

Risk Factors for Instability After Hip Arthroplasty for Femoral Neck Fracture

*Jeffrey Frandsen, MD; Graham John DeKeyser, MD; Brenna Blackburn, PhD, MPH; The Arthroplasty for Hip Fracture Consortium; Jeremy Gililland, MD
University of Utah, Salt Lake City, Utah, UNITED STATES*

Purpose: Dislocation after hip arthroplasty (HA) is one of the most common postoperative complications. It can lead to poor functional outcomes and possible need for subsequent surgery to obtain a stable hip. The purpose of this study was to evaluate risk factors predisposing to dislocation following HA for femoral neck fracture.

Methods: Patients from 9 academic medical centers who underwent an HA for femoral neck fracture between 2010 and 2020 with at least 1 year of follow-up were included in this retrospective review. χ^2 , Fisher's exact, and t tests were used to compare demographics and outcomes between patients who had a dislocation following HA versus those who did not. An adjusted logistic regression was also used to determine risk factors for dislocation.

Results: 1620 patients met inclusion criteria and a total of 80 patients (4.9%) suffered at least 1 dislocation event. Both groups (dislocators vs non-dislocators) were similar in terms of demographic variables including age, sex, body mass index (BMI), diabetes, tobacco use, injury mechanism, ISS, and Garden classification ($P > 0.05$). Dislocation rates were statistically significantly higher in posterior-based approaches than anterior-based approaches to the hip ($P < 0.005$). In total, 2.9% of anterior-based approaches dislocated and 7.2% of posterior-based approaches dislocated ($P < 0.001$, unadjusted odds ratio 2.46 [1.60,4.00]). Longer operative times (115 min in dislocators vs 105 min in non-dislocators, $P = 0.05$), intraoperative blood transfusion (yes vs no, $P = 0.05$), and postoperative limb length inequality ($P = 0.028$) were associated with a higher risk of dislocation. Prosthetic joint infection (PJI) was significantly associated with hip instability with a 15% rate of instability in infected hips versus a 4.2% rate of dislocation in hips that were not infected ($P = 0.0002$). Finally, fellowship training of the treating surgeon (general, trauma, or arthroplasty) did not affect dislocation risk.

Conclusion: Limited literature exists regarding risk of instability in HA for treatment of femoral neck fractures. We found an overall dislocation rate of 4.9% in a large cohort of femoral neck fractures with at least 1 year of follow-up. Dislocation after arthroplasty for femoral neck fracture is higher in patients who had a posterior-based approach, had longer operative times, received an intraoperative blood transfusion, had an associated PJI, and/or had a postoperative leg-length discrepancy. Our study also found similar rates of dislocation between fellowship training of the treating orthopaedic surgeons.