Multicenter, prospective, controlled clinical trial of surgical stabilization of rib fractures(SSRF) in older patients with severe, non-flail fracture patterns

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Introduction

Chest wall trauma in the elderly carries a high risk of complications including pneumonia and death. [1] Traditional management of rib fractures involves non-operative intervention with pain management, pulmonary hygiene, and ventilatory support as needed.

Elderly trauma patients are known to be at higher risk for complications following traumatic injury compared to younger cohorts. [7],[8]

Age alone is not always a reliable predictor for health outcomes following traumatic injury. The impact of frailty on trauma patient outcomes has been studied as a potential predictive factor.

Frailty is a multidimensional syndrome characterized by decreased physiological reserve and increased vulnerability to stressors. It is consistently identified as an independent risk factor for adverse surgical outcomes, including morbidity and mortality. [9],[10],[11]

The Rib Fracture Frailty (RFF) index has been validated as a tool to determine patient frailty. The RFF has three frailty tiers to help identify patients at increased odds of pulmonary complications, prolonged hospitalization, mortality, and adverse disposition. [12]

The Chest Wall Injury Society (CWIS) conducted a study on adult trauma patients that was published in 2020. It, demonstrated an improvement in pain scores and respiratory-related quality of life in patients who underwent surgical stabilization of rib fractures (SSRF) compared to patients whose rib fractures were managed non-operatively. [6]

There is limited evidence, however, that specifically compares outcomes in elderly, frail patients with non-flail fracture patterns who undergo SSRF vs non-operative management.

Study Design

This study is a prospective, observational, multicenter study carried out in collaboration with Prisma Health Richland Hospital, The Chest Wall Injury Society (CWIS), and approximately 20 other participating sites. Prisma Health Richland Hospital developed this protocol, and they will serve as the lead site.



Google: Rib fractures

The Chest Wall Injury Society

The Chest Wall Injury Society (CWIS) is a medical society that focuses on the science of chest wall injury and the surgical stabilization of rib fractures. It has a unique collaborative center program which **Saint Francis Hospital has been a member of since 2021.**

This program utilizes an application process to recognize outstanding partnerships to advance the care of patients with chest wall injuries through rigorous research, promotion of patient access, navigation, advocacy, coordination of education, networking, and the practice of high quality, evidence based, cost effective care.

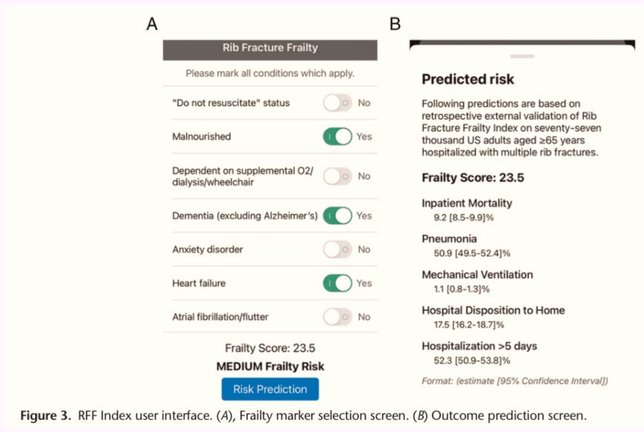


Figure 3. RFF Index user interface. (*A*), Frailty marker selection screen. (*B*) Outcome prediction screen.

RFF Index Chest Wall Injury Society

This study was approved by the Trinity Health IRB and is actively collecting data.

Aim

Primary Objective

The primary objective of this study is to assess whether operative management of rib fracture via SSRF is associated with improved quality of life for patients age ≥65 with a RFF high frailty risk when compared to a cohort of frail patients whose rib fracture was managed non-operatively.

Secondary Objectives

Evaluating the effects of SSRF on other outcomes, specifically, length of intensive care unit stay, ventilator days, ventilator-free days, discharge status, functional status on discharge, discharge facility, unanticipated readmissions, unanticipated ED visits, mortality, pleural space complications, surgical site infections, timing to SSRF from injury.

Hypothesis

For patients age 65 and older with non-flail rib fractures and RFF score of ≥25.2, we hypothesize that SSRF is associated with higher rate of improvement post-discharge quality of life scores, as measured by C-QoL, compared to nonoperative management. C-QoL is a validated, patient reported tool designed to measure health-related quality of life specifically for people with rib and chest wall injuries



Google: Frail patient

References and Acknowledgements