



CWIS Chest Wall Injury Summit 2023

Oral Presentation Abstract Submission

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Title of Presentation Surgical Stabilization of Rib Fractures in the Geriatric Trauma Population Is Associated with Similar Mortality As Younger Patients

Background

Surgical stabilization of rib fractures (SSRF) improves outcomes in patients with flail chest and severely displaced fractures. Geriatric patients are particularly vulnerable to poor outcomes following chest wall trauma; yet, this population is often excluded from studies of SSRF. Recently favorable results have been found for octogenarians undergoing SSRF. The purpose of this study was to evaluate SSRF patient outcomes by age, and we hypothesized geriatric patients would have similar outcomes as their younger counterparts.

Methods

A retrospective cohort study was conducted for patients aged 40+ for whom an SSRF consult was placed between March 2017 and March 2022 at an ACS-verified level 1 trauma center with a dedicated SSRF service line. Data were obtained from the trauma registry. Patients who died within the first 48 hours of admission were excluded. Patients were categorized into geriatric (65+) and adult (<65). Patients were further sub-categorized to patients over 80 (80+) and under 80 (<80). Patient outcomes were assessed comparing non-operative and operative management of chest wall trauma. Inpatient mortality was the primary outcome and examined with standard descriptive, univariate, and multivariate

statistics (controlling for ED disposition, ISS, chest, spine and head AIS).

Results

546 patients had an SSRF consultation within the study period. Of these, 227 were 65+, and 73 were 80+. The leading mechanisms of injury were motor vehicle collision (40.3%) and fall (30%) (Table 1).

A total of 125 patients underwent SSRF (23%). Among these, 51 patients were 65+ and 16 were 80+. The percentage of patients undergoing SSRF did not vary between < 65 and 65+ (23.2% and 22.5%, respectively, $p=0.8$) or <80 and 80+ (23.0 vs 21.9, $p=0.8$). Patients underwent SSRF on average 2.4 days (1.5 SD) after admission, and 81% underwent SSRF within 3 days of admission.

Overall, in-hospital mortality rate was 4.4%, and did not differ significantly between those who did and did not undergo SSRF (4.8 vs 4.28% respectively, $p = 0.8$). On multivariate logistic regression a similar association was found (OR -0.66, 95% CI -1.92 to 0.60). Among patients who underwent SSRF, mortality rate did not significantly differ between 65+ and <65 (7.8% vs 2.7%, $p=0.18$) or 80+ and <80 (6.3% vs 4.6%, $p=0.77$). Additionally, the mortality rate did not differ significantly between 65+ or 80+ patients who did and did not undergo SSRF (65+: 7.8 vs 6.3, $p = 0.780$; 80+: 6.3 vs. 3.5%, $p=0.611$). A similar relationship on multivariate regression was found (65+: OR -0.18, 95% CI -2.0 to 1.6; 80+: OR 1.3, -2.0 to 4.7).

Conclusion

Geriatric patients and patients over 80 with rib fractures underwent SSRF at similar rates to their younger counterparts. Among patients who underwent SSRF, patients 65+ and 80+ were no more likely suffer in-hospital mortality as compared to the younger adult trauma population. No difference in mortality was seen between those who did and did not undergo SSRF, suggesting appropriate patient selection for operative intervention. SSRF is safe for geriatric patients including octa- and nonagenarians and offers comparable survival outcomes as seen in the younger adult trauma population.