Accolade II/Trident Tritanium (Shell) Total Conventional Hip Investigation

Note: This analysis compares the Accolade II/Trident Tritanium (Shell) femoral stem/acetabular combination with all other total conventional 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-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 Accolade II/Trident Tritanium (Shell) total conventional hip combination 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)
Accolade II/Trident Tritanium (Shell)	177	4417	23312	0.76 (0.65, 0.88)
Other Total Conventional Hip	19524	564195	3599759	0.54 (0.53, 0.55)
TOTAL	**19701**	**568612**	**3623071**	**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 Accolade II/Trident Tritanium (Shell) total conventional hip combination 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
Accolade II/Trident Tritanium (Shell)	2.3 (1.9, 2.8)	3.0 (2.6, 3.6)	3.4 (2.9, 4.0)	3.7 (3.2, 4.4)	3.9 (3.4, 4.6)	4.3 (3.7, 5.0)
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 (3.0, 3.1)	3.3 (3.2, 3.3)

CPR	7 Yrs	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs
Accolade II/Trident Tritanium (Shell)	4.6 (3.9, 5.3)	4.6 (4.0, 5.4)	4.8 (4.1, 5.7)	4.8 (4.1, 5.7)		
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, 4.5)	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
Accolade II/Trident Tritanium (Shell)						
Other Total Conventional Hip	5.4 (5.3, 5.5)	5.8 (5.7, 5.9)	6.2 (6.0, 6.3)	6.6 (6.5, 6.7)	6.9 (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
Accolade II/Trident Tritanium (Shell)							
Other Total Conventional Hip	7.7 (7.5, 7.9)	8.0 (7.8, 8.2)	8.5 (8.3, 8.8)	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.

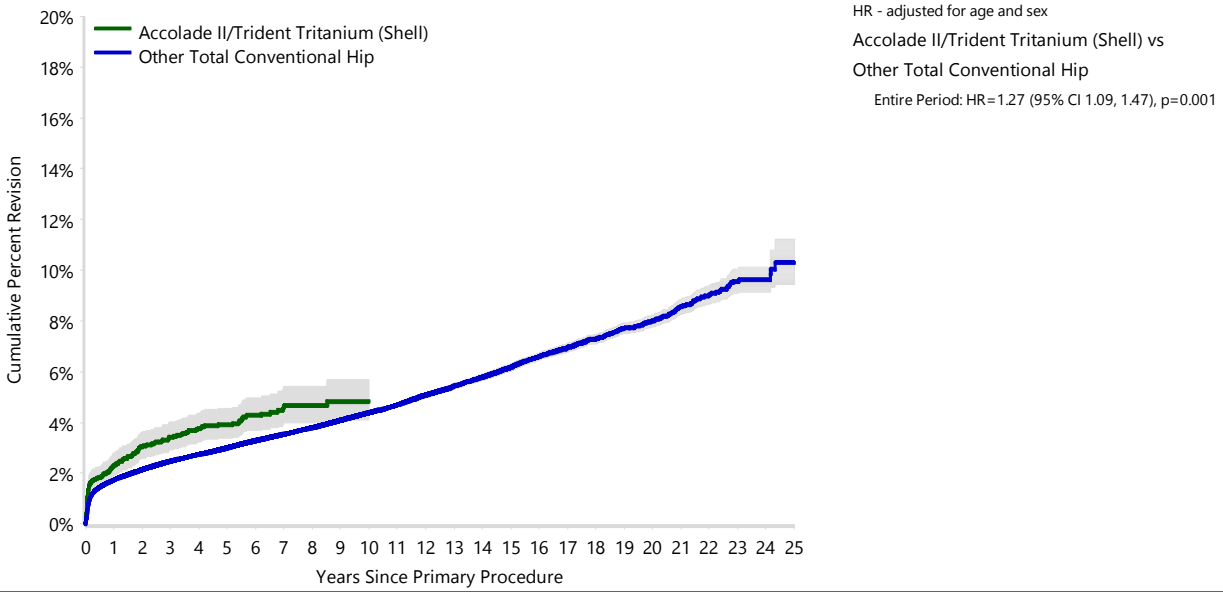
FIGURE 1

Yearly Cumulative Percent Revision of Primary Total Conventional Hip Replacement

The yearly cumulative percent revision of the Accolade II/Trident Tritanium (Shell) total conventional hip combination 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
Accolade II/Trident Tritanium (Shell)	4417	4249	4042	3655	2991	2192	1621	1147
Other Total Conventional Hip	564195	497354	441391	387909	341398	297162	257895	219801

Number at Risk	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs
Accolade II/Trident Tritanium (Shell)	772	344	129	26	1	1	0	0	0
Other Total Conventional Hip	185026	153395	124719	99549	79801	63342	49730	38033	28355

Number at Risk	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs	22 Yrs	23 Yrs	24 Yrs	25 Yrs
Accolade II/Trident Tritanium (Shell)	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

