

Australian Orthopaedic Association National Joint Replacement Registry

2022 Primary Partial Hip Replacement
Supplementary Report



AOA
AUSTRALIAN
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National
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**Australian Orthopaedic Association
National Joint Replacement Registry**

**2022 Primary Partial Hip Replacement
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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Contents

INTRODUCTION	6
Classes of Partial Hip Replacement	6
Use of Partial Hip Replacement	6
UNIPOLAR MONOBLOCK	10
Demographics	10
Outcome for Fractured Neck of Femur.....	11
Unipolar Modular	16
Demographics	16
Outcome for Fractured Neck of Femur.....	19
Bipolar	25
Demographics	25
Outcome For Fractured Neck Of Femur	28
LIST OF TABLES	33
LIST OF FIGURES	33

Primary Partial Hip Replacement Introduction

This supplementary report provides detailed information on partial hip replacement. The Partial Hip Arthroplasty Report is one of 15 supplementary reports to complete the AOANJRR Annual Report for 2022.

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 (28.6%) and unipolar monoblock (25.6%) (Table SHP1).

Table SHP1 Primary Partial Hip Replacement by Class

Hip Class	Number	Percent
Unipolar Monoblock	29189	25.6
Unipolar Modular	52059	45.7
Bipolar	32561	28.6
TOTAL	113809	100.0

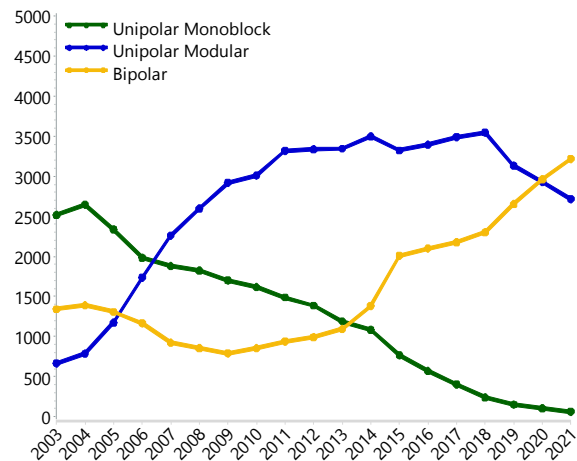
Note: Excludes 15 partial resurfacing procedures

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-2022>

In 2021, there is a slight increase in the use of bipolar and a slight decrease in the use of unipolar modular partial hip replacements. The use of unipolar monoblock continues to decline (Figure SHP1).

Detailed demographic information on primary partial hip replacement is available in the supplementary report 'Demographics of Hip, Knee & Shoulder Arthroplasty' on the AOANJRR website: <https://aoanjrr.sahmri.com/annual-reports-2022>

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 (95.9%), and bipolar (93.0%).

A comparative analysis of partial hip replacement and total conventional hip replacement was undertaken for fractured neck of femur and 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).

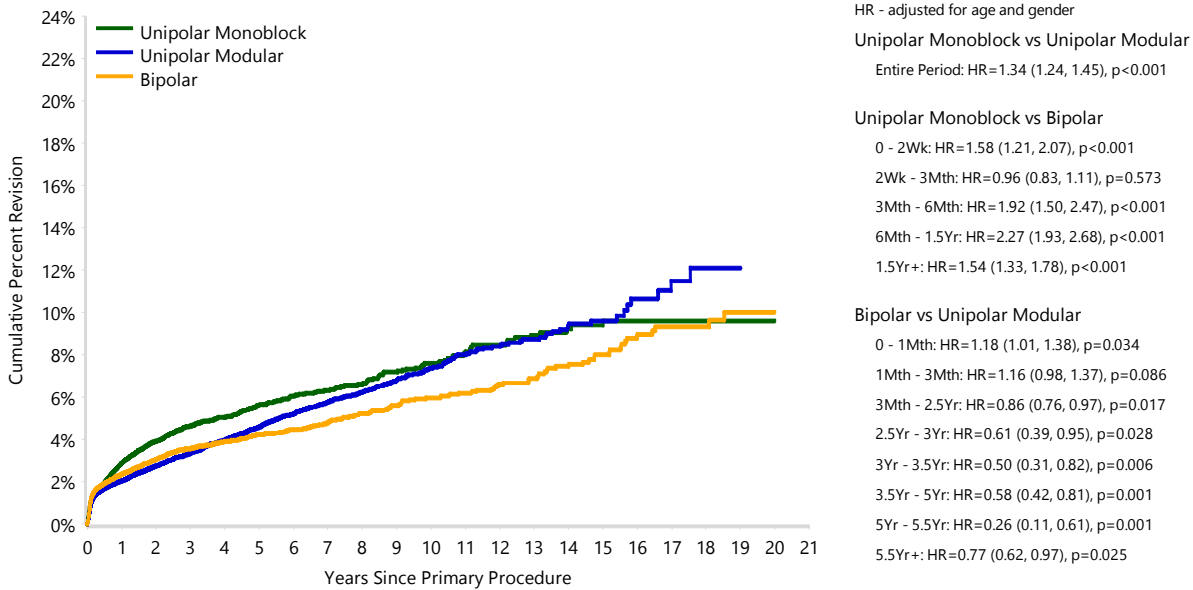
Table SHP2 Cumulative Percent Mortality of Primary Partial Hip Replacement by Class (Primary Diagnosis Fractured NOF)

Hip Class	N Deceased	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Unipolar Monoblock	25428	27781	37.0 (36.5, 37.6)	50.1 (49.5, 50.7)	60.9 (60.3, 61.5)	76.9 (76.4, 77.4)	86.3 (85.9, 86.7)	93.3 (93.0, 93.6)
Unipolar Modular	33999	48169	26.3 (25.9, 26.7)	37.4 (36.9, 37.8)	47.2 (46.8, 47.7)	63.0 (62.6, 63.5)	74.3 (73.9, 74.8)	84.4 (84.0, 84.8)
Bipolar	18348	29438	23.5 (23.0, 24.0)	33.9 (33.3, 34.5)	42.9 (42.3, 43.5)	58.0 (57.3, 58.6)	69.0 (68.3, 69.6)	80.1 (79.4, 80.7)
TOTAL	77775	105388						

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	1081	28505	2.9 (2.7, 3.1)	3.9 (3.7, 4.2)	4.6 (4.3, 4.9)	5.6 (5.3, 6.0)	6.3 (5.9, 6.8)	7.6 (7.0, 8.3)
Unipolar Modular	1728	49911	2.0 (1.9, 2.2)	2.7 (2.6, 2.9)	3.3 (3.2, 3.5)	4.6 (4.3, 4.8)	5.8 (5.5, 6.1)	7.4 (6.9, 7.8)
Bipolar	1006	30283	2.4 (2.2, 2.5)	3.0 (2.8, 3.3)	3.6 (3.3, 3.8)	4.2 (3.9, 4.5)	4.8 (4.4, 5.1)	6.0 (5.5, 6.5)
TOTAL	3815	108699						

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

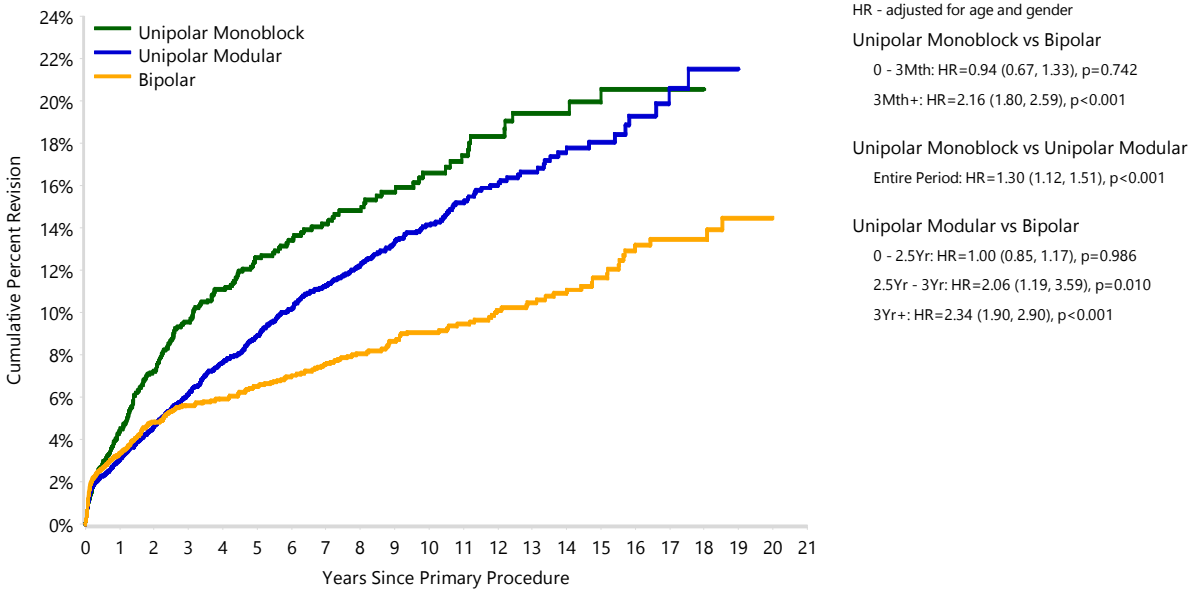


Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Unipolar Monoblock	28505	17412	13585	10518	6026	3405	1481
Unipolar Modular	49911	34139	27167	21382	12731	7274	3061
Bipolar	30283	20352	15728	12198	7405	4439	2298

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	241	2478	4.4 (3.6, 5.4)	7.2 (6.1, 8.5)	9.5 (8.2, 11.0)	12.6 (11.0, 14.4)	14.2 (12.4, 16.2)	16.6 (14.5, 19.0)
Unipolar Modular	628	7458	3.0 (2.6, 3.5)	4.6 (4.1, 5.1)	6.1 (5.5, 6.8)	8.9 (8.1, 9.7)	11.3 (10.4, 12.3)	14.1 (13.0, 15.4)
Bipolar	350	5620	3.3 (2.9, 3.9)	4.8 (4.2, 5.5)	5.6 (5.0, 6.3)	6.5 (5.8, 7.3)	7.5 (6.7, 8.5)	9.1 (8.0, 10.2)
TOTAL	1219	15556						

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	2478	1687	1402	1170	813	582	345
Unipolar Modular	7458	5695	4823	4101	2942	2054	1164
Bipolar	5620	4158	3412	2888	2129	1518	1019

UNIPOLAR MONOBLOCK

DEMOGRAPHICS

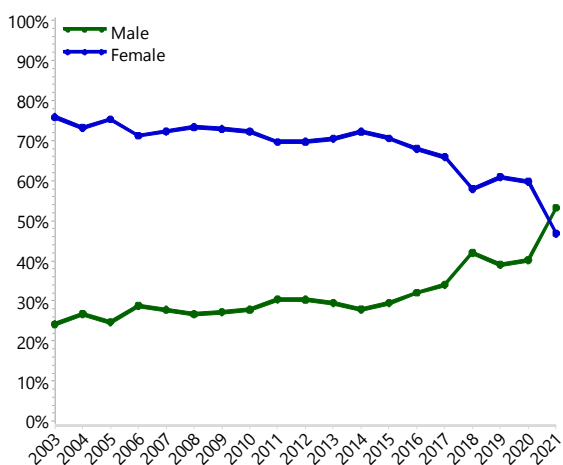
The Registry has recorded 29,189 unipolar monoblock procedures. This is an additional 84 procedures compared to the previous report.

