

ANALYSIS OF TOTAL HIP REPLACEMENT USING THE CORAIL® PINNACLE® HIP SYSTEM IN THE NATIONAL JOINT REGISTRY FOR ENGLAND, WALES, NORTHERN IRELAND AND THE ISLE OF MAN

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Introduction

National joint registries provide valuable information on the revision rates and survivorship of orthopaedic implants. Typically they include large cohorts with data from all surgeons and from all centres, irrespective of surgeon experience level. The National Joint Registry for England, Wales, Northern Ireland and the Isle of Man (NJR) has been in operation since 2003 and in that time has collected data on over 1,000,000 primary total hip replacements (THR).¹

The purpose of this analysis is to examine the results of the standard offset collared CORAIL® and PINNACLE® combination and compare to the cumulative revision rate (CRR) estimates variously available for the different classes of total hip replacement (THR). The NJR provide 64 different class rates across the possible permutations of articulation (Metal-on-Polyethylene, Ceramic-on-Polyethylene, Ceramic-on-Ceramic), fixation (Cemented, Uncemented, Hybrid), age (<55, 55-64, 25-74 and ≥75), and gender.² CRR estimates have been calculated for the equivalent categories from the standard offset collared CORAIL and PINNACLE combination dataset. Analysis was conducted by a DePuy Synthes

biostatistician on data made available from the NJR Supplier Feedback system, downloaded on 10th September 2019.³ The results are provided in Table 1. An annual time-point from the class data has been selected based on the latest available reliable annual estimate for the standard offset collared CORAIL and PINNACLE combination (at least 40 hips surviving) for which a published rate exists.

The CRR estimates for the standard offset collared CORAIL and PINNACLE combination have been compared to the all fixation class rates by comparing the point estimates and 95% confidence intervals.

Summary

- In all combinations* the standard offset collared CORAIL and PINNACLE combination performs at least as well if not better than the class comparator.
- In 15 comparisons the CORAIL PINNACLE Hip System performs better than the class comparator.**

