

Comparison of survivorship of POLARSTEM[®] collarless cementless stems and collared cementless stems in primary total hip arthroplasty (THA)

Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR) Hip, Knee & Shoulder Arthroplasty: 2024 Annual Report Adelaide; AOA, 2024:1–629.

Available at:

[AOANJRR Annual Report, 2024](#)

Overview

- The AOANJRR, founded in 1999, covers 99% of procedures since becoming fully national in mid-2002
- In 2023, a new analysis was introduced comparing the use of collared and collarless cementless stems in patients with primary osteoarthritis (OA)
- Since 2015, there has been a consistent rise in the use of collared cementless stems in THA. This trend can be attributed to the higher average revision rates for fracture and loosening observed with collarless cementless stems

Results

Table HT27 Cumulative Percent Revision of Primary Total Conventional Hip Replacement by Cementless Femoral Component and Stem Collar Use (Primary Diagnosis OA)

Femoral Component	Stem Collar Use	N Revised	N Total	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs
AMiStem H	Collared	31	2116	1.2 (0.8, 1.8)	1.7 (1.2, 2.5)	1.7 (1.2, 2.5)	2.2 (1.3, 3.6)	2.2 (1.3, 3.6)
	Collarless	164	6620	1.5 (1.3, 1.9)	1.7 (1.4, 2.0)	2.0 (1.7, 2.4)	2.2 (1.9, 2.6)	2.8 (2.4, 3.3)
CORAIL	Collared	1126	40956	1.5 (1.4, 1.7)	1.9 (1.8, 2.1)	2.3 (2.1, 2.4)	2.5 (2.4, 2.7)	2.7 (2.5, 2.9)
	Collarless	1285	23778	1.7 (1.6, 1.9)	2.2 (2.0, 2.4)	2.6 (2.4, 2.9)	3.0 (2.8, 3.2)	3.3 (3.1, 3.5)
HACTIV	Collared	60	1354	3.3 (2.5, 4.4)	4.1 (3.1, 5.3)	4.4 (3.4, 5.7)	4.4 (3.4, 5.7)	4.8 (3.7, 6.3)
	Collarless	45	1279	2.3 (1.6, 3.3)	2.8 (2.0, 3.9)	3.0 (2.2, 4.1)	3.1 (2.2, 4.2)	3.2 (2.3, 4.3)
Metafix	Collared	168	11537	1.2 (1.0, 1.4)	1.5 (1.2, 1.7)	1.7 (1.5, 2.0)	1.8 (1.5, 2.1)	1.9 (1.6, 2.3)
	Collarless	219	7257	1.8 (1.5, 2.2)	2.3 (2.0, 2.7)	2.7 (2.3, 3.1)	2.9 (2.5, 3.3)	3.1 (2.7, 3.5)
Origin	Collared	18	1267	1.5 (0.9, 2.5)	1.6 (1.0, 2.7)	2.3 (1.2, 4.2)		
	Collarless	103	2719	2.5 (2.0, 3.2)	3.2 (2.6, 4.0)	3.5 (2.9, 4.3)	3.8 (3.1, 4.7)	4.1 (3.3, 5.0)
Paragon	Collared	48	2834	1.5 (1.1, 2.1)	1.8 (1.4, 2.5)	1.9 (1.4, 2.6)	1.9 (1.4, 2.6)	2.2 (1.5, 3.2)
	Collarless	163	7108	1.6 (1.3, 1.9)	1.9 (1.6, 2.2)	2.0 (1.7, 2.4)	2.1 (1.8, 2.5)	2.4 (2.0, 2.8)
Polarstem	Collared	32	1731	1.8 (1.3, 2.6)	2.0 (1.4, 2.9)	2.3 (1.6, 3.4)	2.3 (1.6, 3.4)	
	Collarless	520	20286	1.8 (1.6, 1.9)	2.0 (1.8, 2.2)	2.2 (2.0, 2.4)	2.4 (2.2, 2.7)	2.6 (2.4, 2.9)
TOTAL		3982	130842					

Note: Restricted to modern prostheses
All procedures using metal/metal prostheses have been excluded
Only prostheses with >500 procedures each have been included



No significant difference
in revision rate between
POLARSTEM collared and
collarless cementless stems



POLARSTEM collarless cementless stem has the **second lowest revision rate** at 5 years compared to other collarless cementless stems

Table HT28 Comparisons of Revision Rates of Primary Total Conventional Hip Replacement by Cementless Femoral Component and Stem Collar Use (Primary Diagnosis OA)

Comparison	Hazard Ratio - adjusted for age and gender
AMiStem H Collarless vs AMiStem H Collared	Entire Period: HR=1.08 (0.73, 1.60), p=0.712
CORAIL Collarless vs CORAIL Collared	0 - 6Mth: HR=1.03 (0.90, 1.19), p=0.646
	6Mth - 1.5Yr: HR=1.28 (1.04, 1.57), p=0.019
	1.5Yr - 8.5Yr: HR=1.52 (1.33, 1.73), p<0.001
	8.5Yr - 10.5Yr: HR=2.64 (1.64, 4.27), p<0.001
	10.5Yr - 11Yr: HR=11.17 (1.52, 82.12), p=0.017
	11Yr+: HR=2.10 (1.32, 3.33), p=0.001
HACTIV Collarless vs HACTIV Collared	Entire Period: HR=0.63 (0.42, 0.95), p=0.025
Metafix Collarless vs Metafix Collared	Entire Period: HR=1.68 (1.37, 2.06), p<0.001
Origin Collarless vs Origin Collared	Entire Period: HR=1.93 (1.16, 3.22), p=0.011
Paragon Collarless vs Paragon Collared	Entire Period: HR=1.03 (0.74, 1.43), p=0.871
Polarstem Collarless vs Polarstem Collared	Entire Period: HR=1.03 (0.72, 1.48), p=0.865

Note: Restricted to modern prostheses
All procedures using metal/metal prostheses have been excluded
Only prostheses with >500 procedures each have been included

Conclusions

Despite the higher revision rates observed in collarless cementless stems, no significant difference in revision rate is reported between POLARSTEM collared and collarless cementless stems. POLARSTEM collarless cementless stem has the second lowest revision rate of collarless cementless stems at 5 years in the AOANJRR.

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References

1. Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR) Hip, Knee & Shoulder Arthroplasty: 2024 Annual Report Adelaide; AOA, 2024:1–629. Available at: <https://aoanjrr.sahmri.com/annual-reports-2024>. Accessed December 11, 2024.

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