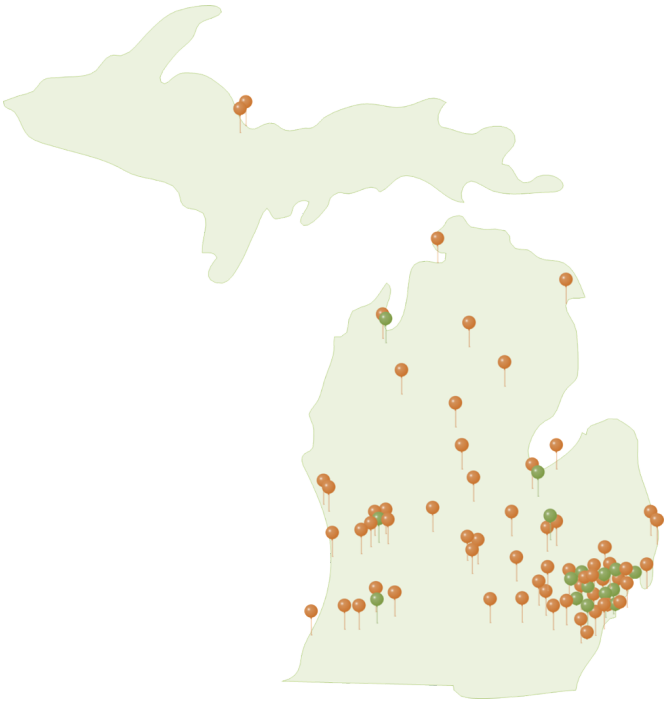
2024 Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI) Annual Report

December 2024

Comprehensive Version

MARCQI Sites



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Ascension Borgess Medical Center, Kalamazoo
Bronson Battle Creek
Bronson Lakeview Hospital, Paw Paw
Bronson Methodist Hospital, Kalamazoo
Bronson Orthopedic Surgery Center, Kalamazoo
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Disclaimer

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Preface

There are six changes to the annual report this year:

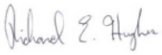
1. Two versions of the report are produced this year: abridged and comprehensive. The abridged version contains an overview of hip and knee arthroplasty data and summary tables of cumulative percent revision (CPR) values for individual implants. Extensive data on individual implants is contained in the comprehensive version, which you are reading.
2. In this comprehensive version, cumulative percent revision is broken down by age (under 65 years vs. 65 years and older) and sex (male vs. female) for each implant. This was done due to confusion about the age- and sex-adjusted hazard ratios. Presenting CPR curves by age and sex was felt to be much more intuitive and have a greater impact. The age cutoff of 65 was chosen to correspond to the Medicare age threshold and the American Joint Replacement Registry (AJRR) CPR estimates.
3. Selected high-volume knee implants that have both cemented and uncemented versions are broken down by constraint and fixation. This was driven by MARCQI quality improvement efforts focused on reducing knee revisions. This analysis required manually identifying catalog numbers of cruciate retaining/posterior stabilized and cemented/uncemented versions because the implant library we utilize does not contain these characteristics.
4. Eight additional implants have met the 500-case threshold for inclusion this year. There are two THA stem/cup combinations, two stems, three cups, and one patellofemoral joint (PFJ) implant. This is the first year that an individual PFJ implant has met the threshold for inclusion.
5. The format has been changed to a one-column format. This change was made because the two-column format made the type-font small and difficult to read. This adds clarity but also considerable length to the document.
6. Implant-specific pages have been made into sub-subsections to take advantage of the LaTeX book template used for this report. This links sub-subsections in the table of contents to corresponding pages in the document. Readers will be able to find implant-specific data by going to the table of contents and clicking on the appropriate hyperlink.

We hope readers will find this an informative document and reflect on opportunities to improve the quality of care for arthroplasty patients in Michigan, the United States, and globally.

Sincerely,



Brian R. Hallstrom, M.D., MARCQI Director



Richard E. Hughes, Ph.D., MARCQI Senior Advisor

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Chapter 1

Quality Improvement Update

The last year of quality improvement at MARCQI has included many projects. There is a continuous evolution of practice, implants and regulatory requirements. As MARCQI works to improve the quality of hip and knee replacement care in Michigan, we also strive to meet the needs of our members, answering questions about the latest technologies and helping them meet regulatory requirements like the new Center for Medicare and Medicaid Services (CMS) Patient Reported Outcome Performance Measure (PRO-PM). This chapter is a summary and sample of MARCQI efforts this year.

1.1 Patient Reported Outcomes (PROs)

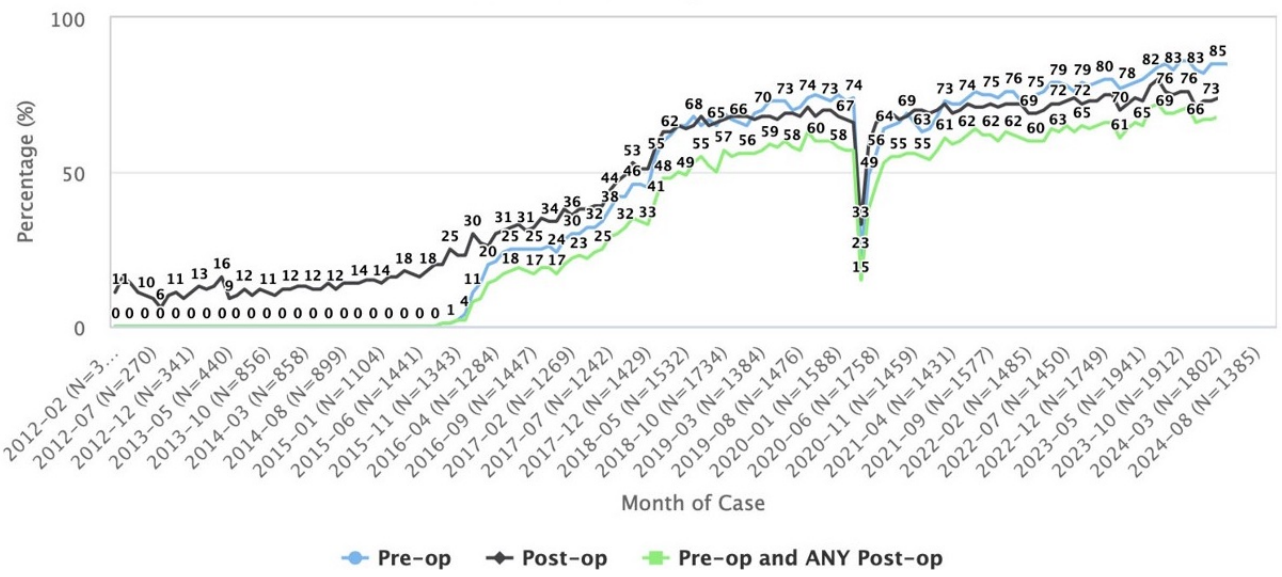


Figure 1. HOOS JR Collection Rates Since the Start of MARCQI in 2012

MARCQI participants have been collecting a variety of patient reported outcome measures (PROMs) since the beginning of MARCQI in 2012. As news of a possible CMS PROs measure began circulating in 2016, MARCQI focused on collecting the HOOS JR, KOOS JR, and the PROMIS Global surveys to help prepare our participating sites for the impending requirements. After considerable work on the part of members, PROMs are being collected before surgery on more than 85% of all cases, and 66% have a pre-op and a post-operative score in the registry (Figure 1).

The CMS requirement is for the post-operative score to be collected between ten and 14 months after surgery (called the

one-year score). It has proven more difficult to capture PROMs scores a year after surgery. Most patients are feeling recovered, have resumed their activities, and are reluctant to return to clinic or complete surveys. For operations in the first half of 2023, MARCQI sites have collected one-year surveys from approximately 42% of all patients. The CMS requirement is submission of surveys from at least 50% of inpatients for cases performed on or after July 1, 2024. With the current trajectory of increasing PROMs collection, MARCQI efforts over the last decade have prepared Michigan hospitals well to meet this requirement.

For clinicians, the goal of collecting PROMs is to use them to improve care. This information can be used to help with shared decision-making with patients, assessing appropriateness of surgical expectations, predicting recovery and tracking post-operative progress. A previous MARCQI analysis (Cowen *et al.*, 2023) showed that patients with a low pain score and a HOOS JR or KOOS JR function score of greater than 55 points had a higher risk of being worse off after surgery: 24% for knee replacement patients and 14% for hips. Improved shared surgical decision-making is made possible by comparing a patient's preoperative function and pain scores and sharing this information with them.

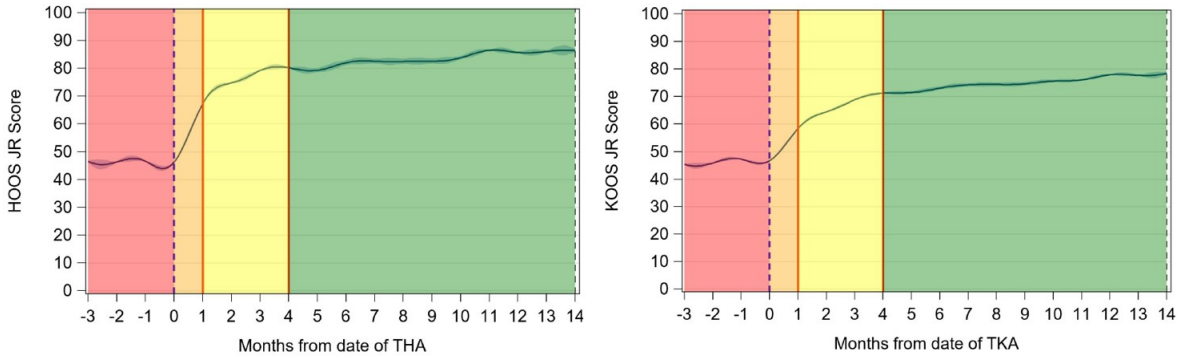


Figure 2. Average HOOS JR and KOOS JR Scores Over Time Relative to Surgical Date

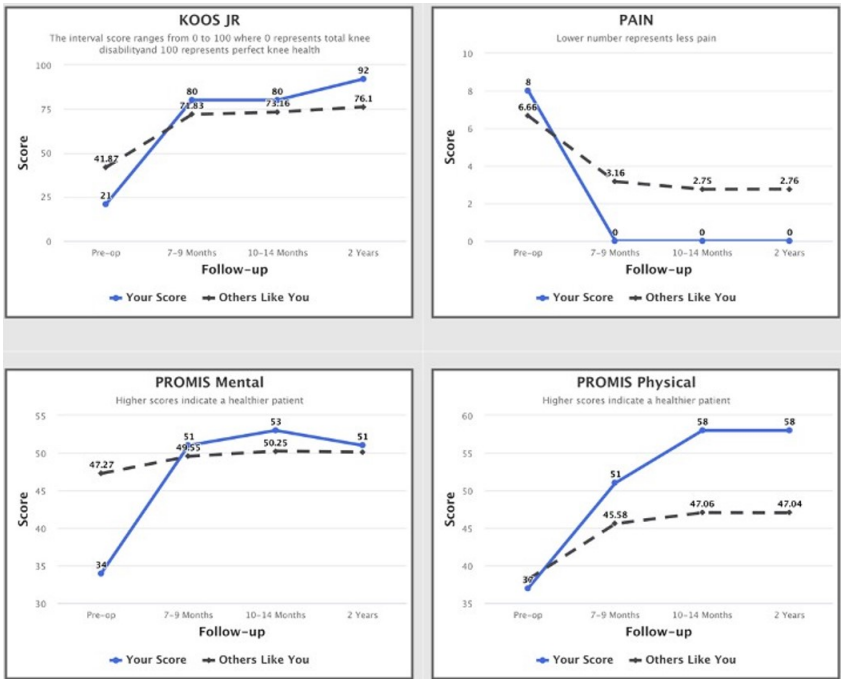


Figure 3. Individual Patient PROMs Progress Report

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PROMs scores can be used to set patient expectations and track their progress over time. The data from the entire registry shows the difference between the rapid improvement that THA patients have in the first few months after surgery and the more gradual progress that TKA patients report over the first year (Figure 2).

Patients are especially interested in how they are progressing, and PROMs can provide them a frame of reference. MARCQI now has a resource available to all MARCQI-participating surgeons that they can share with patients showing how their PROMs scores are progressing relative to other patients their age and sex (Figure 3). These reports can reassure patients about their progress, show them how events in their recovery have affected their scores, and illustrate the improvement from their pre-operative score. Patients in the middle of a rehabilitation program often forget how limited they were prior to surgery.

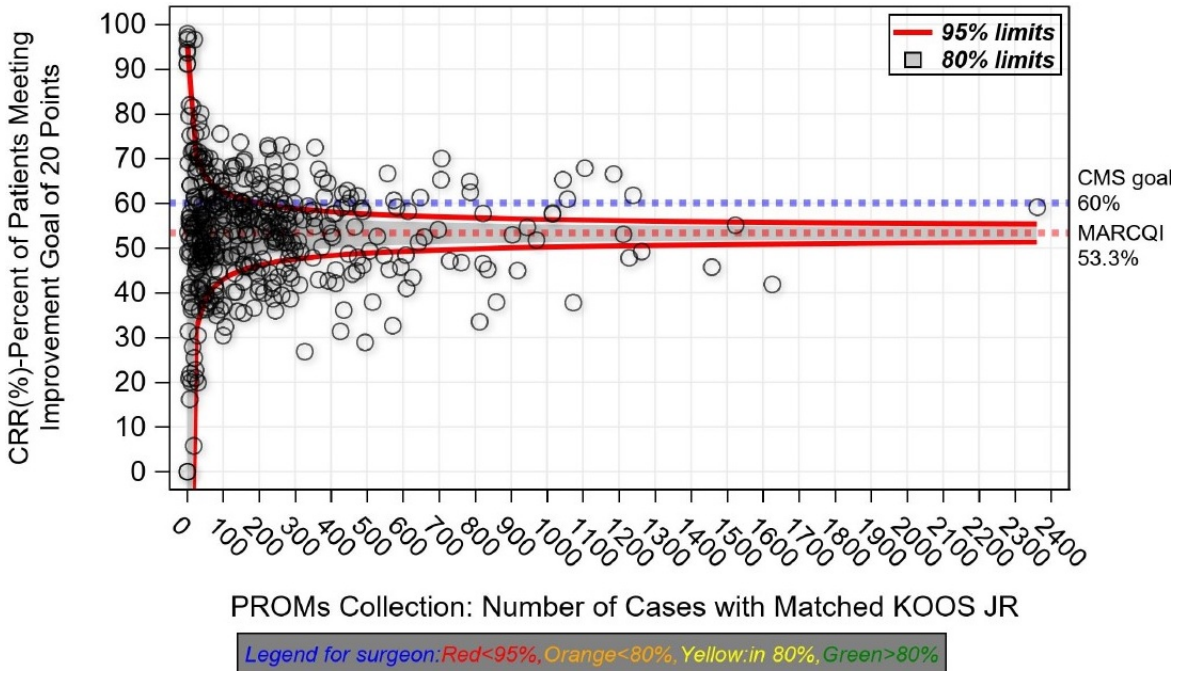


Figure 4. Percent of Patients Achieving 20-point Improvement in KOOS JR Score After TKA by Surgeon

Surgeons can also use PROM scores to develop a sense of their overall patient population and how they are progressing. The average PROM score of a group of patients is not particularly meaningful since it can hide low and high scoring patients. A measure of how many patients achieve a certain threshold of improvement may be a better metric for quality. When comparing PROMs improvement after surgery by surgeon, there is considerable variability between surgeons (Figure 4). While PROM results can be affected by the timing of the PROM collection, patient and surgical factors, and other confounders, this comparison may provide an opportunity for improvement and sharing of best practices between surgeons and MARCQI sites. This information is provided to surgeons in MARCQI through their individual surgeon reports (Mesko *et al.*, 2024).

Going forward, MARCQI will continue to incorporate PROMs into quality improvement projects and analytic models, exploring the effect of different techniques, implants, and optimization strategies on PROMs and how these can be used to inform decision-making and surgical timing.

1.2 Individual Surgeon Reports

Since 2018, MARCQI has produced individual surgeon reports for MARCQI surgeons. Over the years, we have worked to improve the reports so that they are more useful to surgeons to help them improve the care of their patients and understand the impact of their practice changes. This year we published a paper in the *Journal of Bone and Joint Surgery* on the

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progress we have made with these reports (Mesko *et al.*, 2024).

The reports provide surgeons with their revision and infection rates for TKA and UKA and revision, infection, dislocation, and fracture rates for THA. In addition, the results of patient reported outcomes on their patients are included and surgeons can see how their patients are responding compared with their peers.

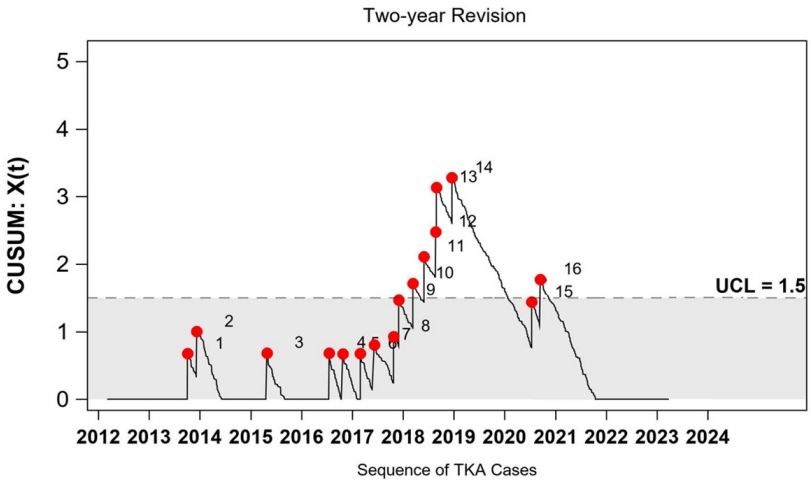


Figure 5. A Sample CUSUM Chart Demonstrating a Practice Change in 2016 Followed by an Adjustment in 2019

The reports include funnel plots that show the surgeon their results compared with their peers around the state. In addition, cumulative sum (CUSUM) graphs provide a timeline of results so that the surgeon can see the effect of changes that they make in their practice. There are many examples that surgeons have shared of a practice change resulting in an improvement or worsening of results. The CUSUM graphs allow surgeons to see the results of changes they have made and then make adjustments. One example that was seen by a number of surgeons in MARCQI was the broad adoption of uncemented knee replacements. Several surgeons saw an increase in early knee revisions and adjusted their practice to use them more selectively. An example is shown in Figure 5.

Through the value-based reimbursement program, surgeons are also incentivized to download their report and share it with their colleagues. These conversations happen around the state and have led to insights and practice changes. For the last two years, about 60% of active MARCQI surgeons in Michigan downloaded their reports, providing them with information about their practice that was previously unavailable and is unique in Michigan.

1.3 Revision Total Joint Replacement in MARCQI

MARCQI conducted an analysis of revision cases for the first time this year. For the 468,791 cases through July 31, 2023, there were 36,794 revision cases: 13,103 hip revisions and 23,691 knee revisions. Of the revision cases, 11,845 were the first revision of a matched MARCQI primary hip or knee replacement. Revision cases without a linked primary procedure in the database fit into three categories: the primary case was performed in Michigan before the registry was started in 2012, the primary case was performed in a surgical site that was not part of MARCQI at the time, or the primary case was performed outside the state of Michigan but revised in Michigan. Of the 11,845 matched first revision cases, 86.9% were only revised once, 10.6% were revised twice, 1.9% were revised three times, and 0.6% were revised more than three times. Two MARCQI cases had nine revisions each.

As expected, revision cases were more likely to return to the emergency department within 30 days of surgery and much more likely to be readmitted. The 90-day dislocation rate after revision THA was 5.21%, compared with 0.76% for primary THA. Revision patients were much more likely to receive a blood transfusion at 21.84% vs. 2.46% for hips and 4.51% vs.

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0.92% for knees. Revision patients also had a higher 90-day infection rate: 3.78% and 1.79% vs. 0.59% and 0.40% respectively.

The top three reasons for revision after TKA were instability, infection, and loosening while for THA they were peri-prosthetic femur fracture, dislocation and infection. Broken down by femoral stem fixation, uncemented stems were revised for peri-prosthetic fracture 28.8% of the time, for dislocation in 21.1% and infection in 20.1% of revisions. Cemented stems were revised less often, and the three most common reasons were dislocation in 34.1%, infection in 22.7%, and loosening in 18.2%.

The CPR for knees with a resurfaced patella was statistically lower, with a revision rate of 4.02% (3.86, 4.18) compared to those with an unresurfaced patella at 4.57% (4.16, 5.02). For patients with an unresurfaced patella who underwent a revision, 25.6% of those revisions were just to resurface the patella, and 21.8% of revisions involved revising the femur and tibia and resurfacing the patella.

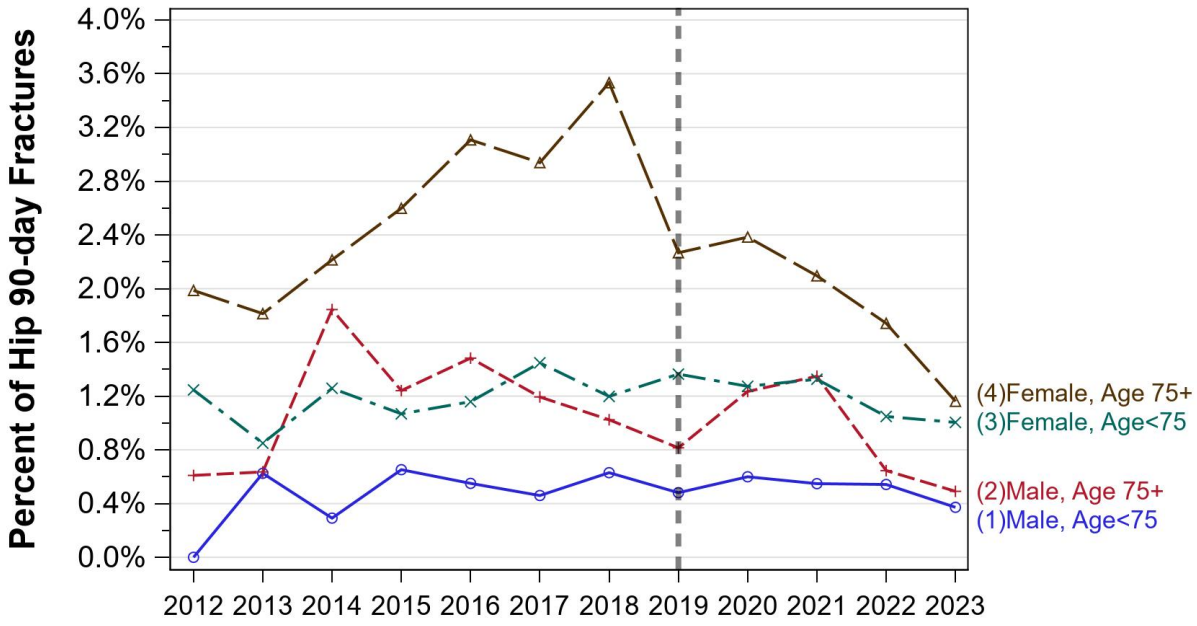


Figure 6. Rate of 90-day Peri-prosthetic Femur Fracture by Age and Sex Over Time

This information will be used in MARCQI to target quality improvement efforts. The goal is to continue reducing revisions by preventing the complications that most often lead to revision. The quality improvement project, started in 2019, on reducing early femur fracture and revision has been associated with a 248% increase in cementing the stem for women 75 and older and a 51% reduction in early post-operative hip fractures in the same group (Figure 6). The next target is reducing dislocations, the second most common reason for revision.

1.4 Infection Prevention, Irrigation, and Antibiotic Powders

In 2019, MARCQI began collecting detailed information about the use of irrigants and antibiotic powders in hip and knee replacement. This included normal saline, antibiotic solutions, chlorhexidine-containing solutions, povidone-iodine solutions, and others. An analysis was done of 68,000 primary hip cases and 106,156 primary knee cases performed between January 2019 and December 2022.

During this time, the use of additives to the irrigation solution increased to over 60% of cases. The 90-day infection rate for hip and knee replacement remained stable, with 0.62% infections in hips and 0.40% in knees. There was no demonstrated

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time trend.

For hip replacement, the use of normal saline alone was associated with a statistically lower infection rate compared with cases using other irrigation solution, and in knees there were no statistically significant differences. The addition of antibiotic powder to the wound was also not associated with fewer infections. While this data can be influenced by selection bias in the use of irrigation additives by surgeons or surgical sites, these results remained when controlled for surgical site and surgeon.

Regardless of the irrigant used, higher infection rates were associated with higher body mass index (BMI), higher American Society of Anesthesiologists (ASA) score, the use of assistive devices pre-op, the use of pre-operative opioids and longer surgical times. This allows MARCQI surgeons to focus on efforts to improve patient selection and optimization, room traffic, surgical efficiency and other factors known to be associated with reduced infections as they continue to work to reduce post-operative infections.

1.5 Summary

The ability of surgeons across Michigan to collaborate, share results, discuss best practices, and work together is the great strength of MARCQI. Many hip and knee replacements are done out of necessity by surgeons with relatively low volumes. Half of the hip surgeons in MARCQI do fewer than 30 THA a year and the median number of cases for TKA is 72. In Michigan, 5.7% of the knee replacements and 12.2% of the hip replacements are done by surgeons who do fewer than three each month ($\leq$35 per year). By working together, sharing reports, and collaborating, MARCQI surgeons can improve as a group. Low-volume surgeons and sites can benefit from the ideas and expertise of other successful low-volume surgeons and high-volume surgeons. Collaboration is the key to improvement.

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Chapter 2

Hip Overview

These data are based on cases performed from 2/15/2012 to 12/31/2023.

2.1 Descriptive Statistics of All Total Hip Arthroplasty (THA) Cases

This section presents data on all THA cases, including primary and revision cases.

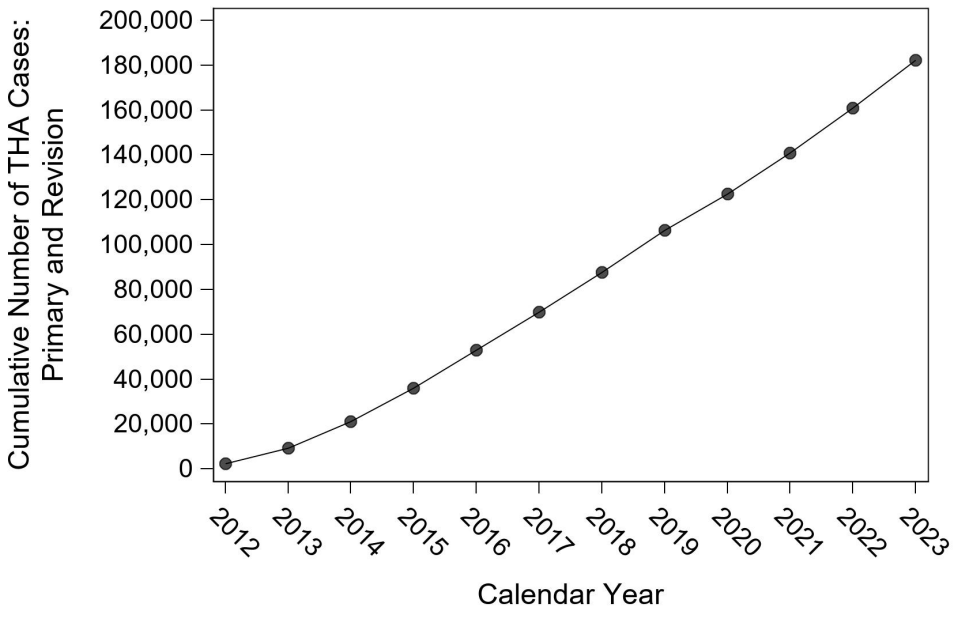


Figure 7. THA Cases Over Time (in 171,868 Patients)

Table 1. THA Cases Over Time (Numerical Values)

Year	Annual cases	Cumulative cases
2012	2,490	2,490
2013	6,724	9,214
2014	11,886	21,100
2015	15,019	36,119
2016	16,821	52,940
2017	16,979	69,919
2018	17,889	87,808
2019	18,679	106,487
2020	16,190	122,677
2021	18,259	140,936
2022	20,011	160,947
2023	21,308	182,255

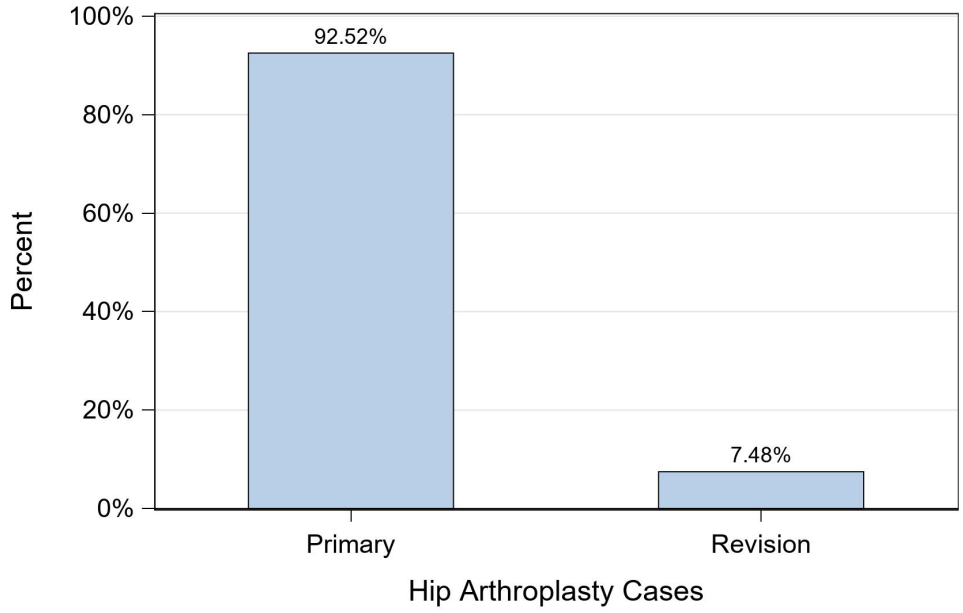


Figure 8. Percent of THA Cases by Primary or Revision

Table 2. Descriptive Statistics of THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	99,629	54.7	
Age (years)	182,255	65.5 (11.1)	66 (14)
Height (cm)	181,559	169.8 (10.5)	170 (15.2)
Weight (kg)	181,559	88.5 (21.3)	86.5 (28.8)
BMI (kg/m^2)	181,556	30.5 (6.3)	29.8 (8.3)
Smoker - Never (%)	88,260	48.4	
Smoker - Previous (%)	68,380	37.5	
Smoker - Current (%)	24,943	13.7	
Smoker - Unknown (%)	672	0.4	

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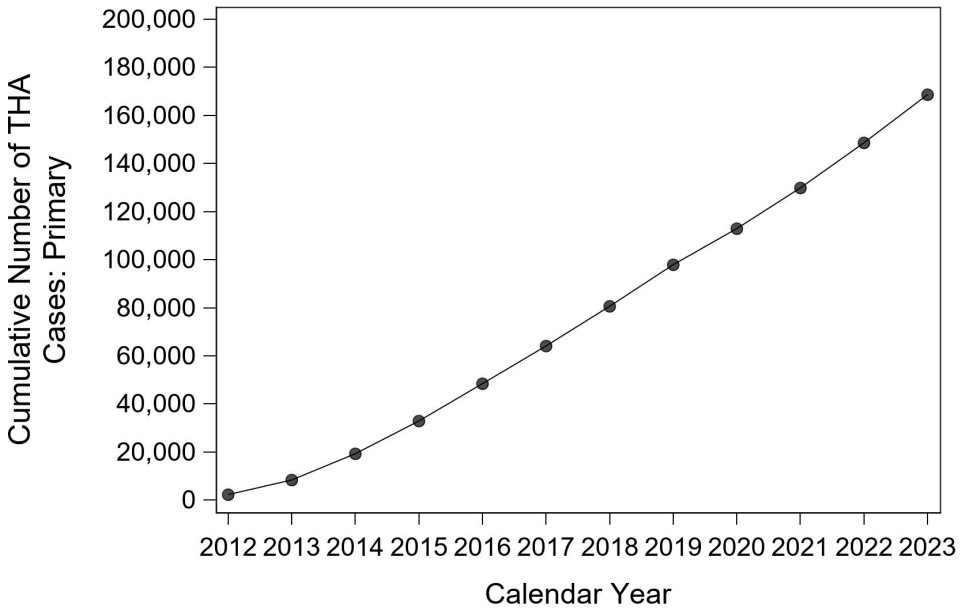


Figure 9. Primary THA Cases Over Time (in 141,908 Patients)

Table 3. Primary THA Cases Over Time (Numerical Values)

Year	Annual cases	Cumulative cases
2012	2,249	2,249
2013	6,090	8,339
2014	10,911	19,250
2015	13,625	32,875
2016	15,523	48,398
2017	15,682	64,080
2018	16,506	80,586
2019	17,293	97,879
2020	15,019	112,898
2021	16,925	129,823
2022	18,765	148,588
2023	20,035	168,623

Table 4. Descriptive Statistics of Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	91,995	54.6	
Age (years)	168,623	65.3 (11)	66 (15)
Height (cm)	167,964	169.9 (10.5)	170 (15.2)
Weight (kg)	167,964	88.6 (21.1)	86.8 (28.7)
BMI (kg/m^2)	167,962	30.6 (6.3)	29.9 (8.3)
Smoker - Never (%)	82,211	48.8	
Smoker - Previous (%)	62,908	37.3	
Smoker - Current (%)	22,913	13.6	
Smoker - Unknown (%)	591	0.4	

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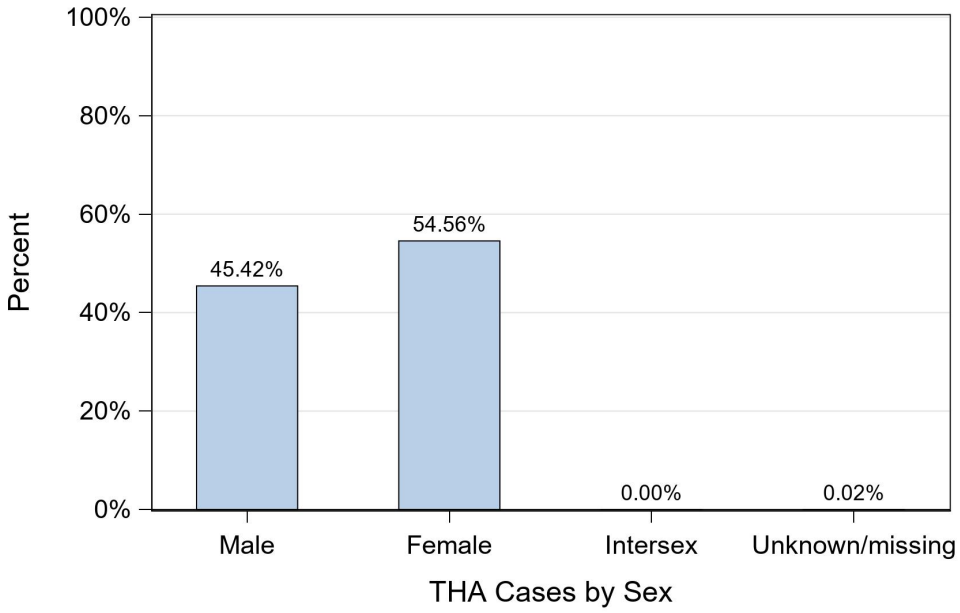


Figure 10. Percent of Primary THA Cases by Sex

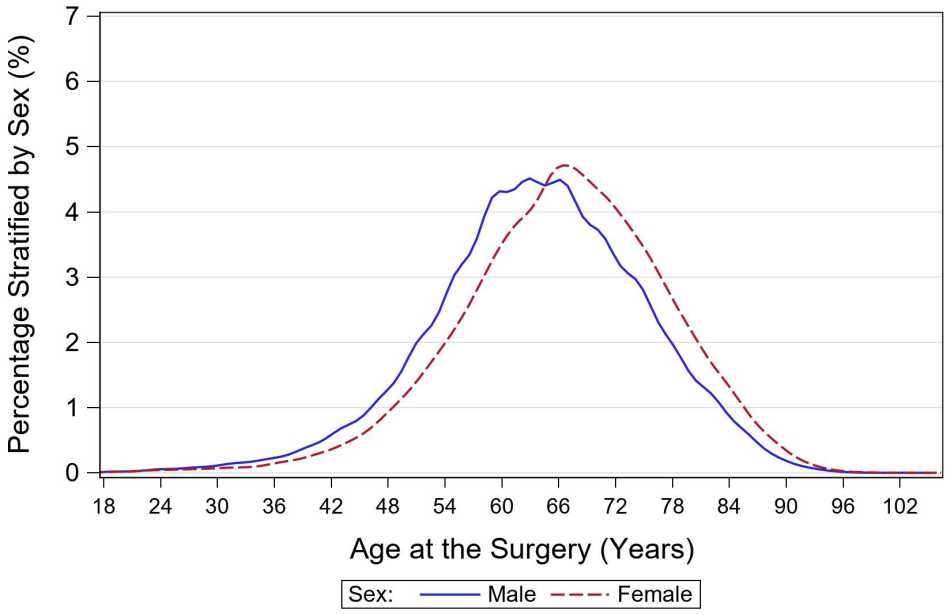


Figure 11. Age Distribution of Primary THA Cases by Sex

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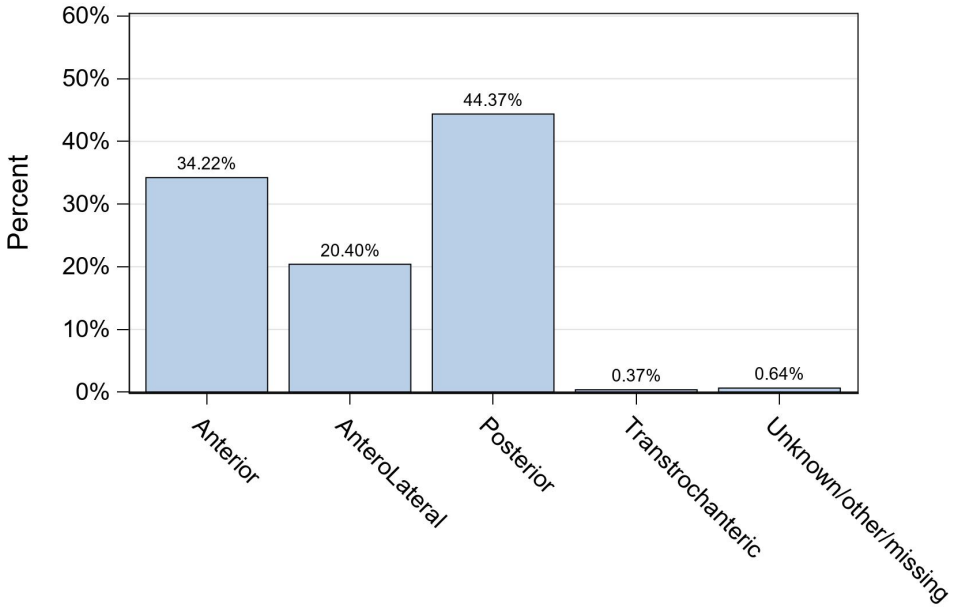


Figure 12. Percent of Primary THA Cases by Approach

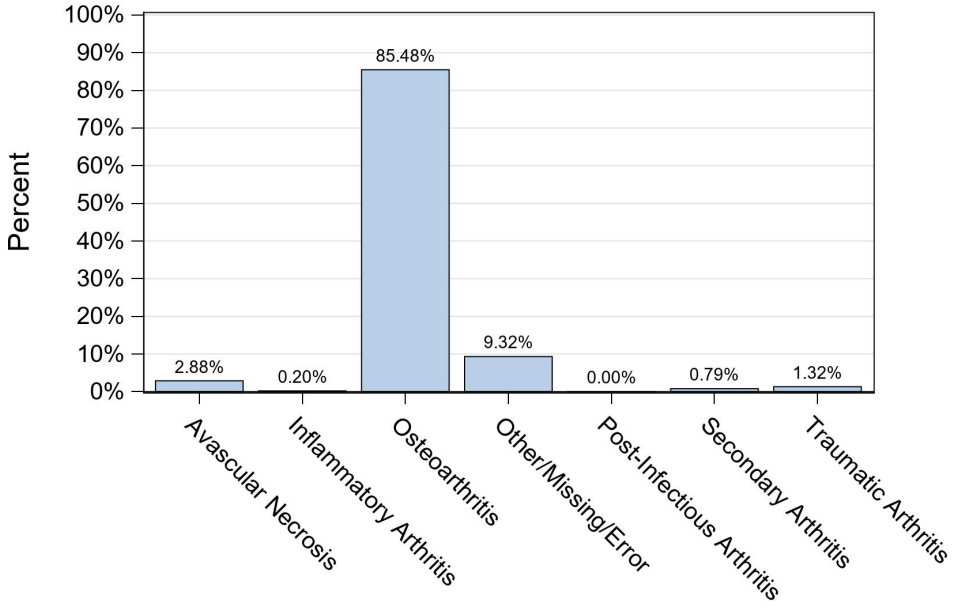


Figure 13. Percent of Primary THA Cases by Diagnosis

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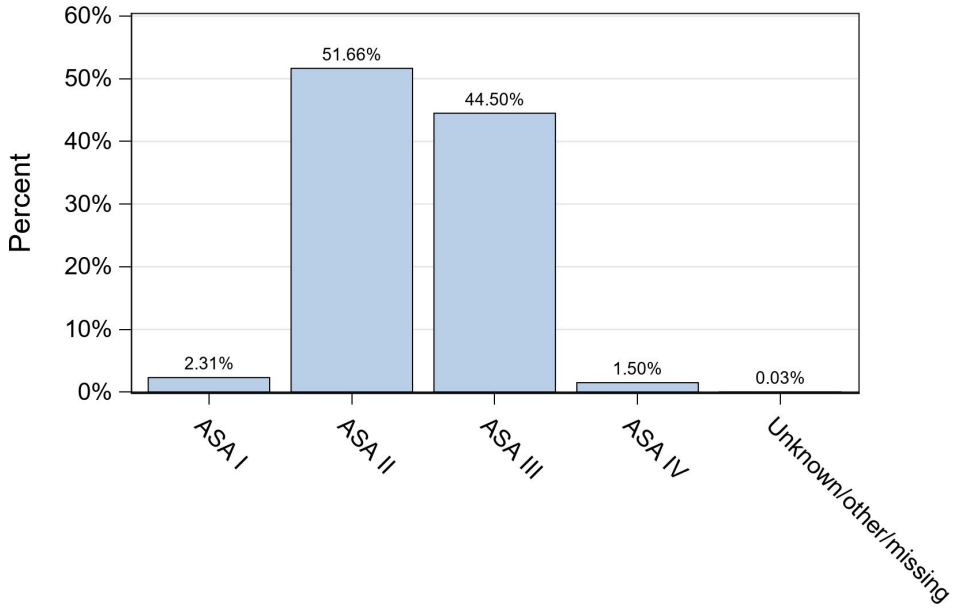


Figure 14. Percent of Primary THA Cases by ASA Class

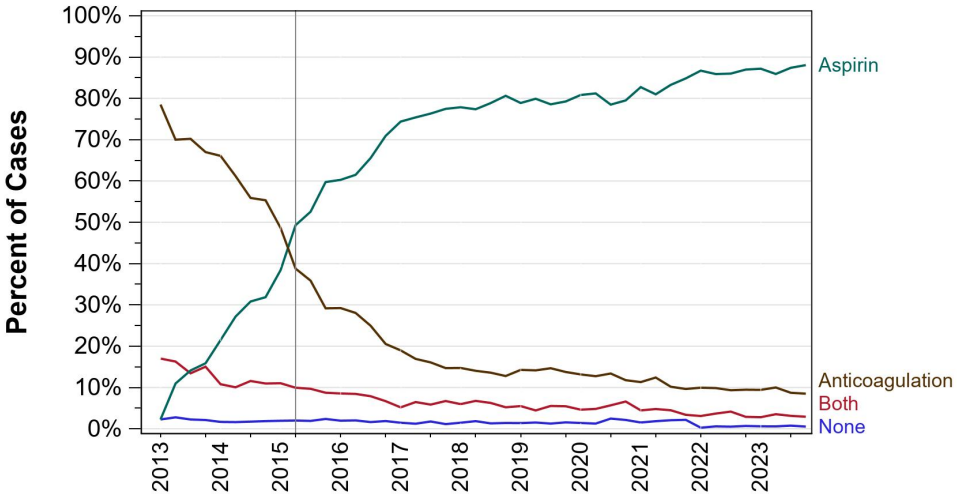


Figure 15. Percent of Primary THA Patients (First Case) by Thrombosis Prophylaxis

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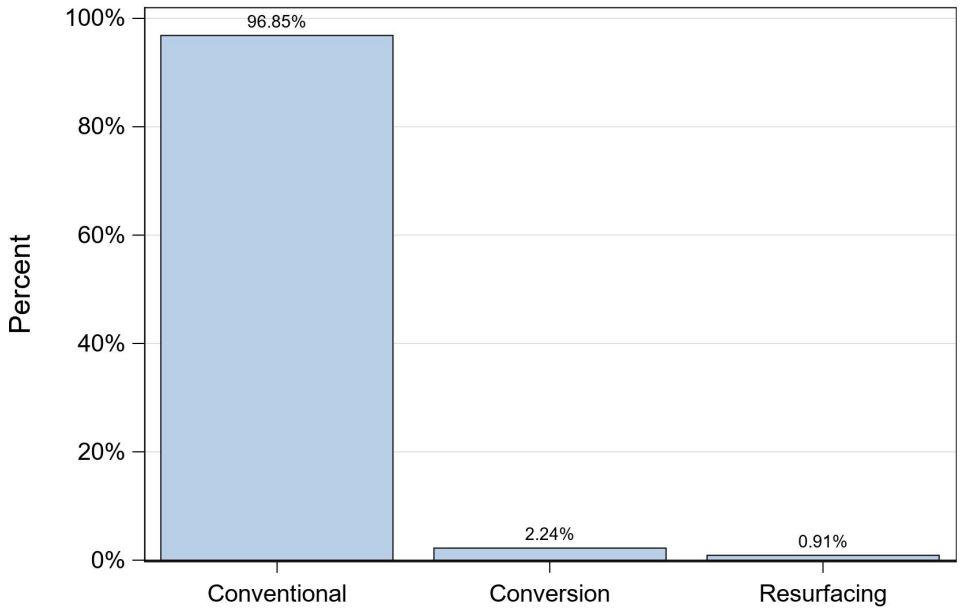


Figure 16. Percent of Primary THA Cases by Procedure

Note the data element for procedure, which was used to create the figure above, was changed in January of 2015 to include conversion.

2.2 Conventional THA

2.2.1 Descriptive Statistics

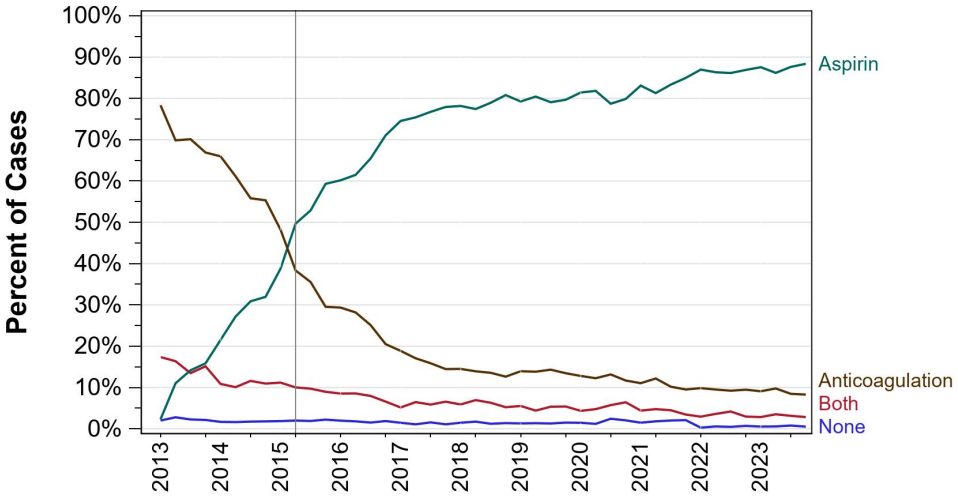


Figure 17. Percent of Primary Conventional THA Patients (First Case) by Thrombosis Prophylaxis

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2.2.2 Revision Risk (Overall, by Sex, and by Diagnosis)

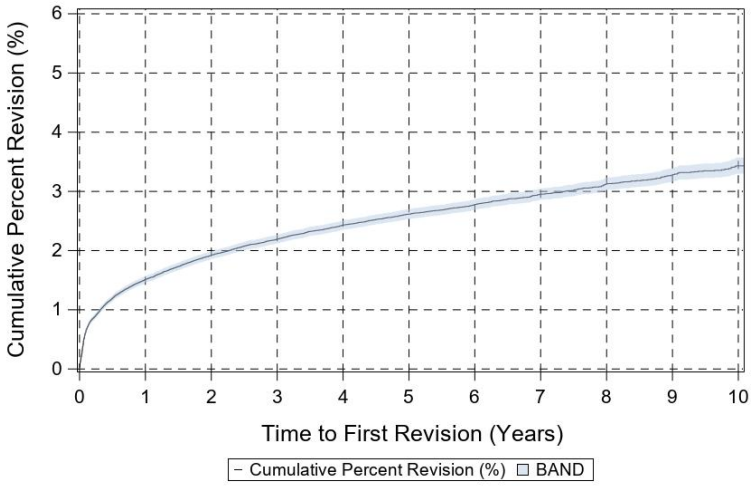


Figure 18. Cumulative Percent Revision for Primary Conventional THA

Table 5. Cumulative Percent Revision and Number at Risk for Primary Conventional THA (Numerical Values)

	1 year	3 years	5 years	7 years	10 years
CPR	1.51 (1.45,1.57)	2.19 (2.12,2.27)	2.61 (2.53,2.70)	2.95 (2.86,3.05)	3.43 (3.30,3.57)
Number at risk	143,879	108,155	76,570	45,733	7,806

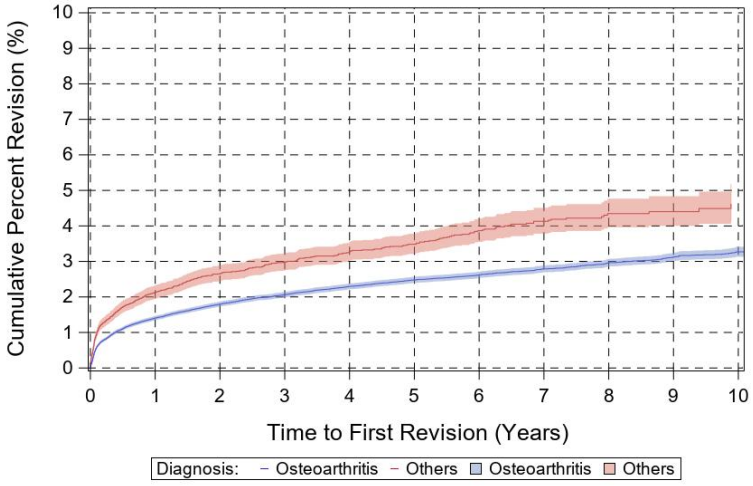


Figure 19. Cumulative Percent Revision for Primary Conventional THA by Diagnosis

Table 6. Cumulative Percent Revision for Primary Conventional THA by Diagnosis (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Osteoarthritis	141,838	1.41 (1.35,1.47)	2.06 (1.99,2.14)	2.48 (2.39,2.57)	2.79 (2.69, 2.89)	3.27 (3.13, 3.41)
Others	23,746	2.13 (1.94,2.32)	2.97 (2.74,3.23)	3.48 (3.21,3.78)	4.13 (3.78, 4.51)	4.62 (4.13, 5.17)
Unknown/Missing	453					

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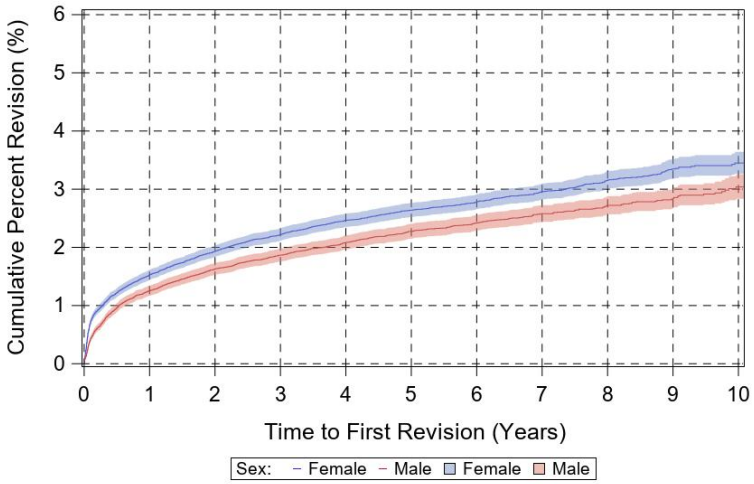


Figure 20. Cumulative Percent Revision for Primary Conventional THA by Sex for Osteoarthritis Diagnosis

Table 7. Cumulative Percent Revision for Primary Conventional THA by Sex for Osteoarthritis Diagnosis (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Female	78,845	1.53 (1.44,1.62)	2.22 (2.11,2.33)	2.64 (2.52,2.76)	2.96 (2.82, 3.10)	3.45 (3.27, 3.64)
Male	62,962	1.25 (1.17,1.35)	1.87 (1.76,1.98)	2.27 (2.15,2.41)	2.58 (2.44, 2.73)	3.04 (2.83, 3.26)
Missing	31					

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2.2.3 Effect of Stem Fixation on Revision Risk

MARCQI began abstracting component fixation as of 1/1/2017, so the analyses presented in this section are based on cases performed between 1/1/2017 and 12/31/2023.

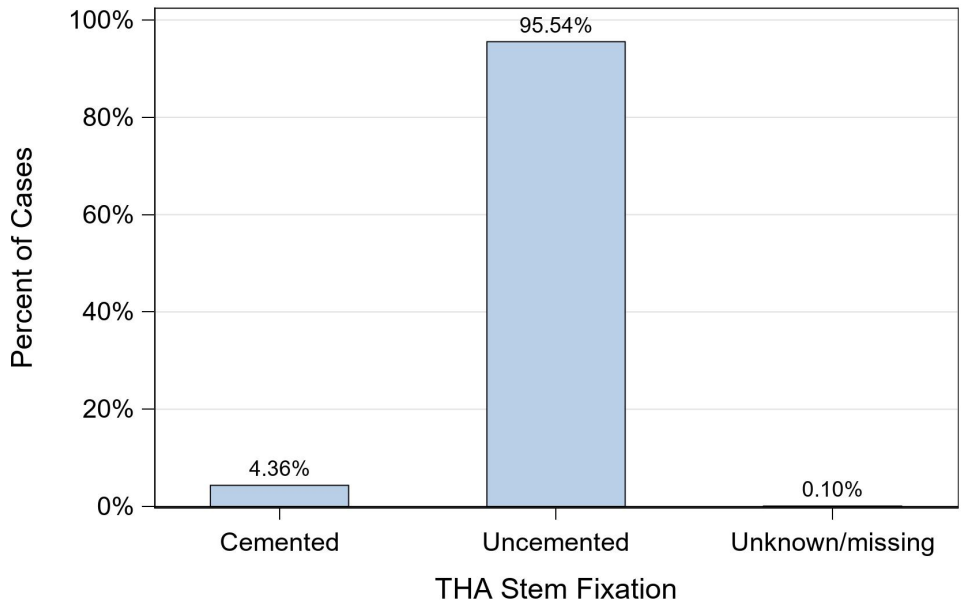


Figure 21. Distribution of Stem Fixation in Primary Conventional THA Cases

Table 8. Descriptive Statistics of Primary Conventional THA Cases by Stem Fixation

Quantity	Cemented N	Cemented Mean (SD)	Cemented Median (IQR)	Uncemented N	Uncemented Mean (SD)	Uncemented Median (IQR)
Female (%)	4,113	81.7		58,926	53.5	
Age (years)	5,033	77.1 (8.5)	78 (11)	110,170	65.1 (10.4)	66 (13)
Height (cm)	5,009	163.5 (9.3)	162.6 (11.4)	109,555	170.2 (10.4)	170.2 (15.2)
Weight (kg)	5,009	75.5 (17.5)	73 (23.4)	109,555	89.6 (21)	88 (27.9)
BMI (kg/m^2)	5,009	28.1 (5.8)	27.4 (7.7)	109,555	30.8 (6.3)	30.1 (8.3)
Smoker - Never (%)	2,715	53.9		54,237	49.2	
Smoker - Previous (%)	1,997	39.7		40,596	36.9	
Smoker - Current (%)	299	5.9		15,084	13.7	
Smoker - Unknown (%)	22	0.4		253	0.2	

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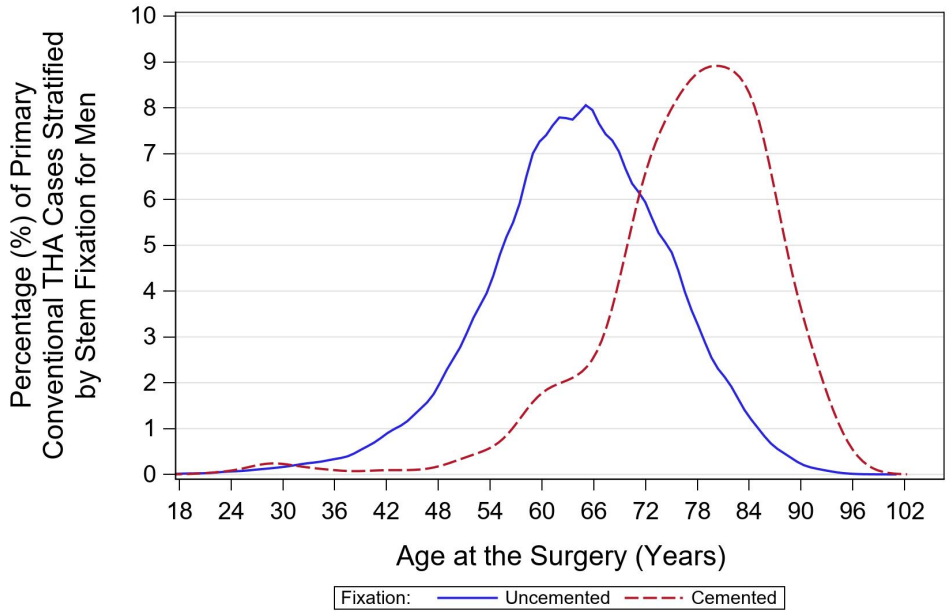


Figure 22. Age Distribution for Primary Conventional THA Cases by Stem Fixation for Men

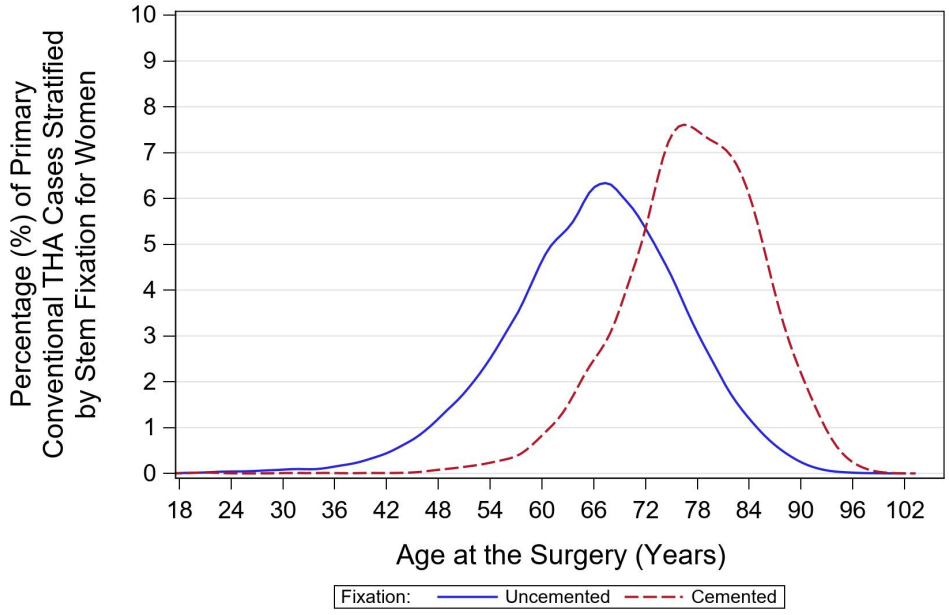


Figure 23. Age Distribution for Primary Conventional THA Cases by Stem Fixation for Women

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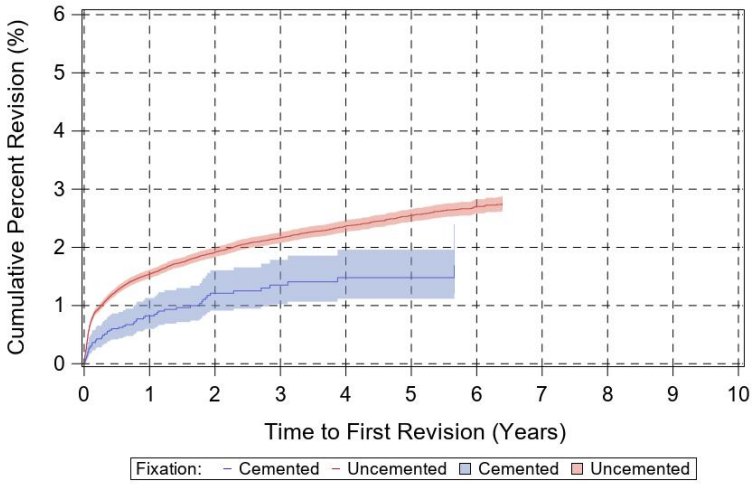


Figure 24. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation

Table 9. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Cemented stem	5,002	0.82 (0.60,1.13)	1.35 (1.02,1.79)	1.48 (1.12,1.96)	N/A	N/A
Uncemented stem	109,823	1.54 (1.47,1.62)	2.16 (2.07,2.26)	2.55 (2.44,2.66)	N/A	N/A
Unknown/missing	110					

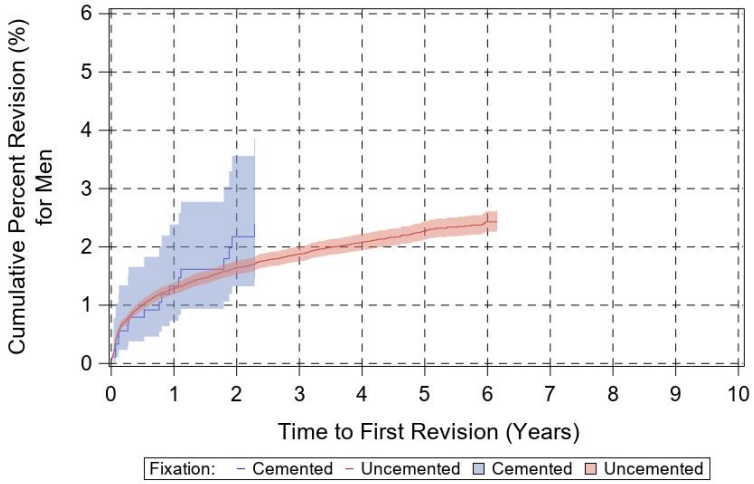


Figure 25. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation for Men

Table 10. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation for Men (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Cemented stem	911	1.33 (0.73,2.39)	2.39 (1.47,3.86)	2.39 (1.47,3.86)	N/A	N/A
Uncemented stem	51,043	1.28 (1.19,1.39)	1.88 (1.75,2.01)	2.27 (2.12,2.43)	N/A	N/A
Unknown/missing	57					

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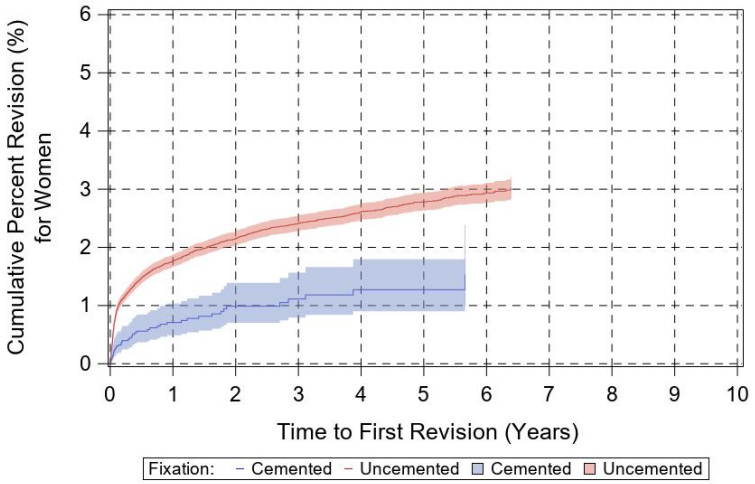


Figure 26. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation for Women

Table 11. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation for Women (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Cemented stem	4,090	0.71 (0.49,1.03)	1.11 (0.79,1.56)	1.27 (0.90,1.80)	N/A	N/A
Uncemented stem	58,759	1.77 (1.66,1.88)	2.41 (2.28,2.55)	2.78 (2.63,2.94)	N/A	N/A
Unknown/missing	53					

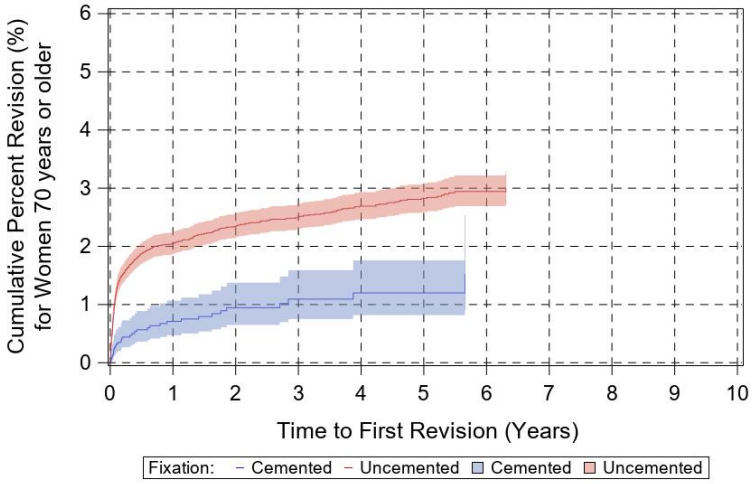


Figure 27. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation for Women 70 Years or Older

Table 12. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation for Women 70 Years or Older (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Cemented stem	3,463	0.71 (0.47,1.07)	1.09 (0.75,1.59)	1.20 (0.82,1.76)	N/A	N/A
Uncemented stem	22,080	2.05 (1.87,2.25)	2.51 (2.30,2.73)	2.82 (2.59,3.08)	N/A	N/A
Unknown/missing	19					

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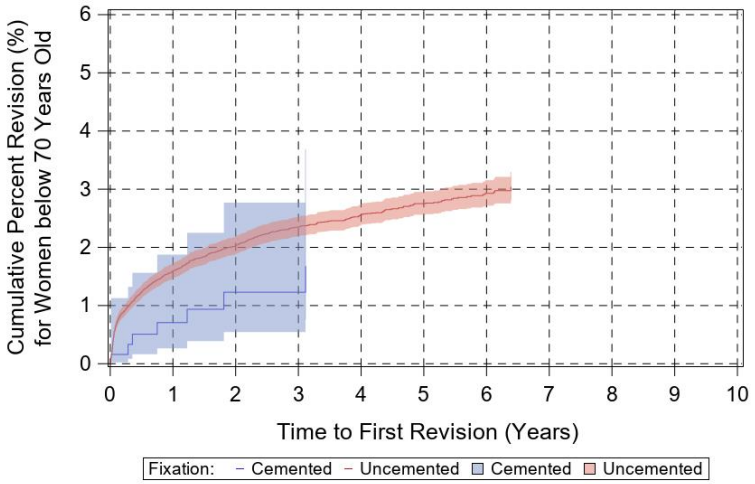


Figure 28. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation for Women Under 70 Years

Table 13. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation for Women Under 70 Years (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Cemented stem	627	0.71 (0.26,1.88)	1.23 (0.54,2.77)	1.68 (0.76,3.69)	N/A	N/A
Uncemented stem	36,679	1.60 (1.47,1.73)	2.35 (2.19,2.52)	2.75 (2.56,2.95)	N/A	N/A
Unknown/missing	34					

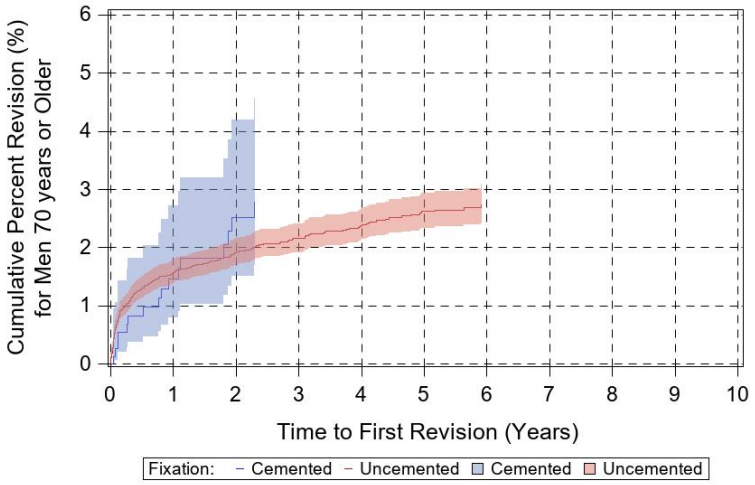


Figure 29. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation for Men 70 Years or Older

Table 14. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation for Men 70 Years or Older (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Cemented stem	754	1.47 (0.79,2.72)	2.79 (1.69,4.58)	2.79 (1.69,4.58)	N/A	N/A
Uncemented stem	15,563	1.58 (1.39,1.79)	2.16 (1.92,2.42)	2.62 (2.34,2.94)	N/A	N/A
Unknown/missing	17					

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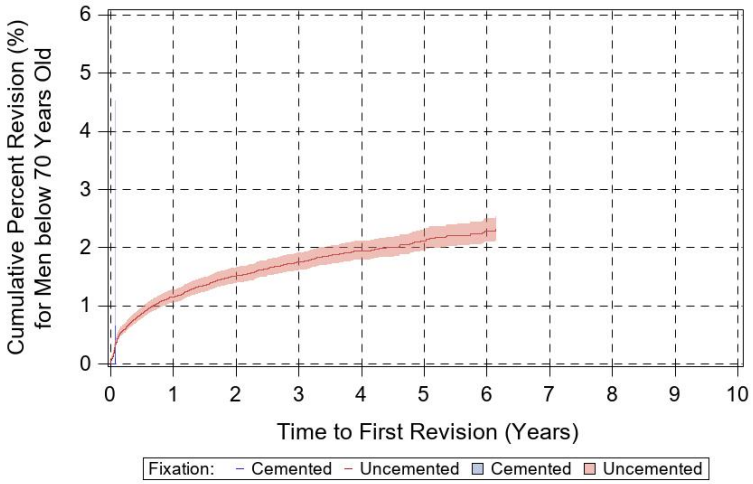


Figure 30. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation for Men Under 70 Years

Table 15. Cumulative Percent Revision for Primary Conventional THA by Stem Fixation for Men Under 70 Years (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Cemented stem	157	0.65 (0.09,4.52)	0.65 (0.09,4.52)	0.65 (0.09,4.52)	N/A	N/A
Uncemented stem	35,480	1.16 (1.05,1.28)	1.75 (1.61,1.91)	2.12 (1.95,2.31)	N/A	N/A
Unknown/missing	40					

Table 16. Reasons for First Revision Following Primary Cemented Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	15	26.8
2	Aseptic Loosening	12	21.4
3	Joint Infection	12	21.4
4	Peri-prosthetic fracture - Femur	10	17.9
5	Implant Failure	3	5.4
6	Peri-prosthetic fracture - Acetabulum	3	5.4
7	Metal Reaction/Metallosis	1	1.8

Table 17. Reasons for First Revision Following Primary Cemented Stem Cases in First Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	14	36.8
2	Joint Infection	11	29.0
3	Peri-prosthetic fracture - Femur	5	13.2
4	Aseptic Loosening	4	10.5
5	Peri-prosthetic fracture - Acetabulum	3	7.9
6	Implant Failure	1	2.6

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Table 18. Reasons for First Revision Following Primary Cemented Stem Cases in Second Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	7	58.3
2	Implant Failure	2	16.7
3	Peri-prosthetic fracture - Femur	2	16.7
4	Joint Infection	1	8.3

Table 19. Reasons for First Revision Following Primary Cemented Stem Cases in Third Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	2	66.7
2	Aseptic Loosening	1	33.3

Table 20. Reasons for First Revision Following Primary Uncemented Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	627	27.0
2	Joint Infection	489	21.1
3	Dislocation/Instability	487	21.0
4	Aseptic Loosening	408	17.6
5	Malalignment	99	4.3
6	Implant Failure	88	3.8
7	Pain	62	2.7
8	Peri-prosthetic fracture - Acetabulum	35	1.5
9	Metal Reaction/Metallosis	16	0.7
10	Osteolysis	4	0.2
	Unknown/missing/other	4	0.2

Table 21. Reasons for First Revision Following Primary Uncemented Stem Cases in First Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	576	35.4
2	Dislocation/Instability	346	21.3
3	Joint Infection	323	19.8
4	Aseptic Loosening	191	11.7
5	Implant Failure	65	4.0
6	Malalignment	52	3.2
7	Pain	34	2.1
8	Peri-prosthetic fracture - Acetabulum	32	2.0
9	Poly liner wear	3	0.2
10	Metal Reaction/Metallosis	3	0.2
	Unknown/missing/other	1	0.1

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Table 22. Reasons for First Revision Following Primary Uncemented Stem Cases in Second Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	95	30.4
2	Joint Infection	82	26.3
3	Dislocation/Instability	58	18.6
4	Malalignment	24	7.7
5	Peri-prosthetic fracture - Femur	22	7.0
6	Pain	15	4.8
7	Implant Failure	11	3.5
8	Peri-prosthetic fracture - Acetabulum	2	0.6
9	Metal Reaction/Metallosis	2	0.6
10	Osteolysis	1	0.3

Table 23. Reasons for First Revision Following Primary Uncemented Stem Cases in Third Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	50	29.6
2	Dislocation/Instability	42	24.8
3	Joint Infection	28	16.6
4	Malalignment	14	8.3
5	Peri-prosthetic fracture - Femur	11	6.5
6	Pain	10	5.9
7	Implant Failure	9	5.3
8	Metal Reaction/Metallosis	3	1.8
9	Poly liner wear	1	0.6
10	Peri-prosthetic fracture - Acetabulum	1	0.6

Table 24. Reasons for First Revision Following Primary Cemented Stem Cases in Women at Least 70 Years of Age

Rank	Reason for Revision	N	Percent
1	Joint Infection	12	25.0
2	Aseptic Loosening	11	22.9
3	Dislocation/Instability	11	22.9
4	Peri-prosthetic fracture - Femur	10	20.8
5	Peri-prosthetic fracture - Acetabulum	2	4.2
6	Implant Failure	1	2.1
7	Metal Reaction/Metallosis	1	2.1

Table 25. Reasons for First Revision Following Primary Cemented Stem Cases in Women at Least 70 Years of Age in First Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	7	30.4
2	Joint Infection	6	26.1
3	Peri-prosthetic fracture - Femur	5	21.7
4	Aseptic Loosening	3	13.0
5	Peri-prosthetic fracture - Acetabulum	2	8.7

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Table 26. Reasons for First Revision Following Primary Cemented Stem cases in Women at Least 70 Years of Age in Second Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	2	40.0
2	Joint Infection	1	20.0
3	Implant Failure	1	20.0
4	Peri-prosthetic fracture - Femur	1	20.0

Table 27. Reasons for First Revision Following Primary Cemented Stem Cases in Women at Least 70 Years of Age in Third Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	50.0
2	Peri-prosthetic fracture - Femur	1	50.0

Table 28. Reasons for First Revision Following Primary Uncemented Stem Cases in Women at Least 70 Years of Age

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	336	38.4
2	Dislocation/Instability	196	22.4
3	Aseptic Loosening	128	14.6
4	Joint Infection	123	14.0
5	Implant Failure	31	3.5
6	Peri-prosthetic fracture - Acetabulum	24	2.7
7	Malalignment	24	2.7
8	Pain	8	0.9
9	Metal Reaction/Metallosis	5	0.6
10	Poly liner wear	1	0.1

Table 29. Reasons for First Revision Following Primary Uncemented Stem Cases in Women at Least 70 Years of Age in First Year post-operatively

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	229	51.9
2	Dislocation/Instability	83	18.8
3	Aseptic Loosening	39	8.8
4	Joint Infection	39	8.8
5	Implant Failure	20	4.5
6	Peri-prosthetic fracture - Acetabulum	18	4.1
7	Malalignment	9	2.0
8	Pain	3	0.7
9	Poly liner wear	1	0.2

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Table 30. Reasons for First Revision Following Primary Uncemented Stem Cases in Women at Least 70 Years of Age in Second Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	22	44.9
2	Aseptic Loosening	15	30.6
3	Joint Infection	5	10.2
4	Peri-prosthetic fracture - Femur	2	4.1
5	Pain	2	4.1
6	Malalignment	2	4.1
7	Peri-prosthetic fracture - Acetabulum	1	2.0

Table 31. Reasons for First Revision Following Primary Uncemented Stem Cases in Women at Least 70 Years of Age in Third Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	10	43.5
2	Joint Infection	5	21.7
3	Aseptic Loosening	3	13.0
4	Implant Failure	2	8.7
5	Malalignment	2	8.7
6	Peri-prosthetic fracture - Femur	1	4.4

2.2.4 Reasons for Revision

The reasons for revision are of central importance to quality improvement because it helps focus attention on specific causes that may be addressed. Therefore, the data are presented in two formats below: tabular and Pareto chart. The tabular format is consistent with how other arthroplasty registries report the cause(s) of revision. The Pareto chart figure presents the same data in a format commonly used in quality improvement. The Pareto chart sorts the reasons for revision by frequency (bar chart on the bottom, from left to right) and presents a cumulative percent using a line graph above.

It is important to note that the time window for the cases reported in the reasons for revision tables and figure differs from the time window used for other figures because the reason for revision was added to the database on 1/1/2015. While these data capture revisions for primaries performed back to 2/15/2012, only revisions occurring on or after 1/1/2015 are included in the reasons for revision figure and tables.

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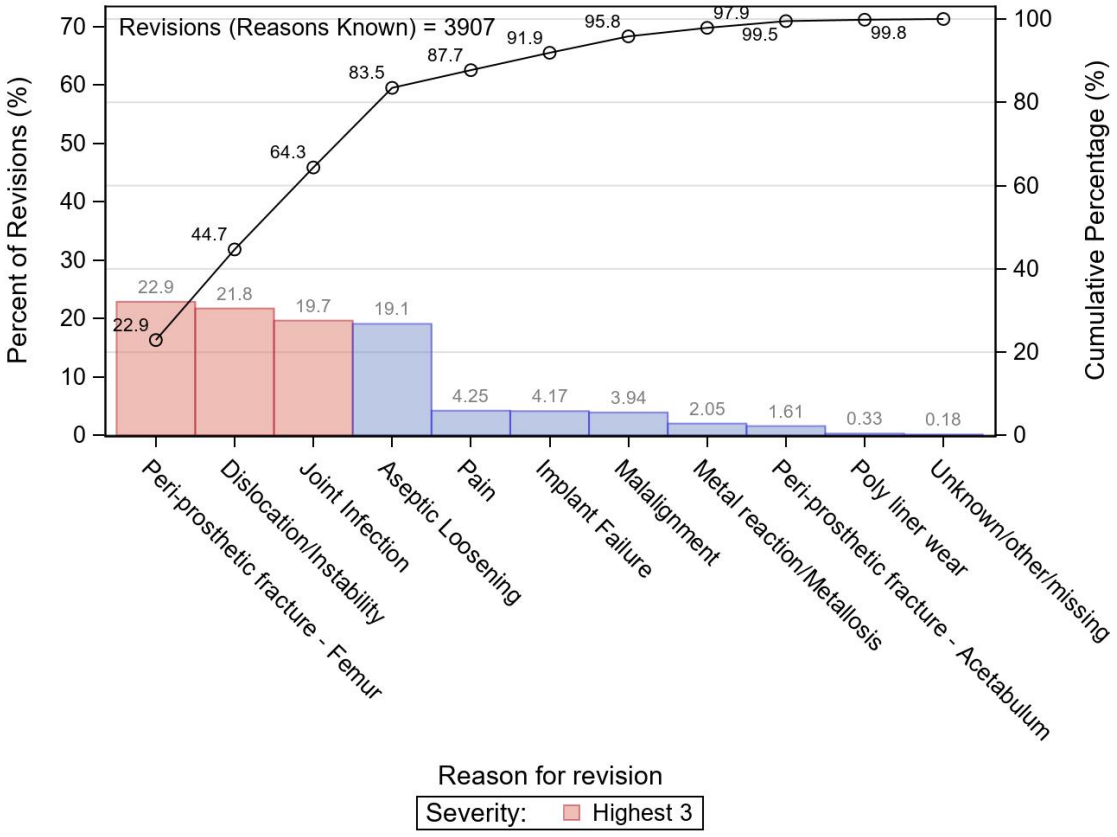


Figure 31. Reasons for First Revision Following Primary Conventional THA (Pareto Chart)

Table 32. Reasons for First Revision Following Primary Conventional THA

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	895	22.9
2	Dislocation/Instability	850	21.8
3	Joint Infection	769	19.7
4	Aseptic Loosening	747	19.1
5	Pain	166	4.2
6	Implant Failure	163	4.2
7	Malalignment	154	3.9
8	Metal Reaction/Metallosis	80	2.0
9	Peri-prosthetic fracture - Acetabulum	63	1.6
10	Poly liner wear	13	0.3
	Unknown/missing/other	6	0.2

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Table 33. Reasons for First Revision Following Primary Conventional THA in First Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	742	32.2
2	Dislocation/Instability	532	23.1
3	Joint Infection	454	19.7
4	Aseptic Loosening	271	11.8
5	Implant Failure	98	4.2
6	Pain	78	3.4
7	Malalignment	68	3.0
8	Peri-prosthetic fracture - Acetabulum	52	2.3
9	Poly liner wear	4	0.2
10	Metal Reaction/Metallosis	3	0.1
	Unknown/missing/other	1	0.1

Table 34. Reasons for First Revision Following Primary Conventional THA in Second Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	174	32.4
2	Joint Infection	122	22.7
3	Dislocation/Instability	101	18.8
4	Pain	47	8.8
5	Peri-prosthetic fracture - Femur	33	6.2
6	Malalignment	29	5.4
7	Implant Failure	21	3.9
8	Peri-prosthetic fracture - Acetabulum	5	0.9
9	Metal Reaction/Metallosis	4	0.7
10	Osteolysis	1	0.2

Table 35. Reasons for First Revision Following Primary Conventional THA in Third Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	99	30.6
2	Dislocation/Instability	70	21.6
3	Joint Infection	58	17.9
4	Pain	28	8.6
5	Peri-prosthetic fracture - Femur	23	7.1
6	Malalignment	19	5.9
7	Implant Failure	15	4.6
8	Metal Reaction/Metallosis	6	1.8
9	Peri-prosthetic fracture - Acetabulum	3	0.9
10	Poly liner wear	2	0.6
	Unknown/missing/other	1	0.3

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2.2.5 Most Commonly Used Implants

Table 36. Ten Most Commonly Used Femoral Components in Primary Conventional THA

Rank	Stem	N	Percent
1	Accolade II	41,272	24.7
2	M/L Taper*	16,584	9.9
3	Taperloc 133	15,959	9.6
4	Actis DuoFix	8,070	4.8
5	Summit	8,031	4.8
6	Avenir	6,978	4.2
7	Anthology	6,516	3.9
8	Fitmore	6,201	3.7
9	Taperloc 133 Microplasty	5,210	3.1
10	Tri-Lock BPS	4,789	2.9
11	Others	47,471	28.3

* M/L Taper does not include M/L Taper Kinectiv

Table 37. Ten Most Commonly Used Acetabular Components in Primary Conventional THA

Rank	Cup	N	Percent
1	G7	39,069	23.4
2	Trident	31,060	18.6
3	Pinnacle	27,501	16.5
4	Trident II	25,451	15.2
5	Continuum	16,530	9.9
6	Reflection 3	11,920	7.1
7	RingLoc	2,652	1.6
8	Trabecular Metal	2,051	1.2
9	Trilogy	1,616	1.0
10	Regenerex RingLoc+	1,031	0.6
11	Others	8,200	4.9

Table 38. Ten Most Commonly Used Femoral/Acetabular Component Combinations Used in Primary Conventional THA

Rank	Stem/cup combination	N	Percent
1	Accolade II / Trident	21,219	12.7
2	Accolade II / Trident II	19,342	11.6
3	Taperloc 133 / G7	12,112	7.2
4	M/L Taper* / Continuum	8,534	5.1
5	Summit / Pinnacle	7,967	4.8
6	Actis DuoFix / Pinnacle	7,858	4.7
7	Avenir / G7	6,819	4.1
8	Anthology / Reflection 3	5,880	3.5
9	M/L Taper* / G7	4,770	2.9
10	Tri-Lock BPS / Pinnacle	4,197	2.5
11	Others	68,383	40.6

* M/L Taper does not include M/L Taper Kinectiv

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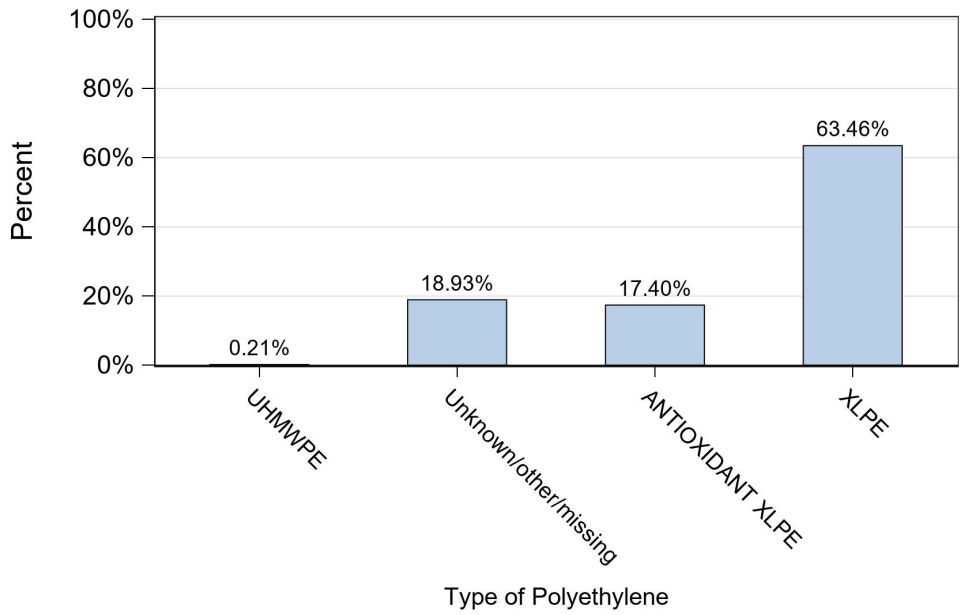


Figure 32. Percentage of Polyethylene Liners by Type of Polyethylene for Primary Conventional THA

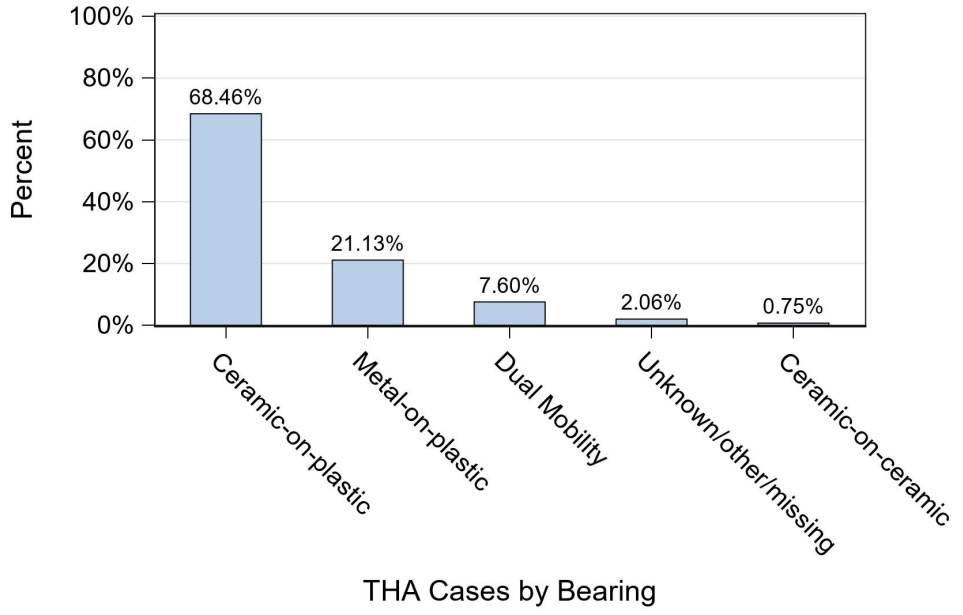


Figure 33. Percentage of Bearing Surface Couple for Primary Conventional THA

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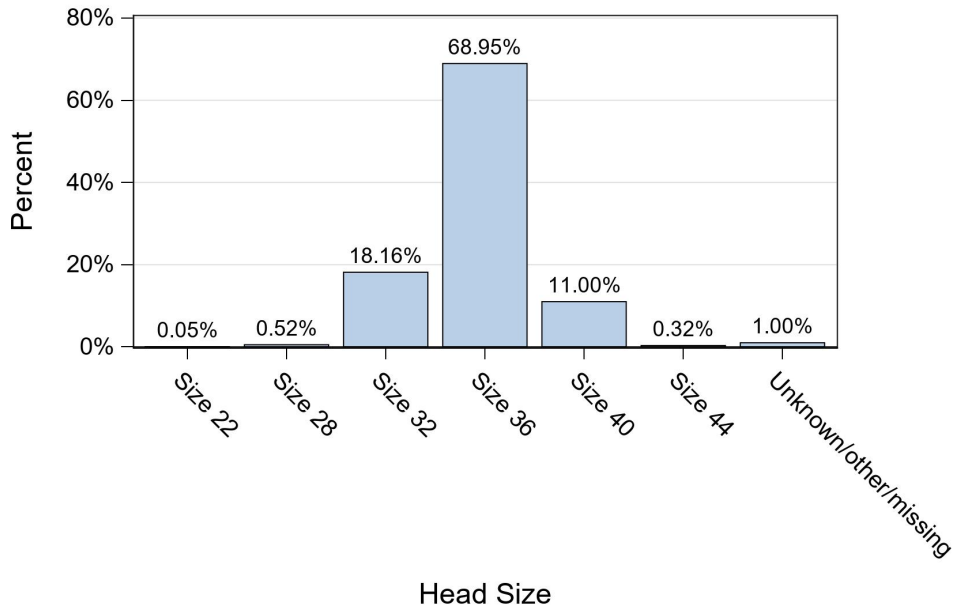


Figure 34. Distribution of Head Sizes for Primary Conventional THA, Excluding Dual Mobility Cases

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2.2.6 Revision Risk by Stem/Cup Implant Combination Summary

There is variation in revision risk across implants. This section provides revision risk data by stem/cup implant combination.

Table 39. Summary of Cumulative Percent Revision Following Primary THA for Stem/Cup Combinations Having at Least 500 Cases, Sorted Alphabetically

Stem/Cup Combination	N*	1 year	3 years	5 years	7 years	10 years
Accolade II / Trident	21,073	1.18 (1.04,1.33)	1.92 (1.74,2.11)	2.44 (2.24,2.66)	2.88 (2.66,3.13)	3.62 (3.25,4.03)
Accolade II / Trident II	19,297	1.51 (1.34,1.70)	2.09 (1.88,2.32)	2.47 (2.18,2.80)	2.90 (2.35,3.57)	N/A
Accolade C / Trident II	838	0.65 (0.27,1.55)	1.10 (0.51,2.39)	1.10 (0.51,2.39)	N/A	N/A
Accolade TMZF / Trident	891	0.90 (0.45,1.79)	2.02 (1.28,3.19)	2.81 (1.90,4.12)	3.27 (2.28,4.67)	4.38 (3.08,6.22)
Actis DuoFix / Pinnacle	7,835	0.80 (0.62,1.04)	1.11 (0.87,1.41)	1.17 (0.91,1.50)	N/A	N/A
AML / Pinnacle	800	1.38 (0.77,2.47)	2.04 (1.26,3.32)	2.99 (1.97,4.51)	3.41 (2.28,5.07)	3.41 (2.28,5.07)
Anthology / PolarCup	552	0.54 (0.18,1.68)	1.46 (0.73,2.90)	1.89 (1.02,3.49)	2.21 (1.21,4.00)	N/A
Anthology / Reflection 3	5,849	1.92 (1.59,2.31)	2.77 (2.36,3.26)	3.18 (2.71,3.72)	3.60 (3.06,4.22)	3.75 (3.18,4.41)
Avenir (Cemented) / G7	1,371	1.04 (0.60,1.79)	1.30 (0.78,2.18)	1.67 (0.93,3.02)	1.67 (0.93,3.02)	N/A
Avenir (Cementless) / Continuum	521	1.34 (0.64,2.80)	1.92 (1.04,3.54)	2.12 (1.18,3.79)	2.54 (1.48,4.34)	2.54 (1.48,4.34)
Avenir (Cementless) / G7	762	1.73 (1.01,2.96)	1.90 (1.13,3.20)	1.90 (1.13,3.20)	1.90 (1.13,3.20)	N/A
Avenir Complete / G7	5,432	1.04 (0.78,1.38)	1.33 (0.97,1.83)	N/A	N/A	N/A
Corail / Pinnacle	3,829	1.27 (0.95,1.68)	2.00 (1.59,2.53)	2.09 (1.66,2.63)	2.19 (1.74,2.76)	2.53 (1.97,3.24)
Corail Coxa Vara / Pinnacle	820	0.13 (0.02,0.89)	0.70 (0.29,1.67)	0.87 (0.39,1.94)	0.87 (0.39,1.94)	0.87 (0.39,1.94)
Echo Bi-Metric / G7	1,652	2.79 (2.10,3.71)	3.49 (2.70,4.50)	3.80 (2.96,4.85)	4.41 (3.12,6.22)	N/A
Echo Bi-Metric Microplasty / G7	2,097	1.85 (1.35,2.53)	2.49 (1.89,3.29)	2.85 (2.17,3.73)	3.51 (2.45,5.00)	N/A
Fitmore / Continuum	2,801	1.36 (0.99,1.86)	2.04 (1.57,2.63)	2.33 (1.83,2.96)	2.77 (2.21,3.46)	3.04 (2.42,3.82)
Fitmore / G7	2,938	1.35 (0.99,1.84)	1.78 (1.35,2.34)	1.89 (1.44,2.48)	1.89 (1.44,2.48)	N/A
Insignia / Trident II	3,067	0.67 (0.42,1.07)	N/A	N/A	N/A	N/A
M/L Taper** / Continuum	8,462	1.72 (1.46,2.02)	2.38 (2.07,2.73)	2.78 (2.44,3.16)	3.06 (2.70,3.47)	3.49 (3.06,3.98)
M/L Taper** / G7	4,750	1.72 (1.39,2.15)	2.50 (2.06,3.03)	2.73 (2.24,3.31)	2.87 (2.33,3.54)	N/A
M/L Taper** / Trabecular Metal	1,061	2.46 (1.68,3.60)	3.25 (2.33,4.52)	3.73 (2.73,5.10)	4.07 (2.98,5.53)	4.07 (2.98,5.53)
M/L Taper** / Trilogy	1,325	1.58 (1.04,2.42)	3.18 (2.36,4.28)	3.85 (2.93,5.05)	4.73 (3.68,6.08)	4.98 (3.88,6.37)
Polarstem / Reflection 3	3,213	1.41 (1.05,1.89)	1.81 (1.38,2.37)	2.40 (1.84,3.12)	2.55 (1.94,3.35)	N/A
Secur-Fit / Trident	1,093	3.75 (2.78,5.06)	4.94 (3.81,6.41)	5.59 (4.38,7.13)	6.03 (4.76,7.63)	6.62 (5.22,8.39)
Secur-Fit / Trident II	834	2.85 (1.90,4.26)	3.22 (2.18,4.75)	3.54 (2.38,5.24)	N/A	N/A
Secur-Fit Max / Trident	3,059	2.12 (1.67,2.70)	2.89 (2.35,3.55)	3.58 (2.97,4.32)	4.01 (3.34,4.81)	4.35 (3.59,5.27)
Secur-Fit Plus Max / Trident	1,982	1.72 (1.23,2.39)	2.12 (1.57,2.86)	2.52 (1.92,3.32)	2.96 (2.30,3.81)	3.39 (2.66,4.32)
SROM / Pinnacle	1,112	1.26 (0.75,2.12)	2.53 (1.76,3.65)	3.10 (2.23,4.31)	3.76 (2.77,5.10)	4.10 (3.03,5.53)
Summit / Pinnacle	7,876	1.52 (1.27,1.82)	2.11 (1.81,2.46)	2.30 (1.98,2.67)	2.44 (2.10,2.82)	2.77 (2.37,3.25)
Synergy / Reflection 3	1,385	2.34 (1.66,3.30)	3.36 (2.51,4.49)	3.68 (2.77,4.88)	4.38 (3.32,5.75)	4.57 (3.47,6.02)
Taperloc 133 / Continuum	831	2.91 (1.96,4.32)	4.76 (3.48,6.48)	5.74 (4.31,7.62)	5.93 (4.47,7.86)	N/A
Taperloc 133 / G7	12,074	1.63 (1.42,1.88)	2.24 (1.98,2.54)	2.71 (2.39,3.07)	2.79 (2.46,3.17)	N/A
Taperloc 133 / Regenerex RingLoc+	498	1.61 (0.81,3.19)	2.21 (1.23,3.95)	2.81 (1.67,4.70)	2.81 (1.67,4.70)	2.81 (1.67,4.70)
Taperloc 133 / RingLoc	1,678	1.73 (1.20,2.48)	2.50 (1.86,3.37)	2.69 (2.01,3.58)	2.76 (2.07,3.66)	3.02 (2.27,4.02)
Taperloc 133 Microplasty / Continuum	708	2.10 (1.25,3.53)	2.56 (1.56,4.19)	2.91 (1.78,4.74)	2.91 (1.78,4.74)	N/A
Taperloc 133 Microplasty / G7	3,821	1.17 (0.87,1.57)	1.43 (1.09,1.87)	1.93 (1.50,2.48)	2.12 (1.65,2.72)	N/A
Trabecular Metal / Continuum	784	2.17 (1.35,3.46)	2.99 (1.99,4.46)	3.28 (2.23,4.82)	3.46 (2.36,5.05)	4.20 (2.90,6.08)
Tri-Lock BPS / Pinnacle	4,175	0.68 (0.47,0.98)	1.30 (0.98,1.71)	1.64 (1.27,2.12)	1.75 (1.35,2.26)	2.22 (1.66,2.97)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision
** M/L Taper does not include M/L Taper Kinectiv

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Table 40. Summary of Cumulative Percent Revision Following Primary THA for Stem/Cup Combinations Having at Least 500 Cases, Sorted by Five-year CPR

Stem/Cup Combination	N*	1 year	3 years	5 years	7 years	10 years
Corail Coxa Vara / Pinnacle	820	0.13 (0.02,0.89)	0.70 (0.29,1.67)	0.87 (0.39,1.94)	0.87 (0.39,1.94)	0.87 (0.39,1.94)
Accolade C / Trident II	838	0.65 (0.27,1.55)	1.10 (0.51,2.39)	1.10 (0.51,2.39)	N/A	N/A
Actis DuoFix / Pinnacle	7,835	0.80 (0.62,1.04)	1.11 (0.87,1.41)	1.17 (0.91,1.50)	N/A	N/A
Tri-Lock BPS / Pinnacle	4,175	0.68 (0.47,0.98)	1.30 (0.98,1.71)	1.64 (1.27,2.12)	1.75 (1.35,2.26)	2.22 (1.66,2.97)
Avenir (Cemented) / G7	1,371	1.04 (0.60,1.79)	1.30 (0.78,2.18)	1.67 (0.93,3.02)	1.67 (0.93,3.02)	N/A
Anthology / PolarCup	552	0.54 (0.18,1.68)	1.46 (0.73,2.90)	1.89 (1.02,3.49)	2.21 (1.21,4.00)	N/A
Fitmore / G7	2,938	1.35 (0.99,1.84)	1.78 (1.35,2.34)	1.89 (1.44,2.48)	1.89 (1.44,2.48)	N/A
Avenir (Cementless) / G7	762	1.73 (1.01,2.96)	1.90 (1.13,3.20)	1.90 (1.13,3.20)	1.90 (1.13,3.20)	N/A
Taperloc 133 Microplasty / G7	3,821	1.17 (0.87,1.57)	1.43 (1.09,1.87)	1.93 (1.50,2.48)	2.12 (1.65,2.72)	N/A
Corail / Pinnacle	3,829	1.27 (0.95,1.68)	2.00 (1.59,2.53)	2.09 (1.66,2.63)	2.19 (1.74,2.76)	2.53 (1.97,3.24)
Avenir (Cementless) / Continuum	521	1.34 (0.64,2.80)	1.92 (1.04,3.54)	2.12 (1.18,3.79)	2.54 (1.48,4.34)	2.54 (1.48,4.34)
Summit / Pinnacle	7,876	1.52 (1.27,1.82)	2.11 (1.81,2.46)	2.30 (1.98,2.67)	2.44 (2.10,2.82)	2.77 (2.37,3.25)
Fitmore / Continuum	2,801	1.36 (0.99,1.86)	2.04 (1.57,2.63)	2.33 (1.83,2.96)	2.77 (2.21,3.46)	3.04 (2.42,3.82)
Polarstem / Reflection 3	3,213	1.41 (1.05,1.89)	1.81 (1.38,2.37)	2.40 (1.84,3.12)	2.55 (1.94,3.35)	N/A
Accolade II / Trident	21,073	1.18 (1.04,1.33)	1.92 (1.74,2.11)	2.44 (2.24,2.66)	2.88 (2.66,3.13)	3.62 (3.25,4.03)
Accolade II / Trident II	19,297	1.51 (1.34,1.70)	2.09 (1.88,2.32)	2.47 (2.18,2.80)	2.90 (2.35,3.57)	N/A
Secur-Fit Plus Max / Trident	1,982	1.72 (1.23,2.39)	2.12 (1.57,2.86)	2.52 (1.92,3.32)	2.96 (2.30,3.81)	3.39 (2.66,4.32)
Taperloc 133 / RingLoc	1,678	1.73 (1.20,2.48)	2.50 (1.86,3.37)	2.69 (2.01,3.58)	2.76 (2.07,3.66)	3.02 (2.27,4.02)
Taperloc 133 / G7	12,074	1.63 (1.42,1.88)	2.24 (1.98,2.54)	2.71 (2.39,3.07)	2.79 (2.46,3.17)	N/A
M/L Taper** / G7	4,750	1.72 (1.39,2.15)	2.50 (2.06,3.03)	2.73 (2.24,3.31)	2.87 (2.33,3.54)	N/A
M/L Taper** / Continuum	8,462	1.72 (1.46,2.02)	2.38 (2.07,2.73)	2.78 (2.44,3.16)	3.06 (2.70,3.47)	3.49 (3.06,3.98)
Taperloc 133 / Regenerex RingLoc+	498	1.61 (0.81,3.19)	2.21 (1.23,3.95)	2.81 (1.67,4.70)	2.81 (1.67,4.70)	2.81 (1.67,4.70)
Accolade TMZF / Trident	891	0.90 (0.45,1.79)	2.02 (1.28,3.19)	2.81 (1.90,4.12)	3.27 (2.28,4.67)	4.38 (3.08,6.22)
Echo Bi-Metric Microplasty / G7	2,097	1.85 (1.35,2.53)	2.49 (1.89,3.29)	2.85 (2.17,3.73)	3.51 (2.45,5.00)	N/A
Taperloc 133 Microplasty / Continuum	708	2.10 (1.25,3.53)	2.56 (1.56,4.19)	2.91 (1.78,4.74)	2.91 (1.78,4.74)	N/A
AML / Pinnacle	800	1.38 (0.77,2.47)	2.04 (1.26,3.32)	2.99 (1.97,4.51)	3.41 (2.28,5.07)	3.41 (2.28,5.07)
SROM / Pinnacle	1,112	1.26 (0.75,2.12)	2.53 (1.76,3.65)	3.10 (2.23,4.31)	3.76 (2.77,5.10)	4.10 (3.03,5.53)
Anthology / Reflection 3	5,849	1.92 (1.59,2.31)	2.77 (2.36,3.26)	3.18 (2.71,3.72)	3.60 (3.06,4.22)	3.75 (3.18,4.41)
Trabecular Metal / Continuum	784	2.17 (1.35,3.46)	2.99 (1.99,4.46)	3.28 (2.23,4.82)	3.46 (2.36,5.05)	4.20 (2.90,6.08)
Secur-Fit / Trident II	834	2.85 (1.90,4.26)	3.22 (2.18,4.75)	3.54 (2.38,5.24)	N/A	N/A
Secur-Fit Max / Trident	3,059	2.12 (1.67,2.70)	2.89 (2.35,3.55)	3.58 (2.97,4.32)	4.01 (3.34,4.81)	4.35 (3.59,5.27)
Synergy / Reflection 3	1,385	2.34 (1.66,3.30)	3.36 (2.51,4.49)	3.68 (2.77,4.88)	4.38 (3.32,5.75)	4.57 (3.47,6.02)
M/L Taper** / Trabecular Metal	1,061	2.46 (1.68,3.60)	3.25 (2.33,4.52)	3.73 (2.73,5.10)	4.07 (2.98,5.53)	4.07 (2.98,5.53)
Echo Bi-Metric / G7	1,652	2.79 (2.10,3.71)	3.49 (2.70,4.50)	3.80 (2.96,4.85)	4.41 (3.12,6.22)	N/A
M/L Taper** / Trilogy	1,325	1.58 (1.04,2.42)	3.18 (2.36,4.28)	3.85 (2.93,5.05)	4.73 (3.68,6.08)	4.98 (3.88,6.37)
Secur-Fit / Trident	1,093	3.75 (2.78,5.06)	4.94 (3.81,6.41)	5.59 (4.38,7.13)	6.03 (4.76,7.63)	6.62 (5.22,8.39)
Taperloc 133 / Continuum	831	2.91 (1.96,4.32)	4.76 (3.48,6.48)	5.74 (4.31,7.62)	5.93 (4.47,7.86)	N/A

* Number of patients that contribute to survival analysis used to compute cumulative percent revision

** M/L Taper does not include M/L Taper Kinectiv

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Table 41. Summary of Cumulative Percent Revision Following Primary THA for Stem/Cup Combinations Having at Least 500 Cases, Sorted by Ten-year CPR

Stem/cup combination	N*	1 year	3 years	5 years	7 years	10 years
Corail Coxa Vara / Pinnacle	820	0.13 (0.02,0.89)	0.70 (0.29,1.67)	0.87 (0.39,1.94)	0.87 (0.39,1.94)	0.87 (0.39,1.94)
Tri-Lock BPS / Pinnacle	4,175	0.68 (0.47,0.98)	1.30 (0.98,1.71)	1.64 (1.27,2.12)	1.75 (1.35,2.26)	2.22 (1.66,2.97)
Corail / Pinnacle	3,829	1.27 (0.95,1.68)	2.00 (1.59,2.53)	2.09 (1.66,2.63)	2.19 (1.74,2.76)	2.53 (1.97,3.24)
Avenir (Cementless) / Continuum	521	1.34 (0.64,2.80)	1.92 (1.04,3.54)	2.12 (1.18,3.79)	2.54 (1.48,4.34)	2.54 (1.48,4.34)
Summit / Pinnacle	7,876	1.52 (1.27,1.82)	2.11 (1.81,2.46)	2.30 (1.98,2.67)	2.44 (2.10,2.82)	2.77 (2.37,3.25)
Taperloc 133 / Regenerex RingLoc+	498	1.61 (0.81,3.19)	2.21 (1.23,3.95)	2.81 (1.67,4.70)	2.81 (1.67,4.70)	2.81 (1.67,4.70)
Taperloc 133 / RingLoc	1,678	1.73 (1.20,2.48)	2.50 (1.86,3.37)	2.69 (2.01,3.58)	2.76 (2.07,3.66)	3.02 (2.27,4.02)
Fitmore / Continuum	2,801	1.36 (0.99,1.86)	2.04 (1.57,2.63)	2.33 (1.83,2.96)	2.77 (2.21,3.46)	3.04 (2.42,3.82)
Secur-Fit Plus Max / Trident	1,982	1.72 (1.23,2.39)	2.12 (1.57,2.86)	2.52 (1.92,3.32)	2.96 (2.30,3.81)	3.39 (2.66,4.32)
AML / Pinnacle	800	1.38 (0.77,2.47)	2.04 (1.26,3.32)	2.99 (1.97,4.51)	3.41 (2.28,5.07)	3.41 (2.28,5.07)
M/L Taper** / Continuum	8,462	1.72 (1.46,2.02)	2.38 (2.07,2.73)	2.78 (2.44,3.16)	3.06 (2.70,3.47)	3.49 (3.06,3.98)
Accolade II / Trident	21,073	1.18 (1.04,1.33)	1.92 (1.74,2.11)	2.44 (2.24,2.66)	2.88 (2.66,3.13)	3.62 (3.25,4.03)
Anthology / Reflection 3	5,849	1.92 (1.59,2.31)	2.77 (2.36,3.26)	3.18 (2.71,3.72)	3.60 (3.06,4.22)	3.75 (3.18,4.41)
M/L Taper** / Trabecular Metal	1,061	2.46 (1.68,3.60)	3.25 (2.33,4.52)	3.73 (2.73,5.10)	4.07 (2.98,5.53)	4.07 (2.98,5.53)
SROM / Pinnacle	1,112	1.26 (0.75,2.12)	2.53 (1.76,3.65)	3.10 (2.23,4.31)	3.76 (2.77,5.10)	4.10 (3.03,5.53)
Trabecular Metal / Continuum	784	2.17 (1.35,3.46)	2.99 (1.99,4.46)	3.28 (2.23,4.82)	3.46 (2.36,5.05)	4.20 (2.90,6.08)
Secur-Fit Max / Trident	3,059	2.12 (1.67,2.70)	2.89 (2.35,3.55)	3.58 (2.97,4.32)	4.01 (3.34,4.81)	4.35 (3.59,5.27)
Accolade TMZF / Trident	891	0.90 (0.45,1.79)	2.02 (1.28,3.19)	2.81 (1.90,4.12)	3.27 (2.28,4.67)	4.38 (3.08,6.22)
Synergy / Reflection 3	1,385	2.34 (1.66,3.30)	3.36 (2.51,4.49)	3.68 (2.77,4.88)	4.38 (3.32,5.75)	4.57 (3.47,6.02)
M/L Taper** / Trilogy	1,325	1.58 (1.04,2.42)	3.18 (2.36,4.28)	3.85 (2.93,5.05)	4.73 (3.68,6.08)	4.98 (3.88,6.37)
Secur-Fit / Trident	1,093	3.75 (2.78,5.06)	4.94 (3.81,6.41)	5.59 (4.38,7.13)	6.03 (4.76,7.63)	6.62 (5.22,8.39)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision

** M/L Taper does not include M/L Taper Kinectiv

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2.2.7 Revision Risk by Stem Implant Summary

Table 42. Summary of Cumulative Percent Revision Following Primary THA for Stems Having at Least 500 Cases, Sorted Alphabetically

Stem	N*	1 year	3 years	5 years	7 years	10 years
Accolade II	41,072	1.33 (1.23,1.45)	2.01 (1.88,2.16)	2.52 (2.35,2.69)	2.97 (2.77,3.17)	3.66 (3.33,4.04)
Accolade C	1,132	0.66 (0.31,1.37)	1.08 (0.57,2.02)	1.60 (0.86,2.97)	3.56 (1.50,8.34)	3.56 (1.50,8.34)
Accolade TMZF	893	0.90 (0.45,1.78)	2.02 (1.27,3.18)	2.80 (1.90,4.12)	3.26 (2.28,4.66)	4.37 (3.08,6.20)
Actis DuoFix	8,047	0.83 (0.65,1.07)	1.13 (0.90,1.43)	1.20 (0.94,1.52)	N/A	N/A
AML	803	1.37 (0.76,2.47)	2.04 (1.25,3.30)	2.97 (1.96,4.49)	3.39 (2.27,5.05)	3.39 (2.27,5.05)
Anthology	6,483	1.79 (1.49,2.15)	2.63 (2.25,3.08)	3.07 (2.64,3.57)	3.46 (2.97,4.04)	3.60 (3.08,4.20)
Avenir (Cemented)	1,470	1.04 (0.62,1.76)	1.27 (0.77,2.09)	1.94 (1.09,3.44)	1.94 (1.09,3.44)	N/A
Avenir (Cementless)	1,306	1.71 (1.13,2.59)	2.07 (1.41,3.03)	2.19 (1.50,3.18)	2.51 (1.73,3.64)	2.51 (1.73,3.64)
Avenir Complete	5,491	1.05 (0.79,1.39)	1.34 (0.98,1.83)	N/A	N/A	N/A
Corail	3,845	1.29 (0.97,1.71)	2.02 (1.60,2.55)	2.11 (1.68,2.65)	2.21 (1.76,2.77)	2.54 (1.99,3.26)
Corail Coxa Vara	828	0.13 (0.02,0.89)	0.85 (0.38,1.89)	1.02 (0.49,2.14)	1.02 (0.49,2.14)	1.02 (0.49,2.14)
Echelon	509	2.75 (1.64,4.60)	3.99 (2.59,6.13)	4.24 (2.79,6.44)	4.81 (3.21,7.18)	5.69 (3.61,8.90)
Echo Bi-Metric	1,991	2.67 (2.05,3.48)	3.35 (2.64,4.24)	3.65 (2.90,4.58)	3.95 (3.11,5.00)	4.63 (3.46,6.18)
Echo Bi-Metric Microplasty	2,109	1.84 (1.34,2.51)	2.48 (1.88,3.27)	2.83 (2.16,3.71)	3.48 (2.44,4.96)	N/A
Fitmore	6,171	1.33 (1.07,1.65)	1.94 (1.62,2.32)	2.20 (1.85,2.61)	2.55 (2.16,3.02)	2.94 (2.44,3.54)
Insignia	3,171	0.65 (0.40,1.04)	N/A	N/A	N/A	N/A
Integral X	594	2.70 (1.66,4.36)	3.24 (2.08,5.03)	3.65 (2.39,5.56)	3.65 (2.39,5.56)	5.04 (3.01,8.40)
M/L Taper**	16,464	1.74 (1.55,1.95)	2.54 (2.30,2.80)	2.97 (2.71,3.26)	3.32 (3.03,3.64)	3.70 (3.36,4.08)
M/L Taper Kinectiv	951	2.13 (1.38,3.28)	3.50 (2.49,4.92)	4.18 (3.04,5.73)	4.34 (3.17,5.93)	5.05 (3.59,7.07)
Polarstem	3,294	1.44 (1.08,1.92)	1.83 (1.41,2.39)	2.41 (1.86,3.12)	2.56 (1.95,3.35)	N/A
ProFemur Gladiator	723	0.88 (0.40,1.96)	1.17 (0.54,2.51)	1.17 (0.54,2.51)	N/A	N/A
Restoration Modular	535	4.62 (3.12,6.82)	6.26 (4.44,8.81)	6.54 (4.66,9.15)	7.55 (5.34,10.62)	7.55 (5.34,10.62)
Secur-Fit	1,933	3.37 (2.65,4.29)	4.29 (3.45,5.32)	4.92 (3.99,6.04)	5.35 (4.35,6.57)	5.94 (4.78,7.37)
Secur-Fit Max	3,263	2.11 (1.67,2.67)	2.84 (2.32,3.48)	3.55 (2.95,4.27)	3.98 (3.32,4.76)	4.31 (3.57,5.21)
Secur-Fit Plus Max	2,125	1.89 (1.39,2.56)	2.27 (1.71,3.00)	2.66 (2.06,3.45)	3.10 (2.43,3.94)	3.53 (2.79,4.45)
SROM	1,159	1.30 (0.78,2.14)	2.69 (1.90,3.81)	3.33 (2.43,4.55)	3.97 (2.96,5.30)	4.29 (3.21,5.71)
Summit	7,940	1.53 (1.28,1.83)	2.16 (1.86,2.51)	2.35 (2.03,2.72)	2.49 (2.15,2.87)	2.85 (2.44,3.34)
Synergy	1,616	2.26 (1.63,3.12)	3.25 (2.47,4.27)	3.60 (2.77,4.69)	4.27 (3.31,5.49)	4.42 (3.42,5.69)
Taperloc	518	1.54 (0.78,3.06)	2.12 (1.18,3.80)	2.51 (1.47,4.28)	2.74 (1.63,4.59)	2.74 (1.63,4.59)
Taperloc 133	15,877	1.70 (1.51,1.92)	2.42 (2.18,2.68)	2.88 (2.60,3.18)	2.97 (2.69,3.29)	3.28 (2.89,3.71)
Taperloc 133 Microplasty	5,197	1.32 (1.04,1.68)	1.60 (1.29,2.00)	1.99 (1.62,2.45)	2.13 (1.73,2.62)	5.10 (1.84, 13.73)
Trabecular Metal	1,393	1.81 (1.23,2.67)	2.47 (1.76,3.45)	2.65 (1.90,3.67)	2.77 (2.00,3.84)	3.42 (2.42,4.81)
Tri-Lock BPS	4,765	0.75 (0.54,1.04)	1.37 (1.07,1.76)	1.67 (1.32,2.11)	1.82 (1.44,2.31)	2.20 (1.70,2.85)
Versys Advocate	800	1.72 (1.00,2.95)	1.72 (1.00,2.95)	2.00 (1.17,3.42)	2.00 (1.17,3.42)	2.00 (1.17,3.42)
Versys Heritage	610	1.18 (0.56,2.46)	1.61 (0.84,3.08)	1.89 (1.01,3.54)	1.89 (1.01,3.54)	1.89 (1.01,3.54)
Wagner Cone	725	1.67 (0.95,2.92)	3.55 (2.39,5.26)	4.16 (2.86,6.03)	5.13 (3.55,7.40)	6.09 (3.94,9.37)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision

** M/L Taper does not include M/L Taper Kinectiv

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Table 43. Summary of Cumulative Percent Revision Following Primary THA for Stems Having at Least 500 Cases, Sorted by Five-year CPR

Stem	N*	1 year	3 years	5 years	7 years	10 years
Corail Coxa Vara	828	0.13 (0.02,0.89)	0.85 (0.38,1.89)	1.02 (0.49,2.14)	1.02 (0.49,2.14)	1.02 (0.49,2.14)
Actis DuoFix	8,047	0.83 (0.65,1.07)	1.13 (0.90,1.43)	1.20 (0.94,1.52)	N/A	N/A
Accolade C	1,132	0.66 (0.31,1.37)	1.08 (0.57,2.02)	1.60 (0.86,2.97)	3.56 (1.50,8.34)	3.56 (1.50,8.34)
Tri-Lock BPS	4,765	0.75 (0.54,1.04)	1.37 (1.07,1.76)	1.67 (1.32,2.11)	1.82 (1.44,2.31)	2.20 (1.70,2.85)
Versys Heritage	610	1.18 (0.56,2.46)	1.61 (0.84,3.08)	1.89 (1.01,3.54)	1.89 (1.01,3.54)	1.89 (1.01,3.54)
Avenir (Cemented)	1,470	1.04 (0.62,1.76)	1.27 (0.77,2.09)	1.94 (1.09,3.44)	1.94 (1.09,3.44)	N/A
Taperloc 133 Microplasty	5,197	1.32 (1.04,1.68)	1.60 (1.29,2.00)	1.99 (1.62,2.45)	2.13 (1.73,2.62)	5.10 (1.84, 13.73)
Versys Advocate	800	1.72 (1.00,2.95)	1.72 (1.00,2.95)	2.00 (1.17,3.42)	2.00 (1.17,3.42)	2.00 (1.17,3.42)
Corail	3,845	1.29 (0.97,1.71)	2.02 (1.60,2.55)	2.11 (1.68,2.65)	2.21 (1.76,2.77)	2.54 (1.99,3.26)
Avenir (Cementless)	1,306	1.71 (1.13,2.59)	2.07 (1.41,3.03)	2.19 (1.50,3.18)	2.51 (1.73,3.64)	2.51 (1.73,3.64)
Fitmore	6,171	1.33 (1.07,1.65)	1.94 (1.62,2.32)	2.20 (1.85,2.61)	2.55 (2.16,3.02)	2.94 (2.44,3.54)
Summit	7,940	1.53 (1.28,1.83)	2.16 (1.86,2.51)	2.35 (2.03,2.72)	2.49 (2.15,2.87)	2.85 (2.44,3.34)
Polarstem	3,294	1.44 (1.08,1.92)	1.83 (1.41,2.39)	2.41 (1.86,3.12)	2.56 (1.95,3.35)	N/A
Taperloc	518	1.54 (0.78,3.06)	2.12 (1.18,3.80)	2.51 (1.47,4.28)	2.74 (1.63,4.59)	2.74 (1.63,4.59)
Accolade II	41,072	1.33 (1.23,1.45)	2.01 (1.88,2.16)	2.52 (2.35,2.69)	2.97 (2.77,3.17)	3.66 (3.33,4.04)
Trabecular Metal	1,393	1.81 (1.23,2.67)	2.47 (1.76,3.45)	2.65 (1.90,3.67)	2.77 (2.00,3.84)	3.42 (2.42,4.81)
Secur-Fit Plus Max	2,125	1.89 (1.39,2.56)	2.27 (1.71,3.00)	2.66 (2.06,3.45)	3.10 (2.43,3.94)	3.53 (2.79,4.45)
Accolade TMZF	893	0.90 (0.45,1.78)	2.02 (1.27,3.18)	2.80 (1.90,4.12)	3.26 (2.28,4.66)	4.37 (3.08,6.20)
Echo Bi-Metric Microplasty	2,109	1.84 (1.34,2.51)	2.48 (1.88,3.27)	2.83 (2.16,3.71)	3.48 (2.44,4.96)	N/A
Taperloc 133	15,877	1.70 (1.51,1.92)	2.42 (2.18,2.68)	2.88 (2.60,3.18)	2.97 (2.69,3.29)	3.28 (2.89,3.71)
AML	803	1.37 (0.76,2.47)	2.04 (1.25,3.30)	2.97 (1.96,4.49)	3.39 (2.27,5.05)	3.39 (2.27,5.05)
M/L Taper**	16,464	1.74 (1.55,1.95)	2.54 (2.30,2.80)	2.97 (2.71,3.26)	3.32 (3.03,3.64)	3.70 (3.36,4.08)
Anthology	6,483	1.79 (1.49,2.15)	2.63 (2.25,3.08)	3.07 (2.64,3.57)	3.46 (2.97,4.04)	3.60 (3.08,4.20)
SROM	1,159	1.30 (0.78,2.14)	2.69 (1.90,3.81)	3.33 (2.43,4.55)	3.97 (2.96,5.30)	4.29 (3.21,5.71)
Secur-Fit Max	3,263	2.11 (1.67,2.67)	2.84 (2.32,3.48)	3.55 (2.95,4.27)	3.98 (3.32,4.76)	4.31 (3.57,5.21)
Synergy	1,616	2.26 (1.63,3.12)	3.25 (2.47,4.27)	3.60 (2.77,4.69)	4.27 (3.31,5.49)	4.42 (3.42,5.69)
Integral X	594	2.70 (1.66,4.36)	3.24 (2.08,5.03)	3.65 (2.39,5.56)	3.65 (2.39,5.56)	5.04 (3.01,8.40)
Echo Bi-Metric	1,991	2.67 (2.05,3.48)	3.35 (2.64,4.24)	3.65 (2.90,4.58)	3.95 (3.11,5.00)	4.63 (3.46,6.18)
Wagner Cone	725	1.67 (0.95,2.92)	3.55 (2.39,5.26)	4.16 (2.86,6.03)	5.13 (3.55,7.40)	6.09 (3.94,9.37)
M/L Taper Kinectiv	951	2.13 (1.38,3.28)	3.50 (2.49,4.92)	4.18 (3.04,5.73)	4.34 (3.17,5.93)	5.05 (3.59,7.07)
Echelon	509	2.75 (1.64,4.60)	3.99 (2.59,6.13)	4.24 (2.79,6.44)	4.81 (3.21,7.18)	5.69 (3.61,8.90)
Secur-Fit	1,933	3.37 (2.65,4.29)	4.29 (3.45,5.32)	4.92 (3.99,6.04)	5.35 (4.35,6.57)	5.94 (4.78,7.37)
Restoration Modular	535	4.62 (3.12,6.82)	6.26 (4.44,8.81)	6.54 (4.66,9.15)	7.55 (5.34,10.62)	7.55 (5.34,10.62)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision

** M/L Taper does not include M/L Taper Kinectiv

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Table 44. Summary of Cumulative Percent Revision Following Primary THA for Stems having at Least 500 Cases, Sorted by Ten-year CPR

Stem	N*	1 year	3 years	5 years	7 years	10 years
Corail Coxa Vara	828	0.13 (0.02,0.89)	0.85 (0.38,1.89)	1.02 (0.49,2.14)	1.02 (0.49,2.14)	1.02 (0.49,2.14)
Versys Heritage	610	1.18 (0.56,2.46)	1.61 (0.84,3.08)	1.89 (1.01,3.54)	1.89 (1.01,3.54)	1.89 (1.01,3.54)
Versys Advocate	800	1.72 (1.00,2.95)	1.72 (1.00,2.95)	2.00 (1.17,3.42)	2.00 (1.17,3.42)	2.00 (1.17,3.42)
Tri-Lock BPS	4,765	0.75 (0.54,1.04)	1.37 (1.07,1.76)	1.67 (1.32,2.11)	1.82 (1.44,2.31)	2.20 (1.70,2.85)
Avenir (Cementless)	1,306	1.71 (1.13,2.59)	2.07 (1.41,3.03)	2.19 (1.50,3.18)	2.51 (1.73,3.64)	2.51 (1.73,3.64)
Corail	3,845	1.29 (0.97,1.71)	2.02 (1.60,2.55)	2.11 (1.68,2.65)	2.21 (1.76,2.77)	2.54 (1.99,3.26)
Taperloc	518	1.54 (0.78,3.06)	2.12 (1.18,3.80)	2.51 (1.47,4.28)	2.74 (1.63,4.59)	2.74 (1.63,4.59)
Summit	7,940	1.53 (1.28,1.83)	2.16 (1.86,2.51)	2.35 (2.03,2.72)	2.49 (2.15,2.87)	2.85 (2.44,3.34)
Fitmore	6,171	1.33 (1.07,1.65)	1.94 (1.62,2.32)	2.20 (1.85,2.61)	2.55 (2.16,3.02)	2.94 (2.44,3.54)
Taperloc 133	15,877	1.70 (1.51,1.92)	2.42 (2.18,2.68)	2.88 (2.60,3.18)	2.97 (2.69,3.29)	3.28 (2.89,3.71)
AML	803	1.37 (0.76,2.47)	2.04 (1.25,3.30)	2.97 (1.96,4.49)	3.39 (2.27,5.05)	3.39 (2.27,5.05)
Trabecular Metal	1,393	1.81 (1.23,2.67)	2.47 (1.76,3.45)	2.65 (1.90,3.67)	2.77 (2.00,3.84)	3.42 (2.42,4.81)
Secur-Fit Plus Max	2,125	1.89 (1.39,2.56)	2.27 (1.71,3.00)	2.66 (2.06,3.45)	3.10 (2.43,3.94)	3.53 (2.79,4.45)
Accolade C	1,132	0.66 (0.31,1.37)	1.08 (0.57,2.02)	1.60 (0.86,2.97)	3.56 (1.50,8.34)	3.56 (1.50,8.34)
Anthology	6,483	1.79 (1.49,2.15)	2.63 (2.25,3.08)	3.07 (2.64,3.57)	3.46 (2.97,4.04)	3.60 (3.08,4.20)
Accolade II	41,072	1.33 (1.23,1.45)	2.01 (1.88,2.16)	2.52 (2.35,2.69)	2.97 (2.77,3.17)	3.66 (3.33,4.04)
M/L Taper**	16,464	1.74 (1.55,1.95)	2.54 (2.30,2.80)	2.97 (2.71,3.26)	3.32 (3.03,3.64)	3.70 (3.36,4.08)
SROM	1,159	1.30 (0.78,2.14)	2.69 (1.90,3.81)	3.33 (2.43,4.55)	3.97 (2.96,5.30)	4.29 (3.21,5.71)
Secur-Fit Max	3,263	2.11 (1.67,2.67)	2.84 (2.32,3.48)	3.55 (2.95,4.27)	3.98 (3.32,4.76)	4.31 (3.57,5.21)
Accolade TMZF	893	0.90 (0.45,1.78)	2.02 (1.27,3.18)	2.80 (1.90,4.12)	3.26 (2.28,4.66)	4.37 (3.08,6.20)
Synergy	1,616	2.26 (1.63,3.12)	3.25 (2.47,4.27)	3.60 (2.77,4.69)	4.27 (3.31,5.49)	4.42 (3.42,5.69)
Echo Bi-Metric	1,991	2.67 (2.05,3.48)	3.35 (2.64,4.24)	3.65 (2.90,4.58)	3.95 (3.11,5.00)	4.63 (3.46,6.18)
Integral X	594	2.70 (1.66,4.36)	3.24 (2.08,5.03)	3.65 (2.39,5.56)	3.65 (2.39,5.56)	5.04 (3.01,8.40)
M/L Taper Kinectiv	951	2.13 (1.38,3.28)	3.50 (2.49,4.92)	4.18 (3.04,5.73)	4.34 (3.17,5.93)	5.05 (3.59,7.07)
Taperloc 133 Microplasty	5,197	1.32 (1.04,1.68)	1.60 (1.29,2.00)	1.99 (1.62,2.45)	2.13 (1.73,2.62)	5.10 (1.84, 13.73)
Echelon	509	2.75 (1.64,4.60)	3.99 (2.59,6.13)	4.24 (2.79,6.44)	4.81 (3.21,7.18)	5.69 (3.61,8.90)
Secur-Fit	1,933	3.37 (2.65,4.29)	4.29 (3.45,5.32)	4.92 (3.99,6.04)	5.35 (4.35,6.57)	5.94 (4.78,7.37)
Wagner Cone	725	1.67 (0.95,2.92)	3.55 (2.39,5.26)	4.16 (2.86,6.03)	5.13 (3.55,7.40)	6.09 (3.94,9.37)
Restoration Modular	535	4.62 (3.12,6.82)	6.26 (4.44,8.81)	6.54 (4.66,9.15)	7.55 (5.34,10.62)	7.55 (5.34,10.62)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision

** M/L Taper does not include M/L Taper Kinectiv

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2.2.8 Revision Risk by Cup Implant Summary

Table 45. Summary of Cumulative Percent Revision Following Primary THA for Cups Having at Least 500 Cases, Sorted Alphabetically

Cup	N*	1 year	3 years	5 years	7 years	10 years
BiMobile	603	0.75 (0.28,1.99)	1.01 (0.42,2.44)	1.01 (0.42,2.44)	N/A	N/A
Continuum	16,412	1.82 (1.63,2.04)	2.61 (2.37,2.87)	3.05 (2.79,3.33)	3.35 (3.07,3.65)	3.76 (3.43,4.11)
Converge	574	0.87 (0.36,2.08)	1.39 (0.70,2.77)	1.57 (0.82,2.99)	1.74 (0.94,3.21)	1.99 (1.10,3.59)
G7	38,944	1.60 (1.47,1.73)	2.15 (2.00,2.31)	2.50 (2.32,2.69)	2.69 (2.48,2.91)	N/A
Mpact	514	2.14 (1.19,3.83)	2.73 (1.62,4.56)	2.73 (1.62,4.56)	2.73 (1.62,4.56)	N/A
Pinnacle	27,295	1.07 (0.96,1.21)	1.67 (1.52,1.84)	1.93 (1.75,2.12)	2.11 (1.92,2.32)	2.46 (2.20,2.74)
PolarCup	610	0.83 (0.35,1.98)	1.69 (0.91,3.12)	2.10 (1.19,3.67)	2.40 (1.39,4.14)	2.40 (1.39,4.14)
Procotyl Prime	829	1.49 (0.85,2.61)	1.64 (0.95,2.81)	2.35 (1.34,4.11)	N/A	N/A
Reflection	549	1.64 (0.86,3.13)	2.55 (1.52,4.27)	2.92 (1.80,4.72)	3.68 (2.39,5.65)	4.12 (2.66,6.35)
Reflection 3	11,831	1.88 (1.64,2.14)	2.72 (2.42,3.04)	3.14 (2.81,3.51)	3.52 (3.14,3.94)	3.71 (3.29,4.18)
Regenerex RingLoc+	1,014	1.68 (1.05,2.68)	2.17 (1.43,3.28)	2.56 (1.75,3.74)	2.66 (1.83,3.86)	2.91 (2.03,4.17)
Restoration ADM	526	0.57 (0.18,1.76)	1.33 (0.64,2.77)	2.12 (1.18,3.80)	2.61 (1.52,4.47)	2.90 (1.72,4.88)
RingLoc	2,614	1.72 (1.29,2.30)	2.41 (1.89,3.08)	2.61 (2.06,3.29)	2.70 (2.14,3.41)	3.43 (2.60,4.51)
Trabecular Metal	2,026	2.13 (1.59,2.87)	3.26 (2.57,4.14)	3.95 (3.17,4.92)	4.37 (3.54,5.40)	4.93 (3.96,6.14)
Trident	30,778	1.44 (1.31,1.58)	2.20 (2.04,2.37)	2.74 (2.56,2.93)	3.20 (3.00,3.41)	3.83 (3.56,4.13)
Trident II	25,379	1.48 (1.34,1.64)	2.08 (1.88,2.29)	2.46 (2.20,2.76)	2.86 (2.35,3.48)	N/A
Trilogy	1,602	1.81 (1.26,2.59)	3.25 (2.49,4.25)	3.93 (3.08,5.01)	4.73 (3.76,5.92)	4.92 (3.93,6.16)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision.

Table 46. Summary of Cumulative Percent Revision Following Primary THA for Cups Having at Least 500 Cases, Sorted by Five-year CPR

Cup	N*	1 year	3 years	5 years	7 years	10 years
BiMobile	603	0.75 (0.28,1.99)	1.01 (0.42,2.44)	1.01 (0.42,2.44)	N/A	N/A
Converge	574	0.87 (0.36,2.08)	1.39 (0.70,2.77)	1.57 (0.82,2.99)	1.74 (0.94,3.21)	1.99 (1.10,3.59)
Pinnacle	27,295	1.07 (0.96,1.21)	1.67 (1.52,1.84)	1.93 (1.75,2.12)	2.11 (1.92,2.32)	2.46 (2.20,2.74)
PolarCup	610	0.83 (0.35,1.98)	1.69 (0.91,3.12)	2.10 (1.19,3.67)	2.40 (1.39,4.14)	2.40 (1.39,4.14)
Restoration ADM	526	0.57 (0.18,1.76)	1.33 (0.64,2.77)	2.12 (1.18,3.80)	2.61 (1.52,4.47)	2.90 (1.72,4.88)
Procotyl Prime	829	1.49 (0.85,2.61)	1.64 (0.95,2.81)	2.35 (1.34,4.11)	N/A	N/A
Trident II	25,379	1.48 (1.34,1.64)	2.08 (1.88,2.29)	2.46 (2.20,2.76)	2.86 (2.35,3.48)	N/A
G7	38,944	1.60 (1.47,1.73)	2.15 (2.00,2.31)	2.50 (2.32,2.69)	2.69 (2.48,2.91)	N/A
Regenerex RingLoc+	1,014	1.68 (1.05,2.68)	2.17 (1.43,3.28)	2.56 (1.75,3.74)	2.66 (1.83,3.86)	2.91 (2.03,4.17)
RingLoc	2,614	1.72 (1.29,2.30)	2.41 (1.89,3.08)	2.61 (2.06,3.29)	2.70 (2.14,3.41)	3.43 (2.60,4.51)
Mpact	514	2.14 (1.19,3.83)	2.73 (1.62,4.56)	2.73 (1.62,4.56)	2.73 (1.62,4.56)	N/A
Trident	30,778	1.44 (1.31,1.58)	2.20 (2.04,2.37)	2.74 (2.56,2.93)	3.20 (3.00,3.41)	3.83 (3.56,4.13)
Reflection	549	1.64 (0.86,3.13)	2.55 (1.52,4.27)	2.92 (1.80,4.72)	3.68 (2.39,5.65)	4.12 (2.66,6.35)
Continuum	16,412	1.82 (1.63,2.04)	2.61 (2.37,2.87)	3.05 (2.79,3.33)	3.35 (3.07,3.65)	3.76 (3.43,4.11)
Reflection 3	11,831	1.88 (1.64,2.14)	2.72 (2.42,3.04)	3.14 (2.81,3.51)	3.52 (3.14,3.94)	3.71 (3.29,4.18)
Trilogy	1,602	1.81 (1.26,2.59)	3.25 (2.49,4.25)	3.93 (3.08,5.01)	4.73 (3.76,5.92)	4.92 (3.93,6.16)
Trabecular Metal	2,026	2.13 (1.59,2.87)	3.26 (2.57,4.14)	3.95 (3.17,4.92)	4.37 (3.54,5.40)	4.93 (3.96,6.14)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision

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Table 47. Summary of Cumulative Percent Revision Following Primary THA for Cups Having at Least 500 Cases, Sorted by Ten-year CPR

Cup	N*	1 year	3 years	5 years	7 years	10 years
Converge	574	0.87 (0.36,2.08)	1.39 (0.70,2.77)	1.57 (0.82,2.99)	1.74 (0.94,3.21)	1.99 (1.10,3.59)
PolarCup	610	0.83 (0.35,1.98)	1.69 (0.91,3.12)	2.10 (1.19,3.67)	2.40 (1.39,4.14)	2.40 (1.39,4.14)
Pinnacle	27,295	1.07 (0.96,1.21)	1.67 (1.52,1.84)	1.93 (1.75,2.12)	2.11 (1.92,2.32)	2.46 (2.20,2.74)
Restoration ADM	526	0.57 (0.18,1.76)	1.33 (0.64,2.77)	2.12 (1.18,3.80)	2.61 (1.52,4.47)	2.90 (1.72,4.88)
Regenerex RingLoc+	1,014	1.68 (1.05,2.68)	2.17 (1.43,3.28)	2.56 (1.75,3.74)	2.66 (1.83,3.86)	2.91 (2.03,4.17)
RingLoc	2,614	1.72 (1.29,2.30)	2.41 (1.89,3.08)	2.61 (2.06,3.29)	2.70 (2.14,3.41)	3.43 (2.60,4.51)
Reflection 3	11,831	1.88 (1.64,2.14)	2.72 (2.42,3.04)	3.14 (2.81,3.51)	3.52 (3.14,3.94)	3.71 (3.29,4.18)
Continuum	16,412	1.82 (1.63,2.04)	2.61 (2.37,2.87)	3.05 (2.79,3.33)	3.35 (3.07,3.65)	3.76 (3.43,4.11)
Trident	30,778	1.44 (1.31,1.58)	2.20 (2.04,2.37)	2.74 (2.56,2.93)	3.20 (3.00,3.41)	3.83 (3.56,4.13)
Reflection	549	1.64 (0.86,3.13)	2.55 (1.52,4.27)	2.92 (1.80,4.72)	3.68 (2.39,5.65)	4.12 (2.66,6.35)
Trilogy	1,602	1.81 (1.26,2.59)	3.25 (2.49,4.25)	3.93 (3.08,5.01)	4.73 (3.76,5.92)	4.92 (3.93,6.16)
Trabecular Metal	2,026	2.13 (1.59,2.87)	3.26 (2.57,4.14)	3.95 (3.17,4.92)	4.37 (3.54,5.40)	4.93 (3.96,6.14)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision

2.3 Resurfacing THA

2.3.1 Descriptive Statistics

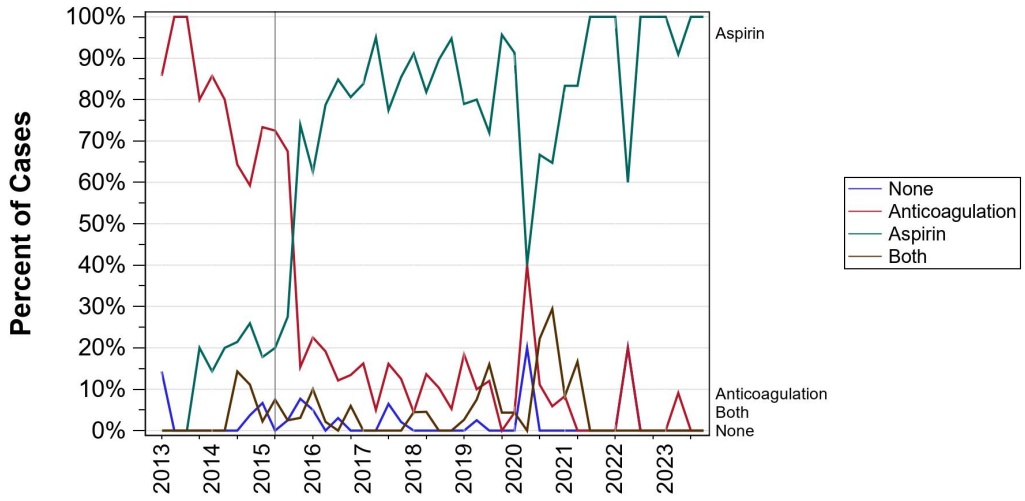


Figure 35. Percent of Primary Resurfacing THA patients (first case) by Thrombosis Prophylaxis

2.3.2 Reasons for Revision

The reason for revision is of central importance to quality improvement because it helps focus attention on specific causes that may be addressed. Therefore, the data are presented in two formats below: tabular and Pareto chart. The tabular format is consistent with how other arthroplasty registries report the cause of revision. The Pareto chart figure presents the same data in a format commonly used in quality improvement. The Pareto chart sorts the reasons for revision by frequency (bar chart on bottom, from left to right) and presents a cumulative percent using a line graph above.

In addition to an overall summary of the reasons for revision, tables showing reason for revision for the first, second, and third year post-operatively are provided because the reasons change over this time horizon. It is important to note that the time window for the cases reported in the reasons for revision tables and figures differs from the time window used for other figures because the reason for revision was added to the database on 1/1/2015. While these data capture revisions for

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primaries performed back to 2/15/2012, only revisions occurring on or after 1/1/2015 are included in the reasons for revision figure and tables.

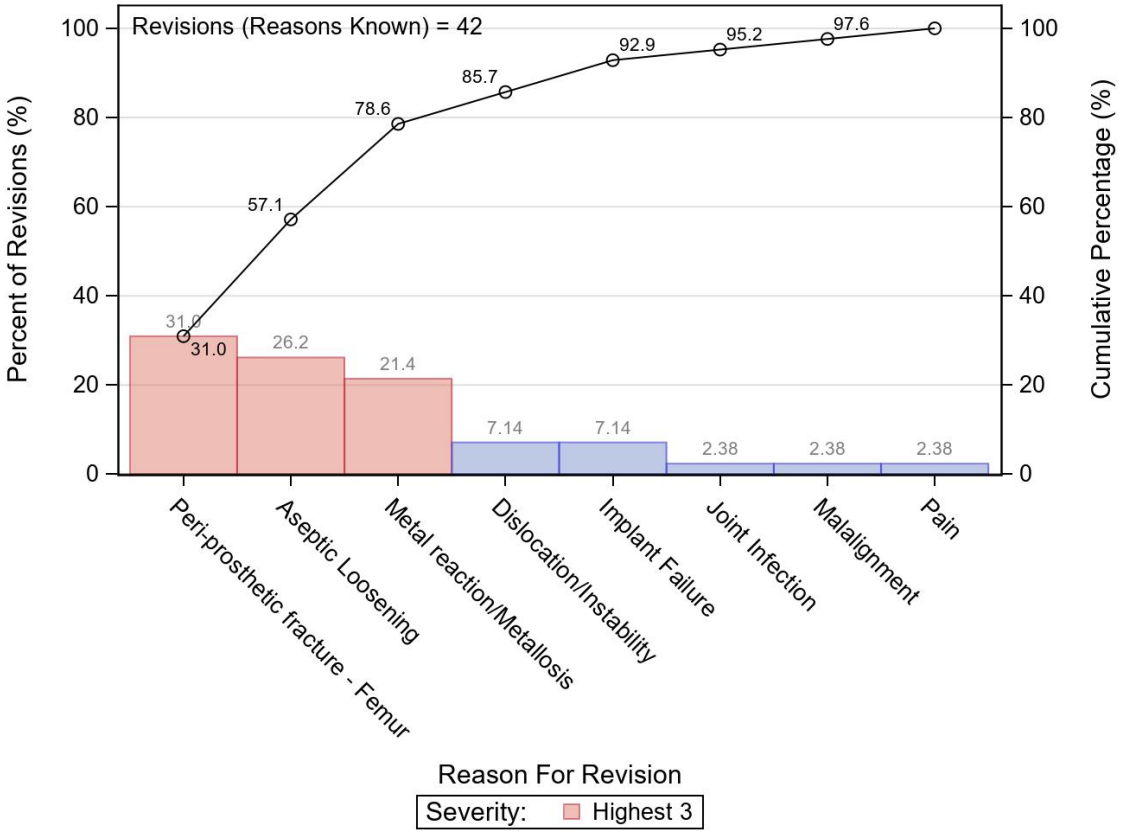


Figure 36. Reasons for First Revision Following Primary Resurfacing THA (Pareto Chart)

Table 48. Reasons for First Revision Following Primary Resurfacing THA

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	13	31.0
2	Aseptic Loosening	11	26.2
3	Metal Reaction/Metallosis	9	21.4
4	Dislocation/Instability	3	7.1
5	Implant Failure	3	7.1
6	Joint Infection	1	2.4
7	Pain	1	2.4
8	Malalignment	1	2.4

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Table 49. Reasons for First Revision Following Primary Resurfacing THA in First Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	11	68.8
2	Dislocation/Instability	2	12.5
3	Implant Failure	2	12.5
4	Aseptic Loosening	1	6.2

Table 50. Reasons for First Revision Following Primary Resurfacing THA in Second Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Metal Reaction/Metallosis	2	50.0
2	Implant Failure	1	25.0
3	Malalignment	1	25.0

Table 51. Reasons for First Revision Following Primary Resurfacing THA in Third Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	20.0
2	Joint Infection	1	20.0
3	Peri-prosthetic fracture - Femur	1	20.0
4	Metal Reaction/Metallosis	1	20.0
5	Pain	1	20.0

2.3.3 Most Commonly Used Implants

The following three tables provide utilization data of implants used in primary resurfacing THA

Table 52. Most Commonly Used Femoral Components in Primary Resurfacing THA

Rank	Stem	N	Percent
1	BHR	1,259	100.0

Table 53. Most Commonly Used Acetabular Components in Primary Resurfacing THA

Rank	Cup	N	Percent
1	BHR	1,259	100.0

Table 54. Most Commonly Used Femoral/Acetabular Component Combinations in Primary Resurfacing THA

Rank	Stem/cup combination	N	Percent
1	BHR / BHR	1,259	100.0

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2.3.4 Revision Risk by Implant Summary

Table 55. Summary of Cumulative Percent Revision Following Primary THA for Stem/Cup Combinations Having at Least 500 Cases

Implant	N*	1 year	3 years	5 years	7 years	10 years
BHR / BHR	1,257	1.28 (0.79,2.08)	2.14 (1.46,3.13)	2.88 (2.07,4.01)	3.57 (2.60,4.89)	5.45 (3.45,8.55)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision

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Chapter 3

Knee Overview

The data reported in this chapter is based on primary knee cases performed from 2/15/2012 to 12/31/2023.

3.1 Descriptive Statistics of All Knee Arthroplasty Cases

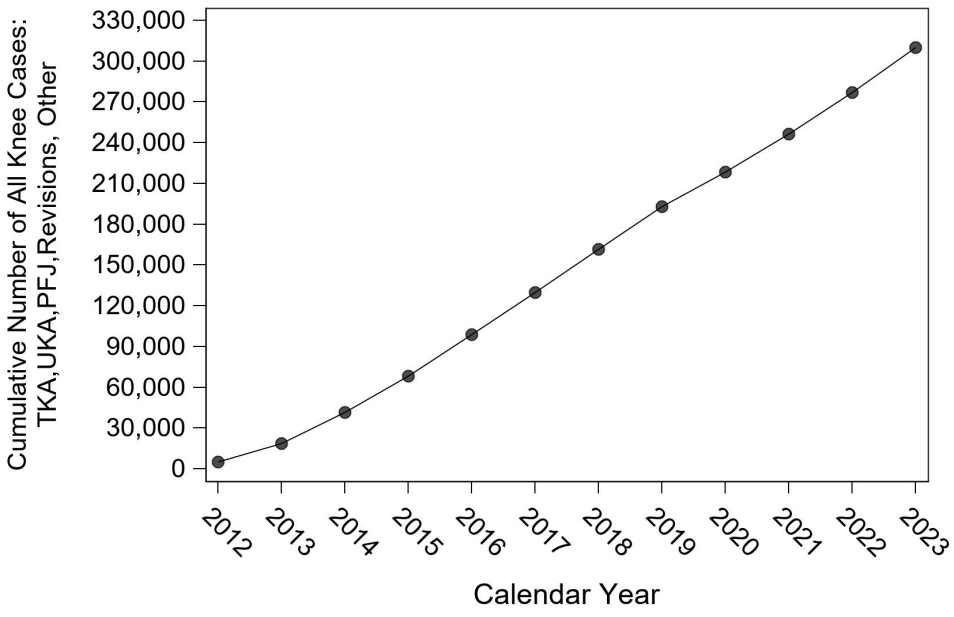


Figure 37. All Knee Cases Over Time (in 208,539 Patients)

Table 56. All Knee Cases Over Time (Numerical Values)

Year	Annual cases	Cumulative cases
2012	4,994	4,994
2013	13,778	18,772
2014	22,701	41,473
2015	26,805	68,278
2016	30,562	98,840
2017	31,089	129,929
2018	31,555	161,484
2019	31,640	193,124
2020	25,213	218,337
2021	27,968	246,305
2022	30,815	277,120
2023	33,091	310,211

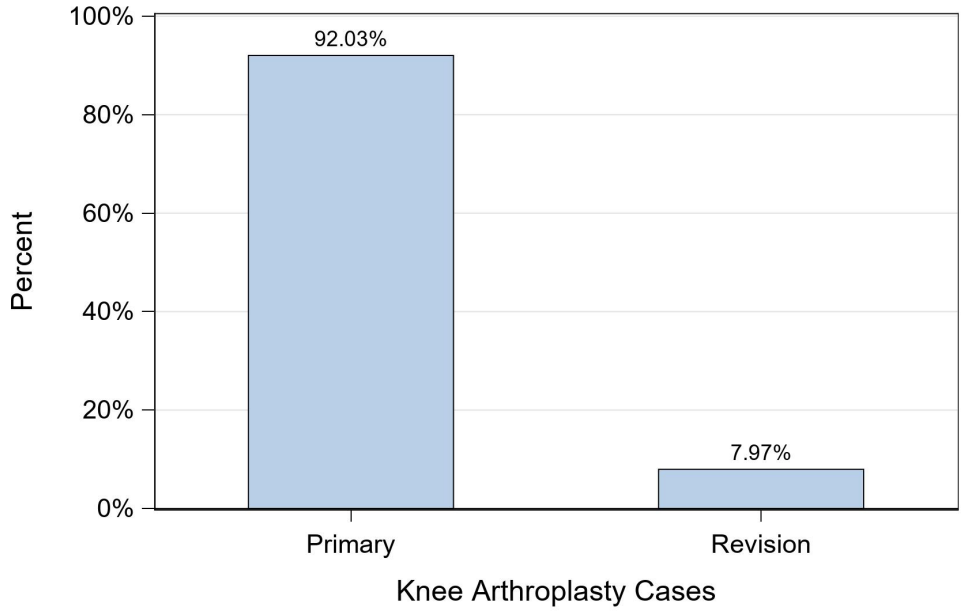


Figure 38. Percent of Knee Arthroplasty Cases by Primary or Revision

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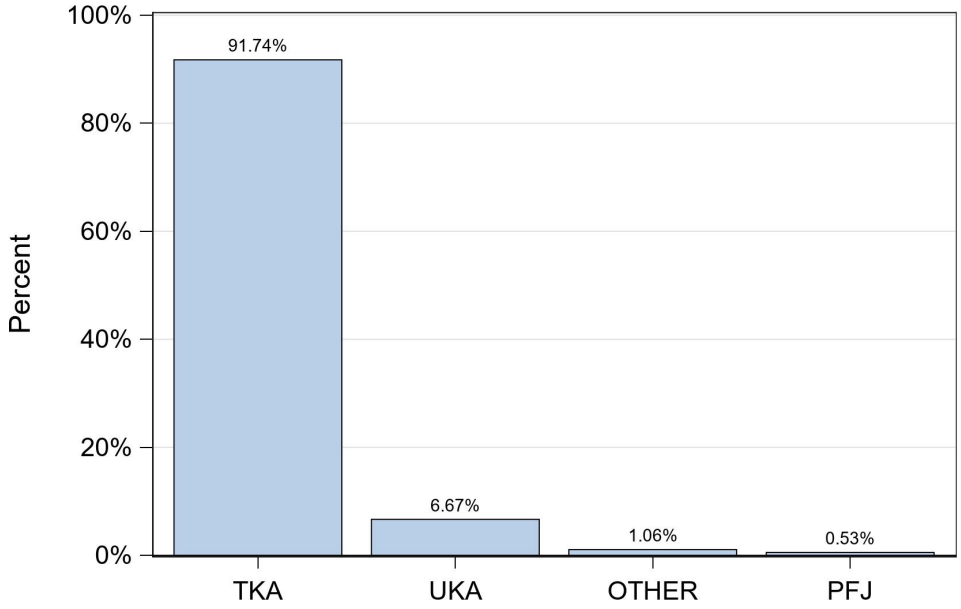


Figure 39. Percent of Primary Knee Arthroplasty Cases Performed as TKA, UKA, PFJ, and Other

3.2 Total Knee Arthroplasty (TKA)

3.2.1 Descriptive Statistics

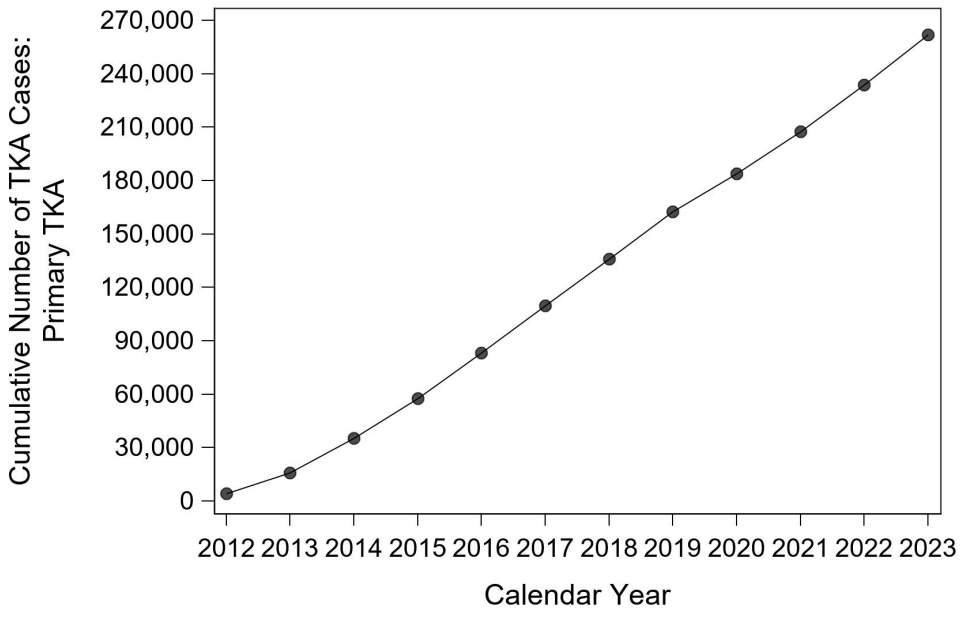


Figure 40. TKA Cases Over Time (in 187,442 Patients)

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Table 57. TKA Cases Over Time (Numerical Values)

Year	Annual cases	Cumulative cases
2012	4,166	4,166
2013	11,672	15,838
2014	19,476	35,314
2015	22,382	57,696
2016	25,690	83,386
2017	26,248	109,634
2018	26,243	135,877
2019	26,605	162,482
2020	21,297	183,779
2021	23,808	207,587
2022	26,188	233,775
2023	28,145	261,920

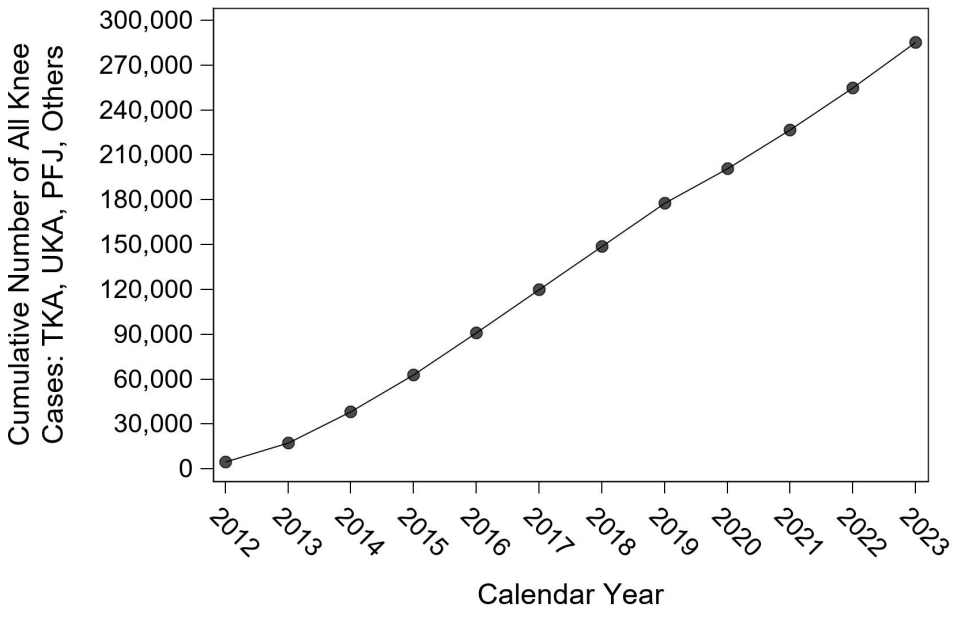


Figure 41. Primary TKA Cases Over Time

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Table 58. Primary TKA Cases Over Time (Numerical Values)

Year	Annual cases	Cumulative cases
2012	4,613	4,613
2013	12,658	17,271
2014	21,012	38,283
2015	24,740	63,023
2016	28,221	91,244
2017	28,664	119,908
2018	28,966	148,874
2019	29,106	177,980
2020	23,003	200,983
2021	25,695	226,678
2022	28,360	255,038
2023	30,462	285,500

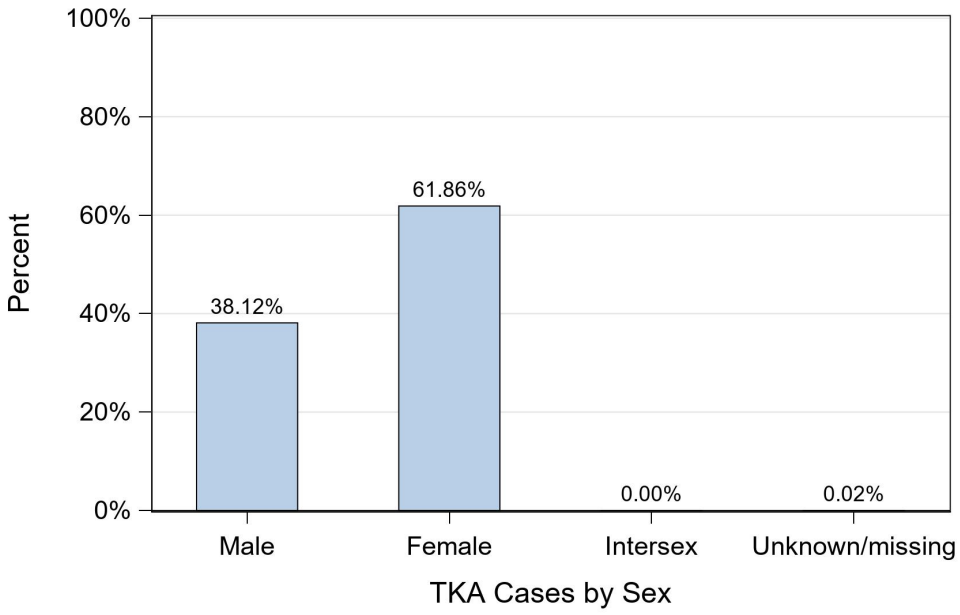


Figure 42. Percent of Primary TKA Cases by Sex

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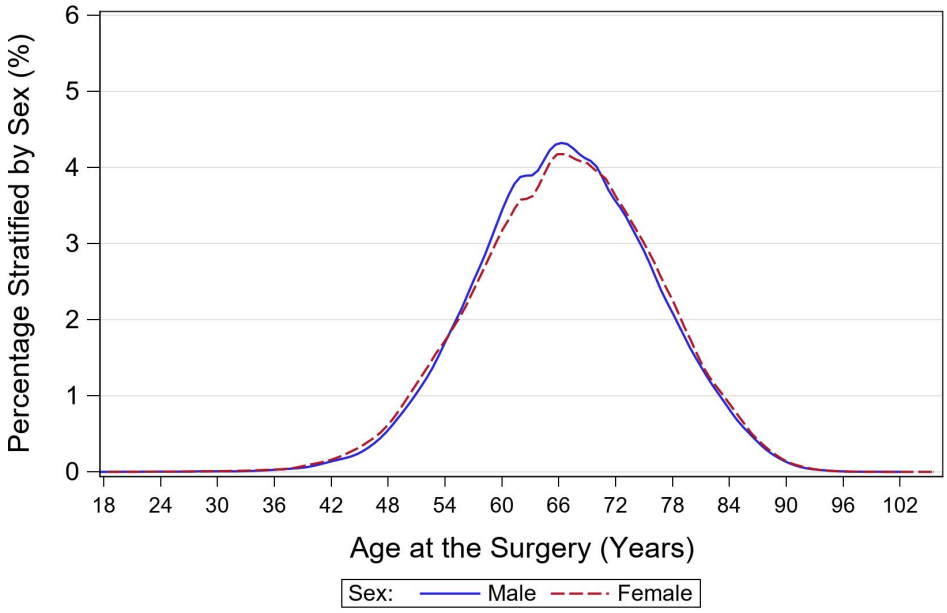


Figure 43. Age Distribution of Primary TKA Cases by Sex

Table 59. Descriptive Statistics of Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	162,031	61.9	
Age (years)	261,919	66.7 (9.4)	67 (13)
Height (cm)	260,786	168.6 (10.5)	167.6 (16.5)
Weight (kg)	260,786	94.5 (21.5)	92.9 (28.4)
BMI (kg/m^2)	260,784	33.2 (6.8)	32.5 (9.1)
Smoker - Never (%)	139,053	53.1	
Smoker - Previous (%)	98,255	37.5	
Smoker - Current (%)	23,508	9	
Smoker - Unknown (%)	1,104	0.4	

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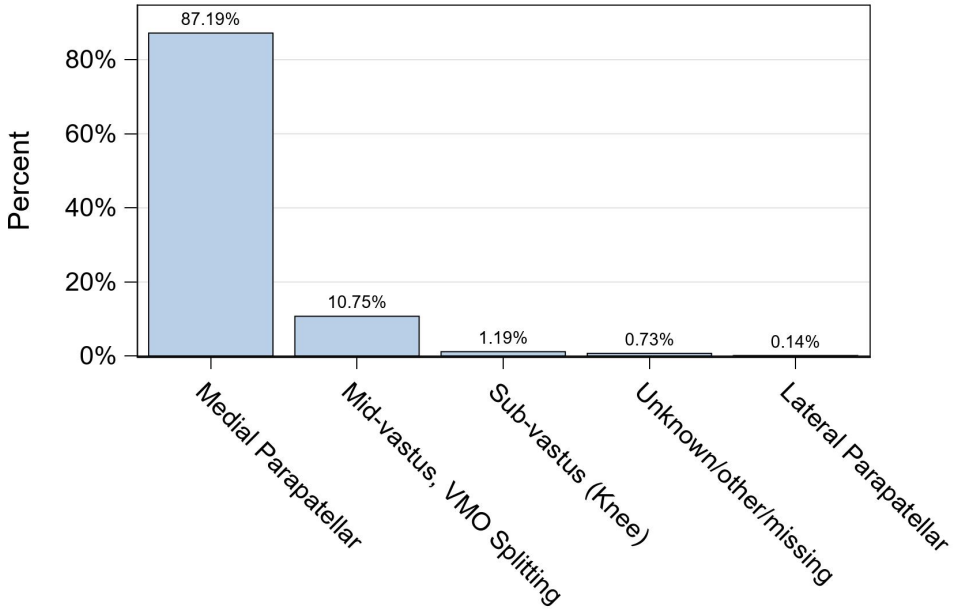


Figure 44. Percent of Primary TKA Cases by Approach

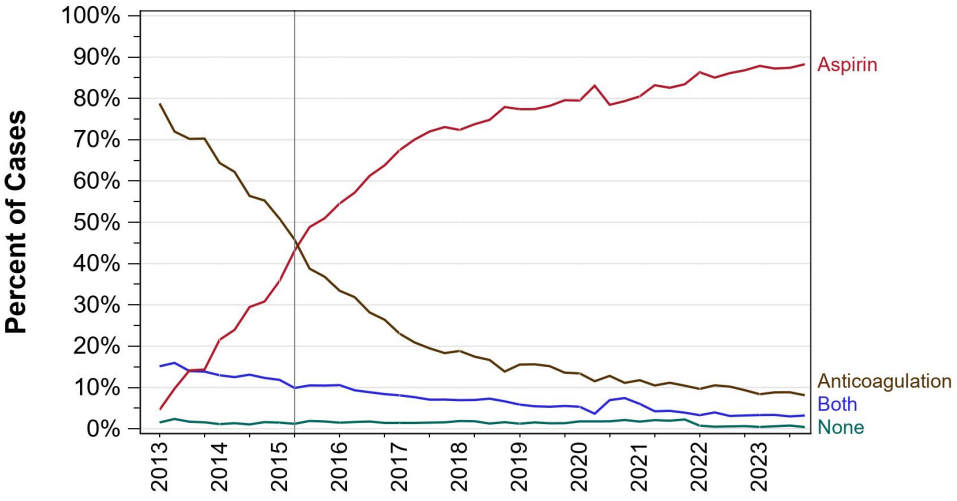


Figure 45. Percent of Primary TKA Patients (First Case) by Thrombosis Prophylaxis

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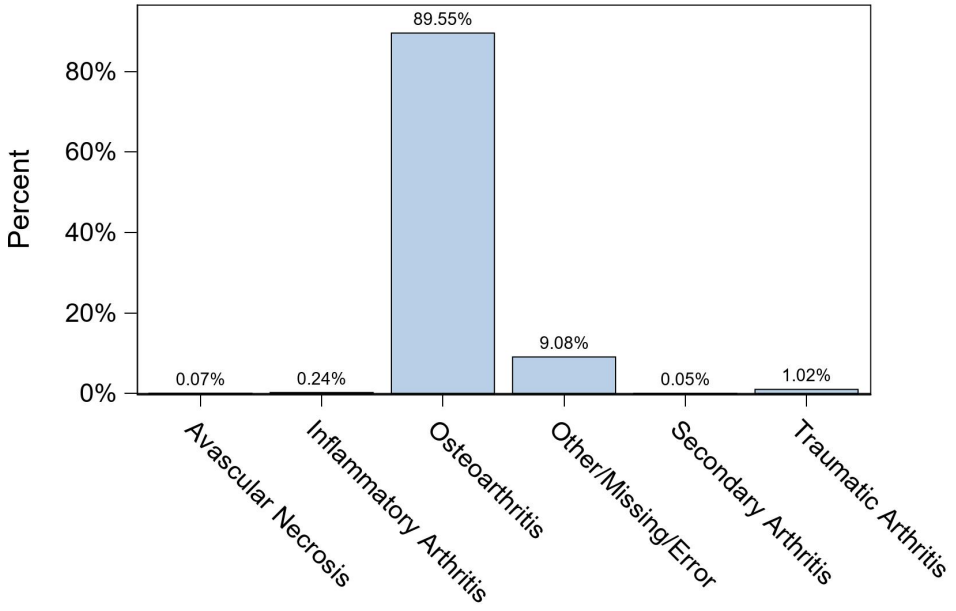


Figure 46. Percent of Primary TKA Cases by Diagnosis

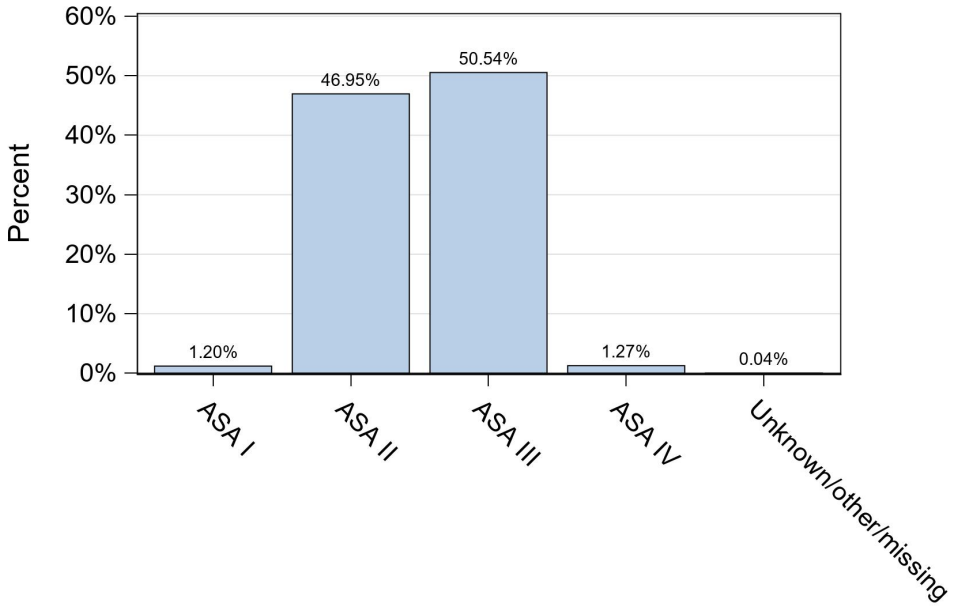


Figure 47. Percent of Primary TKA Cases by ASA Class

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3.2.2 Revision Risk (Overall, by Sex, and by Diagnosis)

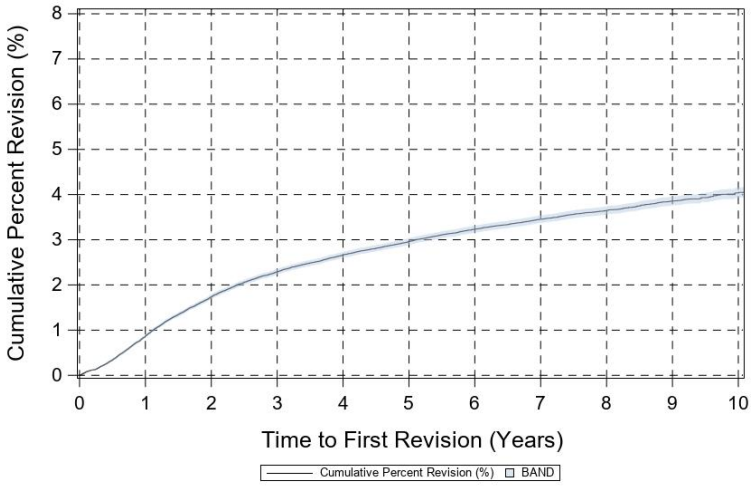


Figure 48. Cumulative Percent Revision for Primary TKA

Table 60. Cumulative Percent Revision for Primary TKA (Numerical Values)

	1 year	3 years	5 years	7 years	10 years
CPR	0.87 (0.83,0.90)	2.29 (2.23,2.35)	2.96 (2.89,3.04)	3.45 (3.37,3.54)	4.04 (3.93,4.16)
Number at risk	230,128	178,066	130,435	79,322	14,816

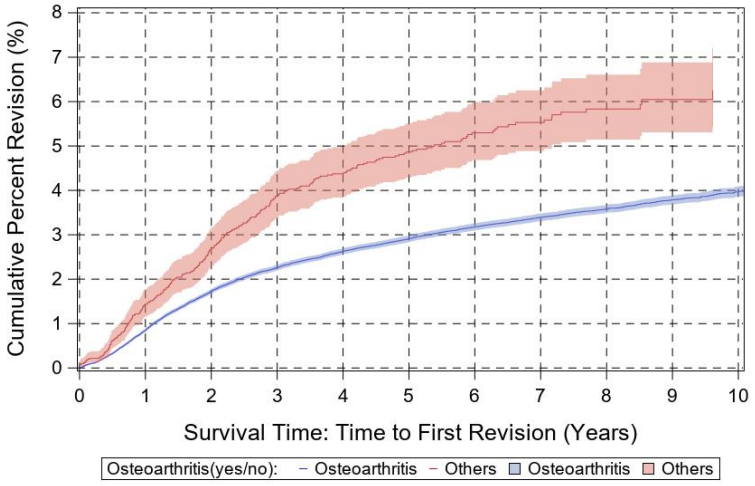


Figure 49. Cumulative Percent Revision for Primary TKA by Diagnosis

Table 61. Cumulative Percent Revision for Primary TKA by Diagnosis (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Osteoarthritis	232,977	0.85 (0.81,0.89)	2.26 (2.20,2.32)	2.91 (2.84,2.99)	3.39 (3.31,3.48)	3.97 (3.86,4.09)
Others	6,023	1.44 (1.16,1.78)	3.87 (3.37,4.43)	4.87 (4.29,5.51)	5.53 (4.89,6.25)	6.25 (5.43,7.20)
Unknown/Missing	21,239					

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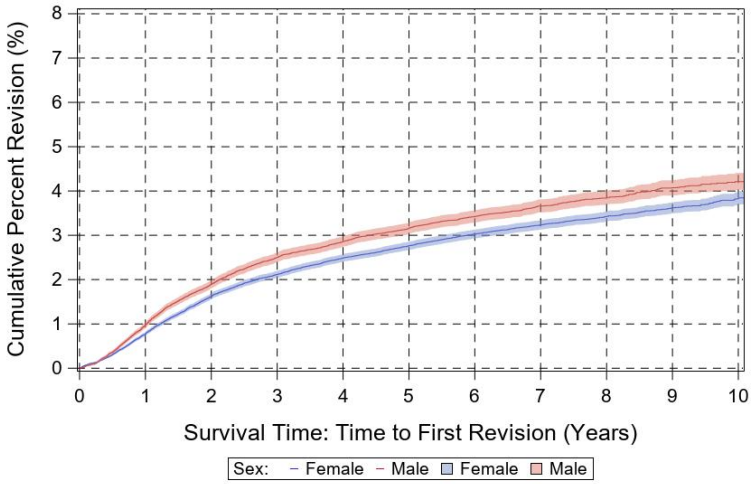


Figure 50. Cumulative Percent Revision for Primary TKA by Sex for Osteoarthritis Diagnosis

Table 62. Cumulative Percent Revision for Primary TKA by Sex for Osteoarthritis Diagnosis (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Female	145,885	0.78 (0.73,0.82)	2.12 (2.04,2.20)	2.76 (2.67,2.86)	3.23 (3.13,3.34)	3.83 (3.69,3.98)
Male	87,053	0.98 (0.92,1.05)	2.50 (2.39,2.61)	3.16 (3.03,3.29)	3.66 (3.52,3.81)	4.21 (4.03,4.41)
Unknown/Missing	39					

3.2.3 Effect of Patella Resurfacing on Revision Risk

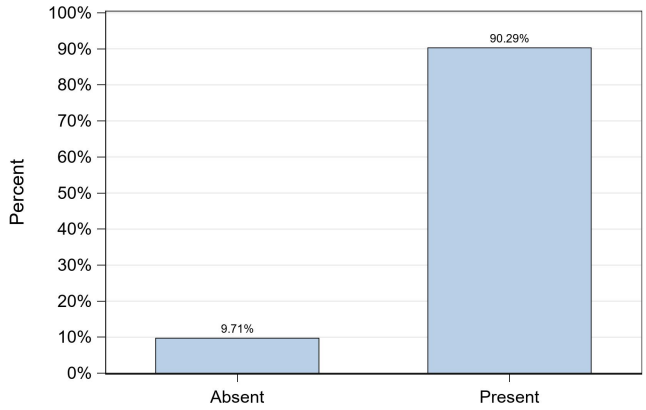


Figure 51. Percent of Primary TKA Cases Performed With (Present) and Without (Absent) Patella Resurfacing

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Table 63. Descriptive Statistics of Primary TKA Cases Having TKA With and Without Patella Resurfacing

Quantity	Resurfaced N	Resurfaced Mean (SD)	Resurfaced Median (IQR)	Without patella resurfaced N	Without patella resurfaced Mean (SD)	Without patella resurfaced Median (IQR)
Female (%)	147,099	62.2		14,925	58.7	
Age (years)	236,488	66.7 (9.3)	67 (13)	25,424	66.6 (9.6)	67 (13)
Height (cm)	235,358	168.6 (10.5)	167.6 (16.3)	25,421	168.7 (10.7)	167.6 (17.8)
Weight (kg)	235,358	94.5 (21.4)	92.8 (28.4)	25,421	94.6 (21.7)	93 (28.7)
BMI (kg/m^2)	235,356	33.2 (6.8)	32.5 (9.1)	25,421	33.2 (6.8)	32.4 (9.1)
Smoker - Never (%)	125,678	53.1		13,371	52.6	
Smoker - Previous (%)	88,552	37.4		9,700	38.2	
Smoker - Current (%)	21,198	9		2,310	9.1	
Smoker - Unknown (%)	1,061	0.5		43	0.2	

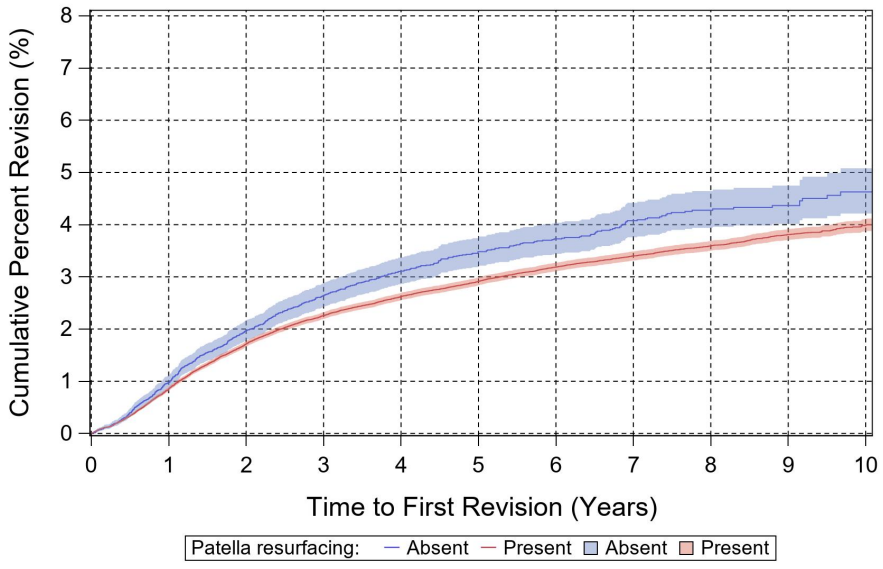


Figure 52. Cumulative Percent Revision Curve for Primary TKA Cases Performed With (Present) and Without (Absent) Patella Resurfacing

Table 64. Cumulative Percent Revision Curve for Primary TKA Cases Performed With and Without Patella Resurfacing (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Patella not resurfaced	25,293	0.98 (0.86,1.12)	2.64 (2.42,2.88)	3.48 (3.21,3.77)	4.08 (3.76, 4.42)	4.63 (4.21, 5.08)
Patella resurfaced	234,939	0.85 (0.82,0.89)	2.26 (2.19,2.32)	2.91 (2.84,2.99)	3.40 (3.31, 3.49)	3.99 (3.87, 4.11)
Unknown/missing	0					

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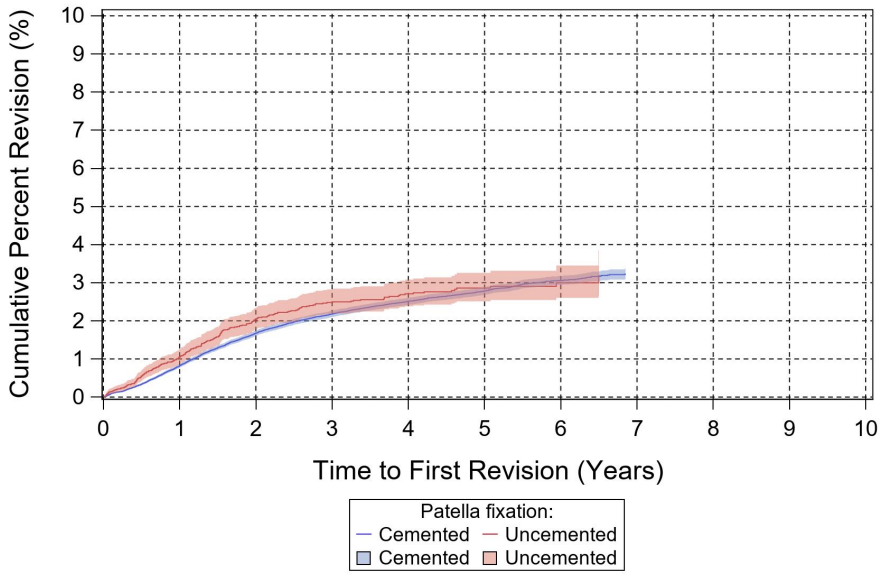


Figure 53. Cumulative Percent Revision Curve for Primary TKA Cases Performed With Patella Resurfacing by Fixation

Table 65. Cumulative Percent Revision Curve for Primary TKA Cases Performed with Patella Resurfacing by Fixation (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Cemented	146,051	0.82 (0.77,0.87)	2.18 (2.09,2.26)	2.79 (2.68,2.89)	N/A	N/A
Uncemented	11,842	1.05 (0.88,1.27)	2.48 (2.18,2.83)	2.86 (2.51,3.26)	N/A	N/A
Unknown/missing	479					

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3.2.4 Reasons for Revision

The reasons for revision are of central importance to quality improvement because it helps focus attention on specific causes that may be addressed. Therefore, the data are presented in two formats below: tabular and Pareto chart. The tabular format is consistent with how other arthroplasty registries report the cause(s) of revision. The Pareto chart figure presents the same data in a format commonly used in quality improvement. The Pareto chart sorts the reasons for revision by frequency (bar chart on the bottom, from left to right) and presents a cumulative percent using a line graph above.

It is important to note that the time window for the cases reported in the reasons for revision tables and figure differs from the time window used for other figures because the reason for revision was added to the database on 1/1/2015. While these data capture revisions for primaries performed back to 2/15/2012, only revisions occurring on or after 1/1/2015 are included in the reasons for revision figure and tables. Note that for knees, instability/dislocation should be interpreted as instability.

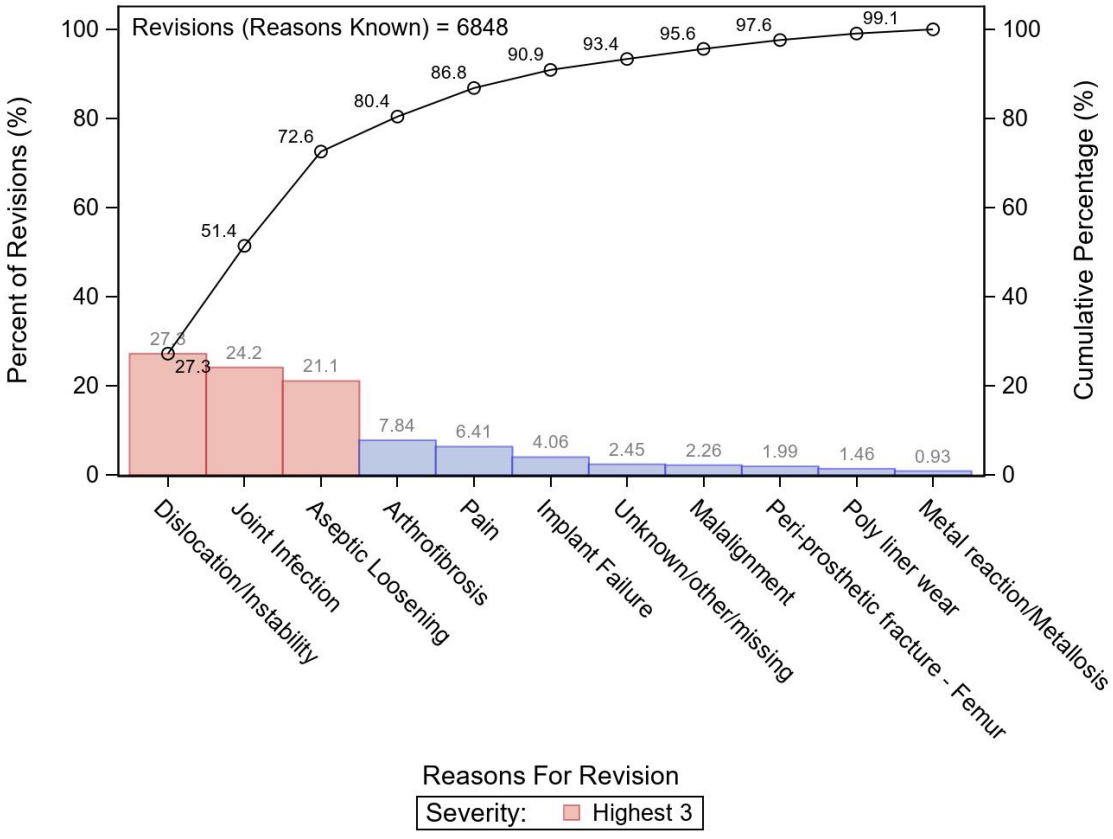


Figure 54. Most Common Reasons for First Revision Following Primary TKA (Pareto Chart)

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Table 66. Reasons for First Revision Following Primary TKA

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1,867	27.3
2	Joint Infection	1,656	24.2
3	Aseptic Loosening	1,448	21.1
4	Arthrofibrosis	537	7.8
5	Pain	439	6.4
6	Implant Failure	278	4.1
7	Malalignment	155	2.3
8	Peri-prosthetic fracture - Femur	136	2.0
9	Poly liner wear	100	1.5
10	Metal Reaction/Metallosis	64	0.9
	Unknown/missing/other	168	2.5

Table 67. Reasons for First Revision Following Primary TKA in First Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Joint Infection	669	34.0
2	Dislocation/Instability	462	23.5
3	Arthrofibrosis	202	10.3
4	Aseptic Loosening	198	10.1
5	Pain	142	7.2
6	Peri-prosthetic fracture - Femur	72	3.7
7	Implant Failure	67	3.4
8	Malalignment	52	2.6
9	Peri-prosthetic fracture - Tibia	34	1.7
10	Extensor mechanism failure	33	1.7
	Unknown/missing/other	13	2.0

Table 68. Reasons for First Revision Following Primary TKA in Second Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	587	31.5
2	Aseptic Loosening	390	20.9
3	Joint Infection	373	20.0
4	Pain	152	8.2
5	Arthrofibrosis	145	7.8
6	Implant Failure	79	4.2
7	Malalignment	44	2.4
8	Poly liner wear	26	1.4
9	Metal Reaction/Metallosis	17	0.9
10	Patellofemoral Joint	16	0.9
	Unknown/missing/other	10	1.8

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Table 69. Reasons for First Revision Following Primary TKA in Third Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	327	30.4
2	Aseptic Loosening	259	24.1
3	Joint Infection	241	22.4
4	Arthrofibrosis	71	6.6
5	Pain	68	6.3
6	Implant Failure	46	4.3
7	Malalignment	23	2.1
8	Metal Reaction/Metallosis	14	1.3
9	Patellofemoral Joint	9	0.8
10	Poly liner wear	8	0.7
	Unknown/missing/other	7	0.9

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3.2.5 Most Commonly Used Implants

The following three tables provide utilization data of implants used in primary TKA.

Table 70. Ten Most Commonly Used Femoral Components in Primary TKA

Rank	Component	N	Percent
1	Triathlon	79,240	30.2
2	Persona	77,632	29.6
3	Vanguard	25,263	9.7
4	Attune	17,030	6.5
5	Legion	14,176	5.4
6	Journey II BCS	7,201	2.8
7	Evolution MP	6,029	2.3
8	Sigma PFC	4,850	1.9
9	NK II GS	4,195	1.6
10	Sigma	2,817	1.1
11	Others	23,487	9.0

Table 71. Ten Most Commonly Used Tibial Components in Primary TKA

Rank	Component	N	Percent
1	Persona	76,687	29.3
2	Triathlon	46,206	17.6
3	Triathlon TS	33,303	12.7
4	Maxim	23,583	9.0
5	Attune	16,957	6.5
6	Genesis II	15,154	5.8
7	Journey	8,673	3.3
8	Evolution MP	5,769	2.2
9	Sigma	5,674	2.2
10	NK II	5,164	2.0
11	Others	24,750	9.4

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Table 72. Ten Most Commonly Used Femoral/Tibial Component Combinations in Primary TKA

Rank	Component combination	N	Percent
1	Persona / Persona	76,673	29.3
2	Triathlon / Triathlon	46,181	17.6
3	Triathlon / Triathlon TS	32,910	12.6
4	Vanguard / Maxim	23,556	9.0
5	Attune / Attune	16,956	6.5
6	Legion / Genesis II	13,722	5.2
7	Journey II BCS / Journey	7,115	2.7
8	Evolution MP / Evolution MP	5,734	2.2
9	NK II GS / NK II	4,169	1.6
10	Sigma PFC / Sigma	3,898	1.5
11	Others	31,006	11.8

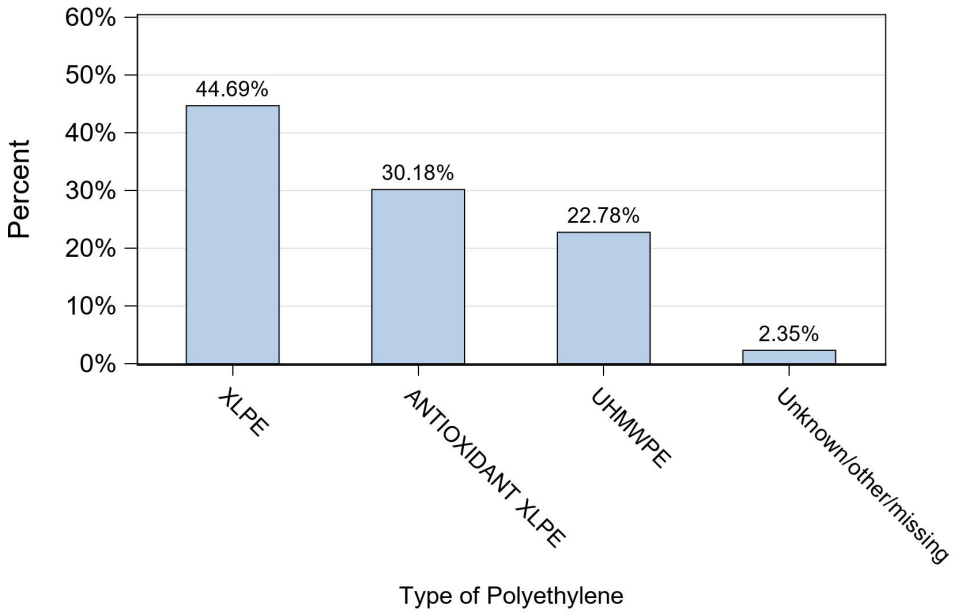


Figure 55. Percent of Polyethylene Inserts by Type of Polyethylene in Primary TKA

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3.2.6 Revision Risk by Implant Summary

As with hip implants, there is substantial variation in revision risk across TKA implants. The same caveats about interpreting CPR data provided in chapter two also apply to the interpretation of CPR data for knees. Specifically, the reader should be cautious in interpreting CPR values when the number at risk is low. While the reader is encouraged to read the details of each femur/tibia implant combination, the following table summarizes the ten-year CPR values.

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Table 73. Summary of Cumulative Percent Revision for Femoral/Tibial Combinations in Primary TKA Having at Least 500 Cases, Sorted Alphabetically (A-P)

Femoral/tibial combination	N*	1 year	3 years	5 years	7 years	10 years
Attune / Attune	16,849	0.69 (0.57,0.84)	2.25 (2.01,2.51)	3.22 (2.92,3.55)	3.85 (3.50,4.23)	4.64 (4.10,5.25)
Evolution MP / Evolution MP	5,722	1.16 (0.90,1.50)	3.28 (2.79,3.86)	4.22 (3.62,4.91)	4.85 (4.12,5.69)	5.07 (4.25,6.04)
Genesis II / Genesis II	1,401	1.21 (0.76,1.94)	2.43 (1.74,3.38)	3.62 (2.76,4.75)	4.30 (3.34,5.53)	4.87 (3.81,6.21)
Genesis II (CoCr) / Genesis II	712	0.84 (0.38,1.87)	1.83 (1.07,3.13)	2.73 (1.75,4.25)	3.22 (2.13,4.86)	3.22 (2.13,4.86)
Genesis II (Oxinium) / Genesis II	689	1.60 (0.89,2.86)	3.05 (2.00,4.64)	4.53 (3.21,6.38)	5.34 (3.88,7.33)	6.41 (4.73,8.65)
GMK Sphere / GMK Primary	556	0.97 (0.40,2.31)	2.35 (1.30,4.22)	2.93 (1.59,5.37)	2.93 (1.59,5.37)	N/A
iBalance / iBalance	711	2.91 (1.86,4.52)	9.39 (7.25,12.11)	11.31 (8.80,14.47)	13.43 (10.12,17.72)	N/A
iTotal	754	1.19 (0.62,2.28)	3.05 (2.04,4.56)	4.33 (3.08,6.07)	5.11 (3.70,7.04)	9.28 (5.81,14.66)
iTotal G2+	733	1.23 (0.64,2.35)	3.00 (1.99,4.52)	4.20 (2.96,5.96)	4.98 (3.57,6.93)	9.42 (5.36,16.26)
Journey II / Journey	1,504	1.46 (0.95,2.23)	3.90 (2.97,5.11)	4.65 (3.58,6.03)	5.60 (4.26,7.35)	6.18 (4.54,8.38)
Journey II (Oxinium) / Journey	1,496	1.47 (0.96,2.24)	3.93 (2.99,5.14)	4.68 (3.61,6.07)	5.64 (4.29,7.39)	6.21 (4.57,8.41)
Journey II BCS / Journey	7,088	1.25 (1.01,1.55)	3.45 (3.02,3.94)	4.40 (3.89,4.98)	4.95 (4.36,5.61)	5.80 (4.82,6.97)
Journey II BCS (CoCr) / Journey	1,021	0.43 (0.16,1.14)	1.07 (0.55,2.05)	1.69 (0.86,3.32)	1.69 (0.86,3.32)	N/A
Journey II BCS (Oxinium) / Journey	6,067	1.39 (1.12,1.72)	3.82 (3.34,4.37)	4.82 (4.25,5.47)	5.39 (4.75,6.12)	6.25 (5.23,7.45)
LCS Complete / M.B.T.	1,928	1.07 (0.69,1.66)	3.35 (2.59,4.32)	4.63 (3.68,5.80)	4.77 (3.80,5.99)	5.14 (3.99,6.62)
Legion / Genesis II	13,626	1.01 (0.86,1.20)	2.95 (2.67,3.27)	3.57 (3.25,3.93)	4.16 (3.79,4.57)	5.04 (4.51,5.64)
NexGen GS / NexGen Pegged	675	1.04 (0.50,2.16)	2.07 (1.23,3.48)	2.67 (1.69,4.21)	3.02 (1.96,4.65)	3.61 (2.23,5.81)
NexGen GS / NexGen Precoat	694	0.30 (0.08,1.21)	1.61 (0.87,2.98)	1.99 (1.13,3.48)	1.99 (1.13,3.48)	1.99 (1.13,3.48)
NexGen LPS GS / NexGen Precoat	528	0.38 (0.09,1.51)	1.89 (1.02,3.49)	2.27 (1.30,3.97)	2.87 (1.74,4.71)	3.07 (1.89,4.97)
NexGen LPS Option / NexGen Precoat	726	0.69 (0.29,1.65)	1.52 (0.84,2.72)	2.36 (1.47,3.77)	3.49 (2.35,5.17)	4.15 (2.85,6.04)
NexGen LPS Option / NexGen TM	1,387	0.44 (0.20,0.99)	0.92 (0.52,1.61)	1.27 (0.78,2.07)	1.36 (0.85,2.19)	1.53 (0.95,2.45)
NexGen Option / NexGen Option	1,313	0.30 (0.11,0.81)	0.94 (0.54,1.65)	1.11 (0.66,1.88)	1.32 (0.81,2.16)	2.13 (1.22,3.71)
NexGen Option / NexGen Pegged	616	0.81 (0.34,1.94)	2.44 (1.48,4.01)	2.92 (1.85,4.60)	3.08 (1.98,4.79)	3.32 (2.15,5.12)
NexGen Precoat / NexGen Precoat	640	0.80 (0.33,1.91)	1.92 (1.06,3.44)	2.61 (1.55,4.40)	3.25 (1.97,5.33)	3.25 (1.97,5.33)
NK II / NK II	990	0.20 (0.05,0.81)	1.11 (0.62,2.00)	1.62 (0.99,2.63)	2.04 (1.32,3.14)	2.73 (1.81,4.11)
NK II GS / NK II	4,153	0.41 (0.26,0.66)	0.98 (0.71,1.35)	1.42 (1.08,1.87)	1.88 (1.44,2.44)	2.29 (1.72,3.04)
Persona CR (Cemented) / Persona (Cemented)	47,421	0.61 (0.54,0.68)	1.67 (1.55,1.81)	2.19 (2.04,2.36)	2.59 (2.41,2.79)	3.22 (2.89,3.58)
Persona CR (Cementless) / Persona (Cementless)	1,709	1.55 (1.03,2.33)	3.83 (2.85,5.13)	4.80 (3.52,6.53)	4.80 (3.52,6.53)	4.80 (3.52,6.53)
Persona PS (Cemented) / Persona (Cemented)	26,395	0.94 (0.82,1.06)	2.65 (2.45,2.87)	3.48 (3.23,3.75)	4.07 (3.79,4.38)	4.78 (4.39,5.19)

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Table 74. Summary of Cumulative Percent Revision for Femoral/Tibial Combinations in Primary TKA Having at Least 500 cases, Sorted Alphabetically (Q-Z)

Femoral/tibial combination	N*	1 year	3 years	5 years	7 years	10 years
Scorpio / Series 7000	650	1.38 (0.72,2.64)	4.00 (2.74,5.82)	4.92 (3.51,6.89)	5.47 (3.95,7.55)	6.55 (4.71,9.08)
Sigma / M.B.T.	1,009	1.42 (0.85,2.39)	3.64 (2.62,5.03)	4.43 (3.29,5.95)	5.01 (3.77,6.65)	7.24 (5.38,9.70)
Sigma / Sigma	1,742	1.42 (0.95,2.11)	2.93 (2.21,3.87)	3.67 (2.86,4.72)	4.19 (3.31,5.31)	4.73 (3.75,5.95)
Sigma PFC / Sigma	3,812	0.72 (0.50,1.05)	2.13 (1.71,2.65)	2.71 (2.23,3.30)	3.08 (2.55,3.72)	3.56 (2.96,4.28)
Sigma PFC / Sigma PFC All-poly	547	0.73 (0.28,1.94)	1.28 (0.61,2.67)	1.28 (0.61,2.67)	1.28 (0.61,2.67)	1.28 (0.61,2.67)
Triathlon CR (Cemented) / Triathlon (Cemented)	19,827	0.57 (0.47,0.69)	1.49 (1.32,1.68)	1.94 (1.74,2.17)	2.20 (1.97,2.45)	2.52 (2.22,2.86)
Triathlon CR (Cemented) / Triathlon TS (Cemented)	15,262	0.81 (0.68,0.98)	1.99 (1.76,2.25)	2.45 (2.18,2.75)	2.90 (2.58,3.27)	3.40 (2.97,3.89)
Triathlon CR (Cementless) / Triathlon (Cemented)	518	1.17 (0.53,2.59)	2.39 (1.37,4.18)	3.25 (2.00,5.25)	3.70 (2.35,5.81)	4.94 (3.08,7.90)
Triathlon CR (Cementless) / Triathlon (Cementless)	17,420	1.08 (0.92,1.25)	2.08 (1.85,2.35)	2.48 (2.19,2.80)	2.74 (2.38,3.16)	3.28 (2.54,4.23)
Triathlon CR (Cementless) / Triathlon TS (Cemented)	525	2.01 (1.01,3.98)	4.94 (2.93,8.27)	7.82 (3.55,16.75)	7.82 (3.55,16.75)	7.82 (3.55,16.75)
Triathlon PS (Cemented) / Triathlon (Cemented)	3,619	1.02 (0.74,1.42)	2.58 (2.10,3.18)	3.36 (2.79,4.03)	3.87 (3.24,4.61)	4.42 (3.67,5.32)
Triathlon PS (Cemented) / Triathlon TS (Cemented)	16,839	1.03 (0.89,1.20)	2.52 (2.28,2.78)	3.23 (2.95,3.53)	3.79 (3.48,4.13)	4.45 (4.04,4.90)
Triathlon PS (Cementless) / Triathlon (Cementless)	4,166	1.12 (0.83,1.50)	2.41 (1.95,2.97)	3.04 (2.49,3.69)	3.54 (2.90,4.32)	3.54 (2.90,4.32)
Vanguard / Maxim	23,417	0.78 (0.68,0.91)	2.04 (1.87,2.24)	2.64 (2.43,2.86)	3.18 (2.94,3.43)	3.58 (3.30,3.89)
Vanguard / Maxim Mono-Lock	1,290	0.55 (0.26,1.14)	1.94 (1.30,2.88)	3.01 (2.17,4.18)	3.52 (2.57,4.81)	4.55 (3.26,6.34)
Vanguard XP / Vanguard XP	547	2.56 (1.52,4.28)	9.87 (7.65,12.69)	11.72 (9.29,14.72)	12.15 (9.67,15.20)	12.44 (9.92,15.55)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision

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Table 75. Summary of Cumulative Percent Revision for Femoral/Tibial Combinations in Primary TKA having at Least 500 Cases, Sorted by Five-year CPR (part 1)

Femoral/Tibial Combination	N*	1 year	3 years	5 years	7 years	10 years
NexGen Option / NexGen Option	1,313	0.30 (0.11,0.81)	0.94 (0.54,1.65)	1.11 (0.66,1.88)	1.32 (0.81,2.16)	2.13 (1.22,3.71)
NexGen LPS Option / NexGen TM	1,387	0.44 (0.20,0.99)	0.92 (0.52,1.61)	1.27 (0.78,2.07)	1.36 (0.85,2.19)	1.53 (0.95,2.45)
Sigma PFC / Sigma PFC All-poly	547	0.73 (0.28,1.94)	1.28 (0.61,2.67)	1.28 (0.61,2.67)	1.28 (0.61,2.67)	1.28 (0.61,2.67)
NK II GS / NK II	4,153	0.41 (0.26,0.66)	0.98 (0.71,1.35)	1.42 (1.08,1.87)	1.88 (1.44,2.44)	2.29 (1.72,3.04)
NK II / NK II	990	0.20 (0.05,0.81)	1.11 (0.62,2.00)	1.62 (0.99,2.63)	2.04 (1.32,3.14)	2.73 (1.81,4.11)
Journey II BCS (CoCr) / Journey	1,021	0.43 (0.16,1.14)	1.07 (0.55,2.05)	1.69 (0.86,3.32)	1.69 (0.86,3.32)	N/A
Triathlon CR (Cemented) / Triathlon (Cemented)	19,827	0.57 (0.47,0.69)	1.49 (1.32,1.68)	1.94 (1.74,2.17)	2.20 (1.97,2.45)	2.52 (2.22,2.86)
NexGen GS / NexGen Precoat	694	0.30 (0.08,1.21)	1.61 (0.87,2.98)	1.99 (1.13,3.48)	1.99 (1.13,3.48)	1.99 (1.13,3.48)
Persona CR (Cemented) / Persona (Cemented)	47,421	0.61 (0.54,0.68)	1.67 (1.55,1.81)	2.19 (2.04,2.36)	2.59 (2.41,2.79)	3.22 (2.89,3.58)
NexGen LPS GS / NexGen Precoat	528	0.38 (0.09,1.51)	1.89 (1.02,3.49)	2.27 (1.30,3.97)	2.87 (1.74,4.71)	3.07 (1.89,4.97)
NexGen LPS Option / NexGen Precoat	726	0.69 (0.29,1.65)	1.52 (0.84,2.72)	2.36 (1.47,3.77)	3.49 (2.35,5.17)	4.15 (2.85,6.04)
Triathlon CR (Cemented) / Triathlon TS (Cemented)	15,262	0.81 (0.68,0.98)	1.99 (1.76,2.25)	2.45 (2.18,2.75)	2.90 (2.58,3.27)	3.40 (2.97,3.89)
Triathlon CR (Cementless) / Triathlon (Cementless)	17,420	1.08 (0.92,1.25)	2.08 (1.85,2.35)	2.48 (2.19,2.80)	2.74 (2.38,3.16)	3.28 (2.54,4.23)
NexGen Precoat / NexGen Precoat	640	0.80 (0.33,1.91)	1.92 (1.06,3.44)	2.61 (1.55,4.40)	3.25 (1.97,5.33)	3.25 (1.97,5.33)
Vanguard / Maxim	23,417	0.78 (0.68,0.91)	2.04 (1.87,2.24)	2.64 (2.43,2.86)	3.18 (2.94,3.43)	3.58 (3.30,3.89)
NexGen GS / NexGen Pegged	675	1.04 (0.50,2.16)	2.07 (1.23,3.48)	2.67 (1.69,4.21)	3.02 (1.96,4.65)	3.61 (2.23,5.81)
Sigma PFC / Sigma	3,812	0.72 (0.50,1.05)	2.13 (1.71,2.65)	2.71 (2.23,3.30)	3.08 (2.55,3.72)	3.56 (2.96,4.28)
Genesis II (CoCr) / Genesis II	712	0.84 (0.38,1.87)	1.83 (1.07,3.13)	2.73 (1.75,4.25)	3.22 (2.13,4.86)	3.22 (2.13,4.86)
NexGen Option / NexGen Pegged	616	0.81 (0.34,1.94)	2.44 (1.48,4.01)	2.92 (1.85,4.60)	3.08 (1.98,4.79)	3.32 (2.15,5.12)
GMK Sphere / GMK Primary	556	0.97 (0.40,2.31)	2.35 (1.30,4.22)	2.93 (1.59,5.37)	2.93 (1.59,5.37)	N/A
Vanguard / Maxim Mono-Lock	1,290	0.55 (0.26,1.14)	1.94 (1.30,2.88)	3.01 (2.17,4.18)	3.52 (2.57,4.81)	4.55 (3.26,6.34)
Triathlon PS (Cementless) / Triathlon (Cementless)	4,166	1.12 (0.83,1.50)	2.41 (1.95,2.97)	3.04 (2.49,3.69)	3.54 (2.90,4.32)	3.54 (2.90,4.32)
Attune / Attune	16,849	0.69 (0.57,0.84)	2.25 (2.01,2.51)	3.22 (2.92,3.55)	3.85 (3.50,4.23)	4.64 (4.10,5.25)
Triathlon PS (Cemented) / Triathlon TS (Cemented)	16,839	1.03 (0.89,1.20)	2.52 (2.28,2.78)	3.23 (2.95,3.53)	3.79 (3.48,4.13)	4.45 (4.04,4.90)
Triathlon CR (Cementless) / Triathlon (Cemented)	518	1.17 (0.53,2.59)	2.39 (1.37,4.18)	3.25 (2.00,5.25)	3.70 (2.35,5.81)	4.94 (3.08,7.90)
Triathlon PS (Cemented) / Triathlon (Cemented)	3,619	1.02 (0.74,1.42)	2.58 (2.10,3.18)	3.36 (2.79,4.03)	3.87 (3.24,4.61)	4.42 (3.67,5.32)
Persona PS (Cemented) / Persona (Cemented)	26,395	0.94 (0.82,1.06)	2.65 (2.45,2.87)	3.48 (3.23,3.75)	4.07 (3.79,4.38)	4.78 (4.39,5.19)
Legion / Genesis II	13,626	1.01 (0.86,1.20)	2.95 (2.67,3.27)	3.57 (3.25,3.93)	4.16 (3.79,4.57)	5.04 (4.51,5.64)

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Table 76. Summary of Cumulative Percent Revision for Femoral/Tibial Combinations in Primary TKA Having at Least 500 Cases, Sorted by Five-year CPR (part 2)

Femoral/Tibial Combination	N*	1 year	3 years	5 years	7 years	10 years
Genesis II / Genesis II	1,401	1.21 (0.76,1.94)	2.43 (1.74,3.38)	3.62 (2.76,4.75)	4.30 (3.34,5.53)	4.87 (3.81,6.21)
Sigma / Sigma	1,742	1.42 (0.95,2.11)	2.93 (2.21,3.87)	3.67 (2.86,4.72)	4.19 (3.31,5.31)	4.73 (3.75,5.95)
iTotal G2+	733	1.23 (0.64,2.35)	3.00 (1.99,4.52)	4.20 (2.96,5.96)	4.98 (3.57,6.93)	9.42 (5.36,16.26)
Evolution MP / Evolution MP	5,722	1.16 (0.90,1.50)	3.28 (2.79,3.86)	4.22 (3.62,4.91)	4.85 (4.12,5.69)	5.07 (4.25,6.04)
iTotal	754	1.19 (0.62,2.28)	3.05 (2.04,4.56)	4.33 (3.08,6.07)	5.11 (3.70,7.04)	9.28 (5.81,14.66)
Journey II BCS / Journey	7,088	1.25 (1.01,1.55)	3.45 (3.02,3.94)	4.40 (3.89,4.98)	4.95 (4.36,5.61)	5.80 (4.82,6.97)
Sigma / M.B.T.	1,009	1.42 (0.85,2.39)	3.64 (2.62,5.03)	4.43 (3.29,5.95)	5.01 (3.77,6.65)	7.24 (5.38,9.70)
Genesis II (Oxinium) / Genesis II	689	1.60 (0.89,2.86)	3.05 (2.00,4.64)	4.53 (3.21,6.38)	5.34 (3.88,7.33)	6.41 (4.73,8.65)
LCS Complete / M.B.T.	1,928	1.07 (0.69,1.66)	3.35 (2.59,4.32)	4.63 (3.68,5.80)	4.77 (3.80,5.99)	5.14 (3.99,6.62)
Journey II / Journey	1,504	1.46 (0.95,2.23)	3.90 (2.97,5.11)	4.65 (3.58,6.03)	5.60 (4.26,7.35)	6.18 (4.54,8.38)
Journey II (Oxinium) / Journey	1,496	1.47 (0.96,2.24)	3.93 (2.99,5.14)	4.68 (3.61,6.07)	5.64 (4.29,7.39)	6.21 (4.57,8.41)
Persona CR (Cementless) / Persona (Cementless)	1,709	1.55 (1.03,2.33)	3.83 (2.85,5.13)	4.80 (3.52,6.53)	4.80 (3.52,6.53)	4.80 (3.52,6.53)
Journey II BCS (Oxinium) / Journey	6,067	1.39 (1.12,1.72)	3.82 (3.34,4.37)	4.82 (4.25,5.47)	5.39 (4.75,6.12)	6.25 (5.23,7.45)
Scorpio / Series 7000	650	1.38 (0.72,2.64)	4.00 (2.74,5.82)	4.92 (3.51,6.89)	5.47 (3.95,7.55)	6.55 (4.71,9.08)
Triathlon CR (Cementless) / Triathlon TS (Cemented)	525	2.01 (1.01,3.98)	4.94 (2.93,8.27)	7.82 (3.55,16.75)	7.82 (3.55,16.75)	7.82 (3.55,16.75)
iBalance / iBalance	711	2.91 (1.86,4.52)	9.39 (7.25,12.11)	11.31 (8.80,14.47)	13.43 (10.12,17.72)	N/A
Vanguard XP / Vanguard XP	547	2.56 (1.52,4.28)	9.87 (7.65,12.69)	11.72 (9.29,14.72)	12.15 (9.67,15.20)	12.44 (9.92,15.55)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision.

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Table 77. Summary of Cumulative Percent Revision for Femoral/Tibial Combinations in Primary TKA Having at Least 500 Cases, Sorted by Ten-year CPR (part 1)

Femoral/Tibial Combination	N*	1 year	3 years	5 years	7 years	10 years
Sigma PFC / Sigma PFC All-poly	547	0.73 (0.28,1.94)	1.28 (0.61,2.67)	1.28 (0.61,2.67)	1.28 (0.61,2.67)	1.28 (0.61,2.67)
NexGen LPS Option / NexGen TM	1,387	0.44 (0.20,0.99)	0.92 (0.52,1.61)	1.27 (0.78,2.07)	1.36 (0.85,2.19)	1.53 (0.95,2.45)
NexGen GS / NexGen Precoat	694	0.30 (0.08,1.21)	1.61 (0.87,2.98)	1.99 (1.13,3.48)	1.99 (1.13,3.48)	1.99 (1.13,3.48)
NexGen Option / NexGen Option	1,313	0.30 (0.11,0.81)	0.94 (0.54,1.65)	1.11 (0.66,1.88)	1.32 (0.81,2.16)	2.13 (1.22,3.71)
NK II GS / NK II	4,153	0.41 (0.26,0.66)	0.98 (0.71,1.35)	1.42 (1.08,1.87)	1.88 (1.44,2.44)	2.29 (1.72,3.04)
Triathlon CR (Cemented) / Triathlon (Cemented)	19,827	0.57 (0.47,0.69)	1.49 (1.32,1.68)	1.94 (1.74,2.17)	2.20 (1.97,2.45)	2.52 (2.22,2.86)
NK II / NK II	990	0.20 (0.05,0.81)	1.11 (0.62,2.00)	1.62 (0.99,2.63)	2.04 (1.32,3.14)	2.73 (1.81,4.11)
NexGen LPS GS / NexGen Precoat	528	0.38 (0.09,1.51)	1.89 (1.02,3.49)	2.27 (1.30,3.97)	2.87 (1.74,4.71)	3.07 (1.89,4.97)
Genesis II (CoCr) / Genesis II	712	0.84 (0.38,1.87)	1.83 (1.07,3.13)	2.73 (1.75,4.25)	3.22 (2.13,4.86)	3.22 (2.13,4.86)
Persona CR (Cemented) / Persona (Cemented)	47,421	0.61 (0.54,0.68)	1.67 (1.55,1.81)	2.19 (2.04,2.36)	2.59 (2.41,2.79)	3.22 (2.89,3.58)
NexGen Precoat / NexGen Precoat	640	0.80 (0.33,1.91)	1.92 (1.06,3.44)	2.61 (1.55,4.40)	3.25 (1.97,5.33)	3.25 (1.97,5.33)
Triathlon CR (Cementless) / Triathlon (Cementless)	17,420	1.08 (0.92,1.25)	2.08 (1.85,2.35)	2.48 (2.19,2.80)	2.74 (2.38,3.16)	3.28 (2.54,4.23)
NexGen Option / NexGen Pegged	616	0.81 (0.34,1.94)	2.44 (1.48,4.01)	2.92 (1.85,4.60)	3.08 (1.98,4.79)	3.32 (2.15,5.12)
Triathlon CR (Cemented) / Triathlon TS (Cemented)	15,262	0.81 (0.68,0.98)	1.99 (1.76,2.25)	2.45 (2.18,2.75)	2.90 (2.58,3.27)	3.40 (2.97,3.89)
Triathlon PS (Cementless) / Triathlon (Cementless)	4,166	1.12 (0.83,1.50)	2.41 (1.95,2.97)	3.04 (2.49,3.69)	3.54 (2.90,4.32)	3.54 (2.90,4.32)
Sigma PFC / Sigma	3,812	0.72 (0.50,1.05)	2.13 (1.71,2.65)	2.71 (2.23,3.30)	3.08 (2.55,3.72)	3.56 (2.96,4.28)
Vanguard / Maxim	23,417	0.78 (0.68,0.91)	2.04 (1.87,2.24)	2.64 (2.43,2.86)	3.18 (2.94,3.43)	3.58 (3.30,3.89)
NexGen GS / NexGen Pegged	675	1.04 (0.50,2.16)	2.07 (1.23,3.48)	2.67 (1.69,4.21)	3.02 (1.96,4.65)	3.61 (2.23,5.81)
NexGen LPS Option / NexGen Precoat	726	0.69 (0.29,1.65)	1.52 (0.84,2.72)	2.36 (1.47,3.77)	3.49 (2.35,5.17)	4.15 (2.85,6.04)
Triathlon PS (Cemented) / Triathlon (Cemented)	3,619	1.02 (0.74,1.42)	2.58 (2.10,3.18)	3.36 (2.79,4.03)	3.87 (3.24,4.61)	4.42 (3.67,5.32)
Triathlon PS (Cemented) / Triathlon TS (Cemented)	16,839	1.03 (0.89,1.20)	2.52 (2.28,2.78)	3.23 (2.95,3.53)	3.79 (3.48,4.13)	4.45 (4.04,4.90)
Vanguard / Maxim Mono-Lock	1,290	0.55 (0.26,1.14)	1.94 (1.30,2.88)	3.01 (2.17,4.18)	3.52 (2.57,4.81)	4.55 (3.26,6.34)
Attune / Attune	16,849	0.69 (0.57,0.84)	2.25 (2.01,2.51)	3.22 (2.92,3.55)	3.85 (3.50,4.23)	4.64 (4.10,5.25)
Sigma / Sigma	1,742	1.42 (0.95,2.11)	2.93 (2.21,3.87)	3.67 (2.86,4.72)	4.19 (3.31,5.31)	4.73 (3.75,5.95)
Persona PS (Cemented) / Persona (Cemented)	26,395	0.94 (0.82,1.06)	2.65 (2.45,2.87)	3.48 (3.23,3.75)	4.07 (3.79,4.38)	4.78 (4.39,5.19)
Persona CR (Cementless) / Persona (Cementless)	1,709	1.55 (1.03,2.33)	3.83 (2.85,5.13)	4.80 (3.52,6.53)	4.80 (3.52,6.53)	4.80 (3.52,6.53)
Genesis II / Genesis II	1,401	1.21 (0.76,1.94)	2.43 (1.74,3.38)	3.62 (2.76,4.75)	4.30 (3.34,5.53)	4.87 (3.81,6.21)
Triathlon CR (Cementless) / Triathlon (Cemented)	518	1.17 (0.53,2.59)	2.39 (1.37,4.18)	3.25 (2.00,5.25)	3.70 (2.35,5.81)	4.94 (3.08,7.90)

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Table 78. Summary of Cumulative Percent Revision for Femoral/Tibial Combinations in Primary TKA Having at Least 500 cases, Sorted by Ten-year CPR (part 2)

Femoral/Tibial Combination	N*	1 year	3 years	5 years	7 years	10 years
Legion / Genesis II	13,626	1.01 (0.86,1.20)	2.95 (2.67,3.27)	3.57 (3.25,3.93)	4.16 (3.79,4.57)	5.04 (4.51,5.64)
Evolution MP / Evolution MP	5,722	1.16 (0.90,1.50)	3.28 (2.79,3.86)	4.22 (3.62,4.91)	4.85 (4.12,5.69)	5.07 (4.25,6.04)
LCS Complete / M.B.T.	1,928	1.07 (0.69,1.66)	3.35 (2.59,4.32)	4.63 (3.68,5.80)	4.77 (3.80,5.99)	5.14 (3.99,6.62)
Journey II BCS / Journey	7,088	1.25 (1.01,1.55)	3.45 (3.02,3.94)	4.40 (3.89,4.98)	4.95 (4.36,5.61)	5.80 (4.82,6.97)
Journey II / Journey	1,504	1.46 (0.95,2.23)	3.90 (2.97,5.11)	4.65 (3.58,6.03)	5.60 (4.26,7.35)	6.18 (4.54,8.38)
Journey II (Oxinium) / Journey	1,496	1.47 (0.96,2.24)	3.93 (2.99,5.14)	4.68 (3.61,6.07)	5.64 (4.29,7.39)	6.21 (4.57,8.41)
Journey II BCS (Oxinium) / Journey	6,067	1.39 (1.12,1.72)	3.82 (3.34,4.37)	4.82 (4.25,5.47)	5.39 (4.75,6.12)	6.25 (5.23,7.45)
Genesis II (Oxinium) / Genesis II	689	1.60 (0.89,2.86)	3.05 (2.00,4.64)	4.53 (3.21,6.38)	5.34 (3.88,7.33)	6.41 (4.73,8.65)
Scorpio / Series 7000	650	1.38 (0.72,2.64)	4.00 (2.74,5.82)	4.92 (3.51,6.89)	5.47 (3.95,7.55)	6.55 (4.71,9.08)
Sigma / M.B.T.	1,009	1.42 (0.85,2.39)	3.64 (2.62,5.03)	4.43 (3.29,5.95)	5.01 (3.77,6.65)	7.24 (5.38,9.70)
Triathlon CR (Cementless) / Triathlon TS (Cemented)	525	2.01 (1.01,3.98)	4.94 (2.93,8.27)	7.82 (3.55,16.75)	7.82 (3.55,16.75)	7.82 (3.55,16.75)
iTotal	754	1.19 (0.62,2.28)	3.05 (2.04,4.56)	4.33 (3.08,6.07)	5.11 (3.70,7.04)	9.28 (5.81,14.66)
iTotal G2+	733	1.23 (0.64,2.35)	3.00 (1.99,4.52)	4.20 (2.96,5.96)	4.98 (3.57,6.93)	9.42 (5.36,16.26)
Vanguard XP / Vanguard XP	547	2.56 (1.52,4.28)	9.87 (7.65,12.69)	11.72 (9.29,14.72)	12.15 (9.67,15.20)	12.44 (9.92,15.55)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision

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3.3 Unicompartmental Arthroplasty (UKA)

3.3.1 Descriptive Statistics

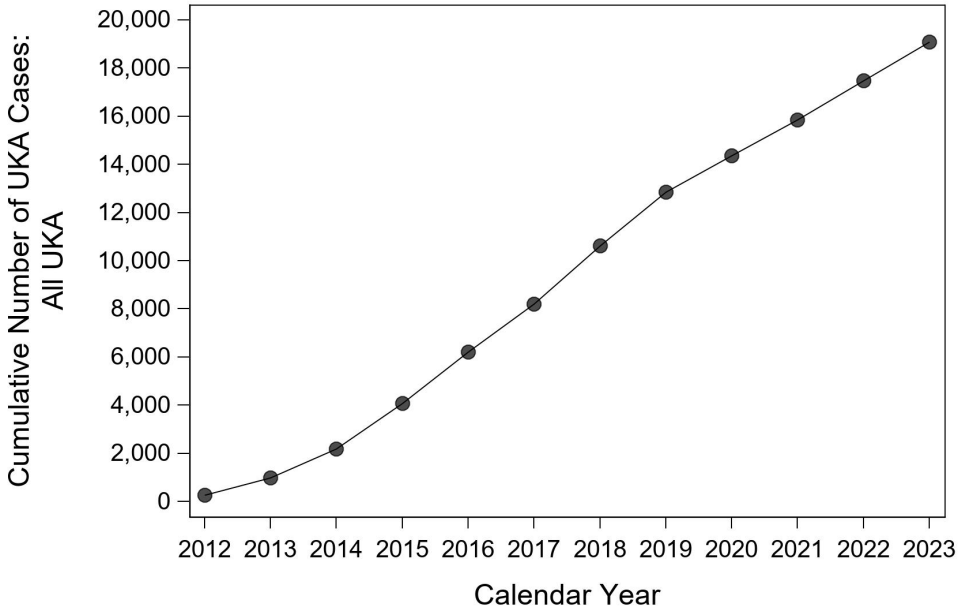


Figure 56. UKA Cases Over Time (in 16,577 Patients)

Table 79. UKA Cases Over Time (Numerical Values)

Year	Annual cases	Cumulative cases
2012	276	276
2013	720	996
2014	1,198	2,194
2015	1,892	4,086
2016	2,117	6,203
2017	2,000	8,203
2018	2,415	10,618
2019	2,247	12,865
2020	1,492	14,357
2021	1,504	15,861
2022	1,615	17,476
2023	1,614	19,090

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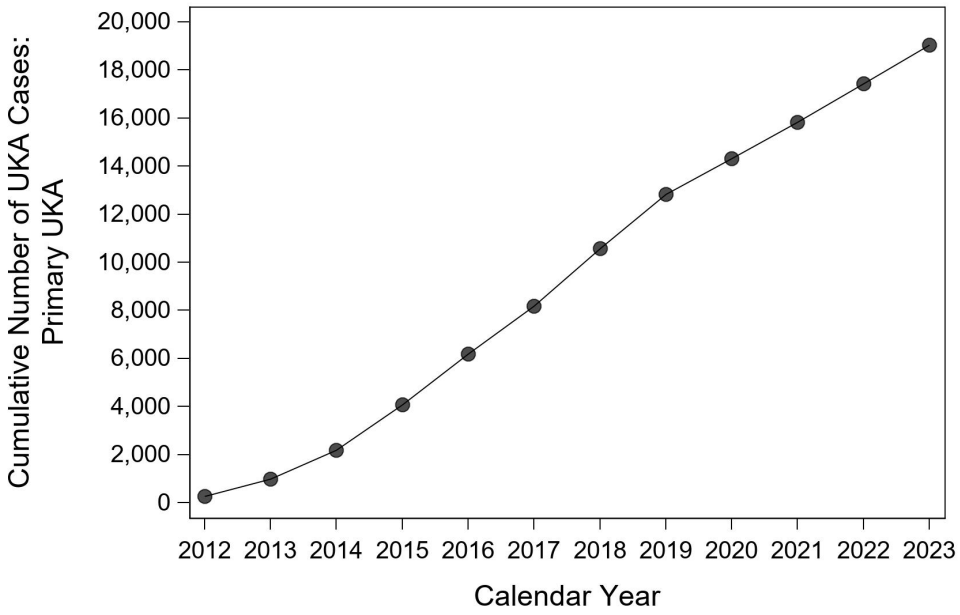


Figure 57. Primary UKA Cases Over Time

Table 80. Primary UKA Cases Over Time (Numerical Values)

Year	Annual cases	Cumulative cases
2012	275	275
2013	717	992
2014	1,193	2,185
2015	1,886	4,071
2016	2,111	6,182
2017	1,995	8,177
2018	2,406	10,583
2019	2,246	12,829
2020	1,491	14,320
2021	1,502	15,822
2022	1,615	17,437
2023	1,610	19,047

Table 81. Descriptive Statistics of Primary UKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	9,536	50.1	
Age (years)	19,047	64.2 (10.2)	64 (14)
Height (cm)	19,023	170.1 (10.5)	170.2 (15.2)
Weight (kg)	19,023	90.7 (19.6)	89 (25.4)
BMI (kg/m^2)	19,022	31.3 (5.8)	30.6 (7.5)
Smoker - Never (%)	9,854	51.7	
Smoker - Previous (%)	7,252	38.1	
Smoker - Current (%)	1,817	9.5	
Smoker - Unknown (%)	124	0.7	

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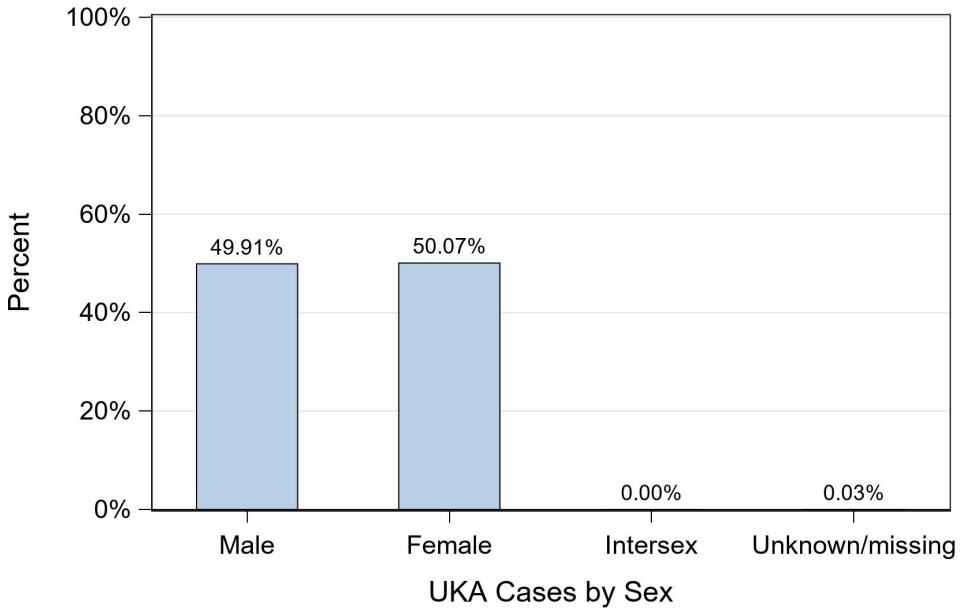


Figure 58. Percent of Primary UKA Cases by Sex

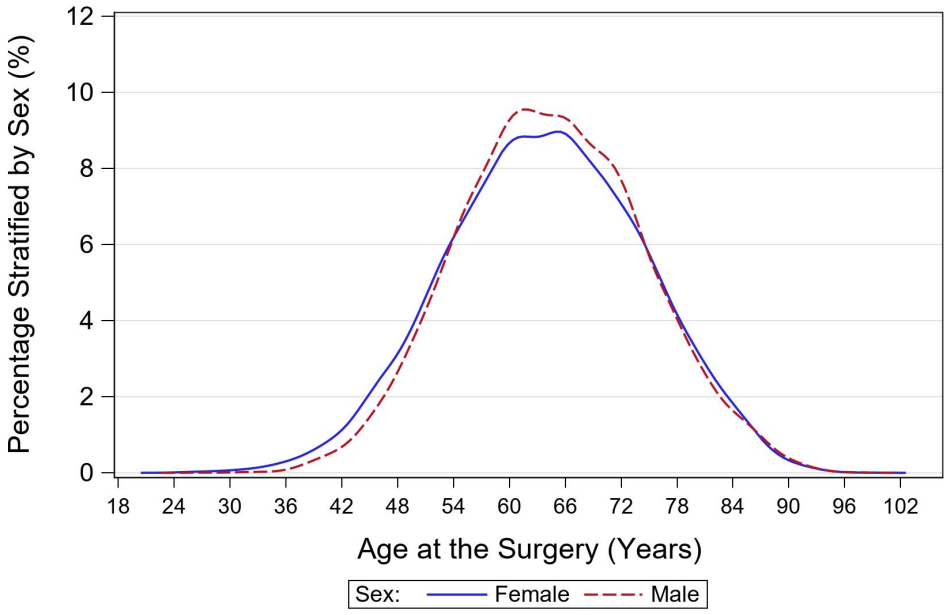


Figure 59. Age Distribution of Primary UKA Cases by Sex

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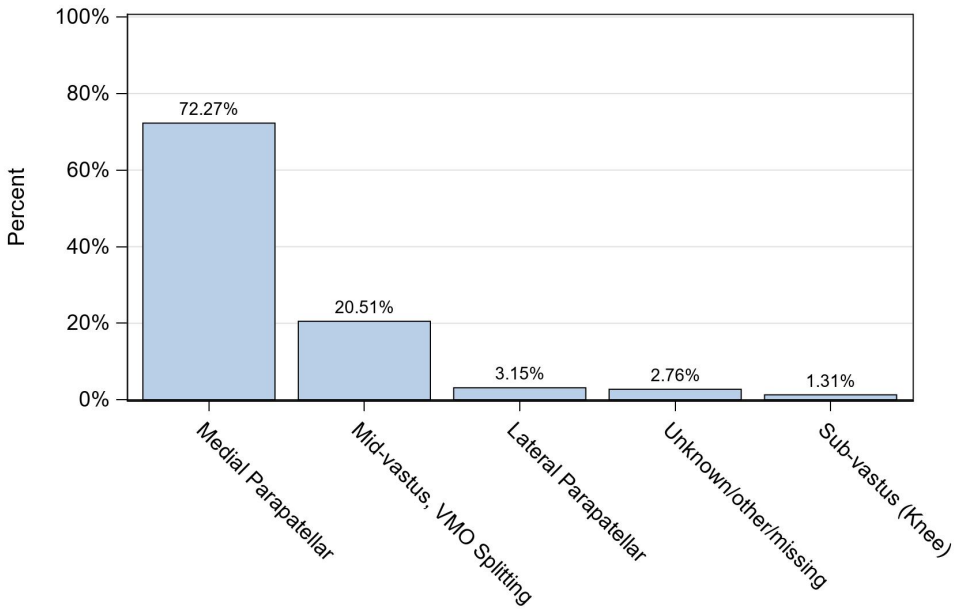


Figure 60. Percent of Primary UKA Cases by Approach

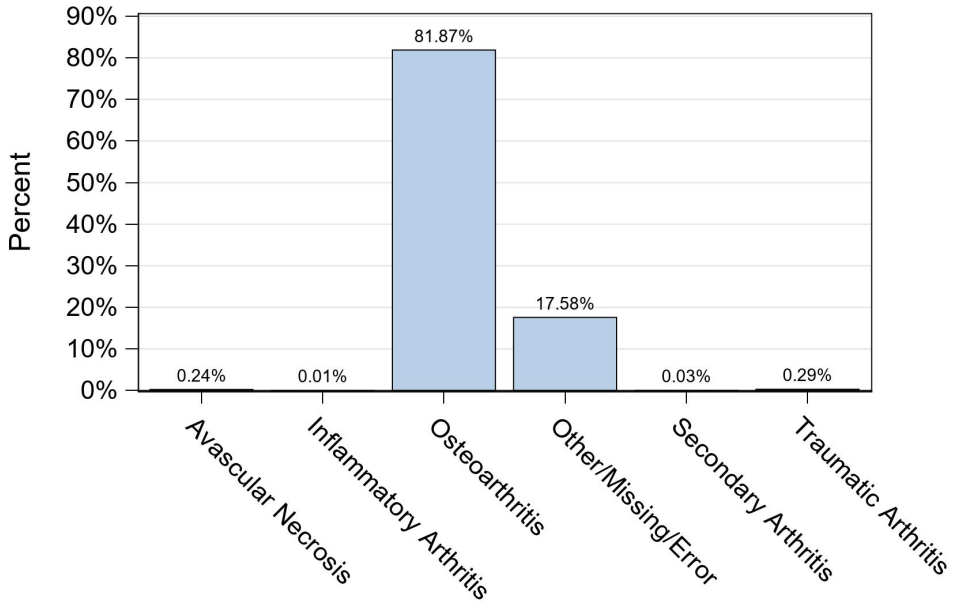


Figure 61. Percent of Primary UKA Cases by Diagnosis

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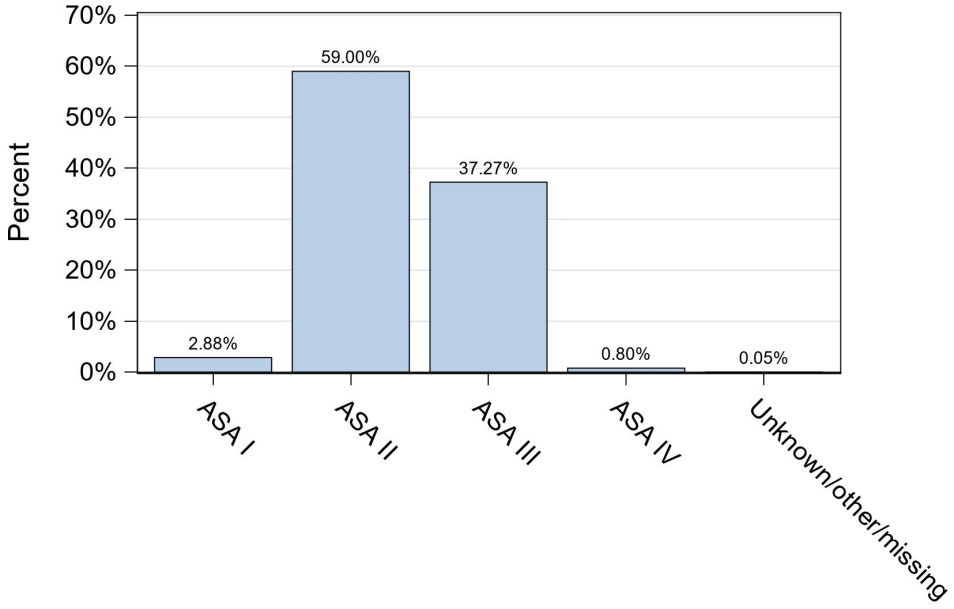


Figure 62. Percent of Primary UKA Cases by ASA Class

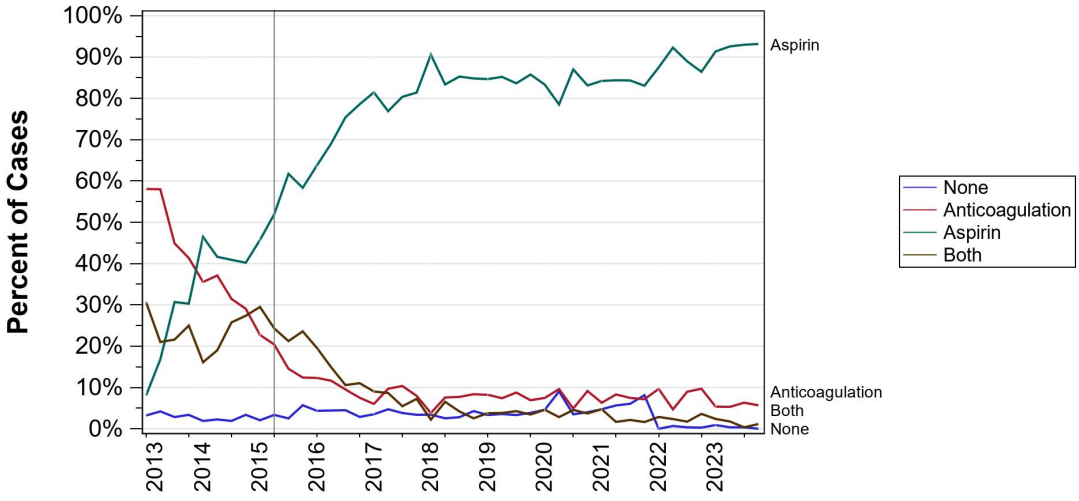


Figure 63. Percent of Primary UKA Patients (First Case) by Thrombosis Prophylaxis

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3.3.2 Revision Risk (Overall and by Sex)

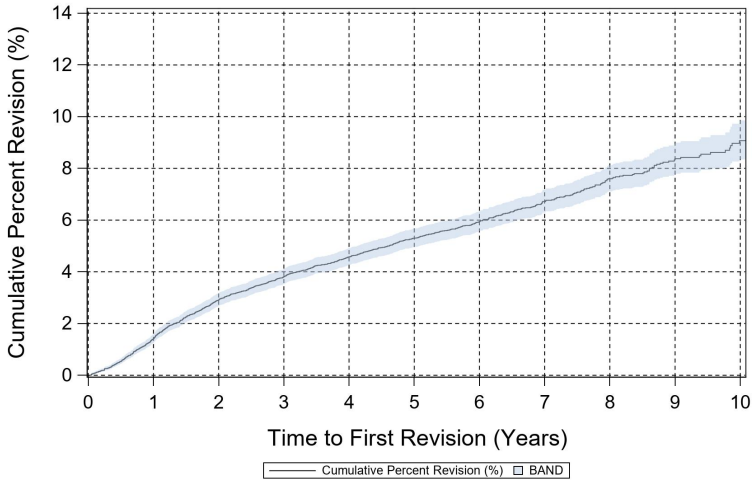


Figure 64. Cumulative Percent Revision for Primary UKA

Table 82. Cumulative Percent Revision for Primary UKA (Numerical Values)

	1 year	3 years	5 years	7 years	10 years
CPR	1.41 (1.25,1.60)	3.81 (3.53,4.11)	5.30 (4.95,5.67)	6.72 (6.29,7.17)	9.07 (8.34,9.86)
Number at risk	17,133	13,709	9,927	5,674	892

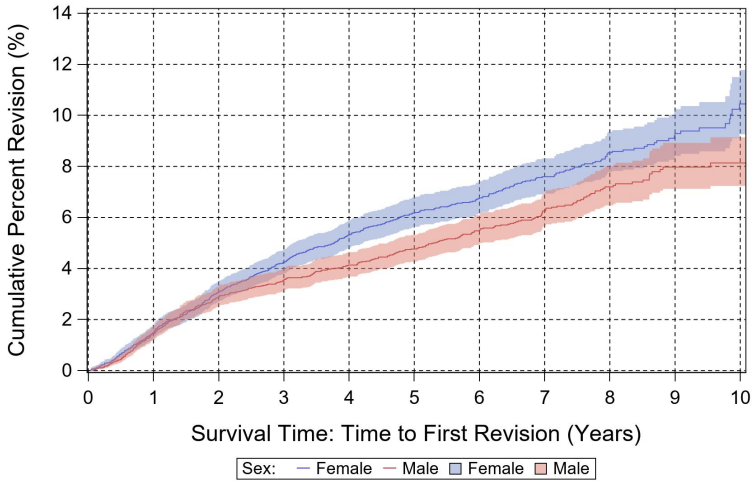


Figure 65. Cumulative Percent Revision for Primary UKA by Sex for Osteoarthritis Diagnosis

Table 83. Cumulative Percent Revision for Primary UKA by Sex for Osteoarthritis Diagnosis (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Female	7,919	1.49 (1.24,1.78)	4.24 (3.80,4.74)	6.17 (5.61,6.79)	7.60 (6.93,8.32)	10.45 (9.26,11.78)
Male	7,615	1.46 (1.20,1.76)	3.55 (3.14,4.02)	4.76 (4.27,5.32)	6.25 (5.63,6.94)	8.13 (7.23,9.14)
Unknown/Missing	4					

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3.3.3 Reasons for Revision

The reasons for revision are of central importance to quality improvement because it helps focus attention on specific causes that may be addressed. Therefore, the data are presented in two formats below: tabular and Pareto chart. The tabular format is consistent with how other arthroplasty registries report the cause(s) of revision. The Pareto chart figure presents the same data in a format commonly used in quality improvement. The Pareto chart sorts the reasons for revision by frequency (bar chart on the bottom, from left to right) and presents a cumulative percent using a line graph above.