The use of unipolar monoblock hip replacement in Australia continues to decline. The number of procedures reported in 2021 has decreased by 39.2% compared to 2020 and by 97.5% compared to 2003.

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

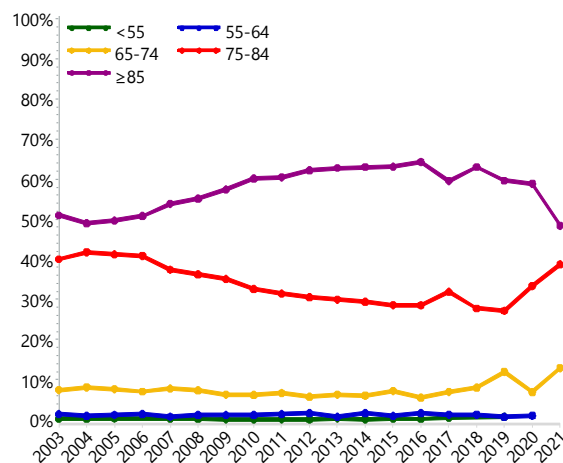
The majority of patients are female (72.7%) and aged ≥75 years (91.3%).

Figure SHP4 Primary Unipolar Monoblock Hip Replacement by Gender



The proportion of patients aged ≥85 years has increased from 51.0% in 2003 to 48.4% in 2021. 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 two types of unipolar monoblock prostheses are the Exeter Trauma Stem (ETS) and Austin-Moore Type. In 2021, the use of the Austin-Moore Type decreased by 88.9% compared to 2020 and by 99.9% compared to 2003. In 2021, the use of the ETS decreased by 33.7% compared to 2020 and accounts for 98.4% of all unipolar monoblock prostheses (Table SHP6).

Table SHP5 Age and Gender of Primary Unipolar Monoblock Hip Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	7967	27.3%	32	107	84	83.5	7.8
Female	21222	72.7%	16	108	86	85.0	7.2
TOTAL	29189	100.0%	16	108	85	84.5	7.4

Table SHP6 Most Used Prostheses in Primary Unipolar Monoblock Hip Replacement

2003		2018		2019		2020		2021	
N	Model	N	Model	N	Model	N	Model	N	Model
1988	Austin-Moore Type	164	ETS	124	ETS	92	ETS	61	ETS
526	Thompson Type	62	Austin-Moore Type	25	Austin-Moore Type	9	Austin-Moore Type	1	Austin-Moore Type
		12	Thompson Type	2	Thompson Type	1	Thompson Type		
Most Used									
2514	(2) 100.0%	238	(3) 100.0%	151	(3) 100.0%	102	(3) 100.0%	62	(2) 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 7.6% (Table SHP7 and Figure SHP6).

The main reason for revision is loosening (42.3%), followed by fracture (20.1%), 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 18.2% 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 no different (Table SHP12 and Figure SHP9).

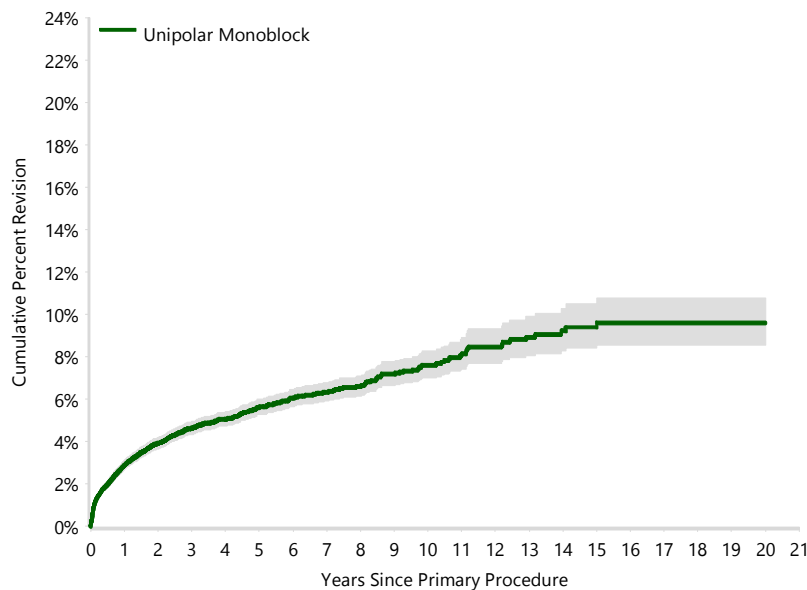
The Thompson Type prosthesis, though designed to be cemented, has been inserted without cement in 591 procedures. This has the highest rate of revision (Table SHP12 and Figure SHP10).

The Thompson Type cemented and Austin-Moore Type cementless have a higher rate of revision compared to the (cemented) ETS after 2.5 years, but there is no difference for the Austin-Moore Type when it is 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	1081	28505	2.9 (2.7, 3.1)	3.9 (3.7, 4.2)	4.6 (4.3, 4.9)	5.6 (5.3, 6.0)	6.3 (5.9, 6.8)	7.6 (7.0, 8.3)
TOTAL	1081	28505						

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	28505	17412	13585	10518	6026	3405	1481

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

Reason for Revision	Number	Percent
Loosening	457	42.3
Fracture	217	20.1
Infection	119	11.0
Pain	79	7.3
Chondrolysis/Acetab. Erosion	52	4.8
Malposition	12	1.1
Lysis	9	0.8
Other	136	12.6
TOTAL	1081	100.0

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

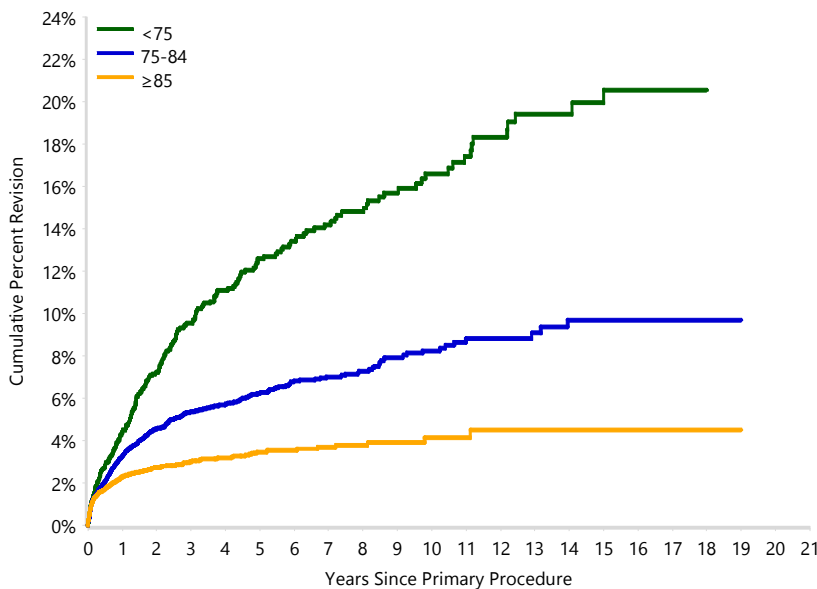
Type of Revision	Number	Percent
THR (Femoral/Acetabular)	652	60.3
Femoral Component	197	18.2
Bipolar Head and Femoral	101	9.3
Removal of Prostheses	56	5.2
Cement Spacer	48	4.4
Minor Components	18	1.7
Reinsertion of Components	6	0.6
Incomplete	1	0.1
Bipolar Only	1	0.1
Insert Only	1	0.1
TOTAL	1081	100.0

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	241	2478	4.4 (3.6, 5.4)	7.2 (6.1, 8.5)	9.5 (8.2, 11.0)	12.6 (11.0, 14.4)	14.2 (12.4, 16.2)	16.6 (14.5, 19.0)
75-84	484	10607	3.3 (2.9, 3.7)	4.6 (4.1, 5.1)	5.4 (4.9, 5.9)	6.2 (5.7, 6.9)	7.0 (6.4, 7.7)	8.2 (7.4, 9.2)
≥85	356	15420	2.3 (2.0, 2.6)	2.7 (2.5, 3.1)	3.0 (2.7, 3.4)	3.5 (3.1, 3.9)	3.7 (3.3, 4.2)	4.1 (3.5, 4.9)
TOTAL	1081	28505						

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 - 3Mth: HR=1.28 (0.92, 1.80), p=0.143
- 3Mth - 1Yr: HR=3.10 (2.22, 4.33), p<0.001
- 1Yr - 1.5Yr: HR=6.50 (4.18, 10.11), p<0.001
- 1.5Yr - 2Yr: HR=4.33 (2.44, 7.69), p<0.001
- 2Yr+: HR=7.19 (5.41, 9.57), p<0.001

<75 vs 75-84

- 0 - 1Yr: HR=1.27 (1.01, 1.61), p=0.042
- 1Yr - 1.5Yr: HR=2.75 (1.79, 4.22), p<0.001
- 1.5Yr+: HR=2.77 (2.19, 3.50), p<0.001

