

Fin II Total Conventional Hip Investigation

Note: This analysis compares the Fin II acetabular prosthesis with all other total conventional hip prostheses.

This prosthesis 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 metal/metal prostheses with head size larger than 32mm are excluded from the comparator. Procedures using prostheses with no recorded use in 2021 are excluded from the comparator.

TABLE 1

Revision Rate of Primary Total Conventional Hip Replacement

The revision rate of the Fin II total conventional hip prosthesis is compared to all other total conventional hip prostheses.

Table 1: Revision Rates of Primary Total Conventional Hip Replacement

Component	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Fin II	161	2298	19598	0.82 (0.70, 0.96)
Other Total Conventional Hip	15852	453051	2719695	0.58 (0.57, 0.59)
TOTAL	16013	455349	2739293	0.58 (0.58, 0.59)

Note: Prostheses no longer used in 2021 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 2

Yearly Cumulative Percent Revision of Primary Total Conventional Hip Replacement

The yearly cumulative percent revision of the Fin II total conventional hip prosthesis is compared to all other total conventional hip prostheses.

Table 2: Yearly Cumulative Percent Revision of Primary Total Conventional Hip Replacement

CPR	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	7 Yrs
Fin II	2.6 (2.0, 3.4)	3.3 (2.7, 4.2)	3.5 (2.8, 4.3)	4.1 (3.3, 5.0)	4.6 (3.8, 5.6)	5.1 (4.3, 6.2)	5.8 (4.9, 6.9)
Other Total Conventional Hip	1.7 (1.7, 1.8)	2.2 (2.2, 2.2)	2.5 (2.5, 2.6)	2.8 (2.8, 2.9)	3.1 (3.0, 3.2)	3.4 (3.3, 3.5)	3.7 (3.6, 3.7)

CPR	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs
Fin II	6.4 (5.4, 7.6)	7.1 (6.0, 8.4)	7.6 (6.5, 8.9)	8.1 (6.9, 9.5)	8.7 (7.4, 10.2)	9.5 (8.0, 11.2)	10.0 (8.3, 12.0)
Other Total Conventional Hip	4.0 (3.9, 4.0)	4.3 (4.2, 4.4)	4.6 (4.6, 4.7)	5.0 (4.9, 5.1)	5.4 (5.3, 5.5)	5.8 (5.7, 5.9)	6.3 (6.1, 6.4)

CPR	15 Yrs	16 Yrs	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs
Fin II	10.0 (8.3, 12.0)						
Other Total Conventional Hip	6.7 (6.5, 6.8)	7.1 (6.9, 7.3)	7.5 (7.3, 7.7)	7.9 (7.6, 8.1)	8.6 (8.3, 8.9)	8.9 (8.5, 9.3)	9.8 (9.0, 10.8)

Note: Prostheses no longer used in 2021 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