It is important to note that the time window for the cases reported in the reasons for revision tables and figure differs from the time window used for other figures because the reason for revision was added to the database on 1/1/2015. While these data capture revisions for primaries performed back to 2/15/2012, only revisions occurring on or after 1/1/2015 are included in the reasons for revision figure and tables. Note that for knees, instability/dislocation should be interpreted as instability.

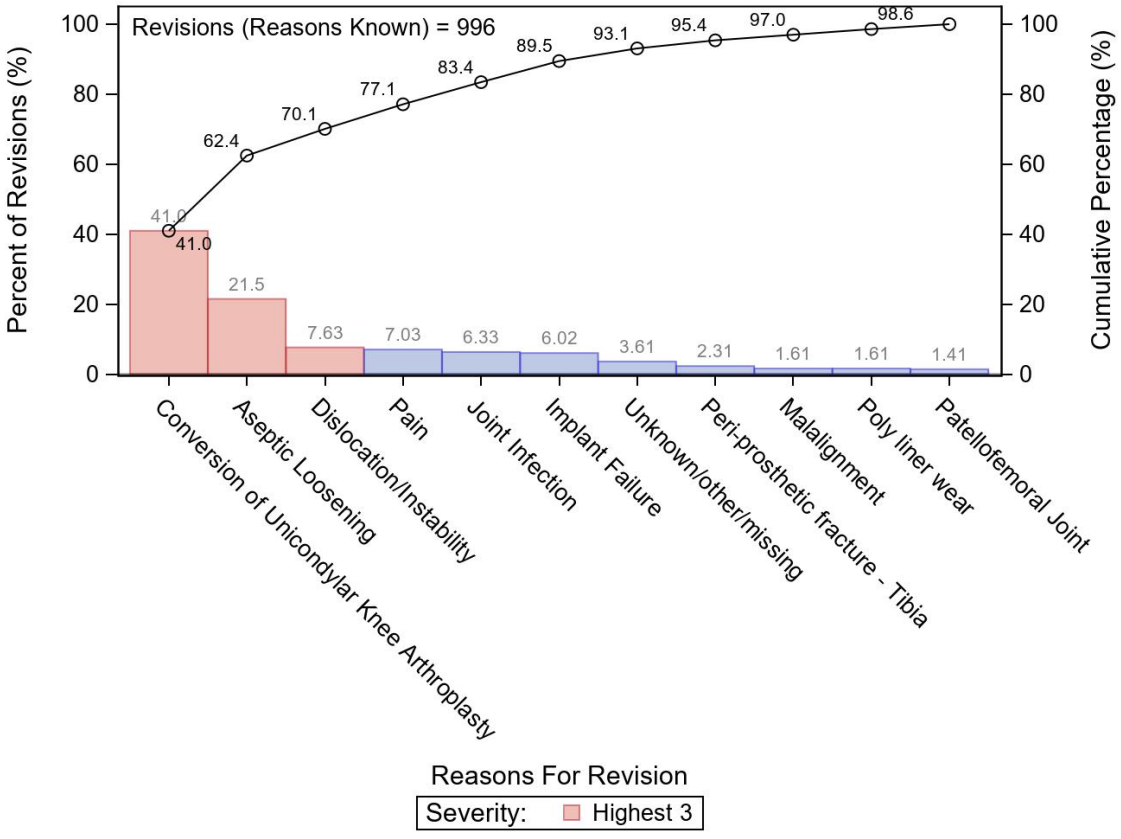


Figure 66. Most Common Reasons for First Revision Following Primary UKA (Pareto Chart)

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Table 84. Reasons for First Revision Following Primary UKA

Rank	Reason for Revision	N	Percent
1	Conversion of Unicondylar Knee Arthroplasty	408	41.0
2	Aseptic Loosening	214	21.5
3	Dislocation/Instability	76	7.6
4	Pain	70	7.0
5	Joint Infection	63	6.3
6	Implant Failure	60	6.0
7	Peri-prosthetic fracture - Tibia	23	2.3
8	Poly liner wear	16	1.6
9	Malalignment	16	1.6
10	Patellofemoral Joint	14	1.4
	Unknown/missing/other	36	3.6

Table 85. Reasons for First Revision Following Primary UKA in First Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Conversion of Unicondylar Knee Arthroplasty	60	25.5
2	Aseptic Loosening	39	16.6
3	Joint Infection	37	15.7
4	Implant Failure	20	8.5
5	Peri-prosthetic fracture - Tibia	20	8.5
6	Dislocation/Instability	19	8.1
7	Pain	17	7.2
8	Arthrofibrosis	5	2.1
9	Extensor mechanism failure	5	2.1
10	Metal Reaction/Metallosis	4	1.7
	Unknown/missing/other	3	3.8

Table 86. Reasons for First Revision Following Primary UKA in Second Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Conversion of Unicondylar Knee Arthroplasty	98	40.5
2	Aseptic Loosening	64	26.4
3	Pain	25	10.3
4	Dislocation/Instability	19	7.9
5	Implant Failure	13	5.4
6	Joint Infection	11	4.5
7	Malalignment	5	2.1
8	Osteolysis	2	0.8
9	Arthrofibrosis	2	0.8
10	Poly liner wear	1	0.4
	Unknown/missing/other	1	0.8

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Table 87. Reasons for First Revision Following Primary UKA in Third Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Conversion of Unicondylar Knee Arthroplasty	61	44.9
2	Aseptic Loosening	31	22.8
3	Pain	14	10.3
4	Dislocation/Instability	9	6.6
5	Implant Failure	7	5.1
6	Joint Infection	5	3.7
7	Malalignment	5	3.7
8	Patellofemoral Joint	2	1.5
9	Poly liner wear	1	0.7
10	Arthrofibrosis	1	0.7

3.3.4 Most Commonly Used Implants

The following three tables provide utilization data of implants used in primary UKA.

Table 88. Ten Most Commonly Used Femoral Components in Primary UKA

Rank	Component	N	Percent
1	Restoris MCK	7,214	37.9
2	Persona	3,350	17.6
3	Oxford	3,349	17.6
4	ZUK*	3,114	16.4
5	Journey	491	2.6
6	Triathlon PKR	440	2.3
7	Journey II	389	2.0
8	iBalance	245	1.3
9	Sigma HP	239	1.2
10	Stride	111	0.6
11	Others	105	0.6

* ZUK (Zimmer Unicondylar Knee) was formerly known as the Zimmer High Flex Knee.

Table 89. Ten Most Commonly Used Femoral/Tibial Component Combinations in Primary UKA

Rank	Component combination	N	Percent
1	Restoris MCK / Restoris MCK	7,190	37.8
2	Persona / Persona	3,338	17.5
3	Oxford / Oxford	3,252	17.1
4	ZUK / ZUK*	3,080	16.2
5	Triathlon PKR / Triathlon PKR	434	2.3
6	Journey / ZUK*	367	1.9
7	Journey II / Journey II	255	1.3
8	Sigma HP / Sigma HP	236	1.2
9	iBalance / iBalance	231	1.2
10	Journey / Journey	113	0.6
11	Others	551	2.9

* ZUK (Zimmer Unicondylar Knee) was formerly known as the Zimmer High Flex Knee.

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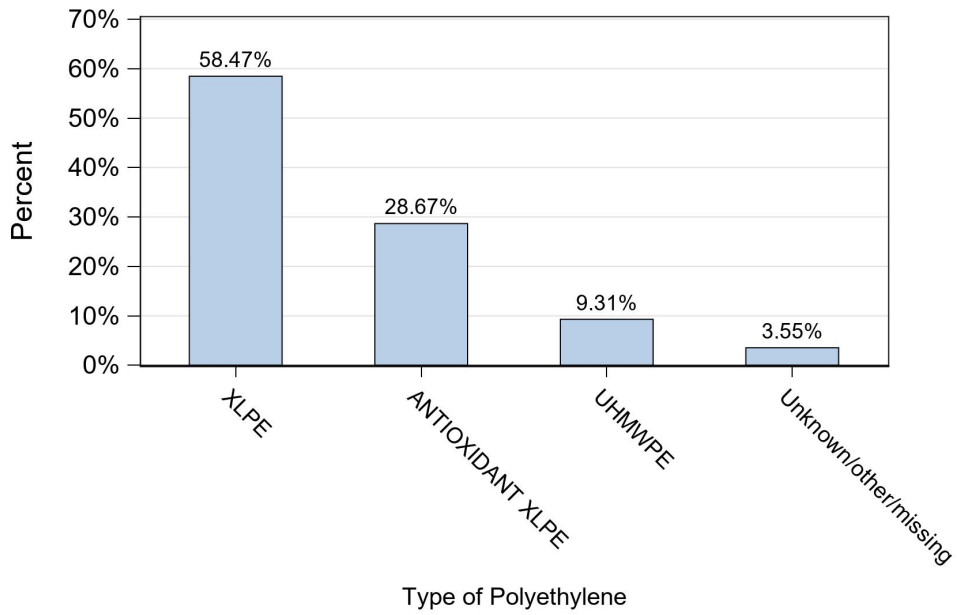


Figure 67. Percentage of Polyethylene Inserts by Type of Polyethylene in Primary UKA

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3.3.5 Revision Risk by Implant Summary

While the reader is encouraged to read the details of each femur/tibia implant combination, the following table summarizes the ten-year CPR values.

Table 90. Cumulative Percent Revision Following Primary UKA for Femoral/Tibial Combinations Having at Least 500 Primary Cases, Sorted Alphabetically

Femoral/Tibial Combination	N*	1 year	3 years	5 years	7 years	10 years
Oxford / Oxford	3,232	1.80 (1.39,2.32)	4.89 (4.18,5.71)	6.93 (6.07,7.90)	9.03 (7.99,10.18)	12.37 (10.80,14.15)
Persona / Persona	3,335	1.36 (1.01,1.84)	3.12 (2.50,3.88)	3.67 (2.95,4.56)	N/A	N/A
Restoris MCK / Restoris MCK	7,174	1.17 (0.94,1.46)	3.25 (2.83,3.73)	4.78 (4.24,5.38)	5.75 (5.10,6.49)	10.21 (7.48,13.86)
ZUK / ZUK**	3,061	1.08 (0.77,1.51)	3.04 (2.49,3.72)	4.00 (3.35,4.76)	4.83 (4.10,5.69)	6.23 (5.25,7.40)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision

** This implant (Zimmer Unicondylar Knee) was formerly known as the Zimmer High Flex Knee

Table 91. Cumulative Percent Revision Following Primary UKA for Femoral/Tibial Combinations Having at Least 500 Primary Cases, Sorted by Ten-year CPR

Femoral/Tibial Combination	N*	1 year	3 years	5 years	7 years	10 years
ZUK / ZUK**	3,061	1.08 (0.77,1.51)	3.04 (2.49,3.72)	4.00 (3.35,4.76)	4.83 (4.10,5.69)	6.23 (5.25,7.40)
Restoris MCK / Restoris MCK	7,174	1.17 (0.94,1.46)	3.25 (2.83,3.73)	4.78 (4.24,5.38)	5.75 (5.10,6.49)	10.21 (7.48,13.86)
Oxford / Oxford	3,232	1.80 (1.39,2.32)	4.89 (4.18,5.71)	6.93 (6.07,7.90)	9.03 (7.99,10.18)	12.37 (10.80,14.15)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision

** This implant (Zimmer Unicondylar Knee) was formerly known as the Zimmer High Flex Knee

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3.4 Patellofemoral Joint Arthroplasty (PFJ)

3.4.1 Descriptive Statistics

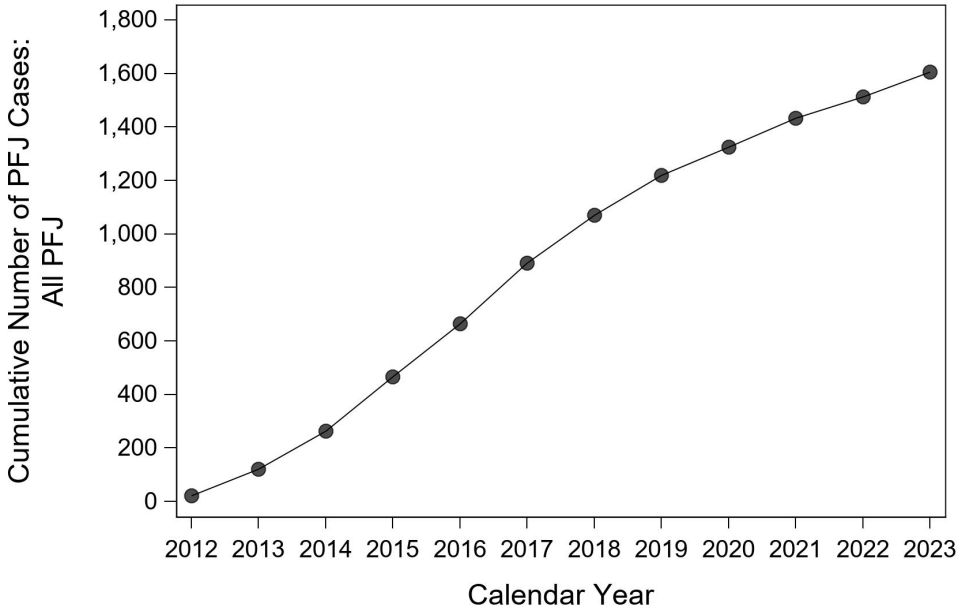


Figure 68. PFJ Cases Over Time (in 1,358 Patients)

Table 92. PFJ Cases Over Time (Numerical Values)

Year	Annual cases	Cumulative cases
2012	23	23
2013	98	121
2014	142	263
2015	204	467
2016	198	665
2017	226	891
2018	180	1,071
2019	149	1,220
2020	105	1,325
2021	109	1,434
2022	80	1,514
2023	92	1,606

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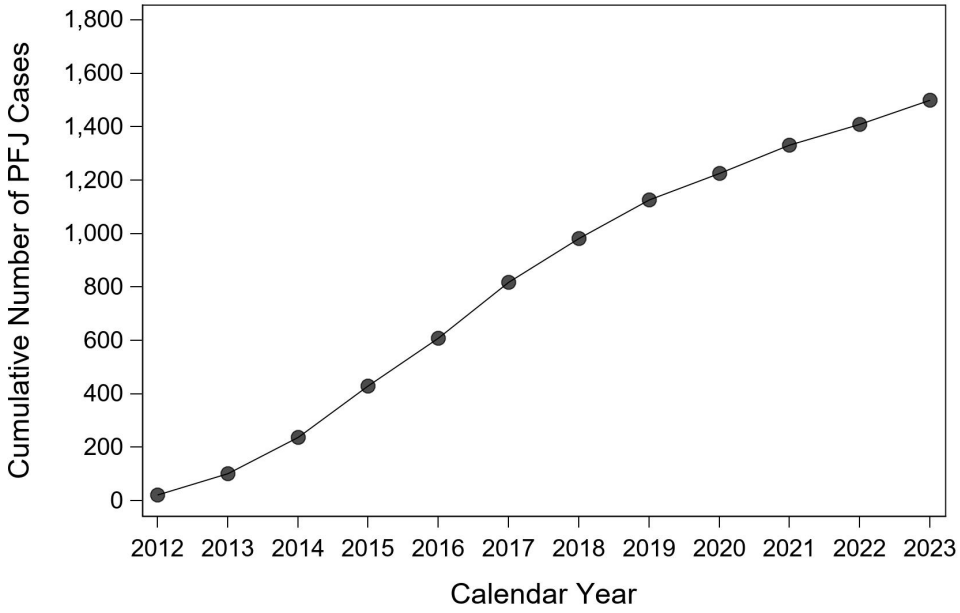


Figure 69. Primary PFJ Cases Over Time

Table 93. Primary PFJ Cases Over Time (Numerical Values)

Year	Annual cases	Cumulative cases
2012	22	22
2013	79	101
2014	136	237
2015	192	429
2016	180	609
2017	210	819
2018	164	983
2019	143	1,126
2020	101	1,227
2021	104	1,331
2022	78	1,409
2023	92	1,501

Table 94. Descriptive Statistics of Primary PFJ Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,127	75.1	
Age (years)	1,501	53.8 (12.5)	54 (18)
Height (cm)	1,499	168.5 (10)	167.6 (13.3)
Weight (kg)	1,499	87.3 (19.9)	85.8 (28.1)
BMI (kg/m^2)	1,499	30.6 (6.1)	30.1 (8.1)
Smoker - Never (%)	777	51.8	
Smoker - Previous (%)	443	29.5	
Smoker - Current (%)	223	14.9	
Smoker - Unknown (%)	58	3.9	

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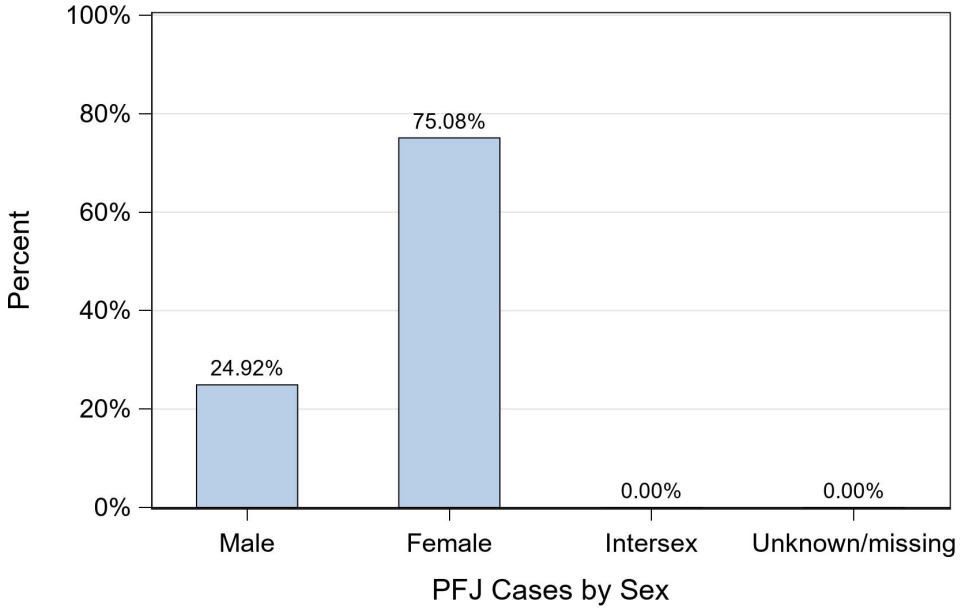


Figure 70. Percent of Primary PFJ Cases by Sex

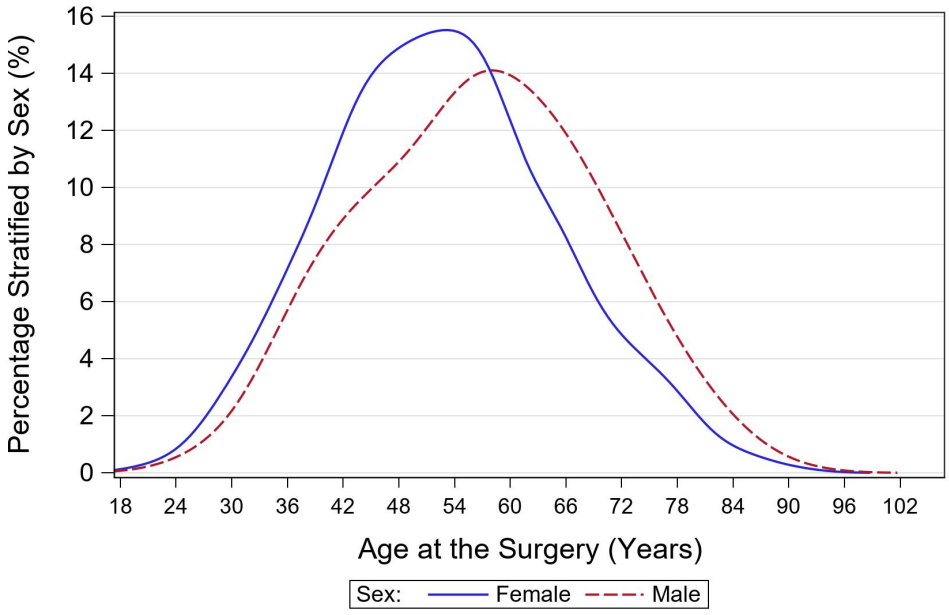


Figure 71. Age Distribution of Primary PFJ Cases by Sex

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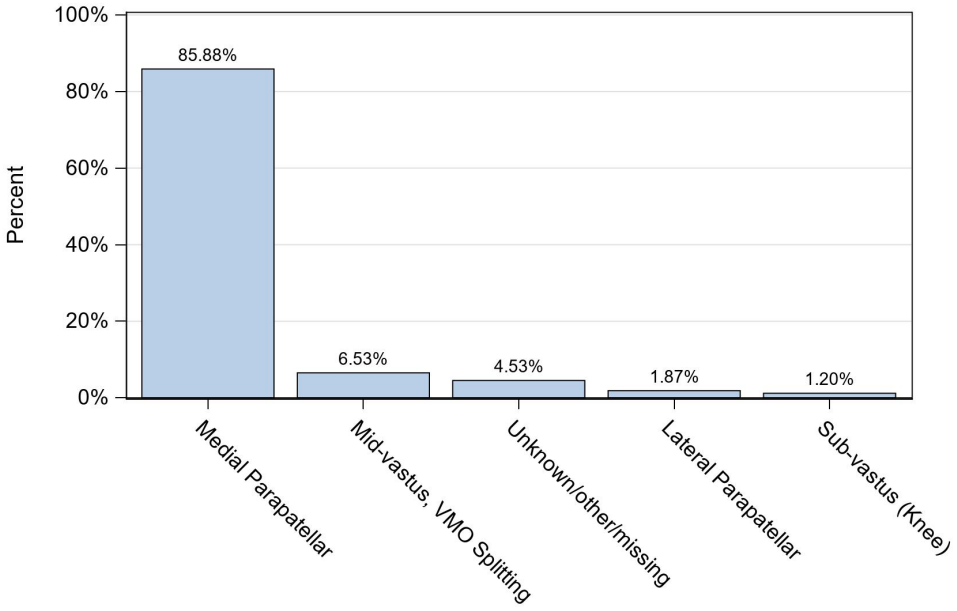


Figure 72. Percent of Primary PFJ Cases by Approach

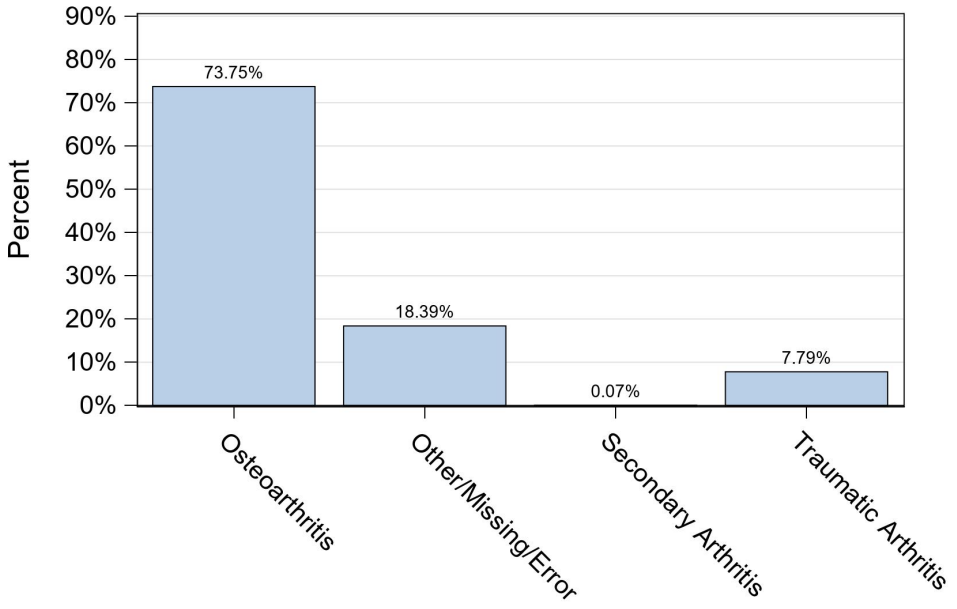


Figure 73. Percent of Primary PFJ Cases by Diagnosis

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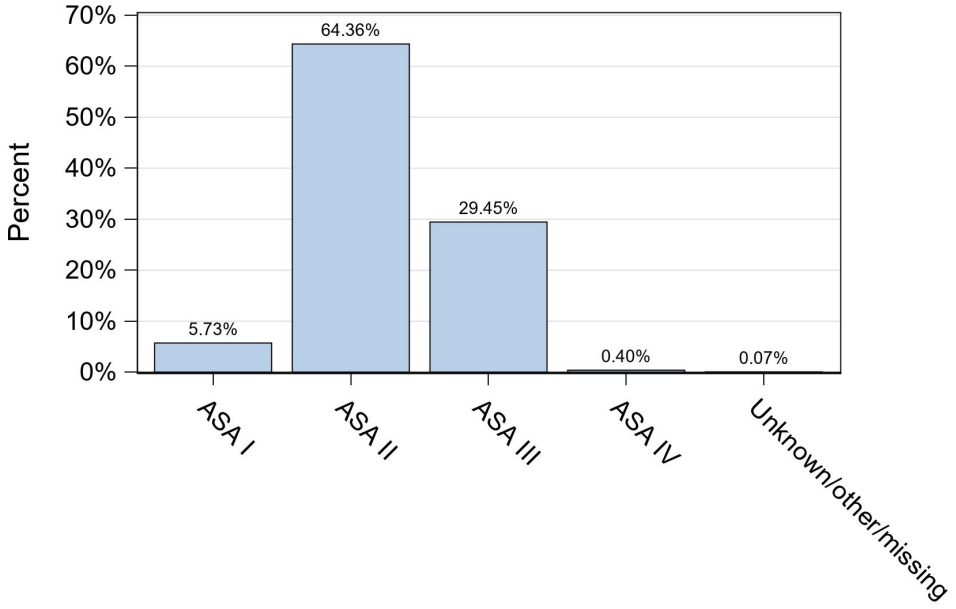


Figure 74. Percent of Primary PFJ Cases by ASA Class

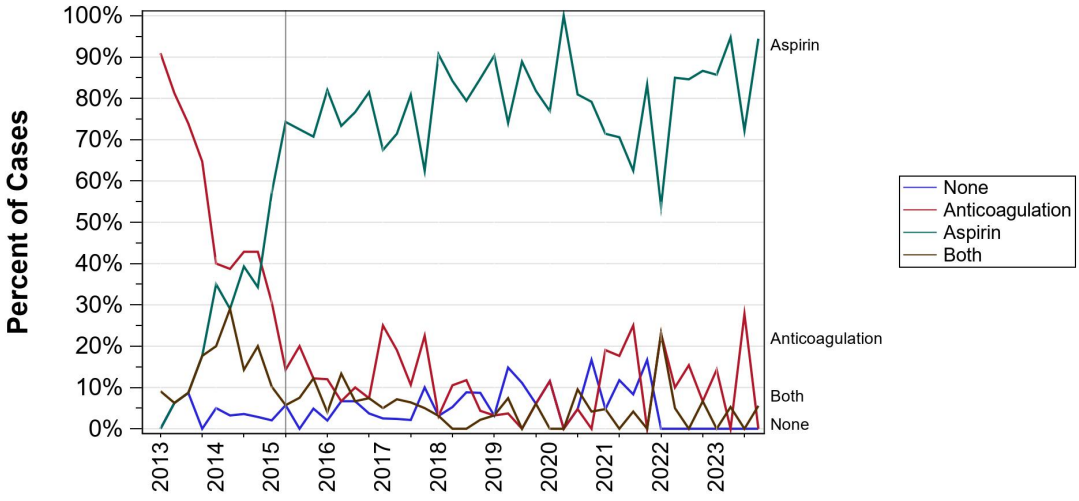


Figure 75. Percent of Primary PFJ Patients (First Case) by Thrombosis Prophylaxis

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3.4.2 Revision Risk (Overall and by Sex)

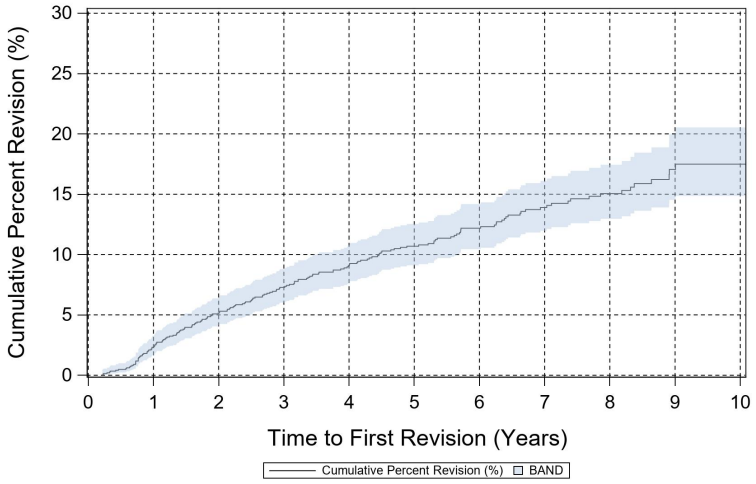


Figure 76. Cumulative Percent Revision for Primary PFJ

Table 95. Cumulative Percent Revision for Primary PFJ (Numerical Values)

	1 year	3 years	5 years	7 years	10 years
CPR	2.31 (1.65,3.23)	7.28 (6.02,8.80)	10.70 (9.11,12.54)	13.90 (11.97,16.11)	17.49 (14.86,20.54)
Number at risk	1,372	1,132	862	506	76

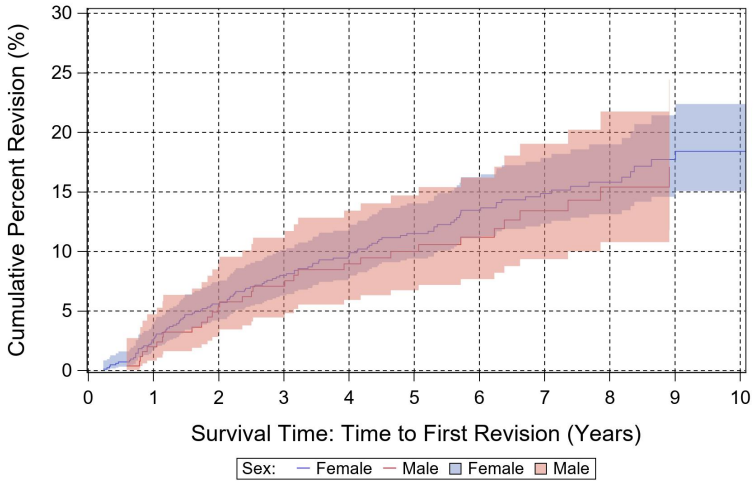


Figure 77. Cumulative Percent Revision for Primary PFJ by Sex for Osteoarthritis Diagnosis

Table 96. Cumulative Percent Revision for Primary PFJ by Sex for Osteoarthritis Diagnosis (Numerical Values)

	N	1 year	3 years	5 years	7 years	10 years
Female	839	2.58 (1.69,3.92)	7.99 (6.30,10.12)	11.51 (9.40,14.04)	14.87 (12.34,17.86)	18.41 (15.08,22.38)
Male	264	2.00 (0.84,4.73)	7.09 (4.46,11.16)	10.00 (6.75,14.70)	13.41 (9.35,19.04)	17.10 (11.80,24.43)
Unknown/Missing	0					

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3.4.3 Reasons for Revision

The reasons for revision are of central importance to quality improvement because it helps focus attention on specific causes that may be addressed. Therefore, the data are presented in two formats below: tabular and Pareto chart. The tabular format is consistent with how other arthroplasty registries report the cause(s) of revision. The Pareto chart figure presents the same data in a format commonly used in quality improvement. The Pareto chart sorts the reasons for revision by frequency (bar chart on the bottom, from left to right) and presents a cumulative percent using a line graph above.

It is important to note that the time window for the cases reported in the reasons for revision tables and figure differs from the time window used for other figures because the reason for revision was added to the database on 1/1/2015. While these data capture revisions for primaries performed back to 2/15/2012, only revisions occurring on or after 1/1/2015 are included in the reasons for revision figure and tables. Note that for knees, instability/dislocation should be interpreted as instability.

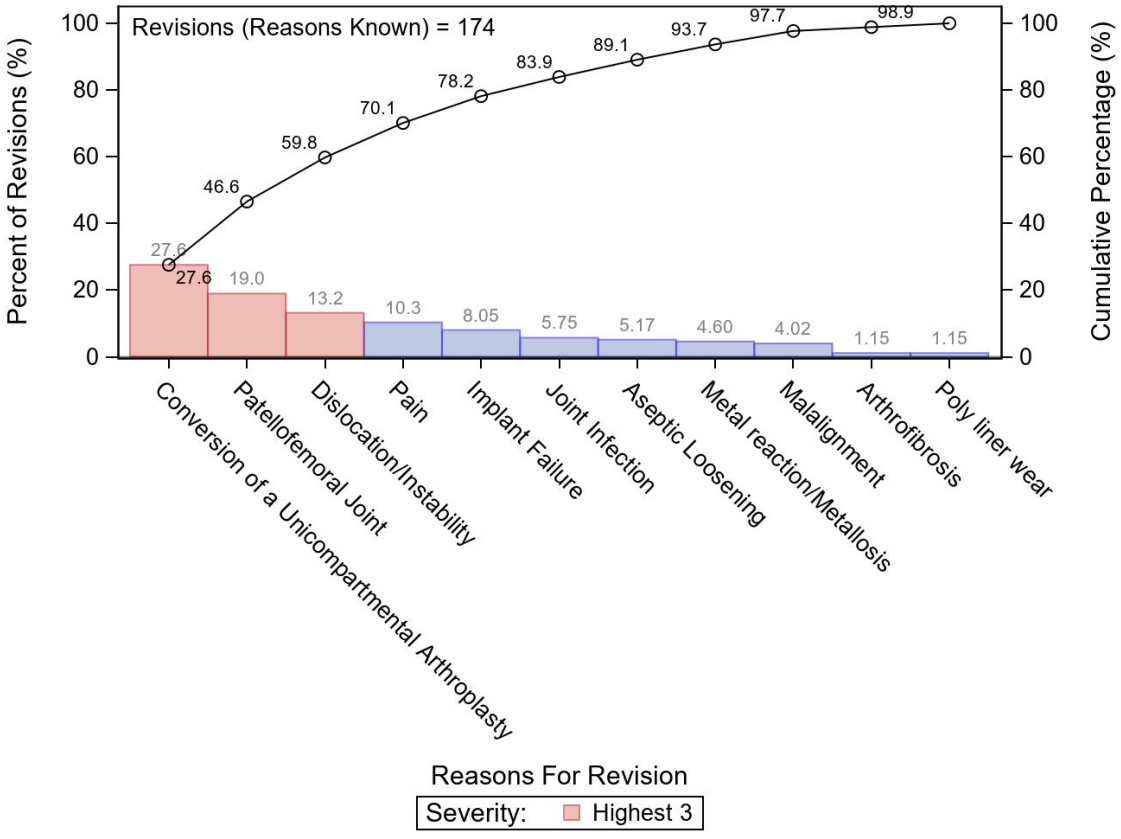


Figure 78. Most Common Reasons for First Revision Following Primary PFJ (Pareto Chart)

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Table 97. Reasons for First Revision Following Primary PFJ

Rank	Reason for Revision	N	Percent
1	Conversion of a Unicompartmental Arthroplasty	48	27.6
2	Patellofemoral Joint	33	19.0
3	Dislocation/Instability	23	13.2
4	Pain	18	10.3
5	Implant Failure	14	8.0
6	Joint Infection	10	5.7
7	Aseptic Loosening	9	5.2
8	Metal Reaction/Metallosis	8	4.6
9	Malalignment	7	4.0
10	Poly liner wear	2	1.1
	Unknown/missing/other	2	1.1

Table 98. Reasons for First Revision Following Primary PFJ in First Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Patellofemoral Joint	6	18.8
2	Conversion of a Unicompartmental Arthroplasty	5	15.6
3	Malalignment	4	12.5
4	Aseptic Loosening	3	9.4
5	Dislocation/Instability	3	9.4
6	Implant Failure	3	9.4
7	Pain	3	9.4
8	Joint Infection	2	6.2
9	Metal Reaction/Metallosis	2	6.2
10	Arthrofibrosis	1	3.1

Table 99. Reasons for First Revision Following Primary PFJ in Second Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Conversion of a Unicompartmental Arthroplasty	9	23.7
2	Pain	8	21.1
3	Patellofemoral Joint	7	18.4
4	Dislocation/Instability	4	10.5
5	Joint Infection	4	10.5
6	Implant Failure	3	7.9
7	Metal Reaction/Metallosis	2	5.3
8	Malalignment	1	2.6

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Table 100. Reasons for First Revision Following Primary PFJ in Third Year Post-operatively

Rank	Reason for Revision	N	Percent
1	Conversion of a Unicompartmental Arthroplasty	7	25.9
2	Dislocation/Instability	5	18.5
3	Implant Failure	3	11.1
4	Metal Reaction/Metallosis	3	11.1
5	Patellofemoral Joint	3	11.1
6	Joint Infection	2	7.4
7	Pain	2	7.4
8	Aseptic Loosening	1	3.7
9	Malalignment	1	3.7

3.4.4 Most Commonly Used Implants

Table 101. Ten Most Commonly Used Trochlear Components in Primary PFJ

Rank	Component	N	Percent
1	Gender Solutions PFJ	506	33.7
2	Restoris MCK	396	26.4
3	iBalance	286	19.1
4	HemiCAP	119	7.9
5	Competitor PFJ	94	6.3
6	Avon	46	3.1
7	Sigma HP	38	2.5
8	Vanguard PFR	16	1.1

3.4.5 Revision Risk by Implant Summary

Table 102. Cumulative Percent Revision Following Primary PFJ for Implants Having at Least 500 Primary Cases

Implant	N*	1 year	3 years	5 years	7 years	10 years
Gender Solutions PFJ	506	1.27 (0.57,2.80)	6.16 (4.26,8.86)	9.74 (7.18,13.14)	14.09 (10.60, 18.61)	18.26 (13.41,24.60)

* Number of patients that contribute to survival analysis used to compute cumulative percent revision.

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Chapter 4

Implant-specific Data

4.1 Conventional THA Stem/Cup Combinations

The discrepancy between the number of cases listed at the beginning of an implant combination and N at year 0 in the table following the CPR figures is due to deaths. The former number is the total number of cases; the latter is the number of cases used to estimate the CPR, considering deaths as censored events.

4.1.1 Accolade II/Trident

N = 21,219 primary cases were used for this analysis. Distribution of utilization: 127 surgeons across 50 sites used this implant combination in primary THA cases.

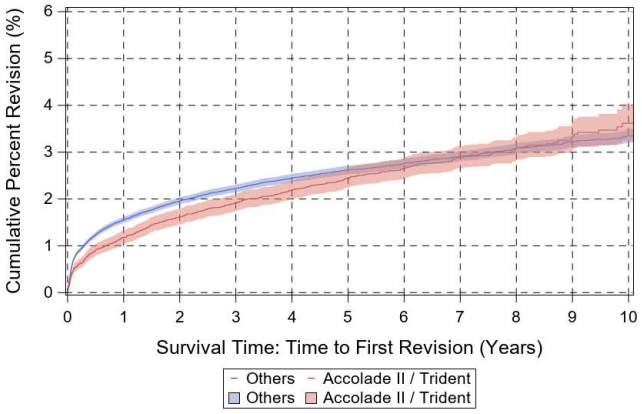


Figure 79. Cumulative Percent Revision Curve for the Accolade II/Trident Combination, Compared to All Other Implant Combinations in Primary THA Cases

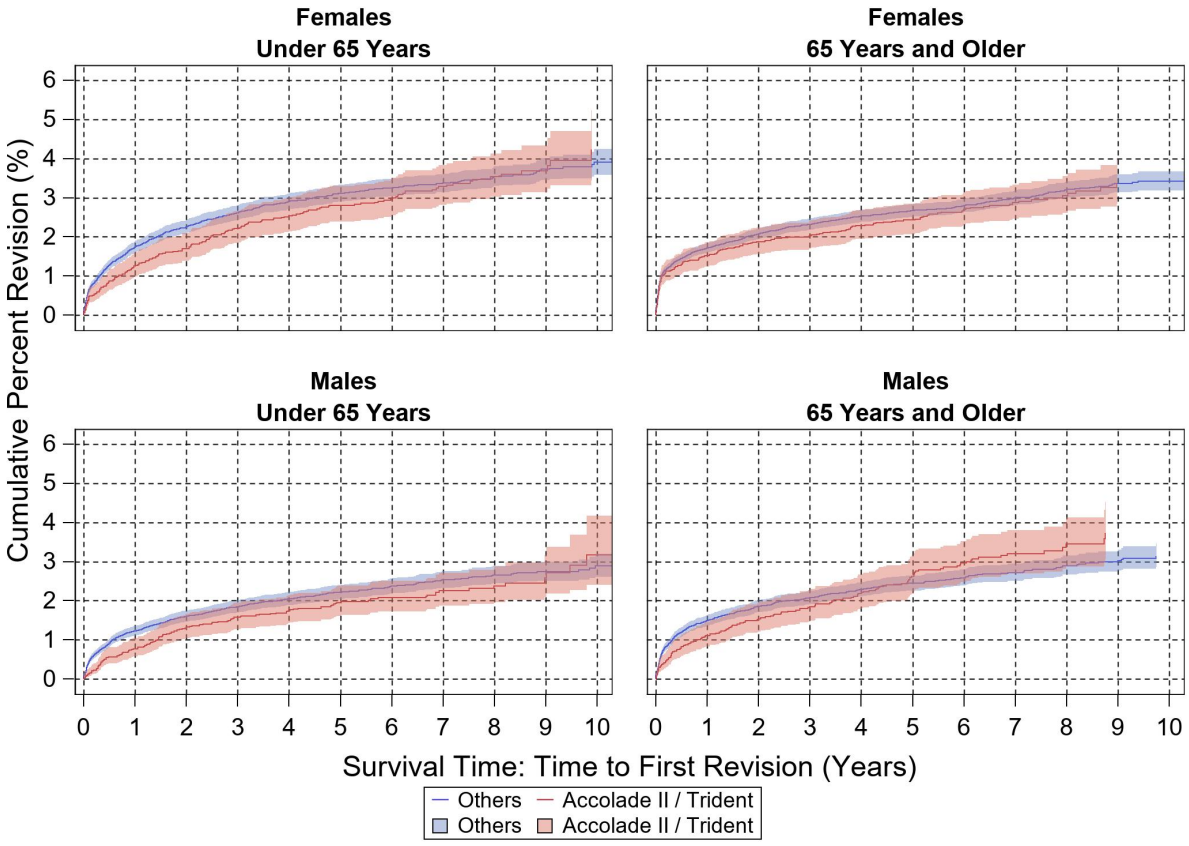


Figure 80. Cumulative Percent Revision Curve for the Accolade II/Trident Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 103. Cumulative Percent Revision and Number at Risk for the Accolade II/Trident Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	21,073	0.00 (0.00,0.00)	5,130	0.00 (0.00,0.00)	6,268	0.00 (0.00,0.00)	5,305	0.00 (0.00,0.00)	4,364	0.00 (0.00,0.00)
1	20,731	1.18 (1.04,1.33)	5,052	1.25 (0.98,1.59)	6,133	1.52 (1.24,1.85)	5,246	0.77 (0.57,1.05)	4,294	1.10 (0.83,1.46)
2	20,465	1.62 (1.46,1.80)	5,004	1.70 (1.38,2.09)	6,041	1.87 (1.56,2.24)	5,183	1.32 (1.05,1.67)	4,231	1.54 (1.21,1.95)
3	20,167	1.92 (1.74,2.11)	4,925	2.21 (1.84,2.65)	5,950	2.02 (1.70,2.40)	5,141	1.57 (1.27,1.95)	4,145	1.85 (1.49,2.29)
4	19,650	2.19 (2.00,2.40)	4,790	2.53 (2.14,3.00)	5,786	2.29 (1.94,2.69)	5,034	1.75 (1.43,2.14)	4,034	2.18 (1.79,2.66)
5	17,355	2.44 (2.24,2.66)	4,265	2.81 (2.39,3.30)	5,130	2.43 (2.07,2.84)	4,447	1.95 (1.61,2.37)	3,507	2.62 (2.18,3.15)
6	13,722	2.66 (2.45,2.90)	3,442	2.99 (2.55,3.50)	4,066	2.70 (2.32,3.14)	3,493	2.08 (1.72,2.50)	2,716	2.96 (2.48,3.53)
7	9,589	2.88 (2.66,3.13)	2,429	3.28 (2.81,3.83)	2,781	2.87 (2.47,3.34)	2,501	2.26 (1.87,2.72)	1,873	3.20 (2.69,3.81)
8	5,688	3.08 (2.83,3.35)	1,481	3.53 (3.02,4.13)	1,652	3.05 (2.62,3.56)	1,453	2.37 (1.96,2.87)	1,097	3.45 (2.88,4.12)
9	2,944	3.32 (3.03,3.63)	769	3.69 (3.14,4.34)	846	3.37 (2.85,3.99)	753	2.58 (2.09,3.18)	572	3.72 (3.06,4.53)
10	1,079	3.62 (3.25,4.03)	298	4.24 (3.43,5.23)	304	3.37 (2.85,3.99)	269	3.17 (2.40,4.18)	207	3.72 (3.06,4.53)

Table 104. Reasons for First Revision Following Primary THA for Accolade II/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	172	29.5
2	Peri-prosthetic fracture - Femur	117	20.1
3	Joint Infection	109	18.7
4	Dislocation/Instability	77	13.2
5	Pain	32	5.5
6	Metal Reaction/Metallosis	27	4.6
7	Implant Failure	19	3.3
8	Malalignment	17	2.9
9	Peri-prosthetic fracture - Acetabulum	11	1.9
10	Osteolysis	2	0.3

Table 105. Reasons for First Revision in the First 90 Days Following Primary THA for Accolade II/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	72	55.4
2	Dislocation/Instability	16	12.3
3	Joint Infection	13	10.0
4	Aseptic Loosening	11	8.5
5	Implant Failure	8	6.2
6	Peri-prosthetic fracture - Acetabulum	4	3.1
7	Pain	3	2.3
8	Malalignment	3	2.3

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Table 106. Reasons for First Revision Between 91 and 365 days Following Primary THA for Accolade II/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	32	30.2
2	Dislocation/Instability	23	21.7
3	Aseptic Loosening	21	19.8
4	Pain	13	12.3
5	Peri-prosthetic fracture - Femur	12	11.3
6	Implant Failure	2	1.9
7	Peri-prosthetic fracture - Acetabulum	2	1.9
8	Malalignment	1	0.9

Table 107. Descriptive Statistics of Cases Receiving the Accolade II/Trident Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	11,464	54.03	
Age (years)	21,219	64.29 (11.01)	65.00 (14.00)
Height (cm)	21,219	170.07 (10.31)	170.00 (15.24)
Weight (kg)	21,219	88.57 (21.07)	86.60 (28.30)
BMI(kg/m^2)	21,219	30.51 (6.37)	29.74 (8.29)
Smoker - Never (%)	10,220	48.16	
Smoker - Previous (%)	8,057	37.97	
Smoker - Current (%)	2,847	13.42	
Smoker - Unknown (%)	95	0.45	

Table 108. Distribution of Approach Used for Accolade II/Trident Combination in Primary THA Cases

Approach	N	Percent
Anterior	6,471	30.5
Anterolateral	3319	15.6
Posterior	11,364	53.6
Transtrochanteric	19	0.1
Missing/unknown/other	46	0.2

Table 109. Distribution of Head Size for Accolade II/Trident Combination in Primary THA Cases

Size (mm)	N	Percent
22	10	0.1
28	34	0.2
32	3,668	18.9
36	14,432	74.3
40	1,123	5.8
44	108	0.6
Missing/unknown/other	54	0.3

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Table 110. Distribution of Bearing Surface for Accolade II/Trident Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	3,485	16.4
Ceramic-on-plastic	15,876	74.8
Ceramic-on-ceramic	16	0.1
Metal-on-metal	0	0.0
Dual mobility	1,747	8.2
Missing/unknown/other	95	0.5

Table 111. Distribution of Polyethylene Used for Accolade II/Trident Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	20,745	98.1
Antioxidant XLPE	0	0.0
Missing/unknown/other	401	1.9

Table 112. Volume of Cases by Surgeon and Site for the Accolade II/Trident Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	167 (292)	21 (197)
Cases per site	424 (667)	119 (589)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

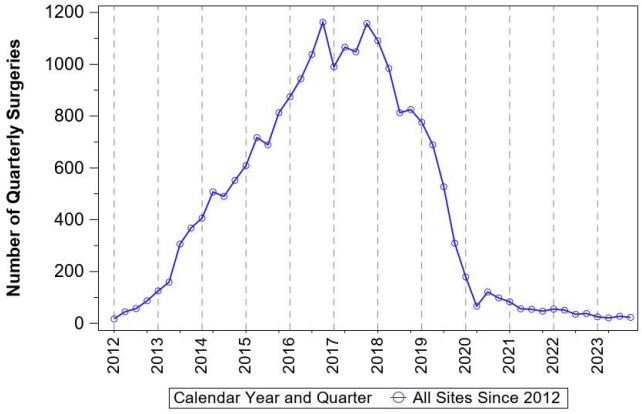


Figure 81. Utilization of the Accolade II/Trident Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

67210535	67210837	67200127
67210635	67200737	67201040
67210435	67210937	67211140
67210737	67200837	67210027
67200535	67210230	67201140
67200435	67200230	67200027
67210330	67200937	
67200635	67211040	
67200330	67210127	

Catalog numbers of Acetabular Cups Used in the Analysis

5020354E	5000352D	5421162H
5021152E	5000350D	5000348C
5021154E	5020156F	5021144B
5421150E	5090254E	5081158F
5020350D	5000152E	5000364G
5021156F	5021146C	5021166H
5020352D	5001152E	5401146D
5020356E	5020364G	5401162H
5021150D	5421160G	5081160G
5020358F	5090256E	5020154E
5021158F	5401160G	5090268H
5421154F	5000154E	5001148D
5021148D	5021164H	5090266H
5020360F	5081152E	5421164H
5421146D	5020158F	5020162G
5021160G	5401148D	5401164H
5421152E	5000148D	5081146C
5421148D	5020148D	5081162G
5421156F	5090258F	5090270I
5000354E	5000150D	5421142B
5401150E	5081150D	5021168I
5020348C	5000362G	5090272I
5020362G	5000156F	5000146C
5421158G	5020346B	5000160G
5401152E	5081148D	5000164H
5021162G	5020160G	5001158F
5401154F	5090262G	5020344A
5421144C	5081154E	5401144C
5000356E	5090264G	5401166I
5000358F	5081156F	5421168I
5401156F	5090260F	65C3248
5020152E	5020366H	65C3252
5401158G	5020150D	
5000360F	5000158F	

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4.1.2 Accolade II/Trident II

N = 19,342 primary cases were used for this analysis. Distribution of utilization: 123 surgeons across 57 sites used this implant combination in primary THA cases.

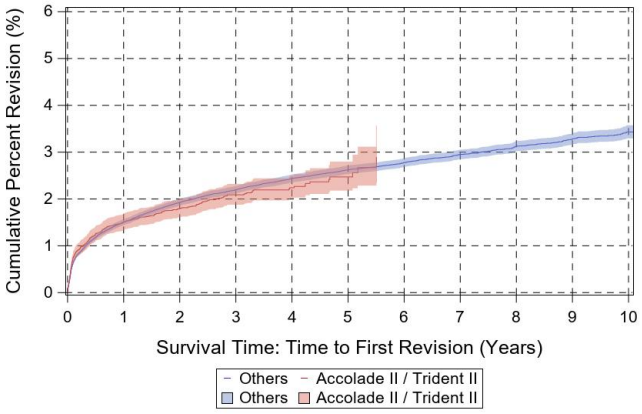


Figure 82. Cumulative Percent Revision Curve for the Accolade II/Trident II Combination, Compared to All Other Implant Combinations in Primary THA Cases

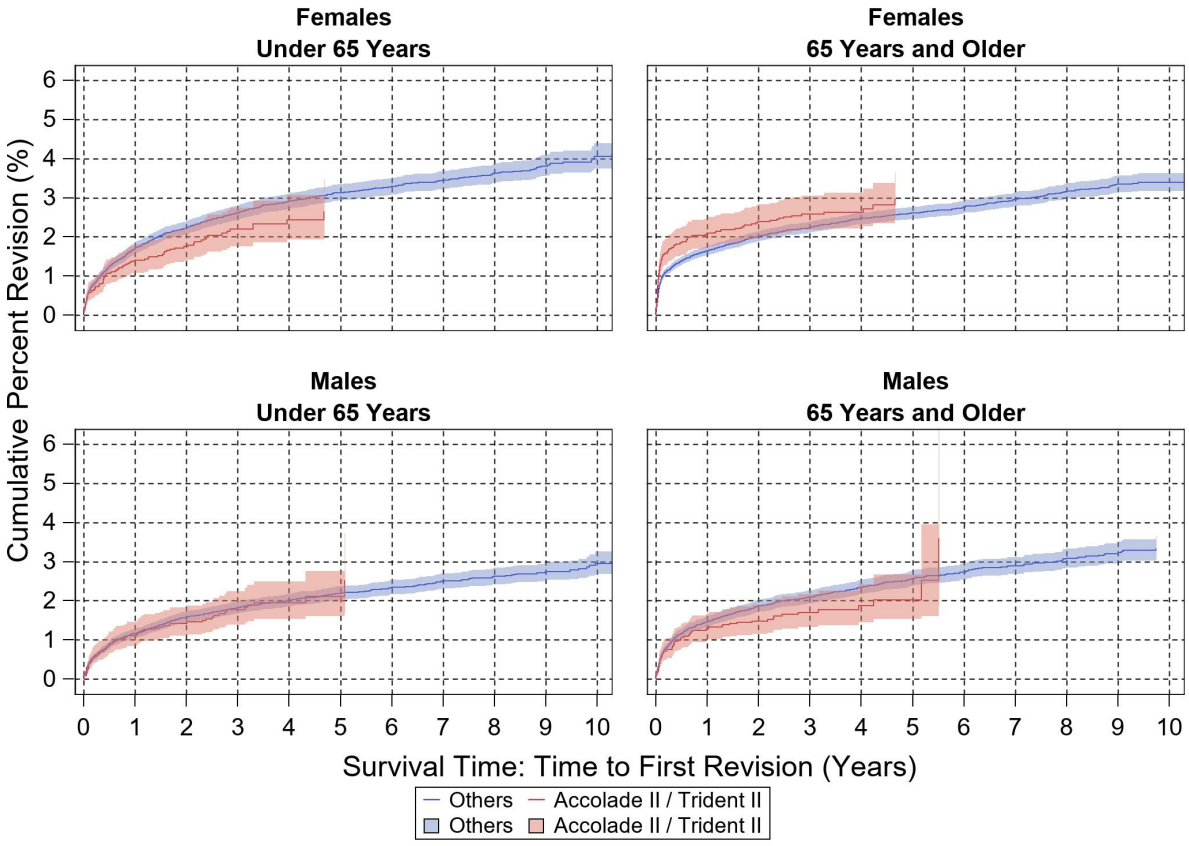


Figure 83. Cumulative Percent Revision Curve for the Accolade II/Trident II Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 113. Cumulative Percent Revision and Number at Risk for the Accolade II/Trident II Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	19,297	0.00 (0.00,0.00)	4,370	0.00 (0.00,0.00)	5,718	0.00 (0.00,0.00)	4,731	0.00 (0.00,0.00)	4,476	0.00 (0.00,0.00)
1	15,732	1.51 (1.34,1.70)	3,555	1.40 (1.08,1.81)	4,725	2.09 (1.75,2.50)	3,855	1.11 (0.84,1.46)	3,595	1.30 (1.00,1.68)
2	11,718	1.80 (1.61,2.00)	2,644	1.75 (1.38,2.22)	3,624	2.38 (2.01,2.83)	2,797	1.42 (1.10,1.82)	2,652	1.48 (1.15,1.90)
3	7,556	2.09 (1.88,2.32)	1,719	2.19 (1.75,2.75)	2,333	2.58 (2.18,3.06)	1,779	1.76 (1.38,2.25)	1,725	1.70 (1.33,2.17)
4	3,953	2.24 (2.01,2.50)	924	2.43 (1.93,3.07)	1,240	2.63 (2.22,3.12)	916	1.95 (1.53,2.49)	873	1.87 (1.44,2.42)
5	1,210	2.47 (2.18,2.80)	269	2.66 (2.03,3.48)	384	2.98 (2.43,3.65)	289	2.11 (1.61,2.75)	268	2.02 (1.53,2.66)
6	176	2.90 (2.35,3.57)	45	2.66 (2.03,3.48)	53	2.98 (2.43,3.65)	39	2.52 (1.70,3.71)	39	3.59 (1.85,6.91)
7	13	2.90 (2.35,3.57)	*	2.66 (2.03,3.48)	*	2.98 (2.43,3.65)	*	2.52 (1.70,3.71)	*	3.59 (1.85,6.91)
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 114. Reasons for First Revision Following Primary THA for Accolade II/Trident II Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	120	32.7
2	Joint Infection	95	25.9
3	Aseptic Loosening	54	14.7
4	Dislocation/Instability	50	13.6
5	Malalignment	13	3.5
6	Implant Failure	12	3.3
7	Peri-prosthetic fracture - Acetabulum	8	2.2
8	Pain	8	2.2
9	Metal Reaction/Metallosis	3	0.8
10	Osteolysis	2	0.5
	Unknown/missing/other	2	0.5

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Table 115. Reasons for First Revision in the First 90 Days Following Primary THA for Accolade II/Trident II Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	102	54.6
2	Joint Infection	39	20.9
3	Dislocation/Instability	18	9.6
4	Aseptic Loosening	9	4.8
5	Implant Failure	6	3.2
6	Peri-prosthetic fracture - Acetabulum	5	2.7
7	Malalignment	5	2.7
8	Pain	2	1.1
9	Metal Reaction/Metallosis	1	0.5

Table 116. Reasons for First Revision Between 91 and 365 days Following Primary THA for Accolade II/Trident II Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	32	34.4
2	Dislocation/Instability	20	21.5
3	Aseptic Loosening	18	19.4
4	Peri-prosthetic fracture - Femur	12	12.9
5	Malalignment	5	5.4
6	Pain	2	2.2
7	Osteolysis	1	1.1
8	Poly liner wear	1	1.1
9	Implant Failure	1	1.1
10	Peri-prosthetic fracture - Acetabulum	1	1.1

Table 117. Descriptive Statistics of Cases Receiving the Accolade II/Trident II Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	10,106	52.25	
Age (years)	19,342	64.47 (10.55)	65.00 (14.00)
Height (cm)	19,342	170.64 (10.43)	170.18 (15.24)
Weight (kg)	19,342	89.36 (20.63)	87.70 (27.70)
BMI(kg/m^2)	19,342	30.58 (6.07)	29.86 (8.08)
Smoker - Never (%)	9,674	50.02	
Smoker - Previous (%)	6,698	34.63	
Smoker - Current (%)	2,938	15.19	
Smoker - Unknown (%)	32	0.17	

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Table 118. Distribution of Approach Used for Accolade II/Trident II Combination in Primary THA Cases

Approach	N	Percent
Anterior	6,803	35.2
Anterolateral	1399	7.2
Posterior	11,086	57.3
Transtrochanteric	12	0.1
Missing/unknown/other	42	0.2

Table 119. Distribution of Head Size for Accolade II/Trident II Combination in Primary THA Cases

Size (mm)	N	Percent
22	1	0.0
28	15	0.1
32	1,649	10.1
36	13,063	80.0
40	1,427	8.7
44	121	0.7
Missing/unknown/other	50	0.3

Table 120. Distribution of Bearing Surface for Accolade II/Trident II Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	697	3.6
Ceramic-on-plastic	15,579	80.5
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	2,755	14.2
Missing/unknown/other	311	1.6

Table 121. Distribution of Polyethylene Used for Accolade II/Trident II Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	10,237	53.8
Antioxidant XLPE	0	0.0
Missing/unknown/other	8,806	46.2

Table 122. Volume of Cases by Surgeon and Site for the Accolade II/Trident II Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	157 (220)	70 (202)
Cases per site	339 (456)	157 (393)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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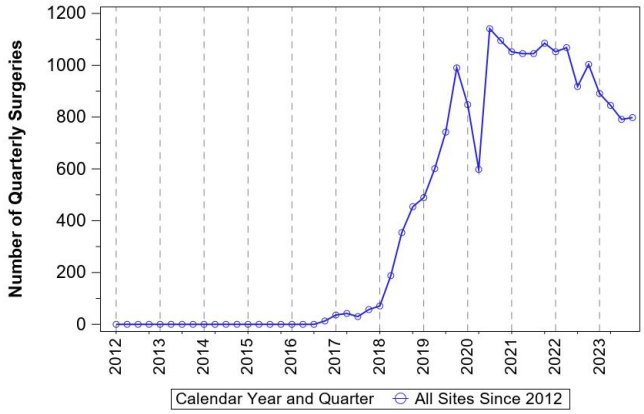


Figure 84. Utilization of the Accolade II/Trident II Combination in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

67210535	67200330	67201040
67210435	67200737	67211140
67210635	67210937	67200127
67210737	67210230	67210027
67210330	67200837	67201140
67200535	67200230	67200027
67200435	67211040	
67200635	67200937	
67210837	67210127	

Catalog numbers of Acetabular Cups Used in the Analysis

7020452E	7021160G	7421156F
7020454E	7090452E	7000446C
7020456F	7000450D	7000462G
7020450D	7000448D	7090462G
7020448D	7090454E	7090464H
7020458F	7090456F	7021164H
7021152E	7090448D	7020466H
7021150D	7021146C	7090446C
7021154E	7020444B	7421146C
7021156F	7000460G	7090468I
7020460G	7421152E	7421162G
7000452E	7090450D	7021166H
7021148D	7021162G	7421158F
7021158F	7421148D	7021144B
7020446C	7090458F	7090466H
7000454E	7020464H	7421160G
7000456F	7090460G	7090470I
7020462G	7421154E	7090472J
7000458F	7421150D	

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4.1.3 Accolade C/Trident II

N = 849 primary cases were used for this analysis. Distribution of utilization: 52 surgeons across 30 sites used this implant combination in primary THA cases.

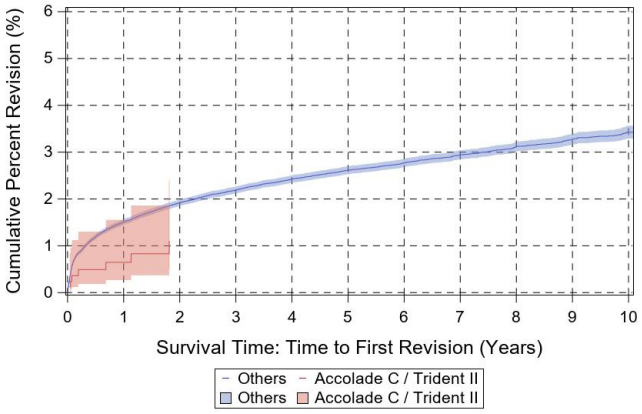


Figure 85. Cumulative Percent Revision Curve for the Accolade C/Trident II Combination, Compared to All Other Implant Combinations in Primary THA Cases

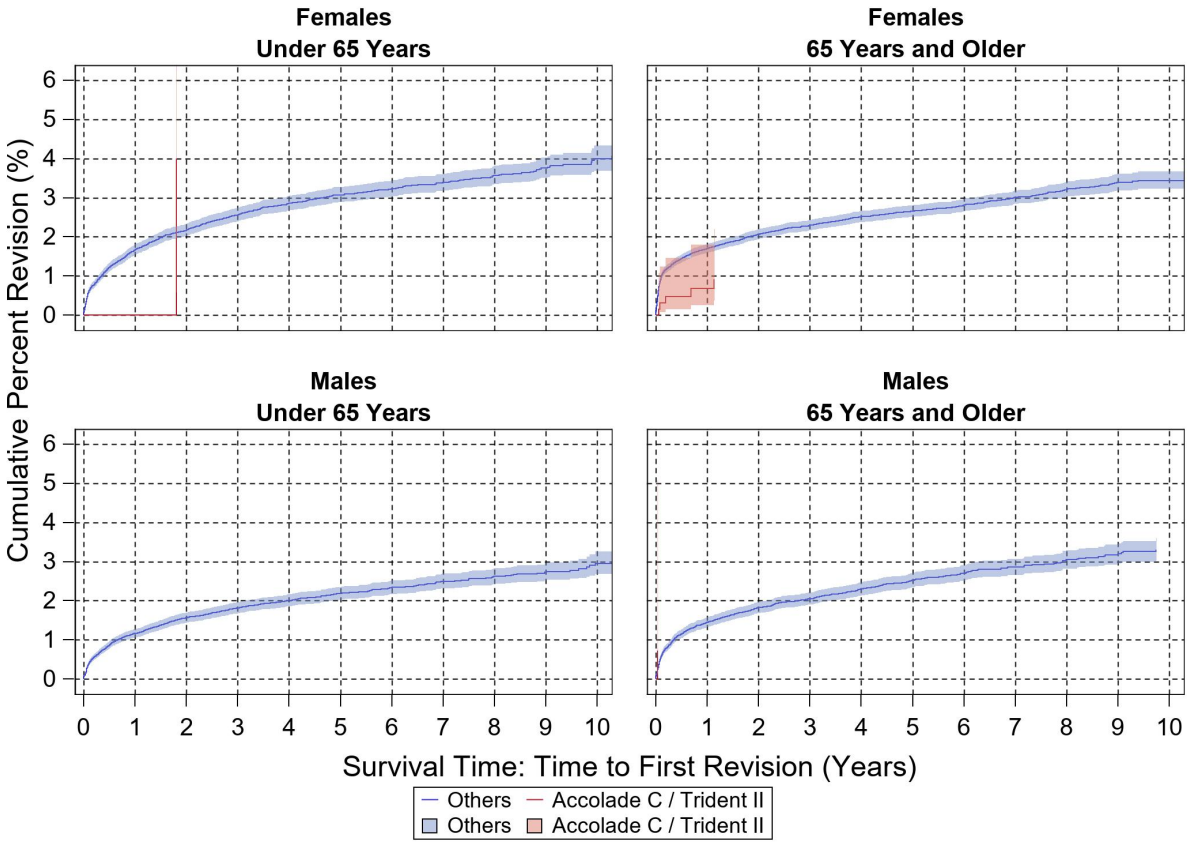


Figure 86. Cumulative Percent Revision Curve for the Accolade C/Trident II Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 123. Cumulative Percent Revision and Number at Risk for the Accolade C/Trident II Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	838	0.00 (0.00,0.00)	39	0.00 (0.00,0.00)	657	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)	138	0.00 (0.00,0.00)
1	566	0.65 (0.27,1.55)	32	0.00 (0.00,0.00)	438	0.67 (0.25,1.80)	*	0.00 (0.00,0.00)	93	0.73 (0.10,5.07)
2	333	1.10 (0.51,2.39)	23	4.00 (0.57,25.16)	255	0.91 (0.37,2.20)	*	0.00 (0.00,0.00)	54	0.73 (0.10,5.07)
3	162	1.10 (0.51,2.39)	11	4.00 (0.57,25.16)	121	0.91 (0.37,2.20)	*	0.00 (0.00,0.00)	29	0.73 (0.10,5.07)
4	56	1.10 (0.51,2.39)	*	4.00 (0.57,25.16)	40	0.91 (0.37,2.20)	0	N/A	11	0.73 (0.10,5.07)
5	15	1.10 (0.51,2.39)	*	4.00 (0.57,25.16)	11	0.91 (0.37,2.20)	0	N/A	*	0.73 (0.10,5.07)
6	*	1.10 (0.51,2.39)	0	N/A	*	0.91 (0.37,2.20)	0	N/A	*	0.73 (0.10,5.07)
7	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 124. Reasons for First Revision Following Primary THA for Accolade C/Trident II Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	3	42.9
2	Aseptic Loosening	2	28.6
3	Dislocation/Instability	1	14.3
4	Peri-prosthetic fracture - Acetabulum	1	14.3

Table 125. Reasons for First Revision in the First 90 Days Following Primary THA for Accolade C/Trident II Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	25.0
2	Dislocation/Instability	1	25.0
3	Joint Infection	1	25.0
4	Peri-prosthetic fracture - Acetabulum	1	25.0

Table 126. Reasons for First Revision Between 91 and 365 days Following Primary THA for Accolade C/Trident II Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	1	100.0

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Table 127. Descriptive Statistics of Cases Receiving the Accolade C/Trident II Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	705	83.04	
Age (years)	849	77.34 (7.79)	78.00 (10.00)
Height (cm)	849	163.31 (8.80)	162.56 (10.16)
Weight (kg)	849	75.25 (17.62)	72.50 (24.24)
BMI(kg/m^2)	849	28.18 (6.13)	27.29 (7.98)
Smoker - Never (%)	476	56.07	
Smoker - Previous (%)	306	36.04	
Smoker - Current (%)	61	7.18	
Smoker - Unknown (%)	6	0.71	

Table 128. Distribution of Approach Used for Accolade C/Trident II Combination in Primary THA Cases

Approach	N	Percent
Anterior	215	25.3
Anterolateral	102	12.0
Posterior	531	62.5
Transtrochanteric	1	0.1
Missing/unknown/other	0	0.0

Table 129. Distribution of Head Size for Accolade C/Trident II Combination in Primary THA Cases

Size (mm)	N	Percent
28	1	0.1
32	35	5.3
36	553	84.4
40	58	8.8
44	4	0.6
Missing/unknown/other	4	0.6

Table 130. Distribution of Bearing Surface for Accolade C/Trident II Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	78	9.2
Ceramic-on-plastic	573	67.5
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	180	21.2
Missing/unknown/other	18	2.1

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Table 131. Distribution of Polyethylene Used for Accolade C/Trident II Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	294	35.5
Antioxidant XLPE	0	0.0
Missing/unknown/other	534	64.5

Table 132. Volume of Cases by Surgeon and Site for the Accolade C/Trident II Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	16 (18)	9 (22)
Cases per site	28 (27)	19 (39)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

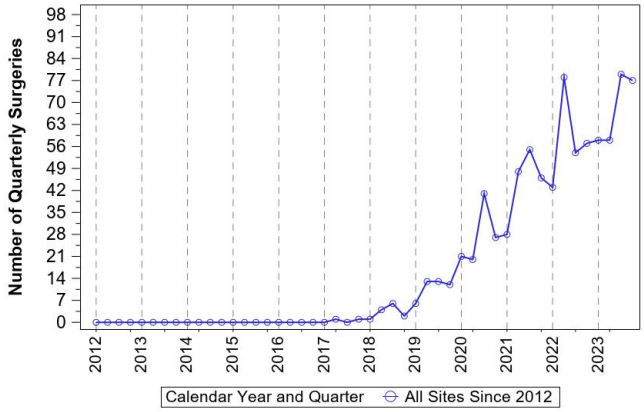


Figure 87. Utilization of the Accolade C/Trident II Combination in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

60570435D	60570637D	60580740D
60570537D	60580637D	60580230D
60570335D	60570740D	
60580435D	60580335D	
60580537D	60570230D	

Catalog numbers of Acetabular Cups Used in the Analysis

7020452E	7020456F	7020458F
7020450D	7021152E	7000450D
7020448D	7021150D	7021154E
7020454E	7021148D	7090448D

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7000452E	7000454E	7090462G
7020446C	7021158F	7000446C
7020460G	7090456F	7020444B
7021156F	7000458F	7021160G
7090452E	7021146C	7090468I
7000456F	7090454E	7090470I
7000448D	7090458F	7421152E
7090450D	7020462G	

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4.1.4 Accolade TMZF/Trident

N = 915 primary cases were used for this analysis. Distribution of utilization: 16 surgeons across 13 sites used this implant combination in primary THA cases.

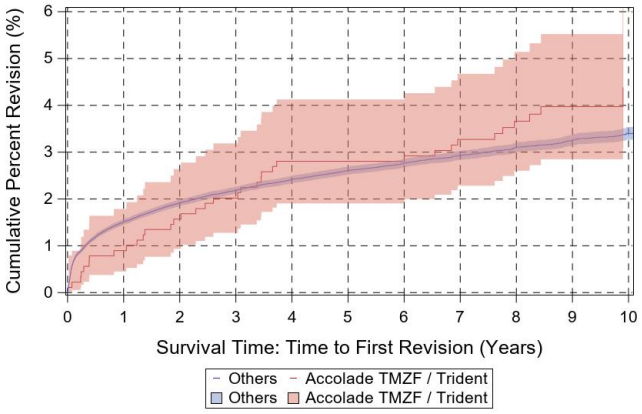


Figure 88. Cumulative Percent Revision Curve for the Accolade TMZF/Trident Combination, Compared to All Other Implant Combinations in Primary THA Cases

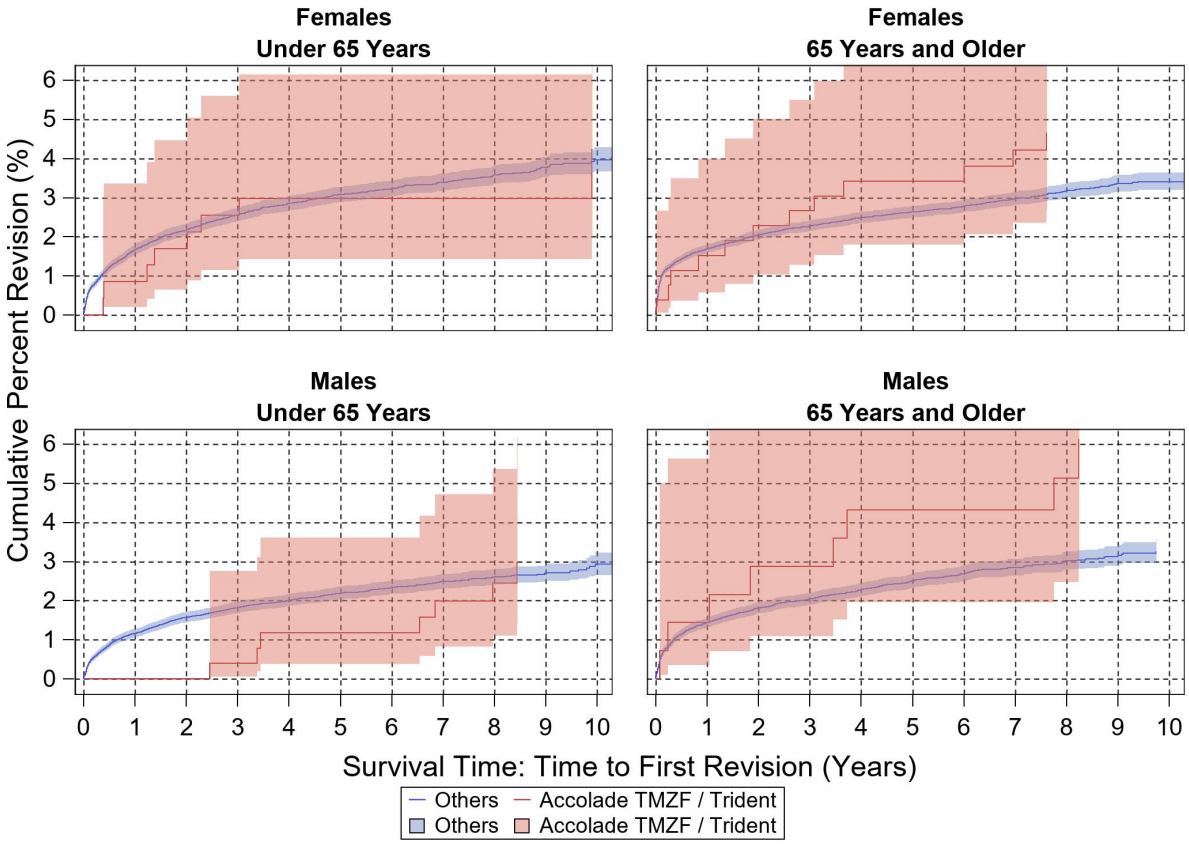


Figure 89. Cumulative Percent Revision Curve for the Accolade TMZF/Trident Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 133. Cumulative Percent Revision and Number at Risk for the Accolade TMZF/Trident Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	891	0.00 (0.00,0.00)	235	0.00 (0.00,0.00)	263	0.00 (0.00,0.00)	254	0.00 (0.00,0.00)	139	0.00 (0.00,0.00)
1	883	0.90 (0.45,1.79)	233	0.85 (0.21,3.36)	259	1.52 (0.57,4.00)	254	0.00 (0.00,0.00)	137	1.44 (0.36,5.63)
2	877	1.57 (0.93,2.64)	231	1.70 (0.64,4.47)	257	2.28 (1.03,5.01)	254	0.00 (0.00,0.00)	135	2.88 (1.09,7.49)
3	873	2.02 (1.28,3.19)	229	2.55 (1.16,5.59)	256	2.66 (1.28,5.50)	253	0.39 (0.06,2.76)	135	2.88 (1.09,7.49)
4	866	2.81 (1.90,4.12)	228	2.98 (1.43,6.15)	254	3.42 (1.80,6.47)	251	1.18 (0.38,3.62)	133	4.32 (1.96,9.36)
5	865	2.81 (1.90,4.12)	228	2.98 (1.43,6.15)	253	3.42 (1.80,6.47)	251	1.18 (0.38,3.62)	133	4.32 (1.96,9.36)
6	854	2.81 (1.90,4.12)	224	2.98 (1.43,6.15)	250	3.42 (1.80,6.47)	247	1.18 (0.38,3.62)	133	4.32 (1.96,9.36)
7	818	3.27 (2.28,4.67)	217	2.98 (1.43,6.15)	235	4.22 (2.36,7.49)	239	1.99 (0.83,4.72)	127	4.32 (1.96,9.36)
8	701	3.66 (2.60,5.14)	188	2.98 (1.43,6.15)	192	4.66 (2.67,8.07)	212	2.44 (1.10,5.36)	109	5.13 (2.48,10.46)
9	431	3.97 (2.85,5.52)	122	2.98 (1.43,6.15)	123	4.66 (2.67,8.07)	126	2.98 (1.42,6.17)	60	6.13 (3.09,11.95)
10	215	4.38 (3.08,6.22)	70	4.24 (1.95,9.07)	64	4.66 (2.67,8.07)	53	2.98 (1.42,6.17)	28	6.13 (3.09,11.95)

Table 134. Reasons for First Revision Following Primary THA for Accolade TMZF/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	11	37.9
2	Metal Reaction/Metallosis	6	20.7
3	Joint Infection	5	17.2
4	Dislocation/Instability	4	13.8
5	Peri-prosthetic fracture - Femur	2	6.9
6	Malalignment	1	3.4

Table 135. Reasons for First Revision in the First 90 Days Following Primary THA for Accolade TMZF/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	50.0
2	Peri-prosthetic fracture - Femur	1	50.0

Table 136. Reasons for First Revision Between 91 and 365 days Following Primary THA for Accolade TMZF/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	1	100.0

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Table 137. Descriptive Statistics of Cases Receiving the Accolade TMZF/Trident Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	509	55.63	
Age (years)	915	63.29 (11.20)	63.00 (16.00)
Height (cm)	915	169.96 (10.57)	170.00 (15.24)
Weight (kg)	915	90.26 (21.34)	89.40 (29.33)
BMI(kg/m^2)	915	31.09 (6.17)	30.49 (8.32)
Smoker - Never (%)	418	45.68	
Smoker - Previous (%)	353	38.58	
Smoker - Current (%)	128	13.99	
Smoker - Unknown (%)	16	1.75	

Table 138. Distribution of Approach Used for Accolade TMZF/Trident Combination in Primary THA Cases

Approach	N	Percent
Anterior	8	0.9
Anterolateral	138	15.1
Posterior	759	83.0
Transtrochanteric	3	0.3
Missing/unknown/other	7	0.8

Table 139. Distribution of Head Size for Accolade TMZF/Trident Combination in Primary THA Cases

Size (mm)	N	Percent
28	1	0.1
32	98	10.9
36	694	77.5
40	96	10.7
Missing/unknown/other	7	0.8

Table 140. Distribution of Bearing Surface for Accolade TMZF/Trident Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	497	54.3
Ceramic-on-plastic	389	42.5
Ceramic-on-ceramic	3	0.3
Metal-on-metal	0	0.0
Dual mobility	18	2.0
Missing/unknown/other	8	0.9

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Table 141. Distribution of Polyethylene Used for Accolade TMZF/Trident Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	908	100.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	0	0.0

Table 142. Volume of Cases by Surgeon and Site for the Accolade TMZF/Trident Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	57 (134)	5 (14)
Cases per site	70 (104)	11 (122)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

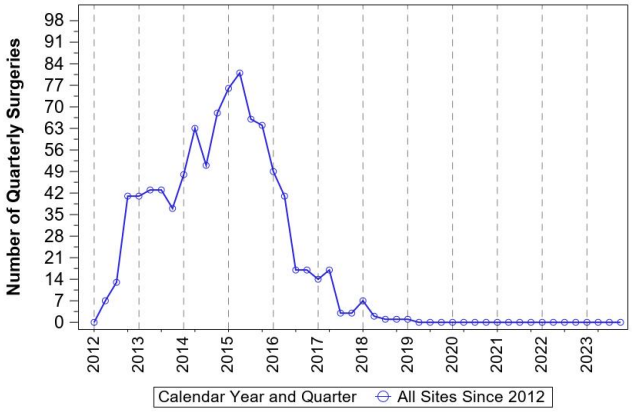


Figure 90. Utilization of the Accolade TMZF/Trident Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

60200335	60212530	60215537
60202530	60214535	60210130
60203535	60210435	60200637
60210335	60200537	60210637
60200230	60210537	60210740
60200435	60210230	60200030
60204535	60205537	60210030
60213535	60200130	

Catalog numbers of Acetabular Cups Used in the Analysis

5021152E	5421158G	5020350D
5021150D	5020158F	5020358F
5021154E	5421148D	5020362G
5021156F	5021162G	5090256E
5421150E	5020352D	5421160G
5421154F	5020356E	5000350D
5021158F	5421146D	5000360F
5020152E	5020154E	5020150D
5021160G	5020360F	5020160G
5021148D	5020148D	5020364G
5020156F	5021164H	5021146C
5421152E	5000352D	5421144C
5020354E	5000354E	
5421156F	5020348C	

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4.1.5 Actis DuoFix/Pinnacle

All Actis DuoFix implants included in this analysis are collared version. N = 7,858 primary cases were used for this analysis. Distribution of utilization: 59 surgeons across 39 sites used this implant combination in primary THA cases.

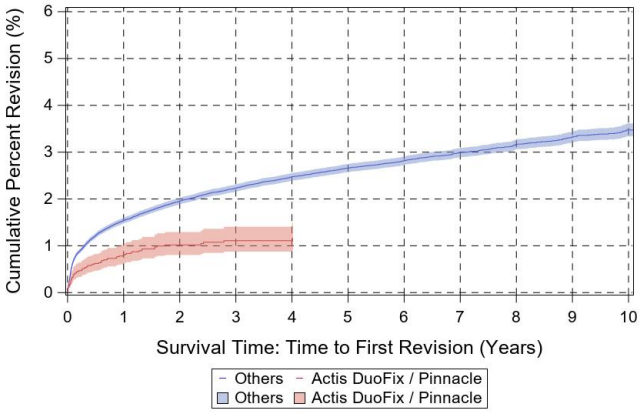


Figure 91. Cumulative Percent Revision Curve for the Actis DuoFix/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases

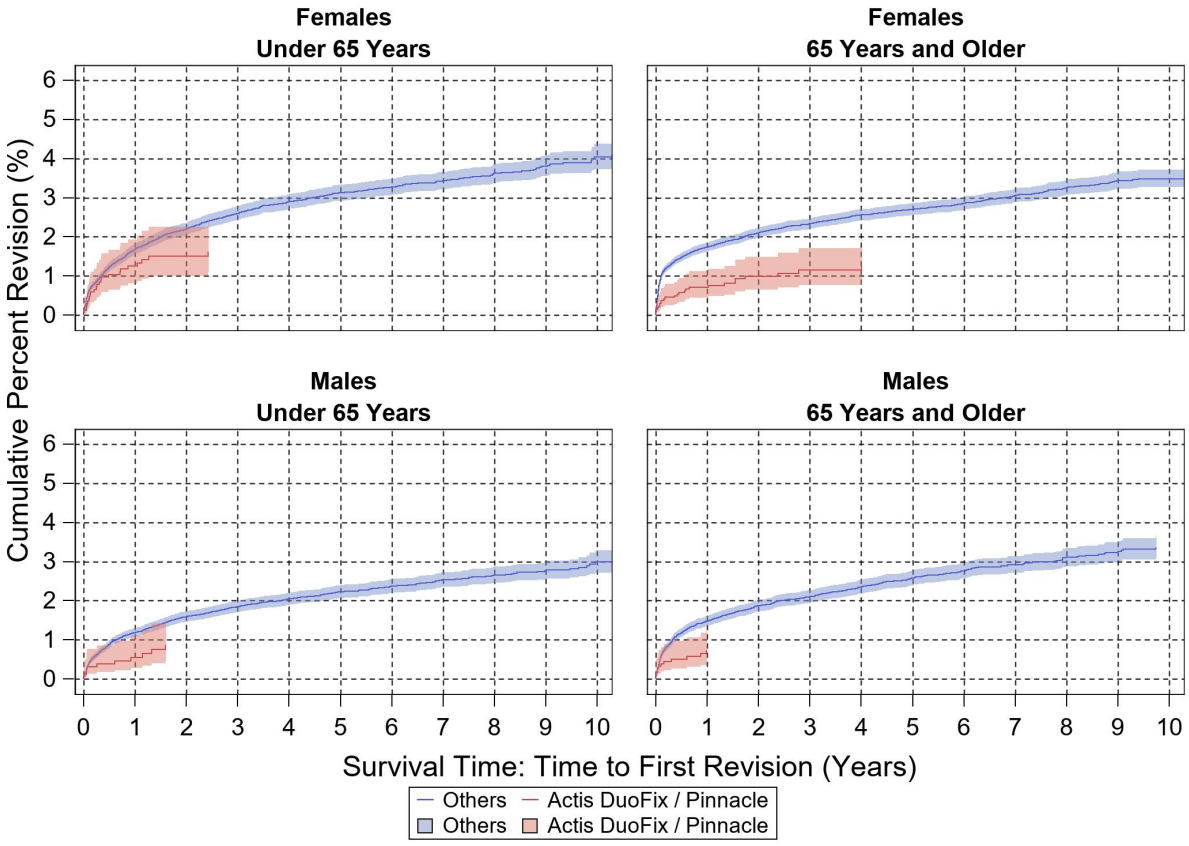


Figure 92. Cumulative Percent Revision Curve for the Actis DuoFix/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 143. Cumulative Percent Revision and Number at Risk for the Actis DuoFix/Pinnacle Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	7,835	0.00 (0.00,0.00)	1,712	0.00 (0.00,0.00)	2,702	0.00 (0.00,0.00)	1,601	0.00 (0.00,0.00)	1,820	0.00 (0.00,0.00)
1	5,583	0.80 (0.62,1.04)	1,257	1.25 (0.81,1.94)	2,002	0.71 (0.44,1.12)	1,087	0.55 (0.28,1.11)	1,237	0.73 (0.41,1.29)
2	4,037	1.02 (0.80,1.29)	896	1.50 (1.00,2.26)	1,519	0.99 (0.65,1.49)	755	0.87 (0.47,1.58)	867	0.73 (0.41,1.29)
3	2,677	1.11 (0.87,1.41)	597	1.63 (1.08,2.44)	1,080	1.14 (0.76,1.71)	469	0.87 (0.47,1.58)	531	0.73 (0.41,1.29)
4	1,606	1.11 (0.87,1.41)	348	1.63 (1.08,2.44)	691	1.14 (0.76,1.71)	280	0.87 (0.47,1.58)	287	0.73 (0.41,1.29)
5	607	1.17 (0.91,1.50)	119	1.63 (1.08,2.44)	285	1.29 (0.85,1.96)	98	0.87 (0.47,1.58)	105	0.73 (0.41,1.29)
6	40	1.17 (0.91,1.50)	*	1.63 (1.08,2.44)	20	1.29 (0.85,1.96)	*	0.87 (0.47,1.58)	*	0.73 (0.41,1.29)
7	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 144. Reasons for First Revision Following Primary THA for Actis DuoFix/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	24	32.9
2	Dislocation/Instability	18	24.7
3	Peri-prosthetic fracture - Femur	11	15.1
4	Pain	6	8.2
5	Aseptic Loosening	5	6.8
6	Malalignment	3	4.1
7	Implant Failure	2	2.7
8	Peri-prosthetic fracture - Acetabulum	2	2.7
9	Metal Reaction/Metallosis	2	2.7

Table 145. Reasons for First Revision in the First 90 Days Following Primary THA for Actis DuoFix/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	12	33.3
2	Joint Infection	10	27.8
3	Peri-prosthetic fracture - Femur	8	22.2
4	Peri-prosthetic fracture - Acetabulum	2	5.6
5	Aseptic Loosening	1	2.8
6	Metal Reaction/Metallosis	1	2.8
7	Pain	1	2.8
8	Malalignment	1	2.8

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Table 146. Reasons for First Revision Between 91 and 365 days Following Primary THA for Actis DuoFix/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	9	40.9
2	Dislocation/Instability	4	18.2
3	Pain	4	18.2
4	Peri-prosthetic fracture - Femur	2	9.1
5	Aseptic Loosening	1	4.6
6	Implant Failure	1	4.6
7	Malalignment	1	4.6

Table 147. Descriptive Statistics of Cases Receiving the Actis DuoFix/Pinnacle Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	4,427	56.34	
Age (years)	7,858	65.85 (10.02)	66.00 (13.00)
Height (cm)	7,858	169.80 (10.39)	170.00 (15.24)
Weight (kg)	7,858	89.31 (21.05)	87.54 (28.87)
BMI(kg/m^2)	7,858	30.85 (6.27)	30.10 (8.42)
Smoker - Never (%)	3,936	50.09	
Smoker - Previous (%)	2,849	36.26	
Smoker - Current (%)	1,061	13.5	
Smoker - Unknown (%)	12	0.15	

Table 148. Distribution of Approach Used for Actis DuoFix/Pinnacle Combination in Primary THA Cases

Approach	N	Percent
Anterior	4,645	59.1
Anterolateral	1105	14.1
Posterior	2,107	26.8
Transtrochanteric	0	0.0
Missing/unknown/other	1	0.0

Table 149. Distribution of Head Size for Actis DuoFix/Pinnacle Combination in Primary THA Cases

Size (mm)	N	Percent
22	12	0.1
28	76	1.0
32	1,776	22.8
36	5,134	66.0
40	768	9.9
Missing/unknown/other	9	0.1

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Table 150. Distribution of Bearing Surface for Actis DuoFix/Pinnacle Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	815	10.4
Ceramic-on-plastic	6,944	88.4
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	32	0.4
Missing/unknown/other	67	0.8

Table 151. Distribution of Polyethylene Used for Actis DuoFix/Pinnacle Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	50	0.6
XLPE	6,825	87.5
Antioxidant XLPE	0	0.0
Missing/unknown/other	925	11.9

Table 152. Volume of Cases by Surgeon and Site for the Actis DuoFix/Pinnacle Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	133 (221)	32 (150)
Cases per site	201 (326)	37 (316)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

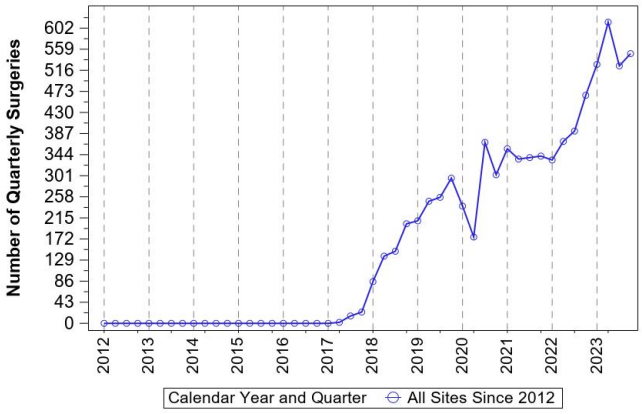


Figure 93. Utilization of the Actis DuoFix/Pinnacle Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

101011060	101012040	101011010
101011050	101012030	101012010
101011040	101012080	101011110
101011070	101011090	101012110
101012060	101011020	101012120
101011030	101012090	101011120
101011080	101012020	
101012070	101011100	
101012050	101012100	

Catalog numbers of Acetabular Cups Used in the Analysis

121732052	121722048	121701054
121732054	121732064	121703058
121732056	121703054	121730060
121732058	121722060	121722062
121732050	121731048	121732066
121722052	121730052	121730062
121732048	121703056	121701056
121732060	121703048	121701058
121722054	121731060	121703060
121722050	121730056	121720044
121732062	121730054	121722064
121722056	121703050	121730066
121731052	121730050	121703062
121731054	121701052	121703064
121731056	121730058	121716068
121722058	121720046	121730068
121703052	121730048	121731046
121731050	121701048	
121730046	121730044	
121731058	121701050	

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4.1.6 AML/Pinnacle

N = 804 primary cases were used for this analysis. Distribution of utilization: 17 surgeons across 14 sites used this implant combination in primary THA cases.

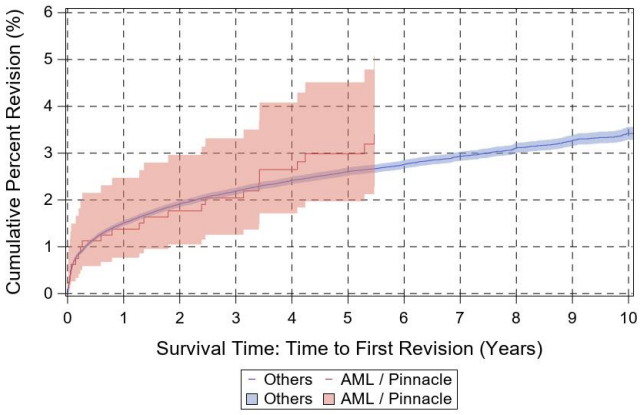


Figure 94. Cumulative Percent Revision Curve for the AML/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases

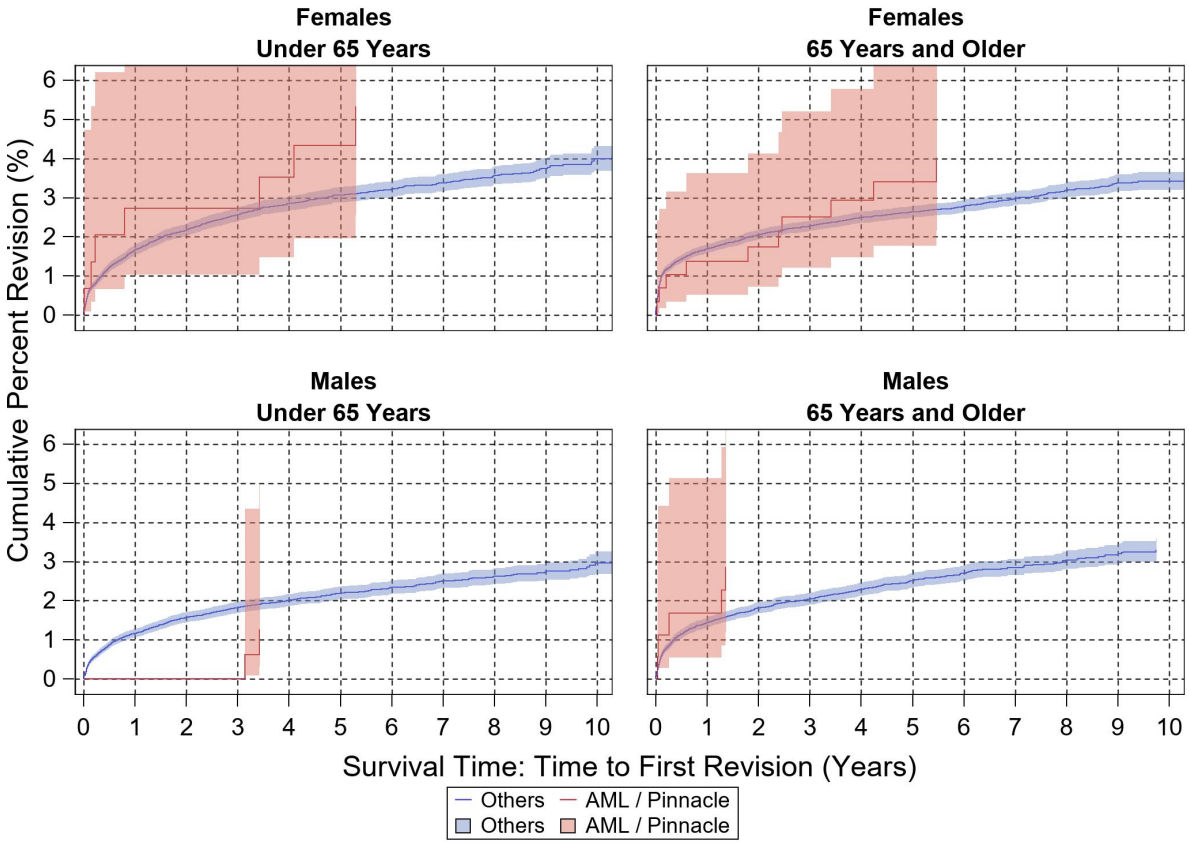


Figure 95. Cumulative Percent Revision Curve for the AML/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 153. Cumulative Percent Revision and Number at Risk for the AML/Pinnacle Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	800	0.00 (0.00,0.00)	147	0.00 (0.00,0.00)	291	0.00 (0.00,0.00)	184	0.00 (0.00,0.00)	178	0.00 (0.00,0.00)
1	775	1.38 (0.77,2.47)	141	2.73 (1.03,7.11)	281	1.38 (0.52,3.63)	182	0.00 (0.00,0.00)	171	1.69 (0.55,5.13)
2	745	1.77 (1.05,2.96)	139	2.73 (1.03,7.11)	267	1.74 (0.73,4.13)	178	0.00 (0.00,0.00)	161	2.86 (1.20,6.73)
3	668	2.04 (1.26,3.32)	129	2.73 (1.03,7.11)	241	2.51 (1.20,5.20)	160	0.00 (0.00,0.00)	138	2.86 (1.20,6.73)
4	598	2.65 (1.71,4.08)	120	3.52 (1.48,8.27)	220	2.93 (1.47,5.78)	143	1.27 (0.32,4.98)	115	2.86 (1.20,6.73)
5	506	2.99 (1.97,4.51)	101	4.34 (1.97,9.43)	182	3.40 (1.78,6.46)	122	1.27 (0.32,4.98)	101	2.86 (1.20,6.73)
6	372	3.41 (2.28,5.07)	78	5.34 (2.56,10.96)	129	4.02 (2.15,7.44)	89	1.27 (0.32,4.98)	76	2.86 (1.20,6.73)
7	269	3.41 (2.28,5.07)	58	5.34 (2.56,10.96)	99	4.02 (2.15,7.44)	57	1.27 (0.32,4.98)	55	2.86 (1.20,6.73)
8	171	3.41 (2.28,5.07)	39	5.34 (2.56,10.96)	64	4.02 (2.15,7.44)	32	1.27 (0.32,4.98)	36	2.86 (1.20,6.73)
9	90	3.41 (2.28,5.07)	18	5.34 (2.56,10.96)	32	4.02 (2.15,7.44)	19	1.27 (0.32,4.98)	21	2.86 (1.20,6.73)
10	24	3.41 (2.28,5.07)	*	5.34 (2.56,10.96)	*	4.02 (2.15,7.44)	*	1.27 (0.32,4.98)	*	2.86 (1.20,6.73)

* Denotes that the number of cases is between 1 and 10.

Table 154. Reasons for First Revision Following Primary THA for AML/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	9	37.5
2	Dislocation/Instability	7	29.2
3	Aseptic Loosening	3	12.5
4	Pain	2	8.3
5	Poly liner wear	1	4.2
6	Peri-prosthetic fracture - Acetabulum	1	4.2
7	Malalignment	1	4.2

Table 155. Reasons for First Revision in the First 90 Days Following Primary THA for AML/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	4	50.0
2	Joint Infection	2	25.0
3	Peri-prosthetic fracture - Acetabulum	1	12.5
4	Malalignment	1	12.5

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Table 156. Reasons for First Revision Between 91 and 365 days Following Primary THA for AML/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	2	66.7
2	Dislocation/Instability	1	33.3

Table 157. Descriptive Statistics of Cases Receiving the AML/Pinnacle Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	441	54.85	
Age (years)	804	66.91 (10.53)	67.00 (15.00)
Height (cm)	804	169.87 (10.44)	170.00 (15.24)
Weight (kg)	804	89.81 (21.13)	87.90 (28.15)
BMI(kg/m^2)	804	31.04 (6.47)	30.40 (8.47)
Smoker - Never (%)	372	46.27	
Smoker - Previous (%)	296	36.82	
Smoker - Current (%)	136	16.92	
Smoker - Unknown (%)	0	0.0	

Table 158. Distribution of Approach Used for AML/Pinnacle Combination in Primary THA Cases

Approach	N	Percent
Anterior	9	1.1
Anterolateral	636	79.1
Posterior	157	19.5
Transtrochanteric	0	0.0
Missing/unknown/other	2	0.2

Table 159. Distribution of Head Size for AML/Pinnacle Combination in Primary THA Cases

Size (mm)	N	Percent
22	1	0.1
28	5	0.6
32	184	23.0
36	501	62.7
40	106	13.3
44	1	0.1
Missing/unknown/other	1	0.1

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Table 160. Distribution of Bearing Surface for AML/Pinnacle Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	699	86.9
Ceramic-on-plastic	99	12.3
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	6	0.8

Table 161. Distribution of Polyethylene Used for AML/Pinnacle Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	731	91.5
Antioxidant XLPE	0	0.0
Missing/unknown/other	68	8.5

Table 162. Volume of Cases by Surgeon and Site for the AML/Pinnacle Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	47 (110)	5 (17)
Cases per site	57 (138)	8 (51)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

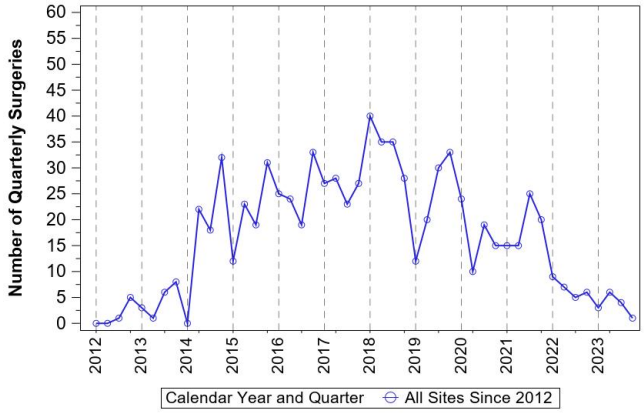


Figure 96. Utilization of the AML/Pinnacle Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

155402135	155401150	155401195
155402121	155401165	155401210
155401121	155402106	155403150
155402150	155402180	155403165
155401135	155401180	155403180
155402165	155403135	
155401106	155402195	

Catalog numbers of Acetabular Cups Used in the Analysis

121701052	121732062	121731050
121701054	121703048	121703060
121732054	121701060	121722058
121701050	121703056	121722060
121732052	121703050	121730048
121701056	121730050	121731048
121701048	121732064	121720046
121732058	121701062	121720052
121732056	121703058	121722062
121732050	121722048	121730056
121701058	121722050	121730064
121732060	121731052	121731056
121732048	121731054	121731058
121703052	121720044	
121703054	121722054	
121722052	121730054	

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4.1.7 Anthology/PolarCup

N = 552 primary cases were used for this analysis. Fewer than ten surgeons used this implant combination at fewer than ten sites in primary THA cases.

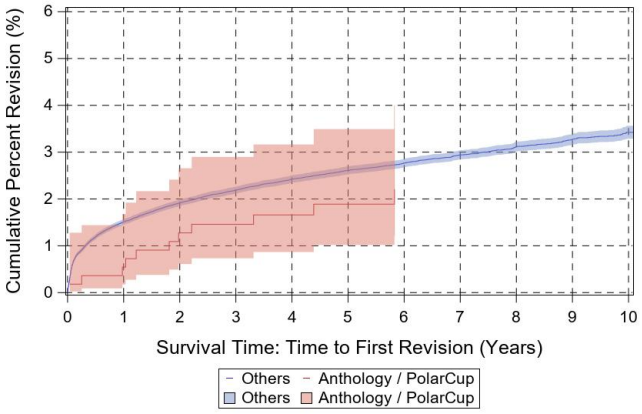


Figure 97. Cumulative Percent Revision Curve for the Anthology/PolarCup Combination, Compared to All Other Implant Combinations in Primary THA Cases

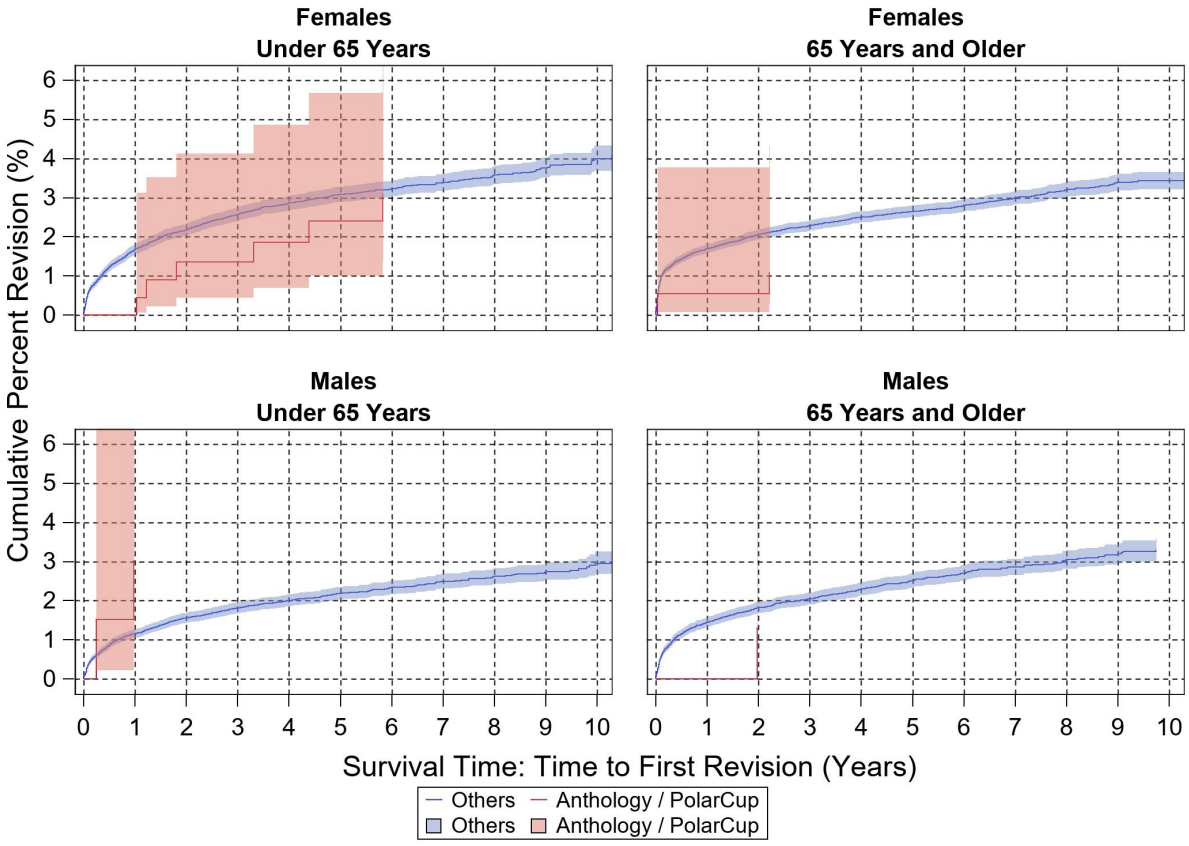


Figure 98. Cumulative Percent Revision Curve for the Anthology/PolarCup Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 163. Cumulative Percent Revision and Number at Risk for the Anthology/PolarCup Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	552	0.00 (0.00,0.00)	225	0.00 (0.00,0.00)	185	0.00 (0.00,0.00)	66	0.00 (0.00,0.00)	76	0.00 (0.00,0.00)
1	548	0.54 (0.18,1.68)	224	0.00 (0.00,0.00)	184	0.54 (0.08,3.77)	64	3.03 (0.77,11.58)	76	0.00 (0.00,0.00)
2	535	1.28 (0.61,2.66)	216	1.35 (0.44,4.13)	180	0.54 (0.08,3.77)	64	3.03 (0.77,11.58)	75	1.32 (0.19,8.97)
3	520	1.46 (0.73,2.90)	208	1.35 (0.44,4.13)	176	1.09 (0.27,4.30)	63	3.03 (0.77,11.58)	73	1.32 (0.19,8.97)
4	458	1.66 (0.87,3.17)	190	1.85 (0.70,4.87)	140	1.09 (0.27,4.30)	60	3.03 (0.77,11.58)	68	1.32 (0.19,8.97)
5	385	1.89 (1.02,3.49)	164	2.40 (1.00,5.68)	116	1.09 (0.27,4.30)	51	3.03 (0.77,11.58)	54	1.32 (0.19,8.97)
6	293	2.21 (1.21,4.00)	131	3.11 (1.39,6.88)	87	1.09 (0.27,4.30)	34	3.03 (0.77,11.58)	41	1.32 (0.19,8.97)
7	183	2.21 (1.21,4.00)	84	3.11 (1.39,6.88)	55	1.09 (0.27,4.30)	18	3.03 (0.77,11.58)	26	1.32 (0.19,8.97)
8	71	2.21 (1.21,4.00)	37	3.11 (1.39,6.88)	17	1.09 (0.27,4.30)	*	3.03 (0.77,11.58)	*	1.32 (0.19,8.97)
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 164. Reasons for First Revision Following Primary THA for Anthology/PolarCup Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	5	45.5
2	Malalignment	2	18.2
3	Joint Infection	1	9.1
4	Peri-prosthetic fracture - Acetabulum	1	9.1
5	Peri-prosthetic fracture - Femur	1	9.1
6	Metal Reaction/Metallosis	1	9.1

Table 165. Reasons for First Revision in the First 90 Days Following Primary THA for Anthology/PolarCup Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Acetabulum	1	100.0

Table 166. Reasons for First Revision Between 91 and 365 days Following Primary THA for Anthology/PolarCup Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	50.0
2	Joint Infection	1	50.0

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Table 167. Descriptive Statistics of Cases Receiving the Anthology/PolarCup Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	410	74.28	
Age (years)	552	62.74 (11.58)	63.50 (14.00)
Height (cm)	552	166.88 (8.84)	167.00 (12.98)
Weight (kg)	552	87.73 (23.97)	83.85 (28.90)
BMI(kg/m^2)	552	31.45 (8.08)	29.93 (8.95)
Smoker - Never (%)	283	51.27	
Smoker - Previous (%)	212	38.41	
Smoker - Current (%)	57	10.33	
Smoker - Unknown (%)	0	0.0	

Table 168. Distribution of Approach Used for Anthology/PolarCup Combination in Primary THA Cases

Approach	N	Percent
Anterior	4	0.7
Anterolateral	481	87.1
Posterior	0	0.0
Transtrochanteric	67	12.1
Missing/unknown/other	0	0.0

Table 169. Distribution of Bearing Surface for Anthology/PolarCup Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	0	0.0
Ceramic-on-plastic	0	0.0
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	546	98.9
Missing/unknown/other	6	1.1

Table 170. Distribution of Polyethylene Used for Anthology/PolarCup Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	546	100.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	0	0.0

Table 171. Volume of Cases by Surgeon and Site for the Anthology/PolarCup Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	138 (258)	13 (272)
Cases per site	184 (295)	26 (524)

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The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

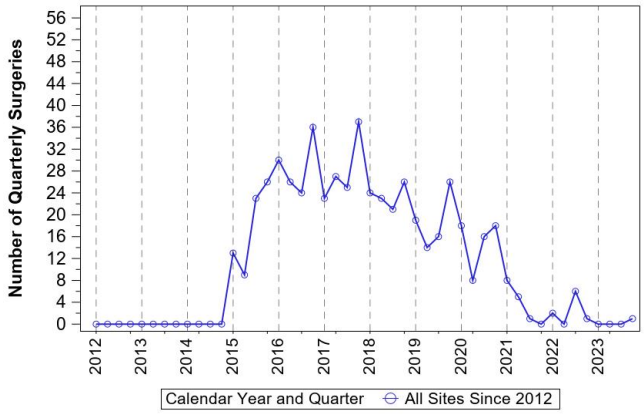


Figure 99. Utilization of the Anthology/PolarCup Combination in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

71356004	71356009	71356107
71356005	71356010	71356011
71356003	71356109	71356101
71356006	71356106	71356102
71356007	71356012	71356112
71356002	71356103	71357004
71356008	71356104	71357007
71356001	71356105	

Catalog numbers of Acetabular Cups Used in the Analysis

75100409	75100413	75100451
75100410	75100414	75100453
75100411	75100407	75100457
75100408	75100406	
75100412	75100415	

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4.1.8 Anthology/Reflection 3

N = 5,880 primary cases were used for this analysis. Distribution of utilization: 61 surgeons across 39 sites used this implant combination in primary THA cases.

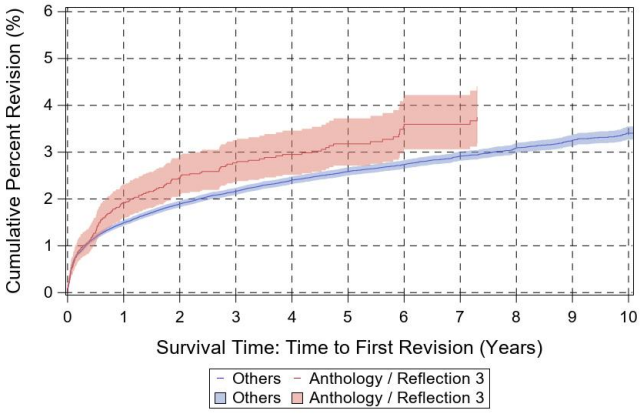


Figure 100. Cumulative Percent Revision Curve for the Anthology/Reflection 3 Combination, Compared to All Other Implant Combinations in Primary THA Cases

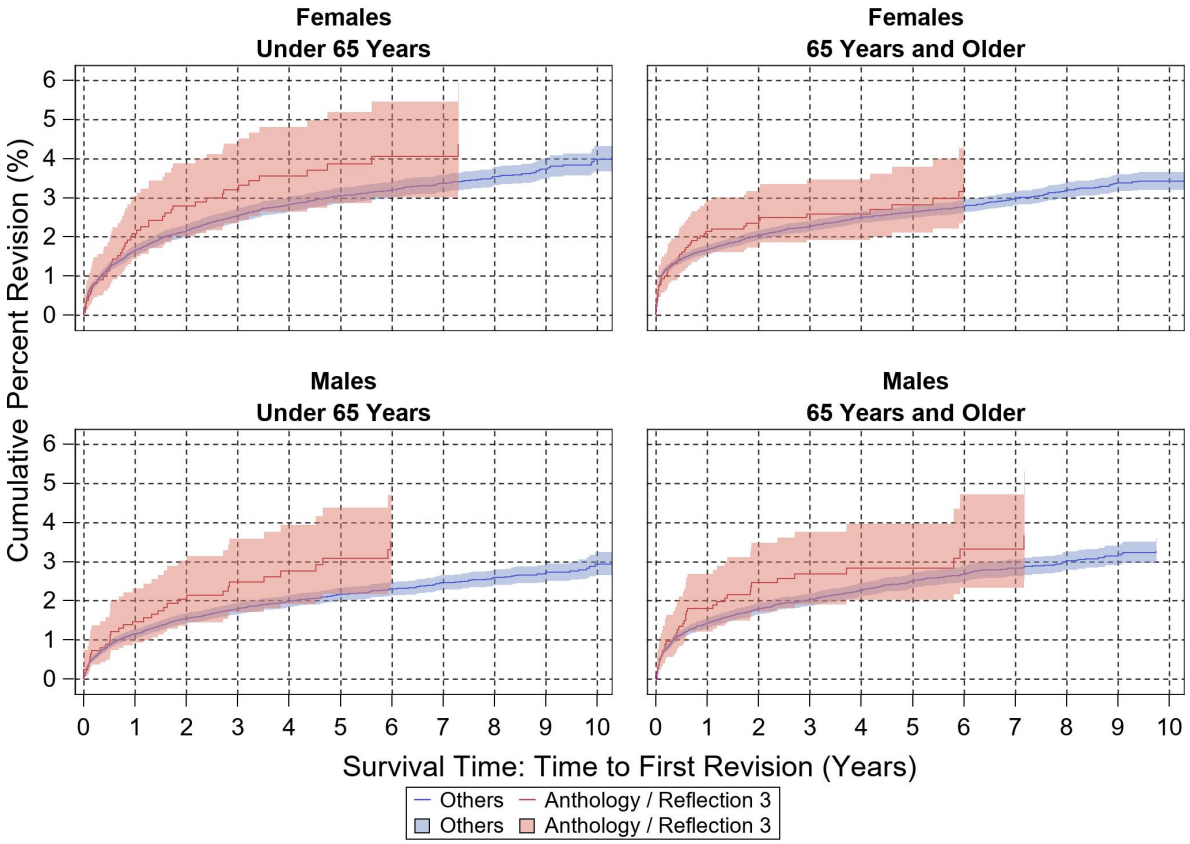


Figure 101. Cumulative Percent Revision Curve for the Anthology/Reflection 3 Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 172. Cumulative Percent Revision and Number at Risk for the Anthology/Reflection 3 Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	5,849	0.00 (0.00,0.00)	1,358	0.00 (0.00,0.00)	1,839	0.00 (0.00,0.00)	1,270	0.00 (0.00,0.00)	1,378	0.00 (0.00,0.00)
1	5,072	1.92 (1.59,2.31)	1,181	2.08 (1.43,3.02)	1,589	2.14 (1.56,2.93)	1,128	1.47 (0.93,2.32)	1,171	1.81 (1.21,2.68)
2	4,236	2.45 (2.07,2.89)	1,006	2.79 (2.01,3.87)	1,316	2.34 (1.73,3.17)	957	2.03 (1.36,3.02)	956	2.46 (1.73,3.48)
3	3,568	2.77 (2.36,3.26)	858	3.21 (2.35,4.37)	1,105	2.58 (1.92,3.46)	806	2.48 (1.71,3.59)	799	2.68 (1.91,3.76)
4	2,897	2.95 (2.52,3.46)	717	3.56 (2.63,4.80)	885	2.58 (1.92,3.46)	668	2.75 (1.92,3.94)	627	2.83 (2.02,3.96)
5	2,300	3.18 (2.71,3.72)	589	3.86 (2.86,5.18)	701	2.82 (2.10,3.78)	532	3.08 (2.17,4.38)	478	2.83 (2.02,3.96)
6	1,781	3.60 (3.06,4.22)	440	4.06 (3.01,5.46)	525	3.34 (2.47,4.52)	432	3.53 (2.48,5.01)	384	3.32 (2.33,4.72)
7	1,381	3.60 (3.06,4.22)	344	4.06 (3.01,5.46)	397	3.34 (2.47,4.52)	348	3.53 (2.48,5.01)	292	3.32 (2.33,4.72)
8	884	3.75 (3.18,4.41)	213	4.37 (3.20,5.94)	229	3.34 (2.47,4.52)	249	3.53 (2.48,5.01)	193	3.68 (2.54,5.31)
9	456	3.75 (3.18,4.41)	118	4.37 (3.20,5.94)	117	3.34 (2.47,4.52)	139	3.53 (2.48,5.01)	82	3.68 (2.54,5.31)
10	128	3.75 (3.18,4.41)	35	4.37 (3.20,5.94)	32	3.34 (2.47,4.52)	39	3.53 (2.48,5.01)	22	3.68 (2.54,5.31)

Table 173. Reasons for First Revision Following Primary THA for Anthology/Reflection 3 Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	38	23.3
2	Aseptic Loosening	34	20.9
3	Joint Infection	32	19.6
4	Peri-prosthetic fracture - Femur	29	17.8
5	Implant Failure	10	6.1
6	Malalignment	10	6.1
7	Pain	7	4.3
8	Peri-prosthetic fracture - Acetabulum	2	1.2
9	Metal Reaction/Metallosis	1	0.6

Table 174. Reasons for First Revision in the First 90 Days Following Primary THA for Anthology/Reflection 3 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	23	42.6
2	Dislocation/Instability	10	18.5
3	Joint Infection	9	16.7
4	Implant Failure	4	7.4
5	Aseptic Loosening	3	5.6
6	Malalignment	3	5.6
7	Peri-prosthetic fracture - Acetabulum	2	3.7

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Table 175. Reasons for First Revision Between 91 and 365 days Following Primary THA for Anthology/Reflection 3 Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	16	32.6
2	Aseptic Loosening	11	22.4
3	Joint Infection	11	22.4
4	Pain	5	10.2
5	Peri-prosthetic fracture - Femur	3	6.1
6	Malalignment	2	4.1
7	Implant Failure	1	2.0

Table 176. Descriptive Statistics of Cases Receiving the Anthology/Reflection 3 Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	3,213	54.64	
Age (years)	5,880	65.29 (10.47)	66.00 (13.00)
Height (cm)	5,880	169.80 (10.24)	170.00 (15.24)
Weight (kg)	5,880	90.80 (21.92)	88.81 (29.00)
BMI(kg/m^2)	5,880	31.39 (6.65)	30.55 (8.81)
Smoker - Never (%)	2,851	48.49	
Smoker - Previous (%)	2,223	37.81	
Smoker - Current (%)	794	13.5	
Smoker - Unknown (%)	12	0.2	

Table 177. Distribution of Approach Used for Anthology/Reflection 3 Combination in Primary THA Cases

Approach	N	Percent
Anterior	3,215	54.7
Anterolateral	1930	32.8
Posterior	715	12.2
Transtrochanteric	16	0.3
Missing/unknown/other	4	0.1

Table 178. Distribution of Head Size for Anthology/Reflection 3 Combination in Primary THA Cases

Size (mm)	N	Percent
22	3	0.1
28	33	0.6
32	1,259	22.2
36	3,938	69.6
40	386	6.8
44	16	0.3
Missing/unknown/other	23	0.4

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Table 179. Distribution of Bearing Surface for Anthology/Reflection 3 Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,114	18.9
Ceramic-on-plastic	4,520	76.9
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	213	3.6
Missing/unknown/other	33	0.6

Table 180. Distribution of Polyethylene Used for Anthology/Reflection 3 Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	1	0.0
XLPE	5,026	85.9
Antioxidant XLPE	0	0.0
Missing/unknown/other	827	14.1

Table 181. Volume of Cases by Surgeon and Site for the Anthology/Reflection 3 Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	96 (200)	14 (69)
Cases per site	150 (232)	48 (215)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

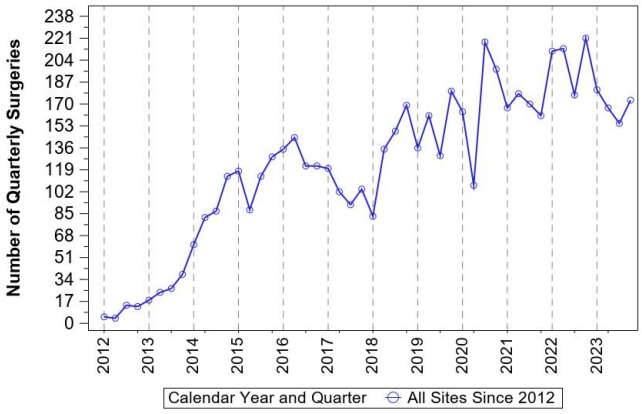


Figure 102. Utilization of the Anthology/Reflection 3 Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

71356006	71357008	71356012
71356007	71357108	71357104
71356106	71357106	71357103
71356108	71356103	71356001
71356008	71356111	71357112
71356107	71357005	71357011
71356005	71356011	71357002
71356105	71357109	71356113
71356009	71357004	71357012
71356004	71357105	71356013
71356010	71357009	71356101
71356109	71357110	71356114
71356110	71356002	71357102
71356104	71357003	71357001
71356003	71356112	71357101
71357006	71357010	71356014
71357007	71357111	
71357107	71356102	

Catalog numbers of Acetabular Cups Used in the Analysis

71335552	71331850	71331846
71335554	71331858	71338664
71335556	71331860	71338663
71335550	71331848	71331862
71335558	71335564	71331864
71335560	71338667	71335544
71335548	71338665	71335566
71331854	71335546	71335568
71331852	71338666	71338671
71331856	71338668	
71335562	71338669	

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4.1.9 Avenir (Cemented)/G7

N = 1,377 primary cases were used for this analysis. Distribution of utilization: 51 surgeons across 36 sites used this implant combination in primary THA cases.

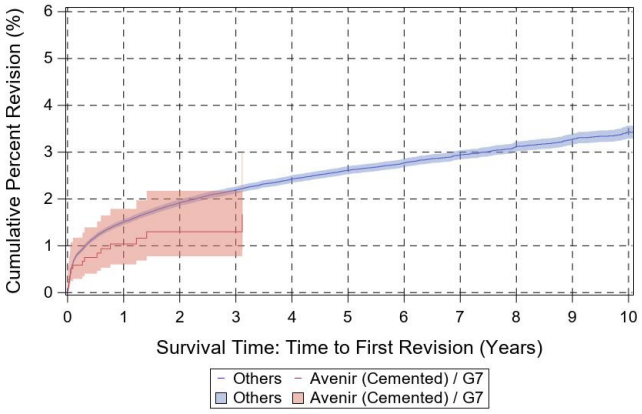


Figure 103. Cumulative Percent Revision Curve for the Avenir (Cemented)/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases

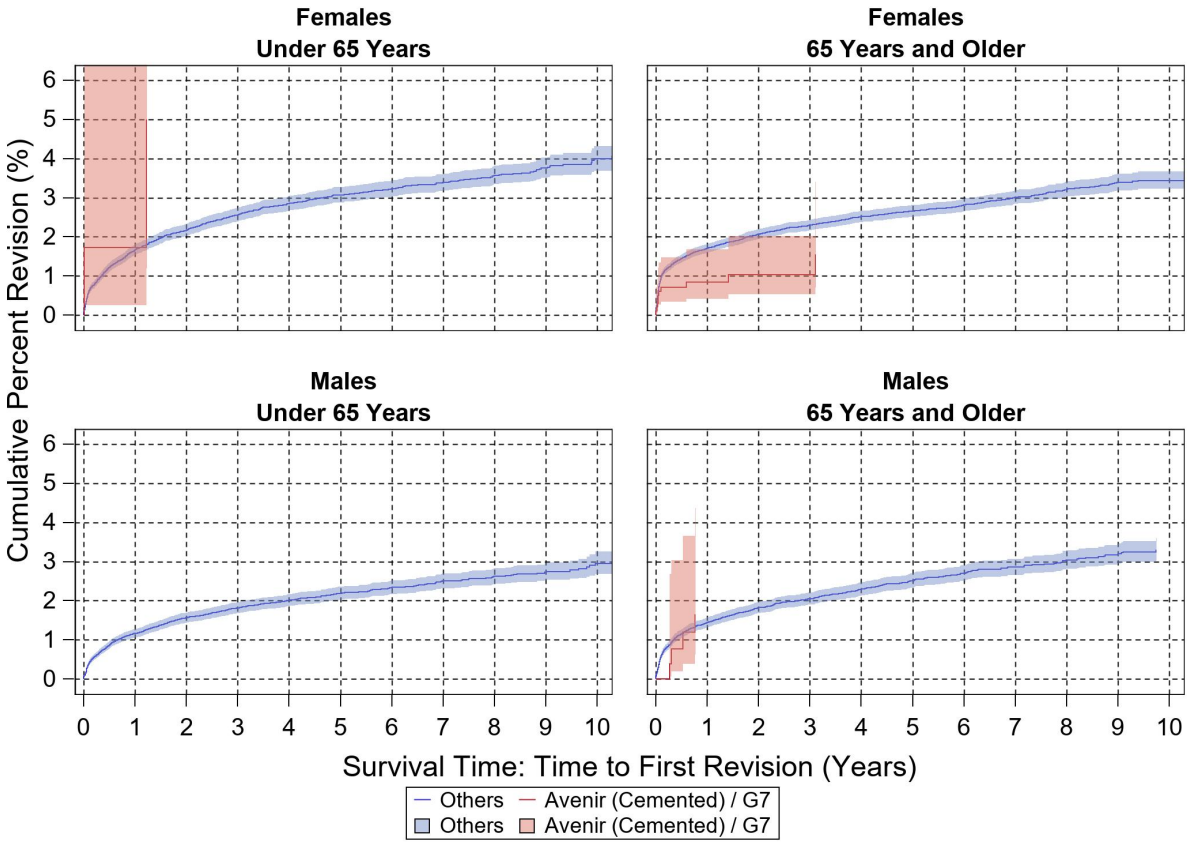


Figure 104. Cumulative Percent Revision Curve for the Avenir (Cemented)/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 182. Cumulative Percent Revision and Number at Risk for the Avenir (Cemented)/G7 Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,371	0.00 (0.00,0.00)	58	0.00 (0.00,0.00)	998	0.00 (0.00,0.00)	22	0.00 (0.00,0.00)	292	0.00 (0.00,0.00)
1	874	1.04 (0.60,1.79)	38	1.72 (0.24,11.62)	624	0.84 (0.42,1.67)	14	0.00 (0.00,0.00)	197	1.65 (0.62,4.36)
2	513	1.30 (0.78,2.18)	14	5.00 (1.19,19.75)	371	1.03 (0.53,2.02)	*	0.00 (0.00,0.00)	119	1.65 (0.62,4.36)
3	279	1.30 (0.78,2.18)	*	5.00 (1.19,19.75)	201	1.03 (0.53,2.02)	*	0.00 (0.00,0.00)	67	1.65 (0.62,4.36)
4	164	1.67 (0.93,3.02)	*	5.00 (1.19,19.75)	114	1.55 (0.70,3.41)	*	0.00 (0.00,0.00)	41	1.65 (0.62,4.36)
5	60	1.67 (0.93,3.02)	0	N/A	43	1.55 (0.70,3.41)	*	0.00 (0.00,0.00)	16	1.65 (0.62,4.36)
6	19	1.67 (0.93,3.02)	0	N/A	14	1.55 (0.70,3.41)	0	N/A	*	1.65 (0.62,4.36)
7	*	1.67 (0.93,3.02)	0	N/A	*	1.55 (0.70,3.41)	0	N/A	0	N/A
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 183. Reasons for First Revision Following Primary THA for Avenir (Cemented)/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	8	50.0
2	Dislocation/Instability	3	18.8
3	Peri-prosthetic fracture - Femur	2	12.5
4	Aseptic Loosening	1	6.2
5	Implant Failure	1	6.2
6	Peri-prosthetic fracture - Acetabulum	1	6.2

Table 184. Reasons for First Revision in the First 90 Days Following Primary THA for Avenir (Cemented)/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	5	62.5
2	Dislocation/Instability	1	12.5
3	Peri-prosthetic fracture - Acetabulum	1	12.5
4	Peri-prosthetic fracture - Femur	1	12.5

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Table 185. Reasons for First Revision Between 91 and 365 days Following Primary THA for Avenir (Cemented)/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	3	60.0
2	Aseptic Loosening	1	20.0
3	Dislocation/Instability	1	20.0

Table 186. Descriptive Statistics of Cases Receiving the Avenir (Cemented)/G7 Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,060	76.98	
Age (years)	1,377	76.55 (7.68)	77.00 (10.00)
Height (cm)	1,367	165.01 (9.56)	165.00 (12.70)
Weight (kg)	1,367	77.70 (17.22)	76.00 (24.59)
BMI(kg/m^2)	1,367	28.48 (5.57)	27.87 (7.42)
Smoker - Never (%)	741	53.81	
Smoker - Previous (%)	564	40.96	
Smoker - Current (%)	67	4.87	
Smoker - Unknown (%)	5	0.36	

Table 187. Distribution of Approach Used for Avenir (Cemented)/G7 Combination in Primary THA Cases

Approach	N	Percent
Anterior	855	62.1
Anterolateral	87	6.3
Posterior	421	30.6
Transtrochanteric	1	0.1
Missing/unknown/other	13	0.9

Table 188. Distribution of Head Size for Avenir (Cemented)/G7 Combination in Primary THA Cases

Size (mm)	N	Percent
28	2	0.2
32	122	12.5
36	758	77.7
40	77	7.9
Missing/unknown/other	17	1.7

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Table 189. Distribution of Bearing Surface for Avenir (Cemented)/G7 Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	163	11.8
Ceramic-on-plastic	796	57.8
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	363	26.4
Missing/unknown/other	55	4.0

Table 190. Distribution of Polyethylene Used for Avenir (Cemented)/G7 Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	770	57.8
Antioxidant XLPE	434	32.6
Missing/unknown/other	129	9.7

Table 191. Volume of Cases by Surgeon and Site for the Avenir (Cemented)/G7 Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	27 (45)	10 (33)
Cases per site	38 (53)	12 (48)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

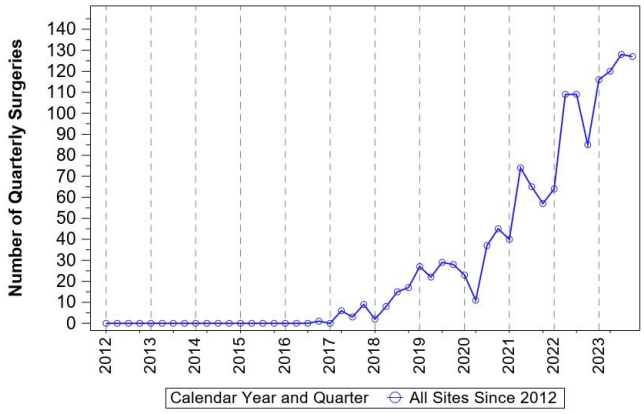


Figure 105. Utilization of the Avenir (Cemented)/G7 Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

106010204	106010201	106010207
106010203	106010206	106010307
106010205	106010306	106010308
106010202	106010303	106010208
106010304	106010301	
106010305	106010302	

Catalog numbers of Acetabular Cups Used in the Analysis

10000663	10000667	110017106
10000662	110010248	10000668
110010244	110017103	110010262
110010243	10000660	110010267
10000664	110017101	110017107
110010245	110017104	10000669
10000665	110010263	110010240
10000661	110010264	110010250
110010246	110010249	110010251
110010242	110010265	110010268
110010247	110010266	110010269
10000666	110017105	110017100
110017102	110010241	

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4.1.10 Avenir (Cementless)/Continuum

N = 525 primary cases were used for this analysis. Distribution of utilization: 17 surgeons across 14 sites used this implant combination in primary THA cases.

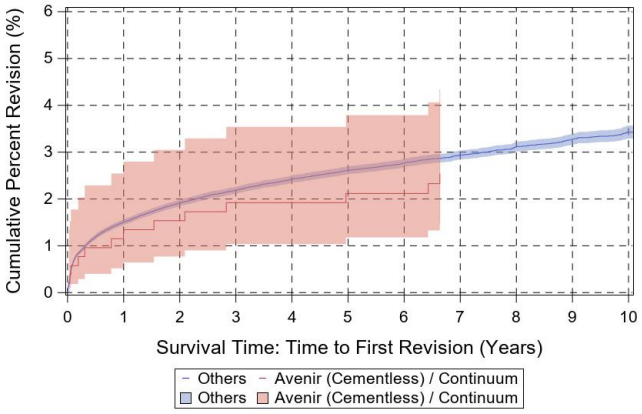


Figure 106. Cumulative Percent Revision Curve for the Avenir (Cementless)/Continuum Combination, Compared to All Other Implant Combinations in Primary THA Cases

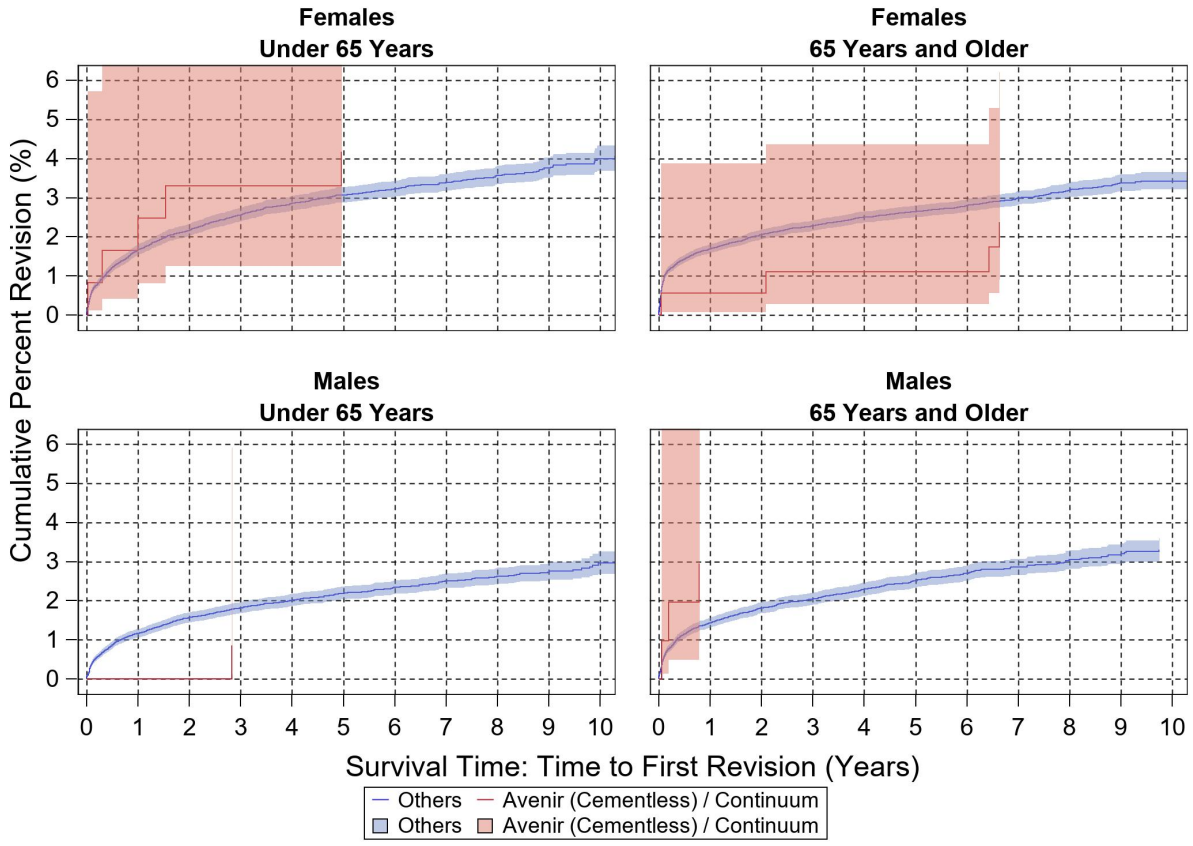


Figure 107. Cumulative Percent Revision Curve for the Avenir (Cementless)/Continuum Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 192. Cumulative Percent Revision and Number at Risk for the Avenir (Cementless)/Continuum Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	521	0.00 (0.00,0.00)	121	0.00 (0.00,0.00)	180	0.00 (0.00,0.00)	118	0.00 (0.00,0.00)	102	0.00 (0.00,0.00)
1	514	1.34 (0.64,2.80)	118	2.48 (0.81,7.49)	179	0.56 (0.08,3.88)	118	0.00 (0.00,0.00)	99	2.94 (0.96,8.84)
2	513	1.54 (0.77,3.05)	117	3.31 (1.25,8.57)	179	0.56 (0.08,3.88)	118	0.00 (0.00,0.00)	99	2.94 (0.96,8.84)
3	505	1.92 (1.04,3.54)	117	3.31 (1.25,8.57)	176	1.11 (0.28,4.37)	115	0.85 (0.12,5.91)	97	2.94 (0.96,8.84)
4	503	1.92 (1.04,3.54)	115	3.31 (1.25,8.57)	176	1.11 (0.28,4.37)	115	0.85 (0.12,5.91)	97	2.94 (0.96,8.84)
5	496	2.12 (1.18,3.79)	111	4.17 (1.76,9.73)	176	1.11 (0.28,4.37)	113	0.85 (0.12,5.91)	96	2.94 (0.96,8.84)
6	481	2.12 (1.18,3.79)	110	4.17 (1.76,9.73)	166	1.11 (0.28,4.37)	110	0.85 (0.12,5.91)	95	2.94 (0.96,8.84)
7	412	2.54 (1.48,4.34)	94	4.17 (1.76,9.73)	135	2.37 (0.89,6.21)	97	0.85 (0.12,5.91)	86	2.94 (0.96,8.84)
8	318	2.54 (1.48,4.34)	76	4.17 (1.76,9.73)	110	2.37 (0.89,6.21)	74	0.85 (0.12,5.91)	58	2.94 (0.96,8.84)
9	189	2.54 (1.48,4.34)	43	4.17 (1.76,9.73)	59	2.37 (0.89,6.21)	51	0.85 (0.12,5.91)	36	2.94 (0.96,8.84)
10	27	2.54 (1.48,4.34)	*	4.17 (1.76,9.73)	*	2.37 (0.89,6.21)	*	0.85 (0.12,5.91)	*	2.94 (0.96,8.84)

* Denotes that the number of cases is between 1 and 10.

Table 193. Reasons for First Revision Following Primary THA for Avenir (Cementless)/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	4	33.3
2	Dislocation/Instability	3	25.0
3	Aseptic Loosening	2	16.7
4	Pain	2	16.7
5	Joint Infection	1	8.3

Table 194. Reasons for First Revision in the First 90 Days Following Primary THA for Avenir (Cementless)/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	2	50.0
2	Aseptic Loosening	1	25.0
3	Dislocation/Instability	1	25.0

Table 195. Reasons for First Revision Between 91 and 365 days Following Primary THA for Avenir (Cementless)/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	1	50.0
2	Pain	1	50.0

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Table 196. Descriptive Statistics of Cases Receiving the Avenir (Cementless)/Continuum Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	303	57.71	
Age (years)	525	65.68 (10.89)	66.00 (14.00)
Height (cm)	513	169.30 (10.49)	168.00 (16.51)
Weight (kg)	513	86.19 (20.68)	84.00 (27.43)
BMI(kg/m^2)	513	29.87 (5.72)	29.30 (7.37)
Smoker - Never (%)	261	49.71	
Smoker - Previous (%)	192	36.57	
Smoker - Current (%)	72	13.71	
Smoker - Unknown (%)	0	0.0	

Table 197. Distribution of Approach Used for Avenir (Cementless)/Continuum Combination in Primary THA Cases

Approach	N	Percent
Anterior	124	23.6
Anterolateral	132	25.1
Posterior	257	49.0
Transtrochanteric	0	0.0
Missing/unknown/other	12	2.3

Table 198. Distribution of Head Size for Avenir (Cementless)/Continuum Combination in Primary THA Cases

Size (mm)	N	Percent
28	3	0.6
32	111	21.2
36	359	68.6
40	46	8.8
Missing/unknown/other	4	0.8

Table 199. Distribution of Bearing Surface for Avenir (Cementless)/Continuum Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	286	54.5
Ceramic-on-plastic	233	44.4
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	6	1.1

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Table 200. Distribution of Polyethylene Used for Avenir (Cementless)/Continuum Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	303	57.9
Antioxidant XLPE	200	38.2
Missing/unknown/other	20	3.8

Table 201. Volume of Cases by Surgeon and Site for the Avenir (Cementless)/Continuum Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	30 (52)	8 (16)
Cases per site	37 (61)	6 (30)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

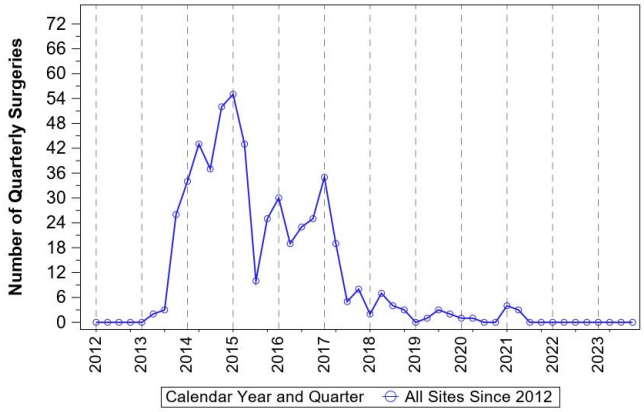


Figure 108. Utilization of the Avenir (Cementless)/Continuum Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

106010004	106010106	106010008
106010003	106010105	106010108
106010005	106010001	106010101
106010002	106010007	106010102
106010006	106010103	106010009
106010104	106010107	

Catalog numbers of Acetabular Cups Used in the Analysis

875705201	875706201	875705402
875705601	875705202	875705602
875705401	875704601	875705802
875705801	875705002	875706002
875705001	875706401	875706402
875704801	875704401	
875706001	875704802	

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4.1.11 Avenir (Cementless)/G7

N = 765 primary cases were used for this analysis. Distribution of utilization: 29 surgeons across 18 sites used this implant combination in primary THA cases.

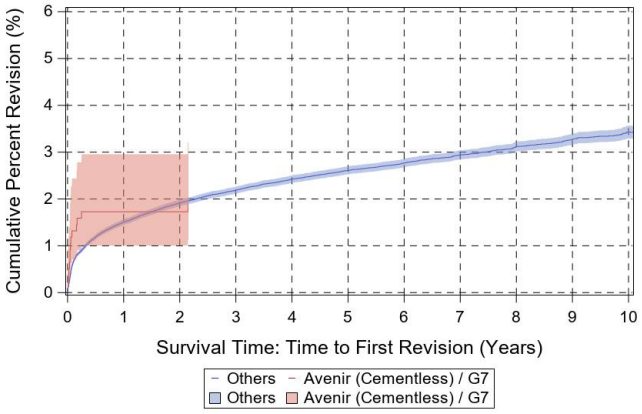


Figure 109. Cumulative Percent Revision Curve for the Avenir (Cementless)/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases

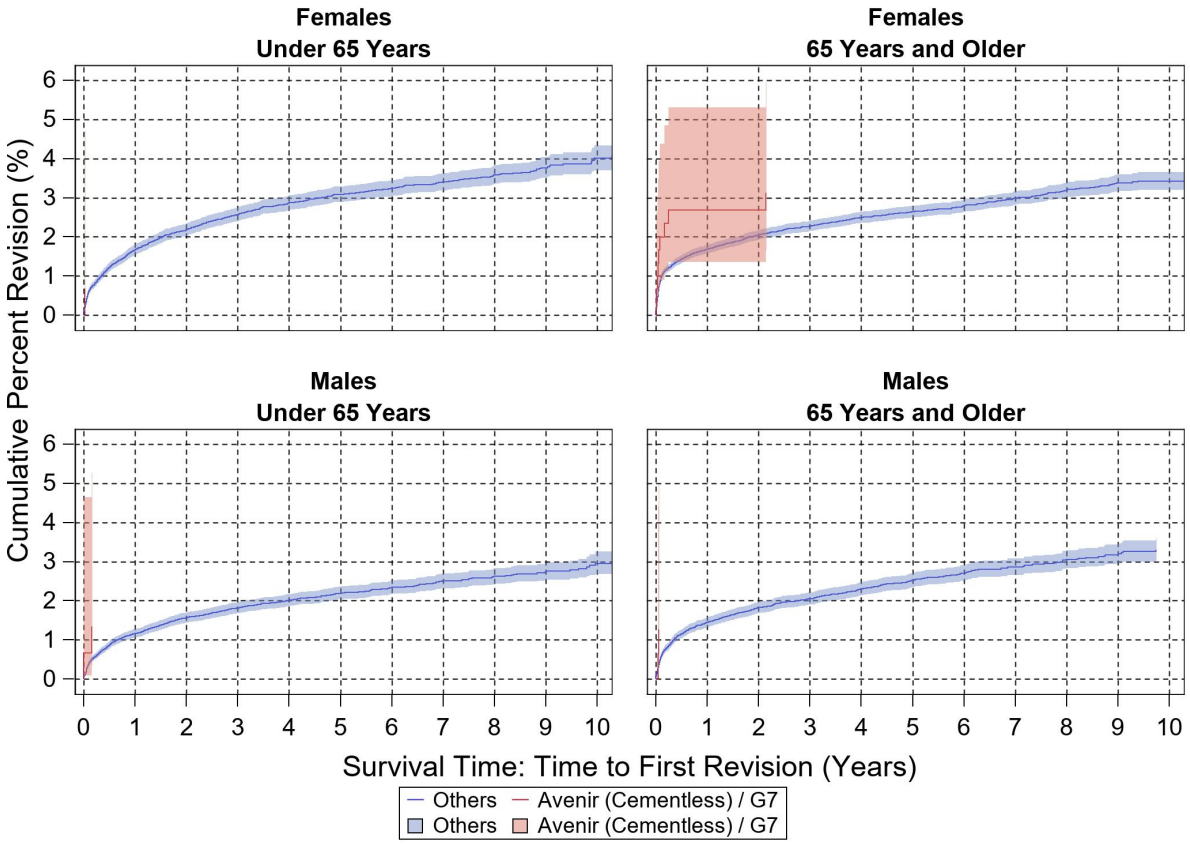


Figure 110. Cumulative Percent Revision Curve for the Avenir (Cementless)/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 202. Cumulative Percent Revision and Number at Risk for the Avenir (Cementless)/G7 Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	762	0.00 (0.00,0.00)	149	0.00 (0.00,0.00)	302	0.00 (0.00,0.00)	150	0.00 (0.00,0.00)	159	0.00 (0.00,0.00)
1	665	1.73 (1.01,2.96)	126	0.68 (0.10,4.70)	261	2.69 (1.35,5.31)	137	1.34 (0.34,5.26)	139	1.27 (0.32,4.98)
2	572	1.73 (1.01,2.96)	107	0.68 (0.10,4.70)	228	2.69 (1.35,5.31)	117	1.34 (0.34,5.26)	118	1.27 (0.32,4.98)
3	501	1.90 (1.13,3.20)	93	0.68 (0.10,4.70)	197	3.13 (1.63,5.95)	107	1.34 (0.34,5.26)	102	1.27 (0.32,4.98)
4	441	1.90 (1.13,3.20)	86	0.68 (0.10,4.70)	171	3.13 (1.63,5.95)	93	1.34 (0.34,5.26)	89	1.27 (0.32,4.98)
5	302	1.90 (1.13,3.20)	64	0.68 (0.10,4.70)	106	3.13 (1.63,5.95)	67	1.34 (0.34,5.26)	65	1.27 (0.32,4.98)
6	186	1.90 (1.13,3.20)	39	0.68 (0.10,4.70)	64	3.13 (1.63,5.95)	39	1.34 (0.34,5.26)	44	1.27 (0.32,4.98)
7	82	1.90 (1.13,3.20)	16	0.68 (0.10,4.70)	34	3.13 (1.63,5.95)	13	1.34 (0.34,5.26)	19	1.27 (0.32,4.98)
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

Table 203. Reasons for First Revision Following Primary THA for Avenir (Cementless)/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	5	35.7
2	Aseptic Loosening	4	28.6
3	Dislocation/Instability	4	28.6
4	Joint Infection	1	7.1

Table 204. Reasons for First Revision in the First 90 Days Following Primary THA for Avenir (Cementless)/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	5	41.7
2	Aseptic Loosening	4	33.3
3	Dislocation/Instability	2	16.7
4	Joint Infection	1	8.3

Table 205. Reasons for First Revision Between 91 and 365 days Following Primary THA for Avenir (Cementless)/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	100.0

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Table 206. Descriptive Statistics of Cases Receiving the Avenir (Cementless)/G7 Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	453	59.22	
Age (years)	765	66.44 (10.63)	67.00 (12.00)
Height (cm)	601	168.67 (9.78)	167.64 (12.76)
Weight (kg)	601	83.94 (18.13)	82.10 (26.10)
BMI(kg/m^2)	601	29.37 (5.20)	29.00 (6.90)
Smoker - Never (%)	374	48.89	
Smoker - Previous (%)	316	41.31	
Smoker - Current (%)	75	9.8	
Smoker - Unknown (%)	0	0.0	

Table 207. Distribution of Approach Used for Avenir (Cementless)/G7 Combination in Primary THA Cases

Approach	N	Percent
Anterior	295	38.6
Anterolateral	32	4.2
Posterior	274	35.8
Transtrochanteric	0	0.0
Missing/unknown/other	164	21.4

Table 208. Distribution of Head Size for Avenir (Cementless)/G7 Combination in Primary THA Cases

Size (mm)	N	Percent
32	46	7.4
36	526	84.7
40	48	7.7
Missing/unknown/other	1	0.2

Table 209. Distribution of Bearing Surface for Avenir (Cementless)/G7 Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	102	13.3
Ceramic-on-plastic	518	67.7
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	140	18.3
Missing/unknown/other	5	0.7

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Table 210. Distribution of Polyethylene Used for Avenir (Cementless)/G7 Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	561	74.0
Antioxidant XLPE	132	17.4
Missing/unknown/other	65	8.6

Table 211. Volume of Cases by Surgeon and Site for the Avenir (Cementless)/G7 Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	26 (69)	2 (22)
Cases per site	42 (90)	6 (61)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

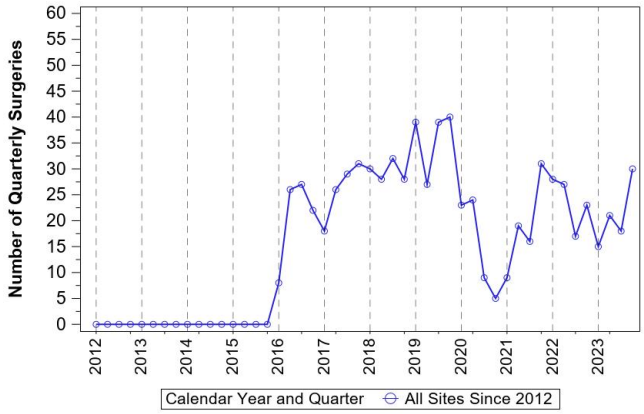


Figure 111. Utilization of the Avenir (Cementless)/G7 Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

106010004	106010006	106010007
106010005	106010106	106010101
106010002	106010103	106010008
106010003	106010107	106010108
106010105	106010102	106010109
106010104	106010001	

Catalog numbers of Acetabular Cups Used in the Analysis

10000664	110010242	10000660
10000663	110010248	10000669
10000665	10000661	110010250
110010244	10000668	110010267
10000662	110010249	110010270
10000666	110010263	110017103
110010243	110010241	110017104
110010245	110010264	110017105
110010246	110010265	
110010247	110010266	
10000667	110010269	

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4.1.12 Avenir Compete/G7

N = 5,442 primary cases were used for this analysis. Distribution of utilization: 73 surgeons across 46 sites used this implant combination in primary THA cases.

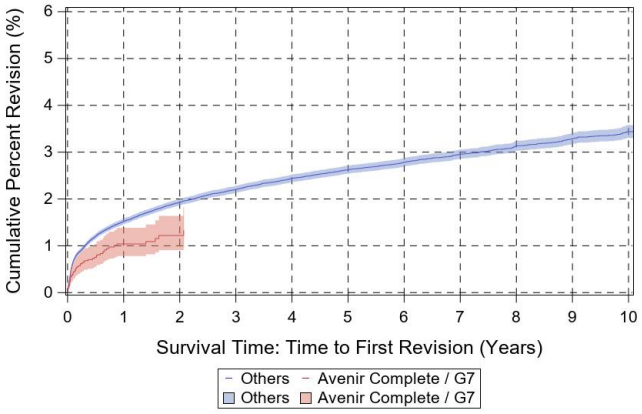


Figure 112. Cumulative Percent Revision Curve for the Avenir Compete/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases

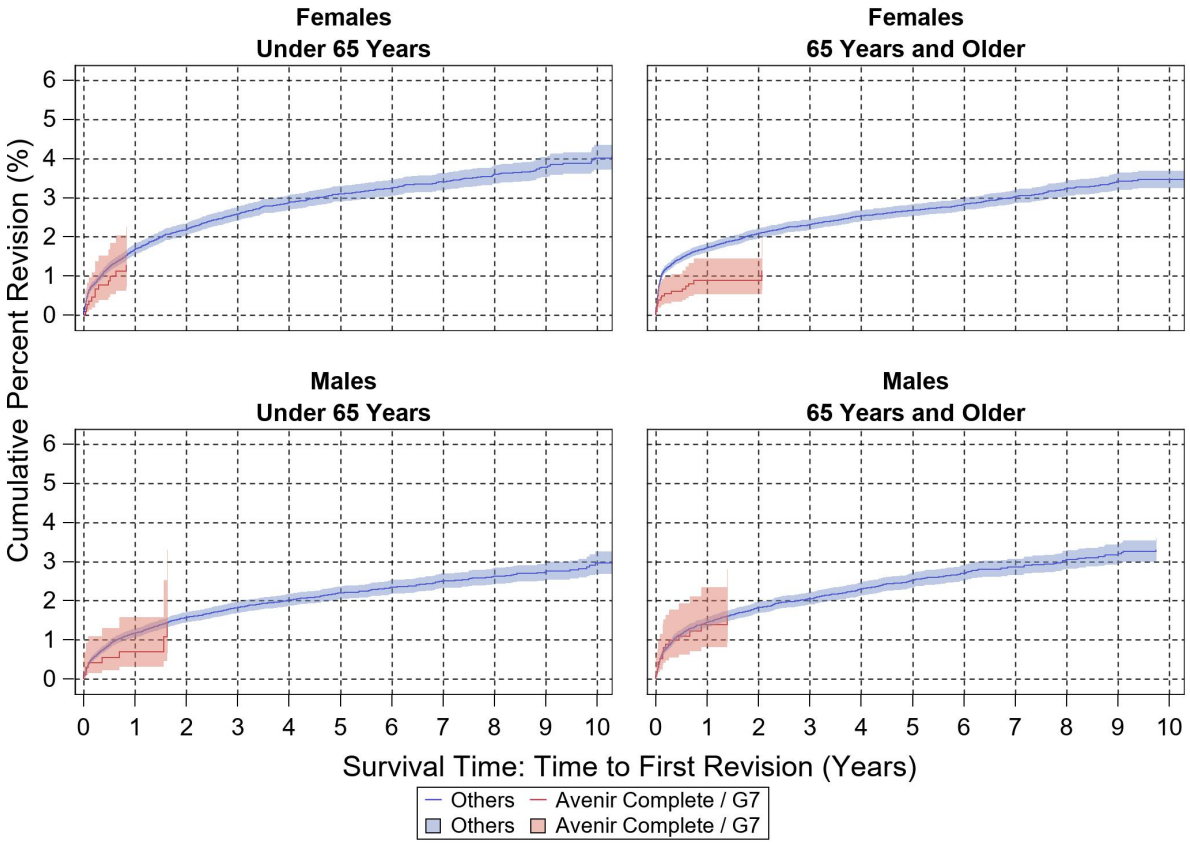


Figure 113. Cumulative Percent Revision Curve for the Avenir Compete/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 212. Cumulative Percent Revision and Number at Risk for the Avenir Compete/G7 Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	5,432	0.00 (0.00,0.00)	1,151	0.00 (0.00,0.00)	2,076	0.00 (0.00,0.00)	1,021	0.00 (0.00,0.00)	1,182	0.00 (0.00,0.00)
1	2,676	1.04 (0.78,1.38)	563	1.28 (0.72,2.26)	1,062	0.88 (0.54,1.44)	473	0.70 (0.31,1.58)	577	1.38 (0.81,2.34)
2	950	1.22 (0.91,1.64)	212	1.28 (0.72,2.26)	405	0.88 (0.54,1.44)	148	1.46 (0.65,3.30)	184	1.63 (0.95,2.79)
3	174	1.33 (0.97,1.83)	41	1.28 (0.72,2.26)	84	1.14 (0.63,2.05)	24	1.46 (0.65,3.30)	25	1.63 (0.95,2.79)
4	11	1.33 (0.97,1.83)	*	1.28 (0.72,2.26)	*	1.14 (0.63,2.05)	*	1.46 (0.65,3.30)	*	1.63 (0.95,2.79)
5	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
6	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
7	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 213. Reasons for First Revision Following Primary THA for Avenir Compete/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	16	30.8
2	Joint Infection	14	26.9
3	Aseptic Loosening	12	23.1
4	Dislocation/Instability	8	15.4
5	Poly liner wear	2	3.8

Table 214. Reasons for First Revision in the First 90 Days Following Primary THA for Avenir Compete/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	14	43.8
2	Joint Infection	7	21.9
3	Aseptic Loosening	6	18.8
4	Dislocation/Instability	4	12.5
5	Poly liner wear	1	3.1

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Table 215. Reasons for First Revision Between 91 and 365 days Following Primary THA for Avenir Compete/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	5	31.2
2	Joint Infection	5	31.2
3	Dislocation/Instability	3	18.8
4	Peri-prosthetic fracture - Femur	2	12.5
5	Poly liner wear	1	6.2

Table 216. Descriptive Statistics of Cases Receiving the Avenir Compete/G7 Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	3,234	59.43	
Age (years)	5,442	66.11 (11.02)	67.00 (14.00)
Height (cm)	5,442	169.08 (10.29)	167.64 (15.24)
Weight (kg)	5,442	85.91 (20.47)	83.91 (27.70)
BMI(kg/m^2)	5,442	29.91 (6.01)	29.28 (8.02)
Smoker - Never (%)	2,760	50.72	
Smoker - Previous (%)	1,923	35.34	
Smoker - Current (%)	744	13.67	
Smoker - Unknown (%)	15	0.28	

Table 217. Distribution of Approach Used for Avenir Compete/G7 Combination in Primary THA Cases

Approach	N	Percent
Anterior	4,274	78.5
Anterolateral	221	4.1
Posterior	934	17.2
Transtrochanteric	2	0.0
Missing/unknown/other	11	0.2

Table 218. Distribution of Head Size for Avenir Compete/G7 Combination in Primary THA Cases

Size (mm)	N	Percent
28	4	0.1
32	688	13.8
36	3,669	73.4
40	608	12.2
Missing/unknown/other	29	0.6

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Table 219. Distribution of Bearing Surface for Avenir Compete/G7 Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	393	7.2
Ceramic-on-plastic	4,576	84.1
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	397	7.3
Missing/unknown/other	76	1.4

Table 220. Distribution of Polyethylene Used for Avenir Compete/G7 Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,771	33.0
Antioxidant XLPE	2,941	54.8
Missing/unknown/other	659	12.3

Table 221. Volume of Cases by Surgeon and Site for the Avenir Compete/G7 Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	74 (151)	22 (66)
Cases per site	118 (150)	55 (139)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

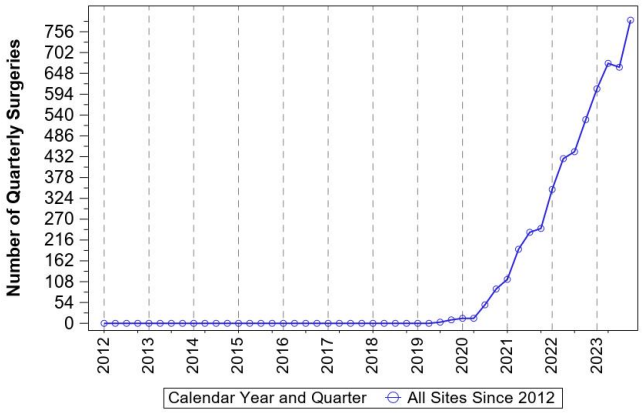


Figure 114. Utilization of the Avenir Compete/G7 Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

574202050	574102030	574201075
574202040	574203060	574203000
574202060	574202075	574103030
574201040	574201010	574203065
574201050	574101050	574102010
574201030	574101040	574102075
574202030	574101030	574203070
574201020	574102020	574101000
574202065	574102065	574103020
574203050	574202010	574101065
574203040	574201065	574101070
574202020	574101060	574102000
574201060	574103040	574102080
574203030	574202080	574101075
574203020	574203010	574201080
574102050	574102070	574101085
574102040	574201000	574102085
574102060	574201070	574101080
574202070	574103050	574101090
574101020	574101010	

Catalog numbers of Acetabular Cups Used in the Analysis

110010244	10000667	10000668
110010243	110017102	110017101
110010245	110017104	110017100
110010246	110017103	10000660
110010242	110010265	110010269
110010247	110017105	110010271
110010241	110017106	110010262
110010248	110010264	110010268
10000662	110010250	110017107
10000663	110010263	110010261
10000664	110010266	110017099
10000665	110010240	110017108
10000666	10000661	110010251
110010249	110010267	

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4.1.13 Corail/Pinnacle

N = 3,879 primary cases were used for this analysis. Distribution of utilization: 49 surgeons across 31 sites used this implant combination in primary THA cases.

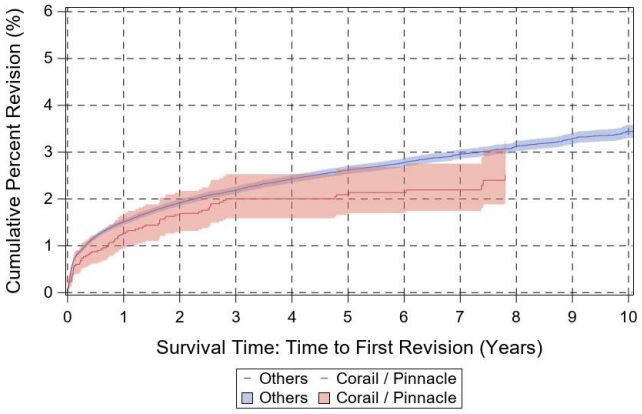


Figure 115. Cumulative Percent Revision Curve for the Corail/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases

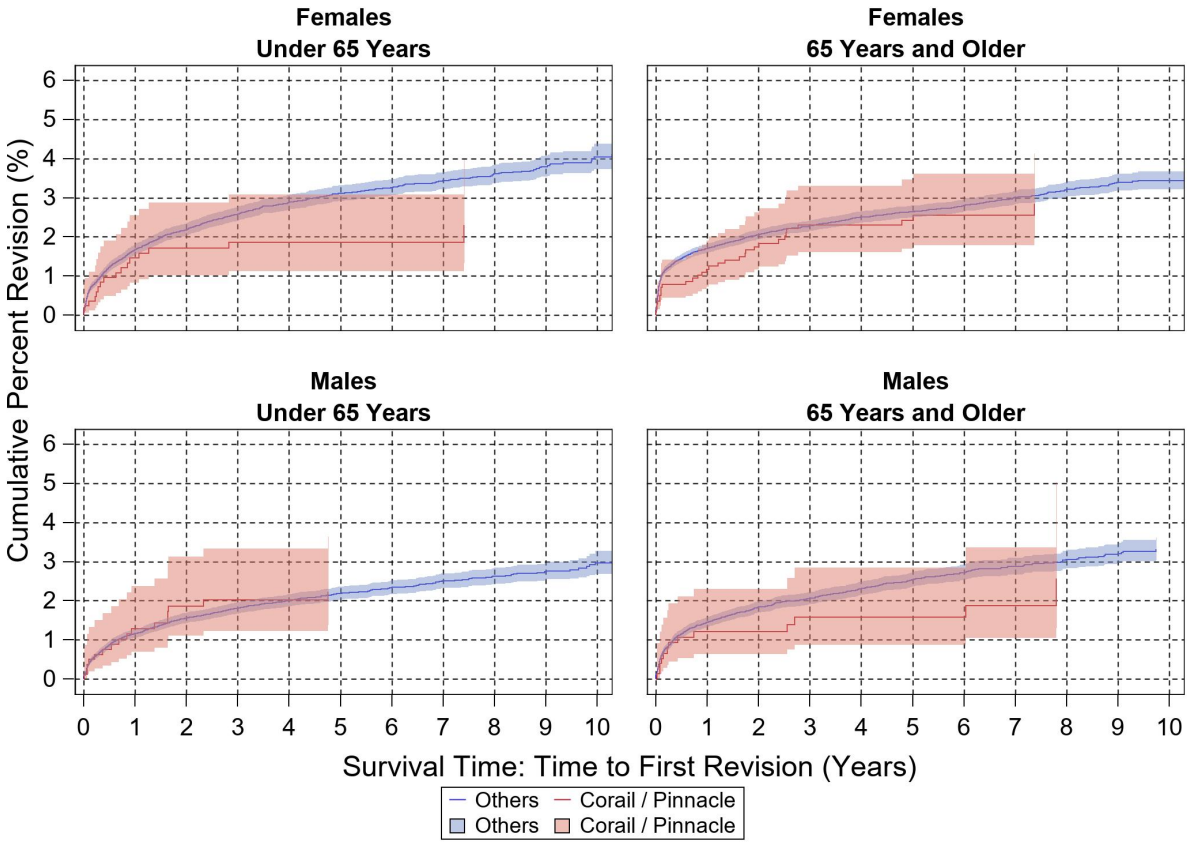


Figure 116. Cumulative Percent Revision Curve for the Corail/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 222. Cumulative Percent Revision and Number at Risk for the Corail/Pinnacle Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,829	0.00 (0.00,0.00)	845	0.00 (0.00,0.00)	1,407	0.00 (0.00,0.00)	807	0.00 (0.00,0.00)	770	0.00 (0.00,0.00)
1	3,454	1.27 (0.95,1.68)	777	1.46 (0.83,2.55)	1,273	1.17 (0.72,1.90)	730	1.29 (0.69,2.38)	674	1.21 (0.63,2.31)
2	3,058	1.66 (1.29,2.13)	699	1.71 (1.02,2.88)	1,129	1.75 (1.16,2.62)	645	1.86 (1.11,3.13)	585	1.21 (0.63,2.31)
3	2,678	2.00 (1.59,2.53)	634	1.86 (1.13,3.08)	981	2.30 (1.60,3.30)	561	2.02 (1.22,3.34)	502	1.58 (0.87,2.85)
4	2,450	2.00 (1.59,2.53)	578	1.86 (1.13,3.08)	899	2.30 (1.60,3.30)	514	2.02 (1.22,3.34)	459	1.58 (0.87,2.85)
5	2,182	2.09 (1.66,2.63)	517	1.86 (1.13,3.08)	791	2.42 (1.69,3.46)	462	2.23 (1.36,3.63)	412	1.58 (0.87,2.85)
6	1,752	2.14 (1.70,2.69)	412	1.86 (1.13,3.08)	635	2.55 (1.79,3.62)	371	2.23 (1.36,3.63)	334	1.58 (0.87,2.85)
7	1,158	2.19 (1.74,2.76)	275	1.86 (1.13,3.08)	408	2.55 (1.79,3.62)	256	2.23 (1.36,3.63)	219	1.88 (1.04,3.36)
8	683	2.53 (1.97,3.24)	171	2.30 (1.33,3.97)	223	2.84 (1.95,4.12)	158	2.23 (1.36,3.63)	131	2.57 (1.30,5.03)
9	347	2.53 (1.97,3.24)	93	2.30 (1.33,3.97)	111	2.84 (1.95,4.12)	77	2.23 (1.36,3.63)	66	2.57 (1.30,5.03)
10	64	2.53 (1.97,3.24)	19	2.30 (1.33,3.97)	20	2.84 (1.95,4.12)	14	2.23 (1.36,3.63)	11	2.57 (1.30,5.03)

Table 223. Reasons for First Revision Following Primary THA for Corail/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	19	24.7
2	Aseptic Loosening	18	23.4
3	Dislocation/Instability	18	23.4
4	Peri-prosthetic fracture - Femur	10	13.0
5	Implant Failure	5	6.5
6	Malalignment	4	5.2
7	Pain	2	2.6
8	Peri-prosthetic fracture - Acetabulum	1	1.3

Table 224. Reasons for First Revision in the First 90 Days Following Primary THA for Corail/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	8	29.6
2	Dislocation/Instability	7	25.9
3	Aseptic Loosening	5	18.5
4	Joint Infection	3	11.1
5	Implant Failure	2	7.4
6	Peri-prosthetic fracture - Acetabulum	1	3.7
7	Pain	1	3.7

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Table 225. Reasons for First Revision Between 91 and 365 days Following Primary THA for Corail/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	8	40.0
2	Joint Infection	5	25.0
3	Aseptic Loosening	3	15.0
4	Malalignment	2	10.0
5	Implant Failure	1	5.0
6	Pain	1	5.0

Table 226. Descriptive Statistics of Cases Receiving the Corail/Pinnacle Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	2,281	58.8	
Age (years)	3,879	65.94 (10.24)	66.00 (14.00)
Height (cm)	3,723	169.30 (10.51)	168.00 (15.30)
Weight (kg)	3,723	88.36 (20.61)	86.18 (28.23)
BMI(kg/m^2)	3,723	30.75 (6.79)	29.94 (8.11)
Smoker - Never (%)	1,823	47	
Smoker - Previous (%)	1,472	37.95	
Smoker - Current (%)	578	14.9	
Smoker - Unknown (%)	6	0.15	

Table 227. Distribution of Approach Used for Corail/Pinnacle Combination in Primary THA Cases

Approach	N	Percent
Anterior	2,272	58.6
Anterolateral	790	20.4
Posterior	648	16.7
Transtrochanteric	7	0.2
Missing/unknown/other	162	4.2

Table 228. Distribution of Head Size for Corail/Pinnacle Combination in Primary THA Cases

Size (mm)	N	Percent
22	5	0.1
28	12	0.3
32	789	20.5
36	2,697	70.0
40	327	8.5
44	16	0.4
Missing/unknown/other	7	0.2

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Table 229. Distribution of Bearing Surface for Corail/Pinnacle Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,291	33.3
Ceramic-on-plastic	2,548	65.7
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	4	0.1
Missing/unknown/other	36	0.9

Table 230. Distribution of Polyethylene Used for Corail/Pinnacle Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	5	0.1
XLPE	3,520	91.5
Antioxidant XLPE	0	0.0
Missing/unknown/other	324	8.4

Table 231. Volume of Cases by Surgeon and Site for the Corail/Pinnacle Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	79 (125)	7 (112)
Cases per site	125 (216)	23 (153)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

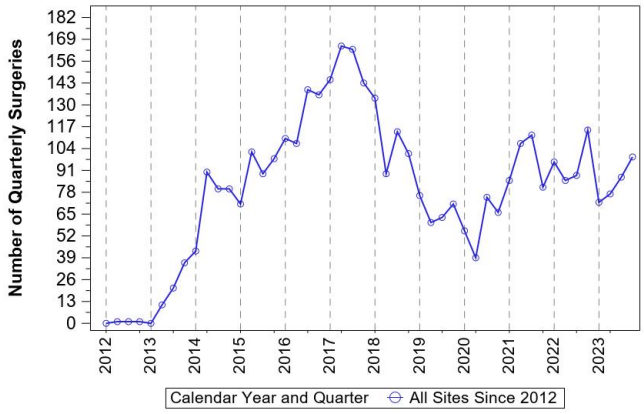


Figure 117. Utilization of the Corail/Pinnacle Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

3L92502	L20311	L98013
3L92501	3L92510	L971208
3L92503	L971115	L971310
3L92500	L20315	L98012
3L92504	3L92514	L20309
3L92505	3L92515	L971308
3L92499	L20316	L98115
L971112	L971116	L98120
3L92512	L971210	L98015
3L92511	L971109	L98112
L971111	3L92508	3L92521
3L92513	3L92509	L20320
L971113	L20310	L98010
L20312	3L92507	L98018
L20313	L971209	L98020
3L92506	3L92516	L98113
L971110	L971118	L98114
3L92498	L20318	L98116
L20314	L98014	
L971114	L98011	

Catalog numbers of Acetabular Cups Used in the Analysis

121732052	121732064	121732066
121732054	121730050	121703062
121732056	121731052	121730046
121732058	121730060	121730064
121732050	121731054	121731060
121732048	121703058	121730068
121732060	121722054	121722056
121730052	121703050	121722060
121730054	121731056	121730066
121722052	121703048	121722058
121732062	121722048	121722064
121730056	121730048	121701052
121703052	121730062	121703064
121730058	121731048	121720046
121722050	121703060	121722062
121703054	121731050	
121703056	121731058	

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4.1.14 Corail Coxa Vara/Pinnacle

N = 824 primary cases were used for this analysis. Distribution of utilization: 30 surgeons across 24 sites used this implant combination in primary THA cases.

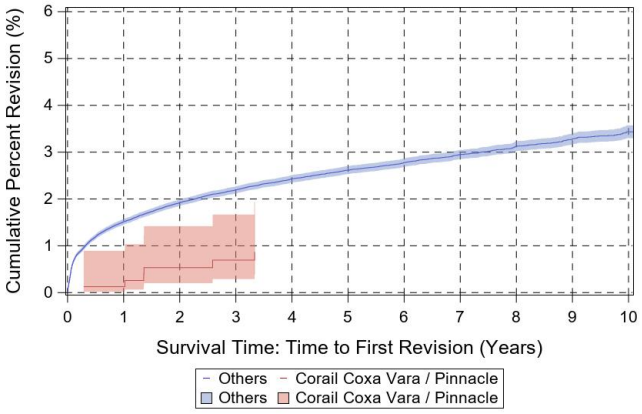


Figure 118. Cumulative Percent Revision Curve for the Corail Coxa Vara/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases

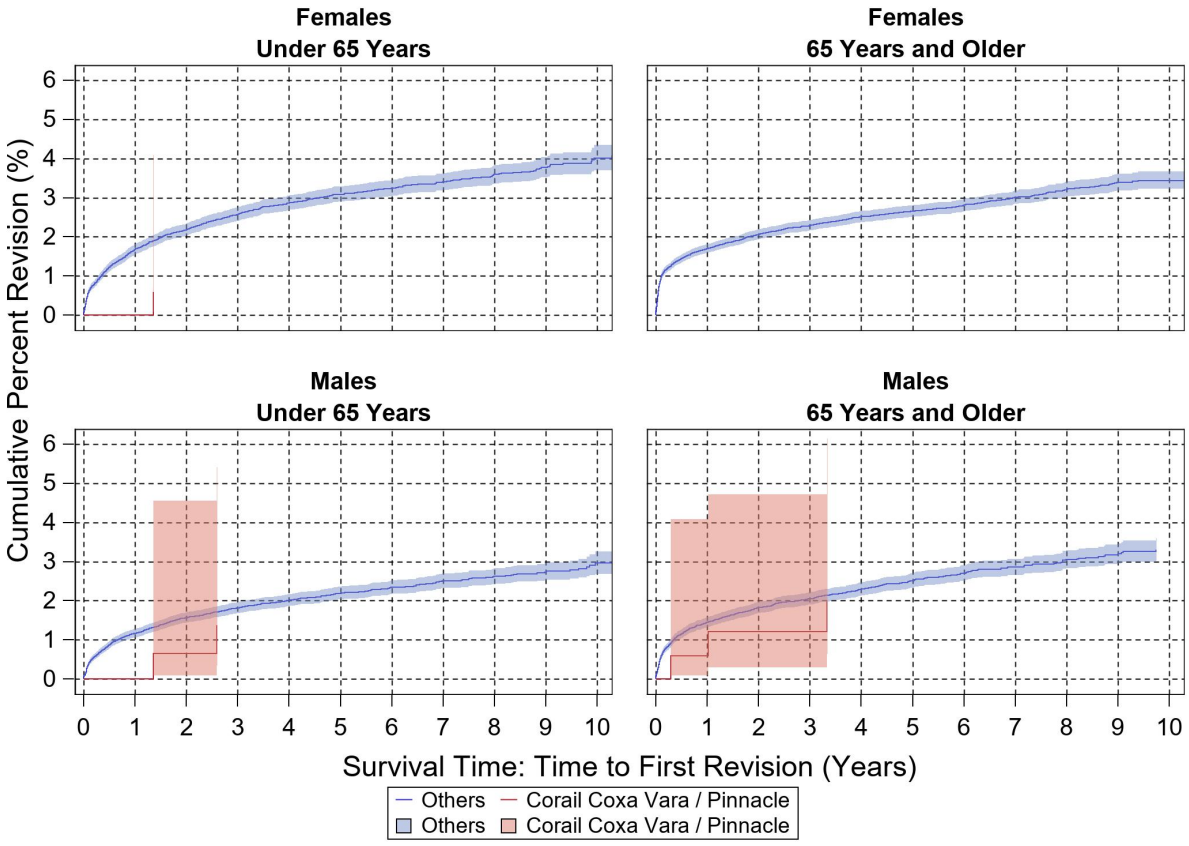


Figure 119. Cumulative Percent Revision Curve for the Corail Coxa Vara/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 232. Cumulative Percent Revision and Number at Risk for the Corail Coxa Vara/Pinnacle Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	820	0.00 (0.00,0.00)	190	0.00 (0.00,0.00)	281	0.00 (0.00,0.00)	168	0.00 (0.00,0.00)	181	0.00 (0.00,0.00)
1	752	0.13 (0.02,0.89)	175	0.00 (0.00,0.00)	261	0.00 (0.00,0.00)	155	0.00 (0.00,0.00)	161	0.58 (0.08,4.08)
2	658	0.53 (0.20,1.42)	155	0.58 (0.08,4.08)	219	0.00 (0.00,0.00)	143	0.65 (0.09,4.55)	141	1.20 (0.30,4.72)
3	586	0.70 (0.29,1.67)	138	0.58 (0.08,4.08)	196	0.00 (0.00,0.00)	126	1.38 (0.35,5.41)	126	1.20 (0.30,4.72)
4	525	0.87 (0.39,1.94)	127	0.58 (0.08,4.08)	170	0.00 (0.00,0.00)	115	1.38 (0.35,5.41)	113	2.00 (0.64,6.14)
5	434	0.87 (0.39,1.94)	109	0.58 (0.08,4.08)	136	0.00 (0.00,0.00)	99	1.38 (0.35,5.41)	90	2.00 (0.64,6.14)
6	344	0.87 (0.39,1.94)	83	0.58 (0.08,4.08)	102	0.00 (0.00,0.00)	84	1.38 (0.35,5.41)	75	2.00 (0.64,6.14)
7	225	0.87 (0.39,1.94)	54	0.58 (0.08,4.08)	53	0.00 (0.00,0.00)	67	1.38 (0.35,5.41)	51	2.00 (0.64,6.14)
8	134	0.87 (0.39,1.94)	32	0.58 (0.08,4.08)	31	0.00 (0.00,0.00)	42	1.38 (0.35,5.41)	29	2.00 (0.64,6.14)
9	63	0.87 (0.39,1.94)	16	0.58 (0.08,4.08)	18	0.00 (0.00,0.00)	14	1.38 (0.35,5.41)	15	2.00 (0.64,6.14)
10	22	0.87 (0.39,1.94)	*	0.58 (0.08,4.08)	*	0.00 (0.00,0.00)	*	1.38 (0.35,5.41)	*	2.00 (0.64,6.14)

* Denotes that the number of cases is between 1 and 10.

Table 233. Reasons for First Revision Following Primary THA for Corail Coxa Vara/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	5	83.3
2	Dislocation/Instability	1	16.7

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 234. Reasons for First Revision Between 91 and 365 days Following Primary THA for Corail Coxa Vara/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	100.0

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Table 235. Descriptive Statistics of Cases Receiving the Corail Coxa Vara/Pinnacle Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	473	57.4	
Age (years)	824	65.36 (9.95)	66.00 (13.00)
Height (cm)	821	169.87 (10.28)	170.18 (15.24)
Weight (kg)	821	88.27 (19.82)	86.95 (24.86)
BMI(kg/m^2)	821	30.48 (5.77)	29.70 (7.82)
Smoker - Never (%)	378	45.87	
Smoker - Previous (%)	330	40.05	
Smoker - Current (%)	115	13.96	
Smoker - Unknown (%)	1	0.12	

Table 236. Distribution of Approach Used for Corail Coxa Vara/Pinnacle Combination in Primary THA Cases

Approach	N	Percent
Anterior	535	64.9
Anterolateral	149	18.1
Posterior	135	16.4
Transtrochanteric	0	0.0
Missing/unknown/other	5	0.6

Table 237. Distribution of Head Size for Corail Coxa Vara/Pinnacle Combination in Primary THA Cases

Size (mm)	N	Percent
28	12	1.5
32	207	25.3
36	568	69.3
40	26	3.2
44	1	0.1
Missing/unknown/other	5	0.6

Table 238. Distribution of Bearing Surface for Corail Coxa Vara/Pinnacle Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	217	26.3
Ceramic-on-plastic	594	72.1
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	1	0.1
Missing/unknown/other	12	1.5

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Table 239. Distribution of Polyethylene Used for Corail Coxa Vara/Pinnacle Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	2	0.2
XLPE	753	92.2
Antioxidant XLPE	0	0.0
Missing/unknown/other	62	7.6

Table 240. Volume of Cases by Surgeon and Site for the Corail Coxa Vara/Pinnacle Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	27 (34)	12 (43)
Cases per site	34 (45)	10 (53)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

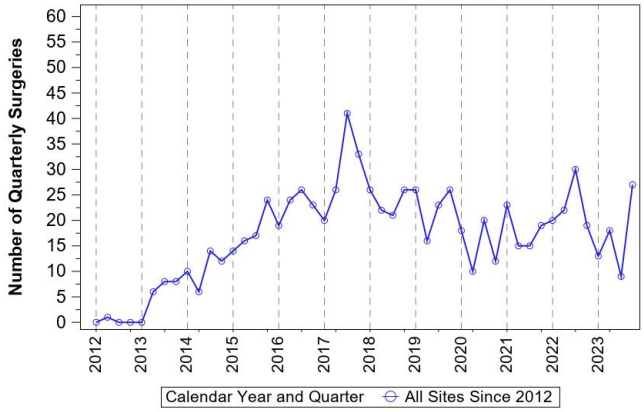


Figure 120. Utilization of the Corail Coxa Vara/Pinnacle Combination in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

3L93712	3L93714	3L93718
3L93711	3L93715	
3L93713	3L93709	
3L93710	3L93716	

Catalog numbers of Acetabular Cups Used in the Analysis

121732052	121730052	121732048
121732054	121732058	121732060
121732056	121722052	121703052
121732050	121722050	121730054

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121732062	121730048	121722060
121730050	121703048	121730044
121703054	121703060	121730046
121722054	121722056	121731050
121703056	121703050	121731052
121703058	121730060	121731054
121730056	121731048	121731056
121730058	121730062	121731058
121722048	121731060	

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4.1.15 Echo Bi-Metric/G7

N = 1,654 primary cases were used for this analysis. Distribution of utilization: 36 surgeons across 31 sites used this implant combination in primary THA cases.

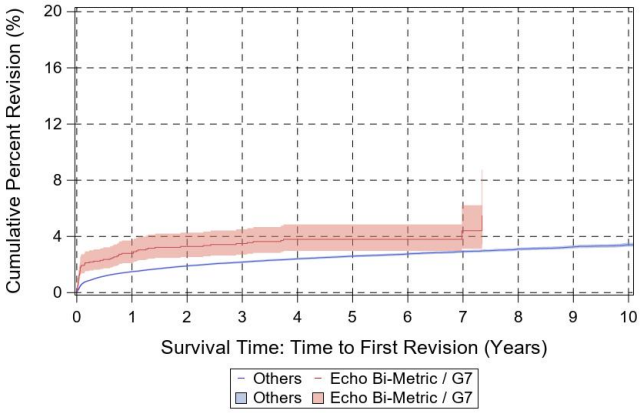


Figure 121. Cumulative Percent Revision Curve for the Echo Bi-Metric/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases

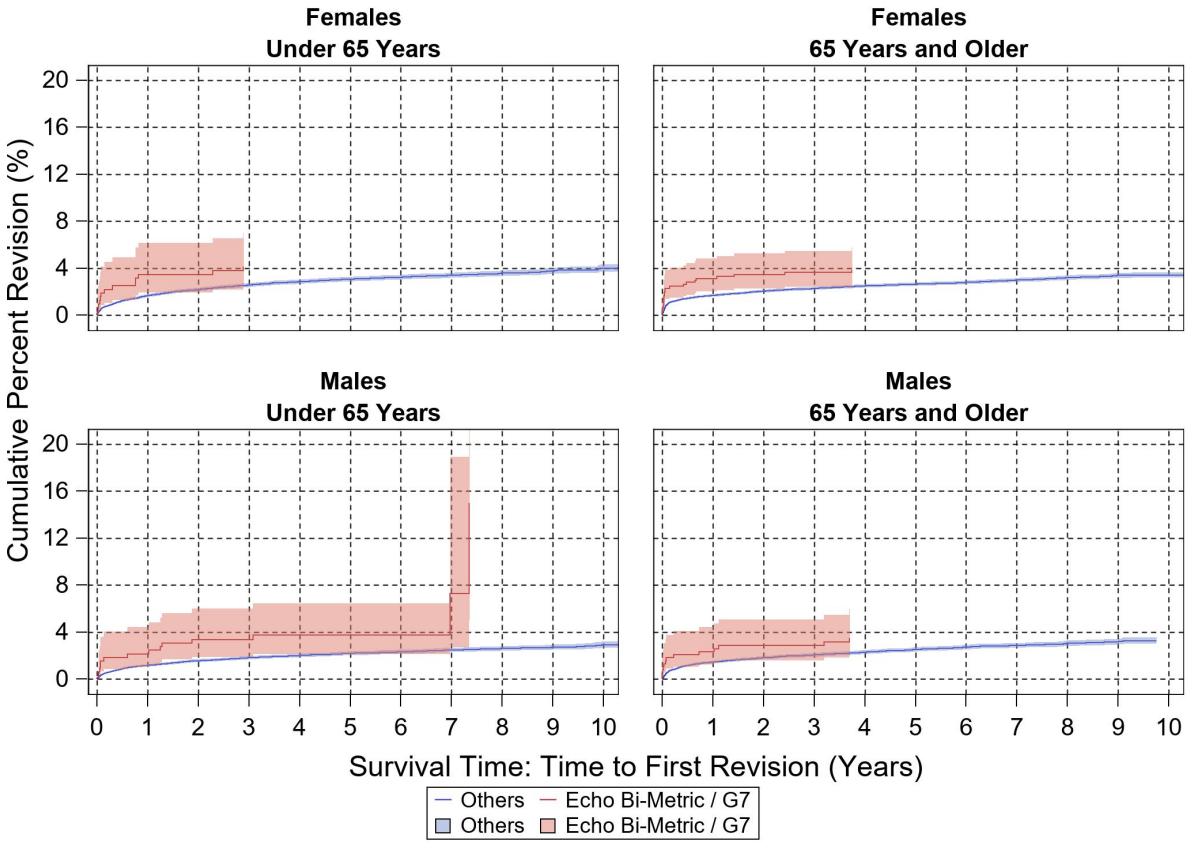


Figure 122. Cumulative Percent Revision Curve for the Echo Bi-Metric/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 241. Cumulative Percent Revision and Number at Risk for the Echo Bi-Metric/G7 Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,652	0.00 (0.00,0.00)	322	0.00 (0.00,0.00)	613	0.00 (0.00,0.00)	329	0.00 (0.00,0.00)	388	0.00 (0.00,0.00)
1	1,581	2.79 (2.10,3.71)	307	3.44 (1.92,6.12)	578	3.11 (2.00,4.83)	319	2.13 (1.02,4.41)	377	2.32 (1.21,4.41)
2	1,497	3.29 (2.53,4.27)	292	3.44 (1.92,6.12)	532	3.45 (2.26,5.24)	307	3.37 (1.88,6.00)	366	2.84 (1.58,5.07)
3	1,357	3.49 (2.70,4.50)	266	4.13 (2.42,7.01)	482	3.64 (2.41,5.47)	284	3.37 (1.88,6.00)	325	2.84 (1.58,5.07)
4	1,136	3.80 (2.96,4.85)	225	4.13 (2.42,7.01)	410	3.86 (2.58,5.76)	246	3.71 (2.13,6.45)	255	3.48 (2.03,5.94)
5	749	3.80 (2.96,4.85)	153	4.13 (2.42,7.01)	276	3.86 (2.58,5.76)	160	3.71 (2.13,6.45)	160	3.48 (2.03,5.94)
6	366	3.80 (2.96,4.85)	67	4.13 (2.42,7.01)	152	3.86 (2.58,5.76)	71	3.71 (2.13,6.45)	76	3.48 (2.03,5.94)
7	151	4.41 (3.12,6.22)	19	4.13 (2.42,7.01)	81	3.86 (2.58,5.76)	25	7.28 (2.69,18.89)	26	3.48 (2.03,5.94)
8	44	5.49 (3.42,8.74)	*	4.13 (2.42,7.01)	26	3.86 (2.58,5.76)	*	15.01 (5.01,40.20)	*	3.48 (2.03,5.94)
9	*	5.49 (3.42,8.74)	0	N/A	*	3.86 (2.58,5.76)	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 242. Reasons for First Revision Following Primary THA for Echo Bi-Metric/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	22	34.9
2	Joint Infection	16	25.4
3	Dislocation/Instability	11	17.5
4	Aseptic Loosening	7	11.1
5	Implant Failure	3	4.8
6	Malalignment	2	3.2
7	Peri-prosthetic fracture - Acetabulum	1	1.6
8	Pain	1	1.6

Table 243. Reasons for First Revision in the First 90 Days Following Primary THA for Echo Bi-Metric/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	19	52.8
2	Aseptic Loosening	5	13.9
3	Dislocation/Instability	4	11.1
4	Joint Infection	4	11.1
5	Malalignment	2	5.6
6	Implant Failure	1	2.8
7	Peri-prosthetic fracture - Acetabulum	1	2.8

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Table 244. Reasons for First Revision Between 91 and 365 days Following Primary THA for Echo Bi-Metric/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	3	30.0
2	Aseptic Loosening	2	20.0
3	Joint Infection	2	20.0
4	Implant Failure	2	20.0
5	Peri-prosthetic fracture - Femur	1	10.0

Table 245. Descriptive Statistics of Cases Receiving the Echo Bi-Metric/G7 Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	935	56.53	
Age (years)	1,654	66.68 (10.87)	67.00 (14.00)
Height (cm)	1,654	169.67 (10.38)	168.91 (15.24)
Weight (kg)	1,654	89.23 (22.31)	87.14 (29.75)
BMI(kg/m^2)	1,654	30.86 (6.66)	29.86 (8.71)
Smoker - Never (%)	811	49.03	
Smoker - Previous (%)	598	36.15	
Smoker - Current (%)	242	14.63	
Smoker - Unknown (%)	3	0.18	

Table 246. Distribution of Approach Used for Echo Bi-Metric/G7 Combination in Primary THA Cases

Approach	N	Percent
Anterior	133	8.0
Anterolateral	53	3.2
Posterior	1,465	88.6
Transtrochanteric	1	0.1
Missing/unknown/other	2	0.1

Table 247. Distribution of Head Size for Echo Bi-Metric/G7 Combination in Primary THA Cases

Size (mm)	N	Percent
28	4	0.3
32	249	17.3
36	762	52.9
40	418	29.0
Missing/unknown/other	8	0.6

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Table 248. Distribution of Bearing Surface for Echo Bi-Metric/G7 Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	113	6.8
Ceramic-on-plastic	1,320	79.8
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	209	12.6
Missing/unknown/other	12	0.7

Table 249. Distribution of Polyethylene Used for Echo Bi-Metric/G7 Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	747	45.3
Antioxidant XLPE	279	16.9
Missing/unknown/other	622	37.7

Table 250. Volume of Cases by Surgeon and Site for the Echo Bi-Metric/G7 Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	45 (131)	4 (40)
Cases per site	53 (149)	11 (37)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

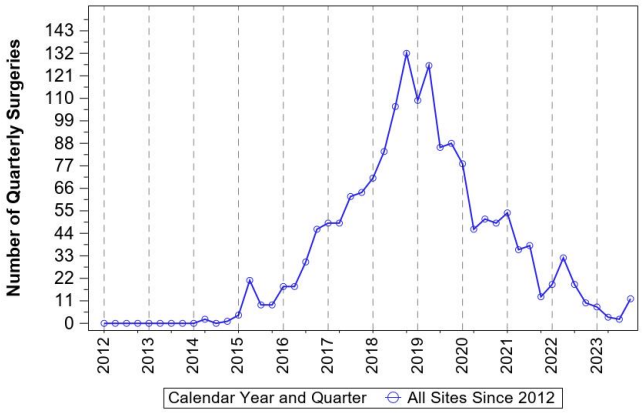


Figure 123. Utilization of the Echo Bi-Metric/G7 Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

192112	192412	192514
192113	192509	192017
192111	192512	192007
192012	192413	192107
192110	192116	192118
192114	192510	192416
192011	192016	192515
192010	192108	192018
192013	192414	192417
192014	192513	192516
192109	192408	192019
192411	192508	192020
192115	192511	192119
192009	192008	192517
192015	192407	
192410	192415	
192409	192117	

Catalog numbers of Acetabular Cups Used in the Analysis

110010243	110010264	110010262
110010244	110010265	110010269
110010245	110017102	110017101
110010246	110010263	10000668
110010242	110010266	110010240
110010247	10000667	110010250
10000663	110017103	110010268
10000664	110017104	10000660
110010241	110010249	10000671
110010248	110017105	110010270
10000665	110010267	110017108
10000662	110017106	
10000666	10000661	

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4.1.16 Echo Bi-Metric Microplasty/G7

N = 2,100 primary cases were used for this analysis. Distribution of utilization: 26 surgeons across 28 sites used this implant combination in primary THA cases.

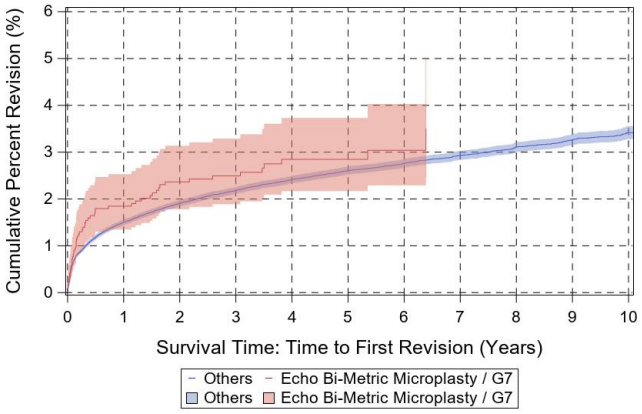


Figure 124. Cumulative Percent Revision Curve for the Echo Bi-Metric Microplasty/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases

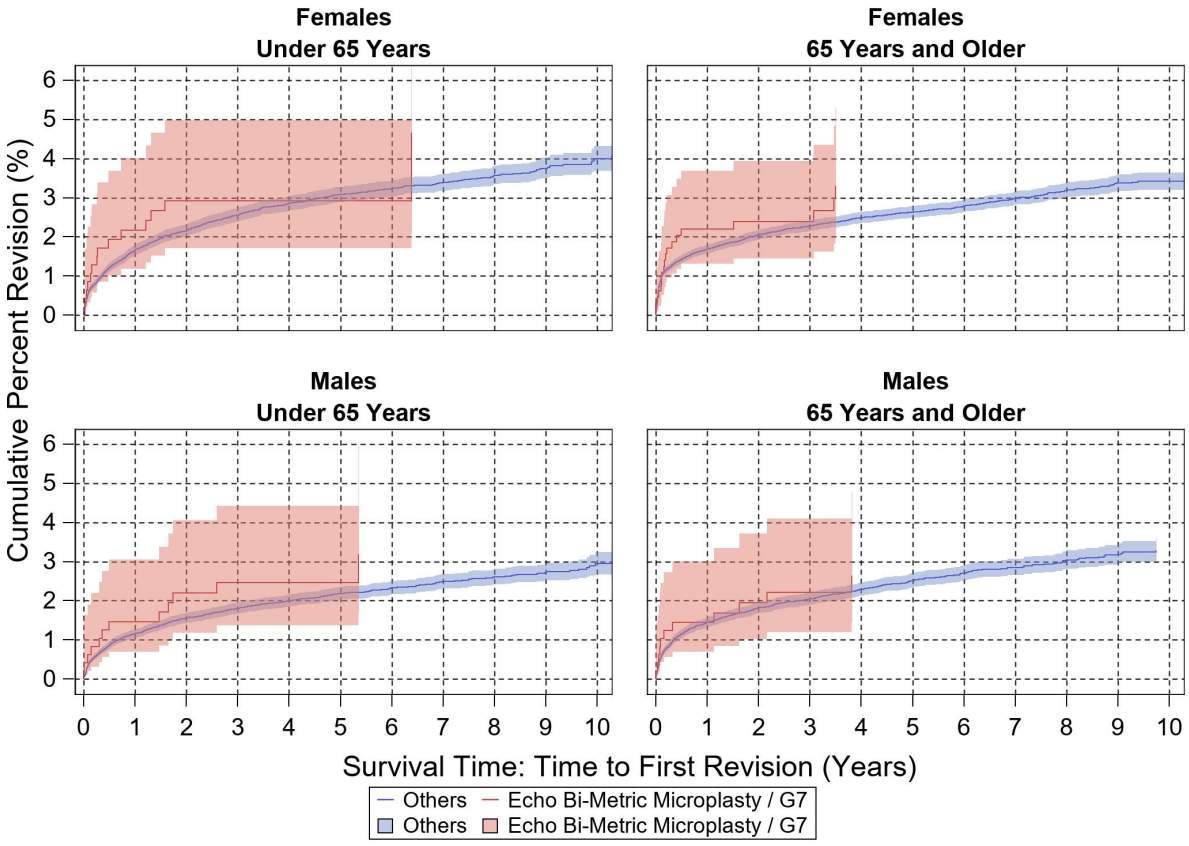


Figure 125. Cumulative Percent Revision Curve for the Echo Bi-Metric Microplasty/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 251. Cumulative Percent Revision and Number at Risk for the Echo Bi-Metric Microplasty/G7 Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	2,097	0.00 (0.00,0.00)	473	0.00 (0.00,0.00)	647	0.00 (0.00,0.00)	485	0.00 (0.00,0.00)	491	0.00 (0.00,0.00)
1	1,807	1.85 (1.35,2.53)	405	2.17 (1.17,4.00)	553	2.20 (1.31,3.69)	431	1.46 (0.70,3.05)	417	1.45 (0.69,3.01)
2	1,613	2.36 (1.78,3.14)	370	2.92 (1.71,4.99)	480	2.39 (1.45,3.94)	391	2.19 (1.18,4.05)	371	1.94 (1.01,3.71)
3	1,308	2.49 (1.89,3.29)	305	2.92 (1.71,4.99)	364	2.39 (1.45,3.94)	336	2.46 (1.37,4.42)	303	2.21 (1.19,4.09)
4	919	2.85 (2.17,3.73)	222	2.92 (1.71,4.99)	255	3.30 (2.05,5.30)	227	2.46 (1.37,4.42)	215	2.63 (1.44,4.80)
5	580	2.85 (2.17,3.73)	159	2.92 (1.71,4.99)	153	3.30 (2.05,5.30)	152	2.46 (1.37,4.42)	116	2.63 (1.44,4.80)
6	327	3.04 (2.29,4.03)	97	2.92 (1.71,4.99)	81	3.30 (2.05,5.30)	82	3.19 (1.69,5.97)	67	2.63 (1.44,4.80)
7	84	3.51 (2.45,5.00)	27	4.66 (2.09,10.21)	16	3.30 (2.05,5.30)	26	3.19 (1.69,5.97)	15	2.63 (1.44,4.80)
8	*	3.51 (2.45,5.00)	0	N/A	*	3.30 (2.05,5.30)	*	3.19 (1.69,5.97)	*	2.63 (1.44,4.80)
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 252. Reasons for First Revision Following Primary THA for Echo Bi-Metric Microplasty/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	22	40.0
2	Aseptic Loosening	10	18.2
3	Dislocation/Instability	9	16.4
4	Joint Infection	6	10.9
5	Pain	3	5.5
6	Malalignment	3	5.5
7	Implant Failure	2	3.6

Table 253. Reasons for First Revision in the First 90 Days Following Primary THA for Echo Bi-Metric Microplasty/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	19	70.4
2	Aseptic Loosening	3	11.1
3	Dislocation/Instability	3	11.1
4	Pain	1	3.7
5	Malalignment	1	3.7

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Table 254. Reasons for First Revision Between 91 and 365 days Following Primary THA for Echo Bi-Metric Microplasty/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	3	27.3
2	Dislocation/Instability	3	27.3
3	Joint Infection	2	18.2
4	Implant Failure	2	18.2
5	Pain	1	9.1

Table 255. Descriptive Statistics of Cases Receiving the Echo Bi-Metric Microplasty/G7 Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,120	53.33	
Age (years)	2,100	65.29 (10.35)	66.00 (15.00)
Height (cm)	2,100	170.03 (10.68)	170.18 (15.24)
Weight (kg)	2,100	87.93 (19.92)	87.36 (26.03)
BMI(kg/m^2)	2,100	30.39 (7.34)	29.81 (7.89)
Smoker - Never (%)	1,043	49.67	
Smoker - Previous (%)	734	34.95	
Smoker - Current (%)	318	15.14	
Smoker - Unknown (%)	5	0.24	

Table 256. Distribution of Approach Used for Echo Bi-Metric Microplasty/G7 Combination in Primary THA Cases

Approach	N	Percent
Anterior	1,573	74.9
Anterolateral	50	2.4
Posterior	473	22.5
Transtrochanteric	3	0.1
Missing/unknown/other	1	0.1

Table 257. Distribution of Head Size for Echo Bi-Metric Microplasty/G7 Combination in Primary THA Cases

Size (mm)	N	Percent
28	1	0.1
32	287	15.2
36	1,321	69.7
40	276	14.6
Missing/unknown/other	10	0.5

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Table 258. Distribution of Bearing Surface for Echo Bi-Metric Microplasty/G7 Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	278	13.2
Ceramic-on-plastic	1,607	76.5
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	176	8.4
Missing/unknown/other	39	1.9

Table 259. Distribution of Polyethylene Used for Echo Bi-Metric Microplasty/G7 Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,056	51.0
Antioxidant XLPE	477	23.0
Missing/unknown/other	537	25.9

Table 260. Volume of Cases by Surgeon and Site for the Echo Bi-Metric Microplasty/G7 Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	80 (120)	7 (124)
Cases per site	75 (116)	15 (104)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

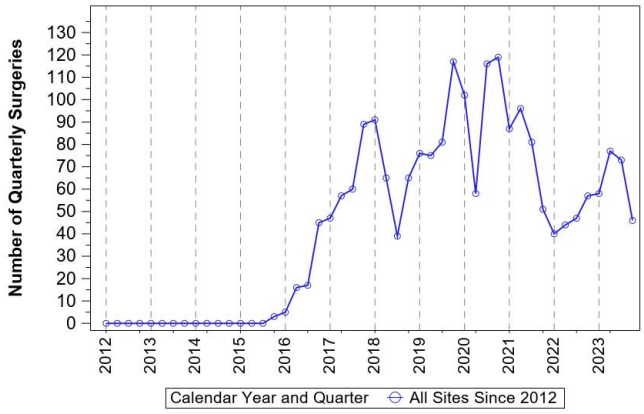


Figure 126. Utilization of the Echo Bi-Metric Microplasty/G7 Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

193012	193009	192807
193112	193109	193007
193111	193115	193118
193113	193015	193018
193010	193108	193107
193011	193008	192907
193013	193116	192908
193110	193016	193019
193014	193117	193119
193114	193017	

Catalog numbers of Acetabular Cups Used in the Analysis

110017102	110017101	110010249
110017103	10000662	110010266
110010243	110010242	110010267
110017104	10000667	110017108
110010246	110017107	10000669
110010245	110010248	110010268
110017105	110010264	10000660
110010244	10000661	10000671
10000664	110010263	110010250
10000665	110017100	110010272
110017106	110010265	110017099
110010247	10000668	110017109
10000663	110010241	
10000666	110010262	

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4.1.17 Fitmore/Continuum

N = 2,814 primary cases were used for this analysis. Distribution of utilization: 38 surgeons across 18 sites used this implant combination in primary THA cases.

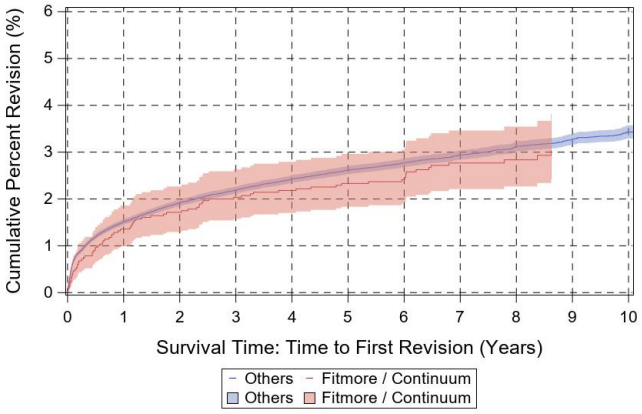


Figure 127. Cumulative Percent Revision Curve for the Fitmore/Continuum Combination, Compared to All Other Implant Combinations in Primary THA Cases

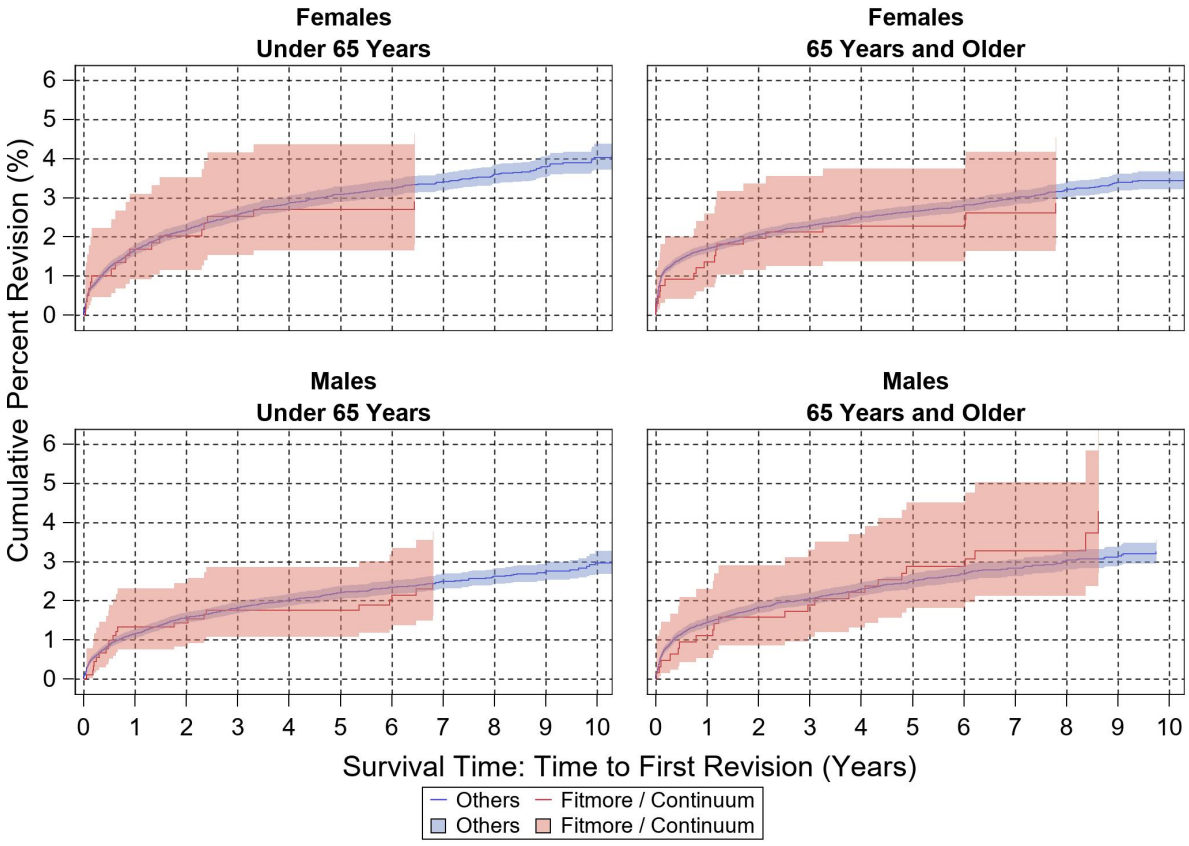


Figure 128. Cumulative Percent Revision Curve for the Fitmore/Continuum Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 261. Cumulative Percent Revision and Number at Risk for the Fitmore/Continuum Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	2,801	0.00 (0.00,0.00)	595	0.00 (0.00,0.00)	661	0.00 (0.00,0.00)	909	0.00 (0.00,0.00)	636	0.00 (0.00,0.00)
1	2,762	1.36 (0.99,1.86)	585	1.68 (0.91,3.10)	652	1.36 (0.71,2.60)	897	1.32 (0.75,2.31)	628	1.10 (0.53,2.30)
2	2,750	1.71 (1.29,2.27)	583	2.02 (1.15,3.52)	647	1.97 (1.15,3.36)	895	1.43 (0.83,2.45)	625	1.57 (0.85,2.90)
3	2,719	2.04 (1.57,2.63)	575	2.52 (1.53,4.15)	643	2.12 (1.26,3.55)	882	1.76 (1.08,2.86)	619	1.89 (1.08,3.30)
4	2,661	2.18 (1.70,2.79)	560	2.69 (1.66,4.36)	633	2.27 (1.38,3.74)	866	1.76 (1.08,2.86)	602	2.21 (1.31,3.70)
5	2,574	2.33 (1.83,2.96)	538	2.69 (1.66,4.36)	619	2.27 (1.38,3.74)	834	1.76 (1.08,2.86)	583	2.87 (1.82,4.52)
6	2,327	2.41 (1.90,3.05)	501	2.69 (1.66,4.36)	576	2.27 (1.38,3.74)	743	2.01 (1.27,3.18)	507	2.87 (1.82,4.52)
7	1,818	2.77 (2.21,3.46)	419	2.90 (1.81,4.63)	474	2.61 (1.63,4.17)	546	2.47 (1.61,3.77)	379	3.27 (2.12,5.03)
8	1,307	2.84 (2.27,3.55)	321	2.90 (1.81,4.63)	352	2.87 (1.81,4.54)	379	2.47 (1.61,3.77)	255	3.27 (2.12,5.03)
9	649	3.04 (2.42,3.82)	151	2.90 (1.81,4.63)	188	2.87 (1.81,4.54)	186	2.47 (1.61,3.77)	124	4.29 (2.69,6.79)
10	167	3.04 (2.42,3.82)	36	2.90 (1.81,4.63)	43	2.87 (1.81,4.54)	52	2.47 (1.61,3.77)	36	4.29 (2.69,6.79)

Table 262. Reasons for First Revision Following Primary THA for Fitmore/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	19	24.7
2	Aseptic Loosening	17	22.1
3	Dislocation/Instability	16	20.8
4	Joint Infection	12	15.6
5	Pain	7	9.1
6	Implant Failure	3	3.9
7	Malalignment	3	3.9

Table 263. Reasons for First Revision in the First 90 Days Following Primary THA for Fitmore/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	11	61.1
2	Dislocation/Instability	5	27.8
3	Joint Infection	1	5.6
4	Implant Failure	1	5.6

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Table 264. Reasons for First Revision Between 91 and 365 days Following Primary THA for Fitmore/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	5	26.3
2	Dislocation/Instability	4	21.0
3	Pain	4	21.0
4	Implant Failure	2	10.5
5	Peri-prosthetic fracture - Femur	2	10.5
6	Joint Infection	1	5.3
7	Malalignment	1	5.3

Table 265. Descriptive Statistics of Cases Receiving the Fitmore/Continuum Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,261	44.81	
Age (years)	2,814	63.68 (10.21)	63.00 (14.00)
Height (cm)	2,730	171.63 (10.18)	172.70 (14.17)
Weight (kg)	2,730	89.46 (21.36)	87.70 (28.50)
BMI(kg/m^2)	2,730	30.22 (6.13)	29.34 (7.80)
Smoker - Never (%)	1,352	48.05	
Smoker - Previous (%)	1,093	38.84	
Smoker - Current (%)	365	12.97	
Smoker - Unknown (%)	4	0.14	

Table 266. Distribution of Approach Used for Fitmore/Continuum Combination in Primary THA Cases

Approach	N	Percent
Anterior	2,390	84.9
Anterolateral	26	0.9
Posterior	314	11.2
Transtrochanteric	0	0.0
Missing/unknown/other	84	3.0

Table 267. Distribution of Head Size for Fitmore/Continuum Combination in Primary THA Cases

Size (mm)	N	Percent
28	2	0.1
32	540	19.2
36	2,033	72.5
40	201	7.2
Missing/unknown/other	29	1.0

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Table 268. Distribution of Bearing Surface for Fitmore/Continuum Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	554	19.7
Ceramic-on-plastic	2,222	79.0
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	38	1.4

Table 269. Distribution of Polyethylene Used for Fitmore/Continuum Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	1	0.0
XLPE	920	32.8
Antioxidant XLPE	1,723	61.4
Missing/unknown/other	161	5.7

Table 270. Volume of Cases by Surgeon and Site for the Fitmore/Continuum Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	74 (234)	5 (23)
Cases per site	156 (263)	26 (223)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

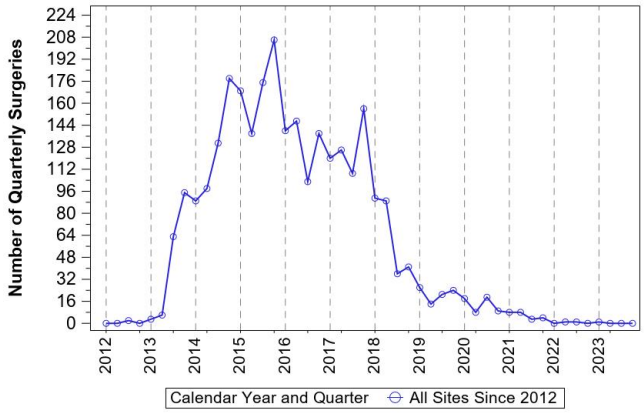


Figure 129. Utilization of the Fitmore/Continuum Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

100551306	100551204	100551411
100551307	100551207	100551106
100551305	100551403	100551108
100551308	100551203	100551313
100551304	100551301	100551102
100551309	100551409	100551104
100551303	100551402	100551314
100551310	100551401	100551103
100551405	100551311	100551211
100551406	100551208	100551105
100551302	100551202	100551412
100551407	100551410	100551107
100551206	100551201	100551110
100551205	100551210	100551109
100551404	100551209	100551212
100551408	100551312	

Catalog numbers of Acetabular Cups Used in the Analysis

875705401	875705402	875704601
875705601	875705602	875706000
875705801	875705800	875704002
875705201	875705802	875705002
875706001	875705400	875706200
875705001	875706601	875706202
875706201	875704800	875706402
875704801	875705202	875706602
875706401	875704802	
875705200	875705000	
875705600	875706002	

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4.1.18 Fitmore/G7

N = 2,944 primary cases were used for this analysis. Distribution of utilization: 35 surgeons across 27 sites used this implant combination in primary THA cases.

