

**Total Hip Arthroplasty for Femoral Neck Fractures:
Does Hospital Arthroplasty Volume Influence Outcomes?**

*Michael Maceroli, MD; Lucas Nikkel, MD; Bilal Mahmood, MD; John Elfar, MD;
University of Rochester, Department of Orthopaedics, Rochester, New York, USA*

Purpose: Total hip arthroplasty (THA) is an increasingly common treatment option for select patients who sustain displaced femoral neck fractures. Primary arthroplasty literature has demonstrated improved THA outcomes at high-volume arthroplasty hospitals but this relationship has not been evaluated for femoral neck fractures. The purpose of this population-based study is to determine if hospital arthroplasty volume affects patient outcomes after undergoing THA for displaced femoral neck fractures.

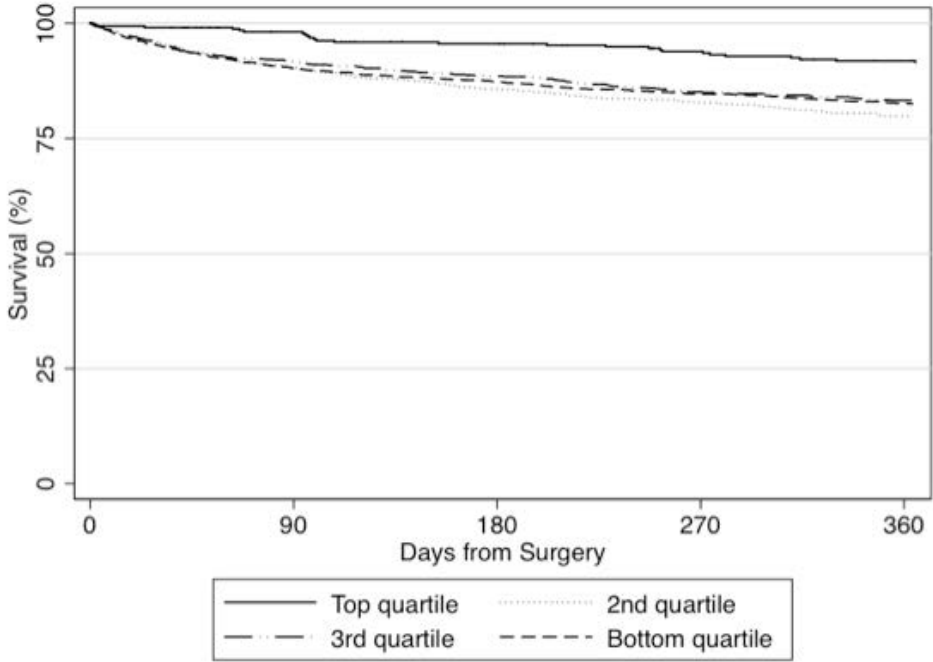
Methods: The Statewide Planning and Research Cooperative System (SPARCS) database from the New York State Department of Health was used to group hospitals into quartiles based on THA volume from 2000-2010. The database was then queried to identify all patients undergoing THA specifically for femoral neck fracture during this time period. The data were analyzed to investigate outcomes within high-volume and low-volume arthroplasty centers in 30-day and 1-year mortality, 1-year revision rate, and 90-day complication rate (readmission for dislocation, deep vein thrombosis, pulmonary embolism, prosthetic joint infection, or other complications related to arthroplasty in the treatment of femoral neck fractures with THA). Univariate analyses on categorical and continuous parameters were performed using chi-square and Student t tests, respectively. Time to mortality was modeled using the Kaplan-Meier method, with the log-rank test. Proportional hazard regression was used to quantify 30-day and 1-year mortality risk with THA, and 90-day complication risk based on hospital volume while adjusting for covariates that were significantly associated with mortality on univariate analysis ($P < 0.05$).

Results: The SPARCS dataset query yielded 3748 patients who underwent THA for femoral neck fracture from 2000-2010. Patients undergoing THA for femoral neck fracture at high-volume arthroplasty centers were younger (77 and 79 years; $P < 0.001$), less likely to be white (60% and 87%, $P < 0.001$), had shorter time to fixation (1.4 and 2.3 days; $P < 0.001$), and were more likely to be fixed on the day of admission or following day (66% and 51%; $P < 0.001$). The mean Charlson comorbidity index score was lower in patients undergoing THA for fracture at high-volume arthroplasty hospitals (0.7 and 0.9; $P = 0.006$). Patients undergoing THA at high-volume arthroplasty centers had significantly lower 30-day (0.9% and 5.2%; $P = 0.001$) and 1-year (7.7% and 17.3%; $P < 0.001$) mortality on univariate analysis. There was no significant difference in revision arthroplasty at 1 year and no significant differences in 90-day pulmonary embolism, deep vein thrombosis, prosthetic joint infection, dislocation, or other complication between patients undergoing THA for fracture at high-volume compared with low-volume centers.

Conclusion: The results of this population-based study indicate that THA for femoral neck fractures at high-volume arthroplasty hospitals confers lower mortality but does not influence 90-day complication rate or 1-year revision rate. When THA is performed for femoral neck fracture at high-volume arthroplasty hospitals the patients are

younger and healthier. The mortality benefit seen in the top quartile hospitals is more likely the result of careful patient selection rather than institution procedural experience.

Fig 1. Post Operative Survival Within Arthroplasty Volume Quartiles Following THA for Femoral Neck Fracture



POSTER ABSTRACTS

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.