

Unipolar Head (JRI)/Furlong LOL Unipolar Modular Hip Investigation

Note: This analysis compares the Unipolar Head (JRI)/Furlong LOL head/femoral stem combination with all other unipolar modular hip prostheses.

This combination has been identified as having a significantly higher rate of revision. For a detailed explanation of the process used by the Registry that results in identification of prostheses that have a higher than anticipated rate of revision please refer to the Prostheses with Higher than Anticipated Rates of Revision chapter of the most recent AOANJRR Annual Report, <https://aoanjrr.sahmri.com/annual-reports-2022>.

Note: Procedures using prostheses with no recorded use in 2021 are excluded from the comparator.

TABLE 1

Revision Rate of Primary Unipolar Modular Hip Replacement

The revision rate of the Unipolar Head (JRI)/Furlong LOL unipolar modular hip combination is compared to all other unipolar modular hip prostheses.

Table 1: Revision Rates of Primary Unipolar Modular Hip Replacement

Component	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Unipolar Head (JRI)/Furlong LOL	11	132	514	2.14 (1.07, 3.83)
Other Unipolar Modular Hip	1470	44103	142876	1.03 (0.98, 1.08)
TOTAL	1481	44235	143390	1.03 (0.98, 1.09)

Note: Prostheses no longer used in 2021 are excluded from the comparator.

TABLE 2

Yearly Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement

The yearly cumulative percent revision of the Unipolar Head (JRI)/Furlong LOL unipolar modular hip combination is compared to all other unipolar modular hip prostheses.

Table 2: Yearly Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement

CPR	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	7 Yrs
Unipolar Head (JRI)/Furlong LOL	6.4 (3.1, 13.0)	9.7 (5.3, 17.4)	9.7 (5.3, 17.4)	11.1 (6.3, 19.4)	11.1 (6.3, 19.4)		
Other Unipolar Modular Hip	2.0 (1.9, 2.2)	2.7 (2.5, 2.9)	3.3 (3.1, 3.5)	4.0 (3.8, 4.2)	4.5 (4.3, 4.8)	5.1 (4.8, 5.4)	5.7 (5.3, 6.0)

CPR	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs
Unipolar Head (JRI)/Furlong LOL							
Other Unipolar Modular Hip	6.2 (5.9, 6.7)	6.8 (6.4, 7.3)	7.4 (6.9, 8.0)	7.9 (7.3, 8.5)	8.1 (7.5, 8.8)	8.4 (7.7, 9.2)	9.3 (8.4, 10.4)

CPR	15 Yrs	16 Yrs	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs
Unipolar Head (JRI)/Furlong LOL							
Other Unipolar Modular Hip	9.6 (8.5, 10.8)	11.4 (9.5, 13.6)	11.4 (9.5, 13.6)	12.5 (9.8, 15.8)			

Note: Prostheses no longer used in 2021 are excluded from the comparator.