	Accolade II/Trident Tritanium (Shell)		Other Total Conventional Hip	
Primary Diagnosis	Number	Percent	Number	Percent
Osteoarthritis	157	88.7	16139	82.7
Fractured Neck Of Femur	4	2.3	1517	7.8
Osteonecrosis	6	3.4	838	4.3
Developmental Dysplasia	7	4.0	314	1.6
Rheumatoid Arthritis	2	1.1	199	1.0
Failed Internal Fixation			165	0.8
Tumour			157	0.8
Other Inflammatory Arthritis			102	0.5
Fracture/Dislocation	1	0.6	59	0.3
Other			21	0.1
Arthrodesis Takedown			13	0.1
TOTAL	**177**	**100.0**	**19524**	**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 13.6 Years)

	Accolade II/Trident Tritanium (Shell)			Other Total Conventional Hip		
Revision Diagnosis	Number	% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Infection	72	1.6	40.7	4860	0.9	25.9
Prosthesis Dislocation/Instability	16	0.4	9.0	4276	0.8	22.8
Fracture	33	0.7	18.6	4106	0.7	21.8
Loosening	35	0.8	19.8	3401	0.6	18.1
Pain	9	0.2	5.1	321	0.1	1.7
Leg Length Discrepancy	2	0.0	1.1	305	0.1	1.6
Malposition				280	0.0	1.5
Implant Breakage Stem				192	0.0	1.0
Lysis	2	0.0	1.1	158	0.0	0.8
Implant Breakage Acetabular Insert				121	0.0	0.6
Incorrect Sizing	2	0.0	1.1	94	0.0	0.5
Metal Related Pathology	1	0.0	0.6	73	0.0	0.4
Wear Acetabular Insert				73	0.0	0.4
Implant Breakage Acetabular				70	0.0	0.4
Tumour				45	0.0	0.2
Wear Head				43	0.0	0.2
Heterotopic Bone				26	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	5	0.1	2.8	314	0.1	1.7
N Revision	**177**	**4.0**	**100.0**	**18794**	**3.3**	**100.0**
N Primary	**4417**			**564195**		

Note: This table is restricted to revisions within 13.6 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 Accolade II/Trident Tritanium (Shell) total conventional hip combination. 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

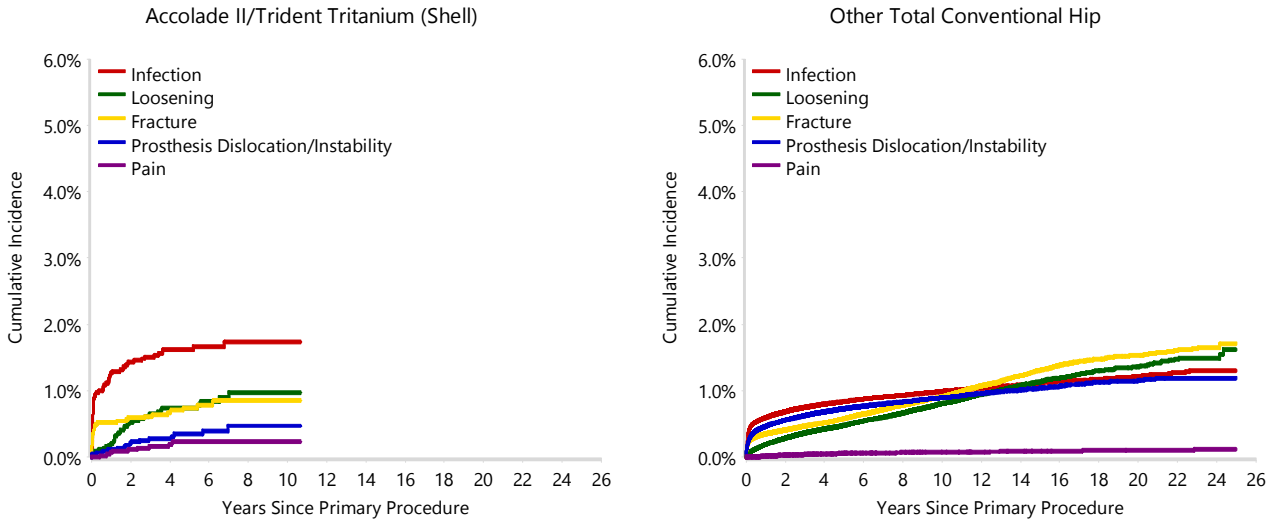


TABLE 5

Type of Revision Performed for Primary Total Conventional Hip Replacement

This analysis identifies the components used in the revision of the Accolade II/Trident Tritanium (Shell) total conventional hip combination 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 Accolade II/Trident Tritanium (Shell) total conventional hip combination compared to all other total conventional hip prostheses.

