

Early Surgery for Proximal Femoral Fractures Is Associated with Lower Mortality: Report of 12,654 Patients

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Purpose: Hip fracture is a common injury with associated high mortality. Early operative treatment remains a contentious issue as some studies show no clear advantage to early surgery. The purpose of this study was to compare the hazard for mortality in patients who had operative treatment for proximal femoral fractures within 48 hours of presentation to the emergency department and those who did not. We hypothesized that mortality would be significantly higher in those with delayed time to the operating room.

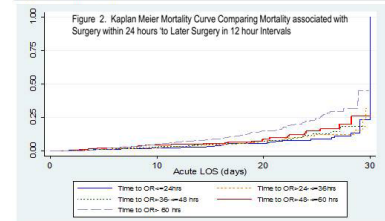
Methods: This was a retrospective study using administrative data on all patients who underwent operative treatment for proximal femoral fractures between April 2009 to 2013. Time from presentation to emergency department to the operating room (OR) was calculated in hours using the National Ambulatory Care and Discharge Abstract Databases. In-hospital mortality to 30 days post fracture was determined using the Discharge Abstract Database. The primary outcome was the in-hospital mortality rate; hospital stay was truncated at 30 days postoperatively. Cox regression analysis was used to assess whether timing of surgery had an effect on mortality after controlling for age, gender, and comorbidity (using the Charlson Comorbidity index). Proportional hazards for mortality using ≤ 48 hours (reference category) versus >48 hours to OR after controlling for age, sex, and comorbidity (Charlson Comorbidity Index). Proportional hazards for mortality using ≤ 24 hours (reference category), $>24-36$ hours, $>36-48$ hours, $>48-60$ hours, and >60 hours to OR after controlling for age, sex, comorbidity (Charlson Comorbidity Index).

Results: Of the 12,654 patients admitted with hip fracture during the study time period, 8503 (67.3%) were female and the average age was 77.2 ± 14.5 years. Almost half (5960 [47.1%]) had a Charlson Comorbidity Score of at least 1. Overall 380 (3.7%) patients died in hospital. Of the overall cohort, 4676 (37%) received surgery within 24 hours, 2833 (22.4%) had surgery between 24 and 36 hours, 2959 (17.3%) had surgery between 36 and 48 hours, and 2959 (23.4%) had surgery after 48 hours of admission. After adjusting for age, sex, and comorbidity, those patients who went to the OR at >48 hours post fracture were significantly more likely to die in hospital than those who received surgery within 48 hours (hazard ratio 1.60; 95% confidence interval 1.33, 1.92)

Conclusion: The results from this large cohort encompassing all patients with hip fracture treated from 2009-2013 demonstrate that delay in surgery by more than 48 hours has an adverse effect on in-hospital mortality. Patients presenting with proximal femoral fractures should be adequately resuscitated, medically optimized, and prioritized to undergo surgery on the next available trauma list.

Impact of Time to OR on Mortality using 12 hour Time Intervals	Hazard Ratio	95% CI
Time to OR ($>24-36$ hrs vs ≤ 24 hrs)	1.01	0.76-1.33
Time to OR ($>36-48$ hrs vs ≤ 24 hrs)	1.12	0.84-1.50
Time to OR ($>48-60$ hrs vs ≤ 24 hrs)	1.36*	1.01-1.90
Time to OR (>60 hrs vs ≤ 24 hrs)	1.80*	1.40-2.32
Age	1.07*	1.05-1.08
Male vs. Female	1.65*	1.36-1.99
Charlson 1 vs 0	1.77*	1.35-2.32
Charlson ≥ 2 vs 0	3.43*	2.71-4.35

* statistically significant ($p < 0.05$)



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.

POSTER ABSTRACTS