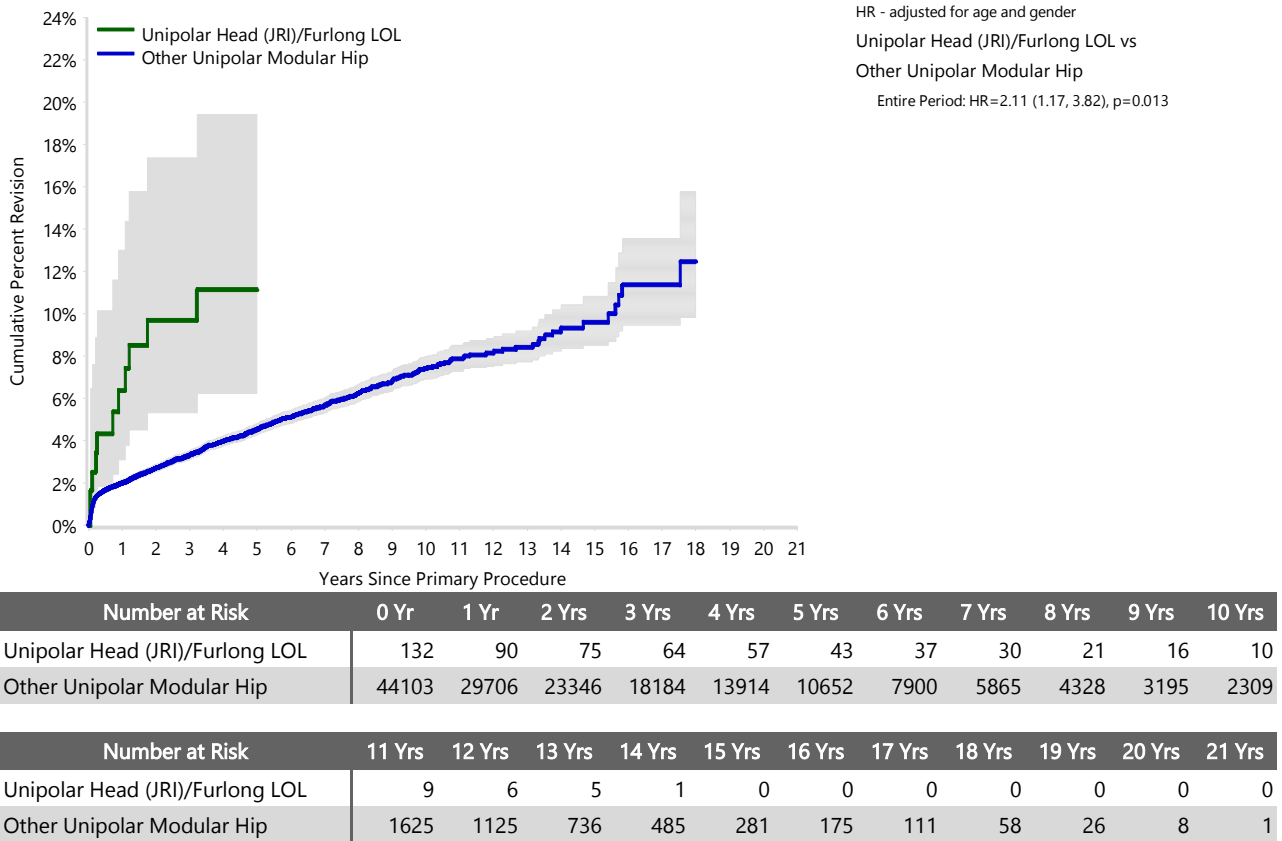
FIGURE 1

Yearly Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement

The yearly cumulative percent revision of the Unipolar Head (JRI)/Furlong LOL unipolar modular hip combination is compared to all other unipolar modular hip prostheses. In addition, hazard ratios are reported.

Hazard ratios are reported for specific time periods during which the hazard ratio is constant. This is done to enable more specific and valid comparisons of the risk of revision over time. The pattern of variation in risk has important implications with respect to the underlying reasons for any difference.

Figure 1: Cumulative Percent Revision of Primary Unipolar Modular Hip Replacement



Note: Prostheses no longer used in 2021 are excluded from the comparator.

TABLE 3**Primary Diagnosis for Revised Primary Unipolar Modular Hip Replacement**

This table identifies the diagnosis of the primary procedure which was subsequently revised. This information is provided as there is a variation on outcome depending on the primary diagnosis. It is therefore important when considering the reasons for a higher than anticipated rate of revision that there is identification of the primary diagnosis. This information should be compared to the primary diagnosis for the revisions of all other unipolar modular hip prostheses.

Table 3: Primary Diagnosis for Revised Primary Unipolar Modular Hip Replacement

Primary Diagnosis	Unipolar Head (JRI)/Furlong LOL		Other Unipolar Modular Hip	
	Number	Percent	Number	Percent
Fractured Neck Of Femur	11	100.0	1383	94.1
Osteoarthritis			46	3.1
Failed Internal Fixation			24	1.6
Tumour			9	0.6
Osteonecrosis			7	0.5
Rheumatoid Arthritis			1	0.1
TOTAL	11	100.0	1470	100.0

Note: Prostheses no longer used in 2021 are excluded from the comparator.

TABLE 4

Reasons for Revision

This is reported in two ways: a percentage of primary procedures revised and as a percentage of all revision procedures.

% Primaries Revised: This shows the proportional contribution of each revision diagnosis as a percentage of the total number of primary procedures. This percentage can be used to approximate the risk of being revised for that diagnosis. Differing percentages between groups, with the same distribution of follow up time, may identify problems of concern.

% Revisions: The number of revisions for each diagnosis is expressed as a percentage of the total number of revisions. This shows the distribution of reasons for revision within a group but cannot be used as a comparison between groups.