Table 5: Primary Total Conventional Hip Replacement - Type of Revision (Follow-up Limited to 13.6 Years)

	Accolade II/Trident Tritanium (Shell)		Other Total Conventional Hip	
Type of Revision	Number	Percent	Number	Percent
Femoral Component	52	29.4	6313	33.6
Acetabular Component	36	20.3	3122	16.6
THR (Femoral/Acetabular)	19	10.7	2146	11.4
Cement Spacer	3	1.7	545	2.9
Removal of Prostheses	1	0.6	89	0.5
Reinsertion of Components			27	0.1
Total Femoral			11	0.1
Bipolar Head and Femoral			10	0.1
N Major	**111**	**62.7**	**12263**	**65.2**
Head/Insert	58	32.8	5193	27.6
Head Only	6	3.4	896	4.8
Minor Components	2	1.1	274	1.5
Insert Only			165	0.9
Bipolar Only			1	0.0
Cement Only			1	0.0
Head/Neck/Insert			1	0.0
N Minor	**66**	**37.3**	**6531**	**34.8**
TOTAL	**177**	**100.0**	**18794**	**100.0**

Note: This table is restricted to revisions within 13.6 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 Accolade II/Trident Tritanium (Shell) 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 Accolade II/Trident Tritanium (Shell) Primary Total Conventional Hip Replacement by Fixation

Fixation	N Revised	N Total
Cementless	177	4411
Hybrid (Femur Cemented)	0	1
Reverse Hybrid (Femur Cementless)	0	5
TOTAL	**177**	**4417**

TABLE 7

Revision Rates of Accolade II/Trident Tritanium (Shell) 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 combination are listed.

Table 7: Revised Number of Accolade II/Trident Tritanium (Shell) Primary Total Conventional Hip Replacement by Bearing Surface

Bearing Surface	N Revised	N Total
Ceramic/Ceramic	2	51
Ceramic/Non XLPE	1	1
Ceramic/XLPE	133	3585
Metal/XLPE	41	779
Unknown	0	1
TOTAL	**177**	**4417**

TABLE 8

Revision Rates of Accolade II/Trident Tritanium (Shell) 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 combination are listed.

Table 8: Revised Number of Accolade II/Trident Tritanium (Shell) Primary Total Conventional Hip Replacement by Approach

Approach	N Revised	N Total
Anterior	38	1021
Lateral	26	420
Posterior	112	2909
TOTAL	**176**	**4350**

Note: Excludes 67 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 Accolade II/Trident Tritanium (Shell) total conventional hip combination 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
Accolade II/Trident Tritanium (Shell)	NSW	47	1238
	VIC	43	965
	QLD	13	277
	WA	49	1342
	SA	11	312
	TAS	11	218
	ACT/NT	3	65
Other Total Conventional Hip	NSW	5460	165764
	VIC	4810	145593
	QLD	3955	104082
	WA	2461	63604
	SA	1876	51772
	TAS	428	18051
	ACT/NT	534	15329
TOTAL		**19701**	**568612**

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 Accolade II/Trident Tritanium (Shell) Primary Total Conventional Hip Replacement by Year of Implant

This analysis details the number of prostheses reported each year to the Registry for the Accolade II/Trident Tritanium (Shell) total conventional 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 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 Accolade II/Trident Tritanium (Shell) Primary Total Conventional Hip Replacement by Year of Implant

Year of Implant	Number Revised	Total Number
2012	0	1
2013	0	1
2014	1	30
2015	5	119
2016	16	258
2017	20	484
2018	20	402
2019	21	510
2020	20	584
2021	27	811
2022	28	670
2023	10	348
2024	8	150
2025	1	49
TOTAL	**177**	**4417**

TABLE 11

Revision Rates of Accolade II/Trident Tritanium (Shell) 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 Accolade II/Trident Tritanium (Shell) 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	Fixation
Femoral Stem						
Accolade II	67200027-67201140	132 DEGREE NECK ANGLE V40 FEMORAL STEM	NO	METAL	HA COATED	
Accolade II	67210027-67211140	127 DEGREE NECK ANGLE V40 FEMORAL STEM	NO	METAL	HA COATED	
Acetabular						
Trident/Tritanium (Shell)	5000344A-5000366H	TRITANIUM HEMISPHERICAL SOLID SHELL	NO	METAL		HIGHLY POROUS
Trident/Tritanium (Shell)	5020344A-5020366H	TRITANIUM HEMISPHERICAL CLUSTER HOLE SHELL	NO	METAL		HIGHLY POROUS
Trident/Tritanium (Shell)	5090254E-5090280J	TRITANIUM REVISION HEMISPHERICAL CLUSTER HOLE SHELL	NO	METAL		HIGHLY POROUS

Table 11: Revised Number of Accolade II/Trident Tritanium (Shell) Primary Total Conventional Hip Replacement by Catalogue Number Range

Femoral Stem Range	Acetabular Range	N Revised	N Total
67200027-67201140	5000344A-5000366H	2	44
	5020344A-5020366H	40	762
	5090254E-5090280J	1	22
67210027-67211140	5000344A-5000366H	7	233
	5020344A-5020366H	125	3319
	5090254E-5090280J	2	37
TOTAL		**177**	**4417**