75-84 vs ≥85

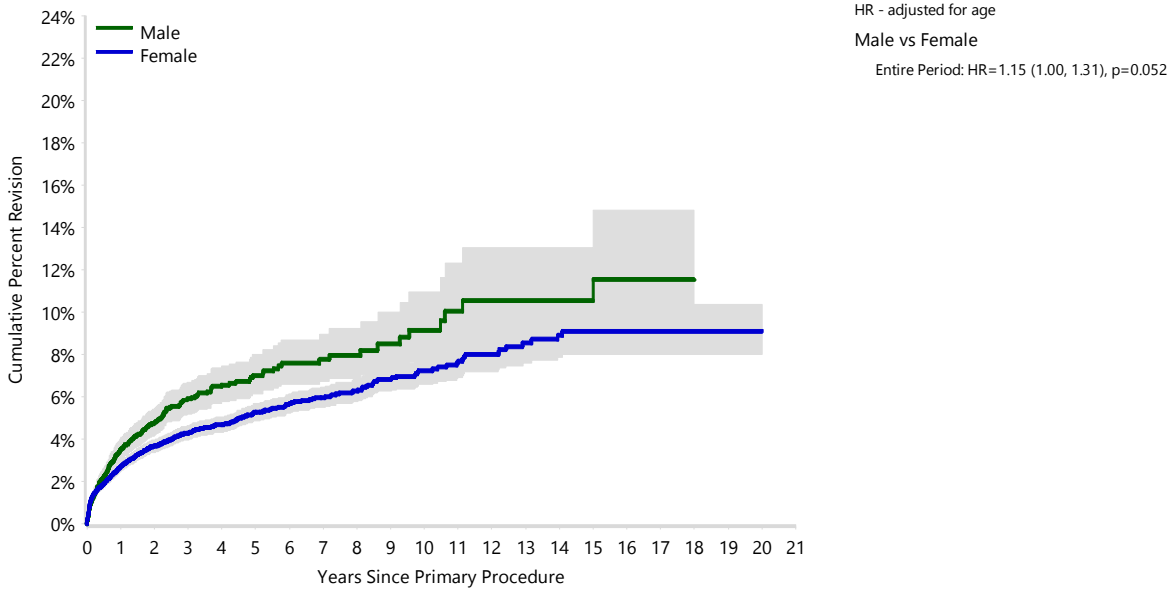
- 0 - 3Mth: HR=1.04 (0.84, 1.29), p=0.711
- 3Mth+: HR=2.37 (1.97, 2.85), p<0.001

Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
<75	2478	1687	1402	1170	813	582	345
75-84	10607	6927	5582	4463	2796	1674	754
≥85	15420	8798	6601	4885	2417	1149	382

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	7782	3.5 (3.0, 4.1)	4.8 (4.2, 5.5)	5.9 (5.2, 6.7)	7.0 (6.1, 8.0)	7.8 (6.7, 8.9)	9.2 (7.6, 11.0)
Female	796	20723	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)	7.2 (6.6, 7.9)
TOTAL	1081	28505						

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



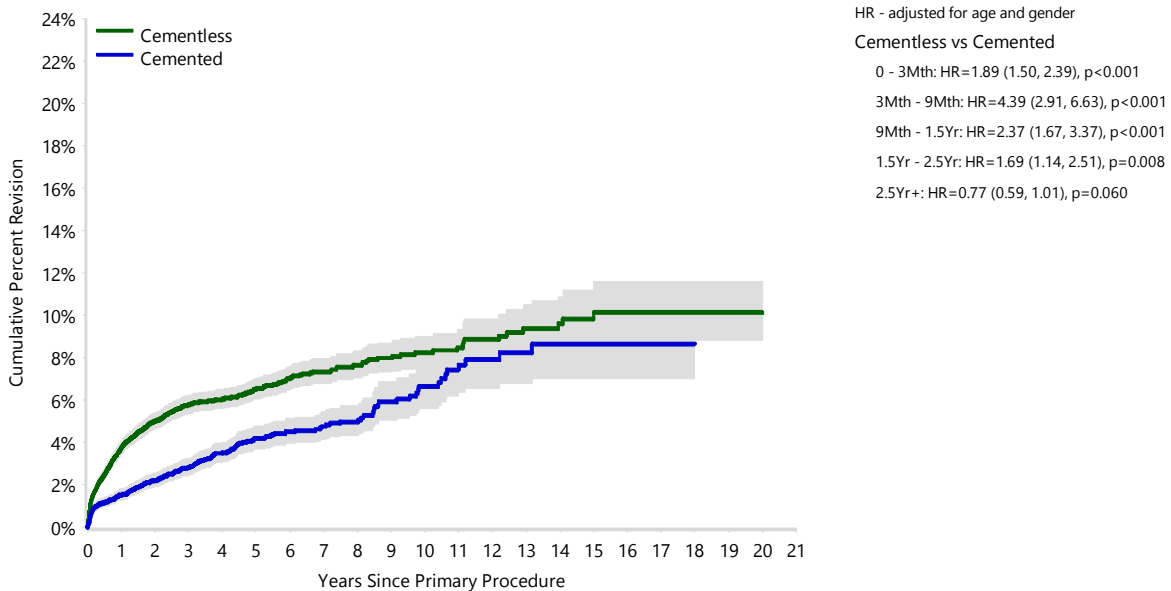
Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Male	7782	3703	2573	1828	934	498	234
Female	20723	13709	11012	8690	5092	2907	1247

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		788	17706	3.7 (3.4, 4.1)	5.0 (4.6, 5.4)	5.8 (5.3, 6.2)	6.5 (6.0, 7.0)	7.3 (6.8, 8.0)	8.2 (7.5, 9.0)
	Austin-Moore	738	17115	3.6 (3.3, 4.0)	4.9 (4.5, 5.3)	5.6 (5.2, 6.1)	6.3 (5.8, 6.8)	7.1 (6.6, 7.7)	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		293	10795	1.5 (1.3, 1.8)	2.2 (1.9, 2.6)	2.8 (2.5, 3.2)	4.2 (3.7, 4.8)	4.8 (4.2, 5.4)	6.6 (5.6, 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	79	3637	1.5 (1.1, 2.0)	1.9 (1.4, 2.5)	2.3 (1.8, 2.9)	3.0 (2.3, 3.8)	3.6 (2.8, 4.8)	4.8 (3.5, 6.7)
	Thompson	192	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)	7.8 (6.4, 9.6)
TOTAL		1081	28501						

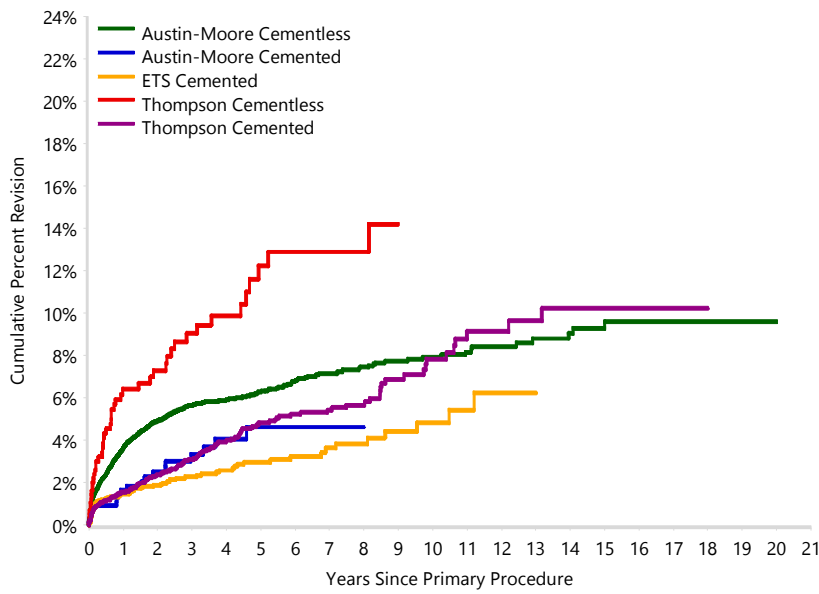
Note: Four ETS procedures that were cementless have been excluded

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	10496	8084	6241	3559	2033	920
Cemented	10795	6915	5500	4276	2467	1372	561

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



HR - adjusted for age and gender
 Austin-Moore Cementless vs ETS Cemented
 Entire Period: HR=2.24 (1.78, 2.82), p<0.001
 Austin-Moore Cemented vs ETS Cemented
 Entire Period: HR=1.35 (0.84, 2.16), p=0.216
 Thompson Cementless vs ETS Cemented
 Entire Period: HR=3.93 (2.75, 5.60), p<0.001
 Thompson Cemented vs ETS Cemented
 0 - 3Mth: HR=1.10 (0.76, 1.58), p=0.614
 3Mth - 2.5Yr: HR=1.05 (0.75, 1.46), p=0.779
 2.5Yr+: HR=3.53 (2.48, 5.02), p<0.001

Number at Risk		0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Austin-Moore	Cementless	17115	10123	7788	6008	3423	1947	882
	Cemented	973	518	400	300	157	77	23
ETS	Cemented	3637	2349	1875	1476	842	468	191
Thompson	Cementless	591	373	296	233	136	86	38
	Cemented	6185	4048	3225	2500	1468	827	347

UNIPOLAR MODULAR

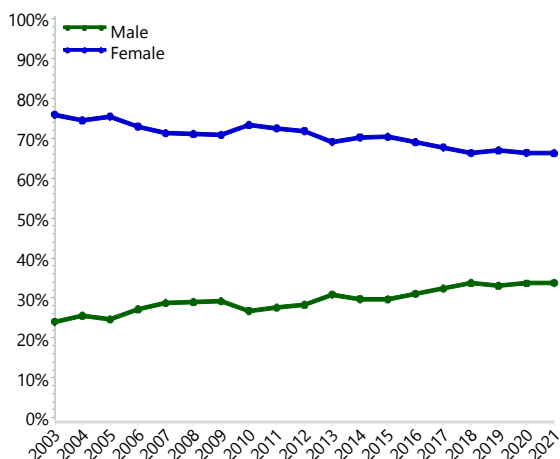
DEMOGRAPHICS

There have been 52,059 unipolar modular procedures reported to the Registry. This is an additional 2,813 procedures compared to the previous report.

In 2021, the number of unipolar modular procedures decreased by 214 procedures (7.3%) compared to 2020 and increased by 307.8% since 2003.

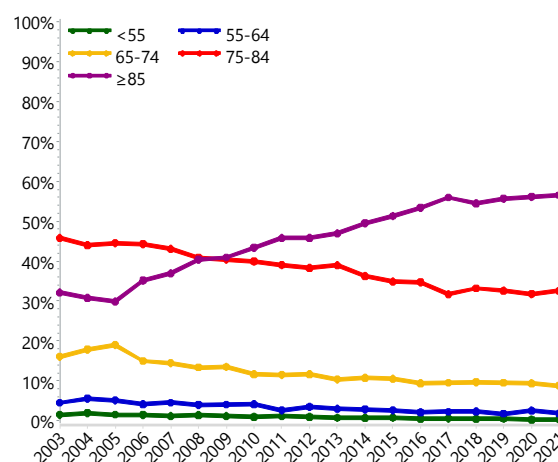
Fractured neck of femur is the principal diagnosis for primary unipolar modular hip replacement (95.9%).

Figure SHP11 Primary Unipolar Modular Hip Replacement by Gender



The majority of patients are female (70.0%) and aged ≥75 years (84.6%). The proportion of patients aged ≥85 years has increased from 32.1% in 2003 to 56.5% in 2021. The mean age of patients is 82.8 years (Table SHP13, Figure SHP11 and Figure SHP12).