Table 4: Primary Unipolar Modular Hip Replacement - Reason for Revision (Follow-up Limited to 14.4 Years)

Revision Diagnosis	Unipolar Head (JRI)/Furlong LOL			Other Unipolar Modular Hip		
	Number	% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Infection	3	2.3	27.3	349	0.8	23.9
Prosthesis Dislocation/Instability	2	1.5	18.2	313	0.7	21.4
Chondrolysis/Acetab. Erosion				238	0.5	16.3
Fracture	2	1.5	18.2	223	0.5	15.2
Pain	1	0.8	9.1	161	0.4	11.0
Loosening	3	2.3	27.3	121	0.3	8.3
Lysis				15	0.0	1.0
Leg Length Discrepancy				7	0.0	0.5
Incorrect Sizing				6	0.0	0.4
Tumour				6	0.0	0.4
Progression Of Disease				5	0.0	0.3
Malposition				4	0.0	0.3
Metal Related Pathology				4	0.0	0.3
Implant Breakage Stem				3	0.0	0.2
Other				8	0.0	0.5
N Revision	11	8.3	100.0	1463	3.3	100.0
N Primary	132			44103		

Note: This table is restricted to revisions within 14.4 years for all groups to allow a time-matched comparison of revisions.

Note: Prostheses no longer used in 2021 are excluded from the comparator.

FIGURE 2

Cumulative Incidence Revision Diagnosis of Primary Unipolar Modular Hip Replacement

This figure details the cumulative incidence of the most common reasons for revision. The five most common reasons for revision are included as long as each of these reasons account for more than 10 procedures or at least 5% of all revisions for the Unipolar Head (JRI)/Furlong LOL unipolar modular hip combination. A comparative graph is provided of the cumulative incidence for the same reasons for revisions for all other unipolar modular hip prostheses.

Figure 2: Cumulative Incidence Revision Diagnosis for Primary Unipolar Modular Hip Replacement

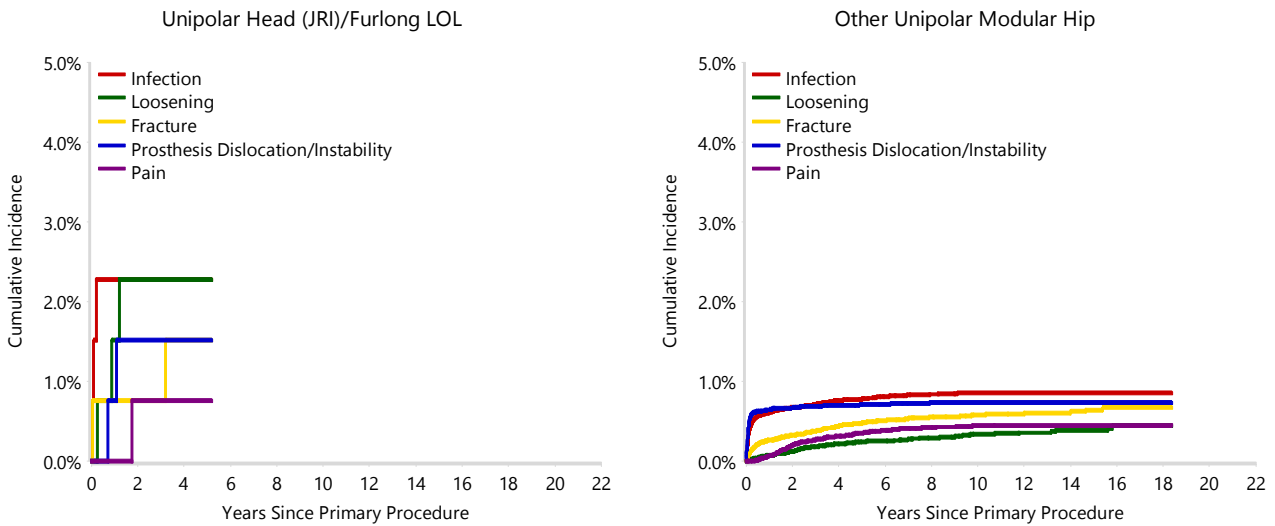


TABLE 5

Type of Revision Performed for Primary Unipolar Modular Hip Replacement

This analysis identifies the components used in the revision of the Unipolar Head (JRI)/Furlong LOL unipolar modular hip combination and compares it to the components used in the revision of all other unipolar modular hip prostheses.

The reason this analysis is undertaken is to identify whether there is one or more components which are being replaced that differ from the components replaced for revisions of all other unipolar modular hip prostheses i.e. is there a difference in the type of revision undertaken for the Unipolar Head (JRI)/Furlong LOL unipolar modular hip combination compared to all other unipolar modular hip prostheses.

