

The PINNACLE® acetabular cup is forgiving, with generally good/excellent or improved clinical and patient-reported outcomes after total hip arthroplasty

Introduction

A total of 32 studies reporting on clinical, radiological or patient-reported outcomes for the PINNACLE cup were identified in a systematic review (SR); representing 6,201 hips. Results are summarised for clinical (survivorship, Harris Hip Score [HHS]), radiological (cup migration), and patient-reported outcomes (Oxford Hip Score [OHS], Western Ontario and McMaster Universities Arthritis Index score [WOMAC]).

Follow-up periods were grouped into short- (0-4 years), medium- (5-10 years) and long-term (>10 years).

Results – clinical outcomes

Survivorship

Four studies reported survivorship with end point revision for any cause. After a short-term follow-up, one study reported three year survivorship >97%¹, one study reported three year survivorship of 99.5%², and one study reported four year survivorship of 98.3%³. In the remaining study, eight year survivorship of 99.0% was reported⁴. Survivorship with end point of cup only revision was reported in two studies, with three year survivorship of 99.6% reported in one study² and five year survivorship of 99.9% reported in another study⁵. Survivorship with end point revision due to aseptic loosening was reported in two studies, with survivorship >98% reported at five and seven years^{3,6}.

Harris Hip Score (HHS)

Postoperative HHS outcomes were reported across a total of 2,560 hips from 15 studies. In two short-term studies a statistically significant improvement ($p < 0.05$) from baseline was reported at follow-up^{7,8}. In the remaining 13 studies, three short-term studies reported a mean score >80, rated as good and ten (five medium-term and five short-term studies) reported a mean score >90, rated as excellent.

Results – radiological outcome

Cup migration

One study, including 60 hips, reported on cup migration. After three months, a clinically significant migration of >1 mm was reported for 14.0% of the

hips. However after three months, migration decreased significantly and within 12 months, all implants except two showed stable migration. This indicated that the desired outcome of osseointegration of the POROCOAT® cup surface had taken place³.

Results – patient-reported outcomes

Oxford Hip Score (OHS)

Five short-term studies, representing 1,565 hips, reported on the OHS. Postoperative OHS ratings were described as good/excellent (OHS>80) in four studies^{2,4,9,10}, and fair (OHS 27-33) in one study¹¹. The study reporting a fair OHS rating may be considered unrepresentative. Although the OHS may improve out to six months postoperatively the second study used a follow-up time (six weeks) which may not capture the expected OHS improvements¹¹.

Western Ontario and McMaster Universities Arthritis Index Score (WOMAC)

The mean WOMAC score was reported in one short-¹⁰, two medium-^{6,12} and one long-term study¹³; representing 963 hips. Due to variations in WOMAC score reporting, direct comparisons between studies were not possible. However, across all four studies an improvement in the mean WOMAC score was reported postoperatively.

Conclusion

The peer-reviewed articles summarised here demonstrate survivorship in line with the benchmark set in the 2014 National Institute for Health and Care Excellence (NICE) guidance ($\geq 95\%$ survivorship at ten years)¹⁴. PINNACLE registry data representing 112,201 hips also report survivorship in line with the NICE guidance. Concordant survivorship results between peer-reviewed and registry data suggests the PINNACLE cup is a forgiving system, tolerant of different levels of surgical experience, varying patient selection and regions. The PINNACLE cup is associated with generally good/excellent or improved clinical and patient-reported outcomes.

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Outcome grades

Oxford Hip score¹⁵

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

Harris Hip Score¹⁶

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

WOMAC score

Due to variations in the questionnaire used in the included publications, please refer to the individual publications.



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