

Comparison of Short-Term Outcomes between Direct Anterior and Posterolateral Approach in Robotic-Assisted Total Hip Arthroplasty

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INTRODUCTION:

The objective was to compare rates of dislocation, reoperation, revision, and patient-reported outcome measures (PROMs) between direct anterior approach (DAA) and posterolateral approach (PLA) for robotic-assisted primary total hip arthroplasty (THA).

METHODS:

We identified 2,040 consecutive robotic-assisted primary THAs for primary osteoarthritis, performed by DAA (n = 497) and PLA (n = 1542) between 2017-2020. Mean age was 63; median follow up was 24 months. There were more females (61% vs. 55%, p=0.012) and lower mean BMI (26 kg/m² vs. 29 kg/m², p<0.001) in the DAA cohort. Kaplan-Meier analysis estimated cumulative survivorship and logistic-regression controlled for baseline differences. Patient acceptable symptom state (PASS) and minimum clinically important difference (MCID) were used to compare changes in the Hip Disability and Osteoarthritis Outcome Score, Joint Replacement (HOOS JR) and Visual Analogue Scale (VAS) following THA.

RESULTS: The incidence of dislocation was rare in this series (14 in 2040, 0.7%); this included 1/497 (0.2%) dislocation in the DAA cohort and 13/1542 (0.8%) dislocations in the PLA cohort treated by closed reductions which was not significantly different (p = 0.20). There was no difference in cumulative reoperation-free survivorship (2-year: 97.8% vs. 98.6%, p = 0.59) and revision-free survivorship (2-year: 98.8% vs. 99.0%, p = 0.64). After controlling for age, sex, BMI, and surgeon, there was no difference in reoperation or revision. At 6-weeks follow up, more patients in the DAA vs. the PLA cohort achieved HOOS PASS (69% vs. 55%, p = 0.017), HOOS MCID (79% vs. 65%, p = 0.015), and VAS MCID (78% vs. 64%, p = 0.016). There were no differences in PROMs by 3 months.

DISCUSSION AND CONCLUSION: For robotic-assisted primary THA, DAA may confer enhanced early (<6 weeks) functional and pain recovery compared to the PLA, but we found no significant difference in postoperative dislocation, reoperation, and revision rates.