Table 5: Primary Unipolar Modular Hip Replacement - Type of Revision (Follow-up Limited to 14.4 Years)

Type of Revision	Unipolar Head (JRI)/Furlong LOL		Other Unipolar Modular Hip	
	Number	Percent	Number	Percent
Acetabular Component	2	18.2	615	42.0
THR (Femoral/Acetabular)	3	27.3	247	16.9
Femoral Component	1	9.1	149	10.2
Cement Spacer			58	4.0
Bipolar Head and Femoral	2	18.2	55	3.8
Removal of Prostheses			52	3.6
Reinsertion of Components			6	0.4
N Major	8	72.7	1182	80.8
Head Only	2	18.2	223	15.2
Minor Components	1	9.1	41	2.8
Bipolar Only			16	1.1
Head/Insert			1	0.1
N Minor	3	27.3	281	19.2
TOTAL	11	100.0	1463	100.0

Note: This table is restricted to revisions within 14.4 years for all groups to allow a time-matched comparison of revisions.

Note: Prostheses no longer used in 2021 are excluded from the comparator.

TABLE 6**Revision Rates of Unipolar Head (JRI)/Furlong LOL Primary Unipolar Modular Hip Replacement by Fixation**

This analysis is provided as some prostheses have more than one fixation option. Additionally there are prostheses where an alternative to the recommended approach to fixation was used e.g. a cementless prosthesis that has been cemented or vice-versa.

Table 6: Revised Number of Unipolar Head (JRI)/Furlong LOL Primary Unipolar Modular Hip Replacement by Fixation

Fixation	N Revised	N Total
Cementless	11	132
TOTAL	11	132

TABLE 7

Revision Rates of Primary Unipolar Modular Hip Replacement by State

This enables a state by state variation to be identified for the Unipolar Head (JRI)/Furlong LOL unipolar modular hip combination and provides the comparative data for each of the states for all other unipolar modular hip prostheses.

The purpose of this analysis is to determine if the higher than anticipated rate of revision has widespread distribution between states. If there is widespread distribution then the reason for the higher than anticipated rate of revision is unlikely to be surgeon specific. If the prosthesis has been used in only a small number of states it is not possible to distinguish if the higher than anticipated rate of revision is related to the prosthesis, surgeon, technique or patient.

Table 7: Revised Number of Primary Unipolar Modular Hip Replacement by State

Component	State	N Revised	N Total
Unipolar Head (JRI)/Furlong LOL	NSW	0	2
	VIC	5	86
	QLD	5	42
	SA	1	2
	Other Unipolar Modular Hip	NSW	301
	VIC	444	12580
	QLD	224	6593
	WA	222	6515
	SA	226	6153
	TAS	38	1177
	ACT/NT	15	323
TOTAL		1481	44235

Note: Prostheses no longer used in 2021 are excluded from the comparator.

TABLE 8**Number of Revisions of Unipolar Head (JRI)/Furlong LOL Primary Unipolar Modular Hip Replacement by Year of Implant**

This analysis details the number of prostheses reported each year to the Registry for the Unipolar Head (JRI)/Furlong LOL unipolar modular hip combination. It also provides the subsequent number of revisions of the primaries reported in that year.

Primary procedures performed in later years have had less follow up time therefore the number revised is expected to be less than the number revised in earlier years. For example, a primary procedure performed in 2021 has a maximum of one year to be revised, whereas a primary procedure performed in 2019 has a maximum of three years to be revised.

Table 8: Number of Revisions of Unipolar Head (JRI)/Furlong LOL Primary Unipolar Modular Hip Replacement by Year of Implant

Year of Implant	Number Revised	Total Number
2007	1	12
2008	1	18
2009	3	10
2010	1	13
2011	1	10
2012	1	8
2013	1	7
2014	1	34
2015	0	16
2016	1	4
TOTAL	11	132

TABLE 9

Revision Rates of Unipolar Head (JRI)/Furlong LOL Primary Unipolar Modular Hip Replacement by Catalogue Number Range

Many prostheses have a number of catalogue ranges. The catalogue range is specific to particular design features; more than one catalogue range usually indicates a minor difference in design in a particular Unipolar Head (JRI)/Furlong LOL prosthesis.

This analysis has been undertaken to determine if the revision rate varies according to the catalogue number range.

Model	Catalogue Range	Catalogue Description	Cement	Material	Coating
Head					
Unipolar Head (JRI)	934001-935801	STAINLESS STEEL PHYSIOLOGICAL HEAD	NO	METAL	
Femoral Stem					
Furlong LOL	970900-971400	LOL H-AC STEM	NO	METAL	HA COATED

Table 9: Revised Number of Unipolar Head (JRI)/Furlong LOL Primary Unipolar Modular Hip Replacement by Catalogue Number Range

Head Range	Femoral Stem Range	N Revised	N Total
934001-935801	970900-971400	11	132
TOTAL		11	132