

Australian Orthopaedic Association National Joint Replacement Registry

2023 SUPPLEMENTARY REPORT

Partial Hip Arthroplasty



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Australian
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Registry

Primary Partial Hip Replacement

2023 Supplementary Report

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The Registry greatly appreciates the participation of all joint replacement patients throughout Australia. Their contribution allows ongoing improvements in arthroplasty outcomes to be achieved.

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**Australian Orthopaedic Association
National Joint Replacement Registry**

**Primary Partial Hip Replacement
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Primary Partial Hip Replacement Introduction

This supplementary report provides detailed information on partial hip replacement. The Partial Hip Arthroplasty Report is one of 16 supplementary reports to complete the AOANJRR Annual Report for 2023.

CLASSES OF PARTIAL HIP REPLACEMENT

The Registry identifies four classes of primary partial hip replacement. These are defined by the type of prostheses used.

Partial resurfacing involves the use of one or more button prostheses to replace part of the natural articulating surface on one or both sides of the hip joint.

Unipolar monoblock involves the use of a femoral stem prosthesis with a fixed large head that replaces the natural femoral head.

Unipolar modular involves the use of a femoral stem and exchangeable large head prosthesis that replaces the natural femoral head.

Bipolar involves the use of a femoral stem and standard head prosthesis that articulates with a non-fixed component replacing the natural femoral head.

USE OF PARTIAL HIP REPLACEMENT

The most common class of primary partial hip replacement is unipolar modular. This accounts for 45.7% of all partial hip procedures, followed by bipolar (30.0%) and unipolar monoblock (24.3%) (Table SHP1).

Table SHP1 Primary Partial Hip Replacement by Class

Hip Class	Number	Percent
Unipolar Monoblock	29257	24.3
Unipolar Modular	55028	45.7
Bipolar	36148	30.0
TOTAL	120433	100.0

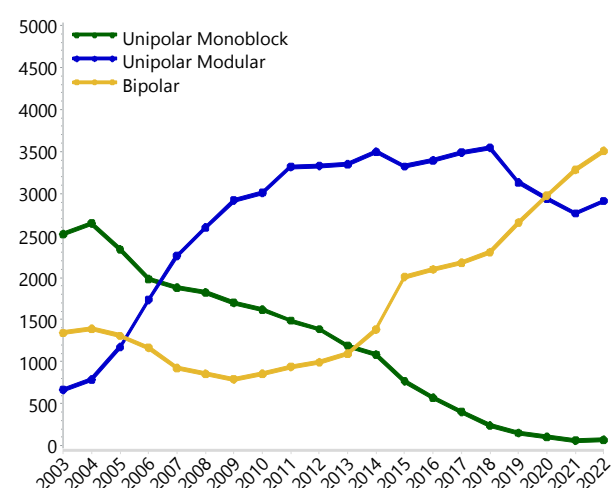
Note: Excludes 15 partial resurfacing procedures

Detailed information on partial resurfacing hip replacement is available in the supplementary report 'Prosthesis Types with No or Minimal Use' on the AOANJRR website: <https://aoanjrr.sahmri.com/annual-reports-2023>

In 2022, there is a slight increase in the use of bipolar. The number of unipolar modular partial hip replacements slightly increased, while unipolar monoblock continues to be rarely used (Figure SHP1).

Detailed demographic information on primary partial hip replacement is available in the supplementary report 'Demographics of Hip, Knee and Shoulder Arthroplasty' on the AOANJRR website: <https://aoanjrr.sahmri.com/annual-reports-2023>

Figure SHP1 Primary Partial Hip Replacement by Class



Fractured neck of femur is the principal diagnosis for the three main classes of primary partial hip replacement: unipolar monoblock (97.7%), unipolar modular (96.0%), and bipolar (93.2%).

A comparative analysis of partial hip replacement and total conventional hip replacement for fractured neck of femur is presented in the primary total hip replacement chapter of the Annual Report.

The outcome of primary partial hip replacement varies depending on the class. Outcomes are restricted to 10 years because of the high mortality in this group. The prosthesis class variation in mortality is almost certainly due to patient selection (Table SHP2).

At 10 years, bipolar has the lowest cumulative percent revision for fractured neck of femur, followed by unipolar modular and unipolar monoblock (Table SHP3 and Figure SHP2). The difference in outcome between classes is most apparent in patients aged <75 years (Table SHP4 and Figure SHP3).

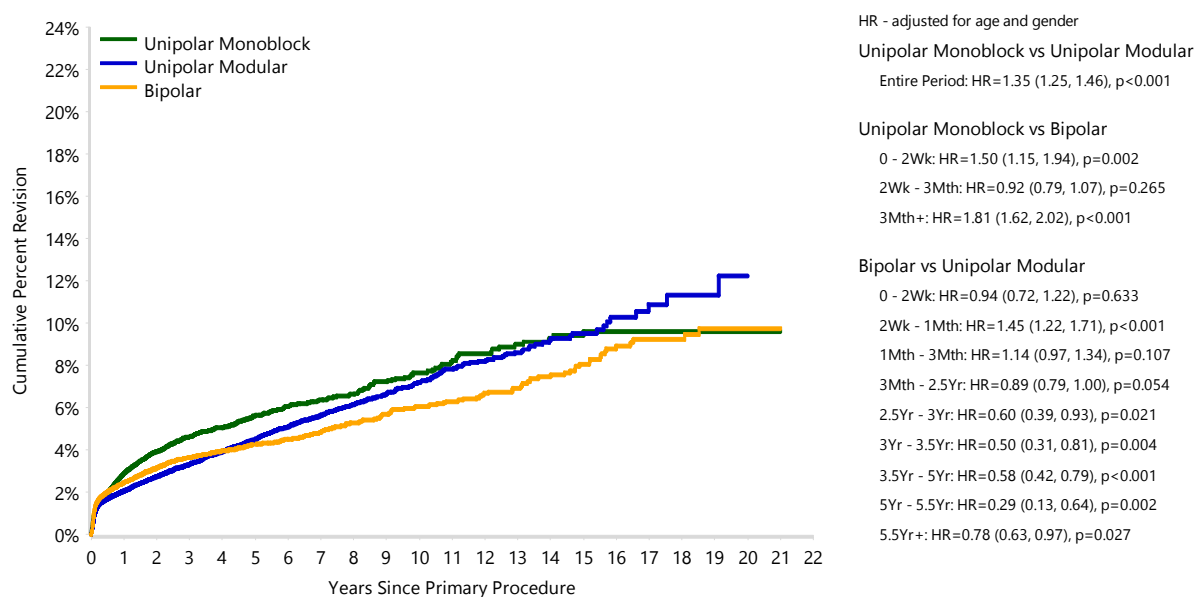
Table SHP2 Cumulative Percent Mortality of Primary Partial Hip Replacement by Class (Primary Diagnosis Fractured NOF)

Hip Class	N Deceased	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Unipolar Monoblock	25701	27845	37.1 (36.5, 37.6)	50.2 (49.6, 50.8)	61.0 (60.4, 61.6)	77.0 (76.5, 77.5)	86.4 (86.0, 86.8)	93.5 (93.2, 93.8)
Unipolar Modular	37151	50963	26.7 (26.3, 27.0)	37.9 (37.4, 38.3)	47.9 (47.4, 48.3)	64.0 (63.5, 64.4)	75.2 (74.8, 75.6)	85.2 (84.8, 85.5)
Bipolar	20655	32741	23.9 (23.4, 24.4)	34.5 (33.9, 35.0)	43.6 (43.0, 44.2)	58.8 (58.1, 59.4)	69.9 (69.3, 70.5)	80.9 (80.3, 81.5)
TOTAL	83507	111549						

Note: Restricted to first procedure performed per patient

Table SHP3 Cumulative Percent Revision of Primary Partial Hip Replacement by Class (Primary Diagnosis Fractured NOF)

Hip Class	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Unipolar Monoblock	1087	28571	2.9 (2.7, 3.1)	3.9 (3.7, 4.2)	4.6 (4.3, 4.9)	5.6 (5.3, 6.0)	6.4 (5.9, 6.8)	7.7 (7.1, 8.3)
Unipolar Modular	1816	52816	2.1 (1.9, 2.2)	2.7 (2.6, 2.9)	3.3 (3.1, 3.5)	4.5 (4.3, 4.7)	5.6 (5.3, 6.0)	7.2 (6.8, 7.7)
Bipolar	1135	33706	2.5 (2.3, 2.6)	3.1 (2.9, 3.4)	3.6 (3.4, 3.9)	4.3 (4.0, 4.5)	4.8 (4.5, 5.2)	6.0 (5.6, 6.5)
TOTAL	4038	115093						

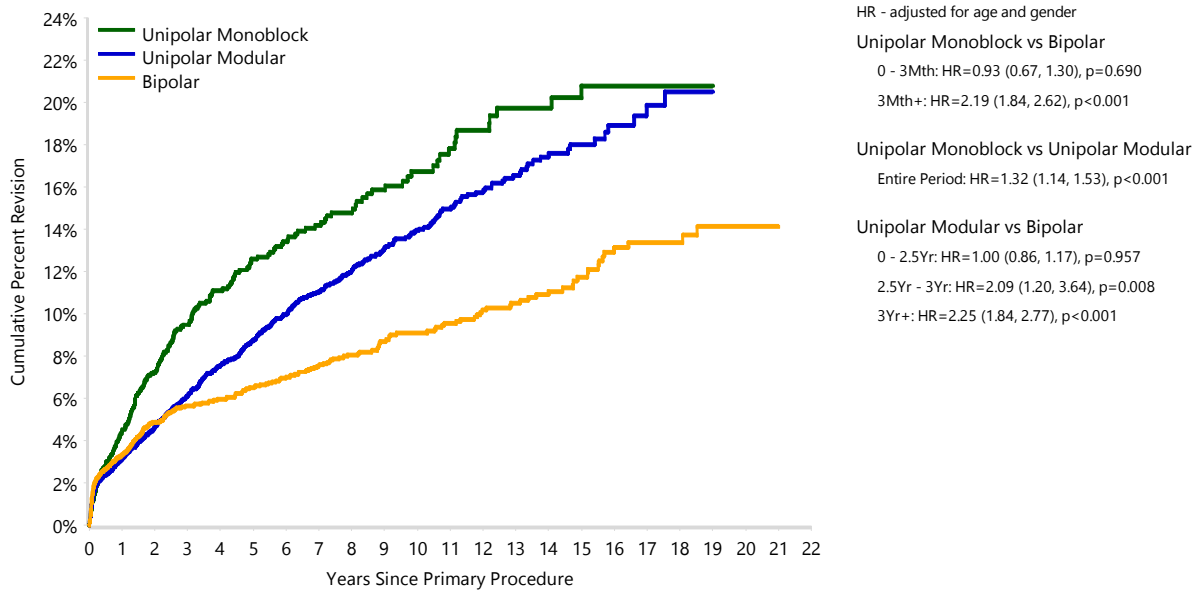
Figure SHP2 Cumulative Percent Revision of Primary Partial Hip Replacement by Class (Primary Diagnosis Fractured NOF)

Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Unipolar Monoblock	28571	17434	13602	10539	6063	3445	1515
Unipolar Modular	52816	35890	28656	22653	13630	7933	3456
Bipolar	33706	22553	17373	13461	8095	4891	2413

Table SHP4 Cumulative Percent Revision of Primary Partial Hip Replacement in Patients Aged <75 Years by Class (Primary Diagnosis Fractured NOF)

Hip Class	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Unipolar Monoblock	244	2484	4.4 (3.6, 5.4)	7.2 (6.2, 8.5)	9.5 (8.2, 11.0)	12.6 (11.0, 14.4)	14.2 (12.4, 16.2)	16.7 (14.6, 19.1)
Unipolar Modular	656	7763	3.1 (2.7, 3.5)	4.6 (4.1, 5.2)	6.1 (5.5, 6.8)	8.7 (8.0, 9.6)	11.1 (10.2, 12.0)	13.9 (12.8, 15.2)
Bipolar	383	6183	3.3 (2.9, 3.8)	4.9 (4.3, 5.5)	5.6 (5.0, 6.3)	6.5 (5.8, 7.3)	7.5 (6.7, 8.4)	9.1 (8.1, 10.2)
TOTAL	1283	16430						

Figure SHP3 Cumulative Percent Revision of Primary Partial Hip Replacement in Patients Aged <75 Years by Class (Primary Diagnosis Fractured NOF)



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Unipolar Monoblock	2484	1693	1403	1180	820	593	349
Unipolar Modular	7763	5895	5027	4279	3115	2197	1300
Bipolar	6183	4535	3722	3144	2306	1675	1068

UNIPOLAR MONOBLOCK

DEMOGRAPHICS

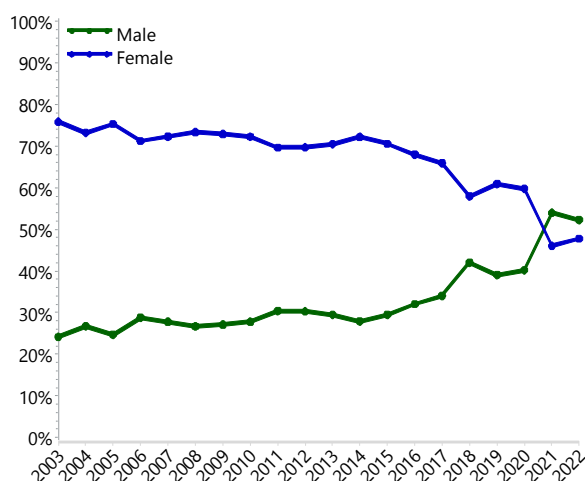
The Registry has recorded 29,257 unipolar monoblock procedures. This is an additional 68 procedures compared to the previous report.