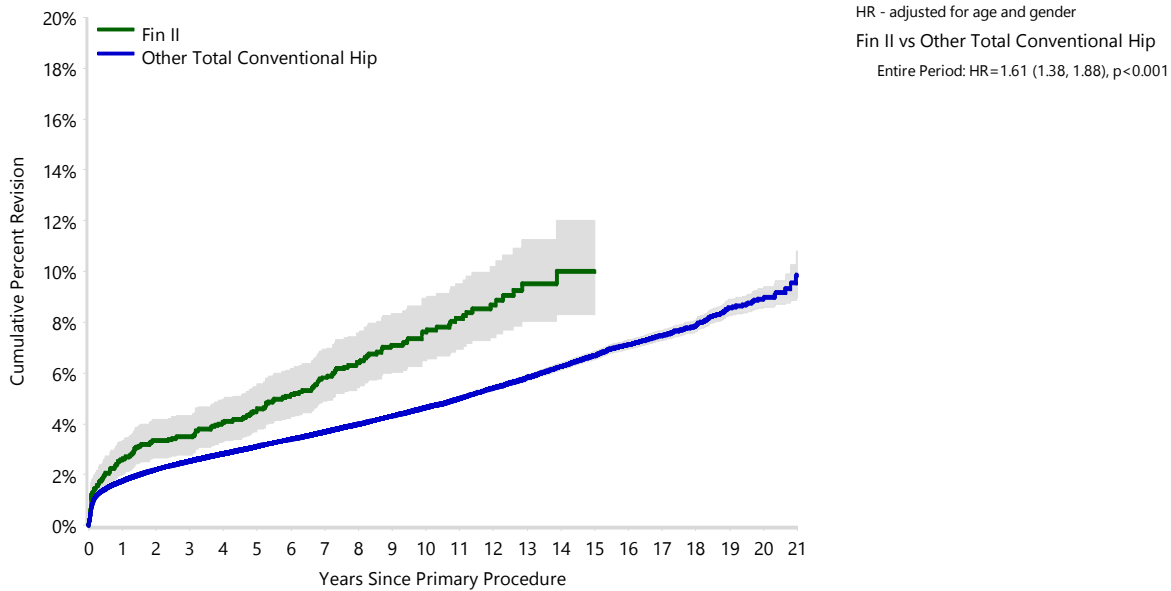
FIGURE 1

Yearly Cumulative Percent Revision of Primary Total Conventional Hip Replacement

The yearly cumulative percent revision of the Fin II total conventional hip prosthesis is compared to all other total conventional 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 Total Conventional Hip Replacement



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	7 Yrs	8 Yrs	9 Yrs	10 Yrs
Fin II	2298	2115	1972	1866	1819	1746	1706	1631	1493	1224	1024
Other Total Conventional Hip	453051	398382	353843	309041	267078	227936	191465	158466	131111	108004	88146

Number at Risk	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs
Fin II	771	538	335	175	78	13	0	0	0	0	0
Other Total Conventional Hip	70601	55342	42208	31909	24032	17719	12212	7611	4006	1573	276

Note: Prostheses no longer used in 2021 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 3**Primary Diagnosis for Revised Primary Total Conventional 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 total conventional hip prostheses.

Table 3: Primary Diagnosis for Revised Primary Total Conventional Hip Replacement

Primary Diagnosis	Fin II		Other Total Conventional Hip	
	Number	Percent	Number	Percent
Osteoarthritis	145	90.1	13105	82.7
Fractured Neck Of Femur	4	2.5	1164	7.3
Osteonecrosis	5	3.1	718	4.5
Developmental Dysplasia	3	1.9	247	1.6
Rheumatoid Arthritis	2	1.2	173	1.1
Failed Internal Fixation	1	0.6	140	0.9
Tumour			137	0.9
Other Inflammatory Arthritis			91	0.6
Fracture/Dislocation			47	0.3
Arthrodesis Takedown			16	0.1
Other	1	0.6	14	0.1
TOTAL	161	100.0	15852	100.0

Note: Prostheses no longer used in 2021 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm 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 Total Conventional Hip Replacement - Reason for Revision (Follow-up Limited to 16.5 Years)

Revision Diagnosis	Number	Fin II		Other Total Conventional Hip		
		% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Prosthesis Dislocation/Instability	34	1.5	21.1	3702	0.8	23.6
Infection	22	1.0	13.7	3538	0.8	22.5
Fracture	19	0.8	11.8	3411	0.8	21.7
Loosening	38	1.7	23.6	3180	0.7	20.2
Pain	6	0.3	3.7	285	0.1	1.8
Leg Length Discrepancy	3	0.1	1.9	260	0.1	1.7
Malposition	2	0.1	1.2	225	0.0	1.4
Lysis	6	0.3	3.7	170	0.0	1.1
Implant Breakage Stem	4	0.2	2.5	148	0.0	0.9
Implant Breakage Acetabular Insert	3	0.1	1.9	114	0.0	0.7
Incorrect Sizing	2	0.1	1.2	95	0.0	0.6
Wear Acetabular Insert	1	0.0	0.6	86	0.0	0.5
Implant Breakage Acetabular	9	0.4	5.6	66	0.0	0.4
Metal Related Pathology	7	0.3	4.3	64	0.0	0.4
Wear Head	1	0.0	0.6	44	0.0	0.3
Tumour				37	0.0	0.2
Implant Breakage Head	1	0.0	0.6	30	0.0	0.2
Heterotopic Bone				23	0.0	0.1
Wear Acetabulum				9	0.0	0.1
Progression Of Disease				2	0.0	0.0
Osteonecrosis				1	0.0	0.0
Synovitis	1	0.0	0.6	1	0.0	0.0
Other	2	0.1	1.2	228	0.1	1.5
N Revision	161	7.0	100.0	15719	3.5	100.0
N Primary	2298			453051		

Note: This table is restricted to revisions within 16.5 years for all groups to allow a time-matched comparison of revisions.

Note: Prostheses no longer used in 2021 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

FIGURE 2

Cumulative Incidence Revision Diagnosis of Primary Total Conventional 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 Fin II total conventional hip prosthesis. A comparative graph is provided of the cumulative incidence for the same reasons for revisions for all other total conventional hip prostheses.

