

## Reducing the Burden of Periprosthetic Hip Fractures: The Impact of Revision Arthroplasty Versus Open Reduction and Internal Fixation on Outcomes

*Brian Richard, MD; Hamidreza Hosseinpour; Bellal Joseph; Jason A. Lowe, MD; Adam C. Carl, MS*

**Purpose:** Periprosthetic femur fractures (PPFX) are a serious complication of hip arthroplasty. There is a lack of data describing financial costs, clinical outcomes, and readmission of PPFX, particularly when stratified by treatment. This study compares readmission rates (RRs), hospital costs, and index admission length of stay (LOS) between PPFX treated with revision arthroplasty (revision) and open reduction and internal fixation (ORIF).

**Methods:** We retrospectively analyzed the 2019 National Readmission Database (NRD). Geriatric ( $\geq 65$  years) patients with hip PPFX on index admission from January to September 2019 were included and followed for 3 months. Patients were stratified by treatment type into revision and ORIF. The primary outcome was 90-day RR. The secondary outcomes were hospital costs and LOS.

**Results:** A total of 9645 patients with hip PPFX were identified, of whom 5561 (57.7%) were treated with ORIF and 4084 (42.3%) underwent revision. The mean age was 79 and 29% were male. The most common mechanism of injury was fall (77.3%), with no difference in ISS between study groups (4 vs 4,  $P = 0.315$ ). Median (interquartile range) LOS was 6 days (4-9). All-cause 90-day RR was 22.0% (revision: 23.2% vs ORIF: 21.1%,  $P = 0.014$ ). Index admission and 90-day post-discharge mortality rates were 1.9% and 3.9%, respectively, with no statistically significant difference. After controlling for patient demographics, injury characteristics, and comorbidities, patients with revision were more likely to have 90-day readmissions (adjusted odds ratio: 1.141, 95% CI [1.035-1.258],  $P = 0.008$ ). The most common causes of readmissions following revision were urinary tract infection (23.4%) and prosthesis dislocation (21.9%). Patients treated with revision had longer LOS (6 days vs 5 days,  $P = 0.048$ ) and higher index admission hospital costs compared to operative fixation (median, \$127,407 vs \$96,561,  $P < 0.001$ ).

**Conclusion:** There exist high rates of readmission and high hospital costs for patients with PPFX. Patients requiring revision after an injury demonstrate increased 90-day hospital RR and associated hospital costs. Future prospective studies are warranted to define the optimal care pathways for improved outcomes and effective health-care utilization.