The use of unipolar monoblock hip replacement in Australia continues to decline. The number of procedures reported in 2022 has increased by 6.3% compared to 2021 and decreased by 97.3% compared to 2003.

Fractured neck of femur is the principal diagnosis for primary unipolar monoblock hip replacement (97.7%).

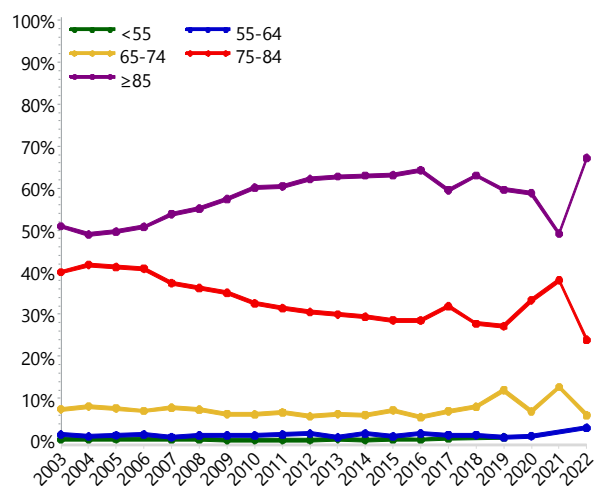
The majority of patients are female (72.6%) and aged ≥ 75 years (91.2%).

Figure SHP4 Primary Unipolar Monoblock Hip Replacement by Gender



The proportion of patients aged ≥ 85 years has increased from 51.0% in 2003 to 67.2% in 2022. The mean age of patients is 84.5 years (Table SHP5, Figure SHP4, and Figure SHP5).

Figure SHP5 Primary Unipolar Monoblock Hip Replacement by Age



The Exeter Trauma Stem (ETS) is the only unipolar monoblock prosthesis used in 2022. The use of the ETS increased by 8.1% compared to 2021 (Table SHP6).

Table SHP5 Age and Gender of Primary Unipolar Monoblock Hip Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	8002	27.4%	32	107	84	83.5	7.8
Female	21255	72.6%	16	108	86	85.0	7.2
TOTAL	29257	100.0%	16	108	85	84.5	7.4

Table SHP6 Most Used Prostheses in Primary Unipolar Monoblock Hip Replacement

2003		2019		2020		2021		2022	
N	Model	N	Model	N	Model	N	Model	N	Model
1988	Austin-Moore Type	124	ETS	92	ETS	62	ETS	67	ETS
526	Thompson Type	25	Austin-Moore Type	9	Austin-Moore Type	1	Austin-Moore Type		
		2	Thompson Type	1	Thompson Type				
Most Used									
2514	(2) 100.0%	151	(3) 100.0%	102	(3) 100.0%	63	(2) 100.0%	67	(1) 100.0%

OUTCOME FOR FRACTURED NECK OF FEMUR

The cumulative percent revision at 10 years for unipolar monoblock replacement undertaken for fractured neck of femur is 7.7% (Table SHP7 and Figure SHP6).

The main reason for revision is loosening (42.1%), followed by fracture (20.0%), and infection (11.0%) (Table SHP8). Of the revisions of unipolar monoblock hip replacements, the majority are revised to a total hip replacement (60.3%). Revision to another unipolar hip replacement (femoral component only) has occurred in 18.1% of revisions (Table SHP9).

Age is a risk factor for revision. The rate of revision decreases with increasing age (Table SHP10 and Figure SHP7).

There is a marginal difference in the outcome between males and females (Table SHP11 and Figure SHP8).

Fixation is a risk factor for revision. In the first 2.5 years, cementless fixation has a higher rate of revision compared to cemented fixation. After this time, the rate of revision for cementless fixation is not different to cemented fixation (Table SHP12 and Figure SHP9).

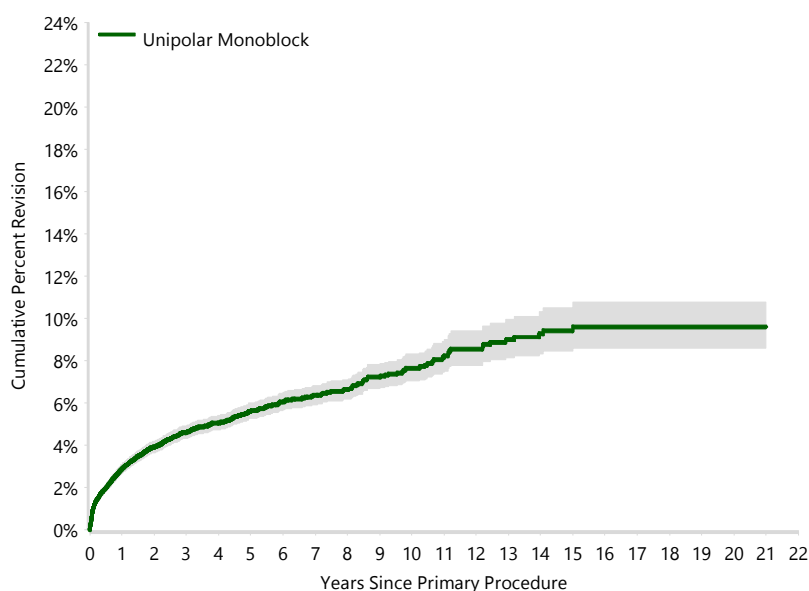
The Thompson Type prosthesis, though designed to be cemented, has been inserted without cement in 591 procedures. This has the highest rate of revision (Table SHP12 and Figure SHP10).

Compared to the (cemented) ETS, the Thompson Type cemented has a higher rate of revision after 2.5 years and the Austin-Moore Type cementless has a higher rate of revision for the entire period. There is no difference for the Austin-Moore Type compared to the ETS when both are used with cement (Figure SHP10).

Table SHP7 Cumulative Percent Revision of Primary Unipolar Monoblock Hip Replacement (Primary Diagnosis Fractured NOF)

Hip Type	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Unipolar Monoblock	1087	28571	2.9 (2.7, 3.1)	3.9 (3.7, 4.2)	4.6 (4.3, 4.9)	5.6 (5.3, 6.0)	6.4 (5.9, 6.8)	7.7 (7.1, 8.3)
TOTAL	1087	28571						

Figure SHP6 Cumulative Percent Revision of Primary Unipolar Monoblock Hip Replacement (Primary Diagnosis Fractured NOF)



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Unipolar Monoblock	28571	17434	13602	10539	6063	3445	1515

Table SHP8 Primary Unipolar Monoblock Hip Replacement by Reason for Revision (Primary Diagnosis Fractured NOF)

Reason for Revision	Number	Percent
Loosening	458	42.1
Fracture	217	20.0
Infection	120	11.0
Pain	81	7.5
Chondrolysis/Acetab. Erosion	52	4.8
Malposition	12	1.1
Lysis	10	0.9
Other	137	12.6
TOTAL	1087	100.0

Table SHP9 Primary Unipolar Monoblock Hip Replacement by Type of Revision (Primary Diagnosis Fractured NOF)

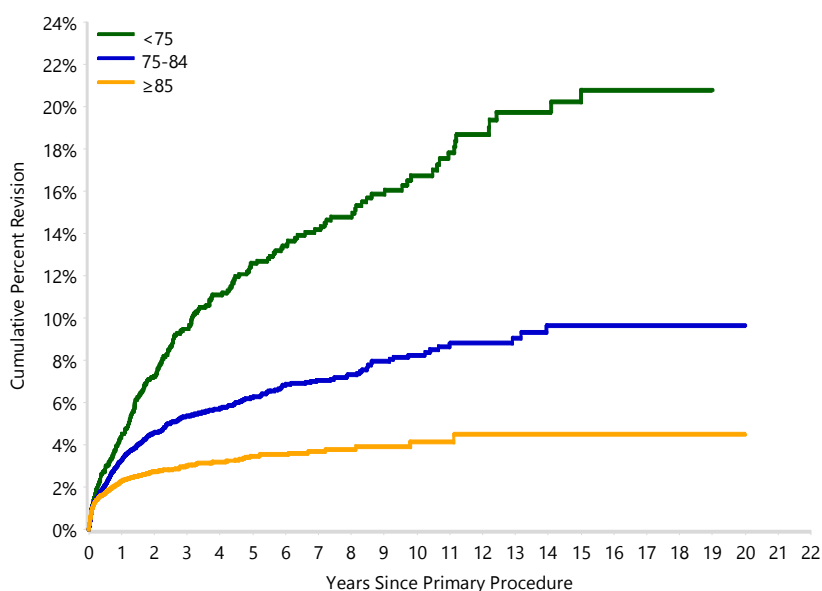
Type of Revision	Number	Percent
THR (Femoral/Acetabular)	656	60.3
Femoral Component	197	18.1
Bipolar Head and Femoral	101	9.3
Removal of Prostheses	57	5.2
Cement Spacer	49	4.5
Minor Components	18	1.7
Reinsertion of Components	6	0.6
Incomplete	1	0.1
Bipolar Only	1	0.1
Insert Only	1	0.1
TOTAL	1087	100.0

Note: Femoral heads are usually replaced when the acetabular component and/or femoral stem is revised

Table SHP10 Cumulative Percent Revision of Primary Unipolar Monoblock Hip Replacement by Age (Primary Diagnosis Fractured NOF)

Age	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
<75	244	2484	4.4 (3.6, 5.4)	7.2 (6.2, 8.5)	9.5 (8.2, 11.0)	12.6 (11.0, 14.4)	14.2 (12.4, 16.2)	16.7 (14.6, 19.1)
75-84	487	10622	3.3 (2.9, 3.7)	4.6 (4.1, 5.1)	5.4 (4.9, 5.9)	6.2 (5.7, 6.9)	7.1 (6.4, 7.8)	8.3 (7.4, 9.2)
≥85	356	15465	2.3 (2.0, 2.6)	2.7 (2.4, 3.1)	3.0 (2.7, 3.3)	3.5 (3.1, 3.9)	3.7 (3.3, 4.2)	4.1 (3.5, 4.9)
TOTAL	1087	28571						

Figure SHP7 Cumulative Percent Revision of Primary Unipolar Monoblock Hip Replacement by Age (Primary Diagnosis Fractured NOF)



HR - adjusted for gender

<75 vs ≥85

0 - 1Mth: HR=1.09 (0.70, 1.72), p=0.693
 1Mth - 3Mth: HR=1.68 (1.05, 2.69), p=0.032
 3Mth - 1Yr: HR=3.10 (2.22, 4.32), p<0.001
 1Yr - 1.5Yr: HR=6.51 (4.19, 10.12), p<0.001
 1.5Yr - 2Yr: HR=4.34 (2.44, 7.70), p<0.001
 2Yr+: HR=7.25 (5.46, 9.63), p<0.001

<75 vs 75-84

0 - 1Yr: HR=1.28 (1.01, 1.61), p=0.038
 1Yr - 1.5Yr: HR=2.75 (1.79, 4.22), p<0.001
 1.5Yr+: HR=2.79 (2.21, 3.52), p<0.001

