

Continuum Total Conventional Hip Investigation

Note: This analysis compares the Continuum 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-2026>.

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 2025 are excluded from the comparator.

TABLE 1

Revision Rate of Primary Total Conventional Hip Replacement

The revision rate of the Continuum 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)
Continuum	702	14078	127376	0.55 (0.51, 0.59)
Other Total Conventional Hip	19346	561216	3565250	0.54 (0.54, 0.55)
TOTAL	20048	575294	3692627	0.54 (0.54, 0.55)

Note: Prostheses no longer used in 2025 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 Continuum total conventional hip prosthesis is compared to all other total conventional hip prostheses.

Table 2: Yearly Cumulative Percent Revision (95% CI) of Primary Total Conventional Hip Replacement

CPR	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs
Continuum	2.6 (2.4, 2.9)	3.2 (2.9, 3.5)	3.5 (3.2, 3.8)	3.7 (3.4, 4.0)	4.0 (3.6, 4.3)	4.2 (3.8, 4.5)
Other Total Conventional Hip	1.7 (1.7, 1.8)	2.1 (2.1, 2.2)	2.5 (2.4, 2.5)	2.7 (2.7, 2.8)	3.0 (2.9, 3.0)	3.3 (3.2, 3.3)

CPR	7 Yrs	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs
Continuum	4.5 (4.2, 4.9)	4.7 (4.4, 5.1)	4.9 (4.5, 5.3)	5.2 (4.8, 5.6)	5.4 (5.0, 5.8)	5.7 (5.2, 6.1)
Other Total Conventional Hip	3.5 (3.5, 3.6)	3.8 (3.7, 3.9)	4.1 (4.0, 4.2)	4.4 (4.3, 4.4)	4.7 (4.6, 4.8)	5.1 (5.0, 5.2)

CPR	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs	18 Yrs
Continuum	5.9 (5.4, 6.4)	5.9 (5.5, 6.4)	6.2 (5.7, 6.8)	6.2 (5.7, 6.8)		
Other Total Conventional Hip	5.4 (5.3, 5.5)	5.8 (5.7, 5.9)	6.2 (6.1, 6.3)	6.6 (6.5, 6.7)	7.0 (6.8, 7.1)	7.3 (7.1, 7.5)

CPR	19 Yrs	20 Yrs	21 Yrs	22 Yrs	23 Yrs	24 Yrs	25 Yrs
Continuum							
Other Total Conventional Hip	7.7 (7.5, 7.9)	8.0 (7.8, 8.2)	8.6 (8.3, 8.9)	9.0 (8.7, 9.4)	9.6 (9.1, 10.0)	9.6 (9.1, 10.1)	10.3 (9.4, 11.2)

Note: Prostheses no longer used in 2025 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