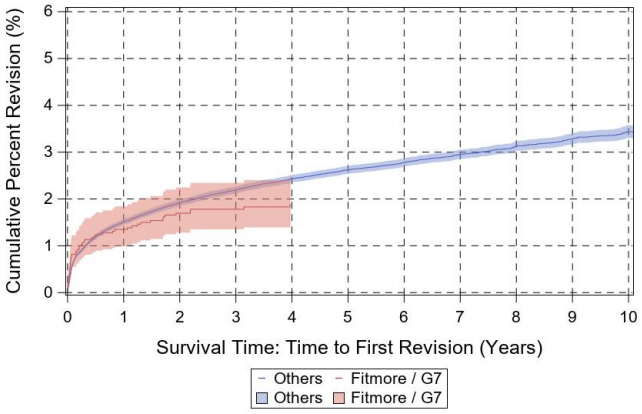


Figure 130. Cumulative Percent Revision Curve for the Fitmore/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases

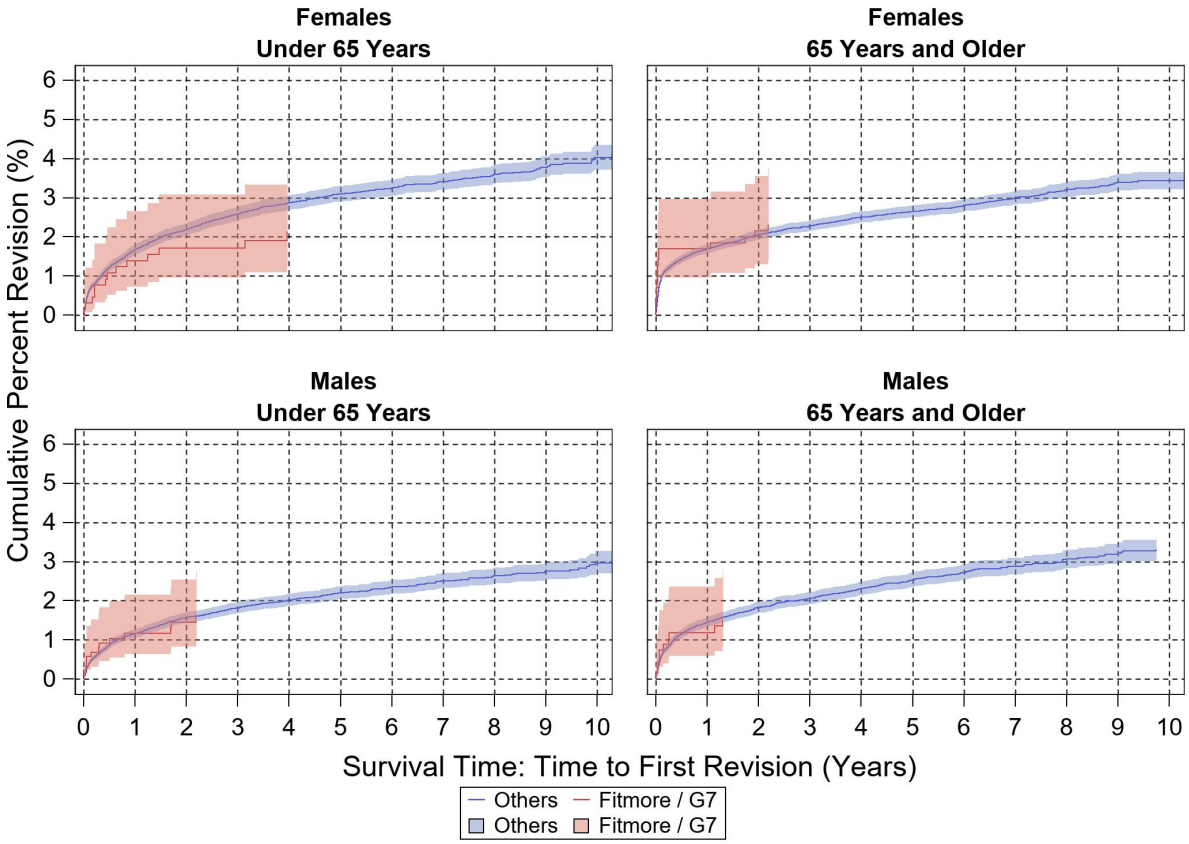


Figure 131. Cumulative Percent Revision Curve for the Fitmore/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 271. Cumulative Percent Revision and Number at Risk for the Fitmore/G7 Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	2,938	0.00 (0.00,0.00)	656	0.00 (0.00,0.00)	708	0.00 (0.00,0.00)	886	0.00 (0.00,0.00)	688	0.00 (0.00,0.00)
1	2,647	1.35 (0.99,1.84)	619	1.39 (0.73,2.66)	660	1.69 (0.97,2.97)	766	1.17 (0.63,2.16)	602	1.18 (0.59,2.35)
2	2,417	1.70 (1.28,2.25)	586	1.72 (0.95,3.08)	629	2.15 (1.30,3.55)	658	1.45 (0.82,2.54)	544	1.52 (0.82,2.81)
3	2,086	1.78 (1.35,2.34)	534	1.72 (0.95,3.08)	571	2.31 (1.42,3.74)	533	1.60 (0.93,2.75)	448	1.52 (0.82,2.81)
4	1,513	1.89 (1.44,2.48)	414	2.14 (1.24,3.67)	419	2.31 (1.42,3.74)	384	1.60 (0.93,2.75)	296	1.52 (0.82,2.81)
5	852	1.89 (1.44,2.48)	274	2.14 (1.24,3.67)	241	2.31 (1.42,3.74)	201	1.60 (0.93,2.75)	136	1.52 (0.82,2.81)
6	436	1.89 (1.44,2.48)	154	2.14 (1.24,3.67)	112	2.31 (1.42,3.74)	102	1.60 (0.93,2.75)	68	1.52 (0.82,2.81)
7	200	1.89 (1.44,2.48)	70	2.14 (1.24,3.67)	49	2.31 (1.42,3.74)	50	1.60 (0.93,2.75)	31	1.52 (0.82,2.81)
8	39	1.89 (1.44,2.48)	13	2.14 (1.24,3.67)	*	2.31 (1.42,3.74)	12	1.60 (0.93,2.75)	*	1.52 (0.82,2.81)
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 272. Reasons for First Revision Following Primary THA for Fitmore/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	18	34.6
2	Dislocation/Instability	11	21.2
3	Joint Infection	9	17.3
4	Aseptic Loosening	5	9.6
5	Implant Failure	4	7.7
6	Malalignment	3	5.8
7	Peri-prosthetic fracture - Acetabulum	1	1.9
8	Pain	1	1.9

Table 273. Reasons for First Revision in the First 90 Days Following Primary THA for Fitmore/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	14	46.7
2	Dislocation/Instability	8	26.7
3	Implant Failure	4	13.3
4	Malalignment	2	6.7
5	Joint Infection	1	3.3
6	Peri-prosthetic fracture - Acetabulum	1	3.3

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Table 274. Reasons for First Revision Between 91 and 365 days Following Primary THA for Fitmore/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	3	33.3
2	Joint Infection	2	22.2
3	Aseptic Loosening	1	11.1
4	Peri-prosthetic fracture - Femur	1	11.1
5	Pain	1	11.1
6	Malalignment	1	11.1

Table 275. Descriptive Statistics of Cases Receiving the Fitmore/G7 Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,365	46.37	
Age (years)	2,944	63.48 (10.07)	64.00 (13.00)
Height (cm)	2,901	171.92 (10.51)	172.70 (15.20)
Weight (kg)	2,901	90.92 (20.44)	89.10 (27.60)
BMI(kg/m^2)	2,901	30.65 (5.93)	29.89 (7.77)
Smoker - Never (%)	1,473	50.03	
Smoker - Previous (%)	1,110	37.7	
Smoker - Current (%)	358	12.16	
Smoker - Unknown (%)	3	0.1	

Table 276. Distribution of Approach Used for Fitmore/G7 Combination in Primary THA Cases

Approach	N	Percent
Anterior	2,447	83.1
Anterolateral	20	0.7
Posterior	433	14.7
Transtrochanteric	0	0.0
Missing/unknown/other	44	1.5

Table 277. Distribution of Head Size for Fitmore/G7 Combination in Primary THA Cases

Size (mm)	N	Percent
28	4	0.1
32	212	7.6
36	1,992	71.5
40	560	20.1
Missing/unknown/other	16	0.6

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Table 278. Distribution of Bearing Surface for Fitmore/G7 Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	311	10.6
Ceramic-on-plastic	2,457	83.5
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	135	4.6
Missing/unknown/other	41	1.4

Table 279. Distribution of Polyethylene Used for Fitmore/G7 Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	458	15.7
Antioxidant XLPE	1,841	63.1
Missing/unknown/other	617	21.2

Table 280. Volume of Cases by Surgeon and Site for the Fitmore/G7 Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	84 (218)	9 (60)
Cases per site	109 (232)	12 (92)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

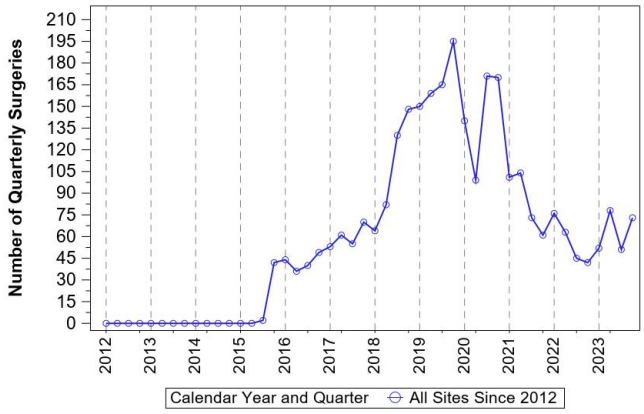


Figure 132. Utilization of the Fitmore/G7 Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

100551304	100551409	100551402
100551306	100551301	100551210
100551305	100551206	100551209
100551307	100551403	100551411
100551303	100551204	100551211
100551308	100551410	100551312
100551407	100551203	100551412
100551406	100551207	100551313
100551405	100551205	100551102
100551309	100551201	100551212
100551408	100551208	100551103
100551302	100551401	100551109
100551404	100551311	100551110
100551310	100551202	

Catalog numbers of Acetabular Cups Used in the Analysis

110010244	110010249	110010269
110010245	10000668	10000659
110010246	110010266	10000670
110010247	110010264	10000671
110010243	110010241	110010239
10000664	110010265	110010240
110010248	110010250	110010251
10000666	10000661	110010261
10000665	110010263	110010262
10000663	110010268	110010270
110010242	10000669	110010271
10000662	10000660	110010272
10000667	110010267	

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4.1.19 Insignia/Trident II

N = 3,073 primary cases were used for this analysis. Distribution of utilization: 53 surgeons across 41 sites used this implant combination in primary THA cases.

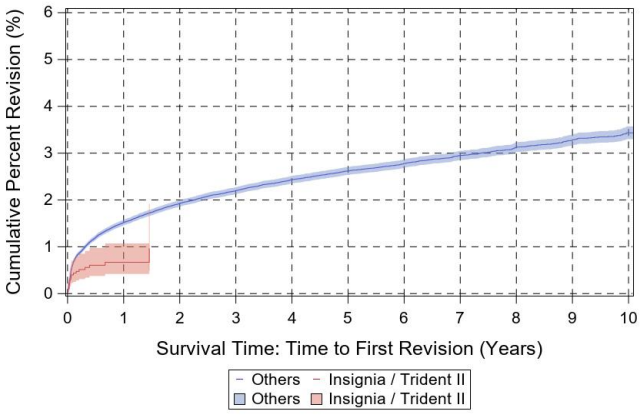


Figure 133. Cumulative Percent Revision Curve for the Insignia/Trident II Combination, Compared to All Other Implant Combinations in Primary THA Cases

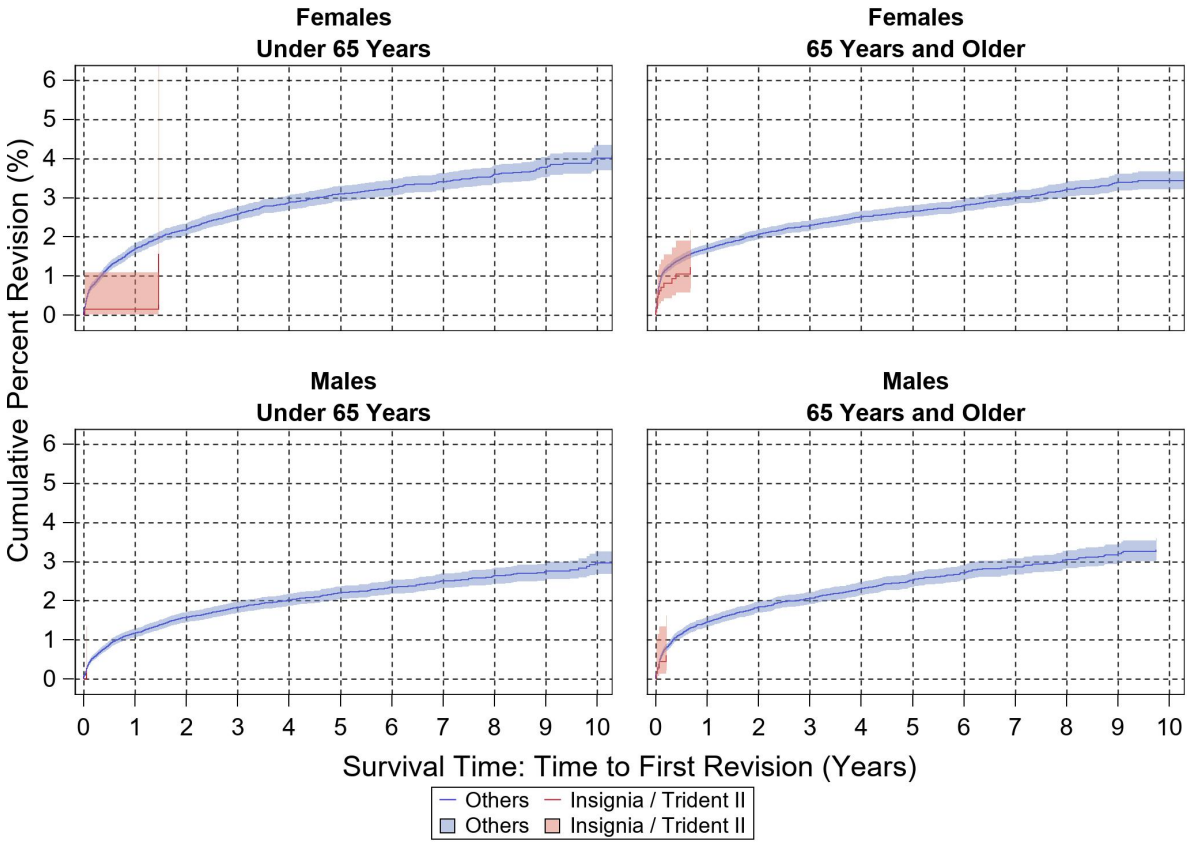


Figure 134. Cumulative Percent Revision Curve for the Insignia/Trident II Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 281. Cumulative Percent Revision and Number at Risk for the Insignia/Trident II Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,067	0.00 (0.00,0.00)	655	0.00 (0.00,0.00)	1,156	0.00 (0.00,0.00)	555	0.00 (0.00,0.00)	701	0.00 (0.00,0.00)
1	982	0.67 (0.42,1.07)	205	0.16 (0.02,1.10)	377	1.22 (0.68,2.17)	169	0.19 (0.03,1.34)	231	0.61 (0.23,1.62)
2	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
3	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
4	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
5	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
6	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
7	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

Table 282. Reasons for First Revision Following Primary THA for Insignia/Trident II Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	7	36.8
2	Aseptic Loosening	4	21.1
3	Dislocation/Instability	4	21.1
4	Joint Infection	3	15.8
5	Implant Failure	1	5.3

Table 283. Reasons for First Revision in the First 90 Days Following Primary THA for Insignia/Trident II Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	7	46.7
2	Dislocation/Instability	3	20.0
3	Aseptic Loosening	2	13.3
4	Joint Infection	2	13.3
5	Implant Failure	1	6.7

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Table 284. Reasons for First Revision Between 91 and 365 days Following Primary THA for Insignia/Trident II Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	33.3
2	Dislocation/Instability	1	33.3
3	Joint Infection	1	33.3

Table 285. Descriptive Statistics of Cases Receiving the Insignia/Trident II Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,814	59.03	
Age (years)	3,073	66.02 (10.55)	67.00 (13.00)
Height (cm)	3,073	169.08 (9.95)	168.00 (13.13)
Weight (kg)	3,073	88.17 (21.10)	86.30 (28.62)
BMI(kg/m^2)	3,073	30.70 (6.25)	30.11 (8.41)
Smoker - Never (%)	1,635	53.21	
Smoker - Previous (%)	1,087	35.37	
Smoker - Current (%)	345	11.23	
Smoker - Unknown (%)	6	0.2	

Table 286. Distribution of Approach Used for Insignia/Trident II Combination in Primary THA Cases

Approach	N	Percent
Anterior	1,979	64.4
Anterolateral	88	2.9
Posterior	1,005	32.7
Transtrochanteric	0	0.0
Missing/unknown/other	1	0.0

Table 287. Distribution of Head Size for Insignia/Trident II Combination in Primary THA Cases

Size (mm)	N	Percent
22	1	0.0
28	1	0.0
32	177	6.6
36	2,290	84.8
40	217	8.0
44	6	0.2
Missing/unknown/other	8	0.3

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Table 288. Distribution of Bearing Surface for Insignia/Trident II Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	47	1.5
Ceramic-on-plastic	2,645	86.1
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	343	11.2
Missing/unknown/other	38	1.2

Table 289. Distribution of Polyethylene Used for Insignia/Trident II Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	102	3.4
Antioxidant XLPE	0	0.0
Missing/unknown/other	2,917	96.6

Table 290. Volume of Cases by Surgeon and Site for the Insignia/Trident II Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	58 (102)	19 (68)
Cases per site	75 (122)	46 (67)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

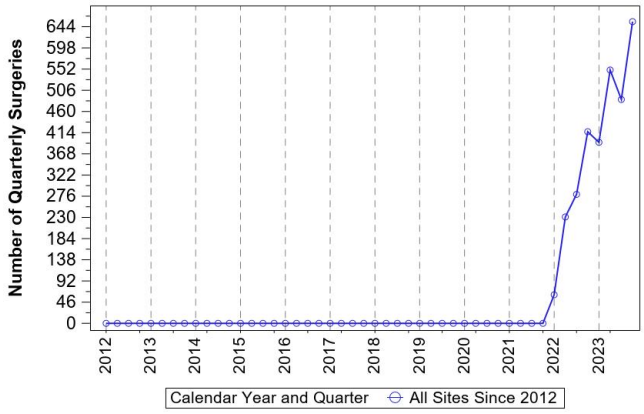


Figure 135. Utilization of the Insignia/Trident II Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

70006605	70006607	70006608
70006604	70005503	70005508
70006606	70005506	70006601
70006603	70006602	
70005505	70005507	
70005504	70005502	

Catalog numbers of Acetabular Cups Used in the Analysis

7020452E	7021148D	7090458F
7020454E	7000454E	7000446C
7020448D	7020446C	7021162G
7020450D	7000450D	7090454E
7020456F	7000456F	7000460G
7021152E	7000448D	7090456F
7020458F	7021160G	7090450D
7021150D	7020462G	7090460G
7021154E	7090448D	7021164H
7021156F	7020444B	7090446C
7021158F	7090452E	7090462G
7000452E	7000458F	7090464H
7020460G	7021146C	

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4.1.20 M/L Taper/Continuum

This analysis excludes M/L Taper Kinectiv. N = 8,534 primary cases were used for this analysis. Distribution of utilization: 69 surgeons across 35 sites used this implant combination in primary THA cases.

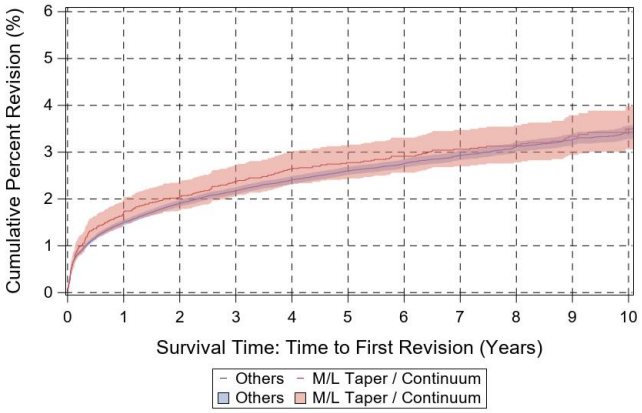


Figure 136. Cumulative Percent Revision Curve for the M/L Taper/Continuum Combination, Compared to All Other Implant Combinations in Primary THA Cases

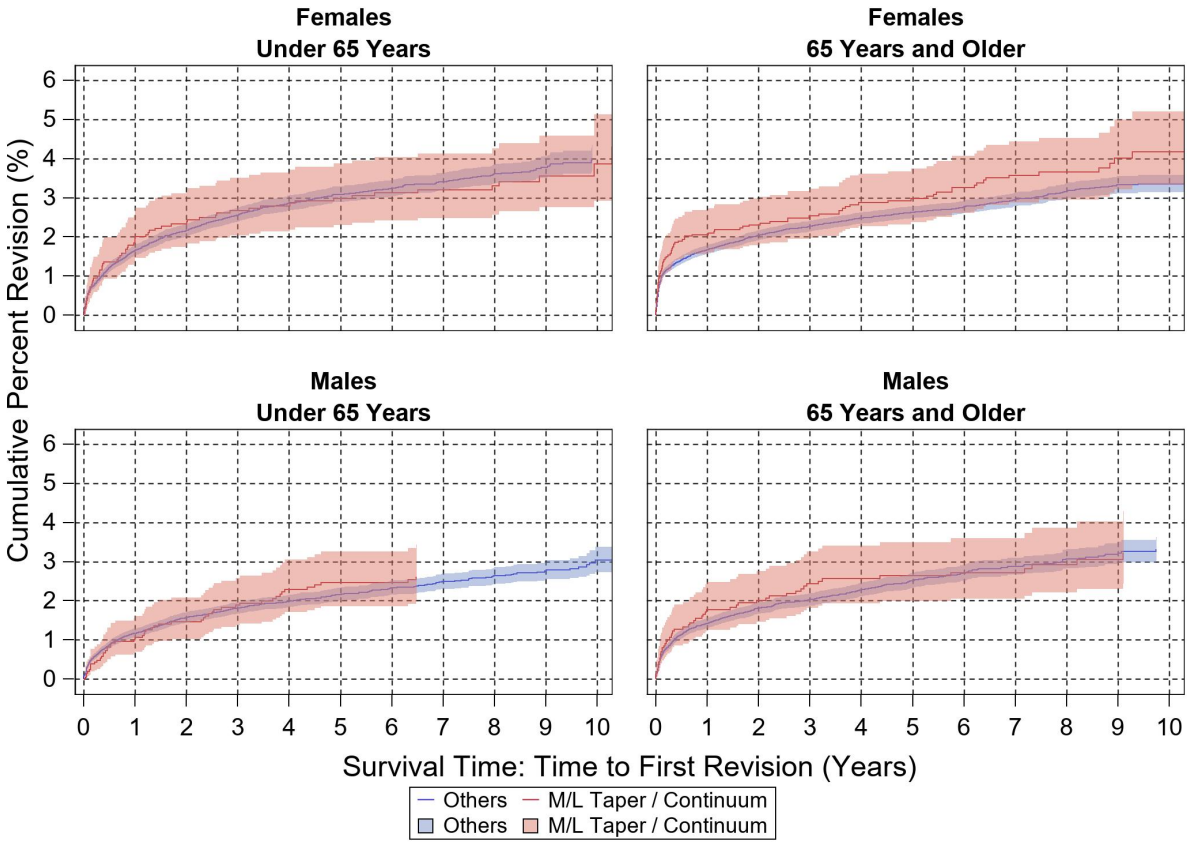


Figure 137. Cumulative Percent Revision Curve for the M/L Taper/Continuum Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 291. Cumulative Percent Revision and Number at Risk for the M/L Taper/Continuum Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	8,462	0.00 (0.00,0.00)	1,919	0.00 (0.00,0.00)	2,546	0.00 (0.00,0.00)	2,101	0.00 (0.00,0.00)	1,896	0.00 (0.00,0.00)
1	7,993	1.72 (1.46,2.02)	1,826	1.95 (1.41,2.68)	2,386	2.05 (1.57,2.69)	2,015	1.06 (0.70,1.60)	1,766	1.77 (1.26,2.48)
2	7,561	2.03 (1.75,2.36)	1,747	2.33 (1.74,3.12)	2,252	2.31 (1.79,2.97)	1,907	1.46 (1.02,2.08)	1,655	2.00 (1.45,2.75)
3	7,065	2.38 (2.07,2.73)	1,646	2.67 (2.03,3.51)	2,099	2.53 (1.98,3.23)	1,793	1.88 (1.37,2.58)	1,527	2.43 (1.82,3.26)
4	6,598	2.64 (2.31,3.01)	1,560	2.79 (2.13,3.65)	1,954	2.87 (2.28,3.62)	1,675	2.28 (1.71,3.05)	1,409	2.56 (1.92,3.41)
5	6,064	2.78 (2.44,3.16)	1,438	2.98 (2.30,3.87)	1,812	2.98 (2.37,3.74)	1,539	2.46 (1.86,3.26)	1,275	2.64 (1.98,3.50)
6	5,454	2.91 (2.56,3.31)	1,299	3.12 (2.42,4.03)	1,624	3.26 (2.61,4.06)	1,373	2.46 (1.86,3.26)	1,158	2.72 (2.05,3.59)
7	4,771	3.06 (2.70,3.47)	1,161	3.20 (2.48,4.13)	1,398	3.57 (2.88,4.43)	1,218	2.61 (1.98,3.44)	994	2.72 (2.05,3.59)
8	3,847	3.15 (2.78,3.57)	942	3.30 (2.56,4.26)	1,091	3.65 (2.94,4.52)	1,011	2.61 (1.98,3.44)	803	2.92 (2.21,3.85)
9	2,644	3.34 (2.94,3.79)	639	3.55 (2.75,4.58)	736	4.01 (3.22,4.99)	717	2.61 (1.98,3.44)	552	3.05 (2.31,4.02)
10	1,264	3.49 (3.06,3.98)	290	3.87 (2.91,5.13)	344	4.16 (3.33,5.20)	345	2.61 (1.98,3.44)	285	3.23 (2.43,4.29)

Table 292. Reasons for First Revision Following Primary THA for M/L Taper/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	62	27.6
2	Dislocation/Instability	57	25.3
3	Aseptic Loosening	35	15.6
4	Joint Infection	32	14.2
5	Implant Failure	11	4.9
6	Malalignment	11	4.9
7	Pain	8	3.6
8	Metal Reaction/Metallosis	5	2.2
9	Peri-prosthetic fracture - Acetabulum	4	1.8

Table 293. Reasons for First Revision in the First 90 Days Following Primary THA for M/L Taper/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	41	50.6
2	Dislocation/Instability	21	25.9
3	Aseptic Loosening	5	6.2
4	Joint Infection	5	6.2
5	Implant Failure	3	3.7
6	Peri-prosthetic fracture - Acetabulum	3	3.7
7	Malalignment	3	3.7

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Table 294. Reasons for First Revision Between 91 and 365 days Following Primary THA for M/L Taper/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	12	30.0
2	Dislocation/Instability	9	22.5
3	Aseptic Loosening	6	15.0
4	Peri-prosthetic fracture - Femur	6	15.0
5	Pain	4	10.0
6	Implant Failure	3	7.5

Table 295. Descriptive Statistics of Cases Receiving the M/L Taper/Continuum Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	4,495	52.67	
Age (years)	8,534	64.89 (10.48)	65.00 (14.00)
Height (cm)	8,525	170.38 (10.37)	170.18 (15.20)
Weight (kg)	8,524	87.86 (19.95)	86.18 (27.20)
BMI(kg/m^2)	8,524	30.14 (5.78)	29.54 (7.60)
Smoker - Never (%)	4,301	50.4	
Smoker - Previous (%)	3,251	38.09	
Smoker - Current (%)	961	11.26	
Smoker - Unknown (%)	21	0.25	

Table 296. Distribution of Approach Used for M/L Taper/Continuum Combination in Primary THA Cases

Approach	N	Percent
Anterior	1,906	22.3
Anterolateral	1336	15.7
Posterior	5,184	60.8
Transtrochanteric	69	0.8
Missing/unknown/other	39	0.5

Table 297. Distribution of Head Size for M/L Taper/Continuum Combination in Primary THA Cases

Size (mm)	N	Percent
28	18	0.2
32	1,811	21.4
36	5,751	67.8
40	825	9.7
Missing/unknown/other	78	0.9

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Table 298. Distribution of Bearing Surface for M/L Taper/Continuum Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	2,329	27.3
Ceramic-on-plastic	6,073	71.2
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	132	1.6

Table 299. Distribution of Polyethylene Used for M/L Taper/Continuum Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	5,531	65.2
Antioxidant XLPE	2,474	29.2
Missing/unknown/other	475	5.6

Table 300. Volume of Cases by Surgeon and Site for the M/L Taper/Continuum Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	123 (280)	31 (88)
Cases per site	243 (621)	49 (163)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

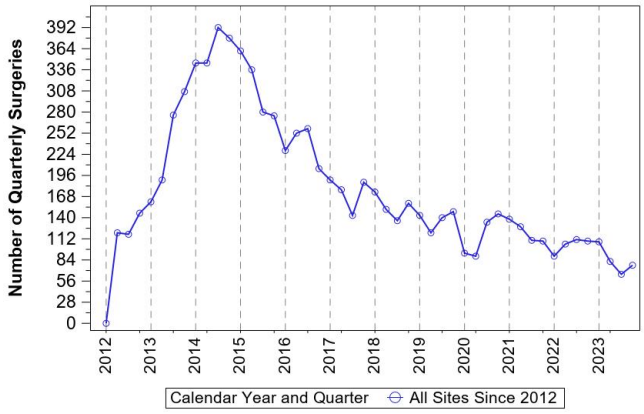


Figure 138. Utilization of the M/L Taper/Continuum Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

771101220	771101140	771100410
771100900	771100910	771100500
771101320	771100710	771101600
771101200	771101240	771100540
771101120	771100720	771100620
771101000	771101010	771100510
771101100	771101500	771100520
771100700	771100640	771102020
771101520	771101110	771101700
771100940	771101210	771102000
771101020	771101620	771102200
771100920	771100600	771102220
771101300	771100610	
771100740	771101720	
771101040	771100440	

Catalog numbers of Acetabular Cups Used in the Analysis

875705201	875705402	875706801
875705401	875705200	875704800
875705601	875705400	875704601
875705801	875705600	875706200
875706001	875705802	875704401
875705001	875705800	875706202
875704801	875705602	875704402
875706201	875706601	875706402
875706401	875704602	875706602
875705002	875705000	875706802
875705202	875706000	875707001
875704802	875706002	

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4.1.21 M/L Taper/G7

This analysis excludes M/L Taper Kinectiv. N = 4,770 primary cases were used for this analysis. Distribution of utilization: 37 surgeons across 27 sites used this implant combination in primary THA cases.

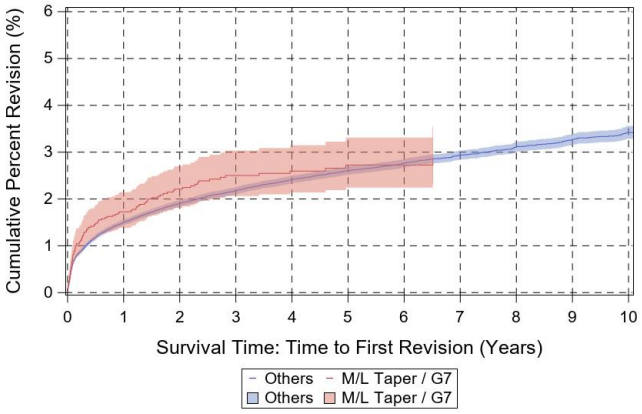


Figure 139. Cumulative Percent Revision Curve for the M/L Taper/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases

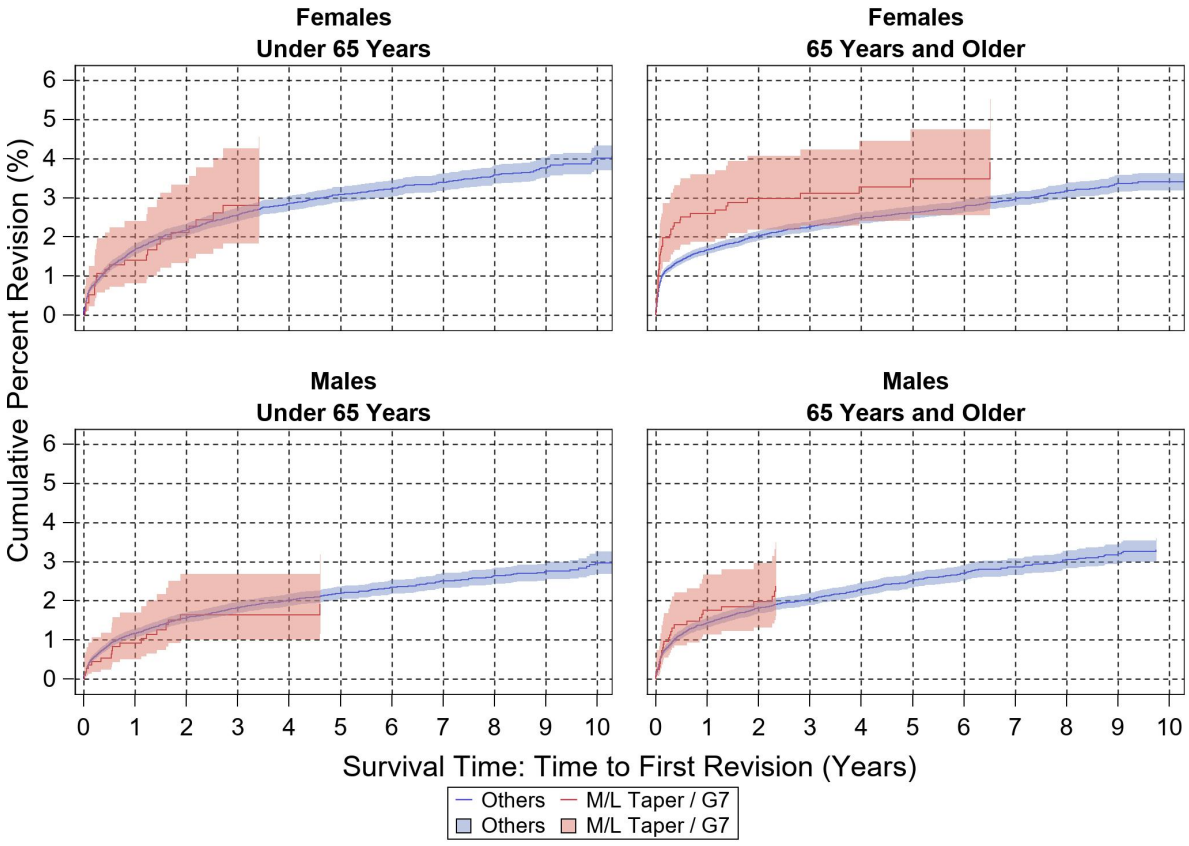


Figure 140. Cumulative Percent Revision Curve for the M/L Taper/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 301. Cumulative Percent Revision and Number at Risk for the M/L Taper/G7 Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	4,750	0.00 (0.00,0.00)	967	0.00 (0.00,0.00)	1,375	0.00 (0.00,0.00)	1,147	0.00 (0.00,0.00)	1,261	0.00 (0.00,0.00)
1	3,872	1.72 (1.39,2.15)	791	1.40 (0.82,2.40)	1,110	2.59 (1.87,3.60)	937	0.92 (0.50,1.70)	1,034	1.75 (1.14,2.67)
2	2,967	2.21 (1.81,2.70)	606	2.10 (1.32,3.33)	868	2.98 (2.19,4.07)	708	1.64 (1.00,2.68)	785	1.97 (1.31,2.96)
3	2,354	2.50 (2.06,3.03)	492	2.80 (1.83,4.26)	722	3.11 (2.29,4.24)	539	1.64 (1.00,2.68)	601	2.38 (1.61,3.50)
4	1,950	2.60 (2.14,3.15)	418	3.01 (1.99,4.56)	616	3.27 (2.40,4.45)	441	1.64 (1.00,2.68)	475	2.38 (1.61,3.50)
5	1,405	2.73 (2.24,3.31)	313	3.01 (1.99,4.56)	451	3.48 (2.55,4.75)	310	1.92 (1.16,3.19)	331	2.38 (1.61,3.50)
6	941	2.73 (2.24,3.31)	215	3.01 (1.99,4.56)	307	3.48 (2.55,4.75)	204	1.92 (1.16,3.19)	215	2.38 (1.61,3.50)
7	452	2.87 (2.33,3.54)	105	3.01 (1.99,4.56)	156	3.90 (2.75,5.51)	82	1.92 (1.16,3.19)	109	2.38 (1.61,3.50)
8	76	2.87 (2.33,3.54)	25	3.01 (1.99,4.56)	23	3.90 (2.75,5.51)	12	1.92 (1.16,3.19)	16	2.38 (1.61,3.50)
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

Table 302. Reasons for First Revision Following Primary THA for M/L Taper/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	36	33.0
2	Dislocation/Instability	35	32.1
3	Joint Infection	18	16.5
4	Aseptic Loosening	12	11.0
5	Implant Failure	3	2.8
6	Malalignment	3	2.8
7	Pain	2	1.8

Table 303. Reasons for First Revision in the First 90 Days Following Primary THA for M/L Taper/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	33	62.3
2	Dislocation/Instability	10	18.9
3	Aseptic Loosening	3	5.7
4	Joint Infection	3	5.7
5	Implant Failure	3	5.7
6	Malalignment	1	1.9

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Table 304. Reasons for First Revision Between 91 and 365 days Following Primary THA for M/L Taper/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	12	46.2
2	Joint Infection	8	30.8
3	Aseptic Loosening	3	11.5
4	Peri-prosthetic fracture - Femur	3	11.5

Table 305. Descriptive Statistics of Cases Receiving the M/L Taper/G7 Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	2,351	49.29	
Age (years)	4,770	64.94 (10.12)	66.00 (13.00)
Height (cm)	4,770	170.90 (10.30)	170.20 (15.20)
Weight (kg)	4,770	89.55 (19.87)	88.00 (27.70)
BMI(kg/m^2)	4,770	30.58 (5.92)	29.91 (8.19)
Smoker - Never (%)	2,402	50.36	
Smoker - Previous (%)	1,853	38.85	
Smoker - Current (%)	514	10.78	
Smoker - Unknown (%)	0	0.0	

Table 306. Distribution of Approach Used for M/L Taper/G7 Combination in Primary THA Cases

Approach	N	Percent
Anterior	1,103	23.1
Anterolateral	356	7.5
Posterior	3,309	69.4
Transtrochanteric	2	0.0
Missing/unknown/other	0	0.0

Table 307. Distribution of Head Size for M/L Taper/G7 Combination in Primary THA Cases

Size (mm)	N	Percent
28	2	0.0
32	279	6.2
36	3,559	78.7
40	680	15.0
Missing/unknown/other	5	0.1

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Table 308. Distribution of Bearing Surface for M/L Taper/G7 Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	425	8.9
Ceramic-on-plastic	4,095	85.8
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	210	4.4
Missing/unknown/other	40	0.8

Table 309. Distribution of Polyethylene Used for M/L Taper/G7 Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,136	24.1
Antioxidant XLPE	2,614	55.5
Missing/unknown/other	956	20.3

Table 310. Volume of Cases by Surgeon and Site for the M/L Taper/G7 Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	128 (271)	14 (98)
Cases per site	176 (367)	18 (215)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

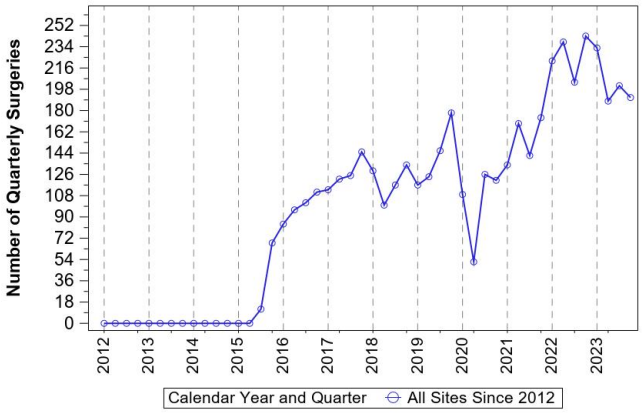


Figure 141. Utilization of the M/L Taper/G7 Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

771100900	771100920	771100440
771101240	771101020	771100540
771101320	771101300	771101110
771100940	771100600	771101210
771100700	771100720	771100520
771101140	771100910	771101720
771101040	771101620	771100510
771101100	771100640	771101600
771101220	771100710	771100410
771101000	771101500	771102020
771100740	771101010	771101700
771101120	771100610	
771101520	771100620	
771101200	771100500	

Catalog numbers of Acetabular Cups Used in the Analysis

10000664	110010242	110010263
10000665	10000668	110010240
10000663	110010248	10000670
10000662	110010249	110010269
10000666	10000660	110010268
10000667	110010241	110010270
110010245	10000669	110010272
110010244	110010264	110017100
110010246	110010267	110017102
110010243	110010265	
110010247	110010266	
10000661	110010250	

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4.1.22 M/L Taper/Trabecular Metal

This analysis excludes M/L Taper Kinectiv. N = 1,064 primary cases were used for this analysis. Distribution of utilization: 22 surgeons across 15 sites used this implant combination in primary THA cases.

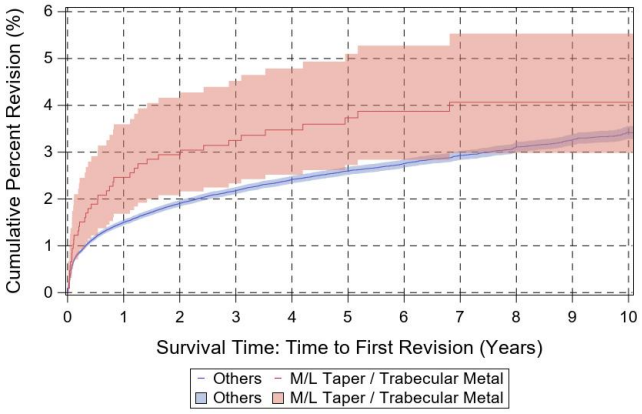


Figure 142. Cumulative Percent Revision Curve for the M/L Taper/Trabecular Metal Combination, Compared to All Other Implant Combinations in Primary THA Cases

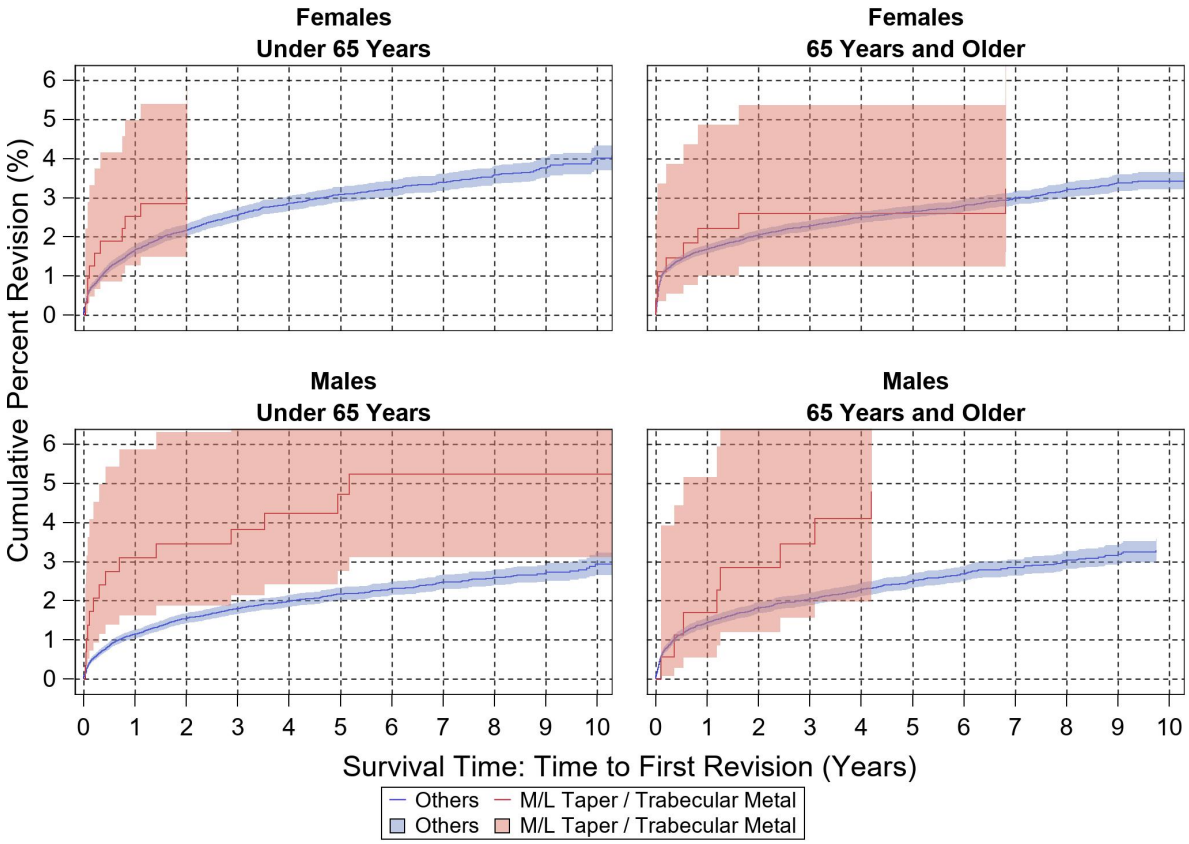


Figure 143. Cumulative Percent Revision Curve for the M/L Taper/Trabecular Metal Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 311. Cumulative Percent Revision and Number at Risk for the M/L Taper/Trabecular Metal Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,061	0.00 (0.00,0.00)	319	0.00 (0.00,0.00)	273	0.00 (0.00,0.00)	291	0.00 (0.00,0.00)	178	0.00 (0.00,0.00)
1	1,014	2.46 (1.68,3.60)	304	2.53 (1.27,4.99)	260	2.22 (1.00,4.87)	279	3.09 (1.62,5.86)	171	1.70 (0.55,5.16)
2	994	2.95 (2.08,4.16)	296	2.85 (1.49,5.40)	255	2.59 (1.24,5.36)	275	3.44 (1.87,6.31)	168	2.85 (1.20,6.71)
3	894	3.25 (2.33,4.52)	259	3.18 (1.72,5.82)	232	2.59 (1.24,5.36)	252	3.82 (2.13,6.79)	151	3.46 (1.57,7.53)
4	807	3.47 (2.52,4.79)	224	3.18 (1.72,5.82)	218	2.59 (1.24,5.36)	226	4.23 (2.42,7.33)	139	4.09 (1.97,8.41)
5	705	3.73 (2.73,5.10)	190	3.18 (1.72,5.82)	199	2.59 (1.24,5.36)	192	4.72 (2.76,8.03)	124	4.79 (2.42,9.38)
6	597	3.87 (2.84,5.27)	146	3.18 (1.72,5.82)	180	2.59 (1.24,5.36)	158	5.23 (3.11,8.74)	113	4.79 (2.42,9.38)
7	472	4.07 (2.98,5.53)	104	3.18 (1.72,5.82)	150	3.23 (1.60,6.46)	118	5.23 (3.11,8.74)	100	4.79 (2.42,9.38)
8	269	4.07 (2.98,5.53)	54	3.18 (1.72,5.82)	98	3.23 (1.60,6.46)	55	5.23 (3.11,8.74)	62	4.79 (2.42,9.38)
9	184	4.07 (2.98,5.53)	37	3.18 (1.72,5.82)	68	3.23 (1.60,6.46)	36	5.23 (3.11,8.74)	43	4.79 (2.42,9.38)
10	100	4.07 (2.98,5.53)	18	3.18 (1.72,5.82)	43	3.23 (1.60,6.46)	14	5.23 (3.11,8.74)	25	4.79 (2.42,9.38)

Table 312. Reasons for First Revision Following Primary THA for M/L Taper/Trabecular Metal Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	12	29.3
2	Aseptic Loosening	11	26.8
3	Dislocation/Instability	6	14.6
4	Joint Infection	6	14.6
5	Implant Failure	4	9.8
6	Pain	1	2.4
7	Malalignment	1	2.4

Table 313. Reasons for First Revision in the First 90 Days Following Primary THA for M/L Taper/Trabecular Metal Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	9	56.2
2	Dislocation/Instability	4	25.0
3	Aseptic Loosening	3	18.8

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Table 314. Reasons for First Revision Between 91 and 365 days Following Primary THA for M/L Taper/Trabecular Metal Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	3	30.0
2	Implant Failure	3	30.0
3	Joint Infection	1	10.0
4	Peri-prosthetic fracture - Femur	1	10.0
5	Pain	1	10.0
6	Malalignment	1	10.0

Table 315. Descriptive Statistics of Cases Receiving the M/L Taper/Trabecular Metal Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	593	55.73	
Age (years)	1,064	62.59 (10.65)	62.50 (13.00)
Height (cm)	1,064	169.50 (10.81)	168.00 (15.80)
Weight (kg)	1,063	91.74 (22.70)	90.00 (31.00)
BMI(kg/m^2)	1,063	32.04 (8.80)	31.02 (10.07)
Smoker - Never (%)	371	34.87	
Smoker - Previous (%)	348	32.71	
Smoker - Current (%)	343	32.24	
Smoker - Unknown (%)	2	0.19	

Table 316. Distribution of Approach Used for M/L Taper/Trabecular Metal Combination in Primary THA Cases

Approach	N	Percent
Anterior	6	0.6
Anterolateral	384	36.1
Posterior	646	60.7
Transtrochanteric	23	2.2
Missing/unknown/other	5	0.5

Table 317. Distribution of Head Size for M/L Taper/Trabecular Metal Combination in Primary THA Cases

Size (mm)	N	Percent
28	18	1.7
32	519	49.0
36	453	42.8
40	34	3.2
Missing/unknown/other	34	3.2

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Table 318. Distribution of Bearing Surface for M/L Taper/Trabecular Metal Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	397	37.3
Ceramic-on-plastic	627	58.9
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	40	3.8

Table 319. Distribution of Polyethylene Used for M/L Taper/Trabecular Metal Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	874	82.6
Antioxidant XLPE	1	0.1
Missing/unknown/other	183	17.3

Table 320. Volume of Cases by Surgeon and Site for the M/L Taper/Trabecular Metal Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	48 (140)	2 (6)
Cases per site	70 (166)	4 (60)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

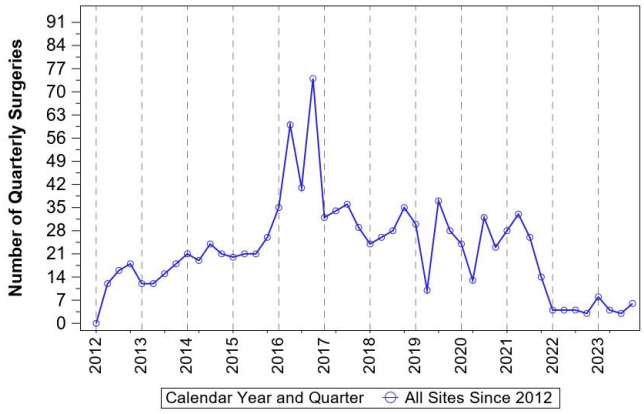


Figure 144. Utilization of the M/L Taper/Trabecular Metal Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

771100700	771101520	771101140
771100900	771101500	771100740
771101200	771100620	771101240
771101100	771100440	771102020
771101000	771100520	771100610
771101220	771101600	771100710
771101020	771101620	771101040
771101120	771100410	771102000
771101320	771101700	771100540
771100920	771100910	771100940
771100500	771101720	771102220
771100600	771101210	
771101300	771101010	
771100720	771101110	

Catalog numbers of Acetabular Cups Used in the Analysis

620204822	620206222	620205220
620205022	620205020	620205420
620205222	620205820	620207022
620205422	620205620	620206420
620205622	620206020	620206820
620205822	620206220	620207020
620206022	620206422	712306254
620204622	620204820	

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4.1.23 M/L Taper/Trilogy

This analysis excludes M/L Taper Kinectiv. N = 1,335 primary cases were used for this analysis. Distribution of utilization: 16 surgeons across 10 sites used this implant combination in primary THA cases.

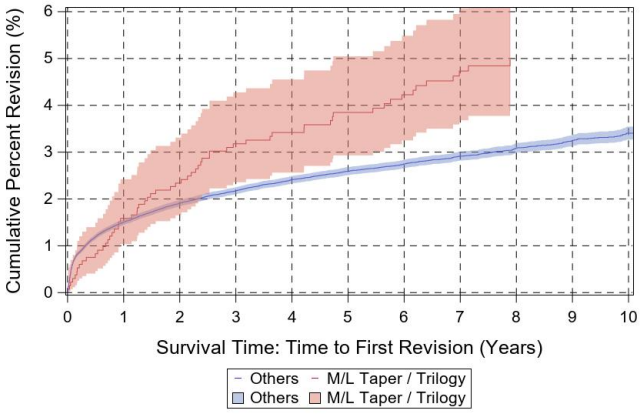


Figure 145. Cumulative Percent Revision Curve for the M/L Taper/Trilogy Combination, Compared to All Other Implant Combinations in Primary THA Cases

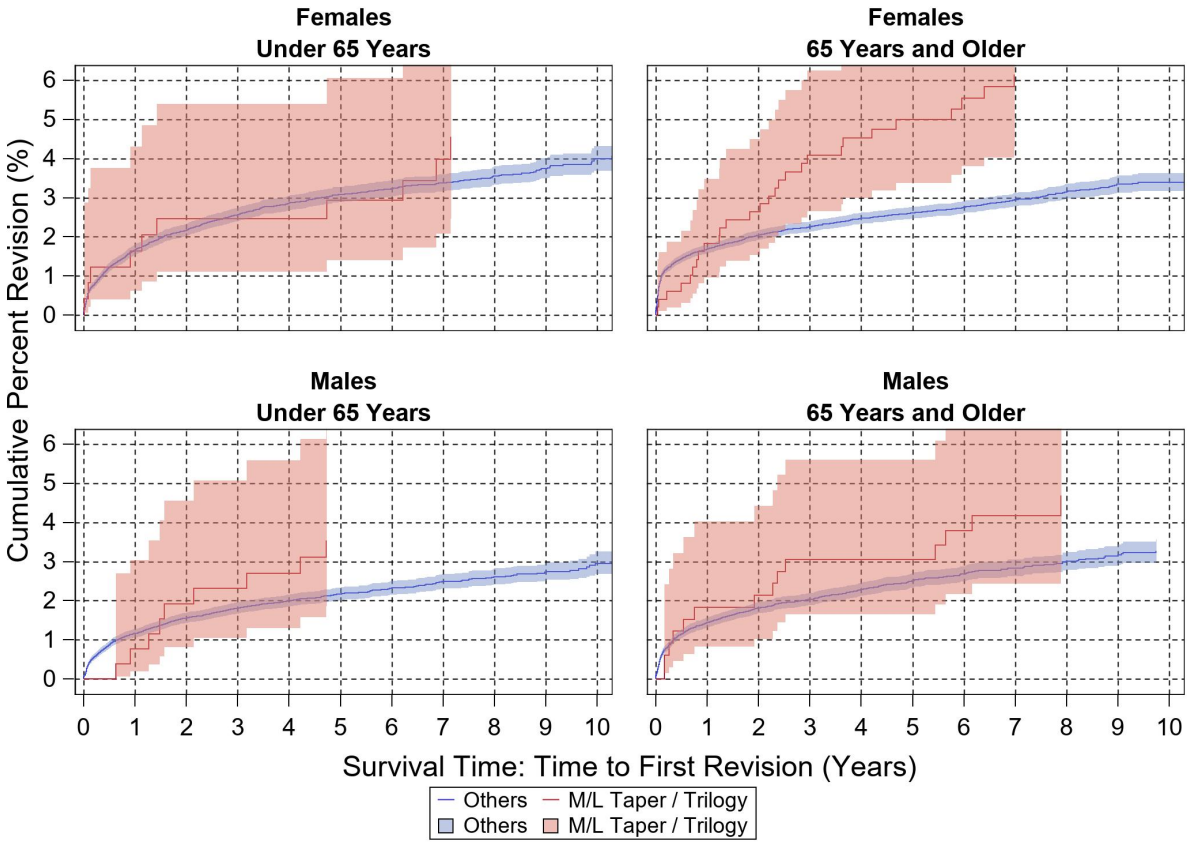


Figure 146. Cumulative Percent Revision Curve for the M/L Taper/Trilogy Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 321. Cumulative Percent Revision and Number at Risk for the M/L Taper/Trilogy Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,325	0.00 (0.00,0.00)	244	0.00 (0.00,0.00)	493	0.00 (0.00,0.00)	260	0.00 (0.00,0.00)	328	0.00 (0.00,0.00)
1	1,304	1.58 (1.04,2.42)	240	1.64 (0.62,4.31)	484	1.83 (0.95,3.48)	258	0.77 (0.19,3.04)	322	1.83 (0.83,4.03)
2	1,294	2.34 (1.65,3.31)	238	2.46 (1.11,5.39)	480	2.64 (1.54,4.50)	255	1.92 (0.80,4.56)	321	2.13 (1.02,4.42)
3	1,252	3.18 (2.36,4.28)	234	2.46 (1.11,5.39)	458	4.08 (2.65,6.25)	251	2.31 (1.04,5.07)	309	3.05 (1.66,5.60)
4	1,173	3.42 (2.56,4.55)	219	2.46 (1.11,5.39)	425	4.52 (3.00,6.78)	237	2.70 (1.30,5.58)	292	3.05 (1.66,5.60)
5	1,078	3.85 (2.93,5.05)	202	2.93 (1.41,6.07)	379	4.99 (3.37,7.36)	222	3.54 (1.86,6.70)	275	3.05 (1.66,5.60)
6	995	4.23 (3.25,5.49)	193	2.93 (1.41,6.07)	338	5.55 (3.80,8.06)	209	3.54 (1.86,6.70)	255	3.79 (2.17,6.59)
7	890	4.73 (3.68,6.08)	172	3.98 (2.08,7.54)	298	6.15 (4.27,8.82)	192	3.54 (1.86,6.70)	228	4.18 (2.44,7.10)
8	689	4.98 (3.88,6.37)	126	4.55 (2.46,8.34)	235	6.15 (4.27,8.82)	146	3.54 (1.86,6.70)	182	4.69 (2.78,7.86)
9	494	4.98 (3.88,6.37)	88	4.55 (2.46,8.34)	165	6.15 (4.27,8.82)	118	3.54 (1.86,6.70)	123	4.69 (2.78,7.86)
10	298	4.98 (3.88,6.37)	55	4.55 (2.46,8.34)	93	6.15 (4.27,8.82)	74	3.54 (1.86,6.70)	76	4.69 (2.78,7.86)

Table 322. Reasons for First Revision Following Primary THA for M/L Taper/Trilogy Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	13	23.2
2	Dislocation/Instability	10	17.9
3	Peri-prosthetic fracture - Femur	9	16.1
4	Joint Infection	8	14.3
5	Metal Reaction/Metallosis	5	8.9
6	Malalignment	4	7.1
7	Implant Failure	3	5.4
8	Peri-prosthetic fracture - Acetabulum	2	3.6
9	Poly liner wear	1	1.8
10	Pain	1	1.8

Table 323. Reasons for First Revision in the First 90 Days Following Primary THA for M/L Taper/Trilogy Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	5	71.4
2	Dislocation/Instability	1	14.3
3	Peri-prosthetic fracture - Acetabulum	1	14.3

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Table 324. Reasons for First Revision Between 91 and 365 days Following Primary THA for M/L Taper/Trilogy Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	4	40.0
2	Aseptic Loosening	2	20.0
3	Joint Infection	2	20.0
4	Peri-prosthetic fracture - Acetabulum	1	10.0
5	Peri-prosthetic fracture - Femur	1	10.0

Table 325. Descriptive Statistics of Cases Receiving the M/L Taper/Trilogy Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	744	55.73	
Age (years)	1,335	67.56 (9.36)	67.00 (13.00)
Height (cm)	1,335	169.13 (10.29)	167.64 (16.80)
Weight (kg)	1,335	87.03 (19.64)	85.30 (27.70)
BMI(kg/m^2)	1,335	30.31 (5.81)	29.67 (7.55)
Smoker - Never (%)	600	44.94	
Smoker - Previous (%)	558	41.8	
Smoker - Current (%)	176	13.18	
Smoker - Unknown (%)	1	0.07	

Table 326. Distribution of Approach Used for M/L Taper/Trilogy Combination in Primary THA Cases

Approach	N	Percent
Anterior	6	0.5
Anterolateral	1037	77.7
Posterior	267	20.0
Transtrochanteric	23	1.7
Missing/unknown/other	2	0.1

Table 327. Distribution of Head Size for M/L Taper/Trilogy Combination in Primary THA Cases

Size (mm)	N	Percent
32	786	59.0
36	484	36.3
40	15	1.1
Missing/unknown/other	47	3.5

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Table 328. Distribution of Bearing Surface for M/L Taper/Trilogy Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	994	74.5
Ceramic-on-plastic	291	21.8
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	50	3.8

Table 329. Distribution of Polyethylene Used for M/L Taper/Trilogy Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,260	94.6
Antioxidant XLPE	0	0.0
Missing/unknown/other	72	5.4

Table 330. Volume of Cases by Surgeon and Site for the M/L Taper/Trilogy Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	83 (138)	27 (93)
Cases per site	133 (205)	13 (271)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

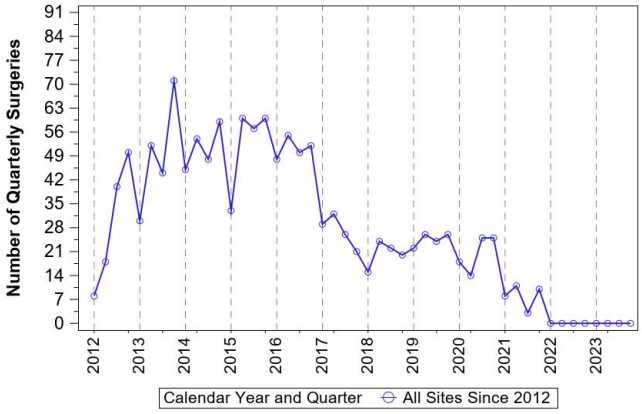


Figure 147. Utilization of the M/L Taper/Trilogy Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

771100910	771101300	771101620
771100710	771101200	771101700
771101010	771101220	771101720
771100940	771101040	771100500
771100900	771100610	771100540
771101240	771100920	771101600
771100740	771100720	771100440
771101000	771100640	771100620
771100700	771101520	771100520
771101140	771101120	771102000
771101100	771101500	771102020
771101210	771101020	
771101110	771100600	
771101320	771100510	

Catalog numbers of Acetabular Cups Used in the Analysis

620005222	620004822	620005824
620005422	620005020	620006024
620005022	620006422	620006622
620005822	620006224	620006624
620005622	620005024	
620006022	620005424	
620006222	620005624	

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4.1.24 Polarstem/Reflection 3

N = 3,227 primary cases were used for this analysis. Distribution of utilization: 46 surgeons across 32 sites used this implant combination in primary THA cases.

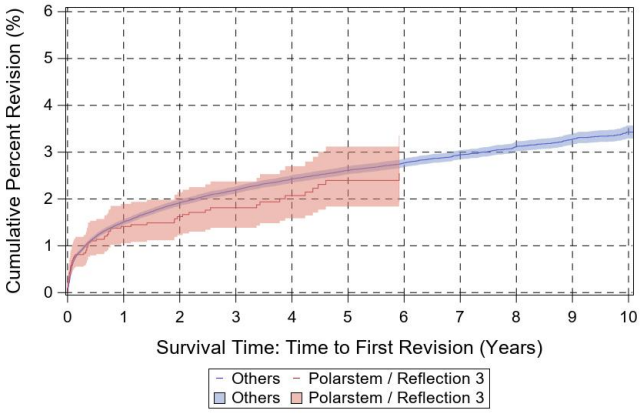


Figure 148. Cumulative Percent Revision Curve for the Polarstem/Reflection 3 Combination, Compared to All Other Implant Combinations in Primary THA Cases

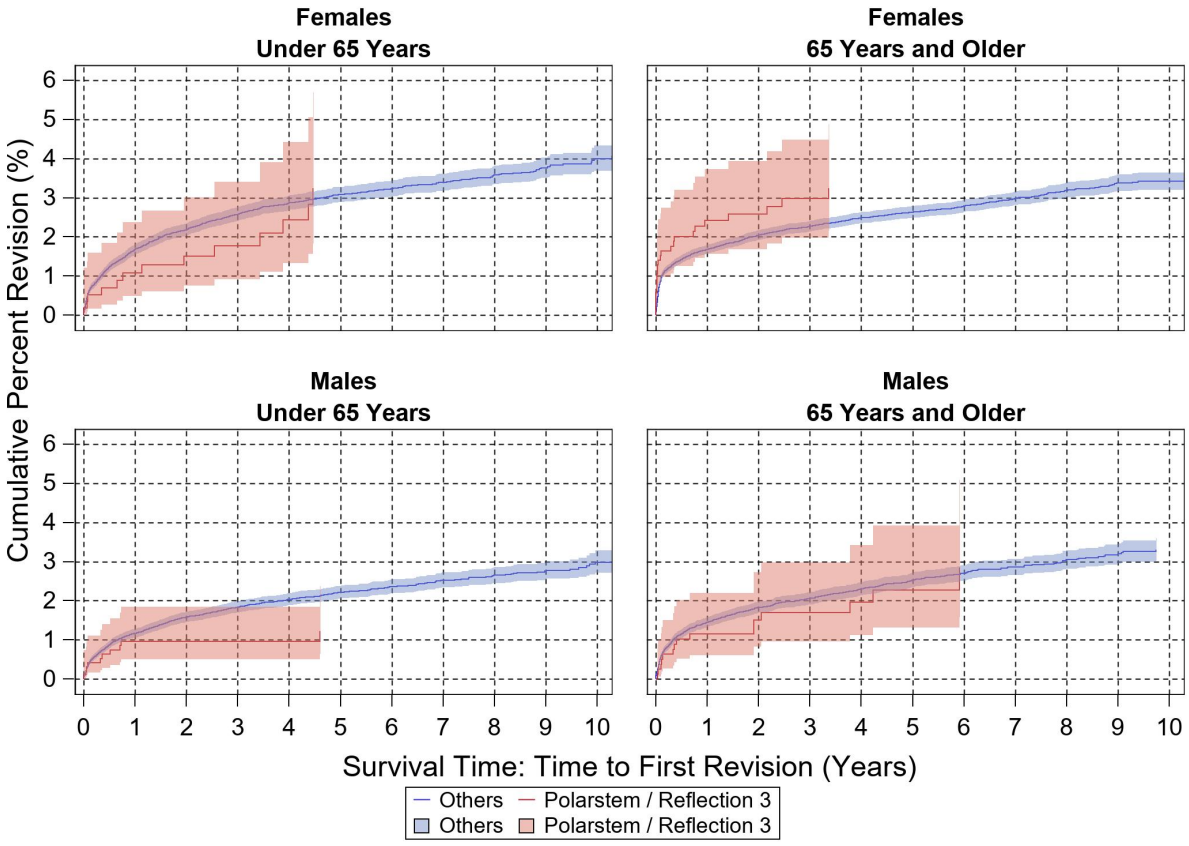


Figure 149. Cumulative Percent Revision Curve for the Polarstem/Reflection 3 Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 331. Cumulative Percent Revision and Number at Risk for the Polarstem/Reflection 3 Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,213	0.00 (0.00,0.00)	583	0.00 (0.00,0.00)	859	0.00 (0.00,0.00)	963	0.00 (0.00,0.00)	802	0.00 (0.00,0.00)
1	2,749	1.41 (1.05,1.89)	504	1.08 (0.48,2.38)	681	2.42 (1.56,3.72)	850	0.96 (0.50,1.84)	711	1.15 (0.60,2.20)
2	2,205	1.62 (1.23,2.14)	423	1.51 (0.76,3.01)	527	2.58 (1.68,3.93)	709	0.96 (0.50,1.84)	546	1.51 (0.83,2.72)
3	1,761	1.81 (1.38,2.37)	342	1.77 (0.92,3.40)	407	2.98 (1.97,4.48)	582	0.96 (0.50,1.84)	430	1.69 (0.96,2.98)
4	1,405	2.07 (1.59,2.70)	280	2.43 (1.32,4.42)	315	3.25 (2.15,4.87)	465	0.96 (0.50,1.84)	345	1.96 (1.12,3.42)
5	968	2.40 (1.84,3.12)	182	3.24 (1.83,5.69)	213	3.25 (2.15,4.87)	325	1.23 (0.63,2.37)	248	2.27 (1.31,3.93)
6	598	2.55 (1.94,3.35)	114	3.24 (1.83,5.69)	129	3.25 (2.15,4.87)	197	1.23 (0.63,2.37)	158	2.84 (1.58,5.09)
7	314	2.55 (1.94,3.35)	65	3.24 (1.83,5.69)	78	3.25 (2.15,4.87)	103	1.23 (0.63,2.37)	68	2.84 (1.58,5.09)
8	47	2.55 (1.94,3.35)	15	3.24 (1.83,5.69)	11	3.25 (2.15,4.87)	13	1.23 (0.63,2.37)	*	2.84 (1.58,5.09)
9	*	2.55 (1.94,3.35)	*	3.24 (1.83,5.69)	*	3.25 (2.15,4.87)	*	1.23 (0.63,2.37)	*	2.84 (1.58,5.09)
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 332. Reasons for First Revision Following Primary THA for Polarstem/Reflection 3 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	23	37.1
2	Joint Infection	15	24.2
3	Aseptic Loosening	11	17.7
4	Dislocation/Instability	8	12.9
5	Pain	3	4.8
6	Implant Failure	1	1.6
7	Malalignment	1	1.6

Table 333. Reasons for First Revision in the First 90 Days Following Primary THA for Polarstem/Reflection 3 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	18	69.2
2	Dislocation/Instability	4	15.4
3	Joint Infection	3	11.5
4	Aseptic Loosening	1	3.8

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Table 334. Reasons for First Revision Between 91 and 365 days Following Primary THA for Polarstem/Reflection 3 Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	7	38.9
2	Aseptic Loosening	5	27.8
3	Dislocation/Instability	2	11.1
4	Peri-prosthetic fracture - Femur	2	11.1
5	Pain	1	5.6
6	Malalignment	1	5.6

Table 335. Descriptive Statistics of Cases Receiving the Polarstem/Reflection 3 Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,446	44.81	
Age (years)	3,227	64.78 (10.98)	65.00 (14.00)
Height (cm)	3,227	171.41 (10.67)	172.70 (17.40)
Weight (kg)	3,227	91.50 (21.67)	89.50 (27.53)
BMI(kg/m^2)	3,227	31.02 (6.30)	30.33 (8.20)
Smoker - Never (%)	1,458	45.18	
Smoker - Previous (%)	1,207	37.4	
Smoker - Current (%)	549	17.01	
Smoker - Unknown (%)	13	0.4	

Table 336. Distribution of Approach Used for Polarstem/Reflection 3 Combination in Primary THA Cases

Approach	N	Percent
Anterior	2,570	79.6
Anterolateral	288	8.9
Posterior	366	11.3
Transtrochanteric	2	0.1
Missing/unknown/other	1	0.0

Table 337. Distribution of Head Size for Polarstem/Reflection 3 Combination in Primary THA Cases

Size (mm)	N	Percent
22	2	0.1
28	9	0.3
32	503	17.4
36	2,219	76.6
40	156	5.4
Missing/unknown/other	8	0.3

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Table 338. Distribution of Bearing Surface for Polarstem/Reflection 3 Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	97	3.0
Ceramic-on-plastic	2,792	86.5
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	302	9.4
Missing/unknown/other	36	1.1

Table 339. Distribution of Polyethylene Used for Polarstem/Reflection 3 Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	1	0.0
XLPE	2,854	90.3
Antioxidant XLPE	0	0.0
Missing/unknown/other	306	9.7

Table 340. Volume of Cases by Surgeon and Site for the Polarstem/Reflection 3 Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	70 (185)	11 (53)
Cases per site	100 (215)	21 (91)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

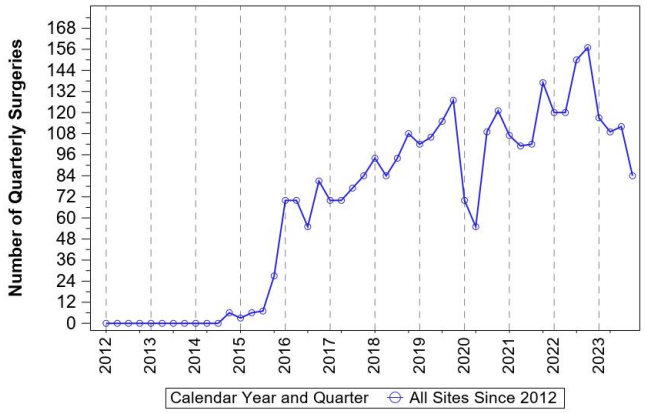


Figure 150. Utilization of the Polarstem/Reflection 3 Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

75100466	75100479	75100482
75100467	75018406	75102210
75100465	75100476	75102246
75100468	75100480	75102251
75100464	75018419	75102211
75100469	75018413	75102244
75018402	75018400	75102255
75018403	75100475	75102256
75018404	75018407	75100483
75018417	75100471	75102245
75018416	75102209	75102257
75100463	75100481	75102258
75100470	75100474	75102248
75018415	75100472	75100473
75018405	75018408	75102074
75100477	75102253	75102249
75100478	75102254	75102076
75018418	75102250	75102259
75018401	75102252	
75018414	75018409	

Catalog numbers of Acetabular Cups Used in the Analysis

71335552	71338666	71335546
71335554	71335562	71338671
71335556	71338667	71331852
71335548	71338664	71331848
71335558	71338668	71331850
71335550	71338669	71331854
71335560	71338663	71338672
71338665	71335564	

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4.1.25 Secur-Fit/Trident

N = 1,106 primary cases were used for this analysis. Distribution of utilization: 35 surgeons across 23 sites used this implant combination in primary THA cases.

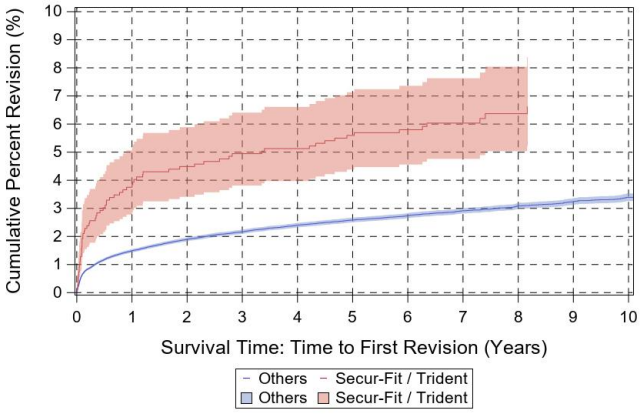


Figure 151. Cumulative Percent Revision Curve for the Secur-Fit/Trident Combination, Compared to All Other Implant Combinations in Primary THA Cases

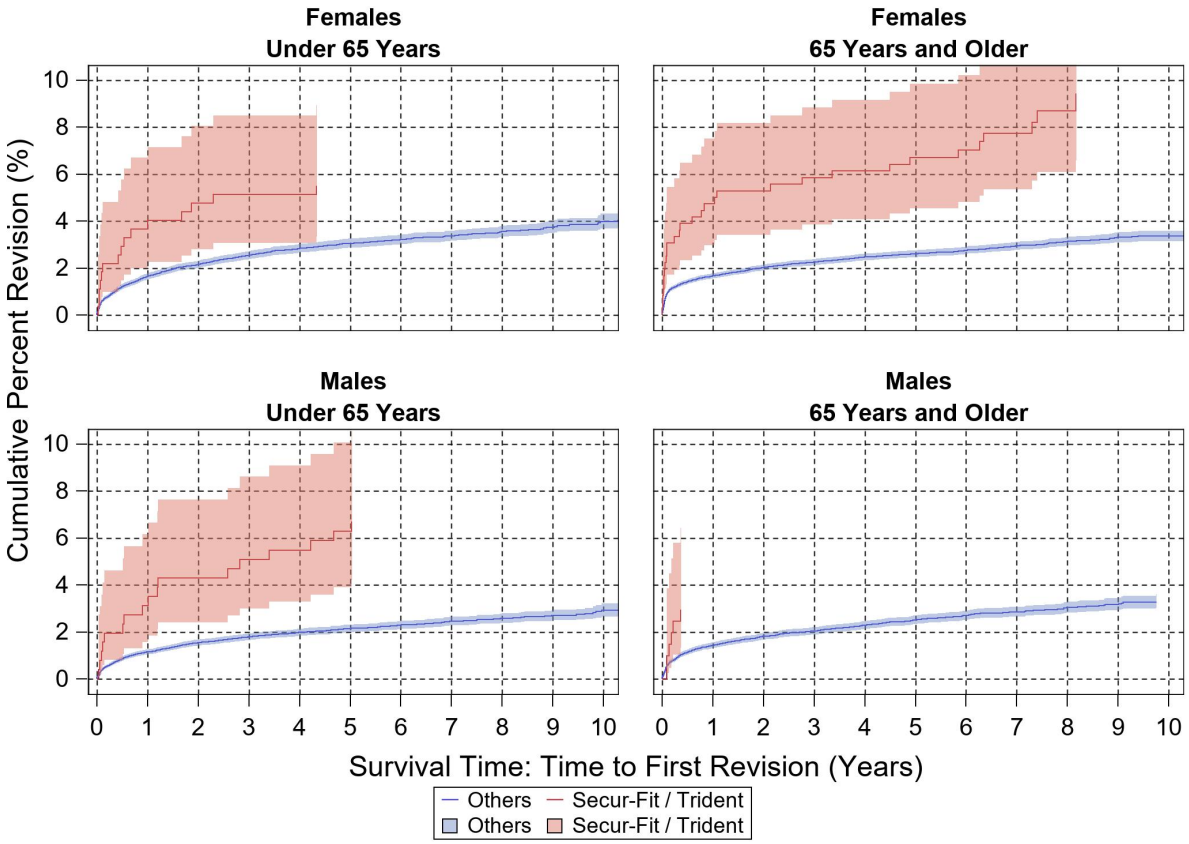


Figure 152. Cumulative Percent Revision Curve for the Secur-Fit/Trident Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 341. Cumulative Percent Revision and Number at Risk for the Secur-Fit/Trident Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,093	0.00 (0.00,0.00)	273	0.00 (0.00,0.00)	359	0.00 (0.00,0.00)	256	0.00 (0.00,0.00)	204	0.00 (0.00,0.00)
1	1,049	3.75 (2.78,5.06)	263	3.66 (1.99,6.70)	341	4.74 (2.97,7.51)	246	3.13 (1.58,6.16)	198	2.94 (1.33,6.43)
2	1,041	4.49 (3.41,5.89)	260	4.76 (2.79,8.06)	339	5.29 (3.41,8.17)	243	4.31 (2.41,7.65)	198	2.94 (1.33,6.43)
3	1,036	4.94 (3.81,6.41)	259	5.13 (3.07,8.51)	337	5.85 (3.86,8.84)	241	5.10 (2.99,8.62)	198	2.94 (1.33,6.43)
4	1,028	5.13 (3.97,6.61)	258	5.13 (3.07,8.51)	332	6.13 (4.08,9.17)	239	5.49 (3.29,9.10)	198	2.94 (1.33,6.43)
5	988	5.59 (4.38,7.13)	248	5.50 (3.35,8.95)	320	6.71 (4.55,9.85)	227	6.29 (3.90,10.06)	192	2.94 (1.33,6.43)
6	853	5.80 (4.56,7.36)	225	5.50 (3.35,8.95)	283	7.03 (4.81,10.23)	190	6.70 (4.22,10.56)	154	2.94 (1.33,6.43)
7	653	6.03 (4.76,7.63)	179	5.50 (3.35,8.95)	223	7.74 (5.36,11.09)	138	6.70 (4.22,10.56)	112	2.94 (1.33,6.43)
8	413	6.37 (5.03,8.04)	122	5.50 (3.35,8.95)	137	8.70 (6.09,12.36)	84	6.70 (4.22,10.56)	69	2.94 (1.33,6.43)
9	213	6.62 (5.22,8.39)	65	5.50 (3.35,8.95)	67	9.43 (6.57,13.45)	47	6.70 (4.22,10.56)	34	2.94 (1.33,6.43)
10	44	6.62 (5.22,8.39)	13	5.50 (3.35,8.95)	16	9.43 (6.57,13.45)	*	6.70 (4.22,10.56)	*	2.94 (1.33,6.43)

* Denotes that the number of cases is between 1 and 10.

Table 342. Reasons for First Revision Following Primary THA for Secur-Fit/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	18	27.7
2	Aseptic Loosening	16	24.6
3	Joint Infection	12	18.5
4	Dislocation/Instability	11	16.9
5	Implant Failure	4	6.2
6	Malalignment	2	3.1
7	Peri-prosthetic fracture - Acetabulum	1	1.5
8	Metal Reaction/Metallosis	1	1.5

Table 343. Reasons for First Revision in the First 90 Days Following Primary THA for Secur-Fit/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	15	55.6
2	Dislocation/Instability	8	29.6
3	Joint Infection	3	11.1
4	Aseptic Loosening	1	3.7

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Table 344. Reasons for First Revision Between 91 and 365 days Following Primary THA for Secur-Fit/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	5	45.4
2	Aseptic Loosening	2	18.2
3	Implant Failure	2	18.2
4	Dislocation/Instability	1	9.1
5	Malalignment	1	9.1

Table 345. Descriptive Statistics of Cases Receiving the Secur-Fit/Trident Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	639	57.78	
Age (years)	1,106	64.72 (10.47)	65.00 (13.00)
Height (cm)	1,106	169.56 (10.34)	170.00 (15.30)
Weight (kg)	1,106	90.50 (21.81)	87.85 (29.05)
BMI(kg/m^2)	1,106	31.37 (6.58)	30.53 (9.17)
Smoker - Never (%)	509	46.02	
Smoker - Previous (%)	401	36.26	
Smoker - Current (%)	186	16.82	
Smoker - Unknown (%)	10	0.9	

Table 346. Distribution of Approach Used for Secur-Fit/Trident Combination in Primary THA Cases

Approach	N	Percent
Anterior	2	0.2
Anterolateral	513	46.4
Posterior	587	53.1
Transtrochanteric	1	0.1
Missing/unknown/other	3	0.3

Table 347. Distribution of Head Size for Secur-Fit/Trident Combination in Primary THA Cases

Size (mm)	N	Percent
28	1	0.1
32	151	16.2
36	537	57.5
40	237	25.4
Missing/unknown/other	8	0.9

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Table 348. Distribution of Bearing Surface for Secur-Fit/Trident Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	271	24.5
Ceramic-on-plastic	652	59.0
Ceramic-on-ceramic	3	0.3
Metal-on-metal	0	0.0
Dual mobility	168	15.2
Missing/unknown/other	12	1.1

Table 349. Distribution of Polyethylene Used for Secur-Fit/Trident Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,099	100.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	0	0.0

Table 350. Volume of Cases by Surgeon and Site for the Secur-Fit/Trident Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	31 (67)	4 (21)
Cases per site	48 (77)	13 (58)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

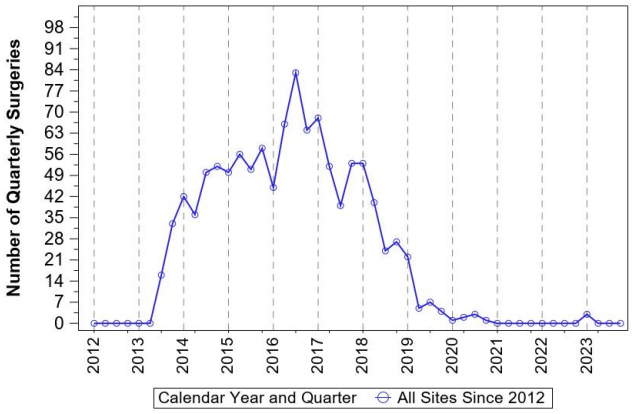


Figure 153. Utilization of the Secur-Fit/Trident Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

160108132	160106132	160111127
160107132	160110132	160112132
160109132	160110127	160112127
160108127	160106127	
160107127	160105132	
160109127	160111132	

Catalog numbers of Acetabular Cups Used in the Analysis

5020354E	5020362G	5020152E
5021152E	5021162G	5020156F
5020352D	5421158G	5020366H
5021150D	5000356E	5021146C
5020356E	5000360F	5081152E
5020350D	5000354E	5081158F
5021154E	5000358F	5081160G
5021156F	5020346B	5090254E
5421150E	5421160G	5090256E
5020358F	5421148D	5090258F
5421152E	5000352D	5090260F
5421154F	5020364G	5401150E
5021158F	5421146D	5401158G
5021160G	5000350D	5421144C
5020360F	5021164H	5421162H
5421156F	5090268H	
5020348C	5401156F	
5021148D	5000362G	

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4.1.26 Secur-Fit/Trident II

N = 837 primary cases were used for this analysis. Distribution of utilization: 24 surgeons across 20 sites used this implant combination in primary THA cases.

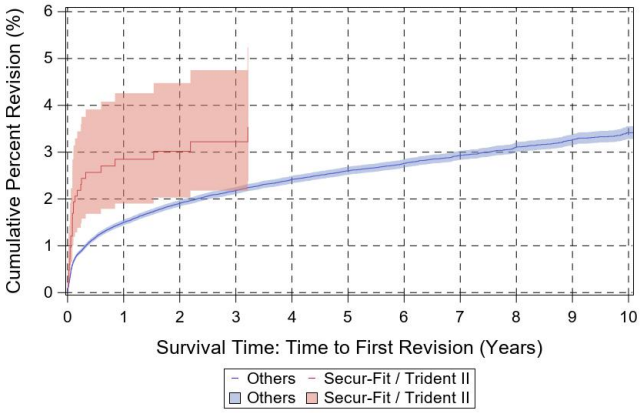


Figure 154. Cumulative Percent Revision Curve for the Secur-Fit/Trident II Combination, Compared to All Other Implant Combinations in Primary THA Cases

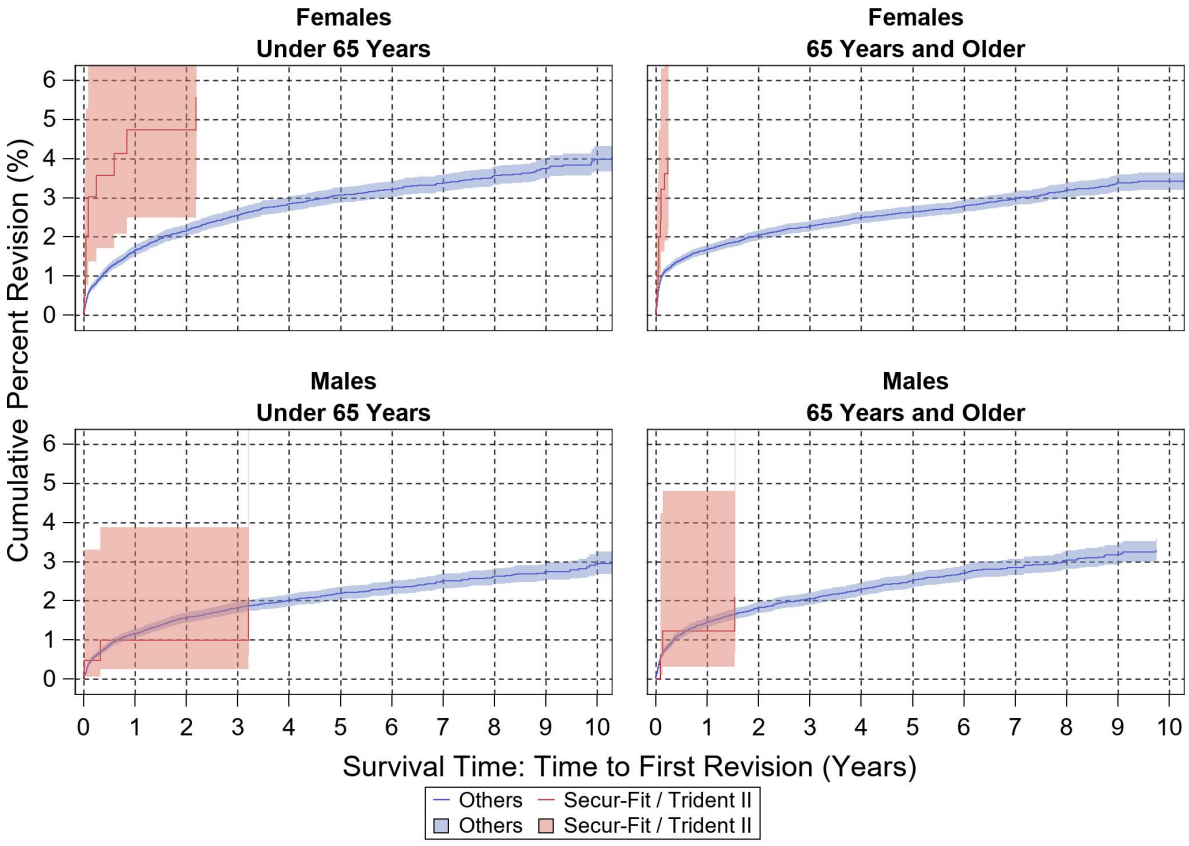


Figure 155. Cumulative Percent Revision Curve for the Secur-Fit/Trident II Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 351. Cumulative Percent Revision and Number at Risk for the Secur-Fit/Trident II Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	834	0.00 (0.00,0.00)	200	0.00 (0.00,0.00)	253	0.00 (0.00,0.00)	213	0.00 (0.00,0.00)	168	0.00 (0.00,0.00)
1	654	2.85 (1.90,4.26)	152	4.74 (2.49,8.92)	195	4.03 (2.19,7.37)	174	0.98 (0.25,3.87)	133	1.22 (0.31,4.80)
2	498	3.02 (2.03,4.48)	119	4.74 (2.49,8.92)	146	4.03 (2.19,7.37)	136	0.98 (0.25,3.87)	97	2.09 (0.67,6.45)
3	344	3.22 (2.18,4.75)	88	5.57 (3.00,10.21)	93	4.03 (2.19,7.37)	101	0.98 (0.25,3.87)	62	2.09 (0.67,6.45)
4	223	3.54 (2.38,5.24)	58	5.57 (3.00,10.21)	63	4.03 (2.19,7.37)	66	2.08 (0.61,6.93)	36	2.09 (0.67,6.45)
5	64	3.54 (2.38,5.24)	13	5.57 (3.00,10.21)	21	4.03 (2.19,7.37)	18	2.08 (0.61,6.93)	12	2.09 (0.67,6.45)
6	*	3.54 (2.38,5.24)	0	N/A	*	4.03 (2.19,7.37)	0	N/A	0	N/A
7	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 352. Reasons for First Revision Following Primary THA for Secur-Fit/Trident II Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	10	38.5
2	Aseptic Loosening	6	23.1
3	Implant Failure	5	19.2
4	Dislocation/Instability	2	7.7
5	Joint Infection	2	7.7
6	Malalignment	1	3.8

Table 353. Reasons for First Revision in the First 90 Days Following Primary THA for Secur-Fit/Trident II Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	10	52.6
2	Implant Failure	3	15.8
3	Aseptic Loosening	2	10.5
4	Dislocation/Instability	2	10.5
5	Joint Infection	1	5.3
6	Malalignment	1	5.3

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Table 354. Reasons for First Revision Between 91 and 365 days Following Primary THA for Secur-Fit/Trident II Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	2	50.0
2	Joint Infection	1	25.0
3	Implant Failure	1	25.0

Table 355. Descriptive Statistics of Cases Receiving the Secur-Fit/Trident II Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	454	54.24	
Age (years)	837	64.54 (10.63)	65.00 (12.00)
Height (cm)	837	170.47 (10.25)	170.18 (15.20)
Weight (kg)	837	93.09 (22.92)	90.72 (28.90)
BMI(kg/m^2)	837	31.99 (7.24)	30.78 (9.28)
Smoker - Never (%)	387	46.24	
Smoker - Previous (%)	274	32.74	
Smoker - Current (%)	175	20.91	
Smoker - Unknown (%)	1	0.12	

Table 356. Distribution of Approach Used for Secur-Fit/Trident II Combination in Primary THA Cases

Approach	N	Percent
Anterior	3	0.4
Anterolateral	638	76.2
Posterior	190	22.7
Transtrochanteric	0	0.0
Missing/unknown/other	6	0.7

Table 357. Distribution of Head Size for Secur-Fit/Trident II Combination in Primary THA Cases

Size (mm)	N	Percent
28	2	0.3
32	77	13.4
36	356	61.9
40	136	23.6
Missing/unknown/other	4	0.7

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Table 358. Distribution of Bearing Surface for Secur-Fit/Trident II Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	7	0.8
Ceramic-on-plastic	564	67.4
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	257	30.7
Missing/unknown/other	9	1.1

Table 359. Distribution of Polyethylene Used for Secur-Fit/Trident II Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	480	57.8
Antioxidant XLPE	0	0.0
Missing/unknown/other	351	42.2

Table 360. Volume of Cases by Surgeon and Site for the Secur-Fit/Trident II Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	34 (68)	5 (31)
Cases per site	41 (73)	12 (44)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

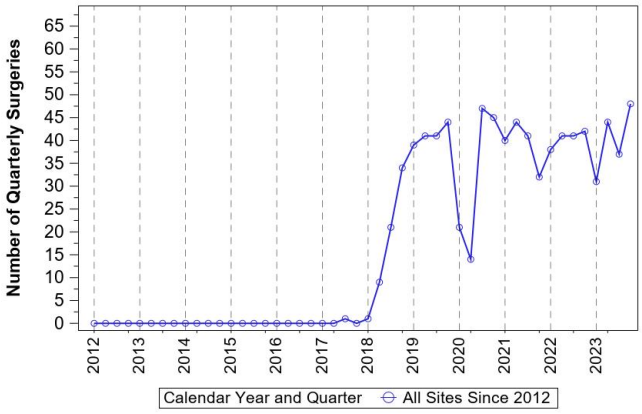


Figure 156. Utilization of the Secur-Fit/Trident II Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

160108127	160110127	160112132
160107127	160106127	160105132
160109127	160110132	160112127
160109132	160111132	
160108132	160111127	
160107132	160106132	

Catalog numbers of Acetabular Cups Used in the Analysis

7020452E	7090450D	7000458F
7020454E	7020446C	7021146C
7020450D	7021150D	7090448D
7020456F	7021156F	7421148D
7020458F	7021158F	7421158F
7020448D	7021160G	7000460G
7020460G	7421152E	7020464H
7020462G	7000456F	7021162G
7000452E	7021148D	7021164H
7021152E	7421156F	7090452E
7000454E	7090464H	7090458F
7000450D	7000446C	7090462G
7421154E	7090454E	7090466H
7021154E	7421150D	
7000448D	7421160G	

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4.1.27 Secur-Fit Max/Trident

N = 3,077 primary cases were used for this analysis. Distribution of utilization: 56 surgeons across 26 sites used this implant combination in primary THA cases.

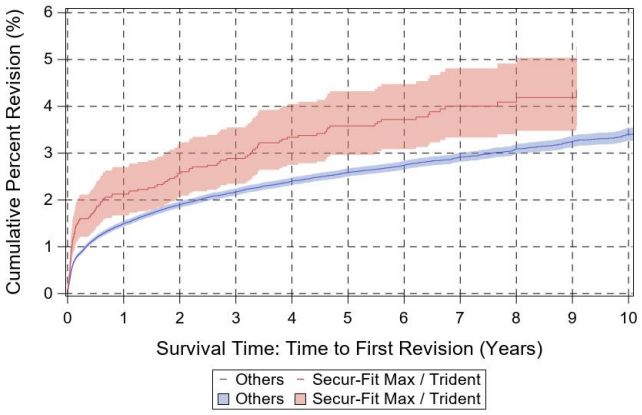


Figure 157. Cumulative Percent Revision Curve for the Secur-Fit Max/Trident Combination, Compared to All Other Implant Combinations in Primary THA Cases

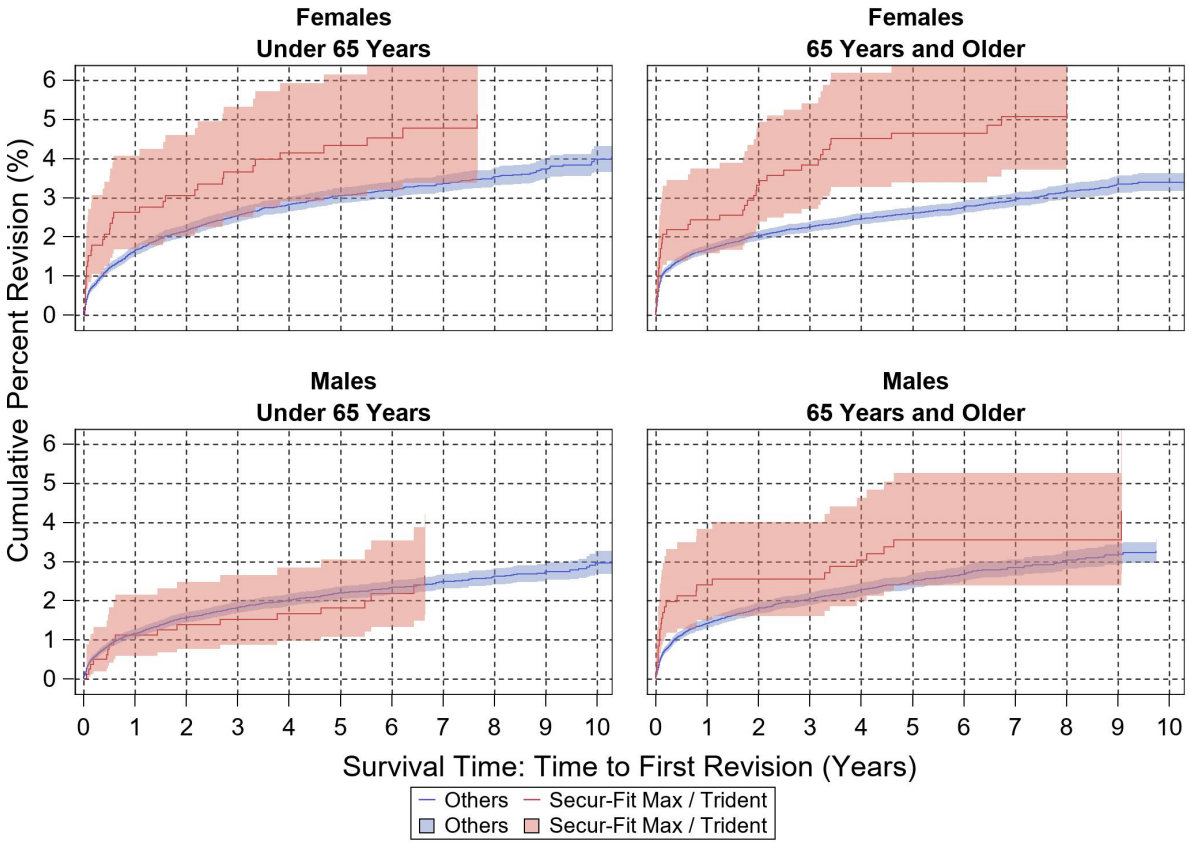


Figure 158. Cumulative Percent Revision Curve for the Secur-Fit Max/Trident Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 361. Cumulative Percent Revision and Number at Risk for the Secur-Fit Max/Trident Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,059	0.00 (0.00,0.00)	726	0.00 (0.00,0.00)	823	0.00 (0.00,0.00)	802	0.00 (0.00,0.00)	708	0.00 (0.00,0.00)
1	2,960	2.12 (1.67,2.70)	695	2.62 (1.68,4.07)	796	2.43 (1.57,3.74)	786	1.12 (0.59,2.15)	683	2.40 (1.50,3.83)
2	2,809	2.57 (2.06,3.19)	658	3.05 (2.02,4.59)	758	3.31 (2.28,4.79)	751	1.38 (0.77,2.48)	642	2.54 (1.61,4.01)
3	2,653	2.89 (2.35,3.55)	609	3.66 (2.50,5.33)	725	3.83 (2.71,5.40)	707	1.52 (0.86,2.65)	612	2.54 (1.61,4.01)
4	2,482	3.34 (2.75,4.05)	557	4.15 (2.90,5.92)	680	4.50 (3.27,6.19)	664	1.66 (0.97,2.85)	581	3.04 (1.99,4.62)
5	2,293	3.58 (2.97,4.32)	519	4.33 (3.04,6.14)	634	4.65 (3.39,6.36)	604	1.82 (1.08,3.06)	536	3.55 (2.39,5.26)
6	1,903	3.72 (3.09,4.48)	426	4.53 (3.20,6.39)	532	4.65 (3.39,6.36)	496	2.18 (1.33,3.54)	449	3.55 (2.39,5.26)
7	1,435	4.01 (3.34,4.81)	328	4.77 (3.38,6.70)	401	5.07 (3.71,6.90)	366	2.64 (1.65,4.22)	340	3.55 (2.39,5.26)
8	995	4.09 (3.40,4.91)	234	5.13 (3.63,7.24)	304	5.07 (3.71,6.90)	244	2.64 (1.65,4.22)	213	3.55 (2.39,5.26)
9	604	4.19 (3.48,5.04)	133	5.13 (3.63,7.24)	188	5.38 (3.93,7.34)	153	2.64 (1.65,4.22)	130	3.55 (2.39,5.26)
10	341	4.35 (3.59,5.27)	83	5.13 (3.63,7.24)	108	5.38 (3.93,7.34)	85	2.64 (1.65,4.22)	65	4.29 (2.68,6.83)

Table 362. Reasons for First Revision Following Primary THA for Secur-Fit Max/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	44	39.3
2	Aseptic Loosening	22	19.6
3	Joint Infection	15	13.4
4	Dislocation/Instability	11	9.8
5	Malalignment	8	7.1
6	Implant Failure	4	3.6
7	Peri-prosthetic fracture - Acetabulum	3	2.7
8	Metal Reaction/Metallosis	3	2.7
9	Pain	2	1.8

Table 363. Reasons for First Revision in the First 90 Days Following Primary THA for Secur-Fit Max/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	31	64.6
2	Joint Infection	5	10.4
3	Dislocation/Instability	4	8.3
4	Aseptic Loosening	3	6.2
5	Implant Failure	2	4.2
6	Peri-prosthetic fracture - Acetabulum	1	2.1
7	Pain	1	2.1
8	Malalignment	1	2.1

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Table 364. Reasons for First Revision Between 91 and 365 days Following Primary THA for Secur-Fit Max/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	4	28.6
2	Peri-prosthetic fracture - Femur	4	28.6
3	Aseptic Loosening	3	21.4
4	Dislocation/Instability	2	14.3
5	Peri-prosthetic fracture - Acetabulum	1	7.1

Table 365. Descriptive Statistics of Cases Receiving the Secur-Fit Max/Trident Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,559	50.67	
Age (years)	3,077	63.64 (11.17)	65.00 (14.00)
Height (cm)	3,077	170.52 (10.22)	170.18 (15.20)
Weight (kg)	3,077	91.85 (21.69)	89.60 (27.90)
BMI(kg/m^2)	3,077	31.48 (6.50)	30.80 (8.43)
Smoker - Never (%)	1,452	47.19	
Smoker - Previous (%)	1,178	38.28	
Smoker - Current (%)	438	14.23	
Smoker - Unknown (%)	9	0.29	

Table 366. Distribution of Approach Used for Secur-Fit Max/Trident Combination in Primary THA Cases

Approach	N	Percent
Anterior	17	0.6
Anterolateral	1750	56.9
Posterior	1,268	41.2
Transtrochanteric	22	0.7
Missing/unknown/other	20	0.7

Table 367. Distribution of Head Size for Secur-Fit Max/Trident Combination in Primary THA Cases

Size (mm)	N	Percent
22	3	0.1
28	36	1.3
32	1,018	35.6
36	1,629	57.0
40	161	5.6
44	2	0.1
Missing/unknown/other	10	0.3

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Table 368. Distribution of Bearing Surface for Secur-Fit Max/Trident Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,047	34.0
Ceramic-on-plastic	591	19.2
Ceramic-on-ceramic	1,211	39.4
Metal-on-metal	0	0.0
Dual mobility	184	6.0
Missing/unknown/other	44	1.4

Table 369. Distribution of Polyethylene Used for Secur-Fit Max/Trident Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,823	100.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	1	0.1

Table 370. Volume of Cases by Surgeon and Site for the Secur-Fit Max/Trident Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	55 (172)	8 (43)
Cases per site	118 (241)	24 (108)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

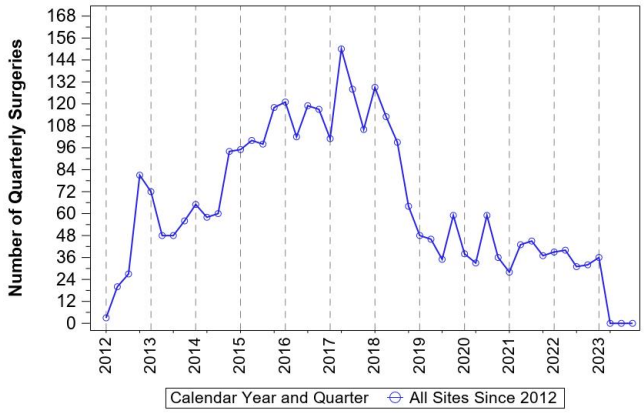


Figure 159. Utilization of the Secur-Fit Max/Trident Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

60510935S	60521035S	60510525S
60510830S	60520730S	60521340S
60511035S	60510625S	60511340S
60510730S	60511240S	60511440S
60520830S	60520625S	60510425S
60520935S	60521140S	
60511140S	60521240S	

Catalog numbers of Acetabular Cups Used in the Analysis

5421150E	5401156F	5401160G
5421154F	5020362G	5000356E
5421152E	5021148D	5000360F
5421158G	5421146D	5020348C
5421156F	5090256E	5000350D
5020356E	5421164H	5000352D
5020354E	5000354E	5081154E
5021154E	5401148D	5081156F
5421148D	5020364G	5081158F
5421160G	5401158G	5401144C
5021152E	5421162H	5020346B
5021156F	5021160G	5020366H
5020352D	5081152E	5021164H
5020358F	5090260F	5081160G
5021150D	5000358F	5090268H
5401150E	5081150D	5090270I
5020360F	5090254E	5421144C
5401154F	5090262G	5421168I
5021158F	5090258F	
5020350D	5090264G	
5401152E	5401146D	

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4.1.28 Secur-Fit Plus Max/Trident

N = 2,019 primary cases were used for this analysis. Distribution of utilization: 31 surgeons across 19 sites used this implant combination in primary THA cases.

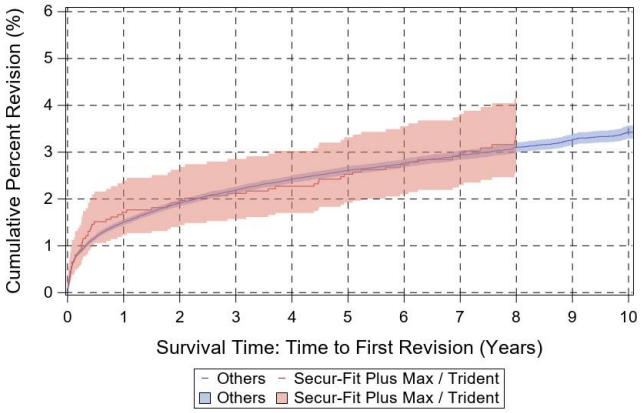


Figure 160. Cumulative Percent Revision Curve for the Secur-Fit Plus Max/Trident Combination, Compared to All Other Implant Combinations in Primary THA Cases

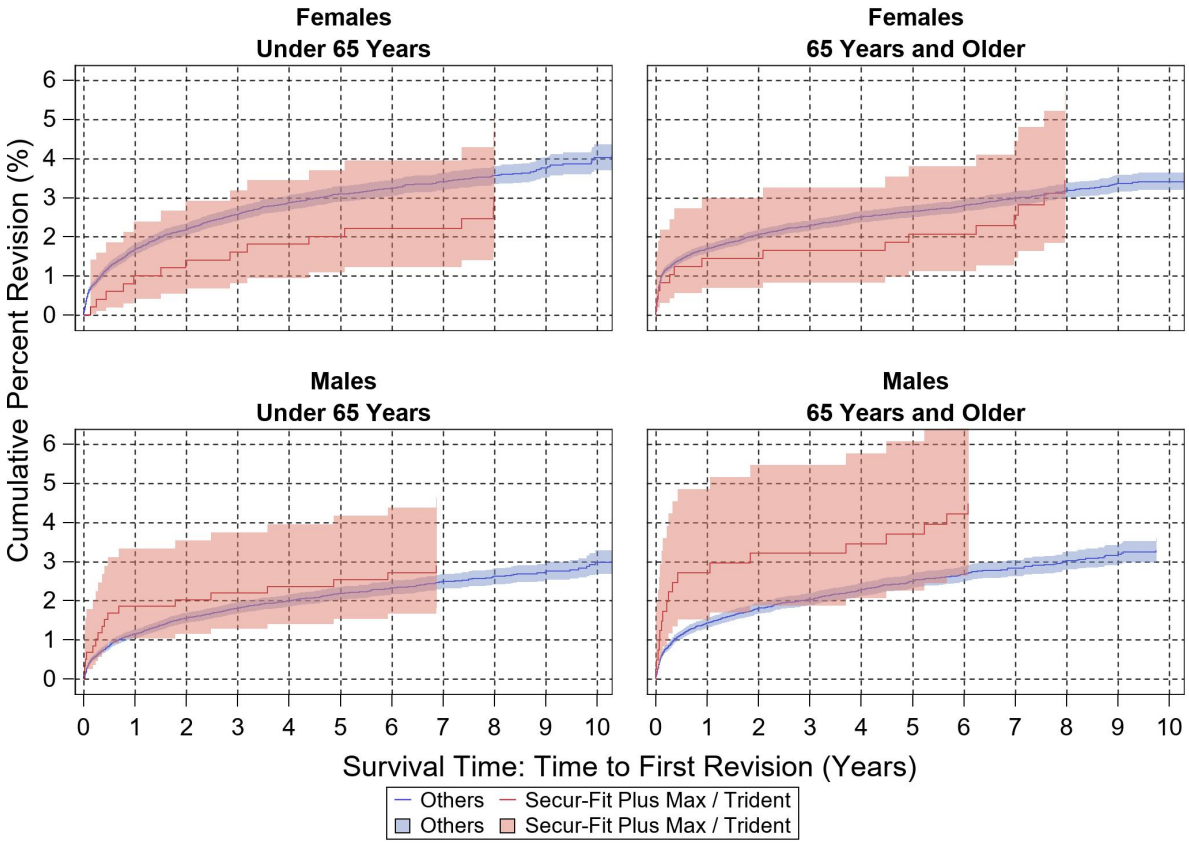


Figure 161. Cumulative Percent Revision Curve for the Secur-Fit Plus Max/Trident Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 371. Cumulative Percent Revision and Number at Risk for the Secur-Fit Plus Max/Trident Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,982	0.00 (0.00,0.00)	498	0.00 (0.00,0.00)	486	0.00 (0.00,0.00)	593	0.00 (0.00,0.00)	405	0.00 (0.00,0.00)
1	1,948	1.72 (1.23,2.39)	493	1.00 (0.42,2.40)	479	1.44 (0.69,3.00)	582	1.85 (1.03,3.32)	394	2.72 (1.51,4.85)
2	1,943	1.97 (1.44,2.68)	491	1.41 (0.67,2.93)	479	1.44 (0.69,3.00)	581	2.02 (1.15,3.54)	392	3.21 (1.88,5.46)
3	1,938	2.12 (1.57,2.86)	490	1.61 (0.81,3.19)	477	1.65 (0.83,3.26)	579	2.19 (1.28,3.75)	392	3.21 (1.88,5.46)
4	1,931	2.27 (1.70,3.03)	488	1.81 (0.94,3.44)	477	1.65 (0.83,3.26)	575	2.36 (1.41,3.96)	391	3.46 (2.06,5.77)
5	1,911	2.52 (1.92,3.32)	484	2.01 (1.09,3.70)	468	2.06 (1.12,3.80)	572	2.53 (1.53,4.17)	387	3.70 (2.25,6.07)
6	1,817	2.73 (2.10,3.55)	466	2.21 (1.23,3.96)	440	2.06 (1.12,3.80)	551	2.71 (1.67,4.38)	360	4.21 (2.64,6.69)
7	1,600	2.96 (2.30,3.81)	427	2.21 (1.23,3.96)	377	2.55 (1.45,4.45)	492	2.90 (1.81,4.63)	304	4.48 (2.85,7.02)
8	1,233	3.39 (2.66,4.32)	339	3.03 (1.79,5.08)	283	3.45 (2.08,5.70)	381	2.90 (1.81,4.63)	230	4.48 (2.85,7.02)
9	881	3.39 (2.66,4.32)	246	3.03 (1.79,5.08)	199	3.45 (2.08,5.70)	279	2.90 (1.81,4.63)	157	4.48 (2.85,7.02)
10	537	3.39 (2.66,4.32)	164	3.03 (1.79,5.08)	119	3.45 (2.08,5.70)	163	2.90 (1.81,4.63)	91	4.48 (2.85,7.02)

Table 372. Reasons for First Revision Following Primary THA for Secur-Fit Plus Max/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	16	30.2
2	Dislocation/Instability	13	24.5
3	Joint Infection	10	18.9
4	Aseptic Loosening	8	15.1
5	Implant Failure	3	5.7
6	Metal Reaction/Metallosis	1	1.9
7	Pain	1	1.9
8	Malalignment	1	1.9

Table 373. Reasons for First Revision in the First 90 Days Following Primary THA for Secur-Fit Plus Max/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	8	44.4
2	Dislocation/Instability	5	27.8
3	Joint Infection	3	16.7
4	Aseptic Loosening	1	5.6
5	Implant Failure	1	5.6

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Table 374. Reasons for First Revision Between 91 and 365 days Following Primary THA for Secur-Fit Plus Max/Trident Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	3	50.0
2	Joint Infection	2	33.3
3	Aseptic Loosening	1	16.7

Table 375. Descriptive Statistics of Cases Receiving the Secur-Fit Plus Max/Trident Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,003	49.68	
Age (years)	2,019	62.18 (13.16)	63.00 (16.00)
Height (cm)	2,019	169.85 (10.67)	170.00 (15.24)
Weight (kg)	2,019	87.16 (19.81)	86.00 (26.70)
BMI(kg/m^2)	2,019	30.11 (6.13)	29.54 (7.22)
Smoker - Never (%)	958	47.45	
Smoker - Previous (%)	741	36.7	
Smoker - Current (%)	279	13.82	
Smoker - Unknown (%)	41	2.03	

Table 376. Distribution of Approach Used for Secur-Fit Plus Max/Trident Combination in Primary THA Cases

Approach	N	Percent
Anterior	5	0.2
Anterolateral	137	6.8
Posterior	1,867	92.5
Transtrochanteric	4	0.2
Missing/unknown/other	6	0.3

Table 377. Distribution of Head Size for Secur-Fit Plus Max/Trident Combination in Primary THA Cases

Size (mm)	N	Percent
28	1	0.1
32	154	7.9
36	1,457	74.7
40	289	14.8
44	45	2.3
Missing/unknown/other	5	0.3

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Table 378. Distribution of Bearing Surface for Secur-Fit Plus Max/Trident Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,172	58.0
Ceramic-on-plastic	774	38.3
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	58	2.9
Missing/unknown/other	15	0.7

Table 379. Distribution of Polyethylene Used for Secur-Fit Plus Max/Trident Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	2,008	100.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	0	0.0

Table 380. Volume of Cases by Surgeon and Site for the Secur-Fit Plus Max/Trident Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	65 (192)	8 (67)
Cases per site	106 (263)	29 (101)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

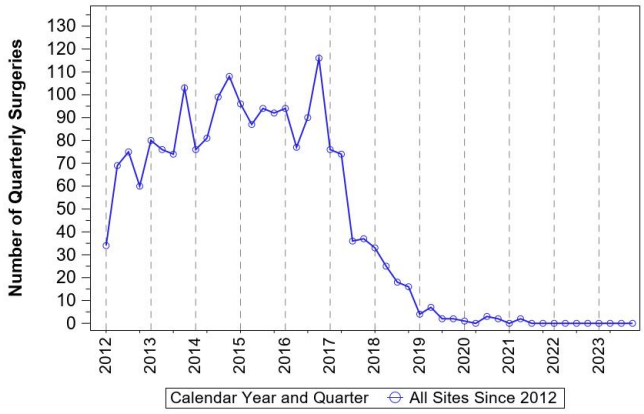


Figure 162. Utilization of the Secur-Fit Plus Max/Trident Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

60540913S	60541016S	60540511S
60540812S	S2337HF09	S2337HF12
60541014S	S2337HF10	60540509S
60540711S	60541117S	60540812
60541115S	60540610S	60540915
60540814S	60540612S	60541319S
60540915S	60541216S	S2337HF05
S2337HF08	S2337HF06	
S2337HF07	S2337HF11	
60540713S	60541218S	

Catalog numbers of Acetabular Cups Used in the Analysis

5421154F	5021158F	5021162G
5421150E	5020360F	5090258F
5421158G	5021148D	5090262G
5421156F	5020362G	5401150E
5421152E	5090254E	5401152E
5421146D	5401154F	5000352D
5020354E	5401158G	5020364G
5421160G	5421162H	5020366H
5020352D	5421164H	5021146C
5021152E	5020348C	5021160G
5020358F	5090256E	5081150D
5020356E	5081148D	5081152E
5421148D	5401156F	5081158F
5021154E	5090260F	5090266H
5020350D	5000356E	5401160G
5021150D	5000358F	5421142B
5021156F	5000360F	

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4.1.29 SROM/Pinnacle

N = 1,115 primary cases were used for this analysis. Distribution of utilization: 50 surgeons across 27 sites used this implant combination in primary THA cases.

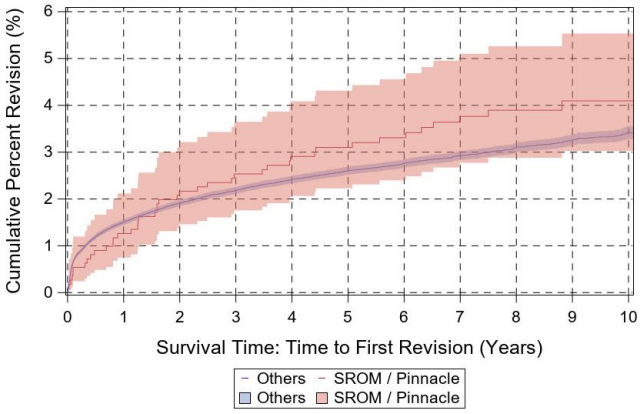


Figure 163. Cumulative Percent Revision Curve for the SROM/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases

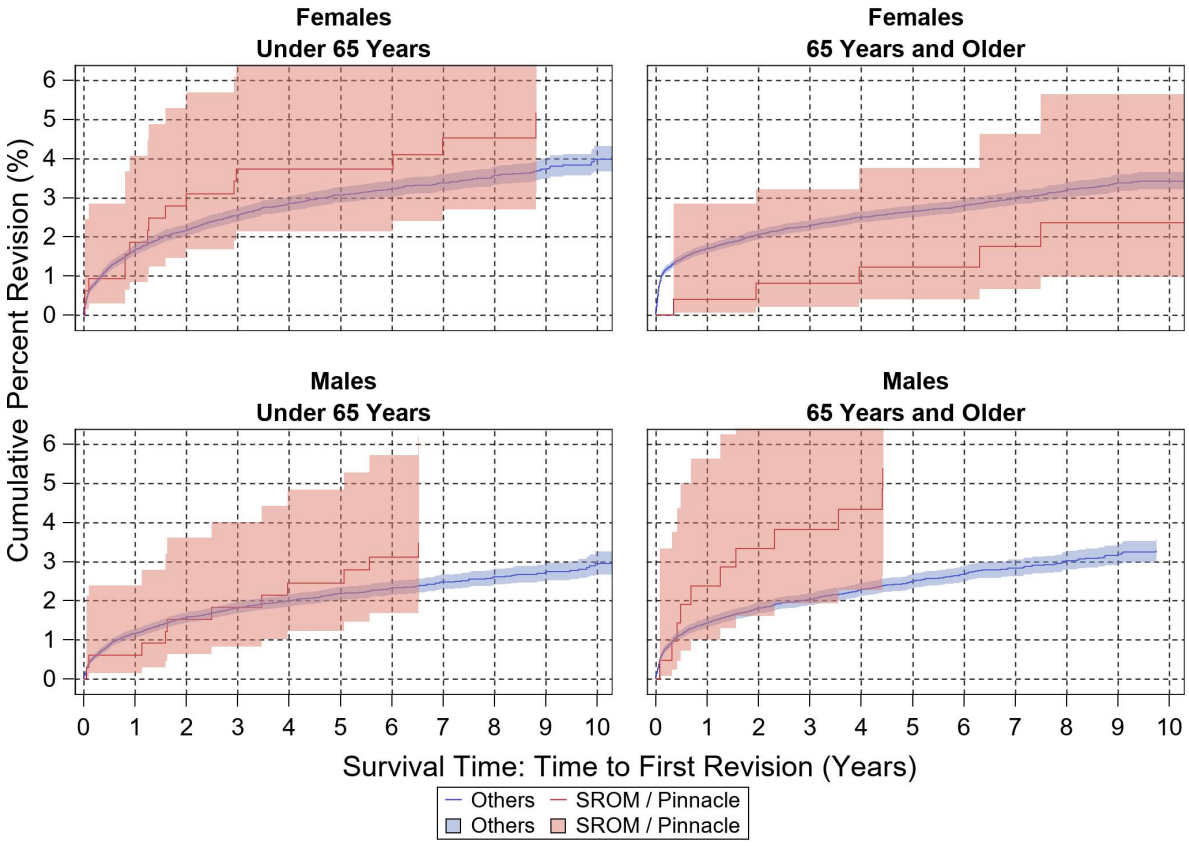


Figure 164. Cumulative Percent Revision Curve for the SROM/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 381. Cumulative Percent Revision and Number at Risk for the SROM/Pinnacle Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,112	0.00 (0.00,0.00)	324	0.00 (0.00,0.00)	247	0.00 (0.00,0.00)	331	0.00 (0.00,0.00)	210	0.00 (0.00,0.00)
1	1,095	1.26 (0.75,2.12)	318	1.85 (0.84,4.08)	245	0.40 (0.06,2.84)	327	0.60 (0.15,2.39)	205	2.38 (1.00,5.63)
2	1,076	2.17 (1.46,3.22)	309	3.10 (1.68,5.69)	243	0.81 (0.20,3.21)	323	1.52 (0.63,3.61)	201	3.34 (1.61,6.87)
3	1,058	2.53 (1.76,3.65)	304	3.73 (2.14,6.48)	241	0.81 (0.20,3.21)	317	1.82 (0.82,4.01)	196	3.82 (1.93,7.50)
4	1,032	2.91 (2.06,4.09)	299	3.73 (2.14,6.48)	236	1.23 (0.40,3.76)	310	2.45 (1.23,4.83)	187	4.33 (2.27,8.15)
5	960	3.10 (2.23,4.31)	282	3.73 (2.14,6.48)	212	1.23 (0.40,3.76)	296	2.45 (1.23,4.83)	170	5.38 (3.01,9.51)
6	891	3.31 (2.40,4.56)	264	3.73 (2.14,6.48)	195	1.23 (0.40,3.76)	276	3.12 (1.69,5.72)	156	5.38 (3.01,9.51)
7	782	3.76 (2.77,5.10)	227	4.52 (2.69,7.53)	175	1.75 (0.66,4.63)	244	3.48 (1.94,6.21)	136	5.38 (3.01,9.51)
8	639	3.90 (2.88,5.26)	188	4.52 (2.69,7.53)	144	2.36 (0.98,5.65)	190	3.48 (1.94,6.21)	117	5.38 (3.01,9.51)
9	434	4.10 (3.03,5.53)	129	5.17 (3.10,8.58)	102	2.36 (0.98,5.65)	121	3.48 (1.94,6.21)	82	5.38 (3.01,9.51)
10	202	4.10 (3.03,5.53)	59	5.17 (3.10,8.58)	48	2.36 (0.98,5.65)	57	3.48 (1.94,6.21)	38	5.38 (3.01,9.51)

Table 382. Reasons for First Revision Following Primary THA for SROM/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	13	32.5
2	Aseptic Loosening	8	20.0
3	Dislocation/Instability	7	17.5
4	Implant Failure	6	15.0
5	Peri-prosthetic fracture - Femur	2	5.0
6	Malalignment	2	5.0
7	Metal Reaction/Metallosis	1	2.5
8	Pain	1	2.5

Table 383. Reasons for First Revision in the First 90 Days Following Primary THA for SROM/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	3	50.0
2	Dislocation/Instability	2	33.3
3	Peri-prosthetic fracture - Femur	1	16.7

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Table 384. Reasons for First Revision Between 91 and 365 days Following Primary THA for SROM/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	3	60.0
2	Dislocation/Instability	1	20.0
3	Implant Failure	1	20.0

Table 385. Descriptive Statistics of Cases Receiving the SROM/Pinnacle Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	573	51.39	
Age (years)	1,115	61.19 (12.39)	62.00 (16.00)
Height (cm)	1,115	170.46 (11.81)	170.18 (17.44)
Weight (kg)	1,115	89.46 (22.34)	88.45 (30.42)
BMI(kg/m^2)	1,115	30.64 (6.50)	29.95 (8.76)
Smoker - Never (%)	549	49.24	
Smoker - Previous (%)	394	35.34	
Smoker - Current (%)	170	15.25	
Smoker - Unknown (%)	2	0.18	

Table 386. Distribution of Approach Used for SROM/Pinnacle Combination in Primary THA Cases

Approach	N	Percent
Anterior	12	1.1
Anterolateral	590	52.9
Posterior	493	44.2
Transtrochanteric	13	1.2
Missing/unknown/other	7	0.6

Table 387. Distribution of Head Size for SROM/Pinnacle Combination in Primary THA Cases

Size (mm)	N	Percent
22	8	0.7
28	35	3.1
32	254	22.8
36	781	70.2
40	26	2.3
44	2	0.2
Missing/unknown/other	7	0.6

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Table 388. Distribution of Bearing Surface for SROM/Pinnacle Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	322	28.9
Ceramic-on-plastic	782	70.1
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	11	1.0

Table 389. Distribution of Polyethylene Used for SROM/Pinnacle Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	961	86.5
Antioxidant XLPE	0	0.0
Missing/unknown/other	150	13.5

Table 390. Volume of Cases by Surgeon and Site for the SROM/Pinnacle Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	22 (50)	3 (13)
Cases per site	41 (135)	4 (12)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

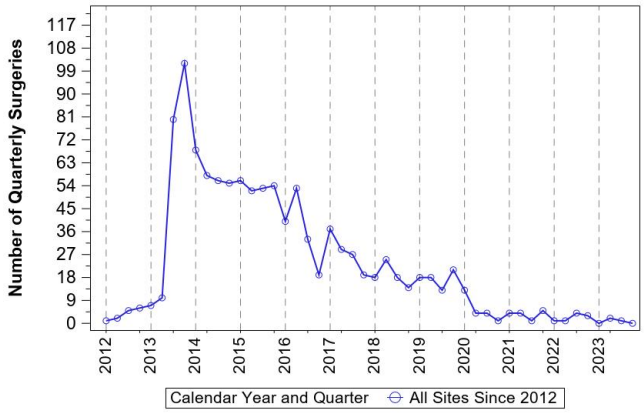


Figure 165. Utilization of the SROM/Pinnacle Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

523418	563514	563216L
563618	523191	523197
563517	523291	523251
563620	523394	523396
523420	523393	526516L
523193	523208	526520L
563516	523293	526520R
563518	523395	563118L
563622	563626	563118N
523192	523195	563120N
523194	523424	563122N
523422	563624	563124N
523292	563118R	

Catalog numbers of Acetabular Cups Used in the Analysis

121732052	121701054	121722064
121722052	121701058	121730038
121732054	121722062	121730042
121722054	121701050	121730050
121722056	121730044	121730062
121732050	121732060	121730064
121732048	121730052	121701062
121732056	121732062	121730040
121722058	121730054	121701048
121722050	121730048	121703048
121701056	121730058	121703052
121722048	121730056	121703058
121732058	121732064	121731052
121701052	121730060	121731054
121722060	121701060	121732066
121730046	121703054	

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4.1.30 Summit/Pinnacle

N = 7,967 primary cases were used for this analysis. Distribution of utilization: 82 surgeons across 37 sites used this implant combination in primary THA cases.

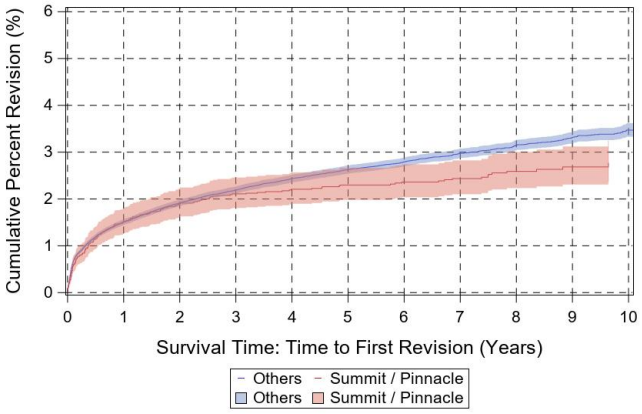


Figure 166. Cumulative Percent Revision Curve for the Summit/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases

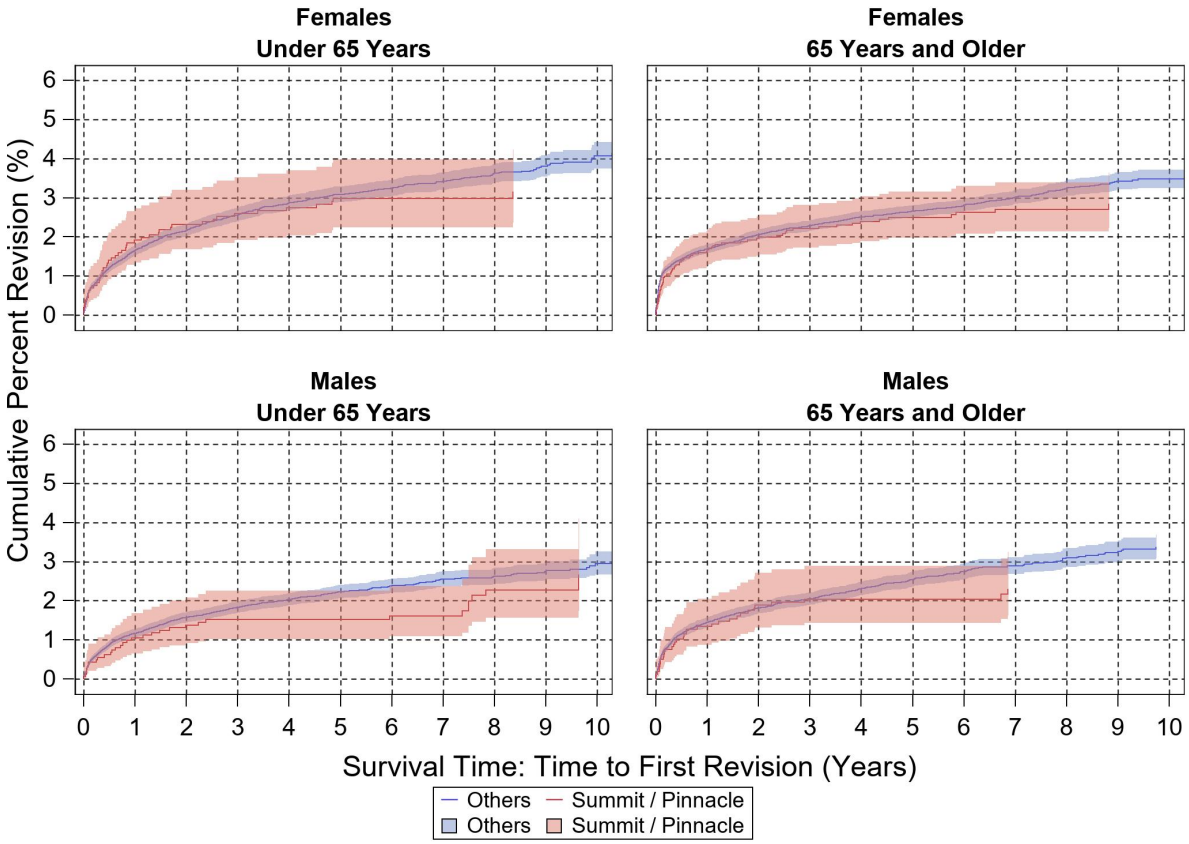


Figure 167. Cumulative Percent Revision Curve for the Summit/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 391. Cumulative Percent Revision and Number at Risk for the Summit/Pinnacle Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	7,876	0.00 (0.00,0.00)	1,585	0.00 (0.00,0.00)	3,061	0.00 (0.00,0.00)	1,636	0.00 (0.00,0.00)	1,593	0.00 (0.00,0.00)
1	7,345	1.52 (1.27,1.82)	1,506	1.91 (1.34,2.73)	2,780	1.66 (1.26,2.19)	1,561	1.05 (0.65,1.69)	1,497	1.34 (0.87,2.05)
2	6,768	1.90 (1.61,2.23)	1,435	2.31 (1.67,3.19)	2,486	1.96 (1.52,2.53)	1,463	1.38 (0.91,2.08)	1,383	1.89 (1.32,2.71)
3	6,219	2.11 (1.81,2.46)	1,351	2.60 (1.91,3.52)	2,224	2.21 (1.73,2.81)	1,396	1.51 (1.02,2.25)	1,247	2.04 (1.44,2.89)
4	5,734	2.21 (1.90,2.57)	1,282	2.74 (2.03,3.70)	2,000	2.39 (1.89,3.03)	1,304	1.51 (1.02,2.25)	1,147	2.04 (1.44,2.89)
5	5,186	2.30 (1.98,2.67)	1,176	2.98 (2.24,3.98)	1,763	2.50 (1.98,3.15)	1,213	1.51 (1.02,2.25)	1,033	2.04 (1.44,2.89)
6	4,529	2.36 (2.04,2.74)	1,026	2.98 (2.24,3.98)	1,539	2.62 (2.08,3.30)	1,065	1.61 (1.09,2.37)	898	2.04 (1.44,2.89)
7	3,689	2.44 (2.10,2.82)	836	2.98 (2.24,3.98)	1,246	2.69 (2.13,3.39)	868	1.61 (1.09,2.37)	738	2.29 (1.62,3.24)
8	2,704	2.59 (2.23,3.00)	631	2.98 (2.24,3.98)	899	2.69 (2.13,3.39)	622	2.28 (1.56,3.31)	552	2.29 (1.62,3.24)
9	1,673	2.68 (2.31,3.12)	391	3.16 (2.36,4.23)	552	2.85 (2.23,3.64)	387	2.28 (1.56,3.31)	343	2.29 (1.62,3.24)
10	759	2.77 (2.37,3.25)	176	3.16 (2.36,4.23)	233	2.85 (2.23,3.64)	181	2.67 (1.73,4.10)	169	2.29 (1.62,3.24)

Table 392. Reasons for First Revision Following Primary THA for Summit/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	54	31.2
2	Joint Infection	36	20.8
3	Peri-prosthetic fracture - Femur	36	20.8
4	Aseptic Loosening	20	11.6
5	Pain	12	6.9
6	Metal Reaction/Metallosis	5	2.9
7	Implant Failure	4	2.3
8	Peri-prosthetic fracture - Acetabulum	3	1.7
9	Malalignment	2	1.2
10	Osteolysis	1	0.6

Table 393. Reasons for First Revision in the First 90 Days Following Primary THA for Summit/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	31	52.5
2	Dislocation/Instability	14	23.7
3	Joint Infection	9	15.2
4	Aseptic Loosening	4	6.8
5	Peri-prosthetic fracture - Acetabulum	1	1.7

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Table 394. Reasons for First Revision Between 91 and 365 days Following Primary THA for Summit/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	18	37.5
2	Joint Infection	18	37.5
3	Aseptic Loosening	7	14.6
4	Pain	3	6.2
5	Peri-prosthetic fracture - Acetabulum	2	4.2

Table 395. Descriptive Statistics of Cases Receiving the Summit/Pinnacle Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	4,700	58.99	
Age (years)	7,967	66.74 (11.02)	67.00 (14.00)
Height (cm)	7,864	168.97 (10.40)	168.00 (17.78)
Weight (kg)	7,865	88.92 (22.58)	86.30 (30.02)
BMI(kg/m^2)	7,864	30.98 (6.71)	30.07 (8.75)
Smoker - Never (%)	3,678	46.17	
Smoker - Previous (%)	3,170	39.79	
Smoker - Current (%)	1,098	13.78	
Smoker - Unknown (%)	21	0.26	

Table 396. Distribution of Approach Used for Summit/Pinnacle Combination in Primary THA Cases

Approach	N	Percent
Anterior	236	3.0
Anterolateral	2900	36.4
Posterior	4,668	58.6
Transtrochanteric	36	0.5
Missing/unknown/other	127	1.6

Table 397. Distribution of Head Size for Summit/Pinnacle Combination in Primary THA Cases

Size (mm)	N	Percent
22	5	0.1
28	103	1.3
32	1,935	24.4
36	5,151	65.1
40	654	8.3
44	26	0.3
Missing/unknown/other	39	0.5

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Table 398. Distribution of Bearing Surface for Summit/Pinnacle Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	3,101	38.9
Ceramic-on-plastic	4,722	59.3
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	13	0.2
Missing/unknown/other	131	1.6

Table 399. Distribution of Polyethylene Used for Summit/Pinnacle Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	18	0.2
XLPE	6,895	87.6
Antioxidant XLPE	0	0.0
Missing/unknown/other	958	12.2

Table 400. Volume of Cases by Surgeon and Site for the Summit/Pinnacle Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	97 (250)	13 (79)
Cases per site	215 (392)	58 (249)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

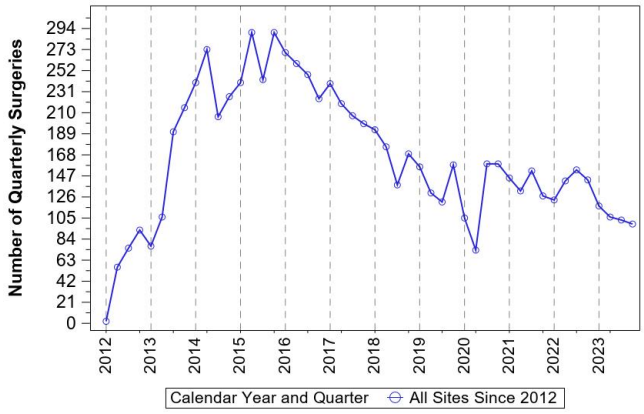


Figure 168. Utilization of the Summit/Pinnacle Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

157001110	157001080	157013100
157011110	157011080	157013120
157011135	157003110	157013090
157011120	157011165	157013135
157001100	157001165	157011070
157001120	157003100	157003150
157011100	157003120	157011180
157001135	157003090	157001180
157001090	157003080	157013150
157011090	157013110	
157011150	157003135	
157001150	157001070	

Catalog numbers of Acetabular Cups Used in the Analysis

121732052	121731050	121730064
121722052	121701052	121701060
121722054	121722062	121730062
121732054	121731048	121703052
121732056	121701056	121722064
121722050	121701054	121703056
121722056	121731058	121703050
121722048	121730054	121703054
121732058	121701048	121722066
121732050	121701050	121731062
121722058	121730048	121732066
121732048	121732064	121703048
121732060	121730056	121716070
121722060	121701058	121717062
121731052	121730044	121720038
121731054	121730058	121720054
121732062	121730060	121730066
121730046	121731060	
121731056	121720046	
121730052	121730050	

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4.1.31 Synergy/Reflection 3

N = 1,423 primary cases were used for this analysis. Distribution of utilization: 39 surgeons across 28 sites used this implant combination in primary THA cases.

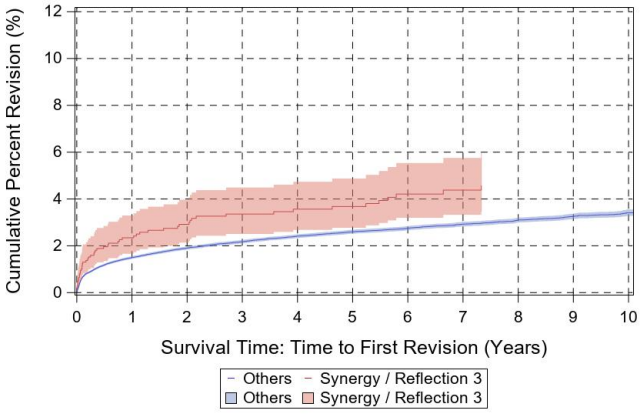


Figure 169. Cumulative Percent Revision Curve for the Synergy/Reflection 3 Combination, Compared to All Other Implant Combinations in Primary THA Cases

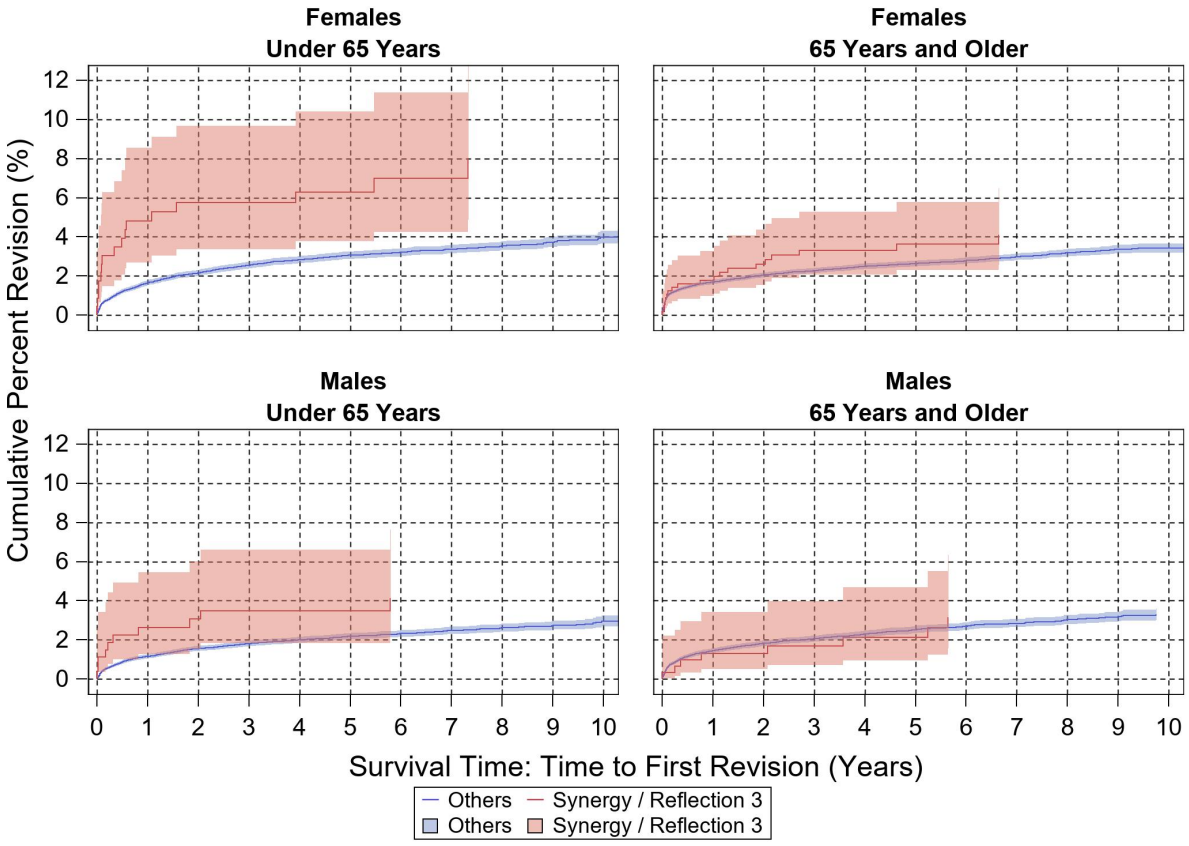


Figure 170. Cumulative Percent Revision Curve for the Synergy/Reflection 3 Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 401. Cumulative Percent Revision and Number at Risk for the Synergy/Reflection 3 Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,385	0.00 (0.00,0.00)	230	0.00 (0.00,0.00)	569	0.00 (0.00,0.00)	269	0.00 (0.00,0.00)	316	0.00 (0.00,0.00)
1	1,240	2.34 (1.66,3.30)	210	4.82 (2.70,8.54)	499	1.78 (0.96,3.28)	243	2.63 (1.26,5.44)	288	1.30 (0.49,3.43)
2	1,117	2.91 (2.14,3.97)	197	5.74 (3.37,9.68)	429	2.61 (1.55,4.37)	227	3.05 (1.54,6.02)	264	1.30 (0.49,3.43)
3	1,005	3.36 (2.51,4.49)	186	5.74 (3.37,9.68)	374	3.31 (2.06,5.29)	211	3.48 (1.82,6.59)	234	1.67 (0.70,3.98)
4	918	3.56 (2.68,4.74)	169	6.29 (3.77,10.40)	339	3.31 (2.06,5.29)	196	3.48 (1.82,6.59)	214	2.12 (0.95,4.70)
5	803	3.68 (2.77,4.88)	146	6.29 (3.77,10.40)	283	3.64 (2.29,5.76)	176	3.48 (1.82,6.59)	198	2.12 (0.95,4.70)
6	665	4.21 (3.19,5.54)	116	6.99 (4.24,11.39)	240	3.64 (2.29,5.76)	142	4.13 (2.21,7.62)	167	3.17 (1.57,6.33)
7	527	4.38 (3.32,5.75)	93	6.99 (4.24,11.39)	190	4.10 (2.57,6.50)	114	4.13 (2.21,7.62)	130	3.17 (1.57,6.33)
8	385	4.57 (3.47,6.02)	75	8.01 (4.86,13.04)	133	4.10 (2.57,6.50)	84	4.13 (2.21,7.62)	93	3.17 (1.57,6.33)
9	246	4.57 (3.47,6.02)	54	8.01 (4.86,13.04)	82	4.10 (2.57,6.50)	54	4.13 (2.21,7.62)	56	3.17 (1.57,6.33)
10	92	4.57 (3.47,6.02)	22	8.01 (4.86,13.04)	30	4.10 (2.57,6.50)	22	4.13 (2.21,7.62)	18	3.17 (1.57,6.33)

Table 402. Reasons for First Revision Following Primary THA for Synergy/Reflection 3 Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	24	51.1
2	Peri-prosthetic fracture - Femur	7	14.9
3	Joint Infection	6	12.8
4	Aseptic Loosening	4	8.5
5	Pain	2	4.3
6	Malalignment	2	4.3
7	Implant Failure	1	2.1
8	Metal Reaction/Metallosis	1	2.1

Table 403. Reasons for First Revision in the First 90 Days Following Primary THA for Synergy/Reflection 3 Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	9	47.4
2	Peri-prosthetic fracture - Femur	4	21.0
3	Joint Infection	2	10.5
4	Malalignment	2	10.5
5	Aseptic Loosening	1	5.3
6	Implant Failure	1	5.3

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Table 404. Reasons for First Revision Between 91 and 365 days Following Primary THA for Synergy/Reflection 3 Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	7	77.8
2	Aseptic Loosening	1	11.1
3	Joint Infection	1	11.1

Table 405. Descriptive Statistics of Cases Receiving the Synergy/Reflection 3 Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	818	57.48	
Age (years)	1,423	68.49 (10.64)	69.00 (15.00)
Height (cm)	1,423	168.48 (10.77)	167.64 (16.98)
Weight (kg)	1,423	88.14 (20.82)	86.20 (28.43)
BMI(kg/m^2)	1,423	30.90 (6.00)	30.38 (8.27)
Smoker - Never (%)	635	44.62	
Smoker - Previous (%)	571	40.13	
Smoker - Current (%)	213	14.97	
Smoker - Unknown (%)	4	0.28	

Table 406. Distribution of Approach Used for Synergy/Reflection 3 Combination in Primary THA Cases

Approach	N	Percent
Anterior	137	9.6
Anterolateral	464	32.6
Posterior	813	57.1
Transtrochanteric	3	0.2
Missing/unknown/other	6	0.4

Table 407. Distribution of Head Size for Synergy/Reflection 3 Combination in Primary THA Cases

Size (mm)	N	Percent
22	1	0.1
28	16	1.2
32	341	24.8
36	938	68.3
40	66	4.8
44	4	0.3
Missing/unknown/other	7	0.5

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Table 408. Distribution of Bearing Surface for Synergy/Reflection 3 Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	569	40.0
Ceramic-on-plastic	797	56.0
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	48	3.4
Missing/unknown/other	9	0.6

Table 409. Distribution of Polyethylene Used for Synergy/Reflection 3 Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	2	0.1
XLPE	1,335	94.2
Antioxidant XLPE	0	0.0
Missing/unknown/other	81	5.7

Table 410. Volume of Cases by Surgeon and Site for the Synergy/Reflection 3 Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	36 (67)	3 (21)
Cases per site	50 (94)	7 (49)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

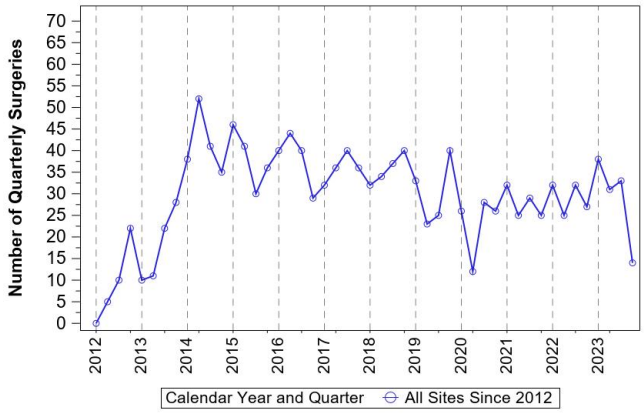


Figure 171. Utilization of the Synergy/Reflection 3 Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

71306614	71306617	71316013
71306114	71306111	71316016
71306613	71316012	71316213
71306113	71306118	71306610
71306612	71316010	71306618
71306112	71316211	71926107
71306115	71316210	71316214
71306116	71316212	71316217
71306615	71316009	71306609
71306616	71316216	71316017
71306117	71316015	71316215
71306611	71316014	71306608
71316011	71306110	

Catalog numbers of Acetabular Cups Used in the Analysis

71335552	71331858	71338664
71335554	71331848	71338669
71335556	71335562	71338671
71335550	71331860	71331864
71335558	71338665	71335566
71331854	71338666	71335568
71335548	71331862	71338672
71331852	71335564	71338675
71331850	71335546	
71331856	71338668	
71335560	71331846	

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4.1.32 Taperloc 133/Continuum

N = 833 primary cases were used for this analysis. Distribution of utilization: 15 surgeons across 11 sites used this implant combination in primary THA cases.

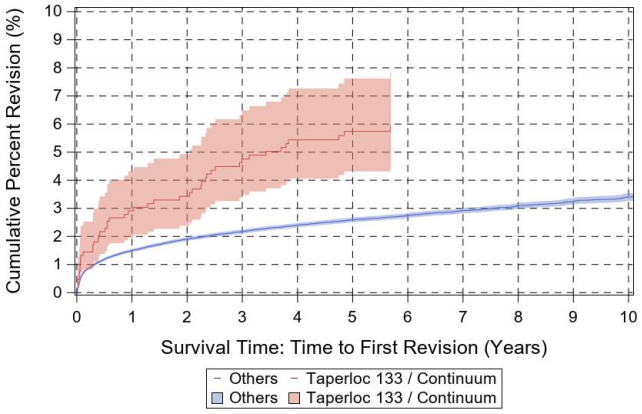


Figure 172. Cumulative Percent Revision Curve for the Taperloc 133/Continuum Combination, Compared to All Other Implant Combinations in Primary THA Cases

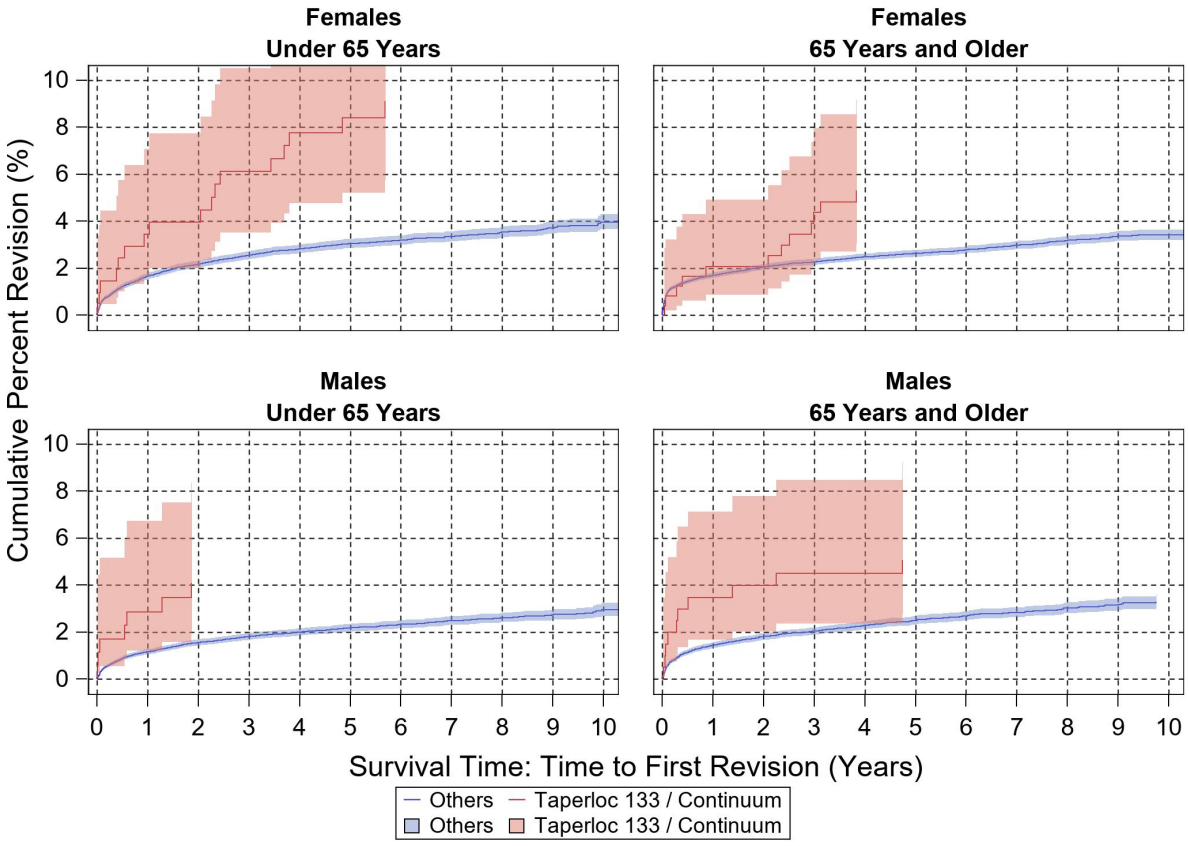


Figure 173. Cumulative Percent Revision Curve for the Taperloc 133/Continuum Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 411. Cumulative Percent Revision and Number at Risk for the Taperloc 133/Continuum Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	831	0.00 (0.00,0.00)	206	0.00 (0.00,0.00)	246	0.00 (0.00,0.00)	177	0.00 (0.00,0.00)	202	0.00 (0.00,0.00)
1	768	2.91 (1.96,4.32)	189	3.43 (1.65,7.07)	222	2.07 (0.87,4.91)	164	2.86 (1.20,6.73)	193	3.47 (1.67,7.14)
2	733	3.43 (2.38,4.92)	178	3.94 (1.99,7.73)	216	2.07 (0.87,4.91)	154	4.07 (1.96,8.36)	185	3.98 (2.01,7.79)
3	706	4.76 (3.48,6.48)	169	6.11 (3.51,10.52)	207	4.36 (2.37,7.96)	150	4.07 (1.96,8.36)	180	4.50 (2.37,8.47)
4	680	5.44 (4.06,7.27)	162	7.78 (4.76,12.58)	197	5.30 (3.04,9.16)	141	4.07 (1.96,8.36)	180	4.50 (2.37,8.47)
5	595	5.74 (4.31,7.62)	147	8.39 (5.22,13.36)	166	5.30 (3.04,9.16)	125	4.07 (1.96,8.36)	157	5.07 (2.76,9.22)
6	434	5.93 (4.47,7.86)	115	9.12 (5.75,14.32)	125	5.30 (3.04,9.16)	89	4.07 (1.96,8.36)	105	5.07 (2.76,9.22)
7	230	5.93 (4.47,7.86)	68	9.12 (5.75,14.32)	63	5.30 (3.04,9.16)	52	4.07 (1.96,8.36)	47	5.07 (2.76,9.22)
8	61	5.93 (4.47,7.86)	21	9.12 (5.75,14.32)	15	5.30 (3.04,9.16)	*	4.07 (1.96,8.36)	15	5.07 (2.76,9.22)
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 412. Reasons for First Revision Following Primary THA for Taperloc 133/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	25	54.3
2	Joint Infection	7	15.2
3	Peri-prosthetic fracture - Femur	5	10.9
4	Aseptic Loosening	3	6.5
5	Malalignment	3	6.5
6	Pain	2	4.3
7	Poly liner wear	1	2.2

Table 413. Reasons for First Revision in the First 90 Days Following Primary THA for Taperloc 133/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	6	50.0
2	Peri-prosthetic fracture - Femur	4	33.3
3	Joint Infection	1	8.3
4	Malalignment	1	8.3

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Table 414. Reasons for First Revision Between 91 and 365 days Following Primary THA for Taperloc 133/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	6	50.0
2	Joint Infection	4	33.3
3	Malalignment	2	16.7

Table 415. Descriptive Statistics of Cases Receiving the Taperloc 133/Continuum Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	453	54.38	
Age (years)	833	65.18 (10.25)	65.00 (13.00)
Height (cm)	833	170.20 (10.24)	170.18 (15.24)
Weight (kg)	833	92.82 (22.47)	90.70 (30.80)
BMI(kg/m^2)	833	31.95 (6.87)	30.95 (10.40)
Smoker - Never (%)	402	48.26	
Smoker - Previous (%)	318	38.18	
Smoker - Current (%)	113	13.57	
Smoker - Unknown (%)	0	0.0	

Table 416. Distribution of Approach Used for Taperloc 133/Continuum Combination in Primary THA Cases

Approach	N	Percent
Anterior	18	2.2
Anterolateral	49	5.9
Posterior	757	90.9
Transtrochanteric	1	0.1
Missing/unknown/other	8	1.0

Table 417. Distribution of Head Size for Taperloc 133/Continuum Combination in Primary THA Cases

Size (mm)	N	Percent
28	2	0.2
32	125	15.1
36	690	83.1
40	5	0.6
Missing/unknown/other	8	1.0

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Table 418. Distribution of Bearing Surface for Taperloc 133/Continuum Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	117	14.1
Ceramic-on-plastic	705	84.6
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	11	1.3

Table 419. Distribution of Polyethylene Used for Taperloc 133/Continuum Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	370	44.6
Antioxidant XLPE	442	53.2
Missing/unknown/other	18	2.2

Table 420. Volume of Cases by Surgeon and Site for the Taperloc 133/Continuum Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	55 (140)	2 (55)
Cases per site	75 (164)	11 (57)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

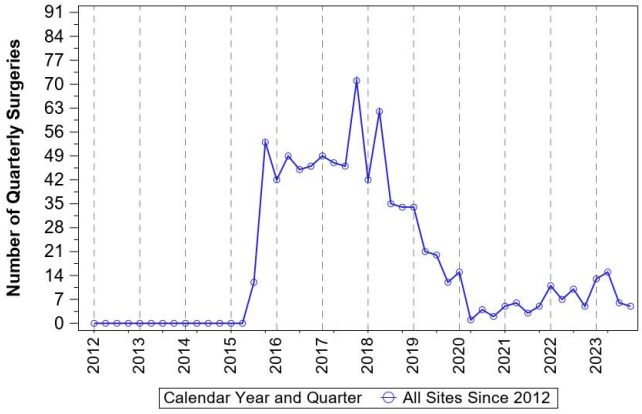


Figure 174. Utilization of the Taperloc 133/Continuum Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

51103100	51104160	51103180
51103120	51103150	51101070
51103110	51104100	51104180
51103130	51103140	51104200
51103090	51104170	51101080
51104150	51100060	51101060
51104120	51100070	51103200
51104140	51103160	51101050
51100080	51104090	51100040
51104110	51100050	51103220
51104130	51103170	

Catalog numbers of Acetabular Cups Used in the Analysis

875705401	875704801	875706401
875705201	875705402	875705002
875705601	875706201	875704402
875705801	875705802	875706202
875705001	875705602	875706002
875706001	875705202	

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4.1.33 Taperloc 133/G7

N = 12,112 primary cases were used for this analysis. Distribution of utilization: 97 surgeons across 58 sites used this implant combination in primary THA cases.

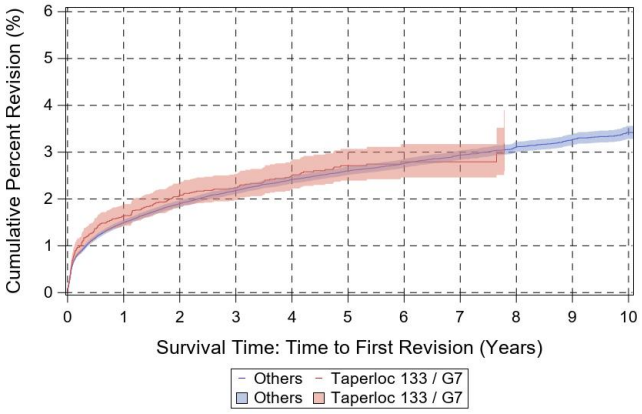


Figure 175. Cumulative Percent Revision Curve for the Taperloc 133/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases

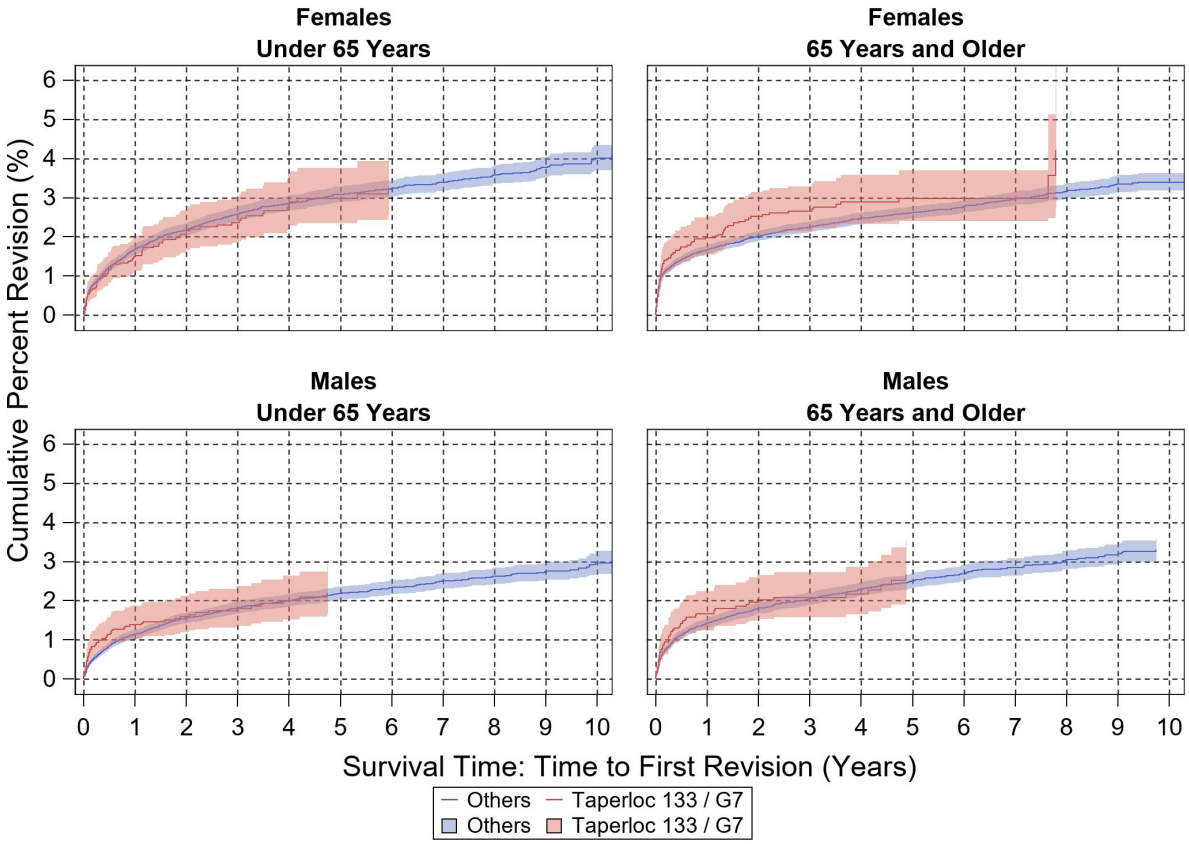


Figure 176. Cumulative Percent Revision Curve for the Taperloc 133/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 421. Cumulative Percent Revision and Number at Risk for the Taperloc 133/G7 Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	12,074	0.00 (0.00,0.00)	3,019	0.00 (0.00,0.00)	3,312	0.00 (0.00,0.00)	3,055	0.00 (0.00,0.00)	2,688	0.00 (0.00,0.00)
1	10,124	1.63 (1.42,1.88)	2,560	1.48 (1.10,2.00)	2,792	1.98 (1.55,2.52)	2,604	1.38 (1.02,1.88)	2,168	1.66 (1.24,2.24)
2	8,297	2.08 (1.83,2.37)	2,127	2.15 (1.67,2.78)	2,305	2.52 (2.02,3.14)	2,129	1.59 (1.19,2.12)	1,736	2.02 (1.53,2.66)
3	6,477	2.24 (1.98,2.54)	1,689	2.36 (1.84,3.02)	1,790	2.65 (2.14,3.29)	1,672	1.80 (1.36,2.37)	1,326	2.08 (1.58,2.73)
4	4,936	2.50 (2.21,2.82)	1,295	2.82 (2.22,3.57)	1,383	2.89 (2.33,3.58)	1,259	2.00 (1.52,2.63)	999	2.17 (1.65,2.86)
5	3,279	2.71 (2.39,3.07)	895	2.97 (2.34,3.77)	966	2.98 (2.40,3.70)	800	2.20 (1.66,2.90)	618	2.67 (2.00,3.57)
6	2,001	2.79 (2.46,3.17)	570	3.26 (2.54,4.18)	602	2.98 (2.40,3.70)	469	2.20 (1.66,2.90)	360	2.67 (2.00,3.57)
7	971	2.79 (2.46,3.17)	287	3.26 (2.54,4.18)	291	2.98 (2.40,3.70)	235	2.20 (1.66,2.90)	158	2.67 (2.00,3.57)
8	363	3.18 (2.60,3.90)	113	3.26 (2.54,4.18)	121	4.21 (2.74,6.46)	86	2.20 (1.66,2.90)	43	2.67 (2.00,3.57)
9	110	3.18 (2.60,3.90)	32	3.26 (2.54,4.18)	34	4.21 (2.74,6.46)	28	2.20 (1.66,2.90)	16	2.67 (2.00,3.57)
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

Table 422. Reasons for First Revision Following Primary THA for Taperloc 133/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	81	29.7
2	Peri-prosthetic fracture - Femur	65	23.8
3	Joint Infection	60	22.0
4	Aseptic Loosening	34	12.5
5	Implant Failure	10	3.7
6	Pain	10	3.7
7	Malalignment	6	2.2
8	Peri-prosthetic fracture - Acetabulum	5	1.8
9	Metal Reaction/Metallosis	1	0.4
10	Unknown/missing	1	0.4

Table 423. Reasons for First Revision in the First 90 Days Following Primary THA for Taperloc 133/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	58	48.3
2	Joint Infection	23	19.2
3	Dislocation/Instability	18	15.0
4	Implant Failure	9	7.5
5	Aseptic Loosening	6	5.0
6	Peri-prosthetic fracture - Acetabulum	4	3.3
7	Malalignment	2	1.7

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Table 424. Reasons for First Revision Between 91 and 365 days Following Primary THA for Taperloc 133/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	27	38.0
2	Joint Infection	22	31.0
3	Aseptic Loosening	11	15.5
4	Pain	5	7.0
5	Peri-prosthetic fracture - Femur	3	4.2
6	Implant Failure	1	1.4
7	Peri-prosthetic fracture - Acetabulum	1	1.4
8	Unknown/other/missing	1	1.4

Table 425. Descriptive Statistics of Cases Receiving the Taperloc 133/G7 Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	6,348	52.41	
Age (years)	12,112	64.01 (10.56)	64.00 (13.00)
Height (cm)	12,112	170.39 (10.31)	170.18 (15.20)
Weight (kg)	12,112	91.34 (21.02)	89.90 (27.63)
BMI(kg/m^2)	12,112	31.37 (6.28)	30.76 (8.67)
Smoker - Never (%)	5,786	47.77	
Smoker - Previous (%)	4,443	36.68	
Smoker - Current (%)	1,790	14.78	
Smoker - Unknown (%)	93	0.77	

Table 426. Distribution of Approach Used for Taperloc 133/G7 Combination in Primary THA Cases

Approach	N	Percent
Anterior	2,715	22.4
Anterolateral	3495	28.9
Posterior	5,878	48.5
Transtrochanteric	10	0.1
Missing/unknown/other	14	0.1

Table 427. Distribution of Head Size for Taperloc 133/G7 Combination in Primary THA Cases

Size (mm)	N	Percent
28	10	0.1
32	707	6.5
36	6,704	61.6
40	3,410	31.3
44	3	0.0
Missing/unknown/other	46	0.4

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Table 428. Distribution of Bearing Surface for Taperloc 133/G7 Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	2,010	16.6
Ceramic-on-plastic	8,824	72.8
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	1,111	9.2
Missing/unknown/other	167	1.4

Table 429. Distribution of Polyethylene Used for Taperloc 133/G7 Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	4,067	34.0
Antioxidant XLPE	5,269	44.0
Missing/unknown/other	2,641	22.1

Table 430. Volume of Cases by Surgeon and Site for the Taperloc 133/G7 Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	124 (220)	19 (112)
Cases per site	208 (283)	88 (229)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

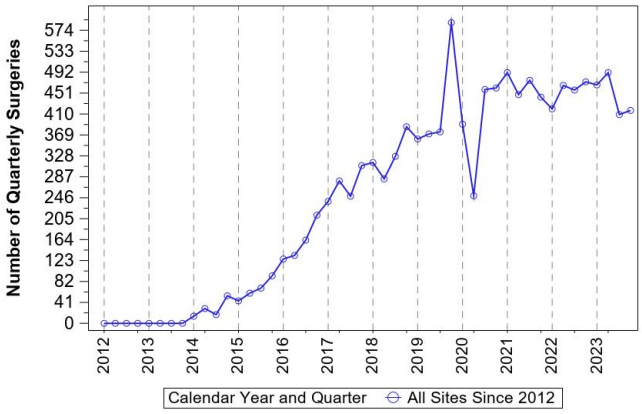


Figure 177. Utilization of the Taperloc 133/G7 Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

51104120	51101060	51100090
51104110	51104170	51100110
51104100	51104180	51101110
51104130	51100070	51101160
51104090	51103160	51100140
51104140	51101050	51101120
51104150	51100060	51101130
51103110	51103180	51100120
51103120	51100050	51100130
51103100	51103170	51101100
51101080	51100040	51104240
51104160	51104200	51100100
51103090	51103200	51100160
51103130	51104220	51100170
51101070	51101090	51103240
51100080	51101140	
51103140	51103220	
51103150	51101150	

Catalog numbers of Acetabular Cups Used in the Analysis

10000664	110017106	10000669
110010244	110010242	110010268
110010245	110017101	110017100
10000663	10000661	110010250
10000665	110010263	110010269
110010246	110010265	110017109
10000662	110010249	110010270
110010243	110017107	110010271
110017103	110010266	10000670
110017104	110010264	110010261
110010247	10000668	10000671
10000666	10000660	110010240
110017102	110010267	10000659
110017105	110010262	110010272
110010248	110017108	110017099
10000667	110010241	

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4.1.34 Taperloc 133/Regenerex RingLoc+

N = 505 primary cases were used for this analysis. Distribution of utilization: 19 surgeons across 16 sites used this implant combination in primary THA cases.

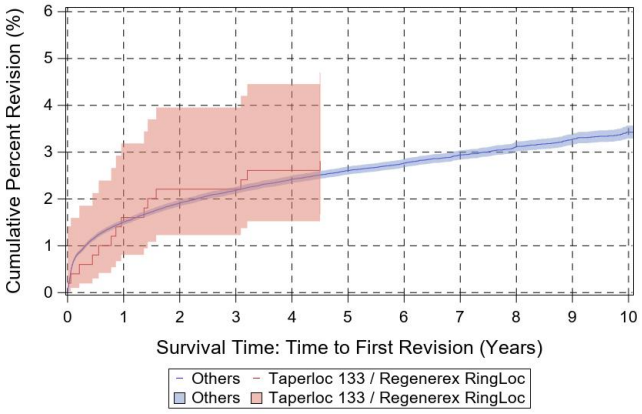


Figure 178. Cumulative Percent Revision Curve for the Taperloc 133/Regenerex RingLoc+ Combination, Compared to All Other Implant Combinations in Primary THA Cases

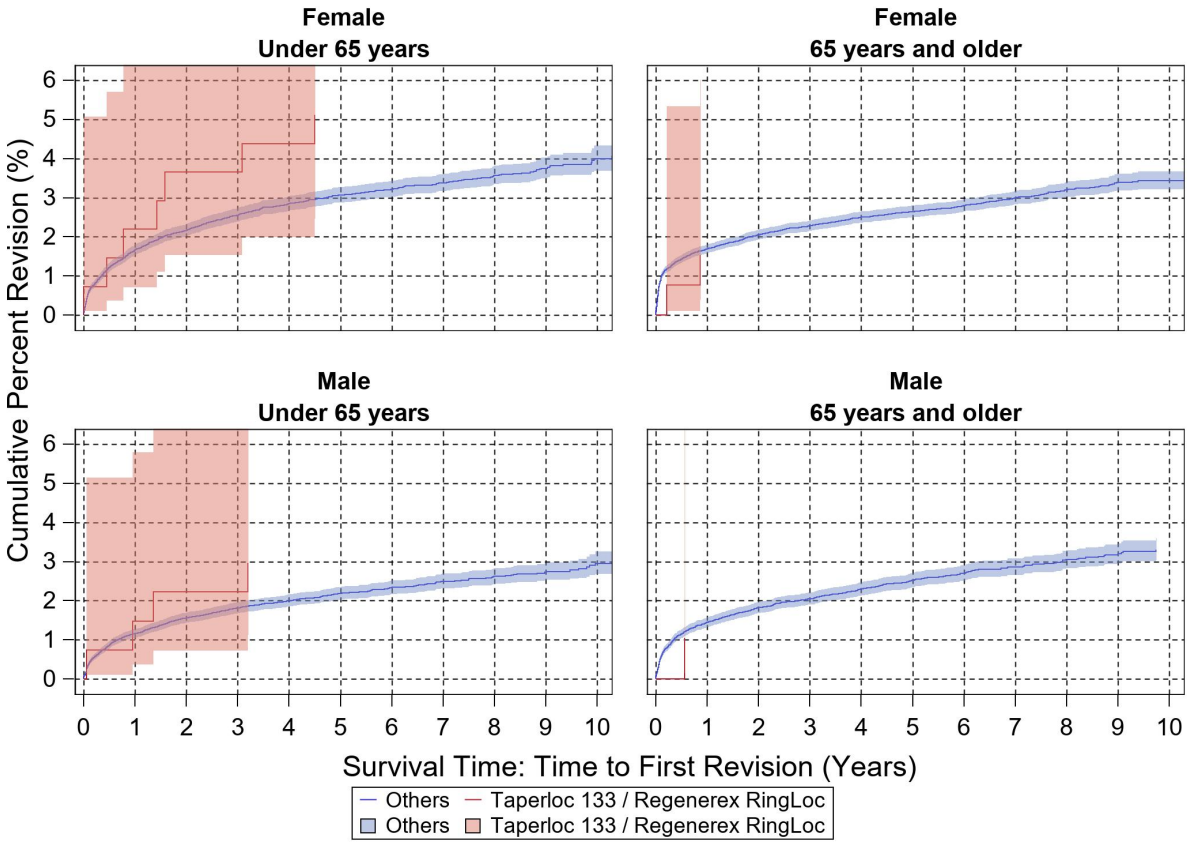


Figure 179. Cumulative Percent Revision Curve for the Taperloc 133/Regenerex RingLoc+ Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 431. Cumulative Percent Revision and Number at Risk for the Taperloc 133/Regenerex RingLoc+ Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	498	0.00 (0.00,0.00)	137	0.00 (0.00,0.00)	130	0.00 (0.00,0.00)	135	0.00 (0.00,0.00)	96	0.00 (0.00,0.00)
1	490	1.61 (0.81,3.19)	134	2.19 (0.71,6.63)	128	1.54 (0.39,6.01)	133	1.48 (0.37,5.79)	95	1.04 (0.15,7.16)
2	487	2.21 (1.23,3.95)	132	3.65 (1.54,8.55)	128	1.54 (0.39,6.01)	132	2.22 (0.72,6.73)	95	1.04 (0.15,7.16)
3	487	2.21 (1.23,3.95)	132	3.65 (1.54,8.55)	128	1.54 (0.39,6.01)	132	2.22 (0.72,6.73)	95	1.04 (0.15,7.16)
4	485	2.61 (1.52,4.45)	131	4.38 (1.99,9.49)	128	1.54 (0.39,6.01)	131	2.96 (1.12,7.70)	95	1.04 (0.15,7.16)
5	482	2.81 (1.67,4.70)	130	5.11 (2.47,10.42)	126	1.54 (0.39,6.01)	131	2.96 (1.12,7.70)	95	1.04 (0.15,7.16)
6	460	2.81 (1.67,4.70)	125	5.11 (2.47,10.42)	121	1.54 (0.39,6.01)	127	2.96 (1.12,7.70)	87	1.04 (0.15,7.16)
7	378	2.81 (1.67,4.70)	105	5.11 (2.47,10.42)	93	1.54 (0.39,6.01)	108	2.96 (1.12,7.70)	72	1.04 (0.15,7.16)
8	303	2.81 (1.67,4.70)	88	5.11 (2.47,10.42)	73	1.54 (0.39,6.01)	85	2.96 (1.12,7.70)	57	1.04 (0.15,7.16)
9	164	2.81 (1.67,4.70)	48	5.11 (2.47,10.42)	43	1.54 (0.39,6.01)	48	2.96 (1.12,7.70)	25	1.04 (0.15,7.16)
10	39	2.81 (1.67,4.70)	14	5.11 (2.47,10.42)	*	1.54 (0.39,6.01)	13	2.96 (1.12,7.70)	*	1.04 (0.15,7.16)

* Denotes that the number of cases is between 1 and 10.

Table 432. Reasons for First Revision Following Primary THA for Taperloc 133/Regenerex RingLoc+ Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	4	28.6
2	Joint Infection	4	28.6
3	Pain	2	14.3
4	Malalignment	2	14.3
5	Dislocation/Instability	1	7.1
6	Peri-prosthetic fracture - Femur	1	7.1

Table 433. Reasons for First Revision in the First 90 Days Following Primary THA for Taperloc 133/Regenerex RingLoc+ Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	33.3
2	Peri-prosthetic fracture - Femur	1	33.3
3	Malalignment	1	33.3

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Table 434. Reasons for First Revision Between 91 and 365 days Following Primary THA for Taperloc 133/Regenerex RingLoc+ Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	2	40.0
2	Aseptic Loosening	1	20.0
3	Dislocation/Instability	1	20.0
4	Pain	1	20.0

Table 435. Descriptive Statistics of Cases Receiving the Taperloc 133/Regenerex RingLoc+ Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	272	53.86	
Age (years)	505	63.26 (11.40)	63.00 (15.00)
Height (cm)	505	170.15 (10.48)	170.00 (15.44)
Weight (kg)	505	90.63 (22.26)	89.00 (29.16)
BMI(kg/m^2)	505	31.21 (6.89)	29.84 (9.11)
Smoker - Never (%)	217	42.97	
Smoker - Previous (%)	163	32.28	
Smoker - Current (%)	122	24.16	
Smoker - Unknown (%)	3	0.59	

Table 436. Distribution of Approach Used for Taperloc 133/Regenerex RingLoc+ Combination in Primary THA Cases

Approach	N	Percent
Anterior	52	10.3
Anterolateral	350	69.3
Posterior	99	19.6
Transtrochanteric	2	0.4
Missing/unknown/other	2	0.4

Table 437. Distribution of Head Size for Taperloc 133/Regenerex RingLoc+ Combination in Primary THA Cases

Size (mm)	N	Percent
28	1	0.2
32	62	12.5
36	308	62.1
40	118	23.8
Missing/unknown/other	7	1.4

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Table 438. Distribution of Bearing Surface for Taperloc 133/Regenerex RingLoc+ Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	317	62.8
Ceramic-on-plastic	172	34.1
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	16	3.2

Table 439. Distribution of Polyethylene Used for Taperloc 133/Regenerex RingLoc+ Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	1	0.2
XLPE	196	39.5
Antioxidant XLPE	299	60.3
Missing/unknown/other	0	0.0

Table 440. Volume of Cases by Surgeon and Site for the Taperloc 133/Regenerex RingLoc+ Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	26 (53)	4 (12)
Cases per site	31 (54)	6 (16)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

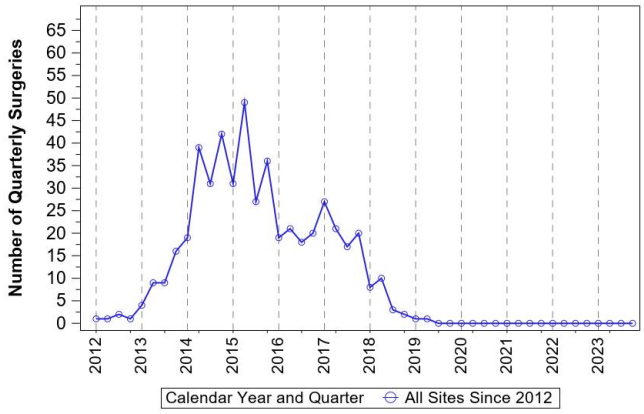


Figure 180. Utilization of the Taperloc 133/Regenerex RingLoc+ Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

51103110	51103160	51101080
51103120	51104100	51101070
51103130	51104160	51100050
51103100	51104140	51103180
51104130	51100070	51101060
51103150	51104150	51103200
51103090	51100060	51103220
51103140	51103170	51104220
51104120	51100080	
51104110	51104180	
51104170	51104090	

Catalog numbers of Acetabular Cups Used in the Analysis

PT116054	PT116062	PT104060
PT116052	PT104050	PT106060
PT116056	PT104056	PT106066
PT116058	PT106058	PT106068
PT116060	PT106062	PT106072
PT116050	PT104054	PT116066
PT116048	PT104058	
PT106056	PT106064	
PT106054	PT104048	

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4.1.35 Taperloc 133/RingLoc

N = 1,703 primary cases were used for this analysis. Distribution of utilization: 23 surgeons across 18 sites used this implant combination in primary THA cases.

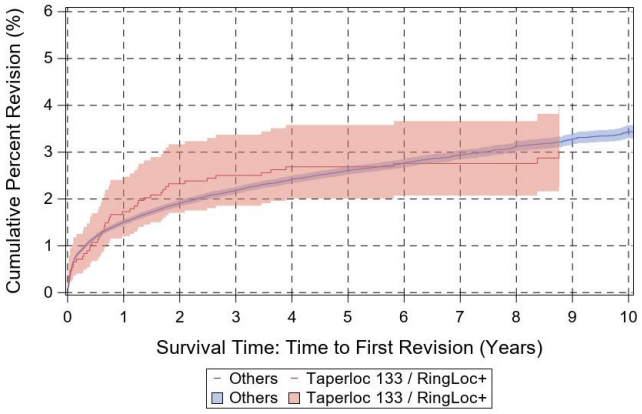


Figure 181. Cumulative Percent Revision Curve for the Taperloc 133/RingLoc Combination, Compared to All Other Implant Combinations in Primary THA Cases

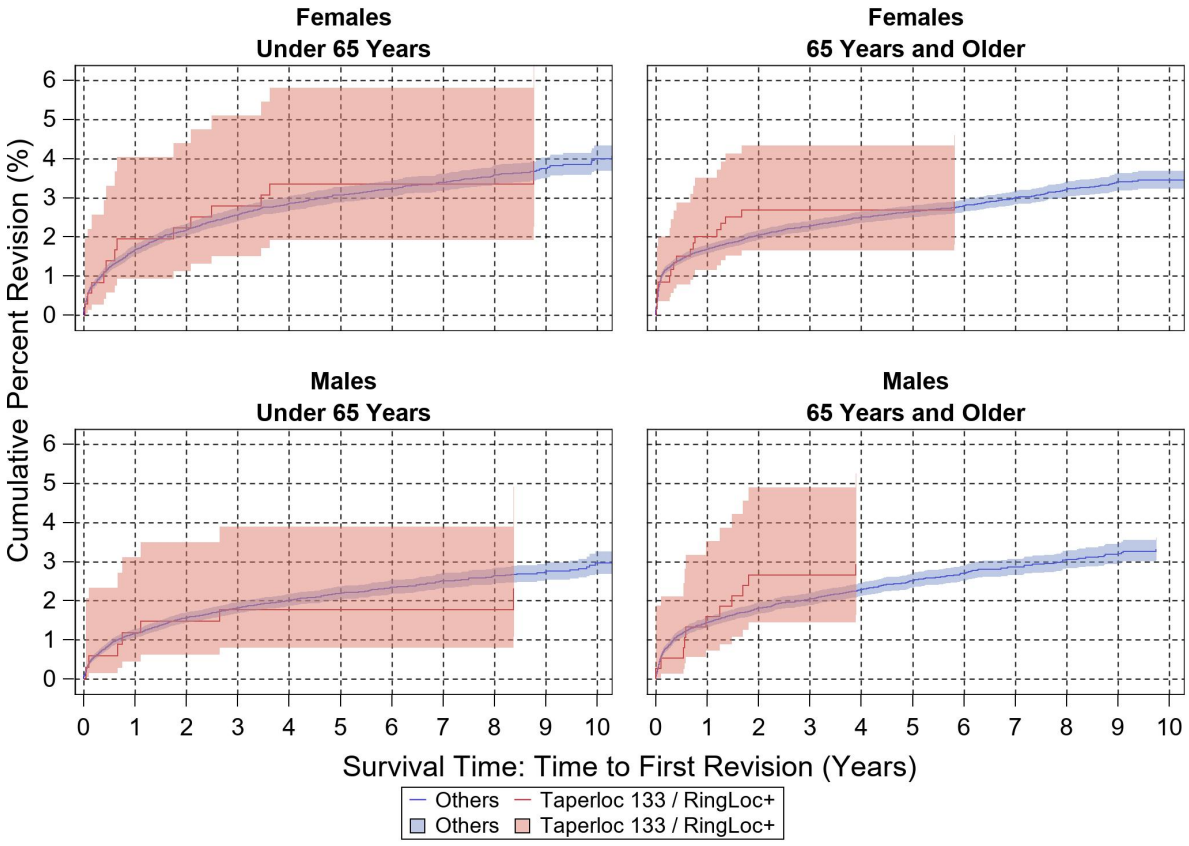


Figure 182. Cumulative Percent Revision Curve for the Taperloc 133/RingLoc Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 441. Cumulative Percent Revision and Number at Risk for the Taperloc 133/RingLoc Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,678	0.00 (0.00,0.00)	360	0.00 (0.00,0.00)	597	0.00 (0.00,0.00)	340	0.00 (0.00,0.00)	376	0.00 (0.00,0.00)
1	1,649	1.73 (1.20,2.48)	353	1.94 (0.93,4.04)	585	2.01 (1.15,3.51)	336	1.18 (0.44,3.10)	370	1.60 (0.72,3.52)
2	1,638	2.32 (1.70,3.17)	351	2.22 (1.12,4.40)	581	2.68 (1.65,4.34)	335	1.47 (0.61,3.50)	366	2.66 (1.44,4.89)
3	1,629	2.50 (1.86,3.37)	349	2.78 (1.51,5.11)	578	2.68 (1.65,4.34)	332	1.76 (0.80,3.89)	365	2.66 (1.44,4.89)
4	1,596	2.69 (2.01,3.58)	344	3.34 (1.91,5.81)	567	2.68 (1.65,4.34)	330	1.76 (0.80,3.89)	350	2.94 (1.64,5.24)
5	1,485	2.69 (2.01,3.58)	322	3.34 (1.91,5.81)	519	2.68 (1.65,4.34)	315	1.76 (0.80,3.89)	324	2.94 (1.64,5.24)
6	1,347	2.76 (2.07,3.66)	297	3.34 (1.91,5.81)	462	2.89 (1.80,4.61)	294	1.76 (0.80,3.89)	289	2.94 (1.64,5.24)
7	1,202	2.76 (2.07,3.66)	272	3.34 (1.91,5.81)	415	2.89 (1.80,4.61)	254	1.76 (0.80,3.89)	256	2.94 (1.64,5.24)
8	973	2.76 (2.07,3.66)	223	3.34 (1.91,5.81)	335	2.89 (1.80,4.61)	211	1.76 (0.80,3.89)	199	2.94 (1.64,5.24)
9	563	3.02 (2.27,4.02)	136	3.94 (2.26,6.83)	191	2.89 (1.80,4.61)	123	2.31 (1.08,4.91)	108	2.94 (1.64,5.24)
10	205	3.02 (2.27,4.02)	44	3.94 (2.26,6.83)	74	2.89 (1.80,4.61)	45	2.31 (1.08,4.91)	41	2.94 (1.64,5.24)

Table 442. Reasons for First Revision Following Primary THA for Taperloc 133/RingLoc Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	14	34.1
2	Joint Infection	9	22.0
3	Aseptic Loosening	6	14.6
4	Peri-prosthetic fracture - Femur	5	12.2
5	Implant Failure	3	7.3
6	Pain	3	7.3
7	Poly liner wear	1	2.4

Table 443. Reasons for First Revision in the First 90 Days Following Primary THA for Taperloc 133/RingLoc Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	5	45.4
2	Dislocation/Instability	2	18.2
3	Aseptic Loosening	1	9.1
4	Joint Infection	1	9.1
5	Implant Failure	1	9.1
6	Pain	1	9.1

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Table 444. Reasons for First Revision Between 91 and 365 days Following Primary THA for Taperloc 133/RingLoc Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	5	45.4
2	Dislocation/Instability	4	36.4
3	Aseptic Loosening	1	9.1
4	Implant Failure	1	9.1

Table 445. Descriptive Statistics of Cases Receiving the Taperloc 133/RingLoc Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	966	56.72	
Age (years)	1,703	66.19 (10.48)	67.00 (14.00)
Height (cm)	1,703	169.48 (10.39)	170.00 (15.24)
Weight (kg)	1,703	90.49 (22.04)	88.00 (28.70)
BMI(kg/m^2)	1,703	31.38 (6.61)	30.51 (9.00)
Smoker - Never (%)	798	46.86	
Smoker - Previous (%)	665	39.05	
Smoker - Current (%)	223	13.09	
Smoker - Unknown (%)	17	1	

Table 446. Distribution of Approach Used for Taperloc 133/RingLoc Combination in Primary THA Cases

Approach	N	Percent
Anterior	93	5.5
Anterolateral	727	42.7
Posterior	870	51.1
Transtrochanteric	7	0.4
Missing/unknown/other	6	0.3

Table 447. Distribution of Head Size for Taperloc 133/RingLoc Combination in Primary THA Cases

Size (mm)	N	Percent
32	111	6.5
36	955	56.2
40	543	32.0
44	66	3.9
Missing/unknown/other	23	1.4

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Table 448. Distribution of Bearing Surface for Taperloc 133/RingLoc Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,034	60.7
Ceramic-on-plastic	641	37.6
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	28	1.6

Table 449. Distribution of Polyethylene Used for Taperloc 133/RingLoc Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	11	0.7
XLPE	172	10.1
Antioxidant XLPE	1,515	89.2
Missing/unknown/other	0	0.0

Table 450. Volume of Cases by Surgeon and Site for the Taperloc 133/RingLoc Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	74 (93)	17 (156)
Cases per site	94 (122)	26 (137)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

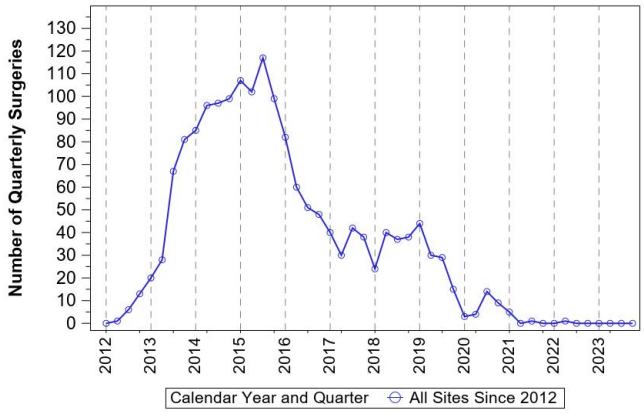


Figure 183. Utilization of the Taperloc 133/RingLoc Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

51104120	51103090	51100070
51104130	51103130	51104200
51104110	51104170	51103170
51104100	51101060	51100050
51104140	51101070	51103180
51104150	51100080	51100040
51104090	51103150	51103200
51104160	51104180	51104220
51103100	51103140	51101100
51103110	51101050	51103240
51101080	51103160	51104240
51103120	51100060	

Catalog numbers of Acetabular Cups Used in the Analysis

16104154	14103658	16116060
16104150	16116056	14103650
16104156	14103660	14103552
16104158	14103554	16116046
16104152	14103560	14103664
16104160	14103564	16116062
14103654	14103662	14103566
16116050	16104164	14103666
16116052	14103558	16116064
14103656	14103562	11165208
16116054	16116058	14103668
14103652	14103556	
16104162	16116048	
16104148	16104146	

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4.1.36 Taperloc 133 Microplasty/Continuum

N = 709 primary cases were used for this analysis. Fewer than ten surgeons used this implant combination at fewer than ten sites in primary THA cases.

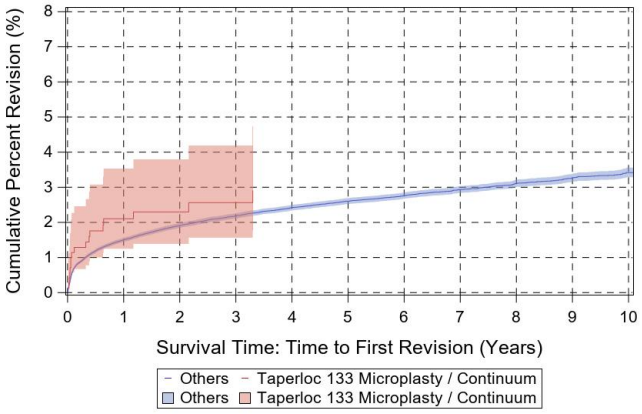


Figure 184. Cumulative Percent Revision Curve for the Taperloc 133 Microplasty/Continuum Combination, Compared to All Other Implant Combinations in Primary THA Cases

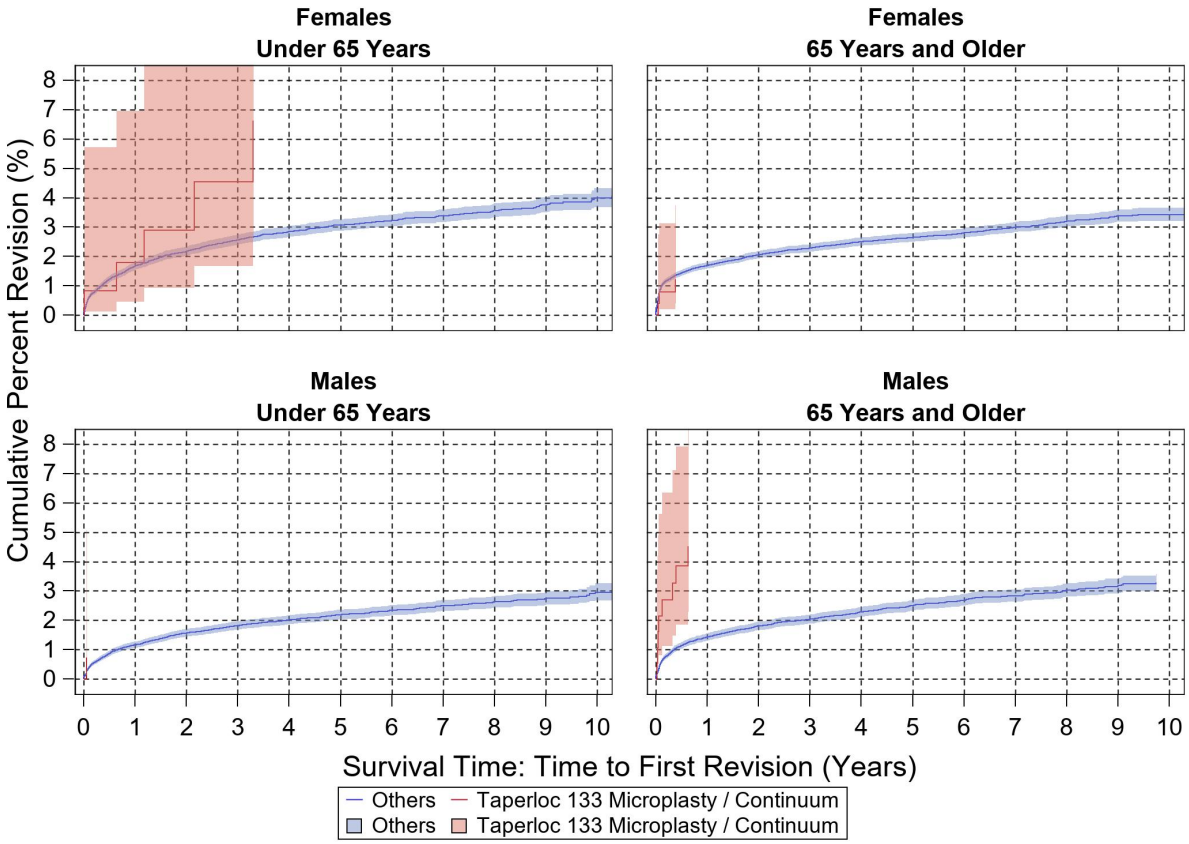


Figure 185. Cumulative Percent Revision Curve for the Taperloc 133 Microplasty/Continuum Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 451. Cumulative Percent Revision and Number at Risk for the Taperloc 133 Microplasty/Continuum Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	708	0.00 (0.00,0.00)	121	0.00 (0.00,0.00)	257	0.00 (0.00,0.00)	142	0.00 (0.00,0.00)	188	0.00 (0.00,0.00)
1	523	2.10 (1.25,3.53)	94	1.78 (0.45,6.96)	192	1.22 (0.39,3.73)	106	0.73 (0.10,5.07)	131	4.52 (2.28,8.86)
2	397	2.30 (1.39,3.79)	62	2.90 (0.93,8.79)	150	1.22 (0.39,3.73)	77	0.73 (0.10,5.07)	108	4.52 (2.28,8.86)
3	292	2.56 (1.56,4.19)	48	4.54 (1.66,12.09)	104	1.22 (0.39,3.73)	58	0.73 (0.10,5.07)	82	4.52 (2.28,8.86)
4	177	2.91 (1.78,4.74)	26	6.62 (2.65,16.01)	60	1.22 (0.39,3.73)	42	0.73 (0.10,5.07)	49	4.52 (2.28,8.86)
5	64	2.91 (1.78,4.74)	*	6.62 (2.65,16.01)	21	1.22 (0.39,3.73)	13	0.73 (0.10,5.07)	23	4.52 (2.28,8.86)
6	20	2.91 (1.78,4.74)	*	6.62 (2.65,16.01)	*	1.22 (0.39,3.73)	*	0.73 (0.10,5.07)	*	4.52 (2.28,8.86)
7	12	2.91 (1.78,4.74)	*	6.62 (2.65,16.01)	*	1.22 (0.39,3.73)	*	0.73 (0.10,5.07)	*	4.52 (2.28,8.86)
8	*	2.91 (1.78,4.74)	*	6.62 (2.65,16.01)	*	1.22 (0.39,3.73)	0	N/A	*	4.52 (2.28,8.86)
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 452. Reasons for First Revision Following Primary THA for Taperloc 133 Microplasty/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	5	29.4
2	Peri-prosthetic fracture - Femur	5	29.4
3	Dislocation/Instability	4	23.5
4	Joint Infection	1	5.9
5	Pain	1	5.9
6	Malalignment	1	5.9

Table 453. Reasons for First Revision in the First 90 Days Following Primary THA for Taperloc 133 Microplasty/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	5	55.6
2	Aseptic Loosening	3	33.3
3	Dislocation/Instability	1	11.1

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Table 454. Reasons for First Revision Between 91 and 365 days Following Primary THA for Taperloc 133 Microplasty/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	3	60.0
2	Aseptic Loosening	1	20.0
3	Malalignment	1	20.0

Table 455. Descriptive Statistics of Cases Receiving the Taperloc 133 Microplasty/Continuum Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	378	53.31	
Age (years)	709	66.59 (9.63)	68.00 (12.00)
Height (cm)	709	170.80 (10.07)	170.20 (15.20)
Weight (kg)	709	85.24 (17.39)	84.50 (23.30)
BMI(kg/m^2)	709	29.11 (4.81)	28.80 (6.77)
Smoker - Never (%)	375	52.89	
Smoker - Previous (%)	279	39.35	
Smoker - Current (%)	55	7.76	
Smoker - Unknown (%)	0	0.0	

Table 456. Distribution of Approach Used for Taperloc 133 Microplasty/Continuum Combination in Primary THA Cases

Approach	N	Percent
Anterior	699	98.6
Anterolateral	2	0.3
Posterior	8	1.1
Transtrochanteric	0	0.0
Missing/unknown/other	0	0.0

Table 457. Distribution of Head Size for Taperloc 133 Microplasty/Continuum Combination in Primary THA Cases

Size (mm)	N	Percent
28	1	0.1
32	134	18.9
36	570	80.5
40	1	0.1
Missing/unknown/other	2	0.3

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Table 458. Distribution of Bearing Surface for Taperloc 133 Microplasty/Continuum Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	8	1.1
Ceramic-on-plastic	698	98.5
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	3	0.4

Table 459. Distribution of Polyethylene Used for Taperloc 133 Microplasty/Continuum Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	46	6.5
Antioxidant XLPE	659	93.1
Missing/unknown/other	3	0.4

Table 460. Volume of Cases by Surgeon and Site for the Taperloc 133 Microplasty/Continuum Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	118 (264)	1 (47)
Cases per site	118 (264)	1 (47)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

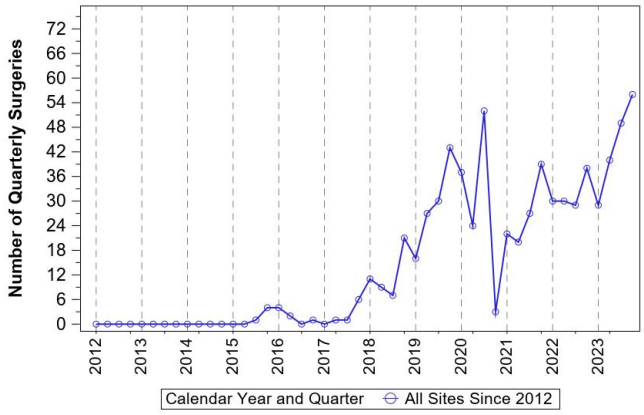


Figure 186. Utilization of the Taperloc 133 Microplasty/Continuum Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

51106110	51108060	51106170
51106120	51107150	51108040
51106130	51107120	51107180
51106100	51107100	51107200
51106090	51107140	51109070
51108080	51108070	51109080
51106140	51107090	51106200
51106150	51107170	51109060
51107130	51106160	51109050
51107110	51108050	
51107160	51106180	

Catalog numbers of Acetabular Cups Used in the Analysis

875705201	875705801	875704602
875705601	875704801	875706002
875705401	875706001	875706401
875705001	875706201	

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4.1.37 Taperloc 133 Microplasty/G7

N = 3,827 primary cases were used for this analysis. Distribution of utilization: 59 surgeons across 42 sites used this implant combination in primary THA cases.

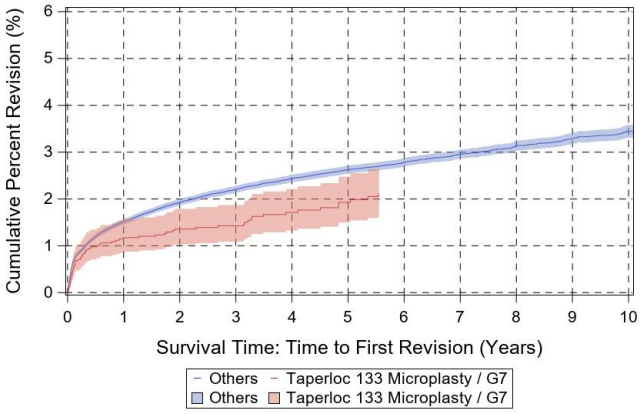


Figure 187. Cumulative Percent Revision Curve for the Taperloc 133 Microplasty/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases

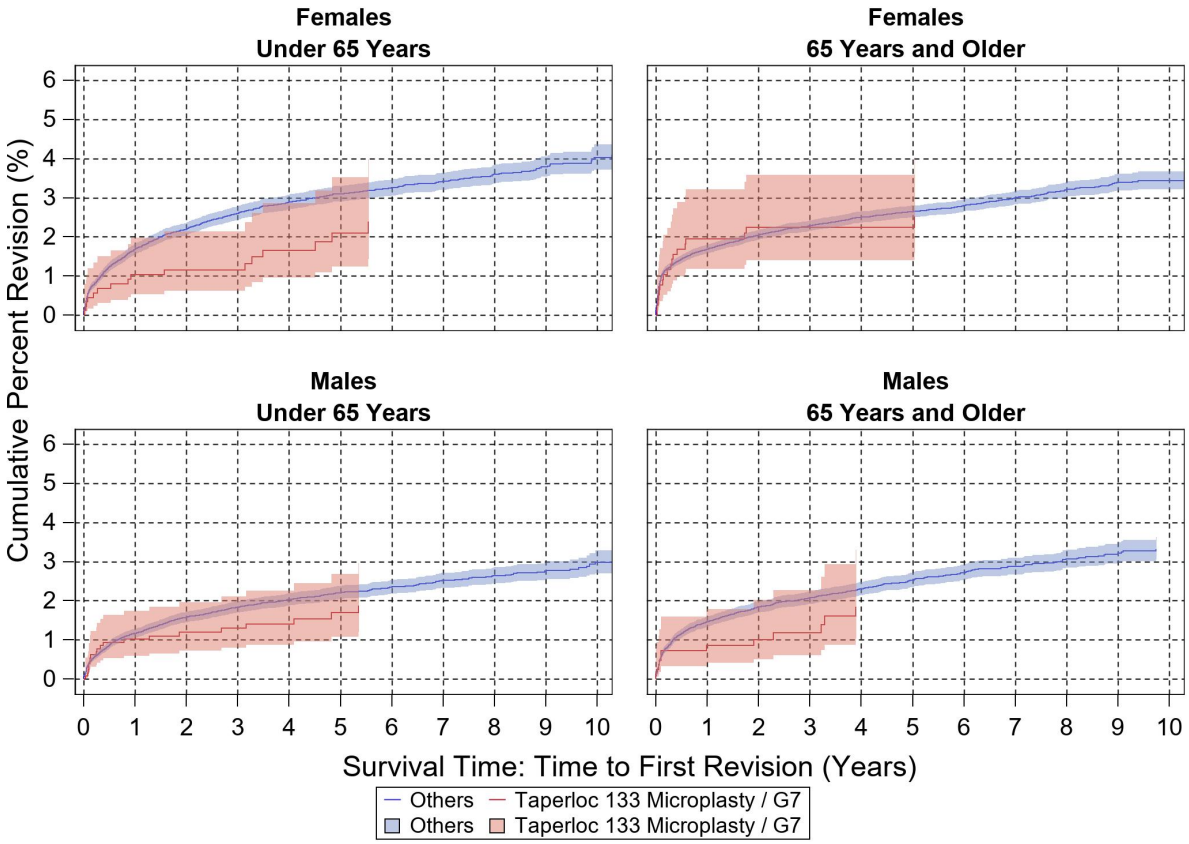


Figure 188. Cumulative Percent Revision Curve for the Taperloc 133 Microplasty/G7 Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 461. Cumulative Percent Revision and Number at Risk for the Taperloc 133 Microplasty/G7 Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,821	0.00 (0.00,0.00)	893	0.00 (0.00,0.00)	775	0.00 (0.00,0.00)	1,312	0.00 (0.00,0.00)	839	0.00 (0.00,0.00)
1	3,448	1.17 (0.87,1.57)	819	1.03 (0.54,1.97)	718	1.95 (1.18,3.22)	1,175	1.01 (0.59,1.74)	734	0.85 (0.41,1.78)
2	3,093	1.36 (1.03,1.79)	749	1.15 (0.62,2.14)	666	2.24 (1.40,3.58)	1,061	1.19 (0.72,1.97)	615	1.01 (0.50,2.01)
3	2,571	1.43 (1.09,1.87)	619	1.15 (0.62,2.14)	555	2.24 (1.40,3.58)	901	1.29 (0.79,2.11)	494	1.18 (0.61,2.27)
4	2,132	1.71 (1.33,2.21)	529	1.65 (0.96,2.86)	438	2.24 (1.40,3.58)	770	1.41 (0.87,2.26)	393	1.85 (1.03,3.30)
5	1,685	1.93 (1.50,2.48)	411	2.10 (1.25,3.52)	346	2.24 (1.40,3.58)	612	1.69 (1.07,2.68)	314	1.85 (1.03,3.30)
6	1,225	2.12 (1.65,2.72)	289	2.39 (1.43,3.98)	261	2.52 (1.57,4.03)	437	1.88 (1.19,2.96)	236	1.85 (1.03,3.30)
7	747	2.12 (1.65,2.72)	168	2.39 (1.43,3.98)	158	2.52 (1.57,4.03)	269	1.88 (1.19,2.96)	150	1.85 (1.03,3.30)
8	333	2.12 (1.65,2.72)	73	2.39 (1.43,3.98)	70	2.52 (1.57,4.03)	120	1.88 (1.19,2.96)	68	1.85 (1.03,3.30)
9	92	2.12 (1.65,2.72)	22	2.39 (1.43,3.98)	17	2.52 (1.57,4.03)	38	1.88 (1.19,2.96)	15	1.85 (1.03,3.30)
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

Table 462. Reasons for First Revision Following Primary THA for Taperloc 133 Microplasty/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	16	25.0
2	Aseptic Loosening	14	21.9
3	Joint Infection	12	18.8
4	Peri-prosthetic fracture - Femur	12	18.8
5	Implant Failure	4	6.2
6	Malalignment	4	6.2
7	Pain	2	3.1

Table 463. Reasons for First Revision in the First 90 Days Following Primary THA for Taperloc 133 Microplasty/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	10	37.0
2	Joint Infection	6	22.2
3	Dislocation/Instability	4	14.8
4	Implant Failure	4	14.8
5	Aseptic Loosening	2	7.4
6	Malalignment	1	3.7

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Table 464. Reasons for First Revision Between 91 and 365 days Following Primary THA for Taperloc 133 Microplasty/G7 Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	7	46.7
2	Dislocation/Instability	6	40.0
3	Joint Infection	1	6.7
4	Pain	1	6.7

Table 465. Descriptive Statistics of Cases Receiving the Taperloc 133 Microplasty/G7 Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,671	43.66	
Age (years)	3,827	61.87 (10.51)	62.00 (13.00)
Height (cm)	3,827	172.09 (10.24)	172.72 (15.30)
Weight (kg)	3,827	90.16 (20.12)	88.90 (27.00)
BMI(kg/m^2)	3,827	30.31 (5.62)	29.84 (7.39)
Smoker - Never (%)	2,001	52.29	
Smoker - Previous (%)	1,312	34.28	
Smoker - Current (%)	500	13.07	
Smoker - Unknown (%)	14	0.37	

Table 466. Distribution of Approach Used for Taperloc 133 Microplasty/G7 Combination in Primary THA Cases

Approach	N	Percent
Anterior	2,533	66.2
Anterolateral	102	2.7
Posterior	1,188	31.0
Transtrochanteric	0	0.0
Missing/unknown/other	4	0.1

Table 467. Distribution of Head Size for Taperloc 133 Microplasty/G7 Combination in Primary THA Cases

Size (mm)	N	Percent
28	5	0.1
32	557	15.5
36	2,787	77.5
40	228	6.3
44	1	0.0
Missing/unknown/other	20	0.6

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Table 468. Distribution of Bearing Surface for Taperloc 133 Microplasty/G7 Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	295	7.7
Ceramic-on-plastic	3,283	85.8
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	205	5.4
Missing/unknown/other	44	1.1

Table 469. Distribution of Polyethylene Used for Taperloc 133 Microplasty/G7 Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	949	25.0
Antioxidant XLPE	1,857	48.9
Missing/unknown/other	990	26.1

Table 470. Volume of Cases by Surgeon and Site for the Taperloc 133 Microplasty/G7 Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	64 (110)	11 (71)
Cases per site	91 (136)	23 (108)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

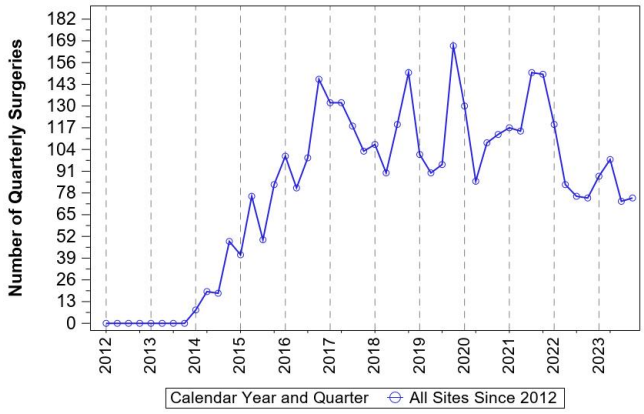


Figure 189. Utilization of the Taperloc 133 Microplasty/G7 Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

51107110	51106090	51109050
51107120	51109080	51106180
51107130	51108080	51108050
51106110	51106140	51106170
51107150	51109070	51106200
51107140	51107170	51107200
51107100	51106150	51108040
51106120	51108070	51106220
51106100	51107180	51107220
51107160	51106160	51107240
51106130	51109060	
51107090	51108060	

Catalog numbers of Acetabular Cups Used in the Analysis

110010244	110010241	110010240
10000665	110017103	110010250
110010245	110017107	110010263
10000664	110017102	110010264
110010243	110010248	110010266
10000663	10000668	110010268
10000666	10000661	110017100
110010246	110017108	10000670
110010242	110010249	110010267
10000662	110017101	110010270
110017105	10000669	110017110
110010247	110017109	110010262
110017106	10000660	
10000667	110010265	
110017104	10000659	

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4.1.38 Trabecular Metal/Continuum

N = 789 primary cases were used for this analysis. Distribution of utilization: 15 surgeons across 14 sites used this implant combination in primary THA cases.

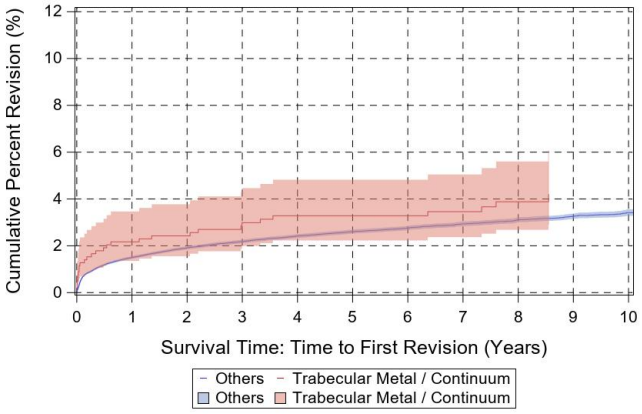


Figure 190. Cumulative Percent Revision Curve for the Trabecular Metal/Continuum Combination, Compared to All Other Implant Combinations in Primary THA Cases

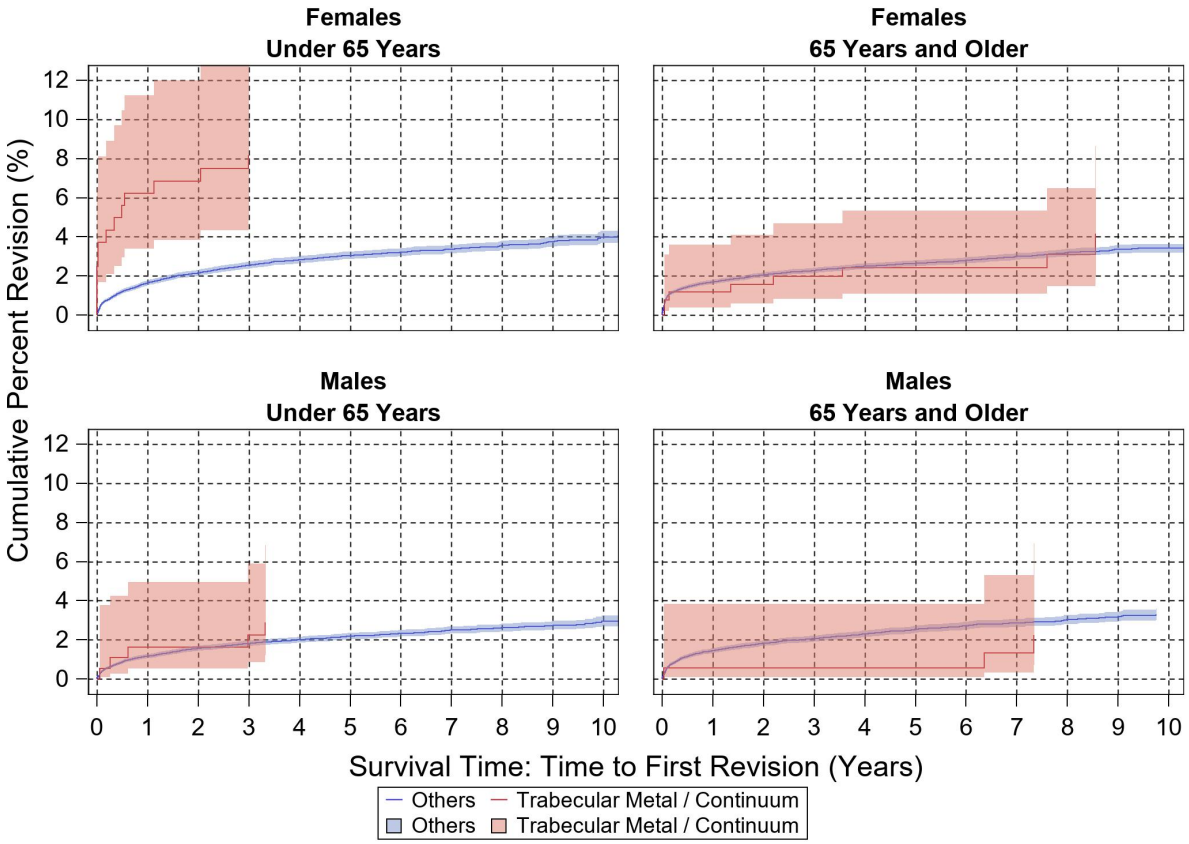


Figure 191. Cumulative Percent Revision Curve for the Trabecular Metal/Continuum Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 471. Cumulative Percent Revision and Number at Risk for the Trabecular Metal/Continuum Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	784	0.00 (0.00,0.00)	161	0.00 (0.00,0.00)	256	0.00 (0.00,0.00)	185	0.00 (0.00,0.00)	182	0.00 (0.00,0.00)
1	765	2.17 (1.35,3.46)	150	6.21 (3.39,11.24)	253	1.17 (0.38,3.59)	181	1.62 (0.53,4.94)	181	0.55 (0.08,3.84)
2	722	2.43 (1.55,3.78)	143	6.84 (3.85,12.00)	241	1.56 (0.59,4.11)	173	1.62 (0.53,4.94)	165	0.55 (0.08,3.84)
3	673	2.99 (1.99,4.46)	136	8.17 (4.82,13.66)	224	1.98 (0.83,4.69)	155	2.25 (0.85,5.90)	158	0.55 (0.08,3.84)
4	643	3.28 (2.23,4.82)	131	8.17 (4.82,13.66)	215	2.43 (1.10,5.33)	145	2.90 (1.21,6.85)	152	0.55 (0.08,3.84)
5	618	3.28 (2.23,4.82)	123	8.17 (4.82,13.66)	212	2.43 (1.10,5.33)	137	2.90 (1.21,6.85)	146	0.55 (0.08,3.84)
6	572	3.28 (2.23,4.82)	112	8.17 (4.82,13.66)	194	2.43 (1.10,5.33)	130	2.90 (1.21,6.85)	136	0.55 (0.08,3.84)
7	501	3.46 (2.36,5.05)	104	8.17 (4.82,13.66)	170	2.43 (1.10,5.33)	116	2.90 (1.21,6.85)	111	1.33 (0.33,5.31)
8	388	3.88 (2.68,5.60)	88	8.17 (4.82,13.66)	123	3.10 (1.46,6.50)	98	2.90 (1.21,6.85)	79	2.24 (0.71,6.94)
9	219	4.20 (2.90,6.08)	57	8.17 (4.82,13.66)	70	4.15 (1.97,8.64)	53	2.90 (1.21,6.85)	39	2.24 (0.71,6.94)
10	73	4.20 (2.90,6.08)	23	8.17 (4.82,13.66)	21	4.15 (1.97,8.64)	24	2.90 (1.21,6.85)	*	2.24 (0.71,6.94)

* Denotes that the number of cases is between 1 and 10.

Table 472. Reasons for First Revision Following Primary THA for Trabecular Metal/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	10	37.0
2	Peri-prosthetic fracture - Femur	5	18.5
3	Pain	5	18.5
4	Aseptic Loosening	4	14.8
5	Joint Infection	3	11.1

Table 473. Reasons for First Revision in the First 90 Days Following Primary THA for Trabecular Metal/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	5	45.4
2	Pain	4	36.4
3	Peri-prosthetic fracture - Femur	2	18.2

Table 474. Reasons for First Revision Between 91 and 365 days Following Primary THA for Trabecular Metal/Continuum Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	3	75.0
2	Aseptic Loosening	1	25.0

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Table 475. Descriptive Statistics of Cases Receiving the Trabecular Metal/Continuum Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	418	52.98	
Age (years)	789	65.92 (10.88)	66.00 (15.00)
Height (cm)	789	170.02 (10.74)	170.18 (15.24)
Weight (kg)	789	90.30 (21.95)	88.36 (27.97)
BMI(kg/m^2)	789	31.08 (6.36)	30.02 (8.48)
Smoker - Never (%)	325	41.19	
Smoker - Previous (%)	343	43.47	
Smoker - Current (%)	120	15.21	
Smoker - Unknown (%)	1	0.13	

Table 476. Distribution of Approach Used for Trabecular Metal/Continuum Combination in Primary THA Cases

Approach	N	Percent
Anterior	3	0.4
Anterolateral	699	88.6
Posterior	85	10.8
Transtrochanteric	1	0.1
Missing/unknown/other	1	0.1

Table 477. Distribution of Head Size for Trabecular Metal/Continuum Combination in Primary THA Cases

Size (mm)	N	Percent
28	4	0.5
32	292	37.1
36	457	58.1
40	25	3.2
Missing/unknown/other	9	1.1

Table 478. Distribution of Bearing Surface for Trabecular Metal/Continuum Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	462	58.6
Ceramic-on-plastic	316	40.0
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	11	1.4

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Table 479. Distribution of Polyethylene Used for Trabecular Metal/Continuum Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	637	80.9
Antioxidant XLPE	72	9.2
Missing/unknown/other	78	9.9

Table 480. Volume of Cases by Surgeon and Site for the Trabecular Metal/Continuum Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	52 (98)	6 (66)
Cases per site	56 (88)	7 (90)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

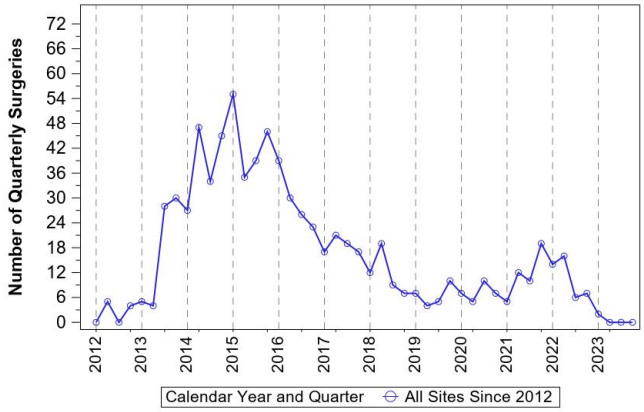


Figure 192. Utilization of the Trabecular Metal/Continuum Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

786401420	786401520	786401000
786401320	786401500	786401700
786401220	786401100	786401720
786401300	786401620	786401820
786401400	786401120	
786401200	786401600	

Catalog numbers of Acetabular Cups Used in the Analysis

875705601	875705001	875704601
875705801	875705800	875706002
875705401	875704800	875706402
875706001	875704801	875704802
875705201	875705402	875705002
875705200	875706401	875706602
875705400	875705802	875706200
875705600	875705602	875706601
875705000	875705202	
875706201	875706000	

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4.1.39 Tri-Lock BPS/Pinnacle

N = 4,197 primary cases were used for this analysis. Distribution of utilization: 51 surgeons across 30 sites used this implant combination in primary THA cases.

