

Chest Wall Injury Society

Title of Presentation

Better late than never? Efficacy of late surgical stabilization of acute rib fractures as compared to non-operative management

Background

Surgical stabilization of rib fractures (SSRF) for severe chest wall injury has increased, with research showing significantly improved outcomes when compared to nonoperative management. Ideally, SSRF is performed within 3 days of injury, but we hypothesize that late SSRF (days 5–14 post-injury) still provides benefits over nonoperative treatment in patients with severe chest trauma.

Methods

We analyzed a prospectively collected database (2016–2024) from an urban level I trauma center, including patients with ≥ 3 severely displaced rib fractures. Propensity score matching (PSM, 1:2) was used to compare patients undergoing late SSRF (post-injury days 5–14) to those hospitalized ≥ 5 days who did not receive SSRF. Outcomes measured were: daily morphine milligram equivalents (MME), epidural use, opioid prescription at discharge, hospital length of stay (LOS), ICU-free days, ventilator-free days (VFD), pneumonia, tracheostomy, and mortality.

Results

Among 364 SSRF patients, 28 (8%) underwent late SSRF. SSRF and No-SSRF groups had similar demographics. SSRF patients had lower ISS (17 vs 26) but higher RibScore (3.5 vs 3.0). Late SSRF patients had significantly lower maximum daily MME post-day 5 (60 mg vs 148 mg, $p=0.045$) and non-significantly lower median MME (56 mg vs 67 mg, $p=0.47$) than No-SSRF patients (Figure 1). They required epidurals less frequently (8% vs 33%, $p=0.22$) and were less likely to be discharged with opioids (75% vs 87%, $p=0.38$). Late SSRF was associated with more ICU-free days (6.5 vs 3.5, $p=0.02$), shorter hospital LOS (9.0 vs 16.5 days, $p=0.008$), and reduced pneumonia incidence (0% vs 33%, $p=0.03$). There were non-significant differences in tracheostomies, VFD and mortality between the study groups.

Conclusion

Late SSRF is safe and associated with improved in-hospital outcomes compared to nonoperative management. While early intervention remains ideal, late SSRF still confers measurable clinical benefits and should be considered when timely surgery is not feasible.

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