

Hip Fractures Are Risky Business: An Analysis of the NSQIP Data

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Purpose: The recent expansion of the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database provides an unparalleled opportunity to analyze the highest-risk orthopaedic surgeries. In this study, we begin by utilizing ACS-NSQIP data to compare the rate of 13 adverse events among the 30 most common orthopaedic procedures. We then use our findings to investigate risk factors and complication rates among the top five surgeries found to have the greatest rate of adverse events in orthopaedic surgery.

Methods: Using the ACS-NSQIP database, a prospective cohort of 101,862 orthopaedic patients from 2005-2011 were categorized by CPT codes. Demographics including age, sex, race, and comorbidities were recorded. The incidence of 13 adverse events was calculated. For the 5 procedures with the greatest rate of adverse events, the most common postoperative complications and risk factors for adverse events were identified. Statistical significant was set at $P < 0.05$.

Results: The top 5 orthopaedic procedures with the highest rate of adverse events were all hip fracture surgeries (n = 9460). Adverse events occurred in 15.9% to 27.4% of cases among these 5 procedures (Figure 1). These surgeries also accounted for 25.2% (2433/9640) of all adverse events in orthopaedics. Among the top 5 procedures, the most common adverse events were death (6.90%), urinary tract infection (UTI) (5.92%), and pneumonia (3.45%) (Table 1). Five significant risk factors were identified for adverse events following hip fracture repair, including age, history of CHF (congestive heart failure), esophageal varices, ASA (American Society of Anesthesiologists) class, and functional status (Table 2).

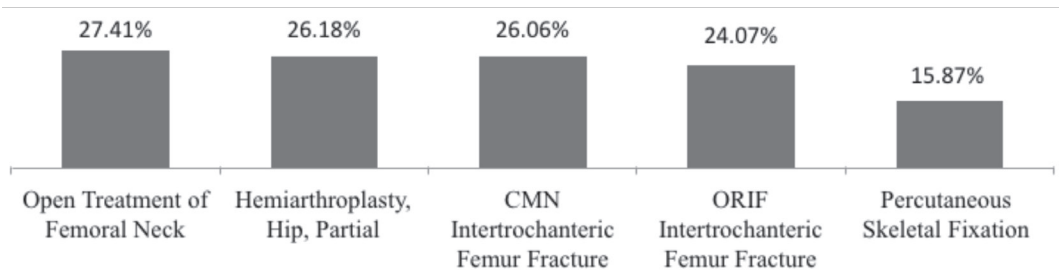


Figure 1. Orthopaedic procedures with the greatest rate of adverse events. CMN = cephalomedullary nailing, ORIF = open reduction and internal fixation.

Conclusion: This study, which is the first to use the expanded orthopaedic ACS-NSQIP database, demonstrates that over one-third of all adverse events in orthopaedics are due to hip fractures. Quality improvement programs targeted towards hip fracture patients, especially those with the risk factors identified above, can dramatically reduce adverse events in orthopaedic trauma.

See pages 99 - 147 for financial disclosure information.

Table 1. Top Five Complications Following Hip Fracture Repair

Death	6.90% (n = 665)
Myocardial infarction	1.69% (n = 163)
Sepsis	2.02% (n = 195)
UTI	5.92% (n = 571)
Pneumonia	3.45% (n = 333)

Table 2. Risk Factors for Adverse Events Following Hip Fracture

Risk Factors	Odds Ratio (95% Confidence Interval)	<i>P</i>
Age >65 years	1.37 (1.07-1.75)	0.013
History of CHF	1.85 (1.31-2.62)	0.0001
Esophageal varices	3.73 (1.20-11.6)	0.022
ASA class	1.26 (1.72-2.78)	0.0001
Functional status	2.33 (2.12-2.56)	0.0001

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