75-84 vs ≥85

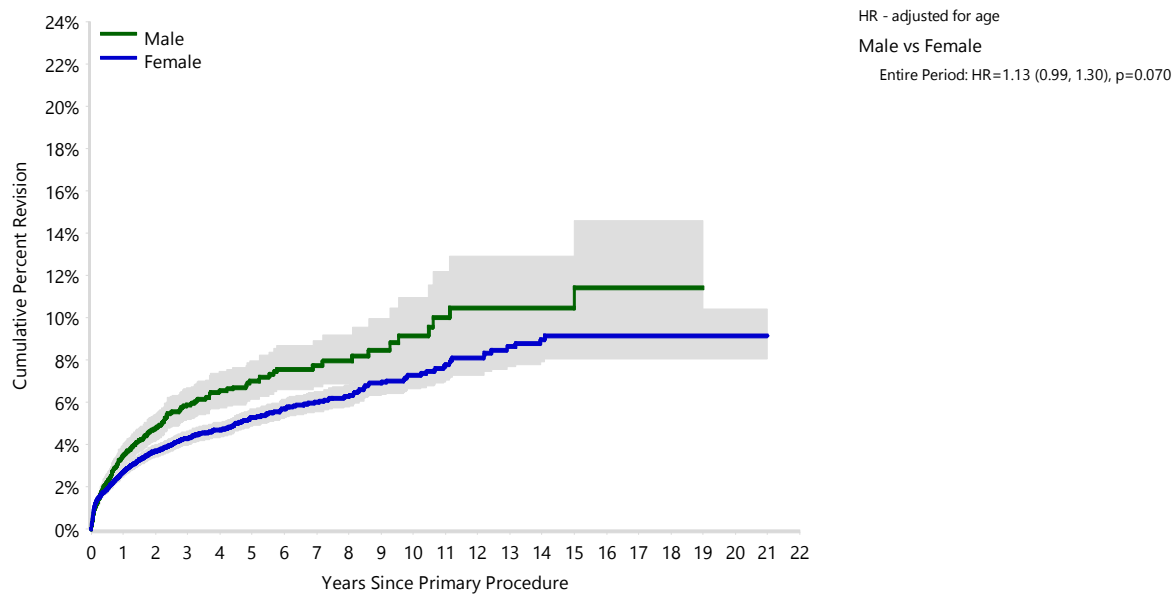
0 - 3Mth: HR=1.06 (0.85, 1.32), p=0.603
 3Mth+: HR=2.37 (1.97, 2.85), p<0.001

Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
<75	2484	1693	1403	1180	820	593	349
75-84	10622	6942	5600	4480	2822	1694	771
≥85	15465	8799	6599	4879	2421	1158	395

Table SHP11 Cumulative Percent Revision of Primary Unipolar Monoblock Hip Replacement by Gender (Primary Diagnosis Fractured NOF)

Gender	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Male	285	7816	3.5 (3.0, 4.0)	4.8 (4.2, 5.5)	5.9 (5.2, 6.7)	7.0 (6.1, 8.0)	7.8 (6.7, 8.9)	9.1 (7.6, 10.9)
Female	802	20755	2.7 (2.5, 3.0)	3.7 (3.4, 4.0)	4.3 (4.0, 4.6)	5.3 (4.9, 5.7)	6.0 (5.5, 6.5)	7.3 (6.6, 8.0)
TOTAL	1087	28571						

Figure SHP8 Cumulative Percent Revision of Primary Unipolar Monoblock Hip Replacement by Gender (Primary Diagnosis Fractured NOF)



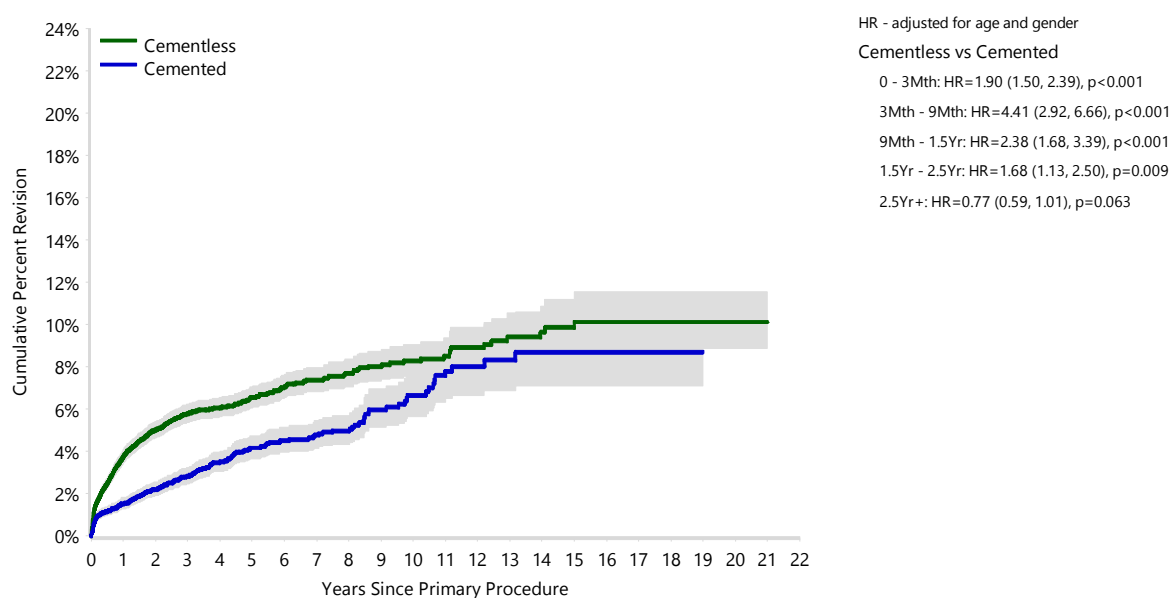
Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Male	7816	3711	2573	1830	931	504	236
Female	20755	13723	11029	8709	5132	2941	1279

Table SHP12 Cumulative Percent Revision of Primary Unipolar Monoblock Hip Replacement by Femoral Fixation and Prosthesis Type (Primary Diagnosis Fractured NOF)

Femoral Fixation	Prosthesis Type	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Cementless		790	17706	3.7 (3.4, 4.1)	5.0 (4.6, 5.4)	5.8 (5.4, 6.2)	6.5 (6.1, 7.0)	7.4 (6.8, 8.0)	8.3 (7.5, 9.1)
	Austin-Moore	740	17115	3.6 (3.3, 4.0)	4.9 (4.6, 5.3)	5.6 (5.2, 6.1)	6.3 (5.8, 6.8)	7.2 (6.6, 7.8)	7.9 (7.2, 8.7)
	Thompson	50	591	6.4 (4.5, 9.0)	7.3 (5.2, 10.1)	9.0 (6.6, 12.3)	12.2 (9.0, 16.5)	12.9 (9.5, 17.4)	
Cemented		297	10861	1.5 (1.3, 1.8)	2.2 (1.9, 2.6)	2.8 (2.5, 3.2)	4.2 (3.7, 4.7)	4.8 (4.2, 5.4)	6.7 (5.7, 7.8)
	Austin-Moore	22	973	1.6 (0.9, 2.9)	2.5 (1.5, 4.1)	3.3 (2.1, 5.3)	4.6 (2.9, 7.3)	4.6 (2.9, 7.3)	
	ETS	81	3703	1.5 (1.1, 2.0)	1.9 (1.4, 2.4)	2.3 (1.8, 2.9)	2.9 (2.3, 3.8)	3.7 (2.8, 4.8)	4.8 (3.5, 6.6)
	Thompson	194	6185	1.5 (1.2, 1.9)	2.4 (2.0, 2.8)	3.1 (2.6, 3.7)	4.8 (4.1, 5.7)	5.4 (4.6, 6.4)	7.9 (6.5, 9.7)
TOTAL		1087	28567						

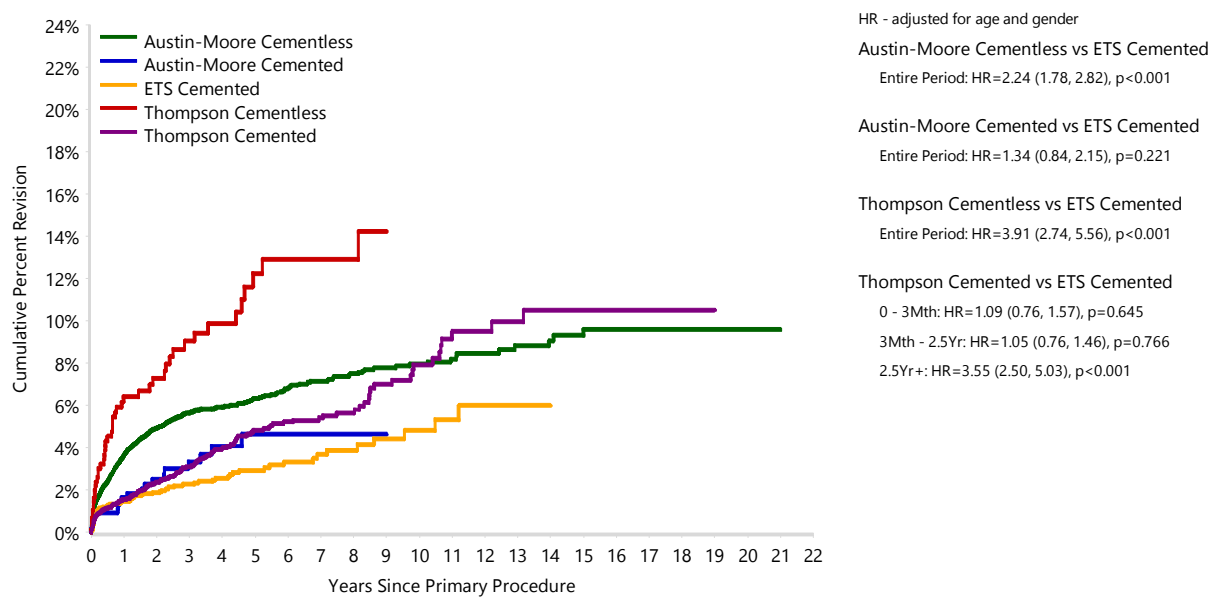
Note: Four ETS procedures that were cementless have been excluded

Figure SHP9 Cumulative Percent Revision of Primary Unipolar Monoblock Hip Replacement by Femoral Fixation (Primary Diagnosis Fractured NOF)



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Cementless	17706	10486	8070	6227	3547	2025	918
Cemented	10861	6947	5531	4311	2516	1420	597

Figure SHP10 Cumulative Percent Revision of Primary Unipolar Monoblock Hip Replacement by Prosthesis Type and Femoral Fixation (Primary Diagnosis Fractured NOF)



Number at Risk		0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Austin-Moore	Cementless	17115	10113	7774	5994	3411	1938	879
	Cemented	973	518	400	301	156	78	28
ETS	Cemented	3703	2382	1907	1511	888	493	213
Thompson	Cementless	591	373	296	233	136	87	39
	Cemented	6185	4047	3224	2499	1472	849	356

UNIPOLAR MODULAR

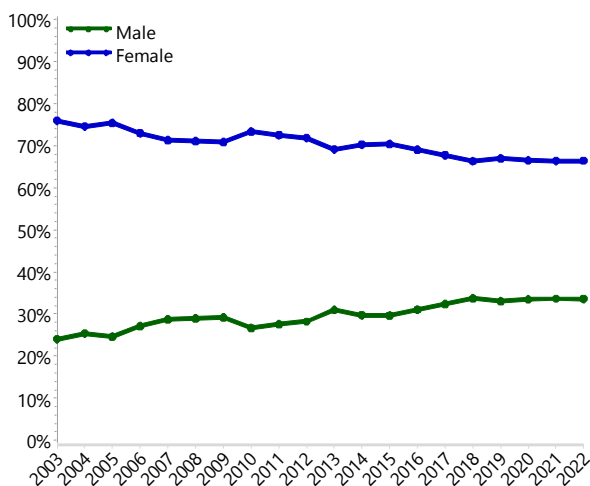
DEMOGRAPHICS

There have been 55,028 unipolar modular procedures reported to the Registry. This is an additional 2,969 procedures compared to the previous report.

In 2022, the number of unipolar modular procedures increased by 148 procedures (5.4%) compared to 2021 and increased by 337.2% since 2003.