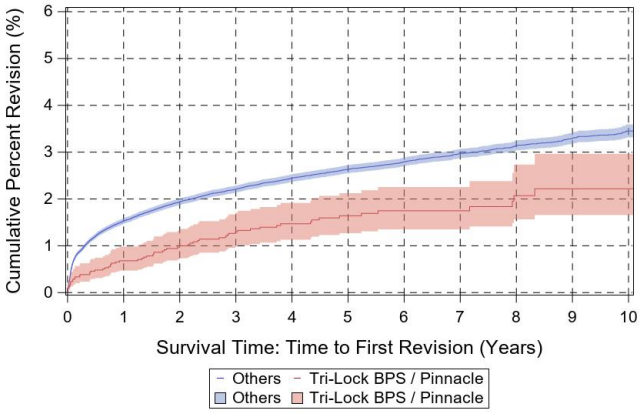


Figure 193. Cumulative Percent Revision Curve for the Tri-Lock BPS/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases

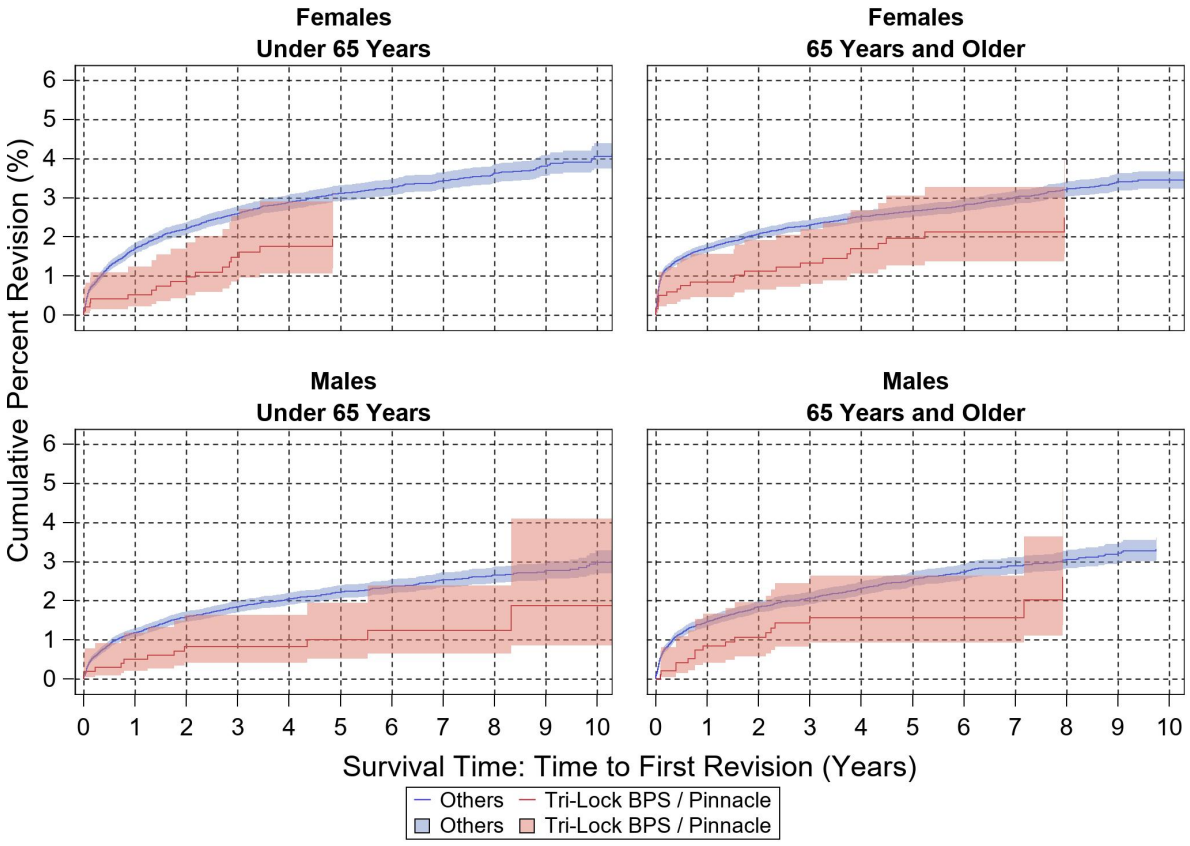


Figure 194. Cumulative Percent Revision Curve for the Tri-Lock BPS/Pinnacle Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 481. Cumulative Percent Revision and Number at Risk for the Tri-Lock BPS/Pinnacle Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	4,175	0.00 (0.00,0.00)	973	0.00 (0.00,0.00)	1,204	0.00 (0.00,0.00)	1,020	0.00 (0.00,0.00)	977	0.00 (0.00,0.00)
1	3,954	0.68 (0.47,0.98)	926	0.52 (0.22,1.24)	1,134	0.84 (0.45,1.56)	972	0.50 (0.21,1.19)	921	0.84 (0.42,1.67)
2	3,564	1.00 (0.73,1.36)	835	0.97 (0.51,1.86)	1,016	1.12 (0.65,1.92)	874	0.82 (0.41,1.64)	838	1.06 (0.57,1.96)
3	3,094	1.30 (0.98,1.71)	748	1.48 (0.86,2.54)	890	1.33 (0.80,2.20)	747	0.82 (0.41,1.64)	708	1.57 (0.93,2.64)
4	2,561	1.47 (1.13,1.92)	611	1.76 (1.06,2.90)	767	1.69 (1.06,2.69)	608	0.82 (0.41,1.64)	574	1.57 (0.93,2.64)
5	2,055	1.64 (1.27,2.12)	491	1.95 (1.19,3.19)	635	1.96 (1.26,3.05)	471	1.00 (0.51,1.95)	457	1.57 (0.93,2.64)
6	1,601	1.75 (1.35,2.26)	397	1.95 (1.19,3.19)	514	2.13 (1.38,3.28)	352	1.24 (0.64,2.39)	337	1.57 (0.93,2.64)
7	1,187	1.75 (1.35,2.26)	297	1.95 (1.19,3.19)	377	2.13 (1.38,3.28)	270	1.24 (0.64,2.39)	242	1.57 (0.93,2.64)
8	805	2.07 (1.57,2.74)	205	1.95 (1.19,3.19)	258	2.50 (1.56,3.98)	181	1.24 (0.64,2.39)	160	2.61 (1.38,4.91)
9	373	2.22 (1.66,2.97)	87	1.95 (1.19,3.19)	109	2.50 (1.56,3.98)	92	1.87 (0.85,4.09)	84	2.61 (1.38,4.91)
10	85	2.22 (1.66,2.97)	14	1.95 (1.19,3.19)	29	2.50 (1.56,3.98)	15	1.87 (0.85,4.09)	27	2.61 (1.38,4.91)

Table 482. Reasons for First Revision Following Primary THA for Tri-Lock BPS/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	16	24.6
2	Dislocation/Instability	15	23.1
3	Joint Infection	13	20.0
4	Peri-prosthetic fracture - Femur	11	16.9
5	Metal Reaction/Metallosis	3	4.6
6	Pain	3	4.6
7	Implant Failure	2	3.1
8	Poly liner wear	1	1.5
9	Malalignment	1	1.5

Table 483. Reasons for First Revision in the First 90 Days Following Primary THA for Tri-Lock BPS/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	10	66.7
2	Dislocation/Instability	3	20.0
3	Aseptic Loosening	1	6.7
4	Joint Infection	1	6.7

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Table 484. Reasons for First Revision Between 91 and 365 days Following Primary THA for Tri-Lock BPS/Pinnacle Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	6	50.0
2	Aseptic Loosening	4	33.3
3	Dislocation/Instability	2	16.7

Table 485. Descriptive Statistics of Cases Receiving the Tri-Lock BPS/Pinnacle Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	2,185	52.06	
Age (years)	4,197	64.58 (10.19)	65.00 (13.00)
Height (cm)	4,172	170.79 (10.22)	170.18 (15.00)
Weight (kg)	4,173	89.55 (19.90)	88.00 (27.27)
BMI(kg/m^2)	4,172	30.59 (5.75)	30.01 (8.00)
Smoker - Never (%)	2,046	48.75	
Smoker - Previous (%)	1,583	37.72	
Smoker - Current (%)	555	13.22	
Smoker - Unknown (%)	13	0.31	

Table 486. Distribution of Approach Used for Tri-Lock BPS/Pinnacle Combination in Primary THA Cases

Approach	N	Percent
Anterior	2,055	49.0
Anterolateral	834	19.9
Posterior	1,266	30.2
Transtrochanteric	14	0.3
Missing/unknown/other	28	0.7

Table 487. Distribution of Head Size for Tri-Lock BPS/Pinnacle Combination in Primary THA Cases

Size (mm)	N	Percent
22	3	0.1
28	25	0.6
32	1,299	31.2
36	2,512	60.3
40	309	7.4
Missing/unknown/other	16	0.4

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Table 488. Distribution of Bearing Surface for Tri-Lock BPS/Pinnacle Combination in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,496	35.6
Ceramic-on-plastic	2,601	62.0
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	15	0.4
Missing/unknown/other	85	2.0

Table 489. Distribution of Polyethylene Used for Tri-Lock BPS/Pinnacle Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	21	0.5
XLPE	3,695	89.5
Antioxidant XLPE	0	0.0
Missing/unknown/other	412	10.0

Table 490. Volume of Cases by Surgeon and Site for the Tri-Lock BPS/Pinnacle Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	82 (218)	8 (76)
Cases per site	139 (415)	13 (141)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

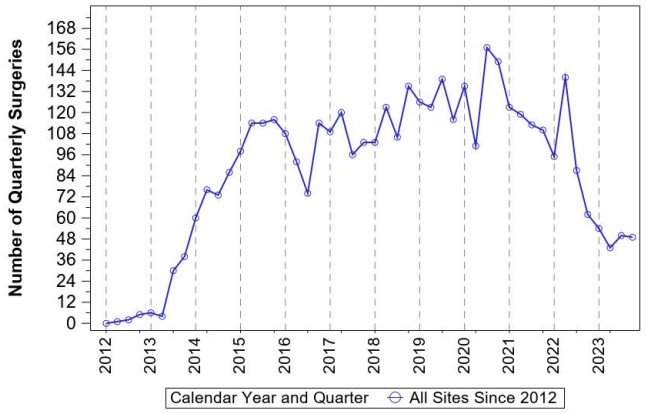


Figure 195. Utilization of the Tri-Lock BPS/Pinnacle Combination in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

101204040	101204070	101204005
101204050	101214070	101214100
101204030	101204080	101204100
101204060	101214080	101214005
101214050	101214020	101204110
101214040	101204010	101214110
101214060	101214010	101204120
101204020	101214090	101214120
101214030	101204090	

Catalog numbers of Acetabular Cups Used in the Analysis

121732052	121703050	121730048
121732054	121703048	121730054
121732056	121701050	121730058
121732050	121701056	121731050
121732058	121701048	121731054
121722052	121701054	121731058
121732048	121722062	121701064
121722054	121703058	121703062
121732060	121720046	121730050
121722056	121730056	121730062
121722050	121732064	121730066
121722058	121730052	121730068
121703052	121701058	121731046
121722048	121731052	121731048
121732062	121703060	121731060
121701052	121730046	121732066
121703054	121731056	
121703056	121720044	
121722060	121722064	

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4.2 Conventional THA Stems

The discrepancy between the number of cases listed at the beginning of an implant and N at year 0 in the table following the CPR figures is due to deaths. The former number is the total number of cases; the latter is the number of cases used to estimate the CPR considering deaths as censored events.

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4.2.1 Accolade II

N = 41,272 primary cases were used for this analysis. Distribution of utilization: 166 surgeons across 64 sites used this implant in primary THA cases.

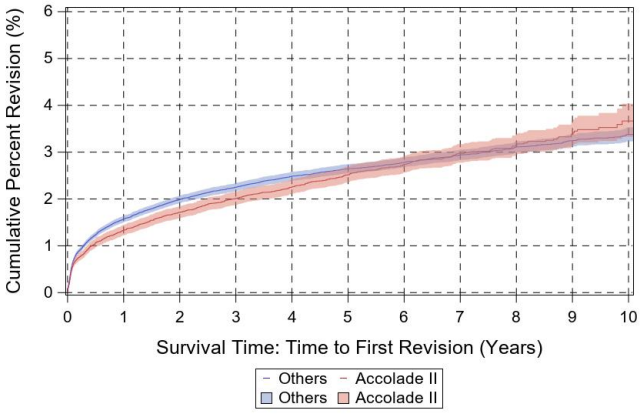


Figure 196. Cumulative Percent Revision Curve for the Accolade II Stem, Compared to All Other Femoral Components in Primary THA Cases

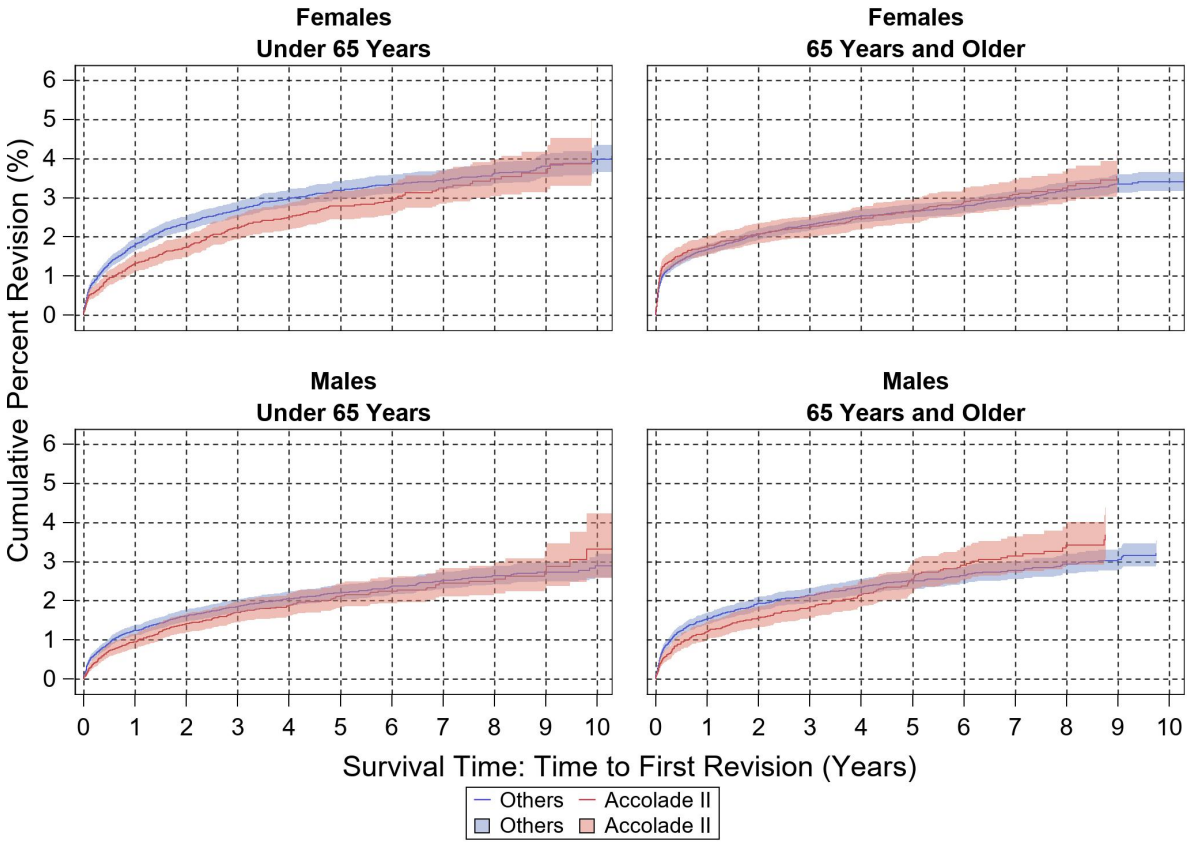


Figure 197. Cumulative Percent Revision Curve for the Accolade II Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 491. Cumulative Percent Revision and Number at Risk for the Accolade II Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	41,072	0.00 (0.00,0.00)	9,684	0.00 (0.00,0.00)	12,176	0.00 (0.00,0.00)	10,206	0.00 (0.00,0.00)	8,998	0.00 (0.00,0.00)
1	37,148	1.33 (1.23,1.45)	8,784	1.32 (1.10,1.57)	11,045	1.76 (1.54,2.01)	9,267	0.95 (0.77,1.16)	8,044	1.21 (1.00,1.47)
2	32,850	1.72 (1.59,1.85)	7,821	1.73 (1.48,2.02)	9,847	2.08 (1.84,2.36)	8,141	1.41 (1.19,1.67)	7,034	1.57 (1.32,1.85)
3	28,363	2.01 (1.88,2.16)	6,810	2.22 (1.93,2.55)	8,457	2.24 (1.99,2.53)	7,073	1.69 (1.45,1.98)	6,017	1.84 (1.57,2.15)
4	24,219	2.26 (2.11,2.41)	5,876	2.51 (2.20,2.87)	7,190	2.46 (2.18,2.76)	6,101	1.87 (1.61,2.18)	5,046	2.14 (1.84,2.49)
5	19,156	2.52 (2.35,2.69)	4,690	2.79 (2.45,3.17)	5,673	2.63 (2.35,2.95)	4,882	2.11 (1.82,2.44)	3,905	2.54 (2.20,2.95)
6	14,467	2.74 (2.57,2.93)	3,640	2.96 (2.60,3.37)	4,272	2.88 (2.57,3.24)	3,670	2.24 (1.94,2.59)	2,880	2.91 (2.52,3.36)
7	10,072	2.97 (2.77,3.17)	2,565	3.24 (2.84,3.69)	2,907	3.08 (2.74,3.46)	2,617	2.44 (2.10,2.83)	1,978	3.14 (2.71,3.64)
8	6,030	3.16 (2.95,3.39)	1,562	3.47 (3.03,3.98)	1,755	3.25 (2.87,3.67)	1,536	2.55 (2.19,2.98)	1,172	3.42 (2.92,4.00)
9	3,158	3.39 (3.13,3.66)	819	3.62 (3.14,4.18)	915	3.55 (3.08,4.09)	800	2.75 (2.31,3.27)	620	3.68 (3.09,4.38)
10	1,143	3.66 (3.33,4.04)	318	4.14 (3.40,5.03)	326	3.55 (3.08,4.09)	281	3.31 (2.58,4.24)	217	3.68 (3.09,4.38)

Table 492. Reasons for First Revision Following Primary THA for Accolade II Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	240	24.7
2	Aseptic Loosening	230	23.7
3	Joint Infection	209	21.5
4	Dislocation/Instability	131	13.5
5	Pain	40	4.1
6	Malalignment	32	3.3
7	Implant Failure	31	3.2
8	Metal Reaction/Metallosis	30	3.1
9	Peri-prosthetic fracture - Acetabulum	19	2.0
10	Osteolysis	4	0.4
	Unknown/missing/other	4	0.4

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Table 493. Reasons for First Revision in the First 90 Days Following Primary THA for Accolade II Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	174	54.4
2	Joint Infection	54	16.9
3	Dislocation/Instability	35	10.9
4	Aseptic Loosening	20	6.2
5	Implant Failure	14	4.4
6	Peri-prosthetic fracture - Acetabulum	9	2.8
7	Malalignment	8	2.5
8	Pain	5	1.6
9	Metal Reaction/Metallosis	1	0.3

Table 494. Reasons for First Revision Between 91 and 365 days Following Primary THA for Accolade II Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	65	32.2
2	Dislocation/Instability	44	21.8
3	Aseptic Loosening	39	19.3
4	Peri-prosthetic fracture - Femur	24	11.9
5	Pain	15	7.4
6	Malalignment	6	3.0
7	Implant Failure	3	1.5
8	Peri-prosthetic fracture - Acetabulum	3	1.5
9	Poly liner wear	2	1.0
10	Osteolysis	1	0.5

Table 495. Descriptive Statistics of Cases Receiving the Accolade II Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	21,949	53.18	
Age (years)	41,272	64.36 (10.81)	65.00 (14.00)
Height (cm)	41,272	170.33 (10.38)	170.18 (15.24)
Weight (kg)	41,272	88.97 (20.91)	87.09 (28.06)
BMI(kg/m^2)	41,272	30.56 (6.24)	29.81 (8.17)
Smoker - Never (%)	20,225	49	
Smoker - Previous (%)	15,060	36.49	
Smoker - Current (%)	5,860	14.2	
Smoker - Unknown (%)	127	0.31	

Table 496. Distribution of Approach Used for Accolade II Stem in Primary THA Cases

Approach	N	Percent
Anterior	13,319	32.3
Anterolateral	4801	11.6
Posterior	23,033	55.8
Transtrochanteric	31	0.1
Missing/unknown/other	88	0.2

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Table 497. Distribution of Head Size for Accolade II Stem in Primary THA Cases

Size (mm)	N	Percent
22	12	0.0
28	57	0.2
32	5,363	14.9
36	27,623	76.8
40	2,569	7.1
44	230	0.6
Missing/unknown/other	106	0.3

Table 498. Distribution of Bearing Surface for Accolade II Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	4,253	10.3
Ceramic-on-plastic	31,588	76.5
Ceramic-on-ceramic	16	0.0
Metal-on-metal	0	0.0
Dual mobility	4,988	12.1
Missing/unknown/other	427	1.0

Table 499. Distribution of Polyethylene Used for Accolade II Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	4	0.0
XLPE	31,601	77.3
Antioxidant XLPE	48	0.1
Missing/unknown/other	9,227	22.6

Table 500. Volume of Cases by Surgeon and Site for the Accolade II Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	248 (418)	77 (251)
Cases per site	644 (1003)	219 (876)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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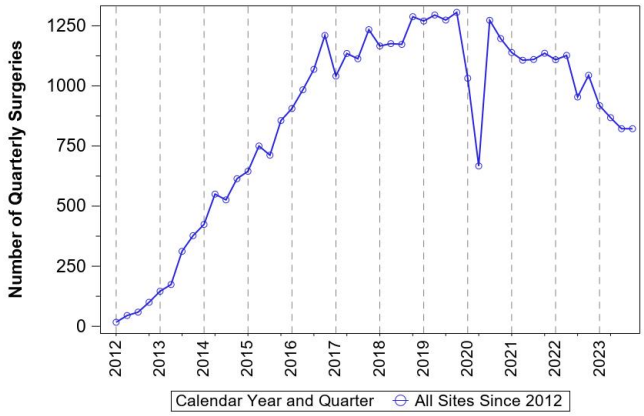


Figure 198. Utilization of the Accolade II Stem in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

67210535	67200330	67201040
67210435	67200737	67211140
67210635	67210937	67200127
67210737	67210230	67210027
67200535	67200837	67201140
67200435	67200230	67200027
67210330	67211040	
67200635	67200937	
67210837	67210127	

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4.2.2 Accolade C

N = 1,154 primary cases were used for this analysis. Distribution of utilization: 58 surgeons across 31 sites used this implant in primary THA cases.

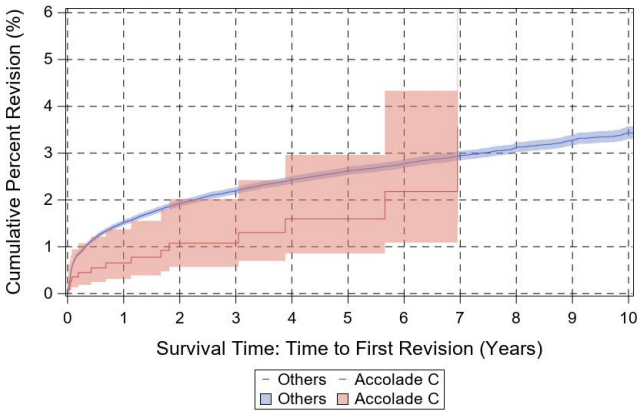


Figure 199. Cumulative Percent Revision Curve for the Accolade C Stem, Compared to All Other Femoral Components in Primary THA Cases

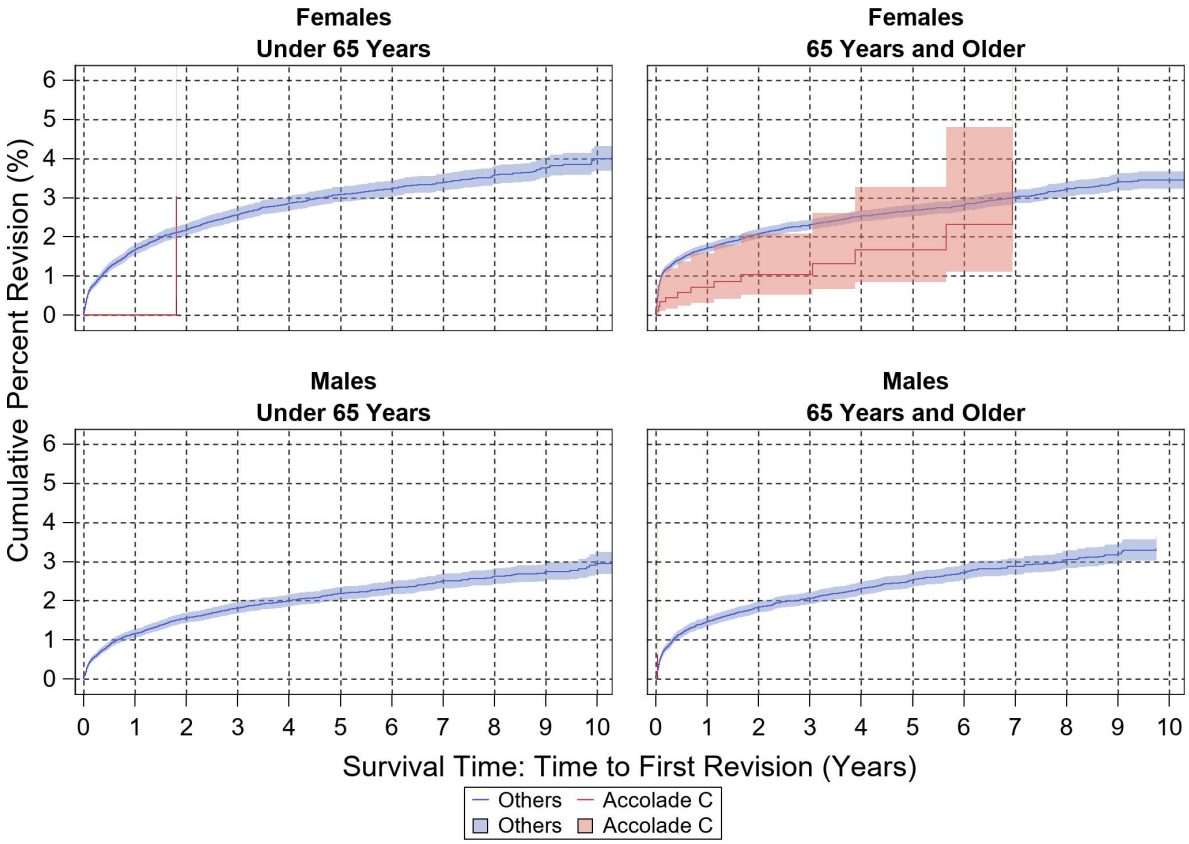


Figure 200. Cumulative Percent Revision Curve for the Accolade C Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 501. Cumulative Percent Revision and Number at Risk for the Accolade C Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,132	0.00 (0.00,0.00)	48	0.00 (0.00,0.00)	910	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)	164	0.00 (0.00,0.00)
1	847	0.66 (0.31,1.37)	41	0.00 (0.00,0.00)	680	0.71 (0.32,1.57)	*	0.00 (0.00,0.00)	119	0.61 (0.09,4.27)
2	610	1.08 (0.57,2.02)	31	3.03 (0.43,19.63)	495	1.03 (0.51,2.08)	*	0.00 (0.00,0.00)	79	0.61 (0.09,4.27)
3	439	1.08 (0.57,2.02)	19	3.03 (0.43,19.63)	361	1.03 (0.51,2.08)	*	0.00 (0.00,0.00)	54	0.61 (0.09,4.27)
4	325	1.60 (0.86,2.97)	12	3.03 (0.43,19.63)	275	1.66 (0.84,3.27)	*	0.00 (0.00,0.00)	35	0.61 (0.09,4.27)
5	231	1.60 (0.86,2.97)	*	3.03 (0.43,19.63)	203	1.66 (0.84,3.27)	*	0.00 (0.00,0.00)	17	0.61 (0.09,4.27)
6	139	2.18 (1.09,4.33)	*	3.03 (0.43,19.63)	123	2.31 (1.11,4.81)	*	0.00 (0.00,0.00)	*	0.61 (0.09,4.27)
7	68	3.56 (1.50,8.34)	*	3.03 (0.43,19.63)	57	3.94 (1.58,9.66)	*	0.00 (0.00,0.00)	*	0.61 (0.09,4.27)
8	43	3.56 (1.50,8.34)	*	3.03 (0.43,19.63)	33	3.94 (1.58,9.66)	*	0.00 (0.00,0.00)	*	0.61 (0.09,4.27)
9	32	3.56 (1.50,8.34)	*	3.03 (0.43,19.63)	25	3.94 (1.58,9.66)	*	0.00 (0.00,0.00)	*	0.61 (0.09,4.27)
10	*	3.56 (1.50,8.34)	*	3.03 (0.43,19.63)	*	3.94 (1.58,9.66)	0	N/A	*	0.61 (0.09,4.27)

* Denotes that the number of cases is between 1 and 10.

Table 502. Reasons for First Revision Following Primary THA for Accolade C Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	4	28.6
2	Aseptic Loosening	3	21.4
3	Joint Infection	3	21.4
4	Poly liner wear	1	7.1
5	Peri-prosthetic fracture - Acetabulum	1	7.1
6	Peri-prosthetic fracture - Femur	1	7.1
7	Malalignment	1	7.1

Table 503. Reasons for First Revision in the First 90 Days Following Primary THA for Accolade C Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	2	40.0
2	Aseptic Loosening	1	20.0
3	Joint Infection	1	20.0
4	Peri-prosthetic fracture - Acetabulum	1	20.0

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Table 504. Reasons for First Revision Between 91 and 365 days Following Primary THA for Accolade C Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	50.0
2	Joint Infection	1	50.0

Table 505. Descriptive Statistics of Cases Receiving the Accolade C Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	978	84.75	
Age (years)	1,154	77.76 (7.93)	78.00 (10.00)
Height (cm)	1,154	162.71 (8.89)	162.56 (10.64)
Weight (kg)	1,154	74.41 (17.64)	71.80 (23.80)
BMI(kg/m^2)	1,154	28.07 (6.19)	27.13 (8.05)
Smoker - Never (%)	641	55.55	
Smoker - Previous (%)	431	37.35	
Smoker - Current (%)	74	6.41	
Smoker - Unknown (%)	8	0.69	

Table 506. Distribution of Approach Used for Accolade C Stem in Primary THA Cases

Approach	N	Percent
Anterior	334	28.9
Anterolateral	146	12.7
Posterior	672	58.2
Transtrochanteric	1	0.1
Missing/unknown/other	1	0.1

Table 507. Distribution of Head Size for Accolade C Stem in Primary THA Cases

Size (mm)	N	Percent
22	2	0.2
28	5	0.5
32	68	7.3
36	788	84.2
40	62	6.6
44	4	0.4
Missing/unknown/other	7	0.8

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Table 508. Distribution of Bearing Surface for Accolade C Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	200	17.3
Ceramic-on-plastic	736	63.8
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	197	17.1
Missing/unknown/other	21	1.8

Table 509. Distribution of Polyethylene Used for Accolade C Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	582	51.5
Antioxidant XLPE	5	0.4
Missing/unknown/other	542	48.0

Table 510. Volume of Cases by Surgeon and Site for the Accolade C Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	19 (21)	11 (26)
Cases per site	37 (44)	21 (43)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

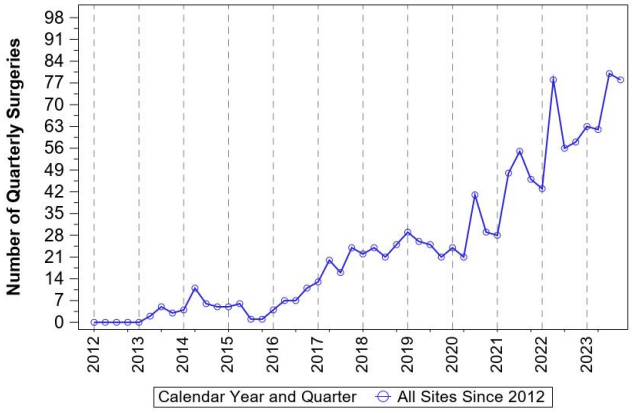


Figure 201. Utilization of the Accolade C Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

60570435D	60570637D	60580230D
60570537D	60580335D	60580740D
60570335D	60570740D	
60580435D	60580637D	
60580537D	60570230D	

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4.2.3 Accolade TMZF

N = 917 primary cases were used for this analysis. Distribution of utilization: 16 surgeons across 13 sites used this implant in primary THA cases.

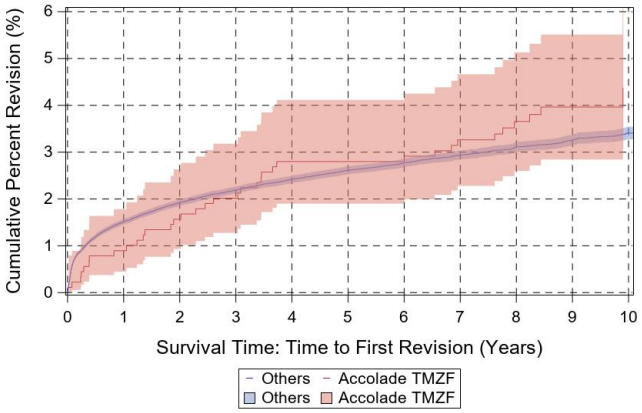


Figure 202. Cumulative Percent Revision Curve for the Accolade TMZF Stem, Compared to All Other Femoral Components in Primary THA Cases

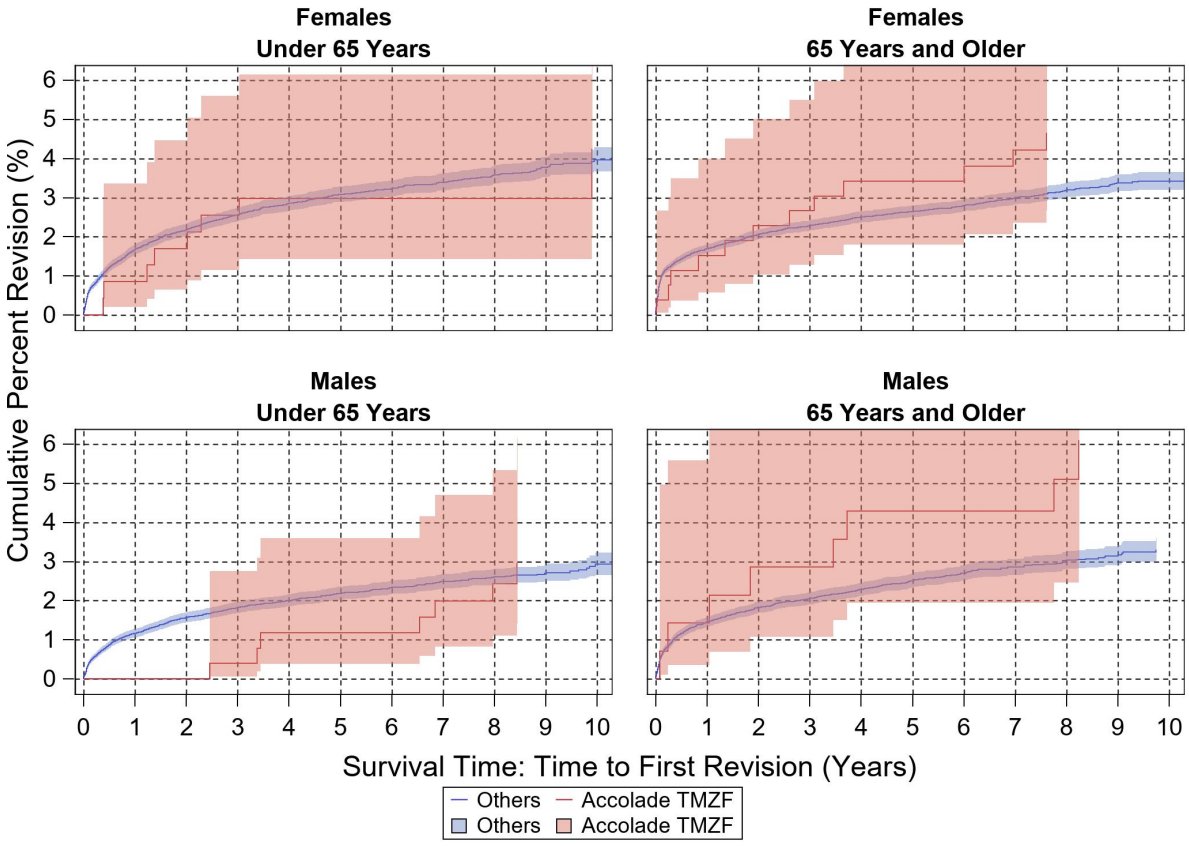


Figure 203. Cumulative Percent Revision Curve for the Accolade TMZF Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 511. Cumulative Percent Revision and Number at Risk for the Accolade TMZF Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	893	0.00 (0.00,0.00)	235	0.00 (0.00,0.00)	263	0.00 (0.00,0.00)	255	0.00 (0.00,0.00)	140	0.00 (0.00,0.00)
1	885	0.90 (0.45,1.78)	233	0.85 (0.21,3.36)	259	1.52 (0.57,4.00)	255	0.00 (0.00,0.00)	138	1.43 (0.36,5.59)
2	879	1.57 (0.93,2.63)	231	1.70 (0.64,4.47)	257	2.28 (1.03,5.01)	255	0.00 (0.00,0.00)	136	2.86 (1.08,7.43)
3	875	2.02 (1.27,3.18)	229	2.55 (1.16,5.59)	256	2.66 (1.28,5.50)	254	0.39 (0.06,2.75)	136	2.86 (1.08,7.43)
4	868	2.80 (1.90,4.12)	228	2.98 (1.43,6.15)	254	3.42 (1.80,6.47)	252	1.18 (0.38,3.60)	134	4.29 (1.95,9.29)
5	867	2.80 (1.90,4.12)	228	2.98 (1.43,6.15)	253	3.42 (1.80,6.47)	252	1.18 (0.38,3.60)	134	4.29 (1.95,9.29)
6	855	2.80 (1.90,4.12)	224	2.98 (1.43,6.15)	250	3.42 (1.80,6.47)	248	1.18 (0.38,3.60)	133	4.29 (1.95,9.29)
7	819	3.26 (2.28,4.66)	217	2.98 (1.43,6.15)	235	4.22 (2.36,7.49)	240	1.98 (0.83,4.70)	127	4.29 (1.95,9.29)
8	702	3.65 (2.60,5.13)	188	2.98 (1.43,6.15)	192	4.66 (2.67,8.07)	213	2.43 (1.10,5.34)	109	5.10 (2.46,10.40)
9	432	3.96 (2.84,5.51)	122	2.98 (1.43,6.15)	123	4.66 (2.67,8.07)	127	2.96 (1.42,6.15)	60	6.10 (3.08,11.89)
10	216	4.37 (3.08,6.20)	70	4.24 (1.95,9.07)	64	4.66 (2.67,8.07)	54	2.96 (1.42,6.15)	28	6.10 (3.08,11.89)

Table 512. Reasons for First Revision Following Primary THA for Accolade TMZF Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	11	37.9
2	Metal Reaction/Metallosis	6	20.7
3	Joint Infection	5	17.2
4	Dislocation/Instability	4	13.8
5	Peri-prosthetic fracture - Femur	2	6.9
6	Malalignment	1	3.4

Table 513. Reasons for First Revision in the First 90 Days Following Primary THA for Accolade TMZF Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	50.0
2	Peri-prosthetic fracture - Femur	1	50.0

Table 514. Reasons for First Revision Between 91 and 365 days Following Primary THA for Accolade TMZF Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	1	100.0

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Table 515. Descriptive Statistics of Cases Receiving the Accolade TMZF Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	509	55.51	
Age (years)	917	63.29 (11.19)	63.00 (16.00)
Height (cm)	917	169.96 (10.56)	170.00 (15.24)
Weight (kg)	917	90.31 (21.35)	89.55 (29.33)
BMI(kg/m^2)	917	31.11 (6.18)	30.49 (8.30)
Smoker - Never (%)	420	45.8	
Smoker - Previous (%)	353	38.5	
Smoker - Current (%)	128	13.96	
Smoker - Unknown (%)	16	1.74	

Table 516. Distribution of Approach Used for Accolade TMZF Stem in Primary THA Cases

Approach	N	Percent
Anterior	8	0.9
Anterolateral	138	15.1
Posterior	759	82.8
Transtrochanteric	3	0.3
Missing/unknown/other	9	1.0

Table 517. Distribution of Head Size for Accolade TMZF Stem in Primary THA Cases

Size (mm)	N	Percent
28	1	0.1
32	98	10.9
36	695	77.4
40	97	10.8
Missing/unknown/other	7	0.8

Table 518. Distribution of Bearing Surface for Accolade TMZF Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	499	54.4
Ceramic-on-plastic	389	42.4
Ceramic-on-ceramic	3	0.3
Metal-on-metal	0	0.0
Dual mobility	18	2.0
Missing/unknown/other	8	0.9

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Table 519. Distribution of Polyethylene Used for Accolade TMZF Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	909	99.9
Antioxidant XLPE	1	0.1
Missing/unknown/other	0	0.0

Table 520. Volume of Cases by Surgeon and Site for the Accolade TMZF Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	57 (135)	5 (14)
Cases per site	70 (105)	11 (122)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

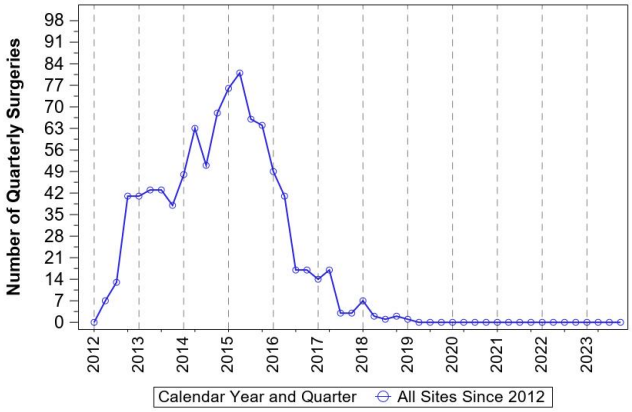


Figure 204. Utilization of the Accolade TMZF Stem in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

60200335	60212530	60215537
60202530	60214535	60210130
60203535	60210435	60200637
60210335	60200537	60210637
60200435	60210537	60210740
60200230	60210230	60200030
60204535	60205537	60210030
60213535	60200130	

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4.2.4 Actis DuoFix

All Actis DuoFix implants included in this analysis are collared version. N = 8,070 primary cases were used for this analysis. Distribution of utilization: 61 surgeons across 39 sites used this implant in primary THA cases.

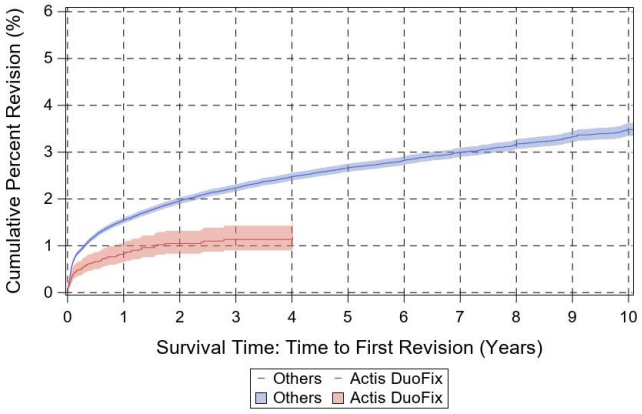


Figure 205. Cumulative Percent Revision Curve for the Actis DuoFix Stem, Compared to All Other Femoral Components in Primary THA Cases

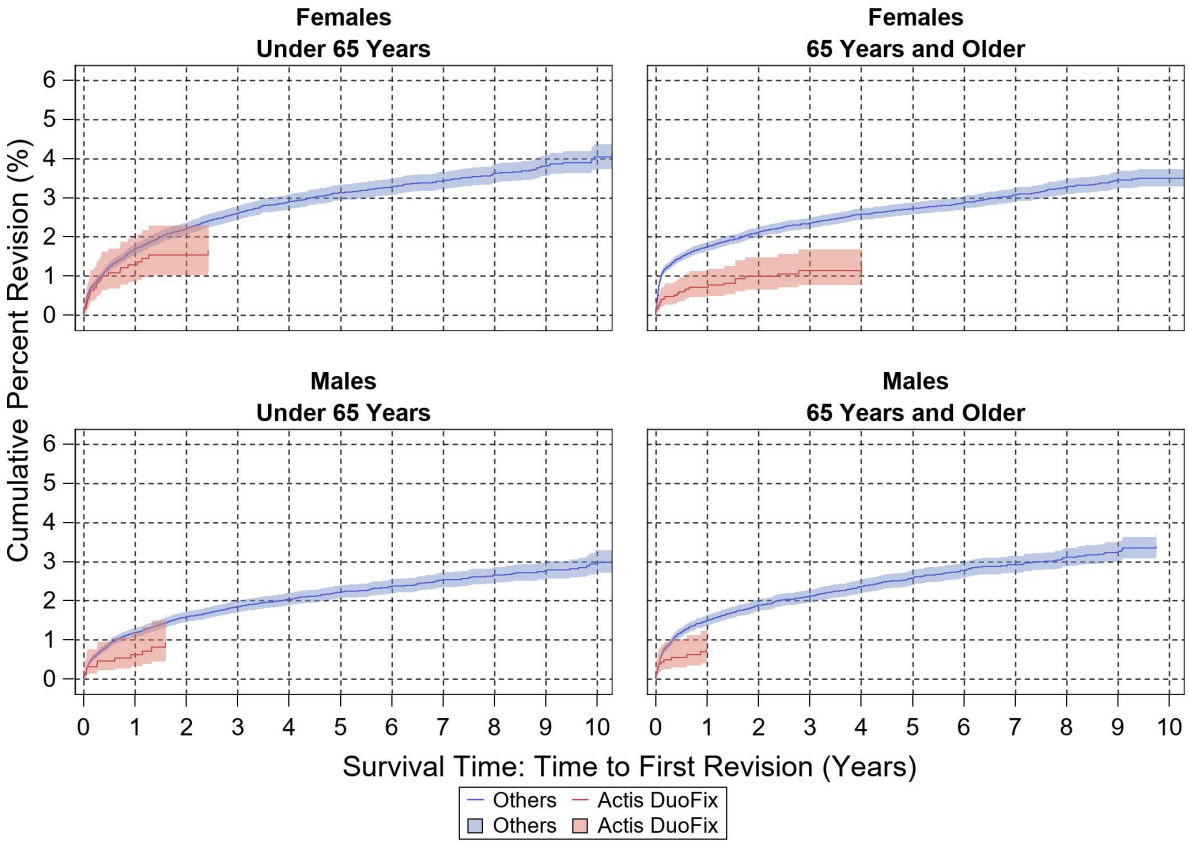


Figure 206. Cumulative Percent Revision Curve for the Actis DuoFix Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 521. Cumulative Percent Revision and Number at Risk for the Actis DuoFix Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	8,047	0.00 (0.00,0.00)	1,753	0.00 (0.00,0.00)	2,822	0.00 (0.00,0.00)	1,617	0.00 (0.00,0.00)	1,855	0.00 (0.00,0.00)
1	5,709	0.83 (0.65,1.07)	1,279	1.29 (0.84,1.97)	2,082	0.71 (0.45,1.12)	1,095	0.62 (0.32,1.19)	1,253	0.77 (0.45,1.34)
2	4,140	1.05 (0.83,1.32)	914	1.53 (1.02,2.28)	1,587	0.98 (0.66,1.47)	761	0.93 (0.52,1.65)	878	0.77 (0.45,1.34)
3	2,731	1.13 (0.90,1.43)	604	1.66 (1.11,2.46)	1,116	1.13 (0.76,1.68)	471	0.93 (0.52,1.65)	540	0.77 (0.45,1.34)
4	1,625	1.13 (0.90,1.43)	352	1.66 (1.11,2.46)	704	1.13 (0.76,1.68)	280	0.93 (0.52,1.65)	289	0.77 (0.45,1.34)
5	607	1.20 (0.94,1.52)	119	1.66 (1.11,2.46)	285	1.28 (0.84,1.93)	98	0.93 (0.52,1.65)	105	0.77 (0.45,1.34)
6	40	1.20 (0.94,1.52)	*	1.66 (1.11,2.46)	20	1.28 (0.84,1.93)	*	0.93 (0.52,1.65)	*	0.77 (0.45,1.34)
7	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 522. Reasons for First Revision Following Primary THA for Actis DuoFix Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	25	32.5
2	Dislocation/Instability	19	24.7
3	Peri-prosthetic fracture - Femur	11	14.3
4	Pain	6	7.8
5	Aseptic Loosening	5	6.5
6	Malalignment	4	5.2
7	Peri-prosthetic fracture - Acetabulum	3	3.9
8	Implant Failure	2	2.6
9	Metal Reaction/Metallosis	2	2.6

Table 523. Reasons for First Revision in the First 90 Days Following Primary THA for Actis DuoFix Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	13	33.3
2	Joint Infection	11	28.2
3	Peri-prosthetic fracture - Femur	8	20.5
4	Peri-prosthetic fracture - Acetabulum	3	7.7
5	Aseptic Loosening	1	2.6
6	Metal Reaction/Metallosis	1	2.6
7	Pain	1	2.6
8	Malalignment	1	2.6

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Table 524. Reasons for First Revision Between 91 and 365 days Following Primary THA for Actis DuoFix Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	9	39.1
2	Dislocation/Instability	4	17.4
3	Pain	4	17.4
4	Peri-prosthetic fracture - Femur	2	8.7
5	Malalignment	2	8.7
6	Aseptic Loosening	1	4.4
7	Implant Failure	1	4.4

Table 525. Descriptive Statistics of Cases Receiving the Actis DuoFix Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	4,588	56.85	
Age (years)	8,070	65.96 (10.04)	66.00 (13.00)
Height (cm)	8,070	169.66 (10.41)	168.91 (15.24)
Weight (kg)	8,070	89.13 (21.05)	87.40 (28.60)
BMI(kg/m^2)	8,070	30.84 (6.26)	30.10 (8.40)
Smoker - Never (%)	4,061	50.32	
Smoker - Previous (%)	2,913	36.1	
Smoker - Current (%)	1,084	13.43	
Smoker - Unknown (%)	12	0.15	

Table 526. Distribution of Approach Used for Actis DuoFix Stem in Primary THA Cases

Approach	N	Percent
Anterior	4,699	58.2
Anterolateral	1112	13.8
Posterior	2,258	28.0
Transtrochanteric	0	0.0
Missing/unknown/other	1	0.0

Table 527. Distribution of Head Size for Actis DuoFix Stem in Primary THA Cases

Size (mm)	N	Percent
22	13	0.2
28	77	1.0
32	1,814	22.9
36	5,243	66.2
40	770	9.7
Missing/unknown/other	9	0.1

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Table 528. Distribution of Bearing Surface for Actis DuoFix Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	875	10.8
Ceramic-on-plastic	7,035	87.2
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	47	0.6
Missing/unknown/other	113	1.4

Table 529. Distribution of Polyethylene Used for Actis DuoFix Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	55	0.7
XLPE	6,920	86.9
Antioxidant XLPE	3	0.0
Missing/unknown/other	988	12.4

Table 530. Volume of Cases by Surgeon and Site for the Actis DuoFix Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	132 (220)	32 (150)
Cases per site	206 (327)	37 (319)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

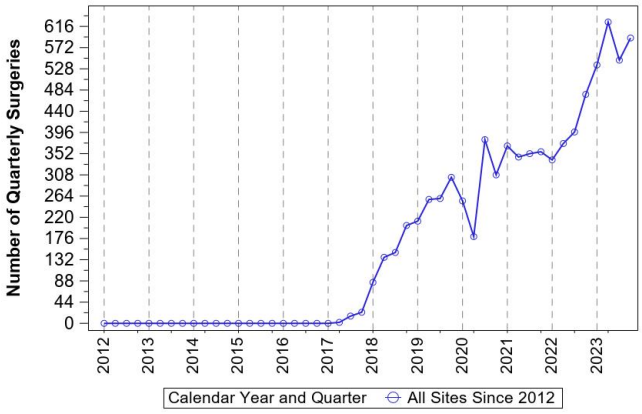


Figure 207. Utilization of the Actis DuoFix Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

101011060	101012040	101011010
101011050	101012030	101012010
101011040	101012080	101011110
101011070	101011090	101012110
101011030	101011020	101012120
101012060	101012090	101011120
101011080	101012020	
101012070	101011100	
101012050	101012100	

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4.2.5 AML

N = 807 primary cases were used for this analysis. Distribution of utilization: 17 surgeons across 14 sites used this implant in primary THA cases.

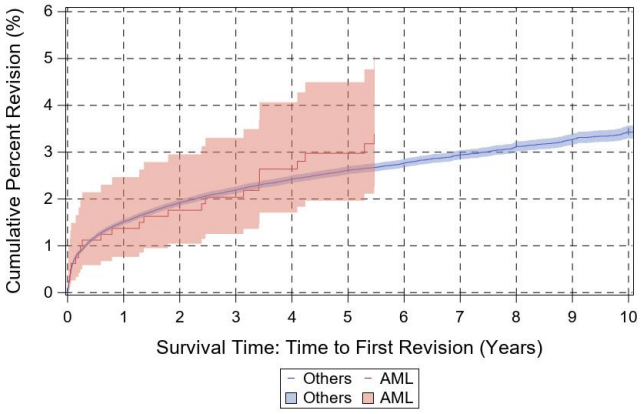


Figure 208. Cumulative Percent Revision Curve for the AML Stem, Compared to All Other Femoral Components in Primary THA Cases

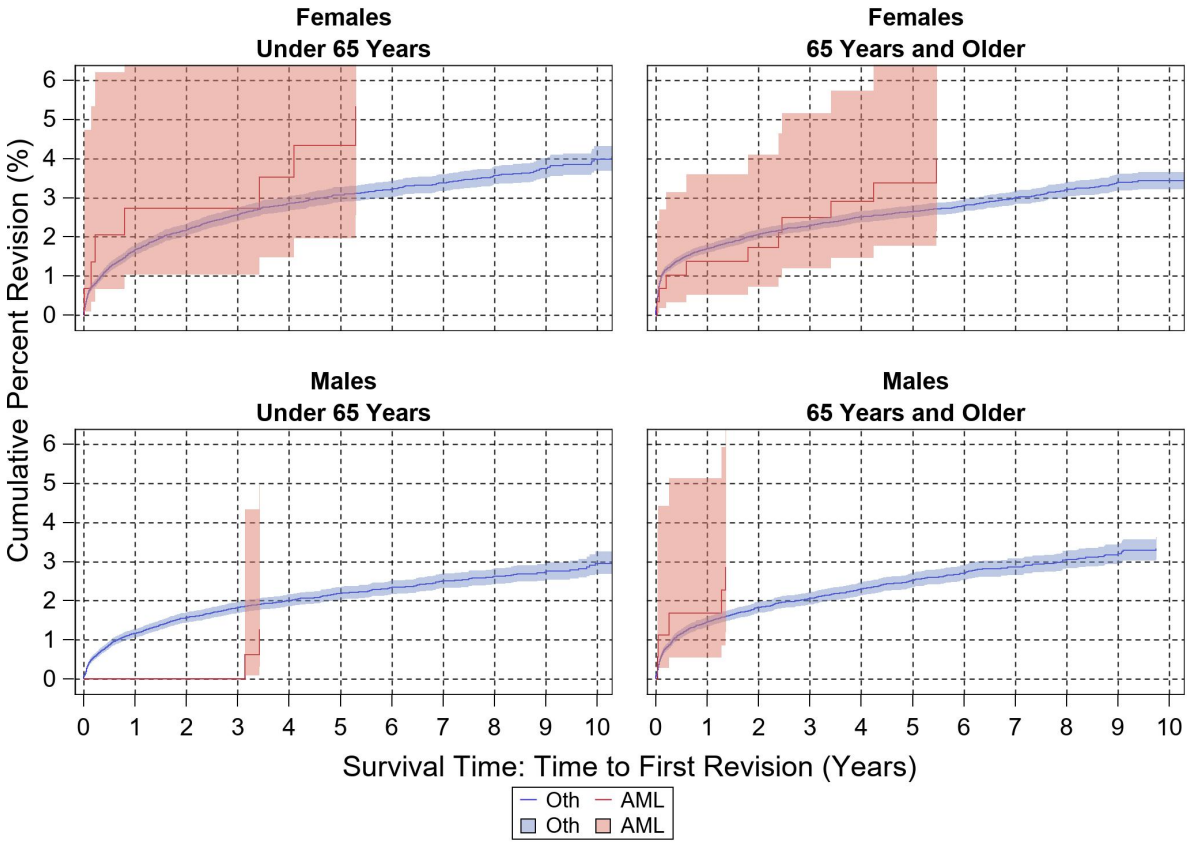


Figure 209. Cumulative Percent Revision Curve for the AML Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 531. Cumulative Percent Revision and Number at Risk for the AML Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	803	0.00 (0.00,0.00)	147	0.00 (0.00,0.00)	293	0.00 (0.00,0.00)	185	0.00 (0.00,0.00)	178	0.00 (0.00,0.00)
1	778	1.37 (0.76,2.47)	141	2.73 (1.03,7.11)	283	1.37 (0.52,3.60)	183	0.00 (0.00,0.00)	171	1.69 (0.55,5.13)
2	748	1.76 (1.05,2.95)	139	2.73 (1.03,7.11)	269	1.73 (0.72,4.10)	179	0.00 (0.00,0.00)	161	2.86 (1.20,6.73)
3	671	2.04 (1.25,3.30)	129	2.73 (1.03,7.11)	243	2.49 (1.20,5.17)	161	0.00 (0.00,0.00)	138	2.86 (1.20,6.73)
4	601	2.64 (1.71,4.07)	120	3.52 (1.48,8.27)	222	2.91 (1.46,5.74)	144	1.26 (0.32,4.95)	115	2.86 (1.20,6.73)
5	509	2.97 (1.96,4.49)	101	4.34 (1.97,9.43)	184	3.38 (1.76,6.42)	123	1.26 (0.32,4.95)	101	2.86 (1.20,6.73)
6	375	3.39 (2.27,5.05)	78	5.34 (2.56,10.96)	131	3.98 (2.13,7.37)	90	1.26 (0.32,4.95)	76	2.86 (1.20,6.73)
7	272	3.39 (2.27,5.05)	58	5.34 (2.56,10.96)	101	3.98 (2.13,7.37)	58	1.26 (0.32,4.95)	55	2.86 (1.20,6.73)
8	173	3.39 (2.27,5.05)	39	5.34 (2.56,10.96)	65	3.98 (2.13,7.37)	33	1.26 (0.32,4.95)	36	2.86 (1.20,6.73)
9	91	3.39 (2.27,5.05)	18	5.34 (2.56,10.96)	32	3.98 (2.13,7.37)	20	1.26 (0.32,4.95)	21	2.86 (1.20,6.73)
10	25	3.39 (2.27,5.05)	*	5.34 (2.56,10.96)	*	3.98 (2.13,7.37)	*	1.26 (0.32,4.95)	*	2.86 (1.20,6.73)

* Denotes that the number of cases is between 1 and 10.

Table 532. Reasons for First Revision Following Primary THA for AML Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	9	37.5
2	Dislocation/Instability	7	29.2
3	Aseptic Loosening	3	12.5
4	Pain	2	8.3
5	Poly liner wear	1	4.2
6	Peri-prosthetic fracture - Acetabulum	1	4.2
7	Malalignment	1	4.2

Table 533. Reasons for First Revision in the First 90 Days Following Primary THA for AML Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	4	50.0
2	Joint Infection	2	25.0
3	Peri-prosthetic fracture - Acetabulum	1	12.5
4	Malalignment	1	12.5

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Table 534. Reasons for First Revision Between 91 and 365 days Following Primary THA for AML Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	2	66.7
2	Dislocation/Instability	1	33.3

Table 535. Descriptive Statistics of Cases Receiving the AML Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	443	54.89	
Age (years)	807	66.93 (10.55)	67.00 (15.00)
Height (cm)	807	169.86 (10.44)	170.00 (15.24)
Weight (kg)	807	89.80 (21.19)	88.00 (28.16)
BMI(kg/m^2)	807	31.04 (6.48)	30.42 (8.49)
Smoker - Never (%)	374	46.34	
Smoker - Previous (%)	297	36.8	
Smoker - Current (%)	136	16.85	
Smoker - Unknown (%)	0	0.0	

Table 536. Distribution of Approach Used for AML Stem in Primary THA Cases

Approach	N	Percent
Anterior	9	1.1
Anterolateral	637	78.9
Posterior	159	19.7
Transtrochanteric	0	0.0
Missing/unknown/other	2	0.2

Table 537. Distribution of Head Size for AML Stem in Primary THA Cases

Size (mm)	N	Percent
22	1	0.1
28	5	0.6
32	185	23.1
36	502	62.7
40	106	13.2
44	1	0.1
Missing/unknown/other	1	0.1

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Table 538. Distribution of Bearing Surface for AML Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	700	86.7
Ceramic-on-plastic	99	12.3
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	8	1.0

Table 539. Distribution of Polyethylene Used for AML Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	732	91.5
Antioxidant XLPE	0	0.0
Missing/unknown/other	68	8.5

Table 540. Volume of Cases by Surgeon and Site for the AML Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	47 (110)	5 (18)
Cases per site	57 (138)	8 (51)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

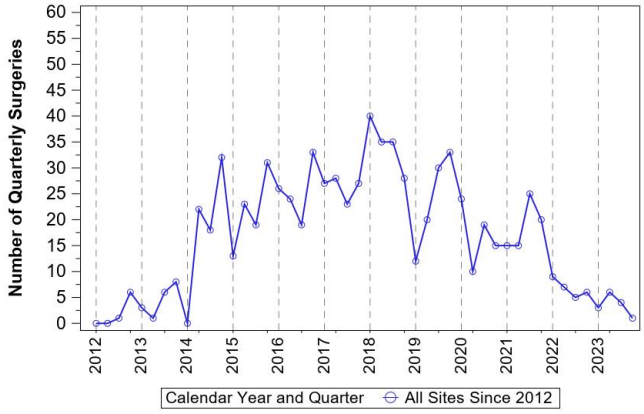


Figure 210. Utilization of the AML Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

155402135	155401150	155401195
155402121	155401165	155401210
155401121	155402106	155403150
155402150	155402180	155403165
155401135	155401180	155403180
155402165	155403135	
155401106	155402195	

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4.2.6 Anthology

N = 6,516 primary cases were used for this analysis. Distribution of utilization: 61 surgeons across 39 sites used this implant in primary THA cases.

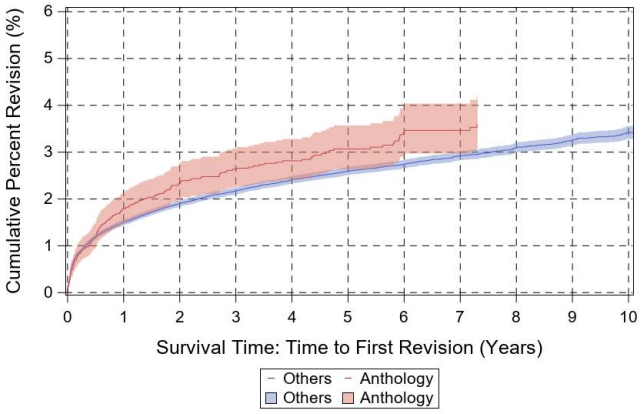


Figure 211. Cumulative Percent Revision Curve for the Anthology Stem, Compared to All Other Femoral Components in Primary THA Cases

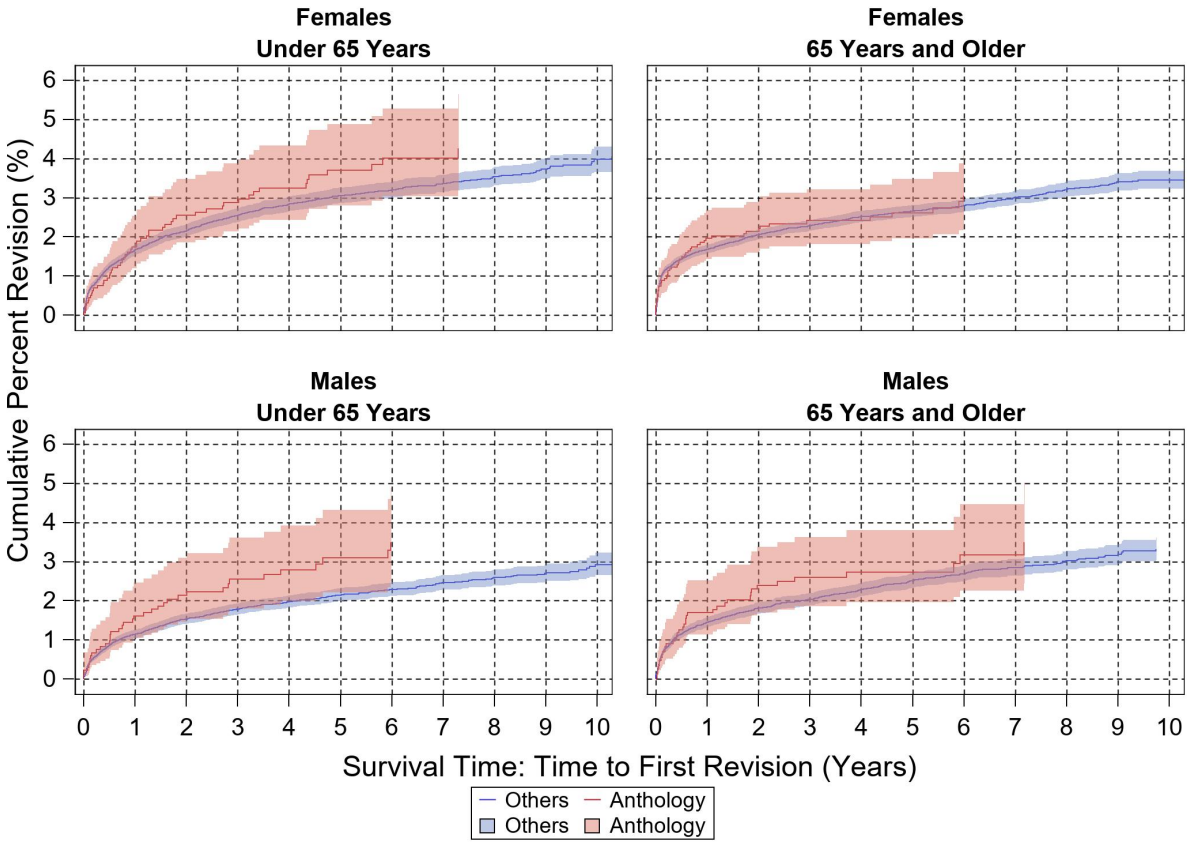


Figure 212. Cumulative Percent Revision Curve for the Anthology Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 541. Cumulative Percent Revision and Number at Risk for the Anthology Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	6,483	0.00 (0.00,0.00)	1,609	0.00 (0.00,0.00)	2,050	0.00 (0.00,0.00)	1,355	0.00 (0.00,0.00)	1,465	0.00 (0.00,0.00)
1	5,697	1.79 (1.49,2.15)	1,430	1.75 (1.20,2.54)	1,798	1.96 (1.44,2.68)	1,209	1.61 (1.05,2.46)	1,257	1.70 (1.14,2.52)
2	4,838	2.33 (1.98,2.74)	1,245	2.55 (1.86,3.48)	1,518	2.14 (1.59,2.89)	1,036	2.13 (1.47,3.10)	1,038	2.39 (1.70,3.38)
3	4,145	2.63 (2.25,3.08)	1,088	2.88 (2.13,3.88)	1,299	2.41 (1.81,3.21)	880	2.55 (1.79,3.61)	878	2.60 (1.86,3.63)
4	3,403	2.81 (2.41,3.28)	925	3.25 (2.44,4.33)	1,041	2.41 (1.81,3.21)	737	2.79 (1.98,3.92)	700	2.73 (1.96,3.80)
5	2,727	3.07 (2.64,3.57)	769	3.70 (2.80,4.88)	831	2.62 (1.97,3.48)	590	3.09 (2.21,4.32)	537	2.73 (1.96,3.80)
6	2,114	3.46 (2.97,4.04)	587	4.01 (3.04,5.28)	625	3.05 (2.28,4.09)	473	3.50 (2.50,4.89)	429	3.17 (2.25,4.47)
7	1,601	3.46 (2.97,4.04)	444	4.01 (3.04,5.28)	464	3.05 (2.28,4.09)	371	3.50 (2.50,4.89)	322	3.17 (2.25,4.47)
8	986	3.60 (3.08,4.20)	264	4.25 (3.20,5.64)	258	3.05 (2.28,4.09)	259	3.50 (2.50,4.89)	205	3.50 (2.44,5.01)
9	471	3.60 (3.08,4.20)	123	4.25 (3.20,5.64)	125	3.05 (2.28,4.09)	139	3.50 (2.50,4.89)	84	3.50 (2.44,5.01)
10	134	3.60 (3.08,4.20)	37	4.25 (3.20,5.64)	36	3.05 (2.28,4.09)	39	3.50 (2.50,4.89)	22	3.50 (2.44,5.01)

Table 542. Reasons for First Revision Following Primary THA for Anthology Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	40	22.7
2	Dislocation/Instability	38	21.6
3	Joint Infection	34	19.3
4	Peri-prosthetic fracture - Femur	30	17.0
5	Malalignment	12	6.8
6	Implant Failure	10	5.7
7	Pain	7	4.0
8	Peri-prosthetic fracture - Acetabulum	3	1.7
9	Metal Reaction/Metallosis	2	1.1

Table 543. Reasons for First Revision in the First 90 Days Following Primary THA for Anthology Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	23	41.8
2	Dislocation/Instability	10	18.2
3	Joint Infection	9	16.4
4	Implant Failure	4	7.3
5	Aseptic Loosening	3	5.4
6	Peri-prosthetic fracture - Acetabulum	3	5.4
7	Malalignment	3	5.4

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Table 544. Reasons for First Revision Between 91 and 365 days Following Primary THA for Anthology Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	16	30.8
2	Joint Infection	13	25.0
3	Aseptic Loosening	12	23.1
4	Pain	5	9.6
5	Peri-prosthetic fracture - Femur	3	5.8
6	Malalignment	2	3.8
7	Implant Failure	1	1.9

Table 545. Descriptive Statistics of Cases Receiving the Anthology Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	3,677	56.43	
Age (years)	6,516	65.06 (10.61)	66.00 (13.00)
Height (cm)	6,516	169.51 (10.15)	168.00 (15.24)
Weight (kg)	6,516	90.49 (22.16)	88.30 (28.85)
BMI(kg/m^2)	6,516	31.39 (6.81)	30.49 (8.87)
Smoker - Never (%)	3,172	48.68	
Smoker - Previous (%)	2,467	37.86	
Smoker - Current (%)	865	13.28	
Smoker - Unknown (%)	12	0.18	

Table 546. Distribution of Approach Used for Anthology Stem in Primary THA Cases

Approach	N	Percent
Anterior	3,231	49.6
Anterolateral	2449	37.6
Posterior	746	11.4
Transtrochanteric	86	1.3
Missing/unknown/other	4	0.1

Table 547. Distribution of Head Size for Anthology Stem in Primary THA Cases

Size (mm)	N	Percent
22	4	0.1
28	37	0.7
32	1,286	22.5
36	3,957	69.2
40	389	6.8
44	17	0.3
Missing/unknown/other	24	0.4

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Table 548. Distribution of Bearing Surface for Anthology Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,148	17.6
Ceramic-on-plastic	4,541	69.7
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	783	12.0
Missing/unknown/other	44	0.7

Table 549. Distribution of Polyethylene Used for Anthology Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	4	0.1
XLPE	5,646	87.2
Antioxidant XLPE	0	0.0
Missing/unknown/other	827	12.8

Table 550. Volume of Cases by Surgeon and Site for the Anthology Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	106 (210)	15 (74)
Cases per site	167 (244)	52 (227)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

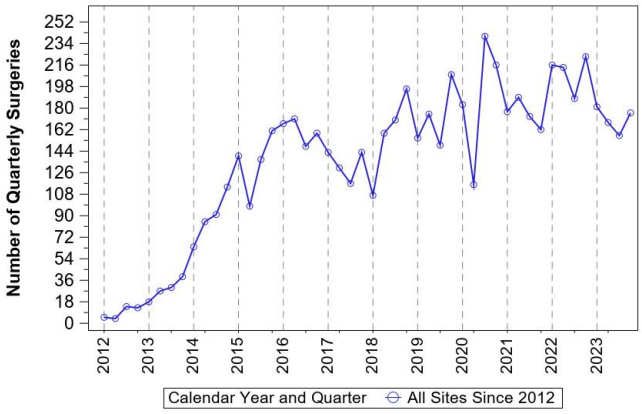


Figure 213. Utilization of the Anthology Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

71356006	71357107	71356012
71356007	71357108	71356001
71356005	71357106	71357104
71356008	71356103	71357103
71356106	71356111	71357112
71356108	71357005	71357011
71356107	71356002	71357002
71356004	71356011	71356113
71356105	71357109	71357012
71356003	71357004	71356013
71356009	71357105	71356101
71356010	71357009	71356114
71356109	71357110	71357102
71356110	71357003	71357001
71356104	71356112	71357101
71357006	71357010	71356014
71357007	71357111	
71357008	71356102	

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4.2.7 Avenir (Cemented)

N = 1,476 primary cases were used for this analysis. Distribution of utilization: 57 surgeons across 38 sites used this implant in primary THA cases.

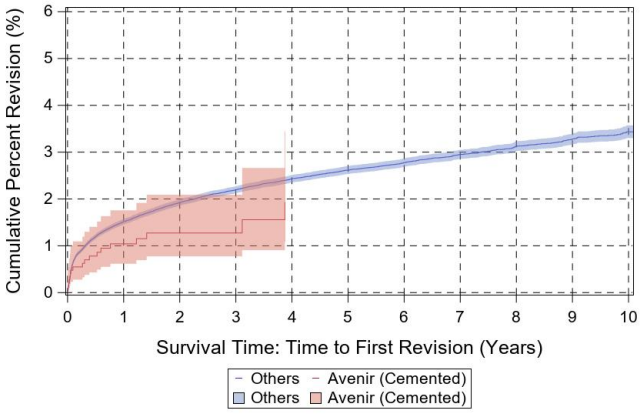


Figure 214. Cumulative Percent Revision Curve for the Avenir (Cemented) Stem, Compared to All Other Femoral Components in Primary THA Cases

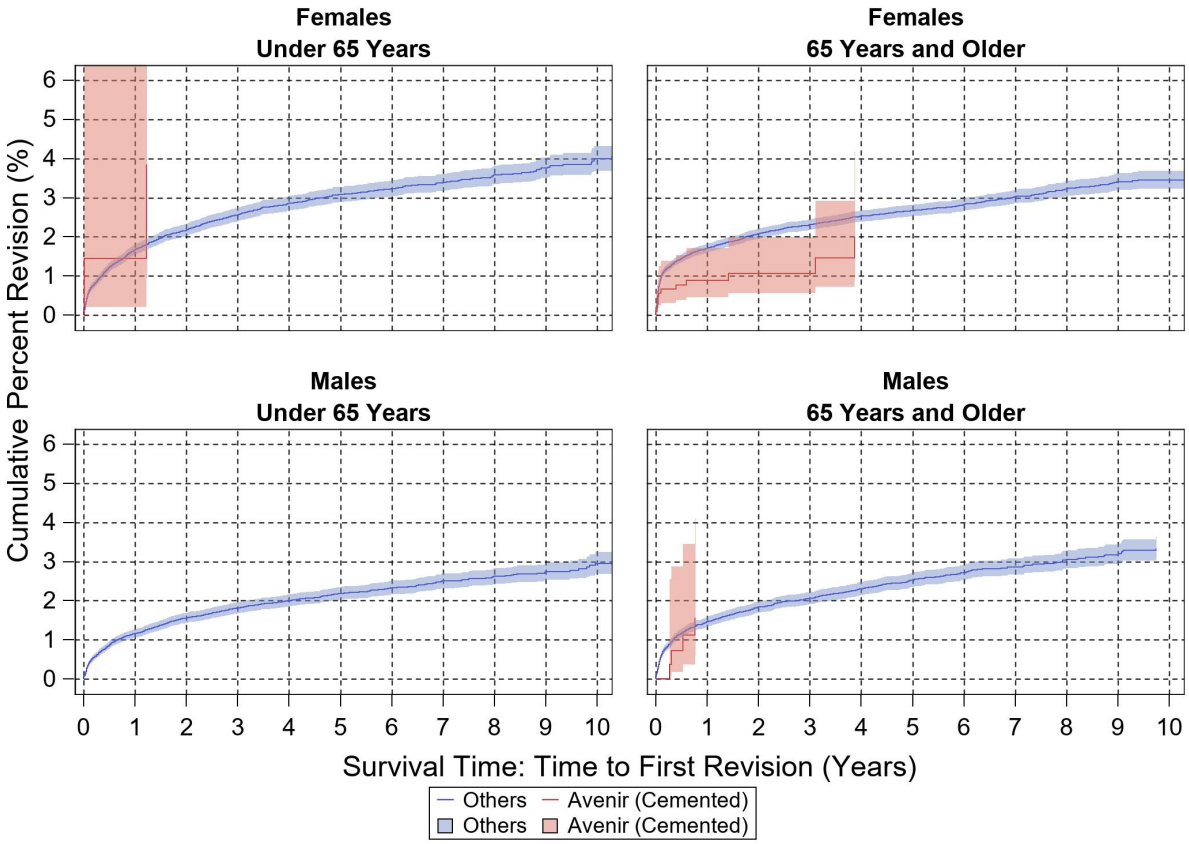


Figure 215. Cumulative Percent Revision Curve for the Avenir (Cemented) Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 551. Cumulative Percent Revision and Number at Risk for the Avenir (Cemented) Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,470	0.00 (0.00,0.00)	69	0.00 (0.00,0.00)	1,067	0.00 (0.00,0.00)	25	0.00 (0.00,0.00)	308	0.00 (0.00,0.00)
1	970	1.04 (0.62,1.76)	49	1.45 (0.21,9.84)	691	0.89 (0.46,1.71)	17	0.00 (0.00,0.00)	212	1.56 (0.59,4.10)
2	607	1.27 (0.77,2.09)	25	3.85 (0.94,15.15)	436	1.06 (0.56,2.00)	12	0.00 (0.00,0.00)	134	1.56 (0.59,4.10)
3	366	1.27 (0.77,2.09)	15	3.85 (0.94,15.15)	262	1.06 (0.56,2.00)	*	0.00 (0.00,0.00)	81	1.56 (0.59,4.10)
4	238	1.94 (1.09,3.44)	12	3.85 (0.94,15.15)	166	2.00 (0.96,4.16)	*	0.00 (0.00,0.00)	54	1.56 (0.59,4.10)
5	118	1.94 (1.09,3.44)	*	3.85 (0.94,15.15)	82	2.00 (0.96,4.16)	*	0.00 (0.00,0.00)	28	1.56 (0.59,4.10)
6	61	1.94 (1.09,3.44)	*	3.85 (0.94,15.15)	44	2.00 (0.96,4.16)	*	0.00 (0.00,0.00)	11	1.56 (0.59,4.10)
7	19	1.94 (1.09,3.44)	*	3.85 (0.94,15.15)	18	2.00 (0.96,4.16)	0	N/A	0	N/A
8	*	1.94 (1.09,3.44)	*	3.85 (0.94,15.15)	*	2.00 (0.96,4.16)	0	N/A	0	N/A
9	*	1.94 (1.09,3.44)	0	N/A	*	2.00 (0.96,4.16)	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 552. Reasons for First Revision Following Primary THA for Avenir (Cemented) Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	8	44.4
2	Dislocation/Instability	4	22.2
3	Peri-prosthetic fracture - Femur	2	11.1
4	Aseptic Loosening	1	5.6
5	Implant Failure	1	5.6
6	Peri-prosthetic fracture - Acetabulum	1	5.6
7	Metal Reaction/Metallosis	1	5.6

Table 553. Reasons for First Revision in the First 90 Days Following Primary THA for Avenir (Cemented) Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	5	62.5
2	Dislocation/Instability	1	12.5
3	Peri-prosthetic fracture - Acetabulum	1	12.5
4	Peri-prosthetic fracture - Femur	1	12.5

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Table 554. Reasons for First Revision Between 91 and 365 days Following Primary THA for Avenir (Cemented) Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	3	50.0
2	Dislocation/Instability	2	33.3
3	Aseptic Loosening	1	16.7

Table 555. Descriptive Statistics of Cases Receiving the Avenir (Cemented) Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,140	77.24	
Age (years)	1,476	76.44 (7.74)	77.00 (10.00)
Height (cm)	1,459	164.91 (9.46)	165.00 (12.70)
Weight (kg)	1,459	77.67 (17.18)	76.00 (24.40)
BMI(kg/m^2)	1,459	28.50 (5.56)	27.95 (7.43)
Smoker - Never (%)	792	53.66	
Smoker - Previous (%)	602	40.79	
Smoker - Current (%)	77	5.22	
Smoker - Unknown (%)	5	0.34	

Table 556. Distribution of Approach Used for Avenir (Cemented) Stem in Primary THA Cases

Approach	N	Percent
Anterior	891	60.4
Anterolateral	120	8.1
Posterior	444	30.1
Transtrochanteric	1	0.1
Missing/unknown/other	20	1.4

Table 557. Distribution of Head Size for Avenir (Cemented) Stem in Primary THA Cases

Size (mm)	N	Percent
28	3	0.3
32	153	14.2
36	818	76.2
40	80	7.5
Missing/unknown/other	20	1.9

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Table 558. Distribution of Bearing Surface for Avenir (Cemented) Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	192	13.0
Ceramic-on-plastic	862	58.4
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	363	24.6
Missing/unknown/other	59	4.0

Table 559. Distribution of Polyethylene Used for Avenir (Cemented) Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	1	0.1
XLPE	831	58.1
Antioxidant XLPE	467	32.6
Missing/unknown/other	132	9.2

Table 560. Volume of Cases by Surgeon and Site for the Avenir (Cemented) Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	25 (44)	8 (26)
Cases per site	38 (53)	14 (52)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

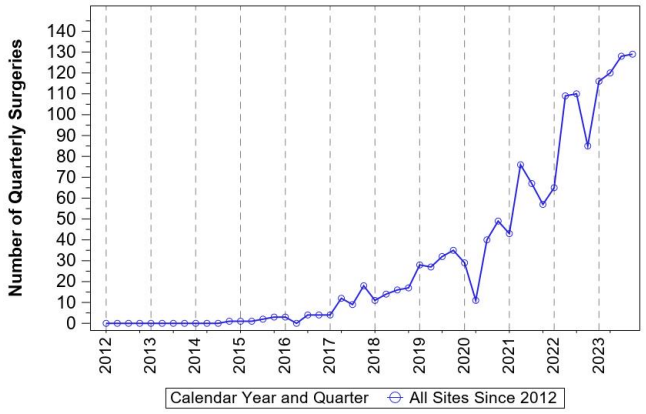


Figure 216. Utilization of the Avenir (Cemented) Stem in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

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106010204	106010201	106010302
106010205	106010206	106010307
106010203	106010306	106010308
106010202	106010303	106010208
106010304	106010207	
106010305	106010301	

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4.2.8 Avenir (Cementless)

N = 1,313 primary cases were used for this analysis. Distribution of utilization: 37 surgeons across 22 sites used this implant in primary THA cases.

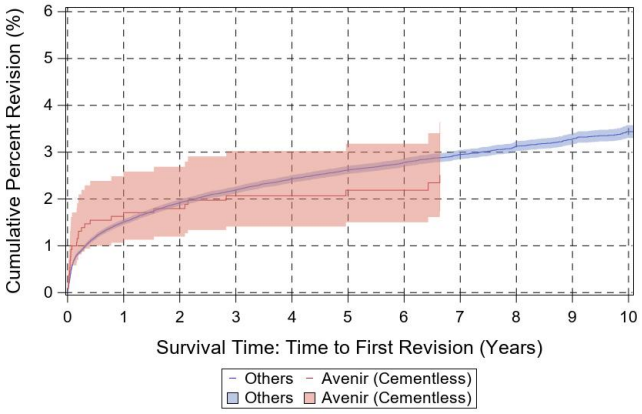


Figure 217. Cumulative Percent Revision Curve for the Avenir (Cementless) Stem, Compared to All Other Femoral Components in Primary THA Cases

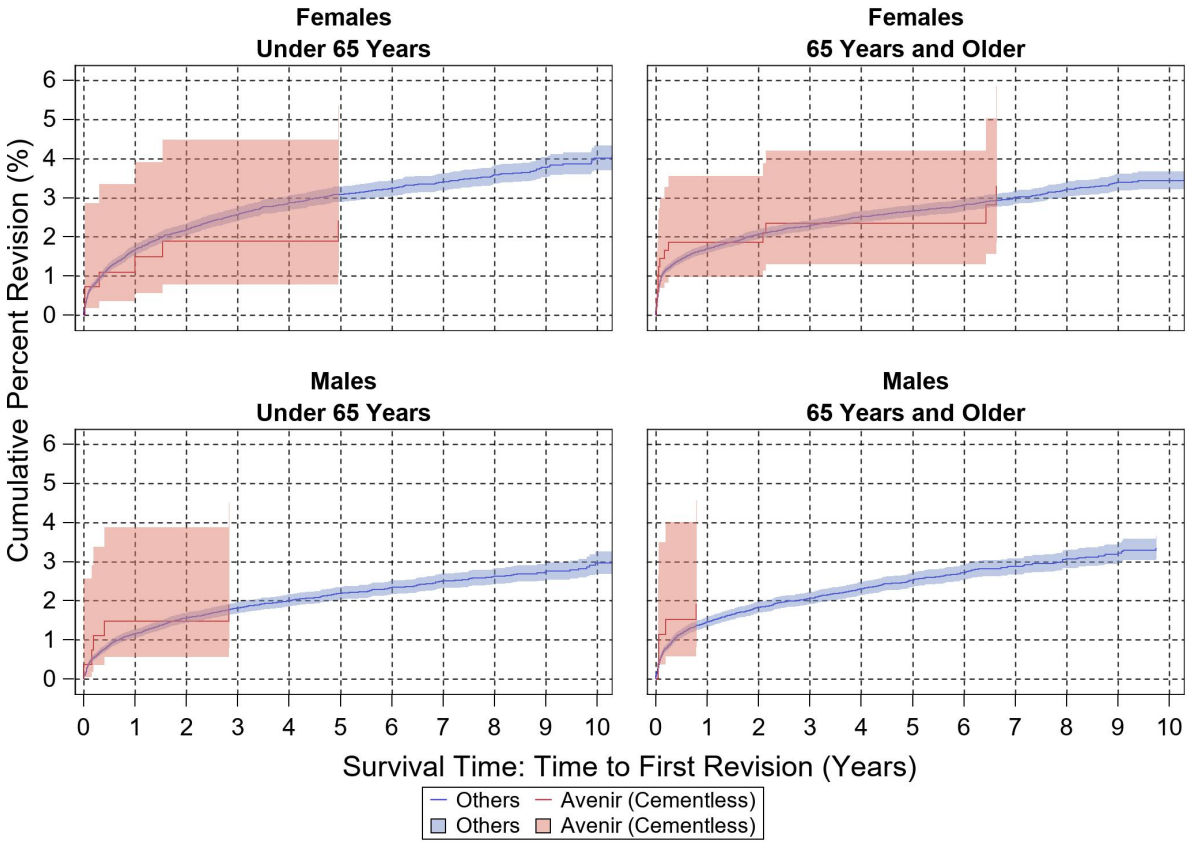


Figure 218. Cumulative Percent Revision Curve for the Avenir (Cementless) Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 561. Cumulative Percent Revision and Number at Risk for the Avenir (Cementless) Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,306	0.00 (0.00,0.00)	278	0.00 (0.00,0.00)	487	0.00 (0.00,0.00)	274	0.00 (0.00,0.00)	265	0.00 (0.00,0.00)
1	1,200	1.71 (1.13,2.59)	252	1.48 (0.56,3.91)	445	1.86 (0.97,3.55)	259	1.47 (0.56,3.87)	242	1.92 (0.80,4.56)
2	1,106	1.79 (1.20,2.69)	232	1.89 (0.79,4.48)	412	1.86 (0.97,3.55)	239	1.47 (0.56,3.87)	221	1.92 (0.80,4.56)
3	1,026	2.07 (1.41,3.03)	218	1.89 (0.79,4.48)	377	2.35 (1.30,4.20)	226	1.90 (0.79,4.51)	203	1.92 (0.80,4.56)
4	963	2.07 (1.41,3.03)	209	1.89 (0.79,4.48)	350	2.35 (1.30,4.20)	212	1.90 (0.79,4.51)	190	1.92 (0.80,4.56)
5	816	2.19 (1.50,3.18)	183	2.42 (1.08,5.35)	285	2.35 (1.30,4.20)	184	1.90 (0.79,4.51)	164	1.92 (0.80,4.56)
6	685	2.19 (1.50,3.18)	157	2.42 (1.08,5.35)	233	2.35 (1.30,4.20)	153	1.90 (0.79,4.51)	142	1.92 (0.80,4.56)
7	509	2.51 (1.73,3.64)	118	2.42 (1.08,5.35)	170	3.31 (1.86,5.85)	113	1.90 (0.79,4.51)	108	1.92 (0.80,4.56)
8	327	2.51 (1.73,3.64)	81	2.42 (1.08,5.35)	110	3.31 (1.86,5.85)	77	1.90 (0.79,4.51)	59	1.92 (0.80,4.56)
9	192	2.51 (1.73,3.64)	43	2.42 (1.08,5.35)	59	3.31 (1.86,5.85)	53	1.90 (0.79,4.51)	37	1.92 (0.80,4.56)
10	30	2.51 (1.73,3.64)	*	2.42 (1.08,5.35)	*	3.31 (1.86,5.85)	*	1.90 (0.79,4.51)	*	1.92 (0.80,4.56)

* Denotes that the number of cases is between 1 and 10.

Table 562. Reasons for First Revision Following Primary THA for Avenir (Cementless) Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	9	33.3
2	Aseptic Loosening	7	25.9
3	Dislocation/Instability	7	25.9
4	Joint Infection	2	7.4
5	Pain	2	7.4

Table 563. Reasons for First Revision in the First 90 Days Following Primary THA for Avenir (Cementless) Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	7	41.2
2	Aseptic Loosening	6	35.3
3	Dislocation/Instability	3	17.6
4	Joint Infection	1	5.9

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Table 564. Reasons for First Revision Between 91 and 365 days Following Primary THA for Avenir (Cementless) Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	33.3
2	Joint Infection	1	33.3
3	Pain	1	33.3

Table 565. Descriptive Statistics of Cases Receiving the Avenir (Cementless) Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	769	58.57	
Age (years)	1,313	66.02 (10.76)	67.00 (13.00)
Height (cm)	1,135	168.98 (10.11)	168.00 (13.31)
Weight (kg)	1,135	85.03 (19.33)	83.30 (26.52)
BMI(kg/m^2)	1,135	29.62 (5.44)	29.11 (7.17)
Smoker - Never (%)	647	49.28	
Smoker - Previous (%)	517	39.38	
Smoker - Current (%)	149	11.35	
Smoker - Unknown (%)	0	0.0	

Table 566. Distribution of Approach Used for Avenir (Cementless) Stem in Primary THA Cases

Approach	N	Percent
Anterior	424	32.3
Anterolateral	165	12.6
Posterior	546	41.6
Transtrochanteric	0	0.0
Missing/unknown/other	178	13.6

Table 567. Distribution of Head Size for Avenir (Cementless) Stem in Primary THA Cases

Size (mm)	N	Percent
28	3	0.3
32	165	14.1
36	900	77.1
40	94	8.1
Missing/unknown/other	5	0.4

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Table 568. Distribution of Bearing Surface for Avenir (Cementless) Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	389	29.6
Ceramic-on-plastic	773	58.9
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	140	10.7
Missing/unknown/other	11	0.8

Table 569. Distribution of Polyethylene Used for Avenir (Cementless) Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	884	67.8
Antioxidant XLPE	333	25.5
Missing/unknown/other	87	6.7

Table 570. Volume of Cases by Surgeon and Site for the Avenir (Cementless) Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	35 (86)	3 (22)
Cases per site	59 (120)	11 (61)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

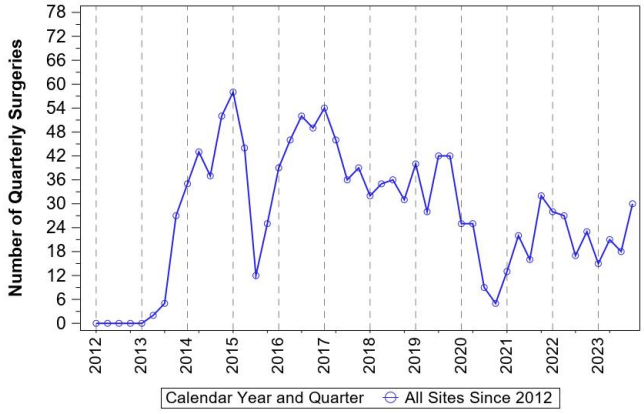


Figure 219. Utilization of the Avenir (Cementless) Stem in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

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106010004	106010106	106010008
106010005	106010103	106010108
106010002	106010107	106010109
106010003	106010001	106010009
106010006	106010007	
106010105	106010102	
106010104	106010101	

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4.2.9 Avenir Complete

N = 5,502 primary cases were used for this analysis. Distribution of utilization: 74 surgeons across 47 sites used this implant in primary THA cases.

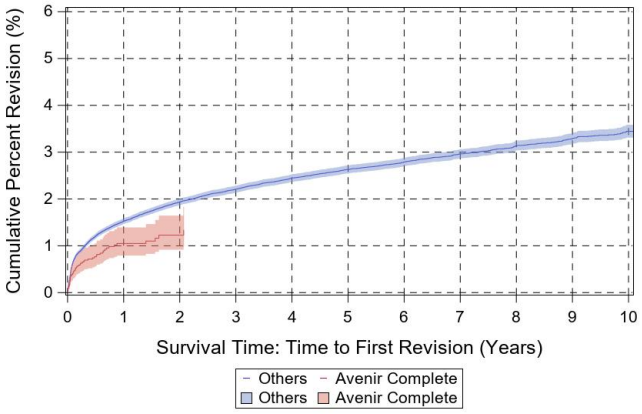


Figure 220. Cumulative Percent Revision Curve for the Avenir Complete Stem, Compared to All Other Femoral Components in Primary THA Cases

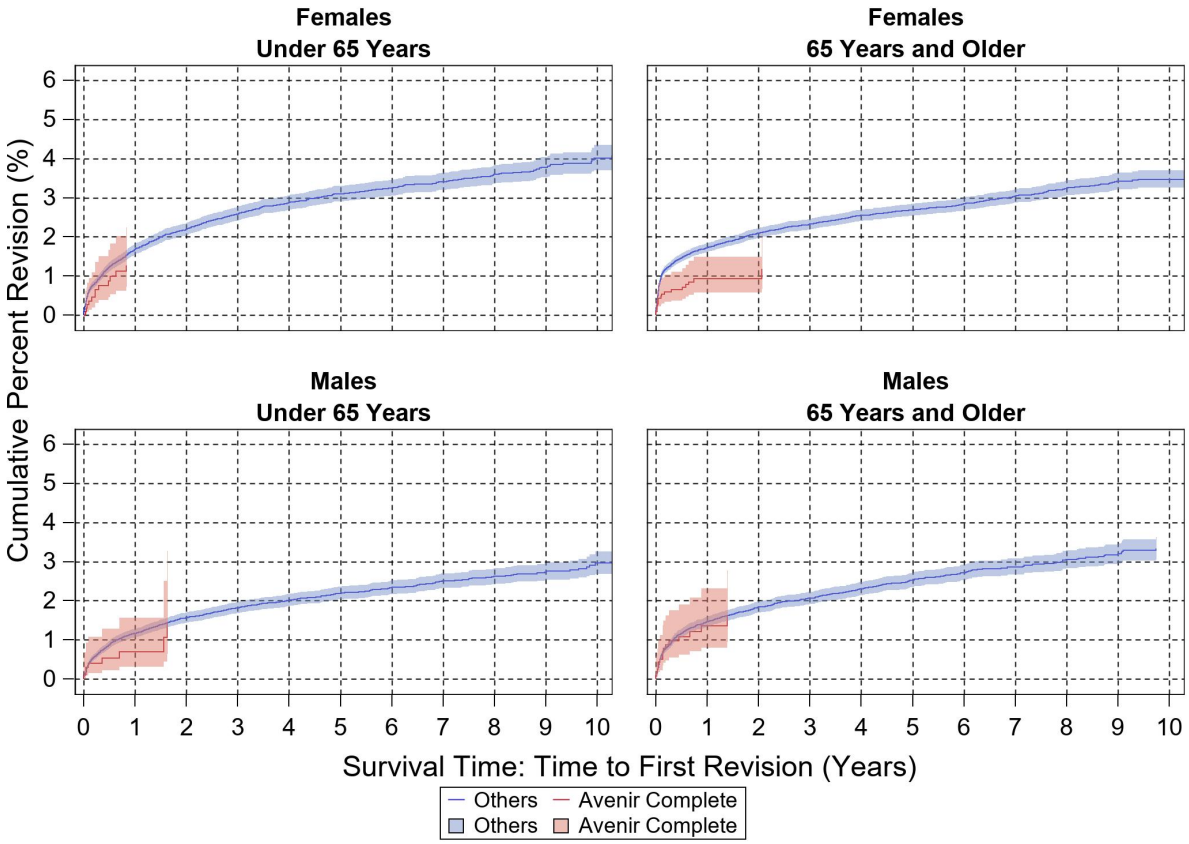


Figure 221. Cumulative Percent Revision Curve for the Avenir Complete Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 571. Cumulative Percent Revision and Number at Risk for the Avenir Complete Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	5,491	0.00 (0.00,0.00)	1,161	0.00 (0.00,0.00)	2,095	0.00 (0.00,0.00)	1,032	0.00 (0.00,0.00)	1,201	0.00 (0.00,0.00)
1	2,691	1.05 (0.79,1.39)	566	1.27 (0.72,2.24)	1,065	0.92 (0.57,1.49)	477	0.69 (0.31,1.56)	582	1.36 (0.80,2.31)
2	958	1.23 (0.92,1.65)	214	1.27 (0.72,2.24)	406	0.92 (0.57,1.49)	150	1.45 (0.64,3.27)	187	1.61 (0.94,2.76)
3	176	1.34 (0.98,1.83)	42	1.27 (0.72,2.24)	85	1.18 (0.67,2.09)	24	1.45 (0.64,3.27)	25	1.61 (0.94,2.76)
4	11	1.34 (0.98,1.83)	*	1.27 (0.72,2.24)	*	1.18 (0.67,2.09)	*	1.45 (0.64,3.27)	*	1.61 (0.94,2.76)
5	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
6	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
7	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 572. Reasons for First Revision Following Primary THA for Avenir Complete Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	17	32.1
2	Joint Infection	14	26.4
3	Aseptic Loosening	12	22.6
4	Dislocation/Instability	8	15.1
5	Poly liner wear	2	3.8

Table 573. Reasons for First Revision in the First 90 Days Following Primary THA for Avenir Complete Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	15	45.4
2	Joint Infection	7	21.2
3	Aseptic Loosening	6	18.2
4	Dislocation/Instability	4	12.1
5	Poly liner wear	1	3.0

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Table 574. Reasons for First Revision Between 91 and 365 days Following Primary THA for Avenir Complete Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	5	31.2
2	Joint Infection	5	31.2
3	Dislocation/Instability	3	18.8
4	Peri-prosthetic fracture - Femur	2	12.5
5	Poly liner wear	1	6.2

Table 575. Descriptive Statistics of Cases Receiving the Avenir Complete Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	3,263	59.31	
Age (years)	5,502	66.10 (11.03)	67.00 (14.00)
Height (cm)	5,502	169.08 (10.28)	167.64 (15.24)
Weight (kg)	5,502	85.96 (20.49)	83.91 (27.70)
BMI(kg/m^2)	5,502	29.93 (6.01)	29.29 (8.04)
Smoker - Never (%)	2,793	50.76	
Smoker - Previous (%)	1,947	35.39	
Smoker - Current (%)	747	13.58	
Smoker - Unknown (%)	15	0.27	

Table 576. Distribution of Approach Used for Avenir Complete Stem in Primary THA Cases

Approach	N	Percent
Anterior	4,286	77.9
Anterolateral	243	4.4
Posterior	959	17.4
Transtrochanteric	3	0.1
Missing/unknown/other	11	0.2

Table 577. Distribution of Head Size for Avenir Complete Stem in Primary THA Cases

Size (mm)	N	Percent
28	4	0.1
32	698	13.8
36	3,702	73.3
40	618	12.2
Missing/unknown/other	29	0.6

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Table 578. Distribution of Bearing Surface for Avenir Complete Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	398	7.2
Ceramic-on-plastic	4,624	84.0
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	400	7.3
Missing/unknown/other	80	1.4

Table 579. Distribution of Polyethylene Used for Avenir Complete Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,800	33.2
Antioxidant XLPE	2,947	54.3
Missing/unknown/other	680	12.5

Table 580. Volume of Cases by Surgeon and Site for the Avenir Complete Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	74 (150)	23 (65)
Cases per site	117 (149)	56 (139)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

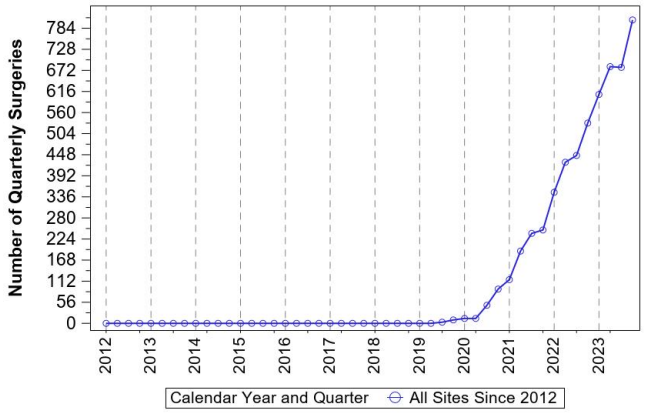


Figure 222. Utilization of the Avenir Complete Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

574202050	574203060	574101010
574202040	574102030	574203000
574202060	574202075	574203065
574201040	574201010	574103030
574201050	574101040	574102010
574201030	574101050	574102075
574202030	574101030	574203070
574201020	574102020	574101000
574202065	574102065	574103020
574203050	574202010	574101065
574203040	574201065	574101070
574202020	574101060	574102000
574201060	574103040	574102080
574203030	574202080	574101075
574102050	574203010	574201080
574203020	574102070	574101085
574102040	574201000	574102085
574102060	574201070	574101080
574202070	574103050	574101090
574101020	574201075	

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4.2.10 Corail

N = 3,895 primary cases were used for this analysis. Distribution of utilization: 50 surgeons across 33 sites used this implant in primary THA cases.

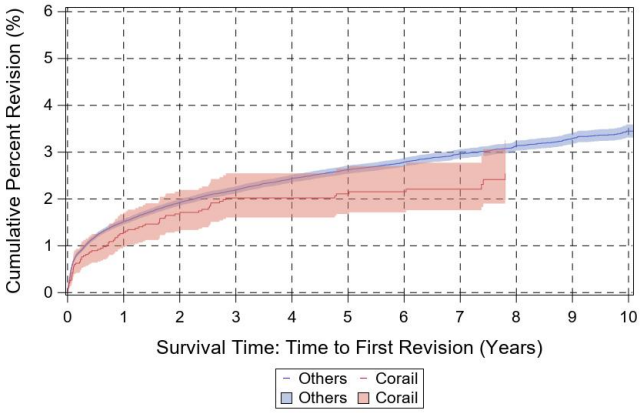


Figure 223. Cumulative Percent Revision Curve for the Corail Stem, Compared to All Other Femoral Components in Primary THA Cases

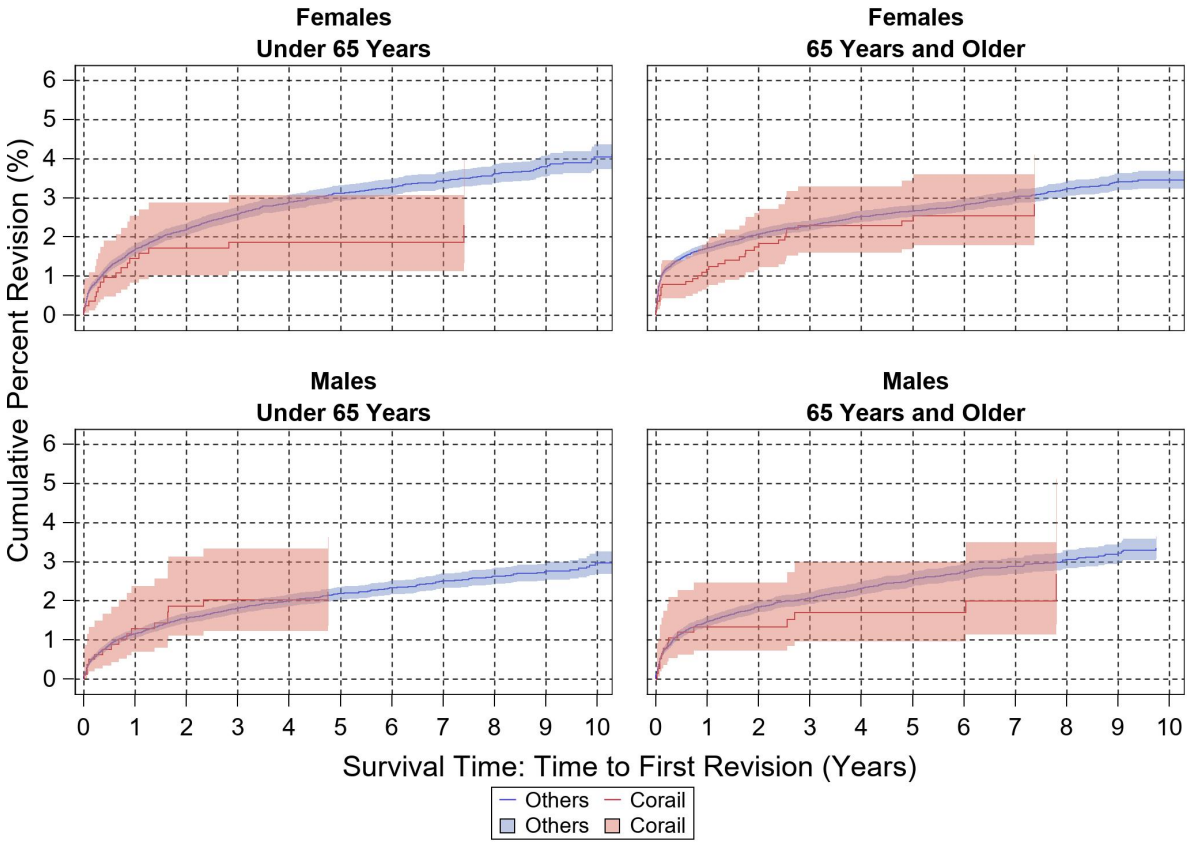


Figure 224. Cumulative Percent Revision Curve for the Corail Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 581. Cumulative Percent Revision and Number at Risk for the Corail Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,845	0.00 (0.00,0.00)	847	0.00 (0.00,0.00)	1,416	0.00 (0.00,0.00)	809	0.00 (0.00,0.00)	773	0.00 (0.00,0.00)
1	3,467	1.29 (0.97,1.71)	779	1.45 (0.83,2.54)	1,280	1.16 (0.71,1.89)	732	1.28 (0.69,2.37)	676	1.33 (0.72,2.46)
2	3,069	1.68 (1.31,2.16)	700	1.71 (1.02,2.87)	1,136	1.74 (1.16,2.61)	646	1.86 (1.10,3.12)	587	1.33 (0.72,2.46)
3	2,688	2.02 (1.60,2.55)	635	1.86 (1.12,3.07)	987	2.29 (1.59,3.28)	562	2.02 (1.22,3.33)	504	1.70 (0.96,2.99)
4	2,456	2.02 (1.60,2.55)	579	1.86 (1.12,3.07)	903	2.29 (1.59,3.28)	514	2.02 (1.22,3.33)	460	1.70 (0.96,2.99)
5	2,186	2.11 (1.68,2.65)	517	1.86 (1.12,3.07)	794	2.41 (1.68,3.44)	462	2.23 (1.36,3.63)	413	1.70 (0.96,2.99)
6	1,756	2.15 (1.72,2.70)	412	1.86 (1.12,3.07)	638	2.53 (1.78,3.60)	371	2.23 (1.36,3.63)	335	1.70 (0.96,2.99)
7	1,161	2.21 (1.76,2.77)	275	1.86 (1.12,3.07)	410	2.53 (1.78,3.60)	256	2.23 (1.36,3.63)	220	2.00 (1.14,3.50)
8	684	2.54 (1.99,3.26)	171	2.29 (1.32,3.96)	223	2.82 (1.94,4.10)	158	2.23 (1.36,3.63)	132	2.68 (1.40,5.12)
9	348	2.54 (1.99,3.26)	93	2.29 (1.32,3.96)	111	2.82 (1.94,4.10)	77	2.23 (1.36,3.63)	67	2.68 (1.40,5.12)
10	65	2.54 (1.99,3.26)	19	2.29 (1.32,3.96)	20	2.82 (1.94,4.10)	14	2.23 (1.36,3.63)	12	2.68 (1.40,5.12)

Table 582. Reasons for First Revision Following Primary THA for Corail Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	20	25.6
2	Aseptic Loosening	18	23.1
3	Dislocation/Instability	18	23.1
4	Peri-prosthetic fracture - Femur	10	12.8
5	Implant Failure	5	6.4
6	Malalignment	4	5.1
7	Pain	2	2.6
8	Peri-prosthetic fracture - Acetabulum	1	1.3

Table 583. Reasons for First Revision in the First 90 Days Following Primary THA for Corail Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	8	28.6
2	Dislocation/Instability	7	25.0
3	Aseptic Loosening	5	17.9
4	Joint Infection	4	14.3
5	Implant Failure	2	7.1
6	Peri-prosthetic fracture - Acetabulum	1	3.6
7	Pain	1	3.6

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Table 584. Reasons for First Revision Between 91 and 365 days Following Primary THA for Corail Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	8	40.0
2	Joint Infection	5	25.0
3	Aseptic Loosening	3	15.0
4	Malalignment	2	10.0
5	Implant Failure	1	5.0
6	Pain	1	5.0

Table 585. Descriptive Statistics of Cases Receiving the Corail Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	2,292	58.84	
Age (years)	3,895	65.95 (10.24)	66.00 (14.00)
Height (cm)	3,739	169.29 (10.51)	168.00 (15.30)
Weight (kg)	3,739	88.36 (20.62)	86.18 (28.23)
BMI(kg/m^2)	3,739	30.75 (6.78)	29.94 (8.11)
Smoker - Never (%)	1,832	47.03	
Smoker - Previous (%)	1,477	37.92	
Smoker - Current (%)	580	14.89	
Smoker - Unknown (%)	6	0.15	

Table 586. Distribution of Approach Used for Corail Stem in Primary THA Cases

Approach	N	Percent
Anterior	2,282	58.6
Anterolateral	791	20.3
Posterior	653	16.8
Transtrochanteric	7	0.2
Missing/unknown/other	162	4.2

Table 587. Distribution of Head Size for Corail Stem in Primary THA Cases

Size (mm)	N	Percent
22	5	0.1
28	13	0.3
32	789	20.4
36	2,701	70.0
40	330	8.6
44	16	0.4
Missing/unknown/other	7	0.2

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Table 588. Distribution of Bearing Surface for Corail Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,292	33.2
Ceramic-on-plastic	2,554	65.6
Ceramic-on-ceramic	0	0.0
Metal-on-metal	1	0.0
Dual mobility	9	0.2
Missing/unknown/other	39	1.0

Table 589. Distribution of Polyethylene Used for Corail Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	9	0.2
XLPE	3,525	91.3
Antioxidant XLPE	1	0.0
Missing/unknown/other	326	8.4

Table 590. Volume of Cases by Surgeon and Site for the Corail Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	77 (124)	7 (111)
Cases per site	118 (212)	23 (135)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

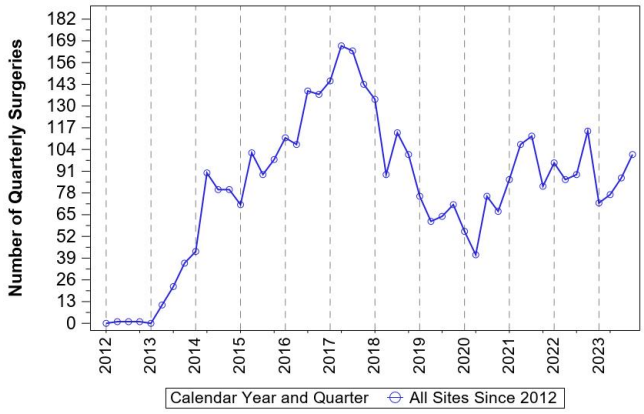


Figure 225. Utilization of the Corail Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

3L92502	L20311	L971310
3L92501	L971115	L98012
3L92503	L20315	L20309
3L92500	3L92514	L971308
3L92504	3L92515	3L92521
3L92505	L20316	L98115
3L92499	L971116	L98120
L971112	L971210	L98015
3L92512	L971109	L98018
3L92511	3L92508	L98112
L971111	3L92509	3L92518
3L92513	L20310	L20320
L971113	3L92507	L98010
L20312	L971209	L98016
L20313	3L92516	L98020
3L92506	L971118	L98113
L971110	L20318	L98114
3L92498	L98014	L98116
L20314	L98011	
L971114	L98013	
3L92510	L971208	

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4.2.11 Corail Coxa Vara

N = 832 primary cases were used for this analysis. Distribution of utilization: 32 surgeons across 27 sites used this implant in primary THA cases.

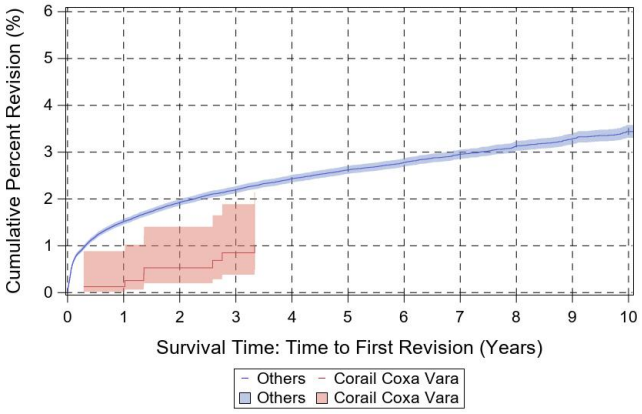


Figure 226. Cumulative Percent Revision Curve for the Corail Coxa Vara Stem, Compared to All Other Femoral Components in Primary THA Cases

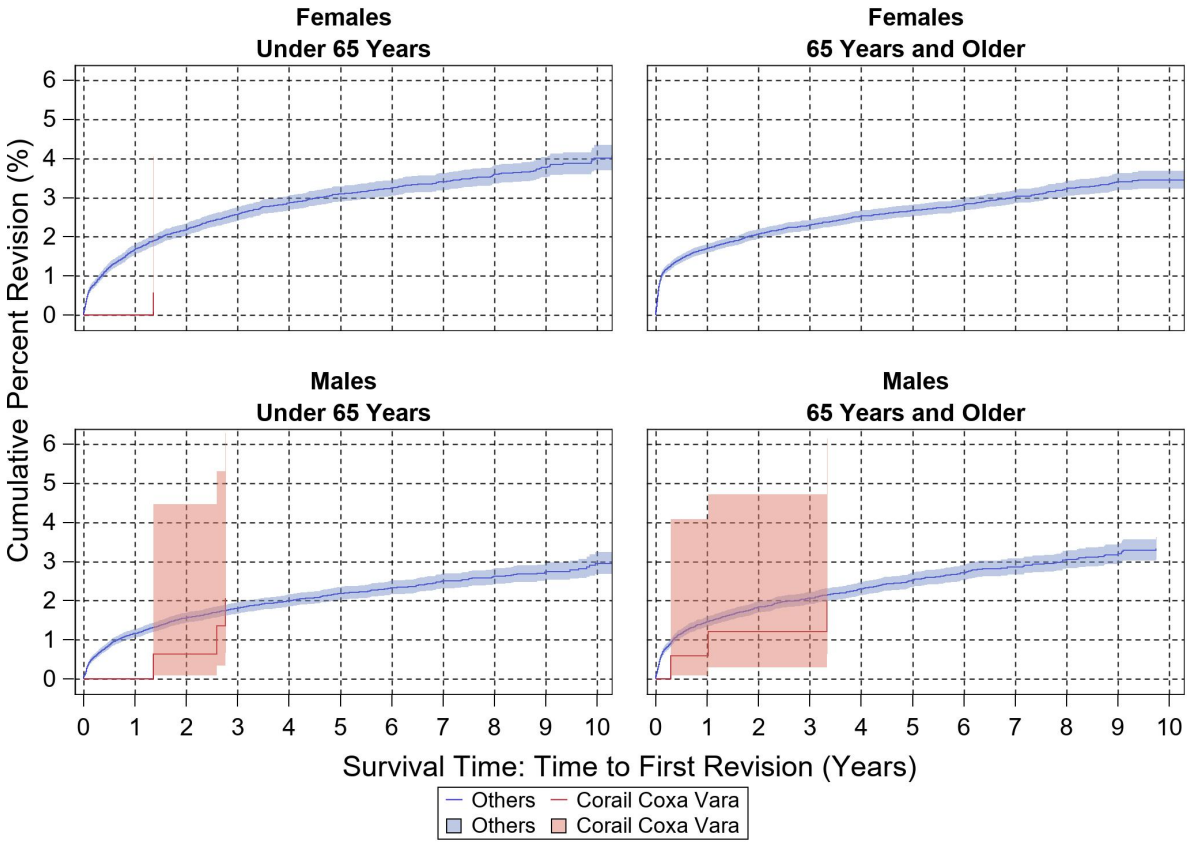


Figure 227. Cumulative Percent Revision Curve for the Corail Coxa Vara Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 591. Cumulative Percent Revision and Number at Risk for the Corail Coxa Vara Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	828	0.00 (0.00,0.00)	191	0.00 (0.00,0.00)	285	0.00 (0.00,0.00)	171	0.00 (0.00,0.00)	181	0.00 (0.00,0.00)
1	759	0.13 (0.02,0.89)	176	0.00 (0.00,0.00)	264	0.00 (0.00,0.00)	158	0.00 (0.00,0.00)	161	0.58 (0.08,4.08)
2	664	0.53 (0.20,1.41)	156	0.58 (0.08,4.05)	221	0.00 (0.00,0.00)	146	0.64 (0.09,4.46)	141	1.20 (0.30,4.72)
3	591	0.85 (0.38,1.89)	139	0.58 (0.08,4.05)	198	0.00 (0.00,0.00)	128	2.07 (0.67,6.28)	126	1.20 (0.30,4.72)
4	528	1.02 (0.49,2.14)	127	0.58 (0.08,4.05)	172	0.00 (0.00,0.00)	116	2.07 (0.67,6.28)	113	2.00 (0.64,6.14)
5	435	1.02 (0.49,2.14)	109	0.58 (0.08,4.05)	137	0.00 (0.00,0.00)	99	2.07 (0.67,6.28)	90	2.00 (0.64,6.14)
6	344	1.02 (0.49,2.14)	83	0.58 (0.08,4.05)	102	0.00 (0.00,0.00)	84	2.07 (0.67,6.28)	75	2.00 (0.64,6.14)
7	225	1.02 (0.49,2.14)	54	0.58 (0.08,4.05)	53	0.00 (0.00,0.00)	67	2.07 (0.67,6.28)	51	2.00 (0.64,6.14)
8	134	1.02 (0.49,2.14)	32	0.58 (0.08,4.05)	31	0.00 (0.00,0.00)	42	2.07 (0.67,6.28)	29	2.00 (0.64,6.14)
9	63	1.02 (0.49,2.14)	16	0.58 (0.08,4.05)	18	0.00 (0.00,0.00)	14	2.07 (0.67,6.28)	15	2.00 (0.64,6.14)
10	22	1.02 (0.49,2.14)	*	0.58 (0.08,4.05)	*	0.00 (0.00,0.00)	*	2.07 (0.67,6.28)	*	2.00 (0.64,6.14)

* Denotes that the number of cases is between 1 and 10.

Table 592. Reasons for First Revision Following Primary THA for Corail Coxa Vara Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	6	85.7
2	Dislocation/Instability	1	14.3

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 593. Reasons for First Revision Between 91 and 365 days Following Primary THA for Corail Coxa Vara Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	100.0

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Table 594. Descriptive Statistics of Cases Receiving the Corail Coxa Vara Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	478	57.45	
Age (years)	832	65.34 (9.98)	66.00 (13.00)
Height (cm)	829	169.89 (10.27)	170.18 (15.24)
Weight (kg)	829	88.35 (19.92)	86.95 (24.90)
BMI(kg/m^2)	829	30.50 (5.77)	29.71 (7.82)
Smoker - Never (%)	382	45.91	
Smoker - Previous (%)	333	40.02	
Smoker - Current (%)	116	13.94	
Smoker - Unknown (%)	1	0.12	

Table 595. Distribution of Approach Used for Corail Coxa Vara Stem in Primary THA Cases

Approach	N	Percent
Anterior	541	65.0
Anterolateral	149	17.9
Posterior	137	16.5
Transtrochanteric	0	0.0
Missing/unknown/other	5	0.6

Table 596. Distribution of Head Size for Corail Coxa Vara Stem in Primary THA Cases

Size (mm)	N	Percent
28	13	1.6
32	208	25.2
36	570	69.2
40	27	3.3
44	1	0.1
Missing/unknown/other	5	0.6

Table 597. Distribution of Bearing Surface for Corail Coxa Vara Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	218	26.2
Ceramic-on-plastic	598	71.9
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	4	0.5
Missing/unknown/other	12	1.4

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Table 598. Distribution of Polyethylene Used for Corail Coxa Vara Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	4	0.5
XLPE	755	91.5
Antioxidant XLPE	3	0.4
Missing/unknown/other	63	7.6

Table 599. Volume of Cases by Surgeon and Site for the Corail Coxa Vara Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	26 (34)	8 (41)
Cases per site	30 (44)	10 (46)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

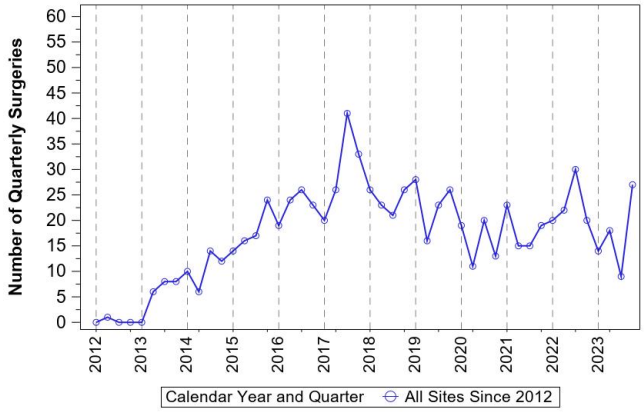


Figure 228. Utilization of the Corail Coxa Vara Stem in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

3L93712	3L93714	3L93718
3L93711	3L93715	
3L93713	3L93709	
3L93710	3L93716	

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4.2.12 Echelon

N = 511 primary cases were used for this analysis. Distribution of utilization: 16 surgeons across 12 sites used this implant in primary THA cases.

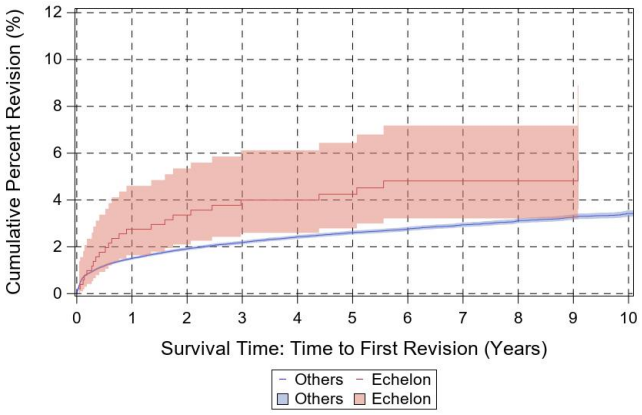


Figure 229. Cumulative Percent Revision Curve for the Echelon Stem, Compared to All Other Femoral Components in Primary THA Cases

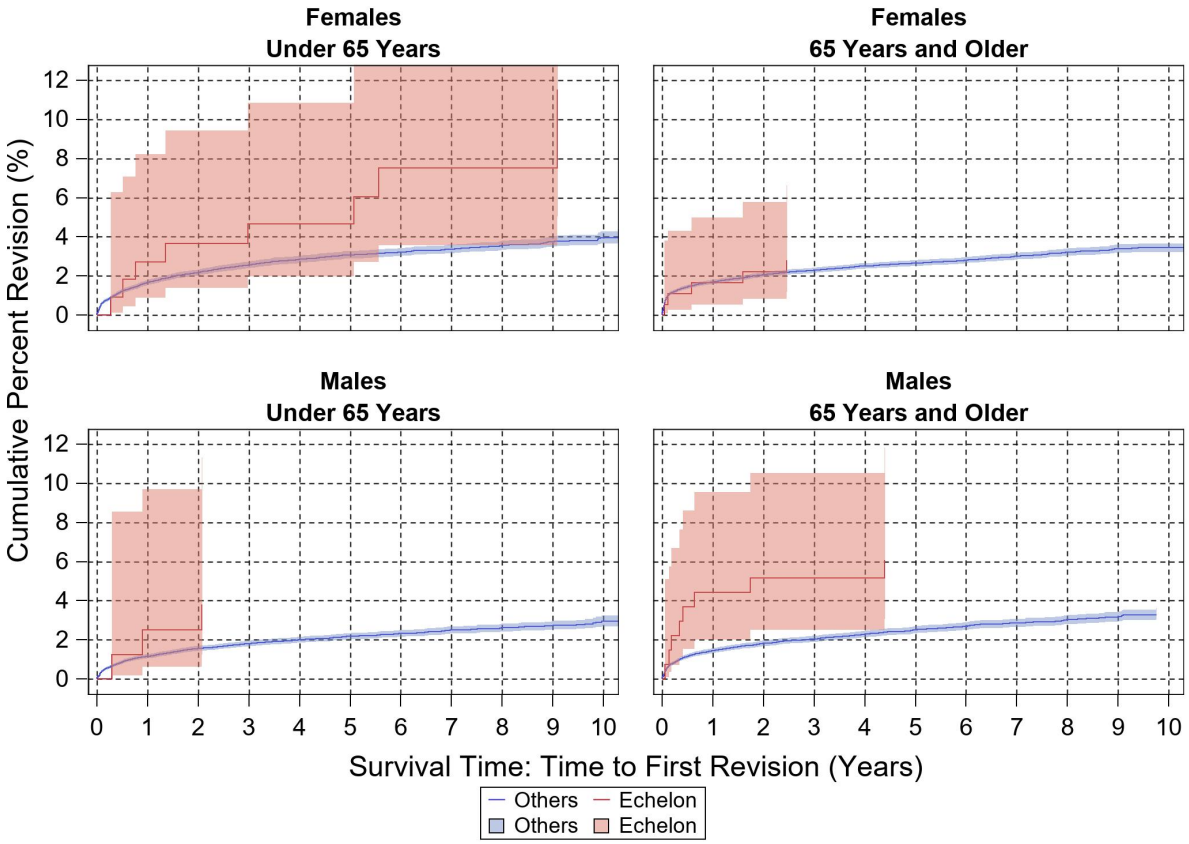


Figure 230. Cumulative Percent Revision Curve for the Echelon Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 600. Cumulative Percent Revision and Number at Risk for the Echelon Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	509	0.00 (0.00,0.00)	110	0.00 (0.00,0.00)	183	0.00 (0.00,0.00)	80	0.00 (0.00,0.00)	136	0.00 (0.00,0.00)
1	493	2.75 (1.64,4.60)	107	2.73 (0.89,8.22)	179	1.64 (0.53,5.00)	77	2.52 (0.64,9.69)	130	4.41 (2.01,9.56)
2	469	3.36 (2.10,5.35)	102	3.64 (1.38,9.42)	169	2.21 (0.83,5.78)	76	2.52 (0.64,9.69)	122	5.16 (2.50,10.53)
3	438	3.99 (2.59,6.13)	94	4.66 (1.96,10.84)	157	2.81 (1.18,6.63)	72	3.80 (1.24,11.32)	115	5.16 (2.50,10.53)
4	409	3.99 (2.59,6.13)	84	4.66 (1.96,10.84)	146	2.81 (1.18,6.63)	70	3.80 (1.24,11.32)	109	5.16 (2.50,10.53)
5	354	4.24 (2.79,6.44)	70	4.66 (1.96,10.84)	127	2.81 (1.18,6.63)	66	3.80 (1.24,11.32)	91	6.08 (3.08,11.81)
6	307	4.81 (3.21,7.18)	55	7.51 (3.58,15.38)	118	2.81 (1.18,6.63)	58	3.80 (1.24,11.32)	76	6.08 (3.08,11.81)
7	282	4.81 (3.21,7.18)	51	7.51 (3.58,15.38)	106	2.81 (1.18,6.63)	53	3.80 (1.24,11.32)	72	6.08 (3.08,11.81)
8	199	4.81 (3.21,7.18)	35	7.51 (3.58,15.38)	80	2.81 (1.18,6.63)	28	3.80 (1.24,11.32)	56	6.08 (3.08,11.81)
9	112	4.81 (3.21,7.18)	24	7.51 (3.58,15.38)	45	2.81 (1.18,6.63)	12	3.80 (1.24,11.32)	31	6.08 (3.08,11.81)
10	38	5.69 (3.61,8.90)	*	11.53 (5.05,25.15)	15	2.81 (1.18,6.63)	*	3.80 (1.24,11.32)	11	6.08 (3.08,11.81)

* Denotes that the number of cases is between 1 and 10.

Table 601. Reasons for First Revision Following Primary THA for Echelon Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	8	34.8
2	Joint Infection	4	17.4
3	Pain	4	17.4
4	Aseptic Loosening	3	13.0
5	Implant Failure	2	8.7
6	Metal Reaction/Metallosis	1	4.3
7	Malalignment	1	4.3

Table 602. Reasons for First Revision in the First 90 Days Following Primary THA for Echelon Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	2	40.0
2	Aseptic Loosening	1	20.0
3	Implant Failure	1	20.0
4	Malalignment	1	20.0

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Table 603. Reasons for First Revision Between 91 and 365 days Following Primary THA for Echelon Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	4	50.0
2	Joint Infection	2	25.0
3	Pain	2	25.0

Table 604. Descriptive Statistics of Cases Receiving the Echelon Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	294	57.53	
Age (years)	511	67.70 (10.71)	68.00 (15.00)
Height (cm)	511	169.02 (10.83)	167.64 (17.78)
Weight (kg)	511	90.49 (22.79)	88.00 (32.40)
BMI(kg/m^2)	511	31.53 (6.76)	30.73 (8.90)
Smoker - Never (%)	267	52.25	
Smoker - Previous (%)	188	36.79	
Smoker - Current (%)	54	10.57	
Smoker - Unknown (%)	2	0.39	

Table 605. Distribution of Approach Used for Echelon Stem in Primary THA Cases

Approach	N	Percent
Anterior	3	0.6
Anterolateral	24	4.7
Posterior	482	94.3
Transtrochanteric	0	0.0
Missing/unknown/other	2	0.4

Table 606. Distribution of Head Size for Echelon Stem in Primary THA Cases

Size (mm)	N	Percent
28	16	3.2
32	237	47.2
36	240	47.8
40	2	0.4
Missing/unknown/other	7	1.4

Table 607. Distribution of Bearing Surface for Echelon Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	250	48.9
Ceramic-on-plastic	245	48.0
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	3	0.6
Missing/unknown/other	13	2.5

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Table 608. Distribution of Polyethylene Used for Echelon Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	388	76.8
Antioxidant XLPE	0	0.0
Missing/unknown/other	117	23.2

Table 609. Volume of Cases by Surgeon and Site for the Echelon Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	31 (53)	1 (42)
Cases per site	42 (80)	1 (42)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

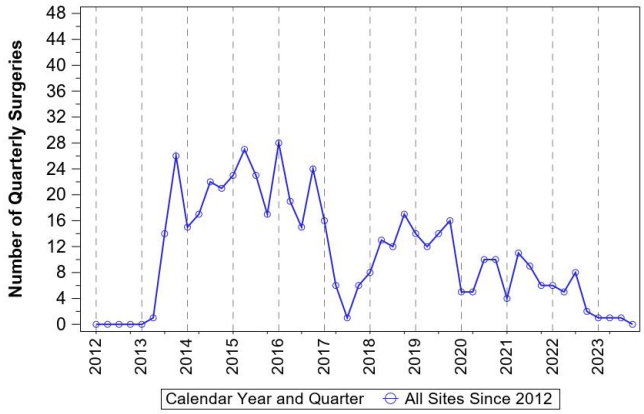


Figure 231. Utilization of the Echelon Stem in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

71341012	71341011	71310414
71341013	71341025	71340114
71341014	71341026	71340612
71341015	71341017	71341018
71341023	71341027	71341029
71341022	71340115	
71341024	71341028	
71341016	71310116	

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4.2.13 Echo Bi-Metric

N = 1,999 primary cases were used for this analysis. Distribution of utilization: 41 surgeons across 33 sites used this implant in primary THA cases.

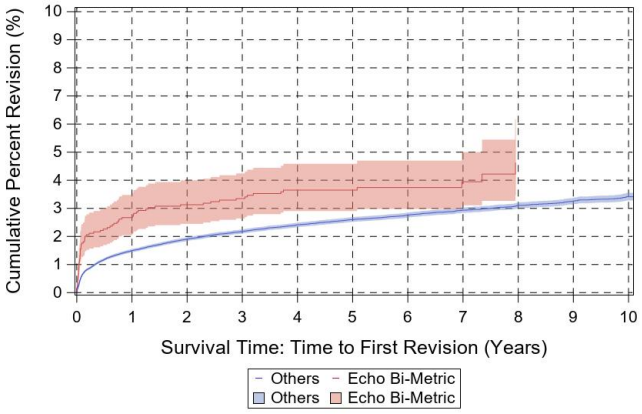


Figure 232. Cumulative Percent Revision Curve for the Echo Bi-Metric Stem, Compared to All Other Femoral Components in Primary THA Cases

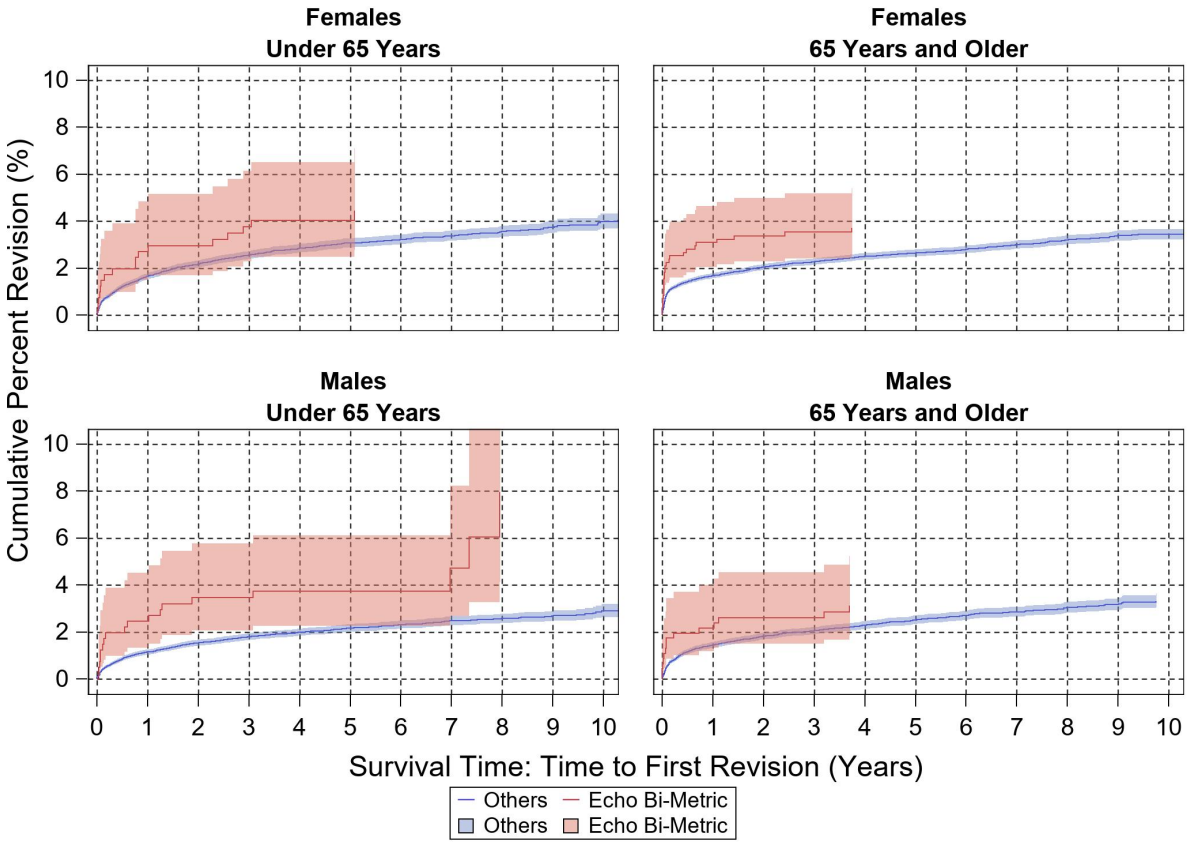


Figure 233. Cumulative Percent Revision Curve for the Echo Bi-Metric Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 610. Cumulative Percent Revision and Number at Risk for the Echo Bi-Metric Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,991	0.00 (0.00,0.00)	408	0.00 (0.00,0.00)	715	0.00 (0.00,0.00)	407	0.00 (0.00,0.00)	461	0.00 (0.00,0.00)
1	1,913	2.67 (2.05,3.48)	393	2.71 (1.51,4.84)	677	3.09 (2.04,4.65)	394	2.46 (1.33,4.52)	449	2.17 (1.17,4.00)
2	1,827	3.13 (2.45,4.00)	377	2.96 (1.69,5.15)	631	3.38 (2.28,4.99)	382	3.45 (2.06,5.76)	437	2.61 (1.49,4.54)
3	1,684	3.35 (2.64,4.24)	350	3.75 (2.28,6.15)	581	3.53 (2.40,5.18)	358	3.45 (2.06,5.76)	395	2.61 (1.49,4.54)
4	1,462	3.65 (2.90,4.58)	308	4.03 (2.49,6.50)	509	3.71 (2.54,5.41)	320	3.73 (2.26,6.11)	325	3.13 (1.86,5.23)
5	1,074	3.65 (2.90,4.58)	236	4.03 (2.49,6.50)	375	3.71 (2.54,5.41)	234	3.73 (2.26,6.11)	229	3.13 (1.86,5.23)
6	690	3.74 (2.98,4.70)	149	4.45 (2.77,7.11)	251	3.71 (2.54,5.41)	145	3.73 (2.26,6.11)	145	3.13 (1.86,5.23)
7	470	3.95 (3.11,5.00)	99	4.45 (2.77,7.11)	180	3.71 (2.54,5.41)	96	4.71 (2.68,8.23)	95	3.13 (1.86,5.23)
8	225	4.63 (3.46,6.18)	55	4.45 (2.77,7.11)	82	3.71 (2.54,5.41)	46	7.95 (4.12,15.07)	42	3.13 (1.86,5.23)
9	72	4.63 (3.46,6.18)	21	4.45 (2.77,7.11)	22	3.71 (2.54,5.41)	17	7.95 (4.12,15.07)	12	3.13 (1.86,5.23)
10	39	4.63 (3.46,6.18)	13	4.45 (2.77,7.11)	13	3.71 (2.54,5.41)	*	7.95 (4.12,15.07)	*	3.13 (1.86,5.23)

* Denotes that the number of cases is between 1 and 10.

Table 611. Reasons for First Revision Following Primary THA for Echo Bi-Metric Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	26	34.7
2	Joint Infection	17	22.7
3	Dislocation/Instability	14	18.7
4	Aseptic Loosening	10	13.3
5	Implant Failure	4	5.3
6	Malalignment	2	2.7
7	Peri-prosthetic fracture - Acetabulum	1	1.3
8	Pain	1	1.3

Table 612. Reasons for First Revision in the First 90 Days Following Primary THA for Echo Bi-Metric Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	23	54.8
2	Aseptic Loosening	6	14.3
3	Dislocation/Instability	5	11.9
4	Joint Infection	4	9.5
5	Malalignment	2	4.8
6	Implant Failure	1	2.4
7	Peri-prosthetic fracture - Acetabulum	1	2.4

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Table 613. Reasons for First Revision Between 91 and 365 days Following Primary THA for Echo Bi-Metric Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	3	27.3
2	Dislocation/Instability	3	27.3
3	Joint Infection	2	18.2
4	Implant Failure	2	18.2
5	Peri-prosthetic fracture - Femur	1	9.1

Table 614. Descriptive Statistics of Cases Receiving the Echo Bi-Metric Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,125	56.28	
Age (years)	1,999	66.45 (11.01)	67.00 (15.00)
Height (cm)	1,999	169.56 (10.46)	168.91 (15.30)
Weight (kg)	1,999	89.22 (22.43)	87.09 (29.73)
BMI(kg/m^2)	1,999	30.90 (6.75)	29.92 (8.88)
Smoker - Never (%)	932	46.62	
Smoker - Previous (%)	744	37.22	
Smoker - Current (%)	318	15.91	
Smoker - Unknown (%)	5	0.25	

Table 615. Distribution of Approach Used for Echo Bi-Metric Stem in Primary THA Cases

Approach	N	Percent
Anterior	135	6.8
Anterolateral	63	3.1
Posterior	1,794	89.7
Transtrochanteric	1	0.1
Missing/unknown/other	6	0.3

Table 616. Distribution of Head Size for Echo Bi-Metric Stem in Primary THA Cases

Size (mm)	N	Percent
28	8	0.5
32	286	16.0
36	931	52.2
40	547	30.7
Missing/unknown/other	11	0.6

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Table 617. Distribution of Bearing Surface for Echo Bi-Metric Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	320	16.0
Ceramic-on-plastic	1,452	72.6
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	209	10.5
Missing/unknown/other	18	0.9

Table 618. Distribution of Polyethylene Used for Echo Bi-Metric Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	6	0.3
XLPE	768	38.6
Antioxidant XLPE	594	29.9
Missing/unknown/other	622	31.3

Table 619. Volume of Cases by Surgeon and Site for the Echo Bi-Metric Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	48 (126)	5 (47)
Cases per site	60 (149)	12 (53)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

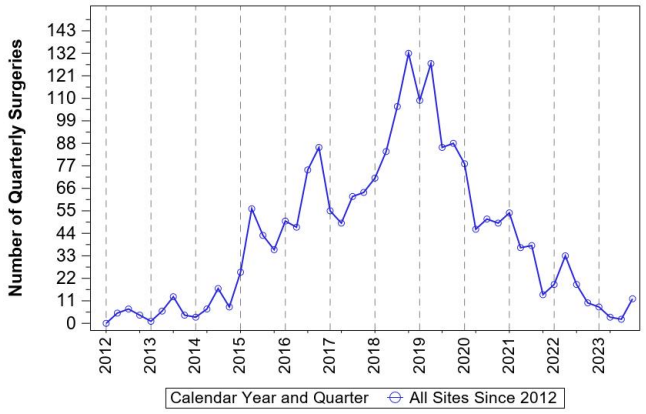


Figure 234. Utilization of the Echo Bi-Metric Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

192010	192412	192514
192012	192509	192017
192011	192413	192007
192113	192512	192107
192112	192008	192118
192111	192016	192515
192110	192116	192018
192013	192414	192416
192114	192510	192417
192014	192108	192516
192009	192513	192019
192411	192511	192020
192015	192408	192119
192109	192508	192517
192115	192407	192518
192410	192415	
192409	192117	

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4.2.14 Echo Bi-Metric Microplasty

N = 2,112 primary cases were used for this analysis. Distribution of utilization: 27 surgeons across 28 sites used this implant in primary THA cases.

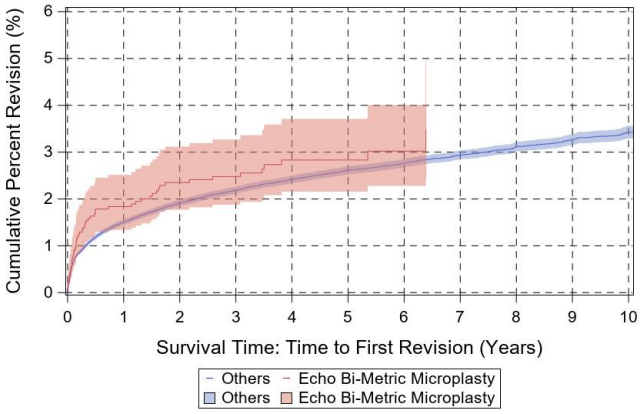


Figure 235. Cumulative Percent Revision Curve for the Echo Bi-Metric Microplasty Stem, Compared to All Other Femoral Components in Primary THA Cases

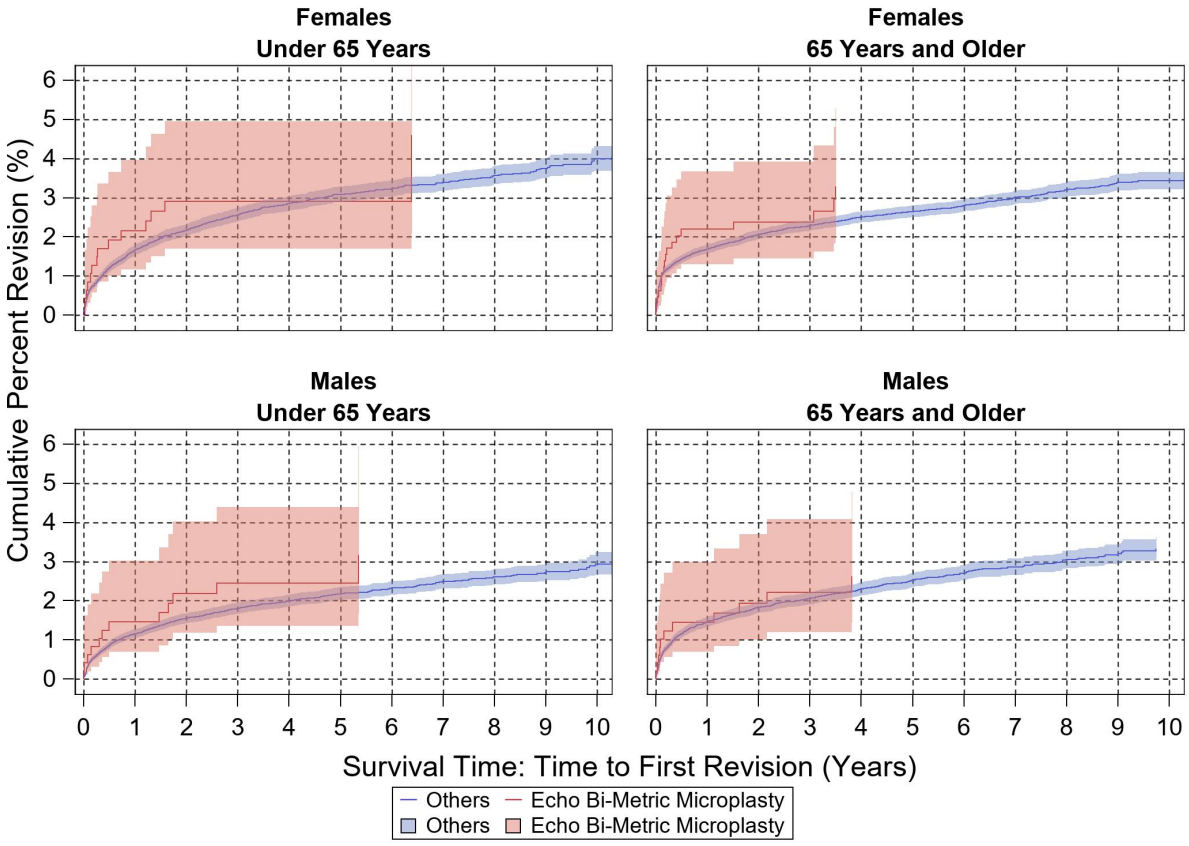


Figure 236. Cumulative Percent Revision Curve for the Echo Bi-Metric Microplasty Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 620. Cumulative Percent Revision and Number at Risk for the Echo Bi-Metric Microplasty Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	2,109	0.00 (0.00,0.00)	477	0.00 (0.00,0.00)	650	0.00 (0.00,0.00)	488	0.00 (0.00,0.00)	493	0.00 (0.00,0.00)
1	1,817	1.84 (1.34,2.51)	408	2.16 (1.16,3.97)	556	2.19 (1.30,3.67)	434	1.45 (0.70,3.03)	418	1.44 (0.69,3.00)
2	1,620	2.35 (1.77,3.12)	373	2.90 (1.69,4.95)	481	2.38 (1.44,3.92)	393	2.18 (1.18,4.03)	372	1.94 (1.01,3.70)
3	1,314	2.48 (1.88,3.27)	308	2.90 (1.69,4.95)	365	2.38 (1.44,3.92)	337	2.45 (1.36,4.39)	304	2.21 (1.19,4.08)
4	922	2.83 (2.16,3.71)	223	2.90 (1.69,4.95)	256	3.29 (2.04,5.28)	227	2.45 (1.36,4.39)	216	2.62 (1.43,4.78)
5	583	2.83 (2.16,3.71)	160	2.90 (1.69,4.95)	154	3.29 (2.04,5.28)	152	2.45 (1.36,4.39)	117	2.62 (1.43,4.78)
6	330	3.02 (2.28,4.01)	98	2.90 (1.69,4.95)	82	3.29 (2.04,5.28)	82	3.17 (1.68,5.95)	68	2.62 (1.43,4.78)
7	85	3.48 (2.44,4.96)	27	4.60 (2.07,10.06)	16	3.29 (2.04,5.28)	26	3.17 (1.68,5.95)	16	2.62 (1.43,4.78)
8	*	3.48 (2.44,4.96)	0	N/A	*	3.29 (2.04,5.28)	*	3.17 (1.68,5.95)	*	2.62 (1.43,4.78)
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 621. Reasons for First Revision Following Primary THA for Echo Bi-Metric Microplasty Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	22	40.0
2	Aseptic Loosening	10	18.2
3	Dislocation/Instability	9	16.4
4	Joint Infection	6	10.9
5	Pain	3	5.5
6	Malalignment	3	5.5
7	Implant Failure	2	3.6

Table 622. Reasons for First Revision in the First 90 Days Following Primary THA for Echo Bi-Metric Microplasty Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	19	70.4
2	Aseptic Loosening	3	11.1
3	Dislocation/Instability	3	11.1
4	Pain	1	3.7
5	Malalignment	1	3.7

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Table 623. Reasons for First Revision Between 91 and 365 days Following Primary THA for Echo Bi-Metric Microplasty Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	3	27.3
2	Dislocation/Instability	3	27.3
3	Joint Infection	2	18.2
4	Implant Failure	2	18.2
5	Pain	1	9.1

Table 624. Descriptive Statistics of Cases Receiving the Echo Bi-Metric Microplasty Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,127	53.36	
Age (years)	2,112	65.28 (10.37)	66.00 (15.00)
Height (cm)	2,112	170.02 (10.67)	170.18 (15.24)
Weight (kg)	2,112	87.91 (19.89)	87.27 (26.00)
BMI(kg/m^2)	2,112	30.39 (7.33)	29.80 (7.88)
Smoker - Never (%)	1,047	49.57	
Smoker - Previous (%)	740	35.04	
Smoker - Current (%)	320	15.15	
Smoker - Unknown (%)	5	0.24	

Table 625. Distribution of Approach Used for Echo Bi-Metric Microplasty Stem in Primary THA Cases

Approach	N	Percent
Anterior	1,582	74.9
Anterolateral	50	2.4
Posterior	476	22.5
Transtrochanteric	3	0.1
Missing/unknown/other	1	0.1

Table 626. Distribution of Head Size for Echo Bi-Metric Microplasty Stem in Primary THA Cases

Size (mm)	N	Percent
28	1	0.1
32	291	15.3
36	1,329	69.7
40	276	14.5
Missing/unknown/other	10	0.5

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Table 627. Distribution of Bearing Surface for Echo Bi-Metric Microplasty Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	280	13.3
Ceramic-on-plastic	1,617	76.6
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	176	8.3
Missing/unknown/other	39	1.9

Table 628. Distribution of Polyethylene Used for Echo Bi-Metric Microplasty Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,066	51.2
Antioxidant XLPE	479	23.0
Missing/unknown/other	537	25.8

Table 629. Volume of Cases by Surgeon and Site for the Echo Bi-Metric Microplasty Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	78 (120)	7 (125)
Cases per site	75 (116)	15 (105)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

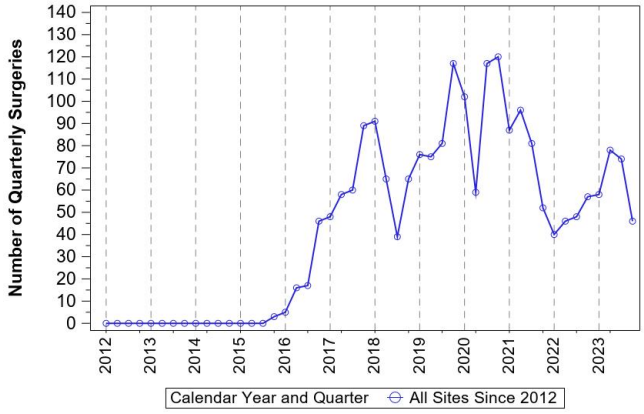


Figure 237. Utilization of the Echo Bi-Metric Microplasty Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

193012	193009	192807
193112	193109	193007
193111	193115	193118
193113	193015	193018
193010	193108	193107
193011	193008	192907
193013	193116	192908
193110	193016	193019
193014	193117	193119
193114	193017	

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4.2.15 Fitmore

N = 6,201 primary cases were used for this analysis. Distribution of utilization: 54 surgeons across 32 sites used this implant in primary THA cases.

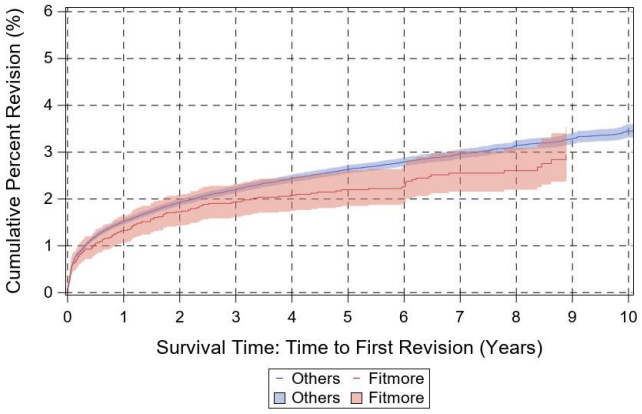


Figure 238. Cumulative Percent Revision Curve for the Fitmore Stem, Compared to All Other Femoral Components in Primary THA Cases

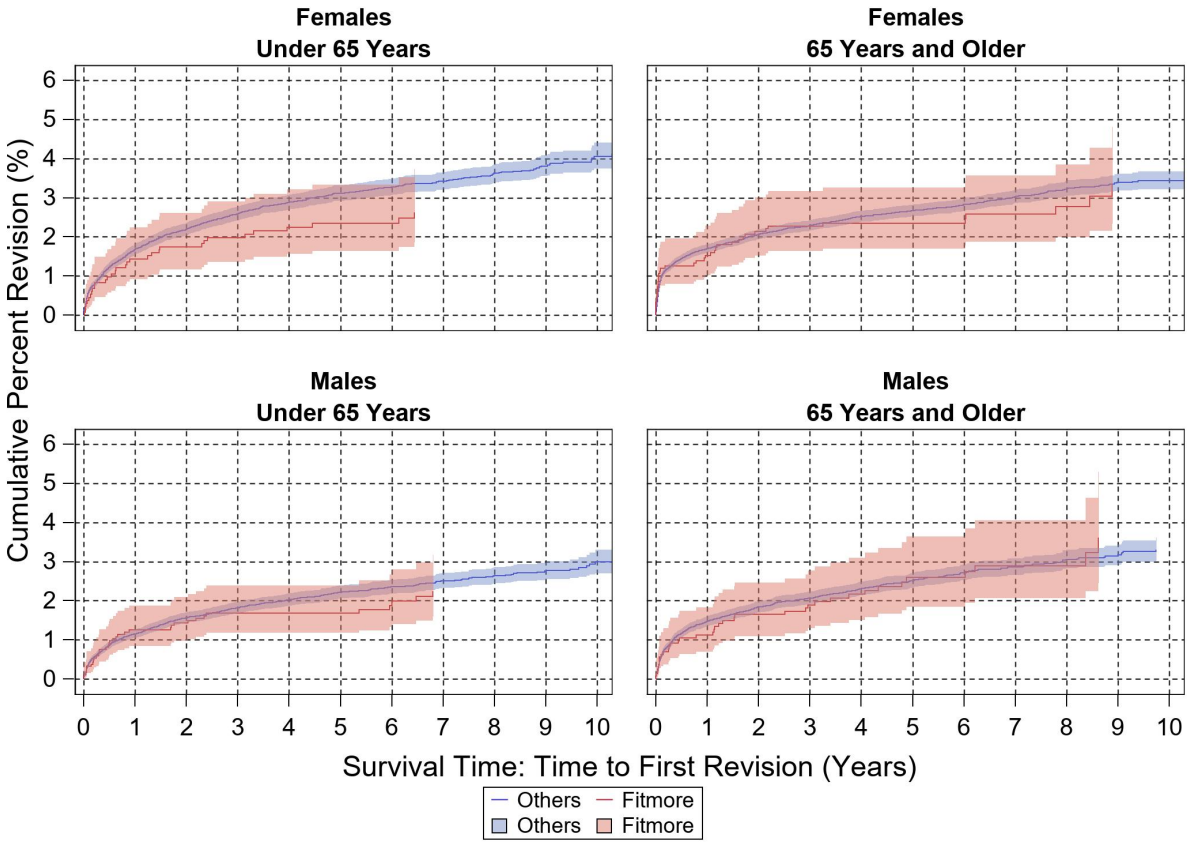


Figure 239. Cumulative Percent Revision Curve for the Fitmore Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 630. Cumulative Percent Revision and Number at Risk for the Fitmore Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	6,171	0.00 (0.00,0.00)	1,334	0.00 (0.00,0.00)	1,516	0.00 (0.00,0.00)	1,878	0.00 (0.00,0.00)	1,443	0.00 (0.00,0.00)
1	5,821	1.33 (1.07,1.65)	1,286	1.43 (0.92,2.24)	1,457	1.52 (1.01,2.28)	1,737	1.25 (0.83,1.88)	1,341	1.12 (0.69,1.83)
2	5,575	1.72 (1.42,2.09)	1,251	1.74 (1.16,2.61)	1,419	2.14 (1.52,3.01)	1,627	1.43 (0.98,2.09)	1,278	1.65 (1.10,2.47)
3	5,210	1.94 (1.62,2.32)	1,190	1.98 (1.35,2.90)	1,357	2.27 (1.63,3.17)	1,488	1.68 (1.17,2.39)	1,175	1.89 (1.29,2.77)
4	4,575	2.08 (1.75,2.48)	1,055	2.24 (1.56,3.21)	1,194	2.35 (1.69,3.26)	1,322	1.68 (1.17,2.39)	1,004	2.16 (1.50,3.10)
5	3,824	2.20 (1.85,2.61)	892	2.34 (1.64,3.34)	1,002	2.35 (1.69,3.26)	1,107	1.68 (1.17,2.39)	823	2.59 (1.84,3.65)
6	3,156	2.26 (1.90,2.68)	734	2.34 (1.64,3.34)	829	2.35 (1.69,3.26)	917	1.88 (1.32,2.66)	676	2.59 (1.84,3.65)
7	2,399	2.55 (2.16,3.02)	563	2.63 (1.85,3.72)	661	2.59 (1.87,3.57)	666	2.24 (1.59,3.17)	509	2.89 (2.06,4.05)
8	1,654	2.61 (2.20,3.09)	397	2.63 (1.85,3.72)	468	2.77 (2.00,3.85)	444	2.24 (1.59,3.17)	345	2.89 (2.06,4.05)
9	922	2.94 (2.44,3.54)	207	2.63 (1.85,3.72)	282	3.36 (2.34,4.81)	233	2.24 (1.59,3.17)	200	3.61 (2.45,5.29)
10	367	2.94 (2.44,3.54)	80	2.63 (1.85,3.72)	114	3.36 (2.34,4.81)	83	2.24 (1.59,3.17)	90	3.61 (2.45,5.29)

Table 631. Reasons for First Revision Following Primary THA for Fitmore Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	39	27.9
2	Dislocation/Instability	30	21.4
3	Aseptic Loosening	24	17.1
4	Joint Infection	22	15.7
5	Implant Failure	9	6.4
6	Pain	9	6.4
7	Malalignment	6	4.3
8	Peri-prosthetic fracture - Acetabulum	1	0.7

Table 632. Reasons for First Revision in the First 90 Days Following Primary THA for Fitmore Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	26	52.0
2	Dislocation/Instability	14	28.0
3	Implant Failure	5	10.0
4	Joint Infection	2	4.0
5	Malalignment	2	4.0
6	Peri-prosthetic fracture - Acetabulum	1	2.0

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Table 633. Reasons for First Revision Between 91 and 365 days Following Primary THA for Fitmore Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	7	23.3
2	Dislocation/Instability	7	23.3
3	Pain	5	16.7
4	Joint Infection	3	10.0
5	Implant Failure	3	10.0
6	Peri-prosthetic fracture - Femur	3	10.0
7	Malalignment	2	6.7

Table 634. Descriptive Statistics of Cases Receiving the Fitmore Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	2,862	46.15	
Age (years)	6,201	63.76 (10.16)	64.00 (14.00)
Height (cm)	6,071	171.58 (10.36)	172.70 (17.00)
Weight (kg)	6,071	89.90 (20.82)	88.35 (28.10)
BMI(kg/m^2)	6,071	30.40 (6.02)	29.58 (7.84)
Smoker - Never (%)	3,057	49.3	
Smoker - Previous (%)	2,380	38.38	
Smoker - Current (%)	754	12.16	
Smoker - Unknown (%)	10	0.16	

Table 635. Distribution of Approach Used for Fitmore Stem in Primary THA Cases

Approach	N	Percent
Anterior	4,927	79.5
Anterolateral	51	0.8
Posterior	1,087	17.5
Transtrochanteric	4	0.1
Missing/unknown/other	132	2.1

Table 636. Distribution of Head Size for Fitmore Stem in Primary THA Cases

Size (mm)	N	Percent
22	1	0.0
28	7	0.1
32	804	13.4
36	4,373	72.8
40	775	12.9
Missing/unknown/other	51	0.8

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Table 637. Distribution of Bearing Surface for Fitmore Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,158	18.7
Ceramic-on-plastic	4,802	77.4
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	138	2.2
Missing/unknown/other	103	1.7

Table 638. Distribution of Polyethylene Used for Fitmore Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	2	0.0
XLPE	1,729	28.1
Antioxidant XLPE	3,584	58.3
Missing/unknown/other	831	13.5

Table 639. Volume of Cases by Surgeon and Site for the Fitmore Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	114 (373)	8 (51)
Cases per site	193 (417)	20 (155)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

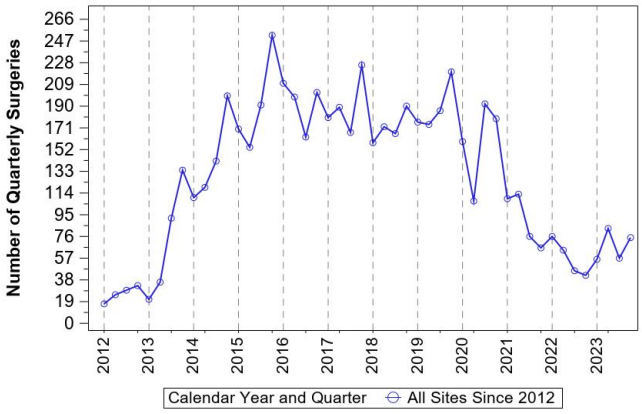


Figure 240. Utilization of the Fitmore Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

100551306	100551207	100551102
100551305	100551301	100551106
100551304	100551409	100551313
100551307	100551403	100551412
100551308	100551203	100551212
100551303	100551208	100551104
100551309	100551401	100551108
100551407	100551311	100551103
100551406	100551410	100551314
100551405	100551201	100551105
100551302	100551402	100551107
100551408	100551202	100551110
100551310	100551210	100551109
100551206	100551209	100551213
100551404	100551411	
100551205	100551312	
100551204	100551211	

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4.2.16 Insignia

N = 3,177 primary cases were used for this analysis. Distribution of utilization: 54 surgeons across 41 sites used this implant in primary THA cases.

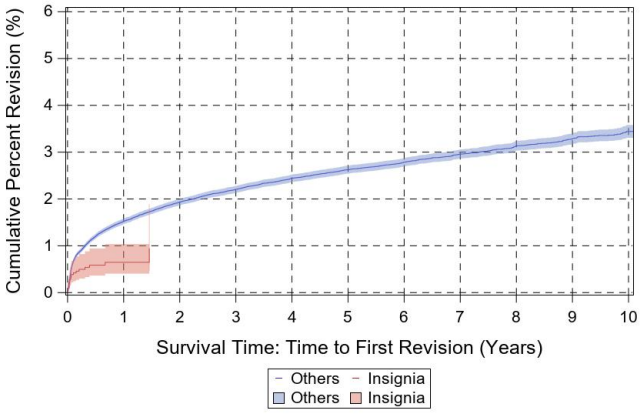


Figure 241. Cumulative Percent Revision Curve for the Insignia Stem, Compared to All Other Femoral Components in Primary THA Cases

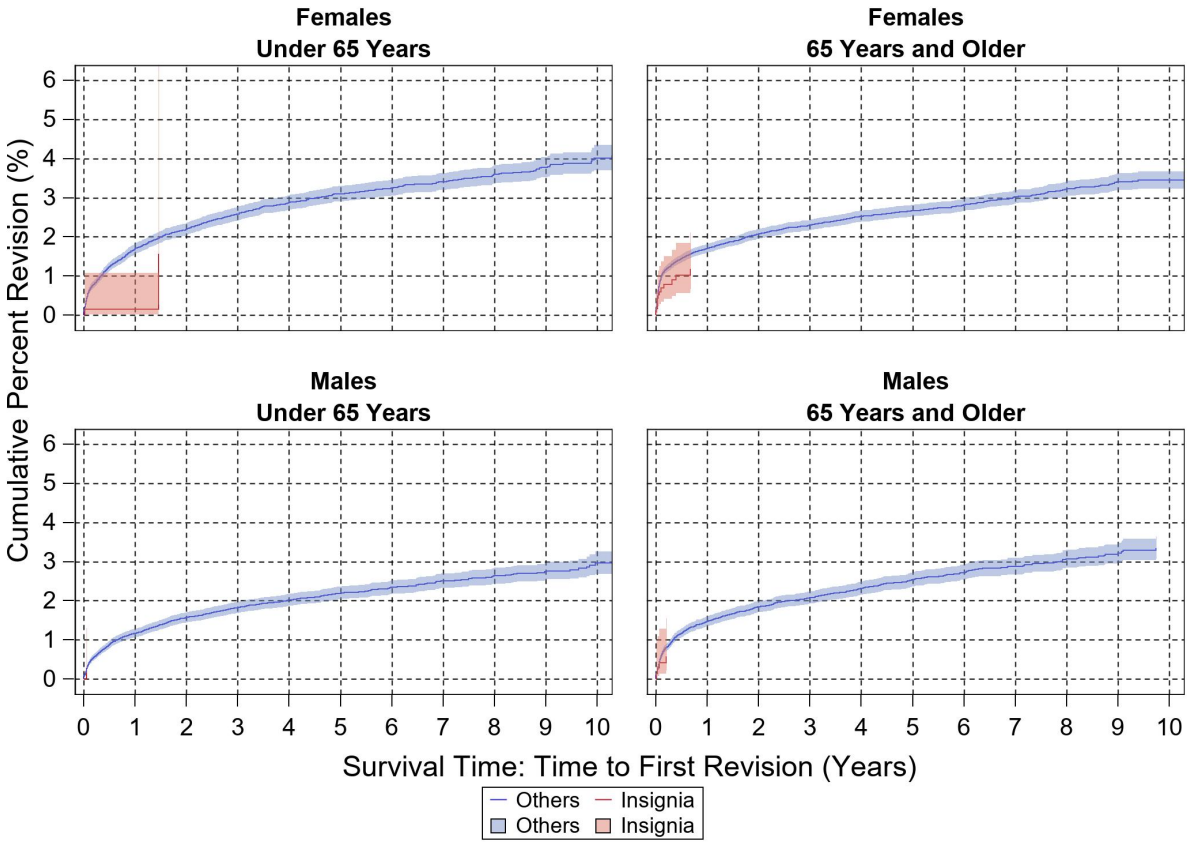


Figure 242. Cumulative Percent Revision Curve for the Insignia Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 640. Cumulative Percent Revision and Number at Risk for the Insignia Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,171	0.00 (0.00,0.00)	665	0.00 (0.00,0.00)	1,196	0.00 (0.00,0.00)	575	0.00 (0.00,0.00)	735	0.00 (0.00,0.00)
1	1,005	0.65 (0.40,1.04)	207	0.15 (0.02,1.08)	379	1.18 (0.66,2.11)	174	0.18 (0.03,1.30)	245	0.58 (0.22,1.54)
2	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
3	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
4	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
5	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
6	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
7	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

Table 641. Reasons for First Revision Following Primary THA for Insignia Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	7	36.8
2	Aseptic Loosening	4	21.1
3	Dislocation/Instability	4	21.1
4	Joint Infection	3	15.8
5	Implant Failure	1	5.3

Table 642. Reasons for First Revision in the First 90 Days Following Primary THA for Insignia Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	7	46.7
2	Dislocation/Instability	3	20.0
3	Aseptic Loosening	2	13.3
4	Joint Infection	2	13.3
5	Implant Failure	1	6.7

Table 643. Reasons for First Revision Between 91 and 365 days Following Primary THA for Insignia Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	33.3
2	Dislocation/Instability	1	33.3
3	Joint Infection	1	33.3

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Table 644. Descriptive Statistics of Cases Receiving the Insignia Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,864	58.67	
Age (years)	3,177	66.12 (10.54)	67.00 (13.00)
Height (cm)	3,177	169.11 (9.95)	168.00 (13.80)
Weight (kg)	3,177	88.29 (21.12)	86.50 (28.88)
BMI(kg/m^2)	3,177	30.73 (6.26)	30.15 (8.46)
Smoker - Never (%)	1,682	52.94	
Smoker - Previous (%)	1,131	35.6	
Smoker - Current (%)	358	11.27	
Smoker - Unknown (%)	6	0.19	

Table 645. Distribution of Approach Used for Insignia Stem in Primary THA Cases

Approach	N	Percent
Anterior	1,981	62.4
Anterolateral	187	5.9
Posterior	1,008	31.7
Transtrochanteric	0	0.0
Missing/unknown/other	1	0.0

Table 646. Distribution of Head Size for Insignia Stem in Primary THA Cases

Size (mm)	N	Percent
22	1	0.0
28	1	0.0
32	186	6.6
36	2,380	85.0
40	218	7.8
44	6	0.2
Missing/unknown/other	8	0.3

Table 647. Distribution of Bearing Surface for Insignia Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	47	1.5
Ceramic-on-plastic	2,745	86.4
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	347	10.9
Missing/unknown/other	38	1.2

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Table 648. Distribution of Polyethylene Used for Insignia Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	104	3.3
Antioxidant XLPE	0	0.0
Missing/unknown/other	3,018	96.7

Table 649. Volume of Cases by Surgeon and Site for the Insignia Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	58 (101)	19 (68)
Cases per site	77 (122)	46 (72)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

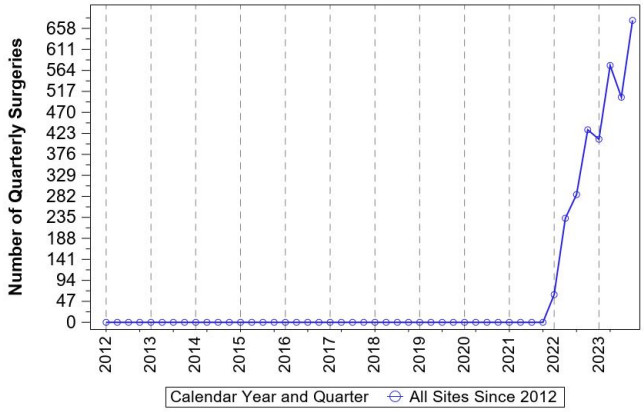


Figure 243. Utilization of the Insignia Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

70006605	70006607	70005502
70006604	70005503	70005508
70006606	70005506	70006601
70006603	70006602	
70005505	70005507	
70005504	70006608	

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4.2.17 Integral X

N = 598 primary cases were used for this analysis. Distribution of utilization: 10 surgeons used this implant at fewer than 10 sites in primary THA cases.

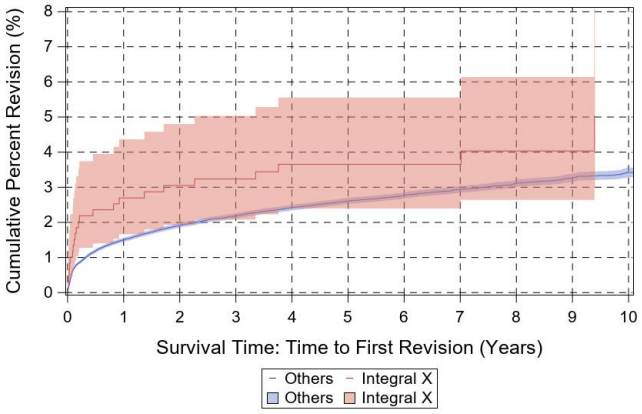


Figure 244. Cumulative Percent Revision Curve for the Integral X Stem, Compared to All Other Femoral Components in Primary THA Cases

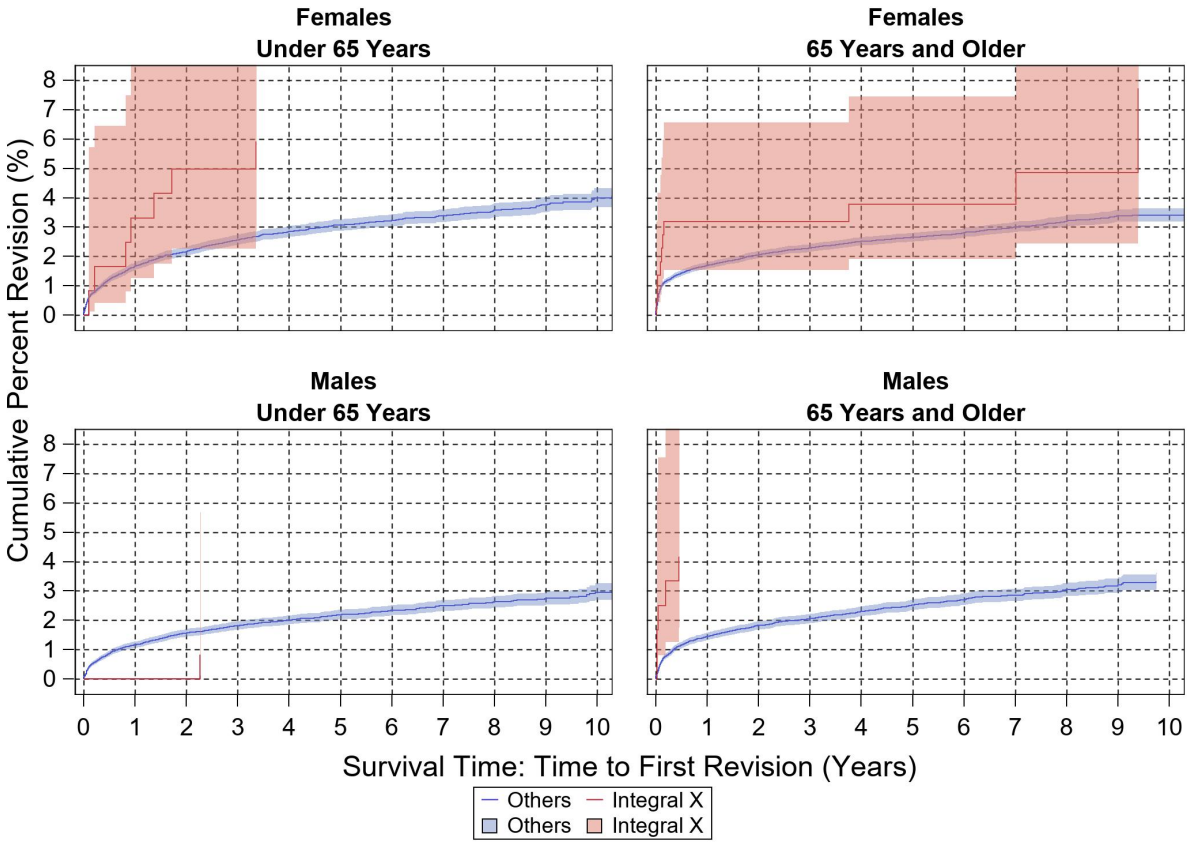


Figure 245. Cumulative Percent Revision Curve for the Integral X Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 650. Cumulative Percent Revision and Number at Risk for the Integral X Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	594	0.00 (0.00,0.00)	121	0.00 (0.00,0.00)	220	0.00 (0.00,0.00)	133	0.00 (0.00,0.00)	120	0.00 (0.00,0.00)
1	568	2.70 (1.66,4.36)	117	3.31 (1.25,8.57)	208	3.18 (1.53,6.56)	131	0.00 (0.00,0.00)	112	4.17 (1.76,9.72)
2	535	3.05 (1.93,4.80)	114	4.97 (2.27,10.73)	190	3.18 (1.53,6.56)	125	0.00 (0.00,0.00)	106	4.17 (1.76,9.72)
3	491	3.24 (2.08,5.03)	107	4.97 (2.27,10.73)	171	3.18 (1.53,6.56)	114	0.82 (0.12,5.68)	99	4.17 (1.76,9.72)
4	450	3.65 (2.39,5.56)	95	5.92 (2.86,12.04)	160	3.78 (1.90,7.44)	107	0.82 (0.12,5.68)	88	4.17 (1.76,9.72)
5	399	3.65 (2.39,5.56)	80	5.92 (2.86,12.04)	137	3.78 (1.90,7.44)	103	0.82 (0.12,5.68)	79	4.17 (1.76,9.72)
6	326	3.65 (2.39,5.56)	66	5.92 (2.86,12.04)	117	3.78 (1.90,7.44)	81	0.82 (0.12,5.68)	62	4.17 (1.76,9.72)
7	258	3.65 (2.39,5.56)	58	5.92 (2.86,12.04)	91	3.78 (1.90,7.44)	59	0.82 (0.12,5.68)	50	4.17 (1.76,9.72)
8	209	4.03 (2.64,6.14)	51	5.92 (2.86,12.04)	67	4.85 (2.44,9.50)	47	0.82 (0.12,5.68)	44	4.17 (1.76,9.72)
9	137	4.03 (2.64,6.14)	35	5.92 (2.86,12.04)	42	4.85 (2.44,9.50)	33	0.82 (0.12,5.68)	27	4.17 (1.76,9.72)
10	58	5.04 (3.01,8.40)	11	5.92 (2.86,12.04)	17	7.73 (3.33,17.39)	15	0.82 (0.12,5.68)	15	4.17 (1.76,9.72)

Table 651. Reasons for First Revision Following Primary THA for Integral X Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	8	36.4
2	Peri-prosthetic fracture - Femur	7	31.8
3	Pain	3	13.6
4	Aseptic Loosening	2	9.1
5	Joint Infection	1	4.5
6	Implant Failure	1	4.5

Table 652. Reasons for First Revision in the First 90 Days Following Primary THA for Integral X Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	6	50.0
2	Dislocation/Instability	4	33.3
3	Pain	2	16.7

Table 653. Reasons for First Revision Between 91 and 365 days Following Primary THA for Integral X Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	33.3
2	Joint Infection	1	33.3
3	Pain	1	33.3

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Table 654. Descriptive Statistics of Cases Receiving the Integral X Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	342	57.19	
Age (years)	598	66.44 (10.59)	67.00 (15.00)
Height (cm)	598	169.29 (10.90)	170.18 (17.78)
Weight (kg)	598	87.19 (18.51)	86.50 (24.75)
BMI(kg/m^2)	598	30.36 (5.54)	30.01 (7.24)
Smoker - Never (%)	240	40.13	
Smoker - Previous (%)	251	41.97	
Smoker - Current (%)	107	17.89	
Smoker - Unknown (%)	0	0.0	

Table 655. Distribution of Approach Used for Integral X Stem in Primary THA Cases

Approach	N	Percent
Anterior	3	0.5
Anterolateral	68	11.4
Posterior	523	87.5
Transtrochanteric	2	0.3
Missing/unknown/other	2	0.3

Table 656. Distribution of Head Size for Integral X Stem in Primary THA Cases

Size (mm)	N	Percent
28	4	0.7
32	60	10.2
36	475	80.5
40	49	8.3
Missing/unknown/other	2	0.3

Table 657. Distribution of Bearing Surface for Integral X Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	321	53.7
Ceramic-on-plastic	267	44.6
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	6	1.0
Missing/unknown/other	4	0.7

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Table 658. Distribution of Polyethylene Used for Integral X Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	2	0.3
XLPE	45	7.5
Antioxidant XLPE	460	77.2
Missing/unknown/other	89	14.9

Table 659. Volume of Cases by Surgeon and Site for the Integral X Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	59 (153)	4 (18)
Cases per site	85 (182)	14 (58)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

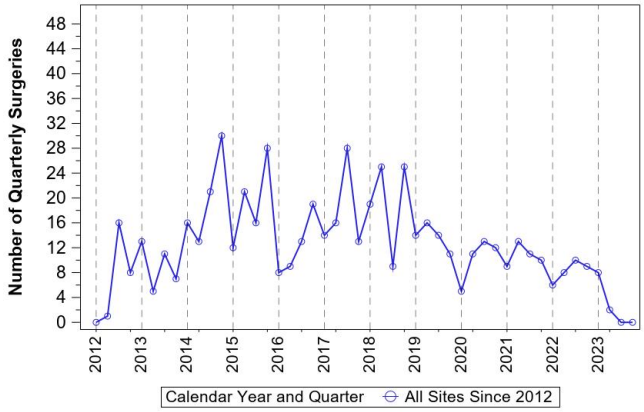


Figure 246. Utilization of the Integral X Stem in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

X11170310
X11170311
X11170312
X11170309
X11170308
X11170313
X170307
X12171310
X170310
X170311
X170312
X12171308
X12171309
X12171312
X11170314
X12171311
X170313
X170309
X12171313
X170314
X12171307
X170308
X170315
X11170315
X170316
X170317

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4.2.18 M/L Taper

This analysis excludes M/L Taper Kinectiv. N = 16,584 primary cases were used for this analysis. Distribution of utilization: 82 surgeons across 42 sites used this implant in primary THA cases.

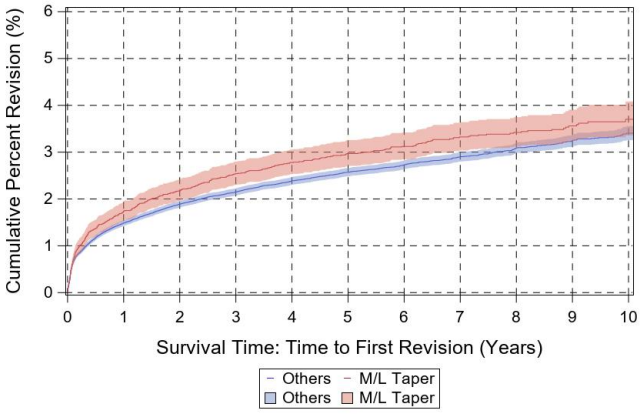


Figure 247. Cumulative Percent Revision Curve for the M/L Taper Stem, Compared to All Other Femoral Components in Primary THA Cases

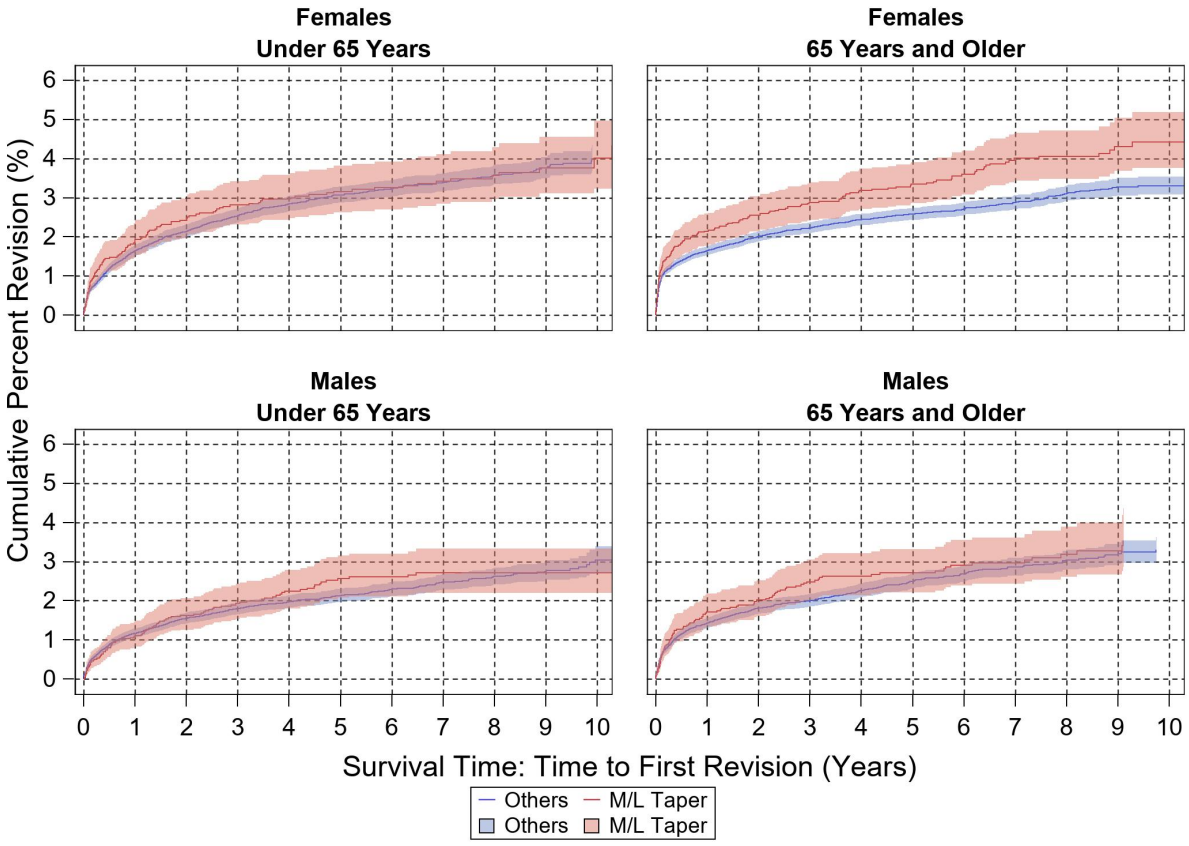


Figure 248. Cumulative Percent Revision Curve for the M/L Taper Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 660. Cumulative Percent Revision and Number at Risk for the M/L Taper Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	16,464	0.00 (0.00,0.00)	3,698	0.00 (0.00,0.00)	4,965	0.00 (0.00,0.00)	3,965	0.00 (0.00,0.00)	3,836	0.00 (0.00,0.00)
1	15,001	1.74 (1.55,1.95)	3,383	1.90 (1.51,2.40)	4,500	2.14 (1.77,2.59)	3,653	1.11 (0.82,1.49)	3,465	1.71 (1.34,2.18)
2	13,550	2.17 (1.95,2.41)	3,075	2.41 (1.96,2.97)	4,073	2.55 (2.14,3.04)	3,304	1.61 (1.26,2.07)	3,098	2.01 (1.61,2.52)
3	12,171	2.54 (2.30,2.80)	2,749	2.81 (2.31,3.42)	3,687	2.88 (2.44,3.40)	2,983	1.93 (1.53,2.43)	2,752	2.48 (2.02,3.05)
4	10,928	2.78 (2.53,3.05)	2,491	2.96 (2.44,3.58)	3,347	3.19 (2.71,3.74)	2,665	2.24 (1.80,2.79)	2,425	2.63 (2.14,3.22)
5	9,625	2.97 (2.71,3.26)	2,208	3.16 (2.62,3.81)	2,968	3.34 (2.85,3.91)	2,342	2.56 (2.08,3.15)	2,107	2.71 (2.22,3.31)
6	8,351	3.12 (2.85,3.42)	1,918	3.26 (2.70,3.92)	2,570	3.59 (3.07,4.19)	2,022	2.60 (2.11,3.20)	1,841	2.91 (2.39,3.55)
7	6,933	3.32 (3.03,3.64)	1,603	3.42 (2.84,4.12)	2,115	4.00 (3.44,4.66)	1,685	2.71 (2.20,3.33)	1,530	2.97 (2.43,3.61)
8	5,203	3.42 (3.12,3.75)	1,201	3.56 (2.96,4.29)	1,555	4.05 (3.48,4.72)	1,292	2.71 (2.20,3.33)	1,155	3.18 (2.60,3.88)
9	3,521	3.56 (3.24,3.91)	795	3.76 (3.11,4.55)	1,043	4.31 (3.68,5.05)	912	2.71 (2.20,3.33)	771	3.27 (2.67,4.00)
10	1,738	3.70 (3.36,4.08)	378	4.00 (3.23,4.96)	514	4.42 (3.76,5.19)	443	2.71 (2.20,3.33)	403	3.53 (2.86,4.36)

Table 661. Reasons for First Revision Following Primary THA for M/L Taper Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	125	27.4
2	Dislocation/Instability	116	25.4
3	Aseptic Loosening	74	16.2
4	Joint Infection	67	14.7
5	Implant Failure	21	4.6
6	Malalignment	20	4.4
7	Pain	14	3.1
8	Metal Reaction/Metallosis	12	2.6
9	Peri-prosthetic fracture - Acetabulum	6	1.3
10	Poly liner wear	1	0.2

Table 662. Reasons for First Revision in the First 90 Days Following Primary THA for M/L Taper Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	92	56.1
2	Dislocation/Instability	38	23.2
3	Aseptic Loosening	11	6.7
4	Joint Infection	9	5.5
5	Implant Failure	6	3.7
6	Peri-prosthetic fracture - Acetabulum	4	2.4
7	Malalignment	4	2.4

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Table 663. Reasons for First Revision Between 91 and 365 days Following Primary THA for M/L Taper Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	26	29.2
2	Joint Infection	23	25.8
3	Aseptic Loosening	15	16.8
4	Peri-prosthetic fracture - Femur	12	13.5
5	Implant Failure	6	6.7
6	Pain	5	5.6
7	Peri-prosthetic fracture - Acetabulum	1	1.1
8	Malalignment	1	1.1

Table 664. Descriptive Statistics of Cases Receiving the M/L Taper Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	8,720	52.58	
Age (years)	16,584	64.95 (10.45)	65.00 (14.00)
Height (cm)	16,575	170.29 (10.40)	170.18 (15.20)
Weight (kg)	16,573	88.30 (20.09)	86.60 (27.40)
BMI(kg/m^2)	16,573	30.35 (6.07)	29.69 (7.93)
Smoker - Never (%)	8,116	48.94	
Smoker - Previous (%)	6,381	38.48	
Smoker - Current (%)	2,062	12.43	
Smoker - Unknown (%)	25	0.15	

Table 665. Distribution of Approach Used for M/L Taper Stem in Primary THA Cases

Approach	N	Percent
Anterior	3,037	18.3
Anterolateral	3189	19.2
Posterior	10,193	61.5
Transtrochanteric	118	0.7
Missing/unknown/other	47	0.3

Table 666. Distribution of Head Size for M/L Taper Stem in Primary THA Cases

Size (mm)	N	Percent
28	39	0.2
32	3,579	22.0
36	10,799	66.4
40	1,645	10.1
44	1	0.0
Missing/unknown/other	201	1.2

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Table 667. Distribution of Bearing Surface for M/L Taper Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	4,456	26.9
Ceramic-on-plastic	11,635	70.2
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	211	1.3
Missing/unknown/other	282	1.7

Table 668. Distribution of Polyethylene Used for M/L Taper Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	9,514	57.9
Antioxidant XLPE	5,103	31.0
Missing/unknown/other	1,826	11.1

Table 669. Volume of Cases by Surgeon and Site for the M/L Taper Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	202 (365)	40 (201)
Cases per site	394 (749)	92 (311)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

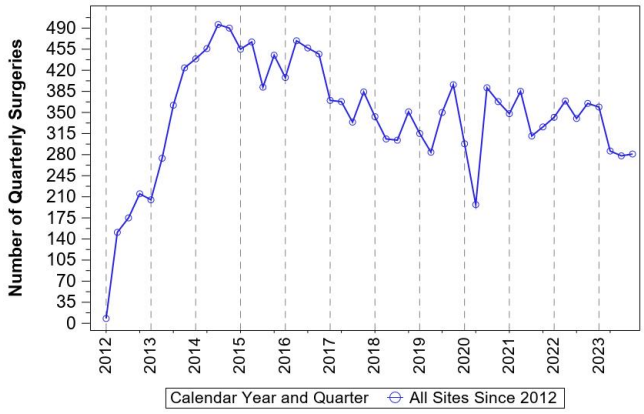


Figure 249. Utilization of the M/L Taper Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

771100900	771100920	771100620
771101320	771101300	771100540
771101220	771100910	771101720
771100940	771100710	771100410
771100700	771100720	771101600
771101100	771101010	771100510
771101200	771100600	771100520
771101000	771100640	771101700
771101120	771101500	771102020
771101240	771101620	771102000
771100740	771101110	771102220
771101520	771101210	771102200
771101040	771100440	
771101140	771100610	
771101020	771100500	

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4.2.19 M/L Taper Kinectiv

N = 958 primary cases were used for this analysis. Distribution of utilization: 13 surgeons across 12 sites used this implant in primary THA cases.

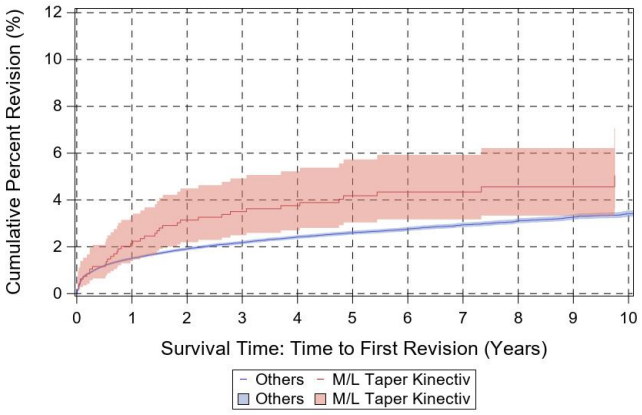


Figure 250. Cumulative Percent Revision Curve for the M/L Taper Kinectiv Stem, Compared to All Other Femoral Components in Primary THA Cases

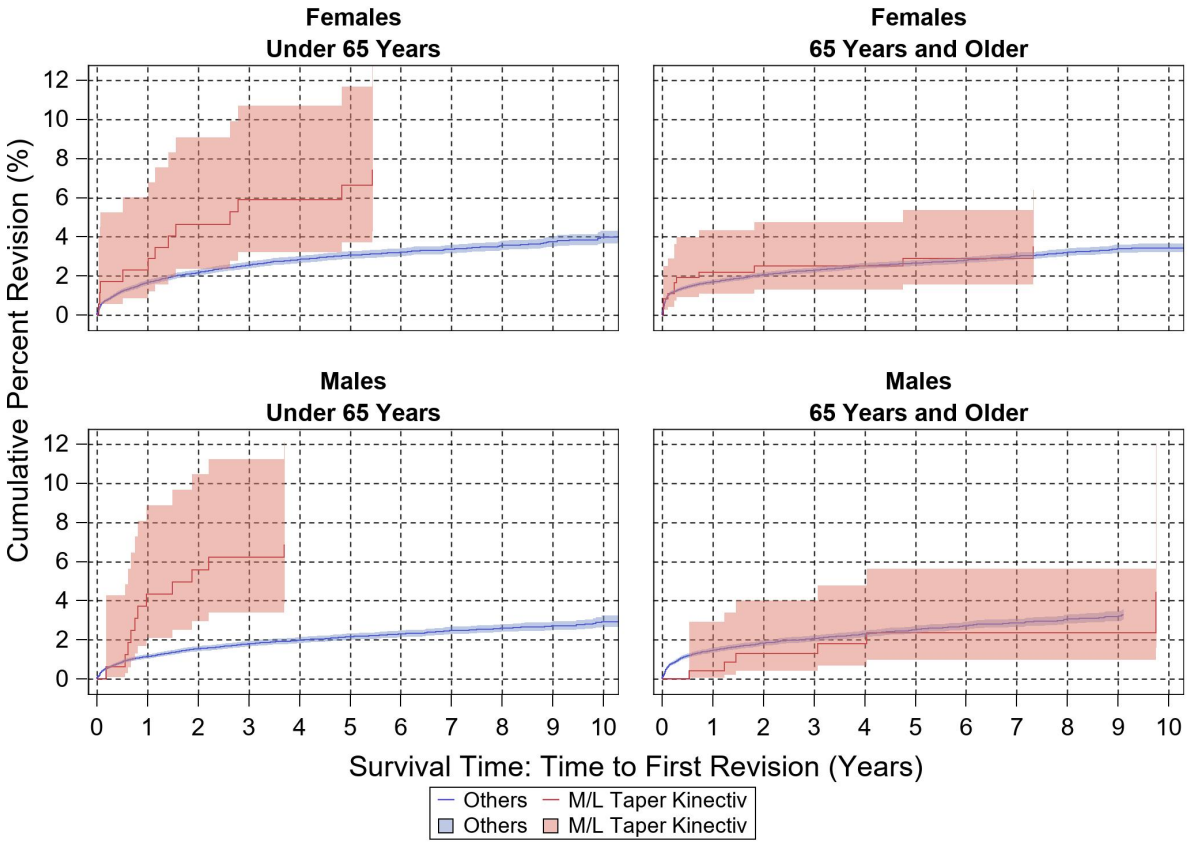


Figure 251. Cumulative Percent Revision Curve for the M/L Taper Kinectiv Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 670. Cumulative Percent Revision and Number at Risk for the M/L Taper Kinectiv Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	951	0.00 (0.00,0.00)	174	0.00 (0.00,0.00)	367	0.00 (0.00,0.00)	165	0.00 (0.00,0.00)	245	0.00 (0.00,0.00)
1	888	2.13 (1.38,3.28)	169	2.30 (0.87,6.02)	338	2.20 (1.10,4.34)	154	4.34 (2.09,8.88)	227	0.42 (0.06,2.92)
2	837	3.14 (2.19,4.49)	158	4.64 (2.35,9.07)	314	2.50 (1.31,4.76)	151	5.58 (2.94,10.46)	214	1.31 (0.42,4.00)
3	785	3.50 (2.49,4.92)	149	5.91 (3.22,10.71)	295	2.50 (1.31,4.76)	146	6.21 (3.39,11.23)	195	1.31 (0.42,4.00)
4	726	3.76 (2.70,5.22)	140	5.91 (3.22,10.71)	272	2.50 (1.31,4.76)	137	6.88 (3.87,12.08)	177	1.81 (0.68,4.77)
5	638	4.18 (3.04,5.73)	125	6.63 (3.72,11.68)	233	2.90 (1.56,5.36)	122	6.88 (3.87,12.08)	158	2.37 (0.99,5.63)
6	550	4.34 (3.17,5.93)	111	7.42 (4.27,12.75)	203	2.90 (1.56,5.36)	107	6.88 (3.87,12.08)	129	2.37 (0.99,5.63)
7	471	4.34 (3.17,5.93)	98	7.42 (4.27,12.75)	174	2.90 (1.56,5.36)	87	6.88 (3.87,12.08)	112	2.37 (0.99,5.63)
8	385	4.56 (3.33,6.22)	84	7.42 (4.27,12.75)	135	3.50 (1.90,6.41)	76	6.88 (3.87,12.08)	90	2.37 (0.99,5.63)
9	277	4.56 (3.33,6.22)	61	7.42 (4.27,12.75)	96	3.50 (1.90,6.41)	54	6.88 (3.87,12.08)	66	2.37 (0.99,5.63)
10	162	5.05 (3.59,7.07)	31	7.42 (4.27,12.75)	62	3.50 (1.90,6.41)	36	6.88 (3.87,12.08)	33	4.45 (1.60,12.04)

Table 671. Reasons for First Revision Following Primary THA for M/L Taper Kinectiv Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	9	24.3
2	Peri-prosthetic fracture - Femur	7	18.9
3	Aseptic Loosening	6	16.2
4	Malalignment	5	13.5
5	Dislocation/Instability	4	10.8
6	Pain	3	8.1
7	Osteolysis	1	2.7
8	Implant Failure	1	2.7
9	Metal Reaction/Metallosis	1	2.7

Table 672. Reasons for First Revision in the First 90 Days Following Primary THA for M/L Taper Kinectiv Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	3	33.3
2	Joint Infection	2	22.2
3	Aseptic Loosening	1	11.1
4	Dislocation/Instability	1	11.1
5	Implant Failure	1	11.1
6	Malalignment	1	11.1

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Table 673. Reasons for First Revision Between 91 and 365 days Following Primary THA for M/L Taper Kinectiv Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	4	44.4
2	Aseptic Loosening	2	22.2
3	Malalignment	2	22.2
4	Peri-prosthetic fracture - Femur	1	11.1

Table 674. Descriptive Statistics of Cases Receiving the M/L Taper Kinectiv Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	546	56.99	
Age (years)	958	67.90 (10.22)	68.00 (14.00)
Height (cm)	958	168.64 (10.57)	167.64 (17.80)
Weight (kg)	958	87.78 (20.18)	86.09 (26.52)
BMI(kg/m^2)	958	30.75 (5.99)	30.12 (8.09)
Smoker - Never (%)	410	42.8	
Smoker - Previous (%)	418	43.63	
Smoker - Current (%)	129	13.47	
Smoker - Unknown (%)	1	0.1	

Table 675. Distribution of Approach Used for M/L Taper Kinectiv Stem in Primary THA Cases

Approach	N	Percent
Anterior	26	2.7
Anterolateral	847	88.4
Posterior	21	2.2
Transtrochanteric	55	5.7
Missing/unknown/other	9	0.9

Table 676. Distribution of Head Size for M/L Taper Kinectiv Stem in Primary THA Cases

Size (mm)	N	Percent
32	223	23.8
36	335	35.7
40	349	37.2
Missing/unknown/other	32	3.4

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Table 677. Distribution of Bearing Surface for M/L Taper Kinectiv Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	357	37.3
Ceramic-on-plastic	571	59.6
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	2	0.2
Missing/unknown/other	28	2.9

Table 678. Distribution of Polyethylene Used for M/L Taper Kinectiv Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	503	53.5
Antioxidant XLPE	411	43.7
Missing/unknown/other	27	2.9

Table 679. Volume of Cases by Surgeon and Site for the M/L Taper Kinectiv Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	73 (105)	11 (102)
Cases per site	79 (135)	9 (104)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

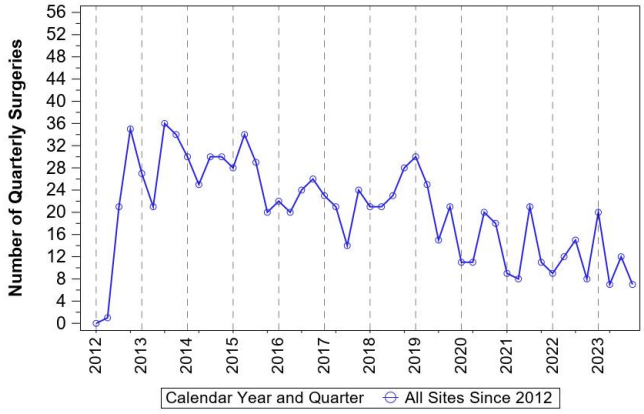


Figure 252. Utilization of the M/L Taper Kinectiv Stem in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

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771301100	771301300	771301700
771301000	771301500	771302000
771301200	771300600	
771300900	771301600	
771300700	771300500	

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4.2.20 Polarstem

N = 3,308 primary cases were used for this analysis. Distribution of utilization: 48 surgeons across 33 sites used this implant in primary THA cases.

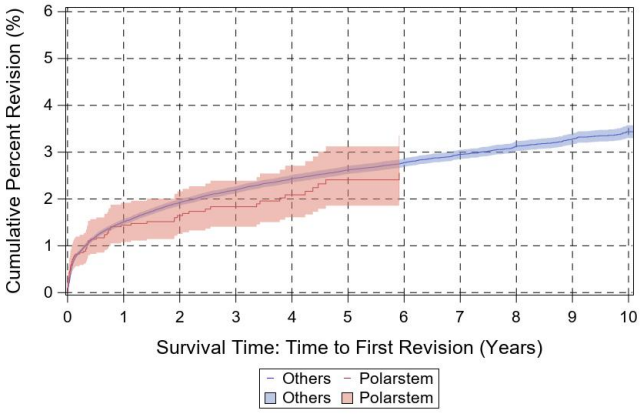


Figure 253. Cumulative Percent Revision Curve for the Polarstem Stem, Compared to All Other Femoral Components in Primary THA Cases

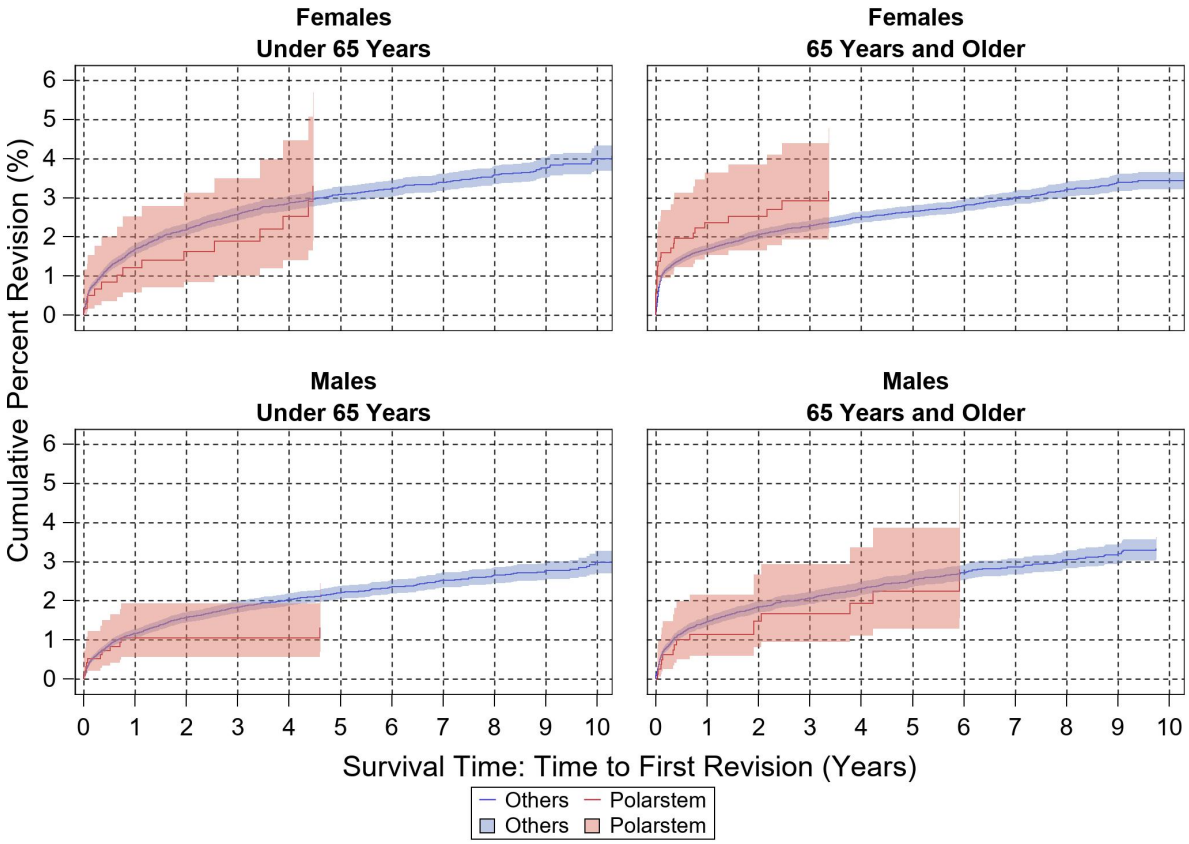


Figure 254. Cumulative Percent Revision Curve for the Polarstem Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 680. Cumulative Percent Revision and Number at Risk for the Polarstem Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,294	0.00 (0.00,0.00)	606	0.00 (0.00,0.00)	880	0.00 (0.00,0.00)	985	0.00 (0.00,0.00)	817	0.00 (0.00,0.00)
1	2,801	1.44 (1.08,1.92)	518	1.21 (0.58,2.52)	696	2.36 (1.53,3.64)	862	1.05 (0.56,1.93)	722	1.13 (0.59,2.16)
2	2,243	1.65 (1.25,2.16)	436	1.63 (0.85,3.12)	535	2.52 (1.64,3.84)	716	1.05 (0.56,1.93)	556	1.48 (0.82,2.67)
3	1,789	1.83 (1.41,2.39)	352	1.88 (1.01,3.49)	413	2.91 (1.93,4.39)	588	1.05 (0.56,1.93)	436	1.66 (0.94,2.93)
4	1,427	2.09 (1.61,2.71)	290	2.52 (1.41,4.47)	321	3.17 (2.11,4.77)	467	1.05 (0.56,1.93)	349	1.93 (1.10,3.37)
5	982	2.41 (1.86,3.12)	189	3.30 (1.91,5.68)	216	3.17 (2.11,4.77)	327	1.31 (0.70,2.45)	250	2.23 (1.29,3.87)
6	609	2.56 (1.95,3.35)	121	3.30 (1.91,5.68)	130	3.17 (2.11,4.77)	199	1.31 (0.70,2.45)	159	2.80 (1.55,5.03)
7	324	2.56 (1.95,3.35)	72	3.30 (1.91,5.68)	79	3.17 (2.11,4.77)	105	1.31 (0.70,2.45)	68	2.80 (1.55,5.03)
8	54	2.56 (1.95,3.35)	21	3.30 (1.91,5.68)	11	3.17 (2.11,4.77)	14	1.31 (0.70,2.45)	*	2.80 (1.55,5.03)
9	*	2.56 (1.95,3.35)	*	3.30 (1.91,5.68)	*	3.17 (2.11,4.77)	*	1.31 (0.70,2.45)	*	2.80 (1.55,5.03)
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 681. Reasons for First Revision Following Primary THA for Polarstem Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	23	35.9
2	Joint Infection	15	23.4
3	Aseptic Loosening	11	17.2
4	Dislocation/Instability	10	15.6
5	Pain	3	4.7
6	Implant Failure	1	1.6
7	Malalignment	1	1.6

Table 682. Reasons for First Revision in the First 90 Days Following Primary THA for Polarstem Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	18	64.3
2	Dislocation/Instability	6	21.4
3	Joint Infection	3	10.7
4	Aseptic Loosening	1	3.6

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Table 683. Reasons for First Revision Between 91 and 365 days Following Primary THA for Polarstem Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	7	38.9
2	Aseptic Loosening	5	27.8
3	Dislocation/Instability	2	11.1
4	Peri-prosthetic fracture - Femur	2	11.1
5	Pain	1	5.6
6	Malalignment	1	5.6

Table 684. Descriptive Statistics of Cases Receiving the Polarstem Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,490	45.04	
Age (years)	3,308	64.75 (10.99)	65.00 (14.00)
Height (cm)	3,308	171.39 (10.67)	172.40 (17.40)
Weight (kg)	3,308	91.42 (21.72)	89.50 (27.65)
BMI(kg/m^2)	3,308	31.00 (6.33)	30.31 (8.22)
Smoker - Never (%)	1,487	44.95	
Smoker - Previous (%)	1,237	37.39	
Smoker - Current (%)	571	17.26	
Smoker - Unknown (%)	13	0.39	

Table 685. Distribution of Approach Used for Polarstem Stem in Primary THA Cases

Approach	N	Percent
Anterior	2,593	78.4
Anterolateral	303	9.2
Posterior	409	12.4
Transtrochanteric	2	0.1
Missing/unknown/other	1	0.0

Table 686. Distribution of Head Size for Polarstem Stem in Primary THA Cases

Size (mm)	N	Percent
22	2	0.1
28	12	0.4
32	513	17.5
36	2,239	76.3
40	158	5.4
Missing/unknown/other	9	0.3

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Table 687. Distribution of Bearing Surface for Polarstem Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	108	3.3
Ceramic-on-plastic	2,817	85.2
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	345	10.4
Missing/unknown/other	38	1.1

Table 688. Distribution of Polyethylene Used for Polarstem Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	1	0.0
XLPE	2,924	90.2
Antioxidant XLPE	6	0.2
Missing/unknown/other	309	9.5

Table 689. Volume of Cases by Surgeon and Site for the Polarstem Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	68 (182)	11 (46)
Cases per site	100 (214)	23 (78)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

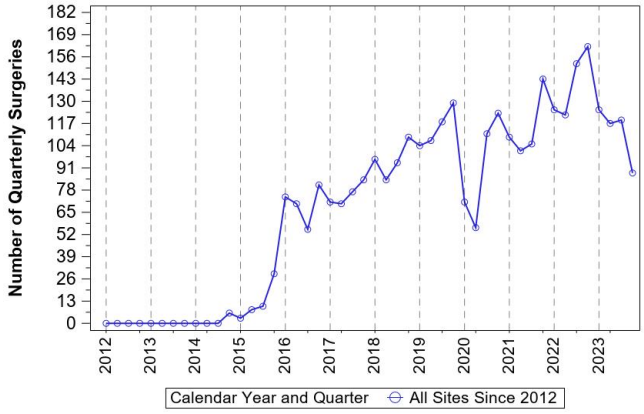


Figure 255. Utilization of the Polarstem Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

75100466	75100479	75018409
75100467	75018406	75100482
75100465	75100476	75102246
75100468	75100480	75102251
75100464	75018419	75102211
75100469	75018413	75102244
75018402	75018400	75102255
75018403	75100471	75102256
75018404	75100475	75100483
75018417	75018407	75102245
75100463	75102209	75102257
75018416	75100481	75102258
75100470	75100474	75102248
75018415	75100472	75100473
75018405	75018408	75102074
75100477	75102253	75102249
75018401	75102254	75102076
75018418	75102210	75102259
75100478	75102250	
75018414	75102252	

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4.2.21 ProFemur Gladiator

N = 726 primary cases were used for this analysis. Fewer than ten surgeons used this implant at fewer than ten sites in primary THA cases.

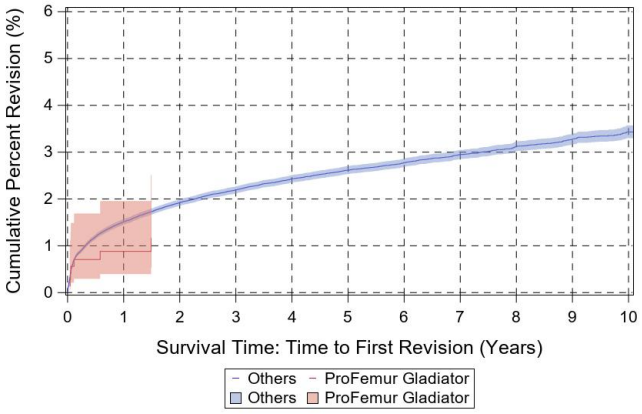


Figure 256. Cumulative Percent Revision Curve for the ProFemur Gladiator Stem, Compared to All Other Femoral Components in Primary THA Cases

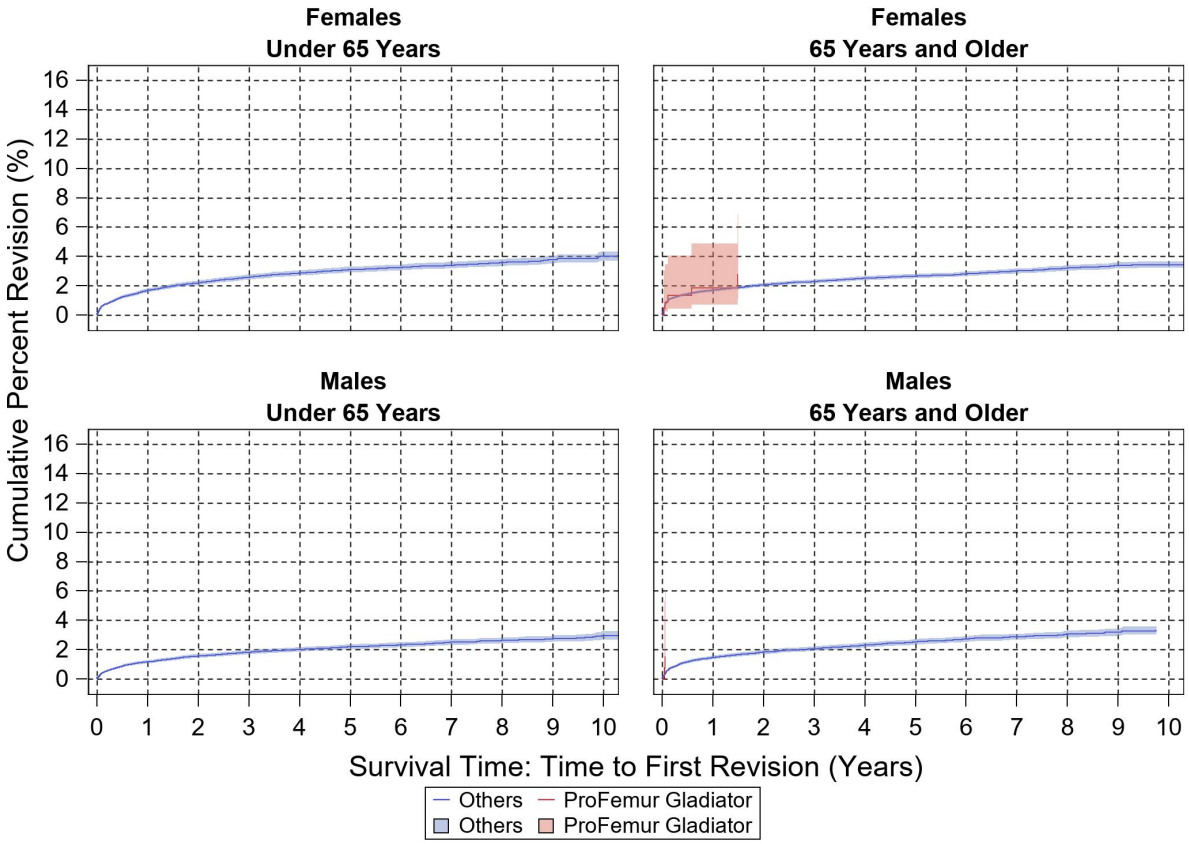


Figure 257. Cumulative Percent Revision Curve for the ProFemur Gladiator Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 690. Cumulative Percent Revision and Number at Risk for the ProFemur Gladiator Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	723	0.00 (0.00,0.00)	191	0.00 (0.00,0.00)	231	0.00 (0.00,0.00)	170	0.00 (0.00,0.00)	131	0.00 (0.00,0.00)
1	463	0.88 (0.40,1.96)	132	0.00 (0.00,0.00)	141	1.86 (0.70,4.89)	113	0.00 (0.00,0.00)	77	1.54 (0.39,6.01)
2	232	1.17 (0.54,2.51)	58	0.00 (0.00,0.00)	70	2.78 (1.11,6.88)	65	0.00 (0.00,0.00)	39	1.54 (0.39,6.01)
3	49	1.17 (0.54,2.51)	18	0.00 (0.00,0.00)	14	2.78 (1.11,6.88)	11	0.00 (0.00,0.00)	*	1.54 (0.39,6.01)
4	22	1.17 (0.54,2.51)	*	0.00 (0.00,0.00)	*	2.78 (1.11,6.88)	*	0.00 (0.00,0.00)	*	1.54 (0.39,6.01)
5	14	1.17 (0.54,2.51)	*	0.00 (0.00,0.00)	*	2.78 (1.11,6.88)	*	0.00 (0.00,0.00)	*	1.54 (0.39,6.01)
6	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
7	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 691. Reasons for First Revision Following Primary THA for ProFemur Gladiator Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	2	28.6
2	Dislocation/Instability	2	28.6
3	Peri-prosthetic fracture - Femur	2	28.6
4	Peri-prosthetic fracture - Acetabulum	1	14.3

Table 692. Reasons for First Revision in the First 90 Days Following Primary THA for ProFemur Gladiator Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	4	25.0
2	Peri-prosthetic fracture - Acetabulum	4	25.0
3	Peri-prosthetic fracture - Femur	4	25.0
4	Malalignment	2	12.5
5	Aseptic Loosening	1	6.2
6	Joint Infection	1	6.2

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Table 693. Reasons for First Revision Between 91 and 365 days Following Primary THA for ProFemur Gladiator Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	4	50.0
2	Aseptic Loosening	2	25.0
3	Dislocation/Instability	1	12.5
4	Malalignment	1	12.5

Table 694. Descriptive Statistics of Cases Receiving the ProFemur Gladiator Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	425	58.54	
Age (years)	726	63.79 (10.88)	65.00 (14.00)
Height (cm)	726	169.12 (10.12)	167.64 (16.60)
Weight (kg)	726	88.93 (20.67)	87.05 (26.76)
BMI(kg/m^2)	726	31.01 (6.36)	29.94 (8.39)
Smoker - Never (%)	346	47.66	
Smoker - Previous (%)	260	35.81	
Smoker - Current (%)	119	16.39	
Smoker - Unknown (%)	1	0.14	

Table 695. Distribution of Approach Used for ProFemur Gladiator Stem in Primary THA Cases

Approach	N	Percent
Anterior	711	97.9
Anterolateral	12	1.6
Posterior	3	0.4
Transtrochanteric	0	0.0
Missing/unknown/other	0	0.0

Table 696. Distribution of Head Size for ProFemur Gladiator Stem in Primary THA Cases

Size (mm)	N	Percent
32	25	3.5
36	548	76.6
40	100	14.0
Missing/unknown/other	42	5.9

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Table 697. Distribution of Bearing Surface for ProFemur Gladiator Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	0	0.0
Ceramic-on-plastic	673	92.7
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	53	7.3

Table 698. Distribution of Polyethylene Used for ProFemur Gladiator Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	32	4.5
Antioxidant XLPE	683	95.5
Missing/unknown/other	0	0.0

Table 699. Volume of Cases by Surgeon and Site for the ProFemur Gladiator Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	121 (204)	12 (175)
Cases per site	90 (118)	11 (201)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

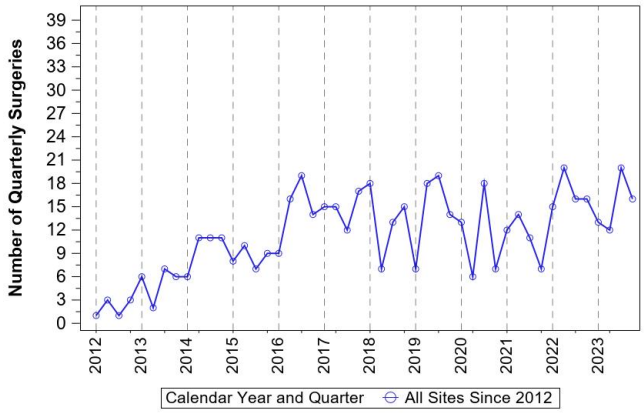


Figure 258. Utilization of the ProFemur Gladiator Stem in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

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PRGLCLE5
PRGLCLE6
PRGLCLE4
PRGLCLE3
PRGLCLS5
PRGLCLS4
PRGLCLS3
PRGLCLE7
PRGLCLE8
PRGLCLS2
PRGLCLS6
PRGLCLS7
PRGLCLE2
PRGLCLS1
PRGLCLE1
PRGLCLE9

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4.2.22 Restoration Modular

N = 546 primary cases were used for this analysis. Distribution of utilization: 104 surgeons across 38 sites used this implant in primary THA cases.

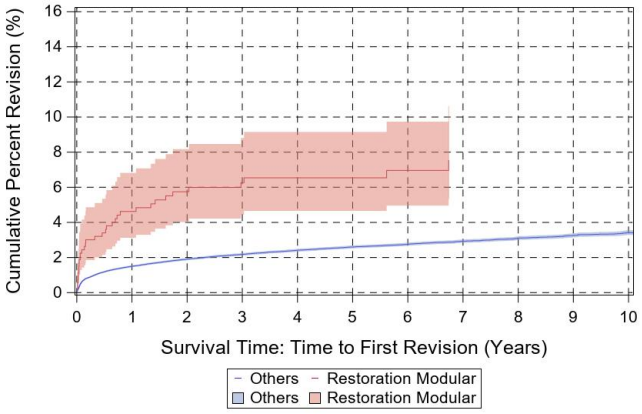


Figure 259. Cumulative Percent Revision Curve for the Restoration Modular Stem, Compared to All Other Femoral Components in Primary THA Cases

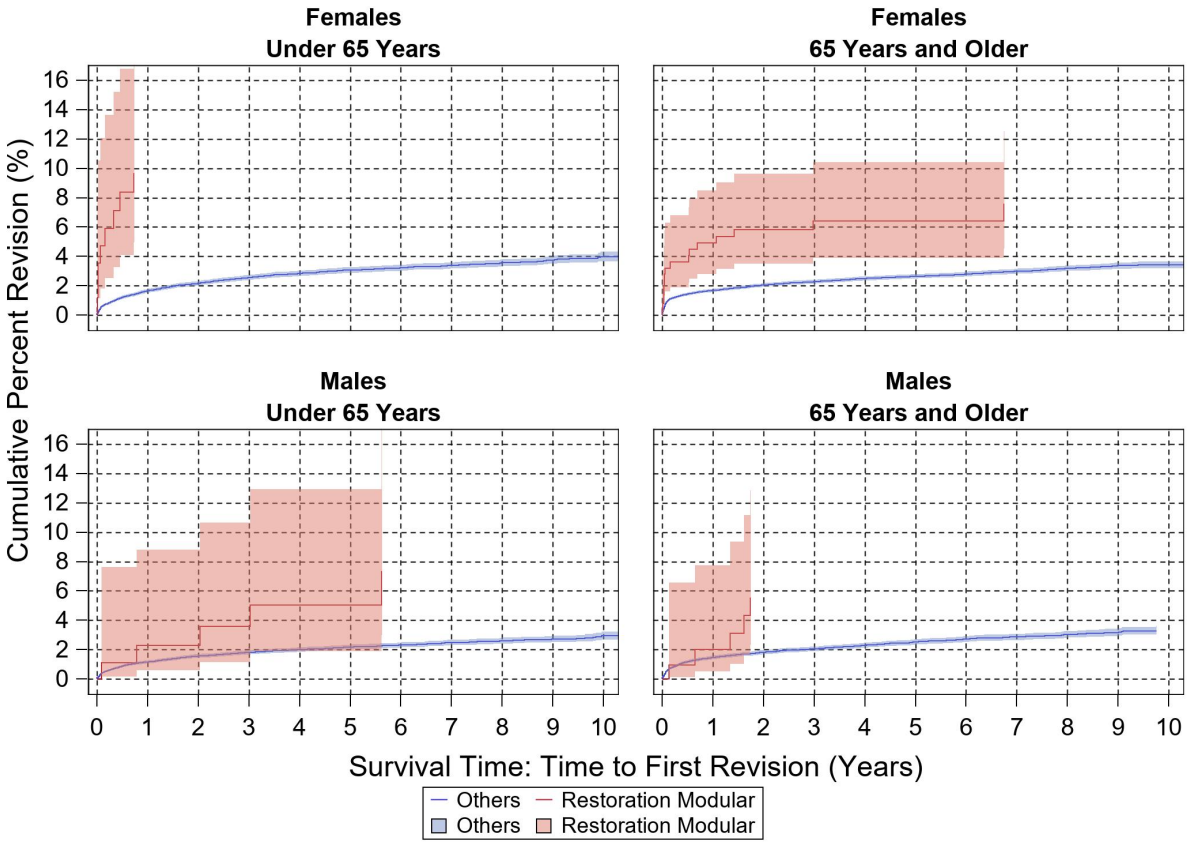


Figure 260. Cumulative Percent Revision Curve for the Restoration Modular Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 700. Cumulative Percent Revision and Number at Risk for the Restoration Modular Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	535	0.00 (0.00,0.00)	85	0.00 (0.00,0.00)	251	0.00 (0.00,0.00)	90	0.00 (0.00,0.00)	108	0.00 (0.00,0.00)
1	452	4.62 (3.12,6.82)	64	9.68 (4.96,18.45)	214	4.90 (2.81,8.47)	82	2.27 (0.57,8.79)	91	1.99 (0.50,7.75)
2	385	5.74 (4.02,8.17)	52	9.68 (4.96,18.45)	183	5.82 (3.48,9.64)	76	2.27 (0.57,8.79)	74	5.55 (2.34,12.87)
3	341	6.26 (4.44,8.81)	46	9.68 (4.96,18.45)	162	6.40 (3.89,10.43)	66	3.56 (1.16,10.66)	67	5.55 (2.34,12.87)
4	300	6.54 (4.66,9.15)	41	9.68 (4.96,18.45)	151	6.40 (3.89,10.43)	55	5.02 (1.90,12.91)	53	5.55 (2.34,12.87)
5	247	6.54 (4.66,9.15)	31	9.68 (4.96,18.45)	129	6.40 (3.89,10.43)	42	5.02 (1.90,12.91)	45	5.55 (2.34,12.87)
6	197	6.96 (4.96,9.73)	27	9.68 (4.96,18.45)	98	6.40 (3.89,10.43)	35	7.34 (2.99,17.43)	37	5.55 (2.34,12.87)
7	144	7.55 (5.34,10.62)	19	9.68 (4.96,18.45)	73	7.57 (4.52,12.52)	27	7.34 (2.99,17.43)	25	5.55 (2.34,12.87)
8	89	7.55 (5.34,10.62)	12	9.68 (4.96,18.45)	44	7.57 (4.52,12.52)	20	7.34 (2.99,17.43)	13	5.55 (2.34,12.87)
9	61	7.55 (5.34,10.62)	*	9.68 (4.96,18.45)	29	7.57 (4.52,12.52)	16	7.34 (2.99,17.43)	*	5.55 (2.34,12.87)
10	26	7.55 (5.34,10.62)	*	9.68 (4.96,18.45)	12	7.57 (4.52,12.52)	*	7.34 (2.99,17.43)	*	5.55 (2.34,12.87)

* Denotes that the number of cases is between 1 and 10.

Table 701. Reasons for First Revision Following Primary THA for Restoration Modular Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	10	29.4
2	Dislocation/Instability	6	17.6
3	Aseptic Loosening	5	14.7
4	Peri-prosthetic fracture - Acetabulum	4	11.8
5	Peri-prosthetic fracture - Femur	4	11.8
6	Malalignment	3	8.8
7	Metal Reaction/Metallosis	1	2.9
8	Pain	1	2.9

Table 702. Reasons for First Revision in the First 90 Days Following Primary THA for Restoration Modular Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	4	25.0
2	Peri-prosthetic fracture - Acetabulum	4	25.0
3	Peri-prosthetic fracture - Femur	4	25.0
4	Malalignment	2	12.5
5	Aseptic Loosening	1	6.2
6	Joint Infection	1	6.2

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Table 703. Reasons for First Revision Between 91 and 365 days Following Primary THA for Restoration Modular Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	4	50.0
2	Aseptic Loosening	2	25.0
3	Dislocation/Instability	1	12.5
4	Malalignment	1	12.5

Table 704. Descriptive Statistics of Cases Receiving the Restoration Modular Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	344	63	
Age (years)	546	68.90 (13.35)	70.00 (16.00)
Height (cm)	546	167.25 (11.10)	165.10 (15.30)
Weight (kg)	546	81.10 (23.28)	77.10 (32.20)
BMI(kg/m^2)	546	28.80 (7.08)	27.69 (8.95)
Smoker - Never (%)	244	44.69	
Smoker - Previous (%)	205	37.55	
Smoker - Current (%)	94	17.22	
Smoker - Unknown (%)	3	0.55	

Table 705. Distribution of Approach Used for Restoration Modular Stem in Primary THA Cases

Approach	N	Percent
Anterior	38	7.0
Anterolateral	147	26.9
Posterior	353	64.7
Transtrochanteric	0	0.0
Missing/unknown/other	8	1.5

Table 706. Distribution of Head Size for Restoration Modular Stem in Primary THA Cases

Size (mm)	N	Percent
22	2	0.6
28	4	1.2
32	28	8.1
36	260	75.1
40	39	11.3
44	6	1.7
Missing/unknown/other	7	2.0

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Table 707. Distribution of Bearing Surface for Restoration Modular Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	99	18.1
Ceramic-on-plastic	239	43.8
Ceramic-on-ceramic	1	0.2
Metal-on-metal	0	0.0
Dual mobility	186	34.1
Missing/unknown/other	21	3.9

Table 708. Distribution of Polyethylene Used for Restoration Modular Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	3	0.6
XLPE	401	76.2
Antioxidant XLPE	3	0.6
Missing/unknown/other	119	22.6

Table 709. Volume of Cases by Surgeon and Site for the Restoration Modular Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	5 (6)	3 (5)
Cases per site	14 (14)	11 (15)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

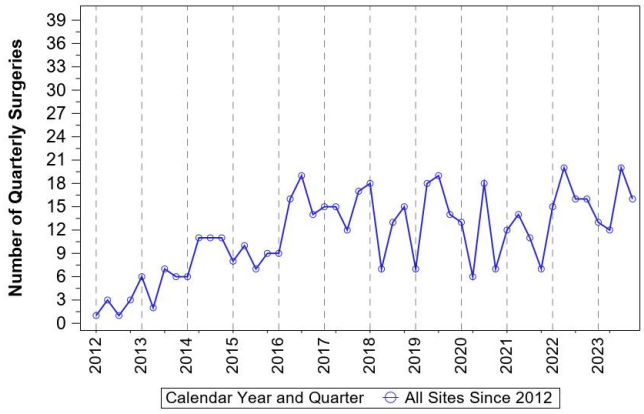


Figure 261. Utilization of the Restoration Modular Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

62761021	62767020	62767221
62761019	62767021	62767315
62761023	62761321	62767320
62761123	62767022	62761029
62761121	62761219	62761131
62761119	62767218	62761327
62761025	62761319	62764127
62767017	62761323	62765015
62767018	62764119	62765017
62767015	62767215	62767024
62761125	62767216	62767117
62767016	62761027	62767118
62767019	62761127	62767120
62761221	62761129	62767219
62767014	62761325	62767222
62761223	62767025	
62767217	62767119	
62761225	62767214	

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4.2.23 Secur-Fit

N = 1,949 primary cases were used for this analysis. Distribution of utilization: 48 surgeons across 29 sites used this implant in primary THA cases.

