

Increased Complications and Cost Associated with Hip Arthroplasty for Femoral Neck Fracture: Evaluation of 576,119 Medicare Patients Treated with Hip Arthroplasty

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Purpose: Multiple studies have shown the benefits of arthroplasty for treatment of femoral neck fractures (FNFs) in geriatric populations. Patients undergoing hip arthroplasty for the treatment of FNF are a significantly different population than elective hip arthroplasty patients. We compare perioperative complications and cost of total hip arthroplasty (THA) for treatment of osteoarthritis (OA) to hemiarthroplasty (HA) and THA for treatment of FNF.

Methods: Data from the Centers for Medicare & Medicaid Services (CMS) were used to identify all patients 65 years of age and older undergoing primary hip arthroplasty between 2013 and 2017. Patients were identified using diagnosis-related group codes 469 and 470, then divided into three cohorts: primary THA for OA (n = 326,313), HA for FNF (n = 223,811), and THA for FNF (n = 25,995). Generalized regressions were used to compare mortality, 90-day readmission, thromboembolic events, and 90-day costs, controlling for age, sex, race, and comorbidity.

Results: Compared to patients treated for OA, FNF patients were older, more likely to be female, and had significantly more comorbidities (all $P < 0.001$). Even among the youngest cohort (65-69 years) without comorbidity, FNF was associated with a greater risk of mortality at 90 days (THA-FNF odds ratio [OR] 9.34, HA-FNF OR 27.02; $P < 0.001$), 1 year (THA-FNF OR 7.75, HA-FNF OR 19.02; $P < 0.001$), and 5 years (THA-FNF HR 4.54, HA-FNF HR 9.965; $P < 0.001$), as well as a higher risk for thromboembolic events (THA-FNF OR 1.42, HA-FNF OR 1.36; $P < 0.001$) and readmission at 90 days (THA-FNF OR 2.10, HA-FNF OR 2.59; $P < 0.001$). Mortality and complications only increased when stratified by age and comorbidities with the 85 years and older age group demonstrating 3.7% 1-year mortality in the THA-OA age group compared to 26% ($P < 0.001$) 1-year mortality in the THA-FNF group and a 31.8% ($P < 0.001$) 1-year mortality in the HA-FNF cohort. Cases with treatment of FNF were associated with significantly greater direct cost ($P < 0.001$). The mean 90-day episode cost for the THA-OA cohort was \$25,296 (95% confidence interval [CI] \$24,997, \$25,595) compared to \$37,720 (95% CI \$38,970, \$39,553; $P < 0.001$) for the THA-FNF group and \$39,261 (95% CI \$37,260, \$38,179; $P < 0.001$) for the HA-FNF group.

Conclusion: Among CMS hip arthroplasty patients, those with an FNF had significantly higher rates of mortality, thromboembolic events, readmission, and greater direct cost. Reimbursement models for arthroplasty should account for differences among FNF patients who have distinctly different perioperative complication profiles from patients undergoing THA for OA. Bundling these heterogeneous groups of patients together in an alternative payment system could disadvantage those centers that care for a higher proportion of FNF patients. Furthermore, this information can be used for counseling FNF patients and families in the perioperative setting regarding risks and complications.