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Commentary

Commentary: Optimal Timing for Surgical Stabilization of Rib Fractures: When Is Best?

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Flail chest and multiple rib fractures, characterized by the presence of 3 or more displaced rib fractures, are forms of severe chest trauma associated with significant morbidity and mortality rates [1]. Surgical stabilization of rib fractures (SSRF) has emerged as the primary treatment for these conditions [1,2]. Unlike conservative approaches, SSRF offers benefits such as accelerated lung function recovery, reduced hospital length of stay (HLOS) and intensive care unit length of stay (ICU-LOS) shorter duration of mechanical ventilation (DMV), and lower incidence rates of pneumonia and tracheostomy [3]. While some studies have suggested that SSRF reduces mortality [4], a recent meta-analysis failed to confirm these findings [5]. Despite growing evidence supporting the benefits of SSRF, uncertainties persist regarding the indications and optimal timing of surgery [6,7].

Regarding the timing of SSRF, several studies have demonstrated favorable outcomes when surgery was performed early, typically within 72 hours [6-8]. Prins et al. [6], in their review of 9 retrospective studies focusing on patients with flail chest or ≥3 displaced rib fractures, revealed that early SSRF (≤48–72 hours after admission) led to improvements in various in-hospital outcomes, including HLOS, ICU-LOS, DMV, and respiratory complication rates, along with lower hospitalization costs. Notably, early SSRF yielded similar results even in patients with concomitant traumatic brain injury and multiple rib fractures [9]. The results of the present study showed comparable pneumonia incidence rates [10].

This study investigated outcomes in patients with complex rib fractures undergoing SSRF compared to non-operative management at a major trauma center [10]. The retrospective review over a 6-year period identified 352 patients with complex rib fractures, among whom 37 underwent SSRF. The comparison between SSRF and non-operative management provides valuable insights. The study's approach to subgroup analysis, particularly focusing on patients with an Injury Severity Score >15, adds granularity to the findings. It attempts to address the challenge of patient heterogeneity by narrowing patients down to a specific subset, which is essential for understanding the potential benefits of SSRF in distinct patient populations.

While SSRF did not significantly impact short-term mortality, patients treated within 72 hours exhibited 6 times lower pneumonia rates than those with delayed surgery. This result addresses the critical question of timing in SSRF, highlighting the importance of prompt intervention in potentially minimizing complications. However, it

is crucial to acknowledge the limitations. The retrospective nature of the study and the absence of randomization might introduce biases. The authors also acknowledged the challenges in patient selection, raising questions about the generalizability of the findings. The variability in severity among patients referred for SSRF emphasizes the need for a more defined referral pathway. Furthermore, this study had limited statistical power due to a small sample size, which may lead to false-negative errors. Conducting a study on a larger patient population could reveal significant differences in hospital outcomes, in addition to pneumonia.

In conclusion, this study acknowledges the ongoing debate about the optimal timing of SSRF and emphasizes that early SSRF (within 72 hours) could improve in-hospital outcomes. Moreover, it highlights the complexity of patient selection and underscores the importance of large, prospective studies to refine rib fracture management strategies.

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