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-2025.

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 2024 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)	163	4366	19326	0.84 (0.72, 0.98)
Other Total Conventional Hip	19329	547789	3533118	0.55 (0.54, 0.55)
TOTAL	**19492**	**552155**	**3552445**	**0.55 (0.54, 0.56)**

Note: Prostheses no longer used in 2024 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	7 Yrs	8 Yrs
Accolade II/Trident Tritanium (Shell)	2.3 (1.9, 2.8)	3.0 (2.5, 3.5)	3.4 (2.9, 4.0)	3.7 (3.2, 4.3)	3.9 (3.3, 4.6)	4.2 (3.6, 5.0)	4.6 (3.9, 5.5)	4.8 (4.0, 5.7)
Other Total Conventional Hip	1.7 (1.7, 1.8)	2.2 (2.1, 2.2)	2.5 (2.4, 2.5)	2.8 (2.7, 2.8)	3.0 (3.0, 3.1)	3.3 (3.3, 3.4)	3.6 (3.5, 3.6)	3.8 (3.8, 3.9)

CPR	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs
Accolade II/Trident Tritanium (Shell)	4.8 (4.0, 5.7)							
Other Total Conventional Hip	4.2 (4.1, 4.2)	4.4 (4.4, 4.5)	4.8 (4.7, 4.8)	5.2 (5.1, 5.3)	5.5 (5.4, 5.6)	5.9 (5.8, 6.0)	6.3 (6.2, 6.4)	6.7 (6.6, 6.9)

CPR	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs	22 Yrs	23 Yrs
Accolade II/Trident Tritanium (Shell)							
Other Total Conventional Hip	7.1 (6.9, 7.2)	7.4 (7.3, 7.6)	7.9 (7.7, 8.1)	8.3 (8.0, 8.5)	8.8 (8.5, 9.1)	9.3 (9.0, 9.7)	9.9 (9.4, 10.4)

Note: Prostheses no longer used in 2024 are excluded from the comparator. Procedures using metal/metal prostheses with head size larger than 32mm are excluded from the comparator.