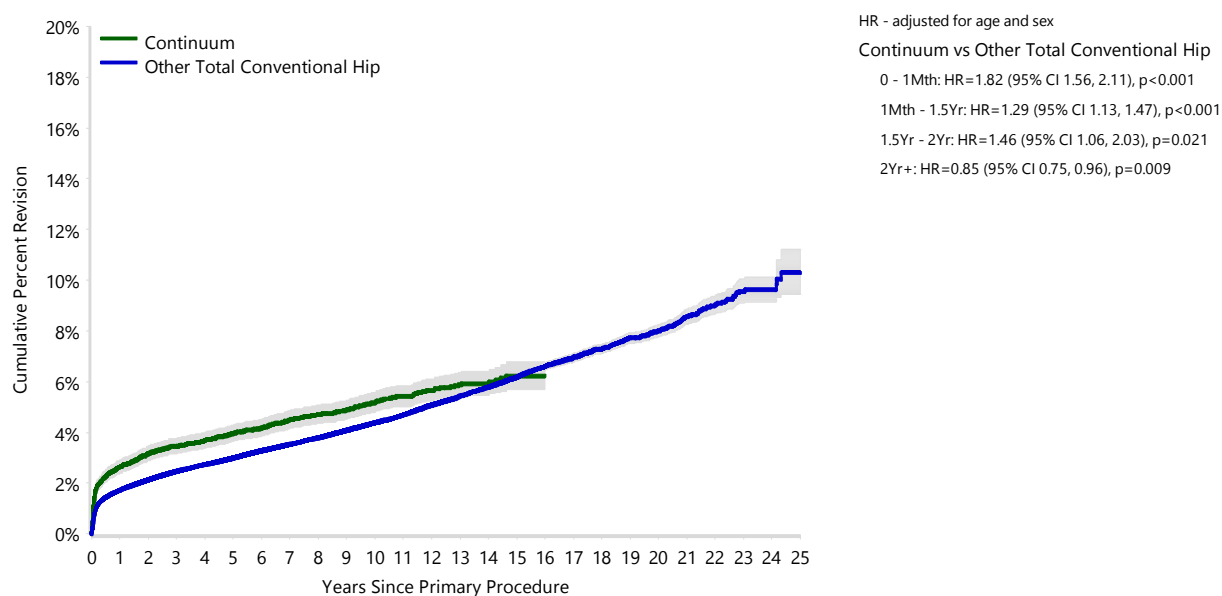
FIGURE 1

Yearly Cumulative Percent Revision of Primary Total Conventional Hip Replacement

The yearly cumulative percent revision of the Continuum 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
Continuum	14078	13538	13246	12843	12403	11871	11078	10010
Other Total Conventional Hip	561216	494532	438550	384975	338119	293457	254220	216437

Number at Risk	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs
Continuum	8683	7364	6092	4858	3602	2490	1567	760	107
Other Total Conventional Hip	182210	150950	122762	98160	78887	62838	49461	37902	28341

Number at Risk	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs	22 Yrs	23 Yrs	24 Yrs	25 Yrs
Continuum	0	0	0	0	0	0	0	0	0
Other Total Conventional Hip	20437	14638	10400	7396	4859	2863	1455	560	95

Note: Prostheses no longer used in 2025 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	Continuum		Other Total Conventional Hip	
	Number	Percent	Number	Percent
Osteoarthritis	587	83.6	16014	82.8
Fractured Neck Of Femur	48	6.8	1486	7.7
Osteonecrosis	28	4.0	830	4.3
Developmental Dysplasia	17	2.4	310	1.6
Rheumatoid Arthritis	7	1.0	197	1.0
Failed Internal Fixation	6	0.9	162	0.8
Tumour	2	0.3	156	0.8
Other Inflammatory Arthritis	3	0.4	101	0.5
Fracture/Dislocation	3	0.4	57	0.3
Other	1	0.1	20	0.1
Arthrodesis Takedown			13	0.1
TOTAL	702	100.0	19346	100.0

Note: Prostheses no longer used in 2025 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 16.3 Years)

Revision Diagnosis	Number	Continuum		Other Total Conventional Hip		
		% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Infection	118	0.8	16.8	4912	0.9	25.8
Prosthesis Dislocation/Instability	253	1.8	36.0	4216	0.8	22.1
Fracture	166	1.2	23.6	4206	0.7	22.1
Loosening	73	0.5	10.4	3521	0.6	18.5
Pain	18	0.1	2.6	330	0.1	1.7
Leg Length Discrepancy	15	0.1	2.1	303	0.1	1.6
Malposition	19	0.1	2.7	268	0.0	1.4
Implant Breakage Stem	3	0.0	0.4	201	0.0	1.1
Lysis	6	0.0	0.9	178	0.0	0.9
Implant Breakage Acetabular Insert	5	0.0	0.7	123	0.0	0.6
Incorrect Sizing	7	0.0	1.0	94	0.0	0.5
Wear Acetabular Insert	1	0.0	0.1	94	0.0	0.5
Metal Related Pathology	6	0.0	0.9	78	0.0	0.4
Implant Breakage Acetabular	1	0.0	0.1	71	0.0	0.4
Wear Head	2	0.0	0.3	47	0.0	0.2
Tumour	1	0.0	0.1	46	0.0	0.2
Heterotopic Bone	1	0.0	0.1	25	0.0	0.1
Implant Breakage Head				23	0.0	0.1
Wear Acetabulum				6	0.0	0.0
Osteonecrosis				4	0.0	0.0
Synovitis				2	0.0	0.0
Progression Of Disease				1	0.0	0.0
Other	7	0.0	1.0	316	0.1	1.7
N Revision	702	5.0	100.0	19065	3.4	100.0
N Primary	14078			561216		

Note: This table is restricted to revisions within 16.3 years for all groups to allow a time-matched comparison of revisions.

