Can We Predict 1-Year Functional Outcomes and Mortality Following Hip Fracture in Geriatric Patients at Time of Admission?

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Purpose: The purpose of this study is to determine if a validated risk assessment tool can be used to predict which patients treated for hip fracture are at highest risk for poor functional outcomes, shorter time to death, and death within 1 year. We hypothesize that the Score for Trauma Triage in the Geriatric and Middle-Aged (STTGMA) can be modeled to stratify the geriatric hip fracture population at highest risk for poor functional outcomes and death within 1 year.

Methods: Between February 2019 and July 2020, there were 544 hip fracture patients (AO/OTA 31A/B, 32A/C) ≥55 years old. Patients were contacted by phone to complete EQ-5D-3L (EuroQol 5 Dimensions 3 Levels) questionnaires on functional status. Each patient's STTGMA score was calculated using their demographics, functional status, and injury details at time of admission. Patients were divided into risk quartiles based on STTGMA score. Comparative analyses were conducted on outcomes and EQ-5D-3L questionnaire results.

Results: 409 patients (75%) had at least 1-year follow-up. 69 patients (16.9%) died within 1 year after hospitalization. Mean STTGMA score was 1.08% ± 2.77%. The highest risk cohort experienced a 2-times increased rate of 1-year mortality (45.96% vs 18.92%, P<0.01) compared to the low-risk group and the minimal risk group had 0 deaths. The highest risk cohort also had the shortest time to death (114.21 ± 89.89 vs 132.76 ± 89.07 vs 169.57 ± 88.50, P = 0.132) and patients experienced severe difficulty with mobility (P<0.01), self-care (P = 0.012), and usual activities (P = 0.016) compared to the lower risk quartiles.

Conclusion: The STTGMA tool can risk stratify geriatric hip fracture patients to provide important prognostic information regarding 1-year mortality and functional outcomes. This information is useful when counseling patients, their families, and their caregivers.

Table 1: Comparison of functional outcomes and 1-year mortality between risk quartiles in geriatric hip fracture patients

1 Year STTGMA Risk Stratification	High Risk (100-75%)	Moderate Risk (75-50%)	Low Risk (50-25%)	Minimal Risk (25-0%)	Total	*P Value*
Variables	***N (%)***	***N (%)***	***N (%)***	***N (%)***	***N (%)***	***N (%)***
All Comers	74	74	74	74	296	
Functional Outcomes (EQ5D-3L)						
Index Score	0.56 ± 0.38	0.60 ± 0.36	0.71 ± 0.34	0.80 ± 0.30	0.69 ± 0.34	**<0.01**‡
Visual Analog Scale (VAS) Score	64.50 ± 34.48	64.91 ± 32.54	74.49 ± 33.32	76.96 ± 17.56	71.28 ± 17.05	**<0.01**‡
Hospital Quality Measures						
Length of Stay	6.58 ± 2.88	6.42 ± 3.56	6.28 ± 4.26	5.04 ± 4.71	6.08 ± 3.81	**<0.01**‡
Readmissions						
30 Day Readmission	13 (17.57%)	5 (6.76%)	6 (8.11%)	2 (2.70%)	26 (8.78%)	**<0.01**‡
Mortality						
1 Year Mortality	34 (45.95%)	21 (28.38%)	14 (18.92%)	0 (0.00%)	69 (23.31%)	**<0.01**‡
Post-Discharge Time to Death (Days)	114.21 ± 89.89	132.76 ± 89.07	169.57 ± 88.50	-	131.09 ± 117.58	0.132‡‡

‡ *P value compares high risk and minimal risk quartiles*
‡‡ *P value compares high risk and low risk quartiles*