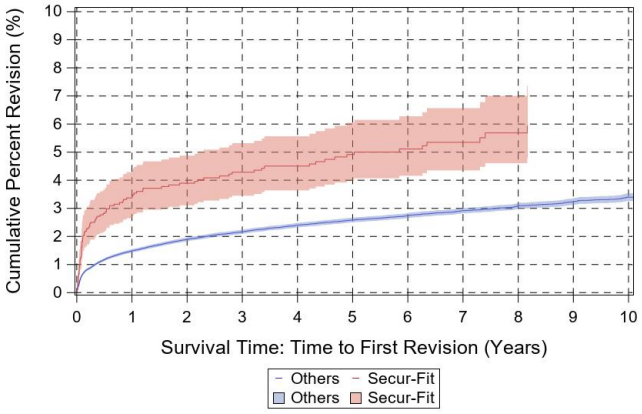


Figure 262. Cumulative Percent Revision Curve for the Secur-Fit Stem, Compared to All Other Femoral Components in Primary THA Cases

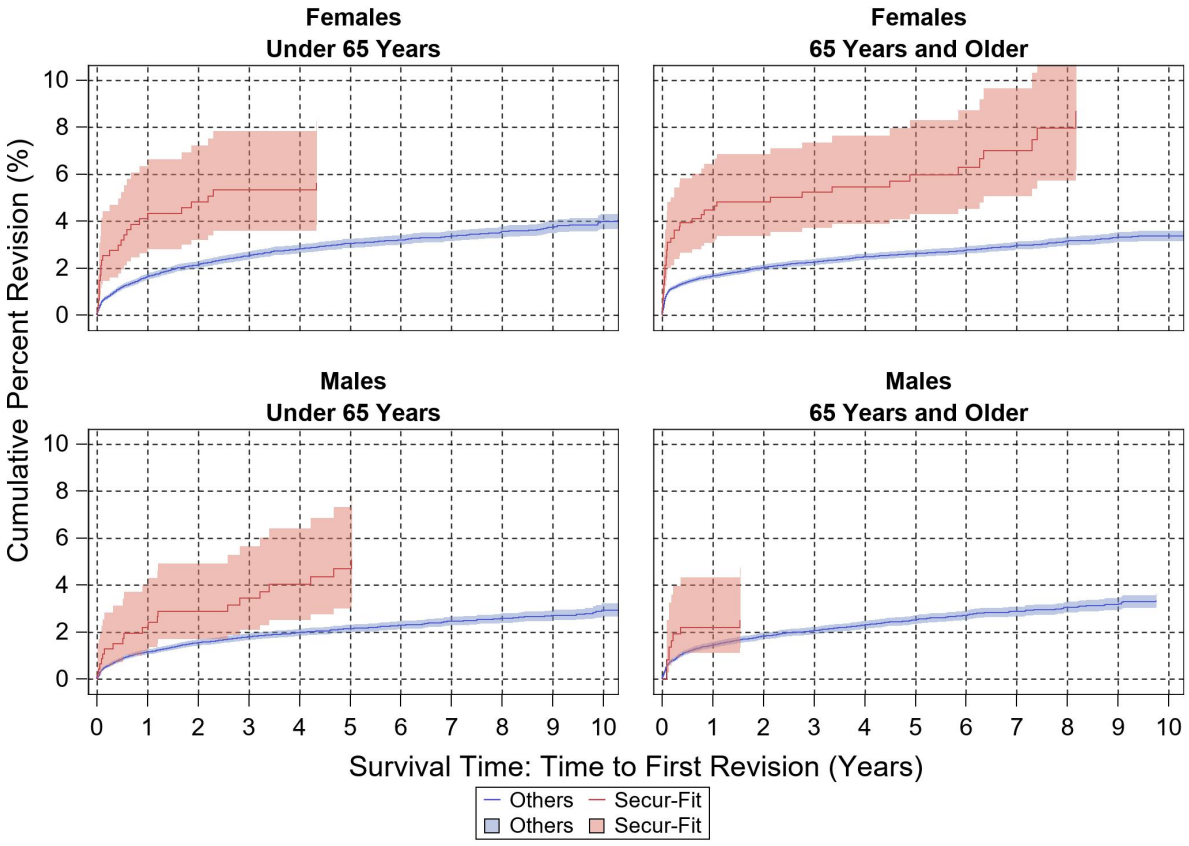


Figure 263. Cumulative Percent Revision Curve for the Secur-Fit Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 710. Cumulative Percent Revision and Number at Risk for the Secur-Fit Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,933	0.00 (0.00,0.00)	474	0.00 (0.00,0.00)	615	0.00 (0.00,0.00)	471	0.00 (0.00,0.00)	372	0.00 (0.00,0.00)
1	1,709	3.37 (2.65,4.29)	416	4.09 (2.63,6.34)	539	4.46 (3.08,6.44)	422	2.18 (1.18,4.01)	331	2.18 (1.10,4.32)
2	1,544	3.90 (3.11,4.88)	380	4.81 (3.19,7.22)	488	4.82 (3.37,6.86)	380	2.89 (1.69,4.92)	295	2.50 (1.31,4.75)
3	1,385	4.29 (3.45,5.32)	348	5.32 (3.59,7.84)	433	5.23 (3.70,7.36)	343	3.43 (2.08,5.64)	260	2.50 (1.31,4.75)
4	1,256	4.50 (3.64,5.57)	317	5.32 (3.59,7.84)	398	5.45 (3.88,7.64)	306	4.02 (2.51,6.41)	234	2.50 (1.31,4.75)
5	1,057	4.92 (3.99,6.04)	262	5.63 (3.83,8.24)	344	5.98 (4.29,8.30)	246	4.70 (3.00,7.32)	204	2.50 (1.31,4.75)
6	857	5.11 (4.16,6.28)	226	5.63 (3.83,8.24)	286	6.30 (4.53,8.72)	190	5.09 (3.28,7.85)	154	2.50 (1.31,4.75)
7	656	5.35 (4.35,6.57)	180	5.63 (3.83,8.24)	225	7.00 (5.05,9.65)	138	5.09 (3.28,7.85)	112	2.50 (1.31,4.75)
8	414	5.69 (4.61,7.01)	122	5.63 (3.83,8.24)	138	7.96 (5.73,11.02)	84	5.09 (3.28,7.85)	69	2.50 (1.31,4.75)
9	214	5.94 (4.78,7.37)	65	5.63 (3.83,8.24)	68	8.70 (6.18,12.19)	47	5.09 (3.28,7.85)	34	2.50 (1.31,4.75)
10	45	5.94 (4.78,7.37)	13	5.63 (3.83,8.24)	17	8.70 (6.18,12.19)	*	5.09 (3.28,7.85)	*	2.50 (1.31,4.75)

* Denotes that the number of cases is between 1 and 10.

Table 711. Reasons for First Revision Following Primary THA for Secur-Fit Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	28	30.8
2	Aseptic Loosening	22	24.2
3	Joint Infection	14	15.4
4	Dislocation/Instability	13	14.3
5	Implant Failure	9	9.9
6	Malalignment	3	3.3
7	Peri-prosthetic fracture - Acetabulum	1	1.1
8	Metal Reaction/Metallosis	1	1.1

Table 712. Reasons for First Revision in the First 90 Days Following Primary THA for Secur-Fit Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	25	54.4
2	Dislocation/Instability	10	21.7
3	Joint Infection	4	8.7
4	Aseptic Loosening	3	6.5
5	Implant Failure	3	6.5
6	Malalignment	1	2.2

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Table 713. Reasons for First Revision Between 91 and 365 days Following Primary THA for Secur-Fit Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	6	40.0
2	Aseptic Loosening	4	26.7
3	Implant Failure	3	20.0
4	Dislocation/Instability	1	6.7
5	Malalignment	1	6.7

Table 714. Descriptive Statistics of Cases Receiving the Secur-Fit Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,097	56.29	
Age (years)	1,949	64.64 (10.55)	65.00 (13.00)
Height (cm)	1,949	169.95 (10.31)	170.10 (15.24)
Weight (kg)	1,949	91.63 (22.34)	89.36 (28.33)
BMI(kg/m^2)	1,949	31.64 (6.87)	30.70 (9.09)
Smoker - Never (%)	898	46.07	
Smoker - Previous (%)	677	34.74	
Smoker - Current (%)	363	18.62	
Smoker - Unknown (%)	11	0.56	

Table 715. Distribution of Approach Used for Secur-Fit Stem in Primary THA Cases

Approach	N	Percent
Anterior	6	0.3
Anterolateral	1154	59.2
Posterior	779	40.0
Transtrochanteric	1	0.1
Missing/unknown/other	9	0.5

Table 716. Distribution of Head Size for Secur-Fit Stem in Primary THA Cases

Size (mm)	N	Percent
28	3	0.2
32	228	15.1
36	894	59.2
40	373	24.7
Missing/unknown/other	12	0.8

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Table 717. Distribution of Bearing Surface for Secur-Fit Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	278	14.3
Ceramic-on-plastic	1,217	62.4
Ceramic-on-ceramic	3	0.1
Metal-on-metal	0	0.0
Dual mobility	429	22.0
Missing/unknown/other	22	1.1

Table 718. Distribution of Polyethylene Used for Secur-Fit Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,584	81.9
Antioxidant XLPE	0	0.0
Missing/unknown/other	351	18.1

Table 719. Volume of Cases by Surgeon and Site for the Secur-Fit Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	40 (103)	4 (22)
Cases per site	67 (128)	15 (58)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

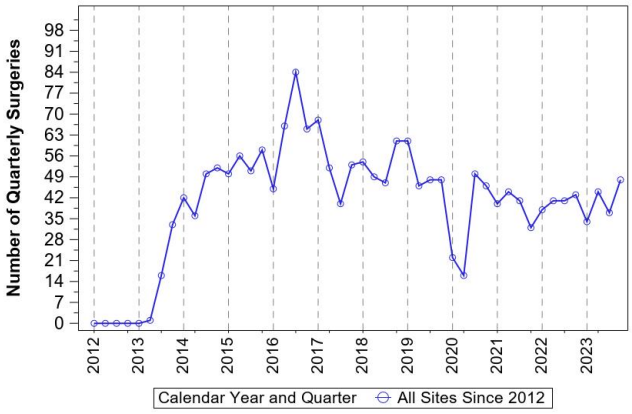


Figure 264. Utilization of the Secur-Fit Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

160108132	160110127	160111127
160108127	160110132	160112132
160109132	160106127	160112127
160107132	160106132	
160107127	160111132	
160109127	160105132	

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4.2.24 Secur-Fit Max

N = 3,282 primary cases were used for this analysis. Distribution of utilization: 58 surgeons across 26 sites used this implant in primary THA cases.

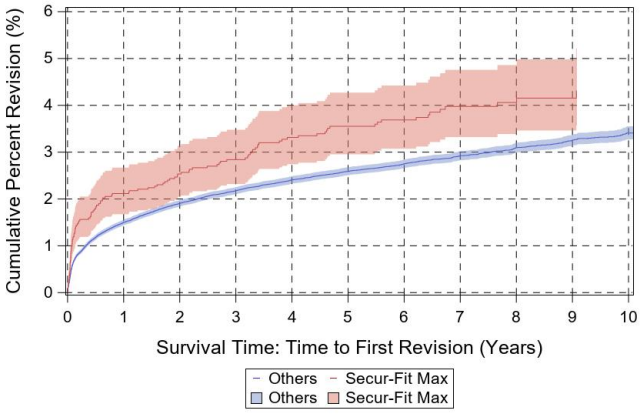


Figure 265. Cumulative Percent Revision Curve for the Secur-Fit Max Stem, Compared to All Other Femoral Components in Primary THA Cases

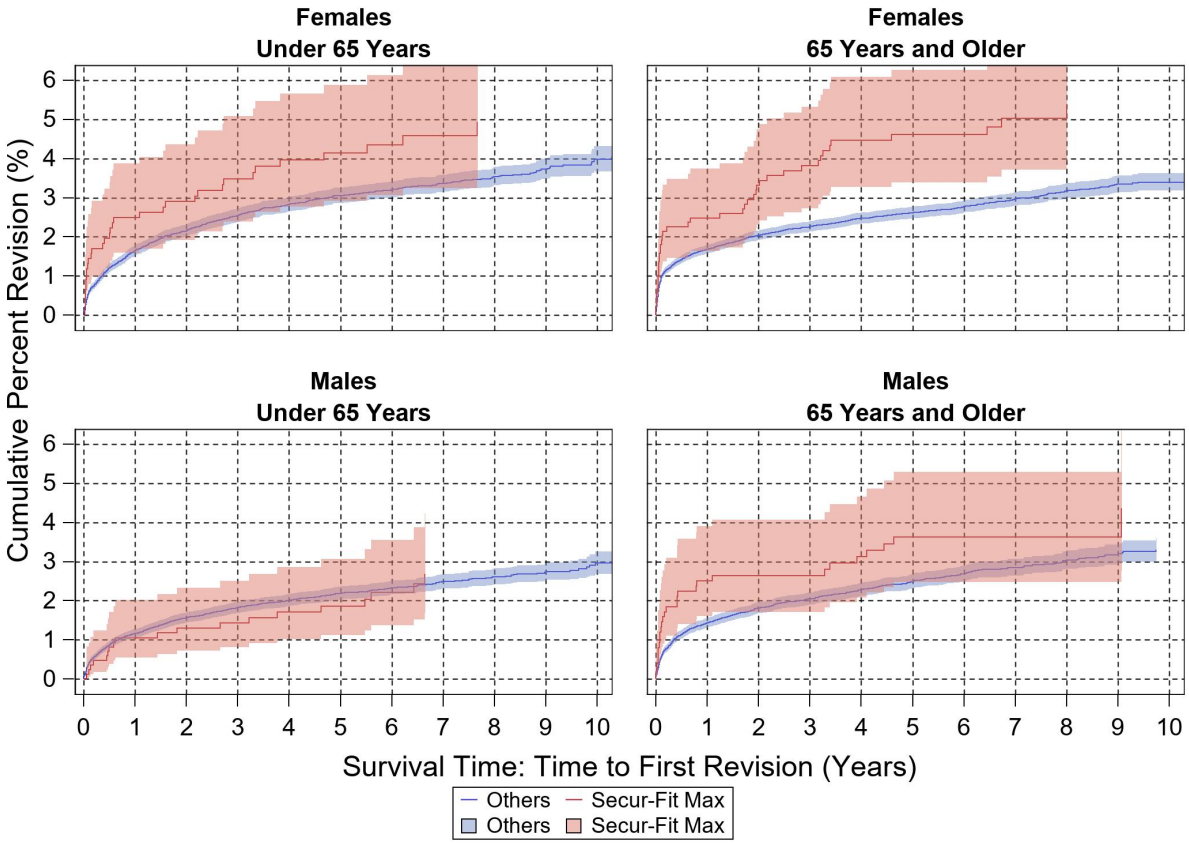


Figure 266. Cumulative Percent Revision Curve for the Secur-Fit Max Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 720. Cumulative Percent Revision and Number at Risk for the Secur-Fit Max Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,263	0.00 (0.00,0.00)	764	0.00 (0.00,0.00)	887	0.00 (0.00,0.00)	855	0.00 (0.00,0.00)	757	0.00 (0.00,0.00)
1	3,148	2.11 (1.67,2.67)	731	2.49 (1.59,3.87)	850	2.48 (1.64,3.74)	839	1.05 (0.55,2.01)	728	2.51 (1.61,3.91)
2	2,948	2.53 (2.05,3.14)	685	2.90 (1.92,4.37)	793	3.32 (2.32,4.74)	791	1.30 (0.72,2.33)	679	2.64 (1.71,4.07)
3	2,755	2.84 (2.32,3.48)	628	3.49 (2.39,5.08)	753	3.81 (2.73,5.33)	738	1.43 (0.81,2.50)	636	2.64 (1.71,4.07)
4	2,544	3.31 (2.74,4.00)	568	3.97 (2.77,5.66)	698	4.47 (3.27,6.09)	683	1.70 (1.01,2.86)	595	3.12 (2.08,4.66)
5	2,317	3.55 (2.95,4.27)	523	4.15 (2.91,5.89)	641	4.61 (3.39,6.26)	610	1.86 (1.12,3.07)	543	3.62 (2.48,5.29)
6	1,914	3.69 (3.07,4.42)	428	4.35 (3.07,6.14)	534	4.61 (3.39,6.26)	500	2.21 (1.37,3.56)	452	3.62 (2.48,5.29)
7	1,445	3.98 (3.32,4.76)	330	4.58 (3.25,6.45)	403	5.03 (3.71,6.80)	369	2.68 (1.69,4.23)	343	3.62 (2.48,5.29)
8	1,005	4.06 (3.39,4.86)	236	4.94 (3.49,6.99)	306	5.03 (3.71,6.80)	247	2.68 (1.69,4.23)	216	3.62 (2.48,5.29)
9	612	4.15 (3.46,4.98)	134	4.94 (3.49,6.99)	190	5.34 (3.92,7.24)	156	2.68 (1.69,4.23)	132	3.62 (2.48,5.29)
10	346	4.31 (3.57,5.21)	84	4.94 (3.49,6.99)	109	5.34 (3.92,7.24)	87	2.68 (1.69,4.23)	66	4.36 (2.76,6.85)

Table 721. Reasons for First Revision Following Primary THA for Secur-Fit Max Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	45	38.5
2	Aseptic Loosening	22	18.8
3	Joint Infection	16	13.7
4	Dislocation/Instability	12	10.3
5	Malalignment	8	6.8
6	Implant Failure	5	4.3
7	Peri-prosthetic fracture - Acetabulum	4	3.4
8	Metal Reaction/Metallosis	3	2.6
9	Pain	2	1.7

Table 722. Reasons for First Revision in the First 90 Days Following Primary THA for Secur-Fit Max Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	32	64.0
2	Joint Infection	5	10.0
3	Dislocation/Instability	4	8.0
4	Aseptic Loosening	3	6.0
5	Implant Failure	2	4.0
6	Peri-prosthetic fracture - Acetabulum	2	4.0
7	Pain	1	2.0
8	Malalignment	1	2.0

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Table 723. Reasons for First Revision Between 91 and 365 days Following Primary THA for Secur-Fit Max Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	5	31.2
2	Peri-prosthetic fracture - Femur	4	25.0
3	Aseptic Loosening	3	18.8
4	Dislocation/Instability	3	18.8
5	Peri-prosthetic fracture - Acetabulum	1	6.2

Table 724. Descriptive Statistics of Cases Receiving the Secur-Fit Max Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,661	50.61	
Age (years)	3,282	63.71 (11.20)	65.00 (14.00)
Height (cm)	3,282	170.50 (10.23)	170.18 (15.20)
Weight (kg)	3,282	91.66 (21.84)	89.40 (27.97)
BMI(kg/m^2)	3,282	31.42 (6.52)	30.74 (8.53)
Smoker - Never (%)	1,560	47.53	
Smoker - Previous (%)	1,250	38.09	
Smoker - Current (%)	463	14.11	
Smoker - Unknown (%)	9	0.27	

Table 725. Distribution of Approach Used for Secur-Fit Max Stem in Primary THA Cases

Approach	N	Percent
Anterior	29	0.9
Anterolateral	1865	56.8
Posterior	1,337	40.7
Transtrochanteric	23	0.7
Missing/unknown/other	28	0.8

Table 726. Distribution of Head Size for Secur-Fit Max Stem in Primary THA Cases

Size (mm)	N	Percent
22	3	0.1
28	36	1.2
32	1,026	35.0
36	1,684	57.5
40	162	5.5
44	2	0.1
Missing/unknown/other	16	0.6

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Table 727. Distribution of Bearing Surface for Secur-Fit Max Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,058	32.2
Ceramic-on-plastic	637	19.4
Ceramic-on-ceramic	1,218	37.1
Metal-on-metal	0	0.0
Dual mobility	318	9.7
Missing/unknown/other	51	1.6

Table 728. Distribution of Polyethylene Used for Secur-Fit Max Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,959	97.1
Antioxidant XLPE	1	0.1
Missing/unknown/other	58	2.9

Table 729. Volume of Cases by Surgeon and Site for the Secur-Fit Max Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	56 (172)	8 (43)
Cases per site	126 (245)	24 (144)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

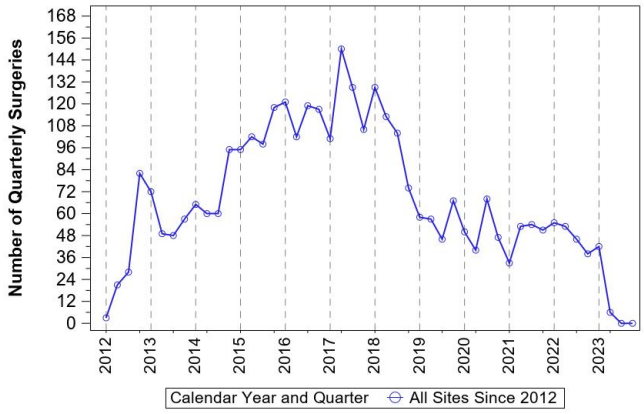


Figure 267. Utilization of the Secur-Fit Max Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

60510935S	60521035S	60510525S
60510830S	60520730S	60521340S
60511035S	60510625S	60511340S
60510730S	60511240S	60511440S
60520830S	60521140S	60510425S
60520935S	60520625S	
60511140S	60521240S	

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4.2.25 Secur-Fit Plus Max

N = 2,162 primary cases were used for this analysis. Distribution of utilization: 35 surgeons across 21 sites used this implant in primary THA cases.

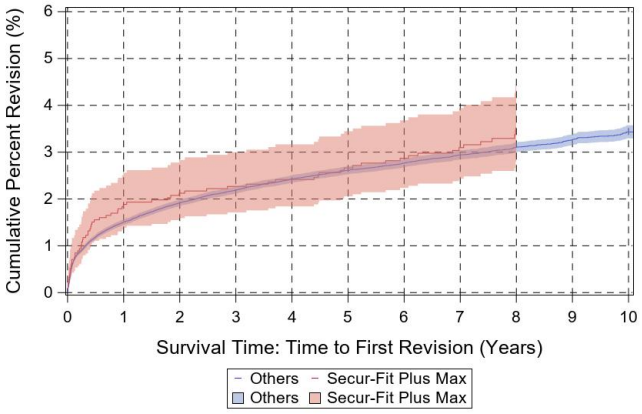


Figure 268. Cumulative Percent Revision Curve for the Secur-Fit Plus Max Stem, Compared to All Other Femoral Components in Primary THA Cases

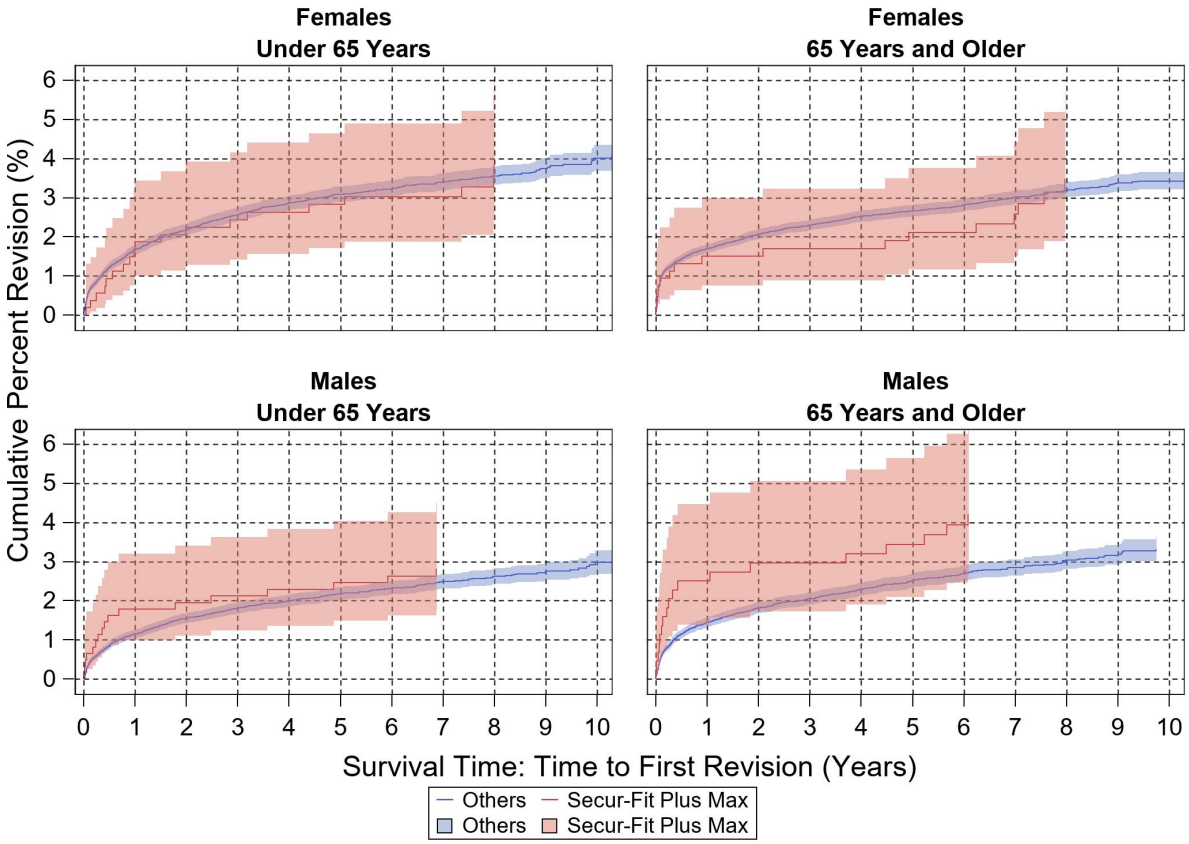


Figure 269. Cumulative Percent Revision Curve for the Secur-Fit Plus Max Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 730. Cumulative Percent Revision and Number at Risk for the Secur-Fit Plus Max Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	2,125	0.00 (0.00,0.00)	537	0.00 (0.00,0.00)	532	0.00 (0.00,0.00)	616	0.00 (0.00,0.00)	440	0.00 (0.00,0.00)
1	2,073	1.89 (1.39,2.56)	525	1.87 (1.01,3.44)	521	1.51 (0.76,2.99)	601	1.79 (0.99,3.21)	426	2.50 (1.39,4.47)
2	2,045	2.12 (1.59,2.83)	515	2.24 (1.28,3.92)	517	1.51 (0.76,2.99)	596	1.95 (1.11,3.41)	417	2.96 (1.73,5.05)
3	2,008	2.27 (1.71,3.00)	503	2.44 (1.42,4.16)	505	1.70 (0.89,3.23)	587	2.12 (1.24,3.62)	413	2.96 (1.73,5.05)
4	1,981	2.42 (1.84,3.17)	497	2.63 (1.57,4.40)	496	1.70 (0.89,3.23)	581	2.29 (1.36,3.83)	407	3.20 (1.91,5.35)
5	1,938	2.66 (2.06,3.45)	487	2.83 (1.71,4.65)	479	2.10 (1.17,3.76)	575	2.46 (1.49,4.04)	397	3.44 (2.09,5.64)
6	1,826	2.87 (2.24,3.68)	467	3.03 (1.87,4.90)	442	2.10 (1.17,3.76)	553	2.63 (1.62,4.26)	364	3.94 (2.47,6.27)
7	1,609	3.10 (2.43,3.94)	428	3.03 (1.87,4.90)	379	2.59 (1.50,4.42)	494	2.82 (1.76,4.50)	308	4.21 (2.67,6.60)
8	1,241	3.53 (2.79,4.45)	340	3.83 (2.45,5.98)	285	3.48 (2.12,5.68)	382	2.82 (1.76,4.50)	234	4.21 (2.67,6.60)
9	888	3.53 (2.79,4.45)	247	3.83 (2.45,5.98)	201	3.48 (2.12,5.68)	280	2.82 (1.76,4.50)	160	4.21 (2.67,6.60)
10	540	3.53 (2.79,4.45)	165	3.83 (2.45,5.98)	121	3.48 (2.12,5.68)	163	2.82 (1.76,4.50)	91	4.21 (2.67,6.60)

Table 731. Reasons for First Revision Following Primary THA for Secur-Fit Plus Max Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	16	27.1
2	Dislocation/Instability	13	22.0
3	Joint Infection	13	22.0
4	Aseptic Loosening	9	15.3
5	Implant Failure	3	5.1
6	Metal Reaction/Metallosis	2	3.4
7	Peri-prosthetic fracture - Acetabulum	1	1.7
8	Pain	1	1.7
9	Malalignment	1	1.7

Table 732. Reasons for First Revision in the First 90 Days Following Primary THA for Secur-Fit Plus Max Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	8	40.0
2	Dislocation/Instability	5	25.0
3	Joint Infection	3	15.0
4	Aseptic Loosening	2	10.0
5	Implant Failure	1	5.0
6	Peri-prosthetic fracture - Acetabulum	1	5.0

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Table 733. Reasons for First Revision Between 91 and 365 days Following Primary THA for Secur-Fit Plus Max Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	5	50.0
2	Dislocation/Instability	3	30.0
3	Aseptic Loosening	1	10.0
4	Metal Reaction/Metallosis	1	10.0

Table 734. Descriptive Statistics of Cases Receiving the Secur-Fit Plus Max Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,088	50.32	
Age (years)	2,162	62.42 (13.02)	63.00 (16.00)
Height (cm)	2,162	169.84 (10.68)	170.00 (15.24)
Weight (kg)	2,162	87.39 (19.84)	86.36 (26.80)
BMI(kg/m^2)	2,162	30.21 (6.24)	29.63 (7.35)
Smoker - Never (%)	1,011	46.76	
Smoker - Previous (%)	803	37.14	
Smoker - Current (%)	307	14.2	
Smoker - Unknown (%)	41	1.9	

Table 735. Distribution of Approach Used for Secur-Fit Plus Max Stem in Primary THA Cases

Approach	N	Percent
Anterior	8	0.4
Anterolateral	194	9.0
Posterior	1,940	89.7
Transtrochanteric	4	0.2
Missing/unknown/other	16	0.7

Table 736. Distribution of Head Size for Secur-Fit Plus Max Stem in Primary THA Cases

Size (mm)	N	Percent
28	1	0.1
32	162	7.8
36	1,551	75.0
40	299	14.5
44	47	2.3
Missing/unknown/other	7	0.3

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Table 737. Distribution of Bearing Surface for Secur-Fit Plus Max Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,194	55.2
Ceramic-on-plastic	866	40.1
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	80	3.7
Missing/unknown/other	22	1.0

Table 738. Distribution of Polyethylene Used for Secur-Fit Plus Max Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	2,103	98.0
Antioxidant XLPE	1	0.1
Missing/unknown/other	42	2.0

Table 739. Volume of Cases by Surgeon and Site for the Secur-Fit Plus Max Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	61 (183)	7 (45)
Cases per site	103 (252)	39 (71)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

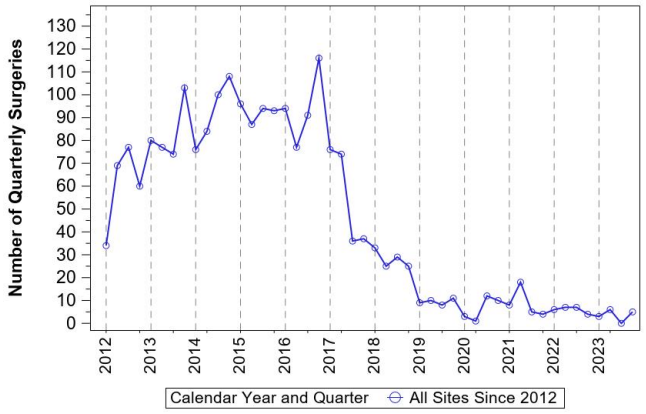


Figure 270. Utilization of the Secur-Fit Plus Max Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

60540913S	60540713S	S2337HF12
60540812S	60541016S	60540511S
60541014S	S2337HF10	60540509S
60540711S	60541117S	60540812
S2337HF08	60540610S	60540915
60541115S	S2337HF11	60541319S
60540814S	60540612S	S2337HF05
60540915S	S2337HF06	S2337HF13
S2337HF07	60541216S	
S2337HF09	60541218S	

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4.2.26 SROM

N = 1,163 primary cases were used for this analysis. Distribution of utilization: 62 surgeons across 35 sites used this implant in primary THA cases.

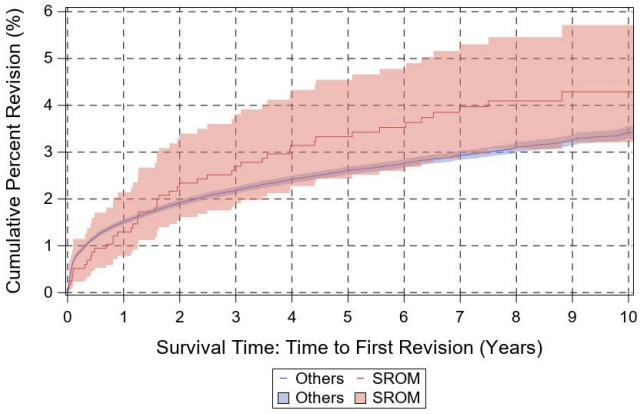


Figure 271. Cumulative Percent Revision Curve for the SROM Stem, Compared to All Other Femoral Components in Primary THA Cases

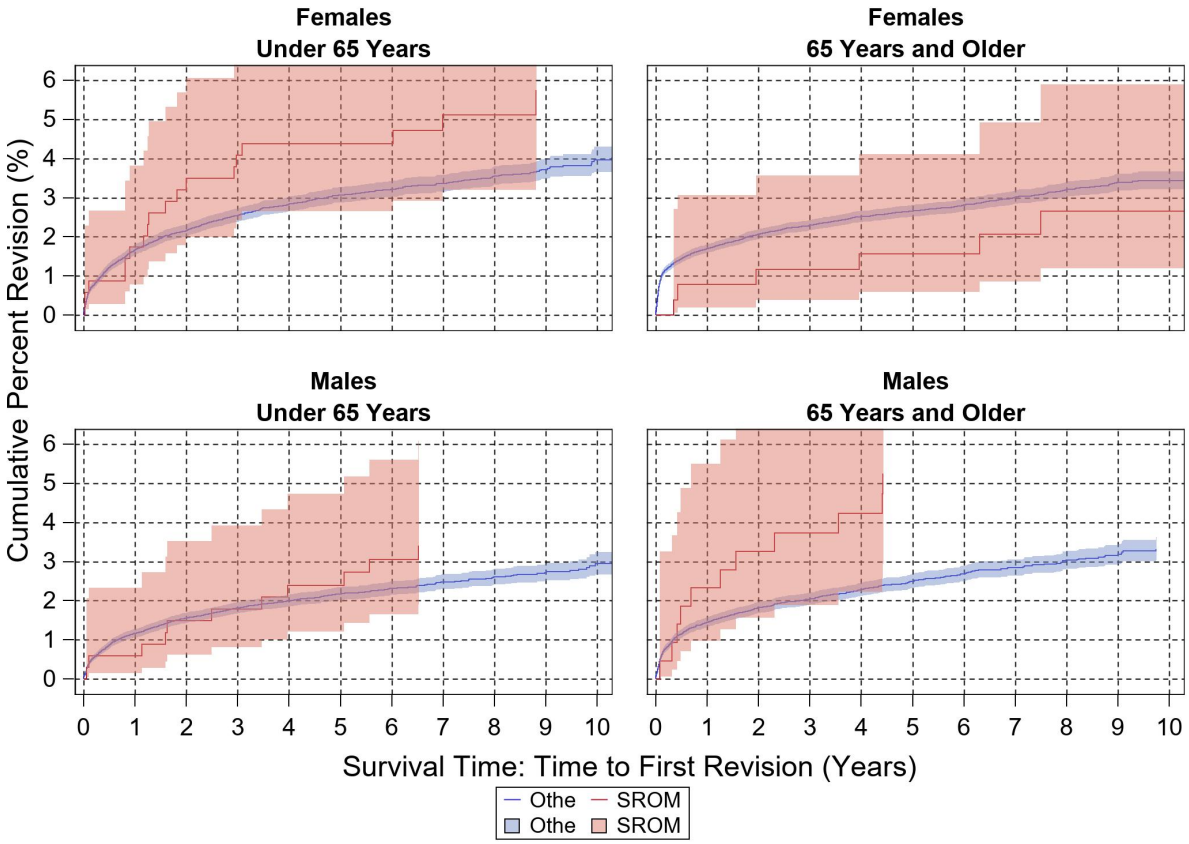


Figure 272. Cumulative Percent Revision Curve for the SROM Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 740. Cumulative Percent Revision and Number at Risk for the SROM Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,159	0.00 (0.00,0.00)	346	0.00 (0.00,0.00)	258	0.00 (0.00,0.00)	340	0.00 (0.00,0.00)	215	0.00 (0.00,0.00)
1	1,139	1.30 (0.78,2.14)	340	1.73 (0.78,3.82)	255	0.78 (0.19,3.06)	334	0.59 (0.15,2.33)	210	2.33 (0.97,5.50)
2	1,118	2.34 (1.61,3.40)	329	3.49 (2.00,6.06)	253	1.17 (0.38,3.57)	330	1.48 (0.62,3.52)	206	3.26 (1.57,6.72)
3	1,099	2.69 (1.90,3.81)	324	4.08 (2.44,6.79)	250	1.17 (0.38,3.57)	324	1.78 (0.80,3.92)	201	3.73 (1.89,7.33)
4	1,068	3.14 (2.28,4.33)	316	4.38 (2.66,7.15)	245	1.57 (0.59,4.12)	315	2.39 (1.20,4.73)	192	4.23 (2.22,7.96)
5	994	3.33 (2.43,4.55)	297	4.38 (2.66,7.15)	221	1.57 (0.59,4.12)	301	2.39 (1.20,4.73)	175	5.25 (2.94,9.29)
6	921	3.53 (2.60,4.78)	277	4.38 (2.66,7.15)	203	1.57 (0.59,4.12)	281	3.05 (1.65,5.61)	160	5.25 (2.94,9.29)
7	809	3.97 (2.96,5.30)	239	5.12 (3.20,8.12)	181	2.07 (0.86,4.92)	249	3.41 (1.90,6.08)	140	5.25 (2.94,9.29)
8	660	4.10 (3.07,5.46)	197	5.12 (3.20,8.12)	147	2.66 (1.19,5.90)	195	3.41 (1.90,6.08)	121	5.25 (2.94,9.29)
9	445	4.29 (3.21,5.71)	132	5.75 (3.60,9.11)	104	2.66 (1.19,5.90)	125	3.41 (1.90,6.08)	84	5.25 (2.94,9.29)
10	208	4.29 (3.21,5.71)	62	5.75 (3.60,9.11)	49	2.66 (1.19,5.90)	57	3.41 (1.90,6.08)	40	5.25 (2.94,9.29)

Table 741. Reasons for First Revision Following Primary THA for SROM Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	13	30.2
2	Aseptic Loosening	9	20.9
3	Dislocation/Instability	7	16.3
4	Implant Failure	6	14.0
5	Malalignment	4	9.3
6	Peri-prosthetic fracture - Femur	2	4.7
7	Metal Reaction/Metallosis	1	2.3
8	Pain	1	2.3

Table 742. Reasons for First Revision in the First 90 Days Following Primary THA for SROM Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	3	50.0
2	Dislocation/Instability	2	33.3
3	Peri-prosthetic fracture - Femur	1	16.7

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Table 743. Reasons for First Revision Between 91 and 365 days Following Primary THA for SROM Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	3	50.0
2	Aseptic Loosening	1	16.7
3	Dislocation/Instability	1	16.7
4	Implant Failure	1	16.7

Table 744. Descriptive Statistics of Cases Receiving the SROM Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	606	52.11	
Age (years)	1,163	60.91 (12.60)	62.00 (16.00)
Height (cm)	1,162	170.23 (11.81)	170.18 (17.44)
Weight (kg)	1,162	89.22 (22.38)	88.00 (29.50)
BMI(kg/m^2)	1,162	30.65 (6.57)	29.86 (8.82)
Smoker - Never (%)	579	49.79	
Smoker - Previous (%)	405	34.82	
Smoker - Current (%)	176	15.13	
Smoker - Unknown (%)	3	0.26	

Table 745. Distribution of Approach Used for SROM Stem in Primary THA Cases

Approach	N	Percent
Anterior	13	1.1
Anterolateral	605	52.0
Posterior	523	45.0
Transtrochanteric	14	1.2
Missing/unknown/other	8	0.7

Table 746. Distribution of Head Size for SROM Stem in Primary THA Cases

Size (mm)	N	Percent
22	9	0.8
28	39	3.4
32	264	22.8
36	808	69.9
40	26	2.2
44	2	0.2
Missing/unknown/other	8	0.7

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Table 747. Distribution of Bearing Surface for SROM Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	340	29.2
Ceramic-on-plastic	806	69.3
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	3	0.3
Missing/unknown/other	14	1.2

Table 748. Distribution of Polyethylene Used for SROM Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	994	85.9
Antioxidant XLPE	8	0.7
Missing/unknown/other	155	13.4

Table 749. Volume of Cases by Surgeon and Site for the SROM Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	18 (45)	3 (5)
Cases per site	33 (120)	4 (8)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

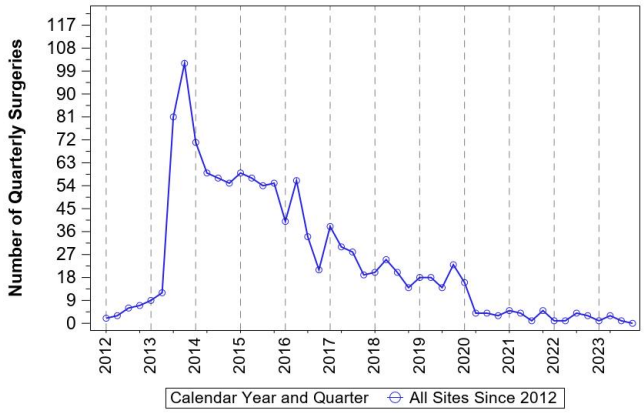


Figure 273. Utilization of the SROM Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

523418	523291	563216L
563618	523191	523197
563517	523394	523251
563620	523393	523396
523420	523208	526516L
563516	523293	526520L
523193	523395	526520R
563518	563626	563118L
523192	523195	563118N
563622	523424	563120L
523194	563624	563124N
523422	563118R	
523292	563120N	
563514	563122N	

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4.2.27 Summit

N = 8,031 primary cases were used for this analysis. Distribution of utilization: 82 surgeons across 38 sites used this implant in primary THA cases.

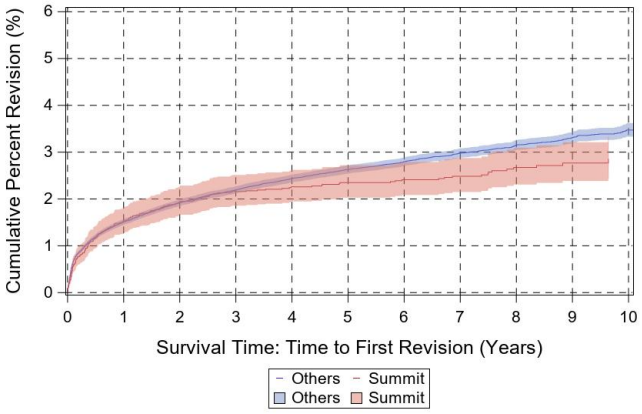


Figure 274. Cumulative Percent Revision Curve for the Summit Stem, Compared to All Other Femoral Components in Primary THA Cases

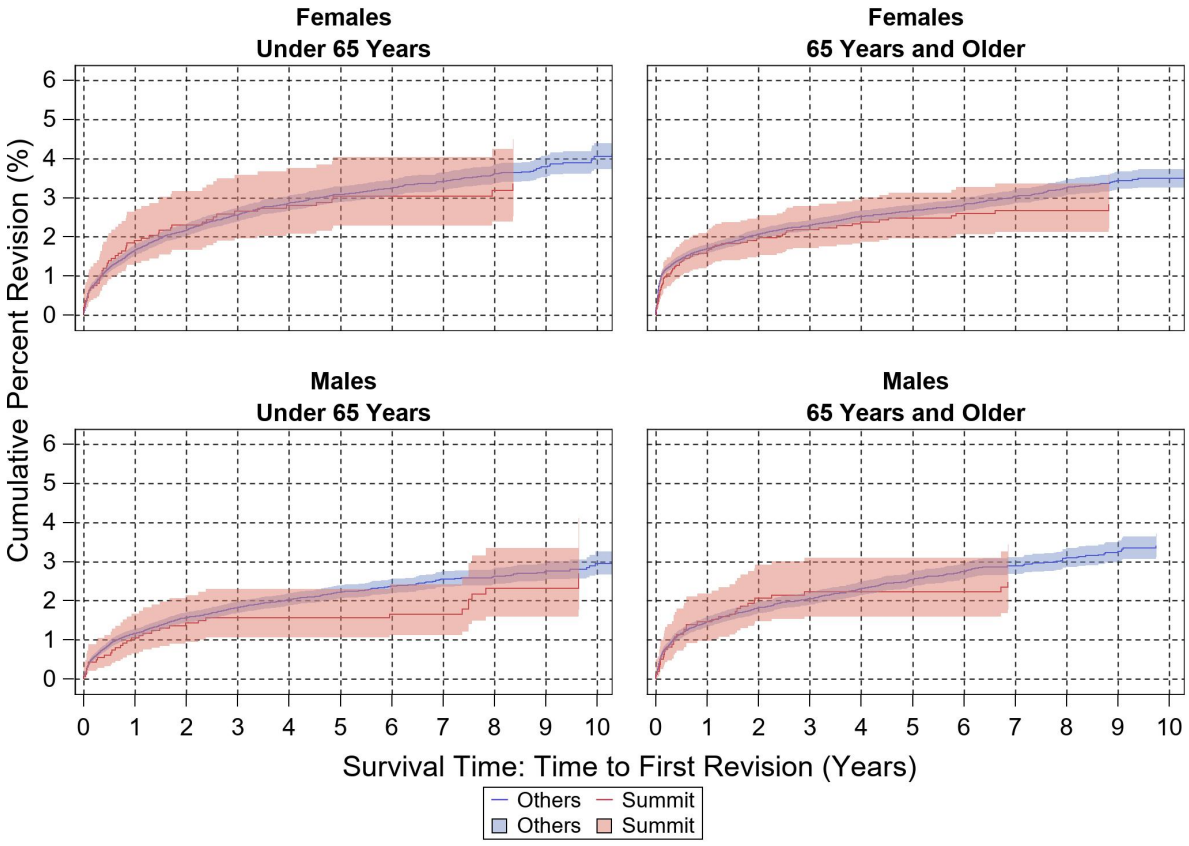


Figure 275. Cumulative Percent Revision Curve for the Summit Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 750. Cumulative Percent Revision and Number at Risk for the Summit Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	7,940	0.00 (0.00,0.00)	1,595	0.00 (0.00,0.00)	3,088	0.00 (0.00,0.00)	1,651	0.00 (0.00,0.00)	1,605	0.00 (0.00,0.00)
1	7,399	1.53 (1.28,1.83)	1,514	1.90 (1.33,2.71)	2,802	1.65 (1.25,2.17)	1,576	1.04 (0.65,1.67)	1,506	1.45 (0.97,2.18)
2	6,811	1.94 (1.65,2.27)	1,443	2.30 (1.66,3.17)	2,500	1.94 (1.50,2.51)	1,477	1.43 (0.95,2.14)	1,390	2.07 (1.47,2.92)
3	6,257	2.16 (1.86,2.51)	1,358	2.65 (1.96,3.58)	2,236	2.19 (1.72,2.79)	1,408	1.56 (1.06,2.31)	1,254	2.22 (1.59,3.09)
4	5,767	2.26 (1.95,2.62)	1,289	2.80 (2.08,3.76)	2,009	2.38 (1.88,3.01)	1,315	1.56 (1.06,2.31)	1,153	2.22 (1.59,3.09)
5	5,215	2.35 (2.03,2.72)	1,182	3.04 (2.28,4.04)	1,769	2.48 (1.96,3.13)	1,224	1.56 (1.06,2.31)	1,039	2.22 (1.59,3.09)
6	4,558	2.41 (2.08,2.79)	1,032	3.04 (2.28,4.04)	1,545	2.60 (2.06,3.28)	1,076	1.65 (1.13,2.42)	904	2.22 (1.59,3.09)
7	3,717	2.49 (2.15,2.87)	842	3.04 (2.28,4.04)	1,251	2.67 (2.12,3.36)	879	1.65 (1.13,2.42)	744	2.47 (1.78,3.44)
8	2,724	2.67 (2.31,3.09)	635	3.19 (2.39,4.24)	903	2.67 (2.12,3.36)	630	2.32 (1.60,3.35)	556	2.47 (1.78,3.44)
9	1,688	2.77 (2.38,3.21)	394	3.36 (2.51,4.49)	555	2.83 (2.22,3.61)	392	2.32 (1.60,3.35)	347	2.47 (1.78,3.44)
10	766	2.85 (2.44,3.34)	177	3.36 (2.51,4.49)	235	2.83 (2.22,3.61)	185	2.70 (1.77,4.12)	169	2.47 (1.78,3.44)

Table 751. Reasons for First Revision Following Primary THA for Summit Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	56	31.3
2	Joint Infection	37	20.7
3	Peri-prosthetic fracture - Femur	36	20.1
4	Aseptic Loosening	21	11.7
5	Pain	13	7.3
6	Implant Failure	5	2.8
7	Metal Reaction/Metallosis	5	2.8
8	Peri-prosthetic fracture - Acetabulum	3	1.7
9	Malalignment	2	1.1
10	Osteolysis	1	0.6

Table 752. Reasons for First Revision in the First 90 Days Following Primary THA for Summit Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	31	51.7
2	Dislocation/Instability	14	23.3
3	Joint Infection	10	16.7
4	Aseptic Loosening	4	6.7
5	Peri-prosthetic fracture - Acetabulum	1	1.7

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Table 753. Reasons for First Revision Between 91 and 365 days Following Primary THA for Summit Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	19	38.8
2	Joint Infection	18	36.7
3	Aseptic Loosening	7	14.3
4	Pain	3	6.1
5	Peri-prosthetic fracture - Acetabulum	2	4.1

Table 754. Descriptive Statistics of Cases Receiving the Summit Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	4,737	58.98	
Age (years)	8,031	66.77 (11.03)	67.00 (15.00)
Height (cm)	7,928	168.96 (10.42)	168.00 (17.78)
Weight (kg)	7,929	88.89 (22.61)	86.20 (29.93)
BMI(kg/m^2)	7,928	30.98 (6.72)	30.07 (8.75)
Smoker - Never (%)	3,709	46.18	
Smoker - Previous (%)	3,190	39.72	
Smoker - Current (%)	1,110	13.82	
Smoker - Unknown (%)	22	0.27	

Table 755. Distribution of Approach Used for Summit Stem in Primary THA Cases

Approach	N	Percent
Anterior	240	3.0
Anterolateral	2914	36.3
Posterior	4,714	58.7
Transtrochanteric	36	0.5
Missing/unknown/other	127	1.6

Table 756. Distribution of Head Size for Summit Stem in Primary THA Cases

Size (mm)	N	Percent
22	5	0.1
28	108	1.4
32	1,951	24.5
36	5,185	65.1
40	655	8.2
44	26	0.3
Missing/unknown/other	40	0.5

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Table 757. Distribution of Bearing Surface for Summit Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	3,135	39.0
Ceramic-on-plastic	4,745	59.1
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	14	0.2
Missing/unknown/other	137	1.7

Table 758. Distribution of Polyethylene Used for Summit Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	22	0.3
XLPE	6,942	87.5
Antioxidant XLPE	1	0.0
Missing/unknown/other	965	12.2

Table 759. Volume of Cases by Surgeon and Site for the Summit Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	97 (251)	13 (78)
Cases per site	211 (389)	56 (251)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

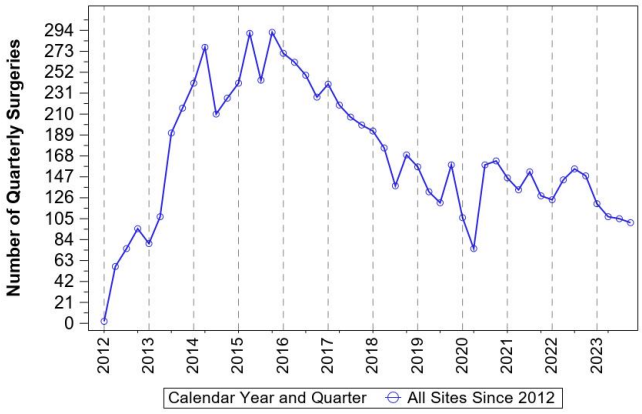


Figure 276. Utilization of the Summit Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

157001110	157001080	157013100
157011110	157011080	157013090
157011135	157003110	157013120
157011120	157011165	157013135
157001100	157003100	157011070
157001120	157001165	157011180
157011100	157003120	157003150
157001135	157003090	157001180
157001090	157003080	157013150
157011090	157013110	
157011150	157003135	
157001150	157001070	

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4.2.28 Synergy

N = 1,654 primary cases were used for this analysis. Distribution of utilization: 45 surgeons across 32 sites used this implant in primary THA cases.

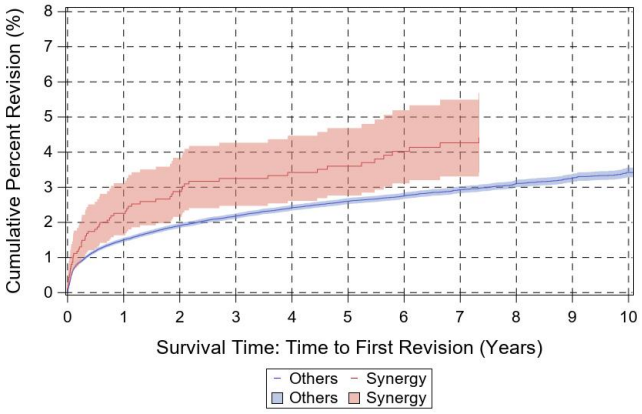


Figure 277. Cumulative Percent Revision Curve for the Synergy Stem, Compared to All Other Femoral Components in Primary THA Cases

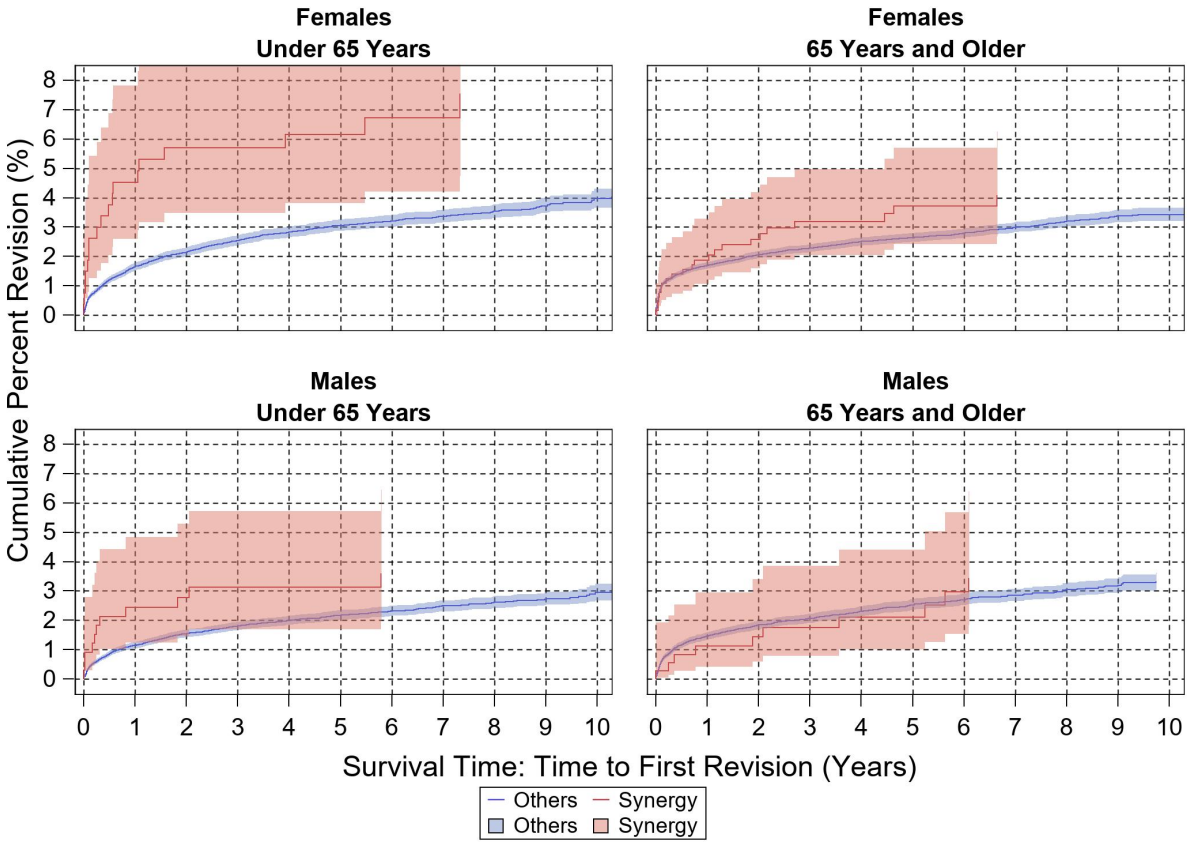


Figure 278. Cumulative Percent Revision Curve for the Synergy Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 760. Cumulative Percent Revision and Number at Risk for the Synergy Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,616	0.00 (0.00,0.00)	267	0.00 (0.00,0.00)	651	0.00 (0.00,0.00)	330	0.00 (0.00,0.00)	367	0.00 (0.00,0.00)
1	1,466	2.26 (1.63,3.12)	246	4.52 (2.59,7.83)	578	1.87 (1.07,3.28)	303	2.45 (1.23,4.83)	339	1.11 (0.42,2.94)
2	1,332	2.88 (2.16,3.84)	232	5.70 (3.47,9.27)	500	2.58 (1.59,4.19)	287	2.78 (1.46,5.28)	313	1.43 (0.60,3.40)
3	1,215	3.25 (2.47,4.27)	221	5.70 (3.47,9.27)	442	3.19 (2.04,4.97)	271	3.12 (1.69,5.73)	281	1.74 (0.79,3.84)
4	1,124	3.42 (2.61,4.47)	204	6.15 (3.81,9.85)	404	3.19 (2.04,4.97)	256	3.12 (1.69,5.73)	260	2.11 (1.01,4.40)
5	1,003	3.60 (2.77,4.69)	180	6.15 (3.81,9.85)	344	3.72 (2.42,5.70)	236	3.12 (1.69,5.73)	243	2.11 (1.01,4.40)
6	851	4.02 (3.11,5.19)	146	6.72 (4.21,10.63)	298	3.72 (2.42,5.70)	197	3.59 (1.99,6.44)	210	2.96 (1.53,5.67)
7	689	4.27 (3.31,5.49)	119	6.72 (4.21,10.63)	242	4.09 (2.67,6.25)	163	3.59 (1.99,6.44)	165	3.44 (1.84,6.38)
8	508	4.42 (3.42,5.69)	92	7.54 (4.74,11.90)	174	4.09 (2.67,6.25)	121	3.59 (1.99,6.44)	121	3.44 (1.84,6.38)
9	326	4.42 (3.42,5.69)	65	7.54 (4.74,11.90)	111	4.09 (2.67,6.25)	75	3.59 (1.99,6.44)	75	3.44 (1.84,6.38)
10	134	4.42 (3.42,5.69)	30	7.54 (4.74,11.90)	40	4.09 (2.67,6.25)	35	3.59 (1.99,6.44)	29	3.44 (1.84,6.38)

Table 761. Reasons for First Revision Following Primary THA for Synergy Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	24	45.3
2	Aseptic Loosening	8	15.1
3	Peri-prosthetic fracture - Femur	8	15.1
4	Joint Infection	7	13.2
5	Pain	2	3.8
6	Malalignment	2	3.8
7	Implant Failure	1	1.9
8	Metal Reaction/Metallosis	1	1.9

Table 762. Reasons for First Revision in the First 90 Days Following Primary THA for Synergy Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	9	47.4
2	Peri-prosthetic fracture - Femur	4	21.0
3	Joint Infection	2	10.5
4	Malalignment	2	10.5
5	Aseptic Loosening	1	5.3
6	Implant Failure	1	5.3

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Table 763. Reasons for First Revision Between 91 and 365 days Following Primary THA for Synergy Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	7	58.3
2	Aseptic Loosening	4	33.3
3	Joint Infection	1	8.3

Table 764. Descriptive Statistics of Cases Receiving the Synergy Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	937	56.65	
Age (years)	1,654	68.10 (10.82)	68.00 (15.00)
Height (cm)	1,654	168.71 (10.71)	167.64 (17.78)
Weight (kg)	1,654	88.24 (21.11)	86.67 (28.40)
BMI(kg/m^2)	1,654	30.85 (6.11)	30.36 (8.33)
Smoker - Never (%)	742	44.86	
Smoker - Previous (%)	654	39.54	
Smoker - Current (%)	254	15.36	
Smoker - Unknown (%)	4	0.24	

Table 765. Distribution of Approach Used for Synergy Stem in Primary THA Cases

Approach	N	Percent
Anterior	149	9.0
Anterolateral	497	30.1
Posterior	994	60.1
Transtrochanteric	8	0.5
Missing/unknown/other	6	0.4

Table 766. Distribution of Head Size for Synergy Stem in Primary THA Cases

Size (mm)	N	Percent
22	1	0.1
28	22	1.4
32	474	30.2
36	994	63.4
40	66	4.2
44	4	0.2
Missing/unknown/other	8	0.5

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Table 767. Distribution of Bearing Surface for Synergy Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	690	41.7
Ceramic-on-plastic	877	53.0
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	71	4.3
Missing/unknown/other	16	1.0

Table 768. Distribution of Polyethylene Used for Synergy Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	9	0.6
XLPE	1,520	92.5
Antioxidant XLPE	0	0.0
Missing/unknown/other	115	7.0

Table 769. Volume of Cases by Surgeon and Site for the Synergy Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	36 (64)	6 (24)
Cases per site	51 (91)	10 (71)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

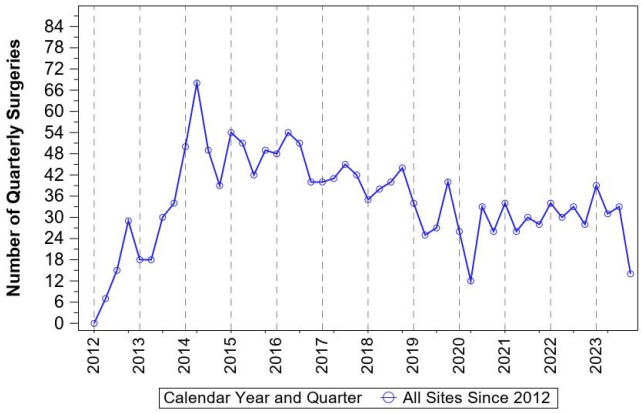


Figure 279. Utilization of the Synergy Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

71306614	71316011	71316009
71306114	71306111	71316214
71306613	71316012	71316216
71306113	71316212	71316016
71306612	71306118	71306110
71306112	71316010	71316215
71306115	71316211	71306610
71306615	71316210	71926107
71306116	71316013	71316017
71306616	71316014	71316217
71306117	71316213	71306609
71306611	71316015	71306608
71306617	71306618	

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4.2.29 Taperloc

N = 522 primary cases were used for this analysis. Distribution of utilization: 20 surgeons across 10 sites used this implant in primary THA cases.

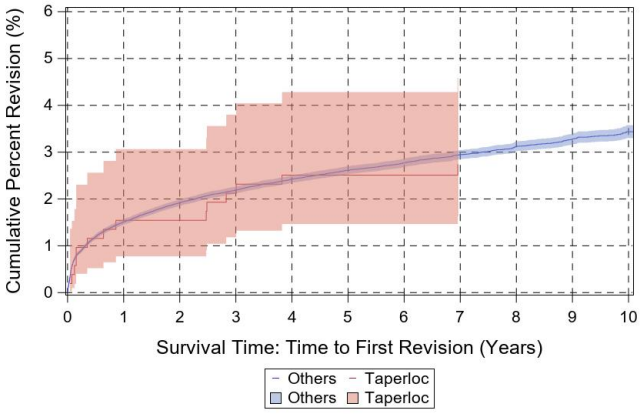


Figure 280. Cumulative Percent Revision Curve for the Taperloc Stem, Compared to All Other Femoral Components in Primary THA Cases

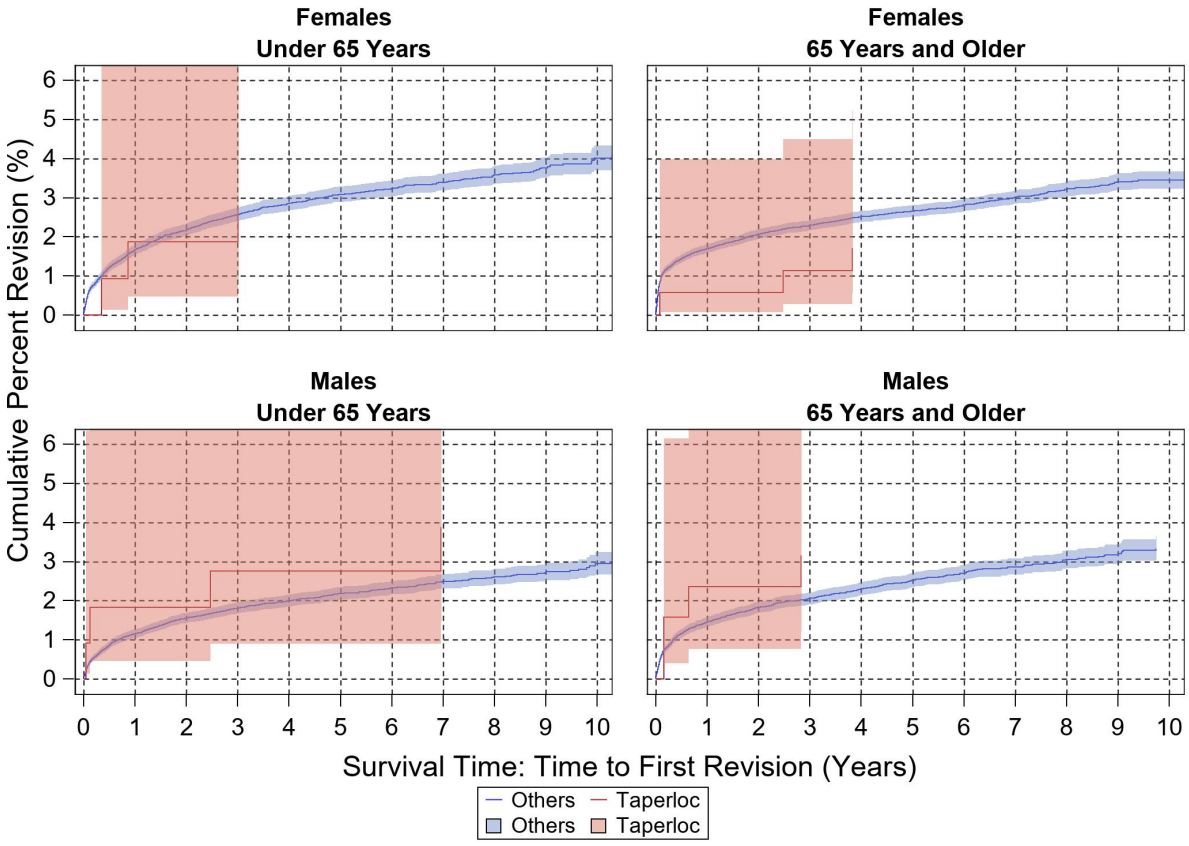


Figure 281. Cumulative Percent Revision Curve for the Taperloc Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 770. Cumulative Percent Revision and Number at Risk for the Taperloc Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	518	0.00 (0.00,0.00)	107	0.00 (0.00,0.00)	175	0.00 (0.00,0.00)	109	0.00 (0.00,0.00)	127	0.00 (0.00,0.00)
1	510	1.54 (0.78,3.06)	105	1.87 (0.47,7.27)	174	0.57 (0.08,3.99)	107	1.83 (0.46,7.14)	124	2.36 (0.77,7.14)
2	510	1.54 (0.78,3.06)	105	1.87 (0.47,7.27)	174	0.57 (0.08,3.99)	107	1.83 (0.46,7.14)	124	2.36 (0.77,7.14)
3	506	2.12 (1.18,3.80)	105	1.87 (0.47,7.27)	173	1.14 (0.29,4.49)	105	2.75 (0.90,8.29)	123	3.15 (1.19,8.17)
4	503	2.51 (1.47,4.28)	104	2.80 (0.91,8.44)	172	1.71 (0.56,5.22)	104	2.75 (0.90,8.29)	123	3.15 (1.19,8.17)
5	492	2.51 (1.47,4.28)	101	2.80 (0.91,8.44)	170	1.71 (0.56,5.22)	103	2.75 (0.90,8.29)	118	3.15 (1.19,8.17)
6	457	2.51 (1.47,4.28)	96	2.80 (0.91,8.44)	163	1.71 (0.56,5.22)	95	2.75 (0.90,8.29)	103	3.15 (1.19,8.17)
7	420	2.74 (1.63,4.59)	91	2.80 (0.91,8.44)	146	1.71 (0.56,5.22)	84	3.88 (1.47,10.07)	99	3.15 (1.19,8.17)
8	354	2.74 (1.63,4.59)	79	2.80 (0.91,8.44)	122	1.71 (0.56,5.22)	68	3.88 (1.47,10.07)	85	3.15 (1.19,8.17)
9	275	2.74 (1.63,4.59)	56	2.80 (0.91,8.44)	93	1.71 (0.56,5.22)	54	3.88 (1.47,10.07)	72	3.15 (1.19,8.17)
10	178	2.74 (1.63,4.59)	37	2.80 (0.91,8.44)	62	1.71 (0.56,5.22)	29	3.88 (1.47,10.07)	50	3.15 (1.19,8.17)

Table 771. Reasons for First Revision Following Primary THA for Taperloc Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	2	16.7
2	Dislocation/Instability	2	16.7
3	Joint Infection	2	16.7
4	Implant Failure	2	16.7
5	Peri-prosthetic fracture - Femur	2	16.7
6	Metal Reaction/Metallosis	1	8.3
7	Malalignment	1	8.3

Table 772. Reasons for First Revision in the First 90 Days Following Primary THA for Taperloc Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	25.0
2	Dislocation/Instability	1	25.0
3	Joint Infection	1	25.0
4	Implant Failure	1	25.0

Table 773. Reasons for First Revision Between 91 and 365 days Following Primary THA for Taperloc Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	1	50.0
2	Implant Failure	1	50.0

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Table 774. Descriptive Statistics of Cases Receiving the Taperloc Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	285	54.6	
Age (years)	522	67.17 (10.42)	67.00 (15.00)
Height (cm)	522	169.93 (10.68)	170.00 (15.30)
Weight (kg)	522	88.28 (20.51)	86.20 (27.40)
BMI(kg/m^2)	522	30.41 (5.75)	29.64 (7.50)
Smoker - Never (%)	236	45.21	
Smoker - Previous (%)	219	41.95	
Smoker - Current (%)	65	12.45	
Smoker - Unknown (%)	2	0.38	

Table 775. Distribution of Approach Used for Taperloc Stem in Primary THA Cases

Approach	N	Percent
Anterior	4	0.8
Anterolateral	240	46.0
Posterior	276	52.9
Transtrochanteric	0	0.0
Missing/unknown/other	2	0.4

Table 776. Distribution of Head Size for Taperloc Stem in Primary THA Cases

Size (mm)	N	Percent
28	6	1.4
32	94	22.0
36	219	51.2
40	81	18.9
44	26	6.1
Missing/unknown/other	2	0.5

Table 777. Distribution of Bearing Surface for Taperloc Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	294	56.3
Ceramic-on-plastic	131	25.1
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	76	14.6
Missing/unknown/other	21	4.0

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Table 778. Distribution of Polyethylene Used for Taperloc Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	3	0.6
XLPE	170	33.7
Antioxidant XLPE	321	63.7
Missing/unknown/other	10	2.0

Table 779. Volume of Cases by Surgeon and Site for the Taperloc Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	26 (41)	6 (21)
Cases per site	52 (79)	10 (93)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

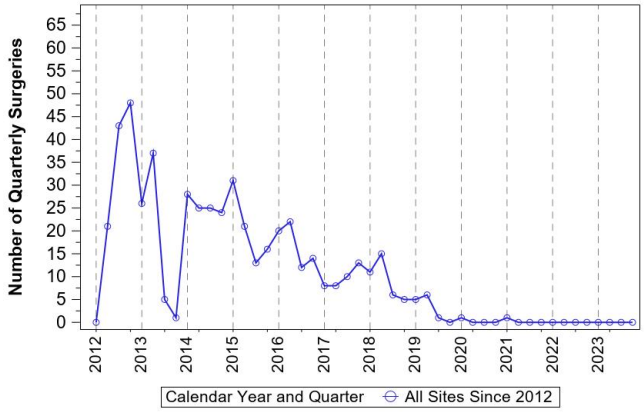


Figure 282. Utilization of the Taperloc Stem in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

11103205	103207	103209
11103203	13103207	12103210
11103204	13103206	11103200
11103206	11103201	12103206
11103208	103201	12103207
11103207	13103208	12103208
103203	13103215	13103209
103205	103208	11103210
103206	13103210	12103211
11103202	11103215	13103211
103204	103200	
103202	11103209	

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4.2.30 Taperloc 133

N = 15,959 primary cases were used for this analysis. Distribution of utilization: 116 surgeons across 64 sites used this implant in primary THA cases.

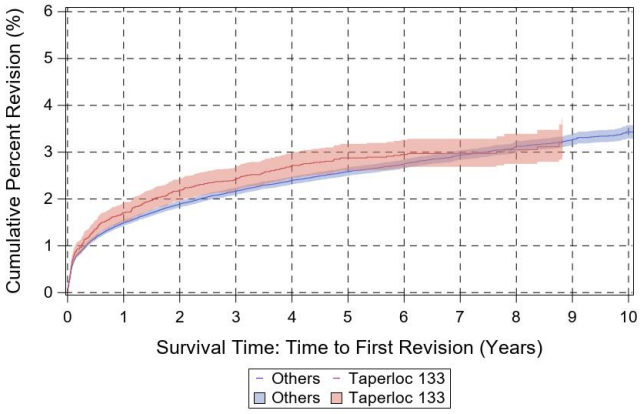


Figure 283. Cumulative Percent Revision Curve for the Taperloc 133 Stem, Compared to All Other Femoral Components in Primary THA Cases

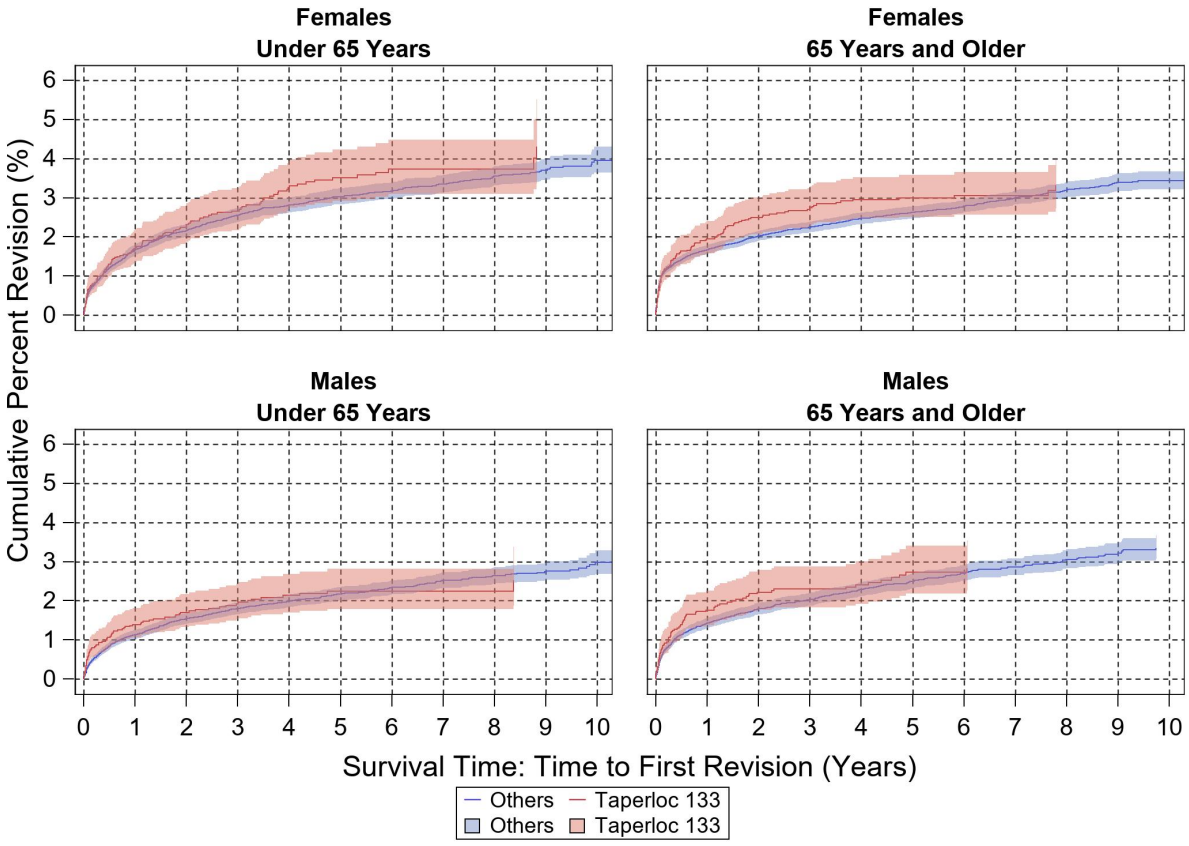


Figure 284. Cumulative Percent Revision Curve for the Taperloc 133 Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 780. Cumulative Percent Revision and Number at Risk for the Taperloc 133 Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	15,877	0.00 (0.00,0.00)	3,899	0.00 (0.00,0.00)	4,527	0.00 (0.00,0.00)	3,912	0.00 (0.00,0.00)	3,534	0.00 (0.00,0.00)
1	13,807	1.70 (1.51,1.92)	3,407	1.69 (1.33,2.16)	3,963	1.94 (1.58,2.40)	3,438	1.39 (1.07,1.82)	2,994	1.75 (1.37,2.25)
2	11,920	2.19 (1.97,2.44)	2,957	2.31 (1.87,2.85)	3,460	2.50 (2.07,3.01)	2,950	1.70 (1.33,2.17)	2,548	2.22 (1.76,2.78)
3	10,048	2.42 (2.18,2.68)	2,505	2.66 (2.17,3.25)	2,929	2.74 (2.28,3.28)	2,479	1.92 (1.52,2.43)	2,130	2.30 (1.83,2.87)
4	8,420	2.71 (2.45,2.99)	2,091	3.26 (2.69,3.93)	2,499	2.95 (2.47,3.52)	2,045	2.13 (1.69,2.68)	1,780	2.40 (1.92,3.00)
5	6,474	2.88 (2.60,3.18)	1,634	3.51 (2.91,4.23)	1,980	3.00 (2.51,3.58)	1,524	2.24 (1.78,2.81)	1,331	2.72 (2.18,3.40)
6	4,779	2.95 (2.67,3.26)	1,230	3.72 (3.09,4.49)	1,481	3.06 (2.56,3.65)	1,107	2.24 (1.78,2.81)	956	2.72 (2.18,3.40)
7	3,218	2.97 (2.69,3.29)	842	3.72 (3.09,4.49)	1,001	3.06 (2.56,3.65)	750	2.24 (1.78,2.81)	620	2.83 (2.26,3.54)
8	2,021	3.05 (2.75,3.39)	531	3.72 (3.09,4.49)	650	3.31 (2.72,4.03)	459	2.24 (1.78,2.81)	376	2.83 (2.26,3.54)
9	1,051	3.28 (2.89,3.71)	279	4.31 (3.36,5.51)	338	3.31 (2.72,4.03)	238	2.51 (1.87,3.37)	191	2.83 (2.26,3.54)
10	344	3.28 (2.89,3.71)	98	4.31 (3.36,5.51)	111	3.31 (2.72,4.03)	70	2.51 (1.87,3.37)	64	2.83 (2.26,3.54)

Table 781. Reasons for First Revision Following Primary THA for Taperloc 133 Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	127	32.2
2	Joint Infection	88	22.3
3	Peri-prosthetic fracture - Femur	78	19.7
4	Aseptic Loosening	50	12.7
5	Pain	17	4.3
6	Implant Failure	14	3.5
7	Malalignment	11	2.8
8	Peri-prosthetic fracture - Acetabulum	5	1.3
9	Poly liner wear	3	0.8
10	Metal Reaction/Metallosis	1	0.3
	Unknown/missing/other	1	0.3

Table 782. Reasons for First Revision in the First 90 Days Following Primary THA for Taperloc 133 Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	70	46.4
2	Dislocation/Instability	27	17.9
3	Joint Infection	26	17.2
4	Implant Failure	11	7.3
5	Aseptic Loosening	8	5.3
6	Peri-prosthetic fracture - Acetabulum	4	2.6
7	Malalignment	4	2.6
8	Pain	1	0.7

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Table 783. Reasons for First Revision Between 91 and 365 days Following Primary THA for Taperloc 133 Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	39	37.5
2	Joint Infection	37	35.6
3	Aseptic Loosening	13	12.5
4	Pain	6	5.8
5	Peri-prosthetic fracture - Femur	3	2.9
6	Implant Failure	2	1.9
7	Malalignment	2	1.9
8	Peri-prosthetic fracture - Acetabulum	1	1.0
9	Unknown/other/missing	1	1.0

Table 784. Descriptive Statistics of Cases Receiving the Taperloc 133 Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	8,465	53.04	
Age (years)	15,959	64.32 (10.62)	65.00 (13.00)
Height (cm)	15,959	170.25 (10.35)	170.18 (15.24)
Weight (kg)	15,959	91.19 (21.24)	89.70 (28.13)
BMI(kg/m^2)	15,959	31.36 (6.36)	30.69 (8.80)
Smoker - Never (%)	7,602	47.63	
Smoker - Previous (%)	5,879	36.84	
Smoker - Current (%)	2,362	14.8	
Smoker - Unknown (%)	116	0.73	

Table 785. Distribution of Approach Used for Taperloc 133 Stem in Primary THA Cases

Approach	N	Percent
Anterior	2,954	18.5
Anterolateral	4936	30.9
Posterior	8,014	50.2
Transtrochanteric	20	0.1
Missing/unknown/other	35	0.2

Table 786. Distribution of Head Size for Taperloc 133 Stem in Primary THA Cases

Size (mm)	N	Percent
28	16	0.1
32	1,147	7.9
36	8,907	61.6
40	4,235	29.3
44	72	0.5
Missing/unknown/other	87	0.6

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Table 787. Distribution of Bearing Surface for Taperloc 133 Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	3,713	23.3
Ceramic-on-plastic	10,664	66.8
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	1,342	8.4
Missing/unknown/other	240	1.5

Table 788. Distribution of Polyethylene Used for Taperloc 133 Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	20	0.1
XLPE	5,053	32.0
Antioxidant XLPE	8,050	51.0
Missing/unknown/other	2,669	16.9

Table 789. Volume of Cases by Surgeon and Site for the Taperloc 133 Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	137 (234)	24 (150)
Cases per site	249 (351)	87 (328)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

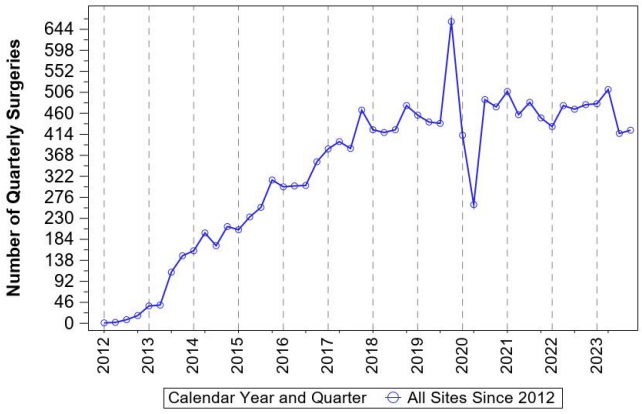


Figure 285. Utilization of the Taperloc 133 Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

51104120	51104170	51101140
51104110	51101060	51104220
51104130	51104180	51101100
51104100	51100070	51103220
51104140	51103160	51101160
51104150	51100060	51100090
51104090	51101050	51100110
51103110	51100050	51101170
51103100	51103180	51101180
51103120	51103170	51100140
51104160	51104200	51104240
51101080	51100040	51100120
51103090	51103200	51100130
51103130	51101150	51100160
51100080	51101130	51103240
51103150	51101120	51100100
51103140	51101090	51100170
51101070	51101110	

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4.2.31 Taperloc 133 Microplasty

N = 5,210 primary cases were used for this analysis. Distribution of utilization: 65 surgeons across 43 sites used this implant in primary THA cases.

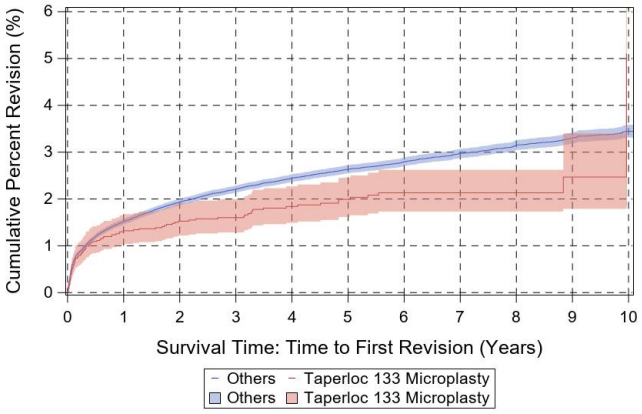


Figure 286. Cumulative Percent Revision Curve for the Taperloc 133 Microplasty Stem, Compared to All Other Femoral Components in Primary THA Cases

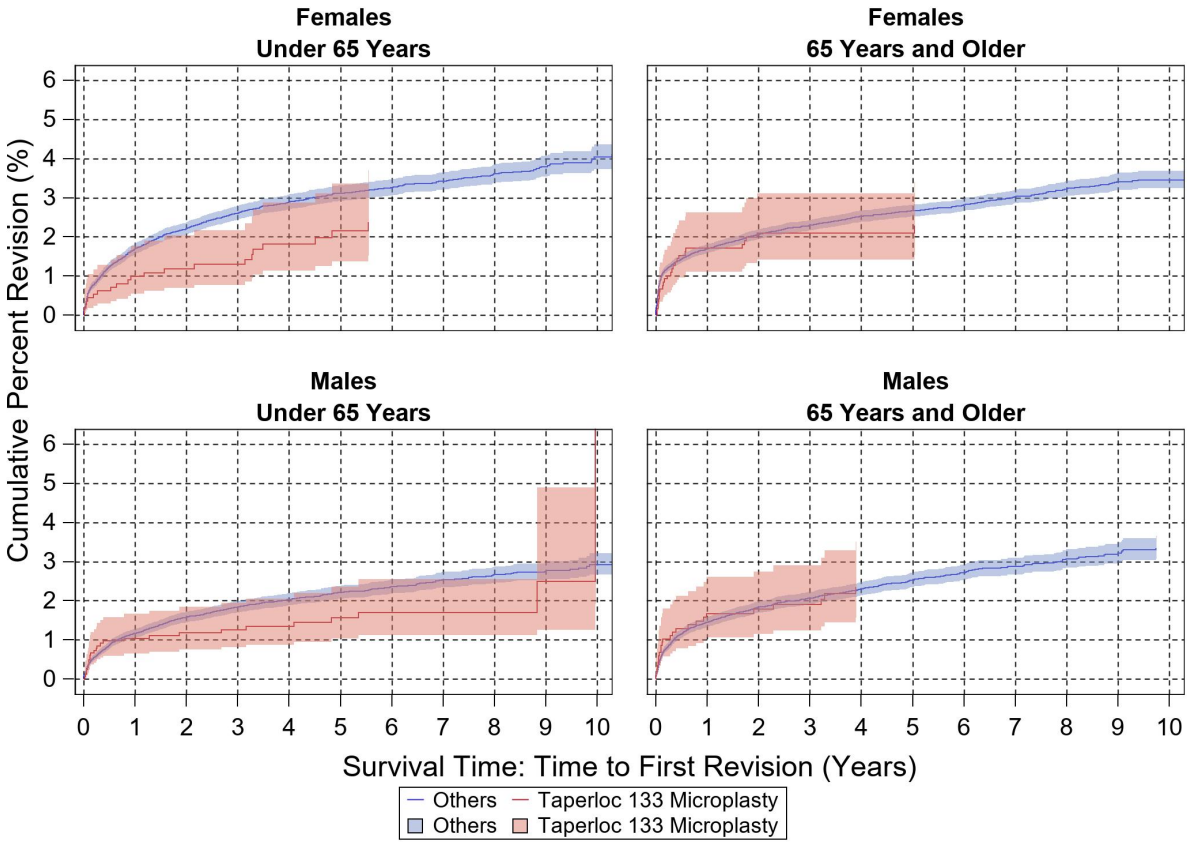


Figure 287. Cumulative Percent Revision Curve for the Taperloc 133 Microplasty Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 790. Cumulative Percent Revision and Number at Risk for the Taperloc 133 Microplasty Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	5,197	0.00 (0.00,0.00)	1,141	0.00 (0.00,0.00)	1,197	0.00 (0.00,0.00)	1,676	0.00 (0.00,0.00)	1,181	0.00 (0.00,0.00)
1	4,629	1.32 (1.04,1.68)	1,040	0.99 (0.55,1.78)	1,073	1.70 (1.10,2.63)	1,499	1.04 (0.65,1.66)	1,015	1.67 (1.07,2.60)
2	4,145	1.53 (1.22,1.91)	938	1.18 (0.69,2.03)	977	2.10 (1.41,3.12)	1,355	1.18 (0.75,1.84)	873	1.78 (1.15,2.75)
3	3,512	1.60 (1.29,2.00)	791	1.29 (0.77,2.17)	820	2.10 (1.41,3.12)	1,174	1.26 (0.81,1.94)	725	1.90 (1.24,2.90)
4	2,953	1.84 (1.49,2.27)	679	1.81 (1.14,2.87)	657	2.10 (1.41,3.12)	1,024	1.34 (0.87,2.06)	591	2.34 (1.56,3.51)
5	2,324	1.99 (1.62,2.45)	530	2.15 (1.38,3.36)	508	2.10 (1.41,3.12)	819	1.56 (1.03,2.36)	465	2.34 (1.56,3.51)
6	1,746	2.13 (1.73,2.62)	387	2.37 (1.52,3.70)	396	2.29 (1.54,3.41)	612	1.69 (1.12,2.55)	349	2.34 (1.56,3.51)
7	1,154	2.13 (1.73,2.62)	242	2.37 (1.52,3.70)	257	2.29 (1.54,3.41)	415	1.69 (1.12,2.55)	238	2.34 (1.56,3.51)
8	631	2.13 (1.73,2.62)	126	2.37 (1.52,3.70)	137	2.29 (1.54,3.41)	237	1.69 (1.12,2.55)	129	2.34 (1.56,3.51)
9	247	2.47 (1.79,3.40)	54	2.37 (1.52,3.70)	50	2.29 (1.54,3.41)	101	2.48 (1.25,4.90)	42	2.34 (1.56,3.51)
10	35	5.10 (1.84,13.73)	*	2.37 (1.52,3.70)	*	2.29 (1.54,3.41)	21	6.72 (1.92,22.08)	*	2.34 (1.56,3.51)

* Denotes that the number of cases is between 1 and 10.

Table 791. Reasons for First Revision Following Primary THA for Taperloc 133 Microplasty Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	22	23.4
2	Dislocation/Instability	21	22.3
3	Peri-prosthetic fracture - Femur	20	21.3
4	Joint Infection	19	20.2
5	Malalignment	5	5.3
6	Implant Failure	4	4.3
7	Pain	3	3.2

Table 792. Reasons for First Revision in the First 90 Days Following Primary THA for Taperloc 133 Microplasty Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	18	43.9
2	Joint Infection	7	17.1
3	Aseptic Loosening	6	14.6
4	Dislocation/Instability	5	12.2
5	Implant Failure	4	9.8
6	Malalignment	1	2.4

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Table 793. Reasons for First Revision Between 91 and 365 days Following Primary THA for Taperloc 133 Microplasty Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	10	41.7
2	Aseptic Loosening	8	33.3
3	Joint Infection	4	16.7
4	Pain	1	4.2
5	Malalignment	1	4.2

Table 794. Descriptive Statistics of Cases Receiving the Taperloc 133 Microplasty Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	2,343	44.97	
Age (years)	5,210	62.76 (10.44)	63.00 (13.00)
Height (cm)	5,210	171.86 (10.19)	172.70 (15.29)
Weight (kg)	5,210	89.31 (19.83)	88.14 (26.60)
BMI(kg/m^2)	5,210	30.11 (5.53)	29.62 (7.26)
Smoker - Never (%)	2,728	52.36	
Smoker - Previous (%)	1,847	35.45	
Smoker - Current (%)	614	11.79	
Smoker - Unknown (%)	21	0.4	

Table 795. Distribution of Approach Used for Taperloc 133 Microplasty Stem in Primary THA Cases

Approach	N	Percent
Anterior	3,735	71.7
Anterolateral	139	2.7
Posterior	1,328	25.5
Transtrochanteric	0	0.0
Missing/unknown/other	8	0.1

Table 796. Distribution of Head Size for Taperloc 133 Microplasty Stem in Primary THA Cases

Size (mm)	N	Percent
28	10	0.2
32	838	16.9
36	3,778	76.3
40	297	6.0
44	3	0.1
Missing/unknown/other	28	0.6

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Table 797. Distribution of Bearing Surface for Taperloc 133 Microplasty Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	555	10.7
Ceramic-on-plastic	4,371	83.9
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	227	4.4
Missing/unknown/other	57	1.1

Table 798. Distribution of Polyethylene Used for Taperloc 133 Microplasty Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	9	0.2
XLPE	1,049	20.3
Antioxidant XLPE	3,122	60.3
Missing/unknown/other	994	19.2

Table 799. Volume of Cases by Surgeon and Site for the Taperloc 133 Microplasty Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	80 (147)	11 (70)
Cases per site	121 (184)	24 (156)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

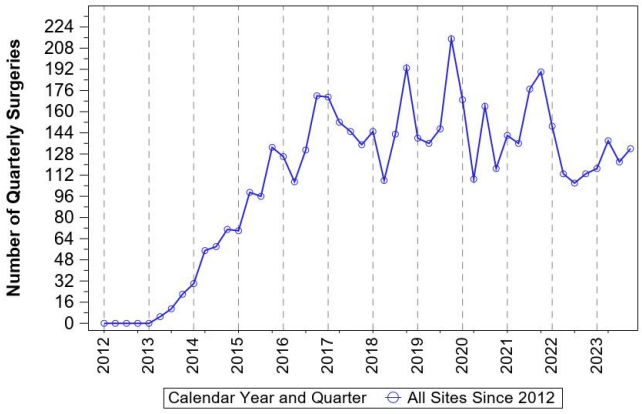


Figure 288. Utilization of the Taperloc 133 Microplasty Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

51107110	51106090	51109050
51107120	51108080	51106180
51107130	51109080	51108050
51106110	51106140	51106170
51107150	51107170	51106200
51107100	51106150	51107200
51107140	51109070	51108040
51106120	51108070	51107220
51106100	51107180	51106220
51106130	51108060	51107240
51107160	51106160	
51107090	51109060	

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4.2.32 Trabecular Metal

N = 1,399 primary cases were used for this analysis. Distribution of utilization: 27 surgeons across 17 sites used this implant in primary THA cases.

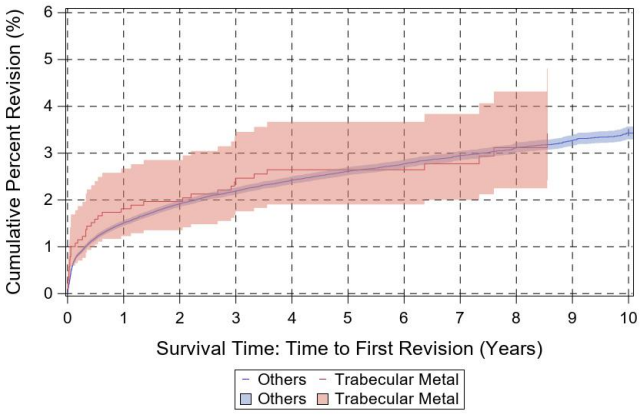


Figure 289. Cumulative Percent Revision Curve for the Trabecular Metal Stem, Compared to All Other Femoral Components in Primary THA Cases

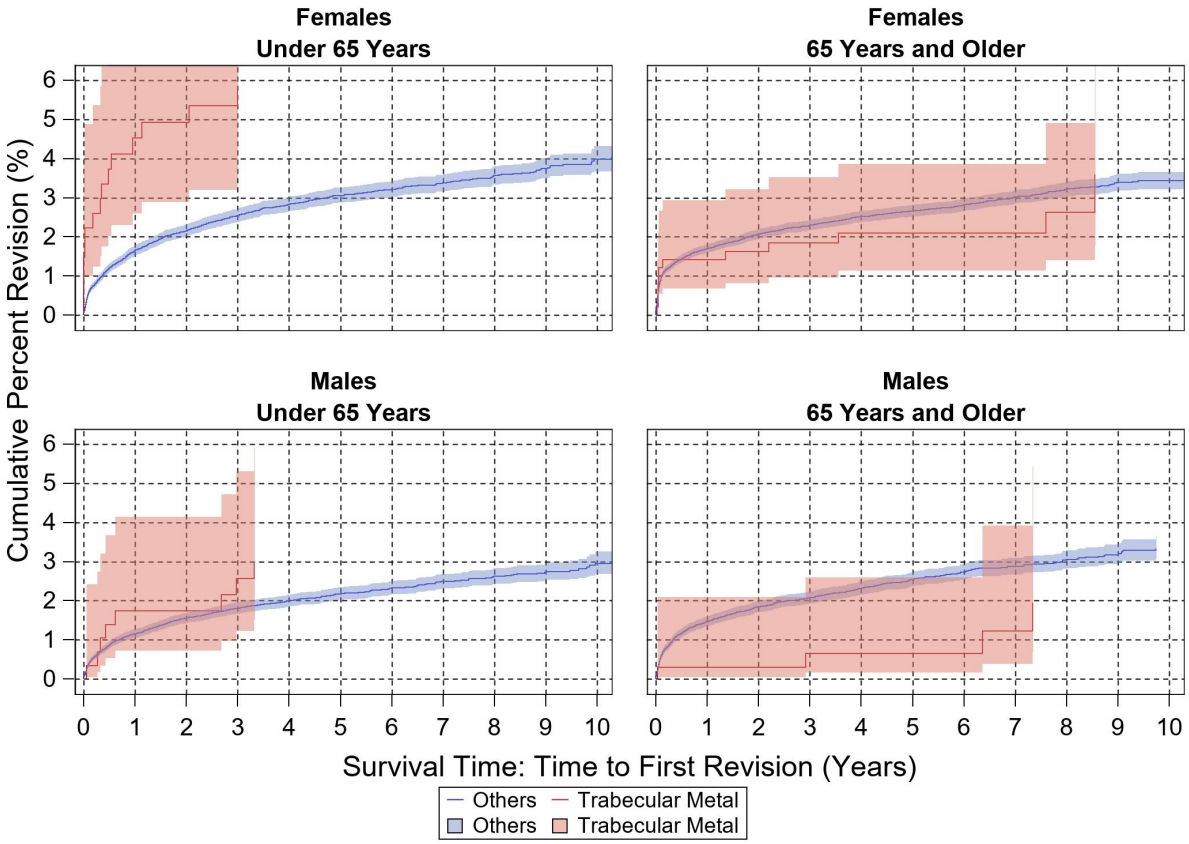


Figure 290. Cumulative Percent Revision Curve for the Trabecular Metal Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 800. Cumulative Percent Revision and Number at Risk for the Trabecular Metal Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,393	0.00 (0.00,0.00)	270	0.00 (0.00,0.00)	496	0.00 (0.00,0.00)	290	0.00 (0.00,0.00)	337	0.00 (0.00,0.00)
1	1,293	1.81 (1.23,2.67)	238	4.52 (2.59,7.82)	468	1.41 (0.68,2.94)	271	1.74 (0.73,4.14)	316	0.30 (0.04,2.09)
2	1,233	1.97 (1.35,2.85)	227	4.92 (2.89,8.33)	451	1.62 (0.82,3.22)	259	1.74 (0.73,4.14)	296	0.30 (0.04,2.09)
3	1,143	2.47 (1.76,3.45)	212	5.79 (3.53,9.43)	415	1.84 (0.96,3.52)	236	2.56 (1.23,5.31)	280	0.65 (0.16,2.59)
4	1,048	2.65 (1.90,3.67)	197	5.79 (3.53,9.43)	383	2.09 (1.13,3.86)	215	2.99 (1.50,5.91)	253	0.65 (0.16,2.59)
5	946	2.65 (1.90,3.67)	178	5.79 (3.53,9.43)	337	2.09 (1.13,3.86)	199	2.99 (1.50,5.91)	232	0.65 (0.16,2.59)
6	818	2.65 (1.90,3.67)	158	5.79 (3.53,9.43)	285	2.09 (1.13,3.86)	178	2.99 (1.50,5.91)	197	0.65 (0.16,2.59)
7	657	2.77 (2.00,3.84)	132	5.79 (3.53,9.43)	229	2.09 (1.13,3.86)	150	2.99 (1.50,5.91)	146	1.22 (0.38,3.92)
8	447	3.12 (2.25,4.32)	101	5.79 (3.53,9.43)	150	2.63 (1.40,4.92)	109	2.99 (1.50,5.91)	87	1.95 (0.69,5.44)
9	237	3.42 (2.42,4.81)	61	5.79 (3.53,9.43)	76	3.60 (1.79,7.18)	58	2.99 (1.50,5.91)	42	1.95 (0.69,5.44)
10	80	3.42 (2.42,4.81)	23	5.79 (3.53,9.43)	24	3.60 (1.79,7.18)	26	2.99 (1.50,5.91)	*	1.95 (0.69,5.44)

* Denotes that the number of cases is between 1 and 10.

Table 801. Reasons for First Revision Following Primary THA for Trabecular Metal Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	13	36.1
2	Peri-prosthetic fracture - Femur	7	19.4
3	Aseptic Loosening	5	13.9
4	Joint Infection	5	13.9
5	Pain	5	13.9
6	Implant Failure	1	2.8

Table 802. Reasons for First Revision in the First 90 Days Following Primary THA for Trabecular Metal Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	6	40.0
2	Pain	4	26.7
3	Peri-prosthetic fracture - Femur	3	20.0
4	Joint Infection	1	6.7
5	Implant Failure	1	6.7

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Table 803. Reasons for First Revision Between 91 and 365 days Following Primary THA for Trabecular Metal Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	5	71.4
2	Aseptic Loosening	1	14.3
3	Joint Infection	1	14.3

Table 804. Descriptive Statistics of Cases Receiving the Trabecular Metal Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	768	54.9	
Age (years)	1,399	67.00 (10.81)	67.00 (15.00)
Height (cm)	1,399	169.41 (10.51)	170.00 (17.78)
Weight (kg)	1,399	88.04 (21.60)	86.18 (29.10)
BMI(kg/m^2)	1,399	30.49 (6.18)	29.52 (8.11)
Smoker - Never (%)	608	43.46	
Smoker - Previous (%)	617	44.1	
Smoker - Current (%)	172	12.29	
Smoker - Unknown (%)	2	0.14	

Table 805. Distribution of Approach Used for Trabecular Metal Stem in Primary THA Cases

Approach	N	Percent
Anterior	11	0.8
Anterolateral	1263	90.3
Posterior	117	8.4
Transtrochanteric	7	0.5
Missing/unknown/other	1	0.1

Table 806. Distribution of Head Size for Trabecular Metal Stem in Primary THA Cases

Size (mm)	N	Percent
28	4	0.3
32	480	34.9
36	742	54.0
40	86	6.2
Missing/unknown/other	63	4.6

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Table 807. Distribution of Bearing Surface for Trabecular Metal Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	578	41.3
Ceramic-on-plastic	760	54.3
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	14	1.0
Missing/unknown/other	47	3.4

Table 808. Distribution of Polyethylene Used for Trabecular Metal Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,087	78.3
Antioxidant XLPE	140	10.1
Missing/unknown/other	162	11.7

Table 809. Volume of Cases by Surgeon and Site for the Trabecular Metal Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	51 (122)	3 (16)
Cases per site	82 (170)	7 (64)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

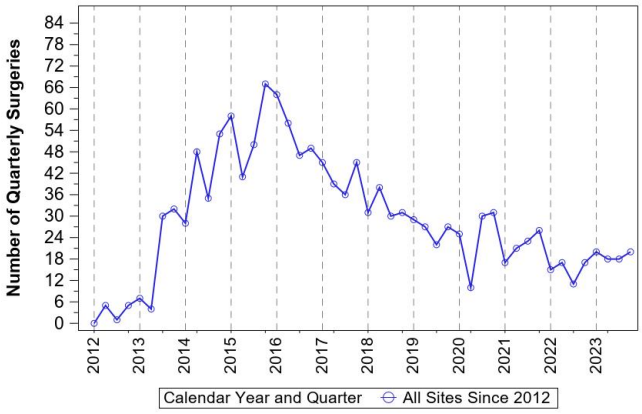


Figure 291. Utilization of the Trabecular Metal Stem in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

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786401320	786401520	786401000
786401420	786401500	786401700
786401220	786401100	786401720
786401300	786401120	786401820
786401200	786401620	
786401400	786401600	

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4.2.33 Tri-Lock BPS

N = 4,789 primary cases were used for this analysis. Distribution of utilization: 53 surgeons across 30 sites used this implant in primary THA cases.

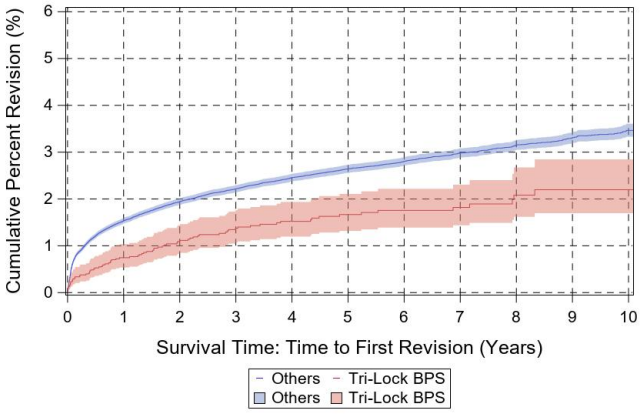


Figure 292. Cumulative Percent Revision Curve for the Tri-Lock BPS Stem, Compared to All Other Femoral Components in Primary THA Cases

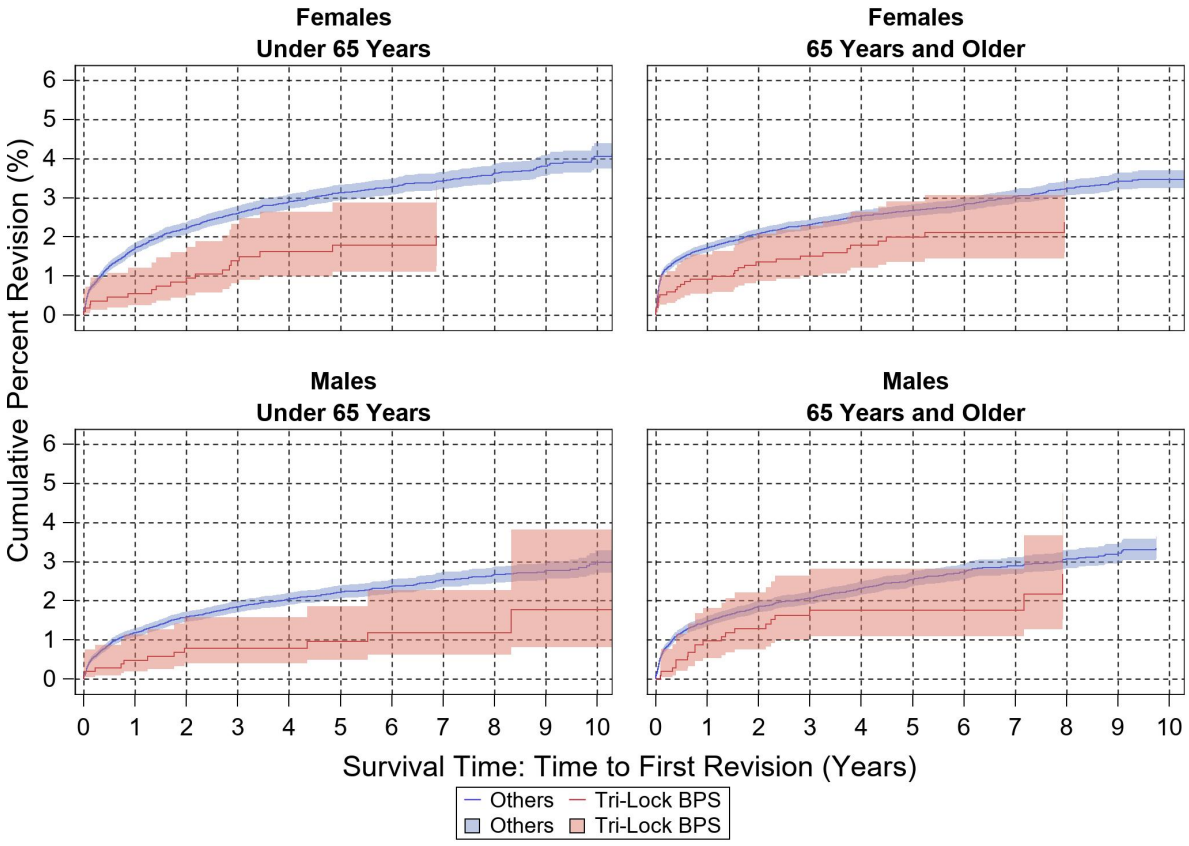


Figure 293. Cumulative Percent Revision Curve for the Tri-Lock BPS Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 810. Cumulative Percent Revision and Number at Risk for the Tri-Lock BPS Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	4,765	0.00 (0.00,0.00)	1,111	0.00 (0.00,0.00)	1,539	0.00 (0.00,0.00)	1,065	0.00 (0.00,0.00)	1,049	0.00 (0.00,0.00)
1	4,513	0.75 (0.54,1.04)	1,060	0.55 (0.25,1.21)	1,452	0.92 (0.55,1.55)	1,014	0.48 (0.20,1.14)	986	0.98 (0.53,1.81)
2	4,096	1.11 (0.85,1.46)	960	0.94 (0.51,1.74)	1,319	1.35 (0.87,2.09)	916	0.79 (0.39,1.57)	900	1.29 (0.75,2.20)
3	3,589	1.37 (1.07,1.76)	864	1.38 (0.82,2.33)	1,176	1.51 (1.00,2.29)	782	0.79 (0.39,1.57)	766	1.76 (1.09,2.81)
4	3,002	1.52 (1.20,1.94)	718	1.62 (0.99,2.64)	1,022	1.78 (1.20,2.63)	639	0.79 (0.39,1.57)	622	1.76 (1.09,2.81)
5	2,429	1.67 (1.32,2.11)	584	1.78 (1.10,2.87)	853	1.99 (1.36,2.90)	498	0.96 (0.49,1.86)	493	1.76 (1.09,2.81)
6	1,919	1.76 (1.39,2.22)	479	1.78 (1.10,2.87)	701	2.11 (1.45,3.06)	373	1.18 (0.62,2.27)	365	1.76 (1.09,2.81)
7	1,452	1.82 (1.44,2.31)	368	2.04 (1.25,3.30)	529	2.11 (1.45,3.06)	288	1.18 (0.62,2.27)	266	1.76 (1.09,2.81)
8	998	2.08 (1.62,2.67)	256	2.04 (1.25,3.30)	369	2.37 (1.59,3.51)	196	1.18 (0.62,2.27)	176	2.69 (1.52,4.75)
9	488	2.20 (1.70,2.85)	108	2.04 (1.25,3.30)	178	2.37 (1.59,3.51)	104	1.76 (0.81,3.81)	97	2.69 (1.52,4.75)
10	136	2.20 (1.70,2.85)	25	2.04 (1.25,3.30)	57	2.37 (1.59,3.51)	22	1.76 (0.81,3.81)	32	2.69 (1.52,4.75)

Table 811. Reasons for First Revision Following Primary THA for Tri-Lock BPS Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	21	27.3
2	Aseptic Loosening	18	23.4
3	Joint Infection	15	19.5
4	Peri-prosthetic fracture - Femur	12	15.6
5	Metal Reaction/Metallosis	4	5.2
6	Pain	3	3.9
7	Implant Failure	2	2.6
8	Poly liner wear	1	1.3
9	Malalignment	1	1.3

Table 812. Reasons for First Revision in the First 90 Days Following Primary THA for Tri-Lock BPS Stem Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	11	64.7
2	Dislocation/Instability	4	23.5
3	Aseptic Loosening	1	5.9
4	Joint Infection	1	5.9

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Table 813. Reasons for First Revision Between 91 and 365 days Following Primary THA for Tri-Lock BPS Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	8	47.1
2	Aseptic Loosening	5	29.4
3	Dislocation/Instability	4	23.5

Table 814. Descriptive Statistics of Cases Receiving the Tri-Lock BPS Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	2,659	55.52	
Age (years)	4,789	65.13 (10.26)	65.00 (13.00)
Height (cm)	4,764	169.91 (10.35)	170.00 (15.44)
Weight (kg)	4,765	88.43 (20.15)	87.00 (27.80)
BMI(kg/m^2)	4,764	30.51 (5.88)	29.90 (8.21)
Smoker - Never (%)	2,339	48.84	
Smoker - Previous (%)	1,800	37.59	
Smoker - Current (%)	624	13.03	
Smoker - Unknown (%)	26	0.54	

Table 815. Distribution of Approach Used for Tri-Lock BPS Stem in Primary THA Cases

Approach	N	Percent
Anterior	2,073	43.3
Anterolateral	853	17.8
Posterior	1,820	38.0
Transtrochanteric	14	0.3
Missing/unknown/other	29	0.6

Table 816. Distribution of Head Size for Tri-Lock BPS Stem in Primary THA Cases

Size (mm)	N	Percent
22	3	0.1
28	27	0.6
32	1,717	36.4
36	2,643	56.0
40	316	6.7
Missing/unknown/other	18	0.4

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Table 817. Distribution of Bearing Surface for Tri-Lock BPS Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,813	37.9
Ceramic-on-plastic	2,842	59.3
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	44	0.9
Missing/unknown/other	90	1.9

Table 818. Distribution of Polyethylene Used for Tri-Lock BPS Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	31	0.7
XLPE	4,231	89.7
Antioxidant XLPE	2	0.0
Missing/unknown/other	453	9.6

Table 819. Volume of Cases by Surgeon and Site for the Tri-Lock BPS Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	90 (234)	8 (77)
Cases per site	159 (434)	14 (142)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

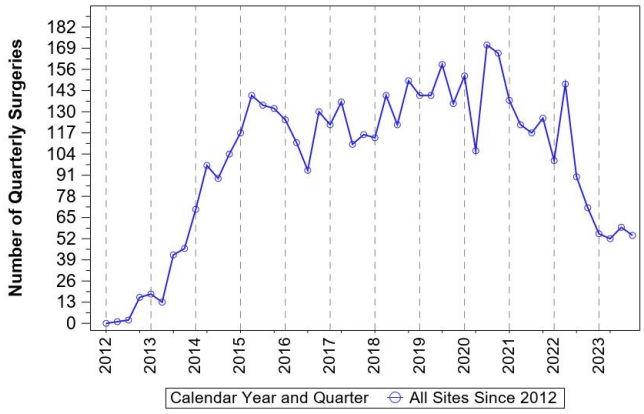


Figure 294. Utilization of the Tri-Lock BPS Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

101204040	101204070	101204005
101204050	101214070	101214100
101204030	101204080	101204100
101204060	101214020	101214005
101214050	101214080	101204110
101214040	101204010	101214110
101204020	101214010	101204120
101214030	101214090	101214120
101214060	101204090	

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4.2.34 Versys Advocate

N = 805 primary cases were used for this analysis. Distribution of utilization: 58 surgeons across 28 sites used this implant in primary THA cases.

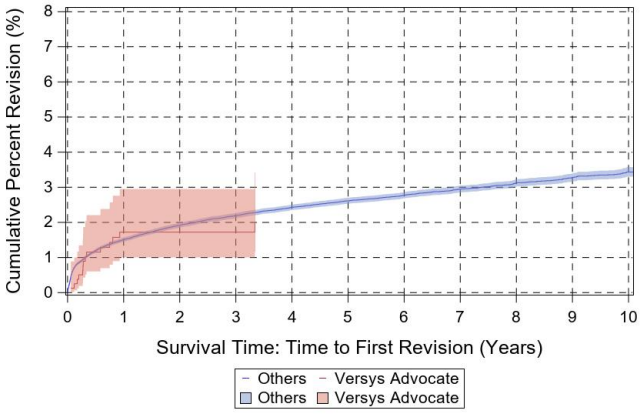


Figure 295. Cumulative Percent Revision Curve for the Versys Advocate Stem, Compared to All Other Femoral Components in Primary THA Cases

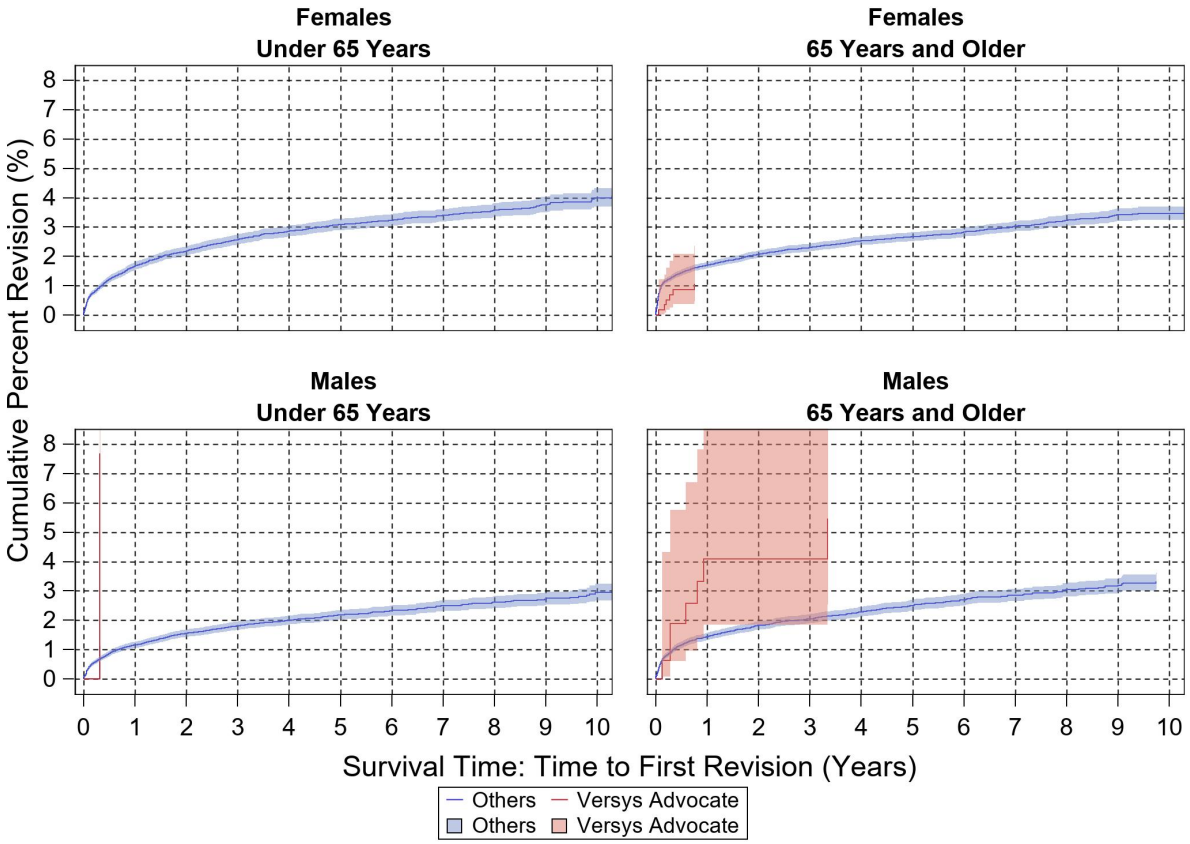


Figure 296. Cumulative Percent Revision Curve for the Versys Advocate Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 820. Cumulative Percent Revision and Number at Risk for the Versys Advocate Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	800	0.00 (0.00,0.00)	42	0.00 (0.00,0.00)	583	0.00 (0.00,0.00)	13	0.00 (0.00,0.00)	162	0.00 (0.00,0.00)
1	655	1.72 (1.00,2.95)	33	0.00 (0.00,0.00)	486	1.07 (0.48,2.36)	12	7.69 (1.12,43.36)	124	4.09 (1.85,8.92)
2	510	1.72 (1.00,2.95)	24	0.00 (0.00,0.00)	379	1.07 (0.48,2.36)	*	7.69 (1.12,43.36)	97	4.09 (1.85,8.92)
3	408	1.72 (1.00,2.95)	16	0.00 (0.00,0.00)	300	1.07 (0.48,2.36)	*	7.69 (1.12,43.36)	83	4.09 (1.85,8.92)
4	285	2.00 (1.17,3.42)	*	0.00 (0.00,0.00)	212	1.07 (0.48,2.36)	*	7.69 (1.12,43.36)	56	5.46 (2.54,11.55)
5	215	2.00 (1.17,3.42)	*	0.00 (0.00,0.00)	160	1.07 (0.48,2.36)	*	7.69 (1.12,43.36)	44	5.46 (2.54,11.55)
6	165	2.00 (1.17,3.42)	*	0.00 (0.00,0.00)	131	1.07 (0.48,2.36)	*	7.69 (1.12,43.36)	31	5.46 (2.54,11.55)
7	134	2.00 (1.17,3.42)	*	0.00 (0.00,0.00)	107	1.07 (0.48,2.36)	*	7.69 (1.12,43.36)	25	5.46 (2.54,11.55)
8	104	2.00 (1.17,3.42)	*	0.00 (0.00,0.00)	84	1.07 (0.48,2.36)	*	7.69 (1.12,43.36)	18	5.46 (2.54,11.55)
9	67	2.00 (1.17,3.42)	*	0.00 (0.00,0.00)	55	1.07 (0.48,2.36)	*	7.69 (1.12,43.36)	*	5.46 (2.54,11.55)
10	34	2.00 (1.17,3.42)	*	0.00 (0.00,0.00)	26	1.07 (0.48,2.36)	*	7.69 (1.12,43.36)	*	5.46 (2.54,11.55)

* Denotes that the number of cases is between 1 and 10.

Table 821. Reasons for First Revision Following Primary THA for Versys Advocate Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	4	30.8
2	Dislocation/Instability	4	30.8
3	Joint Infection	4	30.8
4	Peri-prosthetic fracture - Femur	1	7.7

Table 822. Reasons for First Revision in the First 90 Days Following Primary THA for Versys Advocate Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	2	50.0
2	Dislocation/Instability	1	25.0
3	Peri-prosthetic fracture - Femur	1	25.0

Table 823. Reasons for First Revision Between 91 and 365 days Following Primary THA for Versys Advocate Stem Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	4	50.0
2	Dislocation/Instability	3	37.5
3	Aseptic Loosening	1	12.5

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Table 824. Descriptive Statistics of Cases Receiving the Versys Advocate Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	630	78.26	
Age (years)	805	78.32 (8.79)	80.00 (10.00)
Height (cm)	805	164.44 (9.55)	162.61 (12.68)
Weight (kg)	805	73.17 (16.07)	71.20 (21.40)
BMI(kg/m^2)	805	27.01 (5.25)	26.34 (6.72)
Smoker - Never (%)	435	54.04	
Smoker - Previous (%)	335	41.61	
Smoker - Current (%)	35	4.35	
Smoker - Unknown (%)	0	0.0	

Table 825. Distribution of Approach Used for Versys Advocate Stem in Primary THA Cases

Approach	N	Percent
Anterior	262	32.5
Anterolateral	77	9.6
Posterior	459	57.0
Transtrochanteric	6	0.8
Missing/unknown/other	1	0.1

Table 826. Distribution of Head Size for Versys Advocate Stem in Primary THA Cases

Size (mm)	N	Percent
28	1	0.1
32	117	15.0
36	526	67.5
40	88	11.3
Missing/unknown/other	47	6.0

Table 827. Distribution of Bearing Surface for Versys Advocate Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	408	50.7
Ceramic-on-plastic	324	40.2
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	15	1.9
Missing/unknown/other	58	7.2

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Table 828. Distribution of Polyethylene Used for Versys Advocate Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	442	55.7
Antioxidant XLPE	252	31.8
Missing/unknown/other	99	12.5

Table 829. Volume of Cases by Surgeon and Site for the Versys Advocate Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	13 (33)	2 (6)
Cases per site	28 (57)	5 (25)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

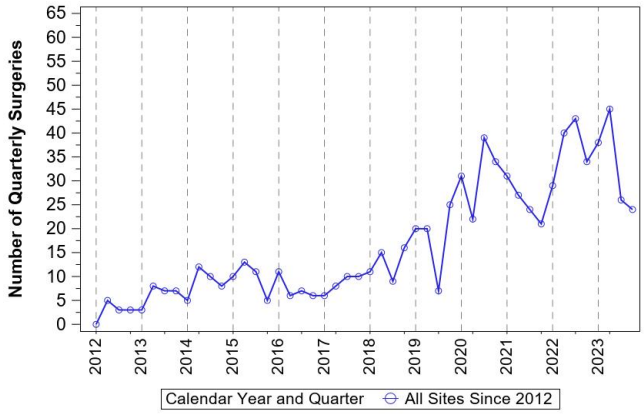


Figure 297. Utilization of the Versys Advocate Stem in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

785001220	785001200	785001620
785001320	785001400	785001600
785001100	785001520	785016
785001300	785001500	785001700
785001420	785001620	

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4.2.35 Versys Heritage

N = 616 primary cases were used for this analysis. Distribution of utilization: 25 surgeons across 15 sites used this implant in primary THA cases.

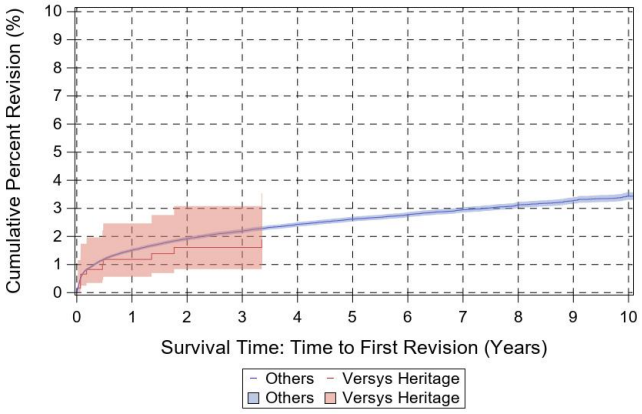


Figure 298. Cumulative Percent Revision Curve for the Versys Heritage Stem, Compared to All Other Femoral Components in Primary THA Cases

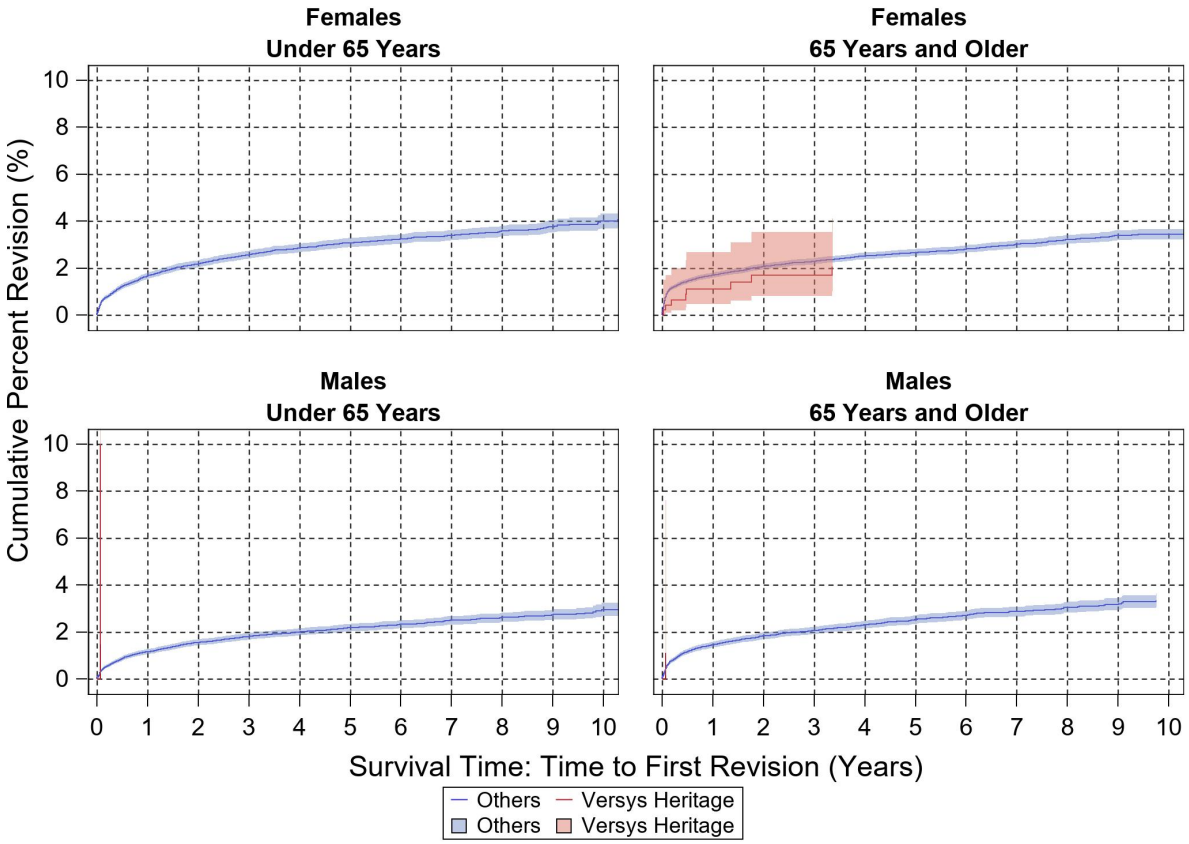


Figure 299. Cumulative Percent Revision Curve for the Versys Heritage Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 830. Cumulative Percent Revision and Number at Risk for the Versys Heritage Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	610	0.00 (0.00,0.00)	42	0.00 (0.00,0.00)	468	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)	90	0.00 (0.00,0.00)
1	512	1.18 (0.56,2.46)	39	0.00 (0.00,0.00)	385	1.12 (0.47,2.67)	*	10.00 (1.47,52.70)	81	1.11 (0.16,7.63)
2	439	1.61 (0.84,3.08)	31	0.00 (0.00,0.00)	330	1.69 (0.80,3.53)	*	10.00 (1.47,52.70)	71	1.11 (0.16,7.63)
3	372	1.61 (0.84,3.08)	27	0.00 (0.00,0.00)	282	1.69 (0.80,3.53)	*	10.00 (1.47,52.70)	57	1.11 (0.16,7.63)
4	309	1.89 (1.01,3.54)	22	0.00 (0.00,0.00)	238	2.06 (1.02,4.13)	*	10.00 (1.47,52.70)	43	1.11 (0.16,7.63)
5	225	1.89 (1.01,3.54)	11	0.00 (0.00,0.00)	174	2.06 (1.02,4.13)	*	10.00 (1.47,52.70)	36	1.11 (0.16,7.63)
6	151	1.89 (1.01,3.54)	11	0.00 (0.00,0.00)	110	2.06 (1.02,4.13)	*	10.00 (1.47,52.70)	27	1.11 (0.16,7.63)
7	102	1.89 (1.01,3.54)	*	0.00 (0.00,0.00)	75	2.06 (1.02,4.13)	*	10.00 (1.47,52.70)	18	1.11 (0.16,7.63)
8	71	1.89 (1.01,3.54)	*	0.00 (0.00,0.00)	50	2.06 (1.02,4.13)	*	10.00 (1.47,52.70)	14	1.11 (0.16,7.63)
9	47	1.89 (1.01,3.54)	*	0.00 (0.00,0.00)	36	2.06 (1.02,4.13)	*	10.00 (1.47,52.70)	*	1.11 (0.16,7.63)
10	34	1.89 (1.01,3.54)	*	0.00 (0.00,0.00)	26	2.06 (1.02,4.13)	*	10.00 (1.47,52.70)	*	1.11 (0.16,7.63)

* Denotes that the number of cases is between 1 and 10.

Table 831. Reasons for First Revision Following Primary THA for Versys Heritage Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	4	40.0
2	Joint Infection	3	30.0
3	Aseptic Loosening	1	10.0
4	Implant Failure	1	10.0
5	Peri-prosthetic fracture - Acetabulum	1	10.0

Table 832. Reasons for First Revision in the First 90 Days Following Primary THA for Versys Heritage Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	2	40.0
2	Joint Infection	2	40.0
3	Peri-prosthetic fracture - Acetabulum	1	20.0

Table 833. Reasons for First Revision Between 91 and 365 days Following Primary THA for Versys Heritage Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	50.0
2	Dislocation/Instability	1	50.0

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Table 834. Descriptive Statistics of Cases Receiving the Versys Heritage Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	512	83.12	
Age (years)	616	77.36 (9.61)	78.00 (12.00)
Height (cm)	615	163.13 (9.42)	162.56 (10.16)
Weight (kg)	615	73.76 (16.12)	71.80 (21.40)
BMI(kg/m^2)	615	27.66 (5.34)	26.88 (6.97)
Smoker - Never (%)	331	53.73	
Smoker - Previous (%)	264	42.86	
Smoker - Current (%)	20	3.25	
Smoker - Unknown (%)	1	0.16	

Table 835. Distribution of Approach Used for Versys Heritage Stem in Primary THA Cases

Approach	N	Percent
Anterior	85	13.8
Anterolateral	22	3.6
Posterior	504	81.8
Transtrochanteric	0	0.0
Missing/unknown/other	5	0.8

Table 836. Distribution of Head Size for Versys Heritage Stem in Primary THA Cases

Size (mm)	N	Percent
28	1	0.2
32	120	24.3
36	348	70.6
40	18	3.6
Missing/unknown/other	6	1.2

Table 837. Distribution of Bearing Surface for Versys Heritage Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	256	41.6
Ceramic-on-plastic	233	37.8
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	116	18.8
Missing/unknown/other	11	1.8

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Table 838. Distribution of Polyethylene Used for Versys Heritage Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	475	78.0
Antioxidant XLPE	94	15.4
Missing/unknown/other	40	6.6

Table 839. Volume of Cases by Surgeon and Site for the Versys Heritage Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	24 (49)	4 (35)
Cases per site	41 (62)	12 (65)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

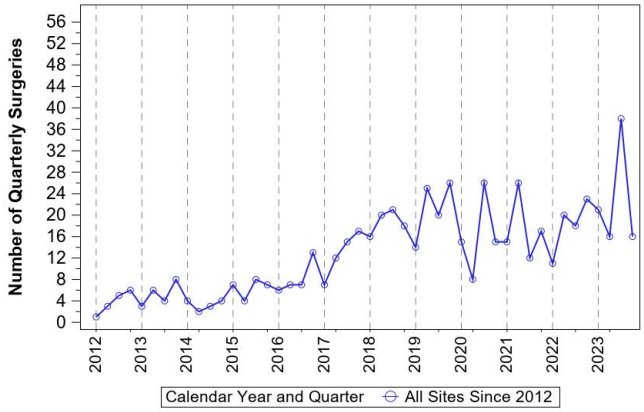


Figure 300. Utilization of the Versys Heritage Stem in Primary THA Cases

Catalog Numbers of Stems Used in the Analysis

785701200	785701420	785701600
785701320	785701500	785701600
785701100	785701520	78571400
785701300	785701620	
785701400	785701700	

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4.2.36 Wagner Cone

N = 730 primary cases were used for this analysis. Distribution of utilization: 63 surgeons across 35 sites used this implant in primary THA cases.

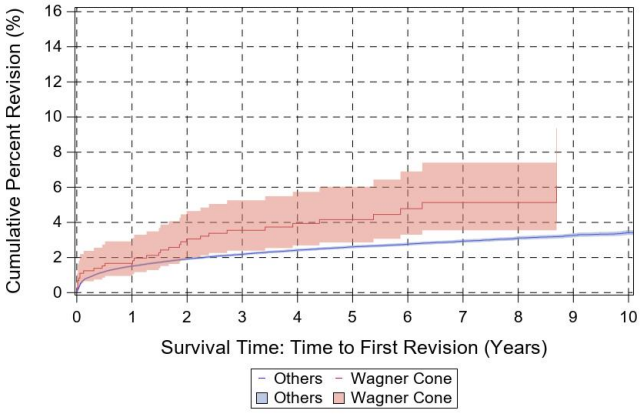


Figure 301. Cumulative Percent Revision Curve for the Wagner Cone Stem, Compared to All Other Femoral Components in Primary THA Cases

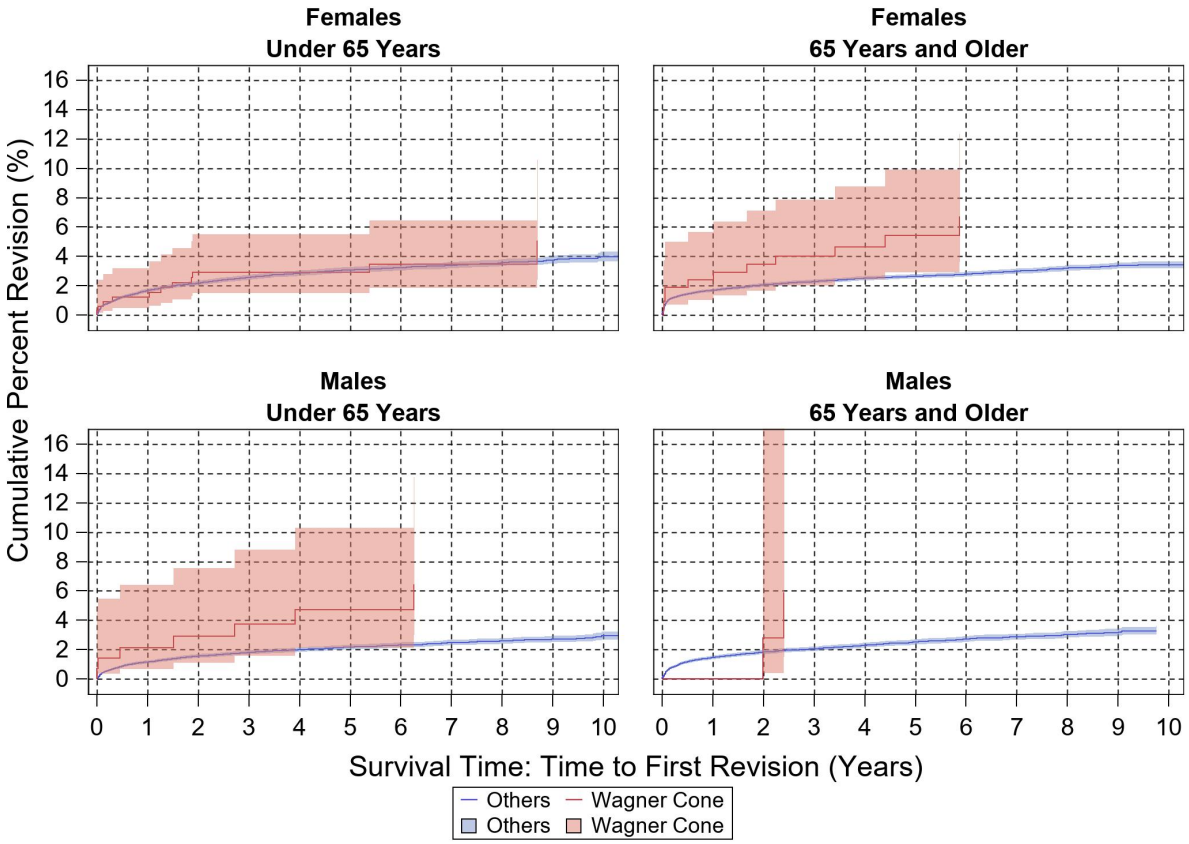


Figure 302. Cumulative Percent Revision Curve for the Wagner Cone Stem, Compared to All Other Femoral Components in Primary THA Cases by Age and Sex

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Table 840. Cumulative Percent Revision and Number at Risk for the Wagner Cone Stem in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	725	0.00 (0.00,0.00)	331	0.00 (0.00,0.00)	210	0.00 (0.00,0.00)	143	0.00 (0.00,0.00)	41	0.00 (0.00,0.00)
1	662	1.67 (0.95,2.92)	306	1.21 (0.46,3.20)	189	2.40 (1.01,5.68)	130	2.12 (0.69,6.42)	37	0.00 (0.00,0.00)
2	612	3.05 (2.00,4.65)	281	2.89 (1.51,5.49)	176	3.46 (1.66,7.13)	120	2.90 (1.10,7.56)	35	2.78 (0.40,18.13)
3	551	3.55 (2.39,5.26)	252	2.89 (1.51,5.49)	162	4.01 (2.02,7.87)	109	3.75 (1.57,8.81)	28	5.91 (1.51,21.71)
4	474	3.94 (2.69,5.74)	219	2.89 (1.51,5.49)	141	4.64 (2.43,8.75)	92	4.74 (2.14,10.31)	22	5.91 (1.51,21.71)
5	357	4.16 (2.86,6.03)	180	2.89 (1.51,5.49)	100	5.41 (2.92,9.91)	69	4.74 (2.14,10.31)	*	5.91 (1.51,21.71)
6	289	4.78 (3.30,6.90)	151	3.47 (1.85,6.45)	70	6.72 (3.61,12.35)	60	4.74 (2.14,10.31)	*	5.91 (1.51,21.71)
7	216	5.13 (3.55,7.40)	123	3.47 (1.85,6.45)	48	6.72 (3.61,12.35)	40	6.47 (2.97,13.77)	*	5.91 (1.51,21.71)
8	138	5.13 (3.55,7.40)	82	3.47 (1.85,6.45)	34	6.72 (3.61,12.35)	19	6.47 (2.97,13.77)	*	5.91 (1.51,21.71)
9	86	6.09 (3.94,9.37)	50	5.08 (2.39,10.59)	22	6.72 (3.61,12.35)	11	6.47 (2.97,13.77)	*	5.91 (1.51,21.71)
10	45	6.09 (3.94,9.37)	29	5.08 (2.39,10.59)	*	6.72 (3.61,12.35)	*	6.47 (2.97,13.77)	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 841. Reasons for First Revision Following Primary THA for Wagner Cone Stem Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	7	23.3
2	Dislocation/Instability	7	23.3
3	Peri-prosthetic fracture - Femur	4	13.3
4	Joint Infection	3	10.0
5	Metal Reaction/Metallosis	3	10.0
6	Malalignment	3	10.0
7	Implant Failure	1	3.3
8	Peri-prosthetic fracture - Acetabulum	1	3.3
9	Pain	1	3.3

Table 842. Reasons for First Revision in the First 90 Days Following Primary THA for Wagner Cone Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	2	25.0
2	Peri-prosthetic fracture - Femur	2	25.0
3	Aseptic Loosening	1	12.5
4	Implant Failure	1	12.5
5	Peri-prosthetic fracture - Acetabulum	1	12.5
6	Malalignment	1	12.5

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Table 843. Reasons for First Revision Between 91 and 365 days Following Primary THA for Wagner Cone Stem Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	33.3
2	Joint Infection	1	33.3
3	Peri-prosthetic fracture - Femur	1	33.3

Table 844. Descriptive Statistics of Cases Receiving the Wagner Cone Stem in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	545	74.66	
Age (years)	730	58.03 (15.37)	59.00 (21.00)
Height (cm)	699	163.79 (11.26)	162.60 (12.70)
Weight (kg)	699	81.74 (21.37)	80.30 (28.25)
BMI(kg/m^2)	699	30.37 (7.03)	29.99 (10.37)
Smoker - Never (%)	434	59.45	
Smoker - Previous (%)	204	27.95	
Smoker - Current (%)	92	12.6	
Smoker - Unknown (%)	0	0.0	

Table 845. Distribution of Approach Used for Wagner Cone Stem in Primary THA Cases

Approach	N	Percent
Anterior	28	3.8
Anterolateral	60	8.2
Posterior	605	82.9
Transtrochanteric	1	0.1
Missing/unknown/other	36	4.9

Table 846. Distribution of Head Size for Wagner Cone Stem in Primary THA Cases

Size (mm)	N	Percent
22	1	0.2
28	10	1.6
32	136	21.6
36	402	63.9
40	72	11.4
Missing/unknown/other	8	1.3

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Table 847. Distribution of Bearing Surface for Wagner Cone Stem in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	189	25.9
Ceramic-on-plastic	433	59.3
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	93	12.7
Missing/unknown/other	15	2.0

Table 848. Distribution of Polyethylene Used for Wagner Cone Stem Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	402	56.1
Antioxidant XLPE	253	35.3
Missing/unknown/other	61	8.5

Table 849. Volume of Cases by Surgeon and Site for the Wagner Cone Stem in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	11 (23)	4 (11)
Cases per site	20 (42)	5 (7)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

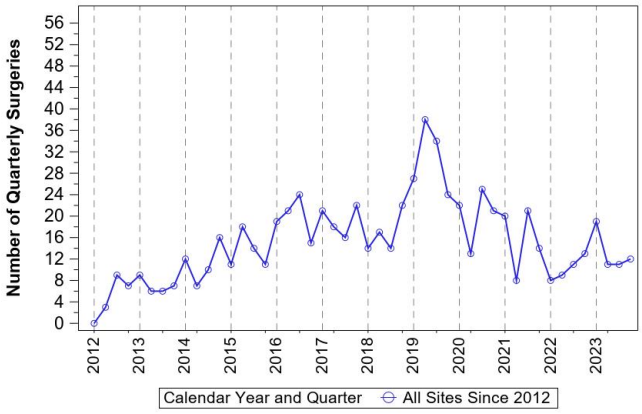


Figure 303. Utilization of the Wagner Cone Stem in Primary THA Cases

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Catalog Numbers of Stems Used in the Analysis

100561218	100561216	100561224
100561221	100561215	100561214
100561217	100561319	100561323
100561318	100561222	100561324
100561220	100561316	100561213
100561219	100561223	100561313
100561317	100561322	
100561320	100561314	
100561321	100561315	

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4.3 Conventional THA Cups

The discrepancy between the number of cases listed at the beginning of an implant and N at year 0 in the table following the CPR figures is due to deaths. The former number is the total number of cases; the latter is the number of cases used to estimate the CPR considering deaths as censored events.

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4.3.1 BiMobile

N = 606 primary cases were used for this analysis. Fewer than ten surgeons used this implant at fewer than ten sites in primary THA cases.

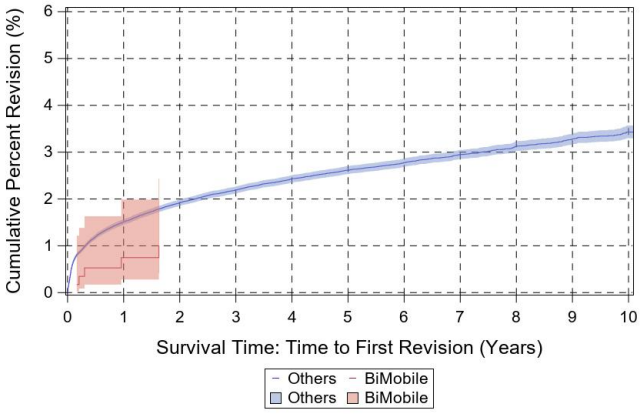


Figure 304. Cumulative Percent Revision Curve for the BiMobile Cup, Compared to All Other Cups in Primary THA Cases

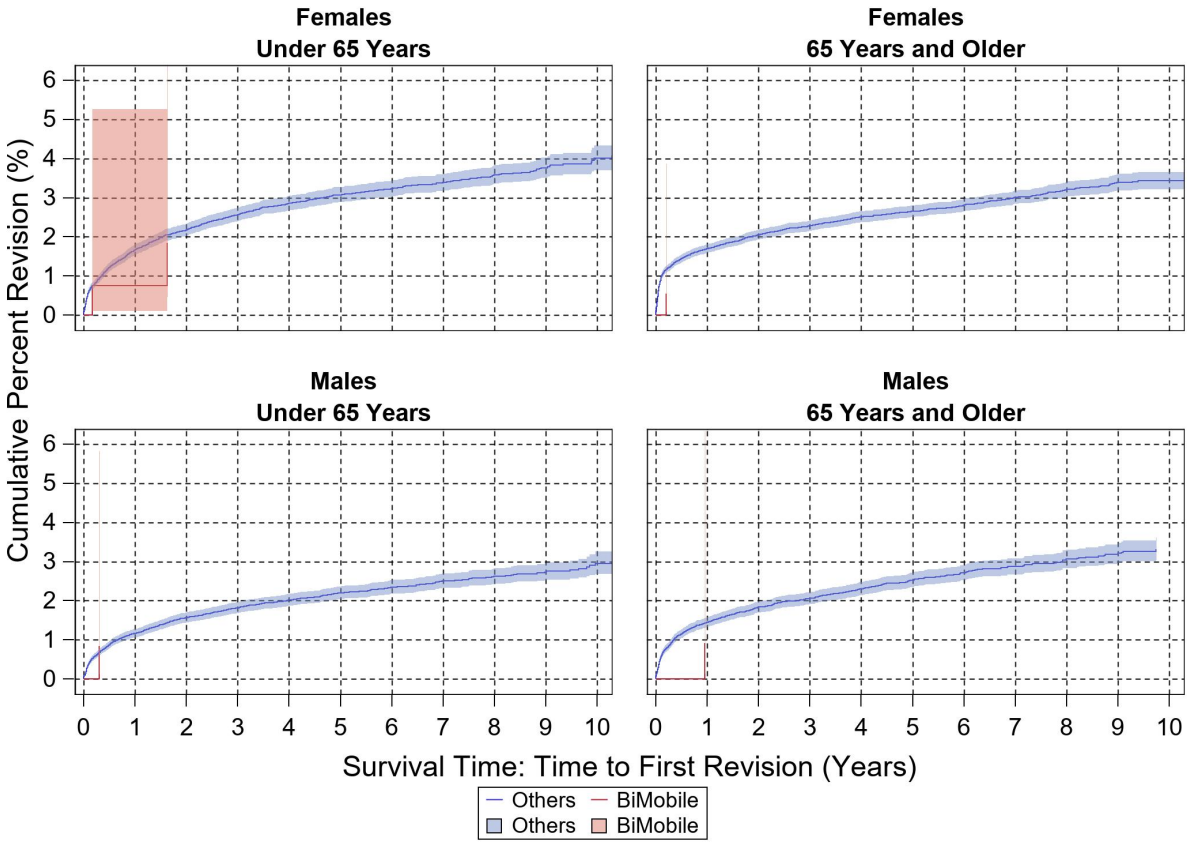


Figure 305. Cumulative Percent Revision Curve for the BiMobile Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 850. Cumulative Percent Revision and Number at Risk for the BiMobile Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	603	0.00 (0.00,0.00)	136	0.00 (0.00,0.00)	195	0.00 (0.00,0.00)	127	0.00 (0.00,0.00)	144	0.00 (0.00,0.00)
1	454	0.75 (0.28,1.99)	111	0.76 (0.11,5.26)	142	0.55 (0.08,3.86)	92	0.84 (0.12,5.81)	108	0.92 (0.13,6.33)
2	334	1.01 (0.42,2.44)	79	1.85 (0.45,7.35)	107	0.55 (0.08,3.86)	66	0.84 (0.12,5.81)	81	0.92 (0.13,6.33)
3	189	1.01 (0.42,2.44)	48	1.85 (0.45,7.35)	54	0.55 (0.08,3.86)	37	0.84 (0.12,5.81)	50	0.92 (0.13,6.33)
4	113	1.01 (0.42,2.44)	23	1.85 (0.45,7.35)	34	0.55 (0.08,3.86)	23	0.84 (0.12,5.81)	33	0.92 (0.13,6.33)
5	40	1.01 (0.42,2.44)	*	1.85 (0.45,7.35)	*	0.55 (0.08,3.86)	*	0.84 (0.12,5.81)	13	0.92 (0.13,6.33)
6	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
7	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 851. Reasons for First Revision Following Primary THA for BiMobile Cup Cases

Rank	Reason for Revision	N	Percent
1	Malalignment	2	40.0
2	Joint Infection	1	20.0
3	Peri-prosthetic fracture - Acetabulum	1	20.0
4	Peri-prosthetic fracture - Femur	1	20.0

Table 852. Reasons for First Revision in the First 90 Days Following Primary THA for BiMobile Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Acetabulum	1	50.0
2	Peri-prosthetic fracture - Femur	1	50.0

Table 853. Reasons for First Revision Between 91 and 365 days Following Primary THA for BiMobile Cup Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	1	50.0
2	Malalignment	1	50.0

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Table 854. Descriptive Statistics of Cases Receiving the BiMobile Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	333	54.95	
Age (years)	606	65.40 (10.83)	67.00 (14.00)
Height (cm)	606	170.20 (10.45)	170.18 (15.20)
Weight (kg)	606	93.35 (22.98)	90.80 (30.90)
BMI(kg/m^2)	606	32.17 (7.24)	31.29 (9.69)
Smoker - Never (%)	299	49.34	
Smoker - Previous (%)	251	41.42	
Smoker - Current (%)	56	9.24	
Smoker - Unknown (%)	0	0.0	

Table 855. Distribution of Approach Used for BiMobile Cup in Primary THA Cases

Approach	N	Percent
Anterior	0	0.0
Anterolateral	94	15.5
Posterior	512	84.5
Transtrochanteric	0	0.0
Missing/unknown/other	0	0.0

Table 856. Distribution of Head Size for BiMobile Cup in Primary THA Cases

Size (mm)	N	Percent
28	95	26.4
Missing/unknown/other	265	73.6

Table 857. Distribution of Bearing Surface for BiMobile Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1	0.2
Ceramic-on-plastic	94	15.5
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	511	84.3

Table 858. Distribution of Polyethylene Used for BiMobile Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	0	0.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	360	100.0

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Table 859. Volume of Cases by Surgeon and Site for the BiMobile Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	303 (297)	303 (420)
Cases per site	303 (297)	303 (420)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

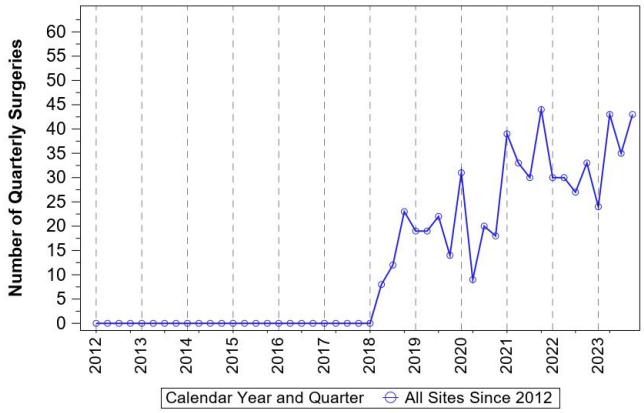


Figure 306. Utilization of the BiMobile Cup in Primary THA Cases

Catalog Numbers of Acetabular Cups Used in the Analysis

184101/48
184101/50
184101/52
184101/54
184101/56
184101/58
184101/60

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4.3.2 Continuum

N = 16,530 primary cases were used for this analysis. Distribution of utilization: 119 surgeons across 42 sites used this implant in primary THA cases.

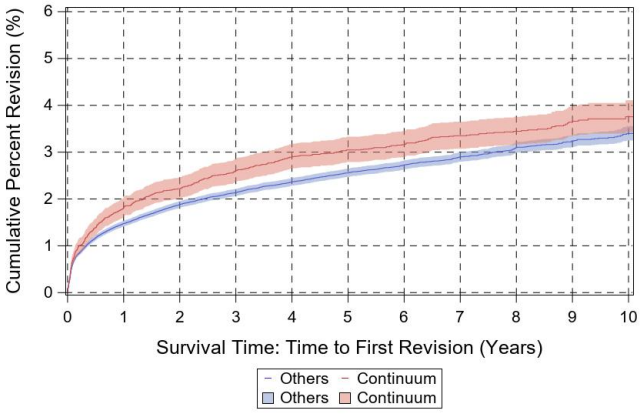


Figure 307. Cumulative Percent Revision Curve for the Continuum Cup, Compared to All Other Cups in Primary THA Cases

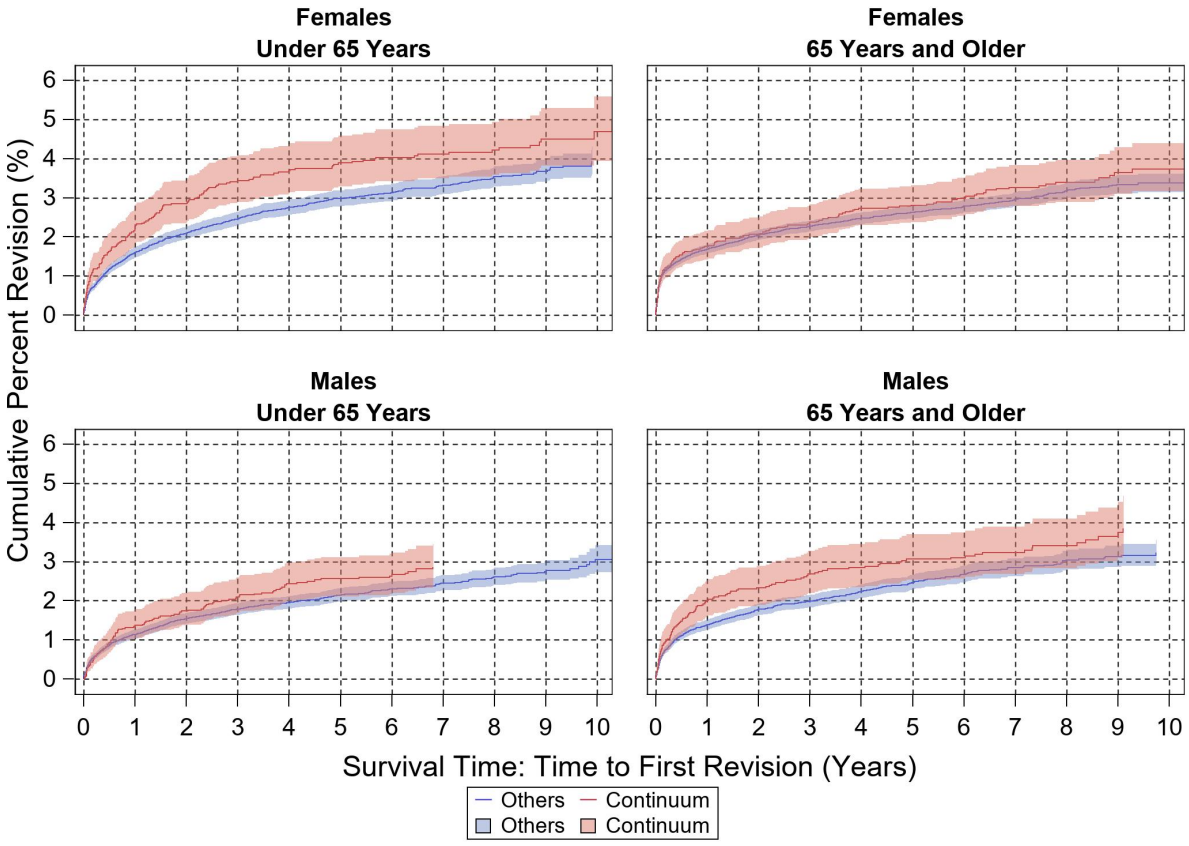


Figure 308. Cumulative Percent Revision Curve for the Continuum Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 860. Cumulative Percent Revision and Number at Risk for the Continuum Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	16,412	0.00 (0.00,0.00)	3,647	0.00 (0.00,0.00)	5,134	0.00 (0.00,0.00)	3,995	0.00 (0.00,0.00)	3,636	0.00 (0.00,0.00)
1	15,491	1.82 (1.63,2.04)	3,469	2.24 (1.80,2.77)	4,799	1.75 (1.42,2.15)	3,829	1.37 (1.05,1.78)	3,394	2.01 (1.60,2.53)
2	14,755	2.22 (2.00,2.46)	3,317	2.84 (2.34,3.44)	4,549	2.06 (1.70,2.49)	3,669	1.73 (1.37,2.19)	3,220	2.33 (1.89,2.89)
3	13,908	2.61 (2.37,2.87)	3,156	3.43 (2.88,4.09)	4,243	2.37 (1.98,2.83)	3,490	2.09 (1.68,2.59)	3,019	2.68 (2.19,3.27)
4	13,060	2.90 (2.65,3.17)	2,999	3.68 (3.11,4.36)	3,951	2.73 (2.31,3.23)	3,301	2.44 (1.99,2.98)	2,809	2.84 (2.34,3.45)
5	12,045	3.05 (2.79,3.33)	2,772	3.89 (3.29,4.58)	3,638	2.81 (2.38,3.32)	3,058	2.56 (2.10,3.12)	2,577	3.06 (2.53,3.70)
6	10,755	3.16 (2.89,3.45)	2,521	4.03 (3.42,4.74)	3,241	2.98 (2.53,3.51)	2,721	2.63 (2.16,3.19)	2,272	3.10 (2.57,3.74)
7	9,040	3.35 (3.07,3.65)	2,192	4.11 (3.50,4.83)	2,724	3.26 (2.78,3.83)	2,267	2.86 (2.36,3.46)	1,857	3.23 (2.68,3.90)
8	7,017	3.45 (3.16,3.75)	1,745	4.21 (3.58,4.95)	2,074	3.39 (2.89,3.97)	1,773	2.86 (2.36,3.46)	1,425	3.40 (2.83,4.09)
9	4,532	3.64 (3.34,3.97)	1,111	4.50 (3.82,5.30)	1,340	3.64 (3.10,4.28)	1,166	2.86 (2.36,3.46)	915	3.63 (3.01,4.38)
10	2,015	3.76 (3.43,4.11)	481	4.69 (3.94,5.59)	581	3.73 (3.16,4.40)	523	2.86 (2.36,3.46)	430	3.85 (3.17,4.67)

Table 861. Reasons for First Revision Following Primary THA for Continuum Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	130	26.6
2	Peri-prosthetic fracture - Femur	110	22.5
3	Aseptic Loosening	84	17.2
4	Joint Infection	79	16.2
5	Pain	31	6.3
6	Malalignment	21	4.3
7	Implant Failure	18	3.7
8	Metal Reaction/Metallosis	9	1.8
9	Peri-prosthetic fracture - Acetabulum	6	1.2
10	Poly liner wear	1	0.2

Table 862. Reasons for First Revision in the First 90 Days Following Primary THA for Continuum Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	73	47.1
2	Dislocation/Instability	42	27.1
3	Joint Infection	12	7.7
4	Aseptic Loosening	10	6.4
5	Implant Failure	5	3.2
6	Peri-prosthetic fracture - Acetabulum	5	3.2
7	Pain	4	2.6
8	Malalignment	4	2.6

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Table 863. Reasons for First Revision Between 91 and 365 days Following Primary THA for Continuum Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	29	27.9
2	Joint Infection	27	26.0
3	Aseptic Loosening	18	17.3
4	Pain	10	9.6
5	Peri-prosthetic fracture - Femur	8	7.7
6	Implant Failure	6	5.8
7	Malalignment	6	5.8

Table 864. Descriptive Statistics of Cases Receiving the Continuum Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	8,831	53.42	
Age (years)	16,530	65.26 (10.93)	65.00 (15.00)
Height (cm)	16,409	170.09 (10.46)	170.18 (15.24)
Weight (kg)	16,408	87.66 (20.60)	86.00 (27.70)
BMI(kg/m^2)	16,408	30.16 (5.98)	29.43 (7.83)
Smoker - Never (%)	8,216	49.7	
Smoker - Previous (%)	6,353	38.43	
Smoker - Current (%)	1,932	11.69	
Smoker - Unknown (%)	29	0.18	

Table 865. Distribution of Approach Used for Continuum Cup in Primary THA Cases

Approach	N	Percent
Anterior	5,309	32.1
Anterolateral	2877	17.4
Posterior	8,070	48.8
Transtrochanteric	96	0.6
Missing/unknown/other	178	1.1

Table 866. Distribution of Head Size for Continuum Cup in Primary THA Cases

Size (mm)	N	Percent
28	40	0.2
32	3,542	21.6
36	11,275	68.6
40	1,406	8.6
Missing/unknown/other	170	1.0

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Table 867. Distribution of Bearing Surface for Continuum Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	4,833	29.2
Ceramic-on-plastic	11,427	69.1
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	270	1.6

Table 868. Distribution of Polyethylene Used for Continuum Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	1	0.0
XLPE	9,456	57.5
Antioxidant XLPE	6,128	37.3
Missing/unknown/other	845	5.1

Table 869. Volume of Cases by Surgeon and Site for the Continuum Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	138 (324)	24 (90)
Cases per site	393 (744)	91 (389)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

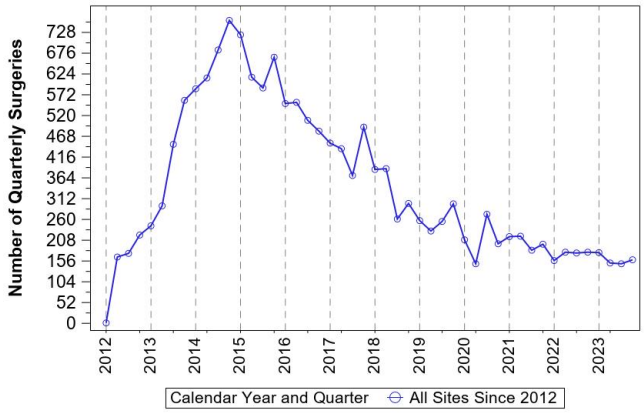


Figure 309. Utilization of the Continuum Cup in Primary THA Cases

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Catalog Numbers of Acetabular Cups Used in the Analysis

875705201	875705400	875706202
875705401	875705600	875706402
875705601	875704802	875706801
875705801	875705602	875704402
875706001	875705802	875706200
875705001	875705000	875706602
875704801	875705800	875704401
875706201	875704800	875704002
875706401	875706002	875706400
875705200	875706601	875706802
875705402	875704601	875707001
875705202	875704602	
875705002	875706000	

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4.3.3 Converge

N = 580 primary cases were used for this analysis. Distribution of utilization: 10 surgeons used this implant at fewer than 10 sites in primary THA cases.

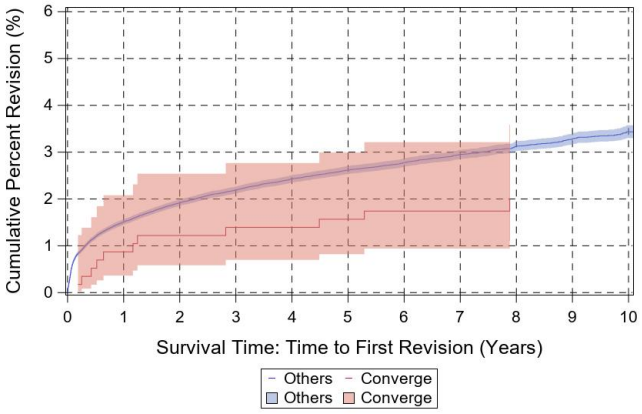


Figure 310. Cumulative Percent Revision Curve for the Converge Cup, Compared to All Other Cups in Primary THA Cases

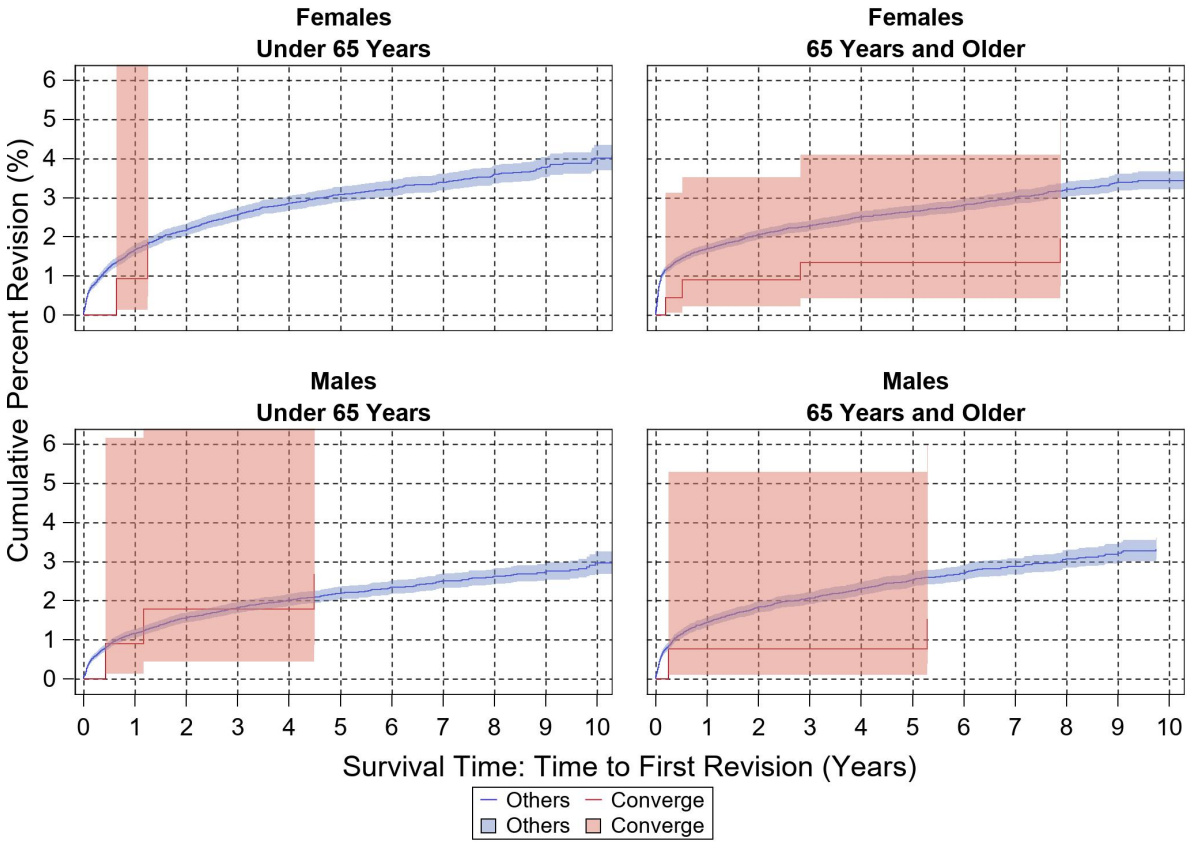


Figure 311. Cumulative Percent Revision Curve for the Converge Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 870. Cumulative Percent Revision and Number at Risk for the Converge Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	574	0.00 (0.00,0.00)	107	0.00 (0.00,0.00)	224	0.00 (0.00,0.00)	112	0.00 (0.00,0.00)	131	0.00 (0.00,0.00)
1	569	0.87 (0.36,2.08)	106	0.93 (0.13,6.45)	222	0.89 (0.22,3.52)	111	0.89 (0.13,6.17)	130	0.76 (0.11,5.29)
2	567	1.22 (0.58,2.54)	105	1.87 (0.47,7.27)	222	0.89 (0.22,3.52)	110	1.79 (0.45,6.95)	130	0.76 (0.11,5.29)
3	566	1.39 (0.70,2.77)	105	1.87 (0.47,7.27)	221	1.34 (0.43,4.09)	110	1.79 (0.45,6.95)	130	0.76 (0.11,5.29)
4	566	1.39 (0.70,2.77)	105	1.87 (0.47,7.27)	221	1.34 (0.43,4.09)	110	1.79 (0.45,6.95)	130	0.76 (0.11,5.29)
5	565	1.57 (0.82,2.99)	105	1.87 (0.47,7.27)	221	1.34 (0.43,4.09)	109	2.68 (0.87,8.07)	130	0.76 (0.11,5.29)
6	564	1.74 (0.94,3.21)	105	1.87 (0.47,7.27)	221	1.34 (0.43,4.09)	109	2.68 (0.87,8.07)	129	1.53 (0.38,5.97)
7	501	1.74 (0.94,3.21)	97	1.87 (0.47,7.27)	195	1.34 (0.43,4.09)	97	2.68 (0.87,8.07)	112	1.53 (0.38,5.97)
8	376	1.99 (1.10,3.59)	77	1.87 (0.47,7.27)	151	1.96 (0.73,5.21)	74	2.68 (0.87,8.07)	74	1.53 (0.38,5.97)
9	230	1.99 (1.10,3.59)	41	1.87 (0.47,7.27)	100	1.96 (0.73,5.21)	49	2.68 (0.87,8.07)	40	1.53 (0.38,5.97)
10	111	1.99 (1.10,3.59)	17	1.87 (0.47,7.27)	41	1.96 (0.73,5.21)	29	2.68 (0.87,8.07)	24	1.53 (0.38,5.97)

Table 871. Reasons for First Revision Following Primary THA for Converge Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	4	44.4
2	Joint Infection	3	33.3
3	Aseptic Loosening	2	22.2

Table 872. Reasons for First Revision in the First 90 Days Following Primary THA for Converge Cup Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	100.0

Table 873. Reasons for First Revision Between 91 and 365 days Following Primary THA for Converge Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	50.0
2	Joint Infection	1	50.0

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Table 874. Descriptive Statistics of Cases Receiving the Converge Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	336	57.93	
Age (years)	580	67.95 (11.25)	68.00 (16.50)
Height (cm)	580	168.67 (10.20)	167.64 (16.74)
Weight (kg)	580	86.72 (21.08)	83.91 (27.90)
BMI(kg/m^2)	580	30.32 (6.09)	29.55 (8.33)
Smoker - Never (%)	269	46.38	
Smoker - Previous (%)	251	43.28	
Smoker - Current (%)	60	10.34	
Smoker - Unknown (%)	0	0.0	

Table 875. Distribution of Approach Used for Converge Cup in Primary THA Cases

Approach	N	Percent
Anterior	4	0.7
Anterolateral	444	76.5
Posterior	121	20.9
Transtrochanteric	8	1.4
Missing/unknown/other	3	0.5

Table 876. Distribution of Head Size for Converge Cup in Primary THA Cases

Size (mm)	N	Percent
28	2	0.3
32	426	73.7
44	2	0.3
Missing/unknown/other	148	25.6

Table 877. Distribution of Bearing Surface for Converge Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	265	45.7
Ceramic-on-plastic	297	51.2
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	18	3.1

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Table 878. Distribution of Polyethylene Used for Converge Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	578	100.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	0	0.0

Table 879. Volume of Cases by Surgeon and Site for the Converge Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	58 (106)	32 (46)
Cases per site	72 (95)	32 (132)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

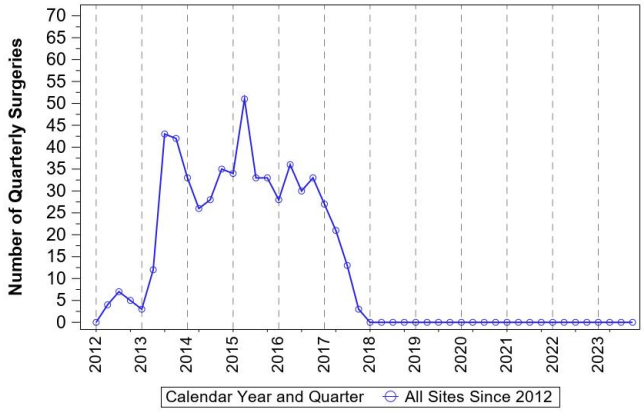


Figure 312. Utilization of the Converge Cup in Primary THA Cases

Catalog Numbers of Acetabular Cups Used in the Analysis

536100055
536100051
536100053
536100049
536100057
536000051
536000057
536000055
536100059
536000049
536000053
536000059
536100061
536000061
636100051
536000063
536000047
536100063
636100049
536000065

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4.3.4 G7

N = 39,069 primary cases were used for this analysis. Distribution of utilization: 195 surgeons across 81 sites used this implant in primary THA cases.

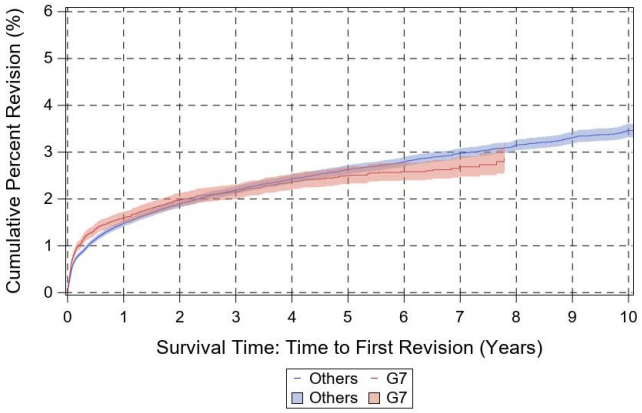


Figure 313. Cumulative Percent Revision Curve for the G7 Cup, Compared to All Other Cups in Primary THA Cases

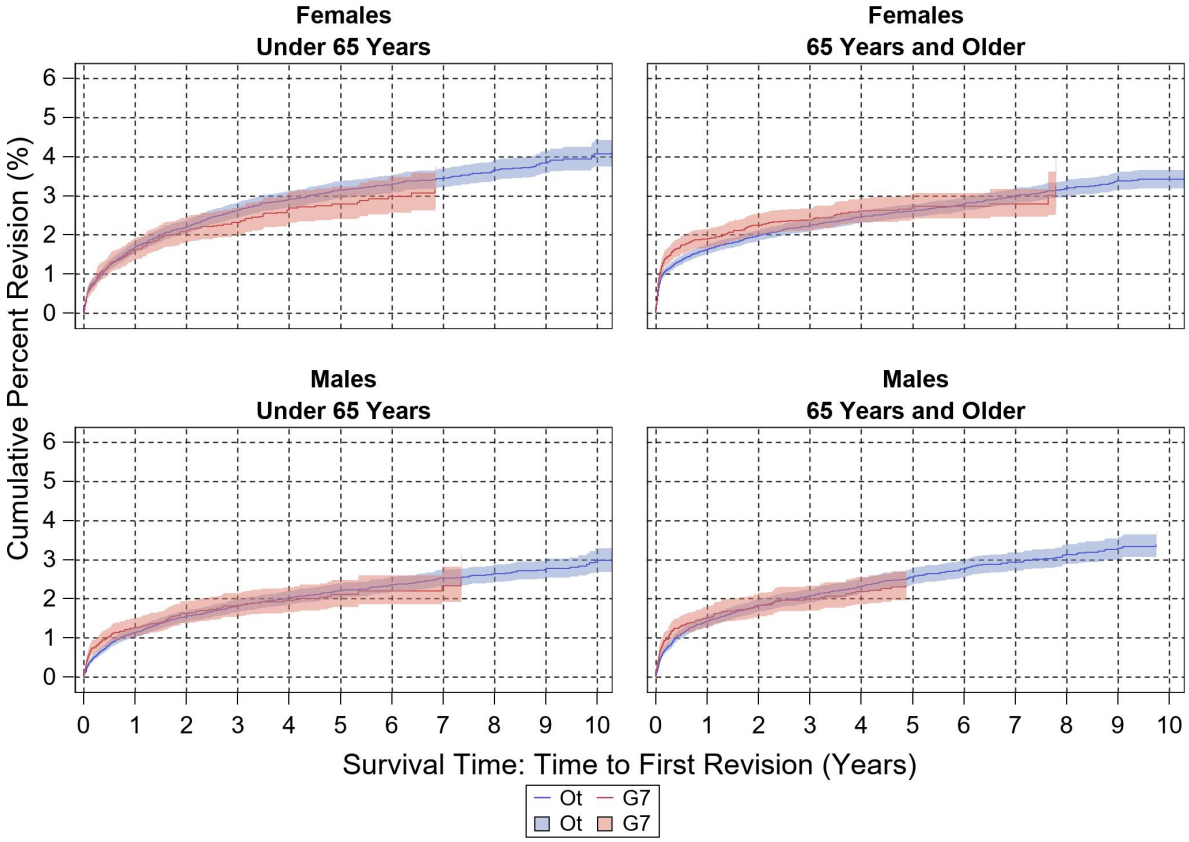


Figure 314. Cumulative Percent Revision Curve for the G7 Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 880. Cumulative Percent Revision and Number at Risk for the G7 Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	38,944	0.00 (0.00,0.00)	8,416	0.00 (0.00,0.00)	12,759	0.00 (0.00,0.00)	8,948	0.00 (0.00,0.00)	8,812	0.00 (0.00,0.00)
1	31,019	1.60 (1.47,1.73)	6,818	1.61 (1.35,1.91)	9,959	1.89 (1.67,2.15)	7,323	1.25 (1.04,1.51)	6,912	1.51 (1.27,1.79)
2	24,643	1.98 (1.84,2.13)	5,547	2.11 (1.81,2.47)	7,781	2.25 (1.99,2.53)	5,938	1.63 (1.37,1.93)	5,371	1.83 (1.55,2.15)
3	19,339	2.15 (2.00,2.31)	4,432	2.31 (1.99,2.68)	6,028	2.37 (2.10,2.67)	4,749	1.83 (1.55,2.15)	4,126	1.99 (1.70,2.33)
4	14,953	2.37 (2.21,2.55)	3,502	2.65 (2.29,3.07)	4,650	2.61 (2.32,2.93)	3,705	1.94 (1.65,2.29)	3,092	2.18 (1.86,2.56)
5	10,096	2.50 (2.32,2.69)	2,478	2.78 (2.40,3.22)	3,114	2.69 (2.39,3.03)	2,516	2.10 (1.78,2.48)	1,986	2.34 (1.99,2.75)
6	6,145	2.58 (2.40,2.78)	1,551	2.98 (2.56,3.47)	1,878	2.72 (2.41,3.07)	1,529	2.20 (1.86,2.60)	1,185	2.34 (1.99,2.75)
7	2,964	2.69 (2.48,2.91)	748	3.18 (2.69,3.75)	907	2.79 (2.46,3.17)	755	2.33 (1.92,2.82)	552	2.34 (1.99,2.75)
8	915	2.88 (2.58,3.20)	241	3.18 (2.69,3.75)	273	3.26 (2.60,4.08)	247	2.51 (2.00,3.16)	152	2.34 (1.99,2.75)
9	221	2.88 (2.58,3.20)	56	3.18 (2.69,3.75)	58	3.26 (2.60,4.08)	72	2.51 (2.00,3.16)	35	2.34 (1.99,2.75)
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

Table 881. Reasons for First Revision Following Primary THA for G7 Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	219	27.0
2	Dislocation/Instability	214	26.4
3	Joint Infection	154	19.0
4	Aseptic Loosening	120	14.8
5	Implant Failure	36	4.4
6	Malalignment	27	3.3
7	Pain	26	3.2
8	Peri-prosthetic fracture - Acetabulum	9	1.1
9	Poly liner wear	2	0.2
10	Metal Reaction/Metallosis	2	0.2
	Unknown/missing/other	1	0.1

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Table 882. Reasons for First Revision in the First 90 Days Following Primary THA for G7 Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	191	47.4
2	Dislocation/Instability	72	17.9
3	Joint Infection	54	13.4
4	Aseptic Loosening	36	8.9
5	Implant Failure	26	6.4
6	Malalignment	11	2.7
7	Peri-prosthetic fracture - Acetabulum	8	2.0
8	Pain	4	1.0
9	Poly liner wear	1	0.2

Table 883. Reasons for First Revision Between 91 and 365 days Following Primary THA for G7 Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	72	37.7
2	Joint Infection	48	25.1
3	Aseptic Loosening	35	18.3
4	Peri-prosthetic fracture - Femur	12	6.3
5	Pain	11	5.8
6	Implant Failure	7	3.7
7	Malalignment	3	1.6
8	Poly liner wear	1	0.5
9	Peri-prosthetic fracture - Acetabulum	1	0.5
10	Unknown/other/missing	1	0.5

Table 884. Descriptive Statistics of Cases Receiving the G7 Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	21,239	54.36	
Age (years)	39,069	65.39 (11.08)	66.00 (14.00)
Height (cm)	38,826	169.88 (10.51)	170.18 (15.24)
Weight (kg)	38,826	88.40 (20.79)	86.80 (28.12)
BMI(kg/m^2)	38,826	30.51 (6.20)	29.84 (8.24)
Smoker - Never (%)	19,345	49.51	
Smoker - Previous (%)	14,488	37.08	
Smoker - Current (%)	5,090	13.03	
Smoker - Unknown (%)	146	0.37	

Table 885. Distribution of Approach Used for G7 Cup in Primary THA Cases

Approach	N	Percent
Anterior	16,777	42.9
Anterolateral	5790	14.8
Posterior	16,174	41.4
Transtrochanteric	31	0.1
Missing/unknown/other	297	0.8

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Table 886. Distribution of Head Size for G7 Cup in Primary THA Cases

Size (mm)	N	Percent
28	43	0.1
32	3,451	9.8
36	24,436	69.8
40	6,845	19.6
44	5	0.0
Missing/unknown/other	238	0.7

Table 887. Distribution of Bearing Surface for G7 Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	4,939	12.6
Ceramic-on-plastic	29,842	76.4
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	3,676	9.4
Missing/unknown/other	612	1.6

Table 888. Distribution of Polyethylene Used for G7 Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	12,819	33.2
Antioxidant XLPE	17,961	46.6
Missing/unknown/other	7,797	20.2

Table 889. Volume of Cases by Surgeon and Site for the G7 Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	200 (333)	51 (241)
Cases per site	482 (600)	249 (640)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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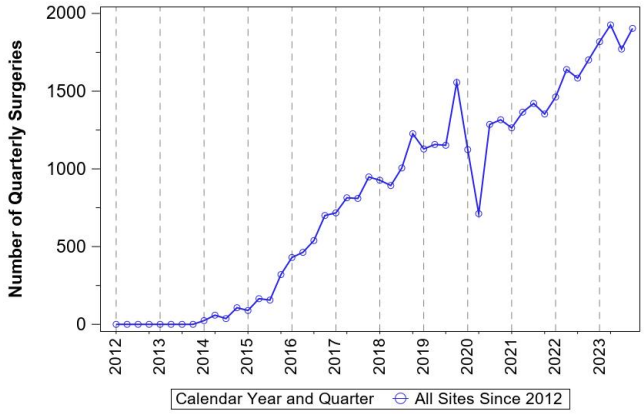


Figure 315. Utilization of the G7 Cup in Primary THA Cases

Catalog Numbers of Acetabular Cups Used in the Analysis

110010244	10000661	110010268
110010245	110017106	110010250
110010243	110010241	110010269
10000664	110017101	110010240
110010246	110010249	110010270
10000663	10000668	110017109
10000665	110010264	110010261
10000662	110010263	10000670
110010247	110017107	110010271
10000666	110010265	10000659
110010242	110010266	110017099
110017103	10000660	10000671
110017102	110010267	110010239
110017104	110010262	110010272
110010248	110017100	110010251
10000667	110017108	110017110
110017105	10000669	

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4.3.5 Mpact

N = 520 primary cases were used for this analysis. Distribution of utilization: 10 surgeons used this implant at fewer than 10 sites in primary THA cases.

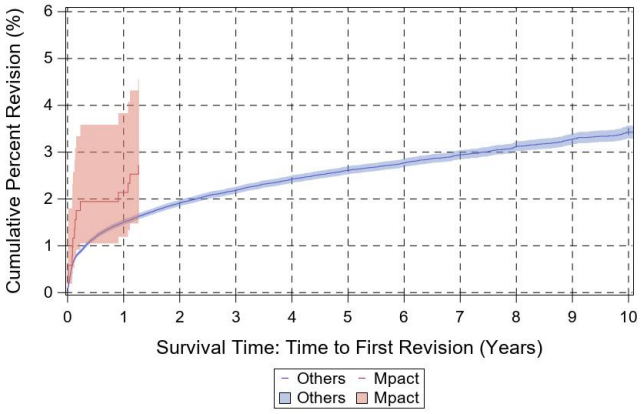


Figure 316. Cumulative Percent Revision Curve for the Mpact Cup, Compared to All Other Cups in Primary THA Cases

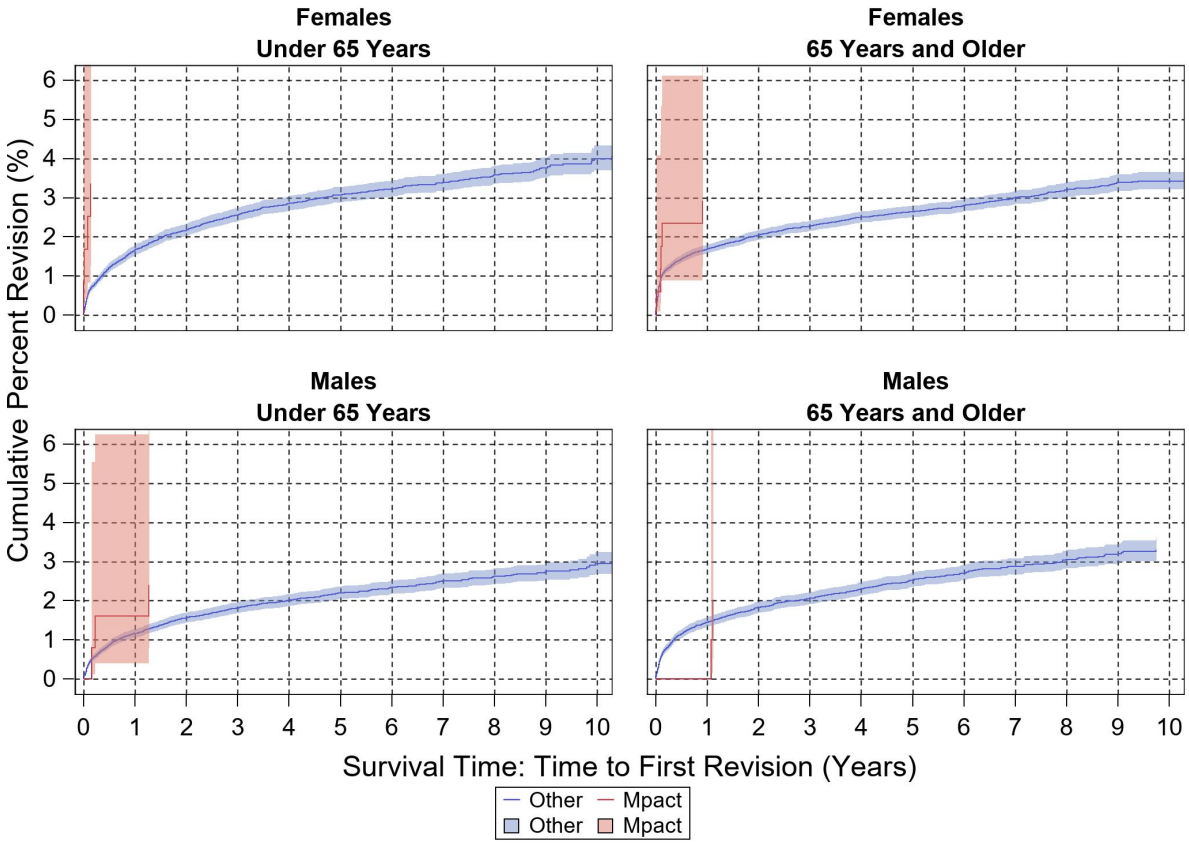


Figure 317. Cumulative Percent Revision Curve for the Mpact Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 890. Cumulative Percent Revision and Number at Risk for the Mpact Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	514	0.00 (0.00,0.00)	119	0.00 (0.00,0.00)	171	0.00 (0.00,0.00)	125	0.00 (0.00,0.00)	99	0.00 (0.00,0.00)
1	503	2.14 (1.19,3.83)	115	3.36 (1.28,8.71)	166	2.92 (1.23,6.88)	123	1.60 (0.40,6.25)	99	0.00 (0.00,0.00)
2	486	2.73 (1.62,4.56)	113	3.36 (1.28,8.71)	161	2.92 (1.23,6.88)	118	2.41 (0.78,7.28)	94	2.02 (0.51,7.84)
3	450	2.73 (1.62,4.56)	104	3.36 (1.28,8.71)	153	2.92 (1.23,6.88)	106	2.41 (0.78,7.28)	87	2.02 (0.51,7.84)
4	368	2.73 (1.62,4.56)	85	3.36 (1.28,8.71)	127	2.92 (1.23,6.88)	87	2.41 (0.78,7.28)	69	2.02 (0.51,7.84)
5	225	2.73 (1.62,4.56)	47	3.36 (1.28,8.71)	80	2.92 (1.23,6.88)	60	2.41 (0.78,7.28)	38	2.02 (0.51,7.84)
6	62	2.73 (1.62,4.56)	12	3.36 (1.28,8.71)	22	2.92 (1.23,6.88)	19	2.41 (0.78,7.28)	*	2.02 (0.51,7.84)
7	*	2.73 (1.62,4.56)	0	N/A	*	2.92 (1.23,6.88)	*	2.41 (0.78,7.28)	*	2.02 (0.51,7.84)
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 891. Reasons for First Revision Following Primary THA for Mpact Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	8	57.1
2	Joint Infection	3	21.4
3	Aseptic Loosening	1	7.1
4	Dislocation/Instability	1	7.1
5	Implant Failure	1	7.1

Table 892. Reasons for First Revision in the First 90 Days Following Primary THA for Mpact Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	6	60.0
2	Joint Infection	2	20.0
3	Dislocation/Instability	1	10.0
4	Implant Failure	1	10.0

Table 893. Reasons for First Revision Between 91 and 365 days Following Primary THA for Mpact Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	1	100.0

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Table 894. Descriptive Statistics of Cases Receiving the Mpact Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	293	56.35	
Age (years)	520	65.21 (10.24)	65.00 (13.00)
Height (cm)	520	169.53 (10.05)	170.18 (15.20)
Weight (kg)	520	86.58 (18.24)	85.40 (25.10)
BMI(kg/m^2)	520	30.01 (5.17)	29.36 (7.20)
Smoker - Never (%)	254	48.85	
Smoker - Previous (%)	199	38.27	
Smoker - Current (%)	53	10.19	
Smoker - Unknown (%)	14	2.69	

Table 895. Distribution of Approach Used for Mpact Cup in Primary THA Cases

Approach	N	Percent
Anterior	512	98.5
Anterolateral	8	1.5
Posterior	0	0.0
Transtrochanteric	0	0.0
Missing/unknown/other	0	0.0

Table 896. Distribution of Head Size for Mpact Cup in Primary THA Cases

Size (mm)	N	Percent
28	1	0.6
32	32	19.9
36	117	72.7
40	10	6.2
Missing/unknown/other	1	0.6

Table 897. Distribution of Bearing Surface for Mpact Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	63	12.1
Ceramic-on-plastic	97	18.6
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	355	68.3
Missing/unknown/other	5	1.0

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Table 898. Distribution of Polyethylene Used for Mpact Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	516	100.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	0	0.0

Table 899. Volume of Cases by Surgeon and Site for the Mpact Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	52 (65)	10 (109)
Cases per site	57 (90)	5 (75)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

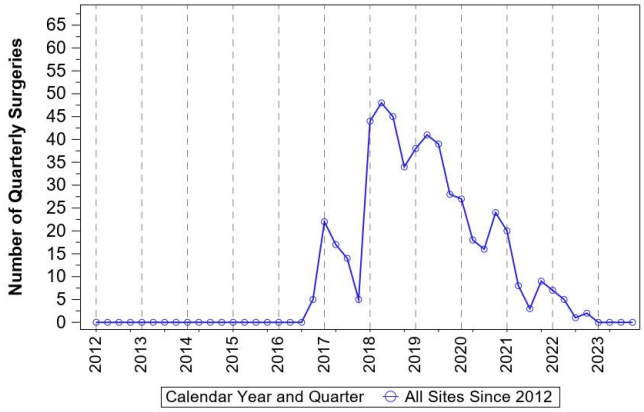


Figure 318. Utilization of the Mpact Cup in Primary THA Cases

Catalog Numbers of Acetabular Cups Used in the Analysis

0132154MB	0132150DH	0132156MH
0132156MB	0132156DH	0132160MH
0132152MB	0132160MB	0132162MB
0132150MB	0132158DH	0132150MH
0132148MB	0132154MH	0132162DH
0132152DH	0132160DH	0132164DH
0132154DH	0132152MH	
0132158MB	0132148DH	

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4.3.6 Pinnacle

N = 27,501 primary cases were used for this analysis. Distribution of utilization: 161 surgeons across 58 sites used this implant in primary THA cases.

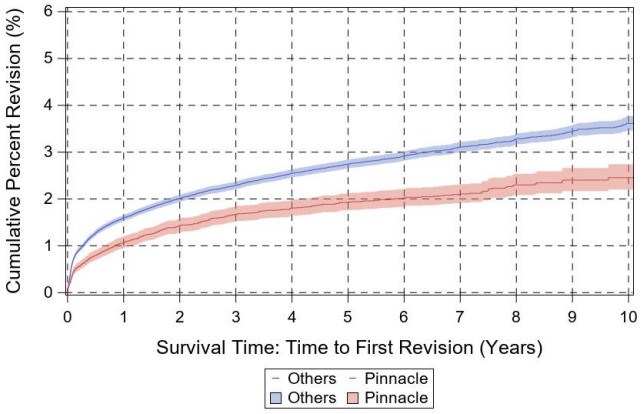


Figure 319. Cumulative Percent Revision Curve for the Pinnacle Cup, Compared to All Other Cups in Primary THA Cases

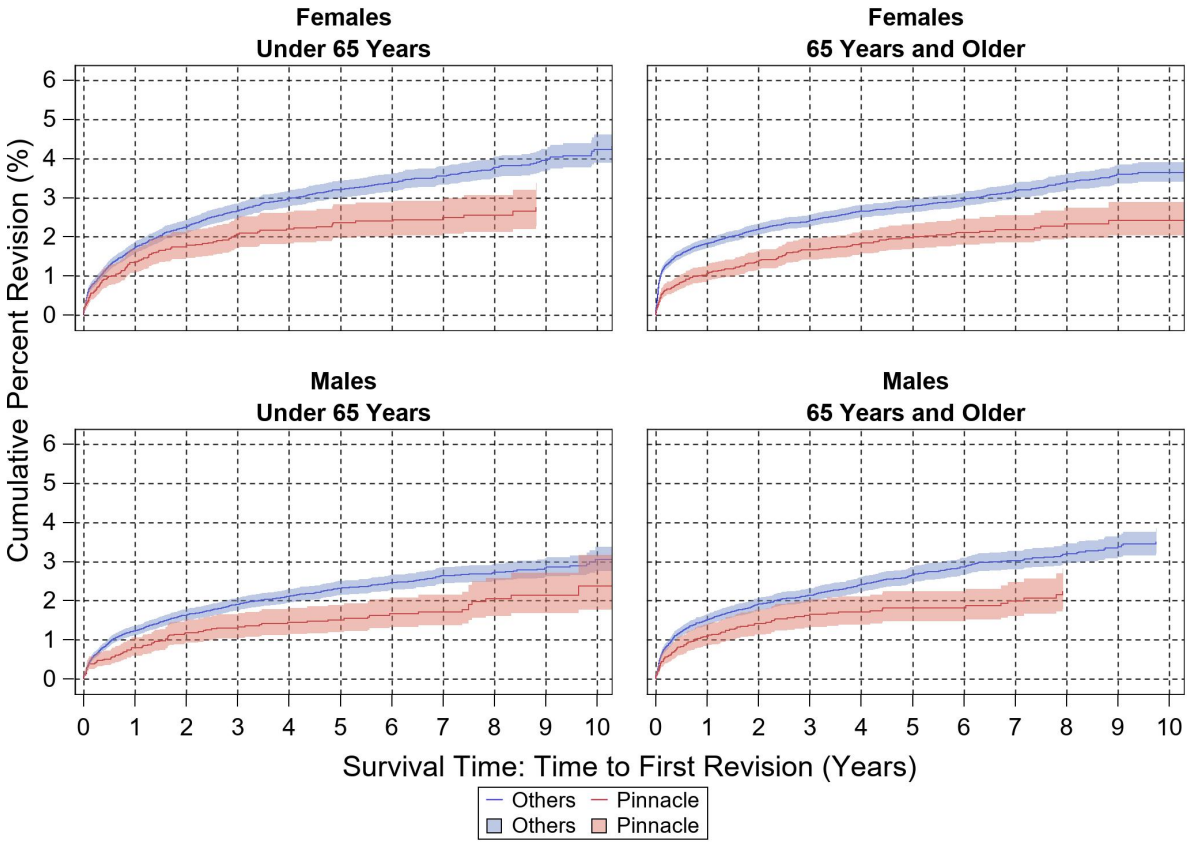


Figure 320. Cumulative Percent Revision Curve for the Pinnacle Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 900. Cumulative Percent Revision and Number at Risk for the Pinnacle Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	27,295	0.00 (0.00,0.00)	5,877	0.00 (0.00,0.00)	9,781	0.00 (0.00,0.00)	5,809	0.00 (0.00,0.00)	5,826	0.00 (0.00,0.00)
1	23,618	1.07 (0.96,1.21)	5,177	1.36 (1.09,1.70)	8,428	1.06 (0.87,1.28)	5,069	0.79 (0.59,1.06)	4,942	1.10 (0.85,1.41)
2	20,399	1.43 (1.29,1.59)	4,516	1.78 (1.46,2.17)	7,209	1.37 (1.15,1.64)	4,432	1.19 (0.93,1.52)	4,240	1.42 (1.13,1.77)
3	17,361	1.67 (1.52,1.84)	3,943	2.07 (1.71,2.49)	6,097	1.67 (1.42,1.96)	3,821	1.30 (1.03,1.65)	3,498	1.65 (1.33,2.04)
4	14,812	1.80 (1.64,1.98)	3,400	2.20 (1.83,2.64)	5,179	1.83 (1.56,2.15)	3,311	1.44 (1.15,1.81)	2,920	1.71 (1.38,2.11)
5	12,177	1.93 (1.75,2.12)	2,824	2.36 (1.97,2.83)	4,156	1.98 (1.69,2.31)	2,797	1.51 (1.20,1.89)	2,398	1.82 (1.47,2.24)
6	9,723	2.02 (1.84,2.21)	2,291	2.40 (2.00,2.87)	3,246	2.11 (1.80,2.46)	2,273	1.66 (1.33,2.09)	1,911	1.82 (1.47,2.24)
7	7,443	2.11 (1.92,2.32)	1,766	2.50 (2.08,2.99)	2,430	2.17 (1.86,2.55)	1,783	1.71 (1.37,2.15)	1,462	2.00 (1.61,2.48)
8	5,202	2.30 (2.08,2.54)	1,278	2.56 (2.13,3.07)	1,656	2.33 (1.97,2.74)	1,232	2.04 (1.61,2.59)	1,035	2.25 (1.79,2.83)
9	3,010	2.40 (2.17,2.66)	739	2.76 (2.27,3.37)	940	2.42 (2.03,2.88)	713	2.14 (1.68,2.72)	617	2.25 (1.79,2.83)
10	1,167	2.46 (2.20,2.74)	278	2.76 (2.27,3.37)	349	2.42 (2.03,2.88)	275	2.37 (1.77,3.17)	265	2.25 (1.79,2.83)

Table 901. Reasons for First Revision Following Primary THA for Pinnacle Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	122	26.1
2	Joint Infection	116	24.8
3	Aseptic Loosening	78	16.7
4	Peri-prosthetic fracture - Femur	71	15.2
5	Pain	26	5.6
6	Implant Failure	20	4.3
7	Malalignment	14	3.0
8	Metal Reaction/Metallosis	11	2.4
9	Peri-prosthetic fracture - Acetabulum	7	1.5
10	Poly liner wear	2	0.4
	Unknown/missing/other	1	0.2

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Table 902. Reasons for First Revision in the First 90 Days Following Primary THA for Pinnacle Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	58	37.4
2	Dislocation/Instability	42	27.1
3	Joint Infection	30	19.4
4	Aseptic Loosening	11	7.1
5	Peri-prosthetic fracture - Acetabulum	5	3.2
6	Implant Failure	3	1.9
7	Malalignment	3	1.9
8	Pain	2	1.3
9	Metal Reaction/Metallosis	1	0.6

Table 903. Reasons for First Revision Between 91 and 365 days Following Primary THA for Pinnacle Cup Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	43	38.4
2	Dislocation/Instability	36	32.1
3	Aseptic Loosening	15	13.4
4	Pain	8	7.1
5	Implant Failure	3	2.7
6	Malalignment	3	2.7
7	Peri-prosthetic fracture - Acetabulum	2	1.8
8	Peri-prosthetic fracture - Femur	2	1.8

Table 904. Descriptive Statistics of Cases Receiving the Pinnacle Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	15,773	57.35	
Age (years)	27,501	65.99 (10.68)	66.00 (14.00)
Height (cm)	27,214	169.51 (10.48)	168.00 (15.24)
Weight (kg)	27,216	88.70 (21.32)	86.74 (28.90)
BMI(kg/m^2)	27,214	30.74 (6.39)	29.97 (8.37)
Smoker - Never (%)	13,229	48.1	
Smoker - Previous (%)	10,418	37.88	
Smoker - Current (%)	3,797	13.81	
Smoker - Unknown (%)	57	0.21	

Table 905. Distribution of Approach Used for Pinnacle Cup in Primary THA Cases

Approach	N	Percent
Anterior	10,238	37.2
Anterolateral	7198	26.2
Posterior	9,657	35.1
Transtrochanteric	75	0.3
Missing/unknown/other	333	1.2

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Table 906. Distribution of Head Size for Pinnacle Cup in Primary THA Cases

Size (mm)	N	Percent
22	40	0.1
28	282	1.0
32	6,837	25.1
36	17,733	65.0
40	2,239	8.2
44	46	0.2
Missing/unknown/other	98	0.4

Table 907. Distribution of Bearing Surface for Pinnacle Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	8,428	30.6
Ceramic-on-plastic	18,624	67.7
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	70	0.2
Missing/unknown/other	379	1.4

Table 908. Distribution of Polyethylene Used for Pinnacle Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	103	0.4
XLPE	24,175	88.8
Antioxidant XLPE	0	0.0
Missing/unknown/other	2,937	10.8

Table 909. Volume of Cases by Surgeon and Site for the Pinnacle Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	170 (347)	17 (162)
Cases per site	474 (814)	114 (466)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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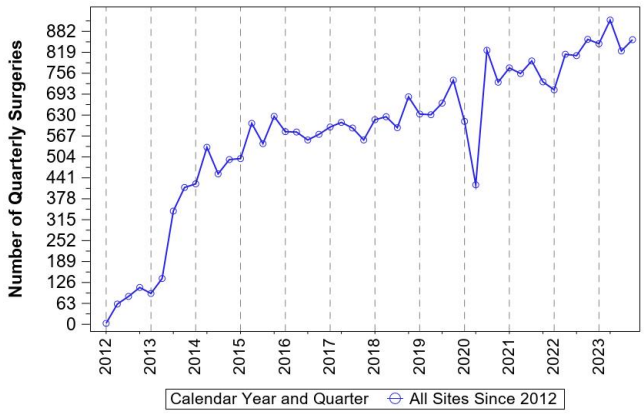


Figure 321. Utilization of the Pinnacle Cup in Primary THA Cases

Catalog Numbers of Acetabular Cups Used in the Analysis

121732052	121730046	121701060
121732054	121701056	121722064
121732056	121701050	121720044
121722052	121731050	121703062
121732050	121703056	121730066
121732058	121732064	121701062
121732048	121701048	121730068
121722054	121730058	121730038
121722050	121731048	121730042
121732060	121731058	121703064
121722056	121730050	121722066
121722048	121703048	121730040
121722058	121722062	121731046
121732062	121703050	121731062
121730052	121730048	121701064
121701052	121701058	121716068
121731052	121703058	121716070
121703052	121730060	121717060
121731054	121731060	121717062
121722060	121720046	121720038
121730054	121730044	121720052
121701054	121730062	121720054
121703054	121703060	
121730056	121730064	
121731056	121732066	

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4.3.7 PolarCup

N = 611 primary cases were used for this analysis. Distribution of utilization: 13 surgeons used this implant at fewer than 10 sites in primary THA cases.

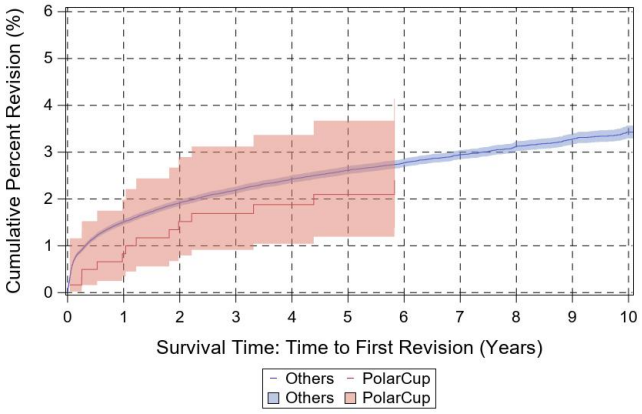


Figure 322. Cumulative Percent Revision Curve for the PolarCup Cup, Compared to All Other Cups in Primary THA Cases

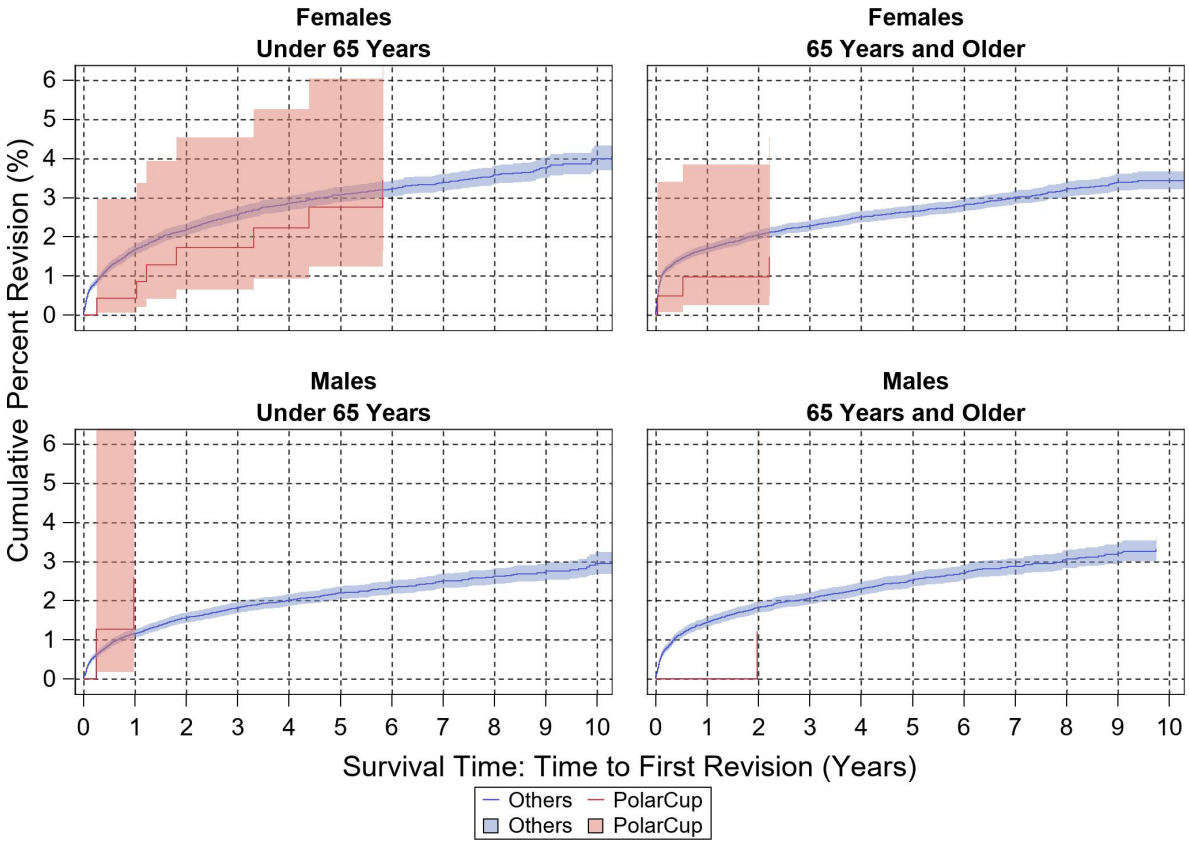


Figure 323. Cumulative Percent Revision Curve for the PolarCup Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 910. Cumulative Percent Revision and Number at Risk for the PolarCup Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	610	0.00 (0.00,0.00)	238	0.00 (0.00,0.00)	205	0.00 (0.00,0.00)	81	0.00 (0.00,0.00)	86	0.00 (0.00,0.00)
1	585	0.83 (0.35,1.98)	231	0.42 (0.06,2.97)	198	0.98 (0.25,3.85)	73	2.60 (0.66,10.01)	83	0.00 (0.00,0.00)
2	567	1.52 (0.79,2.90)	222	1.73 (0.65,4.55)	192	0.98 (0.25,3.85)	71	2.60 (0.66,10.01)	82	1.20 (0.17,8.25)
3	549	1.69 (0.91,3.12)	213	1.73 (0.65,4.55)	187	1.49 (0.48,4.56)	69	2.60 (0.66,10.01)	80	1.20 (0.17,8.25)
4	483	1.88 (1.04,3.37)	194	2.22 (0.93,5.26)	149	1.49 (0.48,4.56)	66	2.60 (0.66,10.01)	74	1.20 (0.17,8.25)
5	401	2.10 (1.19,3.67)	167	2.75 (1.24,6.05)	120	1.49 (0.48,4.56)	57	2.60 (0.66,10.01)	57	1.20 (0.17,8.25)
6	306	2.40 (1.39,4.14)	134	3.45 (1.64,7.19)	90	1.49 (0.48,4.56)	39	2.60 (0.66,10.01)	43	1.20 (0.17,8.25)
7	191	2.40 (1.39,4.14)	86	3.45 (1.64,7.19)	56	1.49 (0.48,4.56)	22	2.60 (0.66,10.01)	27	1.20 (0.17,8.25)
8	77	2.40 (1.39,4.14)	38	3.45 (1.64,7.19)	17	1.49 (0.48,4.56)	12	2.60 (0.66,10.01)	*	1.20 (0.17,8.25)
9	*	2.40 (1.39,4.14)	0	N/A	0	N/A	*	2.60 (0.66,10.01)	0	N/A
10	*	2.40 (1.39,4.14)	0	N/A	0	N/A	*	2.60 (0.66,10.01)	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 911. Reasons for First Revision Following Primary THA for PolarCup Cup Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	7	53.8
2	Malalignment	2	15.4
3	Joint Infection	1	7.7
4	Peri-prosthetic fracture - Acetabulum	1	7.7
5	Peri-prosthetic fracture - Femur	1	7.7
6	Metal Reaction/Metallosis	1	7.7

Table 912. Reasons for First Revision in the First 90 Days Following Primary THA for PolarCup Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Acetabulum	1	100.0

Table 913. Reasons for First Revision Between 91 and 365 days Following Primary THA for PolarCup Cup Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	3	75.0
2	Joint Infection	1	25.0

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Table 914. Descriptive Statistics of Cases Receiving the PolarCup Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	444	72.67	
Age (years)	611	62.91 (11.94)	64.00 (16.00)
Height (cm)	611	167.21 (9.09)	167.60 (12.98)
Weight (kg)	611	87.59 (24.41)	83.85 (29.20)
BMI(kg/m^2)	611	31.24 (8.04)	29.92 (9.18)
Smoker - Never (%)	311	50.9	
Smoker - Previous (%)	232	37.97	
Smoker - Current (%)	68	11.13	
Smoker - Unknown (%)	0	0.0	

Table 915. Distribution of Approach Used for PolarCup Cup in Primary THA Cases

Approach	N	Percent
Anterior	6	1.0
Anterolateral	504	82.5
Posterior	30	4.9
Transtrochanteric	71	11.6
Missing/unknown/other	0	0.0

Table 916. Distribution of Bearing Surface for PolarCup Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1	0.2
Ceramic-on-plastic	0	0.0
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	603	98.7
Missing/unknown/other	7	1.1

Table 917. Distribution of Polyethylene Used for PolarCup Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	604	100.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	0	0.0

Table 918. Volume of Cases by Surgeon and Site for the PolarCup Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	47 (149)	1 (2)
Cases per site	76 (190)	1 (29)

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The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

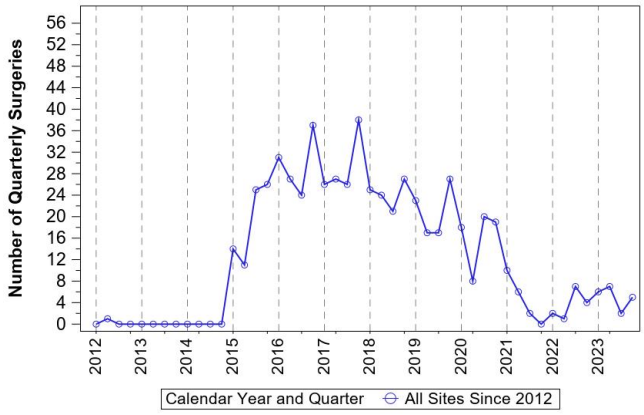


Figure 324. Utilization of the PolarCup Cup in Primary THA Cases

Catalog Numbers of Acetabular Cups Used in the Analysis

75100409	75100414	75100455
75100410	75100407	75100457
75100411	75100453	75100458
75100408	75100451	
75100412	75100406	
75100413	75100415	

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4.3.8 Procotyl Prime

N = 832 primary cases were used for this analysis. Fewer than ten surgeons across 10 sites used this implant in primary THA cases.

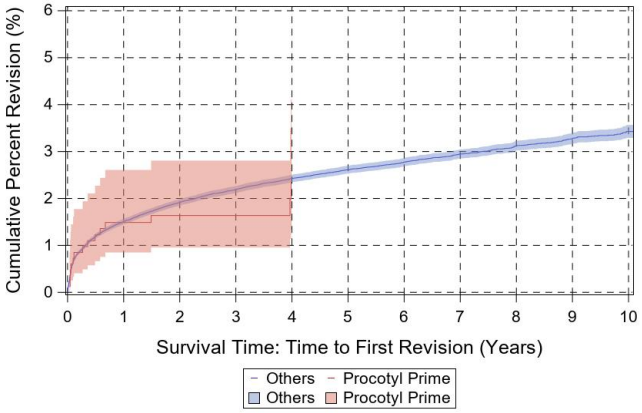


Figure 325. Cumulative Percent Revision Curve for the Procotyl Prime Cup, Compared to All Other Cups in Primary THA Cases

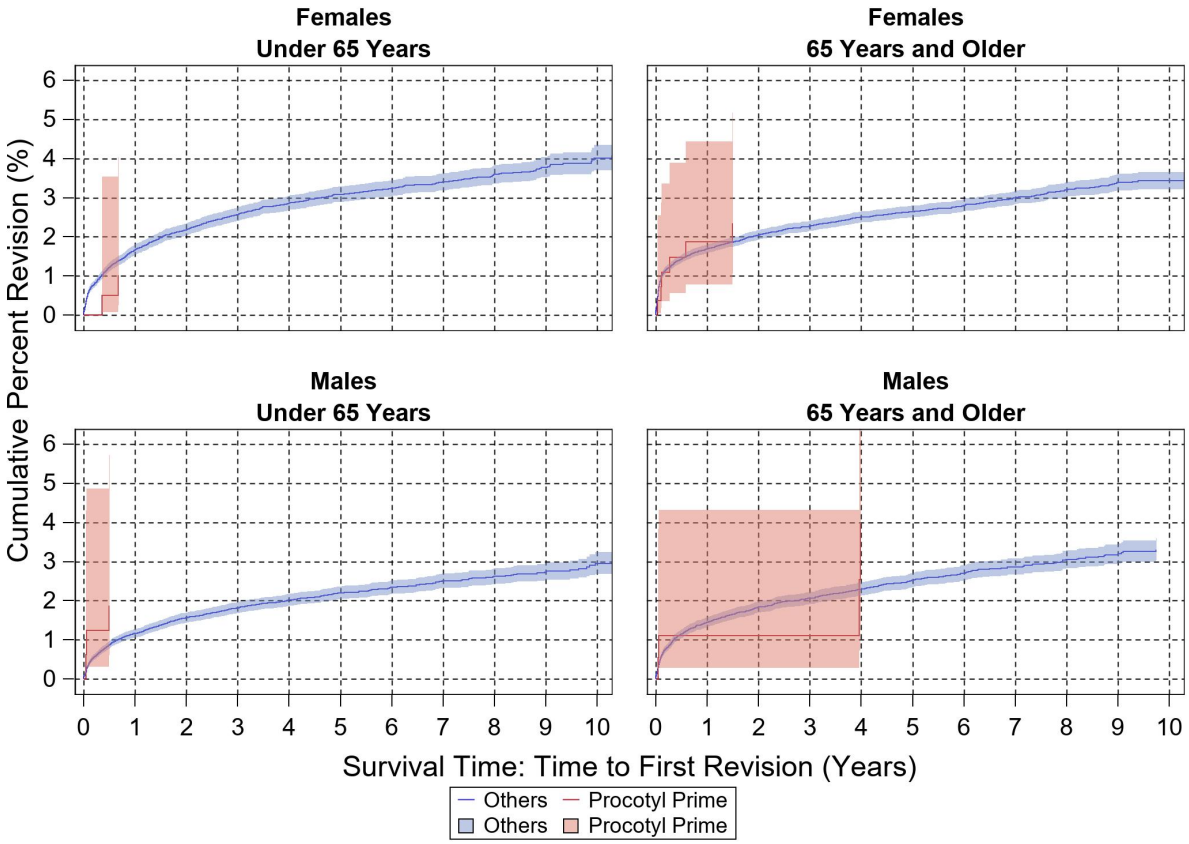


Figure 326. Cumulative Percent Revision Curve for the Procotyl Prime Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 919. Cumulative Percent Revision and Number at Risk for the Procotyl Prime Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	829	0.00 (0.00,0.00)	208	0.00 (0.00,0.00)	276	0.00 (0.00,0.00)	163	0.00 (0.00,0.00)	182	0.00 (0.00,0.00)
1	717	1.49 (0.85,2.61)	185	1.02 (0.26,4.02)	227	1.87 (0.78,4.43)	144	1.88 (0.61,5.72)	161	1.10 (0.28,4.32)
2	584	1.64 (0.95,2.81)	141	1.02 (0.26,4.02)	183	2.35 (1.06,5.17)	119	1.88 (0.61,5.72)	141	1.10 (0.28,4.32)
3	379	1.64 (0.95,2.81)	94	1.02 (0.26,4.02)	121	2.35 (1.06,5.17)	64	1.88 (0.61,5.72)	100	1.10 (0.28,4.32)
4	271	2.35 (1.34,4.11)	64	1.02 (0.26,4.02)	96	2.35 (1.06,5.17)	45	1.88 (0.61,5.72)	66	3.97 (1.37,11.19)
5	193	2.35 (1.34,4.11)	49	1.02 (0.26,4.02)	65	2.35 (1.06,5.17)	32	1.88 (0.61,5.72)	47	3.97 (1.37,11.19)
6	53	2.35 (1.34,4.11)	*	1.02 (0.26,4.02)	16	2.35 (1.06,5.17)	*	1.88 (0.61,5.72)	19	3.97 (1.37,11.19)
7	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 920. Reasons for First Revision Following Primary THA for Procotyl Prime Cup Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	7	46.7
2	Joint Infection	3	20.0
3	Peri-prosthetic fracture - Femur	3	20.0
4	Dislocation/Instability	2	13.3

Table 921. Reasons for First Revision in the First 90 Days Following Primary THA for Procotyl Prime Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	3	42.9
2	Dislocation/Instability	2	28.6
3	Joint Infection	2	28.6

Table 922. Reasons for First Revision Between 91 and 365 days Following Primary THA for Procotyl Prime Cup Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	4	80.0
2	Joint Infection	1	20.0

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Table 923. Descriptive Statistics of Cases Receiving the Procotyl Prime Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	487	58.53	
Age (years)	832	65.15 (10.48)	66.00 (13.00)
Height (cm)	832	169.54 (9.97)	168.00 (15.24)
Weight (kg)	832	90.10 (20.91)	88.45 (26.31)
BMI(kg/m^2)	832	31.30 (6.65)	30.30 (8.91)
Smoker - Never (%)	392	47.12	
Smoker - Previous (%)	323	38.82	
Smoker - Current (%)	113	13.58	
Smoker - Unknown (%)	4	0.48	

Table 924. Distribution of Approach Used for Procotyl Prime Cup in Primary THA Cases

Approach	N	Percent
Anterior	710	85.3
Anterolateral	47	5.7
Posterior	73	8.8
Transtrochanteric	0	0.0
Missing/unknown/other	2	0.2

Table 925. Distribution of Head Size for Procotyl Prime Cup in Primary THA Cases

Size (mm)	N	Percent
32	33	4.0
36	606	74.1
40	149	18.2
Missing/unknown/other	30	3.7

Table 926. Distribution of Bearing Surface for Procotyl Prime Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	13	1.6
Ceramic-on-plastic	775	93.2
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	44	5.3

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Table 927. Distribution of Polyethylene Used for Procotyl Prime Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	367	44.9
Antioxidant XLPE	451	55.1
Missing/unknown/other	0	0.0

Table 928. Volume of Cases by Surgeon and Site for the Procotyl Prime Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	104 (171)	45 (100)
Cases per site	83 (89)	63 (82)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

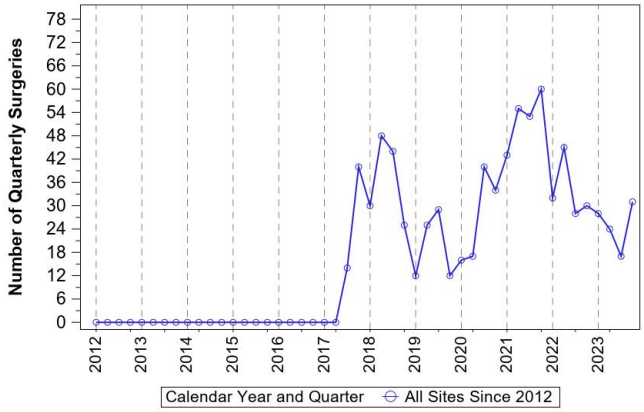


Figure 327. Utilization of the Procotyl Prime Cup in Primary THA Cases

Catalog Numbers of Acetabular Cups Used in the Analysis

P3SBQC50	P3SBQD56	P3SBQB46
P3SBQC52	P3SBQE60	P3SBQF64
P3SBQD54	P3SBQB48	P3SBQG66
P3SBQE58	P3SBQF62	

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4.3.9 Reflection

N = 552 primary cases were used for this analysis. Distribution of utilization: 10 surgeons used this implant at fewer than 10 sites in primary THA cases.

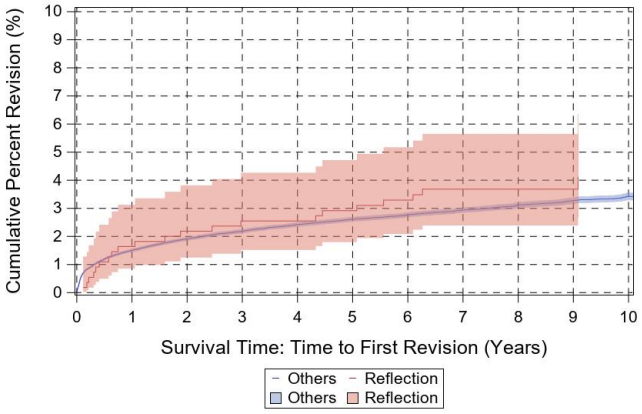


Figure 328. Cumulative Percent Revision Curve for the Reflection Cup, Compared to All Other Cups in Primary THA Cases

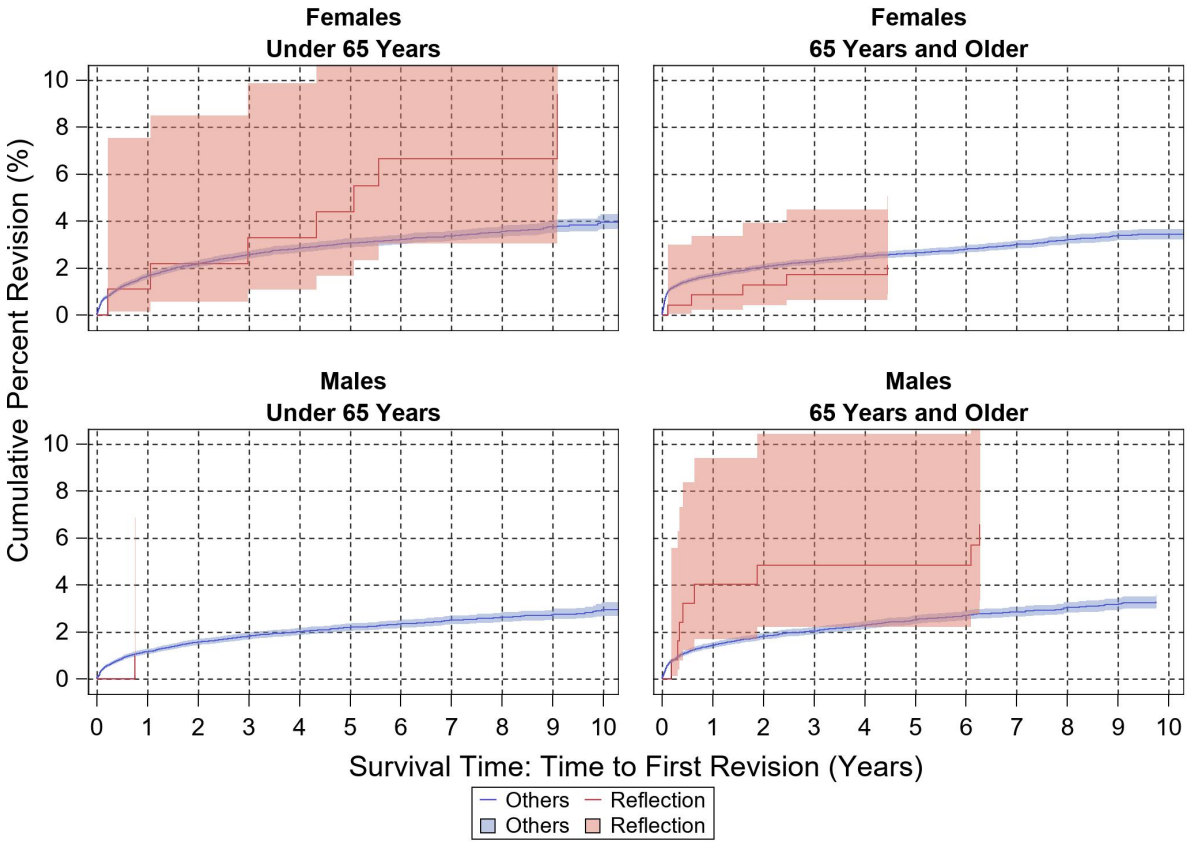


Figure 329. Cumulative Percent Revision Curve for the Reflection Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 929. Cumulative Percent Revision and Number at Risk for the Reflection Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	549	0.00 (0.00,0.00)	91	0.00 (0.00,0.00)	234	0.00 (0.00,0.00)	100	0.00 (0.00,0.00)	124	0.00 (0.00,0.00)
1	540	1.64 (0.86,3.13)	90	1.10 (0.16,7.54)	232	0.85 (0.21,3.37)	99	1.00 (0.14,6.89)	119	4.03 (1.70,9.42)
2	537	2.19 (1.25,3.82)	89	2.20 (0.55,8.50)	231	1.28 (0.42,3.92)	99	1.00 (0.14,6.89)	118	4.84 (2.20,10.45)
3	534	2.55 (1.52,4.27)	88	3.30 (1.08,9.87)	229	1.71 (0.65,4.49)	99	1.00 (0.14,6.89)	118	4.84 (2.20,10.45)
4	533	2.55 (1.52,4.27)	88	3.30 (1.08,9.87)	229	1.71 (0.65,4.49)	98	1.00 (0.14,6.89)	118	4.84 (2.20,10.45)
5	524	2.92 (1.80,4.72)	86	4.40 (1.67,11.29)	225	2.14 (0.90,5.06)	98	1.00 (0.14,6.89)	115	4.84 (2.20,10.45)
6	501	3.29 (2.09,5.17)	80	6.66 (3.05,14.23)	216	2.14 (0.90,5.06)	94	1.00 (0.14,6.89)	111	4.84 (2.20,10.45)
7	453	3.68 (2.39,5.65)	76	6.66 (3.05,14.23)	192	2.14 (0.90,5.06)	86	1.00 (0.14,6.89)	99	6.59 (3.35,12.75)
8	353	3.68 (2.39,5.65)	59	6.66 (3.05,14.23)	154	2.14 (0.90,5.06)	59	1.00 (0.14,6.89)	81	6.59 (3.35,12.75)
9	224	3.68 (2.39,5.65)	35	6.66 (3.05,14.23)	102	2.14 (0.90,5.06)	31	1.00 (0.14,6.89)	56	6.59 (3.35,12.75)
10	107	4.12 (2.66,6.35)	16	9.40 (4.28,19.99)	45	2.14 (0.90,5.06)	19	1.00 (0.14,6.89)	27	6.59 (3.35,12.75)

Table 930. Reasons for First Revision Following Primary THA for Reflection Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	6	31.6
2	Aseptic Loosening	4	21.1
3	Joint Infection	3	15.8
4	Metal Reaction/Metallosis	2	10.5
5	Pain	2	10.5
6	Implant Failure	1	5.3
7	Peri-prosthetic fracture - Femur	1	5.3

Table 931. Reasons for First Revision in the First 90 Days Following Primary THA for Reflection Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	3	100.0

Table 932. Reasons for First Revision Between 91 and 365 days Following Primary THA for Reflection Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	3	60.0
2	Joint Infection	1	20.0
3	Pain	1	20.0

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Table 933. Descriptive Statistics of Cases Receiving the Reflection Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	327	59.24	
Age (years)	552	68.61 (10.86)	69.00 (17.00)
Height (cm)	552	168.57 (10.43)	167.64 (16.46)
Weight (kg)	552	86.86 (21.49)	84.60 (27.79)
BMI(kg/m^2)	552	30.42 (6.42)	29.87 (7.78)
Smoker - Never (%)	272	49.28	
Smoker - Previous (%)	213	38.59	
Smoker - Current (%)	65	11.78	
Smoker - Unknown (%)	2	0.36	

Table 934. Distribution of Approach Used for Reflection Cup in Primary THA Cases

Approach	N	Percent
Anterior	12	2.2
Anterolateral	11	2.0
Posterior	526	95.3
Transtrochanteric	1	0.2
Missing/unknown/other	2	0.4

Table 935. Distribution of Head Size for Reflection Cup in Primary THA Cases

Size (mm)	N	Percent
28	18	3.3
32	358	66.4
36	156	28.9
Missing/unknown/other	7	1.3

Table 936. Distribution of Bearing Surface for Reflection Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	333	60.3
Ceramic-on-plastic	206	37.3
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	13	2.4

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Table 937. Distribution of Polyethylene Used for Reflection Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	48	8.8
XLPE	348	63.6
Antioxidant XLPE	0	0.0
Missing/unknown/other	151	27.6

Table 938. Volume of Cases by Surgeon and Site for the Reflection Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	55 (68)	18 (105)
Cases per site	78 (132)	7 (188)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

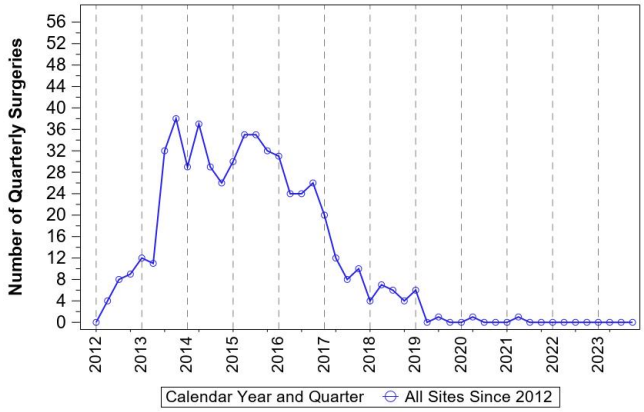


Figure 330. Utilization of the Reflection Cup in Primary THA Cases

Catalog Numbers of Acetabular Cups Used in the Analysis

71336450	71336458	71335056
71334154	71334160	71336462
71334152	71334162	71358007
71336452	71336446	71358026
71336454	71336460	71358068
71334150	71336448	743066
71334156	71334164	
71336456	71358065	
71334158	71358066	

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4.3.10 Reflection 3

N = 11,920 primary cases were used for this analysis. Distribution of utilization: 98 surgeons across 53 sites used this implant in primary THA cases.