Note: Prostheses no longer used in 2025 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 Continuum 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

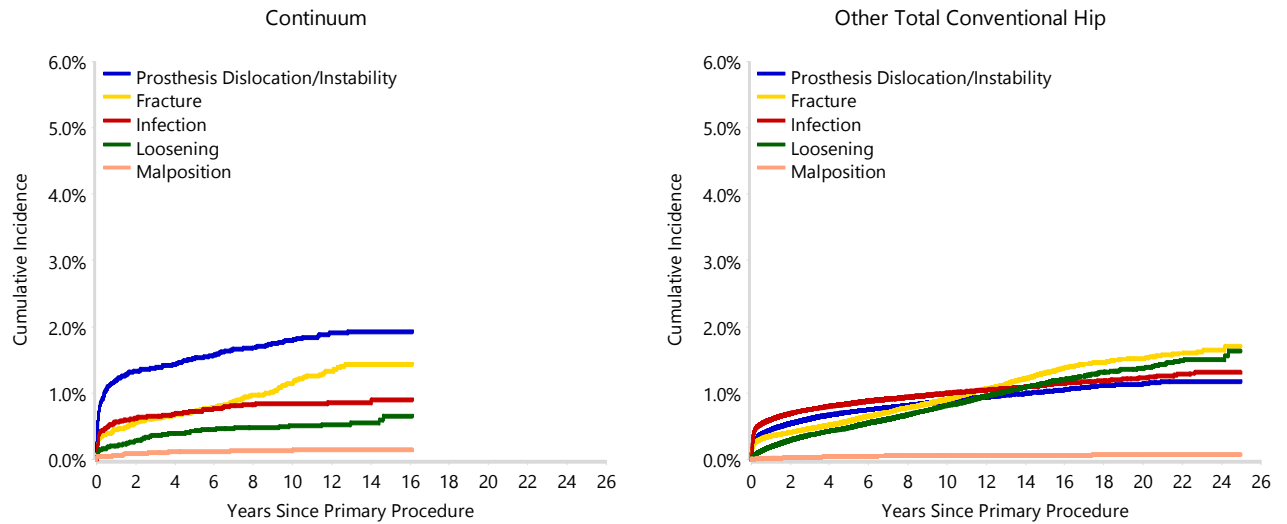


TABLE 5

Type of Revision Performed for Primary Total Conventional Hip Replacement

This analysis identifies the components used in the revision of the Continuum 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 Continuum 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 16.3 Years)

Type of Revision	Continuum		Other Total Conventional Hip	
	Number	Percent	Number	Percent
Femoral Component	225	32.1	6460	33.9
Acetabular Component	118	16.8	3184	16.7
THR (Femoral/Acetabular)	51	7.3	2212	11.6
Cement Spacer	23	3.3	546	2.9
Removal of Prostheses	1	0.1	91	0.5
Reinsertion of Components	1	0.1	26	0.1
Total Femoral			12	0.1
Bipolar Head and Femoral			10	0.1
N Major	419	59.7	12541	65.8
Head/Insert	196	27.9	5192	27.2
Head Only	35	5.0	889	4.7
Minor Components	9	1.3	275	1.4
Insert Only	5	0.7	165	0.9
Head/Neck/Insert	24	3.4	1	0.0
Head/Neck	11	1.6		
Neck Only	3	0.4		
Bipolar Only			1	0.0
Cement Only			1	0.0
N Minor	283	40.3	6524	34.2
TOTAL	702	100.0	19065	100.0

Note: This table is restricted to revisions within 16.3 years for all groups to allow a time-matched comparison of revisions.

Note: Prostheses no longer used in 2025 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 Continuum 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 Continuum Primary Total Conventional Hip Replacement by Fixation

Fixation	N Revised	N Total
Cemented	0	24
Cementless	444	9159
Hybrid (Femur Cemented)	256	4876
Reverse Hybrid (Femur Cementless)	2	19
TOTAL	702	14078

TABLE 7

Revision Rates of Continuum 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 Continuum Primary Total Conventional Hip Replacement by Bearing Surface