Articulation	Fixation	Male				Female			
		<55	55-64	65-74	>75	<55	55-64	65-74	>75
Metal-on-Poly	Cemented	3.18 (2.45, 4.12)	4.96 (4.44,5.53%)	3.81 (3.56,4.09%)	3.16 (2.91,3.43%)	2.64 (2.12,3.29%)	4.02 (3.67,4.41%)	2.99 (2.83,3.16%)	2.03 (1.91,2.17%)
	Uncemented	3.02 (2.46,3.70%)	5.10 (4.54,5.73%)	4.14 (3.76,4.56%)	3.64 (3.23,4.10%)	2.63 (2.17,3.18%)	4.12 (3.70,4.58%)	3.50 (3.22,3.80%)	3.49 (3.16,3.85%)
	Hybrid	3.40 (2.51,4.59%)	4.36 (3.67,5.18%)	3.84 (3.42,4.30%)	3.51 (3.03,4.06%)	2.40 (1.78,3.21%)	3.81 (3.32,4.36%)	3.09 (2.82,3.40%)	2.28 (2.04,2.55%)
	CORAIL PINNACLE	1.78 (0.57, 5.47%)	1.57 (0.97, 2.54%)	2.74 (1.57, 4.78%)	1.75 (1.33, 2.31%)	2.95 (1.57, 5.52%)	1.81 (1.03, 3.19%)	1.45 (1.05, 1.98%)	1.87 (1.30, 2.70%)
Ceramic-on-Poly	Cemented	1.80 (1.30,2.49%)	1.32 (1.02,1.71%)	1.34 (1.03,1.75%)	1.85 (1.27,2.69%)	2.08 (1.59,2.71%)	2.47 (1.94,3.12%)	2.02 (1.62,2.51%)	0.97 (0.68,1.39%)
	Uncemented	2.61 (2.18,3.12%)	2.03 (1.77,2.34%)	1.55 (1.33,1.79%)	1.98 (1.55,2.52%)	2.33 (1.95,2.79%)	3.31 (2.84,3.84%)	3.01 (2.60,3.48%)	1.84 (1.50,2.25%)
	Hybrid	1.97 (1.47,2.64%)	1.70 (1.35,2.12%)	1.66 (1.35,2.04%)	2.04 (1.53,2.72%)	1.52 (1.16,1.99%)	2.54 (1.96,3.28%)	1.82 (1.48,2.24%)	1.53 (1.15,2.04%)
	CORAIL PINNACLE	1.46 (0.86, 2.48%)	1.27 (0.78, 2.07%)	0.88 (0.47, 1.64%)	1.87 (0.92, 3.79%)	3.07 (2.12, 4.43%)	2.66 (0.75, 9.19%)	1.03 (0.69, 1.53%)	1.28 (0.76, 2.15%)
Ceramic-on-Ceramic	Uncemented	4.64 (4.22,5.11%)	3.79 (3.44,4.17%)	3.14 (2.78,3.56%)	2.11 (1.66,2.69%)	4.57 (4.14,5.04%)	3.31 (3.01,3.63%)	2.51 (2.21,2.85%)	2.09 (1.69,2.57%)
	Hybrid	3.53 (2.75,4.53%)	2.70 (2.15,3.39%)	2.86 (2.16,3.78%)	1.62 (0.81,3.24%)	3.17 (2.54,3.95%)	2.54 (2.09,3.07%)	2.44 (1.85,3.20%)	0.98 (0.50, 1.93%)
	CORAIL PINNACLE	5.76 (4.00, 8.26%)	3.50 (2.41, 5.07%)	2.52 (1.62, 3.92%)	3.01 (1.45, 6.22%)	4.18 (2.86, 6.09%)	2.40 (1.73, 3.32%)	1.99 (1.40, 2.83%)	0.98 (0.37, 2.59%)

Table 1 Comparison of CRR estimates for CORAIL PINNACLE Hip System with CORAIL STD Collared (KA) stems to class rates stratified by articulation, fixation, gender and age (2019 NJR) (Blue cells are 5 years data, green cells are 10 year data). Estimates in blue italics indicate that fewer than 250 cases remain at risk at the time shown. Data extracted from Table 3.7 (2019 NJR)² and NJR Supplier Feedback System.³

KEY MESSAGES

The standard offset collared CORAIL in combination with PINNACLE performs very well when compared to the class comparators as provided by the NJR². In all 64 possible combinations of age, gender, articulation and fixation, the standard offset collared CORAIL in combination with PINNACLE demonstrates cumulative revision rates at least equivalent to the class comparator, and in 15 combinations better than the class comparator.**

*Articulation, Fixation, Age & Gender

** Based on analysis of point estimates and confidence intervals

References

1. National Joint Registry for England, Wales, Northern Ireland and the Isle of Man, 16th Annual Report, 2019. Table 3.3. Available from: www.njrreports.org.uk
2. National Joint Registry for England, Wales, Northern Ireland and the Isle of Man, 16th Annual Report, 2019. Table 3.8. Available from: www.njrreports.org.uk
3. NJR-NJR data from 1st April 2003 - 10th September 2019 on DePuy products supplied for post-marketing surveillance, NJR Centre, 2019. Note: NJR-NJR PMS data do not include Hospital Episode Statistics (HES) data linkage. Revisions may therefore be underreported.

The data used for this analysis was obtained from the NJR Supplier Feedback System. All analyses of NJR data were undertaken by DePuy Synthes. The Healthcare Quality Improvement Partnership ("HQIP") and the National Joint Registry ("NJR") take no responsibility for the accuracy, currency, reliability and correctness of any data used or referred to in this report, nor for the accuracy, currency, reliability and correctness of links or references to other information sources and disclaims all warranties in relation to such data, links and references to the maximum extent permitted by legislation.

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