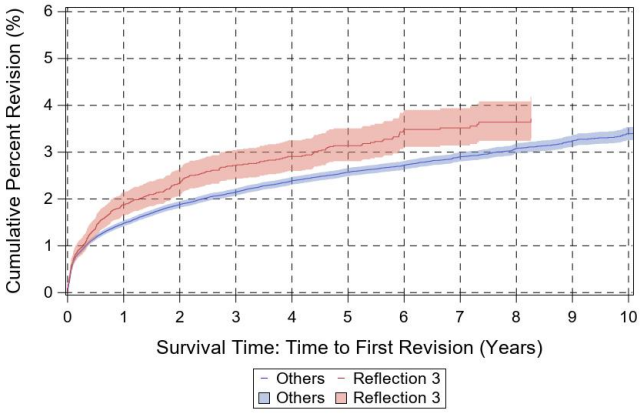


Figure 331. Cumulative Percent Revision Curve for the Reflection 3 Cup, Compared to All Other Cups in Primary THA Cases

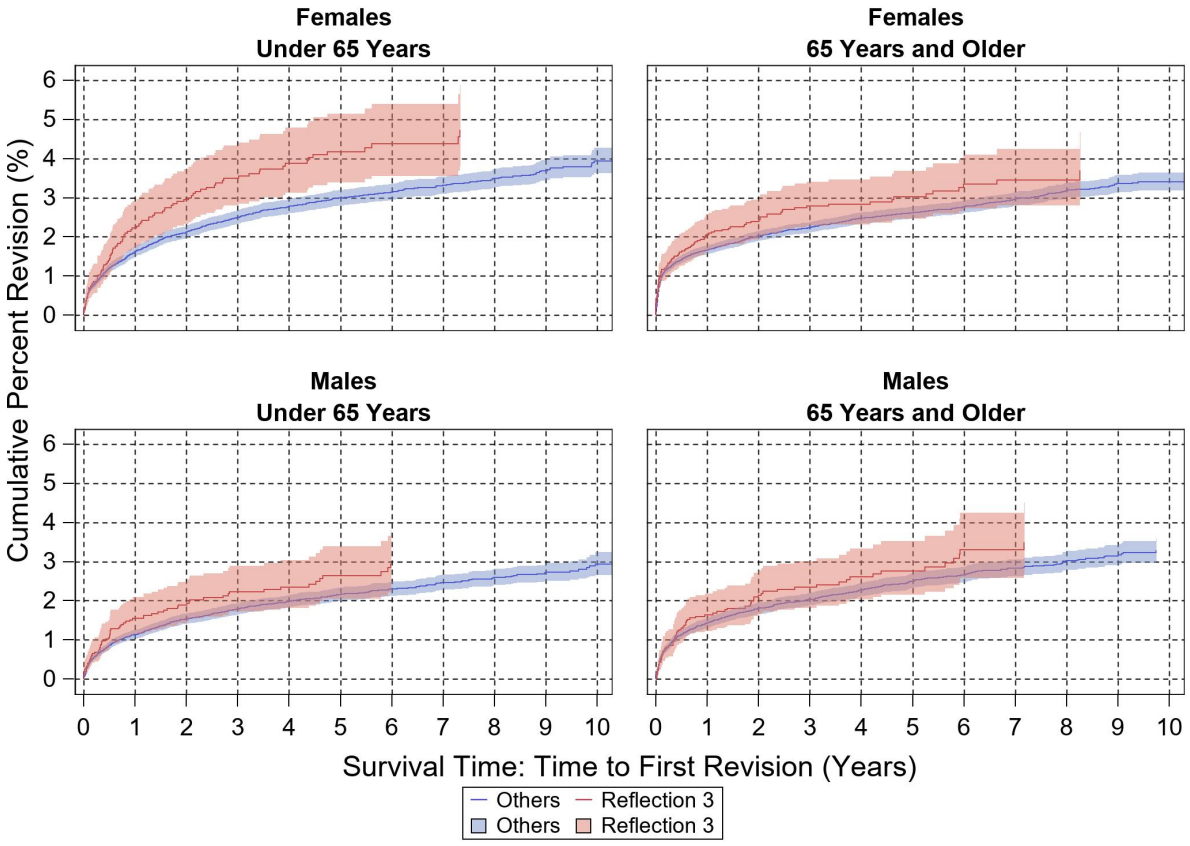


Figure 332. Cumulative Percent Revision Curve for the Reflection 3 Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 939. Cumulative Percent Revision and Number at Risk for the Reflection 3 Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	11,831	0.00 (0.00,0.00)	2,463	0.00 (0.00,0.00)	3,706	0.00 (0.00,0.00)	2,806	0.00 (0.00,0.00)	2,844	0.00 (0.00,0.00)
1	10,319	1.88 (1.64,2.14)	2,173	2.23 (1.71,2.91)	3,180	2.06 (1.64,2.58)	2,489	1.55 (1.14,2.09)	2,470	1.64 (1.22,2.19)
2	8,679	2.33 (2.07,2.63)	1,893	2.95 (2.33,3.73)	2,628	2.39 (1.93,2.95)	2,136	1.89 (1.43,2.48)	2,020	2.09 (1.61,2.72)
3	7,298	2.72 (2.42,3.04)	1,625	3.49 (2.80,4.34)	2,194	2.79 (2.28,3.41)	1,808	2.23 (1.72,2.89)	1,671	2.34 (1.82,3.01)
4	6,113	2.91 (2.60,3.25)	1,388	3.87 (3.13,4.78)	1,824	2.84 (2.32,3.46)	1,529	2.35 (1.82,3.03)	1,372	2.61 (2.04,3.33)
5	4,795	3.14 (2.81,3.51)	1,102	4.18 (3.39,5.15)	1,417	3.02 (2.47,3.68)	1,202	2.64 (2.05,3.39)	1,074	2.76 (2.16,3.53)
6	3,610	3.49 (3.11,3.90)	812	4.38 (3.56,5.40)	1,072	3.35 (2.73,4.10)	907	2.95 (2.29,3.80)	819	3.31 (2.57,4.24)
7	2,656	3.52 (3.14,3.94)	613	4.38 (3.56,5.40)	800	3.45 (2.81,4.24)	667	2.95 (2.29,3.80)	576	3.31 (2.57,4.24)
8	1,554	3.64 (3.24,4.08)	377	4.73 (3.80,5.88)	438	3.45 (2.81,4.24)	397	2.95 (2.29,3.80)	342	3.49 (2.70,4.51)
9	837	3.71 (3.29,4.18)	215	4.73 (3.80,5.88)	234	3.70 (2.93,4.67)	230	2.95 (2.29,3.80)	158	3.49 (2.70,4.51)
10	262	3.71 (3.29,4.18)	71	4.73 (3.80,5.88)	75	3.70 (2.93,4.67)	68	2.95 (2.29,3.80)	48	3.49 (2.70,4.51)

Table 940. Reasons for First Revision Following Primary THA for Reflection 3 Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	83	25.9
2	Peri-prosthetic fracture - Femur	65	20.2
3	Joint Infection	62	19.3
4	Aseptic Loosening	59	18.4
5	Malalignment	16	5.0
6	Implant Failure	15	4.7
7	Pain	15	4.7
8	Peri-prosthetic fracture - Acetabulum	4	1.2
9	Metal Reaction/Metallosis	2	0.6

Table 941. Reasons for First Revision in the First 90 Days Following Primary THA for Reflection 3 Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	50	45.9
2	Dislocation/Instability	24	22.0
3	Joint Infection	14	12.8
4	Aseptic Loosening	6	5.5
5	Implant Failure	6	5.5
6	Malalignment	6	5.5
7	Peri-prosthetic fracture - Acetabulum	3	2.8

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Table 942. Reasons for First Revision Between 91 and 365 days Following Primary THA for Reflection 3 Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	32	34.0
2	Joint Infection	24	25.5
3	Aseptic Loosening	20	21.3
4	Pain	8	8.5
5	Peri-prosthetic fracture - Femur	5	5.3
6	Malalignment	3	3.2
7	Implant Failure	2	2.1

Table 943. Descriptive Statistics of Cases Receiving the Reflection 3 Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	6,210	52.1	
Age (years)	11,920	65.59 (10.78)	66.00 (14.00)
Height (cm)	11,919	170.07 (10.48)	170.18 (15.24)
Weight (kg)	11,919	90.58 (21.82)	88.50 (29.00)
BMI(kg/m^2)	11,919	31.20 (6.48)	30.42 (8.58)
Smoker - Never (%)	5,613	47.09	
Smoker - Previous (%)	4,515	37.88	
Smoker - Current (%)	1,759	14.76	
Smoker - Unknown (%)	33	0.28	

Table 944. Distribution of Approach Used for Reflection 3 Cup in Primary THA Cases

Approach	N	Percent
Anterior	6,342	53.2
Anterolateral	3102	26.0
Posterior	2,437	20.4
Transtrochanteric	21	0.2
Missing/unknown/other	18	0.1

Table 945. Distribution of Head Size for Reflection 3 Cup in Primary THA Cases

Size (mm)	N	Percent
22	11	0.1
28	108	1.0
32	2,463	21.9
36	7,921	70.5
40	651	5.8
44	20	0.2
Missing/unknown/other	54	0.5

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Table 946. Distribution of Bearing Surface for Reflection 3 Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	2,168	18.2
Ceramic-on-plastic	9,006	75.5
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	643	5.4
Missing/unknown/other	103	0.9

Table 947. Distribution of Polyethylene Used for Reflection 3 Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	10	0.1
XLPE	10,473	88.7
Antioxidant XLPE	0	0.0
Missing/unknown/other	1,325	11.2

Table 948. Volume of Cases by Surgeon and Site for the Reflection 3 Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	121 (223)	30 (123)
Cases per site	224 (333)	54 (276)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

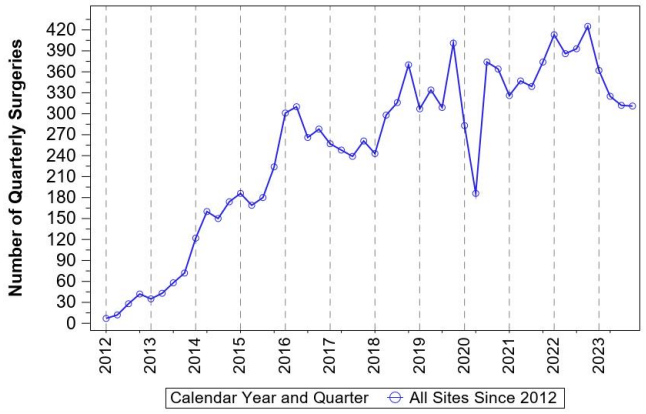


Figure 333. Utilization of the Reflection 3 Cup in Primary THA Cases

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Catalog Numbers of Acetabular Cups Used in the Analysis

71335552	71338665	71331846
71335554	71331858	71331862
71335556	71338666	71338671
71335550	71338667	71335566
71335558	71331860	71331864
71335548	71331848	71335544
71335560	71335546	71335568
71331854	71338664	71338672
71331852	71338668	71338675
71331856	71335564	
71335562	71338669	
71331850	71338663	

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4.3.11 Regenerex RingLoc+

N = 1,031 primary cases were used for this analysis. Distribution of utilization: 30 surgeons across 21 sites used this implant in primary THA cases.

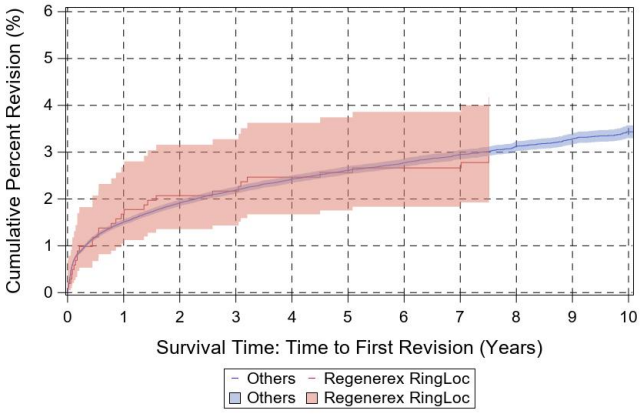


Figure 334. Cumulative Percent Revision Curve for the Regenerex RingLoc+ Cup, Compared to All Other Cups in Primary THA Cases

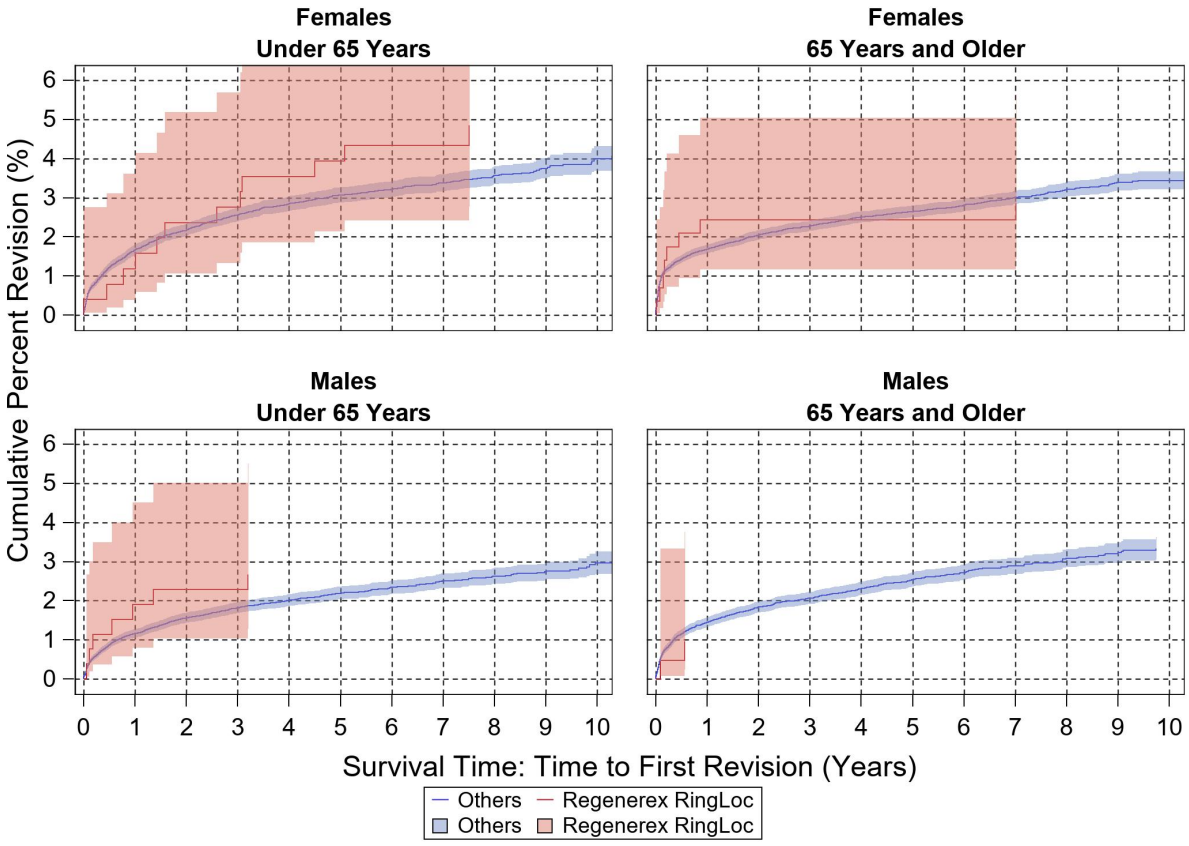


Figure 335. Cumulative Percent Revision Curve for the Regenerex RingLoc+ Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 949. Cumulative Percent Revision and Number at Risk for the Regenerex RingLoc+ Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,014	0.00 (0.00,0.00)	254	0.00 (0.00,0.00)	287	0.00 (0.00,0.00)	263	0.00 (0.00,0.00)	210	0.00 (0.00,0.00)
1	997	1.68 (1.05,2.68)	251	1.18 (0.38,3.62)	280	2.44 (1.17,5.05)	258	1.90 (0.80,4.51)	208	0.95 (0.24,3.75)
2	993	2.07 (1.36,3.16)	248	2.36 (1.07,5.18)	280	2.44 (1.17,5.05)	257	2.28 (1.03,5.01)	208	0.95 (0.24,3.75)
3	992	2.17 (1.43,3.28)	247	2.76 (1.32,5.69)	280	2.44 (1.17,5.05)	257	2.28 (1.03,5.01)	208	0.95 (0.24,3.75)
4	989	2.47 (1.67,3.63)	245	3.54 (1.86,6.70)	280	2.44 (1.17,5.05)	256	2.66 (1.28,5.50)	208	0.95 (0.24,3.75)
5	983	2.56 (1.75,3.74)	243	3.94 (2.14,7.19)	277	2.44 (1.17,5.05)	256	2.66 (1.28,5.50)	207	0.95 (0.24,3.75)
6	955	2.66 (1.83,3.86)	237	4.33 (2.42,7.69)	270	2.44 (1.17,5.05)	250	2.66 (1.28,5.50)	198	0.95 (0.24,3.75)
7	850	2.66 (1.83,3.86)	211	4.33 (2.42,7.69)	238	2.44 (1.17,5.05)	220	2.66 (1.28,5.50)	181	0.95 (0.24,3.75)
8	610	2.91 (2.03,4.17)	155	4.85 (2.78,8.40)	166	2.85 (1.44,5.63)	161	2.66 (1.28,5.50)	128	0.95 (0.24,3.75)
9	305	2.91 (2.03,4.17)	82	4.85 (2.78,8.40)	86	2.85 (1.44,5.63)	84	2.66 (1.28,5.50)	53	0.95 (0.24,3.75)
10	74	2.91 (2.03,4.17)	22	4.85 (2.78,8.40)	18	2.85 (1.44,5.63)	22	2.66 (1.28,5.50)	12	0.95 (0.24,3.75)

Table 950. Reasons for First Revision Following Primary THA for Regenerex RingLoc+ Cup Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	7	24.1
2	Peri-prosthetic fracture - Femur	7	24.1
3	Dislocation/Instability	6	20.7
4	Joint Infection	4	13.8
5	Pain	2	6.9
6	Malalignment	2	6.9
7	Implant Failure	1	3.4

Table 951. Reasons for First Revision in the First 90 Days Following Primary THA for Regenerex RingLoc+ Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	6	60.0
2	Aseptic Loosening	2	20.0
3	Dislocation/Instability	1	10.0
4	Malalignment	1	10.0

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Table 952. Reasons for First Revision Between 91 and 365 days Following Primary THA for Regenerex RingLoc+ Cup Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	2	28.6
2	Dislocation/Instability	2	28.6
3	Joint Infection	2	28.6
4	Pain	1	14.3

Table 953. Descriptive Statistics of Cases Receiving the Regenerex RingLoc+ Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	548	53.15	
Age (years)	1,031	64.28 (11.46)	64.00 (15.00)
Height (cm)	1,031	169.93 (10.57)	170.18 (15.24)
Weight (kg)	1,031	90.46 (22.49)	88.60 (29.49)
BMI(kg/m^2)	1,031	31.25 (7.04)	30.41 (9.16)
Smoker - Never (%)	398	38.6	
Smoker - Previous (%)	390	37.83	
Smoker - Current (%)	239	23.18	
Smoker - Unknown (%)	4	0.39	

Table 954. Distribution of Approach Used for Regenerex RingLoc+ Cup in Primary THA Cases

Approach	N	Percent
Anterior	103	10.0
Anterolateral	450	43.6
Posterior	470	45.6
Transtrochanteric	3	0.3
Missing/unknown/other	5	0.5

Table 955. Distribution of Head Size for Regenerex RingLoc+ Cup in Primary THA Cases

Size (mm)	N	Percent
28	7	0.7
32	107	10.5
36	597	58.6
40	294	28.9
44	3	0.3
Missing/unknown/other	11	1.1

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Table 956. Distribution of Bearing Surface for Regenerex RingLoc+ Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	645	62.6
Ceramic-on-plastic	363	35.2
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	23	2.2

Table 957. Distribution of Polyethylene Used for Regenerex RingLoc+ Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	6	0.6
XLPE	279	27.4
Antioxidant XLPE	734	72.0
Missing/unknown/other	0	0.0

Table 958. Volume of Cases by Surgeon and Site for the Regenerex RingLoc+ Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	34 (56)	5 (41)
Cases per site	49 (78)	16 (30)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

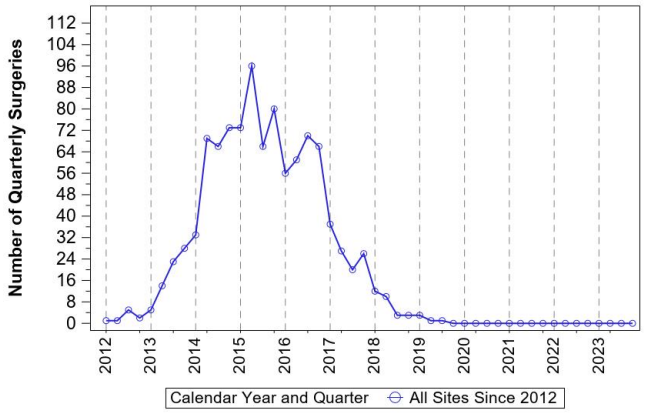


Figure 336. Utilization of the Regenerex RingLoc+ Cup in Primary THA Cases

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Catalog Numbers of Acetabular Cups Used in the Analysis

PT116052	PT106058	PT106052
PT116056	PT104050	PT106068
PT116054	PT106060	PT116066
PT116058	PT104054	PT104062
PT116060	PT106064	PT104066
PT116050	PT104052	PT106070
PT106054	PT104058	PT106072
PT106056	PT106062	PT116064
PT116048	PT104060	
PT116062	PT106066	
PT104056	PT104048	

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4.3.12 Restoration ADM

N = 531 primary cases were used for this analysis. Fewer than ten surgeons used this implant at fewer than ten sites in primary THA cases.

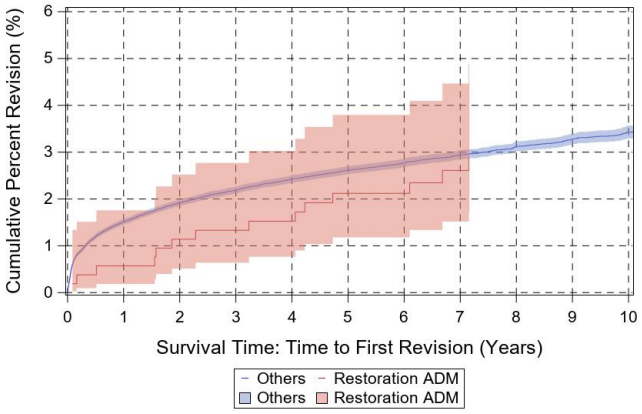


Figure 337. Cumulative Percent Revision Curve for the Restoration ADM Cup, Compared to All Other Cups in Primary THA Cases

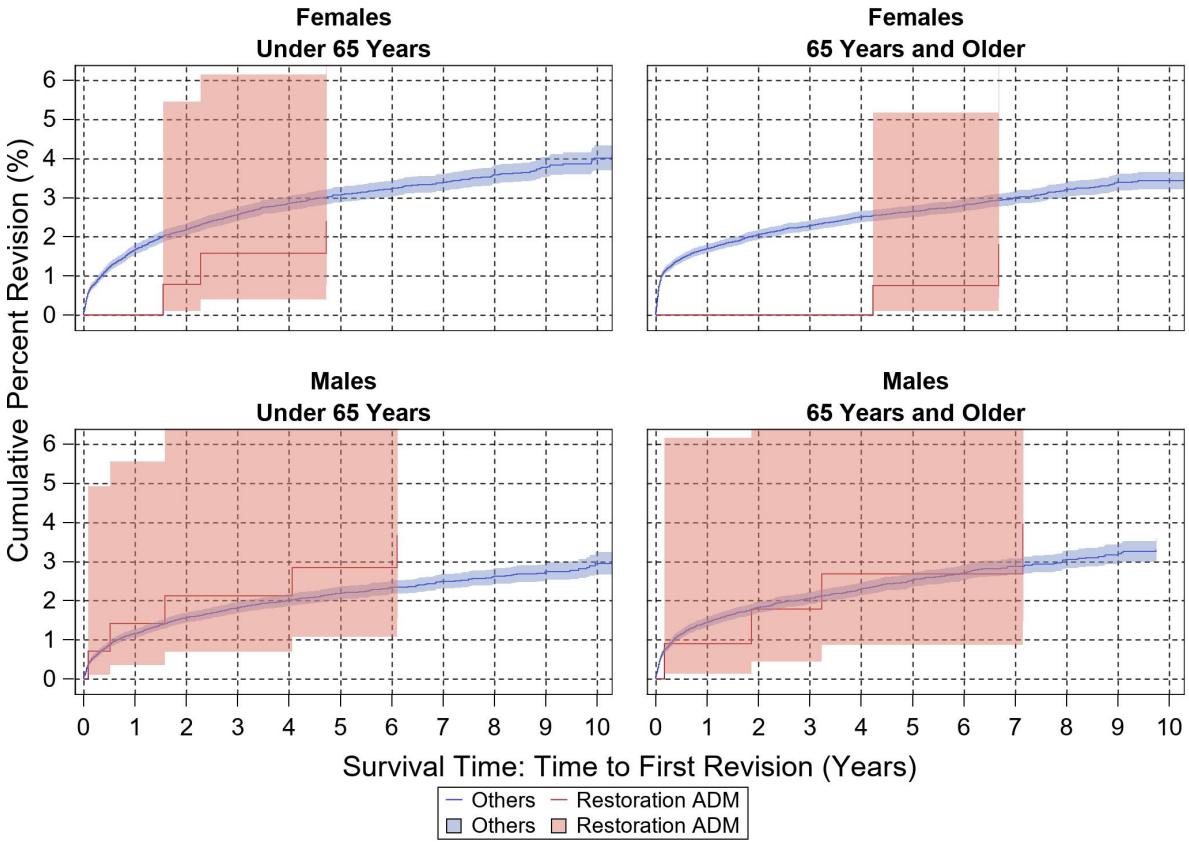


Figure 338. Cumulative Percent Revision Curve for the Restoration ADM Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 959. Cumulative Percent Revision and Number at Risk for the Restoration ADM Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	526	0.00 (0.00,0.00)	127	0.00 (0.00,0.00)	146	0.00 (0.00,0.00)	141	0.00 (0.00,0.00)	112	0.00 (0.00,0.00)
1	523	0.57 (0.18,1.76)	127	0.00 (0.00,0.00)	146	0.00 (0.00,0.00)	139	1.42 (0.36,5.55)	111	0.89 (0.13,6.17)
2	520	1.14 (0.51,2.52)	126	0.79 (0.11,5.46)	146	0.00 (0.00,0.00)	138	2.13 (0.69,6.45)	110	1.79 (0.45,6.95)
3	510	1.33 (0.64,2.77)	124	1.57 (0.40,6.15)	140	0.00 (0.00,0.00)	136	2.13 (0.69,6.45)	110	1.79 (0.45,6.95)
4	500	1.53 (0.77,3.03)	121	1.57 (0.40,6.15)	134	0.00 (0.00,0.00)	136	2.13 (0.69,6.45)	109	2.68 (0.87,8.07)
5	490	2.12 (1.18,3.80)	118	2.40 (0.78,7.26)	132	0.75 (0.11,5.18)	133	2.85 (1.08,7.41)	107	2.68 (0.87,8.07)
6	446	2.12 (1.18,3.80)	110	2.40 (0.78,7.26)	119	0.75 (0.11,5.18)	120	2.85 (1.08,7.41)	97	2.68 (0.87,8.07)
7	346	2.61 (1.52,4.47)	85	2.40 (0.78,7.26)	89	1.81 (0.45,7.21)	93	3.68 (1.54,8.63)	79	2.68 (0.87,8.07)
8	242	2.90 (1.72,4.88)	52	2.40 (0.78,7.26)	70	1.81 (0.45,7.21)	64	3.68 (1.54,8.63)	56	3.96 (1.48,10.36)
9	135	2.90 (1.72,4.88)	26	2.40 (0.78,7.26)	46	1.81 (0.45,7.21)	29	3.68 (1.54,8.63)	34	3.96 (1.48,10.36)
10	33	2.90 (1.72,4.88)	*	2.40 (0.78,7.26)	17	1.81 (0.45,7.21)	*	3.68 (1.54,8.63)	*	3.96 (1.48,10.36)

* Denotes that the number of cases is between 1 and 10.

Table 960. Reasons for First Revision Following Primary THA for Restoration ADM Cup Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	3	23.1
2	Peri-prosthetic fracture - Femur	3	23.1
3	Aseptic Loosening	2	15.4
4	Dislocation/Instability	2	15.4
5	Malalignment	2	15.4
6	Poly liner wear	1	7.7

Table 961. Reasons for First Revision in the First 90 Days Following Primary THA for Restoration ADM Cup Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	2	100.0

There were no reasons for revision recorded between day 91 and day 365, so no table of reasons for revisions during this time period is included.

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Table 962. Descriptive Statistics of Cases Receiving the Restoration ADM Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	276	51.98	
Age (years)	531	63.46 (11.55)	64.00 (15.00)
Height (cm)	531	169.62 (10.43)	170.18 (15.24)
Weight (kg)	531	90.44 (23.43)	88.20 (30.10)
BMI(kg/m^2)	531	31.26 (6.83)	30.40 (8.14)
Smoker - Never (%)	240	45.2	
Smoker - Previous (%)	238	44.82	
Smoker - Current (%)	53	9.98	
Smoker - Unknown (%)	0	0.0	

Table 963. Distribution of Approach Used for Restoration ADM Cup in Primary THA Cases

Approach	N	Percent
Anterior	1	0.2
Anterolateral	75	14.1
Posterior	455	85.7
Transtrochanteric	0	0.0
Missing/unknown/other	0	0.0

Table 964. Distribution of Bearing Surface for Restoration ADM Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	0	0.0
Ceramic-on-plastic	0	0.0
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	531	100.0
Missing/unknown/other	0	0.0

Table 965. Distribution of Polyethylene Used for Restoration ADM Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	531	100.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	0	0.0

Table 966. Volume of Cases by Surgeon and Site for the Restoration ADM Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	106 (176)	39 (71)
Cases per site	132 (169)	80 (244)

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The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

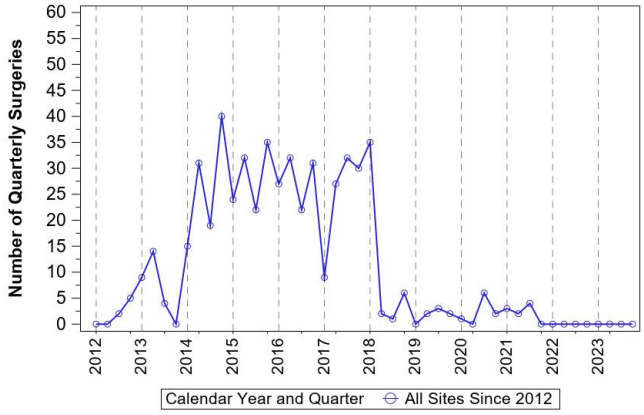


Figure 339. Utilization of the Restoration ADM Cup in Primary THA Cases

Catalog Numbers of Acetabular Cups Used in the Analysis

12352501	12352502	12352602
12352521	12352482	12352601
12352541	12352562	12352621
12352522	12352461	12352622
12352542	12352462	12352641
12352481	12352581	12352642
12352561	12352582	

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4.3.13 RingLoc

N = 2,652 primary cases were used for this analysis. Distribution of utilization: 44 surgeons across 25 sites used this implant in primary THA cases.

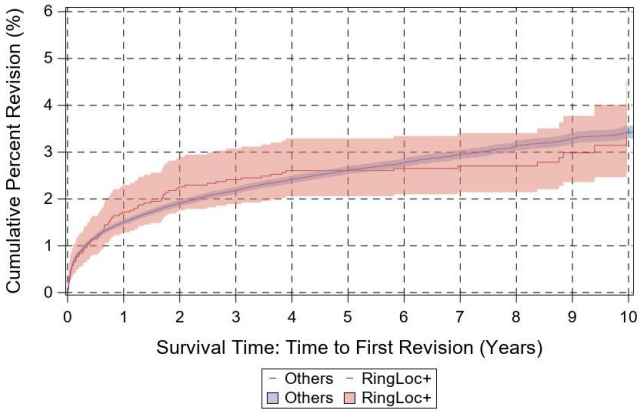


Figure 340. Cumulative Percent Revision Curve for the RingLoc Cup, Compared to All Other Cups in Primary THA Cases

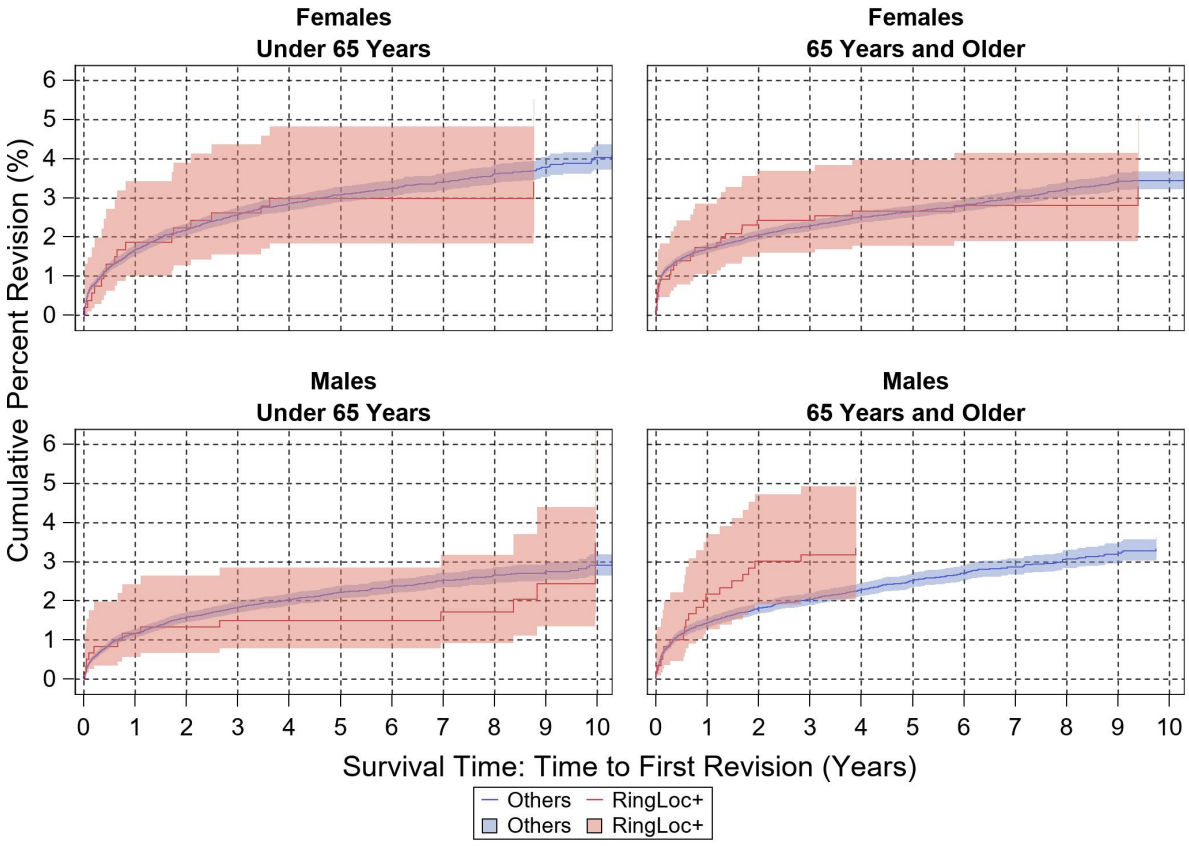


Figure 341. Cumulative Percent Revision Curve for the RingLoc Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 967. Cumulative Percent Revision and Number at Risk for the RingLoc Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	2,614	0.00 (0.00,0.00)	538	0.00 (0.00,0.00)	868	0.00 (0.00,0.00)	603	0.00 (0.00,0.00)	600	0.00 (0.00,0.00)
1	2,568	1.72 (1.29,2.30)	528	1.86 (1.00,3.43)	852	1.73 (1.05,2.85)	596	1.16 (0.56,2.42)	587	2.17 (1.26,3.70)
2	2,552	2.26 (1.75,2.90)	525	2.23 (1.27,3.89)	846	2.42 (1.59,3.69)	595	1.33 (0.67,2.64)	581	3.00 (1.90,4.72)
3	2,538	2.41 (1.89,3.08)	523	2.60 (1.55,4.36)	841	2.42 (1.59,3.69)	591	1.49 (0.78,2.85)	578	3.17 (2.03,4.92)
4	2,494	2.61 (2.06,3.29)	517	2.98 (1.83,4.81)	823	2.66 (1.77,3.97)	586	1.49 (0.78,2.85)	563	3.34 (2.17,5.13)
5	2,307	2.61 (2.06,3.29)	481	2.98 (1.83,4.81)	752	2.66 (1.77,3.97)	554	1.49 (0.78,2.85)	515	3.34 (2.17,5.13)
6	2,087	2.65 (2.10,3.35)	438	2.98 (1.83,4.81)	679	2.80 (1.88,4.14)	511	1.49 (0.78,2.85)	454	3.34 (2.17,5.13)
7	1,830	2.70 (2.14,3.41)	392	2.98 (1.83,4.81)	591	2.80 (1.88,4.14)	445	1.71 (0.92,3.17)	397	3.34 (2.17,5.13)
8	1,487	2.70 (2.14,3.41)	326	2.98 (1.83,4.81)	474	2.80 (1.88,4.14)	374	1.71 (0.92,3.17)	308	3.34 (2.17,5.13)
9	822	2.99 (2.36,3.78)	190	3.40 (2.09,5.52)	261	2.80 (1.88,4.14)	212	2.43 (1.34,4.40)	154	3.34 (2.17,5.13)
10	331	3.43 (2.60,4.51)	68	3.40 (2.09,5.52)	109	3.29 (2.11,5.11)	88	3.48 (1.69,7.09)	65	3.34 (2.17,5.13)

Table 968. Reasons for First Revision Following Primary THA for RingLoc Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	18	27.3
2	Joint Infection	17	25.8
3	Peri-prosthetic fracture - Femur	12	18.2
4	Aseptic Loosening	9	13.6
5	Implant Failure	4	6.1
6	Pain	4	6.1
7	Poly liner wear	1	1.5
8	Malalignment	1	1.5

Table 969. Reasons for First Revision in the First 90 Days Following Primary THA for RingLoc Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	9	47.4
2	Dislocation/Instability	4	21.0
3	Aseptic Loosening	2	10.5
4	Joint Infection	2	10.5
5	Implant Failure	1	5.3
6	Pain	1	5.3

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Table 970. Reasons for First Revision Between 91 and 365 days Following Primary THA for RingLoc Cup Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	9	52.9
2	Dislocation/Instability	4	23.5
3	Implant Failure	2	11.8
4	Aseptic Loosening	1	5.9
5	Pain	1	5.9

Table 971. Descriptive Statistics of Cases Receiving the RingLoc Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,422	53.62	
Age (years)	2,652	65.96 (10.52)	66.00 (14.00)
Height (cm)	2,652	170.06 (10.40)	170.00 (15.24)
Weight (kg)	2,652	89.76 (21.49)	87.70 (27.51)
BMI(kg/m^2)	2,652	30.91 (6.35)	30.11 (8.43)
Smoker - Never (%)	1,251	47.17	
Smoker - Previous (%)	1,037	39.1	
Smoker - Current (%)	332	12.52	
Smoker - Unknown (%)	32	1.21	

Table 972. Distribution of Approach Used for RingLoc Cup in Primary THA Cases

Approach	N	Percent
Anterior	525	19.8
Anterolateral	830	31.3
Posterior	1,273	48.0
Transtrochanteric	10	0.4
Missing/unknown/other	14	0.5

Table 973. Distribution of Head Size for RingLoc Cup in Primary THA Cases

Size (mm)	N	Percent
32	261	9.9
36	1,566	59.5
40	669	25.4
44	99	3.8
Missing/unknown/other	35	1.3

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Table 974. Distribution of Bearing Surface for RingLoc Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,483	55.9
Ceramic-on-plastic	1,111	41.9
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	58	2.2

Table 975. Distribution of Polyethylene Used for RingLoc Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	29	1.1
XLPE	224	8.5
Antioxidant XLPE	2,377	90.4
Missing/unknown/other	0	0.0

Table 976. Volume of Cases by Surgeon and Site for the RingLoc Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	60 (105)	4 (65)
Cases per site	106 (143)	27 (157)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

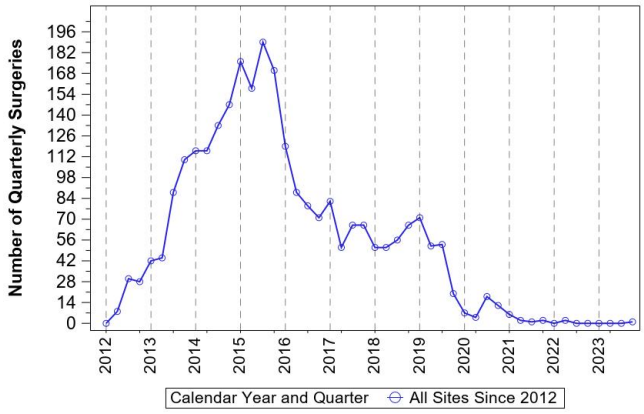


Figure 342. Utilization of the RingLoc Cup in Primary THA Cases

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Catalog Numbers of Acetabular Cups Used in the Analysis

16104154	16116056	11165214
16104150	16104164	11165216
16104156	14103660	14103664
16104152	14103662	16116062
16104158	16104146	11165208
14103654	16116058	11165212
16104160	14103554	11165218
14103656	14103560	14103566
14103652	14103564	14103666
16116050	14103558	16116064
14103650	14103562	11165224
16116054	14103556	11165228
16104162	16116048	14103668
16116052	16116060	
14103658	14103552	
16104148	16116046	

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4.3.14 Trabecular Metal

N = 2,051 primary cases were used for this analysis. Distribution of utilization: 54 surgeons across 26 sites used this implant in primary THA cases.

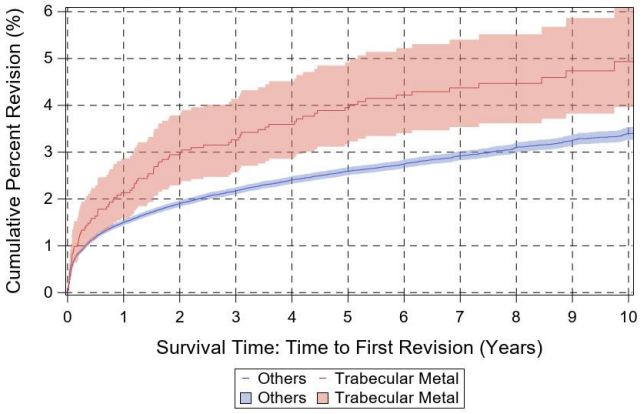


Figure 343. Cumulative Percent Revision Curve for the Trabecular Metal Cup, Compared to All Other Cups in Primary THA Cases

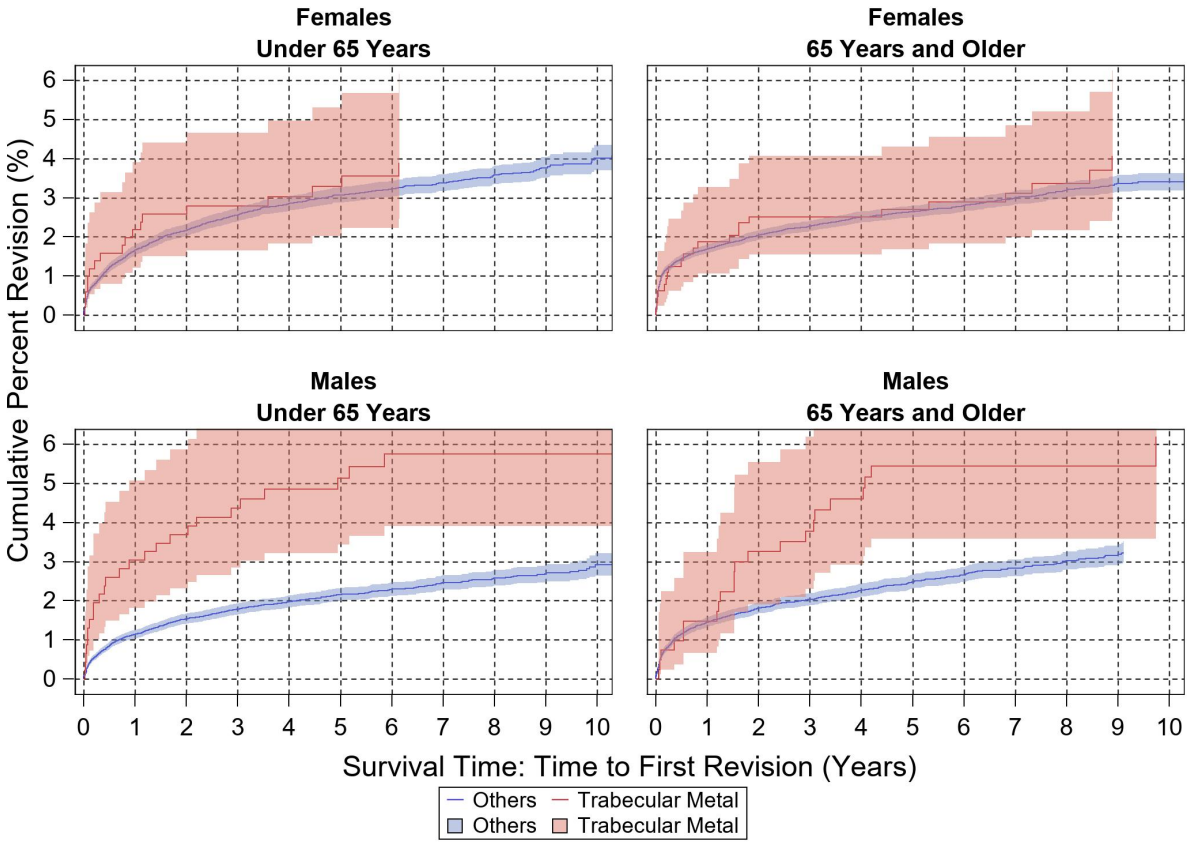


Figure 344. Cumulative Percent Revision Curve for the Trabecular Metal Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 977. Cumulative Percent Revision and Number at Risk for the Trabecular Metal Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	2,026	0.00 (0.00,0.00)	507	0.00 (0.00,0.00)	646	0.00 (0.00,0.00)	462	0.00 (0.00,0.00)	411	0.00 (0.00,0.00)
1	1,941	2.13 (1.59,2.87)	489	2.18 (1.21,3.90)	618	1.87 (1.07,3.27)	444	3.03 (1.81,5.07)	390	1.47 (0.66,3.24)
2	1,895	2.95 (2.29,3.79)	477	2.58 (1.51,4.40)	603	2.51 (1.55,4.07)	436	3.69 (2.31,5.87)	379	3.25 (1.90,5.54)
3	1,778	3.26 (2.57,4.14)	436	2.78 (1.66,4.66)	576	2.51 (1.55,4.07)	408	4.37 (2.84,6.69)	358	3.78 (2.30,6.19)
4	1,660	3.59 (2.86,4.51)	395	3.02 (1.83,4.97)	551	2.51 (1.55,4.07)	376	4.85 (3.22,7.27)	338	4.59 (2.92,7.20)
5	1,507	3.95 (3.17,4.92)	350	3.28 (2.02,5.31)	514	2.69 (1.68,4.30)	332	5.13 (3.44,7.63)	311	5.44 (3.58,8.23)
6	1,338	4.22 (3.40,5.22)	293	3.56 (2.22,5.68)	474	2.89 (1.83,4.55)	284	5.75 (3.91,8.43)	287	5.44 (3.58,8.23)
7	1,136	4.37 (3.54,5.40)	236	3.90 (2.46,6.16)	416	3.11 (1.99,4.85)	228	5.75 (3.91,8.43)	256	5.44 (3.58,8.23)
8	834	4.47 (3.61,5.52)	162	3.90 (2.46,6.16)	322	3.37 (2.17,5.20)	151	5.75 (3.91,8.43)	199	5.44 (3.58,8.23)
9	651	4.74 (3.82,5.86)	119	3.90 (2.46,6.16)	254	4.07 (2.64,6.25)	113	5.75 (3.91,8.43)	165	5.44 (3.58,8.23)
10	409	4.93 (3.96,6.14)	77	3.90 (2.46,6.16)	167	4.07 (2.64,6.25)	62	5.75 (3.91,8.43)	103	6.19 (4.00,9.52)

Table 978. Reasons for First Revision Following Primary THA for Trabecular Metal Cup Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	19	23.5
2	Dislocation/Instability	19	23.5
3	Peri-prosthetic fracture - Femur	17	21.0
4	Joint Infection	10	12.3
5	Implant Failure	6	7.4
6	Pain	4	4.9
7	Malalignment	4	4.9
8	Osteolysis	1	1.2
9	Metal Reaction/Metallosis	1	1.2

Table 979. Reasons for First Revision in the First 90 Days Following Primary THA for Trabecular Metal Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	10	38.5
2	Peri-prosthetic fracture - Femur	10	38.5
3	Aseptic Loosening	6	23.1

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Table 980. Reasons for First Revision Between 91 and 365 days Following Primary THA for Trabecular Metal Cup Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	4	30.8
2	Joint Infection	3	23.1
3	Implant Failure	3	23.1
4	Peri-prosthetic fracture - Femur	1	7.7
5	Pain	1	7.7
6	Malalignment	1	7.7

Table 981. Descriptive Statistics of Cases Receiving the Trabecular Metal Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,166	56.85	
Age (years)	2,051	64.81 (11.20)	65.00 (14.00)
Height (cm)	2,046	168.98 (10.74)	167.64 (17.78)
Weight (kg)	2,045	88.87 (22.09)	87.09 (30.30)
BMI(kg/m^2)	2,045	31.11 (7.77)	30.10 (9.25)
Smoker - Never (%)	841	41	
Smoker - Previous (%)	744	36.27	
Smoker - Current (%)	461	22.48	
Smoker - Unknown (%)	5	0.24	

Table 982. Distribution of Approach Used for Trabecular Metal Cup in Primary THA Cases

Approach	N	Percent
Anterior	35	1.7
Anterolateral	748	36.5
Posterior	1,172	57.1
Transtrochanteric	72	3.5
Missing/unknown/other	24	1.2

Table 983. Distribution of Head Size for Trabecular Metal Cup in Primary THA Cases

Size (mm)	N	Percent
22	2	0.1
28	22	1.1
32	839	41.4
36	1,011	49.9
40	92	4.5
Missing/unknown/other	59	2.9

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Table 984. Distribution of Bearing Surface for Trabecular Metal Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,018	49.6
Ceramic-on-plastic	948	46.2
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	1	0.1
Missing/unknown/other	84	4.1

Table 985. Distribution of Polyethylene Used for Trabecular Metal Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	2	0.1
XLPE	1,754	86.6
Antioxidant XLPE	4	0.2
Missing/unknown/other	266	13.1

Table 986. Volume of Cases by Surgeon and Site for the Trabecular Metal Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	38 (108)	3 (18)
Cases per site	78 (151)	7 (62)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

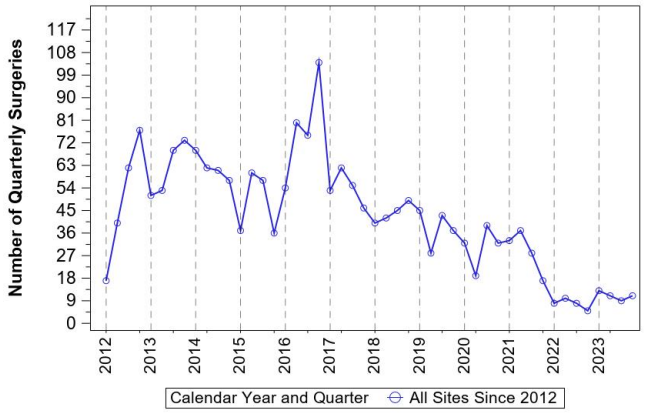


Figure 345. Utilization of the Trabecular Metal Cup in Primary THA Cases

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Catalog Numbers of Acetabular Cups Used in the Analysis

620205222	620204622	620207022
620205022	620205220	700005620
620204822	620205420	620206221
620205422	620205821	620206820
620205622	620204821	620207020
620205822	620206222	712305648
620205021	620206220	620203822
620206022	620206020	620204020
620205221	620204820	620206620
620205421	620206422	620206622
620205020	620206021	620207420
620205820	620206420	700006220
620205621	620204621	712306254
620205620	620204422	

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4.3.15 Trident

N = 31,060 primary cases were used for this analysis. Distribution of utilization: 172 surgeons across 58 sites used this implant in primary THA cases.

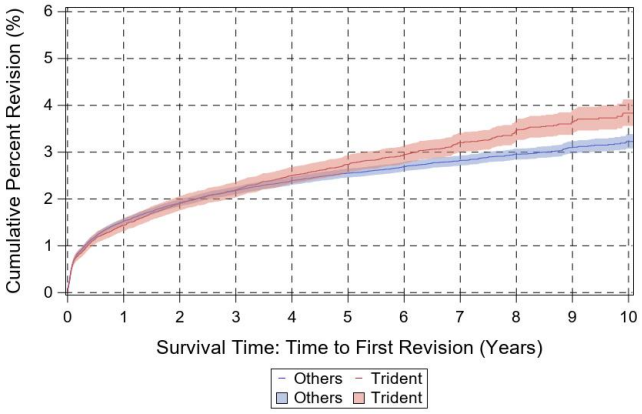


Figure 346. Cumulative Percent Revision Curve for the Trident Cup, Compared to All Other Cups in Primary THA Cases

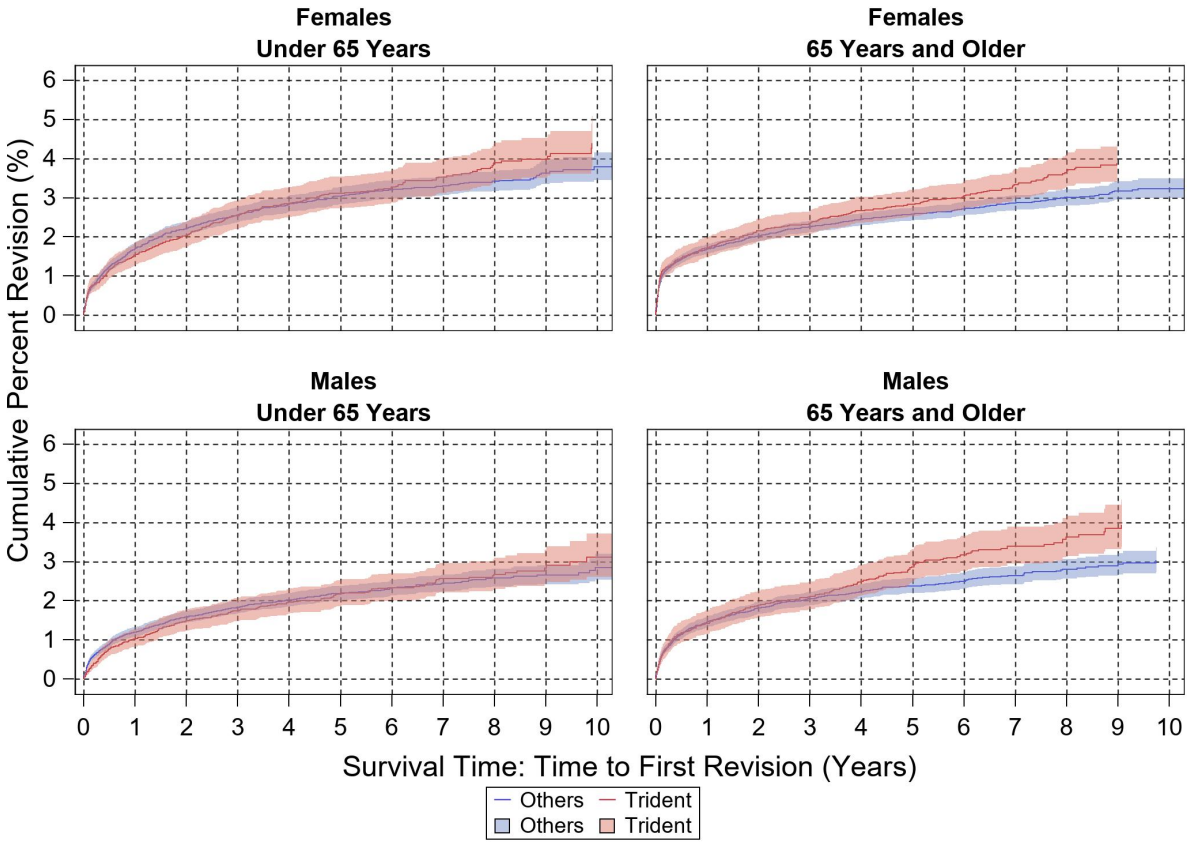


Figure 347. Cumulative Percent Revision Curve for the Trident Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 987. Cumulative Percent Revision and Number at Risk for the Trident Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	30,778	0.00 (0.00,0.00)	7,339	0.00 (0.00,0.00)	9,610	0.00 (0.00,0.00)	7,553	0.00 (0.00,0.00)	6,268	0.00 (0.00,0.00)
1	30,078	1.44 (1.31,1.58)	7,173	1.53 (1.27,1.84)	9,336	1.71 (1.47,1.99)	7,433	1.02 (0.82,1.28)	6,128	1.42 (1.16,1.75)
2	29,487	1.91 (1.76,2.07)	7,038	2.04 (1.74,2.39)	9,125	2.15 (1.87,2.46)	7,317	1.49 (1.24,1.79)	5,999	1.89 (1.58,2.26)
3	28,856	2.20 (2.04,2.37)	6,832	2.53 (2.19,2.92)	8,927	2.35 (2.07,2.68)	7,212	1.75 (1.47,2.07)	5,877	2.11 (1.78,2.50)
4	27,867	2.50 (2.33,2.68)	6,586	2.86 (2.50,3.27)	8,624	2.67 (2.37,3.02)	6,984	1.95 (1.66,2.29)	5,665	2.48 (2.12,2.90)
5	25,084	2.74 (2.56,2.93)	5,981	3.11 (2.73,3.54)	7,758	2.84 (2.52,3.19)	6,293	2.16 (1.85,2.52)	5,044	2.86 (2.47,3.31)
6	20,555	2.95 (2.76,3.15)	5,004	3.27 (2.88,3.71)	6,334	3.04 (2.71,3.41)	5,147	2.33 (2.01,2.71)	4,063	3.17 (2.75,3.65)
7	15,226	3.20 (3.00,3.41)	3,771	3.53 (3.12,4.00)	4,593	3.33 (2.98,3.73)	3,891	2.56 (2.21,2.97)	2,964	3.39 (2.95,3.89)
8	9,868	3.46 (3.24,3.69)	2,509	3.89 (3.43,4.41)	2,987	3.65 (3.25,4.09)	2,501	2.67 (2.30,3.09)	1,864	3.63 (3.15,4.18)
9	5,580	3.64 (3.40,3.89)	1,412	3.98 (3.51,4.52)	1,682	3.88 (3.45,4.37)	1,440	2.83 (2.43,3.30)	1,042	3.84 (3.31,4.45)
10	2,440	3.83 (3.56,4.13)	658	4.39 (3.78,5.09)	727	3.88 (3.45,4.37)	615	3.12 (2.61,3.71)	439	3.94 (3.38,4.58)

Table 988. Reasons for First Revision Following Primary THA for Trident Cup Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	247	26.5
2	Peri-prosthetic fracture - Femur	212	22.8
3	Joint Infection	167	17.9
4	Dislocation/Instability	138	14.8
5	Metal Reaction/Metallosis	40	4.3
6	Pain	39	4.2
7	Implant Failure	33	3.5
8	Malalignment	33	3.5
9	Peri-prosthetic fracture - Acetabulum	19	2.0
10	Osteolysis	2	0.2
	Unknown/missing/other	1	0.1

Table 989. Reasons for First Revision in the First 90 Days Following Primary THA for Trident Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	138	54.6
2	Dislocation/Instability	40	15.8
3	Joint Infection	26	10.3
4	Aseptic Loosening	18	7.1
5	Implant Failure	13	5.1
6	Peri-prosthetic fracture - Acetabulum	9	3.6
7	Malalignment	5	2.0
8	Pain	4	1.6

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Table 990. Reasons for First Revision Between 91 and 365 days Following Primary THA for Trident Cup Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	48	31.2
2	Dislocation/Instability	36	23.4
3	Aseptic Loosening	29	18.8
4	Peri-prosthetic fracture - Femur	16	10.4
5	Pain	14	9.1
6	Implant Failure	4	2.6
7	Malalignment	4	2.6
8	Peri-prosthetic fracture - Acetabulum	3	2.0

Table 991. Descriptive Statistics of Cases Receiving the Trident Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	17,096	55.04	
Age (years)	31,060	64.57 (11.45)	65.00 (14.00)
Height (cm)	31,060	169.70 (10.42)	170.00 (15.24)
Weight (kg)	31,060	88.12 (21.20)	86.18 (28.27)
BMI(kg/m^2)	31,060	30.48 (6.38)	29.76 (8.31)
Smoker - Never (%)	14,924	48.05	
Smoker - Previous (%)	11,792	37.97	
Smoker - Current (%)	4,146	13.35	
Smoker - Unknown (%)	198	0.64	

Table 992. Distribution of Approach Used for Trident Cup in Primary THA Cases

Approach	N	Percent
Anterior	6,719	21.6
Anterolateral	6561	21.1
Posterior	17,637	56.8
Transtrochanteric	50	0.2
Missing/unknown/other	93	0.3

Table 993. Distribution of Head Size for Trident Cup in Primary THA Cases

Size (mm)	N	Percent
22	18	0.1
28	79	0.3
32	5,641	19.7
36	20,431	71.4
40	2,151	7.5
44	166	0.6
Missing/unknown/other	113	0.4

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Table 994. Distribution of Bearing Surface for Trident Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	7,644	24.6
Ceramic-on-plastic	19,648	63.3
Ceramic-on-ceramic	1,240	4.0
Metal-on-metal	0	0.0
Dual mobility	2,301	7.4
Missing/unknown/other	227	0.7

Table 995. Distribution of Polyethylene Used for Trident Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	1	0.0
XLPE	28,927	97.5
Antioxidant XLPE	0	0.0
Missing/unknown/other	748	2.5

Table 996. Volume of Cases by Surgeon and Site for the Trident Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	180 (347)	32 (169)
Cases per site	535 (814)	153 (687)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

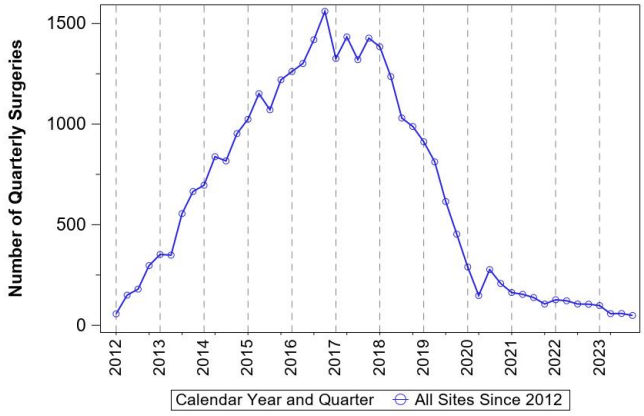


Figure 348. Utilization of the Trident Cup in Primary THA Cases

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Catalog Numbers of Acetabular Cups Used in the Analysis

5421150E
5021152E
5020354E
5421154F
5021154E
5021156F
5021150D
5020350D
5020352D
5020356E
5421152E
5020358F
5021158F
5421158G
5421156F
5421146D
5021148D
5020360F
5021160G
5421148D
5401150E
5000354E
5020362G
5020348C
5401152E
5021162G
5401154F
5421160G
5000356E
5000358F
5020152E
5421144C
5401156F
5000152E
5401158G
5020156F
5000154E
5000360F
5090254E
5000352D
5090256E
5000150D
5000350D
5000148D
5020364G
5021146C
5000156F
5081152E
5001152E
5401160G
5020158F
5021164H
5090258F
5401148D
5020148D
5081150D
5000158F
5421162H
5020346B
5081148D
5090260F
5421164H
5090262G
5000362G
5020150D
5081154E
5020160G
5090264G
5020154E
5020366H
5081156F
5090268H
5081158F
5021144B
5401146D
65C3252
65C3254
5000348C
5000364G
5021166H
5081160G
65C3250
5401162H
5000160G
65C3256
5090266H
5421142B
5001148D
5020162G
5081146C
5090270I
5401164H
65C3248
5081162G
5401144C
5000162G
5001158F
5020344A
5021168I
5090272I
5421168I
5000146C
5000164H
5021142A
5081164H
5090276J
5401166I
65C3258

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4.3.16 Trident II

N = 25,451 primary cases were used for this analysis. Distribution of utilization: 160 surgeons across 65 sites used this implant in primary THA cases.

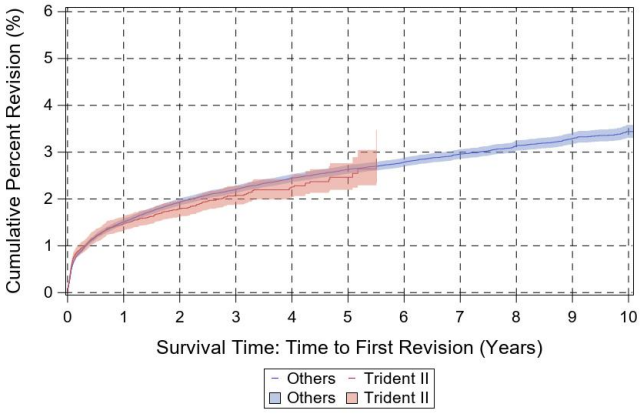


Figure 349. Cumulative Percent Revision Curve for the Trident II Cup, Compared to All Other Cups in Primary THA Cases

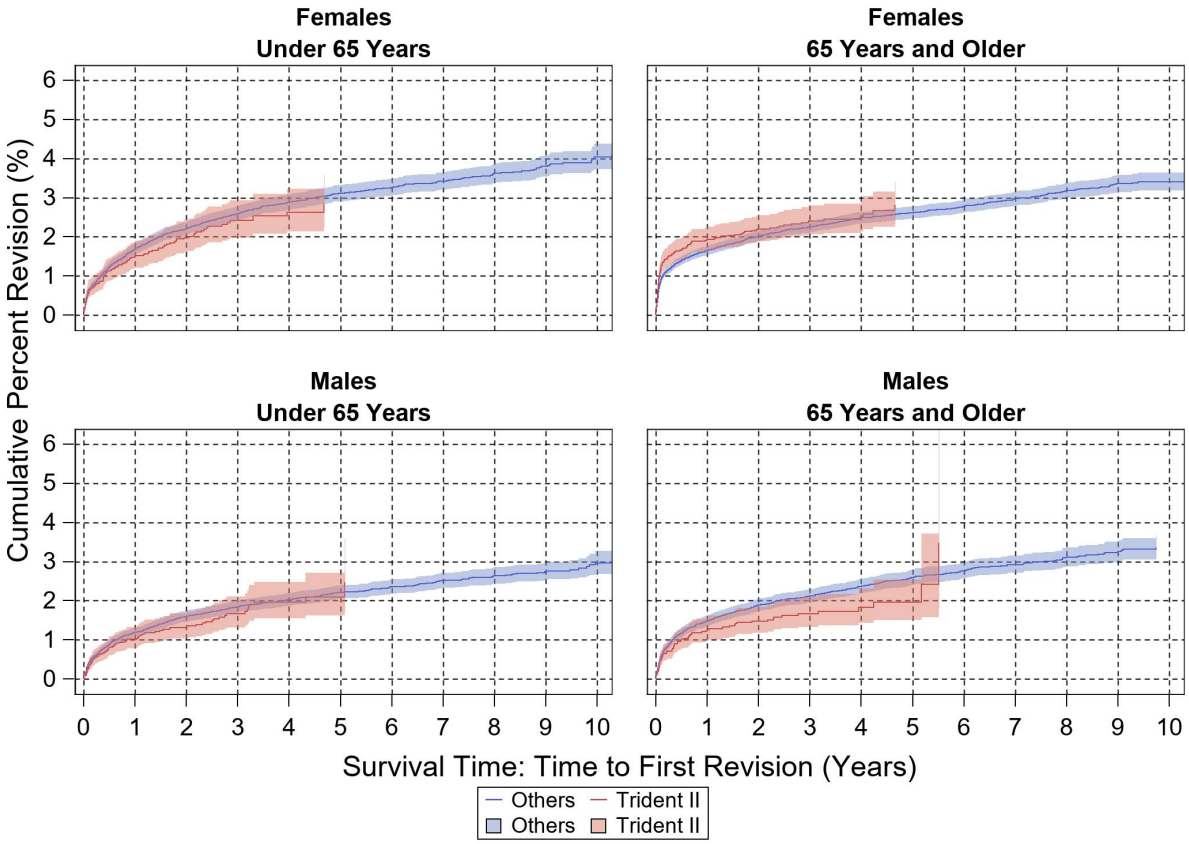


Figure 350. Cumulative Percent Revision Curve for the Trident II Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 997. Cumulative Percent Revision and Number at Risk for the Trident II Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	25,379	0.00 (0.00,0.00)	5,489	0.00 (0.00,0.00)	8,403	0.00 (0.00,0.00)	5,708	0.00 (0.00,0.00)	5,776	0.00 (0.00,0.00)
1	18,907	1.48 (1.34,1.64)	4,120	1.52 (1.22,1.90)	6,182	1.93 (1.65,2.25)	4,350	1.02 (0.78,1.32)	4,252	1.25 (0.99,1.59)
2	13,247	1.79 (1.62,1.97)	2,913	1.98 (1.61,2.43)	4,352	2.20 (1.89,2.56)	3,040	1.32 (1.04,1.68)	2,941	1.47 (1.17,1.85)
3	8,501	2.08 (1.88,2.29)	1,901	2.41 (1.98,2.94)	2,741	2.40 (2.06,2.79)	1,945	1.67 (1.32,2.11)	1,914	1.67 (1.33,2.09)
4	4,440	2.26 (2.04,2.50)	1,031	2.63 (2.14,3.22)	1,427	2.51 (2.14,2.94)	1,015	1.96 (1.54,2.48)	967	1.82 (1.44,2.32)
5	1,345	2.46 (2.20,2.76)	294	2.83 (2.23,3.58)	444	2.81 (2.33,3.40)	312	2.10 (1.62,2.71)	295	1.96 (1.51,2.53)
6	183	2.86 (2.35,3.48)	46	2.83 (2.23,3.58)	56	2.81 (2.33,3.40)	41	2.48 (1.71,3.58)	40	3.47 (1.79,6.68)
7	13	2.86 (2.35,3.48)	*	2.83 (2.23,3.58)	*	2.81 (2.33,3.40)	*	2.48 (1.71,3.58)	*	3.47 (1.79,6.68)
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 998. Reasons for First Revision Following Primary THA for Trident II Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	141	30.9
2	Joint Infection	112	24.6
3	Aseptic Loosening	72	15.8
4	Dislocation/Instability	63	13.8
5	Implant Failure	22	4.8
6	Malalignment	16	3.5
7	Peri-prosthetic fracture - Acetabulum	12	2.6
8	Pain	10	2.2
9	Metal Reaction/Metallosis	4	0.9
10	Osteolysis	2	0.4
	Unknown/missing/other	2	0.4

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Table 999. Reasons for First Revision in the First 90 Days Following Primary THA for Trident II Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	122	51.5
2	Joint Infection	44	18.6
3	Dislocation/Instability	25	10.6
4	Aseptic Loosening	15	6.3
5	Implant Failure	12	5.1
6	Peri-prosthetic fracture - Acetabulum	9	3.8
7	Malalignment	7	3.0
8	Pain	2	0.8
9	Metal Reaction/Metallosis	1	0.4

Table 1000. Reasons for First Revision Between 91 and 365 days Following Primary THA for Trident II Cup Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	41	35.3
2	Dislocation/Instability	25	21.6
3	Aseptic Loosening	23	19.8
4	Peri-prosthetic fracture - Femur	13	11.2
5	Malalignment	5	4.3
6	Pain	3	2.6
7	Implant Failure	2	1.7
8	Osteolysis	1	0.9
9	Poly liner wear	1	0.9
10	Peri-prosthetic fracture - Acetabulum	1	0.9
	Unknown/missing/other	1	0.9

Table 1001. Descriptive Statistics of Cases Receiving the Trident II Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	13,929	54.73	
Age (years)	25,451	65.35 (10.87)	66.00 (14.00)
Height (cm)	25,451	170.04 (10.47)	170.18 (15.24)
Weight (kg)	25,451	88.57 (20.97)	86.70 (28.70)
BMI(kg/m^2)	25,451	30.51 (6.19)	29.78 (8.24)
Smoker - Never (%)	12,853	50.5	
Smoker - Previous (%)	8,862	34.82	
Smoker - Current (%)	3,685	14.48	
Smoker - Unknown (%)	51	0.2	

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Table 1002. Distribution of Approach Used for Trident II Cup in Primary THA Cases

Approach	N	Percent
Anterior	9,214	36.2
Anterolateral	2505	9.8
Posterior	13,644	53.6
Transtrochanteric	15	0.1
Missing/unknown/other	73	0.3

Table 1003. Distribution of Head Size for Trident II Cup in Primary THA Cases

Size (mm)	N	Percent
22	4	0.0
28	20	0.1
32	2,100	9.9
36	16,906	79.9
40	1,915	9.1
44	136	0.6
Missing/unknown/other	87	0.4

Table 1004. Distribution of Bearing Surface for Trident II Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,015	4.0
Ceramic-on-plastic	20,065	78.8
Ceramic-on-ceramic	1	0.0
Metal-on-metal	0	0.0
Dual mobility	3,936	15.5
Missing/unknown/other	434	1.7

Table 1005. Distribution of Polyethylene Used for Trident II Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	11,800	47.2
Antioxidant XLPE	0	0.0
Missing/unknown/other	13,218	52.8

Table 1006. Volume of Cases by Surgeon and Site for the Trident II Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	159 (254)	59 (166)
Cases per site	391 (527)	202 (442)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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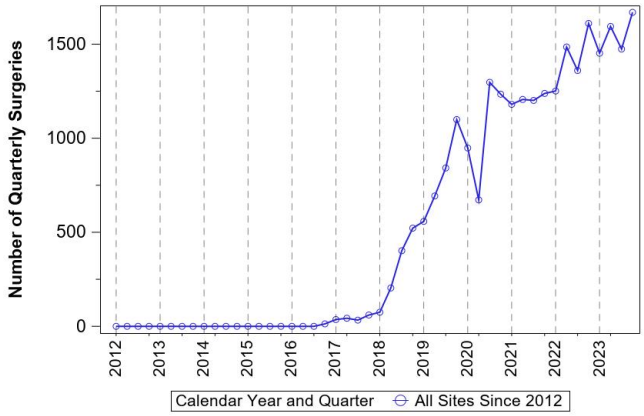


Figure 351. Utilization of the Trident II Cup in Primary THA Cases

Catalog Numbers of Acetabular Cups Used in the Analysis

7020452E	7021160G	7090460G
7020454E	7000458F	7000446C
7020456F	7090452E	7090462G
7020450D	7000448D	7421158F
7020448D	7090448D	7090464H
7020458F	7090454E	7000462G
7021152E	7421152E	7021164H
7021150D	7090456F	7090446C
7021154E	7021146C	7020466H
7021156F	7090450D	7421160G
7020460G	7020444B	7421162G
7021148D	7421154E	7421146C
7000452E	7090458F	7090468I
7021158F	7000460G	7090466H
7020446C	7021162G	7021166H
7000454E	7421148D	7021144B
7000456F	7421156F	7090470I
7020462G	7421150D	7090472J
7000450D	7020464H	

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4.3.17 Trilogy

N = 1,616 primary cases were used for this analysis. Distribution of utilization: 24 surgeons across 12 sites used this implant in primary THA cases.

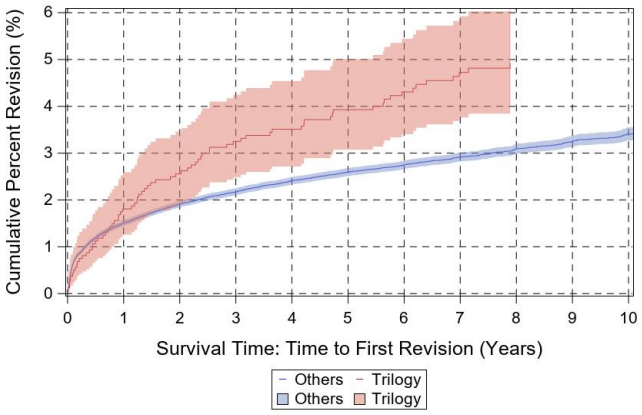


Figure 352. Cumulative Percent Revision Curve for the Trilogy Cup, Compared to All Other Cups in Primary THA Cases

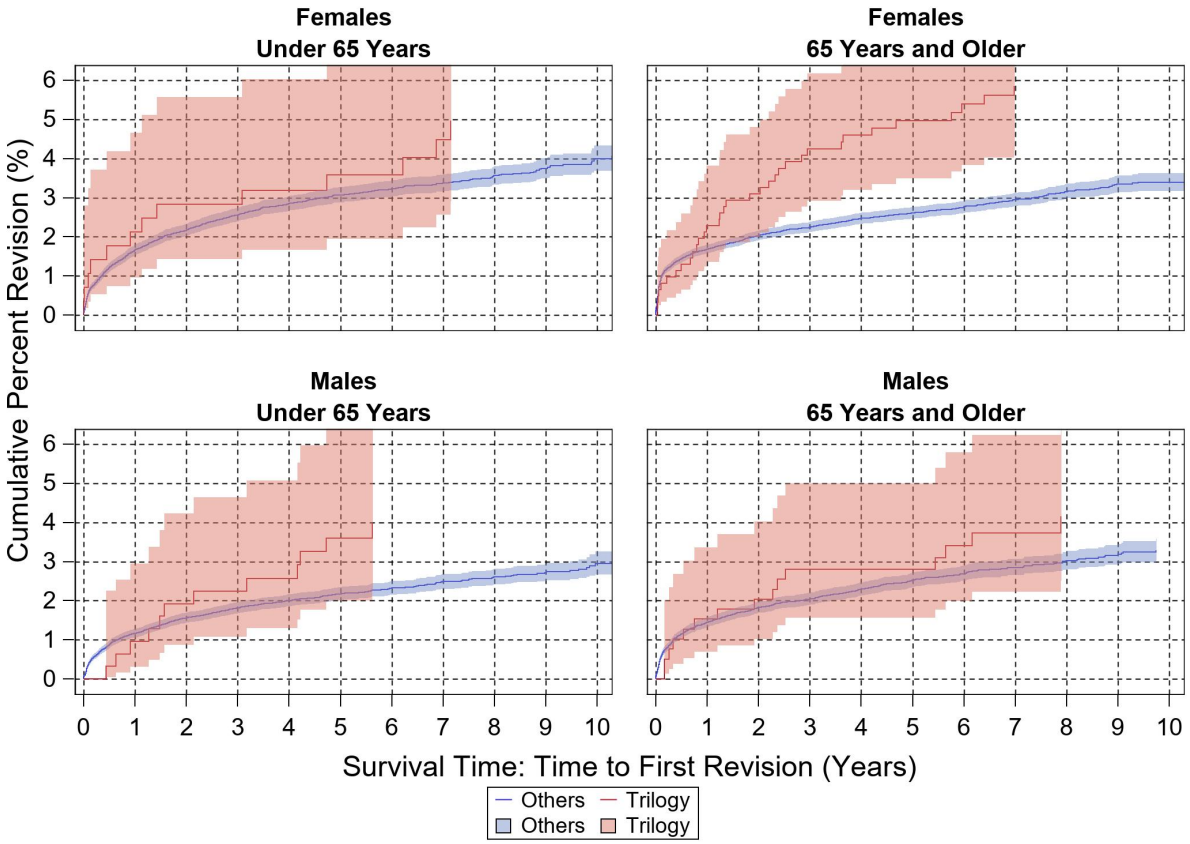


Figure 353. Cumulative Percent Revision Curve for the Trilogy Cup, Compared to All Other Cups in Primary THA Cases by Age and Sex

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Table 1007. Cumulative Percent Revision and Number at Risk for the Trilogy Cup in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,602	0.00 (0.00,0.00)	283	0.00 (0.00,0.00)	614	0.00 (0.00,0.00)	312	0.00 (0.00,0.00)	393	0.00 (0.00,0.00)
1	1,573	1.81 (1.26,2.59)	277	2.12 (0.96,4.66)	600	2.28 (1.36,3.82)	309	0.96 (0.31,2.95)	387	1.53 (0.69,3.37)
2	1,561	2.56 (1.89,3.46)	275	2.83 (1.42,5.57)	595	3.09 (1.98,4.81)	306	1.92 (0.87,4.23)	385	2.04 (1.02,4.03)
3	1,519	3.25 (2.49,4.25)	271	2.83 (1.42,5.57)	573	4.25 (2.91,6.18)	302	2.24 (1.08,4.65)	373	2.80 (1.56,5.00)
4	1,438	3.51 (2.71,4.54)	255	3.19 (1.67,6.03)	539	4.60 (3.20,6.59)	288	2.57 (1.29,5.07)	356	2.80 (1.56,5.00)
5	1,336	3.93 (3.08,5.01)	237	3.59 (1.95,6.57)	492	4.97 (3.50,7.03)	270	3.60 (2.01,6.42)	337	2.80 (1.56,5.00)
6	1,218	4.31 (3.40,5.44)	225	3.59 (1.95,6.57)	441	5.39 (3.84,7.55)	247	3.97 (2.27,6.90)	305	3.40 (1.99,5.80)
7	1,080	4.73 (3.76,5.92)	200	4.48 (2.56,7.77)	390	5.86 (4.21,8.12)	221	3.97 (2.27,6.90)	269	3.73 (2.22,6.23)
8	860	4.92 (3.93,6.16)	152	4.97 (2.90,8.44)	319	5.86 (4.21,8.12)	172	3.97 (2.27,6.90)	217	4.16 (2.51,6.86)
9	621	4.92 (3.93,6.16)	111	4.97 (2.90,8.44)	223	5.86 (4.21,8.12)	136	3.97 (2.27,6.90)	151	4.16 (2.51,6.86)
10	393	4.92 (3.93,6.16)	76	4.97 (2.90,8.44)	135	5.86 (4.21,8.12)	85	3.97 (2.27,6.90)	97	4.16 (2.51,6.86)

Table 1008. Reasons for First Revision Following Primary THA for Trilogy Cup Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	14	20.6
2	Dislocation/Instability	13	19.1
3	Joint Infection	11	16.2
4	Peri-prosthetic fracture - Femur	10	14.7
5	Malalignment	7	10.3
6	Metal Reaction/Metallosis	5	7.4
7	Implant Failure	4	5.9
8	Peri-prosthetic fracture - Acetabulum	2	2.9
9	Poly liner wear	1	1.5
10	Pain	1	1.5

Table 1009. Reasons for First Revision in the First 90 Days Following Primary THA for Trilogy Cup Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	6	60.0
2	Dislocation/Instability	2	20.0
3	Peri-prosthetic fracture - Acetabulum	1	10.0
4	Malalignment	1	10.0

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Table 1010. Reasons for First Revision Between 91 and 365 days Following Primary THA for Trilogy Cup Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	5	35.7
2	Joint Infection	4	28.6
3	Aseptic Loosening	2	14.3
4	Implant Failure	1	7.1
5	Peri-prosthetic fracture - Acetabulum	1	7.1
6	Peri-prosthetic fracture - Femur	1	7.1

Table 1011. Descriptive Statistics of Cases Receiving the Trilogy Cup in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	906	56.06	
Age (years)	1,616	67.93 (9.67)	68.00 (14.00)
Height (cm)	1,616	168.98 (10.42)	167.64 (16.80)
Weight (kg)	1,616	86.38 (19.63)	85.00 (27.39)
BMI(kg/m^2)	1,616	30.12 (5.74)	29.51 (7.57)
Smoker - Never (%)	727	44.99	
Smoker - Previous (%)	673	41.65	
Smoker - Current (%)	213	13.18	
Smoker - Unknown (%)	3	0.19	

Table 1012. Distribution of Approach Used for Trilogy Cup in Primary THA Cases

Approach	N	Percent
Anterior	7	0.4
Anterolateral	1152	71.3
Posterior	431	26.7
Transtrochanteric	23	1.4
Missing/unknown/other	3	0.2

Table 1013. Distribution of Head Size for Trilogy Cup in Primary THA Cases

Size (mm)	N	Percent
32	991	61.5
36	552	34.3
40	17	1.1
Missing/unknown/other	51	3.2

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Table 1014. Distribution of Bearing Surface for Trilogy Cup in Primary THA Cases

Bearing	N	Percent
Metal-on-plastic	1,190	73.6
Ceramic-on-plastic	370	22.9
Ceramic-on-ceramic	0	0.0
Metal-on-metal	0	0.0
Dual mobility	0	0.0
Missing/unknown/other	56	3.5

Table 1015. Distribution of Polyethylene Used for Trilogy Cup Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,519	94.3
Antioxidant XLPE	0	0.0
Missing/unknown/other	92	5.7

Table 1016. Volume of Cases by Surgeon and Site for the Trilogy Cup in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	67 (127)	12 (69)
Cases per site	134 (205)	33 (204)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

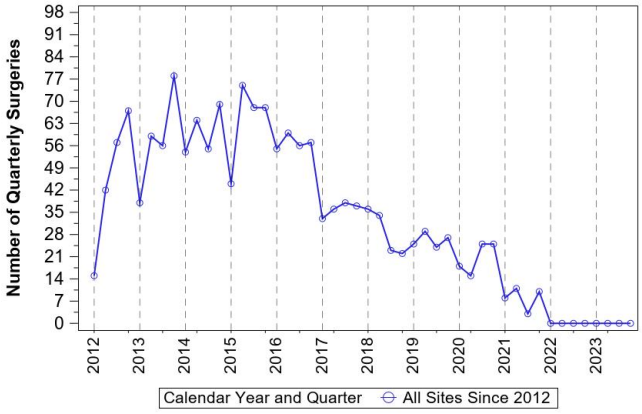


Figure 354. Utilization of the Trilogy Cup in Primary THA Cases

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Catalog Numbers of Acetabular Cups Used in the Analysis

620005222	620004822	620005824
620005422	620005020	620006024
620005822	620006422	620006622
620005022	620006224	620006624
620005622	620005024	
620006022	620005424	
620006222	620005624	

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4.4 Resurfacing THA

The discrepancy between the number of cases listed at the beginning of an implant combination and N at year 0 in the table following the CPR figures is due to deaths. The former number is the total number of cases; the latter is the number of cases used to estimate the CPR considering deaths as censored events.

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4.4.1 BHR/BHR

N = 1,259 primary cases were used for this analysis. Distribution of utilization: 25 surgeons across 24 sites used this implant combination in primary THA cases.

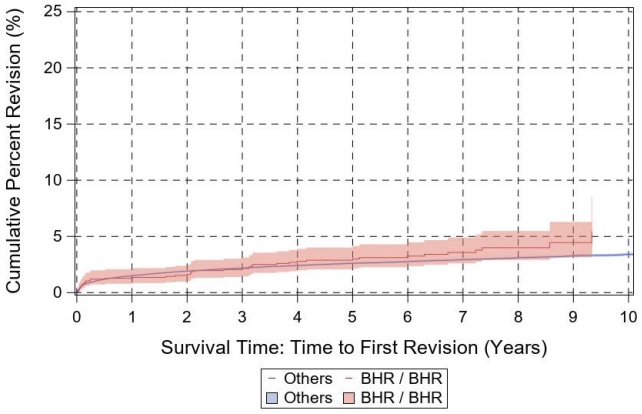


Figure 355. Cumulative Percent Revision Curve for the BHR/BHR Combination, Compared to All Other Implant Combinations in Primary THA Cases

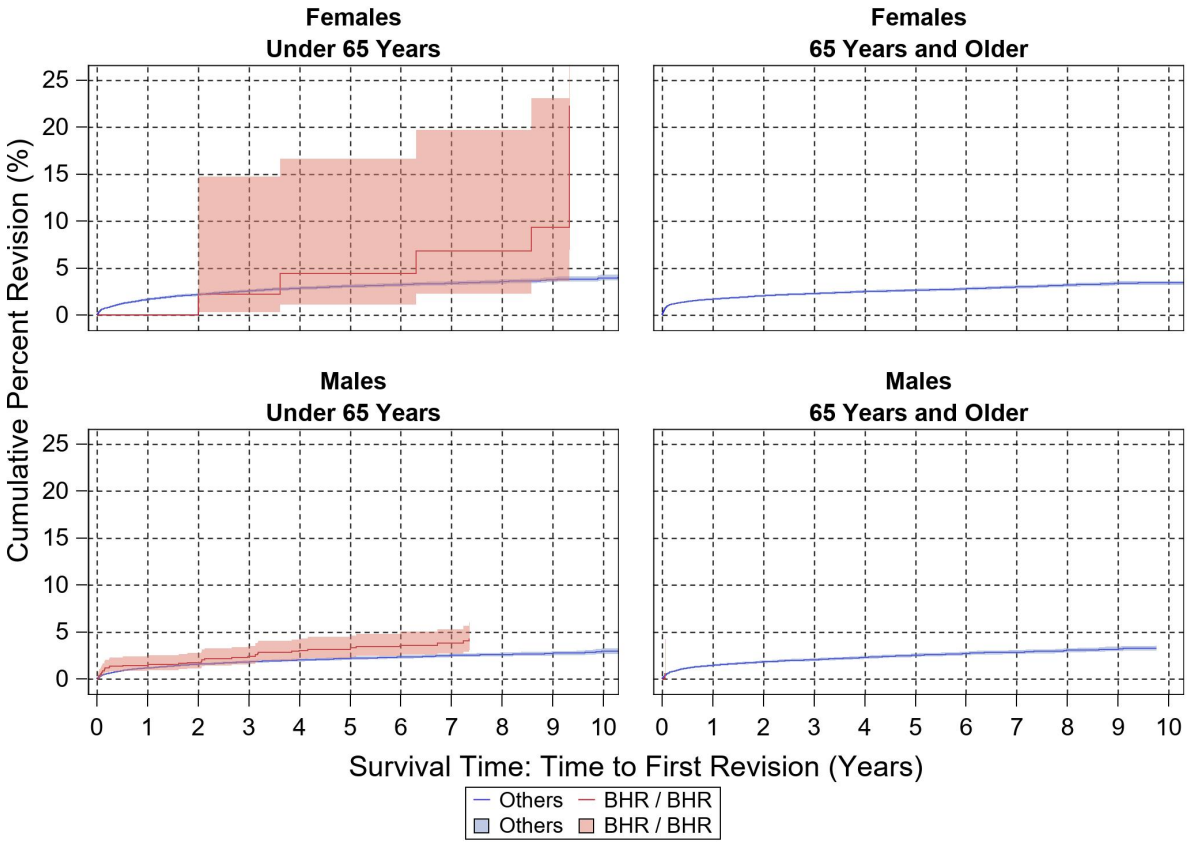


Figure 356. Cumulative Percent Revision Curve for the BHR/BHR Combination, Compared to All Other Implant Combinations in Primary THA Cases by Age and Sex

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Table 1017. Cumulative Percent Revision and Number at Risk for the BHR/BHR Combination in Primary THA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,257	0.00 (0.00,0.00)	46	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)	1,044	0.00 (0.00,0.00)	165	0.00 (0.00,0.00)
1	1,195	1.28 (0.79,2.08)	46	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)	990	1.45 (0.87,2.39)	157	0.61 (0.09,4.22)
2	1,151	1.62 (1.05,2.50)	44	2.22 (0.32,14.75)	*	0.00 (0.00,0.00)	954	1.75 (1.11,2.76)	151	0.61 (0.09,4.22)
3	1,095	2.14 (1.46,3.13)	44	2.22 (0.32,14.75)	*	0.00 (0.00,0.00)	910	2.38 (1.60,3.53)	140	0.61 (0.09,4.22)
4	1,010	2.78 (1.99,3.90)	43	4.44 (1.13,16.62)	*	0.00 (0.00,0.00)	840	3.04 (2.13,4.32)	126	0.61 (0.09,4.22)
5	856	2.88 (2.07,4.01)	42	4.44 (1.13,16.62)	*	0.00 (0.00,0.00)	713	3.16 (2.23,4.46)	100	0.61 (0.09,4.22)
6	695	3.25 (2.36,4.47)	40	4.44 (1.13,16.62)	*	0.00 (0.00,0.00)	585	3.60 (2.57,5.01)	69	0.61 (0.09,4.22)
7	537	3.57 (2.60,4.89)	38	6.83 (2.25,19.73)	*	0.00 (0.00,0.00)	443	3.80 (2.72,5.28)	55	0.61 (0.09,4.22)
8	331	4.00 (2.91,5.48)	38	6.83 (2.25,19.73)	*	0.00 (0.00,0.00)	262	4.32 (3.09,6.02)	30	0.61 (0.09,4.22)
9	132	4.45 (3.14,6.29)	16	9.35 (3.61,23.08)	0	N/A	108	4.32 (3.09,6.02)	*	0.61 (0.09,4.22)
10	61	5.45 (3.45,8.55)	*	22.30 (6.92,58.85)	0	N/A	58	4.32 (3.09,6.02)	*	0.61 (0.09,4.22)

* Denotes that the number of cases is between 1 and 10.

Table 1018. Reasons for First Revision Following Primary THA for BHR/BHR Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	13	31.0
2	Aseptic Loosening	11	26.2
3	Metal Reaction/Metallosis	9	21.4
4	Dislocation/Instability	3	7.1
5	Implant Failure	3	7.1
6	Joint Infection	1	2.4
7	Pain	1	2.4
8	Malalignment	1	2.4

Table 1019. Reasons for First Revision in the First 90 Days Following Primary THA for BHR/BHR Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	10	71.4
2	Dislocation/Instability	2	14.3
3	Implant Failure	2	14.3

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Table 1020. Reasons for First Revision Between 91 and 365 days Following Primary THA for BHR/BHR Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	50.0
2	Peri-prosthetic fracture - Femur	1	50.0

Table 1021. Descriptive Statistics of Cases Receiving the BHR/BHR Combination in Primary THA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	47	3.73	
Age (years)	1,259	54.61 (8.86)	55.00 (12.00)
Height (cm)	1,259	179.17 (7.47)	180.00 (9.00)
Weight (kg)	1,259	99.52 (19.73)	96.50 (24.90)
BMI(kg/m^2)	1,259	30.92 (5.40)	29.98 (6.53)
Smoker - Never (%)	784	62.27	
Smoker - Previous (%)	312	24.78	
Smoker - Current (%)	162	12.87	
Smoker - Unknown (%)	1	0.08	

Table 1022. Distribution of Approach Used for BHR/BHR Combination in Primary THA Cases

Approach	N	Percent
Anterior	18	1.4
Anterolateral	763	60.6
Posterior	359	28.5
Transtrochanteric	117	9.3
Missing/unknown/other	2	0.2

Table 1023. Distribution of Polyethylene Used for BHR/BHR Combination Cases in Which Polyethylene Was Used in Primary THA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1	100.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	0	0.0

Table 1024. Volume of Cases by Surgeon and Site for the BHR/BHR Combination in Primary THA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	50 (138)	8 (25)
Cases per site	52 (141)	9 (27)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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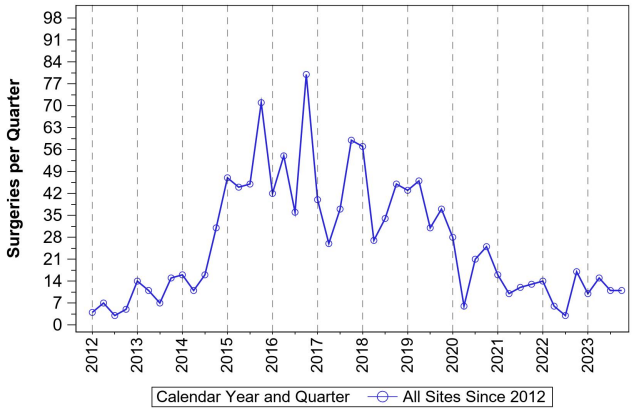


Figure 357. Utilization of the BHR/BHR Combination in Primary THA Cases

Catalog Numbers of Femoral Components Used in the Analysis

74123148	74121146	74121158
74121150	74123156	74123140
74123152	74121142	
74121154	74123144	

Catalog Numbers of Acetabular Cups Used in the Analysis

74122154	74122162	74122160
74120156	74120148	74120154
74122158	74122156	74120164
74120160	74122150	74122148
74120152	74120158	

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4.5 TKA

The discrepancy between the number of cases listed at the beginning of an implant combination and N at year 0 in the table following the CPR figures is due to deaths. The former number is the total number of cases; the latter is the number of cases used to estimate the CPR considering deaths as censored events.

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4.5.1 Attune/Attune

N = 16,956 primary cases were used for this analysis. Distribution of utilization: 104 surgeons across 50 sites used this implant combination in primary TKA cases.

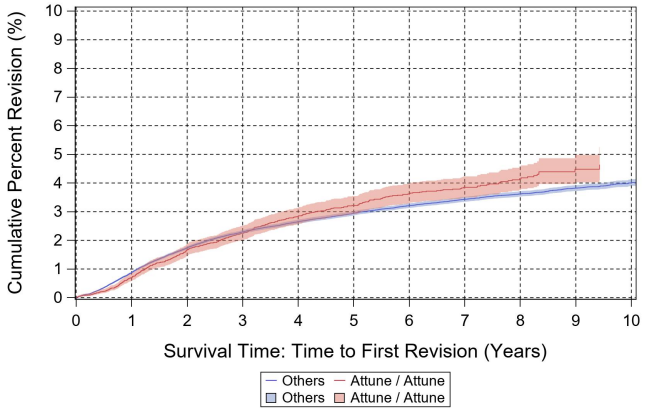


Figure 358. Cumulative Percent Revision Curve for the Attune/Attune Combination, Compared to All Other Implant Combinations in Primary TKA Cases

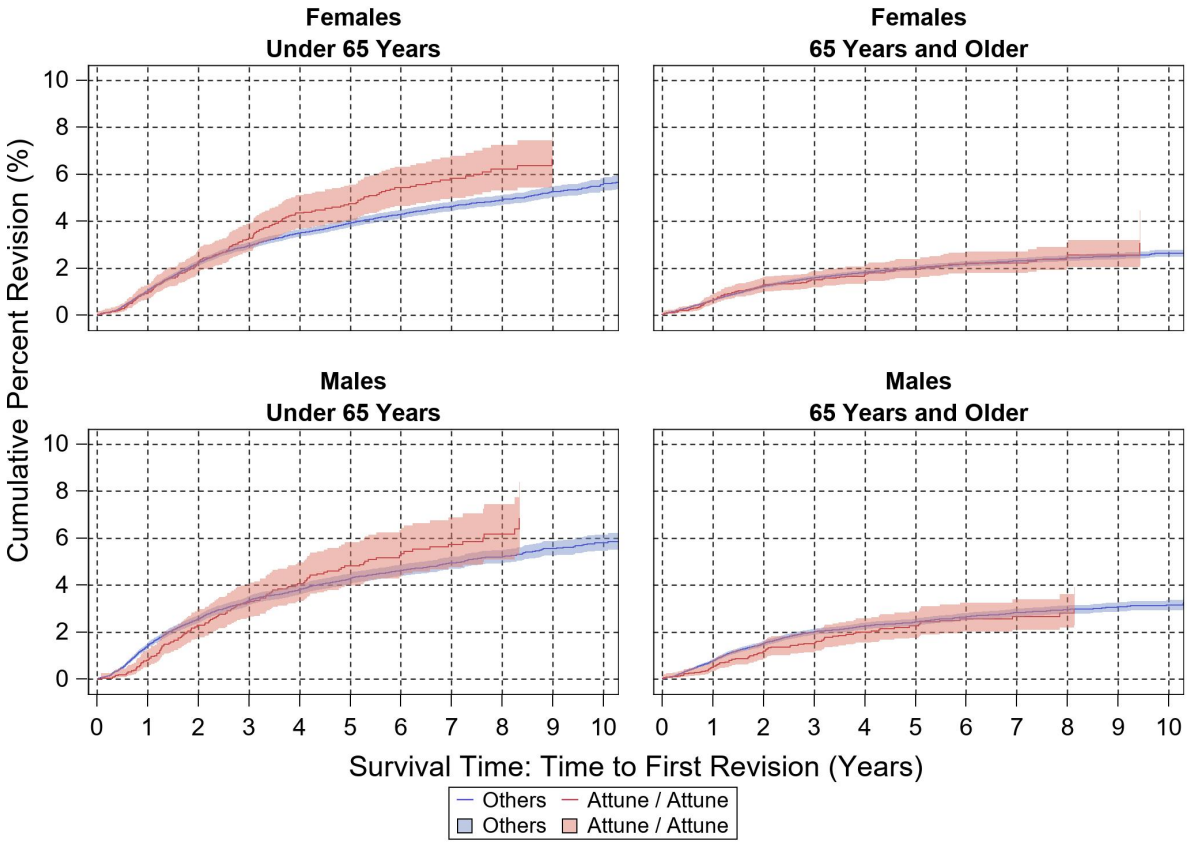


Figure 359. Cumulative Percent Revision Curve for the Attune/Attune Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1025. Cumulative Percent Revision and Number at Risk for the Attune/Attune Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	16,849	0.00 (0.00,0.00)	4,110	0.00 (0.00,0.00)	5,989	0.00 (0.00,0.00)	2,832	0.00 (0.00,0.00)	3,914	0.00 (0.00,0.00)
1	14,687	0.69 (0.57,0.84)	3,635	0.91 (0.65,1.26)	5,162	0.62 (0.44,0.86)	2,535	0.80 (0.52,1.22)	3,352	0.50 (0.32,0.80)
2	12,665	1.67 (1.47,1.89)	3,169	2.25 (1.81,2.79)	4,470	1.27 (1.00,1.62)	2,206	2.30 (1.78,2.97)	2,817	1.18 (0.86,1.61)
3	10,840	2.25 (2.01,2.51)	2,711	3.27 (2.72,3.92)	3,830	1.49 (1.19,1.87)	1,904	3.24 (2.60,4.04)	2,392	1.51 (1.14,2.01)
4	9,295	2.85 (2.57,3.15)	2,317	4.34 (3.68,5.11)	3,281	1.71 (1.38,2.13)	1,646	4.06 (3.31,4.96)	2,048	1.99 (1.54,2.57)
5	7,874	3.22 (2.92,3.55)	1,991	4.74 (4.04,5.56)	2,777	1.94 (1.57,2.38)	1,385	4.81 (3.97,5.81)	1,718	2.25 (1.76,2.88)
6	6,288	3.62 (3.29,3.98)	1,618	5.42 (4.65,6.33)	2,197	2.17 (1.76,2.66)	1,114	5.26 (4.36,6.33)	1,356	2.56 (2.01,3.25)
7	4,608	3.85 (3.50,4.23)	1,238	5.83 (5.00,6.79)	1,579	2.21 (1.80,2.71)	824	5.73 (4.76,6.89)	964	2.65 (2.08,3.38)
8	2,809	4.15 (3.76,4.57)	794	6.21 (5.31,7.25)	937	2.46 (1.98,3.05)	502	6.16 (5.10,7.43)	574	2.81 (2.18,3.61)
9	1,075	4.48 (4.02,4.99)	305	6.66 (5.59,7.94)	341	2.56 (2.05,3.20)	216	6.85 (5.58,8.39)	213	2.99 (2.29,3.90)
10	226	4.64 (4.10,5.25)	67	6.66 (5.59,7.94)	63	3.07 (2.11,4.45)	49	6.85 (5.58,8.39)	47	2.99 (2.29,3.90)

Table 1026. Reasons for First Revision Following Primary TKA for Attune/Attune Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	161	34.3
2	Dislocation/Instability	109	23.2
3	Joint Infection	98	20.9
4	Arthrofibrosis	41	8.7
5	Implant Failure	16	3.4
6	Pain	16	3.4
7	Malalignment	13	2.8
8	Peri-prosthetic fracture - Femur	4	0.9
9	Extensor mechanism failure	3	0.6
10	Poly liner wear	3	0.6
	Unknown/missing/other	2	1.1

Table 1027. Reasons for First Revision in the First 90 Days Following Primary TKA for Attune/Attune Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	6	42.9
2	Joint Infection	5	35.7
3	Aseptic Loosening	2	14.3
4	Peri-prosthetic fracture - Femur	1	7.1

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Table 1028. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Attune/Attune Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	29	31.2
2	Dislocation/Instability	23	24.7
3	Aseptic Loosening	14	15.0
4	Arthrofibrosis	10	10.8
5	Pain	7	7.5
6	Implant Failure	4	4.3
7	Malalignment	2	2.2
8	Peri-prosthetic fracture - Femur	1	1.1
9	Metal Reaction/Metallosis	1	1.1
10	Extensor mechanism failure	1	1.1
	Unknown/missing/other	1	1.1

Table 1029. Descriptive Statistics of Cases Receiving the Attune/Attune Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	10,147	59.8	
Age (years)	16,956	66.4 (9.2)	67 (13)
Height (cm)	16,555	169.1 (10.6)	168 (17.8)
Weight (kg)	16,555	95.8 (21.1)	94.5 (27.9)
BMI(kg/m^2)	16,555	33.5 (6.5)	32.9 (8.9)
Smoker - Never (%)	8,843	52.2	
Smoker - Previous (%)	6,409	37.8	
Smoker - Current (%)	1,653	9.8	
Smoker - Unknown (%)	51	0.3	

Table 1030. Distribution of Approach Used for Attune/Attune Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	15,693	92.6
Mid-vastus	817	4.8
Sub-vastus	9	0.1
Lateral parapatellar	13	0.1
Missing/unknown/other	424	2.5

Table 1031. Distribution of Polyethylene Used for Attune/Attune Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	1	0.0
XLPE	0	0.0
Antioxidant XLPE	16,328	96.3
Missing/unknown/other	627	3.7

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Table 1032. Volume of Cases by Surgeon and Site for the Attune/Attune Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	163 (314)	17 (231)
Cases per site	339 (638)	58 (317)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

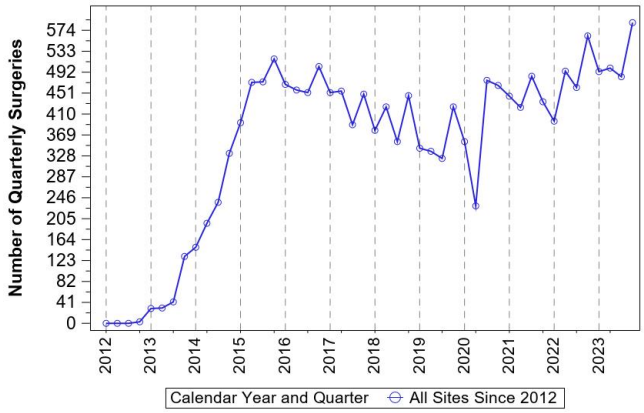


Figure 360. Utilization of the Attune/Attune Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

150400207	150400104	150401105
150400107	150410104	150400210
150410207	150400209	150401125
150410107	150410204	150401205
150400206	150410209	150401106
150400205	150410109	150440105
150400106	150400109	150410110
150400208	150400224	150440106
150400105	150410124	150440206
150410226	150410224	150440107
150400226	150400124	150401109
150400108	150401207	150410223
150410206	150401107	150440205
150410208	150400203	150440207
150400126	150400103	150410123
150410106	150401126	150400223
150410108	150401226	150400123
150400125	150401225	150440108
150410126	150410210	150401124
150410205	150401108	150401209
150410105	150401208	150440208
150400225	150410203	150440104
150410225	150400110	150440204
150410125	150401206	150400202
150400204	150410103	150410102

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150411108	150400102	150440209
150411207	150401203	150411106
150440109	150411125	150411126
150411107	150411205	150440210
150401224	150410202	

Catalog Numbers of Tibial Components Used in the Analysis

150670005	150670009	150640003
150600005	150610008	150621004
150670004	150640005	150660007
150600004	150640004	150640008
150670007	150610003	150610009
150670006	150611005	150670002
150600006	150611006	150680002
150600007	150640006	150600002
150670008	150640007	150610002
150600008	150611007	150611009
150680005	150660004	150660008
150680004	150660006	150611003
150670003	150680009	150680010
150680006	150660005	150610010
150610005	150600010	150660002
150680007	150670010	150680001
150600003	150621007	151600605
150610004	150611004	150600001
150610006	150621005	150640010
150680008	150621006	150670001
150680003	150611008	150640009
150610007	150660003	
150600009	150621008	

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4.5.2 Evolution MP/Evolution MP

N = 5,734 primary cases were used for this analysis. Distribution of utilization: 41 surgeons across 25 sites used this implant combination in primary TKA cases.

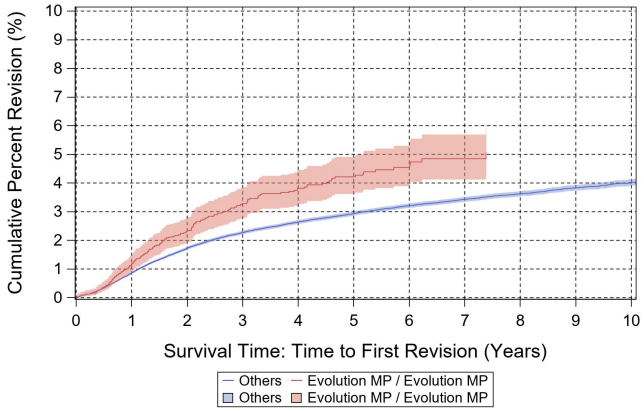


Figure 361. Cumulative Percent Revision Curve for the Evolution MP/Evolution MP Combination, Compared to All Other Implant Combinations in Primary TKA Cases

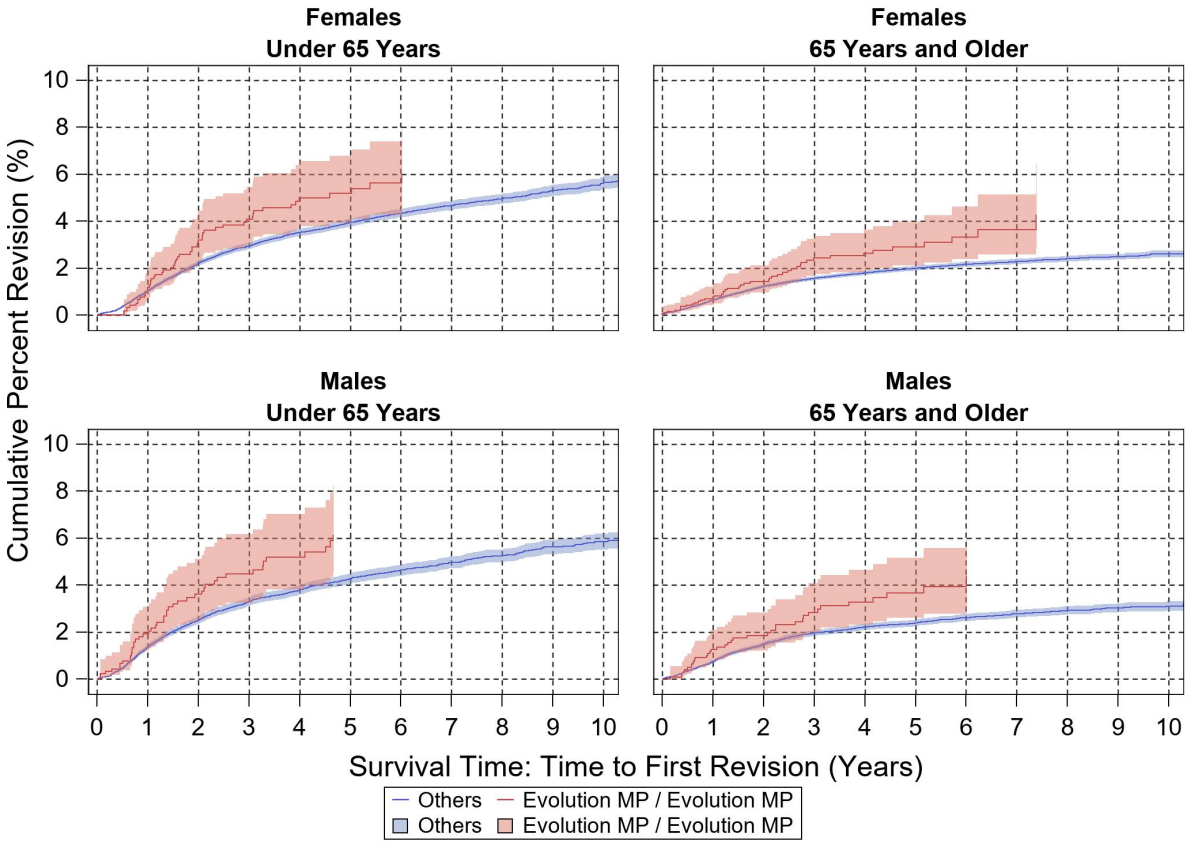


Figure 362. Cumulative Percent Revision Curve for the Evolution MP/Evolution MP Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1033. Cumulative Percent Revision and Number at Risk for the Evolution MP/Evolution MP Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	5,722	0.00 (0.00,0.00)	1,328	0.00 (0.00,0.00)	2,059	0.00 (0.00,0.00)	969	0.00 (0.00,0.00)	1,365	0.00 (0.00,0.00)
1	4,634	1.16 (0.90,1.50)	1,119	1.10 (0.64,1.89)	1,626	0.76 (0.45,1.29)	809	1.92 (1.20,3.08)	1,079	1.26 (0.76,2.08)
2	3,845	2.32 (1.92,2.79)	942	3.10 (2.22,4.32)	1,323	1.42 (0.95,2.12)	695	3.60 (2.53,5.12)	885	1.85 (1.21,2.82)
3	3,143	3.28 (2.79,3.86)	809	4.07 (3.03,5.46)	1,057	2.42 (1.74,3.36)	578	4.48 (3.24,6.17)	699	2.83 (1.96,4.07)
4	2,524	3.82 (3.27,4.46)	647	4.99 (3.79,6.56)	853	2.64 (1.91,3.63)	473	5.18 (3.81,7.03)	551	3.28 (2.31,4.64)
5	1,717	4.22 (3.62,4.91)	459	5.17 (3.93,6.79)	562	2.90 (2.11,3.98)	317	6.14 (4.55,8.26)	379	3.66 (2.59,5.16)
6	994	4.54 (3.89,5.30)	268	5.63 (4.28,7.40)	338	3.33 (2.39,4.62)	177	6.14 (4.55,8.26)	211	3.94 (2.78,5.58)
7	546	4.85 (4.12,5.69)	151	5.99 (4.51,7.93)	188	3.65 (2.58,5.15)	101	6.14 (4.55,8.26)	106	4.40 (3.03,6.36)
8	342	5.07 (4.25,6.04)	97	5.99 (4.51,7.93)	116	4.28 (2.83,6.43)	65	6.14 (4.55,8.26)	64	4.40 (3.03,6.36)
9	251	5.07 (4.25,6.04)	81	5.99 (4.51,7.93)	85	4.28 (2.83,6.43)	50	6.14 (4.55,8.26)	35	4.40 (3.03,6.36)
10	187	5.07 (4.25,6.04)	60	5.99 (4.51,7.93)	62	4.28 (2.83,6.43)	40	6.14 (4.55,8.26)	25	4.40 (3.03,6.36)

Table 1034. Reasons for First Revision Following Primary TKA for Evolution MP/Evolution MP Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	81	45.3
2	Aseptic Loosening	34	19.0
3	Joint Infection	31	17.3
4	Malalignment	8	4.5
5	Arthrofibrosis	6	3.4
6	Peri-prosthetic fracture - Femur	5	2.8
7	Implant Failure	4	2.2
8	Pain	3	1.7
9	Patellofemoral Joint	3	1.7
10	Extensor mechanism failure	2	1.1
	Unknown/missing/other	1	1.1

Table 1035. Reasons for First Revision in the First 90 Days Following Primary TKA for Evolution MP/Evolution MP Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	3	42.9
2	Dislocation/Instability	1	14.3
3	Implant Failure	1	14.3
4	Peri-prosthetic fracture - Femur	1	14.3
5	Malalignment	1	14.3

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Table 1036. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Evolution MP/Evolution MP Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	25	49.0
2	Joint Infection	12	23.5
3	Aseptic Loosening	4	7.8
4	Implant Failure	2	3.9
5	Pain	2	3.9
6	Malalignment	2	3.9
7	Arthrofibrosis	2	3.9
8	Extensor mechanism failure	2	3.9

Table 1037. Descriptive Statistics of Cases Receiving the Evolution MP/Evolution MP Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	3,394	59.2	
Age (years)	5,734	66.5 (9.2)	67 (13)
Height (cm)	5,734	169.2 (10.8)	167.6 (16.5)
Weight (kg)	5,734	95.5 (21.9)	93 (29)
BMI(kg/m^2)	5,734	33.3 (6.8)	32.6 (9.1)
Smoker - Never (%)	3,073	53.6	
Smoker - Previous (%)	2,165	37.8	
Smoker - Current (%)	466	8.1	
Smoker - Unknown (%)	30	0.5	

Table 1038. Distribution of Approach Used for Evolution MP/Evolution MP Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	5,653	98.6
Mid-vastus	64	1.1
Sub-vastus	2	0.0
Lateral parapatellar	5	0.1
Missing/unknown/other	10	0.2

Table 1039. Distribution of Polyethylene Used for Evolution MP/Evolution MP Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	5,688	99.2
XLPE	0	0.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	46	0.8

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Table 1040. Volume of Cases by Surgeon and Site for the Evolution MP/Evolution MP Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	139 (224)	37 (162)
Cases per site	229 (289)	154 (318)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

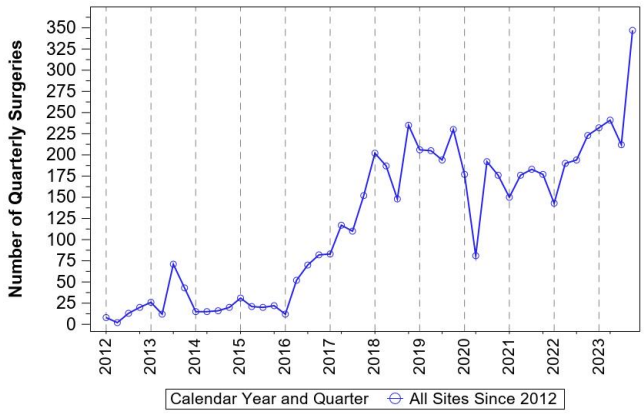


Figure 363. Utilization of the Evolution MP/Evolution MP Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

EFSRN5PR	EFSRP4PL	EFPSN4PL
EFSRN5PL	EFSRP4PR	EFPSN4PR
EFSRN4PR	EFSRP7PR	EFPSN7PL
EFSRN4PL	EFSRP7PL	EFPSN6PL
EFSRN6PR	EFSRP3PL	EFPSN6PR
EFSRN6PL	EFSRP3PR	EFPSN5PR
EFSRN7PR	EFSRN8PL	EFSRP2PR
EFSRN7PL	EFSRN8PR	EFPSN7PR
EFSRP5PR	EFSRP8PL	EFPSN3PR
EFSRN3PL	EFSRP8PR	EFPSN8PR
EFSRP5PL	EFSRN2PL	EFPSN2PR
EFSRN3PR	EFSRN2PR	EFPSN8PL
EFSRP6PR	EFPSN5PL	
EFSRP6PL	EFSRP2PL	

Catalog Numbers of Tibial Components Used in the Analysis

ETPKN5SR	ETPKN6SL	ETPKN6PR
ETPKN4SR	ETPK1556	ETPKN7SR
ETPKN4SL	ETPK1534	ETPKN7SL
ETPKN5SL	ETPK1578	ETPKN6PL
ETPKN6SR	ETPKN3SL	ETPKN3SR

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ETPLB5SL
ETPLB5SR
ETPLB6SR
ETPLB6SL
ETPLB4SL
ETPKN8SR
ETPLB4SR
ETPKN8SL
ETPLB6PL
ETPLB6PR
ETPLB7SR
ETPLB8SL
ETPLB7SL
ETPLB8SR
ETPKN2PL
ETPLB3SR
ETPKN8PR
ETPKN2SL
ETPKN2PR
ETPKN8PL
ETPKN2SR
ETPLB3SL
ETRKN5SR
ETPLB2PL
ETRKN5SL
ETRKN4SR
ETRKN4SL
ETRKN6SL
ETRKN6SR
ETRKN3SL
ETRKN7SL
ETPSB5SL
ETRKN3SR
ETRKN6PL
ETRKN6PR
ETRKN7SR

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4.5.3 Genesis II/Genesis II

N = 1,429 primary cases were used for this analysis. Distribution of utilization: 24 surgeons across 13 sites used this implant combination in primary TKA cases.

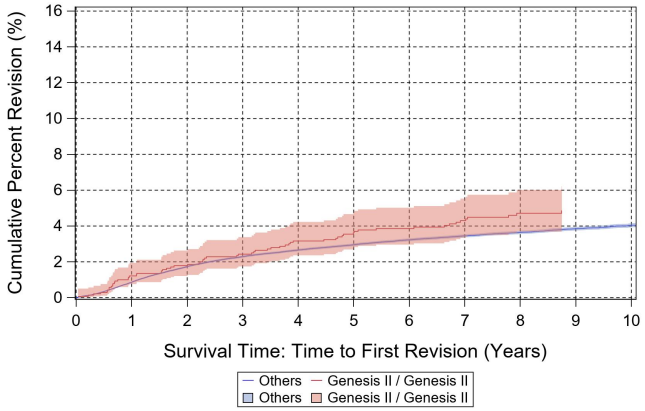


Figure 364. Cumulative Percent Revision Curve for the Genesis II/Genesis II Combination, Compared to All Other Implant Combinations in Primary TKA Cases

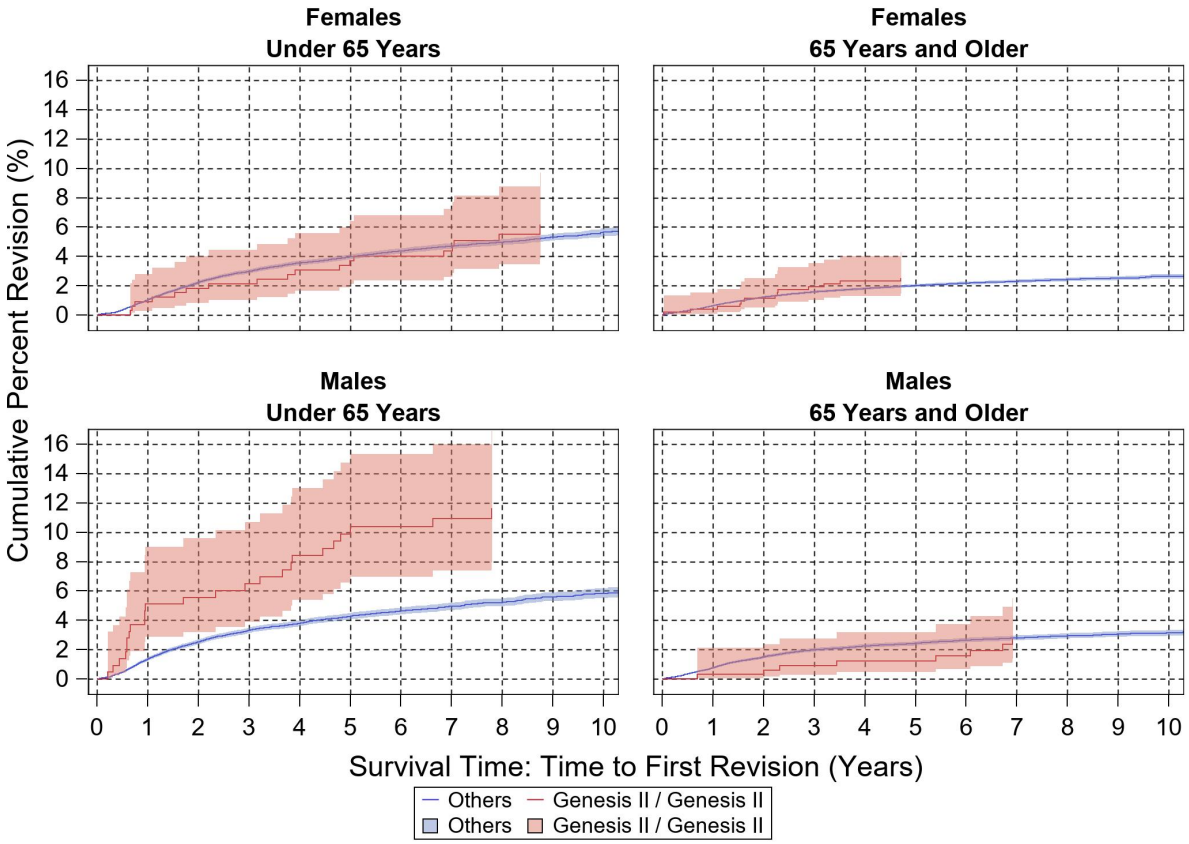


Figure 365. Cumulative Percent Revision Curve for the Genesis II/Genesis II Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1041. Cumulative Percent Revision and Number at Risk for the Genesis II/Genesis II Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,401	0.00 (0.00,0.00)	328	0.00 (0.00,0.00)	523	0.00 (0.00,0.00)	216	0.00 (0.00,0.00)	334	0.00 (0.00,0.00)
1	1,384	1.21 (0.76,1.94)	325	0.91 (0.30,2.81)	521	0.38 (0.10,1.52)	205	5.09 (2.85,9.01)	333	0.30 (0.04,2.11)
2	1,376	1.78 (1.21,2.63)	322	1.83 (0.83,4.03)	517	1.15 (0.52,2.54)	204	5.56 (3.19,9.58)	333	0.30 (0.04,2.11)
3	1,349	2.43 (1.74,3.38)	320	2.13 (1.02,4.42)	508	1.91 (1.03,3.53)	199	6.49 (3.89,10.71)	322	0.90 (0.29,2.76)
4	1,299	3.16 (2.36,4.23)	316	3.05 (1.65,5.60)	489	2.30 (1.32,4.02)	189	8.40 (5.38,13.01)	305	1.21 (0.46,3.20)
5	1,243	3.62 (2.76,4.75)	305	3.68 (2.11,6.39)	471	2.51 (1.46,4.28)	180	9.87 (6.55,14.75)	287	1.21 (0.46,3.20)
6	1,159	3.86 (2.96,5.02)	291	4.00 (2.34,6.79)	434	2.51 (1.46,4.28)	172	10.38 (6.95,15.33)	262	1.57 (0.65,3.74)
7	1,030	4.30 (3.34,5.53)	267	4.35 (2.60,7.24)	379	2.51 (1.46,4.28)	158	10.92 (7.39,15.98)	226	2.78 (1.39,5.52)
8	810	4.71 (3.69,6.02)	203	5.52 (3.46,8.76)	311	2.51 (1.46,4.28)	119	11.63 (7.92,16.89)	177	2.78 (1.39,5.52)
9	550	4.87 (3.81,6.21)	126	6.16 (3.87,9.72)	215	2.51 (1.46,4.28)	91	11.63 (7.92,16.89)	118	2.78 (1.39,5.52)
10	252	4.87 (3.81,6.21)	67	6.16 (3.87,9.72)	104	2.51 (1.46,4.28)	34	11.63 (7.92,16.89)	47	2.78 (1.39,5.52)

Table 1042. Reasons for First Revision Following Primary TKA for Genesis II/Genesis II Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	16	27.6
2	Arthrofibrosis	9	15.5
3	Dislocation/Instability	9	15.5
4	Joint Infection	8	13.8
5	Pain	8	13.8
6	Implant Failure	2	3.4
7	Osteolysis	2	3.4
8	Poly liner wear	2	3.4
9	Malalignment	1	1.7
10	Patellofemoral Joint	1	1.7

Table 1043. Reasons for First Revision in the First 90 Days Following Primary TKA for Genesis II/Genesis II Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	100.0

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Table 1044. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Genesis II/Genesis II Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	3	25.0
2	Joint Infection	3	25.0
3	Aseptic Loosening	2	16.7
4	Pain	2	16.7
5	Arthrofibrosis	2	16.7

Table 1045. Descriptive Statistics of Cases Receiving the Genesis II/Genesis II Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	872	61	
Age (years)	1,429	67 (9.8)	67 (14)
Height (cm)	1,429	168.3 (10.6)	167.6 (16.5)
Weight (kg)	1,429	94.7 (21.2)	92.5 (27.2)
BMI(kg/m^2)	1,429	33.4 (6.8)	32.6 (8.8)
Smoker - Never (%)	770	53.9	
Smoker - Previous (%)	533	37.3	
Smoker - Current (%)	118	8.3	
Smoker - Unknown (%)	8	0.6	

Table 1046. Distribution of Approach Used for Genesis II/Genesis II Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	1,228	85.9
Mid-vastus	194	13.6
Sub-vastus	0	0.0
Lateral parapatellar	3	0.2
Missing/unknown/other	4	0.3

Table 1047. Distribution of Polyethylene Used for Genesis II/Genesis II Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	698	48.8
XLPE	729	51.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	2	0.1

Table 1048. Volume of Cases by Surgeon and Site for the Genesis II/Genesis II Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	59 (95)	4 (133)
Cases per site	109 (153)	12 (145)

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The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

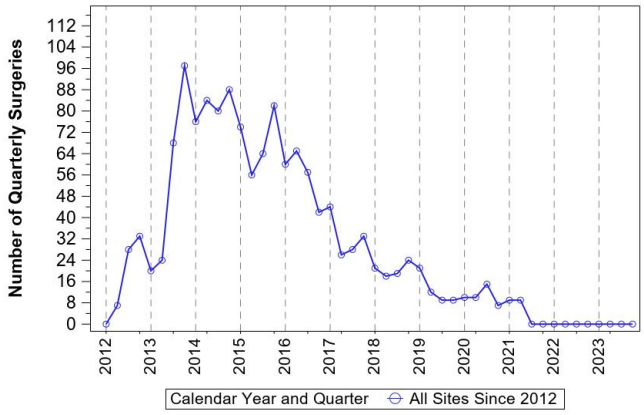


Figure 366. Utilization of the Genesis II/Genesis II Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

71420136	71420020	71420118
71420152	71420090	71420094
71420154	71420122	71420108
71420138	71420124	71420014
71420140	71421115	71420132
71420022	71420074	71421014
71420026	71420076	71421113
71420008	71420086	71421118
71420010	71420158	71420030
71420024	71421016	71420100
71420006	71421015	71420110
71420156	71421117	71420116
71420134	71420070	71420084
71420150	71421116	71421018
71420012	71420092	71930008
71420088	71420120	71420126
71420028	71420102	71421013
71420072	71420106	71930007
71420142	71420148	71930009
71420104	71421017	71930010
71420004	71421114	

Catalog Numbers of Tibial Components Used in the Analysis

71420184	71420182	71420180
71420168	71420188	71420162
71420166	71420190	71420176
71420186	71420172	71423116
71420170	71420174	
71420164	71420191	

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4.5.4 Genesis II (CoCr)/Genesis II

N = 733 primary cases were used for this analysis. Distribution of utilization: 14 surgeons used this implant combination at fewer than 10 sites in primary TKA cases.

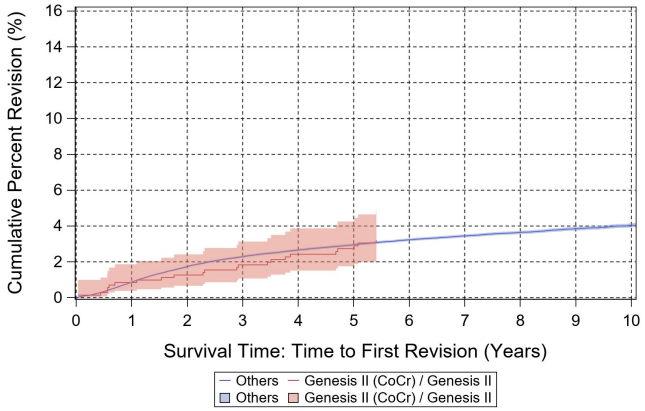


Figure 367. Cumulative Percent Revision Curve for the Genesis II (CoCr)/Genesis II Combination, Compared to All Other Implant Combinations in Primary TKA Cases

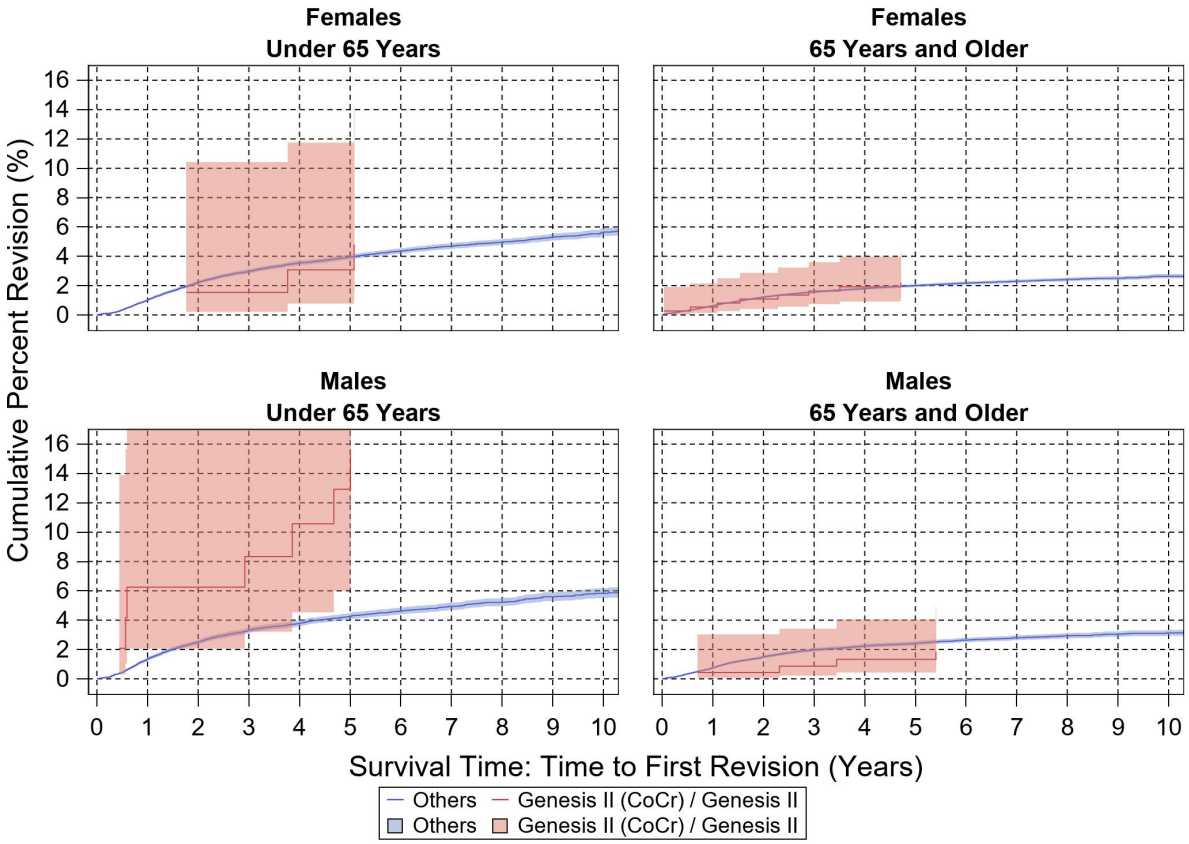


Figure 368. Cumulative Percent Revision Curve for the Genesis II (CoCr)/Genesis II Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1049. Cumulative Percent Revision and Number at Risk for the Genesis II (CoCr)/Genesis II Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	712	0.00 (0.00,0.00)	65	0.00 (0.00,0.00)	368	0.00 (0.00,0.00)	48	0.00 (0.00,0.00)	231	0.00 (0.00,0.00)
1	706	0.84 (0.38,1.87)	65	0.00 (0.00,0.00)	366	0.54 (0.14,2.16)	45	6.25 (2.06,18.14)	230	0.43 (0.06,3.03)
2	703	1.26 (0.66,2.42)	64	1.54 (0.22,10.42)	364	1.09 (0.41,2.87)	45	6.25 (2.06,18.14)	230	0.43 (0.06,3.03)
3	686	1.83 (1.07,3.13)	64	1.54 (0.22,10.42)	357	1.63 (0.74,3.60)	44	8.33 (3.21,20.70)	221	0.87 (0.22,3.42)
4	649	2.42 (1.51,3.87)	63	3.08 (0.78,11.75)	341	1.92 (0.92,3.98)	40	10.57 (4.54,23.57)	205	1.33 (0.43,4.06)
5	609	2.73 (1.75,4.25)	58	3.08 (0.78,11.75)	326	2.21 (1.11,4.37)	34	12.92 (6.01,26.58)	191	1.33 (0.43,4.06)
6	544	3.22 (2.13,4.86)	51	4.81 (1.57,14.20)	292	2.21 (1.11,4.37)	32	15.48 (7.66,29.88)	169	1.87 (0.70,4.93)
7	470	3.22 (2.13,4.86)	45	4.81 (1.57,14.20)	255	2.21 (1.11,4.37)	30	15.48 (7.66,29.88)	140	1.87 (0.70,4.93)
8	384	3.22 (2.13,4.86)	35	4.81 (1.57,14.20)	212	2.21 (1.11,4.37)	25	15.48 (7.66,29.88)	112	1.87 (0.70,4.93)
9	286	3.22 (2.13,4.86)	25	4.81 (1.57,14.20)	159	2.21 (1.11,4.37)	22	15.48 (7.66,29.88)	80	1.87 (0.70,4.93)
10	131	3.22 (2.13,4.86)	16	4.81 (1.57,14.20)	76	2.21 (1.11,4.37)	12	15.48 (7.66,29.88)	27	1.87 (0.70,4.93)

Table 1050. Reasons for First Revision Following Primary TKA for Genesis II (CoCr)/Genesis II Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	5	25.0
2	Joint Infection	5	25.0
3	Aseptic Loosening	4	20.0
4	Pain	4	20.0
5	Malalignment	1	5.0
6	Poly liner wear	1	5.0

Table 1051. Reasons for First Revision in the First 90 Days Following Primary TKA for Genesis II (CoCr)/Genesis II Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	100.0

Table 1052. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Genesis II (CoCr)/Genesis II Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	33.3
2	Joint Infection	1	33.3
3	Pain	1	33.3

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Table 1053. Descriptive Statistics of Cases Receiving the Genesis II (CoCr)/Genesis II Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	448	61.1	
Age (years)	733	72.1 (8.3)	73 (11)
Height (cm)	733	167.2 (10.1)	167.6 (15.3)
Weight (kg)	733	89.9 (19.2)	88.6 (26.2)
BMI(kg/m^2)	733	32.1 (6.2)	31.6 (8.3)
Smoker - Never (%)	381	52	
Smoker - Previous (%)	298	40.7	
Smoker - Current (%)	49	6.7	
Smoker - Unknown (%)	5	0.7	

Table 1054. Distribution of Approach Used for Genesis II (CoCr)/Genesis II Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	687	93.7
Mid-vastus	44	6.0
Sub-vastus	0	0.0
Lateral parapatellar	2	0.3
Missing/unknown/other	0	0.0

Table 1055. Distribution of Polyethylene Used for Genesis II (CoCr)/Genesis II Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	602	82.1
XLPE	130	17.7
Antioxidant XLPE	0	0.0
Missing/unknown/other	1	0.1

Table 1056. Volume of Cases by Surgeon and Site for the Genesis II (CoCr)/Genesis II Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	52 (84)	13 (73)
Cases per site	81 (100)	65 (91)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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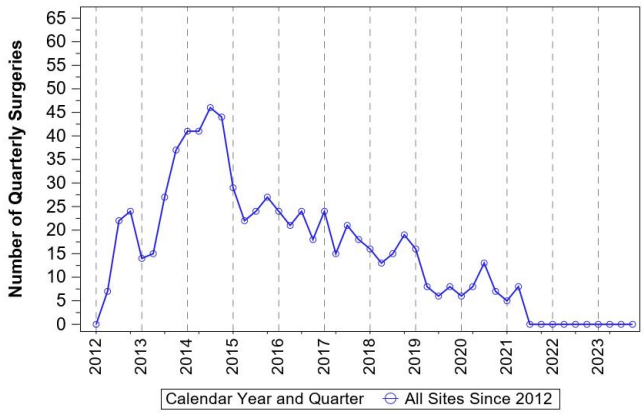


Figure 369. Utilization of the Genesis II (CoCr)/Genesis II Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

71420022	71420020	71420118
71420026	71420090	71420094
71420008	71420122	71420108
71420010	71420124	71420014
71420024	71420074	71420030
71420006	71420076	71420100
71420012	71420086	71420110
71420088	71420070	71420116
71420028	71420092	71420084
71420072	71420120	71420126
71420104	71420102	
71420004	71420106	

Catalog Numbers of Tibial Components Used in the Analysis

71420184	71420182	71420180
71420166	71420188	71420162
71420186	71420190	71423116
71420170	71420172	
71420164	71420174	
71420168	71420191	

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4.5.5 Genesis II (Oxinium)/Genesis II

N = 696 primary cases were used for this analysis. Distribution of utilization: 23 surgeons across 13 sites used this implant combination in primary TKA cases.

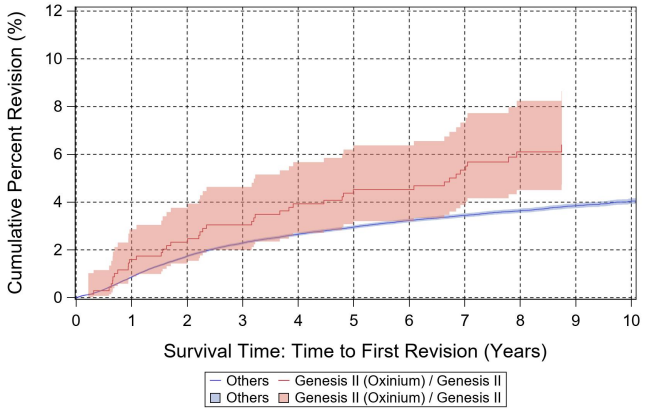


Figure 370. Cumulative Percent Revision Curve for the Genesis II (Oxinium)/Genesis II Combination, Compared to All Other Implant Combinations in Primary TKA Cases

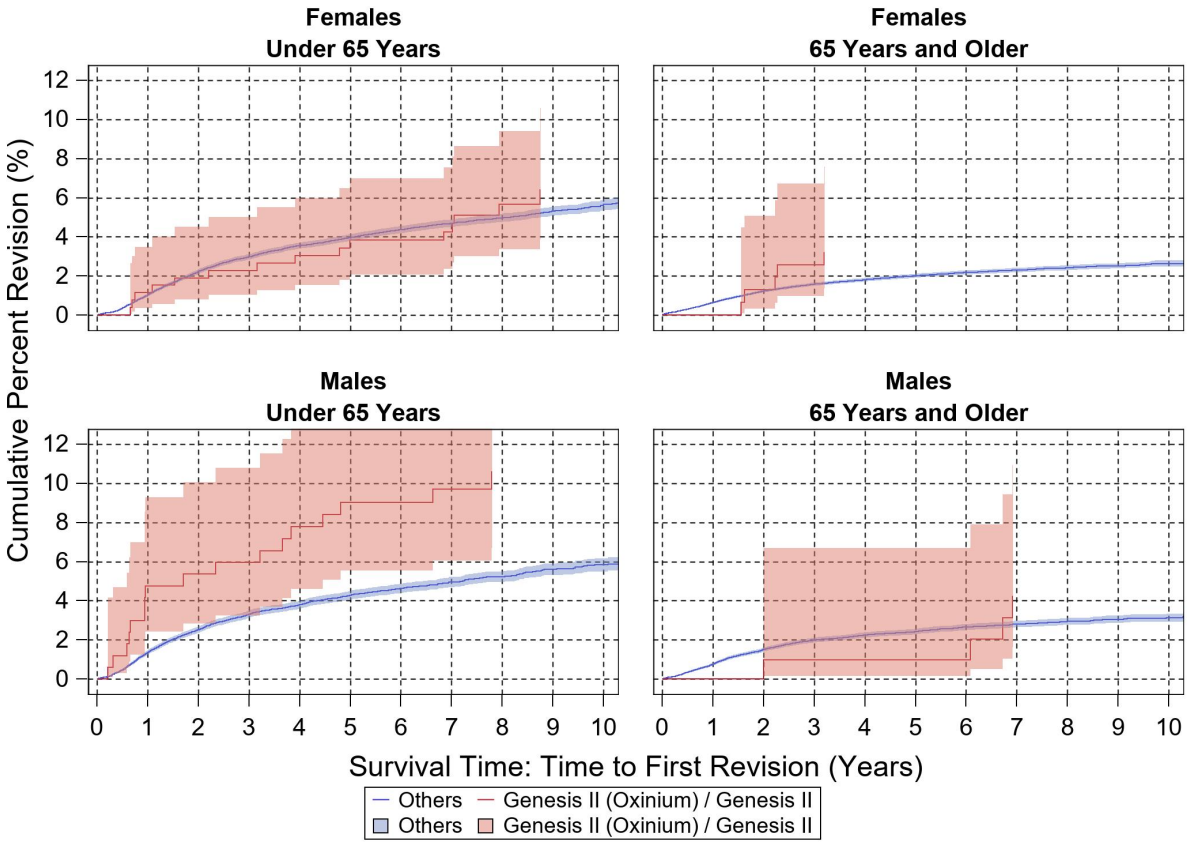


Figure 371. Cumulative Percent Revision Curve for the Genesis II (Oxinium)/Genesis II Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1057. Cumulative Percent Revision and Number at Risk for the Genesis II (Oxinium)/Genesis II Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	689	0.00 (0.00,0.00)	263	0.00 (0.00,0.00)	155	0.00 (0.00,0.00)	168	0.00 (0.00,0.00)	103	0.00 (0.00,0.00)
1	678	1.60 (0.89,2.86)	260	1.14 (0.37,3.49)	155	0.00 (0.00,0.00)	160	4.76 (2.41,9.30)	103	0.00 (0.00,0.00)
2	673	2.32 (1.43,3.76)	258	1.90 (0.80,4.51)	153	1.29 (0.32,5.06)	159	5.36 (2.82,10.04)	103	0.00 (0.00,0.00)
3	663	3.05 (2.00,4.64)	256	2.28 (1.03,5.01)	151	2.58 (0.98,6.73)	155	5.95 (3.25,10.78)	101	0.97 (0.14,6.69)
4	650	3.93 (2.71,5.68)	253	3.05 (1.54,6.00)	148	3.23 (1.36,7.58)	149	7.78 (4.59,13.02)	100	0.97 (0.14,6.69)
5	634	4.53 (3.21,6.38)	247	3.82 (2.07,6.99)	145	3.23 (1.36,7.58)	146	9.02 (5.54,14.52)	96	0.97 (0.14,6.69)
6	615	4.53 (3.21,6.38)	240	3.82 (2.07,6.99)	142	3.23 (1.36,7.58)	140	9.02 (5.54,14.52)	93	0.97 (0.14,6.69)
7	560	5.34 (3.88,7.33)	222	4.25 (2.37,7.54)	124	3.23 (1.36,7.58)	128	9.70 (6.05,15.35)	86	4.25 (1.61,10.95)
8	426	6.10 (4.50,8.24)	168	5.65 (3.37,9.39)	99	3.23 (1.36,7.58)	94	10.60 (6.70,16.56)	65	4.25 (1.61,10.95)
9	264	6.41 (4.73,8.65)	101	6.43 (3.86,10.59)	56	3.23 (1.36,7.58)	69	10.60 (6.70,16.56)	38	4.25 (1.61,10.95)
10	121	6.41 (4.73,8.65)	51	6.43 (3.86,10.59)	28	3.23 (1.36,7.58)	22	10.60 (6.70,16.56)	20	4.25 (1.61,10.95)

Table 1058. Reasons for First Revision Following Primary TKA for Genesis II (Oxinium)/Genesis II Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	12	31.6
2	Arthrofibrosis	9	23.7
3	Dislocation/Instability	4	10.5
4	Pain	4	10.5
5	Joint Infection	3	7.9
6	Implant Failure	2	5.3
7	Osteolysis	2	5.3
8	Patellofemoral Joint	1	2.6
9	Poly liner wear	1	2.6

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1059. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Genesis II (Oxinium)/Genesis II Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	2	22.2
2	Dislocation/Instability	2	22.2
3	Joint Infection	2	22.2
4	Arthrofibrosis	2	22.2
5	Pain	1	11.1

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Table 1060. Descriptive Statistics of Cases Receiving the Genesis II (Oxinium)/Genesis II Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	424	60.9	
Age (years)	696	61.6 (8.3)	62 (10)
Height (cm)	696	169.4 (11.1)	168 (17.8)
Weight (kg)	696	99.7 (22.1)	97.5 (29)
BMI(kg/m^2)	696	34.8 (7.1)	33.8 (9.2)
Smoker - Never (%)	389	55.9	
Smoker - Previous (%)	235	33.8	
Smoker - Current (%)	69	9.9	
Smoker - Unknown (%)	3	0.4	

Table 1061. Distribution of Approach Used for Genesis II (Oxinium)/Genesis II Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	541	77.7
Mid-vastus	150	21.6
Sub-vastus	0	0.0
Lateral parapatellar	1	0.1
Missing/unknown/other	4	0.6

Table 1062. Distribution of Polyethylene Used for Genesis II (Oxinium)/Genesis II Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	96	13.8
XLPE	599	86.1
Antioxidant XLPE	0	0.0
Missing/unknown/other	1	0.1

Table 1063. Volume of Cases by Surgeon and Site for the Genesis II (Oxinium)/Genesis II Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	30 (51)	3 (56)
Cases per site	53 (97)	7 (59)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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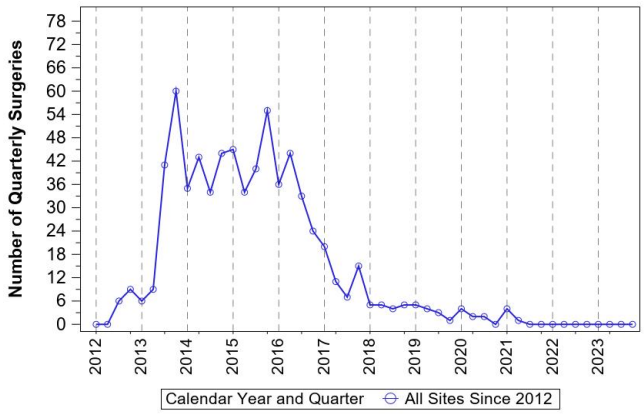


Figure 372. Utilization of the Genesis II (Oxinium)/Genesis II Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

71420136	71420158	71421113
71420152	71421016	71421118
71420154	71421015	71421018
71420138	71421117	71930008
71420140	71421116	71421013
71420156	71420148	71930007
71420134	71421017	71930009
71420150	71421114	71930010
71420142	71420132	
71421115	71421014	

Catalog Numbers of Tibial Components Used in the Analysis

71420184	71420164	71420180
71420168	71420172	71420162
71420166	71420188	71420176
71420186	71420182	
71420170	71420174	
71420190	71420191	

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4.5.6 GMK Sphere/GMK Primary

N = 556 primary cases were used for this analysis. Fewer than ten surgeons across 11 sites used this implant combination in primary TKA cases.

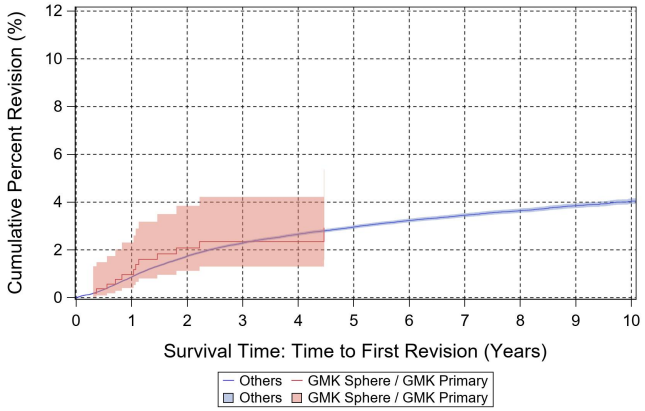


Figure 373. Cumulative Percent Revision Curve for the GMK Sphere/GMK Primary Combination, Compared to All Other Implant Combinations in Primary TKA Cases

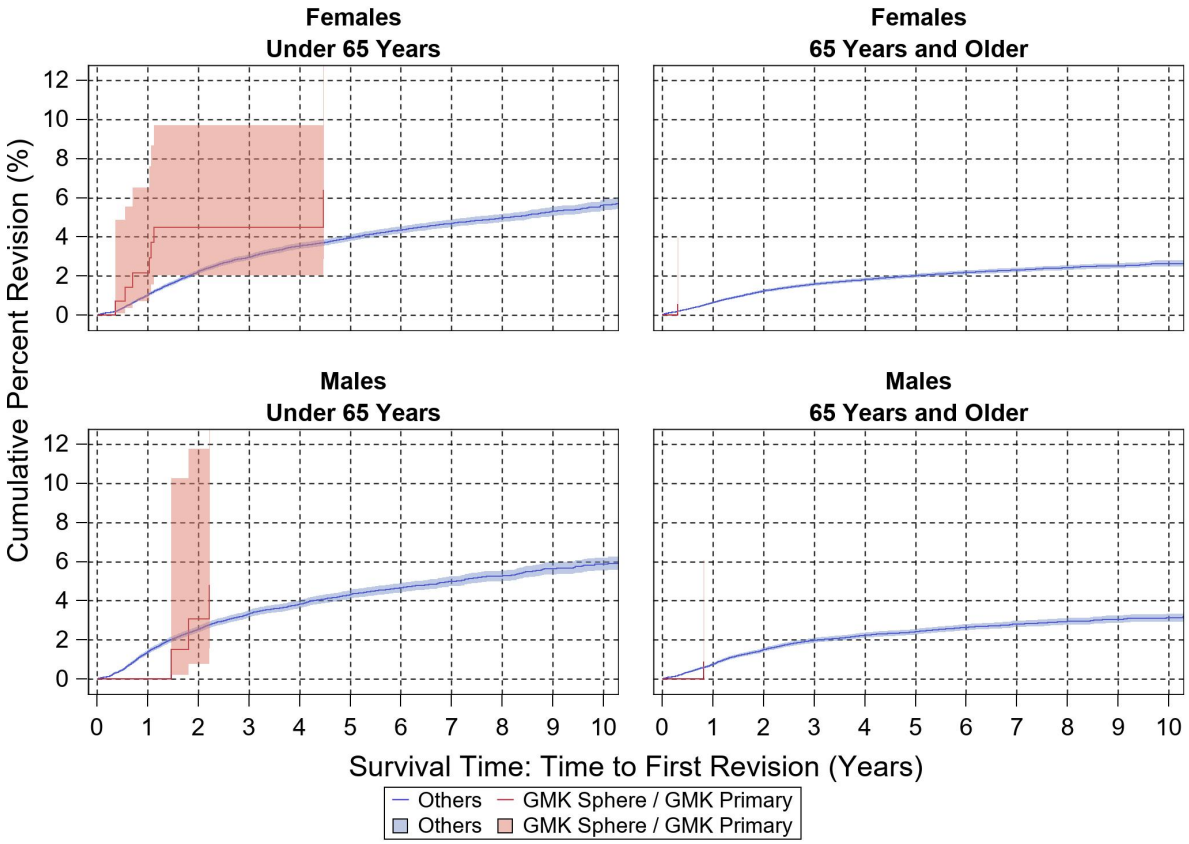


Figure 374. Cumulative Percent Revision Curve for the GMK Sphere/GMK Primary Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1064. Cumulative Percent Revision and Number at Risk for the GMK Sphere/GMK Primary Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	556	0.00 (0.00,0.00)	149	0.00 (0.00,0.00)	183	0.00 (0.00,0.00)	90	0.00 (0.00,0.00)	134	0.00 (0.00,0.00)
1	476	0.97 (0.40,2.31)	127	2.15 (0.70,6.52)	163	0.57 (0.08,3.96)	75	0.00 (0.00,0.00)	111	0.88 (0.12,6.06)
2	385	2.08 (1.12,3.85)	109	4.48 (2.04,9.71)	132	0.57 (0.08,3.96)	60	3.08 (0.78,11.76)	84	0.88 (0.12,6.06)
3	290	2.35 (1.30,4.22)	86	4.48 (2.04,9.71)	96	0.57 (0.08,3.96)	46	4.81 (1.57,14.21)	62	0.88 (0.12,6.06)
4	189	2.35 (1.30,4.22)	53	4.48 (2.04,9.71)	62	0.57 (0.08,3.96)	26	4.81 (1.57,14.21)	48	0.88 (0.12,6.06)
5	149	2.93 (1.59,5.37)	45	6.39 (2.87,13.90)	46	0.57 (0.08,3.96)	23	4.81 (1.57,14.21)	35	0.88 (0.12,6.06)
6	89	2.93 (1.59,5.37)	31	6.39 (2.87,13.90)	28	0.57 (0.08,3.96)	13	4.81 (1.57,14.21)	17	0.88 (0.12,6.06)
7	71	2.93 (1.59,5.37)	23	6.39 (2.87,13.90)	23	0.57 (0.08,3.96)	11	4.81 (1.57,14.21)	14	0.88 (0.12,6.06)
8	63	2.93 (1.59,5.37)	20	6.39 (2.87,13.90)	19	0.57 (0.08,3.96)	*	4.81 (1.57,14.21)	14	0.88 (0.12,6.06)
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 1065. Reasons for First Revision Following Primary TKA for GMK Sphere/GMK Primary Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	4	33.3
2	Dislocation/Instability	2	16.7
3	Implant Failure	2	16.7
4	Pain	2	16.7
5	Arthrofibrosis	1	8.3
6	Joint Infection	1	8.3

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1066. Reasons for First Revision Between 91 and 365 days Following Primary TKA for GMK Sphere/GMK Primary Combination Cases

Rank	Reason for Revision	N	Percent
1	Implant Failure	2	40.0
2	Dislocation/Instability	1	20.0
3	Joint Infection	1	20.0
4	Pain	1	20.0

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Table 1067. Descriptive Statistics of Cases Receiving the GMK Sphere/GMK Primary Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	332	59.7	
Age (years)	556	65.9 (9.7)	66 (14)
Height (cm)	556	167.9 (10.5)	167.6 (15.3)
Weight (kg)	556	94.3 (21.4)	92.6 (28.8)
BMI(kg/m^2)	556	33.5 (7.3)	32.8 (9.2)
Smoker - Never (%)	277	49.8	
Smoker - Previous (%)	209	37.6	
Smoker - Current (%)	63	11.3	
Smoker - Unknown (%)	7	1.3	

Table 1068. Distribution of Approach Used for GMK Sphere/GMK Primary Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	554	99.6
Mid-vastus	2	0.4
Sub-vastus	0	0.0
Lateral parapatellar	0	0.0
Missing/unknown/other	0	0.0

Table 1069. Distribution of Polyethylene Used for GMK Sphere/GMK Primary Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	513	92.3
XLPE	0	0.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	43	7.7

Table 1070. Volume of Cases by Surgeon and Site for the GMK Sphere/GMK Primary Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	61 (85)	39 (61)
Cases per site	50 (83)	4 (90)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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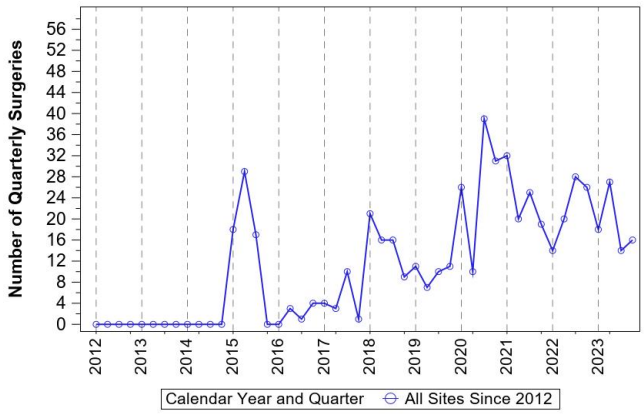


Figure 375. Utilization of the GMK Sphere/GMK Primary Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

02120003R	02120006L	02120026R
02120023R	02120025R	02120007R
02120023L	02120004R	02120002L
02120003L	02120006R	02120007L
02120005R	02120004L	02120021L
02120005L	02120025L	02120021R
02120024R	02120022R	
02120022L	02120002R	
02120024L	02120026L	

Catalog Numbers of Tibial Components Used in the Analysis

02071204R	02071205L	02071206R
02071203L	02071205R	02071206L
02071203R	02071202R	
02071204L	02071202L	

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4.5.7 iBalance/iBalance

N = 713 primary cases were used for this analysis. Fewer than ten surgeons used this implant combination at fewer than ten sites in primary TKA cases.

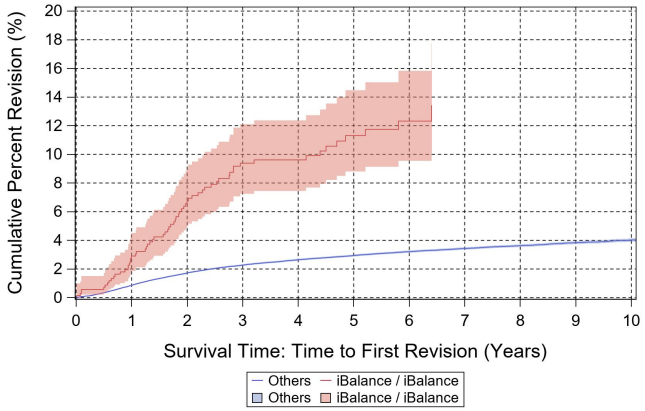


Figure 376. Cumulative Percent Revision Curve for the iBalance/iBalance Combination, Compared to All Other Implant Combinations in Primary TKA Cases

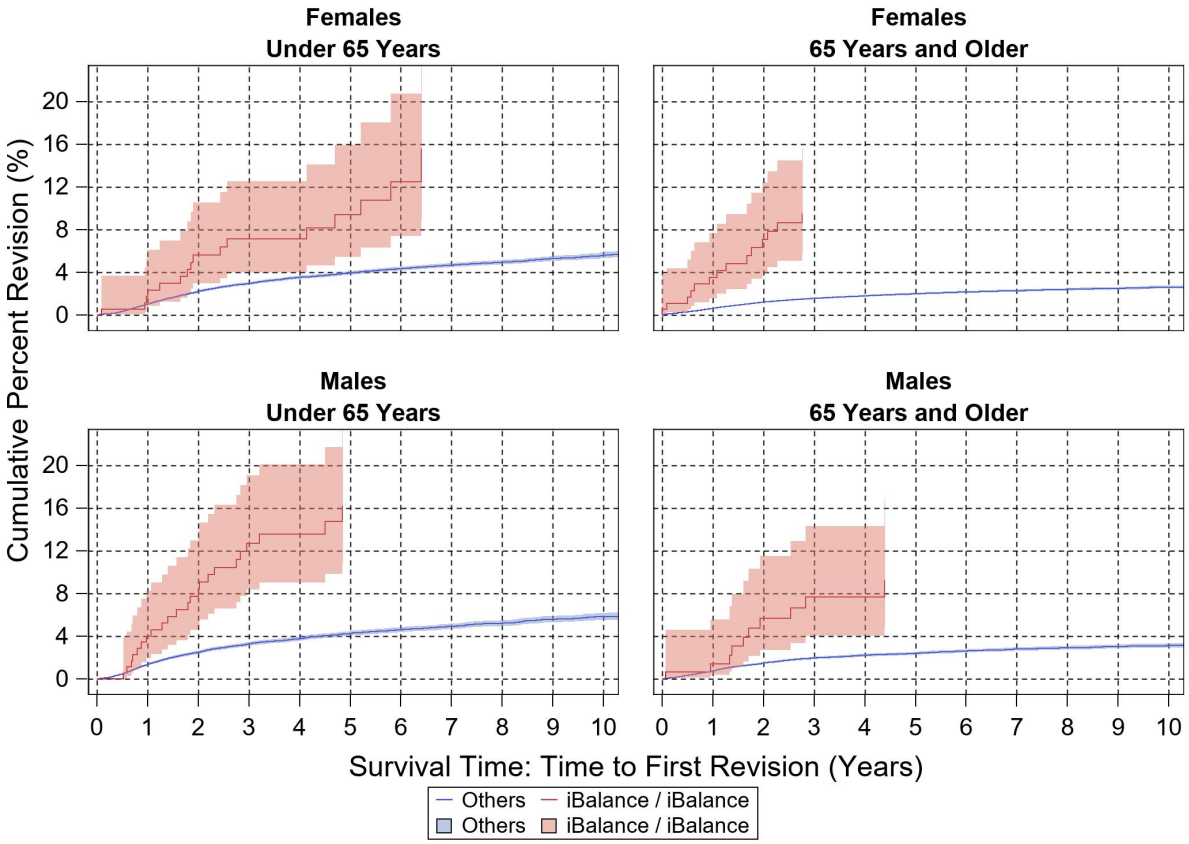


Figure 377. Cumulative Percent Revision Curve for the iBalance/iBalance Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1071. Cumulative Percent Revision and Number at Risk for the iBalance/iBalance Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	711	0.00 (0.00,0.00)	191	0.00 (0.00,0.00)	182	0.00 (0.00,0.00)	183	0.00 (0.00,0.00)	155	0.00 (0.00,0.00)
1	608	2.91 (1.86,4.52)	162	2.33 (0.88,6.10)	152	3.52 (1.60,7.68)	164	4.02 (1.94,8.25)	130	1.42 (0.36,5.58)
2	504	6.75 (5.01,9.07)	138	5.61 (2.95,10.53)	121	7.07 (3.96,12.46)	139	8.42 (5.07,13.82)	106	5.66 (2.73,11.54)
3	418	9.39 (7.25,12.11)	116	7.14 (4.00,12.56)	99	9.51 (5.70,15.63)	114	12.72 (8.37,19.09)	89	7.67 (4.04,14.32)
4	318	9.62 (7.45,12.37)	91	7.14 (4.00,12.56)	73	9.51 (5.70,15.63)	86	13.55 (9.01,20.12)	68	7.67 (4.04,14.32)
5	218	11.31 (8.80,14.47)	69	9.39 (5.45,15.93)	50	9.51 (5.70,15.63)	51	16.21 (10.83,23.87)	48	9.24 (4.96,16.86)
6	127	12.32 (9.55,15.83)	43	12.50 (7.38,20.74)	31	9.51 (5.70,15.63)	22	16.21 (10.83,23.87)	31	9.24 (4.96,16.86)
7	36	13.43 (10.12,17.72)	12	15.62 (8.86,26.73)	12	9.51 (5.70,15.63)	*	16.21 (10.83,23.87)	*	9.24 (4.96,16.86)
8	36	13.43 (10.12,17.72)	12	15.62 (8.86,26.73)	12	9.51 (5.70,15.63)	*	16.21 (10.83,23.87)	*	9.24 (4.96,16.86)
9	23	13.43 (10.12,17.72)	*	15.62 (8.86,26.73)	*	9.51 (5.70,15.63)	*	16.21 (10.83,23.87)	*	9.24 (4.96,16.86)
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 1072. Reasons for First Revision Following Primary TKA for iBalance/iBalance Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	23	36.5
2	Aseptic Loosening	18	28.6
3	Joint Infection	10	15.9
4	Arthrofibrosis	4	6.3
5	Implant Failure	2	3.2
6	Pain	2	3.2
7	Malalignment	1	1.6
8	Patellofemoral Joint	1	1.6
9	Peri-prosthetic fracture - Femur	1	1.6
10	Peri-prosthetic fracture - Tibia	1	1.6

Table 1073. Reasons for First Revision in the First 90 Days Following Primary TKA for iBalance/iBalance Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	2	50.0
2	Aseptic Loosening	1	25.0
3	Joint Infection	1	25.0

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Table 1074. Reasons for First Revision Between 91 and 365 days Following Primary TKA for iBalance/iBalance Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	7	46.7
2	Arthrofibrosis	3	20.0
3	Joint Infection	2	13.3
4	Aseptic Loosening	1	6.7
5	Implant Failure	1	6.7
6	Malalignment	1	6.7

Table 1075. Descriptive Statistics of Cases Receiving the iBalance/iBalance Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	375	52.6	
Age (years)	713	63.7 (9.3)	64 (13)
Height (cm)	713	170.2 (10.9)	170.2 (15.2)
Weight (kg)	713	92.7 (20.8)	91.2 (28.1)
BMI(kg/m^2)	713	31.9 (6)	31.2 (8)
Smoker - Never (%)	413	57.9	
Smoker - Previous (%)	210	29.5	
Smoker - Current (%)	84	11.8	
Smoker - Unknown (%)	6	0.8	

Table 1076. Distribution of Approach Used for iBalance/iBalance Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	710	99.6
Mid-vastus	0	0.0
Sub-vastus	0	0.0
Lateral parapatellar	1	0.1
Missing/unknown/other	2	0.3

Table 1077. Distribution of Polyethylene Used for iBalance/iBalance Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	353	49.5
XLPE	0	0.0
Antioxidant XLPE	129	18.1
Missing/unknown/other	231	32.4

Table 1078. Volume of Cases by Surgeon and Site for the iBalance/iBalance Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	101 (247)	2 (43)
Cases per site	89 (181)	2 (89)

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The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

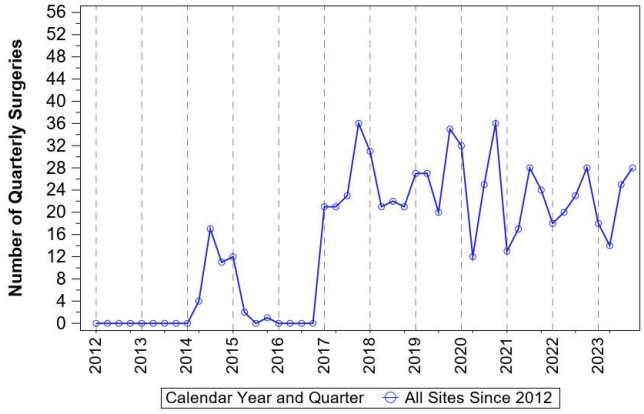


Figure 378. Utilization of the iBalance/iBalance Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

AR5174R	AR5172R	AR5167R
AR5175R	AR5166R	AR5168L
AR5175L	AR5179L	AR5162R
AR5177L	AR5165L	AR5163R
AR5174L	AR5164R	AR5166L
AR5176L	AR5172L	AR51710R
AR5176R	AR5165R	AR51710L
AR5178R	AR5167L	AR5171R
AR5173R	AR5179R	AR51610L
AR5178L	AR5163L	AR5162L
AR5173L	AR5164L	AR5169L
AR5177R	AR5168R	

Catalog Numbers of Tibial Components Used in the Analysis

AR513T4	AR513T9	AR503TTTH
AR513T5	AR513T2	AR503TTTJ
AR513T6	AR503TTTF	AR513T1
AR513T7	AR513T10	AR503TTTC
AR513T3	AR503TTTE	AR503TTTD
AR513T8	AR503TTTG	

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4.5.8 iTotal

N = 756 primary cases were used for this analysis. Distribution of utilization: 15 surgeons across 12 sites used this implant combination in primary TKA cases.

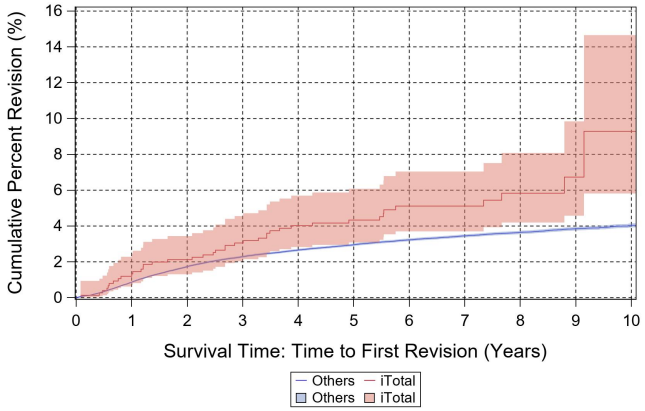


Figure 379. Cumulative Percent Revision Curve for the iTotal Combination, Compared to All Other Implant Combinations in Primary TKA Cases

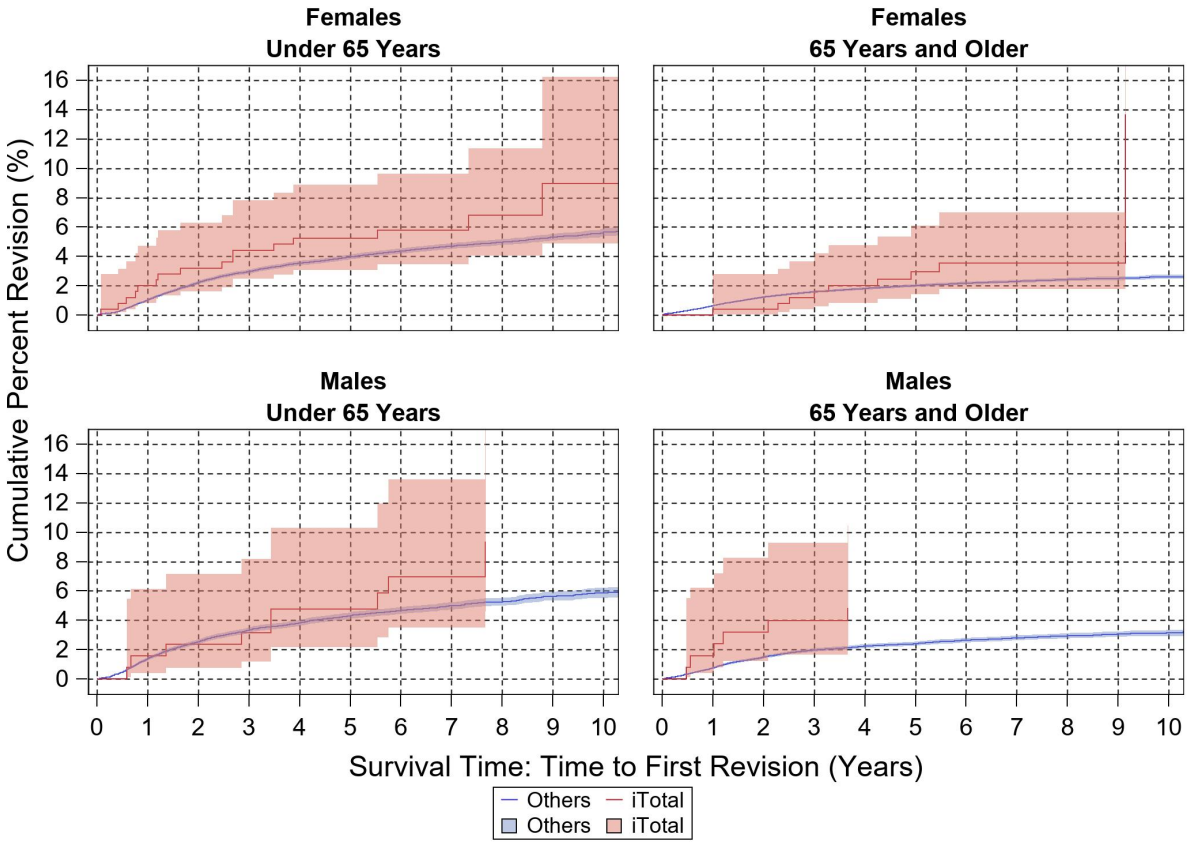


Figure 380. Cumulative Percent Revision Curve for the iTotal Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1079. Cumulative Percent Revision and Number at Risk for the iTotal Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	754	0.00 (0.00,0.00)	250	0.00 (0.00,0.00)	251	0.00 (0.00,0.00)	127	0.00 (0.00,0.00)	126	0.00 (0.00,0.00)
1	745	1.19 (0.62,2.28)	245	2.00 (0.84,4.74)	251	0.00 (0.00,0.00)	125	1.57 (0.40,6.15)	124	1.59 (0.40,6.20)
2	738	2.12 (1.31,3.44)	242	3.20 (1.61,6.30)	250	0.40 (0.06,2.79)	124	2.36 (0.77,7.14)	122	3.17 (1.20,8.24)
3	723	3.05 (2.04,4.56)	235	4.40 (2.46,7.80)	248	1.20 (0.39,3.66)	122	3.16 (1.20,8.19)	118	3.97 (1.67,9.27)
4	670	4.02 (2.83,5.70)	218	5.25 (3.08,8.87)	234	2.00 (0.84,4.75)	113	4.77 (2.17,10.31)	105	4.83 (2.20,10.45)
5	566	4.33 (3.08,6.07)	196	5.25 (3.08,8.87)	190	2.94 (1.41,6.08)	94	4.77 (2.17,10.31)	86	4.83 (2.20,10.45)
6	441	5.11 (3.70,7.04)	147	5.80 (3.46,9.62)	148	3.53 (1.76,6.98)	77	6.97 (3.51,13.59)	69	4.83 (2.20,10.45)
7	342	5.11 (3.70,7.04)	113	5.80 (3.46,9.62)	113	3.53 (1.76,6.98)	57	6.97 (3.51,13.59)	59	4.83 (2.20,10.45)
8	187	5.83 (4.19,8.08)	68	6.80 (4.03,11.35)	58	3.53 (1.76,6.98)	30	9.36 (4.61,18.48)	31	4.83 (2.20,10.45)
9	83	6.73 (4.58,9.84)	33	8.97 (4.86,16.24)	22	3.53 (1.76,6.98)	15	9.36 (4.61,18.48)	13	4.83 (2.20,10.45)
10	28	9.28 (5.81,14.66)	11	8.97 (4.86,16.24)	*	13.68 (4.96,34.66)	*	9.36 (4.61,18.48)	*	4.83 (2.20,10.45)

* Denotes that the number of cases is between 1 and 10.

Table 1080. Reasons for First Revision Following Primary TKA for iTotal Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	15	36.6
2	Dislocation/Instability	15	36.6
3	Pain	4	9.8
4	Implant Failure	2	4.9
5	Metal Reaction/Metallosis	2	4.9
6	Arthrofibrosis	1	2.4
7	Malalignment	1	2.4
8	Patellofemoral Joint	1	2.4

Table 1081. Reasons for First Revision in the First 90 Days Following Primary TKA for iTotal Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	100.0

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Table 1082. Reasons for First Revision Between 91 and 365 days Following Primary TKA for iTotal Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	2	25.0
2	Dislocation/Instability	2	25.0
3	Metal Reaction/Metallosis	1	12.5
4	Pain	1	12.5
5	Malalignment	1	12.5
6	Arthrofibrosis	1	12.5

Table 1083. Descriptive Statistics of Cases Receiving the iTotal Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	503	66.5	
Age (years)	756	64.4 (8.9)	65 (11)
Height (cm)	756	168.1 (10.1)	167.6 (15.3)
Weight (kg)	756	93.1 (22.4)	90.7 (27.5)
BMI(kg/m^2)	756	32.9 (7)	32 (8.7)
Smoker - Never (%)	412	54.5	
Smoker - Previous (%)	283	37.4	
Smoker - Current (%)	60	7.9	
Smoker - Unknown (%)	1	0.1	

Table 1084. Distribution of Approach Used for iTotal Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	529	70.0
Mid-vastus	214	28.3
Sub-vastus	0	0.0
Lateral parapatellar	0	0.0
Missing/unknown/other	13	1.7

Table 1085. Volume of Cases by Surgeon and Site for the iTotal Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	50 (82)	7 (70)
Cases per site	63 (91)	18 (78)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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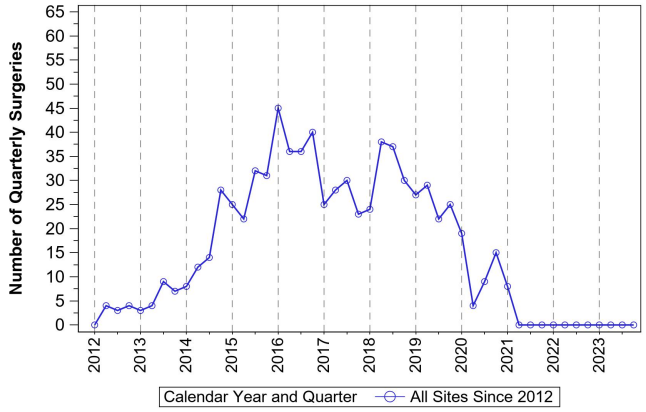


Figure 381. Utilization of the iTotal Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

TCR1111111FI	M57250600020FI
TPS1111111FI	M57250600010FI

Catalog Numbers of Tibial Components Used in the Analysis

TCR1111111TT	M57250600020TT
TPS1111111TT	M57250600010TT

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4.5.9 iTotal G2+

N = 733 primary cases were used for this analysis. Distribution of utilization: 13 surgeons across 12 sites used this implant combination in primary TKA cases.

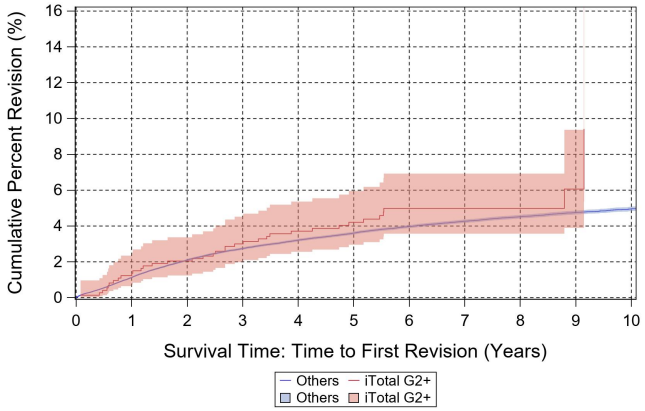


Figure 382. Cumulative Percent Revision Curve for the iTotal G2+ Combination, Compared to All Other Implant Combinations in Primary TKA Cases

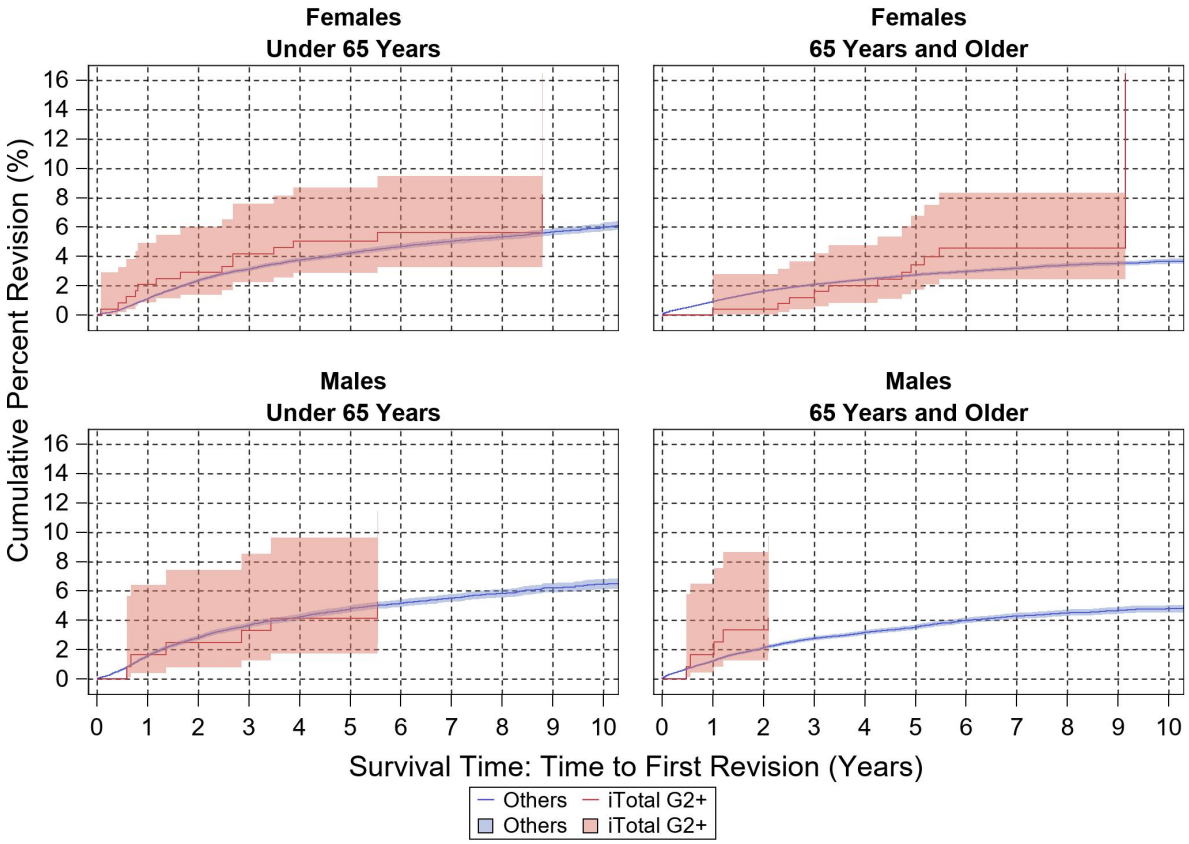


Figure 383. Cumulative Percent Revision Curve for the iTotal G2+ Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1086. Cumulative Percent Revision and Number at Risk for the iTotal G2+ Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	733	0.00 (0.00,0.00)	241	0.00 (0.00,0.00)	250	0.00 (0.00,0.00)	122	0.00 (0.00,0.00)	120	0.00 (0.00,0.00)
1	724	1.23 (0.64,2.35)	236	2.07 (0.87,4.91)	250	0.00 (0.00,0.00)	120	1.64 (0.41,6.40)	118	1.67 (0.42,6.50)
2	718	2.05 (1.24,3.37)	234	2.90 (1.40,6.00)	249	0.40 (0.06,2.81)	119	2.46 (0.80,7.43)	116	3.33 (1.26,8.64)
3	703	3.00 (1.99,4.52)	227	4.15 (2.25,7.57)	247	1.20 (0.39,3.67)	117	3.29 (1.25,8.52)	112	4.17 (1.76,9.72)
4	652	3.71 (2.56,5.37)	210	5.03 (2.89,8.69)	233	2.01 (0.84,4.77)	109	4.13 (1.74,9.63)	100	4.17 (1.76,9.72)
5	547	4.20 (2.96,5.96)	188	5.03 (2.89,8.69)	188	3.43 (1.72,6.76)	90	4.13 (1.74,9.63)	81	4.17 (1.76,9.72)
6	422	4.98 (3.57,6.93)	139	5.61 (3.28,9.49)	145	4.55 (2.45,8.34)	74	5.27 (2.38,11.44)	64	4.17 (1.76,9.72)
7	323	4.98 (3.57,6.93)	105	5.61 (3.28,9.49)	110	4.55 (2.45,8.34)	54	5.27 (2.38,11.44)	54	4.17 (1.76,9.72)
8	170	4.98 (3.57,6.93)	61	5.61 (3.28,9.49)	55	4.55 (2.45,8.34)	28	5.27 (2.38,11.44)	26	4.17 (1.76,9.72)
9	66	6.06 (3.90,9.37)	26	8.23 (4.01,16.48)	19	4.55 (2.45,8.34)	13	5.27 (2.38,11.44)	*	4.17 (1.76,9.72)
10	11	9.42 (5.36,16.26)	*	8.23 (4.01,16.48)	*	16.48 (6.16,39.95)	*	5.27 (2.38,11.44)	*	4.17 (1.76,9.72)

* Denotes that the number of cases is between 1 and 10.

Table 1087. Reasons for First Revision Following Primary TKA for iTotal G2+ Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	14	40.0
2	Aseptic Loosening	13	37.1
3	Pain	3	8.6
4	Metal Reaction/Metallosis	2	5.7
5	Arthrofibrosis	1	2.9
6	Implant Failure	1	2.9
7	Malalignment	1	2.9

Table 1088. Reasons for First Revision in the First 90 Days Following Primary TKA for iTotal G2+ Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	100.0

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Table 1089. Reasons for First Revision Between 91 and 365 days Following Primary TKA for iTotal G2+ Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	2	25.0
2	Dislocation/Instability	2	25.0
3	Metal Reaction/Metallosis	1	12.5
4	Pain	1	12.5
5	Malalignment	1	12.5
6	Arthrofibrosis	1	12.5

Table 1090. Descriptive Statistics of Cases Receiving the iTotal G2+ Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	491	67	
Age (years)	733	64.4 (8.9)	65 (11)
Height (cm)	733	168.1 (10.1)	167.6 (15.3)
Weight (kg)	733	93 (22.6)	90.4 (27.9)
BMI(kg/m^2)	733	32.8 (7)	31.9 (8.6)
Smoker - Never (%)	398	54.3	
Smoker - Previous (%)	276	37.7	
Smoker - Current (%)	58	7.9	
Smoker - Unknown (%)	1	0.1	

Table 1091. Distribution of Approach Used for iTotal G2+ Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	513	70.0
Mid-vastus	209	28.5
Sub-vastus	0	0.0
Lateral parapatellar	0	0.0
Missing/unknown/other	11	1.5

Table 1092. Volume of Cases by Surgeon and Site for the iTotal G2+ Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	56 (86)	7 (69)
Cases per site	61 (91)	14 (76)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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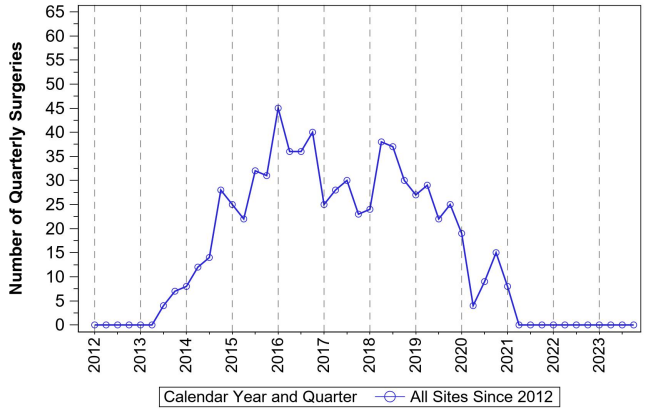


Figure 384. Utilization of the iTotal G2+ Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

TCR1111111FI	M57250600020FI
TPS1111111FI	M57250600010FI

Catalog Numbers of Tibial Components Used in the Analysis

TCR1111111TT	M57250600020TT
TPS1111111TT	M57250600010TT

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4.5.10 Journey II/Journey

N = 1,511 primary cases were used for this analysis. Distribution of utilization: 66 surgeons across 42 sites used this implant combination in primary TKA cases.

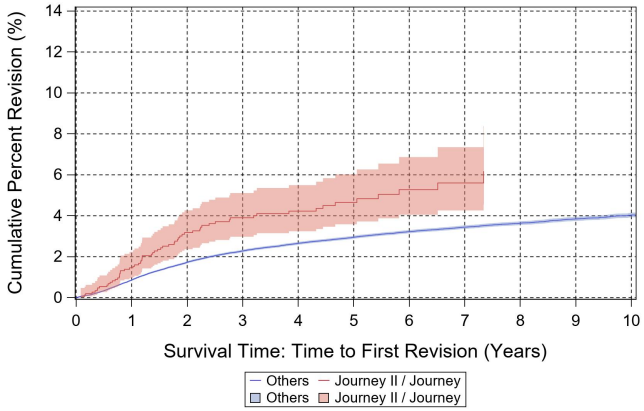


Figure 385. Cumulative Percent Revision Curve for the Journey II/Journey Combination, Compared to All Other Implant Combinations in Primary TKA Cases

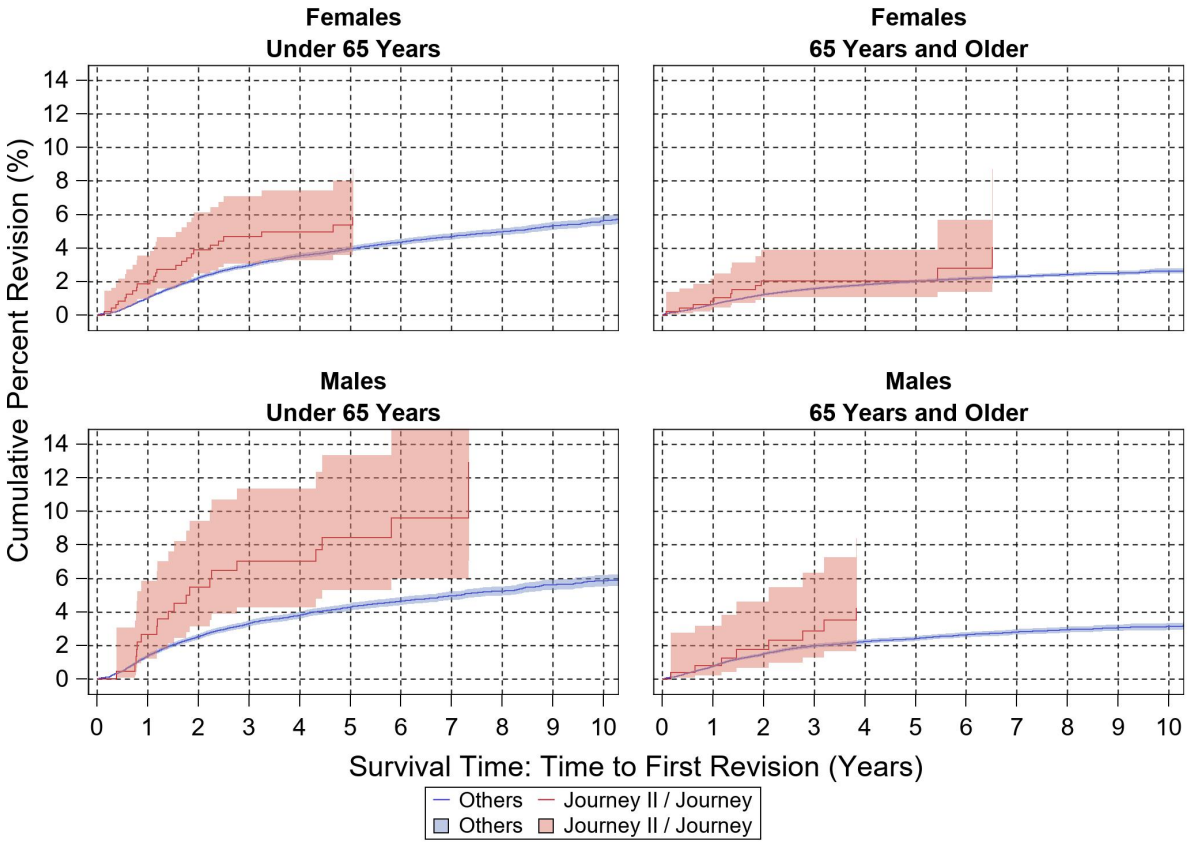


Figure 386. Cumulative Percent Revision Curve for the Journey II/Journey Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1093. Cumulative Percent Revision and Number at Risk for the Journey II/Journey Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,504	0.00 (0.00,0.00)	496	0.00 (0.00,0.00)	516	0.00 (0.00,0.00)	231	0.00 (0.00,0.00)	261	0.00 (0.00,0.00)
1	1,365	1.46 (0.95,2.23)	461	1.86 (0.97,3.55)	460	0.82 (0.31,2.17)	216	2.66 (1.21,5.83)	228	0.80 (0.20,3.15)
2	1,144	3.18 (2.37,4.27)	400	3.90 (2.47,6.12)	370	2.03 (1.06,3.87)	194	5.47 (3.14,9.43)	180	1.74 (0.65,4.59)
3	974	3.90 (2.97,5.11)	350	4.66 (3.06,7.08)	298	2.03 (1.06,3.87)	167	7.01 (4.28,11.37)	159	2.87 (1.29,6.33)
4	786	4.23 (3.24,5.50)	289	4.95 (3.28,7.44)	236	2.03 (1.06,3.87)	138	7.01 (4.28,11.37)	123	4.23 (2.10,8.40)
5	541	4.65 (3.58,6.03)	202	5.36 (3.57,8.02)	153	2.03 (1.06,3.87)	107	8.44 (5.29,13.34)	79	4.23 (2.10,8.40)
6	369	5.28 (4.05,6.87)	143	5.85 (3.90,8.74)	108	2.80 (1.37,5.68)	65	9.60 (6.00,15.19)	53	4.23 (2.10,8.40)
7	215	5.60 (4.26,7.35)	90	5.85 (3.90,8.74)	57	4.04 (1.86,8.69)	35	9.60 (6.00,15.19)	33	4.23 (2.10,8.40)
8	92	6.18 (4.54,8.38)	45	5.85 (3.90,8.74)	19	4.04 (1.86,8.69)	16	12.95 (7.04,23.16)	12	4.23 (2.10,8.40)
9	19	6.18 (4.54,8.38)	*	5.85 (3.90,8.74)	*	4.04 (1.86,8.69)	*	12.95 (7.04,23.16)	*	4.23 (2.10,8.40)
10	*	6.18 (4.54,8.38)	*	5.85 (3.90,8.74)	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 1094. Reasons for First Revision Following Primary TKA for Journey II/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	28	45.2
2	Joint Infection	10	16.1
3	Aseptic Loosening	8	12.9
4	Arthrofibrosis	7	11.3
5	Pain	6	9.7
6	Implant Failure	1	1.6
7	Malalignment	1	1.6
8	Metal Reaction/Metallosis	1	1.6

Table 1095. Reasons for First Revision in the First 90 Days Following Primary TKA for Journey II/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	33.3
2	Dislocation/Instability	1	33.3
3	Joint Infection	1	33.3

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Table 1096. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Journey II/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	7	38.9
2	Joint Infection	5	27.8
3	Arthrofibrosis	3	16.7
4	Aseptic Loosening	2	11.1
5	Pain	1	5.6

Table 1097. Descriptive Statistics of Cases Receiving the Journey II/Journey Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,014	67.1	
Age (years)	1,511	65 (9.2)	65 (12)
Height (cm)	1,510	167.9 (10.5)	167.2 (15.2)
Weight (kg)	1,510	96.2 (21.9)	94.4 (27.9)
BMI(kg/m^2)	1,510	34.1 (7)	33.4 (9.4)
Smoker - Never (%)	704	46.6	
Smoker - Previous (%)	591	39.1	
Smoker - Current (%)	196	13	
Smoker - Unknown (%)	20	1.3	

Table 1098. Distribution of Approach Used for Journey II/Journey Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	1,449	95.9
Mid-vastus	48	3.2
Sub-vastus	7	0.5
Lateral parapatellar	3	0.2
Missing/unknown/other	4	0.3

Table 1099. Distribution of Polyethylene Used for Journey II/Journey Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,485	98.3
Antioxidant XLPE	0	0.0
Missing/unknown/other	26	1.7

Table 1100. Volume of Cases by Surgeon and Site for the Journey II/Journey Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	22 (53)	5 (17)
Cases per site	36 (72)	12 (37)

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The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

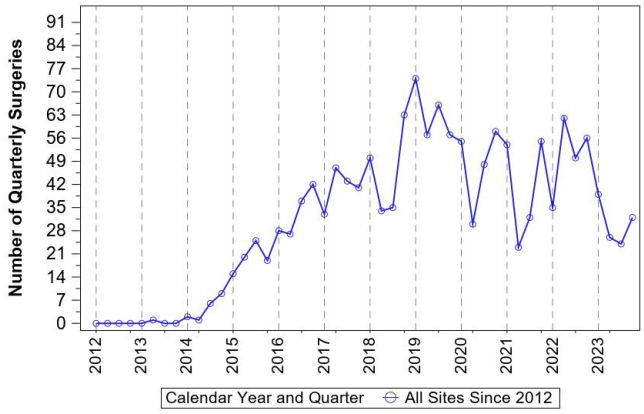


Figure 387. Utilization of the Journey II/Journey Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

74021155	74021163	74021255
74021165	74021153	74021254
74021154	74021158	74021257
74021164	74021168	74021265
74021156	74021169	74021266
74021166	74021159	74021267
74021167	74021160	74021268
74021157	74021162	

Catalog Numbers of Tibial Components Used in the Analysis

74022214	74022216	74022218
74022224	74022226	74022228
74022223	74022227	74022221
74022213	74022217	74022211
74022225	74022222	
74022215	74022212	

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4.5.11 Journey II (Oxinium)/Journey

N = 1,503 primary cases were used for this analysis. Distribution of utilization: 66 surgeons across 42 sites used this implant combination in primary TKA cases.

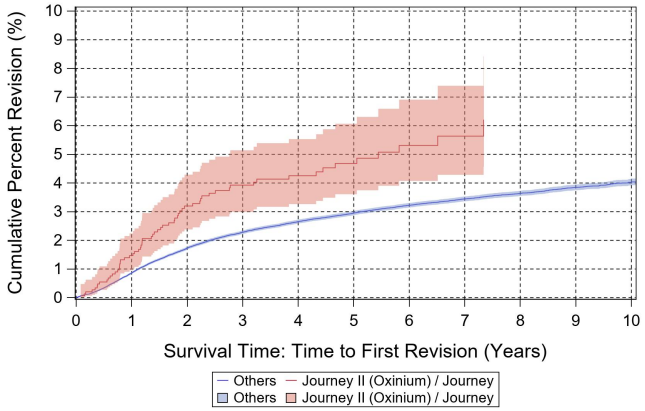


Figure 388. Cumulative Percent Revision Curve for the Journey II (Oxinium)/Journey Combination, Compared to All Other Implant Combinations in Primary TKA Cases

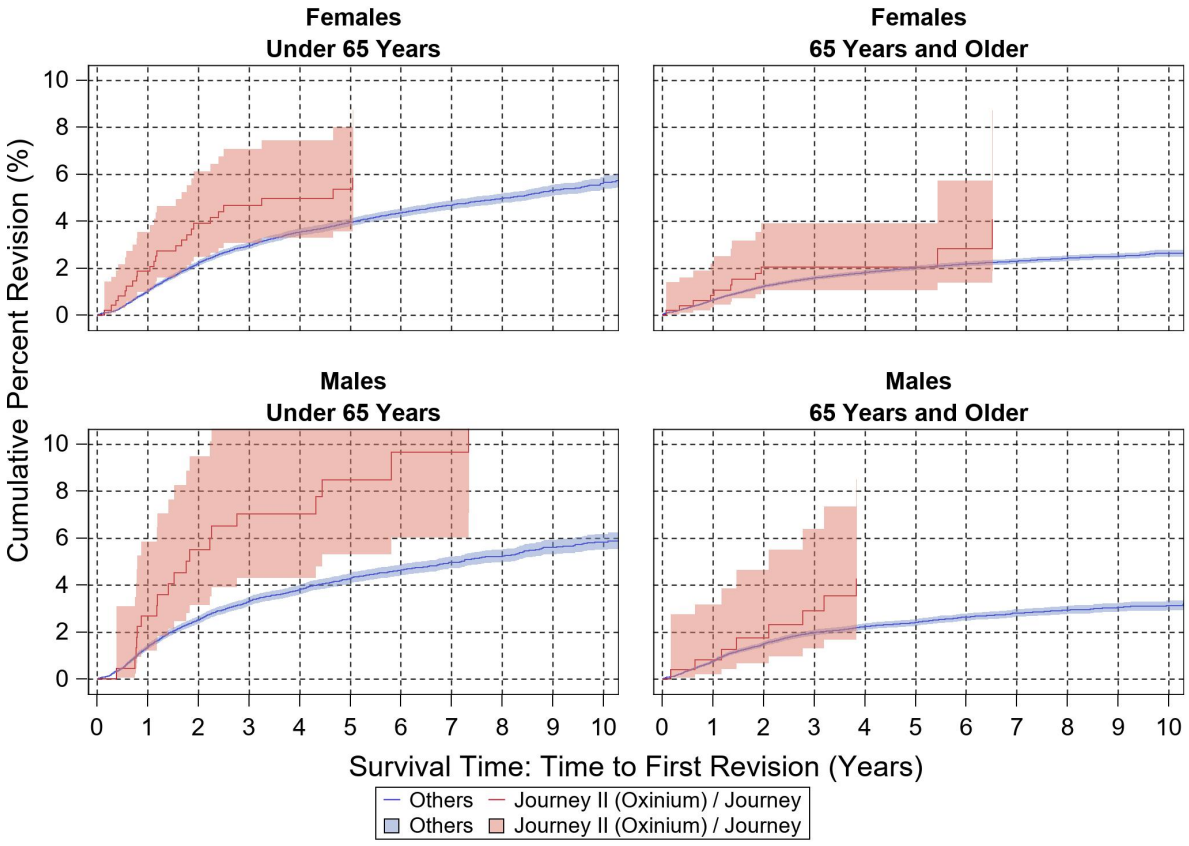


Figure 389. Cumulative Percent Revision Curve for the Journey II (Oxinium)/Journey Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1101. Cumulative Percent Revision and Number at Risk for the Journey II (Oxinium)/Journey Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,496	0.00 (0.00,0.00)	496	0.00 (0.00,0.00)	511	0.00 (0.00,0.00)	230	0.00 (0.00,0.00)	259	0.00 (0.00,0.00)
1	1,357	1.47 (0.96,2.24)	461	1.86 (0.97,3.55)	455	0.83 (0.31,2.19)	215	2.67 (1.21,5.86)	226	0.80 (0.20,3.18)
2	1,136	3.20 (2.38,4.29)	400	3.90 (2.47,6.12)	365	2.05 (1.07,3.92)	193	5.49 (3.16,9.48)	178	1.76 (0.66,4.63)
3	966	3.93 (2.99,5.14)	350	4.66 (3.06,7.08)	293	2.05 (1.07,3.92)	166	7.04 (4.30,11.42)	157	2.90 (1.30,6.39)
4	778	4.25 (3.26,5.53)	289	4.95 (3.28,7.44)	231	2.05 (1.07,3.92)	137	7.04 (4.30,11.42)	121	4.27 (2.13,8.50)
5	538	4.68 (3.61,6.07)	202	5.36 (3.57,8.02)	151	2.05 (1.07,3.92)	107	8.49 (5.32,13.41)	78	4.27 (2.13,8.50)
6	369	5.31 (4.07,6.91)	143	5.85 (3.90,8.74)	108	2.82 (1.38,5.71)	65	9.64 (6.02,15.25)	53	4.27 (2.13,8.50)
7	215	5.64 (4.29,7.39)	90	5.85 (3.90,8.74)	57	4.07 (1.87,8.71)	35	9.64 (6.02,15.25)	33	4.27 (2.13,8.50)
8	92	6.21 (4.57,8.41)	45	5.85 (3.90,8.74)	19	4.07 (1.87,8.71)	16	12.99 (7.07,23.20)	12	4.27 (2.13,8.50)
9	19	6.21 (4.57,8.41)	*	5.85 (3.90,8.74)	*	4.07 (1.87,8.71)	*	12.99 (7.07,23.20)	*	4.27 (2.13,8.50)
10	*	6.21 (4.57,8.41)	*	5.85 (3.90,8.74)	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 1102. Reasons for First Revision Following Primary TKA for Journey II (Oxinium)/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	28	45.2
2	Joint Infection	10	16.1
3	Aseptic Loosening	8	12.9
4	Arthrofibrosis	7	11.3
5	Pain	6	9.7
6	Implant Failure	1	1.6
7	Malalignment	1	1.6
8	Metal Reaction/Metallosis	1	1.6

Table 1103. Reasons for First Revision in the First 90 Days Following Primary TKA for Journey II (Oxinium)/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	33.3
2	Dislocation/Instability	1	33.3
3	Joint Infection	1	33.3

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Table 1104. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Journey II (Oxinium)/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	7	38.9
2	Joint Infection	5	27.8
3	Arthrofibrosis	3	16.7
4	Aseptic Loosening	2	11.1
5	Pain	1	5.6

Table 1105. Descriptive Statistics of Cases Receiving the Journey II (Oxinium)/Journey Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,009	67.1	
Age (years)	1,503	64.9 (9.2)	65 (12)
Height (cm)	1,502	167.9 (10.5)	167.2 (15.2)
Weight (kg)	1,502	96.2 (21.9)	94.3 (27.9)
BMI(kg/m^2)	1,502	34.1 (7)	33.3 (9.4)
Smoker - Never (%)	702	46.7	
Smoker - Previous (%)	585	38.9	
Smoker - Current (%)	196	13	
Smoker - Unknown (%)	20	1.3	

Table 1106. Distribution of Approach Used for Journey II (Oxinium)/Journey Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	1,441	95.9
Mid-vastus	48	3.2
Sub-vastus	7	0.5
Lateral parapatellar	3	0.2
Missing/unknown/other	4	0.3

Table 1107. Distribution of Polyethylene Used for Journey II (Oxinium)/Journey Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,477	98.3
Antioxidant XLPE	0	0.0
Missing/unknown/other	26	1.7

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Table 1108. Volume of Cases by Surgeon and Site for the Journey II (Oxinium)/Journey Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	22 (53)	5 (15)
Cases per site	35 (72)	11 (37)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

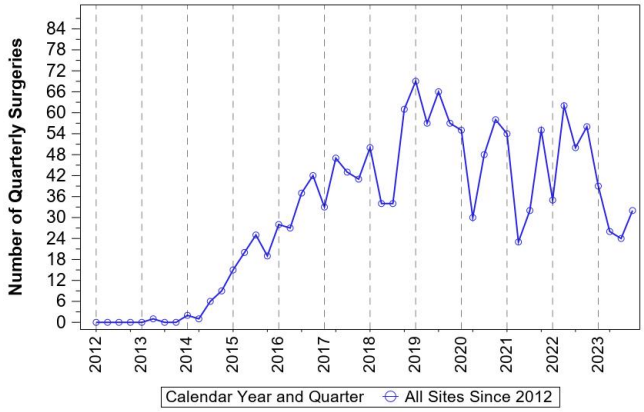


Figure 390. Utilization of the Journey II (Oxinium)/Journey Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

74021155	74021167	74021169
74021165	74021157	74021159
74021154	74021163	74021160
74021164	74021153	74021162
74021156	74021158	
74021166	74021168	

Catalog Numbers of Tibial Components Used in the Analysis

74022214	74022216	74022218
74022224	74022226	74022228
74022223	74022227	74022221
74022213	74022217	74022211
74022225	74022222	
74022215	74022212	

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4.5.12 Journey II BCS/Journey

N = 7,115 primary cases were used for this analysis. Distribution of utilization: 99 surgeons across 54 sites used this implant combination in primary TKA cases.

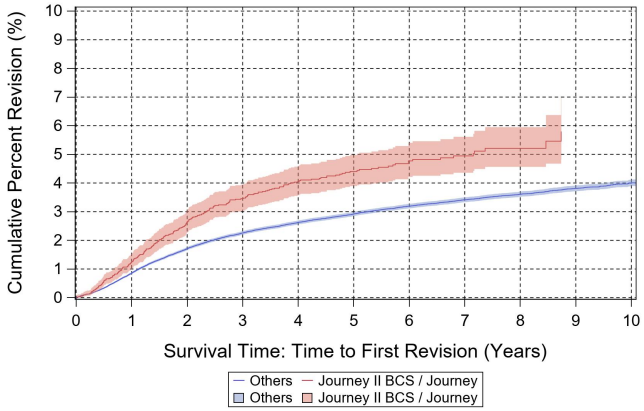


Figure 391. Cumulative Percent Revision Curve for the Journey II BCS/Journey Combination, Compared to All Other Implant Combinations in Primary TKA Cases

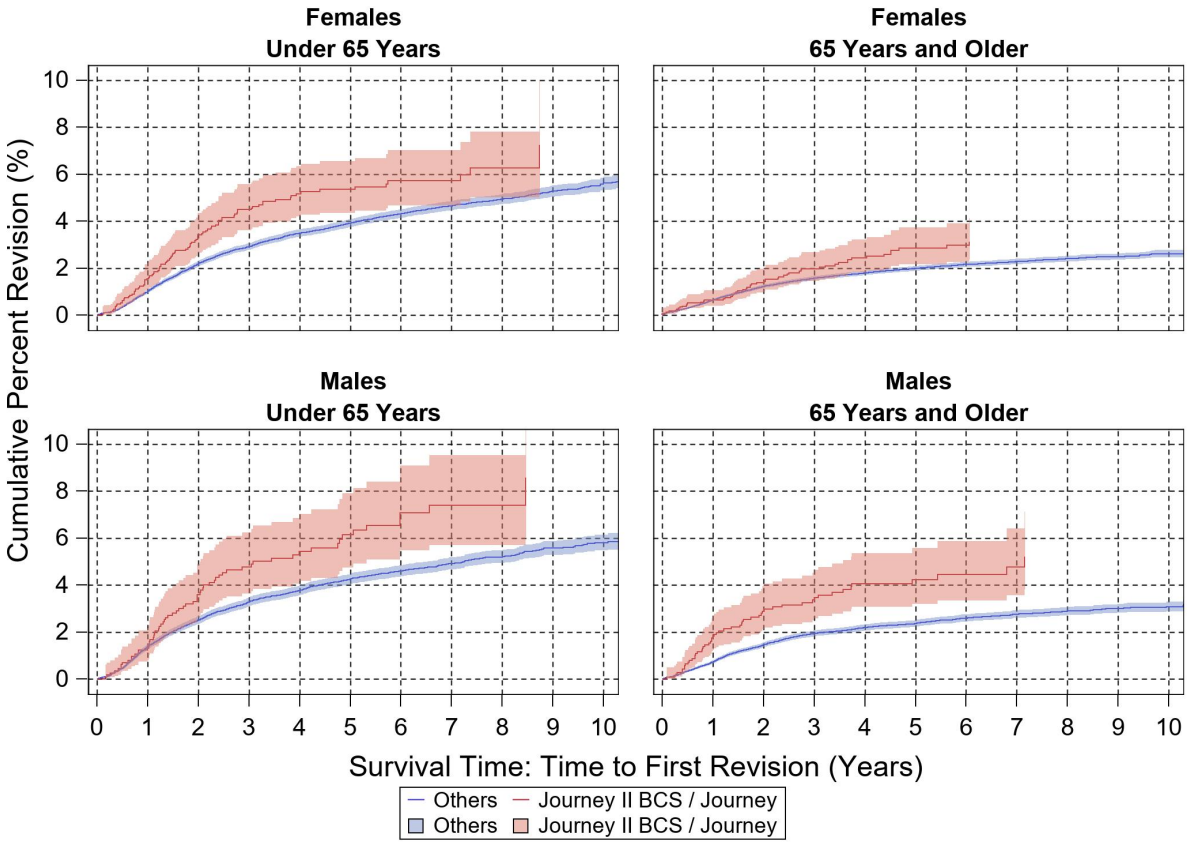


Figure 392. Cumulative Percent Revision Curve for the Journey II BCS/Journey Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1109. Cumulative Percent Revision and Number at Risk for the Journey II BCS/Journey Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	7,088	0.00 (0.00,0.00)	1,974	0.00 (0.00,0.00)	2,455	0.00 (0.00,0.00)	1,187	0.00 (0.00,0.00)	1,465	0.00 (0.00,0.00)
1	6,331	1.25 (1.01,1.55)	1,779	1.55 (1.08,2.23)	2,168	0.64 (0.39,1.06)	1,086	1.31 (0.79,2.17)	1,293	1.82 (1.23,2.68)
2	5,602	2.64 (2.27,3.07)	1,599	3.41 (2.66,4.36)	1,929	1.37 (0.96,1.96)	965	3.59 (2.63,4.88)	1,108	2.89 (2.11,3.95)
3	4,740	3.45 (3.02,3.94)	1,383	4.49 (3.61,5.58)	1,643	1.97 (1.45,2.67)	793	4.76 (3.62,6.24)	921	3.36 (2.50,4.51)
4	3,882	4.06 (3.58,4.60)	1,128	5.17 (4.20,6.35)	1,371	2.43 (1.83,3.22)	645	5.43 (4.18,7.03)	738	4.06 (3.07,5.36)
5	2,854	4.40 (3.89,4.98)	878	5.34 (4.35,6.55)	949	2.85 (2.17,3.74)	490	6.13 (4.75,7.90)	537	4.23 (3.20,5.58)
6	1,994	4.77 (4.21,5.40)	634	5.73 (4.66,7.02)	638	2.98 (2.26,3.91)	351	7.07 (5.47,9.10)	371	4.44 (3.35,5.87)
7	1,263	4.95 (4.36,5.61)	410	5.73 (4.66,7.02)	378	3.13 (2.37,4.13)	238	7.38 (5.70,9.53)	237	4.78 (3.55,6.41)
8	569	5.21 (4.56,5.95)	194	6.27 (5.02,7.81)	146	3.13 (2.37,4.13)	118	7.38 (5.70,9.53)	111	5.22 (3.80,7.14)
9	222	5.80 (4.82,6.97)	79	7.24 (5.23,9.99)	61	3.13 (2.37,4.13)	45	8.57 (6.04,12.09)	37	5.22 (3.80,7.14)
10	62	5.80 (4.82,6.97)	24	7.24 (5.23,9.99)	14	3.13 (2.37,4.13)	16	8.57 (6.04,12.09)	*	5.22 (3.80,7.14)

* Denotes that the number of cases is between 1 and 10.

Table 1110. Reasons for First Revision Following Primary TKA for Journey II BCS/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	82	30.6
2	Joint Infection	48	17.9
3	Aseptic Loosening	43	16.0
4	Arthrofibrosis	35	13.1
5	Pain	20	7.5
6	Implant Failure	13	4.9
7	Poly liner wear	11	4.1
8	Malalignment	7	2.6
9	Peri-prosthetic fracture - Femur	5	1.9
10	Patellofemoral Joint	3	1.1
	Unknown/missing/other	1	0.4

Table 1111. Reasons for First Revision in the First 90 Days Following Primary TKA for Journey II BCS/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	4	40.0
2	Joint Infection	2	20.0
3	Arthrofibrosis	2	20.0
4	Malalignment	1	10.0
5	Extensor mechanism failure	1	10.0

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Table 1112. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Journey II BCS/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	19	26.0
2	Joint Infection	18	24.7
3	Arthrofibrosis	18	24.7
4	Poly liner wear	4	5.5
5	Pain	4	5.5
6	Malalignment	4	5.5
7	Aseptic Loosening	3	4.1
8	Implant Failure	2	2.7
9	Patellofemoral Joint	1	1.4

Table 1113. Descriptive Statistics of Cases Receiving the Journey II BCS/Journey Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	4,443	62.5	
Age (years)	7,115	65.6 (9.4)	66 (13)
Height (cm)	7,115	168.5 (10.5)	167.6 (16)
Weight (kg)	7,115	97 (22.2)	95.3 (29.7)
BMI(kg/m^2)	7,115	34.1 (7.2)	33.3 (9.6)
Smoker - Never (%)	3,651	51.3	
Smoker - Previous (%)	2,646	37.2	
Smoker - Current (%)	782	11	
Smoker - Unknown (%)	36	0.5	

Table 1114. Distribution of Approach Used for Journey II BCS/Journey Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	6,563	92.2
Mid-vastus	519	7.3
Sub-vastus	7	0.1
Lateral parapatellar	12	0.2
Missing/unknown/other	14	0.2

Table 1115. Distribution of Polyethylene Used for Journey II BCS/Journey Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	6,767	95.1
Antioxidant XLPE	0	0.0
Missing/unknown/other	348	4.9

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Table 1116. Volume of Cases by Surgeon and Site for the Journey II BCS/Journey Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	71 (153)	7 (75)
Cases per site	131 (233)	49 (161)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

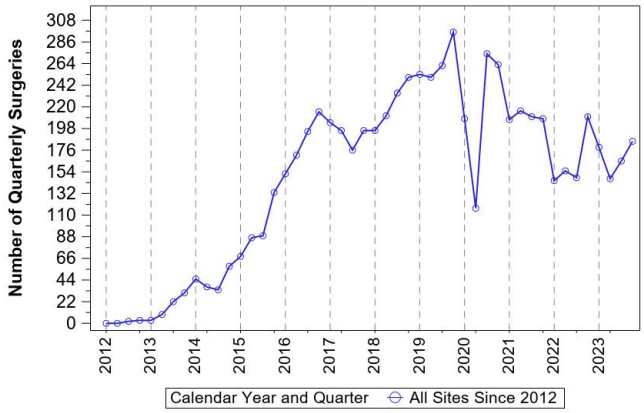


Figure 393. Utilization of the Journey II BCS/Journey Combination in Primary TKA Cases

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Catalog Numbers of Femoral Components Used in the Analysis

74022125	74022123	74024218
74022115	74024215	74024928
74022116	74024925	74024213
74022126	74024216	74024923
74022114	74024926	74022112
74022124	74024214	74022122
74022117	74024924	74022110
74022127	74022129	74022120
74022118	74022119	
74022128	74024927	
74022113	74024217	

Catalog Numbers of Tibial Components Used in the Analysis

74022224	74022216	74022218
74022214	74022226	74022228
74022213	74022227	74022211
74022223	74022217	74022221
74022215	74022222	
74022225	74022212	

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4.5.13 Journey II BCS (CoCr)/Journey

N = 1,026 primary cases were used for this analysis. Distribution of utilization: 11 surgeons across 10 sites used this implant combination in primary TKA cases.

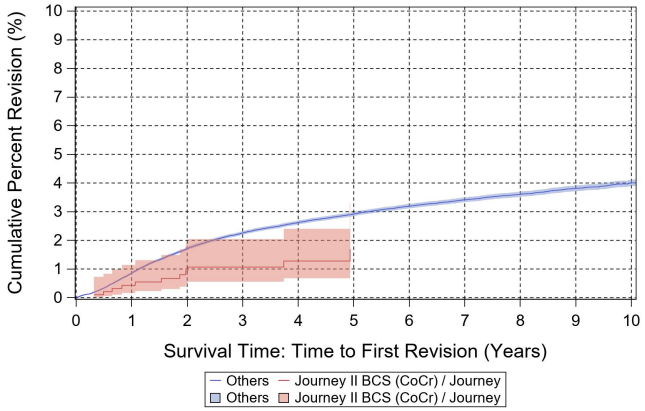


Figure 394. Cumulative Percent Revision Curve for the Journey II BCS (CoCr)/Journey Combination, Compared to All Other Implant Combinations in Primary TKA Cases

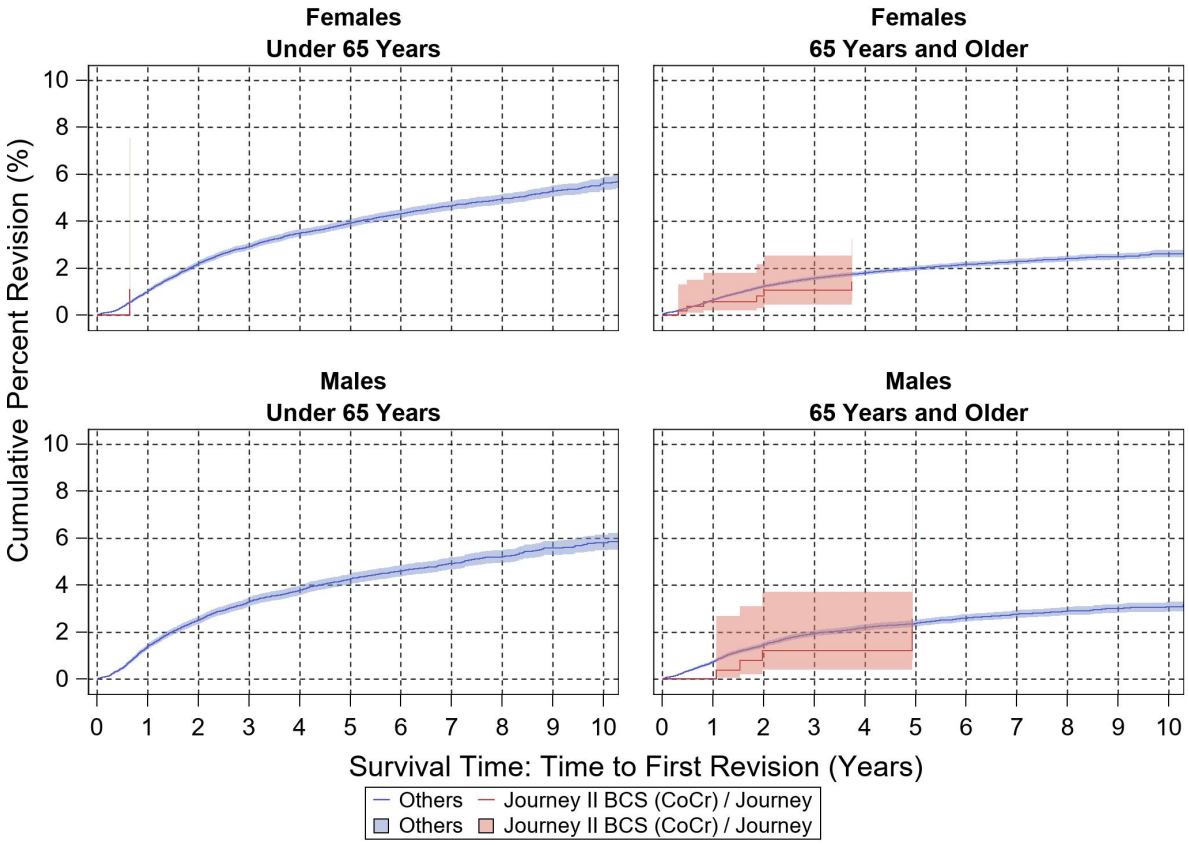


Figure 395. Cumulative Percent Revision Curve for the Journey II BCS (CoCr)/Journey Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1117. Cumulative Percent Revision and Number at Risk for the Journey II BCS (CoCr)/Journey Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,021	0.00 (0.00,0.00)	102	0.00 (0.00,0.00)	572	0.00 (0.00,0.00)	39	0.00 (0.00,0.00)	305	0.00 (0.00,0.00)
1	862	0.43 (0.16,1.14)	85	1.10 (0.16,7.54)	476	0.58 (0.19,1.78)	35	0.00 (0.00,0.00)	264	0.00 (0.00,0.00)
2	750	0.93 (0.47,1.86)	75	1.10 (0.16,7.54)	414	0.82 (0.31,2.17)	31	0.00 (0.00,0.00)	229	1.21 (0.39,3.72)
3	588	1.07 (0.55,2.05)	52	1.10 (0.16,7.54)	330	1.06 (0.44,2.53)	26	0.00 (0.00,0.00)	180	1.21 (0.39,3.72)
4	435	1.28 (0.68,2.40)	35	1.10 (0.16,7.54)	255	1.42 (0.62,3.22)	19	0.00 (0.00,0.00)	126	1.21 (0.39,3.72)
5	224	1.69 (0.86,3.32)	14	1.10 (0.16,7.54)	136	1.42 (0.62,3.22)	*	0.00 (0.00,0.00)	68	2.55 (0.80,7.93)
6	95	1.69 (0.86,3.32)	0	N/A	65	1.42 (0.62,3.22)	*	0.00 (0.00,0.00)	27	2.55 (0.80,7.93)
7	36	1.69 (0.86,3.32)	0	N/A	22	1.42 (0.62,3.22)	*	0.00 (0.00,0.00)	11	2.55 (0.80,7.93)
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 1118. Reasons for First Revision Following Primary TKA for Journey II BCS (CoCr)/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Arthrofibrosis	4	33.3
2	Dislocation/Instability	3	25.0
3	Aseptic Loosening	2	16.7
4	Joint Infection	2	16.7
5	Implant Failure	1	8.3

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1119. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Journey II BCS (CoCr)/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Arthrofibrosis	3	75.0
2	Aseptic Loosening	1	25.0

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Table 1120. Descriptive Statistics of Cases Receiving the Journey II BCS (CoCr)/Journey Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	675	65.8	
Age (years)	1,026	71.5 (7)	72 (9)
Height (cm)	1,026	166.8 (10.3)	165.1 (16.5)
Weight (kg)	1,026	95.2 (21.8)	93.3 (31.3)
BMI(kg/m^2)	1,026	34.2 (7.3)	33.4 (10.4)
Smoker - Never (%)	555	54.1	
Smoker - Previous (%)	415	40.5	
Smoker - Current (%)	55	5.4	
Smoker - Unknown (%)	0	0.0	

Table 1121. Distribution of Approach Used for Journey II BCS (CoCr)/Journey Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	1,018	99.2
Mid-vastus	5	0.5
Sub-vastus	0	0.0
Lateral parapatellar	1	0.1
Missing/unknown/other	2	0.2

Table 1122. Distribution of Polyethylene Used for Journey II BCS (CoCr)/Journey Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,006	98.1
Antioxidant XLPE	0	0.0
Missing/unknown/other	20	1.9

Table 1123. Volume of Cases by Surgeon and Site for the Journey II BCS (CoCr)/Journey Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	93 (165)	12 (142)
Cases per site	102 (206)	10 (134)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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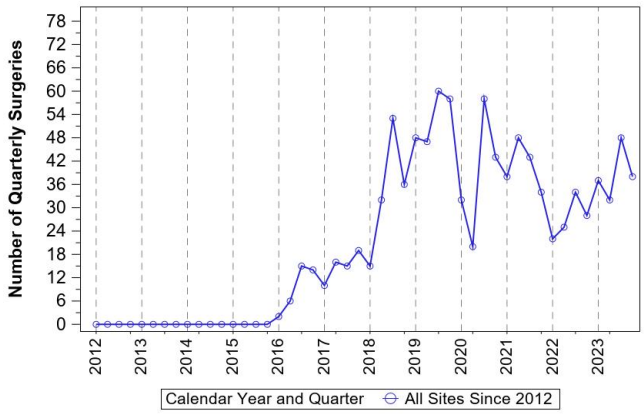


Figure 396. Utilization of the Journey II BCS (CoCr)/Journey Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

74024215	74024924	74024213
74024925	74024927	74024923
74024216	74024217	
74024926	74024218	
74024214	74024928	

Catalog Numbers of Tibial Components Used in the Analysis

74022214	74022226	74022228
74022224	74022217	74022218
74022213	74022216	74022221
74022223	74022227	74022211
74022215	74022212	
74022225	74022222	

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4.5.14 Journey II BCS (Oxinium)/Journey

N = 6,089 primary cases were used for this analysis. Distribution of utilization: 99 surgeons across 54 sites used this implant combination in primary TKA cases.