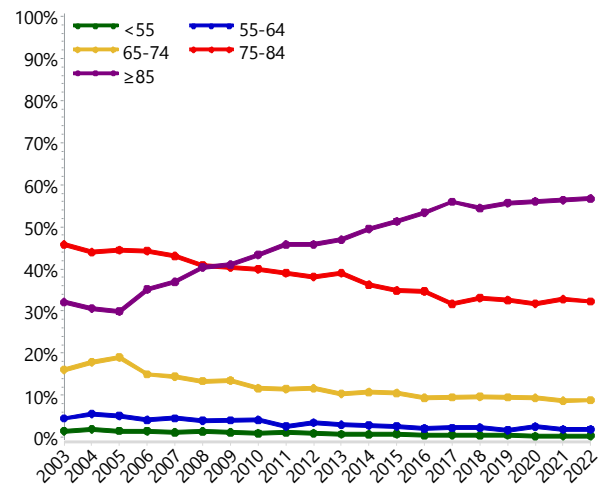
Fractured neck of femur is the principal diagnosis for primary unipolar modular hip replacement (96.0%).

Figure SHP11 Primary Unipolar Modular Hip Replacement by Gender



The majority of patients are female (69.8%) and aged ≥ 75 years (84.9%). The proportion of patients aged ≥ 85 years has increased from 32.1% in 2003 to 56.7% in 2022. The mean age of patients is 82.9 years (Table SHP13, Figure SHP11 and Figure SHP12).

Figure SHP12 Primary Unipolar Modular Hip Replacement by Age



Overall, there have been 248 unipolar modular head and stem combinations recorded by the Registry. The 10 most frequently used unipolar modular head prostheses and femoral stems are listed in Table SHP14 and Table SHP15.

In 2022, 13 different unipolar modular head prostheses were used. The Unitrax head is the most frequently used (70.2%). The 10 most used unipolar modular head prostheses account for 99.9% of all primary unipolar modular hip procedures (Table SHP14).

There were 26 different stem prostheses used in 2022. The most frequently used stem is the Exeter V40 (66.3%). The 10 most used femoral stems account for 98.8% of all primary unipolar modular hip procedures (Table SHP15).

The cumulative percent revision of unipolar modular head/stem prosthesis combinations with more than 100 procedures is detailed in Table SHP16.

Table SHP13 Age and Gender of Primary Unipolar Modular Hip Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	16623	30.2%	5	106	83	81.9	9.4
Female	38405	69.8%	18	108	84	83.3	8.5
TOTAL	55028	100.0%	5	108	84	82.9	8.8

Table SHP14 10 Most Used Unipolar Head Prostheses in Primary Unipolar Modular Hip Replacement

2003		2019		2020		2021		2022	
N	Model	N	Model	N	Model	N	Model	N	Model
193	Unitrax	1931	Unitrax	1879	Unitrax	1836	Unitrax	2045	Unitrax
142	Unipolar Head (Zimmer)	457	Unipolar Head (S&N)	460	Unipolar Head (S&N)	437	Unipolar Head (S&N)	406	Unipolar Head (S&N)
127	Unipolar Head (S&N)	338	Cathcart	349	Cathcart	322	Cathcart	313	Cathcart
75	VerSys	133	BioBall	92	VerSys	101	VerSys	94	VerSys
64	Unipolar Head (Mathys)	106	VerSys	76	Unipolar Head (Mathys)	37	Unipolar Head (Mathys)	25	Unipolar Head (Mathys)
46	Elite	54	Unipolar Head (Signature)	51	Unipolar Head (Signature)	16	Unipolar Head (Signature)	14	Unipolar Head (Signature)
16	Ultima	47	Unipolar Head (Mathys)	16	Unipolar Head (Corin)	6	Femoral Head (Stryker)	6	Femoral Head (Stryker)
1	Metasul	46	Unipolar Head (Corin)	8	Femoral Head (Stryker)	4	Articul/Eze	3	Articul/Eze
1	Optimom	10	Femoral Head (Stryker)	3	Unipolar Head (Lima)	2	Femoral Head (S&N)	2	Femoral Head (S&N)
1	Unipolar Head (Sulzer)	3	Articul/Eze	2	Femoral Head (S&N)	1	Trinity	1	Articul/Eze Zir
10 Most Used									
666	(10) 100.0%	3125	(10) 99.8%	2936	(10) 99.9%	2762	(10) 99.9%	2909	(10) 99.9%
Remainder									
0	(0) 0%	6	(6) 0.2%	2	(2) 0.1%	2	(2) 0.1%	3	(3) 0.1%
TOTAL									
666	(10) 100.0%	3131	(16) 100.0%	2938	(12) 100.0%	2764	(12) 100.0%	2912	(13) 100.0%

Table SHP15 10 Most Used Femoral Stem Prostheses in Primary Unipolar Modular Hip Replacement

2003		2019		2020		2021		2022	
N	Model	N	Model	N	Model	N	Model	N	Model
180	Exeter V40	1864	Exeter V40	1798	Exeter V40	1750	Exeter V40	1931	Exeter V40
111	Alloclassic	368	CPCS	395	CPCS	371	CPCS	356	CPCS
91	CPT	298	C-Stem AMT	324	C-Stem AMT	297	C-Stem AMT	275	C-Stem AMT
70	Spectron EF	161	Absolut	88	CPT	98	CPT	109	Short Exeter V40
49	Fullfix	100	CPT	81	Short Exeter V40	80	Short Exeter V40	90	CPT
38	SL-Plus	67	Short Exeter V40	70	twinSys (ctd)	37	twinSys (ctd)	42	CORAIL
33	Elite Plus	63	Spectron EF	46	Spectron EF	35	Spectron EF	28	Polarstem
18	Basis	43	Taper Fit	28	Evolve	26	CORAIL	23	twinSys (ctd)
15	CCA	41	CORAIL	25	CORAIL	24	Polarstem	13	Spectron EF
15	Thompson Modular Stem	40	twinSys (ctd)	20	Absolut	14	Evolve	11	Evolve
10 Most Used									
620	(10) 93.1%	3045	(10) 97.3%	2875	(10) 97.9%	2732	(10) 98.8%	2878	(10) 98.8%
Remainder									
46	(13) 6.9%	86	(19) 2.7%	63	(16) 2.1%	32	(12) 1.2%	34	(16) 1.2%
TOTAL									
666	(23) 100.0%	3131	(29) 100.0%	2938	(26) 100.0%	2764	(22) 100.0%	2912	(26) 100.0%

Table SHP16 Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement by Prosthesis Combination

Unipolar Head	Femoral Component	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
BioBall	Absolut	12	555	2.2 (1.2, 3.9)	2.5 (1.4, 4.3)	2.5 (1.4, 4.3)	2.5 (1.4, 4.3)		
Cathcart	C-Stem AMT	48	2317	1.7 (1.2, 2.4)	2.0 (1.5, 2.8)	2.4 (1.7, 3.3)	3.8 (2.6, 5.7)	4.3 (2.8, 6.6)	
	CORAIL	96	1612	3.1 (2.3, 4.1)	4.3 (3.3, 5.6)	5.5 (4.4, 7.0)	6.8 (5.4, 8.5)	9.4 (7.5, 11.7)	11.6 (9.1, 14.8)
Endo II	Taperloc	7	103	5.1 (2.2, 11.8)	5.1 (2.2, 11.8)	5.1 (2.2, 11.8)			
Metasul	Alloclassic	18	345	2.5 (1.3, 4.9)	2.9 (1.5, 5.5)	3.7 (2.1, 6.7)	4.3 (2.4, 7.5)	7.4 (4.4, 12.2)	9.1 (5.2, 15.7)
	CPT	4	215	1.6 (0.5, 4.9)	1.6 (0.5, 4.9)	2.5 (0.9, 6.6)	2.5 (0.9, 6.6)		
Pharo	Pharo	7	144	3.1 (1.2, 8.0)	5.0 (2.3, 10.9)	6.3 (3.0, 12.9)	6.3 (3.0, 12.9)		
U2	E2	3	232	0.0 (0.0, 0.0)	0.7 (0.1, 4.9)	1.5 (0.4, 6.0)	2.5 (0.8, 7.7)	2.5 (0.8, 7.7)	
Ultima	Thompson Modular Stem	1	133	0.8 (0.1, 5.5)	0.8 (0.1, 5.5)	0.8 (0.1, 5.5)	0.8 (0.1, 5.5)	0.8 (0.1, 5.5)	
Unipolar Head (Corin)	Metafix	23	485	2.2 (1.1, 4.1)	3.1 (1.8, 5.5)	3.5 (2.0, 6.1)	6.2 (3.8, 10.0)	7.6 (4.7, 11.9)	
	Taper Fit	23	414	2.5 (1.3, 4.7)	3.5 (2.0, 6.1)	5.6 (3.5, 8.9)	6.9 (4.3, 10.9)	7.8 (4.9, 12.3)	10.3 (6.4, 16.5)
	Tri-Fit	10	288	1.5 (0.6, 4.0)	2.1 (0.9, 5.0)	2.6 (1.2, 5.9)	2.6 (1.2, 5.9)	4.7 (2.2, 10.0)	6.5 (3.0, 13.5)
Unipolar Head (JRI)	Furlong LOL	11	132	6.4 (3.1, 13.0)	9.7 (5.3, 17.4)	9.7 (5.3, 17.4)	11.1 (6.3, 19.4)		
Unipolar Head (Mathys)	CCA	10	357	1.0 (0.3, 3.0)	2.1 (1.0, 4.7)	2.6 (1.2, 5.3)	2.6 (1.2, 5.3)	3.5 (1.7, 7.4)	3.5 (1.7, 7.4)
	Fullfix	9	226	1.5 (0.5, 4.7)	2.8 (1.2, 6.5)	2.8 (1.2, 6.5)	2.8 (1.2, 6.5)	6.2 (3.0, 12.6)	6.2 (3.0, 12.6)
	twinSys (ctd)	6	241	3.0 (1.3, 6.6)	3.0 (1.3, 6.6)				
Unipolar Head (Plus)	SL-Plus	8	193	2.2 (0.8, 5.8)	2.9 (1.2, 6.9)	3.6 (1.6, 8.0)	4.6 (2.2, 9.7)	5.9 (2.9, 11.9)	5.9 (2.9, 11.9)
Unipolar Head (S&N)	Anthology	6	105	4.4 (1.7, 11.3)	4.4 (1.7, 11.3)	4.4 (1.7, 11.3)			
	Basis	33	578	2.0 (1.1, 3.7)	2.0 (1.1, 3.7)	3.4 (2.0, 5.6)	7.6 (5.2, 11.0)	9.5 (6.7, 13.5)	9.5 (6.7, 13.5)
	CPCS	190	7071	1.9 (1.6, 2.3)	2.3 (2.0, 2.7)	2.7 (2.3, 3.2)	3.8 (3.2, 4.4)	4.4 (3.7, 5.2)	5.4 (4.5, 6.6)
	Platform	6	110	4.1 (1.5, 10.5)	4.1 (1.5, 10.5)	4.1 (1.5, 10.5)	6.0 (2.4, 14.5)		
	Polarstem	7	172	1.4 (0.4, 5.8)	2.6 (0.8, 8.1)	6.0 (2.4, 14.6)			
	SL-Plus	54	1124	2.4 (1.6, 3.5)	3.3 (2.3, 4.6)	4.5 (3.3, 6.1)	4.9 (3.6, 6.6)	6.0 (4.4, 8.1)	10.8 (7.4, 15.6)
	Spectron EF	125	3139	1.6 (1.2, 2.1)	2.5 (2.0, 3.2)	3.0 (2.3, 3.7)	4.0 (3.3, 5.0)	5.4 (4.4, 6.6)	7.6 (6.2, 9.5)
Unipolar Head (Signature)	Absolut	4	109	2.1 (0.5, 8.3)	3.6 (1.2, 11.0)				
	E2	1	106	1.0 (0.1, 6.6)	1.0 (0.1, 6.6)	1.0 (0.1, 6.6)			
	Evolve	7	175	2.6 (1.0, 6.9)	4.9 (2.2, 11.1)	6.3 (2.9, 13.4)			
Unipolar Head (Zimmer)	Alloclassic	69	1085	3.2 (2.2, 4.5)	4.1 (3.0, 5.6)	4.5 (3.4, 6.1)	6.0 (4.6, 7.9)	8.4 (6.5, 10.8)	9.2 (7.0, 11.9)
	CPT	12	173	1.9 (0.6, 5.8)	3.3 (1.4, 7.7)	4.1 (1.8, 8.8)	5.9 (3.0, 11.6)	7.2 (3.7, 13.6)	10.6 (5.7, 19.3)
Unitrax	Accolade I	10	130	1.7 (0.4, 6.7)	5.7 (2.6, 12.3)	6.8 (3.3, 13.7)	6.8 (3.3, 13.7)		
	Exeter V40	804	25296	2.0 (1.9, 2.2)	2.7 (2.4, 2.9)	3.2 (3.0, 3.5)	4.4 (4.1, 4.8)	5.5 (5.0, 5.9)	7.1 (6.4, 7.8)
	Omnifit	7	256	2.7 (1.2, 5.8)	3.2 (1.5, 6.6)	3.2 (1.5, 6.6)	3.2 (1.5, 6.6)	3.2 (1.5, 6.6)	
	Short Exeter V40	10	474	1.9 (0.9, 3.7)	1.9 (0.9, 3.7)	2.5 (1.2, 5.1)			
VerSys	CPT	184	4921	2.0 (1.6, 2.4)	2.9 (2.4, 3.5)	3.4 (2.9, 4.1)	4.6 (3.9, 5.5)	5.8 (4.9, 6.8)	6.9 (5.8, 8.2)
	VerSys	6	182	3.5 (1.5, 8.4)	3.5 (1.5, 8.4)	3.5 (1.5, 8.4)			
Other (213)		103	1830	3.6 (2.8, 4.7)	4.8 (3.8, 6.1)	5.4 (4.4, 6.8)	6.9 (5.6, 8.5)	8.5 (6.8, 10.5)	10.5 (8.3, 13.3)
TOTAL		1934	55028						

Note: Only combinations with over 100 procedures have been listed

OUTCOME FOR FRACTURED NECK OF FEMUR

The cumulative percent revision at 10 years for unipolar modular hip replacement, when undertaken for fractured neck of femur, is 7.2% (Table SHP17 and Figure SHP13).

