

Does Surgical Approach Affect Outcomes after Hemiarthroplasty for Femoral Neck Fractures?

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INTRODUCTION:

Hemiarthroplasty (HA) is frequently utilized to treat displaced femoral neck fractures (FNF). These fractures are associated with significant morbidity, mortality, and overall cost. There is paucity of information regarding the impact of surgical approach on postoperative outcomes and mortality. The purpose of this study is to compare postoperative outcomes between the three approaches [direct anterior (DAA), direct lateral (DLA), and posterior (PA)] utilized to perform HA for FNF.

This was a retrospective, multi-institutional study. There are 9 institutions participating in this study: University of Alabama Birmingham, University of Arkansas, University of Missouri, University of Pittsburgh Medical Center, Brigham and Women's Hospital, Massachusetts General Hospital, University of California San Francisco, University of Utah, University of Mississippi. All institutions provided de-identified data that was analyzed by a biostatistician at the lead site, University of Alabama Birmingham.

METHODS:

Our cohort consisted of 939 FNFs treated with HA from 2010-2019 at 9 institutions. Patients with high-energy injury mechanisms, who were non-ambulatory prior to injury, had concomitant femoral head or acetabular fractures, or did not reach a minimum follow up of 1-year were excluded. The mean follow up was 20 months (15-25 months). The DAA, DLA, and PA were utilized in 7.5%, 26.6%, and 65.9% of the cases respectively. Demographics, comorbidities, in-hospital variables, and postoperative outcomes including mortality at 90 days and 1-year were compared between the groups. Multivariable analysis of significant outcomes of interest was performed to adjust for confounders. All analyses were performed using same software.

RESULTS:

The demographics and comorbidities between the three groups were mostly similar except for a history of cerebrovascular accident history ($p < 0.02$) that was more prevalent in the PA group. The PA patients were more likely to receive general anesthesia ($p < 0.001$), hip precautions ($p < 0.001$), and abduction pillows or wedges ($p < 0.0001$) but were administered less frequently tranexamic acid ($p < 0.001$). DAA patients were less likely to be admitted to an ICU ($p = 0.008$), had shorter lengths of stay ($p = 0.008$), and were least likely to be non-ambulatory at discharge ($p < 0.001$) compared to DLA and PA patients. DAA ($p = 0.007$) and DLA ($p < 0.001$) patients were more likely to independently ambulate postoperatively compared to PA patients. The dislocation rate was significantly higher in PA patients at 90-day ($p < 0.001$) and 1-year ($p < 0.001$), while providing hip precautions, abduction pillows, and performing a capsular repair did not effect dislocation rates. DAA ($p = 0.04$) and DLA ($p = 0.01$) patients were independently associated with higher PJI rates at 90-days ($p = 0.02$) and 1-year ($p = 0.01$) to PA patients. Mortality rates were similar between the three groups at 90-days ($p = 0.169$) and 1-year ($p = 0.177$) postoperatively.

DISCUSSION AND CONCLUSION:

The anterior based approaches (DAA and DLA) were associated with greater rates of independent ambulation after HA for FNF, but they had higher PJI rates at 1-year postoperatively compared to PA. The DLA conferred lower dislocation rates compared to PA. Mortality at 1 year of surgery was similar for all three approaches. There are pros and cons for each individual surgical approach when performing HA for FNF that need to be considered.