Can We Accurately Predict Which Elderly Hip Fracture Patients Will Experience a Delay to Surgery?

Sanjit R. Konda, MD; *Joseph Robert Johnson, BS; Erin Arlene Kelly, BA, MS;*
Kenneth A. Egol, MD
NYU Langone Orthopedic Hospital, Jamaica Hospital Medical Center,
New York, NY, United States

Purpose: Surgical delays of 48 hours or more for elderly hip fracture patients are associated with increased risks for morbidity and mortality; thus, surgeons continue to pursue opportunities to decrease time to surgery in this cohort. This study sought to determine if a validated risk-stratification tool utilized at the time of admission can predict time to surgery for elderly hip fracture patients and flag patients who are mostly likely to experience a delayed time to surgery.

Methods: Patients aged 55 years and older who underwent hip fracture surgery at 1 academic medical center between September 2014 and October 2017 were identified. On admission, a trauma triage risk score (STTGMA [Score for Trauma Triage in the Geriatric and Middle-Aged]) was calculated using patient demographics, injury characteristics, and preinjury functional status. Patients were stratified by their calculated risk of inpatient mortality into minimal, low, moderate, and high-risk quartiles of <0.87%, 0.87%-1.39%, 1.39%-2.15%, and >2.15%. Patients were followed prospectively throughout hospitalization and information on time to surgery was recorded. Linear regression was performed to assess the predictive capacity of STTGMA risk stratification on operative timing, and logistic regression was utilized to assess the ability of STTGMA to predict surgical delays >48 hours.

Results: Of the 612 patients included in this analysis, 314 (51.3%) had intertrochanteric fractures, 257 (42.0%) had femoral neck fractures, and 41 (6.7%) had subtrochanteric fractures. The majority of injuries occurred from low-energy mechanisms (97.9%). Mean age was 81.1 ± 10.5 years. Mean time to surgery was 33.7 hours for the minimal, 42.8 hours for the low, 46.9 hours for the medium, and 52.7 hours for the high-risk cohort. Stratification to the high-risk STTGMA group was a significant predictor of a 19.0-hour longer time to surgery (slope coefficient [β]: 19.03, 95% CI [confidence interval]: 4.04-34.01, P = 0.013) when compared to the minimal-risk group. In addition, patients had higher odds of operative fixation occurring after 48 hours if they were in the low-risk (odds ratio [OR]: 1.94, 95% CI: 1.12-3.36, P = 0.019), medium-risk (OR: 2.43, 95% CI: 1.41-4.19, P = 0.001), or high-risk group (OR: 1.92, 95% CI: 1.10-3.35, P = 0.021) when compared to minimal- risk patients.

Conclusion: The STTGMA tool can be utilized upon admission to quickly identify hip fracture patients who are at risk for a delayed time to surgery. Use of this tool may allow the treatment team to target this "at risk" population and proactively optimize higher-risk patients for surgery in a more efficient manner.

POSTER ABSTRACTS