The Registry has recorded 1,816 revisions of primary unipolar modular hip replacement with a primary diagnosis of fractured neck of femur.

The main reasons for revision are infection (22.4%), fracture (17.3%), chondrolysis/acetabular erosion (16.0%), loosening (10.6%), and pain (9.9%) (Table SHP18).

Most revisions are acetabular only (41.1%), followed by total hip replacement (femoral/acetabular) (18.0%) (Table SHP19).

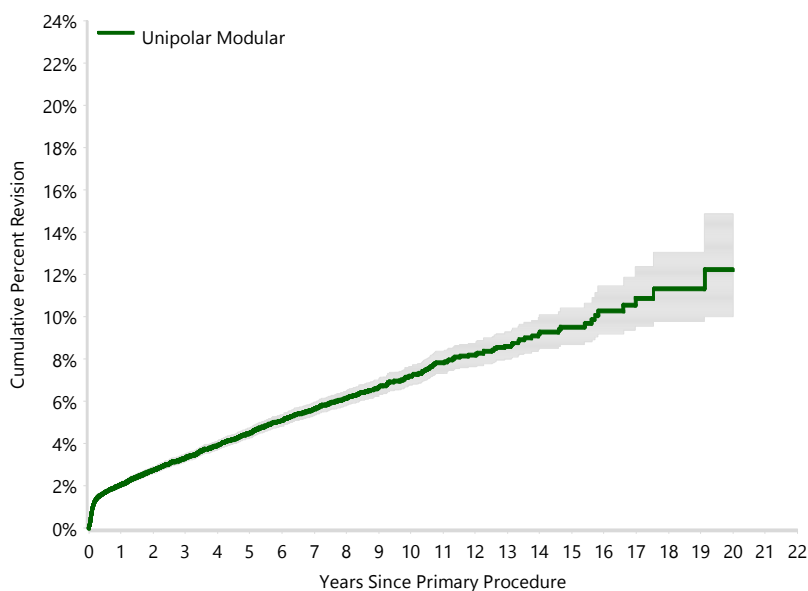
Age, gender, and femoral stem fixation are risk factors for revision. The rate of revision decreases with increasing age (Table SHP20 and Figure SHP14). Males have a higher rate of revision in the first 1.5 years (Table SHP21 and Figure SHP15).

Cementless fixation has a higher rate of revision compared to cemented fixation (Table SHP22 and Figure SHP16). The cumulative incidence for loosening, fracture and, chondrolysis/acetabular erosion is higher for cementless compared to cemented fixation (Figure SHP17).

Table SHP17 Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement (Primary Diagnosis Fractured NOF)

Hip Type	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Unipolar Modular	1816	52816	2.1 (1.9, 2.2)	2.7 (2.6, 2.9)	3.3 (3.1, 3.5)	4.5 (4.3, 4.7)	5.6 (5.3, 6.0)	7.2 (6.8, 7.7)
TOTAL	1816	52816						

Figure SHP13 Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement (Primary Diagnosis Fractured NOF)



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Unipolar Modular	52816	35890	28656	22653	13630	7933	3456

Table SHP18 Primary Unipolar Modular Hip Replacement by Reason for Revision (Primary Diagnosis Fractured NOF)

Reason for Revision	Number	Percent
Infection	407	22.4
Fracture	314	17.3
Chondrolysis/Acetab. Erosion	290	16.0
Loosening	193	10.6
Pain	179	9.9
Lysis	23	1.3
Malposition	4	0.2
Other	406	22.4
TOTAL	1816	100.0

Table SHP19 Primary Unipolar Modular Hip Replacement by Type of Revision (Primary Diagnosis Fractured NOF)

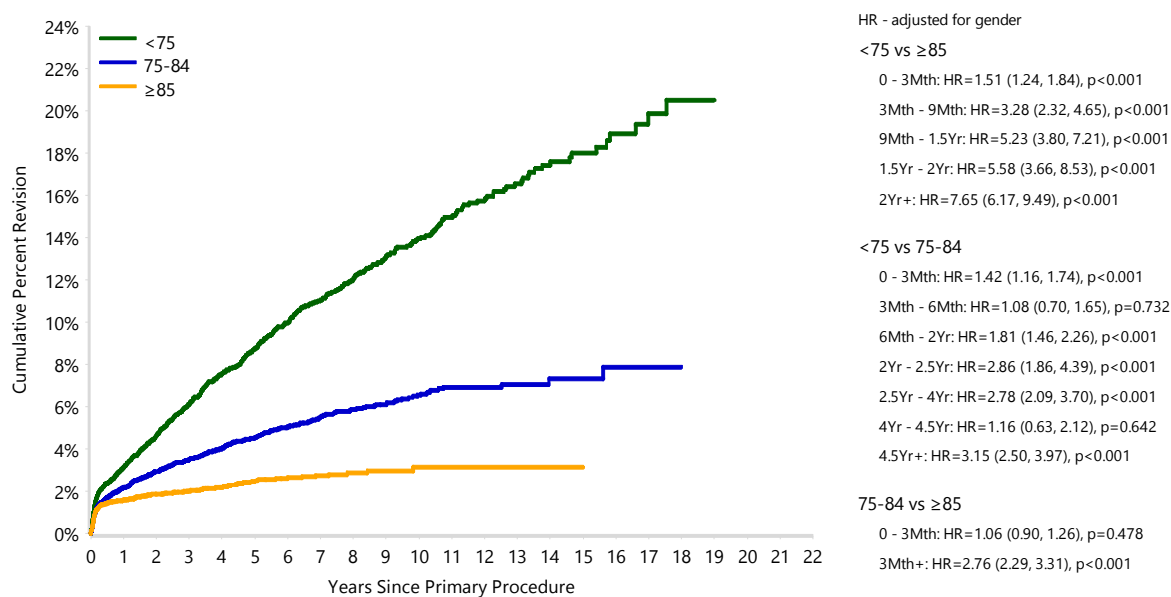
Type of Revision	Number	Percent
Acetabular Component	746	41.1
THR (Femoral/Acetabular)	326	18.0
Head Only	264	14.5
Femoral Component	200	11.0
Bipolar Head and Femoral	84	4.6
Cement Spacer	62	3.4
Removal of Prostheses	52	2.9
Minor Components	51	2.8
Bipolar Only	22	1.2
Reinsertion of Components	6	0.3
Head/Insert	3	0.2
TOTAL	1816	100.0

Note: Femoral heads are usually replaced when the acetabular component and/or femoral stem is revised

Table SHP20 Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement by Age (Primary Diagnosis Fractured NOF)

Age	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
<75	656	7763	3.1 (2.7, 3.5)	4.6 (4.1, 5.2)	6.1 (5.5, 6.8)	8.7 (8.0, 9.6)	11.1 (10.2, 12.0)	13.9 (12.8, 15.2)
75-84	717	19518	2.2 (2.0, 2.4)	2.9 (2.7, 3.2)	3.5 (3.2, 3.8)	4.5 (4.2, 4.9)	5.5 (5.1, 6.0)	6.5 (6.0, 7.2)
≥85	443	25535	1.6 (1.4, 1.8)	1.9 (1.7, 2.1)	2.0 (1.8, 2.2)	2.5 (2.2, 2.7)	2.7 (2.4, 3.1)	3.1 (2.6, 3.7)
TOTAL	1816	52816						

Figure SHP14 Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement by Age (Primary Diagnosis Fractured NOF)

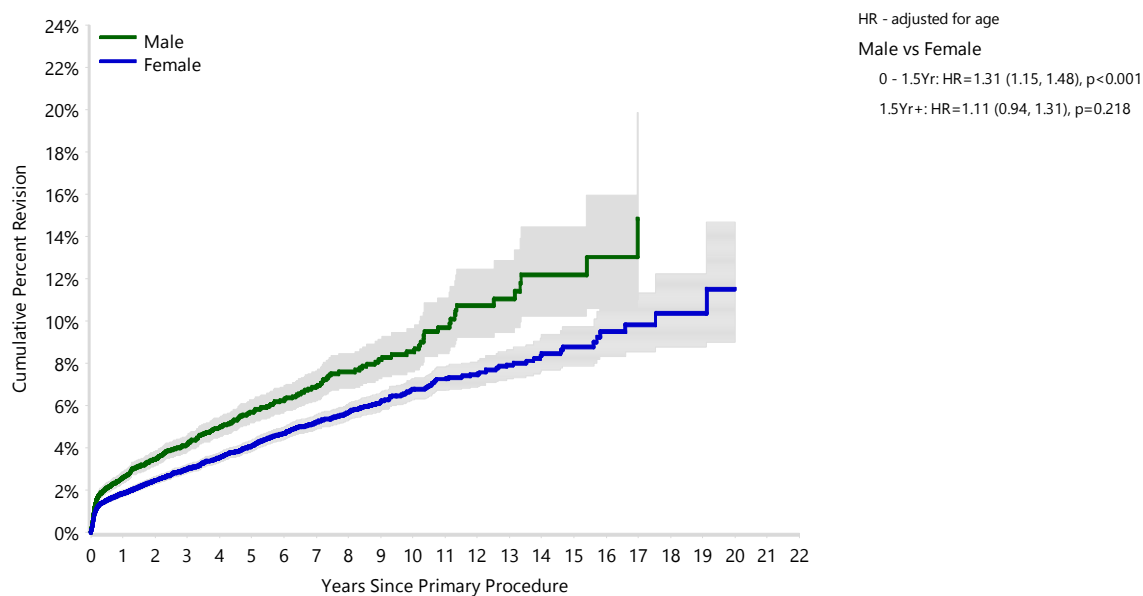


Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
<75	7763	5895	5027	4279	3115	2197	1300
75-84	19518	14246	11791	9720	6277	3832	1637
≥85	25535	15749	11838	8654	4238	1904	519

Table SHP21 Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement by Gender (Primary Diagnosis Fractured NOF)

Gender	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Male	582	15939	2.6 (2.3, 2.9)	3.5 (3.1, 3.8)	4.2 (3.8, 4.6)	5.7 (5.2, 6.3)	6.9 (6.2, 7.7)	8.5 (7.6, 9.6)
Female	1234	36877	1.8 (1.7, 2.0)	2.5 (2.3, 2.7)	3.0 (2.8, 3.2)	4.1 (3.8, 4.4)	5.2 (4.9, 5.6)	6.8 (6.3, 7.3)
TOTAL	1816	52816						

Figure SHP15 Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement by Gender (Primary Diagnosis Fractured NOF)