Figure SHP12 Primary Unipolar Modular Hip Replacement by Age



Overall, there have been 244 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 2021, 12 different unipolar modular head prostheses were used. The Unitrax head is the most frequently used (66.8%). The 10 most used unipolar modular head prostheses account for 100% of all primary unipolar modular hip procedures (Table SHP14).

There were 22 different stem prostheses used in 2021. The most frequently used stem is the Exeter V40 (63.6%). 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	15632	30.0%	5	106	83	81.8	9.4
Female	36427	70.0%	18	108	84	83.2	8.5
TOTAL	52059	100.0%	5	108	84	82.8	8.8

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

2003		2018		2019		2020		2021	
N	Model	N	Model	N	Model	N	Model	N	Model
193	Unitrax	1979	Unitrax	1930	Unitrax	1871	Unitrax	1814	Unitrax
142	Unipolar Head (Zimmer)	588	Unipolar Head (S&N)	457	Unipolar Head (S&N)	460	Unipolar Head (S&N)	433	Unipolar Head (S&N)
127	Unipolar Head (S&N)	387	Cathcart	338	Cathcart	349	Cathcart	320	Cathcart
75	VerSys	241	BioBall	133	BioBall	91	VerSys	85	VerSys
64	Unipolar Head (Mathys)	166	VerSys	106	VerSys	77	Unipolar Head (Mathys)	35	Unipolar Head (Mathys)
46	Elite	89	Unipolar Head (Signature)	54	Unipolar Head (Signature)	51	Unipolar Head (Signature)	16	Unipolar Head (Signature)
16	Ultima	42	Unipolar Head (Mathys)	47	Unipolar Head (Mathys)	16	Unipolar Head (Corin)	5	Femoral Head (Stryker)
1	Metasul	36	Unipolar Head (Corin)	46	Unipolar Head (Corin)	8	Femoral Head (Stryker)	4	Articul/Eze
1	Optimom	9	Femoral Head (Stryker)	10	Femoral Head (Stryker)	3	Unipolar Head (Lima)	2	Femoral Head (S&N)
1	Unipolar Head (Sulzer)	2	Articul/Eze	3	Articul/Eze	2	Femoral Head (S&N)	1	Trinity
10 Most Used									
666 (10)	100.0%	3539 (10)	99.9%	3124 (10)	99.8%	2928 (10)	99.9%	2715 (10)	100.0%
Remainder									
0 (0)	0%	5 (4)	0.1%	6 (6)	0.2%	2 (2)	0.1%	1 (1)	0.0%
TOTAL									
666 (10)	100.0%	3544 (14)	100.0%	3130 (16)	100.0%	2930 (12)	100.0%	2716 (11)	100.0%

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

2003		2018		2019		2020		2021	
N	Model	N	Model	N	Model	N	Model	N	Model
180	Exeter V40	1931	Exeter V40	1863	Exeter V40	1790	Exeter V40	1728	Exeter V40
111	Alloclassic	500	CPCS	368	CPCS	396	CPCS	368	CPCS
91	CPT	344	C-Stem AMT	298	C-Stem AMT	324	C-Stem AMT	296	C-Stem AMT
70	Spectron EF	271	Absolut	161	Absolut	87	CPT	82	CPT
49	Fullfix	141	CPT	100	CPT	81	Short Exeter V40	78	Short Exeter V40
38	SL-Plus	52	Short Exeter V40	67	Short Exeter V40	71	twinSys (ctd)	35	twinSys (ctd)
33	Elite Plus	51	Spectron EF	63	Spectron EF	45	Spectron EF	34	Spectron EF
18	Basis	45	CORAIL	43	Taper Fit	28	Evolve	25	CORAIL
15	CCA	38	twinSys (ctd)	41	CORAIL	25	CORAIL	24	Polarstem
15	Thompson Modular Stem	35	Evolve	40	twinSys (ctd)	20	Absolut	14	Evolve
10 Most Used									
620 (10)	93.1%	3408 (10)	96.2%	3044 (10)	97.3%	2867 (10)	97.8%	2684 (10)	98.8%
Remainder									
46 (13)	6.9%	136 (18)	3.8%	86 (19)	2.7%	63 (16)	2.2%	32 (12)	1.2%
TOTAL									
666 (23)	100.0%	3544 (28)	100.0%	3130 (29)	100.0%	2930 (26)	100.0%	2716 (22)	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)			
Cathcart	C-Stem AMT	43	2045	1.7 (1.2, 2.5)	1.9 (1.4, 2.7)	2.4 (1.7, 3.4)	4.4 (2.7, 7.2)		
	CORAIL	96	1570	3.1 (2.3, 4.2)	4.4 (3.4, 5.7)	5.6 (4.4, 7.1)	6.9 (5.5, 8.6)	9.7 (7.7, 12.1)	12.0 (9.4, 15.3)
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	17	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)	9.2 (5.2, 16.0)
	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, 5.9)	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	22	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)	6.8 (4.3, 10.9)	
	Taper Fit	23	414	2.5 (1.3, 4.7)	3.5 (2.0, 6.1)	5.7 (3.5, 9.1)	7.1 (4.5, 11.3)	8.0 (5.0, 12.7)	10.5 (6.5, 16.8)
	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)	5	217	2.9 (1.2, 6.8)	2.9 (1.2, 6.8)				
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	104	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	174	6715	1.8 (1.5, 2.2)	2.3 (1.9, 2.7)	2.7 (2.3, 3.2)	3.7 (3.2, 4.4)	4.4 (3.7, 5.2)	5.2 (4.2, 6.4)
	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	144	1.7 (0.4, 6.9)	3.0 (1.0, 9.4)	6.5 (2.6, 15.4)			
	SL-Plus	53	1118	2.4 (1.6, 3.5)	3.3 (2.3, 4.6)	4.5 (3.3, 6.1)	4.9 (3.6, 6.7)	6.0 (4.4, 8.2)	11.2 (7.4, 16.7)
	Spectron EF	122	3124	1.6 (1.2, 2.1)	2.5 (2.0, 3.2)	2.9 (2.3, 3.7)	4.0 (3.3, 5.0)	5.4 (4.4, 6.7)	7.8 (6.3, 9.7)
Unipolar Head (Signature)	Absolut	4	108	2.2 (0.5, 8.4)	3.7 (1.2, 11.3)				
	E2	1	106	1.0 (0.1, 6.6)	1.0 (0.1, 6.6)	1.0 (0.1, 6.6)			
	Evolve	7	164	2.8 (1.0, 7.3)	5.3 (2.3, 11.9)	6.9 (3.2, 14.8)			
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 (7.1, 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)	10.7 (5.7, 19.6)
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	754	23340	2.0 (1.8, 2.2)	2.7 (2.4, 2.9)	3.3 (3.0, 3.6)	4.6 (4.2, 5.0)	5.6 (5.2, 6.1)	7.3 (6.6, 8.1)
	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	9	363	2.2 (1.0, 4.5)	2.2 (1.0, 4.5)	3.1 (1.4, 6.7)			
VerSys	CPT	177	4814	1.9 (1.6, 2.4)	2.9 (2.4, 3.4)	3.4 (2.9, 4.1)	4.6 (3.9, 5.5)	5.8 (4.9, 6.9)	6.9 (5.7, 8.3)
	VerSys	6	181	3.5 (1.5, 8.5)	3.5 (1.5, 8.5)	3.5 (1.5, 8.5)			
Other (209)		100	1792	3.6 (2.8, 4.7)	4.8 (3.8, 6.1)	5.4 (4.3, 6.8)	6.9 (5.6, 8.6)	8.6 (6.9, 10.7)	10.4 (8.2, 13.3)
TOTAL		1845	52059						

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 7.4% (Table SHP17 and Figure SHP13).

The Registry has recorded 1,728 revisions of primary unipolar modular hip replacement with a primary diagnosis of fractured neck of femur.

The main reasons for revision are infection (21.9%), fracture (16.8%), chondrolysis/acetabular erosion (16.3%), loosening (11.0%), and pain (10.3%) (Table SHP18).

Most revisions are acetabular only (41.7%), followed by total hip replacement (femoral/acetabular) (18.1%) (Table SHP19).

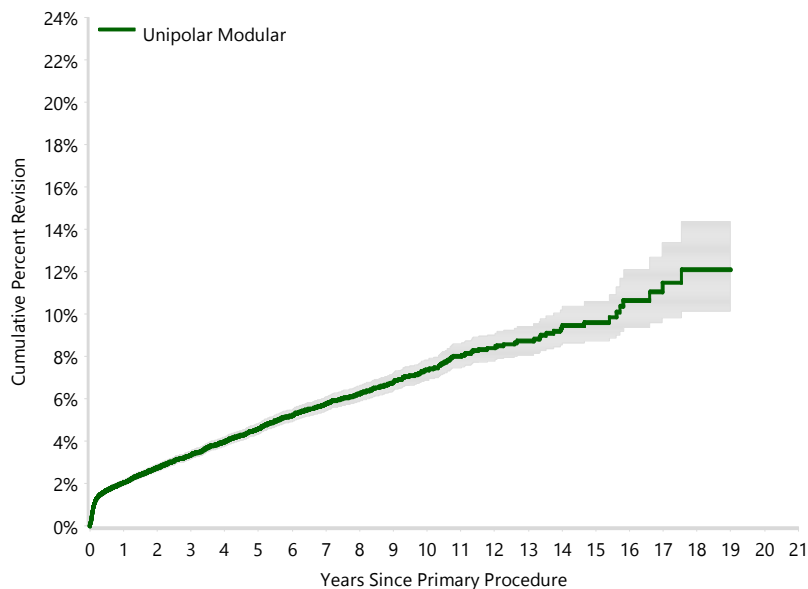
Age, gender, and femoral stem fixation are risk factors for revision. The rate of revision decreases with increasing age (Table SHP20 and Figure SHP14). Males have a higher rate of revision in the first 1.5 years (Table SHP21 and Figure SHP15).

