

Risk of Revision and Complications: An Analysis of 956 Total Hip Arthroplasty Procedures for Acute Treatment of Acetabular Fractures

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Purpose: Total hip arthroplasty (THA) for the treatment of acute acetabular fracture may be indicated where there is a high risk for failure of open reduction and internal fixation. The current literature is limited to single institutional experiences with few reported outcomes in younger patients. The aims of this study were to determine the risk of revision and rates of major surgical complications of THA for acute acetabular fracture.

Methods: A retrospective review was performed (all claims data files, PearlDiver database) by querying ICD-10 procedure codes for THA within 14 days of acetabular fracture. We identified all-cause revision and complications including dislocation, mechanical failure (loosening or broken prosthesis), and infection. Demographic data collected included age, sex, obesity and Charlson Comorbidity Index (CCI). Multivariate analysis evaluated the association of revision and major surgical complications after adjusting for demographic characteristics and comorbidities.

Results: We identified 956 THAs for the treatment of acute acetabular fracture from 2015 to 2020, ensuring a minimum of 1-year follow-up for all patients. Overall major complication rate was 26.9% and all-cause revision risk was 18.2%. Dislocation was the most common complication (15.2%), followed by mechanical complication (14.2%) and infection (10.9%). Mean age was 67.6 ± 11.8 years and mean CCI was 3.05 ± 3.06 ; 31.4% carried a diagnosis of obesity and 59.1% were female. Female sex was associated with increased risk of revision (adjusted odds ratio [aOR] 1.8; confidence interval [CI] 1.3-2.6, $P = 0.001$), dislocation (aOR 2.0; CI 1.5-3.1, $P < 0.001$), mechanical complication (aOR 2.1; CI 1.4-3.2, $P < 0.001$), and infection (aOR 1.6; CI 1.0-2.5, $P = 0.044$). Obesity was associated with increased risk of revision (aOR 1.7; 95% CI 1.2-2.4, $P = 0.004$), mechanical complication (aOR 1.8; 95% CI 1.2-2.6, $P = 0.002$), and infection (aOR 1.6; 95% CI 1.0-2.4, $P = 0.036$). Younger age was associated with increased infection rate (aOR 0.97; CI 0.95-0.98, $P = 0.0001$). 80.7% of dislocations, 69.2% of infections, and 81.0% of revisions occurred within the first 3 months. At 1 year, >90% of all complications had occurred.

Conclusion: We noted risk of all-cause revision of 18.2% and overall major surgical complication rate of 26.9% for THA as the treatment of acute acetabular fracture. We caution surgeons to realistically evaluate patients risk profile prior to an acute THA, and make a shared decision with patients. Further, higher revision and complication rates in females and younger patients warrant additional investigation into patient and fracture characteristics that may contribute to this finding.