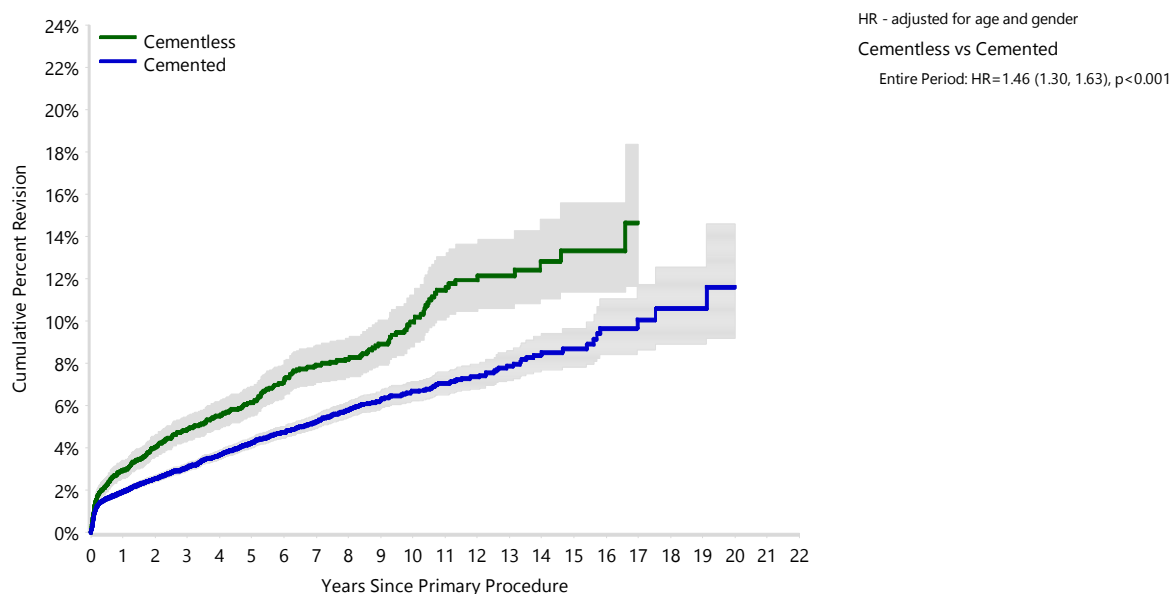


Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Male	15939	9310	6919	5133	2775	1507	617
Female	36877	26580	21737	17520	10855	6426	2839

Table SHP22 Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement by Femoral Fixation (Primary Diagnosis Fractured NOF)

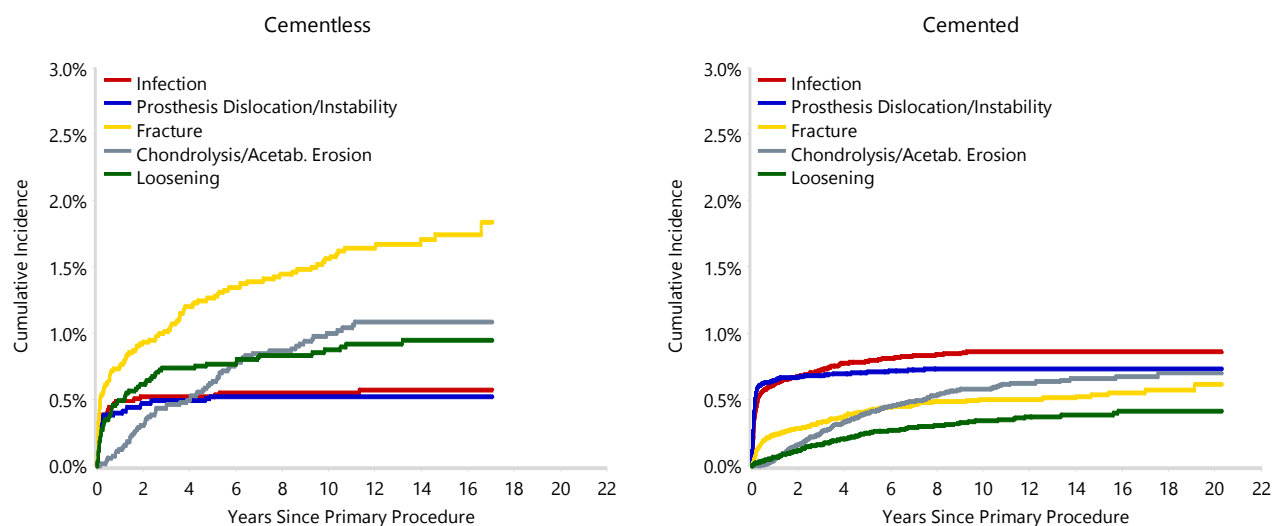
Femoral Fixation	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Cementless	370	6571	2.9 (2.5, 3.4)	4.0 (3.5, 4.6)	4.9 (4.3, 5.5)	6.2 (5.5, 6.9)	7.9 (7.1, 8.9)	9.9 (8.8, 11.2)
Cemented	1446	46245	1.9 (1.8, 2.1)	2.5 (2.4, 2.7)	3.1 (2.9, 3.3)	4.2 (4.0, 4.5)	5.2 (4.9, 5.6)	6.7 (6.2, 7.2)
TOTAL	1816	52816						

Figure SHP16 Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement by Femoral Fixation (Primary Diagnosis Fractured NOF)



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Cementless	6571	4826	4074	3415	2320	1502	715
Cemented	46245	31064	24582	19238	11310	6431	2741

Figure SHP17 Cumulative Incidence Revision Diagnosis of Primary Unipolar Modular Hip Replacement by Femoral Fixation (Primary Diagnosis Fractured NOF)



BIPOLAR

DEMOGRAPHICS

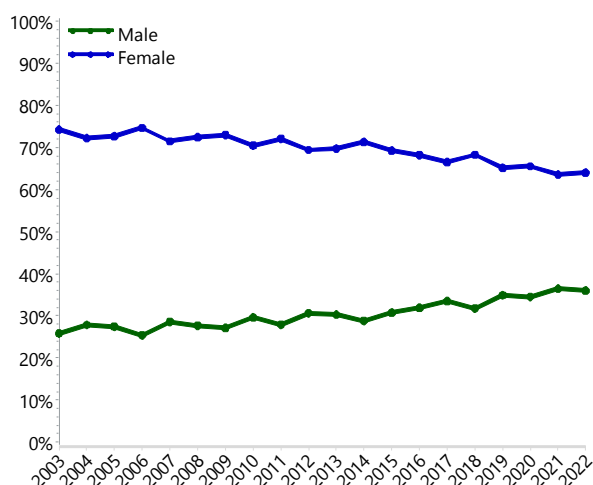
There have been 36,148 bipolar hip replacement procedures reported to the Registry. This is an additional 3,587 procedures compared to the previous report.

Since 2010, there has been an increase in the number of bipolar procedures undertaken each year, with 6.9% more procedures in 2022 compared to 2021. The total number of bipolar procedures has increased by 161.5% since 2003.

Fractured neck of femur is the principal diagnosis for bipolar hip replacement (93.2%).

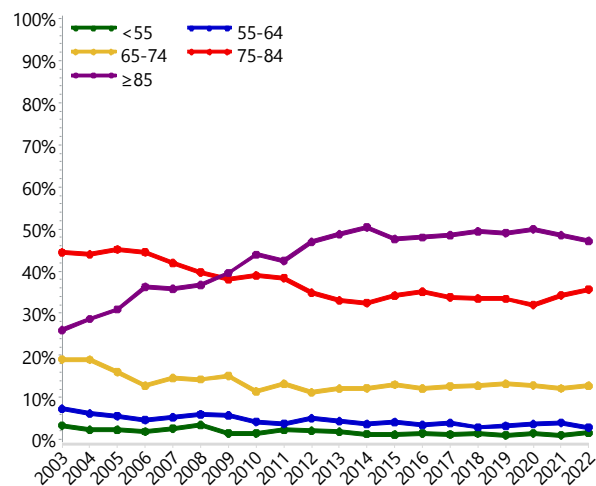
The majority of patients are female (68.6%) and aged ≥ 75 years (80.1%). The proportion of patients aged ≥ 85 years has increased from 26.0% in 2003 to 47.1% in 2022.

Figure SHP18 Primary Bipolar Hip Replacement by Gender



The mean age of patients is 81.5 years (Table SHP23, Figure SHP18, and Figure SHP19).

Figure SHP19 Primary Bipolar Hip Replacement by Age



Overall, there have been 313 bipolar head and stem combinations recorded by the Registry. In 2022, there were 9 different bipolar heads and 42 different femoral stem prostheses used.

In 2022, the UHR remains the most frequently used bipolar head (45.7%) (Table SHP24). The Exeter V40 is the most frequently used femoral stem (41.9%). The 10 most used femoral stems account for 93.8% of all bipolar hip procedures (Table SHP25).

The cumulative percent revision of bipolar head/stem prosthesis combinations with >100 procedures is detailed in Table SHP26.

Table SHP23 Age and Gender of Primary Bipolar Hip Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	11357	31.4%	9	105	82	80.6	10.7
Female	24791	68.6%	9	107	83	81.9	9.5
TOTAL	36148	100.0%	9	107	83	81.5	9.9

Table SHP24 10 Most Used Bipolar Head Prostheses in Primary Bipolar Hip Replacement

2003		2019		2020		2021		2022	
N	Model	N	Model	N	Model	N	Model	N	Model
760	UHR	1205	UHR	1242	UHR	1437	UHR	1602	UHR
140	Hastings	663	Multipolar Bipolar	833	Multipolar Bipolar	839	Multipolar Bipolar	818	Multipolar Bipolar
115	Convene	386	Tandem	406	Tandem	383	Tandem	402	Tandem
91	Bipolar Head (Zimmer)	282	Self-Centering	245	Self-Centering	316	Self-Centering	364	Self-Centering
87	Self-Centering	68	Bipolar Head (Medacta)	108	BioBall	180	BioBall	141	BioBall
59	Multipolar Bipolar	20	BioBall	104	Bipolar Head (Medacta)	90	Bipolar Head (Medacta)	128	Bipolar Head (Medacta)
39	Bipolar Head (Mathys)	16	Bipolar Head (Mathys)	18	Bipolar Head (Lima)	22	Bipolar Head (Mathys)	25	Bipolar Head (Mathys)
19	Bipolar Head (Lima)	9	Bipolar Head (Lima)	12	Bipolar Head (Mathys)	8	Bipolar Head (Lima)	20	Bipolar Head (Lima)
19	Ringloc	5	Bipolar Head (Implantcast)	8	Bipolar Head (Implantcast)	7	Bipolar Head (Implantcast)	7	Bipolar Head (Implantcast)
5	UHL								
10 Most Used									
1334	(10) 99.5%	2654	(9) 100.0%	2976	(9) 100.0%	3282	(9) 100.0%	3507	(9) 100.0%
Remainder									
7	(2) 0.5%	0	(0) 0%	0	(0) 0%	0	(0) 0%	0	(0) 0%
TOTAL									
1341	(12) 100.0%	2654	(9) 100.0%	2976	(9) 100.0%	3282	(9) 100.0%	3507	(9) 100.0%

Table SHP25 10 Most Used Femoral Stem Prostheses in Primary Bipolar Hip Replacement

2003		2019		2020		2021		2022	
N	Model	N	Model	N	Model	N	Model	N	Model
630	Exeter V40	1116	Exeter V40	1137	Exeter V40	1347	Exeter V40	1469	Exeter V40
94	Elite Plus	613	CPT	772	CPT	775	CPT	746	CPT
75	Alloclassic	357	CPCS	374	CPCS	353	CPCS	365	CPCS
65	CPCS	177	C-Stem AMT	153	C-Stem AMT	202	C-Stem AMT	209	C-Stem AMT
61	C-Stem	100	CORAIL	83	CORAIL	106	CORAIL	141	CORAIL
59	Omnifit	56	Quadra-C	70	Taper Fit	91	Absolut	99	Quadra-C
33	VerSys	36	Accolade II	61	Quadra-C	73	Taper Fit	95	Short Exeter V40
26	ABGII	29	Short Exeter V40	42	Short Exeter V40	72	Quadra-C	81	Taper Fit
25	CCA	16	MS 30	37	Accolade II	50	Short Exeter V40	48	Absolut
25	Spectron EF	14	Absolut	29	Absolut	28	MS 30	36	MS 30
10 Most Used									
1093	(10) 81.5%	2514	(10) 94.7%	2758	(10) 92.7%	3097	(10) 94.4%	3289	(10) 93.8%
Remainder									
248	(46) 18.5%	140	(29) 5.3%	218	(28) 7.3%	185	(32) 5.6%	218	(32) 6.2%
TOTAL									
1341	(56) 100.0%	2654	(39) 100.0%	2976	(38) 100.0%	3282	(42) 100.0%	3507	(42) 100.0%