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	1728	49911	2.0 (1.9, 2.2)	2.7 (2.6, 2.9)	3.3 (3.2, 3.5)	4.6 (4.3, 4.8)	5.8 (5.5, 6.1)	7.4 (6.9, 7.8)
TOTAL	1728	49911						

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	49911	34139	27167	21382	12731	7274	3061

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

Reason for Revision	Number	Percent
Infection	379	21.9
Fracture	291	16.8
Chondrolysis/Acetab. Erosion	281	16.3
Loosening	190	11.0
Pain	178	10.3
Lysis	21	1.2
Malposition	4	0.2
Other	384	22.2
TOTAL	1728	100.0

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

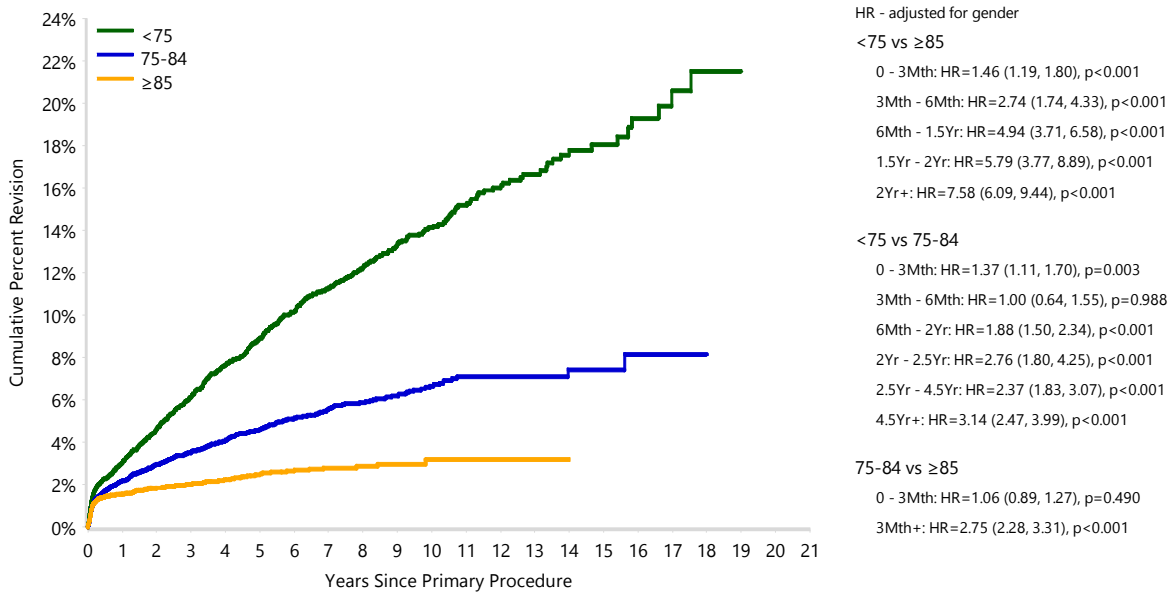
Type of Revision	Number	Percent
Acetabular Component	721	41.7
THR (Femoral/Acetabular)	313	18.1
Head Only	241	13.9
Femoral Component	190	11.0
Bipolar Head and Femoral	73	4.2
Cement Spacer	61	3.5
Removal of Prostheses	52	3.0
Minor Components	48	2.8
Bipolar Only	20	1.2
Reinsertion of Components	6	0.3
Head/Insert	2	0.1
Cement Only	1	0.1
TOTAL	1728	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	628	7458	3.0 (2.6, 3.5)	4.6 (4.1, 5.1)	6.1 (5.5, 6.8)	8.9 (8.1, 9.7)	11.3 (10.4, 12.3)	14.1 (13.0, 15.4)
75-84	686	18576	2.2 (2.0, 2.4)	2.9 (2.7, 3.2)	3.5 (3.2, 3.8)	4.6 (4.2, 5.0)	5.6 (5.1, 6.1)	6.7 (6.1, 7.3)
≥85	414	23877	1.6 (1.4, 1.7)	1.9 (1.7, 2.1)	2.0 (1.8, 2.3)	2.5 (2.2, 2.8)	2.8 (2.5, 3.2)	3.2 (2.6, 3.8)
TOTAL	1728	49911						

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

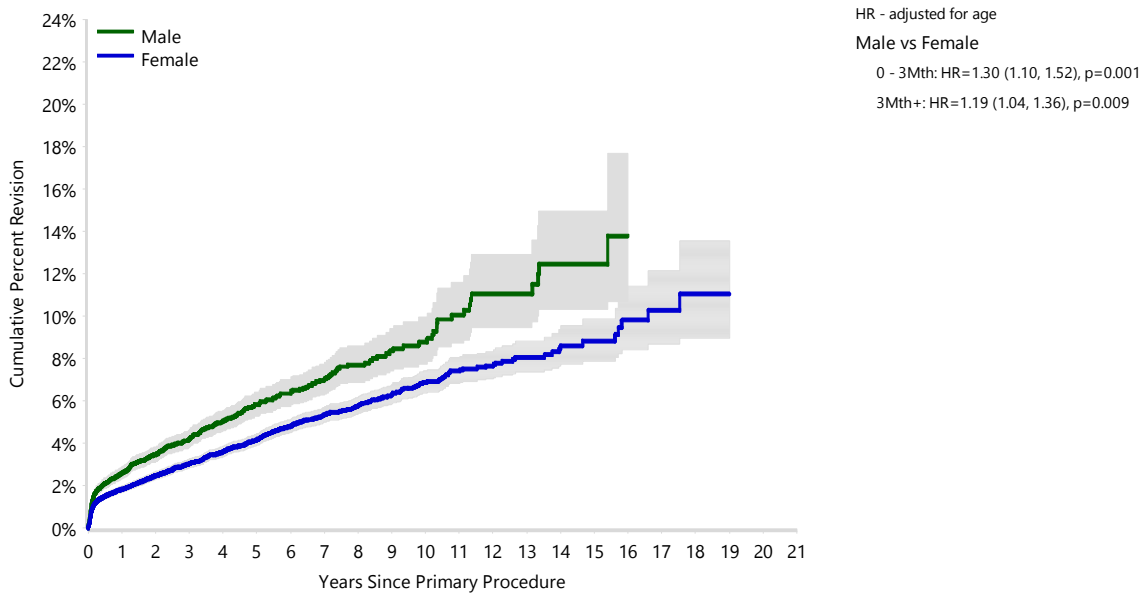


Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
<75	7458	5695	4823	4101	2942	2054	1164
75-84	18576	13613	11290	9205	5897	3531	1450
≥85	23877	14831	11054	8076	3892	1689	447

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	552	14970	2.6 (2.3, 2.9)	3.5 (3.1, 3.8)	4.2 (3.8, 4.6)	5.8 (5.3, 6.4)	7.0 (6.3, 7.8)	8.8 (7.7, 9.9)
Female	1176	34941	1.8 (1.7, 2.0)	2.5 (2.3, 2.7)	3.0 (2.8, 3.2)	4.2 (3.9, 4.4)	5.3 (5.0, 5.7)	6.9 (6.4, 7.4)
TOTAL	1728	49911						

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

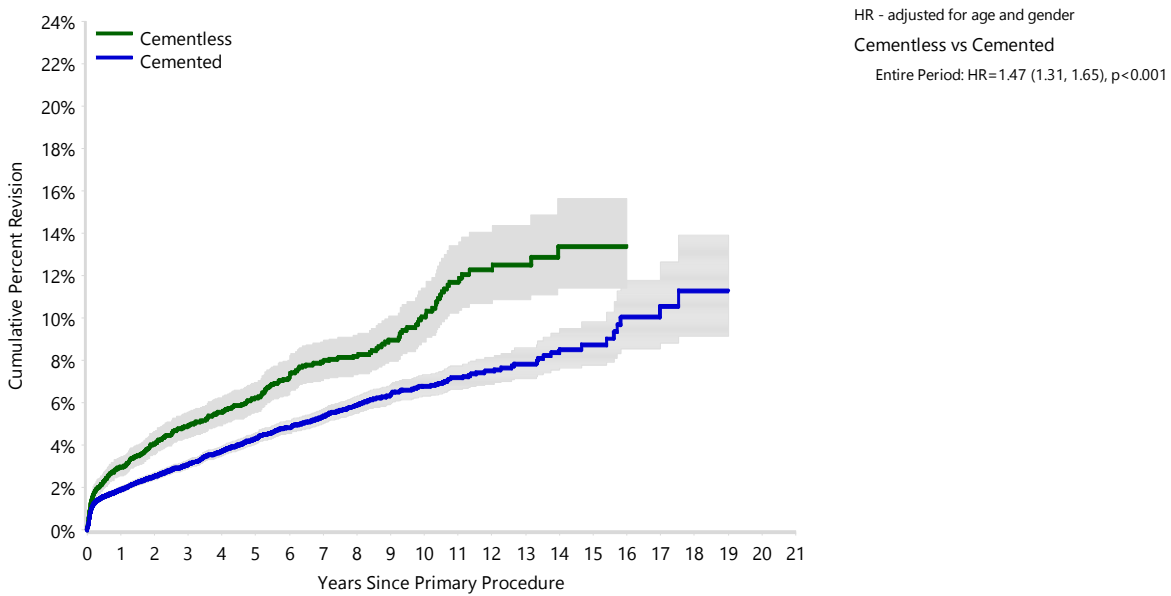


Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Male	14970	8813	6534	4838	2588	1391	547
Female	34941	25326	20633	16544	10143	5883	2514

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

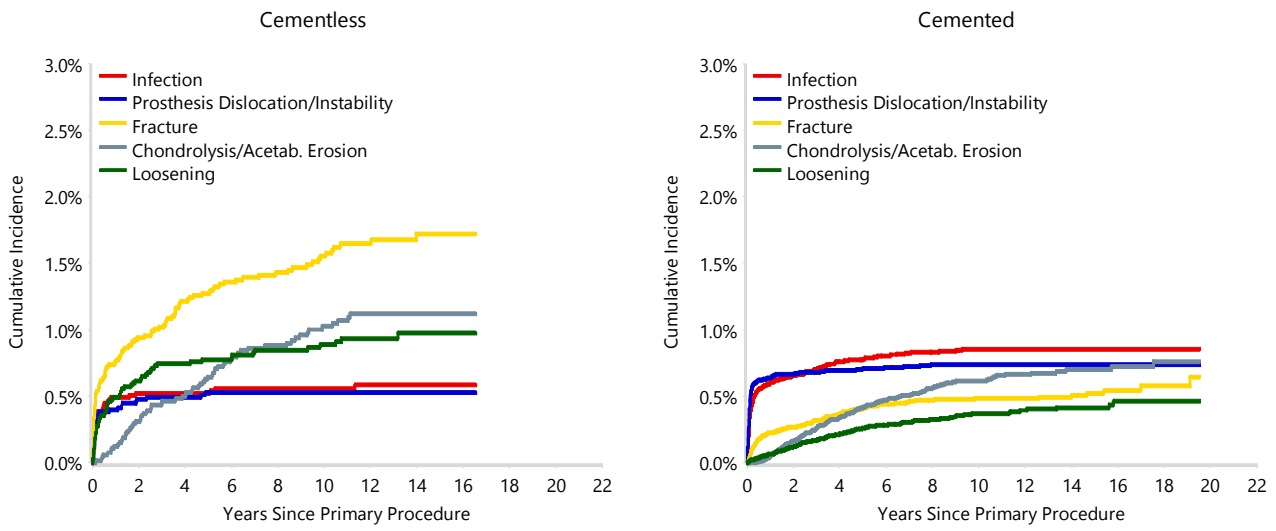
Femoral Fixation	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Cementless	367	6493	3.0 (2.6, 3.4)	4.1 (3.6, 4.6)	4.9 (4.4, 5.6)	6.2 (5.5, 7.0)	8.0 (7.1, 8.9)	10.1 (8.9, 11.4)
Cemented	1361	43418	1.9 (1.8, 2.0)	2.5 (2.4, 2.7)	3.1 (2.9, 3.3)	4.3 (4.1, 4.6)	5.4 (5.0, 5.7)	6.8 (6.3, 7.3)
TOTAL	1728	49911						

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	6493	4798	4046	3376	2275	1436	665
Cemented	43418	29341	23121	18006	10456	5838	2396

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



BIPOLAR

DEMOGRAPHICS

There have been 32,561 bipolar hip replacement procedures reported to the Registry. This is an additional 3,284 procedures compared to the previous report.

