

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

Jack Mantel, BA, Associate Director, HEMA | DePuy Synthes Companies
 John Leopold, MS, Biostatistician | DePuy Synthes Companies

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 790,000 primary total hip replacements (THR).¹

The purpose of this analysis is to examine the results of the CORAIL 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 CORAIL PINNACLE dataset. Analysis was conducted by a DePuy Synthes biostatistician on data made available from the NJR Supplier Feedback system, downloaded on 10th September 2016.³ 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 CORAIL PINNACLE

construct (at least 40 hips surviving) for which a published rate exists. The CRR estimates for CORAIL PINNACLE uncemented construct have been compared to the all fixation class rates by comparing the point estimates and 95% confidence intervals. As an additional comparison the final column provides the overall CRR estimates for the combinations of bearing and fixation before age or gender stratification, along with the equivalent published CRR estimate for CORAIL PINNACLE.^{4,5}

Key Message

- In 63/64 combinations* CORAIL PINNACLE performs at least as well if not better than the class comparator. (*Articulation, Fixation, Age & Gender)
- In three comparisons the CORAIL PINNACLE construct performs statistically better than the class comparator.
- In 60/64 comparisons the CORAIL PINNACLE construct performs as well as the class comparator.
- The only exception is for the category of over 75 year old females with a cemented Metal-on-Poly

Articulation	Fixation	Male				Female				Overall
		<55	55-64	65-74	>75	<55	55-64	65-74	>75	
Metal-on-Poly	Cemented	4.24 (3.20-5.60%)	5.16 (4.52-5.90%)	3.69 (3.37-4.03%)	2.79 (2.48-3.14%)	3.97 (3.16-4.99%)	4.01 (3.57-4.51%)	2.84 (2.65-3.05%)	2.00 (1.83-2.19%)	3.00 (2.88-3.12%)
	Uncemented	5.47 (4.34-6.90%)	5.43 (4.64-6.35%)	4.35 (3.79-4.99%)	3.62 (3.09-4.23%)	3.73 (2.95-4.70%)	4.88 (4.23-5.63%)	3.52 (3.14-3.96%)	3.56 (3.05-4.16%)	4.23 (4.00-4.47%)
	Hybrid	5.38 (3.76-7.66%)	4.76 (3.80-5.94%)	4.07 (3.46-4.79%)	3.55 (2.72-4.62%)	3.73 (2.69-5.16%)	3.44 (2.85-4.14%)	3.08 (2.69-3.52%)	2.18 (1.86-2.56%)	3.40 (3.17-3.65%)
	CORAIL PINNACLE	3.02 (1.53, 5.93%)	4.13 (3.06, 5.56%)	3.02 (2.30, 3.95%)	2.55 (1.88, 3.44%)	4.41 (2.63, 7.34%)	2.34 (1.67, 3.28%)	2.57 (1.91, 3.46%)	3.29 (2.20, 4.91%)	3.16 (2.72-3.66%)
Ceramic-on-Poly	Cemented	3.22 (2.16-4.79%)	1.41 (0.98-2.01%)	1.47 (1.03-2.10%)	1.49 (0.86-2.59%)	3.04 (2.14-4.30%)	2.71 (1.93-3.81%)	1.80 (1.36-2.39%)	1.38 (0.88-2.16%)	2.33 (2.02-2.69%)
	Uncemented	3.51 (2.70-4.56%)	2.93 (2.43-3.53%)	1.94 (1.58-2.39%)	2.38 (1.77-3.20%)	3.14 (2.42-4.07%)	4.07 (3.33-4.97%)	3.39 (2.81-4.10%)	2.18 (1.67-2.85%)	3.46 (3.17-3.78%)
	Hybrid	2.84 (1.62-4.98%)	1.93 (1.30-2.86%)	1.93 (1.30-2.87%)	1.85 (1.15-2.98%)	2.09 (1.26-3.45%)	2.50 (1.69-3.69%)	1.51 (1.13-2.01%)	1.14 (0.66-1.96%)	2.41 (1.99-2.91%)
	CORAIL PINNACLE	2.56 (1.50, 4.36%)	3.13 (1.95, 4.99%)	1.73 (1.02, 2.91%)	1.78 (0.93, 3.43%)	2.90 (1.95, 4.31%)	1.49 (1.00, 2.21%)	2.42 (1.52, 3.82%)	1.22 (0.63, 2.33%)	2.81 (2.13-3.72%)
Ceramic-on-Ceramic	Uncemented	5.14 (4.32-6.10%)	4.49 (3.81-5.29%)	3.69 (2.95-4.62%)	2.32 (1.72-3.11%)	5.13 (4.34-6.06%)	3.70 (3.17-4.32%)	2.43 (2.01-2.93%)	2.48 (1.92-3.21%)	4.08 (3.80-4.38%)
	Hybrid	3.44 (2.49-4.73%)	2.41 (1.79-3.25%)	2.86 (1.82-4.50%)	2.18 (1.07-4.43%)	2.87 (2.11-3.90%)	2.37 (1.79-3.15%)	3.04 (2.03-4.53%)	1.04 (0.44-2.48%)	2.72 (2.38-3.10%)
	CORAIL PINNACLE	5.38 (4.24, 6.81%)	3.86 (2.84, 5.24%)	3.71 (1.81, 7.54%)	3.10 (2.07, 4.62%)	5.25 (3.75, 7.32%)	3.60 (2.80, 4.61%)	1.97 (1.56, 2.49%)	2.39 (1.55, 3.69%)	4.00 (3.38-4.74%)

Table 1. Comparison of CRR estimates for CORAIL PINNACLE to class rates stratified by articulation, fixation, gender and age. (2016 NJR) (Blue cells are 7 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.

References

1. National Joint Registry for England, Wales, Northern Ireland and the Isle of Man, 13th Annual Report, 2016. Table 3.2. Available from: www.njrreports.org.uk
2. National Joint Registry for England, Wales, Northern Ireland and the Isle of Man, 13th Annual Report, 2016. Table 3.7. Available from: www.njrreports.org.uk
3. NJR-NJR data from 1st April 2003 -10TH September 2016 on DePuy products supplied for post-marketing surveillance, NJR Centre, 2016.
Note: NJR-NJR PMS data do not include Hospital Episode Statistics (HES) data linkage. Revisions may therefore be underreported.
4. National Joint Registry for England, Wales, Northern Ireland and the Isle of Man, 13th Annual Report, 2016. Table 3.6. Available from: www.njrreports.org.uk
5. National Joint Registry for England, Wales, Northern Ireland and the Isle of Man, 13th Annual Report, 2016. Table 3.9. Available from: www.njrreports.org.uk

Although NJR Data was used, all analysis was carried out by DePuy Synthes, the NJR do not vouch for the accuracy of the interpretation.

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Incorporated and registered in Scotland under company number SC132162.

DePuy Orthopaedics, Inc.
700 Orthopaedic Drive
Warsaw, IN 46582
USA
Tel: +1 (800) 366 8143
Fax: +1 (574) 267 7196

DePuy International Ltd
St Anthony's Road
Leeds LS11 8DT
England
Tel: +44 (0)113 270 0461

DePuy (Ireland)
Loughbeg
Ringaskiddy
Co. Cork
Ireland
Tel: +353 21 4914 000
Fax: +353 21 4914 199

depuysynthes.com

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