Table SHP26 Cumulative Percent Revision of Primary Bipolar Hip Replacement by Prosthesis Combination

Bipolar Head	Femoral Component	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
BioBall	Absolut	3	174	1.3 (0.3, 5.2)					
	Taper Fit	5	228	3.0 (1.2, 7.3)					
Bipolar Head (Lima)	H-Max	7	178	2.5 (0.9, 6.5)	4.2 (1.9, 9.2)	4.2 (1.9, 9.2)			
Bipolar Head (Medacta)	Quadra-C	14	639	2.3 (1.3, 4.0)	2.5 (1.5, 4.4)	2.5 (1.5, 4.4)	2.5 (1.5, 4.4)		
	X-Acta	3	157	2.5 (0.8, 7.6)	2.5 (0.8, 7.6)				
Bipolar Head (Zimmer)	Alloclassic*	19	358	0.9 (0.3, 2.8)	2.0 (0.9, 4.3)	2.3 (1.1, 4.9)	2.8 (1.4, 5.5)	3.4 (1.7, 6.6)	7.7 (4.4, 13.4)
Centrax	Exeter*	7	200	2.1 (0.8, 5.5)	2.7 (1.1, 6.5)	2.7 (1.1, 6.5)	2.7 (1.1, 6.5)	2.7 (1.1, 6.5)	3.9 (1.7, 8.9)
Convene	CPCS*	16	347	2.2 (1.1, 4.6)	3.3 (1.8, 6.1)	3.3 (1.8, 6.1)	5.2 (3.1, 8.8)	5.9 (3.5, 9.8)	6.7 (4.0, 11.0)
	Spectron EF*	8	123	2.6 (0.9, 8.0)	2.6 (0.9, 8.0)	3.8 (1.4, 10.1)	6.6 (2.9, 14.4)	6.6 (2.9, 14.4)	
Hastings	C-Stem*	10	208	2.5 (1.1, 5.9)	5.0 (2.6, 9.4)	5.7 (3.1, 10.4)	5.7 (3.1, 10.4)	5.7 (3.1, 10.4)	5.7 (3.1, 10.4)
	CORAIL*	19	362	3.3 (1.8, 5.8)	3.6 (2.1, 6.3)	4.0 (2.3, 6.8)	4.6 (2.7, 7.7)	4.6 (2.7, 7.7)	7.0 (4.1, 11.5)
	Charnley*	7	119	0.0 (0.0, 0.0)	3.6 (1.2, 10.7)	3.6 (1.2, 10.7)	6.3 (2.7, 14.6)		
	Elite Plus*	16	298	1.9 (0.8, 4.6)	3.3 (1.7, 6.5)	4.3 (2.3, 7.9)	5.5 (3.1, 9.5)	6.8 (4.1, 11.4)	6.8 (4.1, 11.4)
	Summit*	3	102	2.5 (0.6, 9.6)	2.5 (0.6, 9.6)	2.5 (0.6, 9.6)			
Multipolar Bipolar	Alloclassic	10	228	4.4 (2.3, 8.2)	4.4 (2.3, 8.2)	4.4 (2.3, 8.2)	5.3 (2.8, 9.9)	5.3 (2.8, 9.9)	
	CPT	202	5947	3.0 (2.6, 3.5)	3.8 (3.3, 4.4)	4.1 (3.5, 4.7)	4.9 (4.2, 5.7)	5.2 (4.4, 6.2)	6.7 (4.8, 9.3)
	MS 30	3	186	1.2 (0.3, 4.7)	1.2 (0.3, 4.7)	1.2 (0.3, 4.7)			
	VerSys	6	285	1.0 (0.2, 3.8)	2.9 (1.2, 6.9)	2.9 (1.2, 6.9)	2.9 (1.2, 6.9)	2.9 (1.2, 6.9)	
	VerSys Heritage*	12	275	1.7 (0.6, 4.5)	3.2 (1.5, 6.7)	3.2 (1.5, 6.7)	4.0 (2.0, 7.9)	4.0 (2.0, 7.9)	10.2 (5.3, 19.1)
Ringloc	Mallory-Head*	4	120	2.0 (0.5, 7.9)	2.0 (0.5, 7.9)	2.0 (0.5, 7.9)	3.7 (1.2, 11.3)		
Self-Centering	C-Stem AMT	29	1021	2.6 (1.7, 3.9)	3.6 (2.5, 5.2)	3.9 (2.7, 5.7)	3.9 (2.7, 5.7)		
	C-Stem*	3	113	0.0 (0.0, 0.0)	1.2 (0.2, 8.2)	1.2 (0.2, 8.2)	1.2 (0.2, 8.2)		
	CORAIL	47	1261	3.5 (2.6, 4.8)	4.2 (3.1, 5.7)	4.6 (3.4, 6.1)	4.6 (3.4, 6.1)	5.2 (3.7, 7.3)	
	Elite Plus*	4	238	0.0 (0.0, 0.0)	0.6 (0.1, 3.9)	0.6 (0.1, 3.9)	1.3 (0.3, 5.2)	2.5 (0.8, 7.8)	2.5 (0.8, 7.8)
	Summit	5	108	4.1 (1.6, 10.5)	4.1 (1.6, 10.5)	4.1 (1.6, 10.5)			
Tandem	Basis*	15	114	2.0 (0.5, 7.7)	7.5 (3.6, 15.1)	12.3 (7.0, 21.2)	15.6 (9.2, 25.5)	15.6 (9.2, 25.5)	
	CPCS	91	3267	2.2 (1.7, 2.8)	2.7 (2.2, 3.5)	3.2 (2.6, 4.0)	3.9 (3.1, 4.9)	5.1 (3.8, 6.7)	5.4 (4.1, 7.2)
	Polarstem	2	109	1.9 (0.5, 7.5)	1.9 (0.5, 7.5)				
	Spectron EF	8	208	2.1 (0.8, 5.6)	3.5 (1.6, 7.7)	4.2 (2.0, 8.7)	5.1 (2.5, 10.1)	5.1 (2.5, 10.1)	
UHR	ABGII*	23	177	4.3 (2.1, 8.9)	4.3 (2.1, 8.9)	5.1 (2.6, 10.0)	10.8 (6.5, 17.9)	13.4 (8.2, 21.4)	
	Accolade I*	19	337	2.9 (1.5, 5.5)	4.1 (2.3, 7.1)	4.5 (2.6, 7.7)	5.1 (3.0, 8.5)	5.7 (3.4, 9.5)	8.8 (5.3, 14.5)
	Accolade II	0	169	0.0 (0.0, 0.0)	0.0 (0.0, 0.0)	0.0 (0.0, 0.0)			
	Exeter V40	438	14738	2.2 (2.0, 2.5)	2.8 (2.5, 3.1)	3.3 (3.0, 3.6)	3.8 (3.4, 4.2)	4.3 (3.9, 4.8)	5.2 (4.5, 5.9)
	Exeter*	12	205	1.6 (0.5, 4.9)	2.2 (0.8, 5.8)	3.5 (1.6, 7.7)	4.9 (2.5, 9.7)	4.9 (2.5, 9.7)	4.9 (2.5, 9.7)
	GMRS	15	205	2.1 (0.8, 5.6)	5.4 (2.7, 10.7)	6.4 (3.3, 12.3)	10.5 (5.8, 18.5)		
	Omnifit*	24	380	5.1 (3.3, 8.0)	5.5 (3.5, 8.5)	5.8 (3.8, 8.9)	6.3 (4.1, 9.5)	7.5 (4.9, 11.2)	7.5 (4.9, 11.2)
	Short Exeter V40	7	269	2.2 (0.9, 5.4)	3.1 (1.3, 7.0)	3.1 (1.3, 7.0)			
Other (276)		141	2695	3.5 (2.9, 4.4)	4.4 (3.6, 5.3)	5.1 (4.2, 6.1)	5.7 (4.8, 6.8)	6.3 (5.3, 7.6)	8.8 (7.2, 10.7)
TOTAL		1257	36148						

Note: Only combinations with > 100 procedures have been listed

*denotes prosthesis combination with no recorded use in primary bipolar hip replacement in 2022

OUTCOME FOR FRACTURED NECK OF FEMUR

The cumulative percent revision at 10 years for primary bipolar hip replacement undertaken for fractured neck of femur is 6.0% (Table SHP27 and Figure SHP20).

The Registry has recorded 1,135 revisions of primary bipolar hip replacement procedures with a primary diagnosis of fractured neck of femur.

The main reasons for revision are infection (25.8%), fracture (23.0%), loosening (11.7%), and chondrolysis/acetabular erosion (7.9%) (Table SHP28).

The most frequent type of revision is acetabular component only (31.6%), followed by total hip replacement (femoral/acetabular) (19.7%), bipolar only (17.1%), and bipolar head and femoral stem replacement (14.4%) (Table SHP29).

Age is a risk factor for revision. Patients aged <75 years have a higher rate of revision compared to the two older age groups (Table SHP30 and Figure SHP21). Males have a higher rate of revision than females (Table SHP31 and Figure SHP22).

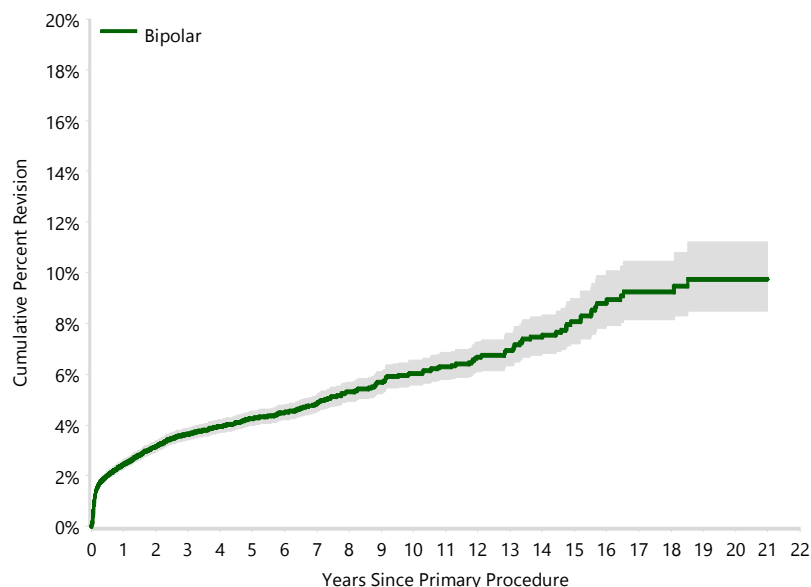
Cementless fixation has a higher rate of revision compared to cemented fixation.

Fixation is a risk factor for revision. Cementless fixation has a higher rate of revision compared to cemented fixation (Table SHP32 and Figure SHP23). The cumulative incidence of fracture for cementless fixation is higher than for cemented fixation (Figure SHP24).