Figure 2: Cumulative Incidence Revision Diagnosis for Primary Total Conventional Hip Replacement

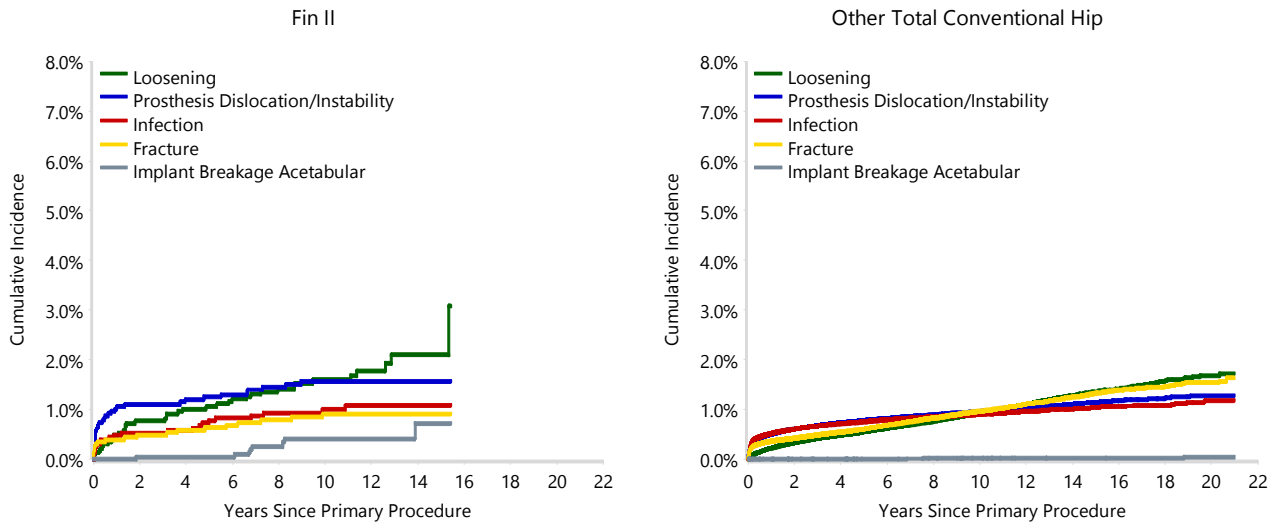


TABLE 5

Type of Revision Performed for Primary Total Conventional Hip Replacement

This analysis identifies the components used in the revision of the Fin II total conventional hip prosthesis and compares it to the components used in the revision of all other total conventional 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 total conventional hip prostheses i.e. is there a difference in the type of revision undertaken for the Fin II total conventional hip prosthesis compared to all other total conventional hip prostheses.

Table 5: Primary Total Conventional Hip Replacement - Type of Revision (Follow-up Limited to 16.5 Years)

Type of Revision	Fin II		Other Total Conventional Hip	
	Number	Percent	Number	Percent
Femoral Component	51	31.7	5114	32.5
Acetabular Component	40	24.8	3019	19.2
THR (Femoral/Acetabular)	25	15.5	1783	11.3
Cement Spacer	9	5.6	592	3.8
Removal of Prostheses			96	0.6
Reinsertion of Components			25	0.2
Total Femoral			6	0.0
Bipolar Head and Femoral			4	0.0
Saddle			1	0.0
N Major	125	77.6	10640	67.7
Head/Insert	7	4.3	3855	24.5
Head Only	13	8.1	776	4.9
Minor Components	3	1.9	272	1.7
Insert Only			172	1.1
Head/Neck	9	5.6	1	0.0
Head/Neck/Insert	4	2.5		
Bipolar Only			2	0.0
Cement Only			1	0.0
N Minor	36	22.4	5079	32.3
TOTAL	161	100.0	15719	100.0

Note: This table is restricted to revisions within 16.5 years for all groups to allow a time-matched comparison of revisions.

Note: Prostheses no longer used in 2021 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 6**Revision Rates of Fin II Primary Total Conventional 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 Fin II Primary Total Conventional Hip Replacement by Fixation

Fixation	N Revised	N Total
Cemented	0	1
Cementless	142	1968
Hybrid (Femur Cemented)	17	326
Reverse Hybrid (Femur Cementless)	2	3
TOTAL	161	2298

TABLE 7**Revision Rates of Fin II Primary Total Conventional Hip Replacement by Bearing Surface**

This analysis is provided as some prostheses are combined with a variety of bearing surfaces. All bearing surfaces used with this prosthesis are listed.

