Editorial

Early surgical stabilization of rib fractures (SSRF) is better, but delayed SSRF is not worse

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Despite improved understanding of the role of surgical stabilization of rib fractures (SSRF) in the management of severely unstable chest wall injuries, questions remain about the value of SSRF beyond the first few days after admission. Prins *et al.* and others have published several studies showing the importance of early SSRF in maximizing benefits of the procedure and optimizing outcomes (1). However, there appears to be little consensus on whether delayed SSRF (beyond 48 hours after injury) results in higher incidence of complications and has the same beneficial impact on outcomes. Dr. Belaroussi and colleagues have sought to answer that question (2).

In their retrospective cohort of 159 patients over a 10-year period, the authors found that more than half of their patients received SSRF after the initial 48 hours from injury, while 18 patients underwent SSRF beyond the 7th day (2). This constitutes a small, but significant cohort on which to begin to analyze the effects of delayed operative intervention for this condition. Although some data does exist to suggest that delayed SSRF can be effective, including Tanaka's initial randomized control trial wherein all patients were treated beyond the 5th day, this is the first study to our knowledge that explicitly seeks to examine the specific effects of delay in SSRF (3).

The study highlights some of the challenges of treating this type of injury and discusses situations in which SSRF can and should be delayed. There is little doubt that the patients in this study suffered severe chest injuries, supported by the fact that nearly half of the cohort experienced respiratory failure either on the scene or shortly after arriving to the hospital. Only two of the cohort had what initially appeared to be minimally displaced fractures but showed evidence of progressive displacement and chest wall instability.

While early SSRF is better, late SSRF is not worse. This appears to be a contradictory statement on the surface. Several authors have noted that patients who undergo SSRF within 48 hours achieve the most benefit from the procedure in terms of hospital length of stay and lower incidence of pneumonia. However, Belaroussi *et al.* noted that there was no difference in the late SSRF groups' incidence of pneumonia and extubation failure (2). There was a trend towards higher incidence of pneumonia in their late group, but this did not reach statistical significance possibly due to a small late group study population and lower study power. The largest benefit appreciated from Belaroussi and Prins' data was a significantly decreased length of hospitalization associated with early SSRF (11–12 *vs.* 18 days) (1,2). While this may have large financial and system-wide implications, a longer hospitalization was not associated with worse patient outcomes in Belaroussi's study. This statement directly contradicts Harrell *et al.*'s

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2020 study that showed an increased hospital length of stay, increased length of ICU stay, and increased number of ventilatory days for patients undergoing SSRF more than 48 hours after time of injury (4).

All of the studies discussed above are limited in nature by their retrospective cohorts. SSRF warrants future prospective studies to better determine the optimal timing of SSRF and patient outcomes in cases of delayed SSRF. Elimination of confounders is very difficult in this patient population as most are presenting as polytraumas with multiple injuries that dictate overall hospital length of stay, morbidity, and mortality. Most will agree that early SSRF is better, but this study eloquently emphasizes the importance of fixation, even though it may be delayed, especially in cases with other life- or limb-threatening injuries that must take management priority.

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Footnote

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy and integrity of any part of the work are appropriately investigated and resolved.

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