Verso/Verso Total Stemmed Reverse Shoulder Investigation

Note: This analysis compares the Verso/Verso humeral stem/glenoid combination with all other total stemmed reverse shoulder 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-2024.

Note: Procedures using prostheses with no recorded use in 2023 are excluded from the comparator.

TABLE 1

Revision Rate of Primary Total Stemmed Reverse Shoulder Replacement

The revision rate of the Verso/Verso total stemmed reverse shoulder combination is compared to all other total stemmed reverse shoulder prostheses.

Table 1: Revision Rates of Primary Total Stemmed Reverse Shoulder Replacement

Component	N Revised	N Total	Obs. Years	Revisions/100 Obs. Yrs (95% CI)
Verso/Verso	6	38	76	7.90 (2.90, 17.19)
Other Total Stemmed Reverse Shoulder	2022	55356	229647	0.88 (0.84, 0.92)
TOTAL	**2028**	**55394**	**229723**	**0.88 (0.84, 0.92)**

Note: Prostheses no longer used in 2023 are excluded from the comparator.

TABLE 2

Yearly Cumulative Percent Revision of Primary Total Stemmed Reverse Shoulder Replacement

The yearly cumulative percent revision of the Verso/Verso total stemmed reverse shoulder combination is compared to all other total stemmed reverse shoulder prostheses.

Table 2: Yearly Cumulative Percent Revision of Primary Total Stemmed Reverse Shoulder Replacement

CPR	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs
Verso/Verso	19.2 (8.9, 38.4)	19.2 (8.9, 38.4)	19.2 (8.9, 38.4)	19.2 (8.9, 38.4)		
Other Total Stemmed Reverse Shoulder	2.3 (2.2, 2.4)	3.0 (2.9, 3.2)	3.5 (3.3, 3.7)	3.8 (3.7, 4.0)	4.1 (3.9, 4.3)	4.4 (4.2, 4.6)

CPR	7 Yrs	8 Yrs	9 Yrs	10 Yrs	11 Yrs	12 Yrs
Verso/Verso						
Other Total Stemmed Reverse Shoulder	4.6 (4.4, 4.8)	5.0 (4.7, 5.2)	5.2 (4.9, 5.5)	5.6 (5.3, 5.9)	6.0 (5.6, 6.4)	6.3 (5.9, 6.8)

CPR	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs
Verso/Verso					
Other Total Stemmed Reverse Shoulder	6.5 (6.0, 7.1)	6.8 (6.2, 7.6)	6.8 (6.2, 7.6)	6.8 (6.2, 7.6)	

Note: Prostheses no longer used in 2023 are excluded from the comparator.

