

Total Hip Arthroplasty (THA) for Developmental Dysplasia of the Hip (DDH): Influence of Dysplasia Severity and Hip Reconstruction on Revision Rates and Clinical Outcomes at 15-Year Follow-up

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INTRODUCTION:

The aim of this study was to assess the 15-year survival of total hip arthroplasty (THA) in patients with end-stage arthritis secondary to developmental dysplasia of the hip (DDH) and to evaluate the impact of (1) dysplasia severity and (2) postoperative hip reconstruction on revision rates and clinical outcomes.

METHODS: In this retrospective cohort study, 120 consecutive THAs performed in patients younger than 60 years (mean age: 47 years; range: 19–59) with DDH were included and prospectively followed. The majority of acetabular reconstructions were performed with cementless cups (103 cases), while cemented cups were used in 17 cases. Cementless fixation was used for all femoral stems. The severity of dysplasia was classified on preoperative radiographs using the Hartofilakidis classification system (Type A: n = 67, 56%; Type B: n = 39, 33%; Type C: n = 14, 12%). Implant survival was analyzed using Kaplan–Meier survival analysis. All common radiographic parameters, including hip offset and the vertical position of the center of rotation, were measured on pre- and postoperative radiographs. They were then correlated with clinical outcomes based on patient-reported outcome measures (PROMs) and revision rates.

RESULTS: At a mean follow-up of 15 years (range: 14.2–16.5 years), 11 patients (9%) had died and another 11 (9%) were lost to follow-up. A total of five revision surgeries (4%) were performed: one head and liner exchange for acute periprosthetic joint infection, two stem revisions due to aseptic loosening, one stem revision following a traumatic periprosthetic femoral fracture, and one stem and cup revision due to a stem fracture. The 15-year survival rate was 95% (95% confidence interval [CI]: 89–98%) for the endpoint “revision for any reason” and 98% (95% CI: 93–99%) for “revision for aseptic loosening.” No statistically significant differences in implant survival were found between the different dysplasia severity groups ($p = 0.73$). Similarly, postoperative reconstruction parameters, including the height of the hip center, did not significantly affect revision rates or functional outcomes (Oxford Hip Score, UCLA Activity Score, and visual analog scale [VAS] for hip pain). All patients experienced significant postoperative functional improvement. However, patients with severe dysplasia (Hartofilakidis Type C) had significantly worse functional scores both pre- and postoperatively compared to those with mild to moderate dysplasia (Types A and B).

DISCUSSION AND CONCLUSION:

Total hip arthroplasty for end-stage arthritis secondary to DDH leads to significant and durable improvements in clinical function, with excellent implant survival over 15 years. The height of the reconstructed hip center did not influence revision risk or functional outcomes, supporting the use of a “high hip center” as a viable surgical option in patients with DDH. While patients with severe dysplasia did not show increased revision rates, their functional outcomes remained significantly inferior to those of patients with less severe dysplasia.