What's the Rush? Not All Patients Benefit Equally from Hip Fracture Repair within 24 Hours

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Purpose: Current guidelines advocate for operative fixation of hip fractures within 48 hours of Emergency Department (ED) arrival for maximum mortality benefit; however, recent studies have demonstrated improved mortality benefit when fixation is done within 24 hours. This study aims to identify which patients truly benefit from operative repair within 24 hours of ED presentation based on patient risk stratification.

Methods: An established trauma registry from a single academic institution was queried for radiographically confirmed AO/OTA (31A, 31B, 31C) operatively treated hip fractures. Patient demographics, hospital quality measures, complication rates, and mortality rates during admission, at 30 days postoperatively, and 1 year postoperatively were queried. Each patient was placed into an "individualized risk quartile" (IRQ) using a validated risk stratification tool (STTGMA [Score for Trauma Triage in the Geriatric and Middle Aged]). A total of 2776 patients were identified and subsequently risk stratified into minimal, low, moderate, and high-risk IRQs. In each cohort, patients were separated into 3 groups based on their time from ED arrival to surgery (≤24 h, >24 h, ≤48 h, and >48 h). Each of these 12 groups was analyzed for complications, mortality rates, and hospital quality measures, and the results were compared. A P value of <0.05 was considered significant for all statistical tests.

Results: The data demonstrated improved outcomes across all IRQs for surgery within 24 h compared to surgery between 24 h and 48 h and surgery greater than 48 h. However, these effects were not evenly distributed among the IRQs. Comparing the high-risk IRQ (IRQ4) to the low-risk IRQ (IRQ1), major complication rates demonstrated statistically significant increases in IRQ4 (P = 0.003), with the rates progressing from 20.5% to 24.7% to 34.1% as a function of time to surgery, while IRQ1 did not demonstrate similar results (P = 0.70), with the rates essentially static across surgery time points (3.4% to 2.04% to 3.70%). A similar trend was seen when analyzing favorable discharge location, unplanned readmission, 36-h mortality, 48-h mortality, mortality during admission, and mortality at 1 year for the highest risk patients.

Conclusion: Patients stratified into the moderate and high-risk IRQs have a complication and mortality benefit if operated on within 24 h; however, the benefit decreases in utility in the lower risk cohorts. The lowest risk hip fracture patients do not fare worse if operated on within 48 h as compared to 24 h.