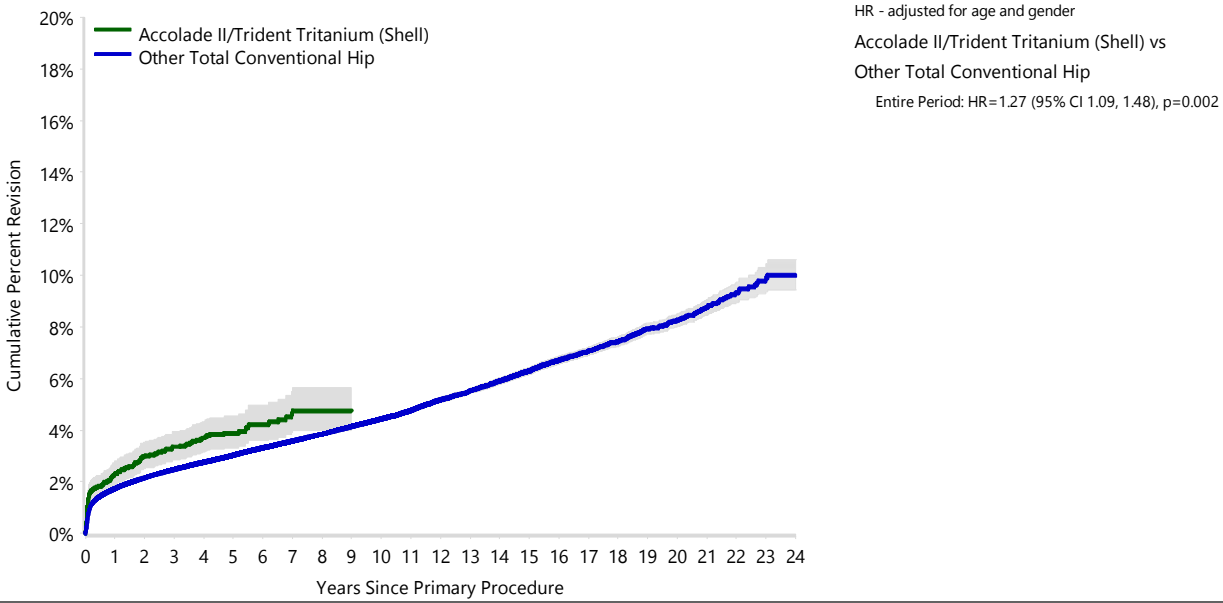
FIGURE 1

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	8 Yrs	9 Yrs	10 Yrs	11 Yrs
Accolade II/Trident Tritanium (Shell)	4366	4106	3709	3032	2228	1656	1172	788	355	131	26	1
Other Total Conventional Hip	547789	483610	429109	381178	334985	294155	253774	216335	181878	150245	122125	99377

Number at Risk	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs	18 Yrs	19 Yrs	20 Yrs	21 Yrs	22 Yrs	23 Yrs
Accolade II/Trident Tritanium (Shell)	1	0	0	0	0	0	0	0	0	0	0	0
Other Total Conventional Hip	80222	63999	49890	37936	28064	20581	15102	10871	7426	4536	2346	851

Note: Prostheses no longer used in 2024 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	148	90.8	16026	82.9
Fractured Neck Of Femur	3	1.8	1433	7.4
Osteonecrosis	6	3.7	850	4.4
Developmental Dysplasia	5	3.1	308	1.6
Rheumatoid Arthritis	1	0.6	209	1.1
Failed Internal Fixation			157	0.8
Tumour			148	0.8
Other Inflammatory Arthritis			112	0.6
Fracture/Dislocation			53	0.3
Other			19	0.1
Arthrodesis Takedown			14	0.1
TOTAL	**163**	**100.0**	**19329**	**100.0**

Note: Prostheses no longer used in 2024 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 12.6 Years)

	Accolade II/Trident Tritanium (Shell)			Other Total Conventional Hip		
Revision Diagnosis	Number	% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Infection	70	1.6	42.9	4599	0.8	25.1
Prosthesis Dislocation/Instability	13	0.3	8.0	4271	0.8	23.3
Fracture	31	0.7	19.0	4026	0.7	22.0
Loosening	31	0.7	19.0	3376	0.6	18.4
Pain	8	0.2	4.9	308	0.1	1.7
Leg Length Discrepancy	2	0.0	1.2	294	0.1	1.6
Malposition				266	0.0	1.5
Implant Breakage Stem				177	0.0	1.0
Lysis	2	0.0	1.2	152	0.0	0.8
Implant Breakage Acetabular Insert				120	0.0	0.7
Incorrect Sizing	2	0.0	1.2	96	0.0	0.5
Metal Related Pathology	1	0.0	0.6	67	0.0	0.4
Wear Acetabular Insert				66	0.0	0.4
Implant Breakage Acetabular				65	0.0	0.4
Tumour				39	0.0	0.2
Wear Head				39	0.0	0.2
Heterotopic Bone				27	0.0	0.1
Implant Breakage Head				26	0.0	0.1
Wear Acetabulum				7	0.0	0.0
Osteonecrosis				3	0.0	0.0
Synovitis				1	0.0	0.0
Other	3	0.1	1.8	305	0.1	1.7
N Revision	**163**	**3.7**	**100.0**	**18330**	**3.3**	**100.0**
N Primary	**4366**			**547789**		

Note: This table is restricted to revisions within 12.6 years for all groups to allow a time-matched comparison of revisions.
Note: Prostheses no longer used in 2024 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

