

8. GERIATRIC MANAGEMENT

C. Geriatric Trauma Rib Fracture Management

PURPOSE:

- Geriatric population at higher risk of rib fractures compared to younger adults.
- Geriatric rib fractures associated with higher mortality and complications.
- For each rib fractured, mortality increases by 19% and pneumonia increases by 27%.
- Anatomical position of rib fracture is key.

GUIDELINE:

Diagnosis:

- History and Physical Exam for:
 - Underlying lung disease
 - Paradoxical motion
 - Persistent clicking/popping sound
 - Pain and cough assessment
 - Incentive spirometry
- Imaging: X-ray alone is not sufficient to define injury pattern and may miss > 50% of fractures.
 - All patients ≥ 65 years of age would have a CT chest if there is clinical suspicion for rib/sternal injury or if a fracture is demonstrated on X-ray.

Risk Assessment on Admission:

- ≥ 65 years of age with ≥ 4 rib fractures:
 - Stratified according to the presence or absence of pulmonary contusion, concomitant hemo/pneumothorax with chest tube, and/or flail chest (FC).
 - Admitted to intensive care unit
 - Treatment: Multimodal analgesia, including narcotics; evaluated by the regional anesthesia team for neuraxial block (paravertebral, erector-spinae, or epidural) if pain is not adequately controlled with enteral, topical, and parenteral analgesia.
- < 4 rib fractures or for whom > 24 hours have elapsed since the trauma:
 - May be admitted to the floor or stepdown unit at the discretion of the trauma attending.

Analgesia:

- Multimodal analgesia with scheduled acetaminophen and lidocaine patch
- Use of NSAIDs, muscle relaxants, and gabapentin are also recommended (adjust for age and renal function)
- Oral/IV opioids can also be used for moderate to severe pain (monitor for respiratory depression and constipation)
- Early Acute Pain Service Consultation is recommended for patients with severe pain, oxygen requirements, and larger numbers of rib fractures. In general, erector spinae and paravertebral catheters are preferable to thoracic epidurals for neuraxial analgesia due to an improved side effect profile without difference in efficacy. The exception may be in patients with bilateral fractures.

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Non-Pharmacologic Management:

- Pulmonary hygiene is essential
 - Incentive spirometry use
 - Early ambulation/mobilization
 - Out of bed to chair
 - Physical and Occupational Therapy
 - Elevated head of bed > 30 degrees (unless contraindicated)

Palliative Care:

- All patients greater than 65 or who have a positive frailty index who are intubated for respiratory failure secondary to thoracic trauma should have a Goals of Care discussion with the ICU team and/or a Palliative Care Service Consultation as needed
- All patients admitted to the ICU for rib fractures should have goals of care and code status documented within 24 hours of admission.

Surgical Management:

- Age and/or frailty alone *is not* a contraindication to surgical stabilization of rib fractures.
- The following patients should be evaluated for surgical stabilization of rib fractures by one of the Center for Thoracic Trauma core faculty:
 - All patients with radiographic or clinical flail chest or clinical chest wall instability
 - Patients with:
 - Hospitalization with ≥ 3 severely displaced ($\geq 50\%$ of rib width) acute rib fractures AND
 - Two or more of the following pulmonary physiologic derangements (despite optimization of multimodal analgesia):
 - Respiratory rate > 20 breaths per minute
 - Incentive spirometry < 50% predicted (Attachment 3)
 - Numeric pain score > 5
 - Poor cough (as documented by respiratory therapy service)
 - An intubated patient without flail chest for which there is concern for rib fracture instability/pain limiting attempts at extubation
 - Patients with persistent clicking or popping with respiration
 - Patients requiring thoracoscopic procedures for retained hemothorax or diaphragmatic injury may be selectively considered for rib fracture fixation “on the way out”

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