Since 2010, there has been an increase in the number of bipolar procedures undertaken each year, with 8.7% more procedures in 2021 compared to 2020. The total number of bipolar procedures has increased by 140.0% since 2003.

Fractured neck of femur is the principal diagnosis for bipolar hip replacement (93.0%).

The majority of patients are female (69.1%) and aged ≥75 years (79.8%). The proportion of patients aged ≥85 years has increased from 26.0% in 2003 to 48.6% in 2021.

Figure SHP18 Primary Bipolar Hip Replacement by Gender

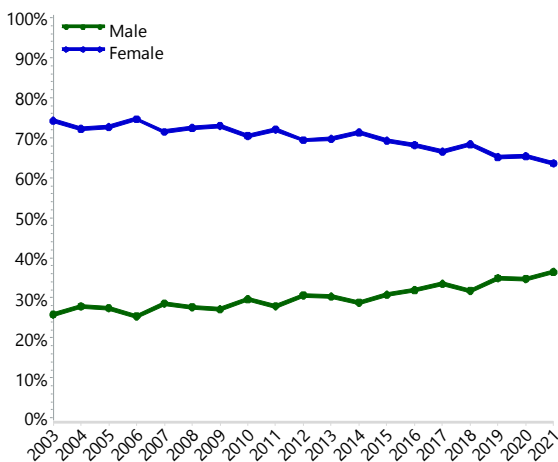
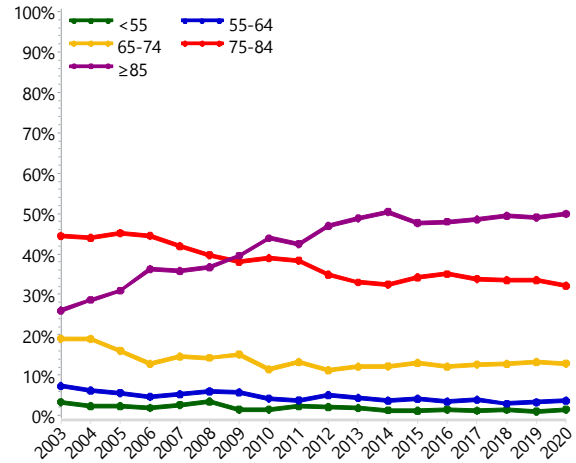


Table SHP23 Age and Gender of Primary Bipolar Hip Replacement

Gender	Number	Percent	Minimum	Maximum	Median	Mean	Std Dev
Male	10072	30.9%	9	105	82	80.5	10.8
Female	22489	69.1%	9	107	83	81.7	9.6
TOTAL	32561	100.0%	9	107	83	81.3	10.0

The mean age of patients is 81.3 years (Table SHP23, Figure SHP18, and Figure SHP19).

Figure SHP19 Primary Bipolar Hip Replacement by Age



Overall, there have been 304 bipolar head and stem combinations recorded by the Registry. In 2021, there were 9 different bipolar heads and 37 different femoral stem prostheses used.

In 2021, the UHR remains the most frequently used bipolar head (41.9%) (Table SHP24). The Exeter V40 is the most frequently used femoral stem (38.4%). The 10 most used femoral stems account for 92.9% 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 SHP24 10 Most Used Bipolar Head Prostheses in Primary Bipolar Hip Replacement

2003		2018		2019		2020		2021	
N	Model	N	Model	N	Model	N	Model	N	Model
760	UHR	999	UHR	1205	UHR	1239	UHR	1410	UHR
140	Hastings	534	Multipolar Bipolar	663	Multipolar Bipolar	822	Multipolar Bipolar	824	Multipolar Bipolar
115	Convene	357	Tandem	386	Tandem	404	Tandem	375	Tandem
91	Bipolar Head (Zimmer)	272	Self-Centering	282	Self-Centering	247	Self-Centering	313	Self-Centering
87	Self-Centering	101	Bipolar Head (Medacta)	68	Bipolar Head (Medacta)	108	BioBall	175	BioBall
59	Multipolar Bipolar	23	Bipolar Head (Lima)	20	BioBall	103	Bipolar Head (Medacta)	84	Bipolar Head (Medacta)
39	Bipolar Head (Mathys)	15	Bipolar Head (Implantcast)	16	Bipolar Head (Mathys)	18	Bipolar Head (Lima)	22	Bipolar Head (Mathys)
19	Bipolar Head (Lima)			9	Bipolar Head (Lima)	12	Bipolar Head (Mathys)	8	Bipolar Head (Lima)
19	Ringloc			5	Bipolar Head (Implantcast)	8	Bipolar Head (Implantcast)	7	Bipolar Head (Implantcast)
5	UHL								
10 Most Used									
1334	(10) 99.5%	2301	(7) 100.0%	2654	(9) 100.0%	2961	(9) 100.0%	3218	(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%	2301	(7) 100.0%	2654	(9) 100.0%	2961	(9) 100.0%	3218	(9) 100.0%

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

2003		2018		2019		2020		2021	
N	Model	N	Model	N	Model	N	Model	N	Model
630	Exeter V40	920	Exeter V40	1116	Exeter V40	1134	Exeter V40	1322	Exeter V40
94	Elite Plus	482	CPT	613	CPT	765	CPT	763	CPT
75	Alloclassic	311	CPCS	357	CPCS	372	CPCS	345	CPCS
65	CPCS	121	CORAIL	177	C-Stem AMT	153	C-Stem AMT	202	C-Stem AMT
61	C-Stem	115	C-Stem AMT	100	CORAIL	83	CORAIL	105	CORAIL
59	Omnifit	83	Quadra-C	56	Quadra-C	70	Taper Fit	90	Absolut
33	VerSys	31	Short Exeter V40	36	Accolade II	60	Quadra-C	71	Taper Fit
26	ABGII	24	H-Max	29	Short Exeter V40	42	Short Exeter V40	68	Quadra-C
25	CCA	21	Absolut	16	MS 30	37	Accolade II	50	Short Exeter V40
25	Spectron EF	20	GMRS	14	Absolut	29	Absolut	28	MS 30
10 Most Used									
1093	(10) 81.5%	2128	(10) 92.5%	2514	(10) 94.7%	2745	(10) 92.7%	3044	(10) 94.6%
Remainder									
248	(46) 18.5%	173	(29) 7.5%	140	(29) 5.3%	216	(28) 7.3%	174	(31) 5.4%
TOTAL									
1341	(56) 100.0%	2301	(39) 100.0%	2654	(39) 100.0%	2961	(38) 100.0%	3218	(41) 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	1	125						
	Taper Fit	3	145	3.3 (1.1, 10.2)					
Bipolar Head (Lima)	H-Max	5	160	2.1 (0.7, 6.4)	3.0 (1.1, 7.8)	3.0 (1.1, 7.8)			
Bipolar Head (Medacta)	Quadra-C	12	535	2.3 (1.3, 4.2)	2.7 (1.5, 4.7)	2.7 (1.5, 4.7)	2.7 (1.5, 4.7)		
	X-Acta	3	133	2.8 (0.9, 8.5)	2.8 (0.9, 8.5)				
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, 5.4)	3.4 (1.7, 6.6)	7.7 (4.4, 13.3)
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)
Convене	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)	7.1 (4.2, 11.8)
	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	9	221	4.0 (2.0, 7.9)	4.0 (2.0, 7.9)	4.0 (2.0, 7.9)	5.0 (2.6, 9.7)	5.0 (2.6, 9.7)	
	CPT	162	5181	2.7 (2.3, 3.3)	3.5 (3.0, 4.1)	3.8 (3.2, 4.5)	4.6 (3.9, 5.5)	4.9 (4.0, 6.0)	6.9 (4.5, 10.4)
	MS 30	3	151	1.5 (0.4, 5.9)	1.5 (0.4, 5.9)	1.5 (0.4, 5.9)			
	VerSys	5	278	1.0 (0.2, 3.9)	2.4 (0.9, 6.3)	2.4 (0.9, 6.3)	2.4 (0.9, 6.3)	2.4 (0.9, 6.3)	
	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	22	813	2.4 (1.5, 3.8)	3.4 (2.2, 5.3)	3.9 (2.5, 6.0)			
	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	43	1120	3.6 (2.6, 4.9)	4.3 (3.2, 5.9)	4.7 (3.5, 6.4)	4.7 (3.5, 6.4)	5.5 (3.7, 7.9)	
	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	107	4.1 (1.6, 10.6)	4.1 (1.6, 10.6)	4.1 (1.6, 10.6)			
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	80	2892	2.1 (1.6, 2.8)	2.7 (2.1, 3.4)	3.2 (2.5, 4.1)	4.0 (3.1, 5.2)	5.3 (4.0, 7.1)	5.7 (4.2, 7.7)
	Spectron EF	8	203	2.2 (0.8, 5.7)	3.6 (1.6, 7.8)	4.3 (2.0, 8.8)	5.2 (2.6, 10.3)	5.2 (2.6, 10.3)	
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*	18	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)	5.8 (3.4, 9.6)	
	Accolade II	0	153	0.0 (0.0, 0.0)	0.0 (0.0, 0.0)				
	Exeter V40	390	13246	2.1 (1.9, 2.4)	2.7 (2.4, 3.0)	3.3 (2.9, 3.6)	3.8 (3.4, 4.3)	4.3 (3.9, 4.9)	5.1 (4.5, 5.8)
	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	14	185	2.4 (0.9, 6.2)	5.0 (2.4, 10.5)	6.1 (3.0, 12.2)	10.9 (5.8, 19.9)		
	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	4	174	2.6 (1.0, 7.0)	2.6 (1.0, 7.0)				
Other (268)		132	2663	3.4 (2.7, 4.2)	4.2 (3.4, 5.1)	4.9 (4.1, 5.9)	5.5 (4.6, 6.6)	6.0 (5.0, 7.3)	8.4 (6.8, 10.3)
TOTAL		1121	32561						

Note: Only combinations with over 100 procedures have been listed

*denotes prosthesis combination with no recorded use in primary bipolar hip replacement in 2021

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 1,006 revisions of primary bipolar hip replacement procedures with a primary diagnosis of fractured neck of femur.

