

Redefining the Critical Window for Elderly Hip Fracture Surgery: 'Next Day Surgery' has Equivalent Outcomes Compared to Surgery Performed Less than 24 Hours from Emergency Room Arrival.

Benjamin Hammond, BS; Danielle M. Olson, MS; Abhishek Ganta, MD; Kenneth A. Egol, MD; Sanjit R. Konda, MD

Purpose: Our objective was to compare the outcomes of patients who undergo "Next Day Surgery" (NDS) versus those who undergo "Less than 24-Hour Surgery" (<24S).

Methods: A retrospective review of a hip fracture database in a single institution from 2014 to 2024 was performed. Inclusion criteria were age older than 65 years, OTA 31A-B hip fracture, surgical treatment, and follow up for 1 year. Demographics, injury, hospital quality measures, and postoperative mortality were recorded up to 1 year. The study cohort was divided into two groups based on time from emergency department arrival to surgery start time: <24S and NDS more than 24 hours from arrival. Univariate analysis was performed to compare outcomes. Multivariate linear regression analysis was performed to adjust for age and risk-profile (STTGMA score). Significance was set to $p < 0.05$.

Results: There were 1873 patients included in the study analysis, of which 1090 (58.20%) were <24S and 783 (41.80%) were NDS. The overall mean age was 79.21 years. Univariate analysis revealed no differences between <24S and NDS cohorts for average in-hospital complications (0.51 vs 0.54, $p = 0.427$), inpatient mortality (0.5% vs 1.1%, $p = 0.087$), 30-day (5.8% vs 6.3%, $p = 0.667$) and 90-day (8.6% vs 11.0%, $p = 0.087$) readmission, and 30-day (2.3% vs 2.6%, $p = 0.716$) and 1-year (4.5% vs 6.1%, $p = 0.115$) mortality. Length of stay (5.16 [3.25] vs 5.65 [3.39], $p = 0.002$) and discharge location (36.9% home discharge vs 30.7%, $p = 0.005$) were both noted to favor the <24S cohort. After adjusting for confounding factors, only length of stay was found to be associated with the <24S cohort ($B = -0.446$, $p < 0.001$).

Conclusion: There are no significant differences in meaningful patient outcomes for elderly patients undergoing hip fracture surgery less than 24 hours from emergency department arrival versus those who undergo NDS more than 24 hours after arrival. This study suggests that NDS can be performed safely without increased risk to the patient.