

## Does Resident Participation in the Surgical Fixation of Hip Fractures Increase Operative Time or Affect Outcome?

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**Purpose:** Hip fracture fixation is commonly performed at teaching hospitals with resident support and in community hospitals. It is unknown to what extent participation by residents affects operative times or outcomes.

**Methods:** 314 patients with hip fractures (AO/OTA A1-3, B1-3) were treated with surgical fixation (177 patients at the community hospital, 137 at the teaching hospital). Demographic and hospital data were collected retrospectively. All operations were performed by one of three board-certified orthopaedic surgeons with clinical appointments at both hospitals. Differences in operative time, estimated blood loss (EBL), transfusion requirement, length of stay, discharge to skilled nursing facility (SNF), and 30-day mortality were evaluated. Multivariate regression assessed the effect of location adjusting for age, gender, and Charlson Comorbidity Index.

**Results:** At the community hospital we found lower median operative time (46 minutes [95% confidence interval (CI): 43, 52]) versus 75 minutes (95% CI: 70, 81)) and lower EBL (177.3 mL [95% CI: 158.6, 195.1] vs 234.8 mL [95% CI: 196.4, 273.6]). When compared by fixation type, the community hospital had shorter median operative times in 5 of the 6 fixation types analyzed, including: cannulated screws, short intramedullary nail, noncemented hemiarthroplasty, sliding hip screw, and long intramedullary nail. We found no difference in rate of transfusion, length of stay, or discharge to SNF. The unadjusted 30-day mortality was 1.7% (95% CI: 0.35, 4.87) at the community hospital compared to 5.1% (95% CI: 2.08, 10.2,  $P = 0.11$ ) at the teaching hospital. The adjusted odds ratio for 30-day mortality at the teaching hospital was 5.44 (95% CI: 1.22, 24.1,  $P = 0.026$ ). The Charlson comorbidity score demonstrated an association with 30-day mortality with an odds ratio of 1.61 (95% CI: 1.19, 2.18,  $P = 0.018$ ).

**Conclusion:** The current study shows an increase in operative time and 30-day mortality when residents participate in surgical fixation of hip fractures. While resident involvement in surgical procedures is essential for future competency, it is important that it not come at the expense of patient outcomes. Further research is warranted to evaluate what increase in operative time we can accept in order to teach, and what difference in outcomes, if any, is acceptable.