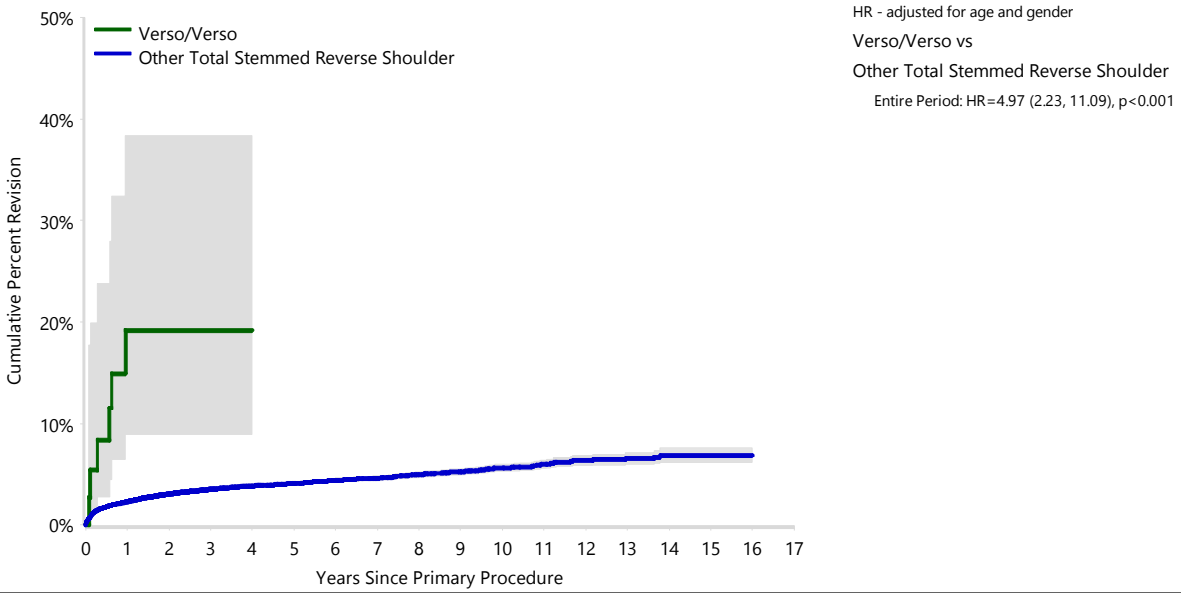
FIGURE 1

Yearly Cumulative Percent Revision of Primary Total Stemmed Reverse Shoulder Replacement

The yearly cumulative percent revision of the Verso/Verso total stemmed reverse shoulder combination is compared to all other total stemmed reverse shoulder 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 Stemmed Reverse Shoulder Replacement



Number at Risk	0 Yr	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	7 Yrs	8 Yrs
Verso/Verso	38	19	15	10	9	4	0	0	0
Other Total Stemmed Reverse Shoulder	55356	45647	38132	30899	24729	19041	14118	10171	7208

Number at Risk	9 Yrs	10 Yrs	11 Yrs	12 Yrs	13 Yrs	14 Yrs	15 Yrs	16 Yrs	17 Yrs
Verso/Verso	0	0	0	0	0	0	0	0	0
Other Total Stemmed Reverse Shoulder	5069	3392	2118	1298	833	558	260	78	13

Note: Prostheses no longer used in 2023 are excluded from the comparator.

TABLE 3

Primary Diagnosis for Revised Primary Total Stemmed Reverse Shoulder 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 stemmed reverse shoulder prostheses.

Table 3: Primary Diagnosis for Revised Primary Total Stemmed Reverse Shoulder Replacement

	Verso/Verso		Other Total Stemmed Reverse Shoulder	
Primary Diagnosis	Number	Percent	Number	Percent
Osteoarthritis	5	83.3	763	37.7
Rotator Cuff Arthropathy	1	16.7	743	36.7
Fracture			357	17.7
Rheumatoid Arthritis			51	2.5
Instability			41	2.0
Tumour			32	1.6
Osteonecrosis			24	1.2
Other Inflammatory Arthritis			10	0.5
Other			1	0.0
TOTAL	**6**	**100.0**	**2022**	**100.0**

Note: Prostheses no longer used in 2023 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 Stemmed Reverse Shoulder Replacement - Reason for Revision (Follow-up Limited to 5.9 Years)

	Verso/Verso			Other Total Stemmed Reverse Shoulder		
Revision Diagnosis	Number	% Primaries Revised	% Revisions	Number	% Primaries Revised	% Revisions
Instability/Dislocation	2	5.3	33.3	626	1.1	32.9
Infection				489	0.9	25.7
Loosening	1	2.6	16.7	309	0.6	16.2
Fracture				200	0.4	10.5
Dissociation	3	7.9	50.0	65	0.1	3.4
Pain				41	0.1	2.2
Malposition				22	0.0	1.2
Arthrofibrosis				20	0.0	1.1
Lysis				17	0.0	0.9
Implant Breakage Glenoid				16	0.0	0.8
Incorrect Sizing				14	0.0	0.7
Heterotopic Bone				10	0.0	0.5
Metal Related Pathology				10	0.0	0.5
Rotator Cuff Insufficiency				8	0.0	0.4
Tumour				5	0.0	0.3
Implant Breakage Glenoid Insert				2	0.0	0.1
Implant Breakage Humeral				2	0.0	0.1
Wear Humeral Cup				2	0.0	0.1
Glenoid Erosion				1	0.0	0.1
Wear Glenoid Insert				1	0.0	0.1
Other				43	0.1	2.3
N Revision	**6**	**15.8**	**100.0**	**1903**	**3.4**	**100.0**
N Primary	**38**			**55356**		