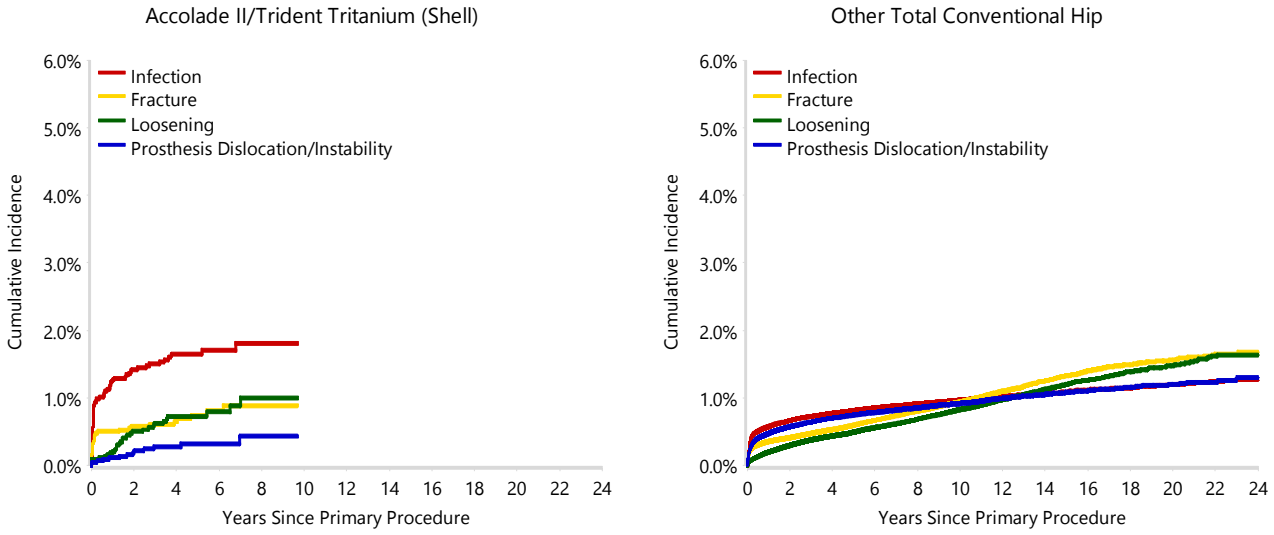


TABLE 5

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 12.6 Years)

	Accolade II/Trident Tritanium (Shell)		Other Total Conventional Hip	
Type of Revision	Number	Percent	Number	Percent
Femoral Component	46	28.2	6151	33.6
Acetabular Component	32	19.6	3141	17.1
THR (Femoral/Acetabular)	19	11.7	2051	11.2
Cement Spacer	3	1.8	581	3.2
Removal of Prostheses	1	0.6	92	0.5
Reinsertion of Components			29	0.2
Total Femoral			11	0.1
Bipolar Head and Femoral			9	0.0
N Major	**101**	**62.0**	**12065**	**65.8**
Head/Insert	54	33.1	4894	26.7
Head Only	6	3.7	902	4.9
Minor Components	2	1.2	290	1.6
Insert Only			176	1.0
Bipolar Only			1	0.0
Cement Only			1	0.0
Head/Neck			1	0.0
N Minor	**62**	**38.0**	**6265**	**34.2**
TOTAL	**163**	**100.0**	**18330**	**100.0**

Note: This table is restricted to revisions within 12.6 years for all groups to allow a time-matched comparison of revisions.
Note: Prostheses no longer used in 2024 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	163	4360
Hybrid (Femur Cemented)	0	1
Reverse Hybrid (Femur Cementless)	0	5
TOTAL	**163**	**4366**

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	124	3541
Metal/XLPE	36	772
Unknown	0	1
TOTAL	**163**	**4366**

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	1007
Lateral	22	418
Posterior	102	2874
TOTAL	**162**	**4299**

Note: Excludes 67 procedures with no approach recorded

TABLE 9

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 2024 has a maximum of one year to be revised, whereas a primary procedure performed in 2022 has a maximum of three years to be revised.

Table 9: 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	19	484
2018	20	402
2019	20	510
2020	19	584
2021	26	810
2022	25	670
2023	6	348
2024	6	149
TOTAL	**163**	**4366**