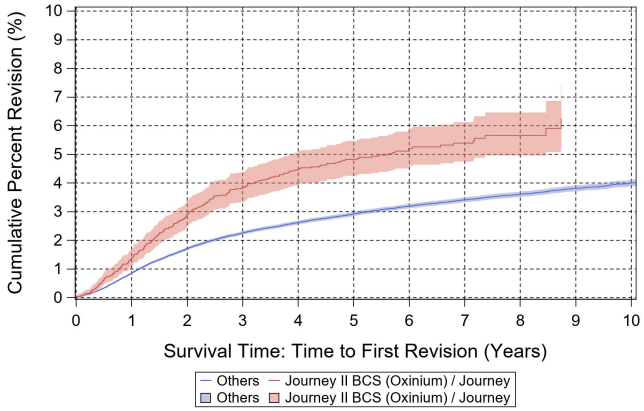


Figure 397. Cumulative Percent Revision Curve for the Journey II BCS (Oxinium)/Journey Combination, Compared to All Other Implant Combinations in Primary TKA Cases

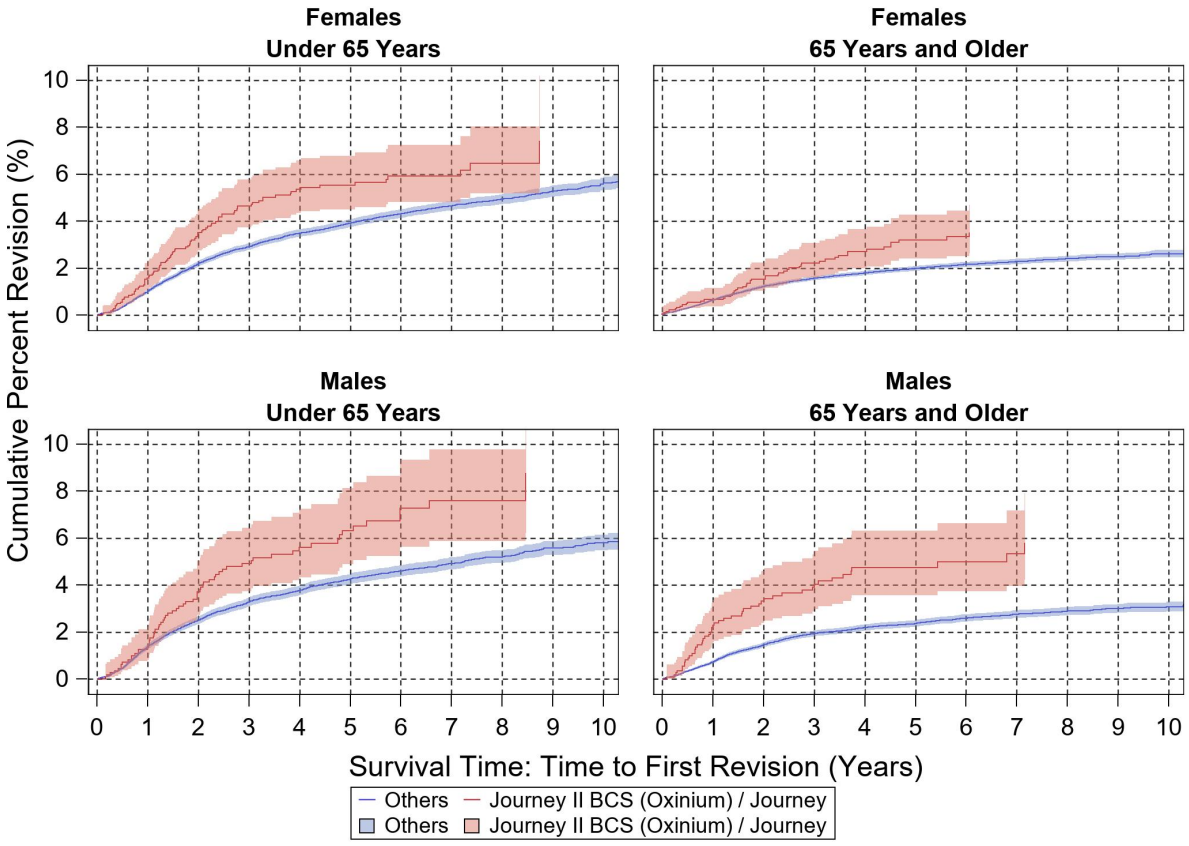


Figure 398. Cumulative Percent Revision Curve for the Journey II BCS (Oxinium)/Journey Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1124. Cumulative Percent Revision and Number at Risk for the Journey II BCS (Oxinium)/Journey Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	6,067	0.00 (0.00,0.00)	1,872	0.00 (0.00,0.00)	1,883	0.00 (0.00,0.00)	1,148	0.00 (0.00,0.00)	1,160	0.00 (0.00,0.00)
1	5,469	1.39 (1.12,1.72)	1,694	1.58 (1.09,2.28)	1,692	0.66 (0.38,1.16)	1,051	1.36 (0.82,2.24)	1,029	2.28 (1.55,3.36)
2	4,852	2.91 (2.50,3.39)	1,524	3.52 (2.74,4.51)	1,515	1.53 (1.04,2.24)	934	3.71 (2.72,5.04)	879	3.31 (2.39,4.59)
3	4,152	3.82 (3.34,4.37)	1,331	4.65 (3.73,5.78)	1,313	2.22 (1.60,3.07)	767	4.92 (3.74,6.44)	741	3.90 (2.87,5.30)
4	3,447	4.48 (3.94,5.09)	1,093	5.35 (4.35,6.58)	1,116	2.70 (2.00,3.65)	626	5.60 (4.32,7.25)	612	4.75 (3.56,6.32)
5	2,630	4.82 (4.25,5.47)	864	5.53 (4.51,6.79)	813	3.20 (2.40,4.26)	484	6.32 (4.90,8.14)	469	4.75 (3.56,6.32)
6	1,899	5.21 (4.60,5.91)	634	5.92 (4.82,7.25)	573	3.35 (2.51,4.46)	348	7.26 (5.63,9.34)	344	4.98 (3.73,6.64)
7	1,227	5.39 (4.75,6.12)	410	5.92 (4.82,7.25)	356	3.52 (2.63,4.69)	235	7.58 (5.87,9.77)	226	5.34 (3.96,7.18)
8	569	5.66 (4.96,6.46)	194	6.46 (5.18,8.03)	146	3.52 (2.63,4.69)	118	7.58 (5.87,9.77)	111	5.79 (4.23,7.91)
9	222	6.25 (5.23,7.45)	79	7.43 (5.40,10.19)	61	3.52 (2.63,4.69)	45	8.77 (6.21,12.30)	37	5.79 (4.23,7.91)
10	62	6.25 (5.23,7.45)	24	7.43 (5.40,10.19)	14	3.52 (2.63,4.69)	16	8.77 (6.21,12.30)	*	5.79 (4.23,7.91)

* Denotes that the number of cases is between 1 and 10.

Table 1125. Reasons for First Revision Following Primary TKA for Journey II BCS (Oxinium)/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	79	30.9
2	Joint Infection	46	18.0
3	Aseptic Loosening	41	16.0
4	Arthrofibrosis	31	12.1
5	Pain	20	7.8
6	Implant Failure	12	4.7
7	Poly liner wear	11	4.3
8	Malalignment	7	2.7
9	Peri-prosthetic fracture - Femur	5	2.0
10	Patellofemoral Joint	3	1.2
	Unknown/missing/other	1	0.4

Table 1126. Reasons for First Revision in the First 90 Days Following Primary TKA for Journey II BCS (Oxinium)/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	4	40.0
2	Joint Infection	2	20.0
3	Arthrofibrosis	2	20.0
4	Malalignment	1	10.0
5	Extensor mechanism failure	1	10.0

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Table 1127. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Journey II BCS (Oxinium)/Journey Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	19	27.5
2	Joint Infection	18	26.1
3	Arthrofibrosis	15	21.7
4	Poly liner wear	4	5.8
5	Pain	4	5.8
6	Malalignment	4	5.8
7	Aseptic Loosening	2	2.9
8	Implant Failure	2	2.9
9	Patellofemoral Joint	1	1.4

Table 1128. Descriptive Statistics of Cases Receiving the Journey II BCS (Oxinium)/Journey Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	3,768	61.9	
Age (years)	6,089	64.6 (9.4)	65 (13)
Height (cm)	6,089	168.8 (10.6)	167.6 (17.2)
Weight (kg)	6,089	97.3 (22.2)	95.7 (29.5)
BMI(kg/m^2)	6,089	34.1 (7.1)	33.3 (9.5)
Smoker - Never (%)	3,096	50.9	
Smoker - Previous (%)	2,231	36.6	
Smoker - Current (%)	727	11.9	
Smoker - Unknown (%)	35	0.6	

Table 1129. Distribution of Approach Used for Journey II BCS (Oxinium)/Journey Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	5,545	91.1
Mid-vastus	514	8.4
Sub-vastus	7	0.1
Lateral parapatellar	11	0.2
Missing/unknown/other	12	0.2

Table 1130. Distribution of Polyethylene Used for Journey II BCS (Oxinium)/Journey Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	5,761	94.6
Antioxidant XLPE	0	0.0
Missing/unknown/other	328	5.4

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Table 1131. Volume of Cases by Surgeon and Site for the Journey II BCS (Oxinium)/Journey Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	61 (110)	7 (75)
Cases per site	112 (159)	49 (161)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

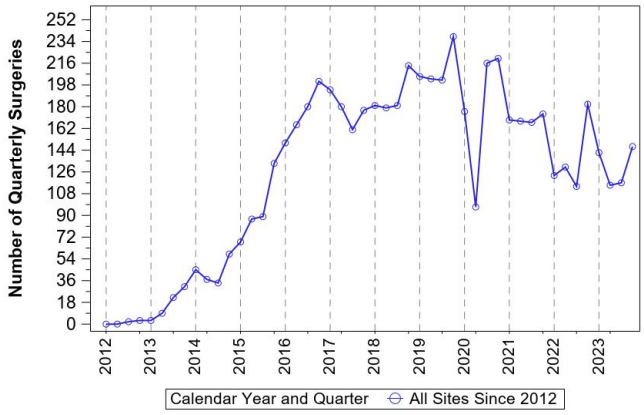


Figure 399. Utilization of the Journey II BCS (Oxinium)/Journey Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

74022125	74022127	74022112
74022115	74022118	74022122
74022116	74022128	74022110
74022126	74022113	74022120
74022114	74022123	
74022124	74022129	
74022117	74022119	

Catalog Numbers of Tibial Components Used in the Analysis

74022224	74022216	74022218
74022214	74022226	74022228
74022213	74022227	74022211
74022223	74022217	74022221
74022215	74022222	
74022225	74022212	

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4.5.15 LCS Complete/M.B.T.

N = 1,936 primary cases were used for this analysis. Fewer than ten surgeons across 12 sites used this implant combination in primary TKA cases.

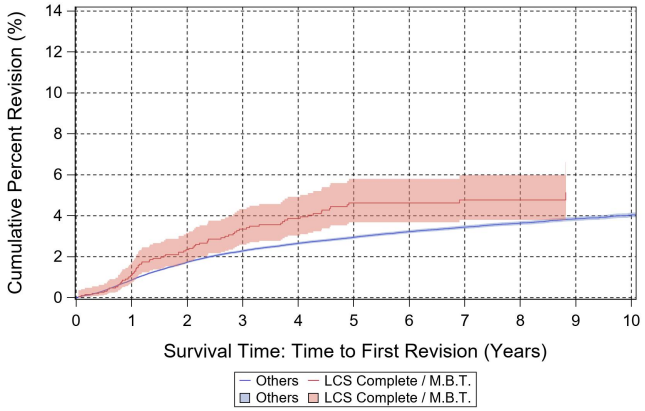


Figure 400. Cumulative Percent Revision Curve for the LCS Complete/M.B.T. Combination, Compared to All Other Implant Combinations in Primary TKA Cases

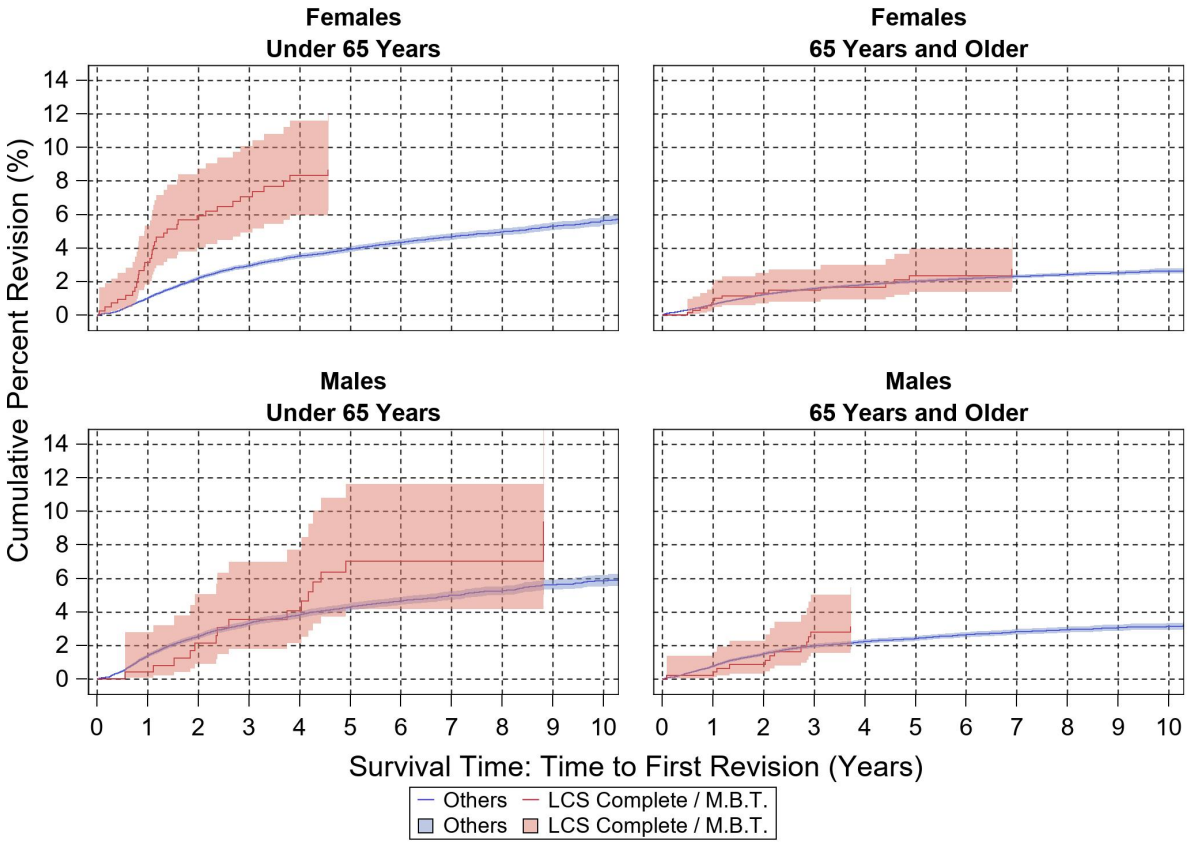


Figure 401. Cumulative Percent Revision Curve for the LCS Complete/M.B.T. Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1132. Cumulative Percent Revision and Number at Risk for the LCS Complete/MBT Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,928	0.00 (0.00,0.00)	423	0.00 (0.00,0.00)	730	0.00 (0.00,0.00)	258	0.00 (0.00,0.00)	517	0.00 (0.00,0.00)
1	1,786	1.07 (0.69,1.66)	395	3.13 (1.83,5.33)	680	0.71 (0.30,1.70)	246	0.40 (0.06,2.79)	465	0.19 (0.03,1.37)
2	1,561	2.35 (1.74,3.16)	351	5.93 (4.01,8.72)	604	1.31 (0.68,2.51)	215	2.13 (0.89,5.04)	391	0.86 (0.32,2.28)
3	1,355	3.35 (2.59,4.32)	311	7.06 (4.93,10.08)	523	1.48 (0.80,2.73)	193	3.54 (1.78,6.97)	328	2.79 (1.55,5.02)
4	1,220	3.87 (3.04,4.93)	277	8.32 (5.94,11.59)	485	1.67 (0.92,3.00)	172	4.07 (2.13,7.70)	286	3.12 (1.77,5.46)
5	1,065	4.63 (3.68,5.80)	256	8.67 (6.22,12.01)	416	2.34 (1.38,3.97)	148	7.00 (4.18,11.61)	245	3.12 (1.77,5.46)
6	879	4.63 (3.68,5.80)	217	8.67 (6.22,12.01)	341	2.34 (1.38,3.97)	127	7.00 (4.18,11.61)	194	3.12 (1.77,5.46)
7	622	4.77 (3.80,5.99)	143	8.67 (6.22,12.01)	231	2.75 (1.61,4.67)	93	7.00 (4.18,11.61)	155	3.12 (1.77,5.46)
8	386	4.77 (3.80,5.99)	95	8.67 (6.22,12.01)	131	2.75 (1.61,4.67)	64	7.00 (4.18,11.61)	96	3.12 (1.77,5.46)
9	226	5.14 (3.99,6.62)	57	8.67 (6.22,12.01)	77	2.75 (1.61,4.67)	35	9.39 (5.03,17.17)	57	3.12 (1.77,5.46)
10	59	5.14 (3.99,6.62)	17	8.67 (6.22,12.01)	16	2.75 (1.61,4.67)	15	9.39 (5.03,17.17)	11	3.12 (1.77,5.46)

Table 1133. Reasons for First Revision Following Primary TKA for LCS Complete/M.B.T. Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	26	37.1
2	Aseptic Loosening	21	30.0
3	Joint Infection	9	12.9
4	Pain	8	11.4
5	Implant Failure	4	5.7
6	Peri-prosthetic fracture - Femur	2	2.9

Table 1134. Reasons for First Revision in the First 90 Days Following Primary TKA for LCS Complete/M.B.T. Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	33.3
2	Joint Infection	1	33.3
3	Peri-prosthetic fracture - Femur	1	33.3

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Table 1135. Reasons for First Revision Between 91 and 365 days Following Primary TKA for LCS Complete/M.B.T. Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	9	56.2
2	Aseptic Loosening	2	12.5
3	Joint Infection	2	12.5
4	Pain	2	12.5
5	Implant Failure	1	6.2

Table 1136. Descriptive Statistics of Cases Receiving the LCS Complete/M.B.T. Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,158	59.8	
Age (years)	1,936	67.9 (9.5)	69 (14)
Height (cm)	1,936	168.3 (10.1)	167.6 (15.2)
Weight (kg)	1,936	96.1 (21.3)	94.1 (28)
BMI(kg/m^2)	1,936	33.9 (6.8)	33.2 (9)
Smoker - Never (%)	1,066	55.1	
Smoker - Previous (%)	659	34	
Smoker - Current (%)	154	8	
Smoker - Unknown (%)	57	2.9	

Table 1137. Distribution of Approach Used for LCS Complete/M.B.T. Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	1,929	99.6
Mid-vastus	1	0.1
Sub-vastus	0	0.0
Lateral parapatellar	1	0.1
Missing/unknown/other	5	0.3

Table 1138. Distribution of Polyethylene Used for LCS Complete/M.B.T. Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	1,934	99.9
XLPE	0	0.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	2	0.1

Table 1139. Volume of Cases by Surgeon and Site for the LCS Complete/M.B.T. Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	242 (498)	35 (190)
Cases per site	161 (415)	11 (66)

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The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

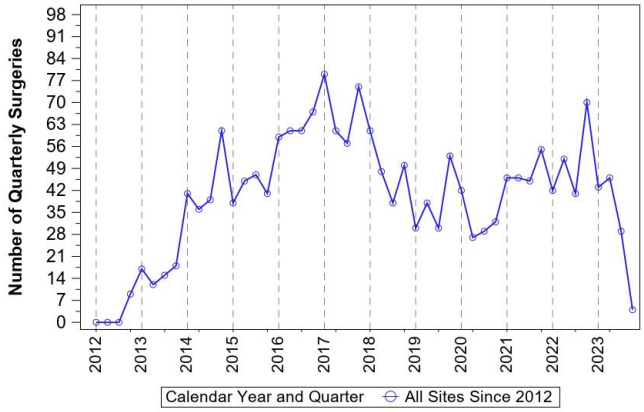


Figure 402. Utilization of the LCS Complete/M.B.T. Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

129401040	129404060	129404030
129402040	129401030	129428040
129401060	129402030	129428050
129402050	129402070	129411050
129401050	129401070	129411060
129402060	129404070	129411070
129403040	129403070	129412060
129404050	129411040	129429040
129404040	129403030	129429050
129403050	129412050	
129403060	129412040	

Catalog Numbers of Tibial Components Used in the Analysis

129431130	129431160	129435125
129431140	129431120	129435130
129431150	129433160	129433170
129433140	129432150	129434130
129433130	129432140	129435120
129433150	129432125	129435150
129431125	129433120	
129433125	129435140	

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4.5.16 Legion/Genesis II

N = 13,722 primary cases were used for this analysis. Distribution of utilization: 204 surgeons across 69 sites used this implant combination in primary TKA cases.

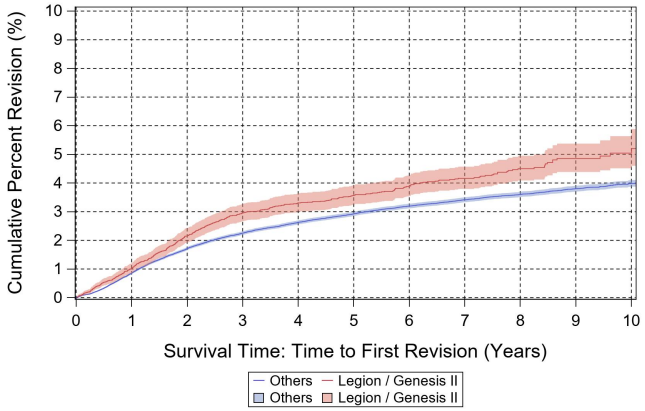


Figure 403. Cumulative Percent Revision Curve for the Legion/Genesis II Combination, Compared to All Other Implant Combinations in Primary TKA Cases

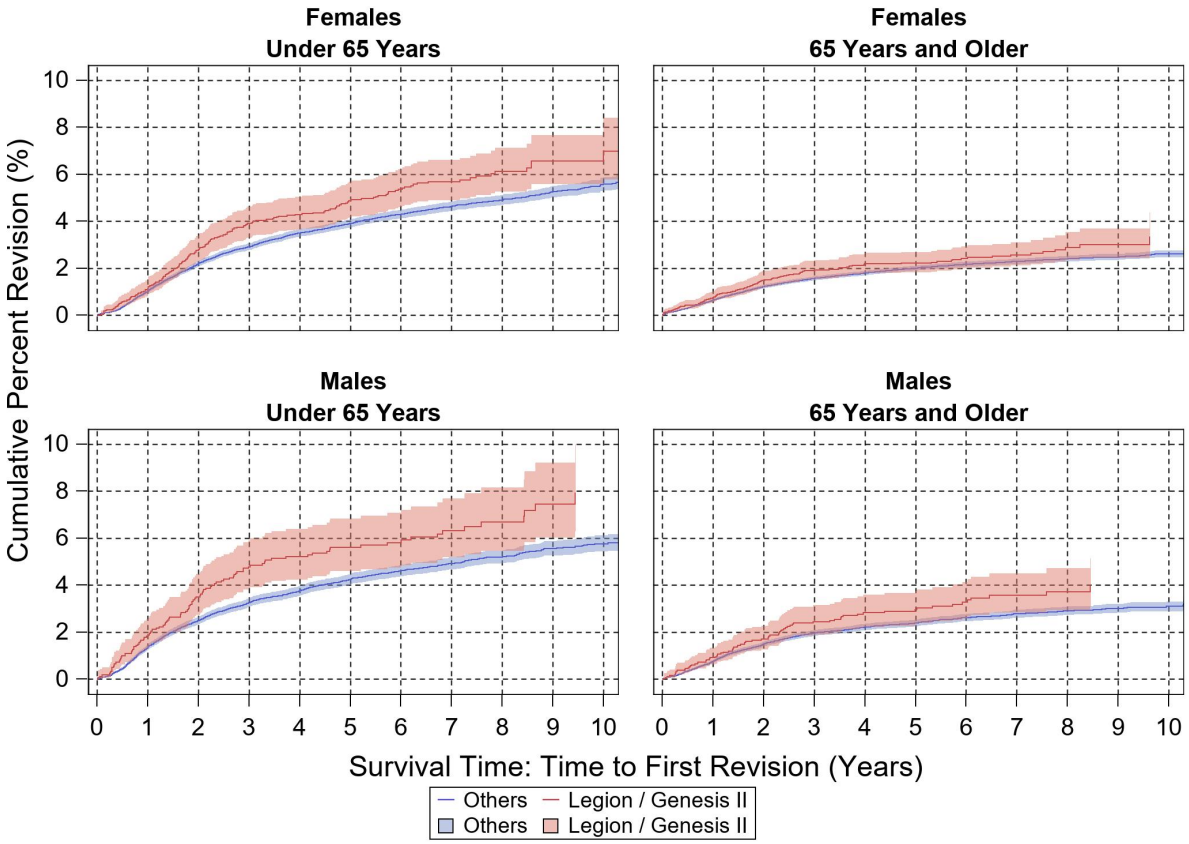


Figure 404. Cumulative Percent Revision Curve for the Legion/Genesis II Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1140. Cumulative Percent Revision and Number at Risk for the Legion/Genesis II Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	13,626	0.00 (0.00,0.00)	3,612	0.00 (0.00,0.00)	5,368	0.00 (0.00,0.00)	1,866	0.00 (0.00,0.00)	2,776	0.00 (0.00,0.00)
1	12,602	1.01 (0.86,1.20)	3,421	1.10 (0.81,1.50)	4,931	0.73 (0.53,1.01)	1,729	1.82 (1.30,2.55)	2,519	0.90 (0.60,1.34)
2	11,234	2.15 (1.91,2.42)	3,138	2.75 (2.25,3.36)	4,356	1.48 (1.18,1.86)	1,552	3.49 (2.73,4.46)	2,188	1.69 (1.25,2.27)
3	10,150	2.95 (2.67,3.27)	2,876	3.90 (3.29,4.62)	3,923	1.88 (1.53,2.31)	1,401	4.78 (3.86,5.91)	1,950	2.43 (1.89,3.13)
4	9,051	3.31 (3.00,3.65)	2,582	4.28 (3.64,5.04)	3,503	2.18 (1.79,2.64)	1,266	5.20 (4.23,6.38)	1,700	2.81 (2.21,3.58)
5	7,527	3.57 (3.25,3.93)	2,192	4.86 (4.16,5.68)	2,880	2.21 (1.82,2.68)	1,070	5.60 (4.58,6.84)	1,385	2.95 (2.32,3.73)
6	5,951	3.88 (3.53,4.26)	1,805	5.35 (4.60,6.22)	2,243	2.41 (1.99,2.92)	830	5.80 (4.75,7.07)	1,073	3.27 (2.59,4.13)
7	4,317	4.16 (3.79,4.57)	1,341	5.69 (4.90,6.60)	1,603	2.56 (2.11,3.10)	619	6.32 (5.18,7.70)	754	3.56 (2.82,4.49)
8	2,777	4.50 (4.09,4.95)	870	6.13 (5.26,7.13)	995	2.88 (2.35,3.53)	431	6.67 (5.45,8.15)	481	3.72 (2.93,4.72)
9	1,639	4.86 (4.38,5.38)	544	6.55 (5.59,7.67)	527	3.00 (2.43,3.69)	283	7.45 (6.01,9.22)	285	3.97 (3.08,5.13)
10	597	5.04 (4.51,5.64)	225	6.55 (5.59,7.67)	176	3.34 (2.54,4.38)	111	7.93 (6.28,9.99)	85	3.97 (3.08,5.13)

Table 1141. Reasons for First Revision Following Primary TKA for Legion/Genesis II Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	152	33.1
2	Aseptic Loosening	100	21.8
3	Joint Infection	82	17.9
4	Pain	33	7.2
5	Arthrofibrosis	32	7.0
6	Implant Failure	22	4.8
7	Malalignment	11	2.4
8	Peri-prosthetic fracture - Femur	9	2.0
9	Patellofemoral Joint	6	1.3
10	Osteolysis	4	0.9
	Unknown/missing/other	3	1.7

Table 1142. Reasons for First Revision in the First 90 Days Following Primary TKA for Legion/Genesis II Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	12	44.4
2	Dislocation/Instability	5	18.5
3	Peri-prosthetic fracture - Femur	5	18.5
4	Pain	2	7.4
5	Aseptic Loosening	1	3.7
6	Poly liner wear	1	3.7
7	Extensor mechanism failure	1	3.7

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Table 1143. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Legion/Genesis II Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	24	25.8
2	Joint Infection	24	25.8
3	Arthrofibrosis	12	12.9
4	Aseptic Loosening	9	9.7
5	Implant Failure	9	9.7
6	Pain	7	7.5
7	Malalignment	3	3.2
8	Peri-prosthetic fracture - Femur	2	2.2
9	Extensor mechanism failure	2	2.2
10	Patellofemoral Joint	1	1.1

Table 1144. Descriptive Statistics of Cases Receiving the Legion/Genesis II Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	9,030	65.8	
Age (years)	13,722	66.5 (9.2)	67 (13)
Height (cm)	13,722	168 (10.3)	167.6 (15.2)
Weight (kg)	13,722	94.6 (21.3)	93 (28.1)
BMI(kg/m^2)	13,722	33.5 (6.9)	32.7 (9.3)
Smoker - Never (%)	7,134	52	
Smoker - Previous (%)	5,328	38.8	
Smoker - Current (%)	1,224	8.9	
Smoker - Unknown (%)	36	0.3	

Table 1145. Distribution of Approach Used for Legion/Genesis II Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	12,630	92.0
Mid-vastus	1,026	7.5
Sub-vastus	24	0.2
Lateral parapatellar	14	0.1
Missing/unknown/other	28	0.2

Table 1146. Distribution of Polyethylene Used for Legion/Genesis II Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	975	7.1
XLPE	12,408	90.4
Antioxidant XLPE	0	0.0
Missing/unknown/other	339	2.5

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Table 1147. Volume of Cases by Surgeon and Site for the Legion/Genesis II Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	67 (153)	8 (50)
Cases per site	198 (382)	45 (190)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

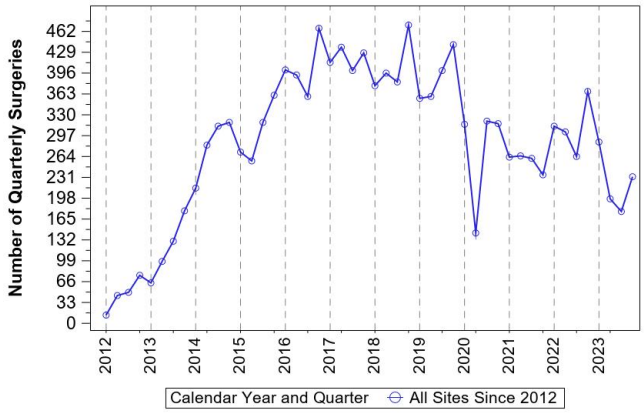


Figure 405. Utilization of the Legion/Genesis II Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

71421225	71421217	71421218
71421224	71423234	71933646
71421235	71423224	71933650
71421236	71423237	71421203
71421226	71421256	71421238
71421234	71421223	71421228
71421255	71421246	71423223
71421245	71423216	71933649
71421227	71421233	71423238
71421237	71423227	71423228
71421205	71423206	71423233
71421215	71421264	71933653
71421214	71421274	71933645
71421216	71421276	71933647
71421204	71423215	71933655
71421206	71421266	71933641
71421275	71423214	71933651
71423235	71423205	71423213
71421244	71423217	71421243
71421254	71423207	71421253
71421207	71423204	71423203
71423225	71421208	71421263
71421265	71933654	71933643
71423226	71933642	71421273
71423236	71421213	71423218

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71933652	71421165	71421222
71423208	71421174	71423212
71421212	71421232	71423222
71933644	71421163	71423232
71421175	71421177	71425003
71933640	71426003	71426007
71421176	71421164	71426008
71421202	71421167	
71933648	71421173	

Catalog Numbers of Tibial Components Used in the Analysis

71420184	71420296	71420266
71420182	71420306	71420268
71420166	71420298	71420270
71420164	71420314	71420272
71420186	71420234	71420274
71420168	71420386	71420316
71420170	71420328	71420344
71420188	71420368	71420350
71420190	71420384	71420388
71420172	71420264	71420392
71420180	71420378	71420394
71420162	71420446	71420396
71420191	71420242	71420432
71420174	71420308	71420434
71420312	71420322	71420440
71420240	71420336	71420444
71420304	71420338	71420452
71420248	71420376	71420456
71420160	71420380	71420458
71420176	71926221	71420460
71420320	71420244	71420464
71420232	71420252	
71420256	71420258	
71420250	71420262	

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4.5.17 NexGen GS/NexGen Pegged

N = 682 primary cases were used for this analysis. Distribution of utilization: 17 surgeons across 11 sites used this implant combination in primary TKA cases.

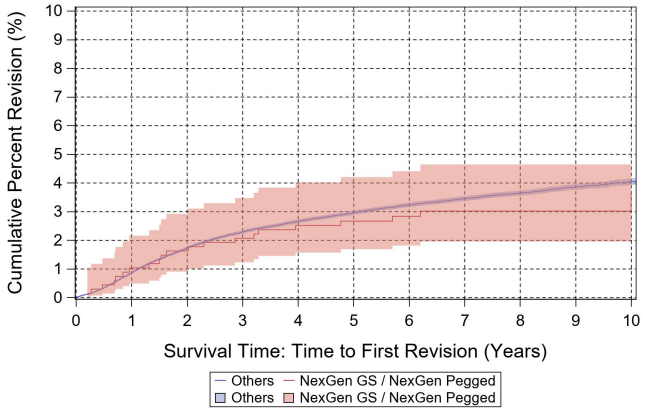


Figure 406. Cumulative Percent Revision Curve for the NexGen GS/NexGen Pegged Combination, Compared to All Other Implant Combinations in Primary TKA Cases

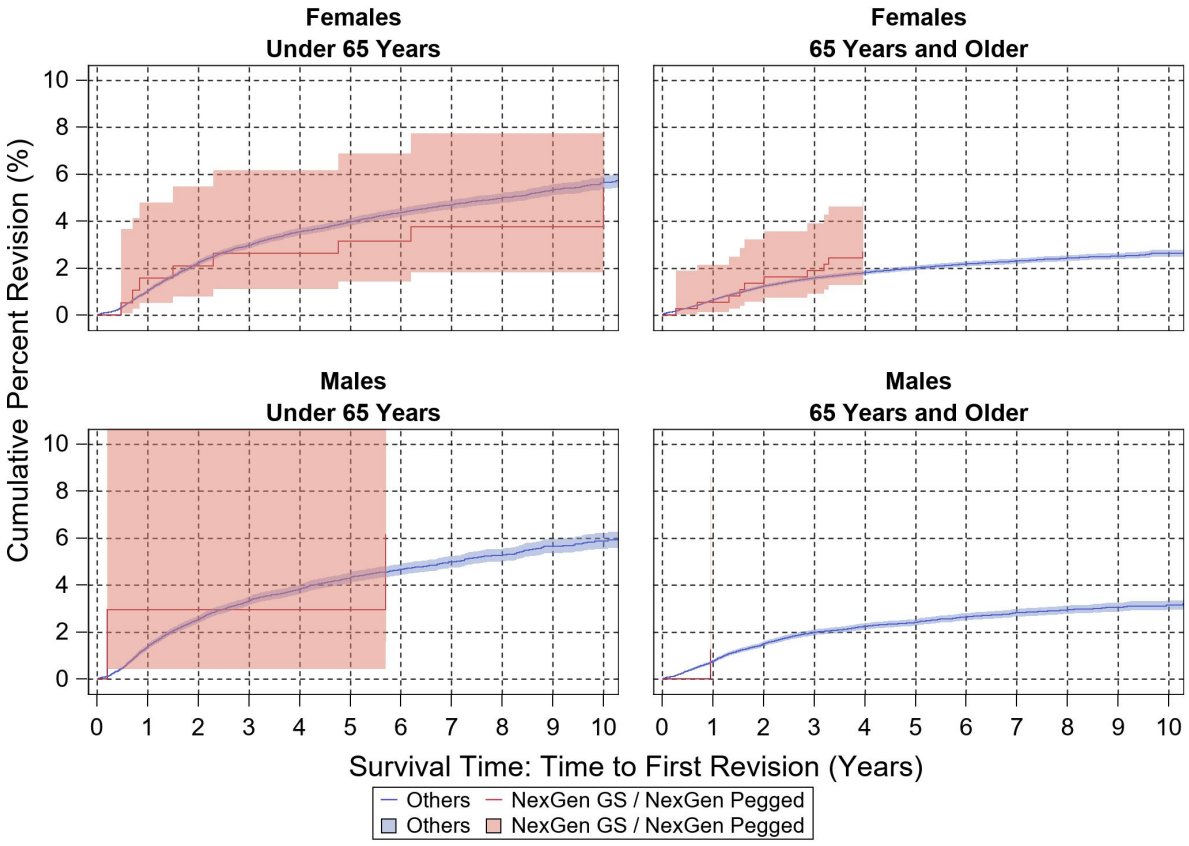


Figure 407. Cumulative Percent Revision Curve for the NexGen GS/NexGen Pegged Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1148. Cumulative Percent Revision and Number at Risk for the NexGen GS/NexGen Pegged Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	675	0.00 (0.00,0.00)	191	0.00 (0.00,0.00)	371	0.00 (0.00,0.00)	34	0.00 (0.00,0.00)	79	0.00 (0.00,0.00)
1	668	1.04 (0.50,2.16)	188	1.57 (0.51,4.79)	369	0.54 (0.14,2.14)	33	2.94 (0.42,19.10)	78	1.27 (0.18,8.65)
2	664	1.63 (0.91,2.92)	187	2.09 (0.79,5.48)	366	1.35 (0.56,3.21)	33	2.94 (0.42,19.10)	78	1.27 (0.18,8.65)
3	661	2.07 (1.23,3.48)	186	2.62 (1.10,6.17)	364	1.89 (0.90,3.92)	33	2.94 (0.42,19.10)	78	1.27 (0.18,8.65)
4	658	2.52 (1.57,4.02)	186	2.62 (1.10,6.17)	361	2.70 (1.46,4.95)	33	2.94 (0.42,19.10)	78	1.27 (0.18,8.65)
5	627	2.67 (1.69,4.21)	179	3.15 (1.43,6.88)	345	2.70 (1.46,4.95)	33	2.94 (0.42,19.10)	70	1.27 (0.18,8.65)
6	550	2.84 (1.82,4.41)	165	3.15 (1.43,6.88)	294	2.70 (1.46,4.95)	29	6.18 (1.58,22.56)	62	1.27 (0.18,8.65)
7	429	3.02 (1.96,4.65)	136	3.76 (1.81,7.73)	223	2.70 (1.46,4.95)	24	6.18 (1.58,22.56)	46	1.27 (0.18,8.65)
8	325	3.02 (1.96,4.65)	105	3.76 (1.81,7.73)	168	2.70 (1.46,4.95)	18	6.18 (1.58,22.56)	34	1.27 (0.18,8.65)
9	244	3.02 (1.96,4.65)	86	3.76 (1.81,7.73)	119	2.70 (1.46,4.95)	11	6.18 (1.58,22.56)	28	1.27 (0.18,8.65)
10	165	3.61 (2.23,5.81)	59	5.36 (2.47,11.43)	79	2.70 (1.46,4.95)	*	6.18 (1.58,22.56)	18	1.27 (0.18,8.65)

* Denotes that the number of cases is between 1 and 10.

Table 1149. Reasons for First Revision Following Primary TKA for NexGen GS/NexGen Pegged Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	5	33.3
2	Dislocation/Instability	4	26.7
3	Poly liner wear	2	13.3
4	Arthrofibrosis	1	6.7
5	Joint Infection	1	6.7
6	Malalignment	1	6.7
7	Pain	1	6.7

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1150. Reasons for First Revision Between 91 and 365 days Following Primary TKA for NexGen GS/NexGen Pegged Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	50.0
2	Dislocation/Instability	1	50.0

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Table 1151. Descriptive Statistics of Cases Receiving the NexGen GS/NexGen Pegged Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	567	83.1	
Age (years)	682	68.2 (9.2)	68 (13)
Height (cm)	682	165.3 (8.8)	165 (10)
Weight (kg)	682	85.3 (18.3)	83.8 (25.7)
BMI(kg/m^2)	682	31.2 (6.3)	30.7 (8.8)
Smoker - Never (%)	398	58.4	
Smoker - Previous (%)	252	37	
Smoker - Current (%)	31	4.6	
Smoker - Unknown (%)	0	0.0	

Table 1152. Distribution of Approach Used for NexGen GS/NexGen Pegged Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	659	96.6
Mid-vastus	16	2.3
Sub-vastus	2	0.3
Lateral parapatellar	2	0.3
Missing/unknown/other	3	0.4

Table 1153. Distribution of Polyethylene Used for NexGen GS/NexGen Pegged Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	51	7.5
XLPE	625	91.6
Antioxidant XLPE	0	0.0
Missing/unknown/other	6	0.9

Table 1154. Volume of Cases by Surgeon and Site for the NexGen GS/NexGen Pegged Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	40 (110)	6 (8)
Cases per site	62 (134)	11 (40)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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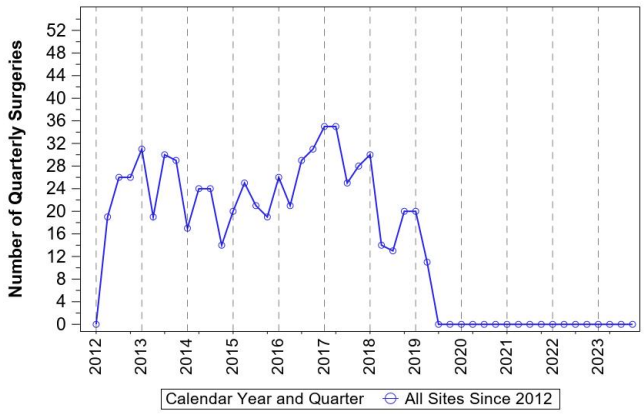


Figure 408. Utilization of the NexGen GS/NexGen Pegged Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

575001501	575001706	575201502
575001505	575001701	575201601
575001502	575001702	575001305
575001506	575001406	575201505
575001602	575001401	575201605
575001606	575001405	575201606
575001601	575001402	575001301
575001605	575201602	
575001705	575001306	

Catalog Numbers of Tibial Components Used in the Analysis

597003502	597004502
597004501	597002502
597003501	597005501

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4.5.18 NexGen GS/NexGen Precoat

N = 702 primary cases were used for this analysis. Distribution of utilization: 21 surgeons across 17 sites used this implant combination in primary TKA cases.

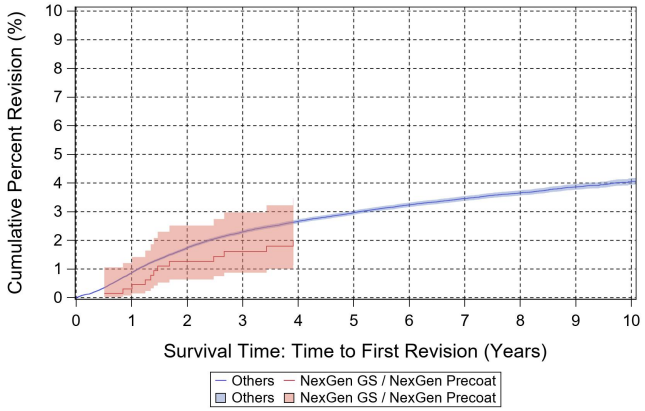


Figure 409. Cumulative Percent Revision Curve for the NexGen GS/NexGen Precoat Combination, Compared to All Other Implant Combinations in Primary TKA Cases

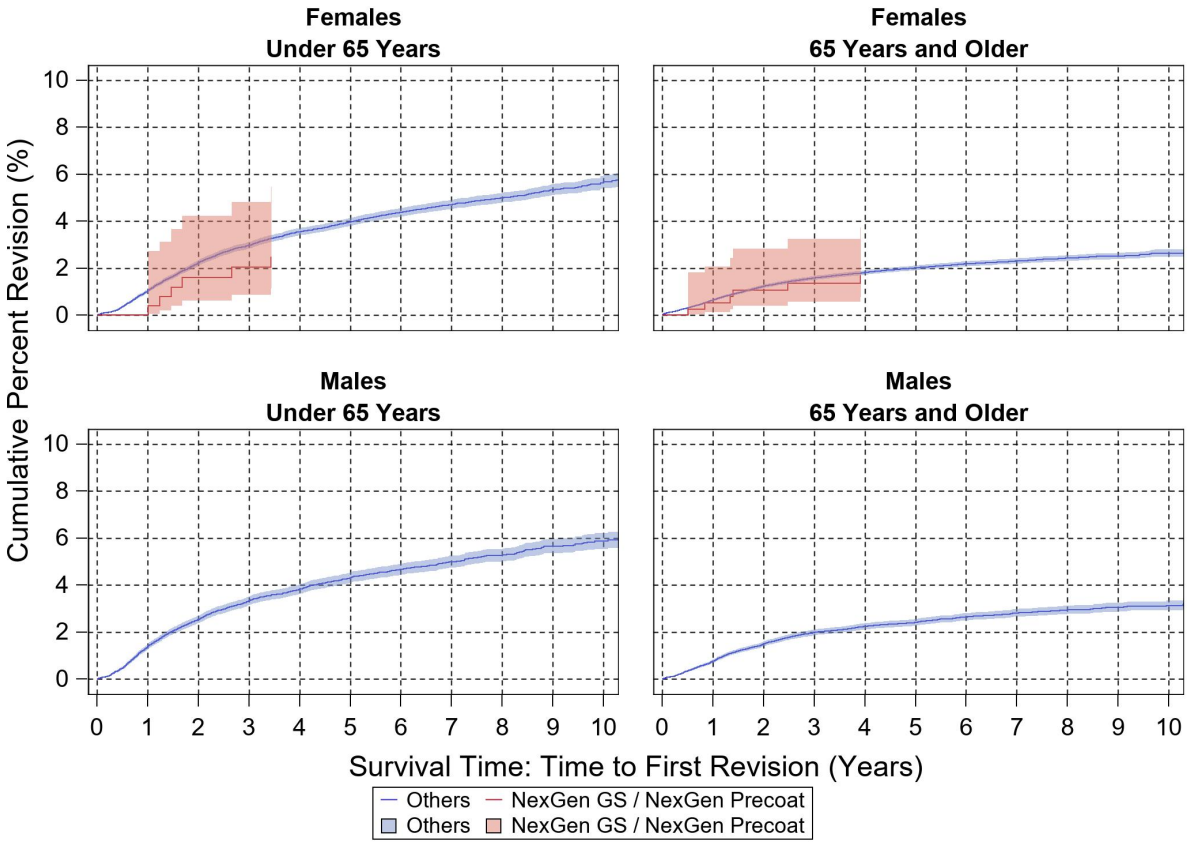


Figure 410. Cumulative Percent Revision Curve for the NexGen GS/NexGen Precoat Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1155. Cumulative Percent Revision and Number at Risk for the NexGen GS/NexGen Precoat Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	694	0.00 (0.00,0.00)	272	0.00 (0.00,0.00)	404	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)	14	0.00 (0.00,0.00)
1	639	0.30 (0.08,1.21)	257	0.00 (0.00,0.00)	372	0.52 (0.13,2.06)	*	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)
2	595	1.27 (0.63,2.52)	236	1.60 (0.60,4.21)	352	1.07 (0.40,2.82)	*	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)
3	554	1.61 (0.87,2.98)	225	2.04 (0.85,4.83)	324	1.36 (0.57,3.24)	*	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)
4	510	1.99 (1.13,3.48)	213	2.48 (1.12,5.45)	292	1.69 (0.76,3.74)	*	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)
5	456	1.99 (1.13,3.48)	193	2.48 (1.12,5.45)	258	1.69 (0.76,3.74)	*	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)
6	399	1.99 (1.13,3.48)	173	2.48 (1.12,5.45)	221	1.69 (0.76,3.74)	*	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)
7	320	1.99 (1.13,3.48)	144	2.48 (1.12,5.45)	172	1.69 (0.76,3.74)	*	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)
8	236	1.99 (1.13,3.48)	109	2.48 (1.12,5.45)	123	1.69 (0.76,3.74)	*	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)
9	201	1.99 (1.13,3.48)	96	2.48 (1.12,5.45)	101	1.69 (0.76,3.74)	*	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)
10	163	1.99 (1.13,3.48)	76	2.48 (1.12,5.45)	83	1.69 (0.76,3.74)	*	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)

* Denotes that the number of cases is between 1 and 10.

Table 1156. Reasons for First Revision Following Primary TKA for NexGen GS/NexGen Precoat Combination Cases

Rank	Reason for Revision	N	Percent
1	Arthrofibrosis	3	25.0
2	Metal Reaction/Metallosis	3	25.0
3	Aseptic Loosening	2	16.7
4	Joint Infection	2	16.7
5	Pain	1	8.3
6	Peri-prosthetic fracture - Femur	1	8.3

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1157. Reasons for First Revision Between 91 and 365 days Following Primary TKA for NexGen GS/NexGen Precoat Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	1	50.0
2	Pain	1	50.0

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Table 1158. Descriptive Statistics of Cases Receiving the NexGen GS/NexGen Precoat Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	682	97.2	
Age (years)	702	66.6 (9.3)	67 (12)
Height (cm)	701	162.4 (7.7)	162.6 (10.2)
Weight (kg)	702	86.7 (18.5)	85.2 (25)
BMI(kg/m^2)	701	32.8 (6.4)	32.4 (9.1)
Smoker - Never (%)	406	57.8	
Smoker - Previous (%)	214	30.5	
Smoker - Current (%)	80	11.4	
Smoker - Unknown (%)	2	0.3	

Table 1159. Distribution of Approach Used for NexGen GS/NexGen Precoat Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	678	96.6
Mid-vastus	11	1.6
Sub-vastus	3	0.4
Lateral parapatellar	1	0.1
Missing/unknown/other	9	1.3

Table 1160. Distribution of Polyethylene Used for NexGen GS/NexGen Precoat Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	71	10.1
XLPE	618	88.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	13	1.9

Table 1161. Volume of Cases by Surgeon and Site for the NexGen GS/NexGen Precoat Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	33 (54)	8 (50)
Cases per site	41 (72)	19 (45)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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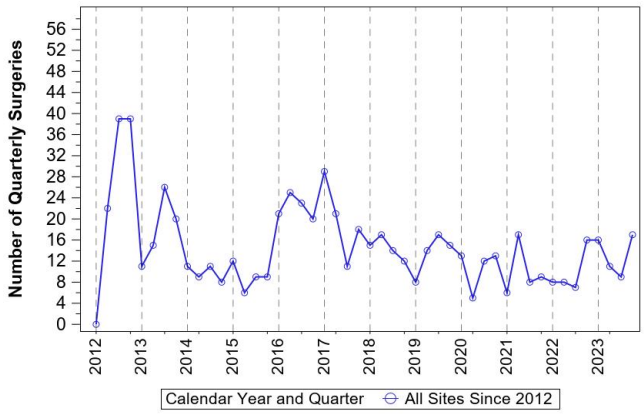


Figure 411. Utilization of the NexGen GS/NexGen Precoat Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

575001502	575001401	575001406
575001501	575001402	575001605
575001602	575001702	575001705
575001601	575001606	575001706
575001505	575001701	575001301
575001506	575001405	

Catalog Numbers of Tibial Components Used in the Analysis

598003701	598002702
598003702	598004702
598004701	598005701

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4.5.19 NexGen LPS GS/NexGen Precoat

N = 535 primary cases were used for this analysis. Distribution of utilization: 38 surgeons across 18 sites used this implant combination in primary TKA cases.

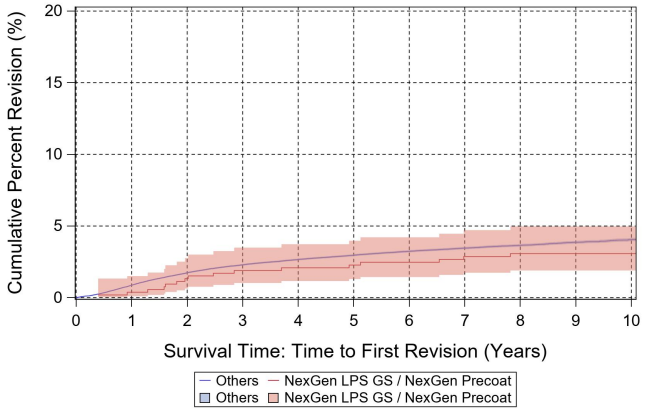


Figure 412. Cumulative Percent Revision Curve for the NexGen LPS GS/NexGen Precoat Combination, Compared to All Other Implant Combinations in Primary TKA Cases

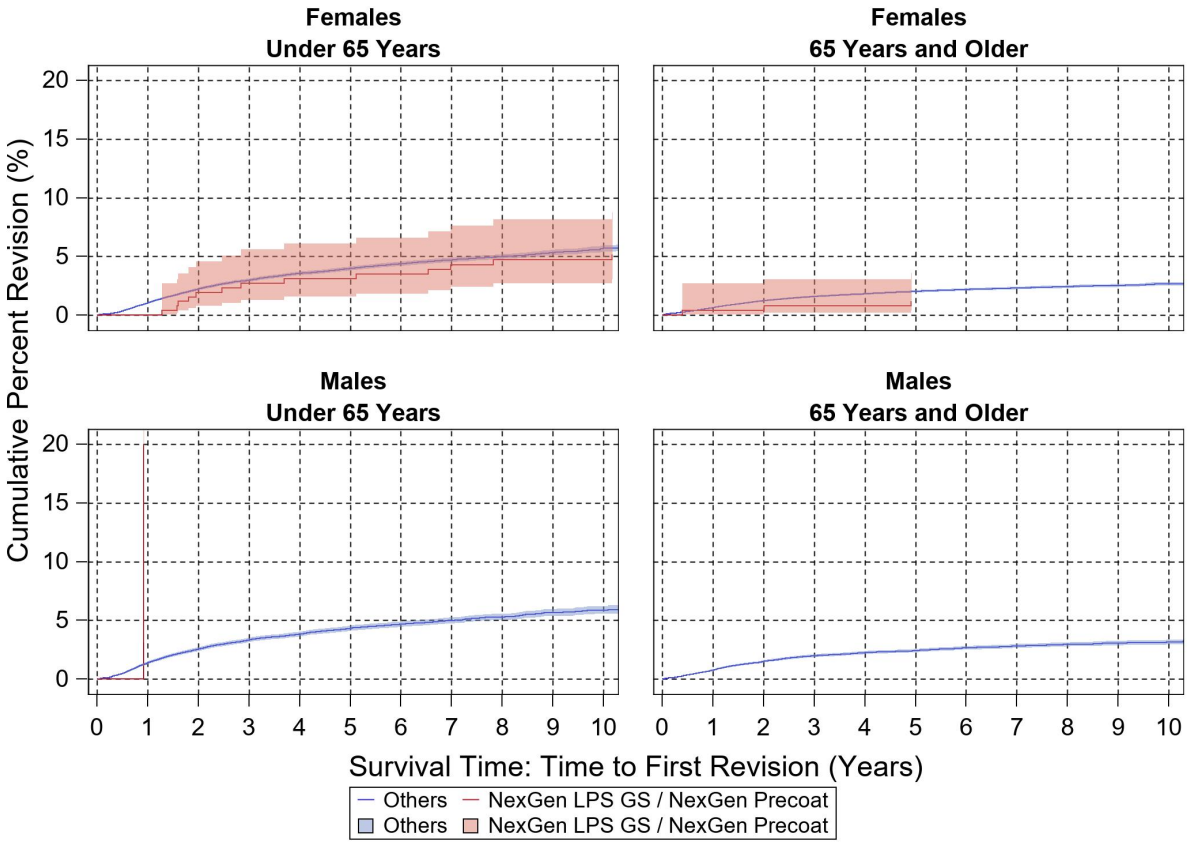


Figure 413. Cumulative Percent Revision Curve for the NexGen LPS GS/NexGen Precoat Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1162. Cumulative Percent Revision and Number at Risk for the NexGen LPS GS/NexGen Precoat Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	528	0.00 (0.00,0.00)	259	0.00 (0.00,0.00)	258	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)
1	526	0.38 (0.09,1.51)	259	0.00 (0.00,0.00)	257	0.39 (0.05,2.72)	*	20.00 (3.08,79.62)	*	0.00 (0.00,0.00)
2	521	1.33 (0.63,2.76)	254	1.93 (0.81,4.58)	257	0.39 (0.05,2.72)	*	20.00 (3.08,79.62)	*	0.00 (0.00,0.00)
3	518	1.89 (1.02,3.49)	252	2.70 (1.30,5.59)	256	0.78 (0.19,3.06)	*	20.00 (3.08,79.62)	*	0.00 (0.00,0.00)
4	516	2.08 (1.16,3.73)	250	3.09 (1.56,6.08)	256	0.78 (0.19,3.06)	*	20.00 (3.08,79.62)	*	0.00 (0.00,0.00)
5	509	2.27 (1.30,3.97)	245	3.09 (1.56,6.08)	254	1.16 (0.38,3.57)	*	20.00 (3.08,79.62)	*	0.00 (0.00,0.00)
6	495	2.47 (1.44,4.21)	240	3.49 (1.83,6.59)	247	1.16 (0.38,3.57)	*	20.00 (3.08,79.62)	*	0.00 (0.00,0.00)
7	484	2.87 (1.74,4.71)	236	4.30 (2.40,7.63)	240	1.16 (0.38,3.57)	*	20.00 (3.08,79.62)	*	0.00 (0.00,0.00)
8	469	3.07 (1.89,4.97)	231	4.71 (2.70,8.15)	231	1.16 (0.38,3.57)	*	20.00 (3.08,79.62)	*	0.00 (0.00,0.00)
9	462	3.07 (1.89,4.97)	228	4.71 (2.70,8.15)	227	1.16 (0.38,3.57)	*	20.00 (3.08,79.62)	*	0.00 (0.00,0.00)
10	428	3.07 (1.89,4.97)	208	4.71 (2.70,8.15)	213	1.16 (0.38,3.57)	*	20.00 (3.08,79.62)	*	0.00 (0.00,0.00)

* Denotes that the number of cases is between 1 and 10.

Table 1163. Reasons for First Revision Following Primary TKA for NexGen LPS GS/NexGen Precoat Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	4	40.0
2	Aseptic Loosening	3	30.0
3	Arthrofibrosis	1	10.0
4	Implant Failure	1	10.0
5	Pain	1	10.0

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

There were no reasons for revision recorded between day 91 and day 365, so no table of reasons for revisions during this time period is included.

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Table 1164. Descriptive Statistics of Cases Receiving the NexGen LPS GS/NexGen Precoat Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	524	97.9	
Age (years)	535	65.5 (9.7)	65 (14)
Height (cm)	534	162.4 (7.6)	162.6 (10.2)
Weight (kg)	535	90.6 (21.2)	88.9 (29.8)
BMI(kg/m^2)	534	34.3 (7.4)	33.8 (11)
Smoker - Never (%)	318	59.4	
Smoker - Previous (%)	180	33.6	
Smoker - Current (%)	36	6.7	
Smoker - Unknown (%)	1	0.2	

Table 1165. Distribution of Approach Used for NexGen LPS GS/NexGen Precoat Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	519	97.0
Mid-vastus	5	0.9
Sub-vastus	0	0.0
Lateral parapatellar	4	0.7
Missing/unknown/other	7	1.3

Table 1166. Distribution of Polyethylene Used for NexGen LPS GS/NexGen Precoat Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	453	84.7
XLPE	72	13.5
Antioxidant XLPE	0	0.0
Missing/unknown/other	10	1.9

Table 1167. Volume of Cases by Surgeon and Site for the NexGen LPS GS/NexGen Precoat Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	14 (18)	6 (19)
Cases per site	29 (76)	6 (15)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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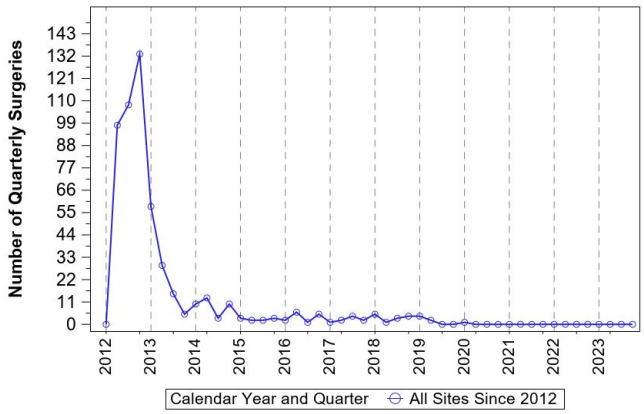


Figure 414. Utilization of the NexGen LPS GS/NexGen Precoat Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

576401552	576401452	576401351
576401652	576401451	
576401551	576401752	
576401651	576401751	

Catalog Numbers of Tibial Components Used in the Analysis

598003702	598004702	598002701
598004701	598002702	598005702
598003701	598005701	

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4.5.20 NexGen LPS Option/NexGen Precoat

N = 745 primary cases were used for this analysis. Distribution of utilization: 58 surgeons across 29 sites used this implant combination in primary TKA cases.

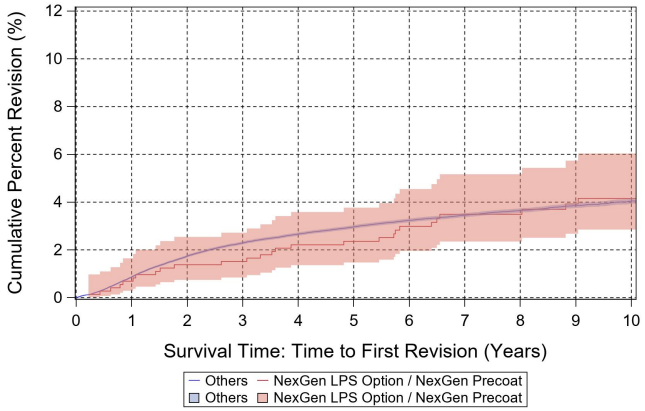


Figure 415. Cumulative Percent Revision Curve for the NexGen LPS Option/NexGen Precoat Combination, Compared to All Other Implant Combinations in Primary TKA Cases

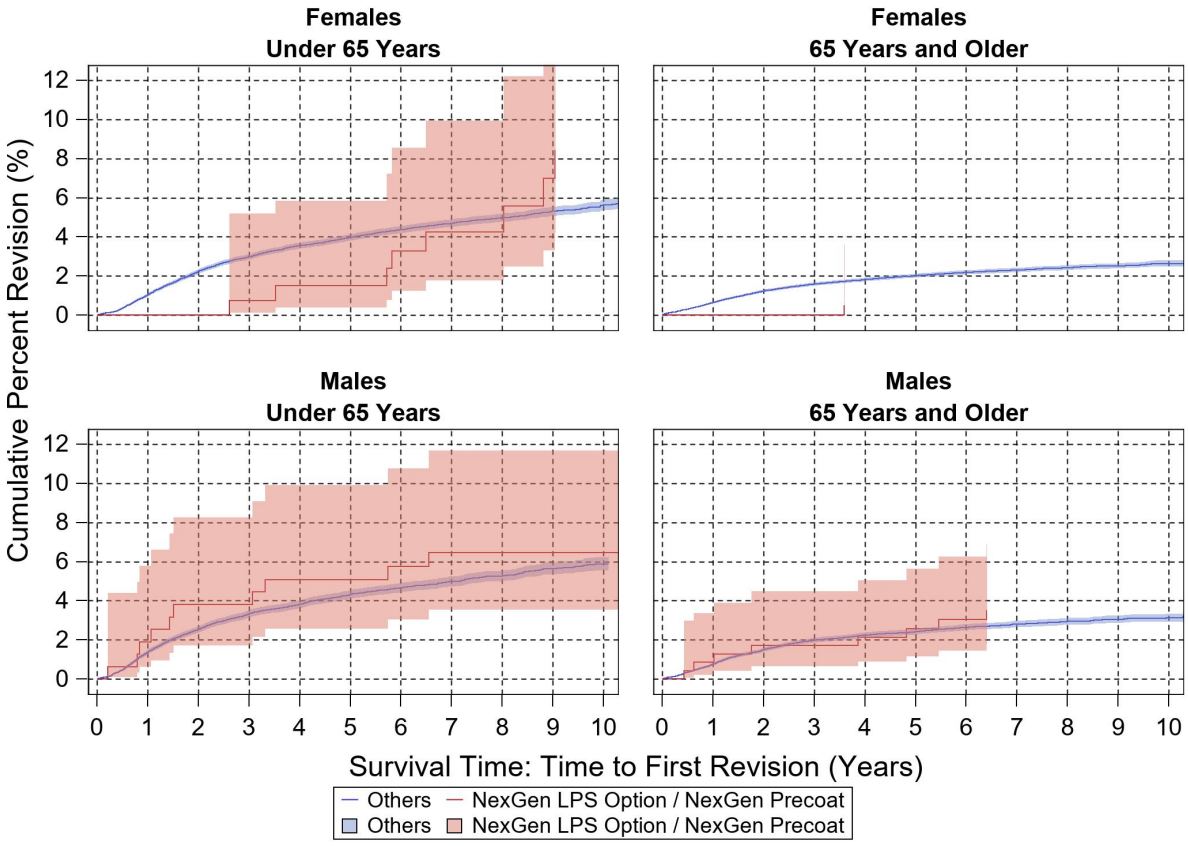


Figure 416. Cumulative Percent Revision Curve for the NexGen LPS Option/NexGen Precoat Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1168. Cumulative Percent Revision and Number at Risk for the NexGen LPS Option/NexGen Precoat Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	726	0.00 (0.00,0.00)	135	0.00 (0.00,0.00)	198	0.00 (0.00,0.00)	158	0.00 (0.00,0.00)	235	0.00 (0.00,0.00)
1	721	0.69 (0.29,1.65)	135	0.00 (0.00,0.00)	198	0.00 (0.00,0.00)	155	1.90 (0.62,5.77)	233	0.85 (0.21,3.36)
2	713	1.38 (0.74,2.55)	134	0.00 (0.00,0.00)	197	0.00 (0.00,0.00)	151	3.80 (1.72,8.26)	231	1.70 (0.64,4.47)
3	709	1.52 (0.84,2.72)	133	0.75 (0.11,5.18)	196	0.00 (0.00,0.00)	150	3.80 (1.72,8.26)	230	1.70 (0.64,4.47)
4	700	2.21 (1.36,3.59)	131	1.49 (0.38,5.84)	193	0.52 (0.07,3.60)	147	5.08 (2.57,9.90)	229	2.13 (0.89,5.04)
5	659	2.36 (1.47,3.77)	121	1.49 (0.38,5.84)	174	0.52 (0.07,3.60)	145	5.08 (2.57,9.90)	219	2.57 (1.16,5.63)
6	608	2.99 (1.96,4.55)	106	3.28 (1.24,8.55)	152	0.52 (0.07,3.60)	140	5.75 (3.03,10.76)	210	3.03 (1.45,6.24)
7	549	3.49 (2.35,5.17)	94	4.24 (1.78,9.94)	129	0.52 (0.07,3.60)	131	6.46 (3.52,11.68)	195	3.50 (1.76,6.88)
8	466	3.49 (2.35,5.17)	72	4.24 (1.78,9.94)	89	0.52 (0.07,3.60)	125	6.46 (3.52,11.68)	180	3.50 (1.76,6.88)
9	417	3.92 (2.68,5.74)	65	7.00 (3.31,14.49)	74	0.52 (0.07,3.60)	114	6.46 (3.52,11.68)	164	3.50 (1.76,6.88)
10	338	4.15 (2.85,6.04)	42	8.43 (4.19,16.57)	55	0.52 (0.07,3.60)	93	6.46 (3.52,11.68)	148	3.50 (1.76,6.88)

Table 1169. Reasons for First Revision Following Primary TKA for NexGen LPS Option/NexGen Precoat Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	7	31.8
2	Aseptic Loosening	5	22.7
3	Dislocation/Instability	3	13.6
4	Implant Failure	2	9.1
5	Arthrofibrosis	1	4.5
6	Malalignment	1	4.5
7	Metal Reaction/Metallosis	1	4.5
8	Pain	1	4.5
9	Patellofemoral Joint	1	4.5

Table 1170. Reasons for First Revision in the First 90 Days Following Primary TKA for NexGen LPS Option/NexGen Precoat Combination Cases

Rank	Reason for Revision	N	Percent
1	Arthrofibrosis	1	100.0

Table 1171. Reasons for First Revision Between 91 and 365 days Following Primary TKA for NexGen LPS Option/NexGen Precoat Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	1	100.0

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Table 1172. Descriptive Statistics of Cases Receiving the NexGen LPS Option/NexGen Precoat Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	340	45.6	
Age (years)	745	66.8 (10.5)	67 (14)
Height (cm)	745	170.2 (10.7)	170.2 (16)
Weight (kg)	745	95.4 (20.3)	93.7 (28.5)
BMI(kg/m^2)	745	33 (6.7)	32.3 (8.9)
Smoker - Never (%)	336	45.1	
Smoker - Previous (%)	318	42.7	
Smoker - Current (%)	88	11.8	
Smoker - Unknown (%)	3	0.4	

Table 1173. Distribution of Approach Used for NexGen LPS Option/NexGen Precoat Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	719	96.5
Mid-vastus	18	2.4
Sub-vastus	2	0.3
Lateral parapatellar	2	0.3
Missing/unknown/other	4	0.5

Table 1174. Distribution of Polyethylene Used for NexGen LPS Option/NexGen Precoat Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	607	81.5
XLPE	123	16.5
Antioxidant XLPE	0	0.0
Missing/unknown/other	15	2.0

Table 1175. Volume of Cases by Surgeon and Site for the NexGen LPS Option/NexGen Precoat Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	12 (19)	6 (12)
Cases per site	25 (38)	17 (32)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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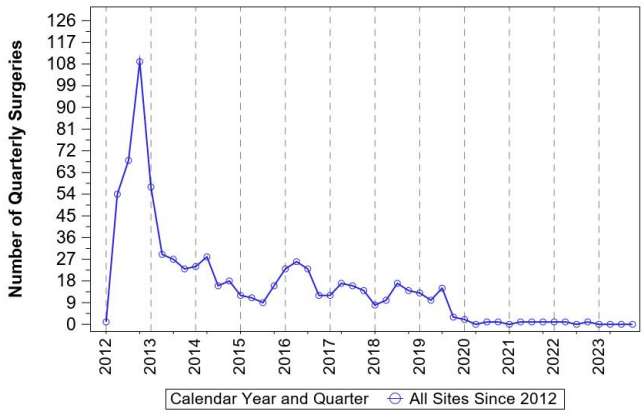


Figure 417. Utilization of the NexGen LPS Option/NexGen Precoat Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

596401751	599601751	596401352
596401752	599601752	599601352
599601552	596401551	599601851
599601551	599601452	599601852
596401651	596401652	596401351
599601651	599601451	599601351
596401552	596401451	
599601652	596401452	

Catalog Numbers of Tibial Components Used in the Analysis

598004702	598005702	598800300
598003702	598002702	598800700
598005701	598005703	
598004701	598002701	
598003701	598005704	

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4.5.21 NexGen LPS Option/NexGen TM

N = 1,401 primary cases were used for this analysis. Fewer than ten surgeons used this implant combination at fewer than ten sites in primary TKA cases.

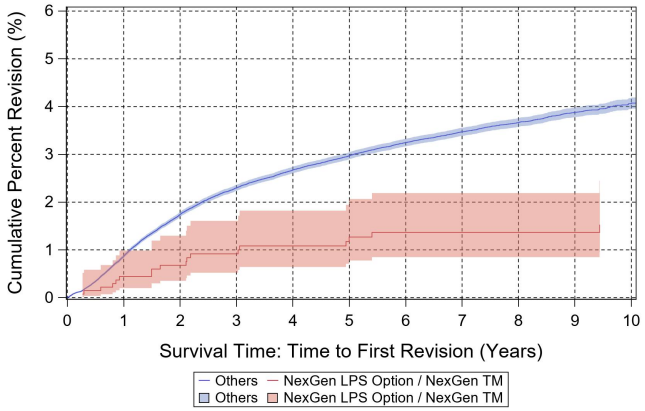


Figure 418. Cumulative Percent Revision Curve for the NexGen LPS Option/NexGen TM Combination, Compared to All Other Implant Combinations in Primary TKA Cases

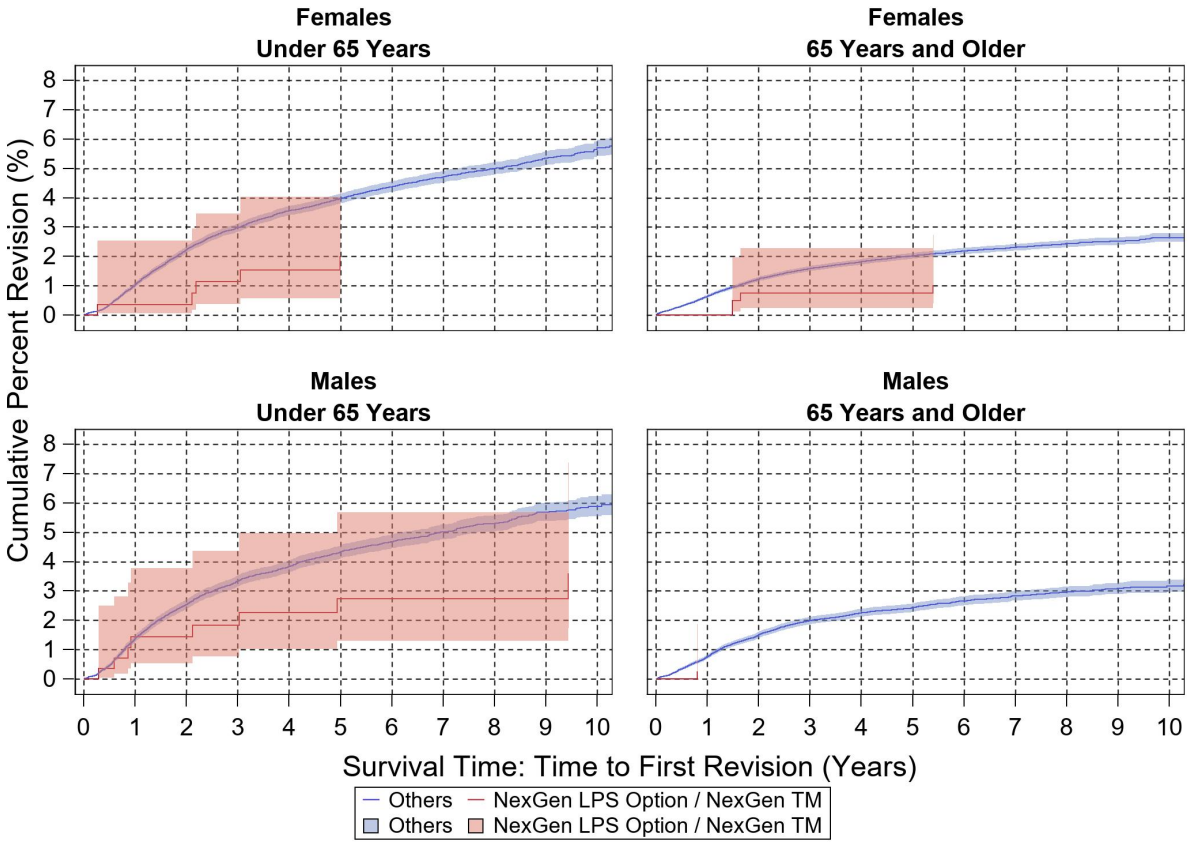


Figure 419. Cumulative Percent Revision Curve for the NexGen LPS Option/NexGen TM Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1176. Cumulative Percent Revision and Number at Risk for the NexGen LPS Option/NexGen TM Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,387	0.00 (0.00,0.00)	279	0.00 (0.00,0.00)	427	0.00 (0.00,0.00)	286	0.00 (0.00,0.00)	395	0.00 (0.00,0.00)
1	1,326	0.44 (0.20,0.99)	269	0.36 (0.05,2.54)	413	0.00 (0.00,0.00)	271	1.43 (0.54,3.77)	373	0.27 (0.04,1.87)
2	1,251	0.68 (0.35,1.30)	260	0.36 (0.05,2.54)	396	0.74 (0.24,2.28)	246	1.43 (0.54,3.77)	349	0.27 (0.04,1.87)
3	1,197	0.92 (0.52,1.61)	249	1.13 (0.37,3.47)	381	0.74 (0.24,2.28)	233	1.83 (0.77,4.36)	334	0.27 (0.04,1.87)
4	1,127	1.08 (0.64,1.82)	225	1.53 (0.58,4.03)	369	0.74 (0.24,2.28)	216	2.26 (1.02,4.96)	317	0.27 (0.04,1.87)
5	1,059	1.27 (0.78,2.07)	209	2.00 (0.83,4.76)	350	0.74 (0.24,2.28)	202	2.73 (1.31,5.67)	298	0.27 (0.04,1.87)
6	997	1.36 (0.85,2.19)	189	2.00 (0.83,4.76)	336	1.03 (0.39,2.72)	191	2.73 (1.31,5.67)	281	0.27 (0.04,1.87)
7	935	1.36 (0.85,2.19)	179	2.00 (0.83,4.76)	319	1.03 (0.39,2.72)	179	2.73 (1.31,5.67)	258	0.27 (0.04,1.87)
8	863	1.36 (0.85,2.19)	169	2.00 (0.83,4.76)	283	1.03 (0.39,2.72)	165	2.73 (1.31,5.67)	246	0.27 (0.04,1.87)
9	705	1.36 (0.85,2.19)	141	2.00 (0.83,4.76)	231	1.03 (0.39,2.72)	132	2.73 (1.31,5.67)	201	0.27 (0.04,1.87)
10	469	1.53 (0.95,2.45)	99	2.00 (0.83,4.76)	157	1.03 (0.39,2.72)	88	3.59 (1.73,7.37)	125	0.27 (0.04,1.87)

Table 1177. Reasons for First Revision Following Primary TKA for NexGen LPS Option/NexGen TM Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	4	30.8
2	Joint Infection	4	30.8
3	Aseptic Loosening	3	23.1
4	Arthrofibrosis	2	15.4

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1178. Reasons for First Revision Between 91 and 365 days Following Primary TKA for NexGen LPS Option/NexGen TM Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	2	66.7
2	Aseptic Loosening	1	33.3

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Table 1179. Descriptive Statistics of Cases Receiving the NexGen LPS Option/NexGen TM Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	713	50.9	
Age (years)	1,401	66.1 (8.1)	66 (11)
Height (cm)	1,401	170.5 (10.4)	170.2 (15.2)
Weight (kg)	1,401	93.2 (19.8)	92.1 (25.2)
BMI(kg/m^2)	1,401	32 (5.9)	31.3 (7.3)
Smoker - Never (%)	779	55.6	
Smoker - Previous (%)	567	40.5	
Smoker - Current (%)	53	3.8	
Smoker - Unknown (%)	2	0.1	

Table 1180. Distribution of Approach Used for NexGen LPS Option/NexGen TM Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	774	55.2
Mid-vastus	616	44.0
Sub-vastus	4	0.3
Lateral parapatellar	2	0.1
Missing/unknown/other	5	0.4

Table 1181. Distribution of Polyethylene Used for NexGen LPS Option/NexGen TM Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	1,399	99.9
XLPE	1	0.1
Antioxidant XLPE	0	0.0
Missing/unknown/other	1	0.1

Table 1182. Volume of Cases by Surgeon and Site for the NexGen LPS Option/NexGen TM Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	175 (296)	24 (326)
Cases per site	200 (304)	13 (580)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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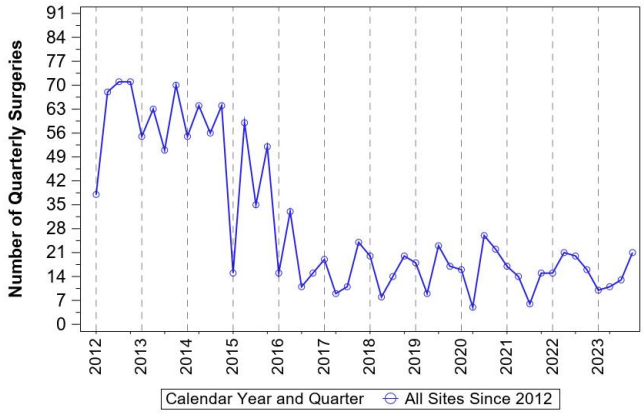


Figure 420. Utilization of the NexGen LPS Option/NexGen TM Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

599601651	596401452	599601452
596401551	599601551	599601451
596401552	599601552	596401352
599601652	596401451	596401351
599601751	596401752	599601352
599601752	596401751	
596401651	599601852	
596401652	599601851	

Catalog Numbers of Tibial Components Used in the Analysis

588606410	588605314	588605617
588606610	588605410	588606417
588606310	588605712	588606514
588605510	588606512	588606617
588606412	588605614	595403702
588605512	588606314	595404702
588605310	588606614	588605417
588606510	588605810	588606710
588605312	588605812	595403701
588605610	588605412	595405701
588605710	588605317	588605717
588606612	595402702	588606712
588606312	588605714	588607512
588605514	588605414	588605814
588606414	588605517	
588605612	595404701	

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4.5.22 NexGen Option/NexGen Option

N = 1,324 primary cases were used for this analysis. Distribution of utilization: 11 surgeons used this implant combination at fewer than 10 sites in primary TKA cases.

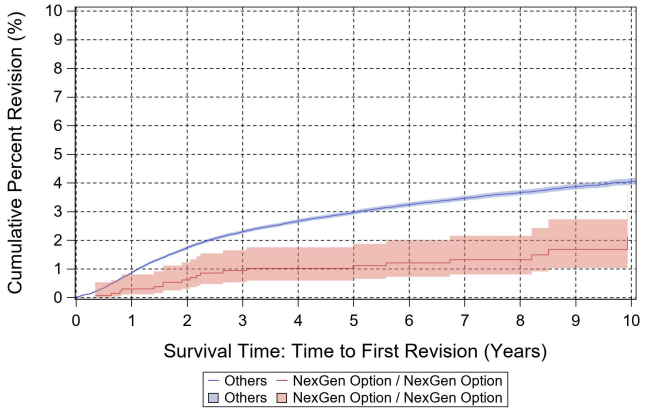


Figure 421. Cumulative Percent Revision Curve for the NexGen Option/NexGen Option Combination, Compared to All Other Implant Combinations in Primary TKA Cases

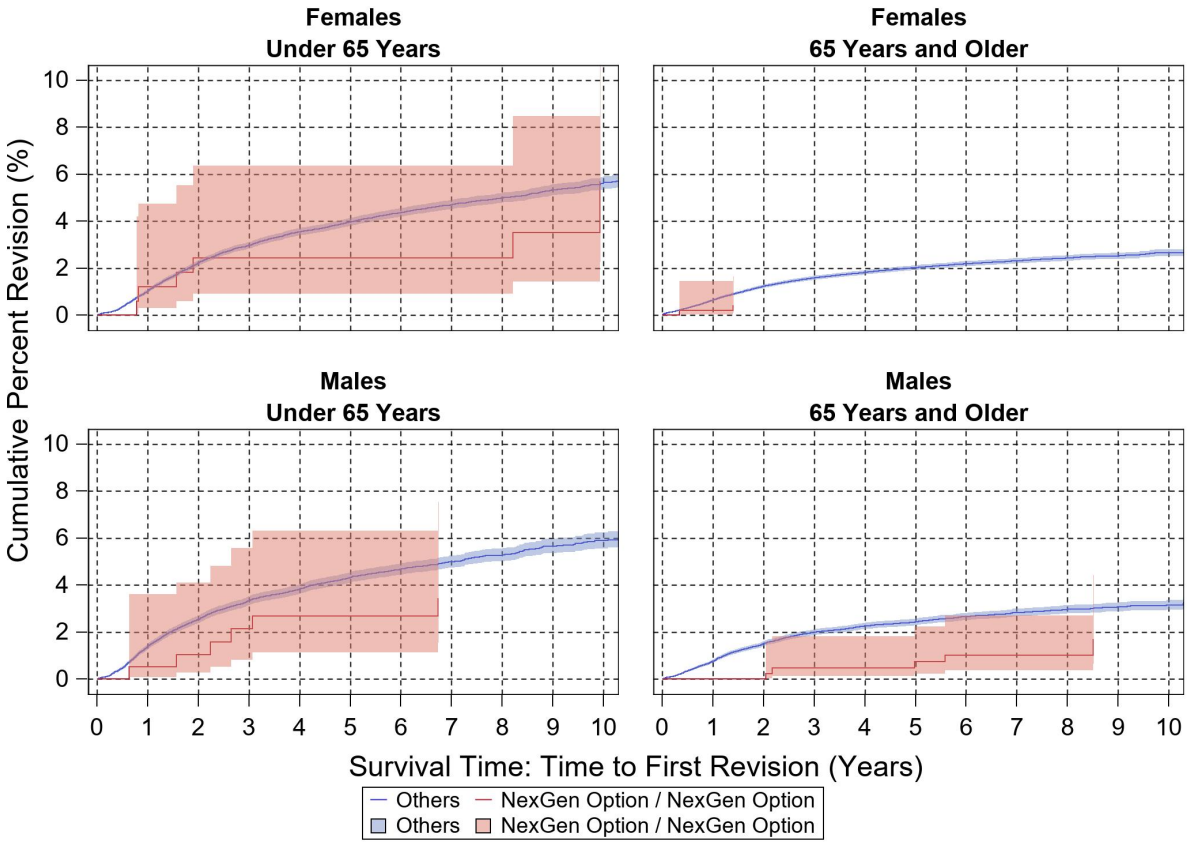


Figure 422. Cumulative Percent Revision Curve for the NexGen Option/NexGen Option Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1183. Cumulative Percent Revision and Number at Risk for the NexGen Option/NexGen Option Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,313	0.00 (0.00,0.00)	166	0.00 (0.00,0.00)	483	0.00 (0.00,0.00)	194	0.00 (0.00,0.00)	470	0.00 (0.00,0.00)
1	1,309	0.30 (0.11,0.81)	164	1.20 (0.30,4.73)	482	0.21 (0.03,1.46)	193	0.52 (0.07,3.60)	470	0.00 (0.00,0.00)
2	1,237	0.62 (0.31,1.23)	157	2.44 (0.92,6.36)	457	0.42 (0.10,1.66)	183	1.04 (0.26,4.10)	440	0.00 (0.00,0.00)
3	1,203	0.94 (0.54,1.65)	156	2.44 (0.92,6.36)	446	0.42 (0.10,1.66)	178	2.13 (0.81,5.58)	423	0.46 (0.11,1.81)
4	1,160	1.02 (0.60,1.76)	154	2.44 (0.92,6.36)	435	0.42 (0.10,1.66)	169	2.68 (1.12,6.33)	402	0.46 (0.11,1.81)
5	1,076	1.11 (0.66,1.88)	149	2.44 (0.92,6.36)	404	0.42 (0.10,1.66)	155	2.68 (1.12,6.33)	368	0.73 (0.23,2.24)
6	973	1.21 (0.73,2.01)	134	2.44 (0.92,6.36)	374	0.42 (0.10,1.66)	140	2.68 (1.12,6.33)	325	1.02 (0.38,2.70)
7	840	1.32 (0.81,2.16)	123	2.44 (0.92,6.36)	317	0.42 (0.10,1.66)	123	3.43 (1.54,7.54)	277	1.02 (0.38,2.70)
8	641	1.32 (0.81,2.16)	106	2.44 (0.92,6.36)	256	0.42 (0.10,1.66)	84	3.43 (1.54,7.54)	195	1.02 (0.38,2.70)
9	409	1.69 (1.04,2.73)	68	3.51 (1.43,8.48)	160	0.42 (0.10,1.66)	61	3.43 (1.54,7.54)	120	1.69 (0.64,4.43)
10	207	2.13 (1.22,3.71)	38	5.70 (2.25,14.03)	76	0.42 (0.10,1.66)	33	3.43 (1.54,7.54)	60	1.69 (0.64,4.43)

Table 1184. Reasons for First Revision Following Primary TKA for NexGen Option/NexGen Option Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	6	33.3
2	Dislocation/Instability	4	22.2
3	Joint Infection	2	11.1
4	Osteolysis	2	11.1
5	Pain	2	11.1
6	Arthrofibrosis	1	5.6
7	Implant Failure	1	5.6

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1185. Reasons for First Revision Between 91 and 365 days Following Primary TKA for NexGen Option/NexGen Option Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	1	33.3
2	Dislocation/Instability	1	33.3
3	Joint Infection	1	33.3

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Table 1186. Descriptive Statistics of Cases Receiving the NexGen Option/NexGen Option Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	654	49.4	
Age (years)	1,324	69.6 (8.3)	70 (11)
Height (cm)	1,324	170.1 (10.3)	170.2 (15.2)
Weight (kg)	1,324	92.9 (19)	91.8 (24.5)
BMI(kg/m^2)	1,324	32.1 (5.8)	31.4 (7.8)
Smoker - Never (%)	621	46.9	
Smoker - Previous (%)	612	46.2	
Smoker - Current (%)	90	6.8	
Smoker - Unknown (%)	1	0.1	

Table 1187. Distribution of Approach Used for NexGen Option/NexGen Option Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	1,308	98.8
Mid-vastus	12	0.9
Sub-vastus	0	0.0
Lateral parapatellar	4	0.3
Missing/unknown/other	0	0.0

Table 1188. Distribution of Polyethylene Used for NexGen Option/NexGen Option Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	154	11.6
XLPE	1,165	88.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	5	0.4

Table 1189. Volume of Cases by Surgeon and Site for the NexGen Option/NexGen Option Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	120 (167)	49 (141)
Cases per site	220 (410)	54 (141)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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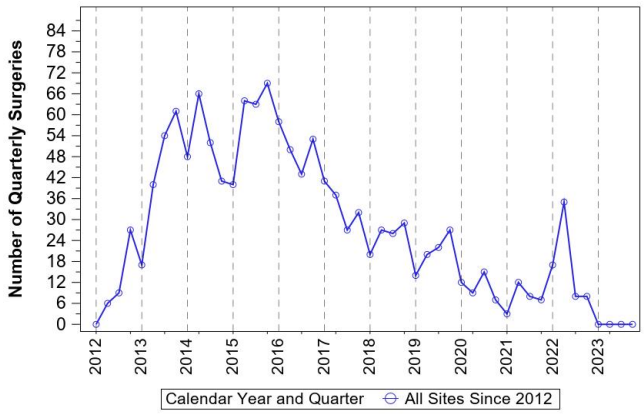


Figure 423. Utilization of the NexGen Option/NexGen Option Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

595601502	595601506	595601401
595601501	595601505	595601705
595601701	595601605	595601405
595601601	595601706	595601406
595601702	595601402	595601302
595601602	595601606	

Catalog Numbers of Tibial Components Used in the Analysis

598604702	598605701
598603702	598603701
598604701	598605702

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4.5.23 NexGen Option/NexGen Pegged

N = 623 primary cases were used for this analysis. Fewer than ten surgeons used this implant combination at fewer than ten sites in primary TKA cases.

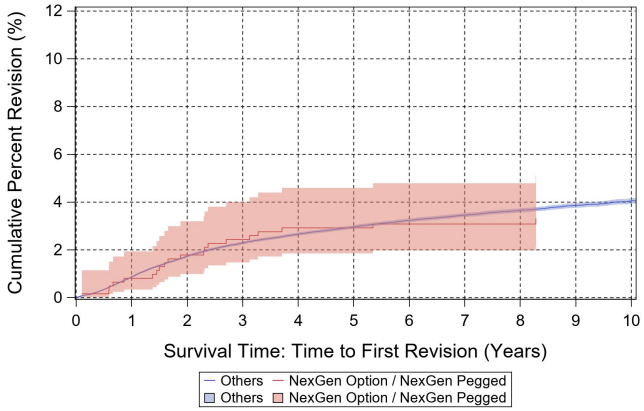


Figure 424. Cumulative Percent Revision Curve for the NexGen Option/NexGen Pegged Combination, Compared to All Other Implant Combinations in Primary TKA Cases

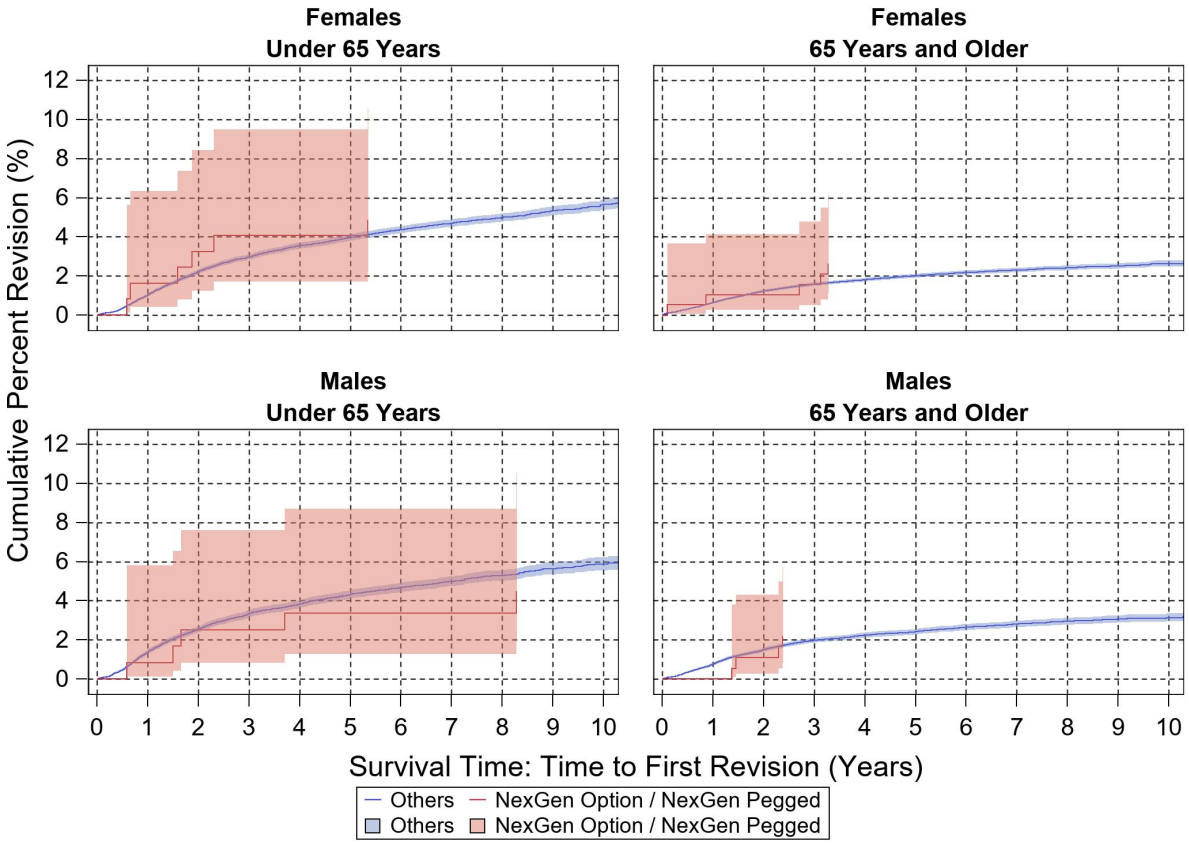


Figure 425. Cumulative Percent Revision Curve for the NexGen Option/NexGen Pegged Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1190. Cumulative Percent Revision and Number at Risk for the NexGen Option/NexGen Pegged Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	616	0.00 (0.00,0.00)	123	0.00 (0.00,0.00)	191	0.00 (0.00,0.00)	119	0.00 (0.00,0.00)	183	0.00 (0.00,0.00)
1	611	0.81 (0.34,1.94)	121	1.63 (0.41,6.34)	189	1.05 (0.26,4.12)	118	0.84 (0.12,5.81)	183	0.00 (0.00,0.00)
2	605	1.79 (0.99,3.20)	119	3.25 (1.23,8.43)	189	1.05 (0.26,4.12)	116	2.52 (0.82,7.61)	181	1.09 (0.27,4.30)
3	601	2.44 (1.48,4.01)	118	4.07 (1.71,9.49)	188	1.57 (0.51,4.79)	116	2.52 (0.82,7.61)	179	2.19 (0.83,5.72)
4	598	2.92 (1.85,4.60)	118	4.07 (1.71,9.49)	186	2.62 (1.10,6.17)	115	3.36 (1.28,8.71)	179	2.19 (0.83,5.72)
5	598	2.92 (1.85,4.60)	118	4.07 (1.71,9.49)	186	2.62 (1.10,6.17)	115	3.36 (1.28,8.71)	179	2.19 (0.83,5.72)
6	578	3.08 (1.98,4.79)	116	4.88 (2.22,10.54)	177	2.62 (1.10,6.17)	114	3.36 (1.28,8.71)	171	2.19 (0.83,5.72)
7	505	3.08 (1.98,4.79)	110	4.88 (2.22,10.54)	150	2.62 (1.10,6.17)	99	3.36 (1.28,8.71)	146	2.19 (0.83,5.72)
8	442	3.08 (1.98,4.79)	101	4.88 (2.22,10.54)	127	2.62 (1.10,6.17)	90	3.36 (1.28,8.71)	124	2.19 (0.83,5.72)
9	316	3.32 (2.15,5.12)	72	4.88 (2.22,10.54)	91	2.62 (1.10,6.17)	69	4.49 (1.88,10.52)	84	2.19 (0.83,5.72)
10	174	3.32 (2.15,5.12)	32	4.88 (2.22,10.54)	53	2.62 (1.10,6.17)	45	4.49 (1.88,10.52)	44	2.19 (0.83,5.72)

Table 1191. Reasons for First Revision Following Primary TKA for NexGen Option/NexGen Pegged Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	6	37.5
2	Pain	3	18.8
3	Dislocation/Instability	2	12.5
4	Joint Infection	2	12.5
5	Arthrofibrosis	1	6.2
6	Implant Failure	1	6.2
7	Peri-prosthetic fracture - Tibia	1	6.2

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1192. Reasons for First Revision Between 91 and 365 days Following Primary TKA for NexGen Option/NexGen Pegged Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Tibia	1	100.0

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Table 1193. Descriptive Statistics of Cases Receiving the NexGen Option/NexGen Pegged Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	315	50.6	
Age (years)	623	67.1 (8.9)	67 (12)
Height (cm)	623	169.9 (10.5)	169 (16)
Weight (kg)	623	95.7 (19.7)	94.7 (28.4)
BMI(kg/m^2)	623	33.1 (5.8)	32.4 (8.8)
Smoker - Never (%)	279	44.8	
Smoker - Previous (%)	274	44	
Smoker - Current (%)	68	10.9	
Smoker - Unknown (%)	2	0.3	

Table 1194. Distribution of Approach Used for NexGen Option/NexGen Pegged Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	611	98.1
Mid-vastus	2	0.3
Sub-vastus	0	0.0
Lateral parapatellar	10	1.6
Missing/unknown/other	0	0.0

Table 1195. Distribution of Polyethylene Used for NexGen Option/NexGen Pegged Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	1	0.2
XLPE	621	99.7
Antioxidant XLPE	0	0.0
Missing/unknown/other	1	0.2

Table 1196. Volume of Cases by Surgeon and Site for the NexGen Option/NexGen Pegged Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	77 (130)	42 (33)
Cases per site	124 (191)	25 (109)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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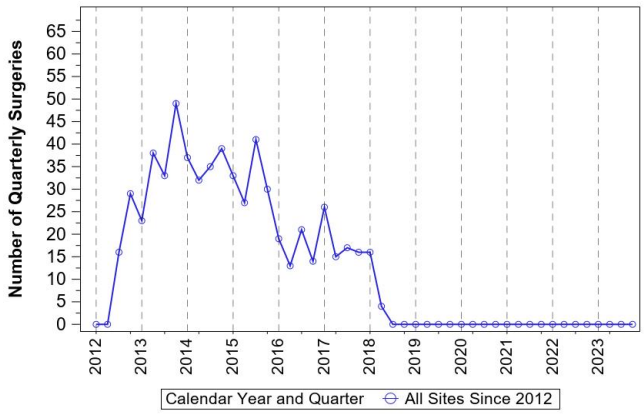


Figure 426. Utilization of the NexGen Option/NexGen Pegged Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

595601501	595601605	595601302
595601502	595601606	595601305
595601506	595601401	596601701
595601702	595601705	596601401
595601602	595601405	596601402
595601505	595601406	595601301
595601701	596601602	595601306
595601706	596601501	
595601402	596601601	
595601601	596601502	

Catalog Numbers of Tibial Components Used in the Analysis

597003502	597005501	597002502
597004501	597003501	597005503
597004502	597005502	

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4.5.24 NexGen Precoat/NexGen Precoat

N = 648 primary cases were used for this analysis. Distribution of utilization: 16 surgeons across 19 sites used this implant combination in primary TKA cases.

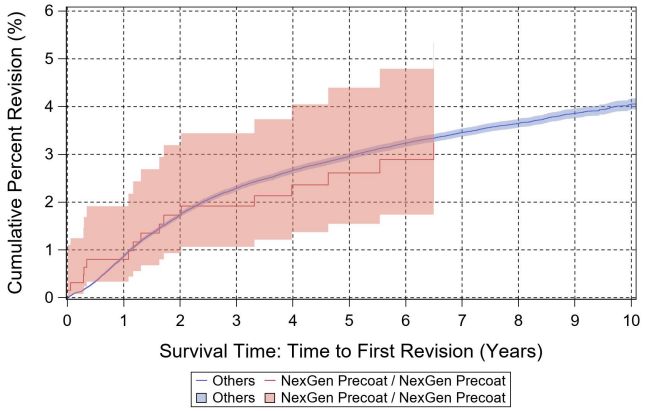


Figure 427. Cumulative Percent Revision Curve for the NexGen Precoat/NexGen Precoat Combination, Compared to All Other Implant Combinations in Primary TKA Cases

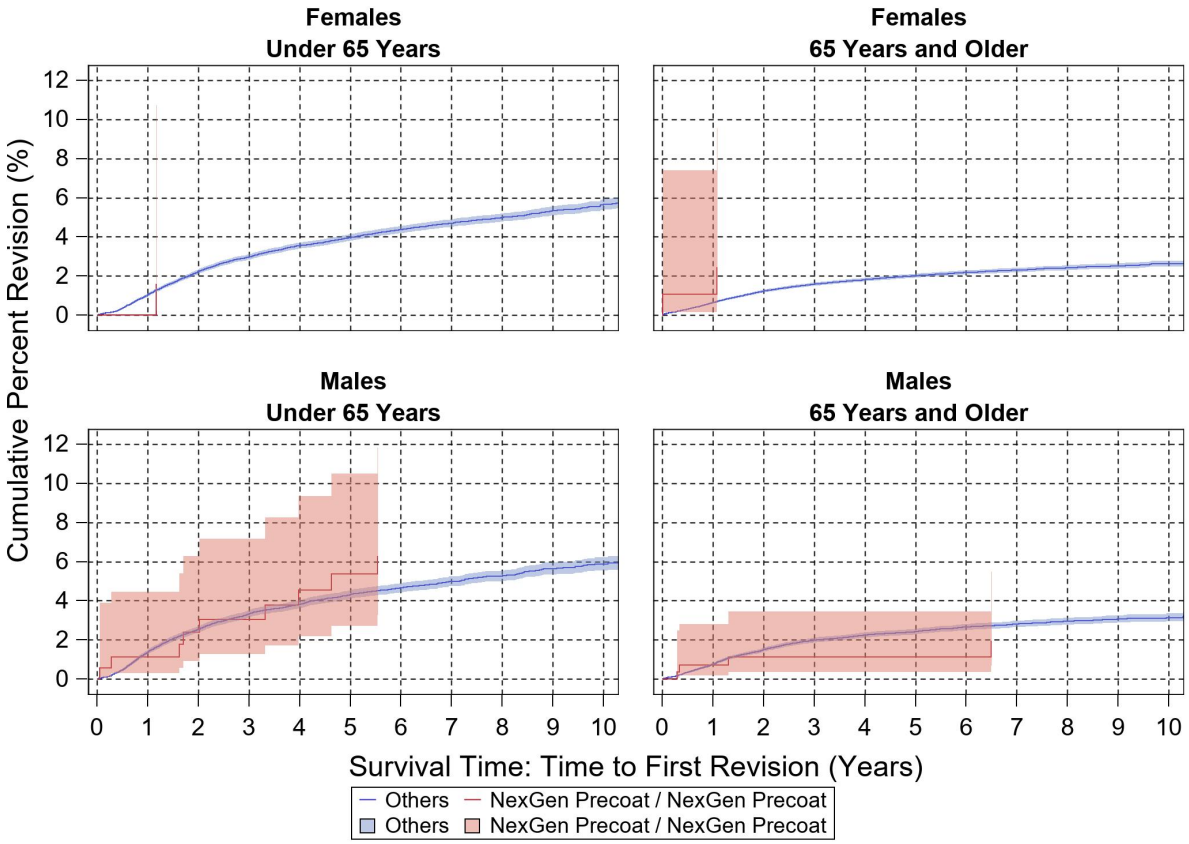


Figure 428. Cumulative Percent Revision Curve for the NexGen Precoat/NexGen Precoat Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1197. Cumulative Percent Revision and Number at Risk for the NexGen Precoat/NexGen Precoat Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	640	0.00 (0.00,0.00)	73	0.00 (0.00,0.00)	93	0.00 (0.00,0.00)	179	0.00 (0.00,0.00)	295	0.00 (0.00,0.00)
1	552	0.80 (0.33,1.91)	64	0.00 (0.00,0.00)	72	1.08 (0.15,7.39)	160	1.13 (0.28,4.46)	256	0.71 (0.18,2.81)
2	518	1.73 (0.93,3.19)	62	1.59 (0.23,10.74)	70	2.45 (0.61,9.54)	151	2.40 (0.91,6.28)	235	1.12 (0.36,3.44)
3	466	1.92 (1.06,3.44)	54	1.59 (0.23,10.74)	60	2.45 (0.61,9.54)	137	3.05 (1.28,7.18)	215	1.12 (0.36,3.44)
4	427	2.36 (1.37,4.05)	52	1.59 (0.23,10.74)	56	2.45 (0.61,9.54)	125	4.54 (2.18,9.33)	194	1.12 (0.36,3.44)
5	371	2.61 (1.55,4.40)	41	1.59 (0.23,10.74)	48	2.45 (0.61,9.54)	112	5.36 (2.70,10.51)	170	1.12 (0.36,3.44)
6	308	2.89 (1.74,4.79)	35	1.59 (0.23,10.74)	43	2.45 (0.61,9.54)	92	6.27 (3.28,11.82)	138	1.12 (0.36,3.44)
7	233	3.25 (1.97,5.33)	29	1.59 (0.23,10.74)	36	2.45 (0.61,9.54)	67	6.27 (3.28,11.82)	101	1.94 (0.68,5.48)
8	143	3.25 (1.97,5.33)	17	1.59 (0.23,10.74)	20	2.45 (0.61,9.54)	46	6.27 (3.28,11.82)	60	1.94 (0.68,5.48)
9	117	3.25 (1.97,5.33)	13	1.59 (0.23,10.74)	14	2.45 (0.61,9.54)	42	6.27 (3.28,11.82)	48	1.94 (0.68,5.48)
10	72	3.25 (1.97,5.33)	*	1.59 (0.23,10.74)	*	2.45 (0.61,9.54)	26	6.27 (3.28,11.82)	29	1.94 (0.68,5.48)

* Denotes that the number of cases is between 1 and 10.

Table 1198. Reasons for First Revision Following Primary TKA for NexGen Precoat/NexGen Precoat Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	5	35.7
2	Aseptic Loosening	3	21.4
3	Arthrofibrosis	2	14.3
4	Dislocation/Instability	2	14.3
5	Pain	1	7.1
6	Patellofemoral Joint	1	7.1

Table 1199. Reasons for First Revision in the First 90 Days Following Primary TKA for NexGen Precoat/NexGen Precoat Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	100.0

Table 1200. Reasons for First Revision Between 91 and 365 days Following Primary TKA for NexGen Precoat/NexGen Precoat Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	2	100.0

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Table 1201. Descriptive Statistics of Cases Receiving the NexGen Precoat/NexGen Precoat Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	168	25.9	
Age (years)	648	67.1 (8.6)	67 (12)
Height (cm)	648	175.5 (10.7)	175.3 (15.2)
Weight (kg)	648	101.4 (21.3)	99.8 (28)
BMI(kg/m^2)	648	32.9 (6.1)	32.3 (8)
Smoker - Never (%)	270	41.7	
Smoker - Previous (%)	293	45.2	
Smoker - Current (%)	77	11.9	
Smoker - Unknown (%)	8	1.2	

Table 1202. Distribution of Approach Used for NexGen Precoat/NexGen Precoat Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	628	96.9
Mid-vastus	4	0.6
Sub-vastus	11	1.7
Lateral parapatellar	2	0.3
Missing/unknown/other	3	0.5

Table 1203. Distribution of Polyethylene Used for NexGen Precoat/NexGen Precoat Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	12	1.9
XLPE	624	96.3
Antioxidant XLPE	0	0.0
Missing/unknown/other	12	1.9

Table 1204. Volume of Cases by Surgeon and Site for the NexGen Precoat/NexGen Precoat Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	40 (57)	13 (47)
Cases per site	34 (56)	11 (46)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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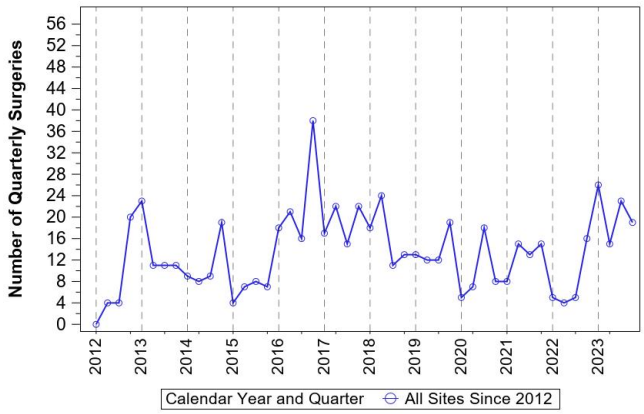


Figure 429. Utilization of the NexGen Precoat/NexGen Precoat Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

595001701	597001801	597001402
595001702	597001701	595001402
595001602	597001802	595001705
597001502	595001502	595001605
595001601	595001606	595001506
597001602	595001505	595001401
597001501	595001501	595001302
597001601	595001706	
597001702	597001401	

Catalog Numbers of Tibial Components Used in the Analysis

598004702	598003702	598002702
598004701	598005702	
598005701	598005703	
598003701	598002701	

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4.5.25 NK II/NK II

N = 994 primary cases were used for this analysis. Fewer than ten surgeons used this implant combination at fewer than ten sites in primary TKA cases.

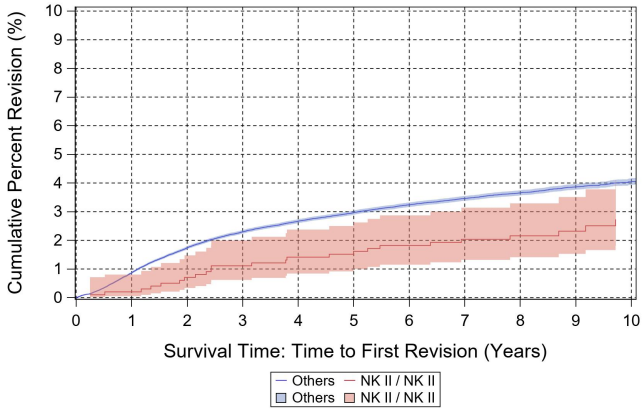


Figure 430. Cumulative Percent Revision Curve for the NK II/NK II Combination, Compared to All Other Implant Combinations in Primary TKA Cases

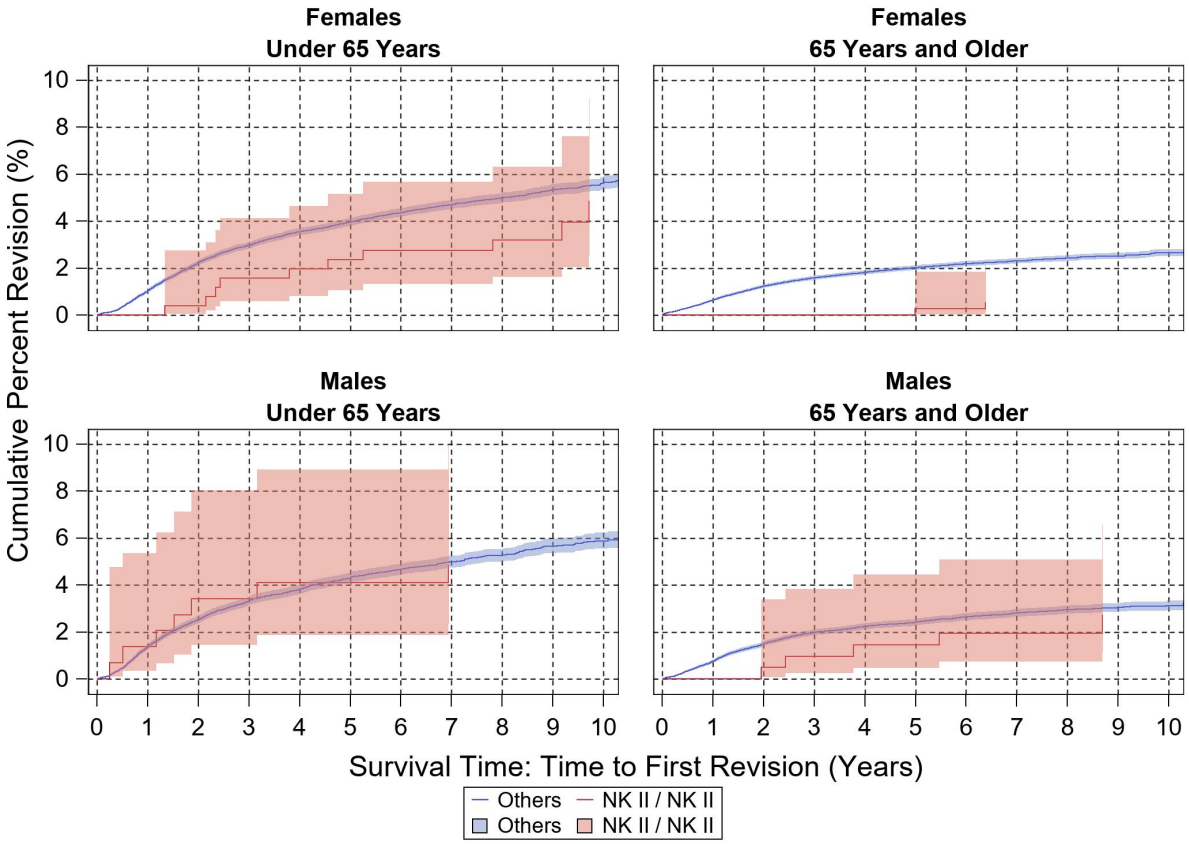


Figure 431. Cumulative Percent Revision Curve for the NK II/NK II Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1205. Cumulative Percent Revision and Number at Risk for the NK II/NK II Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	990	0.00 (0.00,0.00)	255	0.00 (0.00,0.00)	383	0.00 (0.00,0.00)	146	0.00 (0.00,0.00)	206	0.00 (0.00,0.00)
1	988	0.20 (0.05,0.81)	255	0.00 (0.00,0.00)	383	0.00 (0.00,0.00)	144	1.37 (0.34,5.37)	206	0.00 (0.00,0.00)
2	983	0.71 (0.34,1.48)	254	0.39 (0.06,2.75)	383	0.00 (0.00,0.00)	141	3.42 (1.44,8.03)	205	0.49 (0.07,3.40)
3	979	1.11 (0.62,2.00)	251	1.57 (0.59,4.13)	383	0.00 (0.00,0.00)	141	3.42 (1.44,8.03)	204	0.97 (0.24,3.83)
4	976	1.41 (0.84,2.38)	250	1.96 (0.82,4.65)	383	0.00 (0.00,0.00)	140	4.11 (1.87,8.92)	203	1.46 (0.47,4.45)
5	971	1.62 (0.99,2.63)	248	2.35 (1.06,5.16)	381	0.26 (0.04,1.84)	140	4.11 (1.87,8.92)	202	1.46 (0.47,4.45)
6	937	1.82 (1.15,2.87)	236	2.75 (1.32,5.68)	372	0.26 (0.04,1.84)	135	4.11 (1.87,8.92)	194	1.94 (0.73,5.10)
7	879	2.04 (1.32,3.14)	227	2.75 (1.32,5.68)	343	0.54 (0.13,2.14)	126	4.86 (2.34,9.93)	183	1.94 (0.73,5.10)
8	788	2.16 (1.41,3.29)	205	3.20 (1.61,6.31)	301	0.54 (0.13,2.14)	118	4.86 (2.34,9.93)	164	1.94 (0.73,5.10)
9	548	2.32 (1.53,3.51)	134	3.20 (1.61,6.31)	216	0.54 (0.13,2.14)	84	4.86 (2.34,9.93)	114	2.73 (1.12,6.57)
10	358	2.73 (1.81,4.11)	86	4.87 (2.54,9.23)	137	0.54 (0.13,2.14)	62	4.86 (2.34,9.93)	73	2.73 (1.12,6.57)

Table 1206. Reasons for First Revision Following Primary TKA for NK II/NK II Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	7	31.8
2	Joint Infection	5	22.7
3	Aseptic Loosening	3	13.6
4	Implant Failure	3	13.6
5	Pain	2	9.1
6	Poly liner wear	2	9.1

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1207. Reasons for First Revision Between 91 and 365 days Following Primary TKA for NK II/NK II Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	100.0

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Table 1208. Descriptive Statistics of Cases Receiving the NK II/NK II Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	642	64.6	
Age (years)	994	66.9 (9.2)	67 (14)
Height (cm)	991	168.3 (10.1)	167.6 (15.2)
Weight (kg)	991	93.7 (21.4)	90.7 (28.6)
BMI(kg/m^2)	991	33 (6.8)	32.1 (8.9)
Smoker - Never (%)	538	54.1	
Smoker - Previous (%)	376	37.8	
Smoker - Current (%)	76	7.7	
Smoker - Unknown (%)	4	0.4	

Table 1209. Distribution of Approach Used for NK II/NK II Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	925	93.1
Mid-vastus	38	3.8
Sub-vastus	12	1.2
Lateral parapatellar	5	0.5
Missing/unknown/other	14	1.4

Table 1210. Distribution of Polyethylene Used for NK II/NK II Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	497	50.0
XLPE	487	49.0
Antioxidant XLPE	0	0.0
Missing/unknown/other	10	1.0

Table 1211. Volume of Cases by Surgeon and Site for the NK II/NK II Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	110 (181)	11 (104)
Cases per site	198 (166)	129 (247)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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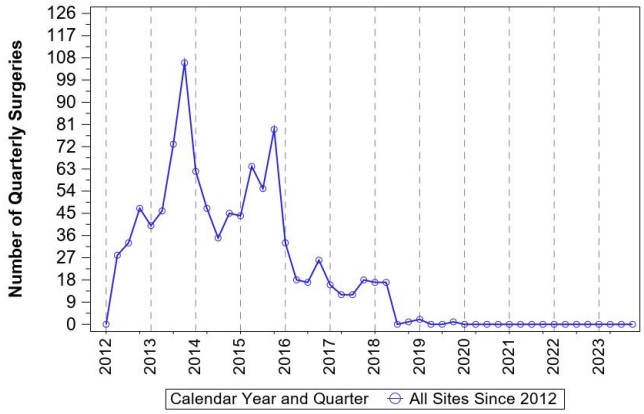


Figure 432. Utilization of the NK II/NK II Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

630700021	621200021	630700008
630700020	621200041	632000103
630700030	621200040	632000203
630700031	630700040	630700009
621200031	621200010	632000102
621200030	621200050	632000202
621200020	621200011	621200008
630700041	621200051	632000101
630700011	630700051	
630700010	630700050	

Catalog Numbers of Tibial Components Used in the Analysis

630701210	630700240	642001240
630700210	630701240	642000100
630700220	642000210	630700002
630701220	642001210	642000240
630701230	642001220	630700250
630700230	642001230	630701002
630700200	642000230	
630701200	642000220	

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4.5.26 NK II GS/NK II

N = 4,169 primary cases were used for this analysis. Distribution of utilization: 12 surgeons across 11 sites used this implant combination in primary TKA cases.

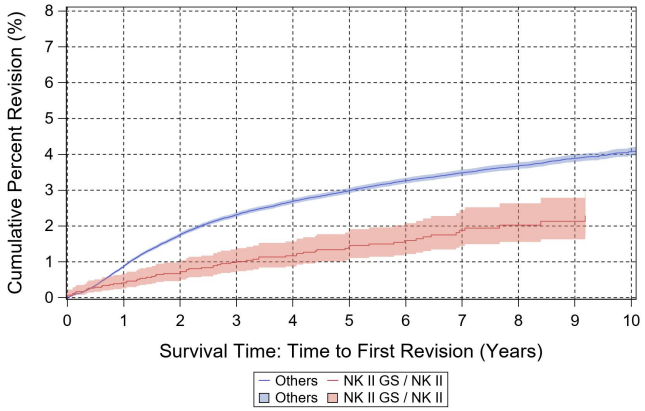


Figure 433. Cumulative Percent Revision Curve for the NK II GS/NK II Combination, Compared to All Other Implant Combinations in Primary TKA Cases

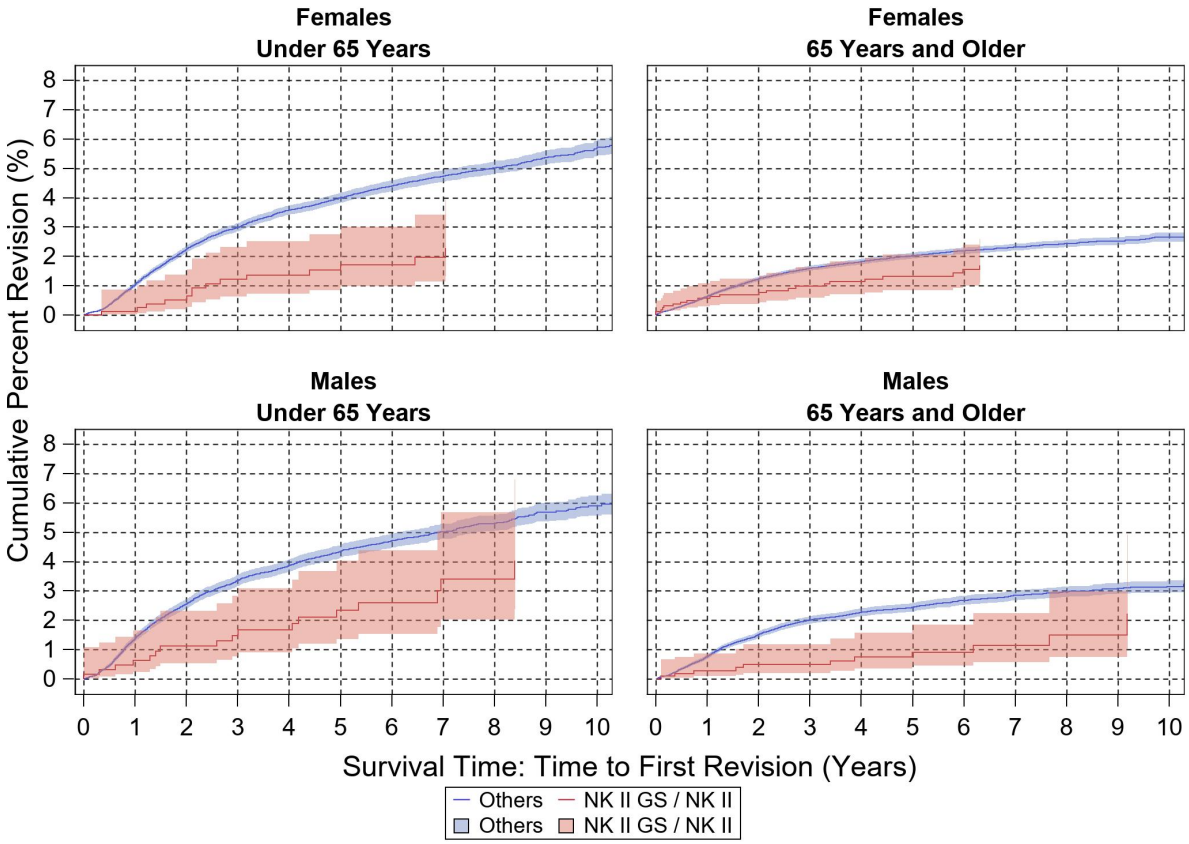


Figure 434. Cumulative Percent Revision Curve for the NK II GS/NK II Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1212. Cumulative Percent Revision and Number at Risk for the NK II GS/NK II Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	4,153	0.00 (0.00,0.00)	822	0.00 (0.00,0.00)	1,610	0.00 (0.00,0.00)	648	0.00 (0.00,0.00)	1,073	0.00 (0.00,0.00)
1	3,961	0.41 (0.26,0.66)	781	0.12 (0.02,0.87)	1,539	0.56 (0.29,1.08)	619	0.62 (0.23,1.65)	1,022	0.28 (0.09,0.87)
2	3,683	0.67 (0.46,0.98)	731	0.52 (0.19,1.37)	1,442	0.69 (0.38,1.25)	578	1.12 (0.53,2.33)	932	0.49 (0.20,1.18)
3	3,304	0.98 (0.71,1.35)	670	1.21 (0.63,2.32)	1,282	0.98 (0.59,1.62)	525	1.48 (0.77,2.83)	827	0.49 (0.20,1.18)
4	2,986	1.17 (0.87,1.57)	611	1.36 (0.73,2.52)	1,167	1.14 (0.71,1.83)	474	1.67 (0.90,3.08)	734	0.75 (0.36,1.57)
5	2,514	1.42 (1.08,1.87)	532	1.53 (0.85,2.76)	991	1.32 (0.84,2.06)	393	2.34 (1.36,4.02)	598	0.91 (0.45,1.85)
6	2,021	1.59 (1.22,2.08)	432	1.72 (0.97,3.02)	794	1.56 (1.01,2.41)	320	2.60 (1.53,4.39)	475	0.91 (0.45,1.85)
7	1,531	1.88 (1.44,2.44)	325	1.97 (1.13,3.42)	616	1.69 (1.10,2.60)	234	3.40 (2.03,5.68)	356	1.13 (0.57,2.23)
8	1,064	2.02 (1.56,2.63)	227	2.28 (1.32,3.92)	428	1.69 (1.10,2.60)	171	3.40 (2.03,5.68)	238	1.49 (0.74,2.99)
9	683	2.13 (1.63,2.79)	149	2.28 (1.32,3.92)	273	1.69 (1.10,2.60)	113	4.03 (2.37,6.80)	148	1.49 (0.74,2.99)
10	341	2.29 (1.72,3.04)	69	2.28 (1.32,3.92)	138	1.69 (1.10,2.60)	55	4.03 (2.37,6.80)	79	2.23 (1.00,4.91)

Table 1213. Reasons for First Revision Following Primary TKA for NK II GS/NK II Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	18	26.5
2	Dislocation/Instability	11	16.2
3	Aseptic Loosening	10	14.7
4	Pain	10	14.7
5	Implant Failure	7	10.3
6	Malalignment	4	5.9
7	Arthrofibrosis	2	2.9
8	Poly liner wear	2	2.9
9	Metal Reaction/Metallosis	1	1.5
10	Osteolysis	1	1.5
	Unknown/missing/other	1	2.9

Table 1214. Reasons for First Revision in the First 90 Days Following Primary TKA for NK II GS/NK II Combination Cases

Rank	Reason for Revision	N	Percent
1	Implant Failure	3	42.9
2	Dislocation/Instability	1	14.3
3	Joint Infection	1	14.3
4	Malalignment	1	14.3
5	Peri-prosthetic fracture - Tibia	1	14.3

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Table 1215. Reasons for First Revision Between 91 and 365 days Following Primary TKA for NK II GS/NK II Combination Cases

Rank	Reason for Revision	N	Percent
1	Pain	4	33.3
2	Dislocation/Instability	2	16.7
3	Joint Infection	2	16.7
4	Aseptic Loosening	1	8.3
5	Peri-prosthetic fracture - Femur	1	8.3
6	Malalignment	1	8.3
7	Arthrofibrosis	1	8.3

Table 1216. Descriptive Statistics of Cases Receiving the NK II GS/NK II Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	2,438	58.5	
Age (years)	4,169	67.9 (8.9)	68 (12)
Height (cm)	4,168	169.5 (10.7)	167.6 (15.8)
Weight (kg)	4,167	93.7 (21.1)	92.1 (28.2)
BMI(kg/m^2)	4,167	32.5 (6.1)	31.9 (8.8)
Smoker - Never (%)	2,181	52.3	
Smoker - Previous (%)	1,705	40.9	
Smoker - Current (%)	281	6.7	
Smoker - Unknown (%)	2	0.1	

Table 1217. Distribution of Approach Used for NK II GS/NK II Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	3,980	95.5
Mid-vastus	65	1.6
Sub-vastus	108	2.6
Lateral parapatellar	5	0.1
Missing/unknown/other	11	0.3

Table 1218. Distribution of Polyethylene Used for NK II GS/NK II Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	4,138	99.3
Antioxidant XLPE	0	0.0
Missing/unknown/other	31	0.7

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Table 1219. Volume of Cases by Surgeon and Site for the NK II GS/NK II Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	347 (525)	59 (659)
Cases per site	379 (494)	119 (862)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

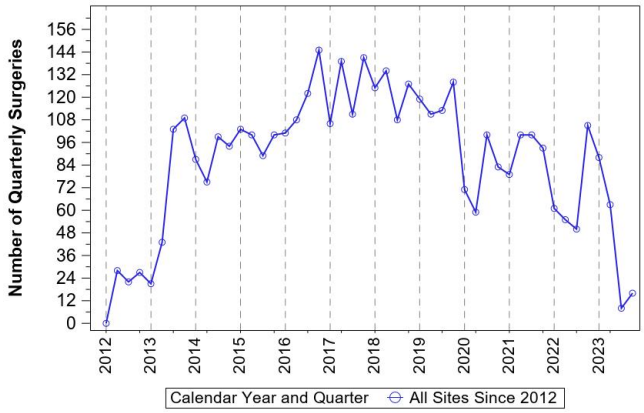


Figure 435. Utilization of the NK II GS/NK II Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

541401501	541401402	541601602
541401502	541401401	541201401
541001602	541401601	541401702
541001601	541001501	541001801
541001702	541601502	541001802
541001701	541601501	541601601
541201602	541001402	541401302
541201701	541201802	541601701
541201501	541001401	541401301
541201502	541201402	541601302
541201702	541401701	541601702
541201601	541201801	541601301
541401602	541601402	
541001502	541601401	

Catalog Numbers of Tibial Components Used in the Analysis

630701210	630700240	621200210
630700210	630701200	621201220
630701220	630701240	621201230
630701230	630700200	621200230
630700230	621201210	621201200
630700220	621200220	621200200

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621200240	621201002	621201250
621201240	630700250	642001220
630701250	621200250	

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4.5.27 Persona CR (Cemented)/Persona (Cemented)

N = 47,614 primary cases were used for this analysis. Distribution of utilization: 233 surgeons across 78 sites used this implant combination in primary TKA cases.

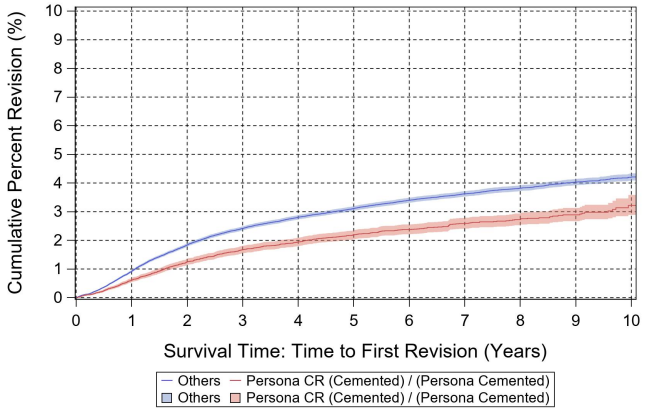


Figure 436. Cumulative Percent Revision Curve for the Persona CR (Cemented)/Persona (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases

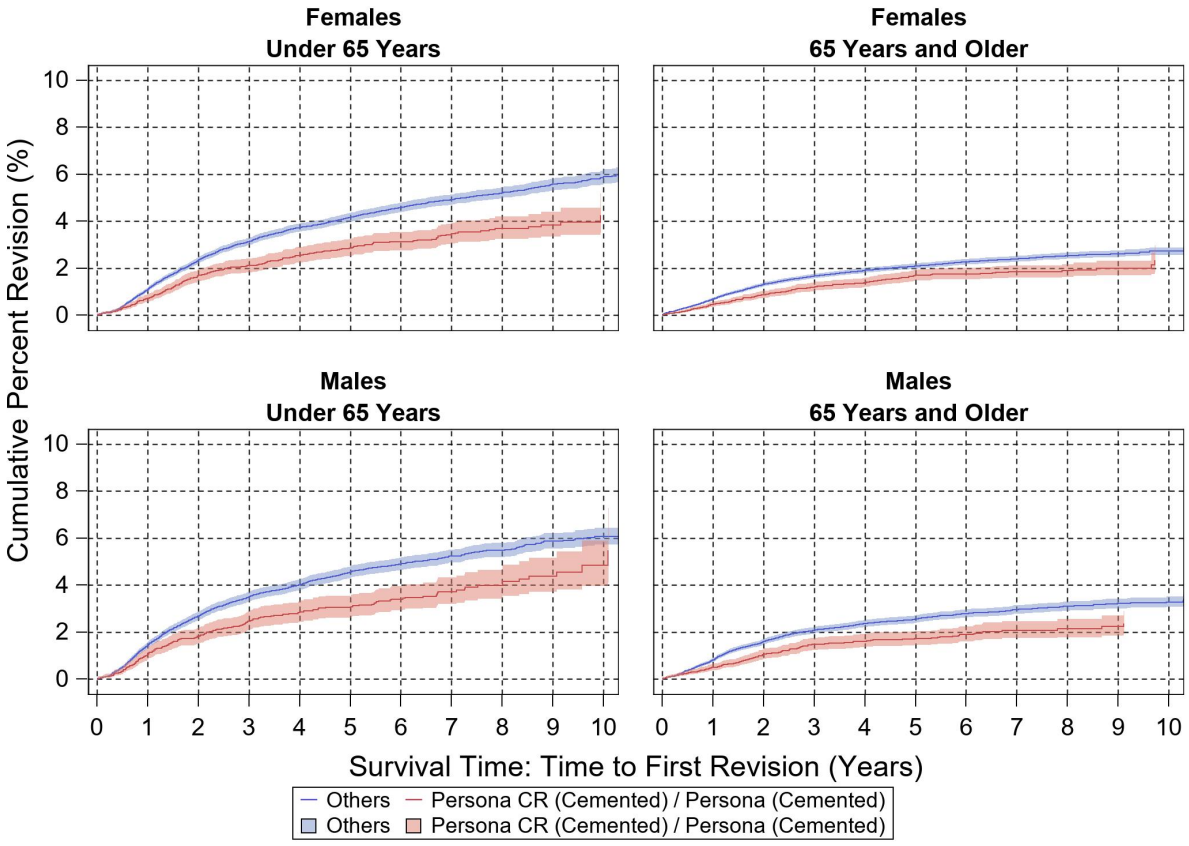


Figure 437. Cumulative Percent Revision Curve for the Persona CR (Cemented)/Persona (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1220. Cumulative Percent Revision and Number at Risk for the Persona CR (Cemented)/Persona (Cemented) Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	47,421	0.00 (0.00,0.00)	11,228	0.00 (0.00,0.00)	18,235	0.00 (0.00,0.00)	7,037	0.00 (0.00,0.00)	10,920	0.00 (0.00,0.00)
1	39,582	0.61 (0.54,0.68)	9,681	0.70 (0.56,0.88)	14,962	0.44 (0.35,0.55)	6,022	1.04 (0.82,1.32)	8,916	0.50 (0.37,0.66)
2	33,180	1.25 (1.14,1.36)	8,286	1.67 (1.44,1.95)	12,403	0.86 (0.72,1.02)	5,121	1.83 (1.52,2.19)	7,369	1.03 (0.84,1.26)
3	28,103	1.67 (1.55,1.81)	7,087	2.10 (1.83,2.42)	10,460	1.19 (1.02,1.38)	4,350	2.47 (2.10,2.91)	6,205	1.47 (1.23,1.76)
4	24,086	1.94 (1.80,2.09)	6,067	2.54 (2.23,2.89)	8,983	1.38 (1.19,1.60)	3,764	2.83 (2.42,3.30)	5,271	1.61 (1.35,1.91)
5	19,126	2.19 (2.04,2.36)	4,916	2.86 (2.52,3.24)	7,036	1.69 (1.47,1.94)	3,072	3.05 (2.61,3.55)	4,101	1.71 (1.44,2.03)
6	14,536	2.38 (2.21,2.55)	3,786	3.11 (2.75,3.53)	5,282	1.75 (1.53,2.01)	2,400	3.39 (2.92,3.94)	3,067	1.88 (1.59,2.24)
7	10,273	2.59 (2.41,2.79)	2,680	3.46 (3.05,3.93)	3,697	1.84 (1.60,2.12)	1,745	3.72 (3.20,4.33)	2,150	2.07 (1.74,2.46)
8	6,566	2.72 (2.53,2.94)	1,744	3.68 (3.23,4.20)	2,355	1.88 (1.63,2.17)	1,079	3.98 (3.41,4.64)	1,387	2.13 (1.78,2.55)
9	3,615	2.89 (2.67,3.13)	980	3.84 (3.35,4.40)	1,224	1.98 (1.70,2.31)	606	4.38 (3.71,5.17)	804	2.23 (1.84,2.70)
10	1,109	3.22 (2.89,3.58)	287	4.26 (3.51,5.18)	357	2.33 (1.83,2.97)	200	4.83 (3.95,5.91)	264	2.36 (1.91,2.91)

Table 1221. Reasons for First Revision Following Primary TKA for Persona CR (Cemented)/Persona (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	240	28.4
2	Joint Infection	208	24.6
3	Aseptic Loosening	173	20.5
4	Arthrofibrosis	75	8.9
5	Pain	57	6.8
6	Malalignment	19	2.3
7	Implant Failure	18	2.1
8	Poly liner wear	17	2.0
9	Peri-prosthetic fracture - Femur	14	1.7
10	Patellofemoral Joint	7	0.8
	Unknown/missing/other	6	1.9

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Table 1222. Reasons for First Revision in the First 90 Days Following Primary TKA for Persona CR (Cemented)/Persona (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	27	55.1
2	Dislocation/Instability	8	16.3
3	Peri-prosthetic fracture - Femur	5	10.2
4	Aseptic Loosening	2	4.1
5	Implant Failure	2	4.1
6	Pain	2	4.1
7	Malalignment	2	4.1
8	Arthrofibrosis	1	2.0

Table 1223. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Persona CR (Cemented)/Persona (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	72	34.6
2	Dislocation/Instability	39	18.8
3	Arthrofibrosis	30	14.4
4	Aseptic Loosening	28	13.5
5	Pain	18	8.6
6	Malalignment	6	2.9
7	Extensor mechanism failure	4	1.9
8	Implant Failure	3	1.4
9	Poly liner wear	2	1.0
10	Peri-prosthetic fracture - Femur	2	1.0
	Unknown/missing/other	1	1.9

Table 1224. Descriptive Statistics of Cases Receiving the Persona CR (Cemented)/Persona (Cemented) Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	29,562	62.1	
Age (years)	47,614	67 (9.1)	67 (12)
Height (cm)	47,087	168.5 (10.5)	167.6 (16.5)
Weight (kg)	47,087	93.9 (20.9)	92.3 (27.7)
BMI(kg/m^2)	47,087	33 (6.5)	32.3 (8.8)
Smoker - Never (%)	25,308	53.2	
Smoker - Previous (%)	18,248	38.3	
Smoker - Current (%)	3,869	8.1	
Smoker - Unknown (%)	189	0.4	

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Table 1225. Distribution of Approach Used for Persona CR (Cemented)/Persona (Cemented) Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	42,113	88.4
Mid-vastus	4,005	8.4
Sub-vastus	870	1.8
Lateral parapatellar	54	0.1
Missing/unknown/other	572	1.2

Table 1226. Distribution of Polyethylene Used for Persona CR (Cemented)/Persona (Cemented) Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	12,606	26.5
XLPE	1	0.0
Antioxidant XLPE	34,711	72.9
Missing/unknown/other	296	0.6

Table 1227. Volume of Cases by Surgeon and Site for the Persona CR (Cemented)/Persona (Cemented) Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	204 (394)	49 (236)
Cases per site	610 (808)	308 (706)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

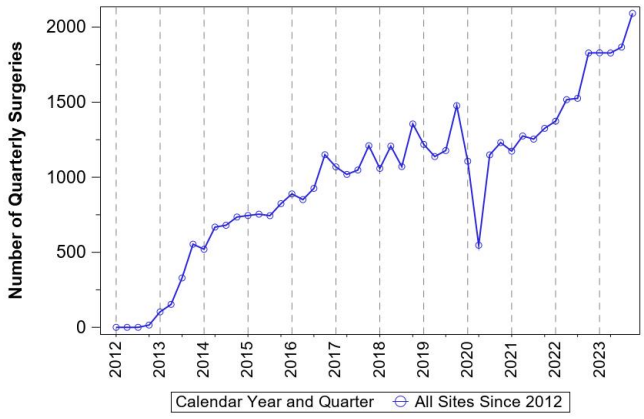


Figure 438. Utilization of the Persona CR (Cemented)/Persona (Cemented) Combination in Primary TKA Cases

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Catalog Numbers of Femoral Components Used in the Analysis

42502606202	42502607402	42572006002
42502607002	42502607401	42502605402
42502006202	42502605802	42572606002
42502607001	42502605801	42572606601
42502006402	42502006802	42572006001
42502606402	42502006801	42572606001
42502606802	42502007002	42572606802
42502606201	42502005802	42572605802
42502606602	42502007001	42572605801
42502606801	42502005801	42572005802
42502606601	42502605602	42502005401
42502006201	42502605601	42502005402
42502606401	42502005602	42572607002
42502006401	42502005601	42572607001
42502606002	42572606202	42572005801
42502606001	42572606201	42572605601
42502006602	42572606402	42504605411
42502006002	42572606401	42572605602
42502006601	42502605401	
42502006001	42572606602	

Catalog Numbers of Tibial Components Used in the Analysis

42532007102	42532008302	42542006701
42532007101	42532008301	42542006702
42532006702	42532008802	42542007501
42532006701	42532008801	42542007902
42532007502	42532006101	42542006402
42532007501	42532006102	42542007502
42532007902	42542007102	42542007901
42532007901	42532005802	
42532006402	42542007101	
42532006401	42542006401	

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4.5.28 Persona CR (Cementless)/Persona (Cementless)

N = 1,718 primary cases were used for this analysis. Distribution of utilization: 61 surgeons across 47 sites used this implant combination in primary TKA cases.

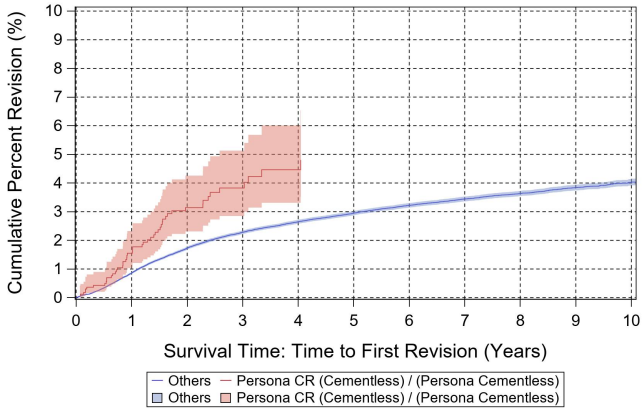


Figure 439. Cumulative Percent Revision Curve for the Persona CR (Cementless)/Persona (Cementless) Combination, Compared to All Other Implant Combinations in Primary TKA Cases

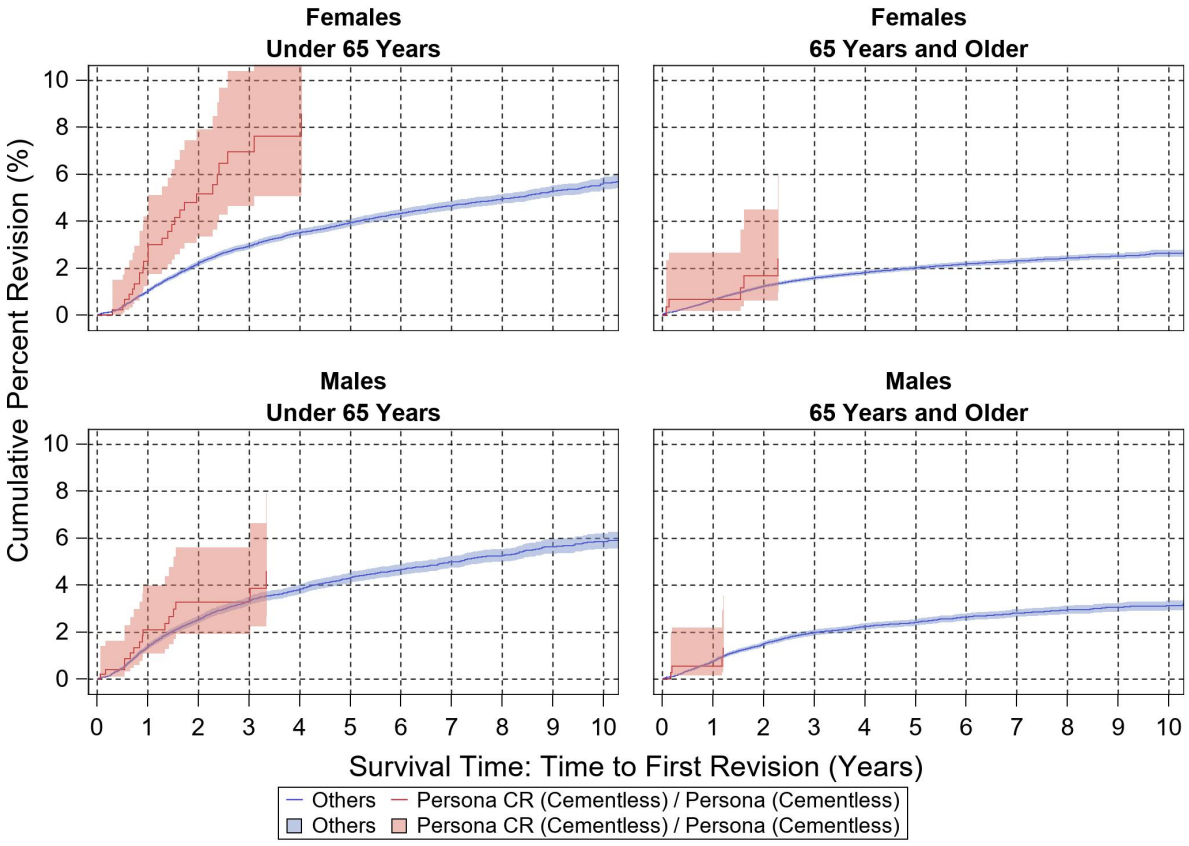


Figure 440. Cumulative Percent Revision Curve for the Persona CR (Cementless)/Persona (Cementless) Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1228. Cumulative Percent Revision and Number at Risk for the Persona CR (Cementless)/Persona (Cementless) Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,709	0.00 (0.00,0.00)	501	0.00 (0.00,0.00)	302	0.00 (0.00,0.00)	519	0.00 (0.00,0.00)	387	0.00 (0.00,0.00)
1	1,326	1.55 (1.03,2.33)	408	2.28 (1.23,4.19)	252	0.67 (0.17,2.65)	388	2.08 (1.09,3.97)	278	0.55 (0.14,2.20)
2	892	3.14 (2.31,4.26)	265	5.15 (3.33,7.92)	162	1.67 (0.62,4.49)	275	3.28 (1.91,5.61)	190	1.33 (0.49,3.54)
3	493	3.83 (2.85,5.13)	147	6.96 (4.64,10.38)	85	2.41 (0.97,5.94)	169	3.28 (1.91,5.61)	92	1.33 (0.49,3.54)
4	290	4.46 (3.31,6.01)	97	7.60 (5.07,11.33)	48	2.41 (0.97,5.94)	94	4.59 (2.64,7.92)	51	1.33 (0.49,3.54)
5	139	4.80 (3.52,6.53)	44	8.58 (5.63,12.95)	27	2.41 (0.97,5.94)	45	4.59 (2.64,7.92)	23	1.33 (0.49,3.54)
6	43	4.80 (3.52,6.53)	18	8.58 (5.63,12.95)	*	2.41 (0.97,5.94)	14	4.59 (2.64,7.92)	*	1.33 (0.49,3.54)
7	43	4.80 (3.52,6.53)	18	8.58 (5.63,12.95)	*	2.41 (0.97,5.94)	14	4.59 (2.64,7.92)	*	1.33 (0.49,3.54)
8	43	4.80 (3.52,6.53)	18	8.58 (5.63,12.95)	*	2.41 (0.97,5.94)	14	4.59 (2.64,7.92)	*	1.33 (0.49,3.54)
9	35	4.80 (3.52,6.53)	17	8.58 (5.63,12.95)	*	2.41 (0.97,5.94)	12	4.59 (2.64,7.92)	*	1.33 (0.49,3.54)
10	*	4.80 (3.52,6.53)	*	8.58 (5.63,12.95)	*	2.41 (0.97,5.94)	*	4.59 (2.64,7.92)	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 1229. Reasons for First Revision Following Primary TKA for Persona CR (Cementless)/Persona (Cementless) Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	21	42.0
2	Dislocation/Instability	13	26.0
3	Implant Failure	7	14.0
4	Arthrofibrosis	4	8.0
5	Joint Infection	2	4.0
6	Malalignment	1	2.0
7	Pain	1	2.0
8	Patellofemoral Joint	1	2.0

Table 1230. Reasons for First Revision in the First 90 Days Following Primary TKA for Persona CR (Cementless)/Persona (Cementless) Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	3	50.0
2	Implant Failure	1	16.7
3	Pain	1	16.7
4	Patellofemoral Joint	1	16.7

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Table 1231. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Persona CR (Cementless)/Persona (Cementless) Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	7	41.2
2	Dislocation/Instability	6	35.3
3	Arthrofibrosis	2	11.8
4	Implant Failure	1	5.9
5	Malalignment	1	5.9

Table 1232. Descriptive Statistics of Cases Receiving the Persona CR (Cementless)/Persona (Cementless) Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	807	47	
Age (years)	1,718	62.6 (8.9)	62 (12)
Height (cm)	1,718	171.8 (10.4)	172.7 (16.3)
Weight (kg)	1,718	100 (21.4)	98 (27.4)
BMI(kg/m^2)	1,718	33.9 (6.8)	32.9 (8.6)
Smoker - Never (%)	920	53.6	
Smoker - Previous (%)	614	35.7	
Smoker - Current (%)	178	10.4	
Smoker - Unknown (%)	6	0.4	

Table 1233. Distribution of Approach Used for Persona CR (Cementless)/Persona (Cementless) Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	1,594	92.8
Mid-vastus	121	7.0
Sub-vastus	1	0.1
Lateral parapatellar	2	0.1
Missing/unknown/other	0	0.0

Table 1234. Distribution of Polyethylene Used for Persona CR (Cementless)/Persona (Cementless) Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	44	2.6
XLPE	0	0.0
Antioxidant XLPE	1,660	96.6
Missing/unknown/other	14	0.8

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Table 1235. Volume of Cases by Surgeon and Site for the Persona CR (Cementless)/Persona (Cementless) Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	28 (62)	8 (25)
Cases per site	36 (77)	13 (32)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

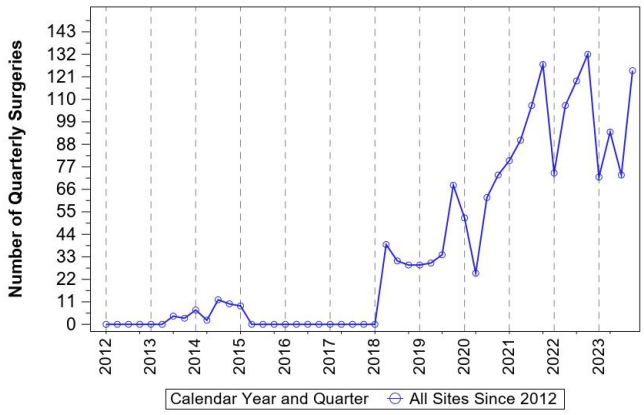


Figure 441. Utilization of the Persona CR (Cementless)/Persona (Cementless) Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

42502806601	42502206202	42502205802
42502806602	42502206602	42502207002
42502806801	42502806002	42508006602
42502806802	42508606601	42508606802
42502807001	42502206002	42502205801
42502806401	42502206001	42502805602
42502807002	42502206801	42502805601
42502806201	42508606401	42508006202
42502806402	42508607001	42508006401
42502806202	42508606801	42508006802
42502807401	42502805801	42508606001
42502206402	42502805802	42508006201
42502206401	42502206802	42508607002
42502806001	42508606602	42502205602
42502206201	42502207001	42508006801
42502807402	42508606402	42508007002
42502206601	42508606201	

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Catalog Numbers of Tibial Components Used in the Analysis

42530007101	42530006702	42535007502
42530007102	42530007902	42535007101
42530007502	42530008302	42535007102
42530007501	42535007501	42530006401
42530006701	42530008301	42530006402
42530007901	42535007901	

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4.5.29 Persona PS (Cemented)/Persona (Cemented)

N = 26,560 primary cases were used for this analysis. Distribution of utilization: 209 surgeons across 71 sites used this implant combination in primary TKA cases.

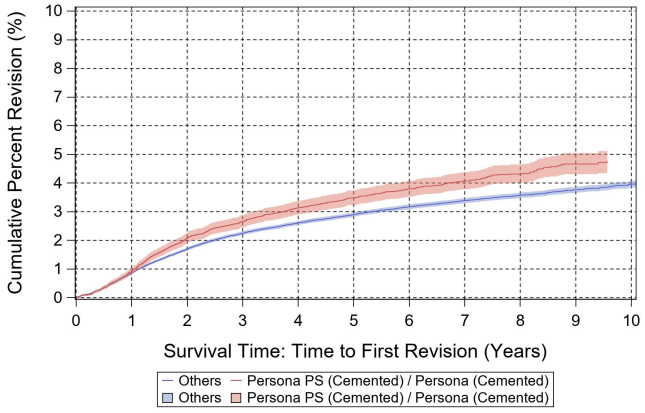


Figure 442. Cumulative Percent Revision Curve for the Persona PS (Cemented)/Persona (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases

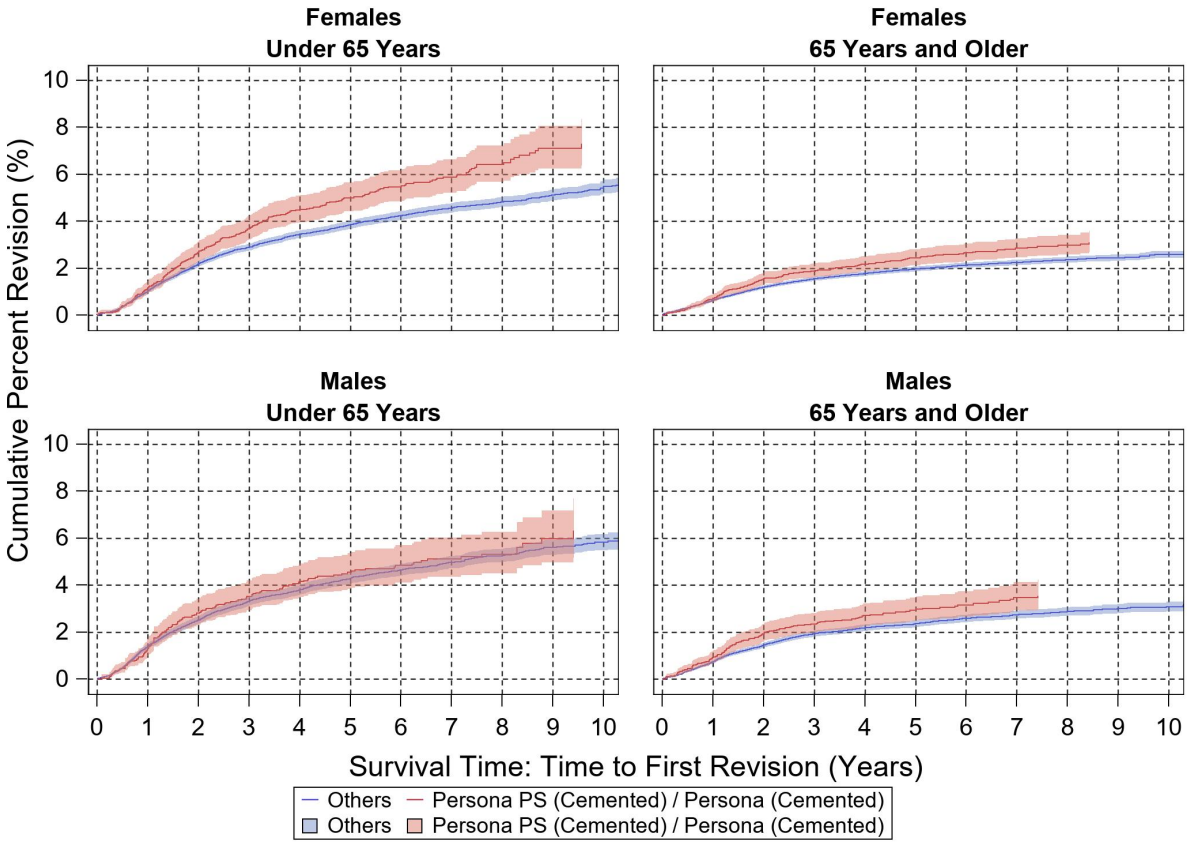


Figure 443. Cumulative Percent Revision Curve for the Persona PS (Cemented)/Persona (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1236. Cumulative Percent Revision and Number at Risk for the Persona PS (Cemented)/Persona (Cemented) Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	26,395	0.00 (0.00,0.00)	6,126	0.00 (0.00,0.00)	10,479	0.00 (0.00,0.00)	3,806	0.00 (0.00,0.00)	5,982	0.00 (0.00,0.00)
1	23,097	0.94 (0.82,1.06)	5,477	1.13 (0.88,1.43)	9,110	0.70 (0.55,0.88)	3,395	1.29 (0.96,1.71)	5,113	0.92 (0.70,1.21)
2	19,728	2.07 (1.89,2.26)	4,820	2.66 (2.26,3.12)	7,740	1.52 (1.28,1.79)	2,895	2.79 (2.29,3.41)	4,271	1.93 (1.58,2.34)
3	16,799	2.65 (2.45,2.87)	4,186	3.66 (3.19,4.21)	6,557	1.87 (1.60,2.18)	2,488	3.51 (2.93,4.20)	3,567	2.34 (1.95,2.81)
4	14,523	3.14 (2.91,3.38)	3,707	4.46 (3.92,5.07)	5,686	2.16 (1.87,2.50)	2,122	4.14 (3.49,4.91)	3,007	2.70 (2.27,3.22)
5	11,902	3.48 (3.23,3.75)	3,117	5.00 (4.41,5.65)	4,636	2.42 (2.10,2.79)	1,768	4.53 (3.84,5.35)	2,380	2.92 (2.46,3.47)
6	9,482	3.79 (3.52,4.07)	2,548	5.46 (4.84,6.17)	3,635	2.66 (2.31,3.05)	1,450	4.83 (4.10,5.69)	1,849	3.15 (2.66,3.74)
7	7,237	4.07 (3.79,4.38)	1,972	5.87 (5.20,6.62)	2,756	2.84 (2.47,3.27)	1,130	5.12 (4.34,6.03)	1,379	3.47 (2.91,4.13)
8	4,821	4.31 (4.01,4.65)	1,322	6.40 (5.67,7.23)	1,817	2.97 (2.57,3.42)	746	5.31 (4.50,6.27)	936	3.55 (2.98,4.23)
9	2,518	4.66 (4.31,5.04)	712	7.10 (6.24,8.07)	949	3.10 (2.67,3.59)	399	5.97 (4.97,7.16)	458	3.55 (2.98,4.23)
10	880	4.78 (4.39,5.19)	256	7.30 (6.37,8.36)	311	3.10 (2.67,3.59)	148	6.30 (5.15,7.70)	165	3.55 (2.98,4.23)

Table 1237. Reasons for First Revision Following Primary TKA for Persona PS (Cemented)/Persona (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	228	28.9
2	Joint Infection	193	24.5
3	Aseptic Loosening	186	23.6
4	Pain	55	7.0
5	Arthrofibrosis	38	4.8
6	Implant Failure	31	3.9
7	Peri-prosthetic fracture - Femur	14	1.8
8	Malalignment	13	1.6
9	Poly liner wear	10	1.3
10	Metal Reaction/Metallosis	8	1.0
	Unknown/missing/other	4	1.6

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Table 1238. Reasons for First Revision in the First 90 Days Following Primary TKA for Persona PS (Cemented)/Persona (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	11	36.7
2	Peri-prosthetic fracture - Femur	7	23.3
3	Aseptic Loosening	4	13.3
4	Dislocation/Instability	4	13.3
5	Peri-prosthetic fracture - Tibia	2	6.7
6	Pain	1	3.3
7	Extensor mechanism failure	1	3.3

Table 1239. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Persona PS (Cemented)/Persona (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	65	35.0
2	Dislocation/Instability	55	29.6
3	Aseptic Loosening	21	11.3
4	Pain	16	8.6
5	Arthrofibrosis	14	7.5
6	Implant Failure	7	3.8
7	Peri-prosthetic fracture - Femur	2	1.1
8	Malalignment	2	1.1
9	Extensor mechanism failure	2	1.1
10	Poly liner wear	1	0.5
	Unknown/missing/other	1	0.5

Table 1240. Descriptive Statistics of Cases Receiving the Persona PS (Cemented)/Persona (Cemented) Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	16,684	62.8	
Age (years)	26,560	67.3 (9.2)	67 (13)
Height (cm)	26,559	168.4 (10.6)	167.6 (15.3)
Weight (kg)	26,559	93.4 (20.9)	91.6 (27.6)
BMI(kg/m^2)	26,559	32.9 (6.5)	32.2 (8.9)
Smoker - Never (%)	14,324	53.9	
Smoker - Previous (%)	10,037	37.8	
Smoker - Current (%)	2,144	8.1	
Smoker - Unknown (%)	55	0.2	

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Table 1241. Distribution of Approach Used for Persona PS (Cemented)/Persona (Cemented) Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	23,585	88.8
Mid-vastus	2,884	10.9
Sub-vastus	20	0.1
Lateral parapatellar	21	0.1
Missing/unknown/other	50	0.2

Table 1242. Distribution of Polyethylene Used for Persona PS (Cemented)/Persona (Cemented) Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	13,508	50.9
XLPE	1	0.0
Antioxidant XLPE	12,812	48.2
Missing/unknown/other	239	0.9

Table 1243. Volume of Cases by Surgeon and Site for the Persona PS (Cemented)/Persona (Cemented) Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	127 (333)	9 (68)
Cases per site	374 (783)	68 (282)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

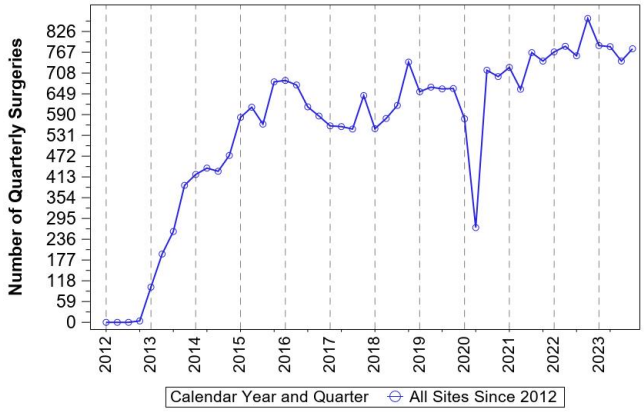


Figure 444. Utilization of the Persona PS (Cemented)/Persona (Cemented) Combination in Primary TKA Cases

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Catalog Numbers of Femoral Components Used in the Analysis

42500606202	42500006801	42504605801
42500606802	42500006802	42504605802
42500606402	42500005802	42500005401
42500606602	42500005801	42500005402
42500607002	42500605602	42570606002
42500606201	42500605601	42570606601
42500606801	42500007002	42504605811
42500606601	42500007001	42504606212
42500606401	42500005601	42570606001
42500607001	42500005602	42570606602
42500006401	42504606202	42504606211
42500006402	42500605402	42504606611
42500006201	42504606601	42504606612
42500006202	42500605401	42570605802
42500606002	42504606602	42570607001
42500606001	42504606201	42504605812
42500006002	42570606202	42504607012
42500006001	42570606201	42570606802
42500006601	42570606402	42502005001
42500006602	42570006001	42502005002
42500605802	42570606401	42502005202
42500605801	42504607001	42504605402
42500607401	42570006002	42504607011
42500607402	42504607002	

Catalog Numbers of Tibial Components Used in the Analysis

42532007102	42532008301	42542006402
42532007101	42532008802	42542007501
42532006702	42532008801	42542007901
42532006701	42532006101	42532005802
42532007502	42542007101	42542007902
42532007501	42542006701	42532005801
42532007902	42542006702	42542008301
42532007901	42542007102	42542008302
42532006402	42542007502	
42532006401	42532006102	
42532008302	42542006401	

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4.5.30 Scorpio/Series 7000

N = 656 primary cases were used for this analysis. Fewer than ten surgeons used this implant combination at fewer than ten sites in primary TKA cases.

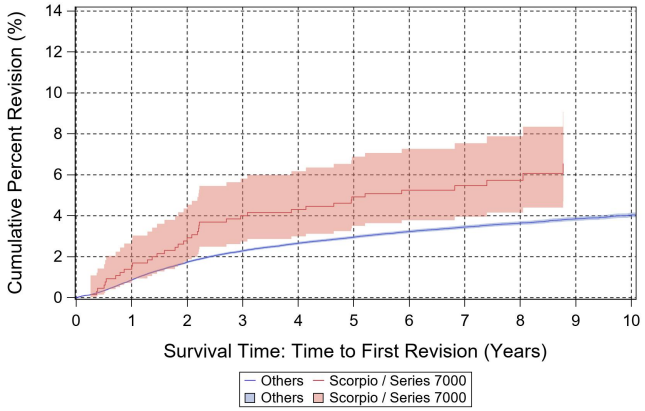


Figure 445. Cumulative Percent Revision Curve for the Scorpio/Series 7000 Combination, Compared to All Other Implant Combinations in Primary TKA Cases

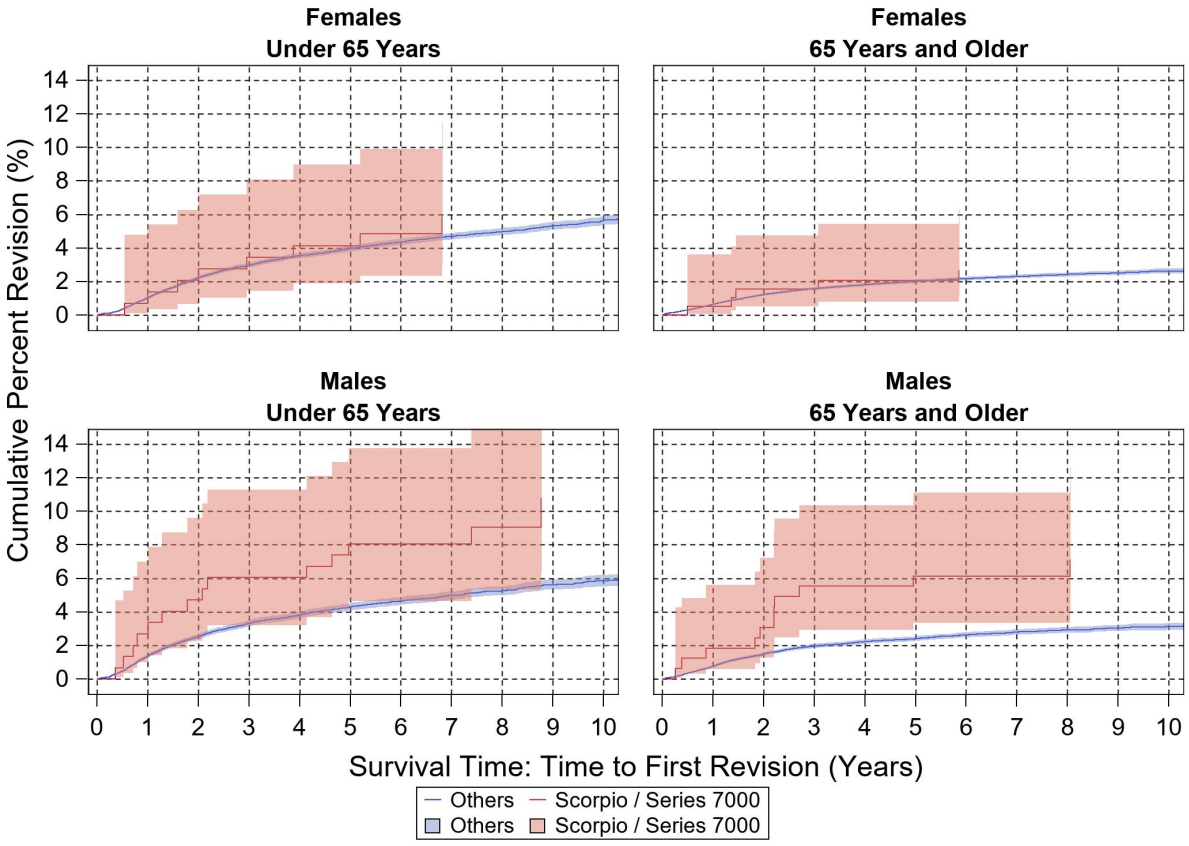


Figure 446. Cumulative Percent Revision Curve for the Scorpio/Series 7000 Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1244. Cumulative Percent Revision and Number at Risk for the Scorpio/Series 7000 Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	650	0.00 (0.00,0.00)	145	0.00 (0.00,0.00)	193	0.00 (0.00,0.00)	149	0.00 (0.00,0.00)	163	0.00 (0.00,0.00)
1	641	1.38 (0.72,2.64)	144	0.69 (0.10,4.79)	192	0.52 (0.07,3.62)	145	2.68 (1.02,6.99)	160	1.84 (0.60,5.60)
2	631	2.92 (1.87,4.54)	141	2.76 (1.04,7.18)	190	1.55 (0.50,4.74)	142	4.70 (2.27,9.60)	158	3.07 (1.29,7.21)
3	624	4.00 (2.74,5.82)	140	3.45 (1.45,8.09)	190	1.55 (0.50,4.74)	140	6.04 (3.19,11.29)	154	5.52 (2.91,10.34)
4	622	4.31 (2.99,6.18)	139	4.14 (1.88,8.98)	189	2.07 (0.78,5.43)	140	6.04 (3.19,11.29)	154	5.52 (2.91,10.34)
5	618	4.92 (3.51,6.89)	139	4.14 (1.88,8.98)	189	2.07 (0.78,5.43)	137	8.05 (4.66,13.75)	153	6.13 (3.35,11.10)
6	538	5.25 (3.78,7.27)	113	4.84 (2.34,9.89)	153	2.68 (1.12,6.33)	130	8.05 (4.66,13.75)	142	6.13 (3.35,11.10)
7	412	5.47 (3.95,7.55)	87	5.87 (2.95,11.49)	108	2.68 (1.12,6.33)	100	8.05 (4.66,13.75)	117	6.13 (3.35,11.10)
8	280	5.73 (4.16,7.89)	59	5.87 (2.95,11.49)	53	2.68 (1.12,6.33)	74	9.05 (5.33,15.16)	94	6.13 (3.35,11.10)
9	168	6.55 (4.71,9.08)	20	5.87 (2.95,11.49)	24	2.68 (1.12,6.33)	47	10.80 (6.29,18.21)	77	7.13 (3.98,12.63)
10	66	6.55 (4.71,9.08)	*	5.87 (2.95,11.49)	*	2.68 (1.12,6.33)	24	10.80 (6.29,18.21)	39	7.13 (3.98,12.63)

* Denotes that the number of cases is between 1 and 10.

Table 1245. Reasons for First Revision Following Primary TKA for Scorpio/Series 7000 Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	12	31.6
2	Aseptic Loosening	7	18.4
3	Dislocation/Instability	6	15.8
4	Pain	5	13.2
5	Arthrofibrosis	3	7.9
6	Poly liner wear	2	5.3
7	Implant Failure	1	2.6
8	Malalignment	1	2.6
9	Peri-prosthetic fracture - Tibia	1	2.6

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1246. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Scorpio/Series 7000 Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	3	37.5
2	Pain	2	25.0
3	Arthrofibrosis	2	25.0
4	Dislocation/Instability	1	12.5

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Table 1247. Descriptive Statistics of Cases Receiving the Scorpio/Series 7000 Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	340	51.8	
Age (years)	656	66 (9.5)	65 (14)
Height (cm)	656	169.8 (10.5)	170 (15.4)
Weight (kg)	656	97.4 (21.3)	96 (28)
BMI(kg/m^2)	656	33.8 (7)	32.7 (9.5)
Smoker - Never (%)	350	53.4	
Smoker - Previous (%)	251	38.3	
Smoker - Current (%)	53	8.1	
Smoker - Unknown (%)	2	0.3	

Table 1248. Distribution of Approach Used for Scorpio/Series 7000 Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	13	2.0
Mid-vastus	643	98.0
Sub-vastus	0	0.0
Lateral parapatellar	0	0.0
Missing/unknown/other	0	0.0

Table 1249. Distribution of Polyethylene Used for Scorpio/Series 7000 Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	653	99.5
Antioxidant XLPE	0	0.0
Missing/unknown/other	3	0.5

Table 1250. Volume of Cases by Surgeon and Site for the Scorpio/Series 7000 Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	93 (190)	13 (80)
Cases per site	164 (195)	75 (215)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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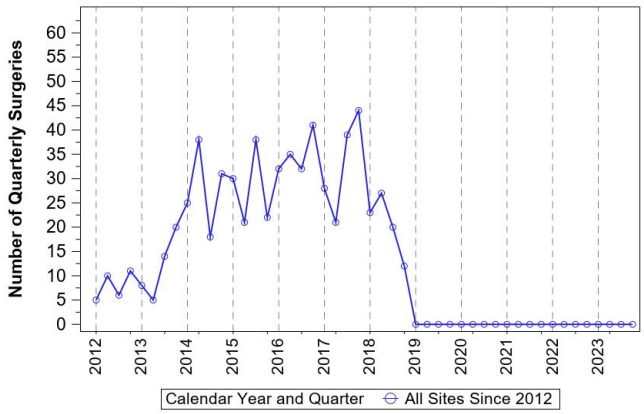


Figure 447. Utilization of the Scorpio/Series 7000 Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

704107R	713009L	704113L
704107L	713009R	713007L
704109L	714509L	713007R
704109R	704105L	714511L
704111R	714509R	714505L
704111L	704113R	714511R
713011L	714507R	714507L
713011R	704105R	

Catalog Numbers of Tibial Components Used in the Analysis

71150007	71150005	71150003
71150009	71150013	71150004
71150011	71150006	

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4.5.31 Sigma/M.B.T.

N = 1,013 primary cases were used for this analysis. Distribution of utilization: 44 surgeons across 31 sites used this implant combination in primary TKA cases.

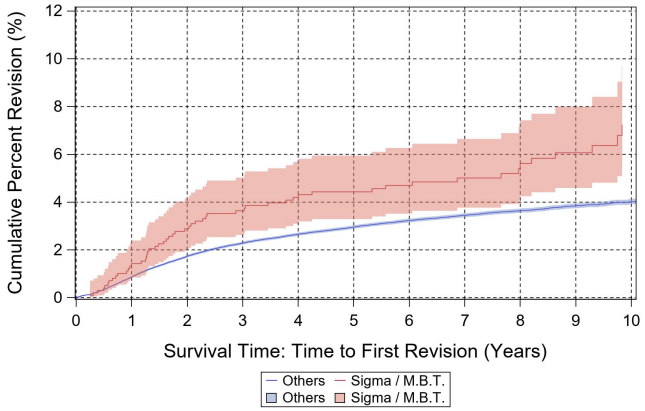


Figure 448. Cumulative Percent Revision Curve for the Sigma/M.B.T. Combination, Compared to All Other Implant Combinations in Primary TKA Cases

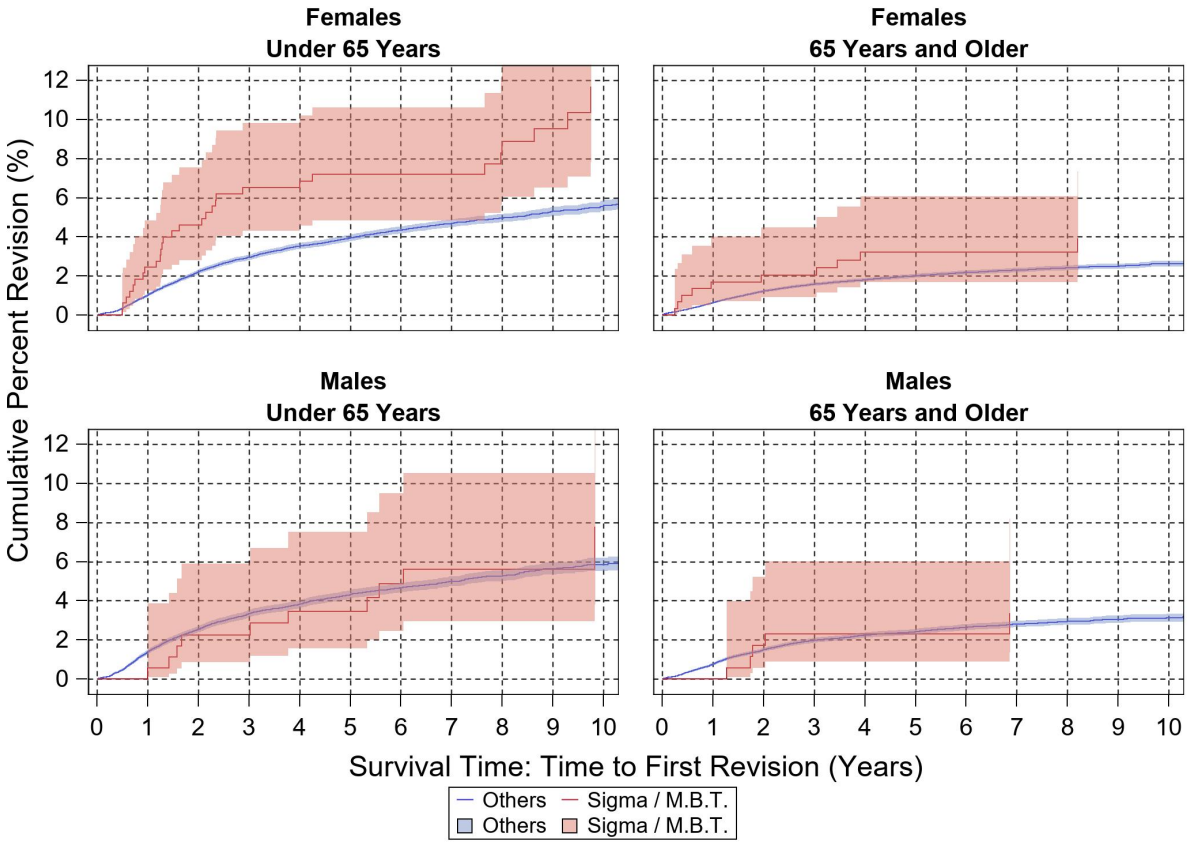


Figure 449. Cumulative Percent Revision Curve for the Sigma/M.B.T. Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1251. Cumulative Percent Revision and Number at Risk for the Sigma/MBT Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,009	0.00 (0.00,0.00)	332	0.00 (0.00,0.00)	305	0.00 (0.00,0.00)	191	0.00 (0.00,0.00)	181	0.00 (0.00,0.00)
1	959	1.42 (0.85,2.39)	318	2.45 (1.23,4.84)	287	1.69 (0.71,4.01)	179	0.56 (0.08,3.88)	175	0.00 (0.00,0.00)
2	913	2.88 (2.00,4.15)	303	4.61 (2.81,7.54)	273	2.04 (0.92,4.50)	170	2.25 (0.85,5.89)	167	1.72 (0.56,5.23)
3	873	3.64 (2.62,5.03)	292	6.51 (4.30,9.82)	260	2.04 (0.92,4.50)	164	2.25 (0.85,5.89)	157	2.31 (0.87,6.03)
4	837	4.31 (3.19,5.81)	282	6.85 (4.56,10.21)	244	3.21 (1.68,6.09)	157	3.45 (1.57,7.53)	154	2.31 (0.87,6.03)
5	758	4.43 (3.29,5.95)	259	7.18 (4.83,10.61)	219	3.21 (1.68,6.09)	147	3.45 (1.57,7.53)	133	2.31 (0.87,6.03)
6	659	4.70 (3.51,6.27)	225	7.18 (4.83,10.61)	197	3.21 (1.68,6.09)	130	4.85 (2.45,9.50)	107	2.31 (0.87,6.03)
7	566	5.01 (3.77,6.65)	202	7.18 (4.83,10.61)	167	3.21 (1.68,6.09)	108	5.60 (2.94,10.53)	89	3.37 (1.36,8.20)
8	450	5.62 (4.24,7.43)	159	8.86 (6.05,12.90)	141	3.21 (1.68,6.09)	80	5.60 (2.94,10.53)	70	3.37 (1.36,8.20)
9	360	6.07 (4.59,7.99)	122	9.51 (6.52,13.78)	107	3.92 (2.08,7.34)	68	5.60 (2.94,10.53)	63	3.37 (1.36,8.20)
10	191	7.24 (5.38,9.70)	63	11.67 (7.82,17.24)	64	3.92 (2.08,7.34)	37	7.79 (3.81,15.58)	27	3.37 (1.36,8.20)

Table 1252. Reasons for First Revision Following Primary TKA for Sigma/M.B.T. Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	17	34.7
2	Dislocation/Instability	8	16.3
3	Joint Infection	8	16.3
4	Pain	5	10.2
5	Malalignment	3	6.1
6	Arthrofibrosis	2	4.1
7	Implant Failure	2	4.1
8	Metal Reaction/Metallosis	2	4.1
9	Extensor mechanism failure	1	2.0
10	Poly liner wear	1	2.0

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1253. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Sigma/M.B.T. Combination Cases

Rank	Reason for Revision	N	Percent
1	Pain	3	42.9
2	Aseptic Loosening	1	14.3
3	Joint Infection	1	14.3
4	Arthrofibrosis	1	14.3
5	Extensor mechanism failure	1	14.3

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Table 1254. Descriptive Statistics of Cases Receiving the Sigma/M.B.T. Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	638	63	
Age (years)	1,013	64.3 (10.2)	64 (13)
Height (cm)	1,013	168.5 (10.9)	167.6 (17.8)
Weight (kg)	1,013	98.8 (22.7)	97.7 (31.6)
BMI(kg/m^2)	1,013	34.8 (7.2)	34.4 (9.8)
Smoker - Never (%)	503	49.7	
Smoker - Previous (%)	358	35.3	
Smoker - Current (%)	115	11.4	
Smoker - Unknown (%)	37	3.7	

Table 1255. Distribution of Approach Used for Sigma/M.B.T. Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	714	70.5
Mid-vastus	286	28.2
Sub-vastus	1	0.1
Lateral parapatellar	1	0.1
Missing/unknown/other	11	1.1

Table 1256. Distribution of Polyethylene Used for Sigma/M.B.T. Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	758	74.8
XLPE	11	1.1
Antioxidant XLPE	240	23.7
Missing/unknown/other	4	0.4

Table 1257. Volume of Cases by Surgeon and Site for the Sigma/M.B.T. Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	23 (50)	3 (19)
Cases per site	32 (50)	11 (36)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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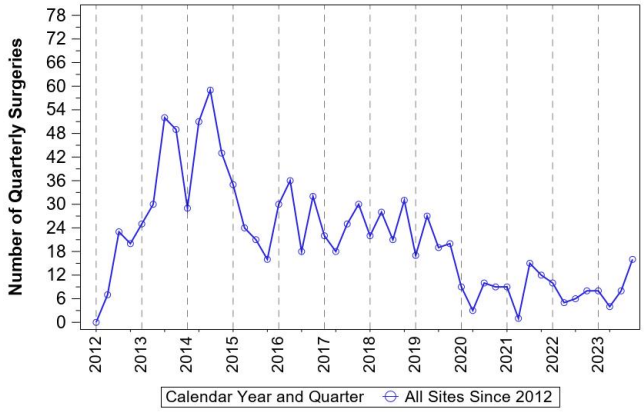


Figure 450. Utilization of the Sigma/M.B.T. Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

196050300	196040600	196030450
196040300	196050600	196040150
196050500	940023	196020400
196050400	940015	196020450
196040400	940013	196030400
196040500	940029	196064500
196050250	940019	196074500
196050450	940018	940012
196040250	940025	940016
196040450	940014	940022
196050200	196050150	940024
196040200	940028	

Catalog Numbers of Tibial Components Used in the Analysis

129433130	129435125	129434120
129433140	129434125	129431130
129433150	129435130	129433110
129433125	129435140	129433170
129433120	129434150	129435115
129434130	129435150	
129433160	129435120	
129434140	129433115	

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4.5.32 Sigma/Sigma

N = 1,765 primary cases were used for this analysis. Distribution of utilization: 39 surgeons across 28 sites used this implant combination in primary TKA cases.

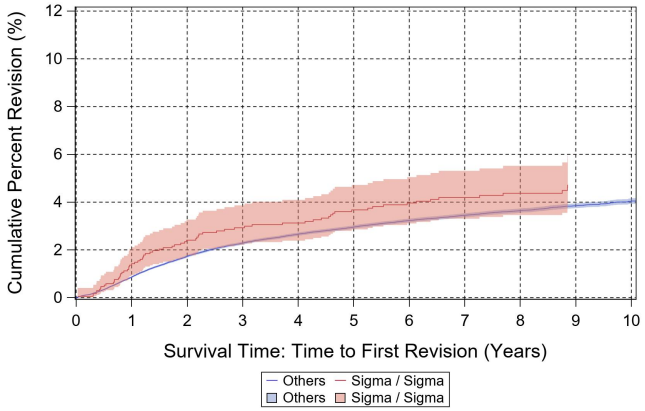


Figure 451. Cumulative Percent Revision Curve for the Sigma/Sigma Combination, Compared to All Other Implant Combinations in Primary TKA Cases

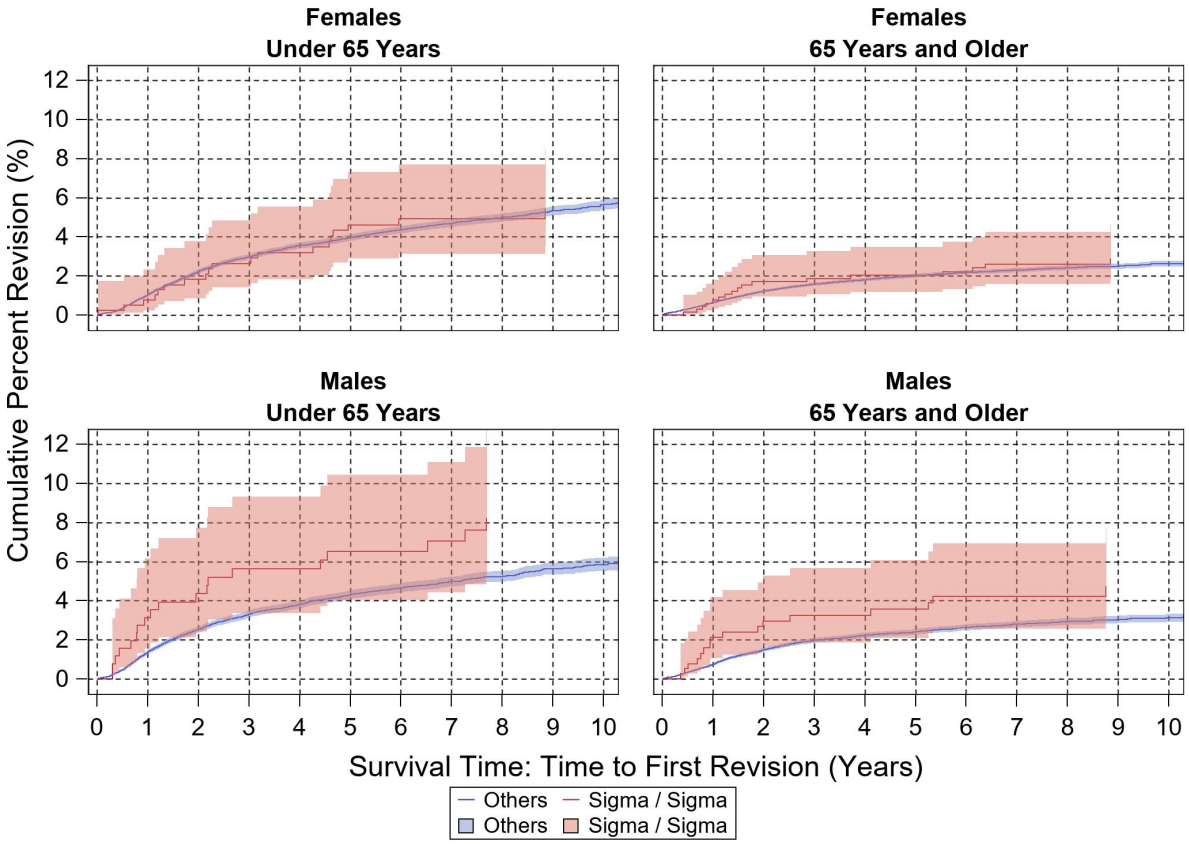


Figure 452. Cumulative Percent Revision Curve for the Sigma/Sigma Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1258. Cumulative Percent Revision and Number at Risk for the Sigma/Sigma Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,742	0.00 (0.00,0.00)	402	0.00 (0.00,0.00)	686	0.00 (0.00,0.00)	261	0.00 (0.00,0.00)	393	0.00 (0.00,0.00)
1	1,639	1.42 (0.95,2.11)	382	0.76 (0.25,2.35)	648	0.76 (0.32,1.81)	246	3.13 (1.58,6.16)	363	2.12 (1.06,4.19)
2	1,545	2.41 (1.77,3.27)	366	1.82 (0.87,3.77)	608	1.70 (0.95,3.05)	229	4.35 (2.43,7.72)	342	2.96 (1.65,5.28)
3	1,459	2.93 (2.21,3.87)	351	2.63 (1.42,4.83)	578	1.87 (1.07,3.27)	217	5.62 (3.37,9.32)	313	3.26 (1.86,5.67)
4	1,432	3.13 (2.38,4.10)	343	3.18 (1.82,5.54)	567	2.04 (1.19,3.49)	213	5.62 (3.37,9.32)	309	3.26 (1.86,5.67)
5	1,385	3.67 (2.86,4.72)	329	4.61 (2.89,7.32)	552	2.04 (1.19,3.49)	205	6.52 (4.04,10.43)	299	3.57 (2.09,6.08)
6	1,286	3.96 (3.11,5.05)	308	4.92 (3.13,7.71)	521	2.23 (1.32,3.74)	185	6.52 (4.04,10.43)	272	4.23 (2.57,6.93)
7	1,175	4.19 (3.31,5.31)	288	4.92 (3.13,7.71)	468	2.61 (1.60,4.23)	170	7.03 (4.42,11.09)	249	4.23 (2.57,6.93)
8	956	4.37 (3.46,5.52)	222	4.92 (3.13,7.71)	395	2.61 (1.60,4.23)	133	8.24 (5.30,12.69)	206	4.23 (2.57,6.93)
9	775	4.73 (3.75,5.95)	174	5.44 (3.47,8.48)	324	2.90 (1.80,4.67)	104	8.24 (5.30,12.69)	173	4.75 (2.90,7.73)
10	340	4.73 (3.75,5.95)	58	5.44 (3.47,8.48)	162	2.90 (1.80,4.67)	41	8.24 (5.30,12.69)	79	4.75 (2.90,7.73)

Table 1259. Reasons for First Revision Following Primary TKA for Sigma/Sigma Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	23	34.3
2	Aseptic Loosening	16	23.9
3	Dislocation/Instability	12	17.9
4	Pain	5	7.5
5	Arthrofibrosis	4	6.0
6	Implant Failure	3	4.5
7	Extensor mechanism failure	1	1.5
8	Malalignment	1	1.5
9	Peri-prosthetic fracture - Femur	1	1.5
10	Poly liner wear	1	1.5

Table 1260. Reasons for First Revision in the First 90 Days Following Primary TKA for Sigma/Sigma Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	100.0

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Table 1261. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Sigma/Sigma Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	8	40.0
2	Pain	3	15.0
3	Arthrofibrosis	3	15.0
4	Dislocation/Instability	2	10.0
5	Aseptic Loosening	1	5.0
6	Peri-prosthetic fracture - Femur	1	5.0
7	Malalignment	1	5.0
8	Extensor mechanism failure	1	5.0

Table 1262. Descriptive Statistics of Cases Receiving the Sigma/Sigma Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,103	62.5	
Age (years)	1,765	67.7 (10)	68 (14)
Height (cm)	1,728	167.8 (10.4)	167.6 (15.3)
Weight (kg)	1,728	90.2 (20.1)	88 (25.9)
BMI(kg/m^2)	1,728	32 (6.2)	31.2 (8.5)
Smoker - Never (%)	947	53.7	
Smoker - Previous (%)	672	38.1	
Smoker - Current (%)	137	7.8	
Smoker - Unknown (%)	9	0.5	

Table 1263. Distribution of Approach Used for Sigma/Sigma Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	1,681	95.2
Mid-vastus	32	1.8
Sub-vastus	0	0.0
Lateral parapatellar	1	0.1
Missing/unknown/other	51	2.9

Table 1264. Distribution of Polyethylene Used for Sigma/Sigma Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	523	29.6
XLPE	1,230	69.7
Antioxidant XLPE	0	0.0
Missing/unknown/other	12	0.7

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Table 1265. Volume of Cases by Surgeon and Site for the Sigma/Sigma Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	45 (78)	4 (37)
Cases per site	63 (133)	21 (39)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

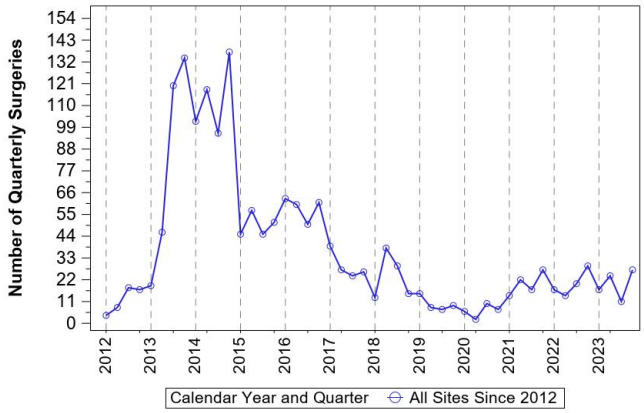


Figure 453. Utilization of the Sigma/Sigma Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

196050300	196020250	940014
196040300	196073500	940025
196050500	196074500	196062500
196040450	196030400	940013
196050450	196040600	940015
196040500	196063500	196020600
196040400	196064500	196066500
196050400	196075500	196072500
196020500	196020400	940024
196050250	196065500	196020200
196030500	196079500	196030600
196040250	196040200	196076500
196020300	196050200	940019
196030300	196078500	940029
196020450	196068500	940028
196030250	196069500	
196030450	196030200	
196050600	940023	

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Catalog Numbers of Tibial Components Used in the Analysis

158130000	158150000	158115000
158140000	158120000	
158125000	158160000	

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4.5.33 Sigma PFC/Sigma

N = 3,898 primary cases were used for this analysis. Distribution of utilization: 49 surgeons across 27 sites used this implant combination in primary TKA cases.

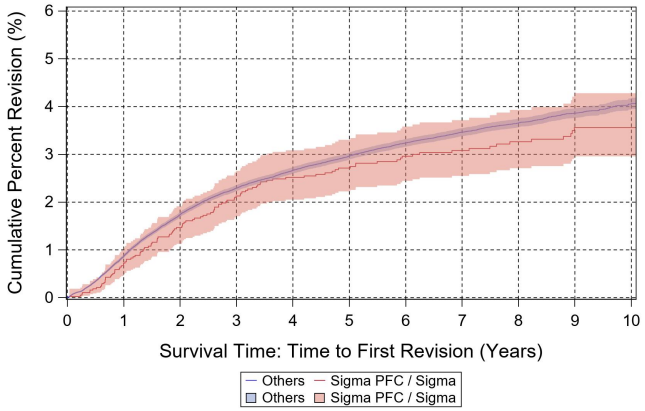


Figure 454. Cumulative Percent Revision Curve for the Sigma PFC/Sigma Combination, Compared to All Other Implant Combinations in Primary TKA Cases

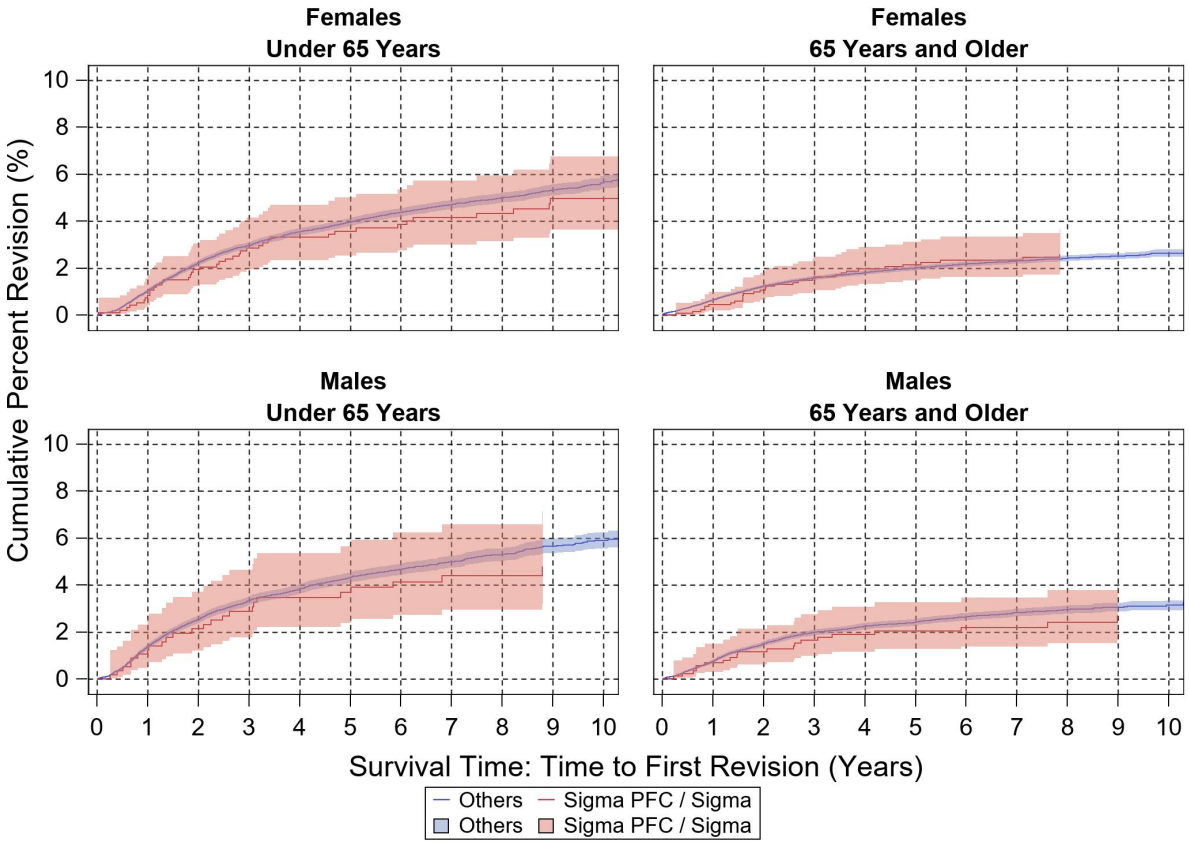


Figure 455. Cumulative Percent Revision Curve for the Sigma PFC/Sigma Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1266. Cumulative Percent Revision and Number at Risk for the Sigma PFC/Sigma Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,812	0.00 (0.00,0.00)	963	0.00 (0.00,0.00)	1,366	0.00 (0.00,0.00)	579	0.00 (0.00,0.00)	902	0.00 (0.00,0.00)
1	3,674	0.72 (0.50,1.05)	928	0.85 (0.43,1.69)	1,322	0.45 (0.20,0.99)	560	1.23 (0.59,2.55)	862	0.68 (0.31,1.51)
2	3,495	1.47 (1.13,1.91)	880	1.94 (1.23,3.06)	1,261	1.07 (0.63,1.80)	536	2.13 (1.21,3.71)	816	1.15 (0.62,2.13)
3	3,341	2.13 (1.71,2.65)	845	2.84 (1.94,4.15)	1,206	1.63 (1.06,2.49)	504	2.87 (1.77,4.65)	784	1.64 (0.98,2.76)
4	3,129	2.52 (2.05,3.09)	797	3.31 (2.33,4.70)	1,136	1.97 (1.33,2.90)	469	3.46 (2.22,5.37)	725	1.90 (1.16,3.08)
5	2,881	2.71 (2.23,3.30)	730	3.57 (2.53,5.01)	1,057	2.15 (1.48,3.11)	431	3.67 (2.38,5.64)	661	2.04 (1.27,3.26)
6	2,599	2.96 (2.45,3.58)	657	3.85 (2.76,5.35)	958	2.33 (1.63,3.35)	389	4.14 (2.74,6.23)	593	2.20 (1.39,3.47)
7	2,257	3.08 (2.55,3.72)	572	4.15 (3.00,5.71)	834	2.33 (1.63,3.35)	347	4.41 (2.94,6.58)	502	2.20 (1.39,3.47)
8	1,936	3.26 (2.71,3.93)	503	4.33 (3.14,5.94)	716	2.59 (1.82,3.67)	298	4.41 (2.94,6.58)	417	2.41 (1.53,3.79)
9	1,565	3.56 (2.96,4.28)	433	4.95 (3.62,6.75)	567	2.59 (1.82,3.67)	236	4.80 (3.21,7.16)	327	2.71 (1.72,4.27)
10	847	3.56 (2.96,4.28)	231	4.95 (3.62,6.75)	321	2.59 (1.82,3.67)	125	4.80 (3.21,7.16)	168	2.71 (1.72,4.27)

Table 1267. Reasons for First Revision Following Primary TKA for Sigma PFC/Sigma Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	33	28.7
2	Aseptic Loosening	32	27.8
3	Dislocation/Instability	18	15.7
4	Arthrofibrosis	12	10.4
5	Pain	8	7.0
6	Implant Failure	3	2.6
7	Malalignment	3	2.6
8	Peri-prosthetic fracture - Femur	2	1.7
9	Poly liner wear	2	1.7
10	Extensor mechanism failure	1	0.9
	Unknown/missing/other	1	0.9

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

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Table 1268. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Sigma PFC/Sigma Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	11	45.8
2	Arthrofibrosis	6	25.0
3	Aseptic Loosening	3	12.5
4	Dislocation/Instability	1	4.2
5	Implant Failure	1	4.2
6	Pain	1	4.2
7	Extensor mechanism failure	1	4.2

Table 1269. Descriptive Statistics of Cases Receiving the Sigma PFC/Sigma Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	2,364	60.7	
Age (years)	3,898	66.8 (9.1)	67 (12)
Height (cm)	3,760	168.4 (10.6)	167.6 (16.5)
Weight (kg)	3,759	94.1 (21.1)	93 (28)
BMI(kg/m^2)	3,759	33.1 (6.5)	32.3 (8.7)
Smoker - Never (%)	1,978	50.7	
Smoker - Previous (%)	1,544	39.6	
Smoker - Current (%)	363	9.3	
Smoker - Unknown (%)	13	0.3	

Table 1270. Distribution of Approach Used for Sigma PFC/Sigma Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	3,611	92.6
Mid-vastus	137	3.5
Sub-vastus	1	0.0
Lateral parapatellar	6	0.2
Missing/unknown/other	143	3.7

Table 1271. Distribution of Polyethylene Used for Sigma PFC/Sigma Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	251	6.4
XLPE	3,636	93.3
Antioxidant XLPE	1	0.0
Missing/unknown/other	10	0.3

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Table 1272. Volume of Cases by Surgeon and Site for the Sigma PFC/Sigma Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	79 (176)	17 (60)
Cases per site	144 (279)	29 (68)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

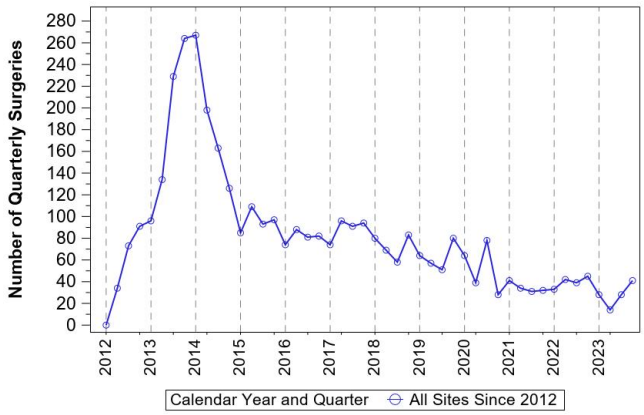


Figure 456. Utilization of the Sigma PFC/Sigma Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

960013	196001400	960012
960003	196000400	960002
960005	960008	960007
960015	960018	960017
960004	960016	
960014	960006	

Catalog Numbers of Tibial Components Used in the Analysis

158130000	158150000	158115000
158140000	158120000	
158125000	158160000	

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4.5.34 Sigma PFC/Sigma PFC All-Poly

N = 554 primary cases were used for this analysis. Fewer than ten surgeons used this implant combination at fewer than ten sites in primary TKA cases.

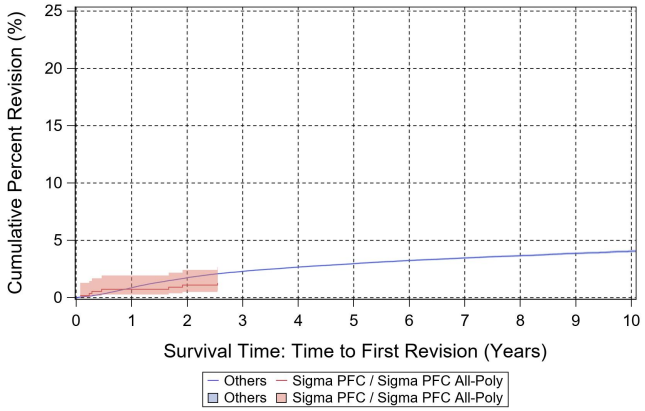


Figure 457. Cumulative Percent Revision Curve for the Sigma PFC/Sigma PFC All-Poly Combination, Compared to All Other Implant Combinations in Primary TKA Cases

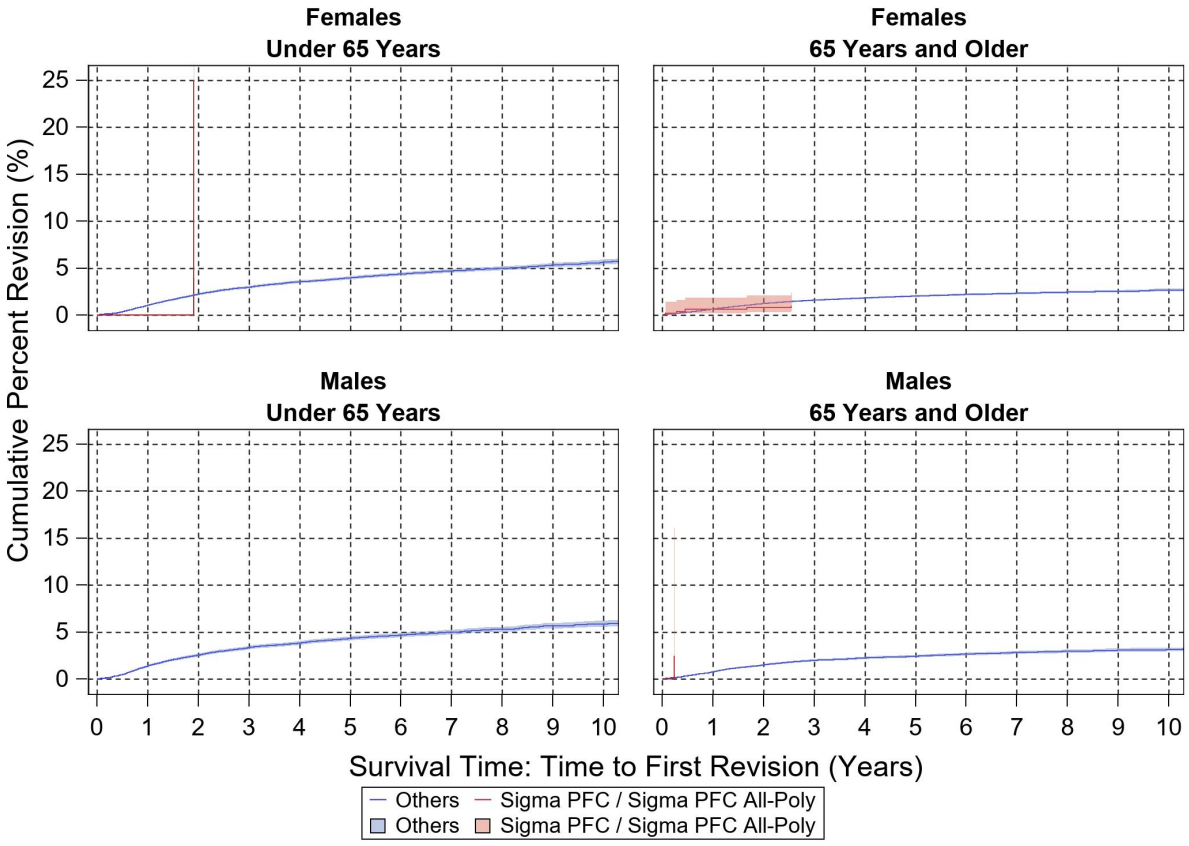


Figure 458. Cumulative Percent Revision Curve for the Sigma PFC/Sigma PFC All-Poly Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1273. Cumulative Percent Revision and Number at Risk for the Sigma PFC/Sigma PFC All-Poly Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	547	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)	501	0.00 (0.00,0.00)	*	0.00 (0.00,0.00)	41	0.00 (0.00,0.00)
1	543	0.73 (0.28,1.94)	*	0.00 (0.00,0.00)	498	0.60 (0.19,1.84)	*	0.00 (0.00,0.00)	40	2.44 (0.35,16.08)
2	539	1.10 (0.49,2.43)	*	25.00 (3.95,87.21)	495	0.80 (0.30,2.11)	*	0.00 (0.00,0.00)	40	2.44 (0.35,16.08)
3	531	1.28 (0.61,2.67)	*	25.00 (3.95,87.21)	487	1.00 (0.42,2.38)	*	0.00 (0.00,0.00)	40	2.44 (0.35,16.08)
4	496	1.28 (0.61,2.67)	*	25.00 (3.95,87.21)	452	1.00 (0.42,2.38)	*	0.00 (0.00,0.00)	40	2.44 (0.35,16.08)
5	456	1.28 (0.61,2.67)	*	25.00 (3.95,87.21)	413	1.00 (0.42,2.38)	*	0.00 (0.00,0.00)	39	2.44 (0.35,16.08)
6	376	1.28 (0.61,2.67)	*	25.00 (3.95,87.21)	339	1.00 (0.42,2.38)	0	N/A	35	2.44 (0.35,16.08)
7	276	1.28 (0.61,2.67)	*	25.00 (3.95,87.21)	246	1.00 (0.42,2.38)	0	N/A	28	2.44 (0.35,16.08)
8	190	1.28 (0.61,2.67)	*	25.00 (3.95,87.21)	167	1.00 (0.42,2.38)	0	N/A	22	2.44 (0.35,16.08)
9	114	1.28 (0.61,2.67)	*	25.00 (3.95,87.21)	96	1.00 (0.42,2.38)	0	N/A	17	2.44 (0.35,16.08)
10	50	1.28 (0.61,2.67)	0	N/A	42	1.00 (0.42,2.38)	0	N/A	*	2.44 (0.35,16.08)

* Denotes that the number of cases is between 1 and 10.

Table 1274. Reasons for First Revision Following Primary TKA for Sigma PFC/Sigma PFC All-Poly Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	3	42.9
2	Joint Infection	3	42.9
3	Peri-prosthetic fracture - Tibia	1	14.3

Table 1275. Reasons for First Revision in the First 90 Days Following Primary TKA for Sigma PFC/Sigma PFC All-Poly Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	1	50.0
2	Peri-prosthetic fracture - Tibia	1	50.0

Table 1276. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Sigma PFC/Sigma PFC All-Poly Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	2	100.0

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Table 1277. Descriptive Statistics of Cases Receiving the Sigma PFC/Sigma PFC All-Poly Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	511	92.2	
Age (years)	554	78.5 (5.4)	78 (7)
Height (cm)	554	161.3 (7.4)	160 (8.1)
Weight (kg)	554	78.4 (15.9)	77.3 (21.4)
BMI(kg/m^2)	554	30.2 (5.9)	29.6 (8.3)
Smoker - Never (%)	330	59.6	
Smoker - Previous (%)	191	34.5	
Smoker - Current (%)	11	2	
Smoker - Unknown (%)	22	4	

Table 1278. Distribution of Approach Used for Sigma PFC/Sigma PFC All-Poly Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	60	10.8
Mid-vastus	492	88.8
Sub-vastus	1	0.2
Lateral parapatellar	0	0.0
Missing/unknown/other	1	0.2

Table 1279. Distribution of Polyethylene Used for Sigma PFC/Sigma PFC All-Poly Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	3	0.5
XLPE	4	0.7
Antioxidant XLPE	0	0.0
Missing/unknown/other	547	98.7

Table 1280. Volume of Cases by Surgeon and Site for the Sigma PFC/Sigma PFC All-Poly Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	61 (165)	1 (1)
Cases per site	69 (167)	1 (32)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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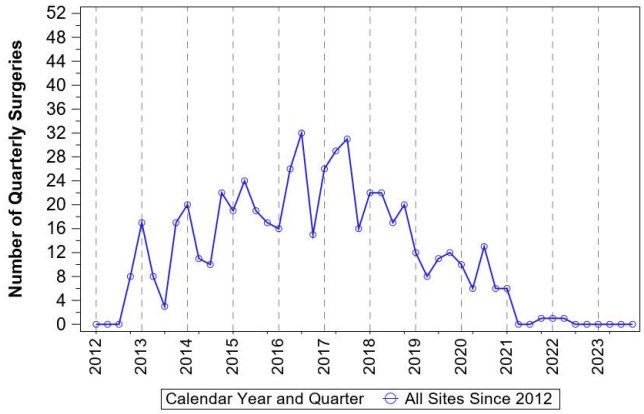


Figure 459. Utilization of the Sigma PFC/Sigma PFC All-Poly Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

960013	960004	960002
960003	960008	960006
196001400	960018	960012
196000400	960015	960016
960014	960005	

Catalog Numbers of Tibial Components Used in the Analysis

960640	960660	960621
960630	960632	960622
960650	960652	960661
960641	960642	962630
960620	860123	
960631	860124	
960651	860127	

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4.5.35 Triathlon CR (Cemented)/Triathlon (Cemented)

N = 19,984 primary cases were used for this analysis. Distribution of utilization: 116 surgeons across 56 sites used this implant combination in primary TKA cases.

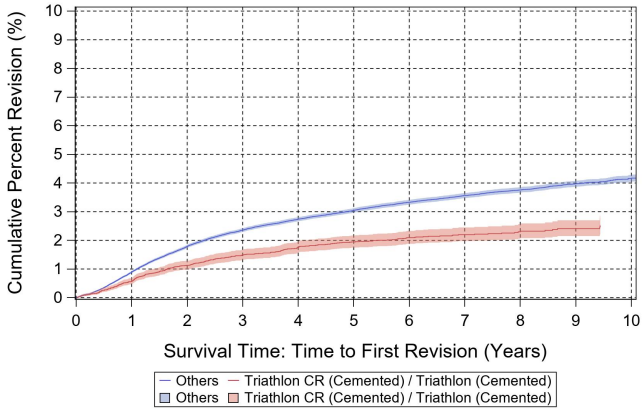


Figure 460. Cumulative Percent Revision Curve for the Triathlon CR (Cemented)/Triathlon (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases

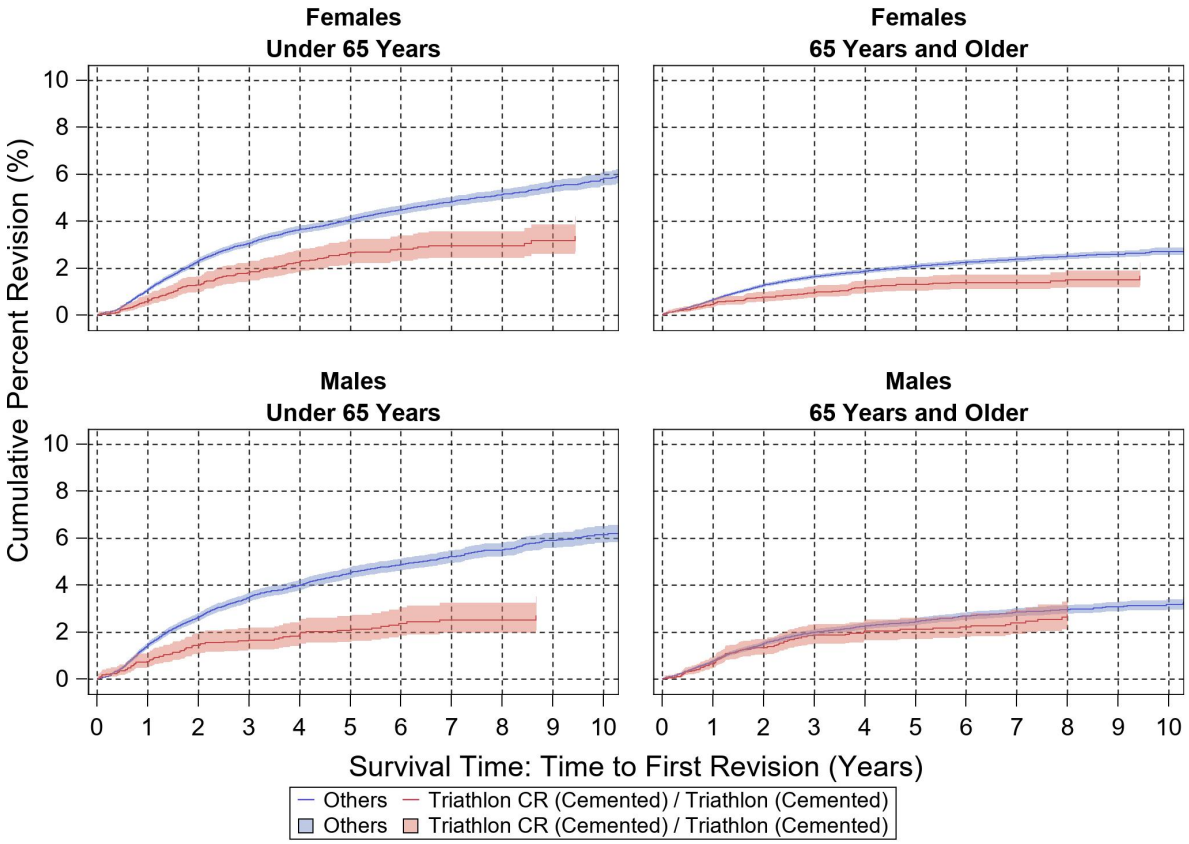


Figure 461. Cumulative Percent Revision Curve for the Triathlon CR (Cemented)/Triathlon (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1281. Cumulative Percent Revision and Number at Risk for the Triathlon CR (Cemented)/Triathlon (Cemented) Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	19,827	0.00 (0.00,0.00)	4,509	0.00 (0.00,0.00)	7,427	0.00 (0.00,0.00)	3,024	0.00 (0.00,0.00)	4,863	0.00 (0.00,0.00)
1	18,036	0.57 (0.47,0.69)	4,256	0.57 (0.39,0.84)	6,589	0.45 (0.32,0.64)	2,851	0.74 (0.49,1.13)	4,336	0.63 (0.44,0.90)
2	16,165	1.13 (0.98,1.29)	3,924	1.27 (0.97,1.66)	5,804	0.76 (0.57,0.99)	2,652	1.43 (1.05,1.93)	3,782	1.32 (1.02,1.71)
3	14,726	1.49 (1.32,1.68)	3,631	1.79 (1.43,2.24)	5,253	0.95 (0.74,1.22)	2,463	1.66 (1.25,2.20)	3,376	1.87 (1.50,2.33)
4	13,023	1.75 (1.57,1.96)	3,236	2.24 (1.83,2.75)	4,616	1.18 (0.93,1.48)	2,212	1.87 (1.43,2.45)	2,957	2.03 (1.64,2.52)
5	10,381	1.94 (1.74,2.17)	2,635	2.64 (2.18,3.21)	3,602	1.29 (1.03,1.61)	1,805	2.06 (1.58,2.67)	2,337	2.11 (1.71,2.61)
6	8,448	2.09 (1.88,2.33)	2,216	2.81 (2.32,3.40)	2,891	1.38 (1.11,1.72)	1,435	2.36 (1.83,3.04)	1,904	2.20 (1.78,2.72)
7	6,347	2.20 (1.97,2.45)	1,691	2.96 (2.45,3.57)	2,144	1.38 (1.11,1.72)	1,079	2.52 (1.96,3.24)	1,431	2.39 (1.93,2.96)
8	4,348	2.30 (2.06,2.56)	1,188	2.96 (2.45,3.57)	1,465	1.51 (1.19,1.90)	734	2.52 (1.96,3.24)	959	2.64 (2.11,3.29)
9	2,523	2.41 (2.15,2.70)	688	3.16 (2.59,3.86)	847	1.51 (1.19,1.90)	434	2.70 (2.06,3.53)	552	2.74 (2.19,3.43)
10	909	2.52 (2.22,2.86)	238	3.37 (2.70,4.21)	315	1.68 (1.26,2.23)	153	2.70 (2.06,3.53)	202	2.74 (2.19,3.43)

Table 1282. Reasons for First Revision Following Primary TKA for Triathlon CR (Cemented)/Triathlon (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	131	37.1
2	Dislocation/Instability	75	21.2
3	Aseptic Loosening	55	15.6
4	Arthrofibrosis	27	7.6
5	Pain	23	6.5
6	Implant Failure	12	3.4
7	Malalignment	7	2.0
8	Peri-prosthetic fracture - Femur	5	1.4
9	Peri-prosthetic fracture - Tibia	5	1.4
10	Poly liner wear	5	1.4
	Unknown/missing/other	4	2.3

Table 1283. Reasons for First Revision in the First 90 Days Following Primary TKA for Triathlon CR (Cemented)/Triathlon (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	7	33.3
2	Dislocation/Instability	5	23.8
3	Peri-prosthetic fracture - Tibia	4	19.0
4	Implant Failure	2	9.5
5	Pain	2	9.5
6	Aseptic Loosening	1	4.8

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Table 1284. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Triathlon CR (Cemented)/Triathlon (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	37	47.4
2	Dislocation/Instability	16	20.5
3	Arthrofibrosis	8	10.3
4	Aseptic Loosening	5	6.4
5	Pain	5	6.4
6	Malalignment	2	2.6
7	Extensor mechanism failure	2	2.6
8	Poly liner wear	1	1.3
9	Metal Reaction/Metallosis	1	1.3
10	Patellofemoral Joint	1	1.3

Table 1285. Descriptive Statistics of Cases Receiving the Triathlon CR (Cemented)/Triathlon (Cemented) Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	12,022	60.2	
Age (years)	19,983	67.3 (9.5)	67 (13)
Height (cm)	19,984	168.7 (10.5)	167.6 (17.8)
Weight (kg)	19,984	93.7 (20.8)	91.9 (27.6)
BMI(kg/m^2)	19,984	32.9 (6.4)	32.3 (8.7)
Smoker - Never (%)	10,610	53.1	
Smoker - Previous (%)	7,607	38.1	
Smoker - Current (%)	1,698	8.5	
Smoker - Unknown (%)	69	0.4	

Table 1286. Distribution of Approach Used for Triathlon CR (Cemented)/Triathlon (Cemented) Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	17,065	85.4
Mid-vastus	2,213	11.1
Sub-vastus	631	3.2
Lateral parapatellar	35	0.2
Missing/unknown/other	40	0.2

Table 1287. Distribution of Polyethylene Used for Triathlon CR (Cemented)/Triathlon (Cemented) Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	19,300	96.6
Antioxidant XLPE	0	0.0
Missing/unknown/other	684	3.4

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Table 1288. Volume of Cases by Surgeon and Site for the Triathlon CR (Cemented)/Triathlon (Cemented) Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	172 (371)	27 (136)
Cases per site	356 (666)	41 (467)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

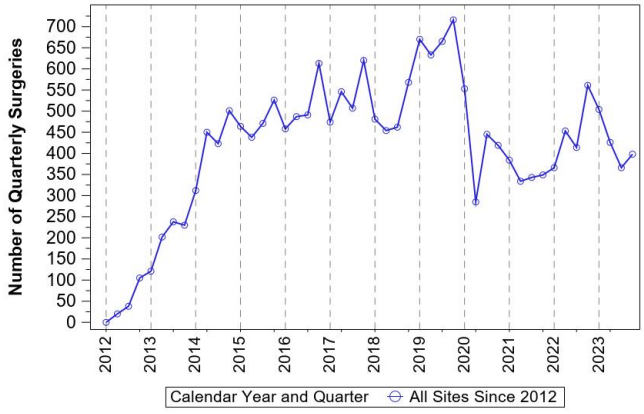


Figure 462. Utilization of the Triathlon CR (Cemented)/Triathlon (Cemented) Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

5510F402	5510F301	5510F801
5510F401	5510F602	5510F802
5510F502	5510F702	5510F102
5510F501	5510F701	5510F101
5510F302	5510F202	
5510F601	5510F201	

Catalog Numbers of Tibial Components Used in the Analysis

5520B400	5520B100	5534A411
5520B500	5534A509	5534A511
5520B300	5534A409	5526B200
5520B600	5534A309	5526B300
5520B700	5534A809	5526B500
5520B200	5534A611	5534A416
5520B800	5534A209	5534A716
5534A609	5520M400	5534A811
5534A709	5534A711	

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4.5.36 Triathlon CR (Cemented)/Triathlon TS (Cemented)

N = 15,364 primary cases were used for this analysis. Distribution of utilization: 155 surgeons across 58 sites used this implant combination in primary TKA cases.