Note: This table is restricted to revisions within 5.9 years for all groups to allow a time-matched comparison of revisions.
Note: Prostheses no longer used in 2023 are excluded from the comparator.

FIGURE 2

Cumulative Incidence Revision Diagnosis of Primary Total Stemmed Reverse Shoulder 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 Verso/Verso total stemmed reverse shoulder combination. A comparative graph is provided of the cumulative incidence for the same reasons for revisions for all other total stemmed reverse shoulder prostheses.

Figure 2: Cumulative Incidence Revision Diagnosis for Primary Total Stemmed Reverse Shoulder Replacement

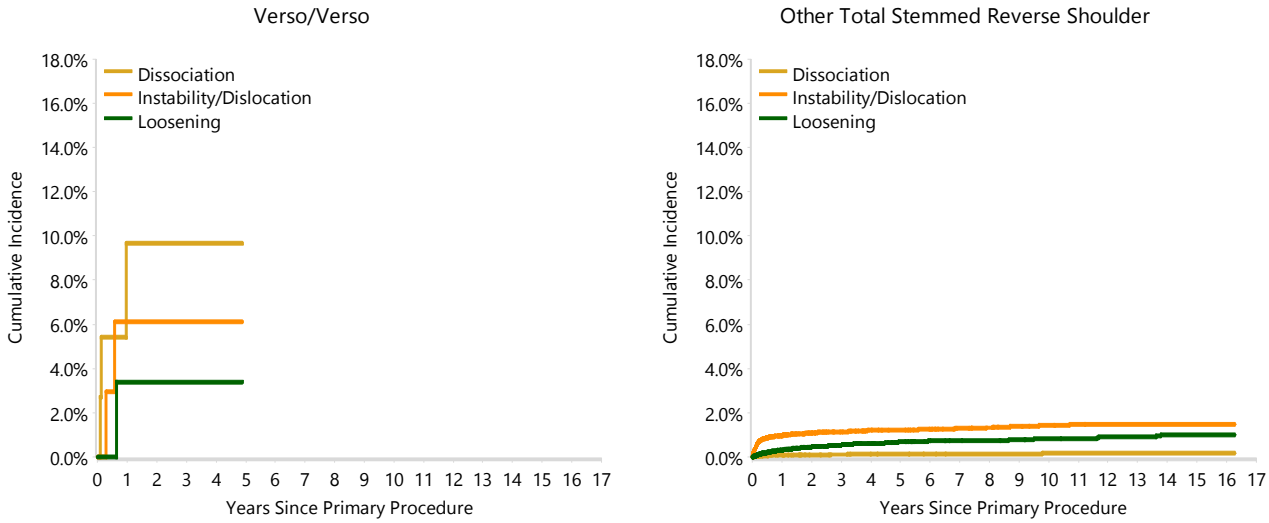


TABLE 5

Type of Revision Performed for Primary Total Stemmed Reverse Shoulder Replacement

This analysis identifies the components used in the revision of the Verso/Verso total stemmed reverse shoulder combination and compares it to the components used in the revision of all other total stemmed reverse shoulder 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 stemmed reverse shoulder prostheses i.e. is there a difference in the type of revision undertaken for the Verso/Verso total stemmed reverse shoulder combination compared to all other total stemmed reverse shoulder prostheses.