The main reasons for revision are infection (24.4%), fracture (23.6%), loosening (12.6%), and chondrolysis/acetabular erosion (8.3%) (Table SHP28).

The most frequent type of revision is acetabular component only (32.8%), followed by total hip replacement (femoral/acetabular) (20.1%), bipolar only (15.5%), and bipolar head and femoral stem replacement (13.6%) (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).

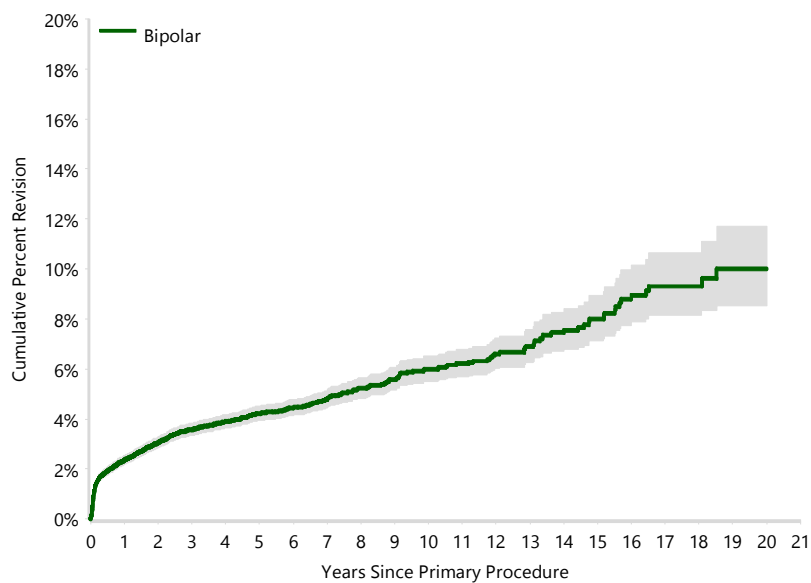
Cementless fixation has a higher rate of revision compared to cemented fixation.

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	1006	30283	2.4 (2.2, 2.5)	3.0 (2.8, 3.3)	3.6 (3.3, 3.8)	4.2 (3.9, 4.5)	4.8 (4.4, 5.1)	6.0 (5.5, 6.5)
TOTAL	1006	30283						

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	30283	20352	15728	12198	7405	4439	2298

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

Reason for Revision	Number	Percent
Infection	245	24.4
Fracture	237	23.6
Loosening	127	12.6
Chondrolysis/Acetab. Erosion	83	8.3
Pain	67	6.7
Lysis	5	0.5
Malposition	5	0.5
Other	237	23.6
TOTAL	1006	100.0

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

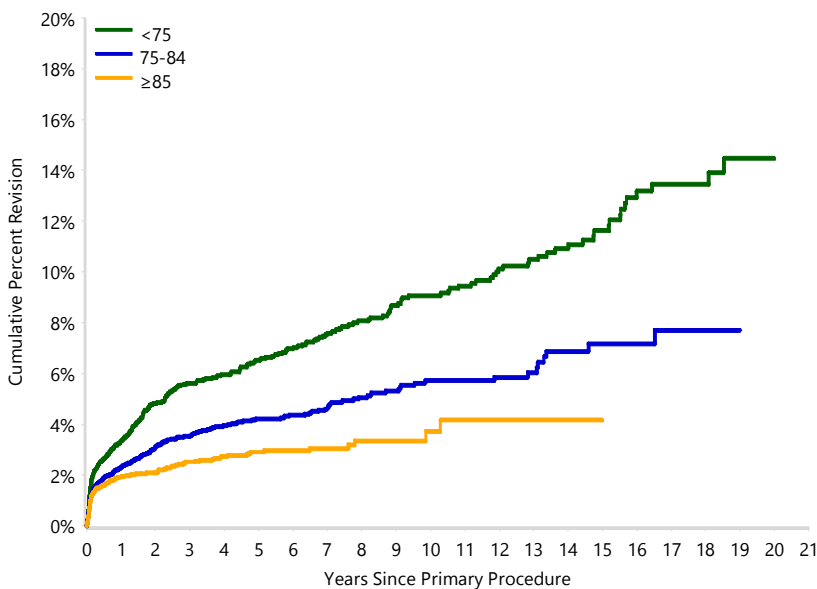
Type of Revision	Number	Percent
Acetabular Component	330	32.8
THR (Femoral/Acetabular)	202	20.1
Bipolar Only	156	15.5
Bipolar Head and Femoral	137	13.6
Femoral Component	51	5.1
Cement Spacer	46	4.6
Head Only	29	2.9
Removal of Prostheses	28	2.8
Minor Components	27	2.7
TOTAL	1006	100.0

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	350	5620	3.3 (2.9, 3.9)	4.8 (4.2, 5.5)	5.6 (5.0, 6.3)	6.5 (5.8, 7.3)	7.5 (6.7, 8.5)	9.1 (8.0, 10.2)
75-84	387	11319	2.3 (2.0, 2.6)	3.1 (2.8, 3.5)	3.5 (3.2, 3.9)	4.2 (3.8, 4.7)	4.6 (4.1, 5.2)	5.7 (5.0, 6.5)
≥85	269	13344	1.9 (1.7, 2.2)	2.1 (1.8, 2.4)	2.5 (2.2, 2.9)	2.9 (2.5, 3.3)	3.1 (2.6, 3.5)	3.7 (2.9, 4.8)
TOTAL	1006	30283						

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



HR - adjusted for gender

<75 vs ≥85
 0 - 3Mth: HR=1.55 (1.22, 1.96), p<0.001
 3Mth - 1.5Yr: HR=2.97 (2.19, 4.03), p<0.001
 1.5Yr+: HR=3.16 (2.37, 4.21), p<0.001

<75 vs 75-84
 Entire Period: HR=1.58 (1.37, 1.83), p<0.001

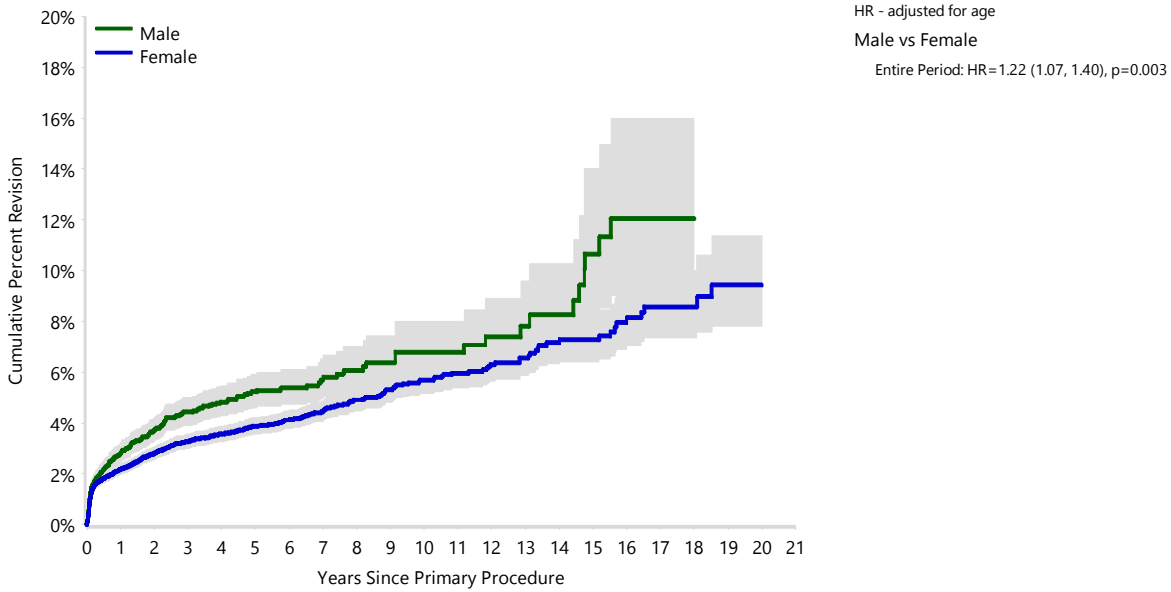
75-84 vs ≥85
 0 - 3Mth: HR=1.12 (0.90, 1.38), p=0.312
 3Mth+: HR=1.79 (1.41, 2.27), p<0.001

Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
<75	5620	4158	3412	2888	2129	1518	1019
75-84	11319	8122	6498	5201	3345	2066	1027
≥85	13344	8072	5818	4109	1931	855	252

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	319	9273	2.8 (2.5, 3.2)	3.7 (3.3, 4.2)	4.4 (3.9, 5.0)	5.2 (4.6, 5.9)	5.7 (5.0, 6.5)	6.8 (5.7, 8.0)
Female	687	21010	2.2 (2.0, 2.4)	2.8 (2.6, 3.1)	3.3 (3.0, 3.6)	3.9 (3.6, 4.2)	4.4 (4.1, 4.8)	5.7 (5.1, 6.3)
TOTAL	1006	30283						

