

Hip Arthroplasty for Fracture versus Elective Patients: One Bundle Does Not Fit All

Siddharth Mahure, MD; Richard Yoon, MD; Lorraine Hutzler, MS; Nirmal C. Tejwani, MD; Frank Liporace, MD; Joseph Bosco, MD; Kenneth A. Egol, MD
New York University Hospital for Joint Diseases, New York, New York, USA

Purpose: The bundled payment model places a greater responsibility on hospitals to provide optimal care by directly tying reimbursements with the ability to improve outcomes across a variety of quality metrics. Currently, all hip arthroplasty patients fall within a single bundle, regardless of whether treatment is provided on an elective or fracture basis. As fracture care must often be provided on an emergent basis, there may be insufficient time to appropriately optimize these patients prior to surgery, thus leading to significantly worse outcomes that ultimately place significant financial burden on hospital systems. We sought to determine how baseline characteristics may be different between patients undergoing hip arthroplasty for fracture care versus elective treatment, and how this may affect subsequent outcomes.

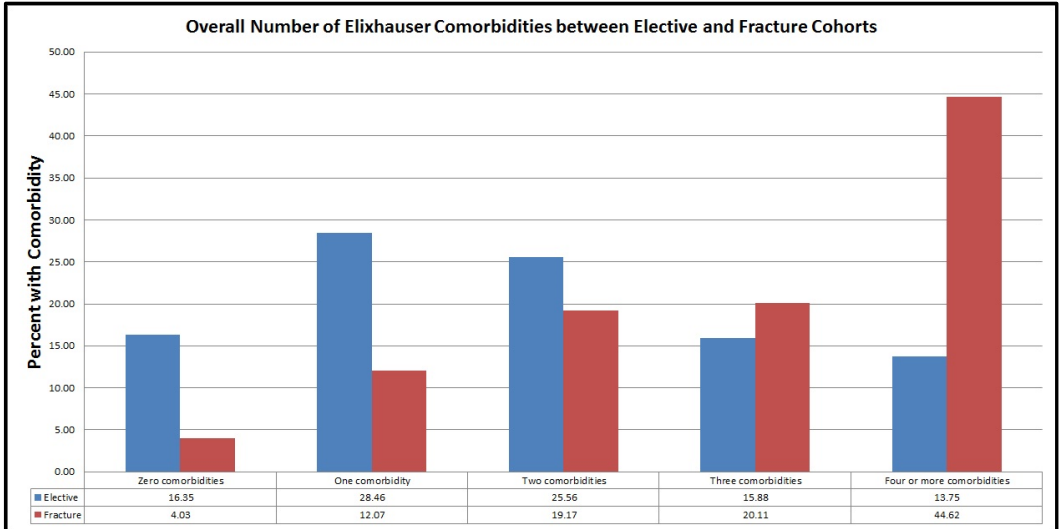
Methods: The New York Statewide Planning and Research Cooperative System (SPARCS) database was queried to identify patients 18 and older who underwent inpatient total hip arthroplasty (THA) or hemiarthroplasty (HA) between 2010 and 2014. Demographic information, hospital teaching status, bed size, urban/rural location, along with concomitant medical comorbidities were identified. Primary ICD-9 diagnosis code at time of admission was used to characterize patients into either elective or fracture cohorts. Differences between groups regarding in-hospital mortality, postoperative complications, length of stay (LOS), total charges, discharge disposition, and hospital readmission were examined.

Results: 76,654 patients underwent THA or HA between 2010 and 2014. 82.8% of the sample was for elective care, 17.2% for fracture-related etiology. Fracture patients were significantly older (81.1 ± 10.20 vs 65.0 ± 11.3 , $P < 0.001$), more likely to be female (70.5% vs 29.5%, $P < 0.001$), Caucasian (89.9% vs 84.8%, $P < 0.001$), reimbursed by Medicare (87.9%, $P < 0.001$), and receive general anesthesia (76.6% vs 23.4%, $P < 0.001$). Comorbidity burden and postoperative complications were significantly higher in the fracture group (Figures I and II). Mean LOS (7.3 ± 5.7 vs 3.3 ± 1.7 , $P < 0.001$) and hospital charges ($\$54,087.0 \pm 44,384.0$ vs $\$46,441.0 \pm 22960.0$, $P < 0.001$) were significantly greater for fracture patients as compared to elective cohort. Results from multivariate analysis showed that compared to elective THA, undergoing arthroplasty for fracture-related care was an independent risk factor for: LOS in 75th percentile (odds ratio [OR] 8.91, 7.66-10.36, $P < 0.001$), hospital charges in the 75th percentile (OR 2.28, 2.00-2.59, $P < 0.001$), nonhomebound discharge disposition (OR 3.92, 3.65-4.21, $P < 0.001$), in-hospital mortality (OR 6.70, 4.67-10.28, $P < 0.001$), and 90-day readmission (OR 2.53, 2.34-2.74, $P < 0.001$).

Conclusion: Patients undergoing hip arthroplasty for fracture care are significantly older and have more medical comorbidities than patients treated on an elective basis, leading to more in-hospital complications, greater LOS, increased hospital costs, and significantly more hospital readmissions. The present bundled payment system unfairly penalizes hospitals who manage fracture patients, and has the potential to incentivize hospitals to defer providing definitive surgical management for these patients. Future amendments to the bundled

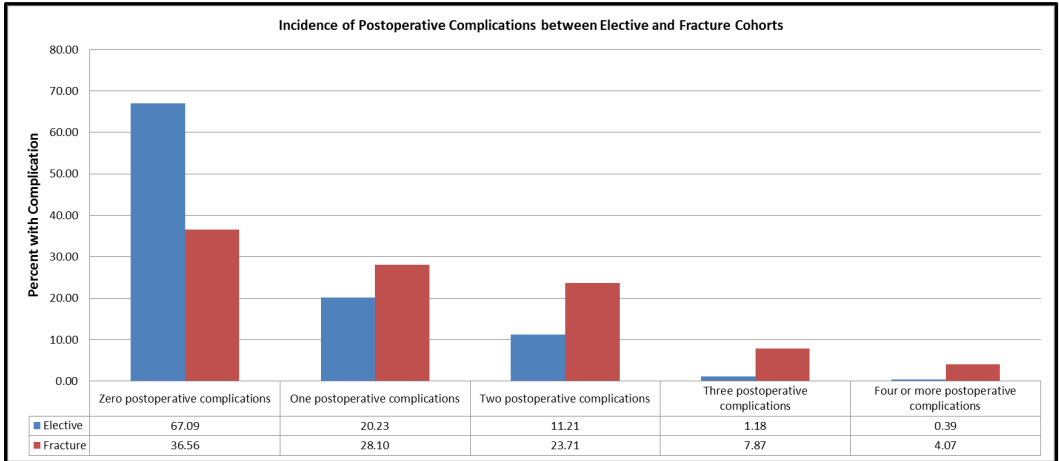
payment system should consider separating hip arthroplasty patients based upon etiology, allowing for a more accurate reflection of these two distinct patient groups.

Figure I



PAPER ABSTRACTS

Figure II



The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.