Table 5: Primary Total Stemmed Reverse Shoulder Replacement - Type of Revision (Follow-up Limited to 5.9 Years)

	Verso/Verso		Other Total Stemmed Reverse Shoulder	
Type of Revision	Number	Percent	Number	Percent
Humeral Component	2	33.3	477	25.1
Humeral/Glenoid			178	9.4
Cement Spacer			165	8.7
Glenoid Component			141	7.4
Removal of Prostheses			34	1.8
Reinsertion of Components			3	0.2
N Major	**2**	**33.3**	**998**	**52.4**
Cup/Head	2	33.3	375	19.7
Cup Only	2	33.3	316	16.6
Head Only			180	9.5
Minor Components			12	0.6
Cement Only			10	0.5
Reoperation			10	0.5
Head/Insert			2	0.1
N Minor	**4**	**66.7**	**905**	**47.6**
TOTAL	**6**	**100.0**	**1903**	**100.0**

Note: This table is restricted to revisions within 5.9 years for all groups to allow a time-matched comparison of revisions.
Note: Prostheses no longer used in 2023 are excluded from the comparator.

TABLE 6

Revision Rates of Verso/Verso Primary Total Stemmed Reverse Shoulder 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 Verso/Verso Primary Total Stemmed Reverse Shoulder Replacement by Fixation

Fixation	N Revised	N Total
Cementless	6	36
Hybrid (Glenoid Cementless)	0	2
TOTAL	**6**	**38**

TABLE 7

Revision Rates of Verso/Verso Primary Total Stemmed Reverse Shoulder 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 Verso/Verso Primary Total Stemmed Reverse Shoulder Replacement by Bearing Surface

Bearing Surface	N Revised	N Total
Non XLPE/Metal	6	38
TOTAL	**6**	**38**

TABLE 8

Revision Rates of Primary Total Stemmed Reverse Shoulder Replacement by State

This enables a state by state variation to be identified for the Verso/Verso total stemmed reverse shoulder combination and provides the comparative data for each of the states for all other total stemmed reverse shoulder 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 8: Revised Number of Primary Total Stemmed Reverse Shoulder Replacement by State

Component	State	N Revised	N Total
Verso/Verso	NSW	6	36
	QLD	0	1
	SA	0	1
Other Total Stemmed Reverse Shoulder	NSW	599	17722
	VIC	408	10532
	QLD	474	12355
	WA	282	7430
	SA	171	4639
	TAS	31	1255
	ACT/NT	57	1423
TOTAL		**2028**	**55394**

Note: Prostheses no longer used in 2023 are excluded from the comparator.

TABLE 9

Number of Revisions of Verso/Verso Primary Total Stemmed Reverse Shoulder Replacement by Year of Implant

This analysis details the number of prostheses reported each year to the Registry for the Verso/Verso total stemmed reverse shoulder 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 2023 has a maximum of one year to be revised, whereas a primary procedure performed in 2021 has a maximum of three years to be revised.

Table 9: Number of Revisions of Verso/Verso Primary Total Stemmed Reverse Shoulder Replacement by Year of Implant

Year of Implant	Number Revised	Total Number
2018	1	5
2019	2	8
2020	0	1
2021	1	6
2022	2	5
2023	0	13
TOTAL	**6**	**38**

TABLE 10

Revision Rates of Verso/Verso Primary Total Stemmed Reverse Shoulder 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 Verso/Verso 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
Humeral Stem				
Verso	124560-124563	STEMMED HUMERAL COMPONENT	NO	METAL
Verso	124564-124567	VERSO HUMERAL SHELL COMPONENT COCR/TI/HA	NO	METAL
Glenoid				
Verso	124572-124576	GLENOID BASE PLATE TI/HA	NO	METAL

Table 10: Revised Number of Verso/Verso Primary Total Stemmed Reverse Shoulder Replacement by Catalogue Number Range

Humeral Stem Range	Glenoid Range	N Revised	N Total
124560-124563	124572-124576	0	3
124564-124567	124572-124576	6	35
TOTAL		**6**	**38**