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

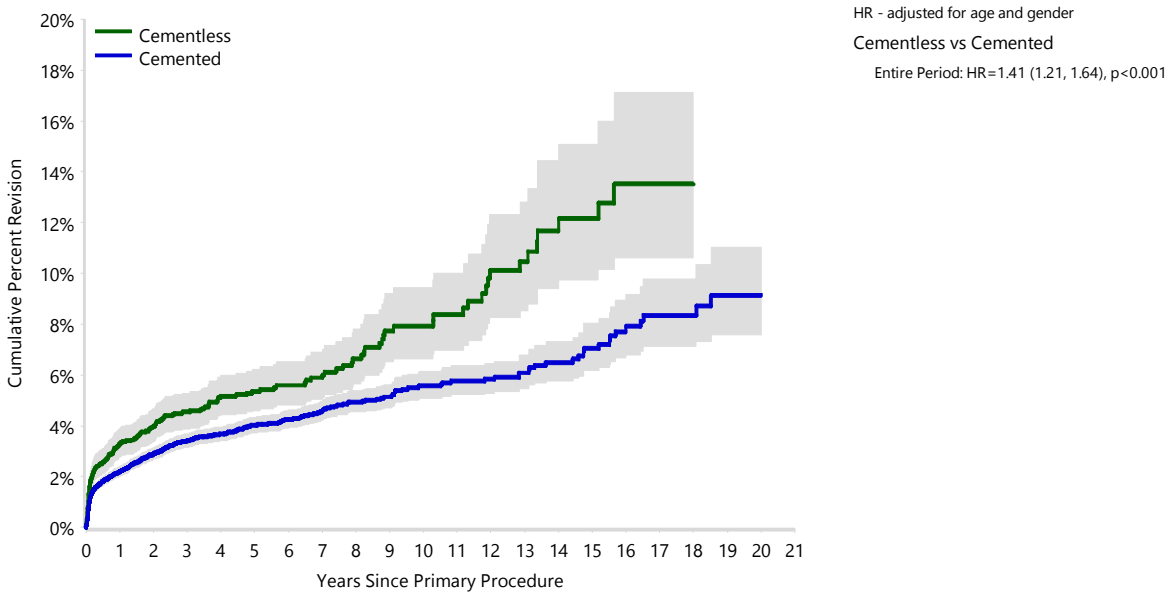


Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Male	9273	5366	3830	2727	1487	828	395
Female	21010	14986	11898	9471	5918	3611	1903

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

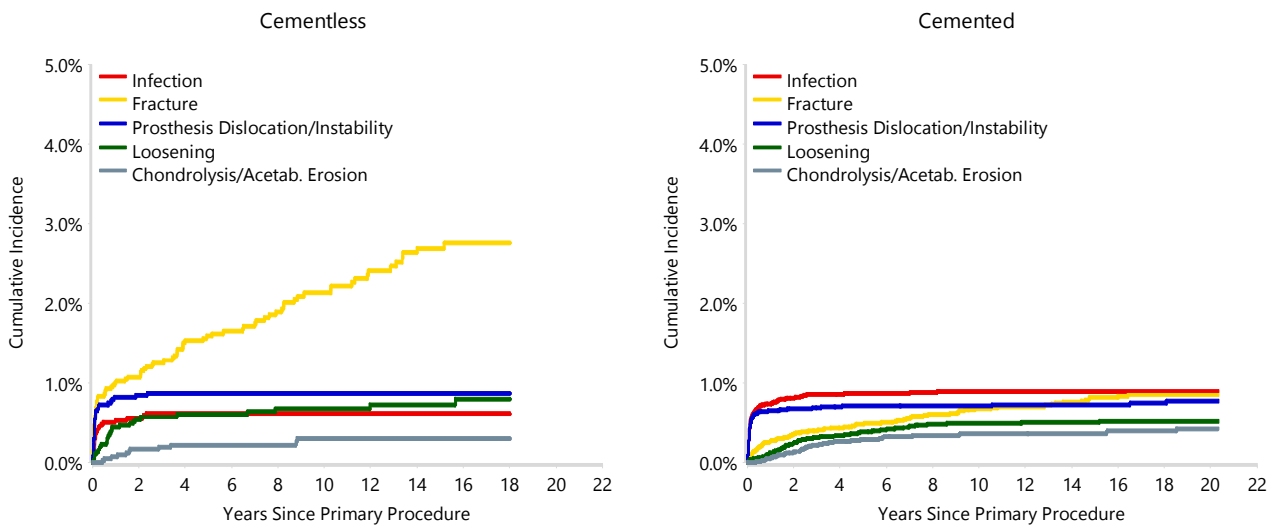
Femoral Fixation	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	5 Yrs	7 Yrs	10 Yrs
Cementless	210	4316	3.3 (2.8, 3.9)	4.0 (3.4, 4.7)	4.5 (3.9, 5.3)	5.4 (4.6, 6.2)	5.9 (5.0, 6.9)	7.9 (6.6, 9.4)
Cemented	796	25967	2.2 (2.0, 2.4)	2.9 (2.7, 3.1)	3.4 (3.2, 3.7)	4.0 (3.7, 4.3)	4.6 (4.2, 5.0)	5.6 (5.1, 6.1)
TOTAL	1006	30283						

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	4316	3072	2521	2085	1339	854	426
Cemented	25967	17280	13207	10113	6066	3585	1872

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



List of Tables

Table SHP1	Primary Partial Hip Replacement by Class.....	5
Table SHP2	Cumulative Percent Mortality of Primary Partial Hip Replacement by Class (Primary Diagnosis Fractured NOF)	6
Table SHP3	Cumulative Percent Revision of Primary Partial Hip Replacement by Class (Primary Diagnosis Fractured NOF)	7
Table SHP4	CPR of Primary Partial Hip Replacement in Patients Aged <75 Years by Class (Primary Diagnosis Fractured NOF) ..	8
Table SHP5	Age and Gender of Primary Unipolar Monoblock Hip Replacement	9
Table SHP6	Most Used Prostheses in Primary Unipolar Monoblock Hip Replacement	9
Table SHP7	CPR of Primary Unipolar Monoblock Hip Replacement (Primary Diagnosis Fractured NOF)	10
Table SHP8	Primary Unipolar Monoblock Hip Replacement by Reason for Revision (Primary Diagnosis Fractured NOF)	11
Table SHP9	Primary Unipolar Monoblock Hip Replacement by Type of Revision (Primary Diagnosis Fractured NOF)	11
Table SHP10	CPR of Primary Unipolar Monoblock Hip Replacement by Age (Primary Diagnosis Fractured NOF)	11
Table SHP11	CPR of Primary Unipolar Monoblock Hip Replacement by Gender (Primary Diagnosis Fractured NOF)	12
Table SHP12	CPR of Primary Unipolar Monoblock Hip Replacement by Femoral Fixation and Prosthesis Type (Fractured NOF) ..	13
Table SHP13	Age and Gender of Primary Unipolar Modular Hip Replacement	15
Table SHP14	10 Most Used Unipolar Head Prostheses in Primary Unipolar Modular Hip Replacement	16
Table SHP15	10 Most Used Femoral Stem Prostheses in Primary Unipolar Modular Hip Replacement	16
Table SHP16	Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement by Prosthesis Combination	17
Table SHP17	Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement (Primary Diagnosis Fractured NOF) ..	18
Table SHP18	Primary Unipolar Modular Hip Replacement by Reason for Revision (Primary Diagnosis Fractured NOF)	19
Table SHP19	Primary Unipolar Modular Hip Replacement by Type of Revision (Primary Diagnosis Fractured NOF)	19
Table SHP20	CPR of Primary Unipolar Modular Hip Replacement by Age (Primary Diagnosis Fractured NOF)	20
Table SHP21	CPR of Primary Unipolar Modular Hip Replacement by Gender (Primary Diagnosis Fractured NOF)	21
Table SHP22	CPR of Primary Unipolar Modular Hip Replacement by Femoral Fixation (Primary Diagnosis Fractured NOF)	22
Table SHP23	Age and Gender of Primary Bipolar Hip Replacement	24
Table SHP24	10 Most Used Bipolar Head Prostheses in Primary Bipolar Hip Replacement	25
Table SHP25	10 Most Used Femoral Stem Prostheses in Primary Bipolar Hip Replacement	25
Table SHP26	Cumulative Percent Revision of Primary Bipolar Hip Replacement by Prosthesis Combination	26
Table SHP27	Cumulative Percent Revision of Primary Bipolar Hip Replacement (Primary Diagnosis Fractured NOF)	27
Table SHP28	Bipolar Hip Replacement by Reason for Revision (Primary Diagnosis Fractured NOF)	28
Table SHP29	Primary Bipolar Hip Replacement by Type of Revision (Primary Diagnosis Fractured NOF)	28
Table SHP30	Cumulative Percent Revision of Primary Bipolar Hip Replacement by Age (Primary Diagnosis Fractured NOF)	28
Table SHP31	CPR of Primary Bipolar Hip Replacement by Gender (Primary Diagnosis Fractured NOF)	29
Table SHP32	CPR of Primary Bipolar Hip Replacement by Femoral Fixation (Primary Diagnosis Fractured NOF)	30

List of Figures

Figure SHP1	Primary Partial Hip Replacement by Class.....	5
Figure SHP2	Cumulative Percent Revision of Primary Partial Hip Replacement by Class (Primary Diagnosis Fractured NOF)	7
Figure SHP3	CPR of Primary Partial Hip Replacement in Patients Aged <75 Years by Class (Fractured NOF)	8
Figure SHP4	Primary Unipolar Monoblock Hip Replacement by Gender	9
Figure SHP5	Primary Unipolar Monoblock Hip Replacement by Age	9
Figure SHP6	Cumulative Percent Revision of Primary Unipolar Monoblock Hip Replacement (Fractured NOF)	10
Figure SHP7	Cumulative Percent Revision of Primary Unipolar Monoblock Hip Replacement by Age (Fractured NOF)	11
Figure SHP8	Cumulative Percent Revision of Primary Unipolar Monoblock Hip Replacement by Gender (Fractured NOF)	12
Figure SHP9	CPR of Primary Unipolar Monoblock Hip Replacement by Femoral Fixation (Fractured NOF)	13
Figure SHP10	CPR of Primary Unipolar Monoblock Hip Replacement by Prosthesis Type and Femoral Fixation (Fractured NOF) ..	14
Figure SHP11	Primary Unipolar Modular Hip Replacement by Gender	15
Figure SHP12	Primary Unipolar Modular Hip Replacement by Age	15
Figure SHP13	Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement (Fractured NOF)	18
Figure SHP14	Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement by Age (Fractured NOF)	20
Figure SHP15	Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement by Gender (Fractured NOF)	21
Figure SHP16	CPR of Primary Unipolar Modular Hip Replacement by Femoral Fixation (Fractured NOF)	22
Figure SHP17	CI Revision Diagnosis of Primary Unipolar Modular Hip Replacement by Femoral Fixation (Fractured NOF)	23
Figure SHP18	Primary Bipolar Hip Replacement by Gender	24
Figure SHP19	Primary Bipolar Hip Replacement by Age	24
Figure SHP20	Cumulative Percent Revision of Primary Bipolar Hip Replacement (Primary Diagnosis Fractured NOF)	27
Figure SHP21	Cumulative Percent Revision of Primary Bipolar Hip Replacement by Age (Primary Diagnosis Fractured NOF)	28
Figure SHP22	Cumulative Percent Revision of Primary Bipolar Hip Replacement by Gender (Fractured NOF)	29
Figure SHP23	Cumulative Percent Revision of Primary Bipolar Hip Replacement by Femoral Fixation (Fractured NOF)	30
Figure SHP24	CI Revision Diagnosis of Primary Bipolar Hip Replacement by Femoral Fixation (Fractured NOF)	31