Table 7: Revised Number of Fin II Primary Total Conventional Hip Replacement by Bearing Surface

Bearing Surface	N Revised	N Total
Ceramic/Ceramic	144	2002
Ceramic/Non XLPE	4	16
Ceramic/XLPE	3	151
Metal/Metal	1	3
Metal/Non XLPE	7	93
Metal/XLPE	2	28
Unknown	0	5
TOTAL	161	2298

TABLE 8**Revision Rates of Fin II Primary Total Conventional Hip Replacement by Approach**

This analysis is provided as some prostheses are used with a variety of surgical approaches. All surgical approaches used with this prosthesis are listed.

Table 8: Revised Number of Fin II Primary Total Conventional Hip Replacement by Approach

Approach	N Revised	N Total
Anterior	3	76
Lateral	0	7
Posterior	2	196
TOTAL	5	279

Note: Excludes 2019 procedures with no approach recorded

TABLE 9

Revision Rates of Primary Total Conventional Hip Replacement by State

This enables a state by state variation to be identified for the Fin II total conventional hip prosthesis and provides the comparative data for each of the states for all other total conventional 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 9: Revised Number of Primary Total Conventional Hip Replacement by State

Component	State	N Revised	N Total
Fin II	NSW	113	1830
	VIC	36	255
	QLD	5	41
	WA	4	133
	TAS	0	2
	ACT/NT	3	37
Other Total Conventional Hip	NSW	4293	132654
	VIC	3982	116998
	QLD	3146	80117
	WA	2182	53881
	SA	1415	41929
	TAS	372	15098
	ACT/NT	462	12374
TOTAL		16013	455349

Note: Prostheses no longer used in 2021 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

TABLE 10**Number of Revisions of Fin II Primary Total Conventional Hip Replacement by Year of Implant**

This analysis details the number of prostheses reported each year to the Registry for the Fin II total conventional hip prosthesis. 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 10: Number of Revisions of Fin II Primary Total Conventional Hip Replacement by Year of Implant

Year of Implant	Number Revised	Total Number
2005	4	39
2006	7	128
2007	13	175
2008	32	251
2009	29	269
2010	30	318
2011	14	286
2012	11	205
2013	14	247
2014	2	101
2015	0	6
2018	0	9
2019	2	76
2020	3	94
2021	0	94
TOTAL	161	2298

TABLE 11**Revision Rates of Fin II Primary Total Conventional 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 Fin II 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
Acetabular					
Fin II	110350146H-110350162H	TITANIUM PLAMA SPRAYED HA ACETABULAR CUP	NO	METAL	HA COATED
Fin II	1110350144-1110350162	TITANIUM PLAMA SPRAYED HA ACETABULAR CUP	NO	METAL	HA COATED
Fin II	1110350144H-1110350254H	TITANIUM PLAMA SPRAYED HA ACETABULAR CUP	NO	METAL	HA COATED

Table 11: Revised Number of Fin II Primary Total Conventional Hip Replacement by Catalogue Number Range

Acetabular Range	N Revised	N Total
110350146H-110350162H	5	266
1110350144-1110350162	7	63
1110350144H-1110350254H	149	1969
TOTAL	161	2298

TABLE 12

Revision Rates of Fin II Primary Total Conventional Hip Replacement by Component

A prosthesis may be combined with multiple components. This analysis has been undertaken to determine if the revision rate varies according to the component with which it is combined.

Table 12: Revised Number of Fin II Primary Total Conventional Hip Replacement by Femoral Stem Component

Femoral Stem Component	N Revised	N Total
Absolut	1	32
Apex	62	1010
Apex K1	2	15
C-Stem AMT	0	4
CPT	0	1
Edinburgh	5	55
Evolve	0	3
Excia	0	2
Excia (cless)	0	1
Exeter V40	0	2
Generic Stem	0	2
HACTIV	0	41
Hip and Go	0	1
Integrale (exch neck)	0	1
K2	44	264
Korus	5	217
Linear	0	2
M-Cor	1	1
MML	0	1
MS 30	0	1
MSA	13	104
Novation	1	16
Origin	0	7
Paragon	0	72
Profemur L (exch neck)	0	1
Profemur TL	2	61
Profemur XM	2	43
R120	9	175
Restoration	0	1
S-Rom	0	3
UniSyn	14	158
VerSys Heritage	0	1
TOTAL	161	2298