

A systematic review of the CORAIL® femoral stem and/or PINNACLE® acetabular cup provides evidence of generally good/excellent clinical outcomes for both implants

Introduction

Total hip arthroplasty (THA) is a clinically successful intervention for end-stage hip disease. The use of cementless fixation for THA is growing worldwide. A systematic review (SR) was conducted to evaluate the clinical effectiveness and safety of the CORAIL cementless femoral stem and the PINNACLE cementless acetabular cup, implanted in combination or separately with other implants in primary elective THA, including all implant configurations and currently marketed bearings.

Key findings of the SR are summarised here.

Methods

The SR was carried out in three stages:

- Stage 1: six previously conducted SRs were reviewed to identify studies eligible for inclusion.
- Stage 2: updated searches were conducted in June 2013 to identify recent relevant studies.
- Stage 3: additional hand searches were conducted to ensure all relevant publications had been identified in the previous stages.

The review included any publication reporting on the CORAIL stem and/or PINNACLE cup together or in combination with other acetabular cups or femoral stems, respectively. Any publications focusing on secondary procedures (i.e. hip revision and THA for femoral neck fractures) or reporting only on metal-on-metal (MoM) bearing surfaces were excluded.

Results

In total, 57 publications on 53 studies were eligible for inclusion in this SR. Implantation was as follows [number of publications]: CORAIL stem with cups other than PINNACLE [23], PINNACLE cup with stems other than CORAIL [19], and CORAIL/PINNACLE hip system [15]. Registry data were available from Australia, Denmark, New Zealand, Norway, Slovakia, Sweden, and the UK. A total of 7,760 hips were implanted across

the 53 included studies, with 128,921 hips implanted across the national joint registries.

For the CORAIL/PINNACLE hip system, survivorship >99.0% after short- (0-4 years) and medium-term follow-up (5-10 years) was reported. After long-term follow-up (>10 years), when the CORAIL stem was implanted with various cups, survivorship was >95% in the majority of studies. In two studies, survivorship <94% was reported after medium- and long-term follow-up^{1,2}. In these studies, low survivorship was driven by high rates of cup revision. Over medium-term follow-up, survivorship of the PINNACLE cup when implanted with various stems remained >97.6%.

In patients implanted with the CORAIL/PINNACLE hip system, pain and function was rated as good/excellent (on Oxford Hip Score [OHS]) in four studies³⁻⁶, with only one study reporting a rating of fair after six weeks follow-up⁷. Six CORAIL studies had a Harris Hip score (HHS) rating of good^{2,4,8-11}, and 16 PINNACLE studies had a HHS rating of excellent.

Conclusion

The results of the SR indicate that the CORAIL stem and PINNACLE cup (used in combination or with other implants for THA) are generally considered good/excellent. Registries and peer-reviewed articles report survivorship >95% after 10 years, which is consistent with the benchmark set in the 2014 National Institute for Health and Care Excellence (NICE) guidelines on hip prostheses¹². These data indicate that the CORAIL/PINNACLE hip system is forgiving, tolerant of surgical experience, patient selection and regional variations. Long-term survivorship >95% in the peer-reviewed articles supports the long-term effectiveness of the CORAIL stem. The SR shows that both the CORAIL stem and PINNACLE cup have good fixation with low revision rates over medium and long-term periods, and both are flexible systems with performance maintained irrespective of prostheses configuration.

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Outcome grades

Oxford Hip Score¹³

>41: Excellent
34-41: Good
27-33: Fair
<27: Poor

Harris Hip Score¹⁴

90-100: Excellent
80-89: Good
70-79: Fair
<70: Poor



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CA#DSEM/JRC/0814/0122 Issued: 01/15