Operative Fixation of Rib Fractures

INCLUSION CRITERIA	EXCLUSION CRITERIA	OUTCOME MEASURES
1) Flail chest - Defined as follows: • ≥3 unilateral segmental rib fractures • ≥3 bilateral rib fractures; • ≥3 unilateral fractures combined with sternum fracture/dissociation **2) Severe deformity of the chest wall** - Diagnosed by CT scan, Defined as follows: • Severe displacement (100%) of 3 or more ribs (by minimum 15mm each) • Marked loss thoracic volume/caved in chest (>25% volume loss in involved lobe(s) • Overriding of 3 or more rib fractures (by minimum 15mm each)(assess Spirometry) • Two or more rib fractures associated with intra-parenchymal injury – ie ribs in the lung parenchyma	**1)** Anatomic location of rib fractures are not amenable to surgical fixation (e.g. fractures directly adjacent to spinal column) **2)**Rib fractures primarily involving floating ribs (ribs 10-12) **3)**Other significant injuries that may require long term intubation: **4)**Severe pulmonary contusion (Defined as PaO2/FIO2 ratio <200 with radiological evidence of pulmonary infiltrates WITHIN 24 hours of THORACIC TRAUMA) **5)**Severe pulmonary contusion (Defined as PaO2/FIO2 ratio <200 with radiological evidence of pulmonary infiltrates WITHIN 24 hours of THORACIC TRAUMA) **6)** Severe head injury/Traumatic brain injury – (GCS ≤ 8 at 48 hrs post injury. If unable to assess full GCS due to intubation or other causes, GCS motor ≤4 at 48 hrs post injury) **7)**Upper airway injury requiring long term intubation and mechanical ventilation (e.g. tracheal disruption) **8)**Acute quadriplegia/quadraparesis **9)**Head and neck burn injuries, or inhalation burn injuries **10)**Medically unstable	**1)** Ventilator-Free Days (VFD) **2)** Days spent in ICU (up to the time patient is deemed stable to leave the ICU, this excludes days that patient has to remain in the ICU due to unavailability of beds on the regular ward) **3)** Pain – measured by amount of pain medication administered during the hospital stay **4)** Intubation, repeat intubation **5)**Pneumonia **6)**Tracheostomy **7)**Mortality **9**)Complications of surgical intervention: rates of wound infection, fixation failure, nonunion, hardware related complications **10)**Pulmonary function testing: spirometry measurement of tidal volume, forced vital capacity (FVC), inspiratory capacity (IC) and forced expiratory volume at 1 second (FEV1) – measured at 3 and 12 months post injury.