Table SHP27 Cumulative Percent Revision of Primary Bipolar Hip Replacement (Primary Diagnosis Fractured NOF)

Hip Type	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Bipolar	1135	33706	2.5 (2.3, 2.6)	3.1 (2.9, 3.4)	3.6 (3.4, 3.9)	4.3 (4.0, 4.5)	4.8 (4.5, 5.2)	6.0 (5.6, 6.5)
TOTAL	1135	33706						

Figure SHP20 Cumulative Percent Revision of Primary Bipolar Hip Replacement (Primary Diagnosis Fractured NOF)



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Bipolar	33706	22553	17373	13461	8095	4891	2413

Table SHP28 Bipolar Hip Replacement by Reason for Revision (Primary Diagnosis Fractured NOF)

Reason for Revision	Number	Percent
Infection	293	25.8
Fracture	261	23.0
Loosening	133	11.7
Chondrolysis/Acetab. Erosion	90	7.9
Pain	73	6.4
Lysis	5	0.4
Malposition	5	0.4
Other	275	24.2
TOTAL	1135	100.0

Table SHP29 Primary Bipolar Hip Replacement by Type of Revision (Primary Diagnosis Fractured NOF)

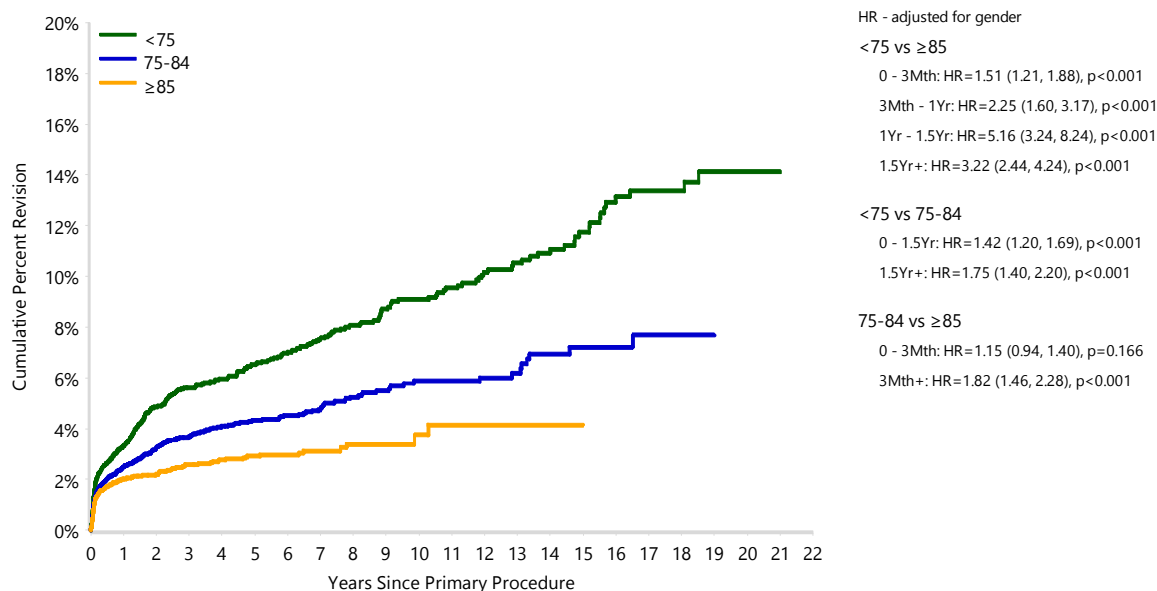
Type of Revision	Number	Percent
Acetabular Component	359	31.6
THR (Femoral/Acetabular)	224	19.7
Bipolar Only	194	17.1
Bipolar Head and Femoral	164	14.4
Femoral Component	58	5.1
Cement Spacer	48	4.2
Head Only	31	2.7
Removal of Prostheses	30	2.6
Minor Components	27	2.4
TOTAL	1135	100.0

Note: Femoral heads are usually replaced when the acetabular component and/or femoral stem is revised

Table SHP30 Cumulative Percent Revision of Primary Bipolar Hip Replacement by Age (Primary Diagnosis Fractured NOF)

Age	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
<75	383	6183	3.3 (2.9, 3.8)	4.9 (4.3, 5.5)	5.6 (5.0, 6.3)	6.5 (5.8, 7.3)	7.5 (6.7, 8.4)	9.1 (8.1, 10.2)
75-84	442	12553	2.5 (2.2, 2.8)	3.2 (2.9, 3.6)	3.7 (3.3, 4.1)	4.3 (3.9, 4.8)	4.7 (4.3, 5.3)	5.9 (5.2, 6.6)
≥85	310	14970	2.0 (1.8, 2.3)	2.2 (1.9, 2.5)	2.6 (2.3, 2.9)	2.9 (2.6, 3.3)	3.1 (2.7, 3.6)	3.7 (2.9, 4.7)
TOTAL	1135	33706						

Figure SHP21 Cumulative Percent Revision of Primary Bipolar Hip Replacement by Age (Primary Diagnosis Fractured NOF)

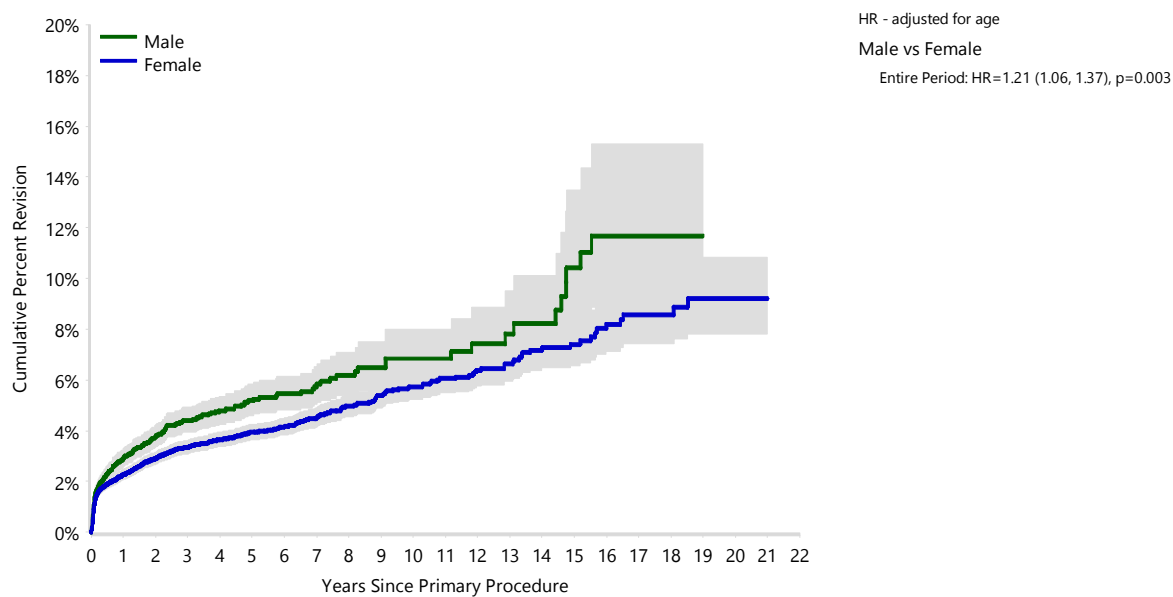


Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
<75	6183	4535	3722	3144	2306	1675	1068
75-84	12553	8919	7109	5698	3621	2253	1081
≥85	14970	9099	6542	4619	2168	963	264

Table SHP31 Cumulative Percent Revision of Primary Bipolar Hip Replacement by Gender (Primary Diagnosis Fractured NOF)

Gender	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Male	364	10488	2.9 (2.6, 3.3)	3.8 (3.4, 4.2)	4.4 (3.9, 4.9)	5.2 (4.6, 5.8)	5.7 (5.0, 6.5)	6.8 (5.8, 8.0)
Female	771	23218	2.3 (2.1, 2.5)	2.9 (2.7, 3.2)	3.3 (3.1, 3.6)	3.9 (3.6, 4.3)	4.5 (4.1, 4.9)	5.7 (5.2, 6.3)
TOTAL	1135	33706						

Figure SHP22 Cumulative Percent Revision of Primary Bipolar Hip Replacement by Gender (Primary Diagnosis Fractured NOF)

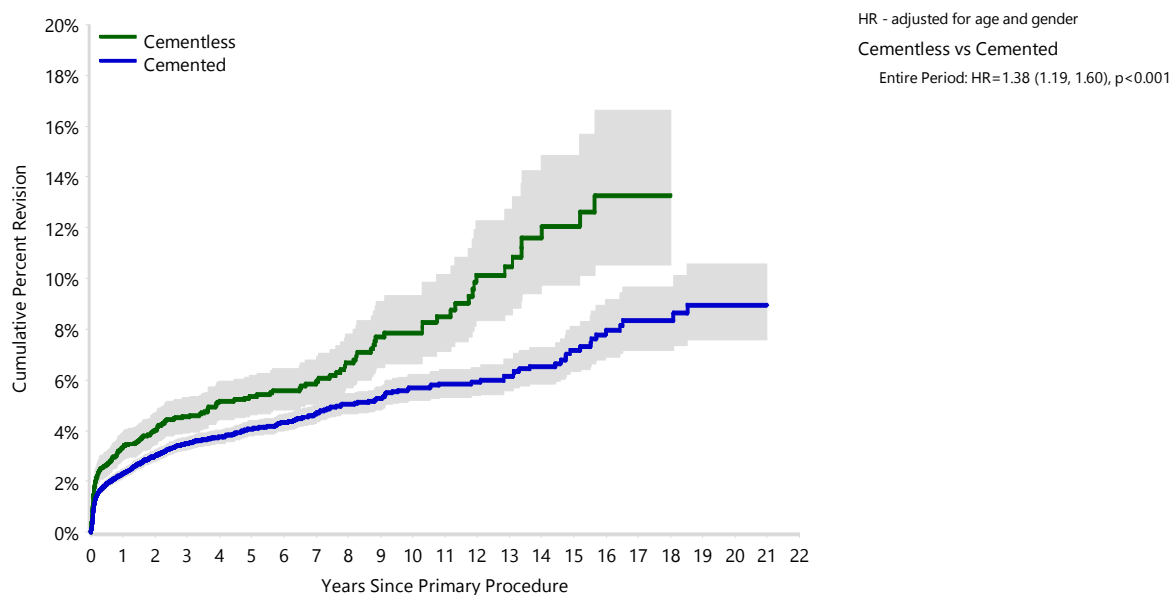


Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Male	10488	6078	4299	3062	1648	926	426
Female	23218	16475	13074	10399	6447	3965	1987

Table SHP32 Cumulative Percent Revision of Primary Bipolar Hip Replacement by Femoral Fixation (Primary Diagnosis Fractured NOF)

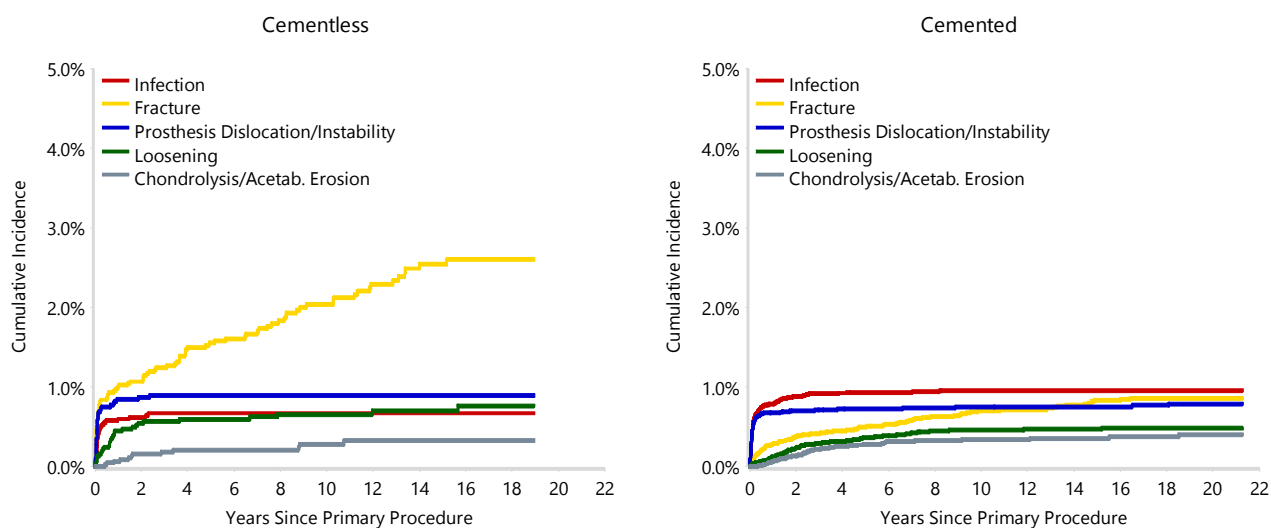
Femoral Fixation	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Cementless	222	4547	3.4 (2.8, 4.0)	4.0 (3.4, 4.7)	4.6 (3.9, 5.3)	5.3 (4.6, 6.2)	5.8 (5.0, 6.8)	7.9 (6.6, 9.3)
Cemented	913	29159	2.3 (2.1, 2.5)	3.0 (2.8, 3.2)	3.5 (3.2, 3.7)	4.1 (3.8, 4.4)	4.6 (4.3, 5.0)	5.7 (5.2, 6.2)
TOTAL	1135	33706						

Figure SHP23 Cumulative Percent Revision of Primary Bipolar Hip Replacement by Femoral Fixation (Primary Diagnosis Fractured NOF)



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Cementless	4547	3206	2626	2175	1425	920	465
Cemented	29159	19347	14747	11286	6670	3971	1948

Figure SHP24 Cumulative Incidence Revision Diagnosis of Primary Bipolar Hip Replacement by Femoral Fixation (Primary Diagnosis Fractured NOF)



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