DEFINITIONS OF TERMS

NON-OP

DERANGEMENTS

RIB FRACTURES

2+ PULMONARY

+ 4. LOCO-REGIONAL PAIN THERAPY

2. ASSESS RESPIRATION FUNCTION

CHEST WALL INSTABILITY

ON VENTILATOR

CONTRAINDICATIONS


3. SSRF should be delayed in the face of higher priority

Ventilated patients
1. Chest wall instability: SSRF should be performed
2. Failure to wean: Patients with displaced rib fractures who have failed to wean from the ventilator with or without chest wall instability
3. Failing respiratory mechanics and \( \geq 60 \) minutes, but develops \( \geq 2 \) of the following:
   a. Flail chest: 3 consecutive ribs broken in two places with or without chest wall instability
   b. Failure to wean: Patients with displaced rib fractures with various chest wall injuries
   c. Measured volumes on incentive spirometry of 100% or less
   d. Patient with high spinal injury resulting in quadriplegia may benefit from SSRF given that they still need tracheostomy placement. However, lower spinal injury resulting in paraplegia may benefit from SSRF given that they still need tracheostomy placement. Therefore, patients should be evaluated for SSRF on a case to case basis.

TIMING
Non-ventilated patients
1. Failed weblee, less than 24 hours is optimal
2. Should be performed within 72 hours of injury for non-flail indications

Vented patients
1. Can be performed within 72 hours of injury for non-flail indications
2. When feasible, less than 24 hours is optimal
3. Should be performed within 72 hours of injury for non-flail indications

INDICATIONS
1. Absolute indications for surgical stabilization of rib fractures (SSRF) have evolved over the last decade and its use has improved quality of life for less displaced fractures. This indication has been shown in ribs broken in 2 locations, or three consecutive ribs broken in 2 locations with or without chest wall instability. A meta-analysis to potentially reduce length of stay, intensive care unit length of stay, and therefore patients should be evaluated for SSRF on a case to case basis.

CONTRAINDICATIONS TO SURGICAL STABILIZATION OF RIB FRACTURES

SUMMARY OF RECOMMENDATIONS

4. Relative Contraindications:
   a. Flail chest: 3 consecutive ribs broken in two places with or without chest wall instability
   b. Measured volumes on incentive spirometry of 100% or less
   c. Clinical finding of paradoxical motion reported by the patient
   d. Instability or "clicking" on palpation or as reported by the patient

2. If SSRF cannot be performed within 72 hours for flail indications, the patient is a non-ventilated patient. SSRF may be a better option for those with severe TBI as the benefit for SSRF is not clear for patients with severe TBI. However, lower spinal injury resulting in paraplegia may benefit from SSRF given that they still need tracheostomy placement. Therefore, patients should be evaluated for SSRF on a case to case basis.

CONTRAINDICATIONS

1. Clinical or pathological rib fractures should deter SSRF. A 3D CT-scan reconstruction can be helpful to determine bone union status. There are no studies that suggest the elderly population may actually benefit more from SSRF than younger patients considering they are less likely to tolerate rib fractures than younger counterparts. Even those contending this study to strong recommendation can be made whether or not to exclude the patient population from SSRF. Therefore, these individuals must be assessed on a case-by-case basis.

RECOMMENDATIONS

3. SSRF should be performed in ventilated patients with respiratory failure due to flail fractures:
   a. Respiratory rate \( \geq 20 \)
   b. Measured volumes on incentive spirometry - 50% of predicted
   c. Numerical pain score \( \geq 5 \)
   d. Poor cough

4. Absolute Contraindications:
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