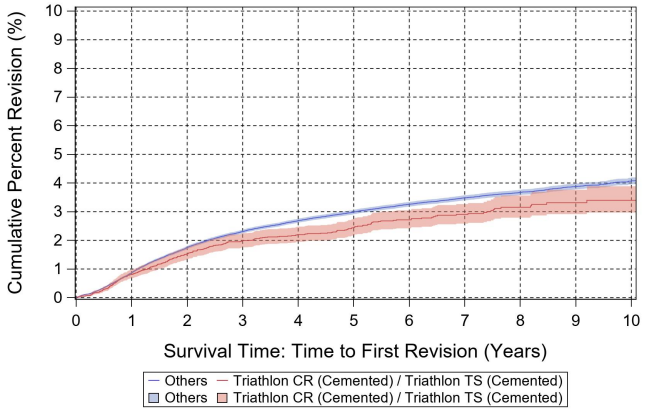


Figure 463. Cumulative Percent Revision Curve for the Triathlon CR (Cemented)/Triathlon TS (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases

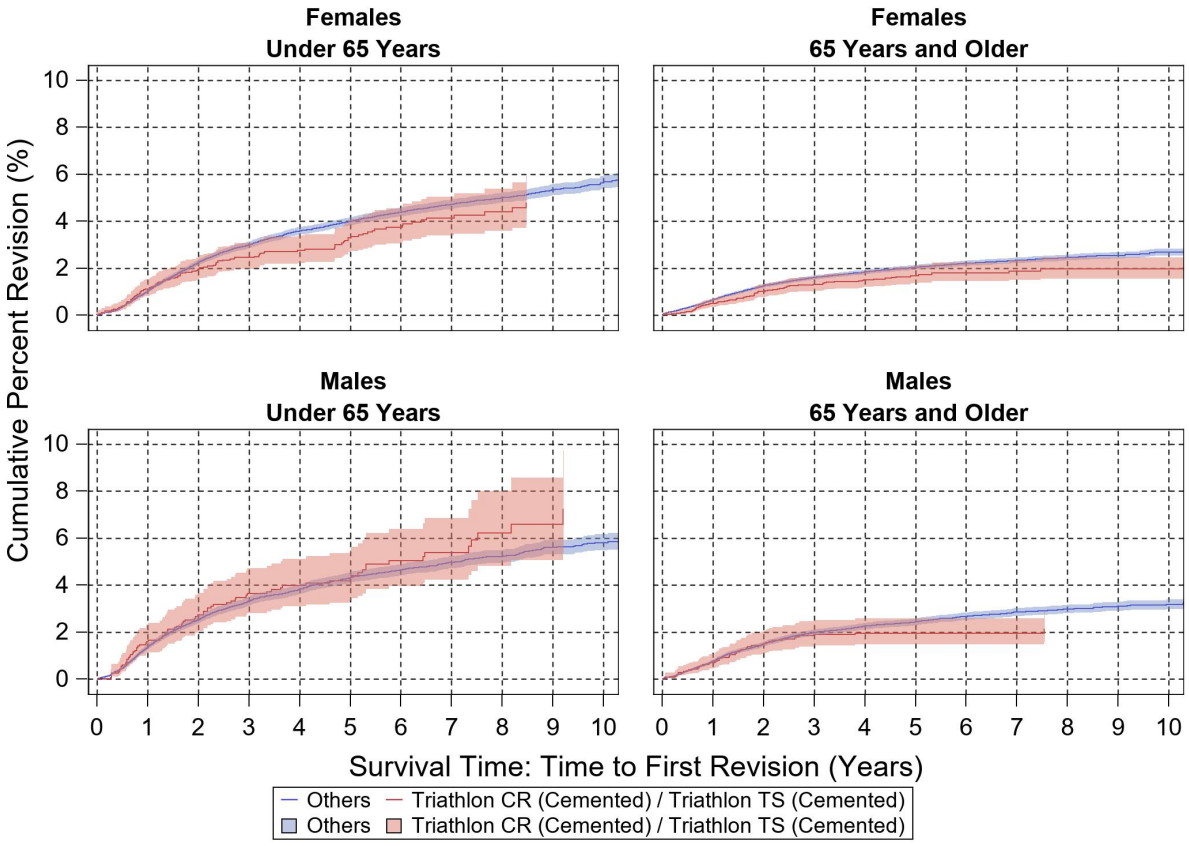


Figure 464. Cumulative Percent Revision Curve for the Triathlon CR (Cemented)/Triathlon TS (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1289. Cumulative Percent Revision and Number at Risk for the Triathlon CR (Cemented)/Triathlon TS (Cemented) Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	15,262	0.00 (0.00,0.00)	3,619	0.00 (0.00,0.00)	6,876	0.00 (0.00,0.00)	1,742	0.00 (0.00,0.00)	3,024	0.00 (0.00,0.00)
1	13,044	0.81 (0.68,0.98)	3,201	1.12 (0.81,1.53)	5,717	0.50 (0.35,0.71)	1,554	1.58 (1.08,2.32)	2,571	0.68 (0.43,1.07)
2	11,155	1.53 (1.33,1.75)	2,776	1.94 (1.51,2.47)	4,809	1.00 (0.77,1.30)	1,373	2.73 (2.03,3.67)	2,196	1.46 (1.07,2.01)
3	9,576	1.99 (1.76,2.25)	2,445	2.45 (1.96,3.06)	3,994	1.32 (1.04,1.66)	1,210	3.63 (2.80,4.71)	1,926	1.89 (1.42,2.51)
4	8,123	2.20 (1.95,2.48)	2,107	2.75 (2.22,3.40)	3,358	1.50 (1.20,1.88)	1,039	3.98 (3.09,5.12)	1,618	1.95 (1.47,2.58)
5	6,462	2.45 (2.18,2.75)	1,695	3.29 (2.68,4.03)	2,602	1.67 (1.34,2.08)	858	4.29 (3.35,5.49)	1,306	1.95 (1.47,2.58)
6	4,708	2.72 (2.42,3.05)	1,278	3.73 (3.05,4.55)	1,870	1.79 (1.44,2.23)	620	5.03 (3.95,6.38)	939	1.95 (1.47,2.58)
7	3,272	2.90 (2.58,3.27)	893	4.14 (3.39,5.04)	1,320	1.86 (1.49,2.33)	415	5.39 (4.23,6.86)	644	1.95 (1.47,2.58)
8	2,110	3.15 (2.79,3.56)	566	4.39 (3.58,5.38)	839	1.95 (1.55,2.46)	270	6.21 (4.81,8.01)	435	2.13 (1.57,2.90)
9	1,253	3.31 (2.91,3.77)	319	4.79 (3.85,5.95)	508	1.95 (1.55,2.46)	160	6.59 (5.05,8.57)	266	2.13 (1.57,2.90)
10	590	3.40 (2.97,3.89)	138	4.79 (3.85,5.95)	241	1.95 (1.55,2.46)	73	7.24 (5.37,9.72)	138	2.13 (1.57,2.90)

Table 1290. Reasons for First Revision Following Primary TKA for Triathlon CR (Cemented)/Triathlon TS (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	104	32.4
2	Dislocation/Instability	95	29.6
3	Aseptic Loosening	44	13.7
4	Arthrofibrosis	25	7.8
5	Pain	15	4.7
6	Implant Failure	11	3.4
7	Malalignment	10	3.1
8	Peri-prosthetic fracture - Femur	6	1.9
9	Patellofemoral Joint	4	1.2
10	Metal Reaction/Metallosis	3	0.9
	Unknown/missing/other	2	1.2

Table 1291. Reasons for First Revision in the First 90 Days Following Primary TKA for Triathlon CR (Cemented)/Triathlon TS (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	5	45.4
2	Dislocation/Instability	2	18.2
3	Aseptic Loosening	1	9.1
4	Peri-prosthetic fracture - Femur	1	9.1
5	Pain	1	9.1
6	Extensor mechanism failure	1	9.1

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Table 1292. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Triathlon CR (Cemented)/Triathlon TS (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	46	45.5
2	Dislocation/Instability	21	20.8
3	Arthrofibrosis	12	11.9
4	Aseptic Loosening	7	6.9
5	Pain	7	6.9
6	Peri-prosthetic fracture - Femur	3	3.0
7	Poly liner wear	1	1.0
8	Implant Failure	1	1.0
9	Malalignment	1	1.0
10	Peri-prosthetic fracture - Tibia	1	1.0
	Unknown/missing/other	1	1.0

Table 1293. Descriptive Statistics of Cases Receiving the Triathlon CR (Cemented)/Triathlon TS (Cemented) Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	10,546	68.6	
Age (years)	15,364	67.8 (9.5)	68 (13.5)
Height (cm)	15,363	167.2 (10.3)	165.1 (15)
Weight (kg)	15,363	93.3 (21.8)	91 (29.8)
BMI(kg/m^2)	15,363	33.3 (7)	32.5 (9.5)
Smoker - Never (%)	8,478	55.2	
Smoker - Previous (%)	5,597	36.4	
Smoker - Current (%)	1,230	8	
Smoker - Unknown (%)	59	0.4	

Table 1294. Distribution of Approach Used for Triathlon CR (Cemented)/Triathlon TS (Cemented) Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	13,082	85.1
Mid-vastus	2,152	14.0
Sub-vastus	61	0.4
Lateral parapatellar	21	0.1
Missing/unknown/other	48	0.3

Table 1295. Distribution of Polyethylene Used for Triathlon CR (Cemented)/Triathlon TS (Cemented) Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	15,294	99.5
Antioxidant XLPE	0	0.0
Missing/unknown/other	70	0.5

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Table 1296. Volume of Cases by Surgeon and Site for the Triathlon CR (Cemented)/Triathlon TS (Cemented) Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	99 (206)	12 (63)
Cases per site	264 (483)	47 (287)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

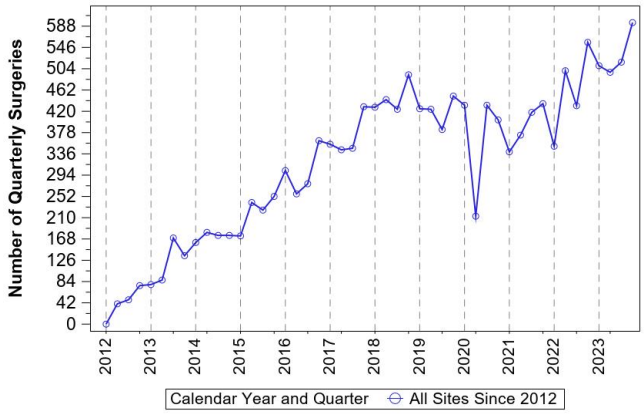


Figure 465. Utilization of the Triathlon CR (Cemented)/Triathlon TS (Cemented) Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

5510F402	5510F601	5510F801
5510F401	5510F602	5510F802
5510F302	5510F202	5510F101
5510F301	5510F702	5510F102
5510F502	5510F201	
5510F501	5510F701	

Catalog Numbers of Tibial Components Used in the Analysis

5521B400	5521B600	5521B100
5521B300	5521B200	5521B800
5521B500	5521B700	

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4.5.37 Triathlon CR (Cementless)/Triathlon (Cemented)

N = 521 primary cases were used for this analysis. Distribution of utilization: 24 surgeons across 16 sites used this implant combination in primary TKA cases.

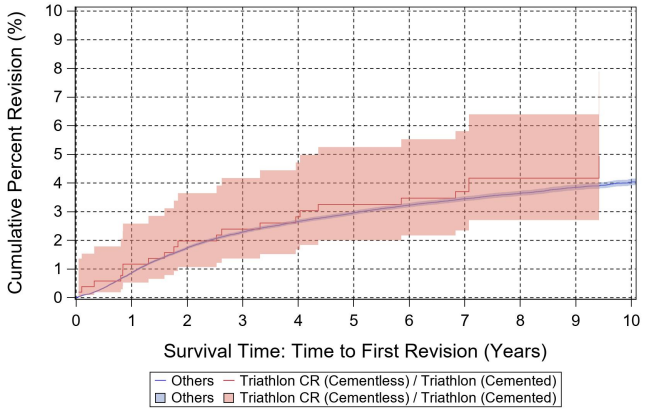


Figure 466. Cumulative Percent Revision Curve for the Triathlon CR (Cementless)/Triathlon (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases

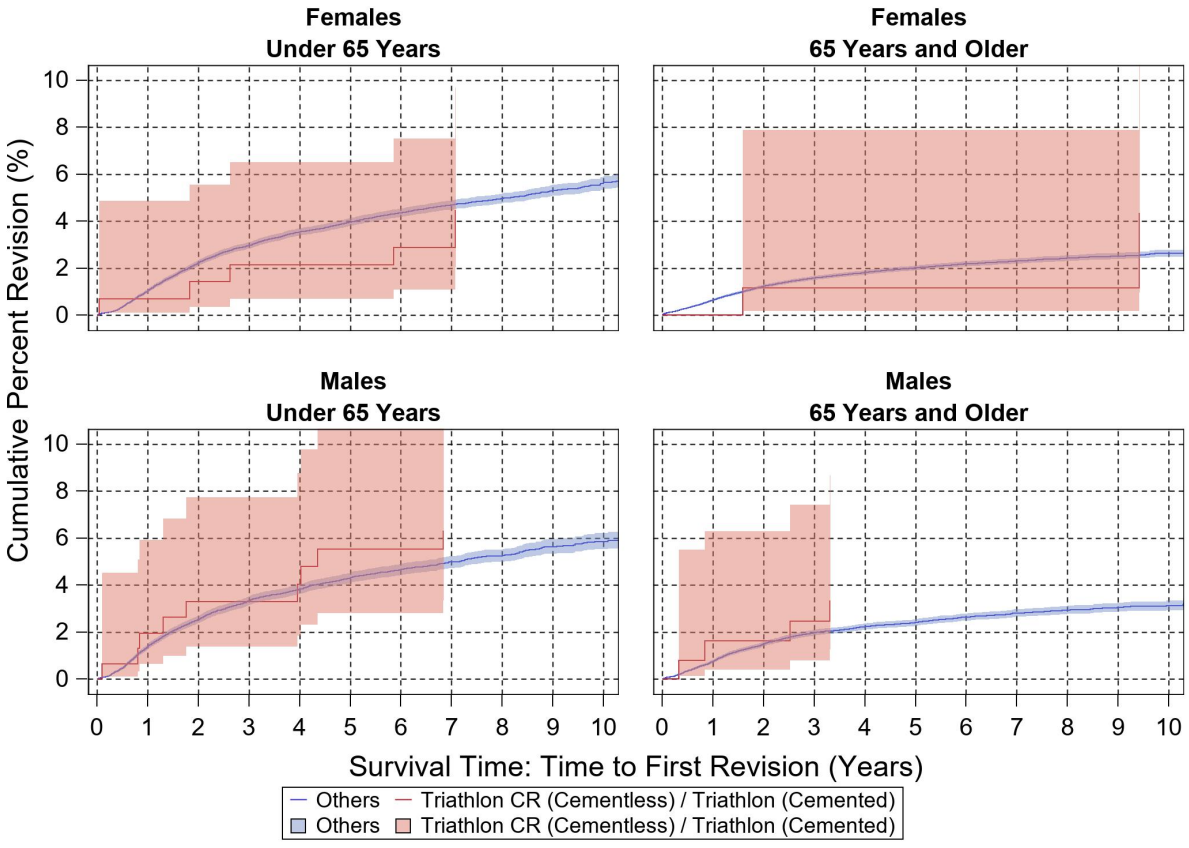


Figure 467. Cumulative Percent Revision Curve for the Triathlon CR (Cementless)/Triathlon (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1297. Cumulative Percent Revision and Number at Risk for the Triathlon CR (Cementless)/Triathlon (Cemented) Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	518	0.00 (0.00,0.00)	143	0.00 (0.00,0.00)	94	0.00 (0.00,0.00)	154	0.00 (0.00,0.00)	127	0.00 (0.00,0.00)
1	498	1.17 (0.53,2.59)	141	0.70 (0.10,4.86)	89	0.00 (0.00,0.00)	149	1.95 (0.63,5.92)	119	1.61 (0.41,6.30)
2	478	1.98 (1.07,3.65)	137	1.42 (0.36,5.55)	84	1.15 (0.16,7.88)	139	3.30 (1.38,7.74)	118	1.61 (0.41,6.30)
3	466	2.39 (1.37,4.18)	135	2.14 (0.70,6.50)	83	1.15 (0.16,7.88)	134	3.30 (1.38,7.74)	114	2.45 (0.80,7.42)
4	452	2.82 (1.68,4.72)	134	2.14 (0.70,6.50)	82	1.15 (0.16,7.88)	129	4.04 (1.83,8.78)	107	3.34 (1.27,8.67)
5	442	3.25 (2.00,5.25)	133	2.14 (0.70,6.50)	79	1.15 (0.16,7.88)	125	5.53 (2.80,10.78)	105	3.34 (1.27,8.67)
6	437	3.47 (2.17,5.53)	131	2.89 (1.09,7.51)	79	1.15 (0.16,7.88)	124	5.53 (2.80,10.78)	103	3.34 (1.27,8.67)
7	415	3.70 (2.35,5.81)	124	2.89 (1.09,7.51)	76	1.15 (0.16,7.88)	118	6.32 (3.33,11.82)	97	3.34 (1.27,8.67)
8	287	4.17 (2.71,6.40)	77	4.46 (2.03,9.68)	60	1.15 (0.16,7.88)	91	6.32 (3.33,11.82)	59	3.34 (1.27,8.67)
9	166	4.17 (2.71,6.40)	49	4.46 (2.03,9.68)	36	1.15 (0.16,7.88)	51	6.32 (3.33,11.82)	30	3.34 (1.27,8.67)
10	79	4.94 (3.08,7.90)	23	4.46 (2.03,9.68)	22	4.34 (0.95,18.63)	19	6.32 (3.33,11.82)	15	3.34 (1.27,8.67)

Table 1298. Reasons for First Revision Following Primary TKA for Triathlon CR (Cementless)/Triathlon (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	6	30.0
2	Dislocation/Instability	5	25.0
3	Aseptic Loosening	4	20.0
4	Poly liner wear	3	15.0
5	Pain	1	5.0
6	Peri-prosthetic fracture - Tibia	1	5.0

Table 1299. Reasons for First Revision in the First 90 Days Following Primary TKA for Triathlon CR (Cementless)/Triathlon (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	1	50.0
2	Peri-prosthetic fracture - Tibia	1	50.0

Table 1300. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Triathlon CR (Cementless)/Triathlon (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	33.3
2	Joint Infection	1	33.3
3	Pain	1	33.3

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Table 1301. Descriptive Statistics of Cases Receiving the Triathlon CR (Cementless)/Triathlon (Cemented) Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	238	45.7	
Age (years)	521	62.6 (9.8)	62 (13)
Height (cm)	521	171.5 (10.8)	170.2 (17.4)
Weight (kg)	521	102.3 (22.9)	99.8 (29.3)
BMI(kg/m^2)	521	34.8 (7.2)	33.6 (9.2)
Smoker - Never (%)	253	48.6	
Smoker - Previous (%)	205	39.4	
Smoker - Current (%)	60	11.5	
Smoker - Unknown (%)	3	0.6	

Table 1302. Distribution of Approach Used for Triathlon CR (Cementless)/Triathlon (Cemented) Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	302	58.0
Mid-vastus	82	15.7
Sub-vastus	137	26.3
Lateral parapatellar	0	0.0
Missing/unknown/other	0	0.0

Table 1303. Distribution of Polyethylene Used for Triathlon CR (Cementless)/Triathlon (Cemented) Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	519	99.6
Antioxidant XLPE	0	0.0
Missing/unknown/other	2	0.4

Table 1304. Volume of Cases by Surgeon and Site for the Triathlon CR (Cementless)/Triathlon (Cemented) Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	21 (48)	4 (7)
Cases per site	32 (59)	5 (22)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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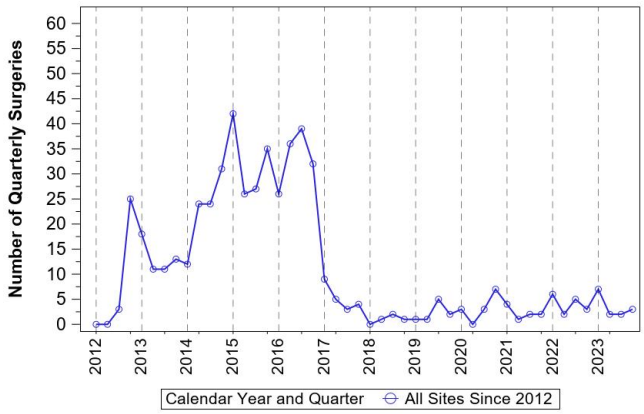


Figure 468. Utilization of the Triathlon CR (Cementless)/Triathlon (Cemented) Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

5517F501	5517F302	5517F802
5517F502	5517F601	5517F101
5517F402	5517F702	5517F801
5517F301	5517F701	5517F102
5517F401	5517F202	
5517F602	5517F201	

Catalog Numbers of Tibial Components Used in the Analysis

5527B400	5520B400	5526B300
5520B300	5527B600	5527B200
5520B600	5526B400	5520B100
5527B500	5526B700	5520B800
5526B600	5520B700	5526B200
5520B500	5527B800	5534A413
5526B500	5527B300	5534A509
5527B700	5520B200	

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4.5.38 Triathlon CR (Cementless)/Triathlon (Cementless)

N = 17,469 primary cases were used for this analysis. Distribution of utilization: 105 surgeons across 41 sites used this implant combination in primary TKA cases.

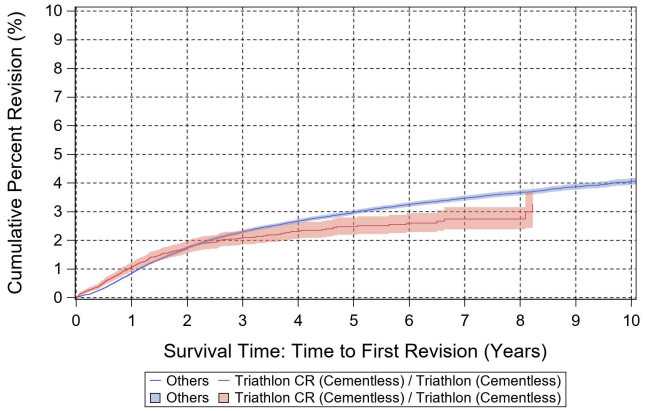


Figure 469. Cumulative Percent Revision Curve for the Triathlon CR (Cementless)/Triathlon (Cementless) Combination, Compared to All Other Implant Combinations in Primary TKA Cases

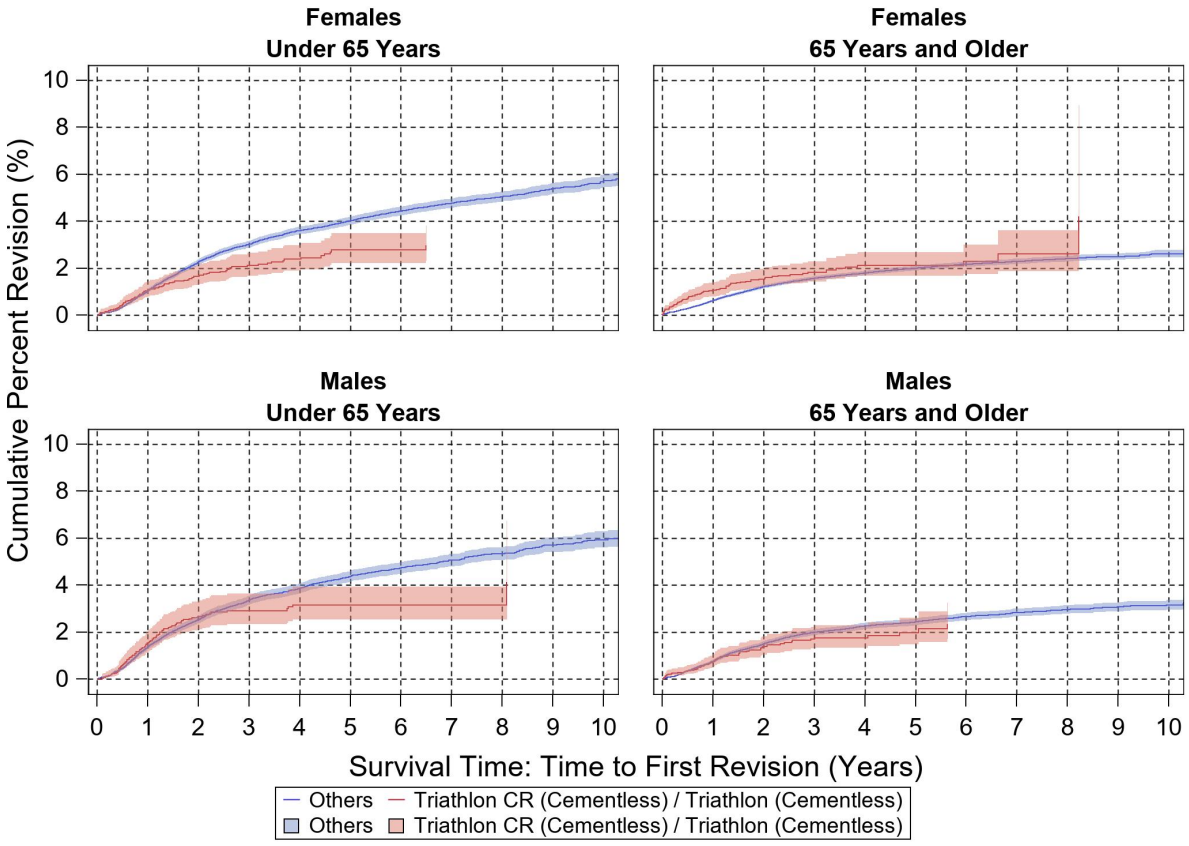


Figure 470. Cumulative Percent Revision Curve for the Triathlon CR (Cementless)/Triathlon (Cementless) Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1305. Cumulative Percent Revision and Number at Risk for the Triathlon CR (Cementless)/Triathlon (Cementless) Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	17,420	0.00 (0.00,0.00)	4,588	0.00 (0.00,0.00)	4,947	0.00 (0.00,0.00)	3,402	0.00 (0.00,0.00)	4,480	0.00 (0.00,0.00)
1	13,465	1.08 (0.92,1.25)	3,639	1.06 (0.79,1.43)	3,786	1.06 (0.80,1.41)	2,658	1.51 (1.13,2.02)	3,380	0.74 (0.51,1.06)
2	10,380	1.75 (1.54,1.98)	2,880	1.64 (1.28,2.10)	2,872	1.53 (1.20,1.96)	2,101	2.66 (2.11,3.33)	2,525	1.38 (1.04,1.83)
3	7,437	2.08 (1.85,2.35)	2,113	2.10 (1.67,2.65)	1,983	1.81 (1.43,2.29)	1,546	2.91 (2.33,3.63)	1,793	1.70 (1.29,2.22)
4	5,127	2.31 (2.05,2.60)	1,527	2.38 (1.90,2.98)	1,338	2.11 (1.66,2.68)	1,087	3.16 (2.53,3.94)	1,175	1.75 (1.34,2.29)
5	3,052	2.48 (2.19,2.80)	979	2.77 (2.20,3.49)	783	2.11 (1.66,2.68)	666	3.16 (2.53,3.94)	624	1.97 (1.48,2.61)
6	1,978	2.60 (2.29,2.95)	635	2.77 (2.20,3.49)	519	2.30 (1.75,3.00)	428	3.16 (2.53,3.94)	396	2.34 (1.69,3.24)
7	1,010	2.74 (2.38,3.16)	356	2.97 (2.31,3.81)	235	2.60 (1.87,3.60)	225	3.16 (2.53,3.94)	194	2.34 (1.69,3.24)
8	436	2.74 (2.38,3.16)	157	2.97 (2.31,3.81)	82	2.60 (1.87,3.60)	117	3.16 (2.53,3.94)	80	2.34 (1.69,3.24)
9	164	3.28 (2.54,4.23)	66	2.97 (2.31,3.81)	31	4.19 (1.94,8.95)	36	4.13 (2.52,6.73)	31	2.34 (1.69,3.24)
10	34	3.28 (2.54,4.23)	14	2.97 (2.31,3.81)	*	4.19 (1.94,8.95)	*	4.13 (2.52,6.73)	*	2.34 (1.69,3.24)

* Denotes that the number of cases is between 1 and 10.

Table 1306. Reasons for First Revision Following Primary TKA for Triathlon CR (Cementless)/Triathlon (Cementless) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	105	34.1
2	Dislocation/Instability	59	19.2
3	Aseptic Loosening	50	16.2
4	Arthrofibrosis	36	11.7
5	Implant Failure	13	4.2
6	Malalignment	12	3.9
7	Peri-prosthetic fracture - Tibia	12	3.9
8	Pain	10	3.2
9	Extensor mechanism failure	5	1.6
10	Osteolysis	2	0.6
	Unknown/missing/other	2	1.3

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Table 1307. Reasons for First Revision in the First 90 Days Following Primary TKA for Triathlon CR (Cementless)/Triathlon (Cementless) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	22	45.8
2	Peri-prosthetic fracture - Tibia	10	20.8
3	Aseptic Loosening	8	16.7
4	Dislocation/Instability	2	4.2
5	Malalignment	2	4.2
6	Extensor mechanism failure	2	4.2
7	Osteolysis	1	2.1
8	Implant Failure	1	2.1

Table 1308. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Triathlon CR (Cementless)/Triathlon (Cementless) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	46	38.7
2	Aseptic Loosening	19	16.0
3	Arthrofibrosis	19	16.0
4	Dislocation/Instability	17	14.3
5	Malalignment	5	4.2
6	Implant Failure	4	3.4
7	Pain	4	3.4
8	Peri-prosthetic fracture - Tibia	2	1.7
9	Extensor mechanism failure	2	1.7
10	Patellofemoral Joint	1	0.8

Table 1309. Descriptive Statistics of Cases Receiving the Triathlon CR (Cementless)/Triathlon (Cementless) Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	9,550	54.7	
Age (years)	17,469	65.2 (9)	65 (12)
Height (cm)	17,469	170.4 (10.6)	170.2 (15.2)
Weight (kg)	17,469	97.4 (21.1)	95.7 (28.5)
BMI(kg/m^2)	17,469	33.5 (6.5)	32.9 (8.9)
Smoker - Never (%)	9,509	54.4	
Smoker - Previous (%)	6,118	35	
Smoker - Current (%)	1,815	10.4	
Smoker - Unknown (%)	27	0.2	

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Table 1310. Distribution of Approach Used for Triathlon CR (Cementless)/Triathlon (Cementless) Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	14,402	82.4
Mid-vastus	2,239	12.8
Sub-vastus	607	3.5
Lateral parapatellar	9	0.1
Missing/unknown/other	212	1.2

Table 1311. Distribution of Polyethylene Used for Triathlon CR (Cementless)/Triathlon (Cementless) Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	17,364	99.4
Antioxidant XLPE	0	0.0
Missing/unknown/other	105	0.6

Table 1312. Volume of Cases by Surgeon and Site for the Triathlon CR (Cementless)/Triathlon (Cementless) Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	166 (254)	55 (182)
Cases per site	426 (680)	167 (645)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

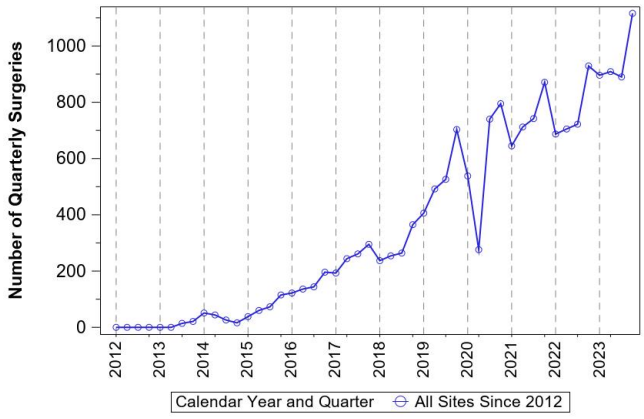


Figure 471. Utilization of the Triathlon CR (Cementless)/Triathlon (Cementless) Combination in Primary TKA Cases

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Catalog Numbers of Femoral Components Used in the Analysis

5517F402	5517F602	5517F802
5517F401	5517F601	5517F801
5517F502	5517F702	5517F101
5517F501	5517F701	5517F102
5517F302	5517F201	
5517F301	5517F202	

Catalog Numbers of Tibial Components Used in the Analysis

5536B400	5536B300	5536B800
5536B500	5536B700	5536B100
5536B600	5536B200	

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4.5.39 Triathlon CR (Cementless)/Triathlon TS (Cemented)

N = 525 primary cases were used for this analysis. Distribution of utilization: 32 surgeons across 21 sites used this implant combination in primary TKA cases.

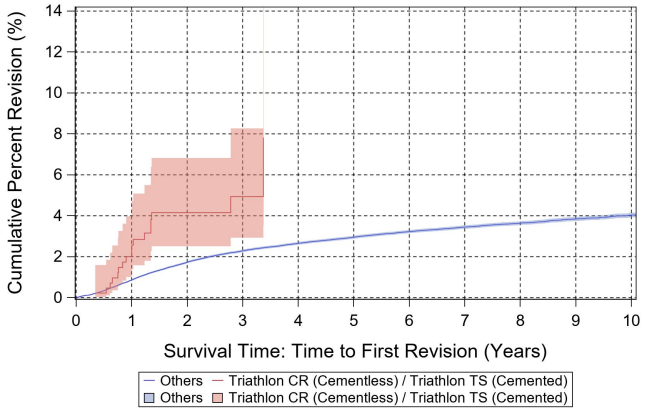


Figure 472. Cumulative Percent Revision Curve for the Triathlon CR (Cementless)/Triathlon TS (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases

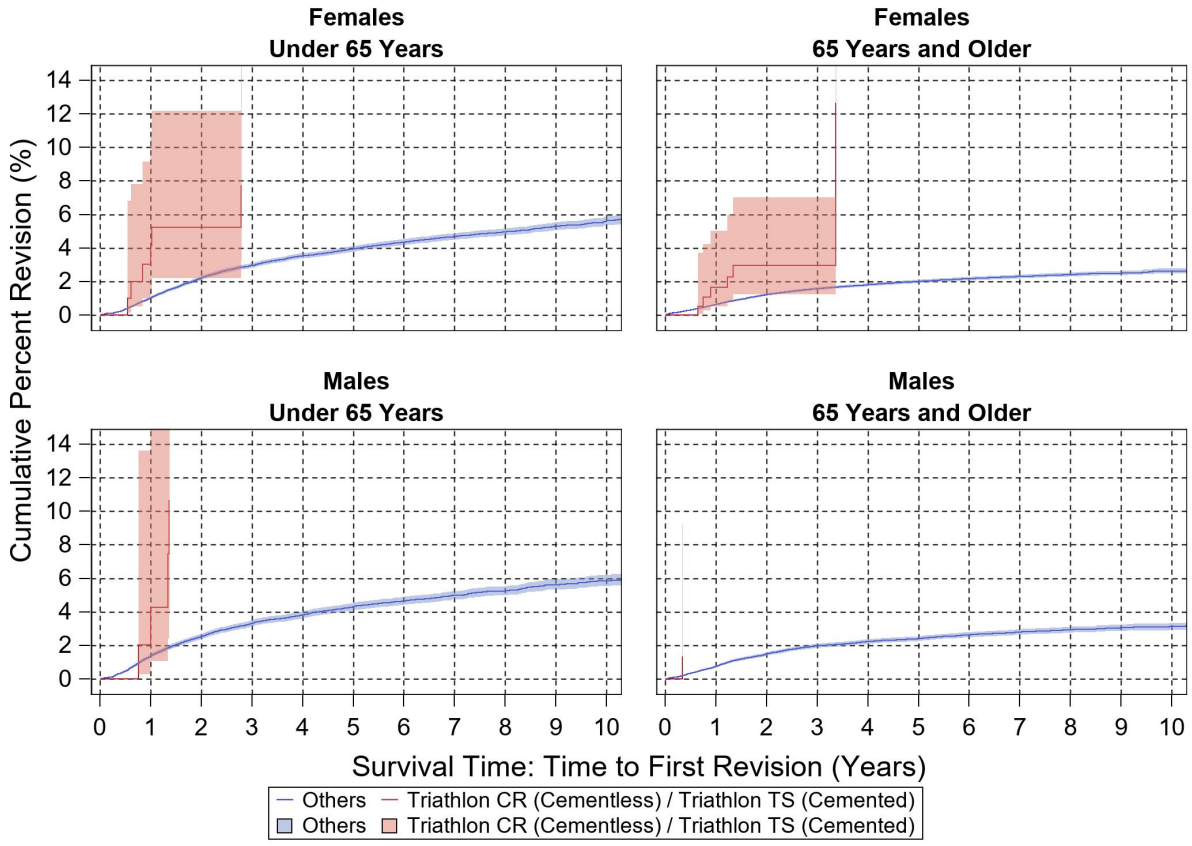


Figure 473. Cumulative Percent Revision Curve for the Triathlon CR (Cementless)/Triathlon TS (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1313. Cumulative Percent Revision and Number at Risk for the Triathlon CR (Cementless)/Triathlon TS (Cemented) Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	525	0.00 (0.00,0.00)	120	0.00 (0.00,0.00)	253	0.00 (0.00,0.00)	65	0.00 (0.00,0.00)	87	0.00 (0.00,0.00)
1	351	2.01 (1.01,3.98)	88	3.04 (0.99,9.14)	168	1.64 (0.53,5.01)	44	2.04 (0.29,13.62)	51	1.35 (0.19,9.21)
2	211	4.15 (2.51,6.82)	62	5.25 (2.21,12.16)	111	2.97 (1.24,7.01)	15	10.65 (4.04,26.48)	23	1.35 (0.19,9.21)
3	81	4.94 (2.93,8.27)	23	7.74 (3.30,17.57)	41	2.97 (1.24,7.01)	*	10.65 (4.04,26.48)	*	1.35 (0.19,9.21)
4	23	7.82 (3.55,16.75)	*	7.74 (3.30,17.57)	*	12.67 (2.87,46.76)	*	10.65 (4.04,26.48)	*	1.35 (0.19,9.21)
5	15	7.82 (3.55,16.75)	*	7.74 (3.30,17.57)	*	12.67 (2.87,46.76)	*	10.65 (4.04,26.48)	*	1.35 (0.19,9.21)
6	*	7.82 (3.55,16.75)	*	7.74 (3.30,17.57)	*	12.67 (2.87,46.76)	*	10.65 (4.04,26.48)	*	1.35 (0.19,9.21)
7	*	7.82 (3.55,16.75)	*	7.74 (3.30,17.57)	*	12.67 (2.87,46.76)	*	10.65 (4.04,26.48)	*	1.35 (0.19,9.21)
8	*	7.82 (3.55,16.75)	*	7.74 (3.30,17.57)	*	12.67 (2.87,46.76)	*	10.65 (4.04,26.48)	0	N/A
9	*	7.82 (3.55,16.75)	0	N/A	*	12.67 (2.87,46.76)	0	N/A	0	N/A
10	*	7.82 (3.55,16.75)	0	N/A	*	12.67 (2.87,46.76)	0	N/A	0	N/A

* Denotes that the number of cases is between 1 and 10.

Table 1314. Reasons for First Revision Following Primary TKA for Triathlon CR (Cementless)/Triathlon TS (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	9	52.9
2	Arthrofibrosis	2	11.8
3	Joint Infection	2	11.8
4	Aseptic Loosening	1	5.9
5	Metal Reaction/Metallosis	1	5.9
6	Pain	1	5.9
7	Poly liner wear	1	5.9

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1315. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Triathlon CR (Cementless)/Triathlon TS (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	4	50.0
2	Joint Infection	1	12.5
3	Poly liner wear	1	12.5
4	Metal Reaction/Metallosis	1	12.5
5	Arthrofibrosis	1	12.5

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Table 1316. Descriptive Statistics of Cases Receiving the Triathlon CR (Cementless)/Triathlon TS (Cemented) Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	373	71.1	
Age (years)	525	67.1 (9.5)	68 (12)
Height (cm)	525	167.3 (10.2)	166.4 (15.3)
Weight (kg)	525	98.8 (23.8)	98.2 (30.6)
BMI(kg/m^2)	525	35.3 (7.8)	34.6 (9.7)
Smoker - Never (%)	309	58.9	
Smoker - Previous (%)	175	33.3	
Smoker - Current (%)	41	7.8	
Smoker - Unknown (%)	0	0.0	

Table 1317. Distribution of Approach Used for Triathlon CR (Cementless)/Triathlon TS (Cemented) Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	122	23.2
Mid-vastus	390	74.3
Sub-vastus	7	1.3
Lateral parapatellar	0	0.0
Missing/unknown/other	6	1.1

Table 1318. Distribution of Polyethylene Used for Triathlon CR (Cementless)/Triathlon TS (Cemented) Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	522	99.4
Antioxidant XLPE	0	0.0
Missing/unknown/other	3	0.6

Table 1319. Volume of Cases by Surgeon and Site for the Triathlon CR (Cementless)/Triathlon TS (Cemented) Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	16 (68)	1 (3)
Cases per site	25 (99)	2 (5)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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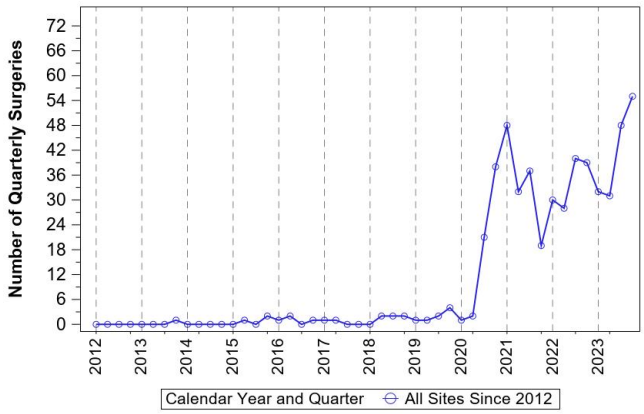


Figure 474. Utilization of the Triathlon CR (Cementless)/Triathlon TS (Cemented) Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

5517F302	5517F202	5517F601
5517F401	5517F501	5517F702
5517F301	5517F602	5517F802
5517F402	5517F101	5517F801
5517F201	5517F701	
5517F502	5517F102	

Catalog Numbers of Tibial Components Used in the Analysis

5521B400	5521B600	5521B100
5521B300	5521B500	5521B800
5521B200	5521B700	

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4.5.40 Triathlon PS (Cemented)/Triathlon (Cemented)

N = 3,696 primary cases were used for this analysis. Distribution of utilization: 83 surgeons across 39 sites used this implant combination in primary TKA cases.

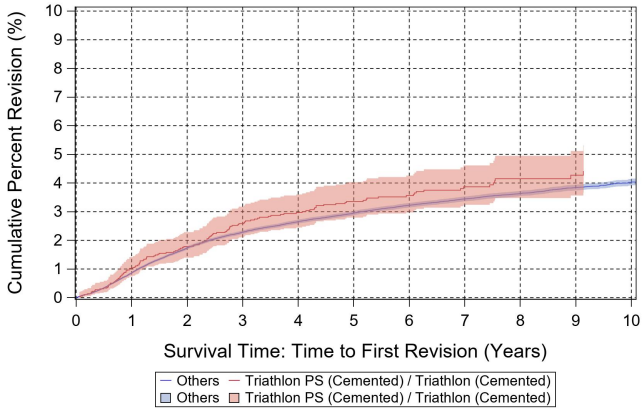


Figure 475. Cumulative Percent Revision Curve for the Triathlon PS (Cemented)/Triathlon (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases

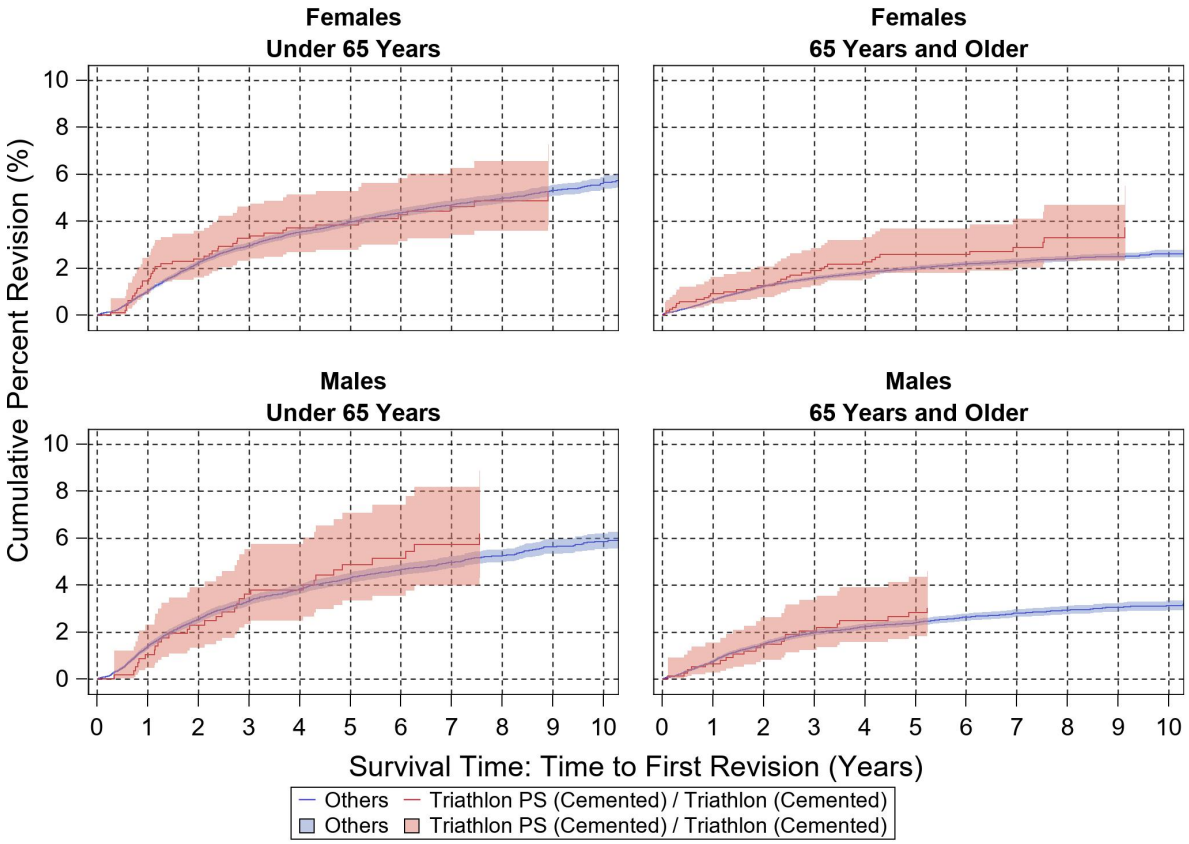


Figure 476. Cumulative Percent Revision Curve for the Triathlon PS (Cemented)/Triathlon (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1320. Cumulative Percent Revision and Number at Risk for the Triathlon PS (Cemented)/Triathlon (Cemented) Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,619	0.00 (0.00,0.00)	1,002	0.00 (0.00,0.00)	1,239	0.00 (0.00,0.00)	588	0.00 (0.00,0.00)	790	0.00 (0.00,0.00)
1	3,425	1.02 (0.74,1.42)	945	1.45 (0.86,2.43)	1,168	0.91 (0.50,1.63)	565	1.04 (0.47,2.30)	747	0.65 (0.27,1.55)
2	3,276	1.79 (1.40,2.29)	915	2.39 (1.60,3.58)	1,119	1.26 (0.76,2.07)	534	2.29 (1.34,3.92)	708	1.47 (0.81,2.63)
3	3,100	2.58 (2.10,3.18)	872	3.26 (2.31,4.61)	1,053	1.89 (1.25,2.86)	506	3.60 (2.34,5.53)	669	2.04 (1.23,3.36)
4	2,904	2.97 (2.45,3.60)	812	3.72 (2.68,5.14)	997	2.27 (1.55,3.32)	469	3.79 (2.49,5.76)	626	2.49 (1.57,3.92)
5	2,564	3.36 (2.79,4.03)	725	3.84 (2.79,5.29)	875	2.57 (1.79,3.68)	414	4.87 (3.33,7.08)	550	2.83 (1.83,4.35)
6	2,104	3.56 (2.97,4.26)	606	4.27 (3.13,5.81)	712	2.57 (1.79,3.68)	336	5.13 (3.54,7.41)	450	3.01 (1.97,4.59)
7	1,617	3.87 (3.24,4.61)	478	4.63 (3.41,6.27)	553	2.88 (2.02,4.10)	251	5.72 (3.99,8.17)	335	3.01 (1.97,4.59)
8	1,148	4.15 (3.47,4.95)	349	4.86 (3.58,6.56)	376	3.30 (2.31,4.70)	173	6.19 (4.30,8.87)	250	3.01 (1.97,4.59)
9	733	4.27 (3.56,5.12)	210	5.29 (3.84,7.26)	242	3.30 (2.31,4.70)	123	6.19 (4.30,8.87)	158	3.01 (1.97,4.59)
10	297	4.42 (3.67,5.32)	79	5.29 (3.84,7.26)	101	3.74 (2.54,5.50)	50	6.19 (4.30,8.87)	67	3.01 (1.97,4.59)

Table 1321. Reasons for First Revision Following Primary TKA for Triathlon PS (Cemented)/Triathlon (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	39	32.0
2	Aseptic Loosening	26	21.3
3	Dislocation/Instability	24	19.7
4	Arthrofibrosis	8	6.6
5	Pain	4	3.3
6	Peri-prosthetic fracture - Femur	4	3.3
7	Implant Failure	3	2.5
8	Malalignment	3	2.5
9	Peri-prosthetic fracture - Tibia	3	2.5
10	Metal Reaction/Metallosis	2	1.6
	Unknown/missing/other	2	4.9

Table 1322. Reasons for First Revision in the First 90 Days Following Primary TKA for Triathlon PS (Cemented)/Triathlon (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	3	50.0
2	Peri-prosthetic fracture - Tibia	2	33.3
3	Aseptic Loosening	1	16.7

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Table 1323. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Triathlon PS (Cemented)/Triathlon (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	8	36.4
2	Aseptic Loosening	4	18.2
3	Arthrofibrosis	4	18.2
4	Dislocation/Instability	3	13.6
5	Metal Reaction/Metallosis	1	4.6
6	Pain	1	4.6
7	Peri-prosthetic fracture - Tibia	1	4.6

Table 1324. Descriptive Statistics of Cases Receiving the Triathlon PS (Cemented)/Triathlon (Cemented) Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	2,272	61.5	
Age (years)	3,696	66.2 (9.7)	66 (14)
Height (cm)	3,696	168.2 (10.5)	167.6 (15.3)
Weight (kg)	3,696	96.1 (22.1)	94 (28.5)
BMI(kg/m^2)	3,696	34 (7.2)	33.2 (9.4)
Smoker - Never (%)	1,932	52.3	
Smoker - Previous (%)	1,347	36.4	
Smoker - Current (%)	386	10.4	
Smoker - Unknown (%)	31	0.8	

Table 1325. Distribution of Approach Used for Triathlon PS (Cemented)/Triathlon (Cemented) Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	3,213	86.9
Mid-vastus	441	11.9
Sub-vastus	33	0.9
Lateral parapatellar	5	0.1
Missing/unknown/other	4	0.1

Table 1326. Distribution of Polyethylene Used for Triathlon PS (Cemented)/Triathlon (Cemented) Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	3,652	98.8
Antioxidant XLPE	0	0.0
Missing/unknown/other	44	1.2

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Table 1327. Volume of Cases by Surgeon and Site for the Triathlon PS (Cemented)/Triathlon (Cemented) Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	44 (108)	4 (20)
Cases per site	94 (191)	10 (47)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

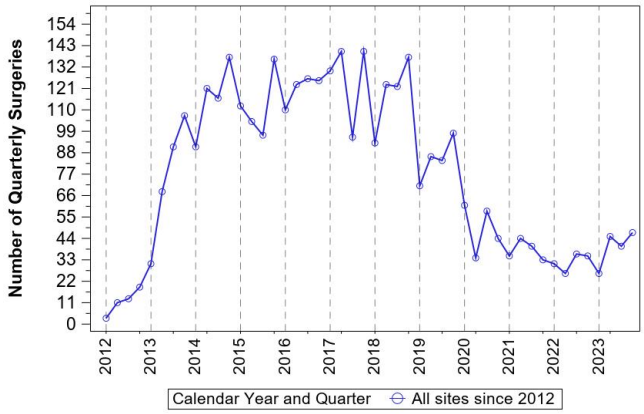


Figure 477. Utilization of the Triathlon PS (Cemented)/Triathlon (Cemented) Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

5515F402	5515F601	5515F202
5515F401	5515F302	5515F801
5515F502	5515F702	5515F102
5515F501	5515F701	5515F101
5515F602	5515F802	
5515F301	5515F201	

Catalog Numbers of Tibial Components Used in the Analysis

5520B400	5535A709	5527B300
5520B500	5535A609	5527B800
5520B300	5535A509	5535A409
5520B600	5535A809	5535A611
5520B700	5527B600	5535A711
5520B200	5527B700	
5520B800	5523B500	
5520B100	5527B200	

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4.5.41 Triathlon PS (Cemented)/Triathlon TS (Cemented)

N = 16,971 primary cases were used for this analysis. Distribution of utilization: 166 surgeons across 53 sites used this implant combination in primary TKA cases.

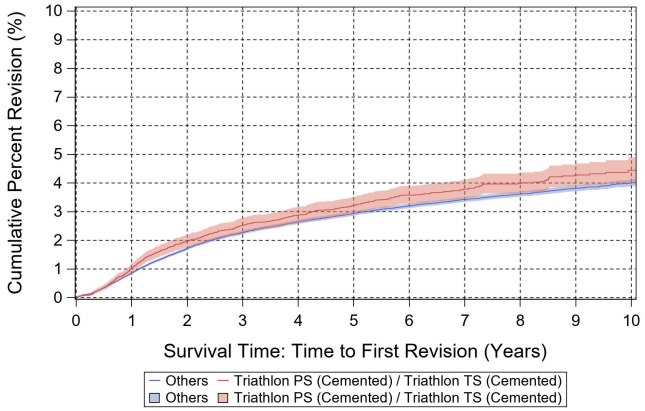


Figure 478. Cumulative Percent Revision Curve for the Triathlon PS (Cemented)/Triathlon TS (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases

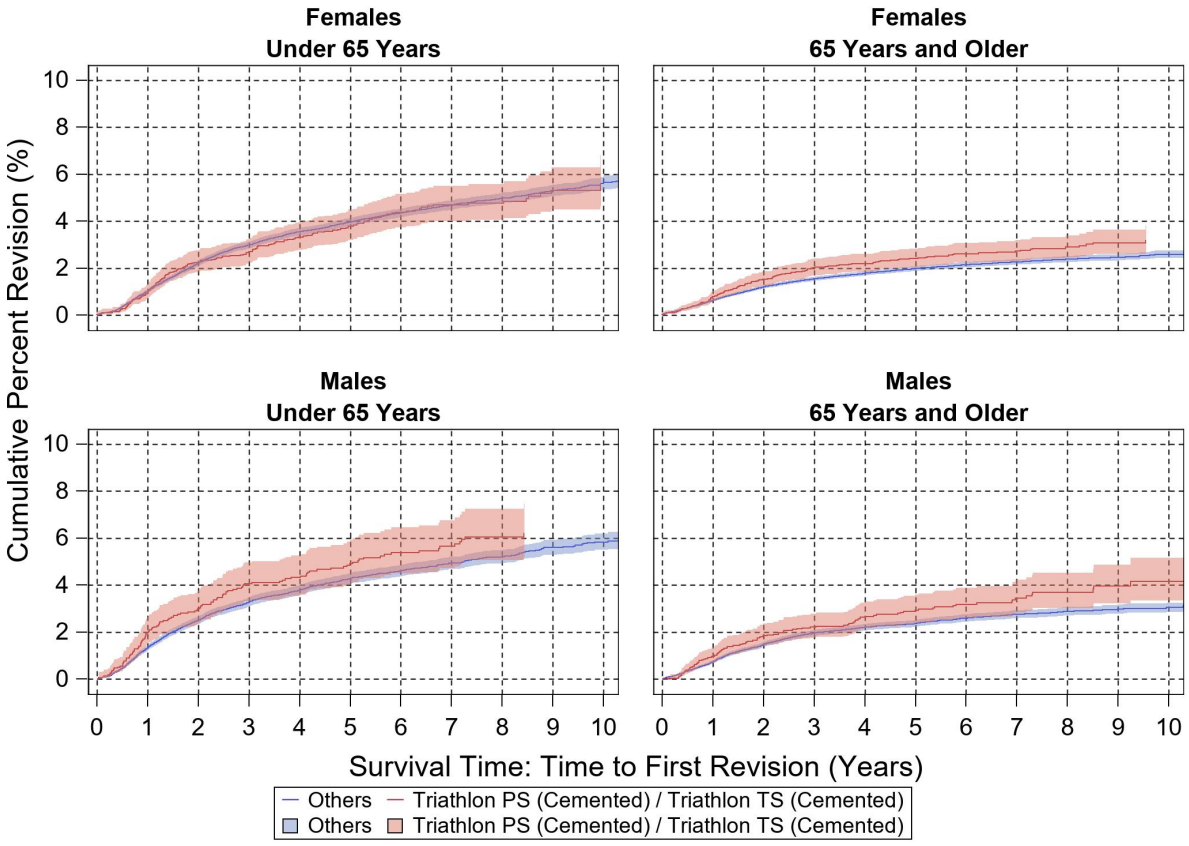


Figure 479. Cumulative Percent Revision Curve for the Triathlon PS (Cemented)/Triathlon TS (Cemented) Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1328. Cumulative Percent Revision and Number at Risk for the Triathlon PS (Cemented)/Triathlon TS (Cemented) Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	16,839	0.00 (0.00,0.00)	4,029	0.00 (0.00,0.00)	6,805	0.00 (0.00,0.00)	2,424	0.00 (0.00,0.00)	3,580	0.00 (0.00,0.00)
1	15,584	1.03 (0.89,1.20)	3,787	0.92 (0.67,1.28)	6,255	0.78 (0.59,1.03)	2,251	2.00 (1.51,2.66)	3,290	0.96 (0.68,1.35)
2	14,253	1.98 (1.77,2.21)	3,481	2.24 (1.81,2.76)	5,699	1.52 (1.25,1.86)	2,071	2.99 (2.37,3.77)	3,001	1.83 (1.43,2.35)
3	12,980	2.52 (2.28,2.78)	3,167	2.68 (2.21,3.25)	5,174	2.01 (1.69,2.40)	1,905	4.06 (3.31,4.96)	2,734	2.21 (1.76,2.78)
4	11,813	2.88 (2.62,3.16)	2,863	3.32 (2.78,3.96)	4,733	2.19 (1.85,2.59)	1,743	4.32 (3.55,5.26)	2,474	2.63 (2.12,3.25)
5	10,199	3.23 (2.95,3.53)	2,475	3.79 (3.21,4.49)	4,096	2.41 (2.04,2.84)	1,503	4.91 (4.07,5.91)	2,125	2.92 (2.38,3.59)
6	8,387	3.58 (3.28,3.90)	2,032	4.38 (3.73,5.15)	3,372	2.62 (2.23,3.07)	1,257	5.38 (4.49,6.45)	1,726	3.18 (2.60,3.88)
7	6,493	3.79 (3.48,4.13)	1,575	4.70 (4.01,5.50)	2,609	2.72 (2.31,3.19)	995	5.64 (4.71,6.76)	1,314	3.45 (2.82,4.22)
8	4,481	3.99 (3.66,4.35)	1,103	4.76 (4.06,5.58)	1,786	2.89 (2.46,3.39)	675	6.05 (5.05,7.24)	917	3.70 (3.02,4.52)
9	2,798	4.28 (3.91,4.68)	703	5.32 (4.49,6.29)	1,108	3.08 (2.61,3.64)	408	6.22 (5.18,7.47)	579	3.96 (3.21,4.88)
10	1,194	4.45 (4.04,4.90)	298	5.62 (4.64,6.80)	505	3.21 (2.68,3.82)	143	6.22 (5.18,7.47)	248	4.16 (3.34,5.17)

Table 1329. Reasons for First Revision Following Primary TKA for Triathlon PS (Cemented)/Triathlon TS (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	183	33.6
2	Joint Infection	144	26.4
3	Aseptic Loosening	68	12.5
4	Arthrofibrosis	57	10.5
5	Pain	28	5.1
6	Peri-prosthetic fracture - Femur	21	3.9
7	Implant Failure	14	2.6
8	Malalignment	7	1.3
9	Peri-prosthetic fracture - Tibia	7	1.3
10	Extensor mechanism failure	5	0.9
	Unknown/missing/other	4	2.0

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Table 1330. Reasons for First Revision in the First 90 Days Following Primary TKA for Triathlon PS (Cemented)/Triathlon TS (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	7	38.9
2	Joint Infection	5	27.8
3	Dislocation/Instability	2	11.1
4	Malalignment	1	5.6
5	Peri-prosthetic fracture - Tibia	1	5.6
6	Arthrofibrosis	1	5.6
7	Extensor mechanism failure	1	5.6

Table 1331. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Triathlon PS (Cemented)/Triathlon TS (Cemented) Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	48	33.3
2	Dislocation/Instability	47	32.6
3	Arthrofibrosis	23	16.0
4	Aseptic Loosening	8	5.6
5	Pain	8	5.6
6	Implant Failure	4	2.8
7	Peri-prosthetic fracture - Femur	2	1.4
8	Malalignment	1	0.7
9	Peri-prosthetic fracture - Tibia	1	0.7
10	Extensor mechanism failure	1	0.7
	Unknown/missing/other	1	0.7

Table 1332. Descriptive Statistics of Cases Receiving the Triathlon PS (Cemented)/Triathlon TS (Cemented) Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	10,897	64.2	
Age (years)	16,971	67.1 (9.5)	67 (13)
Height (cm)	16,971	168 (10.7)	167.6 (15.3)
Weight (kg)	16,971	93 (22.2)	90.7 (29.5)
BMI(kg/m^2)	16,971	32.9 (7.1)	32 (9.5)
Smoker - Never (%)	9,437	55.6	
Smoker - Previous (%)	6,137	36.2	
Smoker - Current (%)	1,362	8	
Smoker - Unknown (%)	35	0.2	

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Table 1333. Distribution of Approach Used for Triathlon PS (Cemented)/Triathlon TS (Cemented) Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	12,998	76.6
Mid-vastus	3,866	22.8
Sub-vastus	46	0.3
Lateral parapatellar	17	0.1
Missing/unknown/other	44	0.3

Table 1334. Distribution of Polyethylene Used for Triathlon PS (Cemented)/Triathlon TS (Cemented) Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	16,842	99.2
Antioxidant XLPE	0	0.0
Missing/unknown/other	129	0.8

Table 1335. Volume of Cases by Surgeon and Site for the Triathlon PS (Cemented)/Triathlon TS (Cemented) Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	102 (342)	10 (45)
Cases per site	320 (936)	39 (292)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

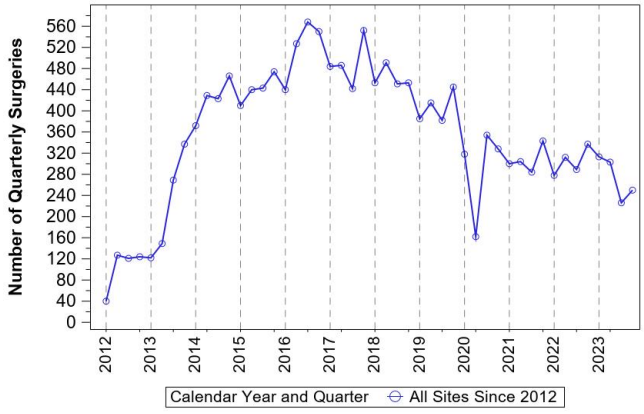


Figure 480. Utilization of the Triathlon PS (Cemented)/Triathlon TS (Cemented) Combination in Primary TKA Cases

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Catalog Numbers of Femoral Components Used in the Analysis

5515F402	5515F602	5515F801
5515F401	5515F601	5515F802
5515F502	5515F702	5515F102
5515F501	5515F701	5515F101
5515F302	5515F202	
5515F301	5515F201	

Catalog Numbers of Tibial Components Used in the Analysis

5521B400	5521B600	5521B800
5521B300	5521B700	5521B100
5521B500	5521B200	

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4.5.42 Triathlon PS (Cementless)/Triathlon (Cementless)

N = 4,179 primary cases were used for this analysis. Distribution of utilization: 52 surgeons across 27 sites used this implant combination in primary TKA cases.

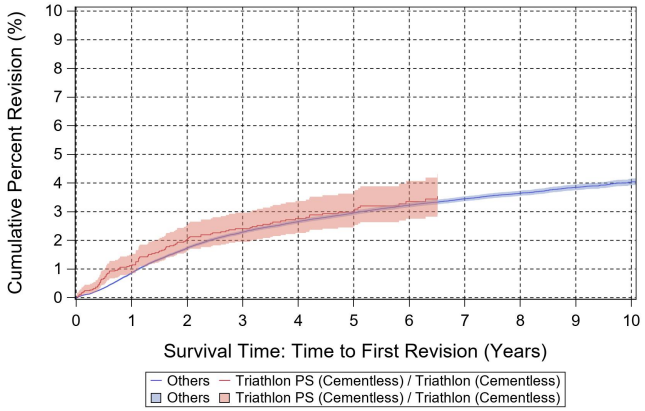


Figure 481. Cumulative Percent Revision Curve for the Triathlon PS (Cementless)/Triathlon (Cementless) Combination, Compared to All Other Implant Combinations in Primary TKA Cases

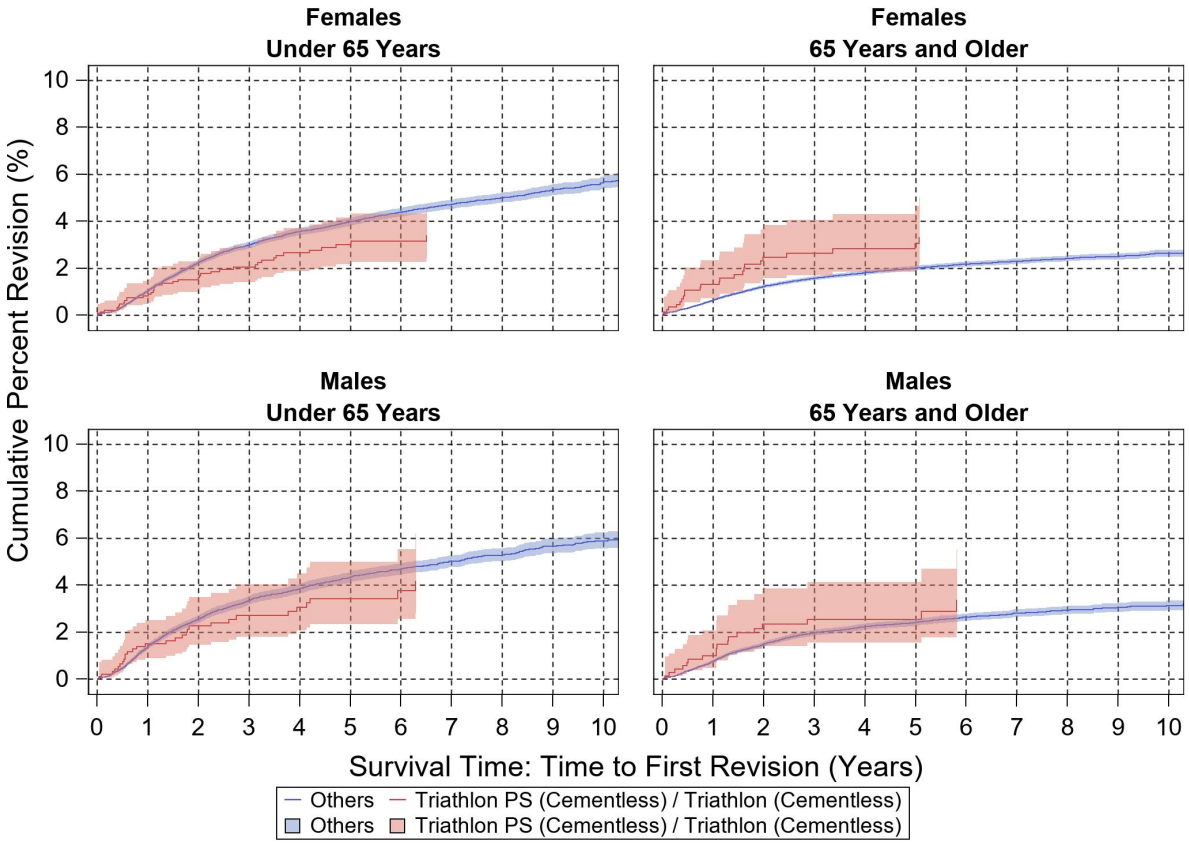


Figure 482. Cumulative Percent Revision Curve for the Triathlon PS (Cementless)/Triathlon (Cementless) Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1336. Cumulative Percent Revision and Number at Risk for the Triathlon PS (Cementless)/Triathlon (Cementless) Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	4,166	0.00 (0.00,0.00)	1,547	0.00 (0.00,0.00)	893	0.00 (0.00,0.00)	986	0.00 (0.00,0.00)	740	0.00 (0.00,0.00)
1	3,600	1.12 (0.83,1.50)	1,352	0.82 (0.47,1.44)	748	1.30 (0.72,2.34)	861	1.50 (0.89,2.52)	639	0.99 (0.47,2.07)
2	3,060	2.03 (1.62,2.54)	1,157	1.50 (0.98,2.30)	633	2.46 (1.57,3.84)	736	2.26 (1.46,3.48)	534	2.33 (1.41,3.85)
3	2,637	2.41 (1.95,2.97)	1,010	2.03 (1.39,2.96)	550	2.63 (1.70,4.06)	617	2.69 (1.79,4.04)	460	2.54 (1.56,4.13)
4	2,331	2.76 (2.26,3.37)	893	2.64 (1.88,3.72)	491	2.81 (1.84,4.30)	534	3.05 (2.06,4.50)	413	2.54 (1.56,4.13)
5	1,819	3.04 (2.49,3.69)	713	3.00 (2.16,4.16)	398	3.06 (2.00,4.65)	409	3.42 (2.34,5.00)	299	2.54 (1.56,4.13)
6	1,219	3.35 (2.75,4.07)	483	3.14 (2.26,4.34)	278	3.31 (2.18,5.01)	269	3.77 (2.55,5.54)	189	3.36 (2.03,5.51)
7	666	3.54 (2.90,4.32)	254	3.39 (2.42,4.72)	143	3.31 (2.18,5.01)	153	4.17 (2.80,6.19)	116	3.36 (2.03,5.51)
8	233	3.54 (2.90,4.32)	66	3.39 (2.42,4.72)	58	3.31 (2.18,5.01)	56	4.17 (2.80,6.19)	53	3.36 (2.03,5.51)
9	64	3.54 (2.90,4.32)	13	3.39 (2.42,4.72)	16	3.31 (2.18,5.01)	21	4.17 (2.80,6.19)	14	3.36 (2.03,5.51)
10	10	3.54 (2.90,4.32)	*	3.39 (2.42,4.72)	*	3.31 (2.18,5.01)	*	4.17 (2.80,6.19)	*	3.36 (2.03,5.51)

* Denotes that the number of cases is between 1 and 10.

Table 1337. Reasons for First Revision Following Primary TKA for Triathlon PS (Cementless)/Triathlon (Cementless) Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	35	32.1
2	Joint Infection	20	18.3
3	Aseptic Loosening	17	15.6
4	Arthrofibrosis	10	9.2
5	Implant Failure	10	9.2
6	Peri-prosthetic fracture - Femur	7	6.4
7	Peri-prosthetic fracture - Tibia	4	3.7
8	Malalignment	2	1.8
9	Metal Reaction/Metallosis	2	1.8
10	Pain	2	1.8

Table 1338. Reasons for First Revision in the First 90 Days Following Primary TKA for Triathlon PS (Cementless)/Triathlon (Cementless) Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	4	40.0
2	Peri-prosthetic fracture - Tibia	2	20.0
3	Aseptic Loosening	1	10.0
4	Joint Infection	1	10.0
5	Implant Failure	1	10.0
6	Malalignment	1	10.0

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Table 1339. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Triathlon PS (Cementless)/Triathlon (Cementless) Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	14	41.2
2	Joint Infection	5	14.7
3	Aseptic Loosening	4	11.8
4	Implant Failure	3	8.8
5	Peri-prosthetic fracture - Femur	2	5.9
6	Pain	2	5.9
7	Metal Reaction/Metallosis	1	2.9
8	Malalignment	1	2.9
9	Peri-prosthetic fracture - Tibia	1	2.9
10	Arthrofibrosis	1	2.9

Table 1340. Descriptive Statistics of Cases Receiving the Triathlon PS (Cementless)/Triathlon (Cementless) Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	2,449	58.6	
Age (years)	4,179	62.1 (9.3)	62 (12)
Height (cm)	4,179	169.6 (10.5)	170 (15.8)
Weight (kg)	4,179	98.9 (22.4)	96.5 (30.6)
BMI(kg/m^2)	4,179	34.4 (7.1)	33.6 (9.6)
Smoker - Never (%)	2,035	48.7	
Smoker - Previous (%)	1,325	31.7	
Smoker - Current (%)	814	19.5	
Smoker - Unknown (%)	5	0.1	

Table 1341. Distribution of Approach Used for Triathlon PS (Cementless)/Triathlon (Cementless) Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	3,592	86.0
Mid-vastus	540	12.9
Sub-vastus	17	0.4
Lateral parapatellar	2	0.0
Missing/unknown/other	28	0.7

Table 1342. Distribution of Polyethylene Used for Triathlon PS (Cementless)/Triathlon (Cementless) Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	4,141	99.1
Antioxidant XLPE	0	0.0
Missing/unknown/other	38	0.9

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Table 1343. Volume of Cases by Surgeon and Site for the Triathlon PS (Cementless)/Triathlon (Cementless) Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	80 (297)	9 (37)
Cases per site	154 (395)	15 (185)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

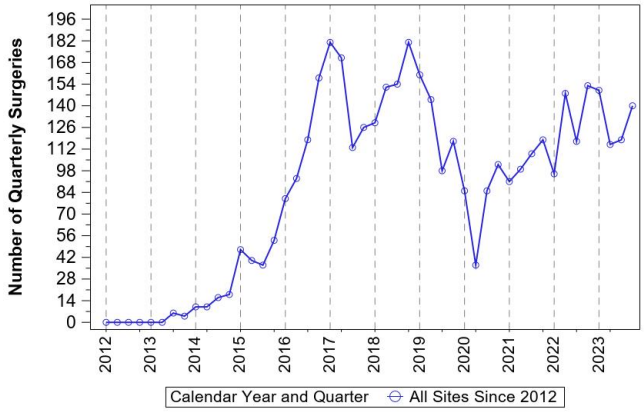


Figure 483. Utilization of the Triathlon PS (Cementless)/Triathlon (Cementless) Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

5516F402	5516F601	5516F802
5516F401	5516F202	5516F101
5516F502	5516F702	5514F302
5516F501	5516F201	5514F502
5516F302	5516F701	5514F602
5516F301	5516F801	
5516F602	5516F102	

Catalog Numbers of Tibial Components Used in the Analysis

5536B400	5536B600	5536B100
5536B500	5536B200	5536B800
5536B300	5536B700	

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4.5.43 Vanguard/Maxim

N = 23,556 primary cases were used for this analysis. Distribution of utilization: 110 surgeons across 55 sites used this implant combination in primary TKA cases.

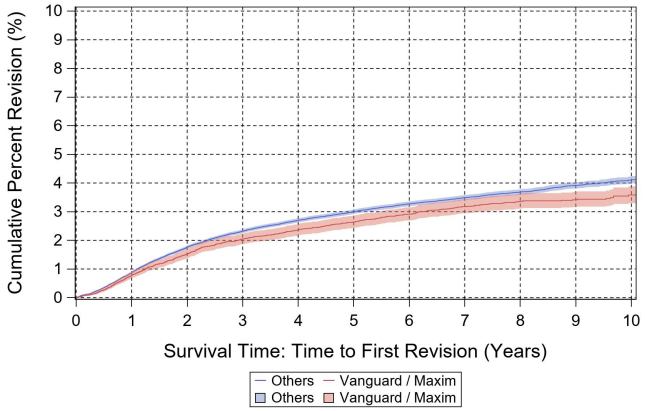


Figure 484. Cumulative Percent Revision Curve for the Vanguard/Maxim Combination, Compared to All Other Implant Combinations in Primary TKA Cases

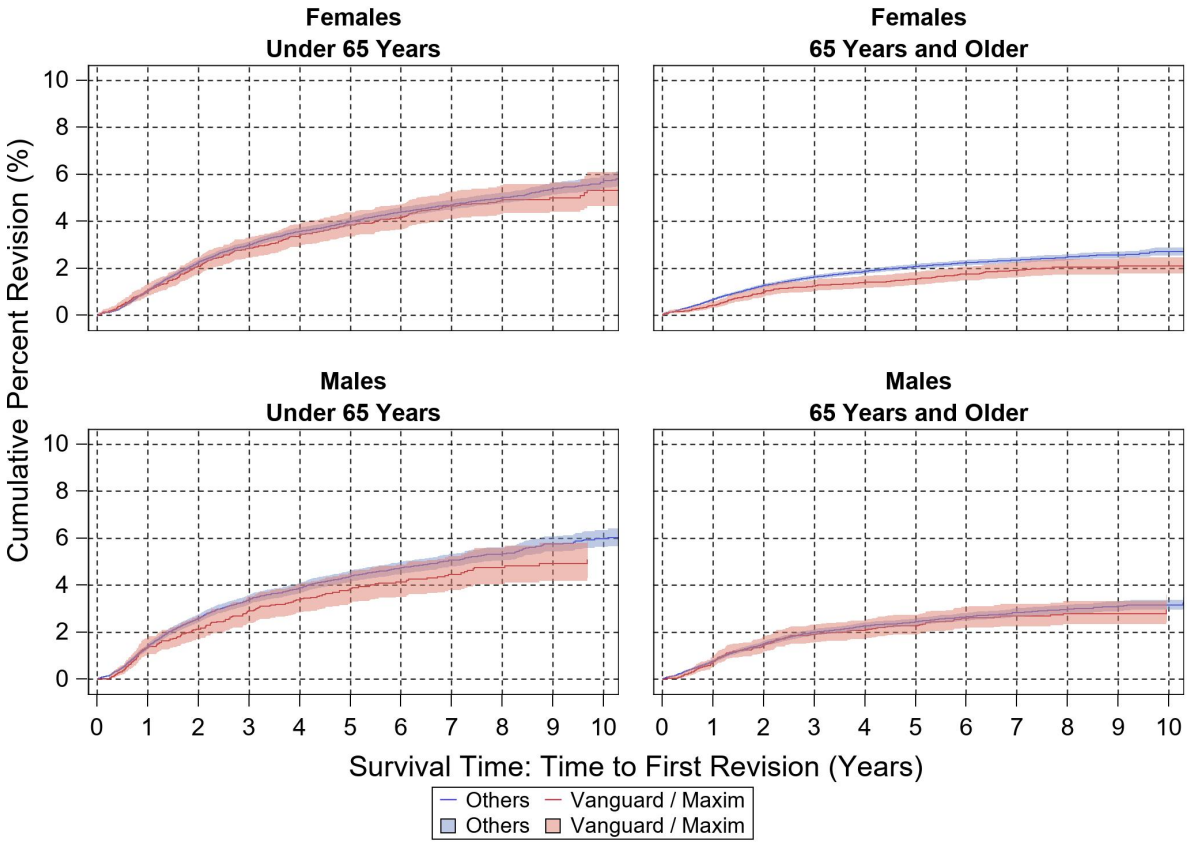


Figure 485. Cumulative Percent Revision Curve for the Vanguard/Maxim Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1344. Cumulative Percent Revision and Number at Risk for the Vanguard/Maxim Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	23,417	0.00 (0.00,0.00)	5,891	0.00 (0.00,0.00)	8,570	0.00 (0.00,0.00)	3,599	0.00 (0.00,0.00)	5,346	0.00 (0.00,0.00)
1	22,490	0.78 (0.68,0.91)	5,691	1.05 (0.82,1.35)	8,223	0.42 (0.30,0.58)	3,452	1.33 (1.00,1.77)	5,113	0.71 (0.51,0.98)
2	21,484	1.52 (1.37,1.69)	5,461	2.05 (1.72,2.46)	7,842	0.96 (0.77,1.20)	3,324	2.11 (1.69,2.65)	4,846	1.44 (1.15,1.81)
3	20,212	2.04 (1.87,2.24)	5,135	2.82 (2.42,3.29)	7,382	1.23 (1.01,1.49)	3,143	2.90 (2.39,3.51)	4,541	1.90 (1.56,2.31)
4	18,952	2.36 (2.17,2.57)	4,848	3.39 (2.95,3.90)	6,926	1.40 (1.16,1.68)	2,943	3.37 (2.82,4.04)	4,224	2.05 (1.70,2.49)
5	17,129	2.64 (2.43,2.86)	4,450	3.83 (3.35,4.37)	6,221	1.53 (1.28,1.83)	2,680	3.82 (3.22,4.53)	3,767	2.27 (1.89,2.72)
6	14,585	2.91 (2.69,3.15)	3,803	4.15 (3.65,4.72)	5,292	1.74 (1.47,2.06)	2,299	4.12 (3.50,4.87)	3,180	2.57 (2.16,3.07)
7	11,546	3.18 (2.94,3.43)	3,048	4.65 (4.10,5.26)	4,205	1.90 (1.61,2.24)	1,818	4.45 (3.79,5.23)	2,464	2.67 (2.25,3.18)
8	8,117	3.35 (3.11,3.62)	2,115	4.87 (4.30,5.52)	2,946	2.03 (1.72,2.40)	1,312	4.75 (4.04,5.58)	1,733	2.78 (2.33,3.31)
9	5,030	3.41 (3.16,3.69)	1,302	4.99 (4.40,5.66)	1,838	2.03 (1.72,2.40)	805	4.92 (4.18,5.79)	1,074	2.78 (2.33,3.31)
10	2,545	3.58 (3.30,3.89)	638	5.31 (4.63,6.08)	943	2.08 (1.76,2.47)	403	5.10 (4.30,6.04)	556	2.95 (2.41,3.59)

Table 1345. Reasons for First Revision Following Primary TKA for Vanguard/Maxim Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	175	27.6
2	Joint Infection	140	22.1
3	Aseptic Loosening	123	19.4
4	Implant Failure	45	7.1
5	Pain	45	7.1
6	Arthrofibrosis	37	5.8
7	Peri-prosthetic fracture - Femur	19	3.0
8	Poly liner wear	16	2.5
9	Metal Reaction/Metallosis	12	1.9
10	Malalignment	11	1.7
	Unknown/missing/other	4	1.6

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Table 1346. Reasons for First Revision in the First 90 Days Following Primary TKA for Vanguard/Maxim Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	6	27.3
2	Peri-prosthetic fracture - Femur	5	22.7
3	Dislocation/Instability	3	13.6
4	Implant Failure	2	9.1
5	Pain	2	9.1
6	Aseptic Loosening	1	4.6
7	Malalignment	1	4.6
8	Peri-prosthetic fracture - Tibia	1	4.6
9	Arthrofibrosis	1	4.6

Table 1347. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Vanguard/Maxim Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	41	32.3
2	Dislocation/Instability	38	29.9
3	Pain	14	11.0
4	Arthrofibrosis	10	7.9
5	Aseptic Loosening	6	4.7
6	Implant Failure	5	3.9
7	Peri-prosthetic fracture - Femur	3	2.4
8	Metal Reaction/Metallosis	3	2.4
9	Extensor mechanism failure	3	2.4
10	Malalignment	2	1.6
	Unknown/missing/other	2	1.6

Table 1348. Descriptive Statistics of Cases Receiving the Vanguard/Maxim Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	14,542	61.7	
Age (years)	23,556	66.7 (9.5)	67 (13)
Height (cm)	23,556	168.6 (10.5)	167.6 (16.7)
Weight (kg)	23,556	95.4 (21.9)	93.2 (29.3)
BMI(kg/m^2)	23,556	33.5 (7)	32.7 (9.4)
Smoker - Never (%)	12,187	51.7	
Smoker - Previous (%)	8,989	38.2	
Smoker - Current (%)	2,165	9.2	
Smoker - Unknown (%)	215	0.9	

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Table 1349. Distribution of Approach Used for Vanguard/Maxim Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	21,188	89.9
Mid-vastus	2,046	8.7
Sub-vastus	205	0.9
Lateral parapatellar	53	0.2
Missing/unknown/other	64	0.3

Table 1350. Distribution of Polyethylene Used for Vanguard/Maxim Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	13,061	55.4
XLPE	0	0.0
Antioxidant XLPE	10,201	43.3
Missing/unknown/other	294	1.2

Table 1351. Volume of Cases by Surgeon and Site for the Vanguard/Maxim Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	214 (383)	59 (246)
Cases per site	428 (697)	102 (558)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

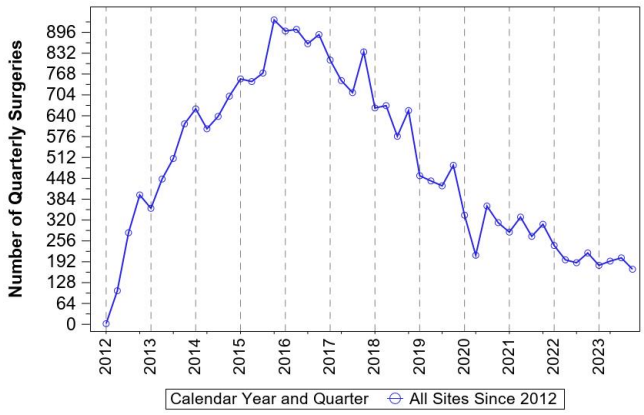


Figure 486. Utilization of the Vanguard/Maxim Combination in Primary TKA Cases

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Catalog Numbers of Femoral Components Used in the Analysis

183008	183050	183042
183028	183068	183213
183006	183070	183232
183026	183052	183226
183010	183134	183214
183030	183102	183224
183032	183122	183234
183012	183072	183056
183004	183066	183076
183013	183046	183204
183024	183073	183216
183108	183053	183060
183128	183016	183236
183033	183036	CP113614
183106	183044	CP113620
183110	183064	CP113638
183130	183020	183202
183126	183054	184508
183014	183074	184526
183112	183120	184534
183034	183116	CP113617
183132	183210	CP113619
183104	183230	CP113626
183124	183208	CP113631
183133	183136	CP113633
183113	183228	CP113637
183114	183206	CP113640
183002	183212	
183022	183233	
183048	183062	

Catalog Numbers of Tibial Components Used in the Analysis

141233	141237	141220
141232	141221	141263
141234	141273	141265
141235	141227	141271
141236	141274	141262
141223	141275	141266
141231	141272	141264
141224	141230	141270
141222	141276	
141225	141238	
141226	141228	

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4.5.44 Vanguard/Maxim Mono-Lock

N = 1,303 primary cases were used for this analysis. Distribution of utilization: 68 surgeons across 36 sites used this implant combination in primary TKA cases.

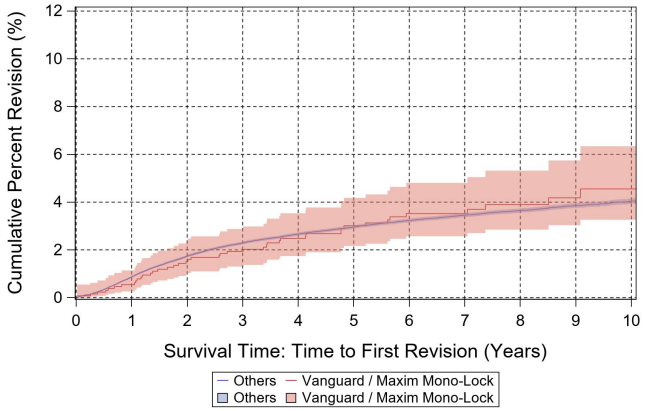


Figure 487. Cumulative Percent Revision Curve for the Vanguard/Maxim Mono-Lock Combination, Compared to All Other Implant Combinations in Primary TKA Cases

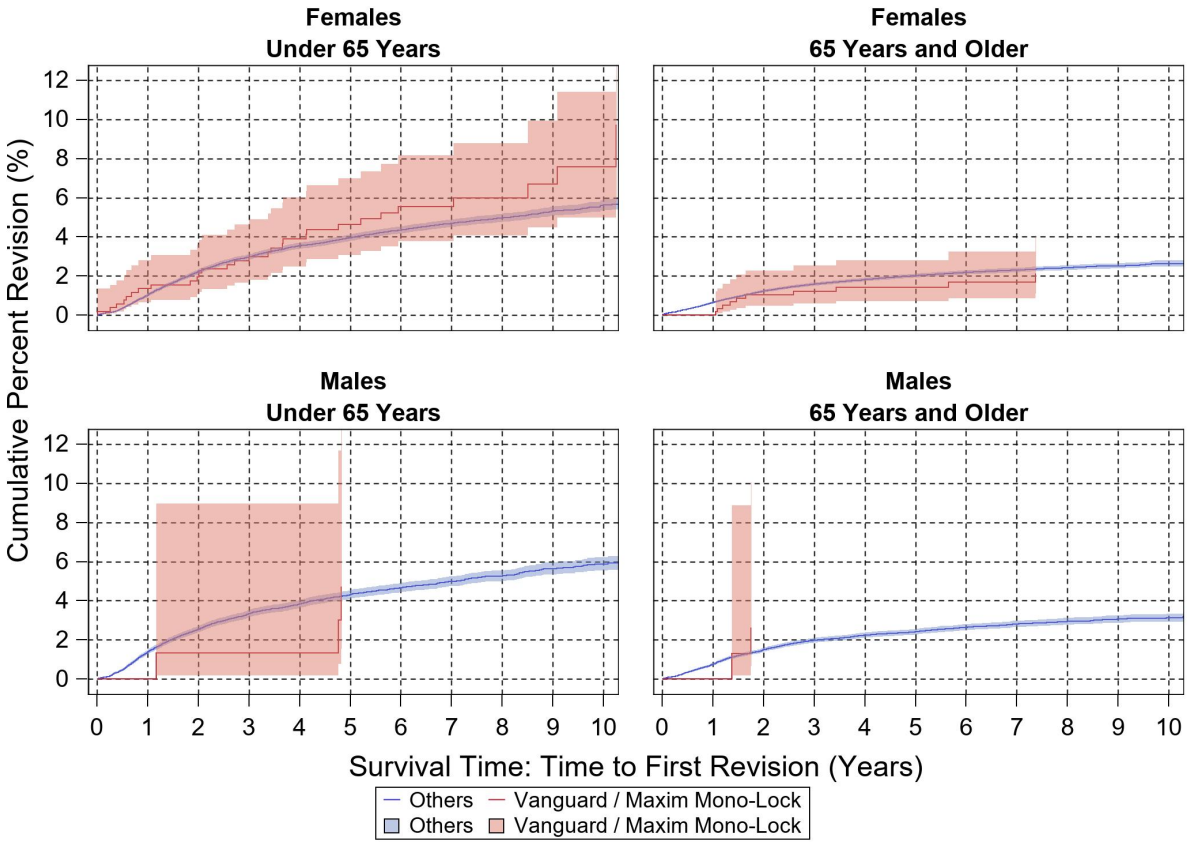


Figure 488. Cumulative Percent Revision Curve for the Vanguard/Maxim Mono-Lock Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1352. Cumulative Percent Revision and Number at Risk for the Vanguard/Maxim Mono-Lock Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	1,290	0.00 (0.00,0.00)	522	0.00 (0.00,0.00)	604	0.00 (0.00,0.00)	83	0.00 (0.00,0.00)	81	0.00 (0.00,0.00)
1	1,253	0.55 (0.26,1.14)	508	1.34 (0.64,2.80)	590	0.00 (0.00,0.00)	76	0.00 (0.00,0.00)	79	0.00 (0.00,0.00)
2	1,195	1.52 (0.97,2.37)	484	1.94 (1.05,3.58)	564	1.03 (0.47,2.28)	73	1.32 (0.19,8.97)	74	2.61 (0.66,10.05)
3	1,126	1.94 (1.30,2.88)	455	2.77 (1.65,4.63)	537	1.21 (0.58,2.52)	69	1.32 (0.19,8.97)	65	2.61 (0.66,10.05)
4	1,014	2.48 (1.74,3.53)	409	3.88 (2.49,6.02)	484	1.40 (0.70,2.79)	64	1.32 (0.19,8.97)	57	2.61 (0.66,10.05)
5	850	3.01 (2.17,4.18)	345	4.64 (3.07,6.98)	401	1.40 (0.70,2.79)	54	4.72 (1.53,14.03)	50	2.61 (0.66,10.05)
6	707	3.52 (2.57,4.81)	285	5.56 (3.76,8.16)	329	1.68 (0.87,3.24)	51	4.72 (1.53,14.03)	42	2.61 (0.66,10.05)
7	543	3.52 (2.57,4.81)	220	5.56 (3.76,8.16)	247	1.68 (0.87,3.24)	44	4.72 (1.53,14.03)	32	2.61 (0.66,10.05)
8	410	3.90 (2.85,5.32)	166	6.00 (4.07,8.79)	183	2.12 (1.09,4.08)	36	4.72 (1.53,14.03)	25	2.61 (0.66,10.05)
9	268	4.18 (3.04,5.75)	111	6.69 (4.48,9.93)	119	2.12 (1.09,4.08)	23	4.72 (1.53,14.03)	15	2.61 (0.66,10.05)
10	131	4.55 (3.26,6.34)	52	7.56 (4.98,11.41)	64	2.12 (1.09,4.08)	*	4.72 (1.53,14.03)	*	2.61 (0.66,10.05)

* Denotes that the number of cases is between 1 and 10.

Table 1353. Reasons for First Revision Following Primary TKA for Vanguard/Maxim Mono-Lock Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	10	25.0
2	Dislocation/Instability	7	17.5
3	Pain	5	12.5
4	Implant Failure	4	10.0
5	Metal Reaction/Metallosis	4	10.0
6	Joint Infection	3	7.5
7	Peri-prosthetic fracture - Femur	3	7.5
8	Arthrofibrosis	2	5.0
9	Malalignment	1	2.5
10	Poly liner wear	1	2.5

Table 1354. Reasons for First Revision in the First 90 Days Following Primary TKA for Vanguard/Maxim Mono-Lock Combination Cases

Rank	Reason for Revision	N	Percent
1	Dislocation/Instability	1	100.0

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Table 1355. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Vanguard/Maxim Mono-Lock Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	2	50.0
2	Dislocation/Instability	1	25.0
3	Implant Failure	1	25.0

Table 1356. Descriptive Statistics of Cases Receiving the Vanguard/Maxim Mono-Lock Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,138	87.3	
Age (years)	1,303	64.9 (9.2)	65 (12)
Height (cm)	1,303	164.8 (8.7)	163.8 (10.2)
Weight (kg)	1,303	93.4 (22.5)	90.8 (30.2)
BMI(kg/m^2)	1,303	34.3 (7.4)	33.5 (10.1)
Smoker - Never (%)	650	49.9	
Smoker - Previous (%)	486	37.3	
Smoker - Current (%)	164	12.6	
Smoker - Unknown (%)	3	0.2	

Table 1357. Distribution of Approach Used for Vanguard/Maxim Mono-Lock Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	1,175	90.2
Mid-vastus	125	9.6
Sub-vastus	1	0.1
Lateral parapatellar	2	0.2
Missing/unknown/other	0	0.0

Table 1358. Distribution of Polyethylene Used for Vanguard/Maxim Mono-Lock Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	593	45.5
XLPE	0	0.0
Antioxidant XLPE	691	53.0
Missing/unknown/other	19	1.5

Table 1359. Volume of Cases by Surgeon and Site for the Vanguard/Maxim Mono-Lock Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	19 (39)	4 (14)
Cases per site	36 (73)	7 (17)

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The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

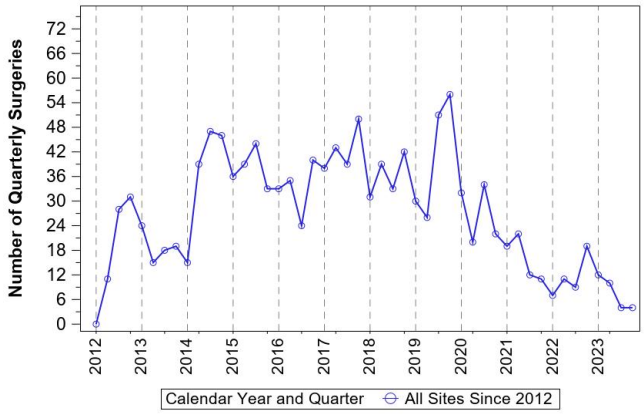


Figure 489. Utilization of the Vanguard/Maxim Mono-Lock Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

CP113617	CP113641	183014
CP113616	183130	183122
CP113618	183064	183133
CP113619	183124	CP113624
CP113614	183128	183034
CP113615	183006	183053
CP113621	183026	183054
CP113620	CP113632	CP113630
CP113634	CP113640	183013
CP113635	183010	183056
CP113639	183028	183062
183048	183032	183102
CP113636	CP113633	183114
183068	183012	CP113625
CP113638	183073	CP113627
183052	183104	183022
183126	183110	183033
CP113622	CP113643	183042
183070	183004	183060
CP113612	183024	183112
183106	183044	183113
CP113613	183108	183120
183072	CP113631	183132
CP113623	183008	183134
CP113637	183030	CP113611
183046	183074	CP113626
183050	CP113610	
183066	CP113642	

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Catalog Numbers of Tibial Components Used in the Analysis

141213	141211	141217
141212	141215	141210
141214	141216	

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4.5.45 Vanguard XP/Vanguard XP

N = 547 primary cases were used for this analysis. Distribution of utilization: 13 surgeons across 13 sites used this implant combination in primary TKA cases.

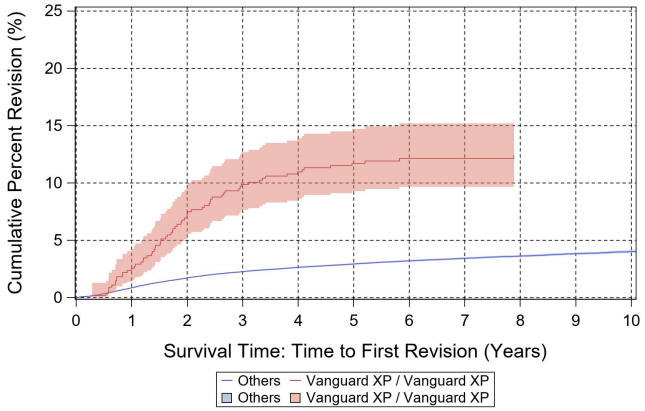


Figure 490. Cumulative Percent Revision Curve for the Vanguard XP/Vanguard XP Combination, Compared to All Other Implant Combinations in Primary TKA Cases

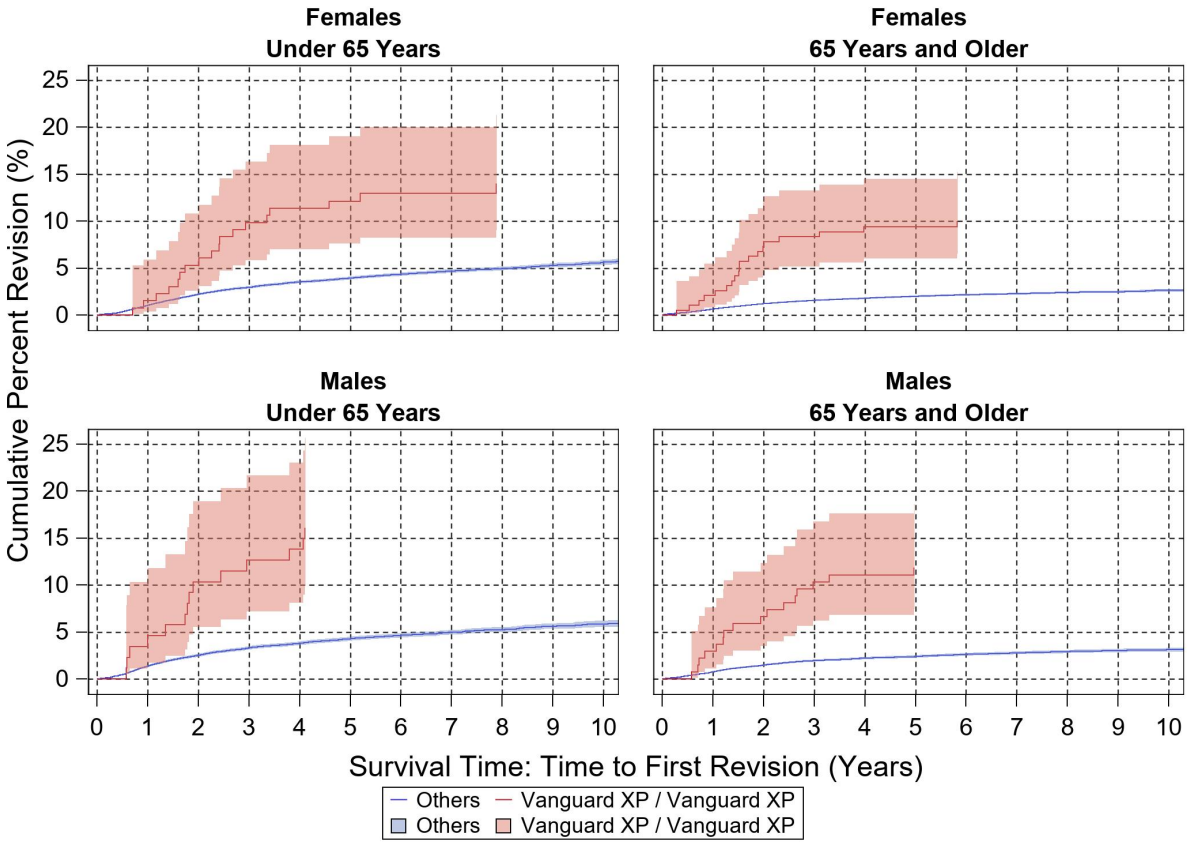


Figure 491. Cumulative Percent Revision Curve for the Vanguard XP/Vanguard XP Combination, Compared to All Other Implant Combinations in Primary TKA Cases by Age and Sex

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Table 1360. Cumulative Percent Revision and Number at Risk for the Vanguard XP/Vanguard XP Combination in Primary TKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	547	0.00 (0.00,0.00)	132	0.00 (0.00,0.00)	192	0.00 (0.00,0.00)	87	0.00 (0.00,0.00)	136	0.00 (0.00,0.00)
1	533	2.56 (1.52,4.28)	130	1.52 (0.38,5.92)	188	2.08 (0.79,5.46)	83	4.60 (1.75,11.79)	132	2.94 (1.11,7.65)
2	507	7.31 (5.42,9.84)	125	5.30 (2.56,10.80)	177	7.81 (4.79,12.62)	78	10.34 (5.52,18.94)	127	6.62 (3.50,12.33)
3	493	9.87 (7.65,12.69)	119	9.85 (5.84,16.36)	176	8.33 (5.19,13.24)	76	12.64 (7.21,21.67)	122	10.29 (6.23,16.76)
4	487	10.97 (8.62,13.90)	117	11.36 (7.01,18.14)	174	9.38 (6.01,14.47)	75	13.79 (8.08,23.01)	121	11.03 (6.80,17.63)
5	446	11.72 (9.29,14.72)	108	12.12 (7.61,19.02)	159	9.38 (6.01,14.47)	69	16.09 (9.86,25.65)	110	11.83 (7.42,18.59)
6	380	12.15 (9.67,15.20)	97	12.96 (8.26,20.02)	138	10.01 (6.50,15.26)	58	16.09 (9.86,25.65)	87	11.83 (7.42,18.59)
7	314	12.15 (9.67,15.20)	89	12.96 (8.26,20.02)	100	10.01 (6.50,15.26)	58	16.09 (9.86,25.65)	67	11.83 (7.42,18.59)
8	290	12.44 (9.92,15.55)	81	13.99 (9.03,21.34)	94	10.01 (6.50,15.26)	50	16.09 (9.86,25.65)	65	11.83 (7.42,18.59)
9	220	12.44 (9.92,15.55)	61	13.99 (9.03,21.34)	81	10.01 (6.50,15.26)	28	16.09 (9.86,25.65)	50	11.83 (7.42,18.59)
10	78	12.44 (9.92,15.55)	21	13.99 (9.03,21.34)	30	10.01 (6.50,15.26)	*	16.09 (9.86,25.65)	20	11.83 (7.42,18.59)

* Denotes that the number of cases is between 1 and 10.

Table 1361. Reasons for First Revision Following Primary TKA for Vanguard XP/Vanguard XP Combination Cases

Rank	Reason for Revision	N	Percent
1	Arthrofibrosis	16	26.2
2	Pain	16	26.2
3	Dislocation/Instability	11	18.0
4	Aseptic Loosening	9	14.8
5	Joint Infection	6	9.8
6	Implant Failure	2	3.3
7	Extensor mechanism failure	1	1.6

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1362. Reasons for First Revision Between 91 and 365 days Following Primary TKA for Vanguard XP/Vanguard XP Combination Cases

Rank	Reason for Revision	N	Percent
1	Pain	3	37.5
2	Joint Infection	2	25.0
3	Aseptic Loosening	1	12.5
4	Dislocation/Instability	1	12.5
5	Arthrofibrosis	1	12.5

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Table 1363. Descriptive Statistics of Cases Receiving the Vanguard XP/Vanguard XP Combination in Primary TKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	324	59.2	
Age (years)	547	66.3 (9.1)	67 (12)
Height (cm)	547	169.2 (9.8)	168 (12.7)
Weight (kg)	547	88.5 (18.9)	86.4 (24.3)
BMI(kg/m^2)	547	30.8 (5.7)	29.8 (7.9)
Smoker - Never (%)	273	49.9	
Smoker - Previous (%)	220	40.2	
Smoker - Current (%)	52	9.5	
Smoker - Unknown (%)	2	0.4	

Table 1364. Distribution of Approach Used for Vanguard XP/Vanguard XP Combination in Primary TKA Cases

Approach	N	Percent
Medial parapatellar	345	63.1
Mid-vastus	1	0.2
Sub-vastus	201	36.7
Lateral parapatellar	0	0.0
Missing/unknown/other	0	0.0

Table 1365. Distribution of Polyethylene Used for Vanguard XP/Vanguard XP Combination Cases in Which Polyethylene Was Used in Primary TKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	0	0.0
Antioxidant XLPE	545	99.6
Missing/unknown/other	2	0.4

Table 1366. Volume of Cases by Surgeon and Site for the Vanguard XP/Vanguard XP Combination in Primary TKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	42 (123)	4 (12)
Cases per site	42 (121)	5 (9)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

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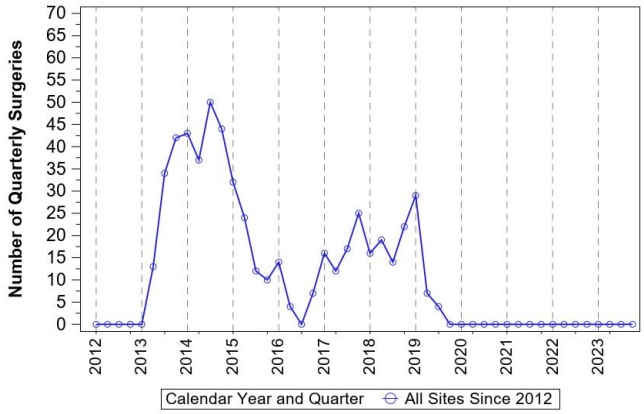


Figure 492. Utilization of the Vanguard XP/Vanguard XP Combination in Primary TKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

195203	195206	195207
195214	195910	195924
195204	195205	195202
195908	195912	195208
195215	195923	195219
195909	195922	195913
195920	195907	195925
195911	195216	195213
195919	195217	195914
195921	195218	

Catalog Numbers of Tibial Components Used in the Analysis

195755	195253	195270
195250	195252	195753
195758	195248	195247
195272	195251	195752
195757	195756	195246
195271	195759	195751
195273	195754	195245
195276	195269	
195249	195274	
195275	195277	

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4.6 UKA

The discrepancy between the number of cases listed at the beginning of an implant combination and N at year 0 in the table following the CPR figures is due to deaths. The former number is the total number of cases; the latter is the number of cases used to estimate the CPR considering deaths as censored events.

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4.6.1 Oxford/Oxford

N = 3,252 primary cases were used for this analysis. 79 surgeons across 47 sites used this implant combination in primary UKA cases.

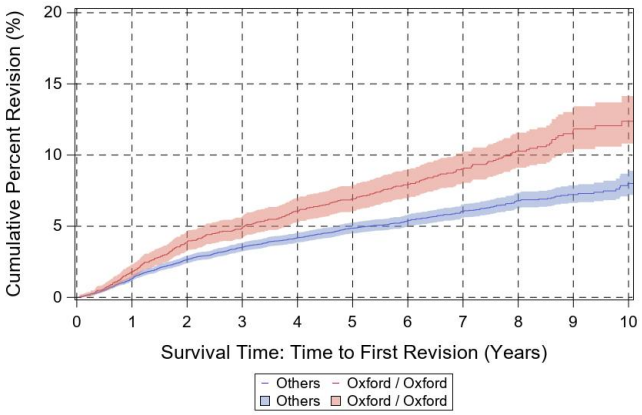


Figure 493. Cumulative Percent Revision Curve for the Oxford/Oxford Combination, Compared to All Other Implant Combinations in Primary UKA Cases

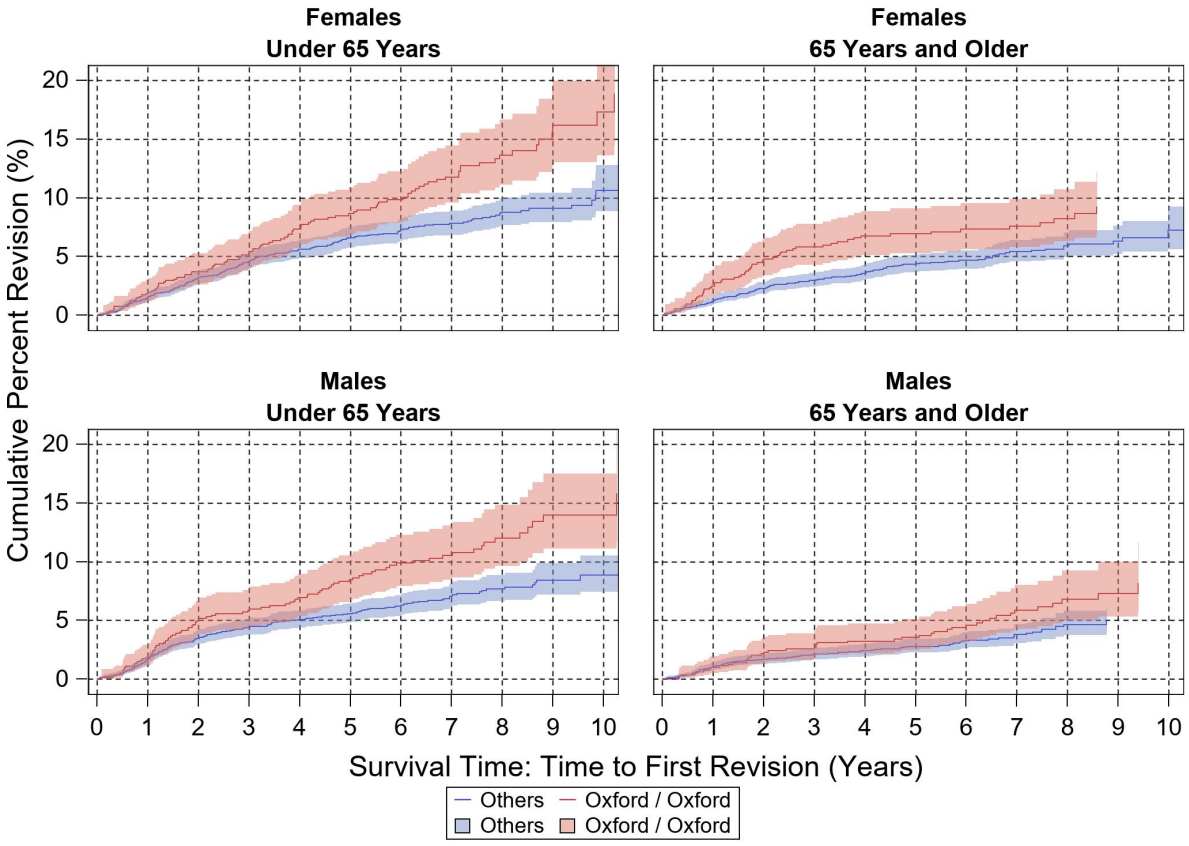


Figure 494. Cumulative Percent Revision Curve for the Oxford/Oxford Combination, Compared to All Other Implant Combinations in Primary UKA Cases by Age and Sex

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Table 1367. Cumulative Percent Revision and Number at Risk for the Oxford/Oxford Combination in Primary UKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,232	0.00 (0.00,0.00)	831	0.00 (0.00,0.00)	739	0.00 (0.00,0.00)	830	0.00 (0.00,0.00)	831	0.00 (0.00,0.00)
1	3,059	1.80 (1.39,2.32)	794	1.82 (1.10,3.01)	697	2.47 (1.57,3.90)	781	1.84 (1.12,3.04)	787	0.99 (0.49,1.96)
2	2,906	3.88 (3.26,4.62)	760	3.70 (2.60,5.24)	657	4.75 (3.42,6.58)	735	4.90 (3.61,6.65)	754	2.14 (1.34,3.42)
3	2,743	4.89 (4.18,5.71)	709	5.25 (3.91,7.04)	619	5.79 (4.29,7.78)	699	5.82 (4.39,7.70)	716	2.67 (1.75,4.07)
4	2,548	6.07 (5.27,6.98)	654	7.31 (5.68,9.38)	578	6.73 (5.10,8.87)	654	6.94 (5.36,8.97)	662	3.22 (2.19,4.73)
5	2,243	6.93 (6.07,7.90)	579	8.63 (6.84,10.86)	505	6.91 (5.25,9.07)	568	8.46 (6.67,10.69)	591	3.54 (2.44,5.12)
6	1,899	7.95 (7.01,9.01)	492	9.82 (7.87,12.22)	431	7.31 (5.58,9.55)	460	9.87 (7.90,12.30)	516	4.58 (3.26,6.40)
7	1,505	9.03 (7.99,10.18)	398	11.77 (9.56,14.44)	351	7.56 (5.78,9.86)	363	10.52 (8.45,13.07)	393	5.86 (4.28,7.99)
8	1,006	10.28 (9.11,11.58)	260	13.63 (11.12,16.64)	231	8.22 (6.28,10.72)	245	11.99 (9.64,14.86)	270	6.78 (4.97,9.22)
9	531	11.84 (10.42,13.43)	146	16.15 (13.01,19.95)	110	9.23 (6.96,12.19)	137	13.96 (11.10,17.49)	138	7.29 (5.30,9.98)
10	242	12.37 (10.80,14.15)	66	17.28 (13.62,21.78)	51	9.23 (6.96,12.19)	62	13.96 (11.10,17.49)	63	8.18 (5.75,11.58)

Table 1368. Reasons for First Revision Following Primary UKA for Oxford/Oxford Combination Cases

Rank	Reason for Revision	N	Percent
1	Conversion of Unicondylar Knee Arthroplasty	103	37.1
2	Aseptic Loosening	67	24.1
3	Dislocation/Instability	28	10.1
4	Pain	17	6.1
5	Implant Failure	16	5.8
6	Joint Infection	16	5.8
7	Poly liner wear	6	2.2
8	Arthrofibrosis	5	1.8
9	Malalignment	4	1.4
10	Osteolysis	4	1.4
	Unknown/missing/other	4	4.3

Table 1369. Reasons for First Revision in the First 90 Days Following Primary UKA for Oxford/Oxford Combination Cases

Rank	Reason for Revision	N	Percent
1	Conversion of Unicondylar Knee Arthroplasty	2	40.0
2	Dislocation/Instability	1	20.0
3	Implant Failure	1	20.0
4	Extensor mechanism failure	1	20.0

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Table 1370. Reasons for First Revision Between 91 and 365 days Following Primary UKA for Oxford/Oxford Combination Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	12	24.5
2	Dislocation/Instability	7	14.3
3	Joint Infection	7	14.3
4	Conversion of Unicondylar Knee Arthroplasty	6	12.2
5	Implant Failure	5	10.2
6	Pain	3	6.1
7	Peri-prosthetic fracture - Tibia	2	4.1
8	Arthrofibrosis	2	4.1
9	Extensor mechanism failure	2	4.1
10	Patellofemoral Joint	2	4.1
	Unknown/missing/other	1	2.0

Table 1371. Descriptive Statistics of Cases Receiving the Oxford/Oxford Combination in Primary UKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,577	48.5	
Age (years)	3,252	64.2 (10.3)	64 (14)
Height (cm)	3,252	170.4 (10.4)	170.2 (15.4)
Weight (kg)	3,252	91.9 (19.7)	90.5 (26.2)
BMI(kg/m^2)	3,252	31.6 (5.9)	30.7 (7.5)
Smoker - Never (%)	1,594	49	
Smoker - Previous (%)	1,300	40	
Smoker - Current (%)	333	10.2	
Smoker - Unknown (%)	25	0.8	

Table 1372. Distribution of Approach Used for Oxford/Oxford Combination in Primary UKA Cases

Approach	N	Percent
Medial parapatellar	2,966	91.2
Mid-vastus	178	5.5
Sub-vastus	27	0.8
Lateral parapatellar	8	0.2
Missing/unknown/other	73	2.2

Table 1373. Distribution of Polyethylene Used for Oxford/Oxford Combination Cases in Which Polyethylene Was Used in Primary UKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	3,212	98.8
Antioxidant XLPE	0	0.0
Missing/unknown/other	40	1.2

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Table 1374. Volume of Cases by Surgeon and Site for the Oxford/Oxford Combination in Primary UKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	41 (111)	14 (38)
Cases per site	69 (131)	19 (70)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

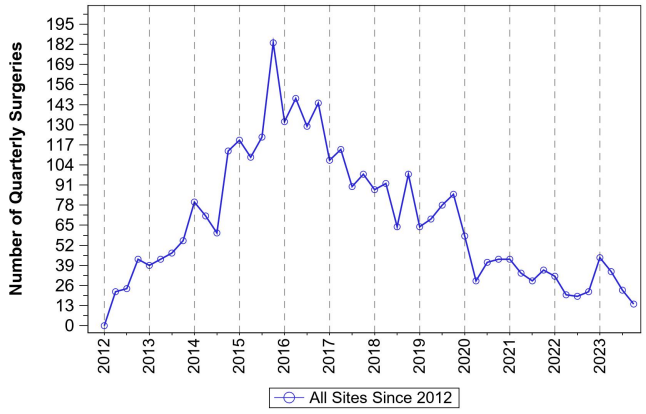


Figure 495. Utilization of the Oxford/Oxford Combination in Primary UKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

161469	161471	166942
161468	166943	166944
161470	166940	
161467	166941	

Catalog Numbers of Tibial Components Used in the Analysis

154722	154718	154776
154723	154719	154775
154721	154726	154355
154724	154727	154331
154720	159531	154370
154725	159532	

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4.6.2 Persona/Persona

N = 3,338 primary cases were used for this analysis. 90 surgeons across 49 sites used this implant combination in primary UKA cases.

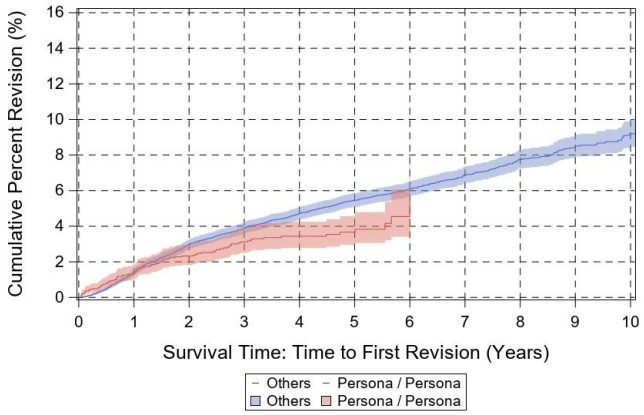


Figure 496. Cumulative Percent Revision Curve for the Persona/Persona Combination, Compared to All Other Implant Combinations in Primary UKA Cases

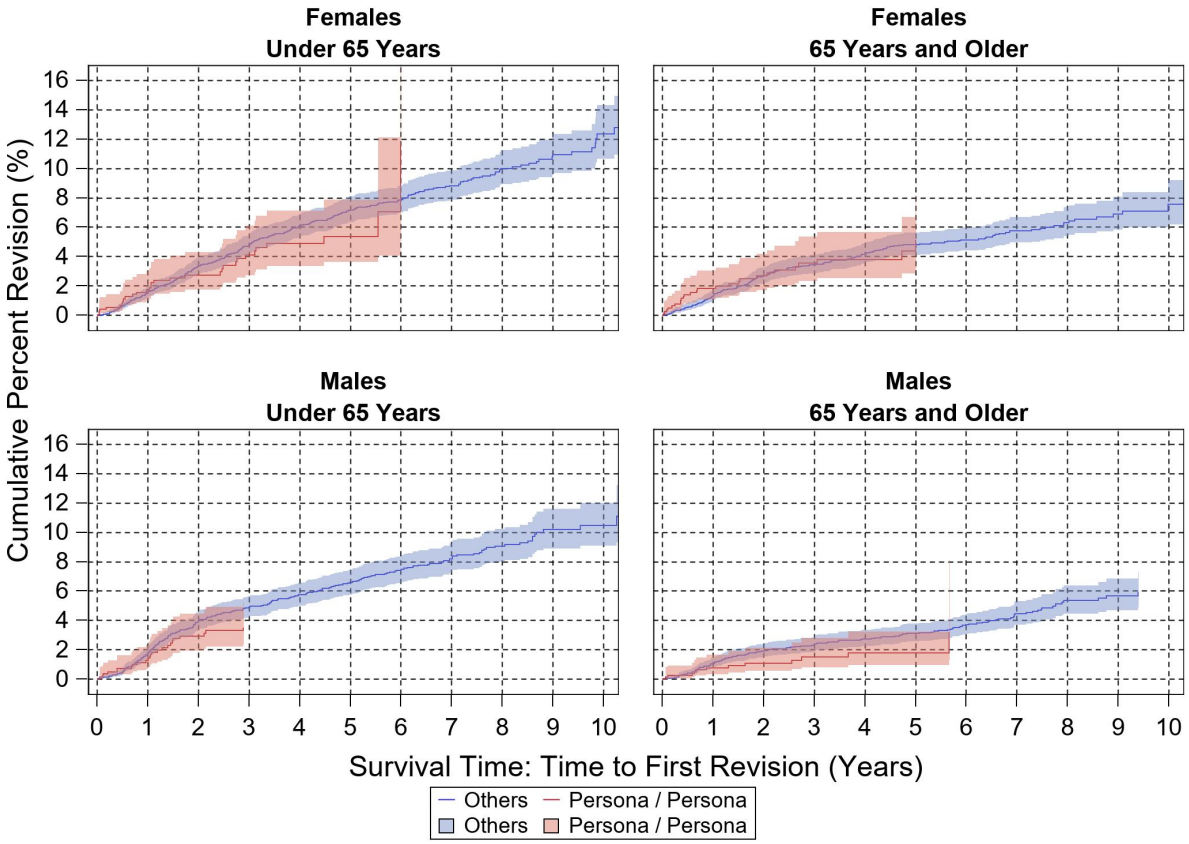


Figure 497. Cumulative Percent Revision Curve for the Persona/Persona Combination, Compared to All Other Implant Combinations in Primary UKA Cases by Age and Sex

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Table 1375. Cumulative Percent Revision and Number at Risk for the Persona/Persona Combination in Primary UKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,335	0.00 (0.00,0.00)	763	0.00 (0.00,0.00)	826	0.00 (0.00,0.00)	860	0.00 (0.00,0.00)	886	0.00 (0.00,0.00)
1	2,709	1.36 (1.01,1.84)	622	1.71 (0.97,2.99)	660	1.81 (1.07,3.03)	711	1.26 (0.68,2.33)	716	0.75 (0.34,1.66)
2	2,067	2.33 (1.83,2.96)	487	2.72 (1.72,4.30)	492	2.66 (1.70,4.16)	548	2.92 (1.91,4.46)	540	1.07 (0.53,2.14)
3	1,661	3.12 (2.50,3.88)	387	4.09 (2.73,6.09)	385	3.53 (2.34,5.33)	453	3.50 (2.34,5.20)	436	1.49 (0.79,2.80)
4	1,247	3.43 (2.77,4.25)	287	4.88 (3.33,7.13)	283	3.79 (2.52,5.67)	349	3.50 (2.34,5.20)	328	1.76 (0.95,3.24)
5	595	3.67 (2.95,4.56)	135	5.36 (3.64,7.87)	124	4.35 (2.82,6.70)	184	3.50 (2.34,5.20)	152	1.76 (0.95,3.24)
6	108	5.42 (3.64,8.03)	19	11.70 (5.06,25.79)	26	5.12 (3.20,8.16)	34	3.50 (2.34,5.20)	29	3.20 (1.25,8.10)
7	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
8	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
9	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A
10	0	N/A	0	N/A	0	N/A	0	N/A	0	N/A

Table 1376. Reasons for First Revision Following Primary UKA for Persona/Persona Combination Cases

Rank	Reason for Revision	N	Percent
1	Conversion of Unicondylar Knee Arthroplasty	38	41.3
2	Aseptic Loosening	17	18.5
3	Joint Infection	11	12.0
4	Peri-prosthetic fracture - Tibia	8	8.7
5	Implant Failure	5	5.4
6	Dislocation/Instability	4	4.3
7	Pain	4	4.3
8	Peri-prosthetic fracture - Femur	2	2.2
9	Extensor mechanism failure	1	1.1
10	Malalignment	1	1.1
	Unknown/missing/other	1	1.1

Table 1377. Reasons for First Revision in the First 90 Days Following Primary UKA for Persona/Persona Combination Cases

Rank	Reason for Revision	N	Percent
1	Joint Infection	7	46.7
2	Peri-prosthetic fracture - Tibia	6	40.0
3	Aseptic Loosening	1	6.7
4	Conversion of Unicondylar Knee Arthroplasty	1	6.7

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Table 1378. Reasons for First Revision Between 91 and 365 days Following Primary UKA for Persona/Persona Combination Cases

Rank	Reason for Revision	N	Percent
1	Conversion of Unicondylar Knee Arthroplasty	10	37.0
2	Aseptic Loosening	5	18.5
3	Implant Failure	4	14.8
4	Peri-prosthetic fracture - Femur	2	7.4
5	Peri-prosthetic fracture - Tibia	2	7.4
6	Dislocation/Instability	1	3.7
7	Joint Infection	1	3.7
8	Pain	1	3.7
9	Extensor mechanism failure	1	3.7

Table 1379. Descriptive Statistics of Cases Receiving the Persona/Persona Combination in Primary UKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,592	47.7	
Age (years)	3,338	64.9 (10)	65 (14)
Height (cm)	3,331	170.2 (10.6)	170.2 (15.2)
Weight (kg)	3,331	91.1 (19.6)	89.8 (25.2)
BMI(kg/m^2)	3,331	31.4 (5.8)	30.7 (7.3)
Smoker - Never (%)	1,770	53	
Smoker - Previous (%)	1,260	37.8	
Smoker - Current (%)	298	8.9	
Smoker - Unknown (%)	10	0.3	

Table 1380. Distribution of Approach Used for Persona/Persona Combination in Primary UKA Cases

Approach	N	Percent
Medial parapatellar	2,193	65.7
Mid-vastus	1,065	31.9
Sub-vastus	52	1.6
Lateral parapatellar	12	0.4
Missing/unknown/other	16	0.5

Table 1381. Distribution of Polyethylene Used for Persona/Persona Combination Cases in Which Polyethylene Was Used in Primary UKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	0	0.0
Antioxidant XLPE	3,315	99.3
Missing/unknown/other	23	0.7

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Table 1382. Volume of Cases by Surgeon and Site for the Persona/Persona Combination in Primary UKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	37 (92)	11 (23)
Cases per site	68 (117)	22 (71)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

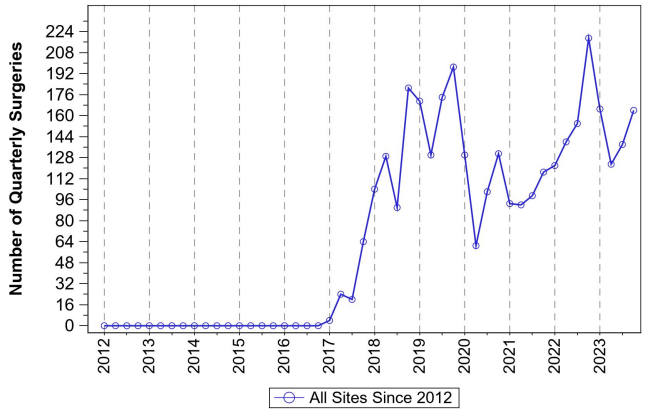


Figure 498. Utilization of the Persona/Persona Combination in Primary UKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

42558000401	42558000502	42558000701
42558000402	42558000601	42558000702
42558000301	42558000201	42558000102
42558000302	42558000202	42558000101
42558000501	42558000602	

Catalog Numbers of Tibial Components Used in the Analysis

42538000501	42538000702	42538000902
42538000601	42538000801	42538000901
42538000602	42538000802	42538000302
42538000502	42538000401	42538000301
42538000701	42538000402	

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4.6.3 Restoris MCK/Restoris MCK

N = 7,190 primary cases were used for this analysis. 112 surgeons across 28 sites used this implant combination in primary UKA cases.

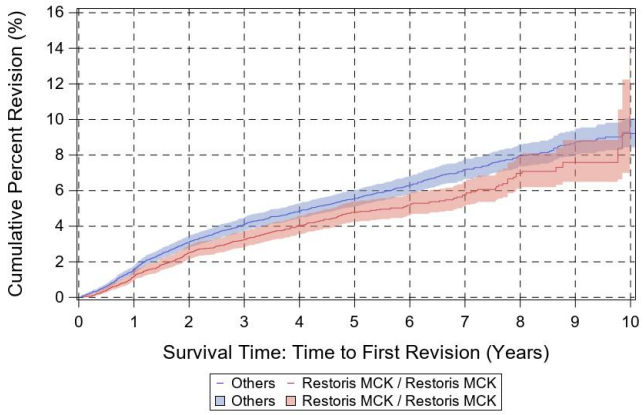


Figure 499. Cumulative Percent Revision Curve for the Restoris MCK/Restoris MCK Combination, Compared to All Other Implant Combinations in Primary UKA Cases

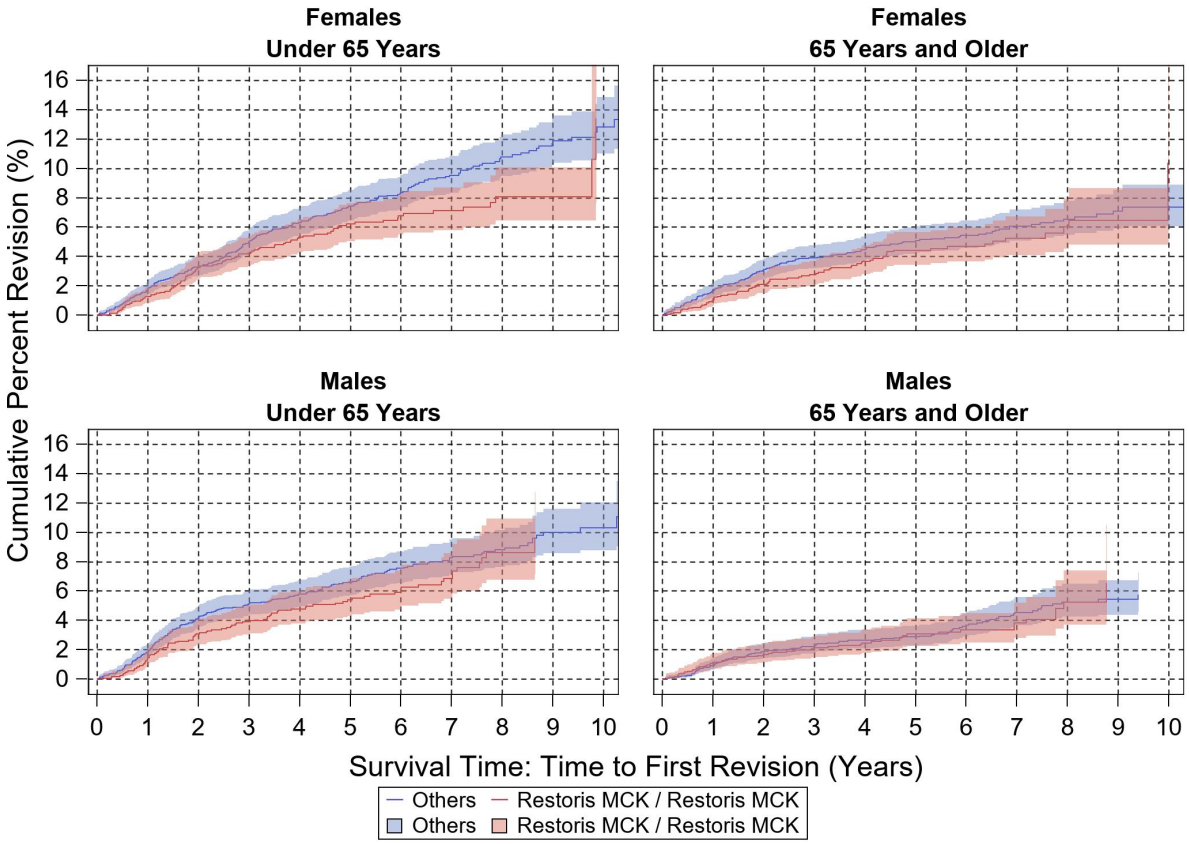


Figure 500. Cumulative Percent Revision Curve for the Restoris MCK/Restoris MCK Combination, Compared to All Other Implant Combinations in Primary UKA Cases by Age and Sex

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Table 1383. Cumulative Percent Revision and Number at Risk for the Restoris MCK/Restoris MCK Combination in Primary UKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	7,174	0.00 (0.00,0.00)	1,869	0.00 (0.00,0.00)	1,765	0.00 (0.00,0.00)	1,743	0.00 (0.00,0.00)	1,793	0.00 (0.00,0.00)
1	6,399	1.17 (0.94,1.46)	1,668	1.25 (0.82,1.89)	1,580	0.96 (0.59,1.56)	1,566	1.41 (0.94,2.11)	1,581	1.07 (0.67,1.69)
2	5,646	2.51 (2.16,2.93)	1,456	3.23 (2.47,4.20)	1,403	2.08 (1.48,2.91)	1,379	3.06 (2.32,4.05)	1,405	1.66 (1.14,2.41)
3	4,898	3.25 (2.83,3.73)	1,251	4.23 (3.34,5.35)	1,224	2.74 (2.03,3.69)	1,186	3.89 (3.02,5.00)	1,237	2.11 (1.50,2.96)
4	4,270	4.05 (3.58,4.60)	1,076	5.31 (4.27,6.58)	1,092	3.66 (2.80,4.77)	1,017	4.76 (3.77,6.01)	1,085	2.45 (1.78,3.38)
5	3,426	4.78 (4.24,5.38)	858	6.20 (5.05,7.61)	875	4.41 (3.44,5.65)	815	5.39 (4.30,6.74)	878	3.06 (2.26,4.13)
6	2,438	5.17 (4.60,5.82)	610	6.75 (5.50,8.27)	620	4.66 (3.64,5.96)	593	5.91 (4.74,7.37)	615	3.33 (2.47,4.49)
7	1,611	5.75 (5.10,6.49)	419	7.10 (5.78,8.71)	394	5.25 (4.07,6.74)	391	6.85 (5.47,8.57)	407	3.80 (2.78,5.18)
8	822	6.97 (6.10,7.95)	226	8.05 (6.43,10.06)	209	6.01 (4.53,7.95)	187	8.62 (6.77,10.95)	200	5.22 (3.68,7.39)
9	252	7.58 (6.50,8.84)	83	8.05 (6.43,10.06)	63	6.47 (4.81,8.66)	56	9.57 (7.16,12.75)	50	6.54 (4.04,10.50)
10	96	10.21 (7.48,13.86)	30	13.40 (7.63,22.94)	23	10.36 (4.87,21.32)	23	9.57 (7.16,12.75)	20	6.54 (4.04,10.50)

Table 1384. Reasons for First Revision Following Primary UKA for Restoris MCK/Restoris MCK Combination Cases

Rank	Reason for Revision	N	Percent
1	Conversion of Unicondylar Knee Arthroplasty	132	42.0
2	Aseptic Loosening	71	22.6
3	Dislocation/Instability	27	8.6
4	Pain	23	7.3
5	Joint Infection	18	5.7
6	Implant Failure	17	5.4
7	Peri-prosthetic fracture - Tibia	7	2.2
8	Arthrofibrosis	5	1.6
9	Poly liner wear	5	1.6
10	Patellofemoral Joint	4	1.3
	Unknown/missing/other	2	1.6

Table 1385. Reasons for First Revision in the First 90 Days Following Primary UKA for Restoris MCK/Restoris MCK Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Tibia	3	50.0
2	Joint Infection	1	16.7
3	Implant Failure	1	16.7
4	Arthrofibrosis	1	16.7

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Table 1386. Reasons for First Revision Between 91 and 365 days Following Primary UKA for Restoris MCK/Restoris MCK Combination Cases

Rank	Reason for Revision	N	Percent
1	Conversion of Unicondylar Knee Arthroplasty	24	32.9
2	Aseptic Loosening	15	20.6
3	Joint Infection	10	13.7
4	Dislocation/Instability	9	12.3
5	Pain	5	6.8
6	Peri-prosthetic fracture - Tibia	4	5.5
7	Implant Failure	3	4.1
8	Poly liner wear	1	1.4
9	Metal Reaction/Metallosis	1	1.4
10	Arthrofibrosis	1	1.4

Table 1387. Descriptive Statistics of Cases Receiving the Restoris MCK/Restoris MCK Combination in Primary UKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	3,642	50.7	
Age (years)	7,190	64.3 (9.7)	64 (13)
Height (cm)	7,190	170.1 (10.6)	170.2 (15.2)
Weight (kg)	7,190	90.7 (19.3)	89.1 (25.4)
BMI(kg/m^2)	7,190	31.3 (5.7)	30.6 (7.4)
Smoker - Never (%)	3,878	53.9	
Smoker - Previous (%)	2,674	37.2	
Smoker - Current (%)	623	8.7	
Smoker - Unknown (%)	15	0.2	

Table 1388. Distribution of Approach Used for Restoris MCK/Restoris MCK Combination in Primary UKA Cases

Approach	N	Percent
Medial parapatellar	5,197	72.3
Mid-vastus	1,406	19.6
Sub-vastus	19	0.3
Lateral parapatellar	305	4.2
Missing/unknown/other	263	3.7

Table 1389. Distribution of Polyethylene Used for Restoris MCK/Restoris MCK Combination Cases in Which Polyethylene Was Used in Primary UKA Cases

Polyethylene type	N	Percent
UHMWPE	1,202	16.7
XLPE	5,871	81.7
Antioxidant XLPE	1	0.0
Missing/unknown/other	116	1.6

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Table 1390. Volume of Cases by Surgeon and Site for the Restoris MCK/Restoris MCK Combination in Primary UKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	64 (113)	24 (52)
Cases per site	256 (375)	78 (302)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

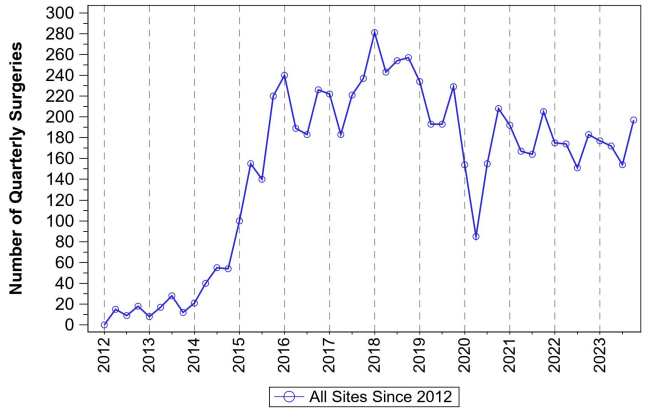


Figure 501. Utilization of the Restoris MCK/Restoris MCK Combination in Primary UKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

180503	180506	180501
180504	180516	180511
180513	180502	180518
180514	180512	
180505	180507	
180515	180517	

Catalog Numbers of Tibial Components Used in the Analysis

180604	180606	180618
180614	180616	180608
180613	180602	180611
180605	180607	180601
180615	180612	1807272
180603	180617	

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4.6.4 ZUK/ZUK

This implant (Zimmer Unicondylar Knee) was formerly known as the Zimmer High Flex Knee. N = 3,080 primary cases were used for this analysis. 117 surgeons across 47 sites used this implant combination in primary UKA cases.

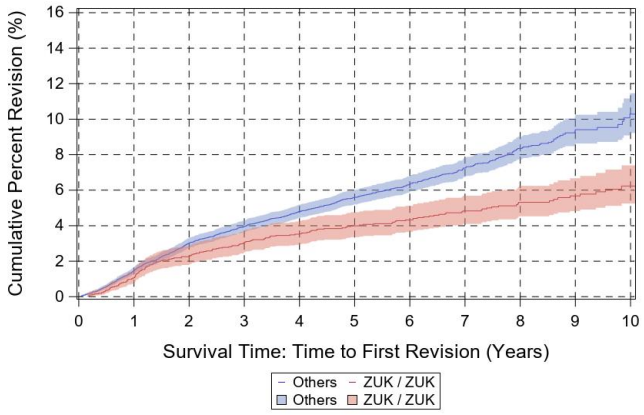


Figure 502. Cumulative Percent Revision Curve for the ZUK/ZUK Combination, Compared to All Other Implant Combinations in Primary UKA Cases

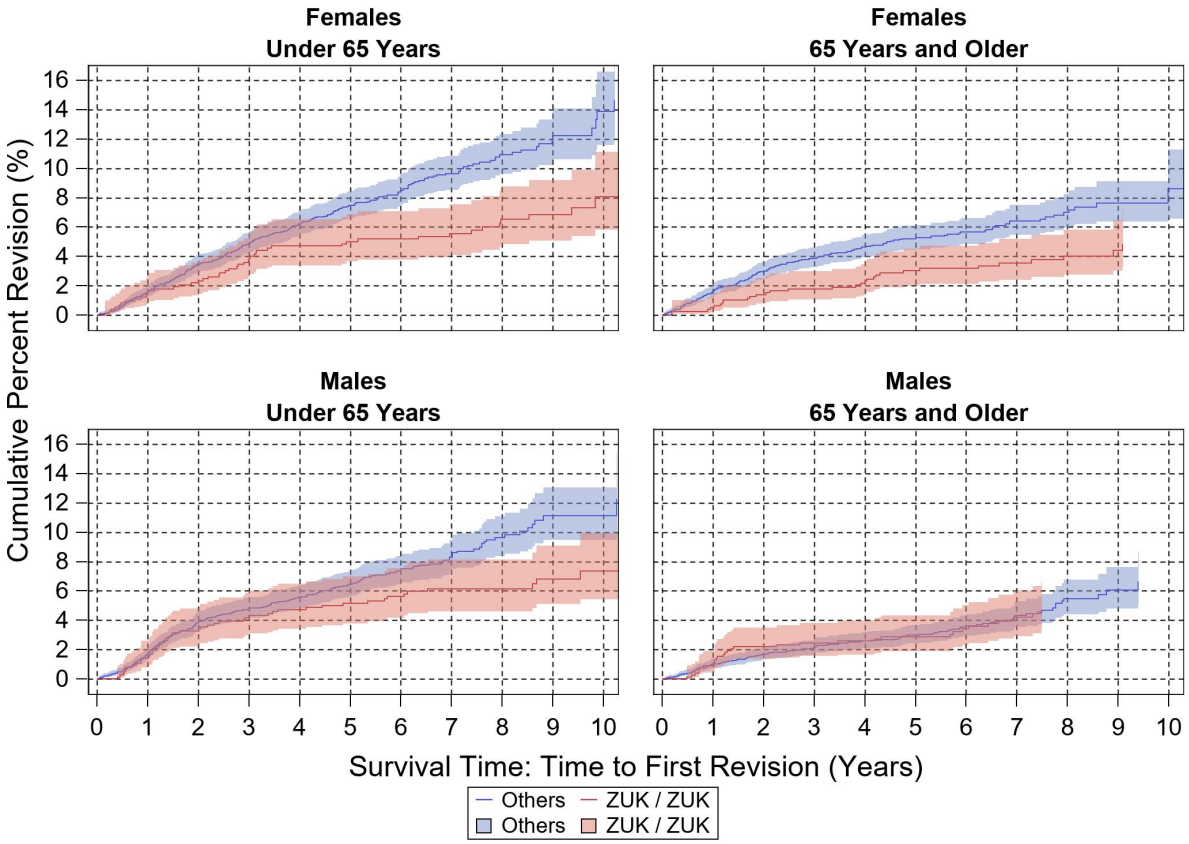


Figure 503. Cumulative Percent Revision Curve for the ZUK/ZUK Combination, Compared to All Other Implant Combinations in Primary UKA Cases by Age and Sex

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Table 1391. Cumulative Percent Revision and Number at Risk for the ZUK/ZUK Combination in Primary UKA Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	3,061	0.00 (0.00,0.00)	727	0.00 (0.00,0.00)	790	0.00 (0.00,0.00)	766	0.00 (0.00,0.00)	778	0.00 (0.00,0.00)
1	3,028	1.08 (0.77,1.51)	716	1.51 (0.84,2.72)	786	0.51 (0.19,1.34)	755	1.44 (0.80,2.58)	771	0.90 (0.43,1.88)
2	2,988	2.25 (1.78,2.85)	711	2.20 (1.35,3.57)	778	1.39 (0.77,2.50)	739	3.26 (2.22,4.79)	760	2.19 (1.36,3.49)
3	2,903	3.04 (2.49,3.72)	692	3.72 (2.57,5.38)	756	1.77 (1.05,2.98)	716	4.32 (3.09,6.02)	739	2.44 (1.57,3.81)
4	2,748	3.52 (2.92,4.24)	660	4.70 (3.38,6.52)	714	2.18 (1.36,3.48)	685	4.73 (3.43,6.49)	689	2.58 (1.67,3.97)
5	2,493	4.00 (3.35,4.76)	602	5.01 (3.64,6.88)	635	3.02 (2.02,4.52)	644	5.16 (3.79,6.99)	612	2.87 (1.90,4.33)
6	2,219	4.32 (3.65,5.12)	551	5.17 (3.77,7.07)	566	3.18 (2.14,4.71)	576	5.63 (4.19,7.54)	526	3.41 (2.31,5.01)
7	1,874	4.83 (4.10,5.69)	474	5.55 (4.08,7.53)	486	3.54 (2.42,5.17)	473	6.14 (4.61,8.15)	441	4.20 (2.92,6.03)
8	1,406	5.32 (4.53,6.24)	358	6.53 (4.85,8.77)	365	4.01 (2.76,5.81)	359	6.14 (4.61,8.15)	324	4.68 (3.28,6.66)
9	929	5.67 (4.82,6.67)	242	6.85 (5.09,9.19)	228	4.42 (3.01,6.45)	238	6.81 (5.09,9.07)	221	4.68 (3.28,6.66)
10	446	6.23 (5.25,7.40)	114	8.05 (5.80,11.13)	105	4.85 (3.29,7.12)	118	7.36 (5.43,9.96)	109	4.68 (3.28,6.66)

Table 1392. Reasons for First Revision Following Primary UKA for ZUK/ZUK Combination Cases

Rank	Reason for Revision	N	Percent
1	Conversion of Unicondylar Knee Arthroplasty	79	53.7
2	Aseptic Loosening	20	13.6
3	Implant Failure	12	8.2
4	Pain	9	6.1
5	Joint Infection	7	4.8
6	Dislocation/Instability	6	4.1
7	Malalignment	3	2.0
8	Patellofemoral Joint	3	2.0
9	Extensor mechanism failure	2	1.4
10	Peri-prosthetic fracture - Tibia	2	1.4
	Unknown/missing/other	1	2.7

Table 1393. Reasons for First Revision in the First 90 Days Following Primary UKA for ZUK/ZUK Combination Cases

Rank	Reason for Revision	N	Percent
1	Peri-prosthetic fracture - Femur	1	33.3
2	Peri-prosthetic fracture - Tibia	1	33.3
3	Conversion of Unicondylar Knee Arthroplasty	1	33.3

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Table 1394. Reasons for First Revision Between 91 and 365 days Following Primary UKA for ZUK/ZUK Combination Cases

Rank	Reason for Revision	N	Percent
1	Conversion of Unicondylar Knee Arthroplasty	7	35.0
2	Joint Infection	5	25.0
3	Aseptic Loosening	2	10.0
4	Implant Failure	2	10.0
5	Pain	2	10.0
6	Osteolysis	1	5.0
7	Extensor mechanism failure	1	5.0

Table 1395. Descriptive Statistics of Cases Receiving the ZUK/ZUK Combination in Primary UKA Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	1,522	49.4	
Age (years)	3,080	64.8 (10.6)	65 (15)
Height (cm)	3,063	170 (10.5)	170 (15.2)
Weight (kg)	3,064	89.2 (19.3)	88 (26.6)
BMI(kg/m^2)	3,063	30.8 (5.8)	30 (7.6)
Smoker - Never (%)	1,506	48.9	
Smoker - Previous (%)	1,234	40.1	
Smoker - Current (%)	312	10.1	
Smoker - Unknown (%)	28	0.9	

Table 1396. Distribution of Approach Used for ZUK/ZUK Combination in Primary UKA Cases

Approach	N	Percent
Medial parapatellar	1,916	62.2
Mid-vastus	906	29.4
Sub-vastus	52	1.7
Lateral parapatellar	158	5.1
Missing/unknown/other	48	1.6

Table 1397. Distribution of Polyethylene Used for ZUK/ZUK Combination Cases in Which Polyethylene Was Used in Primary UKA Cases

Polyethylene type	N	Percent
UHMWPE	0	0.0
XLPE	1,303	42.3
Antioxidant XLPE	1,742	56.6
Missing/unknown/other	35	1.1

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Table 1398. Volume of Cases by Surgeon and Site for the ZUK/ZUK Combination in Primary UKA Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	26 (54)	7 (19)
Cases per site	65 (90)	31 (91)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

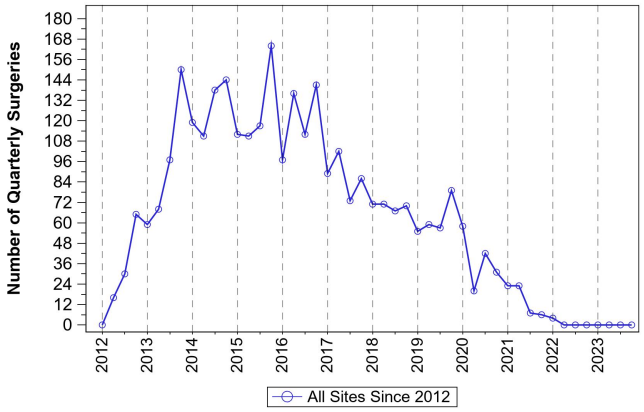


Figure 504. Utilization of the ZUK/ZUK Combination in Primary UKA Cases

Catalog Numbers of Femoral Components Used in the Analysis

584201402	584201301	584201701
584201401	584201602	584201702
584201501	584201601	584201102
584201502	584201201	584201101
584201302	584201202	

Catalog Numbers of Tibial Components Used in the Analysis

584200301	584206108	584206210
584200402	584205108	584205110
584200302	584207108	584205210
584200401	584200102	584206110
584200502	584206208	584206112
584200501	584207208	584207212
584200202	584200101	584205210
584200201	584204208	584206210
584200601	584208108	
584200602	584204108	
584205208	584208208	

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4.7 PFJ

The discrepancy between the number of cases listed at the beginning of an implant and N at year 0 in the table following the CPR figures is due to deaths. The former number is the total number of cases; the latter is the number of cases used to estimate the CPR considering deaths as censored events.

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4.7.1 Gender Solutions PFJ

N = 506 primary cases were used for this analysis. Distribution of utilization: 69 surgeons across 43 sites used this implant combination in primary PFJ cases.

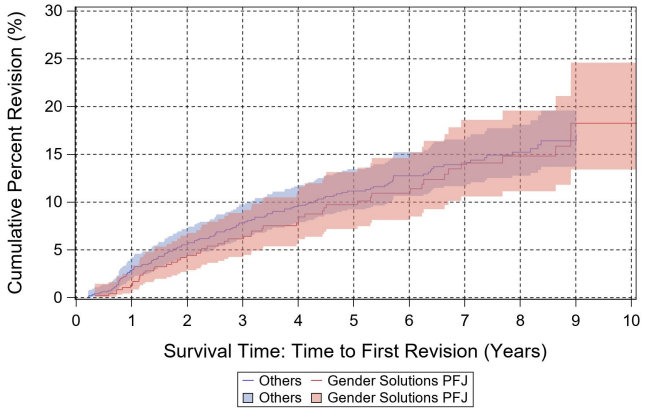


Figure 505. Cumulative Percent Revision Curve for the Gender Solutions PFJ Femoral Component, Compared to All Other Femoral Components in Primary PFJ Cases

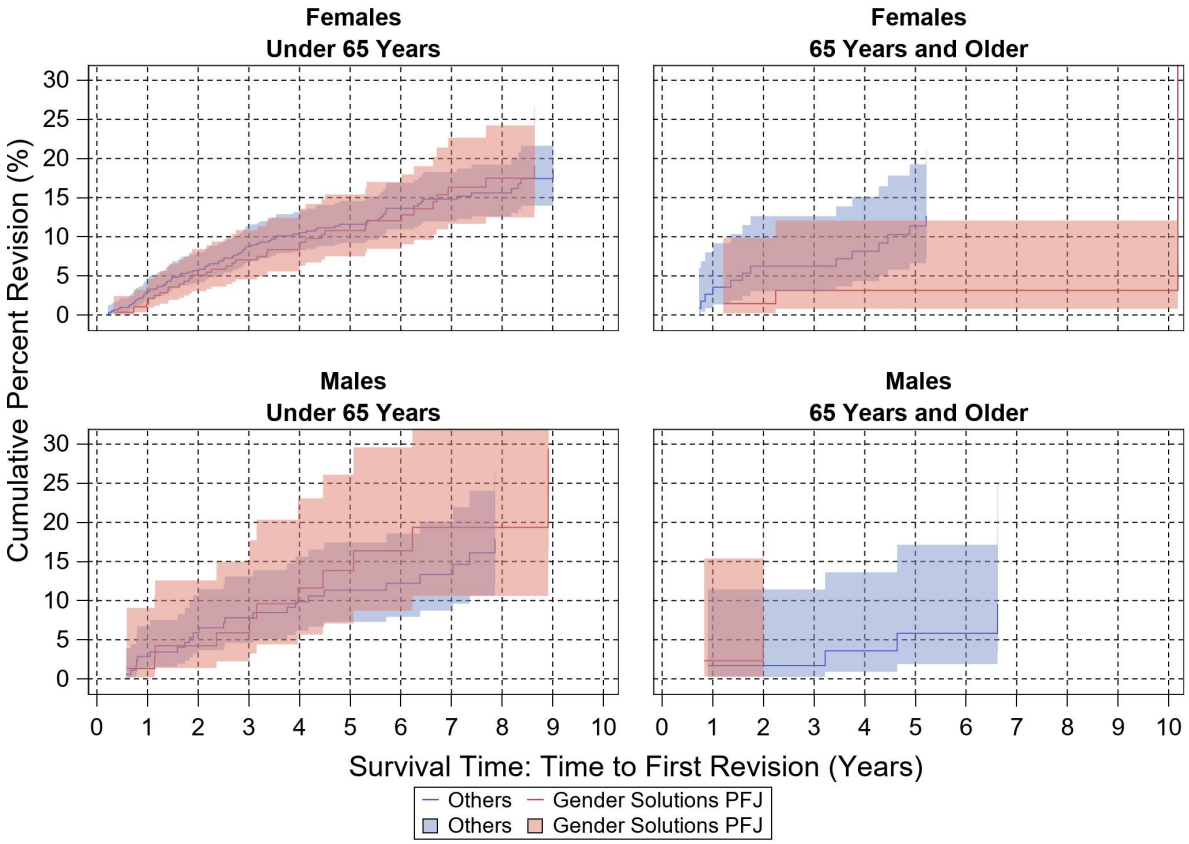


Figure 506. Cumulative Percent Revision Curve for the Gender Solutions PFJ Femoral Component, Compared to All Other Femoral Components in Primary PFJ Cases by Age and Sex

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Table 1399. Cumulative Percent Revision and Number at Risk for the Gender Solutions PFJ Femoral Component in Primary PFJ Cases, Overall and by Age and Sex (Numerical Values)

Year	All cases		Females Under 65		Females 65+		Males Under 65		Males 65+	
	N	CPR	N	CPR	N	CPR	N	CPR	N	CPR
0	506	0.00 (0.00,0.00)	301	0.00 (0.00,0.00)	77	0.00 (0.00,0.00)	79	0.00 (0.00,0.00)	49	0.00 (0.00,0.00)
1	456	1.27 (0.57,2.80)	275	1.41 (0.53,3.71)	72	0.00 (0.00,0.00)	68	1.33 (0.19,9.09)	41	2.33 (0.33,15.38)
2	401	4.42 (2.87,6.78)	249	5.08 (3.04,8.44)	59	1.45 (0.21,9.84)	60	4.24 (1.38,12.57)	33	5.20 (1.31,19.39)
3	352	6.16 (4.26,8.86)	224	7.05 (4.55,10.84)	52	3.15 (0.79,12.07)	51	5.89 (2.24,14.99)	25	5.20 (1.31,19.39)
4	301	7.84 (5.62,10.87)	193	8.35 (5.57,12.43)	45	3.15 (0.79,12.07)	43	11.62 (5.66,23.07)	20	5.20 (1.31,19.39)
5	250	9.74 (7.18,13.14)	162	10.79 (7.50,15.40)	36	3.15 (0.79,12.07)	35	13.83 (7.07,26.08)	17	5.20 (1.31,19.39)
6	194	10.93 (8.14,14.61)	120	12.05 (8.47,17.01)	29	3.15 (0.79,12.07)	29	16.37 (8.70,29.59)	16	5.20 (1.31,19.39)
7	140	14.09 (10.60,18.61)	86	16.34 (11.65,22.66)	19	3.15 (0.79,12.07)	24	19.35 (10.61,33.80)	11	5.20 (1.31,19.39)
8	102	14.82 (11.14,19.58)	61	17.49 (12.47,24.22)	13	3.15 (0.79,12.07)	20	19.35 (10.61,33.80)	*	5.20 (1.31,19.39)
9	64	18.26 (13.41,24.60)	39	19.07 (13.49,26.58)	*	3.15 (0.79,12.07)	13	29.43 (16.40,49.27)	*	5.20 (1.31,19.39)
10	30	18.26 (13.41,24.60)	17	19.07 (13.49,26.58)	*	3.15 (0.79,12.07)	*	29.43 (16.40,49.27)	*	5.20 (1.31,19.39)

* Denotes that the number of cases is between 1 and 10.

Table 1400. Reasons for First Revision Following Primary PFJ for Gender Solutions PFJ Femoral Component Cases

Rank	Reason for Revision	N	Percent
1	Patellofemoral Joint	13	24.5
2	Conversion of Unicompartmental Knee Arthroplasty	12	22.6
3	Pain	11	20.8
4	Implant Failure	6	11.3
5	Aseptic Loosening	4	7.5
6	Dislocation/Instability	3	5.7
7	Joint Infection	2	3.8
8	Arthrofibrosis	1	1.9
9	Metal Reaction/Metallosis	1	1.9

There were no revisions within 90 days, so no table of reasons for revisions during this time period is included.

Table 1401. Reasons for First Revision Between 91 and 365 days Following Primary PFJ for Gender Solutions PFJ Femoral Component Cases

Rank	Reason for Revision	N	Percent
1	Aseptic Loosening	2	33.3
2	Patellofemoral Joint	2	33.3
3	Pain	1	16.7
4	Arthrofibrosis	1	16.7

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Table 1402. Descriptive Statistics of Cases Receiving the Gender Solutions PFJ Femoral Component in Primary PFJ Cases

Quantity	N	Mean (SD)	Median (IQR)
Female (%)	378	74.7	
Age (years)	506	55.8 (12)	55 (17)
Height (cm)	504	169.2 (10.1)	167.6 (12.7)
Weight (kg)	504	85.3 (20.3)	84 (28.2)
BMI(kg/m^2)	504	29.7 (5.9)	29.2 (8.3)
Smoker - Never (%)	287	56.7	
Smoker - Previous (%)	159	31.4	
Smoker - Current (%)	58	11.5	
Smoker - Unknown (%)	2	0.4	

Table 1403. Distribution of Approach Used for Gender Solutions PFJ Femoral Component in Primary PFJ Cases

Approach	N	Percent
Medial parapatellar	458	90.5
Mid-vastus	10	2.0
Sub-vastus	3	0.6
Lateral parapatellar	19	3.8
Missing/unknown/other	16	3.2

Table 1404. Volume of Cases by Surgeon and Site for the Gender Solutions PFJ Femoral Component in Primary PFJ Cases

Quantity	Mean (SD)	Median (IQR)
Cases per surgeon	7 (10)	4 (6)
Cases per site	11 (14)	6 (13)

The mean is substantially greater than the median, which suggests some high-volume surgeons this distribution.

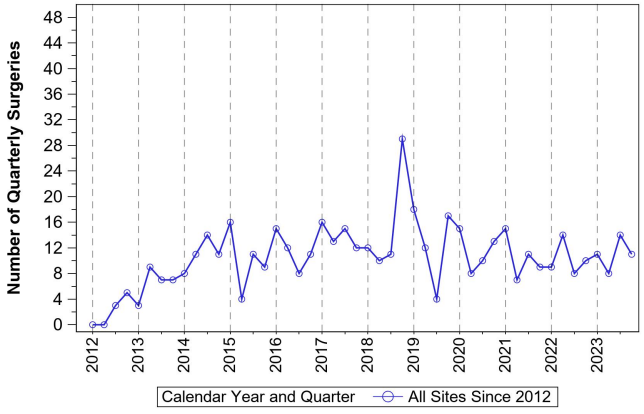


Figure 507. Utilization of the Gender Solutions PFJ Femoral Component in Primary PFJ Cases

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Catalog Numbers of Femoral Components Used in the Analysis

592601302	592601402	592601502
592601301	592601101	592601501
592601202	592601102	
592601201	592601401	

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Appendices

Appendix A

Statistical Methods

This appendix is intended to provide a clear and precise description of the analytical methods used to generate figures, tables, and text in this report. It is written primarily for registry methodologists. It can be used as a reference for readers most interested in clinical aspects of arthroplasty.

A.1 MARCQI Cohort: Qualifying Patients

MARCQI was designed to improve quality of care for elective primary total hip and knee arthroplasty and associated revisions, excluding treatment for trauma cases. Therefore, MARCQI includes:

1. *Elective primary*. All primary hip and knee joint replacements for which the procedure has been planned and the patient undergoes the surgery for a non-emergent condition.
2. *Urgent/emergent*. Rare situations may occur when the patient has a scheduled elective primary procedure but enters the hospital through the emergency room or clinic. These cases are occasionally classified or scheduled by the hospital as urgent or emergent. If the case proceeds under this designation and the original diagnosis and plan are otherwise unchanged then they may be included. This situation is very uncommon.
3. *Revision*. All revision hip and knee replacements regardless of diagnosis are included.
4. *Trauma*. Primary trauma cases do not qualify. The clinical data abstractor (CDA) reviews the case to determine if an urgent/emergent qualifying revision of a knee or hip was performed.

A.2 Time Window, Inclusion, and Exclusion Criteria for the Implant-specific Data Chapter

This report covers MARCQI activities from 02/15/2012 to 12/31/2023, and includes both primary and revision(s) cases.

A.3 Events for Descriptive Statistics and Implant Survival Analysis

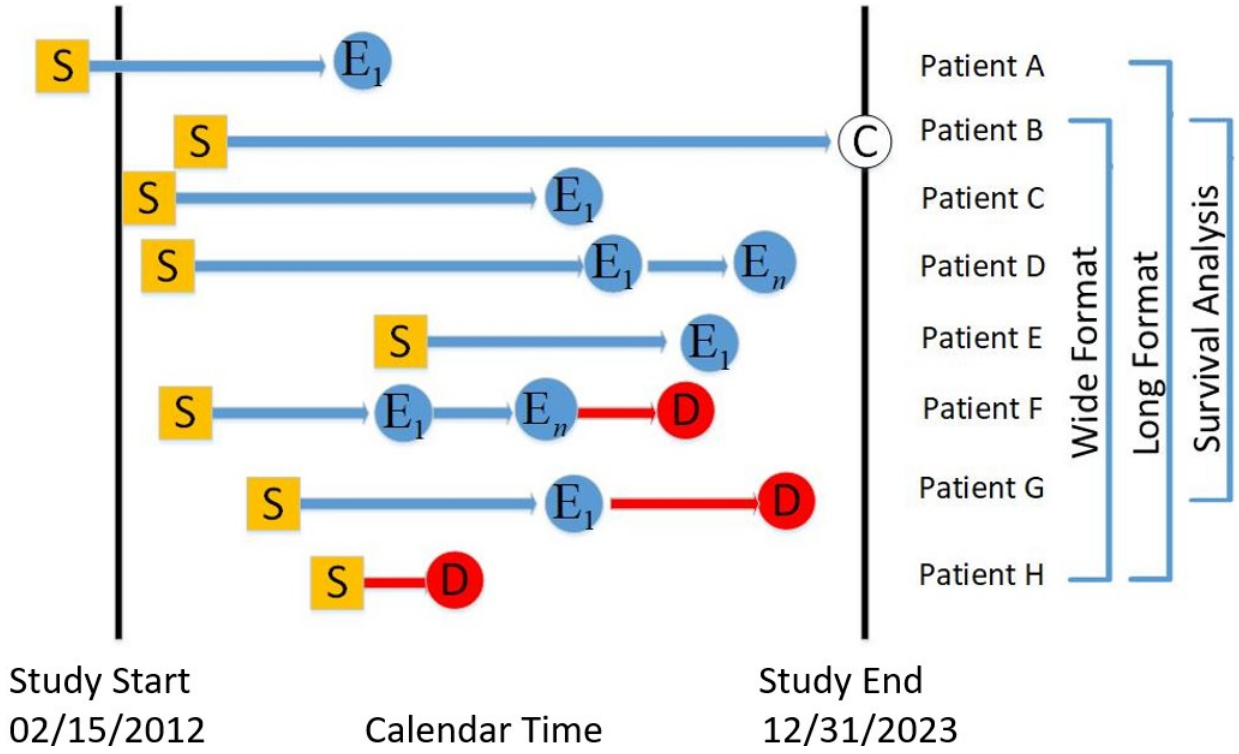


Figure 508. Illustration of Event Flow and Eight Types of Patients in MARCQI Database

There are many different combinations of events that can occur for each patient within and outside the 2/15/2012 - 12/31/2023 time window. For example, a patient could have a primary and revision, have a primary and then die, or have a primary and have no revision before 12/31/2023 but remain alive. It is important to understand each when interpreting data in this report, especially time-to-revision and the resulting cumulative percent revision curves and numbers. Figure 508 illustrates the possible events (*e.g.*, revision) for the report window using eight types of patients. Symbols in the figure represent start of a primary surgery (S), single event (E_1) and/or multiple events (E_n), death (D), and censoring (C). The figure helps define important concepts used in MARCQI analyses:

1. *Study time window*. All primary and revision surgeries performed between 02/15/2012 to 12/31/2023 are included. The revision event might be registered after 12/31/2023 in the database, but those post-study end event(s) do NOT qualify for implant survival analysis and were censored at the end of the study. In addition, primary surgeries performed prior to 02/15/2012 are not included in the revision analysis.

2. *Qualified patients*. All eight types of patients qualify for volume reporting, including patient A and patient H. Patient B through patient G qualified for implant survival analysis (thus patients A and H are disqualified). Patient C and patient E are of the same type, even though starting time varies. Deaths are addressed in (7) below. Patient type A, included in long format dataset, is only qualified to calculate total volumes over time. Patient types B through H are included in the wide format dataset as primary surgery cases.

3. *Censoring*. The patients who did not have the event as of the study-end are considered right-censored. These patients provide some information, but not complete information, *e.g.*, Patient B. Patient A is excluded in implant survival analysis because the surgery occurred prior to the onset of the MARCQI registry; thus, no left-censoring is considered in this report.

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4. *Time-to-event*. Number of days elapsed from primary surgery to the event of interest (*e.g.*, first revision following surgery).

5. *Qualified revision events for implant survival analysis*. First event E_1 after primary surgery (thus events E_2, E_3, ..., E_n disqualified). However, E_2, E_3, ..., E_n are counted in the total volume calculations.

6. *Lost-to-follow-up (LTFU)*. This report does not consider LTFU (*e.g.*, due to geographical relocation of patient) as an event of interest. Instead, if MARCQI has no follow-up or death information until study-end, that patient is treated as a right-censoring at the study-end.

7. *Handling of deaths*. The MARCQI data abstractor records deaths within 90 days of surgery. A national death index is used to identify deaths after 90 days. In the time window used for this report, the overall and the 90-day death rates after primary THA surgeries are about 0.67% and 0.18% respectively, including patient types F, G, and H. The overall and 90-day death rates without any event(s) after primary surgery are approximately 0.64% and 0.18% respectively, like patient type H. Following primary TKA cases, the overall death rate is 0.64% and 0.62% with and without any revision event(s), respectively. The 90-day death rate is 0.14% and 0.14% with and without any revision event(s), respectively. Patients A and H are treated as qualified patients (in the denominator) in calculating descriptive statistics, implant combinations, surgeon volumes, and site volumes. However, they are excluded in implant survival analysis. Patients that die after a revision event (like patient F and G) are included in the implant survival analysis since those patients contributed information of time-to-first revision. This strategy ensures minimal information loss. Kandala *et al.* (2015) showed that low death rate does not substantially affect the implant survival analysis. Thus, in the report, the patient type A and H are excluded in the implant survival analysis without conducting competing risk analysis and left censoring.

Finally, for purposes of this report, “unit” is a general term and context specific and may refer to the surgeon, hospital, or implant that a patient is embedded.

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A.4 MARCQI Definition of Revision

For the purposes of MARCQI revision analyses, a revision is defined to be a procedure that involves either (a) removing and replacing some, or all, of the joint replacement components or (b) adding a component. This applies to all MARCQI qualifying cases. There are two situations likely to cause confusion that need to be clarified: (1) adding a cup after a hemi-arthroplasty is a conversion, which is a primary case according to MARCQI criteria; and (2) adding a unicompartmental knee to another compartment of a knee having pre-existing unicompartmental components is considered another primary case rather than a revision.

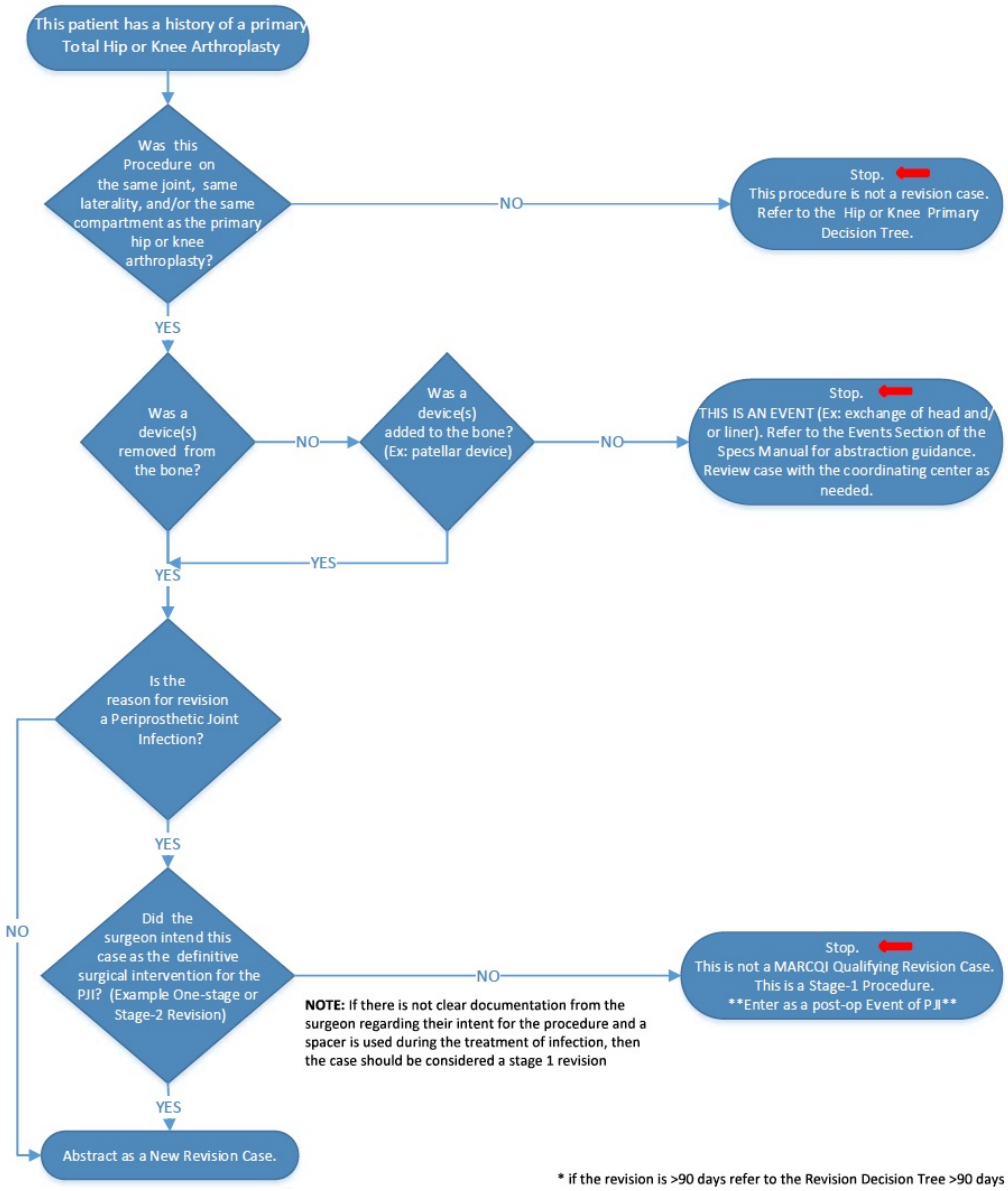


Figure 509. Flowchart of Method Used to Identify Revisions Within 90 Days of Surgery

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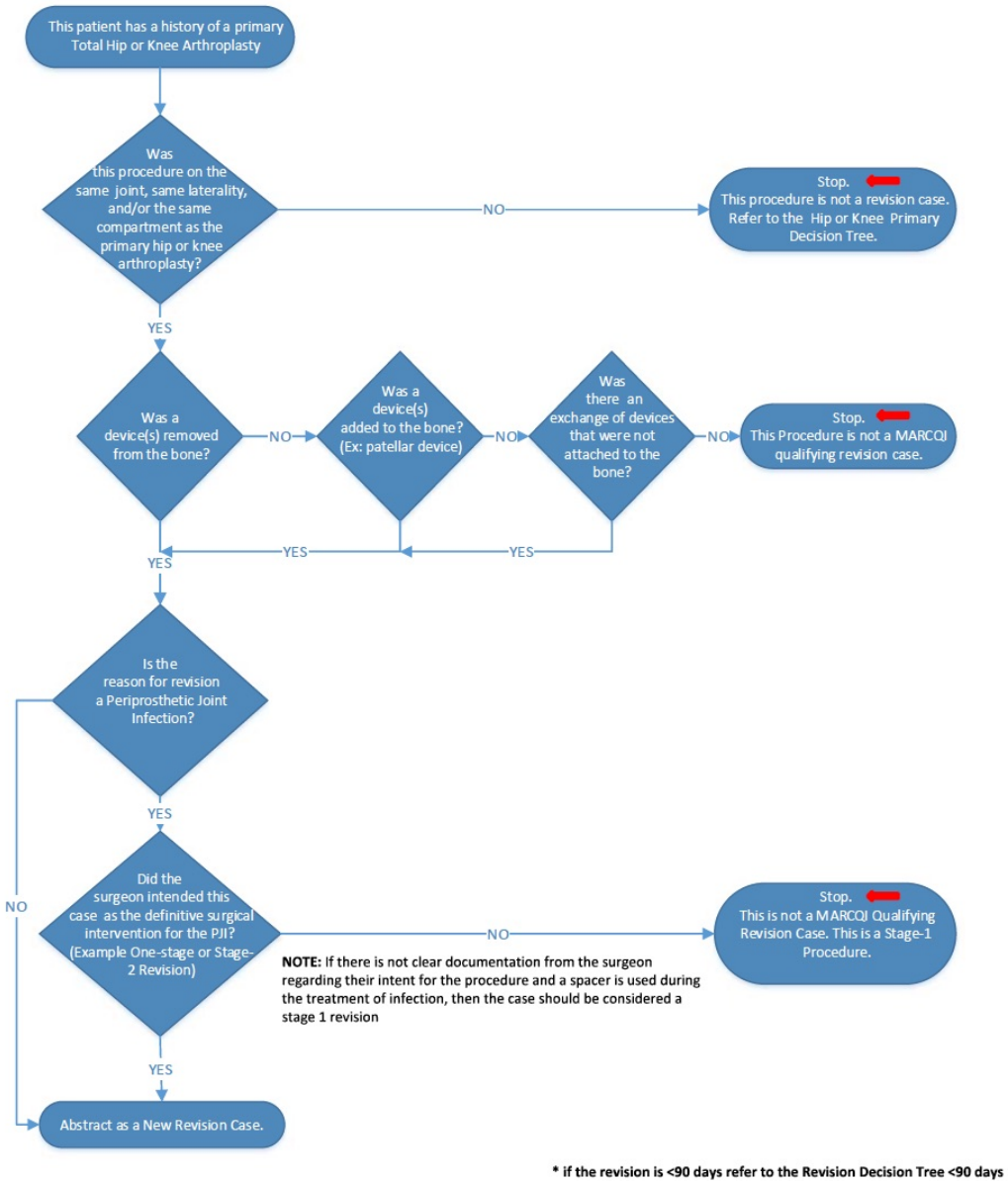


Figure 510. Flowchart of Method Used to Identify Revisions More Than 90 Days of Surgery

MARCQI uses a multi-faceted methodology for identifying revisions for two reasons: (1) revision data comes from both abstracted and administrative data sources, and (2) hospitals switched from ICD-9 to ICD-10 coding in 2015. Figures 509 and 510 illustrates the process used to identify revisions for this report. The process is different within 90 days and beyond 90 days because MARCQI was designed to focus primarily on reduction in 90-day events. For surgeries occurring on or after October 1, 2015, a registry-based MARCQI revision is a case identified by ICD-10 code and confirmed by a CDA. For surgeries occurring prior to October 1, 2015, a revision surgery was identified by the ICD-9 procedure recorded for the case and confirmed by a CDA. MARCQI qualifying revisions are identified by the following criteria:

1. Did the patient have a primary procedure?
2. Determine, if possible, if the revision was performed less than or greater than 90 days from the primary.
3. Determine what devices were removed or implanted by using the surgeon's narrative (operative note) and the device record.
4. ICD-10 codes may be used as validation.

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A common question is how MARCQI handles staged revisions for the treatment of infection. MARCQI data abstractors are taught the following logic, which is included in the MARCQI data manual:

1. A *stage-one revision* is performed to treat the infection and may involve removal of all or some devices. It often involves debridement of tissues (I&D) and treatment with antibiotics via a functional spacer (static or articulating), cement antibiotic beads, IVs, or an intra-articular catheter. The intent is to perform a second procedure to replace the devices. If performed $\leq$ 90 days of the associated case, the stage one would be an event of prosthetic joint infection. If performed $>$ 90 days, it is not a qualifying case. Note: if the case is within 90 days of surgery performed at another site, this is a new revision case.

2. A *stage-two revision* is performed to insert new devices after an infection is treated. Typically, this includes removal of the spacer, beads, or intra-articular catheter and insertion of the new permanent devices. This procedure is intended as the final stage in treating the infection or the definitive surgical intervention. This qualifies as a new revision case (new devices were implanted into bone).

3. A *one-stage revision* treats infection and replaces the devices during the same operative encounter. There is no intent for another procedure; therefore, these are considered a definitive surgical intervention and a new revision case (new devices were implanted into bone).

Procedures performed within 90 days of surgery that involve an exchange of a device(s) not attached to bone, are events. These procedures may also be called an incision and drainage (I&D) or washout. For a hip case, it may involve the femoral head and acetabular liner. For a knee case, it may involve the tibial insert. Note: If the case is within 90 days of a surgery performed at another site, this is a new revision case.

A.5 Data Structure for Analytics

Two formats of data sets are used for this report, called “long” format and “wide” format.

1. The “long” format has a record (or row) for each case, *i.e.*, an individual record for each primary and revision case. Some patients may have multiple records indicating they have had multiple hip or knee replacement procedures over time. There may be a few patients with primary cases before 02/15/2012, and revision after 02/15/2012 (but before the end of the study 12/31/2023). This dataset is used to calculate statistics for total number of performed cases, overall and per calendar year.

2. In contrast, the “wide” format has one record (or row) for each primary case because a patient can only have one primary surgery per joint; subsequent procedures on the same joint would indicate revisions. There are no stand-alone records dedicated to revision(s). Rather, in the wide format the existence of a first revision is indicated as a dummy variable (1 means having a revision, 0 means not having a revision). Time to first revision in days was calculated for implant survival analysis. No revisions beyond first revision are coded in the wide data format. Some patients may have multiple records (or rows) if this patient had more than one primary surgery on different joints and/or lateralities. In this report, each primary surgery was treated as a new case. The date of primary cases must fall within the study window. This dataset is used to calculate descriptive statistics for primary cases, overall and breakdown by sex, diagnosis, and type of implant. It is also used for implant survival analysis.

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A.6 Multi-level Closed-loop Data Quality QC/QA

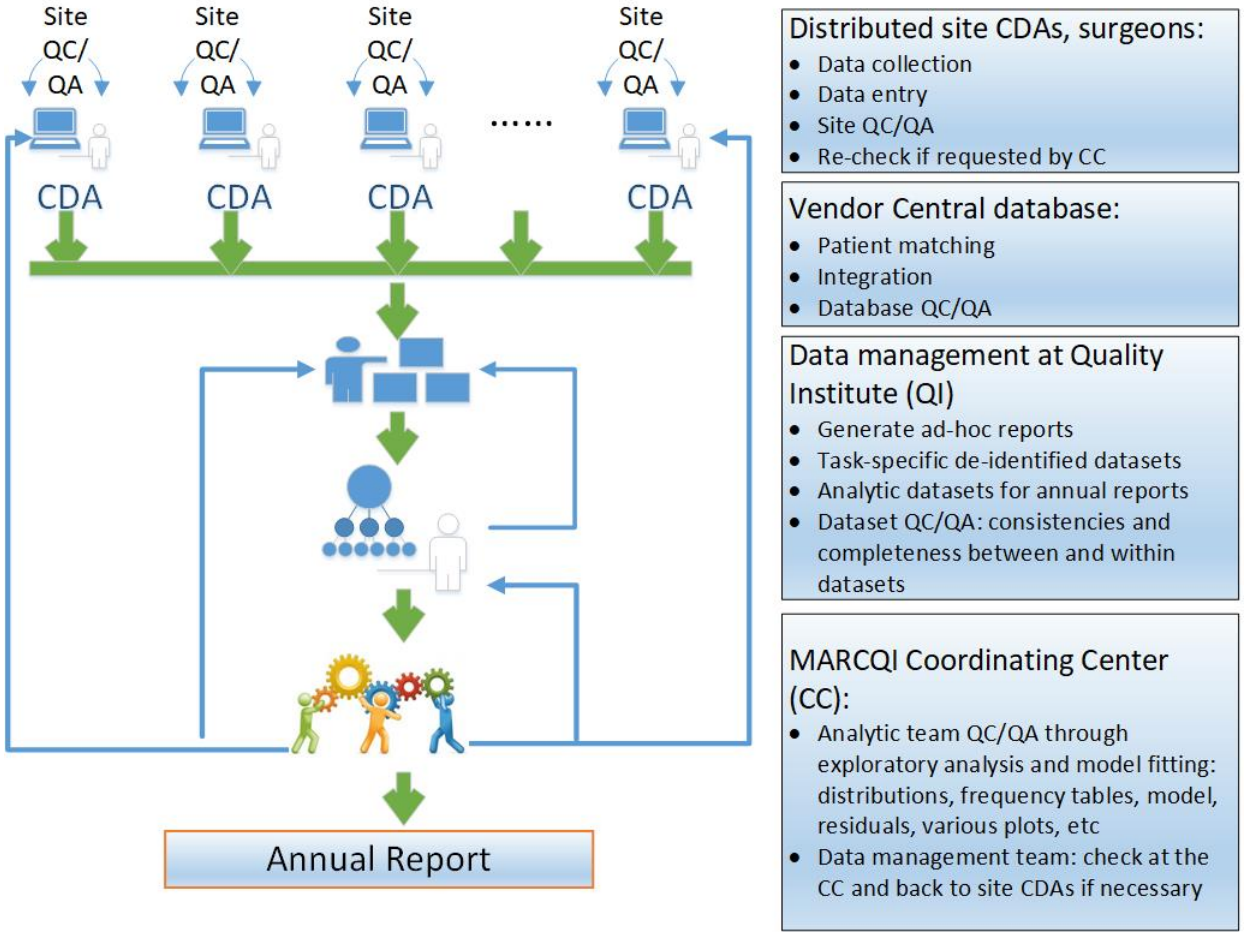


Figure 511. Flowchart of MARCQI Four-level QC/QA Process

Data quality is critical in MARCQI. In order to meet quality dimensions, including accuracy/validity, reliability/consistency, completeness, precision, timeliness, confidentiality, and integrity (Sheppard and Terveen, 2011), MARCQI data has been checked and validated on four levels: (1) hospital, (2) vendor database, (3) data management, and (4) analytical. At the analytical level, the measures were further checked through distributions, frequency tables, model fittings, residuals, and other visualization tools. The questionable measures were directed to the coordinating center data management team and then returned to site clinical data abstractors (CDAs) if necessary. The CDAs validated data and made necessary corrections in the database if a measure was found to be in error. Figure 511 is the flowchart of MARCQI's four-level quality control/quality assurance (QC/QA) process.

The following goals are the focus of data quality in MARCQI:

1. *Accuracy/validity*. MARCQI data accuracy is validated based on the definitions and medical domain knowledge to ensure that data is entered correctly and appropriately into the domain. At the data entry stage, validation messages are created and a warning message window will pop-up if a value is out of normal range as pre-defined by the domain experts. This helps filter out potential data collection errors and allows confirmation of out-of-range but accurate values.
2. *Reliability/consistency*. The coordinating center staff ensures that the definition of measures is consistent over time and across sites.
3. *Completeness*. Data are fully inclusive, *e.g.*, a complete list of eligible implant names, device materials, patient demographics, etc. Missing data, invalid data, and/or incomplete data are checked.

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4. *Precision*. MARCQI data are detailed and include demographics, lab, OR log, implant, etc.
5. *Timeliness*. MARCQI data are up-to-date and available quickly and frequently. Data reports are updated monthly, and the analytical datasets are updated quarterly.
6. *Integrity*. MARCQI maintains the accuracy, validity, and consistency of data over the whole data lifecycle, within and between data tables so that data is recoverable, searchable, traceable, and stable.
7. *Confidentiality*. MARCQI data are maintained according to national/international standards for data. All MARCQI data are protected and used appropriately.

This entire process guarantees the quality of MARCQI data.

A.7 Descriptive Statistics and Visualization

For this report continuous measures were checked for normality and skewness. Categorical variables were checked for cell sizes and questionable category values. If any potential issues were found and confirmed by the MARCQI data management team, then the data quality checking/correction was directed to a different level accordingly.

Univariate analyses are performed to compute descriptive statistics for this report, including frequency tables for smoker, both mean and standard deviation (SD), median and interquartile range (IQR) for age, weight, height, body mass index (BMI), and surgeon volumes (overall and device-specific). Frequency tables and various visualization tools, including pie charts, bar charts, Pareto charts (Montgomery, 2009; Tague, 2004), and line plots are employed to present data for sex, approach, diagnosis, distribution of primary vs. revision cases, venous thrombosis prophylaxis, polyethylene type, procedure type, bearing surface couple, head size, reason for revision, and American Society of Anesthesiologists (ASA) class.

A.8 Kaplan-Meier: Unadjusted Survival Probabilities and Cumulative Percent Revision (CPR)

MARCQI presents revision risk for implants using a curve called the “cumulative percent revision,” which is abbreviated CPR and inspired by the Australian Orthopaedic Association National Joint Replacement Registry. Obviously, lower revision risk is preferred to higher risk.

The CPR is constructed starting with the time a primary joint replacement is performed, with the endpoint of interest being revision surgery on that joint. MARCQI computes the time to first revision since the primary procedure for those patients having revision surgery, which is the X-axis in the CPR curve. The Y-axis is the percent of patients who have had a revision among patients with the joint replacement by the corresponding X-axis, time.

Computationally, the CPR curve is derived from unadjusted survival probabilities, $\hat{S}(t)$, which is calculated using the Kaplan-Meier product-limit estimator (Kaplan and Meier, 1958; Rich *et al.*, 2010), and corresponding standard errors are calculated with Greenwood's formula (Kalbfleisch and Prentice, 2002). Then the overall, stratified, and implant-specific CPRs are expressed as percentages and calculated by $C\hat{P}R = (1 - \hat{S}(t)) \times 100$. The log-rank test is used to compare survival curves between groups at the $\alpha = 0.05$. There is a significant difference in the survival time between groups if the *p*-value is less than 0.05.

A.9 Cox Proportional-hazards Model

The Cox proportional-hazards model (Cox, 1972) is commonly used for investigating the association between the survival time of patients and one or more predictor variables. Specifically, the Cox proportional-hazard model formulates the hazard function for individual as $h_i(t, \mathbf{x}_i) = h_0(t, 0)e^{\mathbf{x}_i^T \boldsymbol{\beta}}$, where $h_i(t, \mathbf{x}_i)$ is the hazard at time t for the i$^{\text{th}}$ case, $h_i(t, 0)$ is the baseline hazard function with all covariates being 0, $\boldsymbol{\beta}$ is a column vector of regression coefficients, and $\mathbf{x}_i$ is a column vector of covariates for the i$^{\text{th}}$ case. The measures of association given by the Cox model as *hazard ratio (HR)* is used to explain the risk of event for certain categories of covariates or exposure of interest. The hazard ratio is obtained by taking the ratio of the hazards of two cases who have different values of the covariates, $\mathbf{x}$:

$$HR = \frac{h_i(t,\mathbf{x}_i)}{h_j(t,\mathbf{x}_j)} = \frac{h_0(t,0)e^{\mathbf{x}_i^T\boldsymbol{\beta}}}{h_0(t,0)e^{\mathbf{x}_j^T\boldsymbol{\beta}}} = e^{(\mathbf{x}_i-\mathbf{x}_j)^T\boldsymbol{\beta}}$$

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The model includes surgeon as a random effect to account for within-subject correlation of the observed outcomes (Zhao *et al.*, 2005).

Parameters in a Cox model and HR are estimated using partial likelihood (Cox, 1975; Verweij and van Houwelingen, 1994). The proportional hazards assumption is assessed following Lin *et al.* (1993), *i.e.*, graphical and numerical methods for model assessment based on the cumulative sums of martingale residuals. Basically, the distributions of the stochastic processes under the assumed model are approximated by the distributions of zero-mean Gaussian processes. The 1000 realizations are generated by simulation. Each observed residual pattern was compared, both graphically and numerically, with simulated realizations from the null distribution. In this report, the risk-adjusted (age and sex) hazard ratio and 95% confidence interval are reported for each specific implant if the proportional-hazards assumption is met according to the supremum test.

A.10 Database and Software Platform

The raw data sources are securely transported to MARCQI by the data vendor (Ortech) in MS SQL format. All the data management, exploratory data analysis, descriptive statistics, graphs, and statistical modeling are performed using SAS 9.4 (SAS® Institute Inc., Cary, North Carolina)[1], SAS / Interactive Matrix Language (IML)[2], and SAS Macro Language [3].

[1] SAS® 9.4 Product Documentation.
[2] SAS/IML® 15.1: User's Guide, Copyright © 2018, SAS Institute Inc., Cary, NC, USA.
[3] SAS® 9.4 Macro Language: Reference, Fifth Edition.

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Appendix B

Awards and Publications

B.1 Awards

2016 Current Concepts in Joint Replacement/Orthopaedic Research and Education Foundation - Clinical Practice Award Paper, *No Difference in Dislocation Seen in Anterior vs Posterior Approach Total Hip Arthroplasty*, Maratt, J.D., Gagnier, J.J., Butler, P.D., Hallstrom, B.R., Urquhart, A.G., and Roberts, K.C..

2022 John N. Insall Knee Society Award, *MARCQI's Pain-control Optimization Pathway (POP): Impact of Registry Data and Education on Opioid Utilization*, Layson, J.T., Markel, D.C., Hughes, R.E., Chubb, J., and Frisch, N.B..

B.2 Journal Publications

2014

Franklin, P.D., Lewallen, D., Bozic, K., Hallstrom, B., Jiranek, W., and Ayers, D.C. (2014) Implementation of patient-reported outcome measures in U.S. total joint replacement registries: rationale, status, and plans. *Journal of Bone and Joint Surgery - American Volume*, 96 Suppl 1:104-109.

2015

Hughes, R.E., Hallstrom, B.R., Cowen, M.E., Igrisan, R.M., Singal, B.M., and Share, D.A. (2015) Michigan Arthroplasty Collaborative Quality Initiative (MARCQI) as a model for regional registries in the United States. *Orthopaedic Research and Reviews*, 7:47-56.

2016

Ellimoottil, C., Ryan, A.M., Hou, H., Dupree, J., Hallstrom, B., and Miller, D.C. (2016) Medicare's new bundled payment for joint replacement may penalize hospitals that treat medically complex patients. *Health Affairs*, 35(9):1651-1657.

Hallstrom, B.R., Singal, B., Cowen, M.E., Roberts, K.C., and Hughes, R.E. (2016) The Michigan experience with safety and effectiveness of tranexamic acid use in hip and knee arthroplasty. *Journal of Bone and Joint Surgery - American Volume*, 98:1646-1655.

Maratt, J.D., Gagnier, J.J., Butler, P.D., Hallstrom, B.R., Urquhart, A.G., and Roberts, K.C. (2016) No difference in dislocation seen in anterior vs posterior approach total hip arthroplasty. *Journal of Arthroplasty*, 31(9 Suppl):S127-S130.

Markel, D.C., Allen, M.W., and Zappa, N.M. (2016) Can an arthroplasty registry help decrease transfusions in primary total joint replacement? A quality initiative. *Clinical Orthopaedics and Related Research*, 474:126-131.

2017

Charles, R.J., Singal, B.M., Urquhart, A.G., Masini, M.A., and Hallstrom, B.R. (2017) Data sharing between providers and quality initiatives eliminate unnecessary nursing home admissions. *Journal of Arthroplasty*, 32(5):1418-1425.

Courtney, P.M., Huddleston, J.I., Iorio, R., and Markel, D.C. (2017) Socioeconomic risk adjustment models for reimbursement are necessary in primary total joint arthroplasty. *Journal of Arthroplasty*, 32:1-5.

Courtney, P.M. and Markel, D.C. (2017) Arthroplasty registries: Improving clinical and economic outcomes. *Journal of Knee Surgery*, 30(1):7-11.

Hughes, R.E., Batra, A., and Hallstrom, B.R. (2017) Arthroplasty registries around the world: valuable sources of hip implant revision risk data. *Current Reviews in Musculoskeletal Medicine*, 10:240-252.

Markel, D.C., Allen, M., Hughes, R., Singal, B., and Hallstrom, B. (2017) Quality initiative programs can decrease total joint arthroplasty transfusion rates - A multicenter study

utilizing the MARCQI total joint registry database. *Journal of Arthroplasty*, 32(11):3292-3297.

Omari, A., Hughes, R.E., Hallstrom, B.R., Singal, B.M., Igrisan, R.M., and McCardel, B.R. (2017) Using device data to improve identification of intraoperative femur fractures in total hip arthroplasty. *Michigan Journal of Medicine*, 2(1).

2018

Charpentier, P.M., Srivastava, A.K., Zheng, H., Ostrander, J.D., and Hughes, R.E. (2018) Readmission rates for single midnight versus two midnight length of stay in primary total knee arthroplasty: Analysis of the MARCQI Database. *Journal of Bone and Joint Surgery – American*, 100:1757-64.

Cheek, C., Zheng, H., Hallstrom, B.R., and Hughes, R.E. (2018) Application of a causal discovery algorithm to the analysis of arthroplasty registry data. *Biomedical Engineering and Computational Biology*, 9:1-9.

Hughes, R.E., Zheng, H., Igrisan, R.M., Cowen, M.E., Markel, D.C., and Hallstrom, B.R. (2018) The Michigan Arthroplasty Registry Collaborative Quality Initiative Experience: Improving the quality of care in Michigan. *Journal of Bone and Joint Surgery – American*, 100(22):e143.

2019

Hood, B.R., Cowen, M.E., Zheng, H., Hughes, R.E., Singal, B., and Hallstrom, B.R. (2019) Aspirin compared with other anticoagulants for prevention of venous thromboembolism in patients after total knee arthroplasty: A non-inferiority analysis. *Journal of the American Medical Association – Surgery*, 154(1):65-72.

2020

Foster, C., Posada, C., Pack, B., Hallstrom, B.R., and Hughes, R.E. (2020) Summary of knee implant one, three, five and 10-year revision risk reported by national and regional arthroplasty registries: A valuable source of evidence for clinical decision-making. *EFORT Open Reviews*, 5:268-272.

Hallstrom, B.R. and Hughes, R.E. (2020) Controversies in hip arthroplasty: Using registries to answer difficult questions (Editorial). *Journal of the American Medical Association*, 323:1046-1048.

Hughes, R.E, Zheng, H., and Hallstrom, B.R. (2020) Why registries are important: The example of the Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI) (Viewpoint). *Arthroplasty Today*, 6:747-748.

Hughes, R., Hallstrom, B., Schemanske, C., Howard, P.W., Wilton, T. (2020) Returning to operating following COVID-19 shutdown: what can human factors tell us? (Editorial) *Bone & Joint Journal*, 102-B(10):1277-1278.

Knapp, P., Weishuhn, L., Pizzimenti, N., and Markel, D.C. (2020) Risk factors for manipulation under anaesthesia after total knee arthroplasty. *Bone & Joint Journal*, 102-B(6 Supple A):66-72.

2021

Chubb, H.A., Cornish, E.R., Hallstrom, B.R., and Hughes, R.E. (2021) Early benchmarking total hip arthroplasty implants using data from the Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI). *Orthopaedic Research and Reviews*, 13:215-228.

Muscatelli, S., Zheng, H., Hughes, R.E., Cowen, M.E., and Hallstrom, B.R. (2021) Non-inferiority of aspirin for venous thromboembolism prophylaxis after hip arthroplasty in a statewide registry. *Journal of Arthroplasty*, 36(6):2068-2075.

Schuman, A.D., Syrjamaki, J.D., Norton, E.C., Hallstrom, B.R., Regenbogen, S.E. (2021) Effect of statewide reduction in extended care facility use after joint replacement on hospital readmissions. *Surgery* 169(2):341-346.

2022

Hallstrom, B., Hughes, R.E., and Huddleston, J.I. 3rd (2022) State-based and national U.S. registries: The Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI), California Joint Replacement Registry (CJRR), and American Joint Replacement Registry (AJRR). *Journal of Bone and Joint Surgery – American*, 104 (Suppl 3):18-22.

Han, P., Fu, S., Kolis, J., Hughes, R., Hallstrom, B.R., Carvour, M., Maradit-Kremers, H., Sohn, S., and Vydiswaran, V. (2022) Multicenter validation of natural language processing algorithms for the detection of common data elements in operative notes for total hip arthroplasty: Algorithm development and validation. *JMIR Medical Informatics*, 10(8):e38155.

Layson, J.T., Markel, D.C., Hughes, R.E., Chubb H., and Frisch, N.B. (2022) MARCQI's pain-control optimization pathway (POP): Impact of registry data and education on opioid utilization. *Journal of Arthroplasty*, 37(6):S19-S26.

Markel, J.F., Driscoll, J.A., Zheng, T.H., Hughes, R.E., Moore, D.D., Hallstrom, B.R., Markel, D.C. (2022) Causes of early hip revision vary by age and sex: Analysis of data from a statewide quality registry. *Journal of Arthroplasty*, 37:S616-S621.

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Muscatelli, S., Zheng, H., Muralidharan, A., Tollemar, V., and Hallstrom, B.R. (2022) Limiting the surveillance period to 90 days misses a large portion of infections in the first year after total hip and knee arthroplasty. *Arthroplasty Today*, 16:90-95.

2023

Cowen, M.E., Zheng, H., Hughes, R.E., Franklin, P.D., Masini, M.A., and Hallstrom, B.R. (2023) How much perioperative pain and dysfunction underlie the HOOS JR and KOOS JR? *Clinical Orthopaedics and Related Research*, 481:1800-1810.

Hughes, R.E., Zheng, H., Kim, T., and Hallstrom, B.R. (2023) Total hip and knee arthroplasty implant revision risk to 5 years from a state-wide arthroplasty registry in Michigan. *Arthroplasty Today*, 21:101146.

Markel, J.F., Adams, N.A., Srivastava, A.K., Zheng, T.H., Hallstrom, B.R., Markel, D.C. (2023) Do ′Surgeon Champions′ and High-Volume Surgeons Have Lower Rates of Periprosthetic Femur Fracture? Perspective From a State-Wide Quality Improvement Registry. *Journal of Arthroplasty*, 38(7S):S247-S251.

Nelson, J., Zheng, H., Hallstrom, B.R., Hughes, R.E., Mont, M.A., and Masini, M. (2023) Are short stems associated with higher fracture rates and early revision rates in primary total hip arthroplasty? - A non-inferiority analysis. *Journal of Arthroplasty*, 38:1287-1294.

Powell, D., Comer, B., Hallstrom, B., Zheng. H., Hughes, R., Markel, D. (2023) Early survivorship of uncemented total knee arthroplasty varies by age and sex based on data from the Michigan Arthroplasty Registry Collaborative Quality Initiative. *Journal of Arthroplasty*, 38(7 Suppl 2):S221-S226.

Powell, D., Markel, D., Chubb, H., Muscatelli, S., Hughes, R., Hallstrom, B., and Frisch, N. (2023) The differential effect of COVID on total joint arthroplasty between hospital and ambulatory surgery centers/hospital outpatient departments: A Michigan Arthroplasty Registry Collaborative Quality Initiative Analysis. *Arthroplasty Today*, 23:101189.

Wenzlick, T.S., Kutzner, A.R., Markel, D.C., Hughes, R.E., Chubb, H.D., Roberts, K.C. (2023) A reduction in opioid prescription size after total joint arthroplasty can be safely performed without an increase in complications. *Journal of Arthroplasty*, 38:1245-1250.

2024

Abbas, M.J., Markel, D.C., Hallstrom, B.R., Zheng, H.T., Charters, M.A. (2024) The Impact of Surgeon Volume on Unicompartmental Knee Arthroplasty Survivorship: A Michigan Arthroplasty Registry Collaborative Quality Initiative Database Analysis. *Journal of Arthroplasty*, 13:S0883-5403(24)00837-4.

Frisch, N.B., Masini, M.A., Zheng, H., Hughes, R.E., Hallstrom, B.R., and Markel, D.C (2024) Early identification of poorly performing implants in Michigan with example of the Vanguard XP. *Arthroplasty Today*, 30:101478.

Mesko, J.W., Zheng, H., Hughes, R.E., and Hallstrom, B.R. (2024) Individualized surgeon reports in a statewide registry: A pathway to improved outcomes. *Journal of Bone and Joint Surgery - American*, 106:2045-50.

B.3 Conference Abstracts

2014

Hughes, R.E., Igrisan, R., and Hallstrom, B. (2014) Designing pay-for-performance incentives for an arthroplasty quality improvement collaborative. *3rd International Congress of Arthroplasty Registries*, May 31-June 2, Cambridge, MA, 2014.

2015

Hallstrom, B.R., Hughes, R., Igrisan, R., Cowen, M., and Singal, B. (2015) Dramatic reduction in blood transfusion through a quality improvement project in the Michigan arthroplasty registry. *4th International Congress of Arthroplasty Registries*, Gothenburg, Sweden, May 23-25, 2015.

Hughes, R.E., Singal, B., Hallstrom, B., Cowen, M., and McCardel, B. (2015) Using device data to improve detection of intra-operative femur fractures in total hip arthroplasty. *4th International Congress of Arthroplasty Registries*, Gothenburg, Sweden, May 23-25, 2015.

Hughes, R. (2015) Development and operation of a regional arthroplasty quality improvement collaborative. *Healthcare Systems Process Improvement Conference 2015*, February 18-20, Orlando, FL, 2015.

Maratt, J.D., Gagnier, J., Butler, P., Hallstrom, B.R., Urquhart, A.G., and Roberts, K. (2015) Direct anterior approach does not reduce dislocation risk. *American Association of Hip and Knee Surgeons*, November 5-8, Dallas, TX, USA, 2015.

2016

Hallstrom, B., Hughes, R., Singal, B., and Cowen, M. (2016) Primary and revision case capture in the Michigan arthroplasty registry. *5th International Congress of Arthroplasty Registries*, Manchester, England, May 28-30,

2016.

Hughes, R.E., Chan, M.Y.H., and Hallstrom, B.R. (2016) A Bayesian network model for hip implant outlier detection in post-market surveillance. *2016 BMES/FDA Frontiers in Medical Devices Conference*, College Park, MD, USA, May 23-25, 2016.

Maratt, J.D., Gagnier, J.J., Butler, P.D., Hallstrom, B.R., Urquhart, A.G., and Roberts, K.C. (2016) No difference in dislocation in anterior versus posterior approach total hip arthroplasty. *American Orthopaedic Association*, June 24-27, Seattle, WA, USA, 2016.

Zarling, B.J., Sikora-Klak, J., Bergum, C., and Markel, D.C. (2016) How do pre-operative medications influence outcomes in total joint arthroplasty? *34th Annual Meeting of the Mid-America Orthopaedic Association*, Bonita Springs, FL, USA, April 13-17, 2016.

2017

Hood, B., Singal, B., Zheng, H., Hughes, R., Cowen, M., and Hallstrom, B. (2017) Aspirin for venous thromboembolism prophylaxis after primary total knee arthroplasty: An analysis of 41,537 cases in the Michigan arthroplasty registry. *6th International Congress of Arthroplasty Registries*, San Francisco, CA, USA, May 20-22, 2017.

Hood, B.R., Hallstrom, B.R., Cowen, M., Hughes, R., Zheng, T., and Singal, B. (2017) Equivalence of aspirin for prophylaxis of venous thromboembolism after knee replacement in a state-wide registry. *American Association of Hip and Knee Surgeons 2017 Annual Meeting*, November 2-5, Dallas, TX, 2017.

Hughes, R.E., Batra, A., Pack, B.J., and Hallstrom, B.R. (2017) Translating registry data into clinical practice: Summary of arthroplasty registry reports of revision risk for hips. *6th International Congress of Arthroplasty Registries*, San Francisco, CA, USA, May 20-22, 2017.

Hughes, R.E., Zheng, H., Kabara, J., Mendenhall, S., Pack, B.J., and Hallstrom, B.R. (2017) Variation in bearing surface couples in conventional total hip arthroplasty within Michigan. *6th International Congress of Arthroplasty Registries*, San Francisco, CA, USA, May 20-22, 2017.

Hughes, R.E., Batra, A., Pack, B.J., and Hallstrom, B.R. (2017) Translating registry data into clinical practice: Summary of arthroplasty registry reports of revision risk for hips. *2017 Michigan Orthopaedic Society Annual Scientific Meeting*, Mackinac Island, MI, USA, June 16-18, 2017.

Zheng, H., Hughes, R.E., Kabara, J., Cowen, M.E., and Hallstrom, B.R. (2017) A multi-stage modeling framework to analyze discrete events with applications to venous thromboembolism (VTE) prophylaxis following total knee arthroplasty (TKA) within MARCQI. *6th International Congress of Arthroplasty Registries*, San Francisco, CA, USA, May 20-22, 2017.

2018

Cheek, C., Zheng, H., Hallstrom, B.R., and Hughes, R.E. (2018) Application of a causal discovery algorithm to the analysis of arthroplasty registry data. *7th Congress of Arthroplasty Registries*, Reykjavik, Iceland, June 9-11, 2018.

Hallstrom, B., Hughes, R., Cowen, M., and Zheng, H. (2018) Differences in reason for early revision between THA and TKA in Michigan. *7th Congress of Arthroplasty Registries*, Reykjavik, Iceland, June 9-11, 2018.

Hallstrom, B., Hughes, R., Cowen, M., and Zheng, H. (2018) Males are more likely to be revised than females in the first year after primary TKA in Michigan. *7th Congress of Arthroplasty Registries*, Reykjavik, Iceland, June 9-11, 2018.

Hughes, R.E., Zheng, H., and Hallstrom, B. (2018) Implant-specific revision risks to three years in Michigan. *7th Congress of Arthroplasty Registries*, Reykjavik, Iceland, June 9-11, 2018.

Zheng, H., Hughes, R.E., Hallstrom, B.R., Charpentier, P.M., Srivastava, A.K., Igrisan, R. (2018) A comparative study on propensity score approaches: Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI). *Joint Statistical Meetings (JSM)*, Vancouver, British Columbia, Canada, July 28 – August 2, 2018.

2019

Hallstrom, B.R., Hughes, R.E., Zheng, H., and Igrisan, R. (2019) Signal detection for implants in the Michigan Arthroplasty Registry Collaborative Quality Initiative. *8th Congress of Arthroplasty Registries*, Leiden, Netherlands, June 1-3, 2019.

Hallstrom, B.R., Zheng, H., Igrisan, R., Cowen, M., and Hughes, R.E. (2019) Combining funnel plots and risk adjusted cumulative sum charts in surgeon reporting and decision making. *8th Congress of Arthroplasty Registries*, Leiden, Netherlands, June 1-3, 2019.

Hallstrom, B.R., Zheng, H., Coon, S., and Hughes, R.E. (2019) First report of an increased 5 year revision risk for a novel knee design in statewide registry data. *American Association of Hip and Knee Surgeons Annual Meeting*, Dallas, November 7-10, 2019.

Hughes, R.E, Zheng, H., and Hallstrom, B.R. (2019)

Reducing discharge to extended care facility does not increase readmission in knee and hip arthroplasty patients. *2019 Annual Meeting of the American Academy of Orthopaedic Surgeons*, Las Vegas, NV, March 13-19, 2019.

Knapp, P., Weishuhn, L., Pizzimenti, N., and Markel, D.C. (2019) Assessment of numerous risk factors for manipulation under anesthesia after total knee arthroplasty. *33rd Annual Congress of the International Society for Technology in Arthroplasty*, Toronto, October 2-5, 2019.

Zheng, H., Hughes, R.E., Hallstrom, B.R., and Igrisan, R. (2019) Effects of hospital scale and infection control program on infection reduction following TKA and THA: A simulation study. *8th Congress of Arthroplasty Registries*, Leiden, Netherlands, June 1-3, 2019.

Zheng, H., Hughes, R.E., Hallstrom, B.R., and Igrisan, R. (2019) Risk-adjusted cumulative sum charts (CUSUM) as a quality improvement toolkit to monitor early revisions with Monte-Carlo simulation and application to Michigan arthroplasty registry data. *8th Congress of Arthroplasty Registries*, Leiden, Netherlands, June 1-3, 2019.

2020

Bolz, N.J., Zarling, B.J., and Markel, D.C. (2020) Long-term sustainability of a quality initiative program on transfusion rates in total joint arthroplasty: A follow-up study. *Journal of Arthroplasty*, 35:340-346.

Chubb, H.A., Kim, T., Hallstrom, B.R., and Hughes, R.E. (2020) Applying International Prosthesis Working Group benchmarking guidelines for Hip Prostheses in the State of Michigan. *Virtual 9th International Congress of Arthroplasty Registries*, November 13-16, 2020.

Hallstrom, B., Roberts, K., and Hughes, R. (2020) Reducing Opioid Prescribing with a Registry Quality Improvement Project in the Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI). *Virtual 9th International Congress of Arthroplasty Registries*, November 13-16, 2020.

Hallstrom, B.R., Zheng, H., and Hughes, R.E. (2020) The Importance of Early Implant Registry Surveillance: An example with the iTotal knee in the Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI). *Virtual 9th International Congress of Arthroplasty Registries*, November 13-16, 2020.

Hughes, R.E., Zheng, H., Coon, S., and Hallstrom, B.R. (2020) The 7-year annual report (2019) of the Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI): Enhancements and Highlights. *Virtual 9th International Congress of Arthroplasty Registries*, November 13-16, 2020.

Nelson, J., Zheng, T., Hallstrom, B., Hughes, R., Mont, M., and Masini, M. (2020) Do Short Stems Lead to Higher Fracture Rates and Early Revision Rates in Primary Total Hip Arthroplasty? - A Non-Inferiority Analysis. *Virtual 9th International Congress of Arthroplasty Registries*, November 13-16, 2020.

Zheng, H., Hallstrom, B.R., Hughes, R.E., and Kim, T. (2020) Integrated Quantitative Methodology to Characterize the Improvement of Patient-report Outcome Measures (PROMs): Michigan Arthroplasty Registry. *Virtual 9th International Congress of Arthroplasty Registries*, November 13-16, 2020.

Zheng, H., Hughes, R., Cowen, M., Gumtow, M., Kim, T., Zhu, Q., and Hallstrom, B. (2020) Development of Infection Risk Calculator for Clinical Decision Making Using Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI) Database. *Virtual 9th International Congress of Arthroplasty Registries*, November 13-16, 2020.

Zheng, H. Hallstrom, B.R., Hughes, R.E., Kim, T., and Cowen, M. (2020) Anchor-based improvement of patient-report outcome measures (PROMs) from Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI). *Virtual 9th International Congress of Arthroplasty Registries*, November 13-16, 2020.

2021

Hallstrom, B.R., Zheng, T., Hughes, R.E., and Kim, T. (2021) A method to track improvement in pain and function after hip and knee replacement using Markov transition modeling: Michigan Arthroplasty Registry Collaborative Quality Initiative (MARCQI). *10th International Congress of Arthroplasty Registries. 2nd Virtual Congress*, Copenhagen, Denmark, November 11-13(14), 2021.

Hughes, R.E., Chubb, H., Cornish, E., and Hallstrom, B.R. (2021) Propensity-score method for conducting safety surveillance of the shift from hospitals to ambulatory surgery centers for elective total hip and knee arthroplasty. *10th International Congress of Arthroplasty Registries. 2nd Virtual Congress*, Copenhagen, Denmark, November 11-13(14), 2021.

Hughes, R.E., Kim, T., and Hallstrom, B. (2021) Optimizing presentation of revision risk information to orthopaedic surgeons. *10th International Congress of Arthroplasty Registries. 2nd Virtual Congress*, Copenhagen, Denmark, November 11-13(14), 2021.

Hughes, R.E., Zheng, H., and Hallstrom, B.R. (2021) Biomechanical variables should be included in analyses of arthroplasty registry data. *Virtual 45th Meeting of the American Society of Biomechanics*, August 10-13, 2021.

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Long, L. and Hughes, R.E. (2021) Importance of including BMI, weight, and height in arthroplasty revision data analysis. *Midwest American Society of Biomechanics Meeting*, Cleveland, OH, September 16-17, 2021.

Long, L., Hallstrom, B.R., and Hughes, R.E. (2021) Biomechanical rationale for including body mass and height in analysis of THA revision. *10th International Congress of Arthroplasty Registries. 2nd Virtual Congress*, Copenhagen, Denmark, November 11-13(14), 2021.

Masini, M.A., Nelson, J.T., Zheng, H., Hallstrom, B.R., Hughes, R.E., and Mont, M.A. (2021) Do short stems lead to higher fracture rates and early revision rates in primary hip arthroplasty? *American Association of Hip and Knee Surgeons Annual Meeting*, Dallas, TX, November 11-14, 2021.

Muscatelli, S., Zheng, H., Hughes, R.E., Cowen, M.E., and Hallstrom, B.R. (2021) Non-inferiority of aspirin versus other anticoagulants for venous thromboembolism prophylaxis after total joint arthroplasty. *American Academy of Orthopaedic Surgeons*, San Diego, CA, August 31 – September 3, 2021.

Zheng, H., Hughes, R.E., Kim, T., Zhu, Q., and Hallstrom, B.R. (2021) Semi-parametric stochastic mixed effect model with applications to pain score progression following joint replacement: Michigan Arthroplasty Registry Quality Initiative. *10th International Congress of Arthroplasty Registries. 2nd Virtual Congress*, Copenhagen, Denmark, November 11-13(14), 2021.

2022

Burns, K., Chubb, H., and Hughes, R.E. (2022) Propensity-score optimal matching method that assures statistical independence. *International Society of Arthroplasty Registry Congress*, Dublin, Ireland, September 3-5, 2022.

Hallstrom, B., Zheng, T., and Hughes, R. (2022) Patellar resurfacing and survivorship after TKA in Michigan. *International Society of Arthroplasty Registry Congress*, Dublin, Ireland, September 3-5, 2022.

Hallstrom, B., Zheng, T., and Hughes, R. (2022) Uncemented knee survivorship varies by age and sex in MARCQI. *International Society of Arthroplasty Registry Congress*, Dublin, Ireland, September 3-5, 2022.

Hallstrom, B., Zheng, T.H., Kim, T., and Hughes, R.E. (2022) Early- and long-term revisions in unicompartmental knee arthroplasty (UKA): Ten-year follow-up analysis with MARCQI database. *International Society of Arthroplasty Registry Congress*, Dublin, Ireland, September 3-5, 2022.

Hallstrom, B.R., Chubb, H., Kim, T., and Hughes, R. (2022) The effects of the COVID pandemic on arthroplasty patients and use of outpatient surgical centers. *International Society of Arthroplasty Registry Congress*, Dublin, Ireland, September 3-5, 2022.

Hughes, R.E., Zheng, T.H., and Hallstrom, B.R. (2022) Graphical causal modeling of revision outcome for THA. *International Society of Arthroplasty Registry Congress*, Dublin, Ireland, September 3-5, 2022.

Layson, J.T., Markel, D.C., Hughes, R., Chubb, H., and Frisch, N.B. (2022) MARCQI's Pain-Control Optimization Pathway (POP): Impact of Registry Data and Education on Opioid Utilization. American Academy of Orthopaedic Surgeons Annual Meeting (Knee Society Specialty Day), Chicago, IL, March 22-26, 2022.

Muscatelli, S., McHugh, M., Locke, C., and Dailey, E. (2022) Aspirin is not for everyone: Discharge to non-home facilities after total hip or knee arthroplasty increases risk of venous thromboembolism. *American Association of Hip and Knee Surgeons Annual Meeting 2022*, Grapevine, TX, November 3-6, 2022.

Salka, B., Long, L., Hughes, R.E., and Hallstrom, B.R. (2022) Dashboard for comparing THA and TKA revision rates across multiple international registries. *International Society of Arthroplasty Registry Congress*, Dublin, Ireland, September 3-5, 2022.

Zheng, T., Hughes, R.E., Kim, T., and Hallstrom, B.R. (2022) Surgeon volume and survivorship of UKA: What is high volume? A 10-year follow-up analysis with MARCQI database. *International Society of Arthroplasty Registry Congress*, Dublin, Ireland, September 3-5, 2022.

Wenzlick, T., Kutzner, A., Markel, D., Hughes, R., Chubb, H., and Roberts, K. (2022) A reduction in opioid prescription size after total joint arthroplasty can be safely performed without an increase in complications. *American Academy of Orthopaedic Surgeons Annual Meeting*, Chicago, IL, March 22-26, 2022.

2023

Abbas, M.J., Hallstrom, B.R., Hughes, R.E., Markel, D.C., Zheng, T., Urquhart, A.G., and Charters, M.A. (2023) Impact of Surgeon Volume on UKA Survivorship: A 10-year follow-up analysis with MARCQI database. *American Association of Hip and Knee Surgeons Annual Meeting 2023*, Dallas, TX, November 2, 2023.

Comer, B.J., Foote, J., Markel, D.C. (2023) Hospital-Based

Total Joint Arthroplasty and Impact on Time to Discharge. *Current Concepts in Joint Replacement*, Orlando, FL, December 13-16, 2023.

Comer, B.J., Powell, D.T., Fry, M., Markel, D.C. (2023) Cementless Total Knee Arthroplasty in Patients Over 75: A Single Practice Review Using Statewide Registry Data. *Ascension Providence Hospital Annual Research Day 2023*, Southfiled, MI, April 19, 2023.

Comer, B.J., Powell, D.T. , Fry, M., Markel, D.C. (2023) Cementless Total Knee Arthroplasty in Patients Over 75: A Single Practice Review Using Statewide Registry Data. *Mid-America Orthopaedic Association*, Miramar Beach, FL, April 19-23, 2023.

Foote, J.D., Comer, B., Kesto, W., Knesek, D.A., Frush, T.J., Michaelson, J., Markel, D.C. (2023) Manual vs Robotic Unicompartmental Knee Arthroplasty Outcomes: A Single Center MARCQI-Based Review. *American Association of Hip and Knee Surgeons*, Grapevine, TX, November 2-5, 2023.

Foote, J., Weaver, M., Comer, B., Markel, D. (2023) Ninety-Day Opioid Use Among Total Knee Arthroplasty Patients: A Single Center Study. *Current Concepts in Joint Replacement*, Orlando, FL, December 13-16, 2023.

Hughes, R.E., Zheng, H., and Hallstrom, B.R. (2023) Patient reported outcomes vary by TKA implant design. *12th International Congress of Arthroplasty Registries*, Montreal, Canada, May 13-15, 2023.

Miller, A., Powell, D., Markel, D., Chubb, H., Muscatelli, S., Hughes, R., Hallstrom, B., Frisch, N. (2023) The Differential Effect of COVID on Total Joint Arthroplasty Between Hospital and ASC/HOPD? A MARCQI Analysis. *Ascension Providence Hospital Annual Research Day 2023*, Southfield, MI, April 19, 2023.

Powell, D.T., Frisch, N., Muscatelli, S., Chubb, H., Hughes, R., Hallstrom, B., Markel, D.C. (2023) The Differential Effect of COVID-19 on Total Joint Arthroplasty Between Hospital and ASC/HOPD - A MARCQI Analysis. *Mid-America Orthopaedic Association*, Miramar Beach, FL, April 19-23, 2023.

Seta, J., Dietz, P., Aboona, F., Weaver, M., Bou-Akl, T., Ren, W., Markel, D. (2023) Efficacy of Commercially Available Irrigation Solutions on Removal of Staphylococcus Aureus Infected Porous Titanium Implants- an in-Vitro Study. *The 35^{th} International Congress*, New York City, September 27-30, 2023.

Zheng, H., Hallstrom, B.R., and Hughes, R.E. (2023) Propensity score matching to evaluate the improvement of KOOS-JR with applications to selected devices: MARCQI five year study. *12th International Congress of Arthroplasty Registries*, Montreal, Canada, May 13-15, 2023.

Zheng, T.H., Hughes, R.E., Kim, T., and Hallstrom, B.R. (2023) Surgeon volume and survivorship of UKA: What is high volume? A 10-year follow-up analysis with MARCQI database. *24th EFFORT Congress*, Vienna, Austria, May 24, 2023.

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Adik, K., Adams, N., Srivastava, A., Hughes, R., Zheng, H.T., Hallstrom, B., and Markel, D. (2024) Increasing use of cemented stems is associated with reduced early fracture after total hip arthroplasty: A single statewide arthroplasty registry perspective. *35th International Society for Technology in Arthroplasty*, Nashville, TN, August 28-31, 2024.

Dailey, E., Hughes, R.E., Zheng, T.H., Hallstrom, B.R. (2024) Age affects TKA implant risk of revision in a regional United States registry. *13th International Congress of Arthroplasty Registries*, Hamburg, Germany, June 1-3, 2024.

Foote, J.D., Comer, B., Kesto, W., Knesek, D.A., Frush, T.J., Michaelson, J., Markel, D.C. (2024) Manual vs Robotic Unicompartmental Knee Arthroplasty Outcomes: A Single Center MARCQI-Based Review. *Ascension Providence Hospital Annual Research Day 2024*, Southfield, MI, April 17, 2024.

Foote, J.D., Comer, B.J., Olson, A.W., Markel, D.C. (2024) Outpatient Total Joint Arthroplasty in the Hospital Setting and Impact of Time to Discharge. *Ascension Providence Hospital Annual Research Day 2024*, Southfield, MI, April 17, 2024.

Foote, J.D., Comer, B.J., Olson, A.W., Markel, D.C. (2024) Outpatient Total Hip Arthroplasty in the Hospital Setting and Impact of Time to Discharge. *Mid-America Orthopaedic Association*, Bonita Springs, FL, April 10-14, 2024.

Foote, J., Weaver, M., Comer, B., Markel, D. (2024) Ninety-Day Opioid Use Among Total Knee Arthroplasty Patients: A Single Center Study. *Ascension Providence Hospital Annual Research Day 2024*, Southfield, MI, April 17, 2024.

Foote, J.D., Weaver, M.J., Comer, B.J., Markel, D.C. (2024) Ninety-Day Opioid Use Among Total Knee Arthroplasty Patients: A Single Center Study. *Mid-America Orthopaedic Association*, Bonita Springs, FL, April 10-14, 2024.

Frisch, N.B., Masini, M., Zheng, H., Hughes, R.E., Hallstrom, B.R., and Markel, D. (2024) Early identification of poorly performing implants in Michigan with the example of the Vanguard XP. *2024 Annual Meeting of the American*

Return to Contents

Academy of Orthopaedic Surgeons, San Francisco, CA, February 12-16, 2024.

Hallstsrom, B.R., Zheng, H., Hughes, R.E. (2024) The effect of the adoption of uncemented knees on TKA survivorship in Michigan. *13th International Congress of Arthroplasty Registries*, Hamburg, Germany, June 1-3, 2024.

Hallstrom, B.R., Zheng, H., and Hughes, R.E. (2024) Increasing use of cemented stems is associated with reduced early fracture after total hip arthroplasty in MARCQI. *13th International Congress of Arthroplasty Registries*, Hamburg, Germany, June 1-3, 2024.

Hallstrom, B.R., Zheng, H., Kim, T., Chen, L., and Hughes, R.E. (2024) Survivorship at 5 years of uncemented total knee replacement varies by age and is not superior in younger men. *13th International Congress of Arthroplasty Registries*, Hamburg, Germany, June 1-3, 2024.

Hughes, R, Dailey, E., Zheng, T., and Hallstrom, B. (2024) Age affects implant hazard of revision in every implant in a regional United States registry. *25th EFORT Congress*, Hamburg, Germany, May 22-24, 2024.

Hughes, R.E., Zheng, T.H., Hallstrom, B.R. (2024) Benchmarking THA implants in the United States using ODEP criteria. *25th EFORT Congress*, Hamburg, Germany, May 22-24, 2024.

Lübbeke, A., Pindeo-Villanueva, R., Hannouche, D., Chen, L., Zheng, H., Zhu, Q., Hallstrom, B., and Hughes, R. (2024) Female sex and a higher ASA score increased the 90-day risk of periprosthetic fracture in two distinct registries. *13th International Congress of Arthroplasty Registries*, Hamburg, Germany, June 1-3, 2024.

Puri, S., Uppal, H., Weaver, M., Melone, G., Hughes, R., Dailey, E., and Markel, D. (2024) Patients having primary total joint arthroplasty at ASC's have lower readmission and ER visits than those at HOPDs or hospitals. *35th International Society for Technology in Arthroplasty*, Nashville, TN, August 28-31, 2024.

Zheng, H., Mesko, W., Hughes, R.E., and Hallstrom, B.R. (2024) Wide variation in Patient Reported Outcome Measures (PROMS) improvement at the surgeon level. *13th International Congress of Arthroplasty Registries*, Hamburg, Germany, June 1-3, 2024.

Ziedas, A., Miller, A., Biddle, E., Laker, M., Michaelson, J., Frush, T., Markel, D.C. (2024) Manual vs Robotic Patellofemoral Arthroplasty Outcomes: A Single Center MARCQI-Based Study. International Society for Technology in Arthroplasty Annual Meeting 2024. *35th International Society for Technology in Arthroplasty*, Nashville, TN, August 28-31, 2024.

Ziedas, A., Puri, S., Kesto, W., Michaelson, J., Knesek, D., Frush, T., and Markel, D. (2024) Cementless vs Cemented Robotic-Assisted Total Knee Arthroplasty Outcomes: A Single Center MARCQI-Based Study. *35th International Society for Technology in Arthroplasty*, Nashville, TN, August 28-31, 2024.

Ziedas, A., Puri, S., Kesto, W., Michaelson, J., Knesek, D., Frush, T., and Markel, D. (2024) Manual vs Robotic Patellofemoral Arthroplasty Outcomes: A Single Center MARCQI-Based Study. *Michigan Orthopaedic Society Annual Scientific Meeting*, Mackinac Island, MI, June 7-9, 2024.

Ziedas, A., Puri, S., Kesto, W., Michaelson, J., Knesek, D., Laker, M., Frush, T., and Markel, D. (2024) Cemented Robotic-Assisted vs Manual Total Knee Arthroplasty Outcomes: A Single Center MARCQI-Based Study. *American Association of Hip and Knee Surgeons Annual Meeting*, Grapevine, TX, November 7-10, 2024.

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Appendix C

References

Cowen, M.E., Zheng, H., Hughes, R.E., Franklin, P.D., Masini, M.A., and Hallstrom, B.R. (2023) How much perioperative pain and dysfunction underlie the HOOS JR and KOOS JR? *Clinical Orthopaedics and Related Research*, 481:1800-1810.

Cox, D.R. (1972) Regression models and life-tables (with discussion). *Journal of the Royal Statistical Society. Series B (Methodological)*, 34(2):187-220.

Cox, D.R. (1975) Partial likelihood. *Biometrika*, 62(2):269-276.

Kalbfleisch, J.D. and Prentice, R.L. (2002) *The statistical analysis of failure time data, 2nd Edition*. Hoboken: John Wiley and Sons.

Kandala, N.-B., Connock, M., Pulikottil-Jacob, R., Sutcliffe, P., Crowther, M.J., Grove, A., Mistry, H., and Clarke, A. (2015) Setting benchmark revision rates for total hip replacement: analysis of registry evidence. *British Medical Journal*, 350:h756.

Kaplan, E.L. and Meier, P. (1958) Nonparametric estimation from incomplete observations. *Journal of the American Statistical Association*, 53(282):457-481.

Lin, D.Y., Wei, L.J., and Ying, Z. (1993) Checking the Cox model with cumulative sums of martingale-based residuals. *Biometrika*, 80:557-572.

Mesko, J.W., Zheng, H., Hughes, R.E., and Hallstrom, B.R. (2024) Individualized physician reports in a statewide registry: A pathway to improved outcomes. *Journal of Bone and Joint Surgery*, 106(6):1945-2052, e45-e46.

Montgomery, D.C. (2009) *Introduction to statistical quality control*. New York: Wiley.

Rich, J.T., Neely, J.G., Paniello, R.C., Voelker, C.C., Nussenbaum, B., and Wang, E.W. (2010) A practical guide to understanding Kaplan-Meier curves. *Otolaryngology Head Neck Surgery*, 143(3):331-336.

Sheppard, S.A. and Terveen, L. (2011) Quality is a Verb: The operationalization of data quality in a citizen science community. WikiSym-11, October 3-5, 2011, Mountain View, California, Copyright 2011, ACM, 978-1-4503-0909-7/11/10.

Tague, N.R. (2004) *Seven Basic Quality Tools. The Quality Toolbox*. Milwaukee, Wisconsin: American Society for Quality.

Verweij, P.J.M. and van Houwelingen, H.C. (1994) Penalized likelihood in Cox regression. *Statistics in Medicine*, 13:2427-2436.

Zhao, J. (2005) Mixed-effects Cox models of alcohol dependence in extended families. *BMC Genetics*, 6(Suppl 1):S127

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