Bearing Surface	N Revised	N Total
Ceramic/Ceramic	109	2254
Ceramic/Non XLPE	0	1
Ceramic/XLPE	159	3518
Ceramic/XLPE + Antioxidant	22	680
Metal/Metal	11	117
Metal/XLPE	382	7011
Metal/XLPE + Antioxidant	16	473
Ceramicised Metal/XLPE	3	16
Ceramicised Metal/XLPE + Antioxidant	0	4
Unknown	0	4
TOTAL	702	14078

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

Approach	N Revised	N Total
Anterior	20	601
Lateral	95	1944
Posterior	190	4217
TOTAL	305	6762

Note: Excludes 7316 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 Continuum 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
Continuum	NSW	273	6389
	VIC	148	2171
	QLD	99	2649
	WA	75	1065
	SA	33	469
	TAS	8	362
	ACT/NT	66	973
Other Total Conventional Hip	NSW	5348	162904
	VIC	4794	145816
	QLD	3911	103101
	WA	2473	64403
	SA	1875	51881
	TAS	435	18171
	ACT/NT	510	14940
TOTAL		20048	575294

Note: Prostheses no longer used in 2025 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 Continuum Primary Total Conventional Hip Replacement by Year of Implant**

This analysis details the number of prostheses reported each year to the Registry for the Continuum 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 2025 has a maximum of one year to be revised, whereas a primary procedure performed in 2023 has a maximum of three years to be revised.

Table 10: Number of Revisions of Continuum Primary Total Conventional Hip Replacement by Year of Implant

Year of Implant	Number Revised	Total Number
2009	9	175
2010	71	1117
2011	78	1245
2012	59	1331
2013	90	1505
2014	73	1492
2015	73	1359
2016	61	1327
2017	46	1293
2018	53	1197
2019	39	850
2020	26	513
2021	14	294
2022	8	182
2023	2	156
2024	0	28
2025	0	14
TOTAL	702	14078

TABLE 11

Revision Rates of Continuum 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 Continuum 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	Fixation
Acetabular					
Continuum	00875704000-00875708000	CONTINUUM ACETABULAR SYSTEM TRABECULAR METAL SHELL WITH UNI-HOLE POROUS	NO	METAL	HIGHLY POROUS
Continuum	00875704002-00875708002	CONTINUUM ACETABULAR SYSTEM TRABECULAR METAL SHELL WITH MULTI HOLES POROUS	NO	METAL	HIGHLY POROUS
Continuum	00875704401-00875708001	CONTINUUM ACETABULAR SYSTEM TRABECULAR METAL SHELL WITH CLUSTER HOLES POROUS	NO	METAL	HIGHLY POROUS

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

Acetabular Range	N Revised	N Total
00875704000-00875708000	50	942
00875704002-00875708002	21	216
00875704401-00875708001	631	12920
TOTAL	702	14078

TABLE 12

Revision Rates of Continuum 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 Continuum Primary Total Conventional Hip Replacement by Femoral Stem Component

Femoral Stem Component	N Revised	N Total
Absolut	4	76
Accolade I	0	1
Accolade II	0	2
AcuMatch M-Series	0	3
Alloclassic	24	343
Anatomic II	8	246
Anthology	0	2
Apex	0	1
Arcos	1	18
Avenir	77	1839
C-Stem AMT	1	1
CLS	9	158
CORAIL	3	66
CPCS	0	13
CPT	212	3431
Echelon	0	3
Echo	0	1
Epoch	0	3
Exeter V40	9	243
Generic Stem	1	1
KAR	0	1
M/L Taper	76	1706
ML Taper Kinectiv	117	2246
MS 30	24	1054
MasterLoc	0	1
Mayo	0	7
Metafix	1	2
Mets	1	2
Natural Hip	0	18
Omnifit	1	7
Paragon	0	1
Polarstem	1	7
Profemur XM	0	1
Quadra-C	0	1
Quadra-H	1	5
Revitan	0	2
S-Rom	3	33
SL-Plus	1	2
Secur-Fit	2	39
Segmental System	1	10
Short Exeter V40	0	3

Femoral Stem Component	N Revised	N Total
Sirius	0	22
Spectron EF	0	1
Synergy	1	4
Taper Fit	0	3
Taperloc	23	803
Taperloc Microplasty	22	643
Trabecular Metal	56	701
VerSys	11	148
VerSys Heritage	0	1
Wagner	8	79
ZMR	3	74
TOTAL	702	14078