

**VANDERBILT UNIVERSITY MEDICAL CENTER
DIVISION OF TRAUMA AND SURGICAL CRITICAL CARE**

CHEST WALL INJURY PRACTICE MANAGEMENT GUIDELINES

Revised 2011 WPR

- I. Rib fracture protocol**
 - II. Chest tube protocol**
 - III. Open reduction internal fixation (ORIF) protocol**
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I. Rib fracture protocol

3 or more fractures

Admit

Cardiac monitoring

Continuous pulse oximetry

Supplemental oxygen as needed

PCA + NSAID if no contraindication (e.g. splenic laceration, TBI)

Frequent assessment of :

Pain (pain scale)

Respiratory mechanics (incentive spirometry)

Consider BiPAP

Repeat CXR in 24h to evaluate for hemopneumothorax

Acute Pain Service (APS) consult for epidural analgesia for age >64

Consider for age >64 with lesser injuries or age <64 with >3 rib fractures

At discharge:

Lortab/Percocet + NSAID x 3-4 weeks if no contraindications

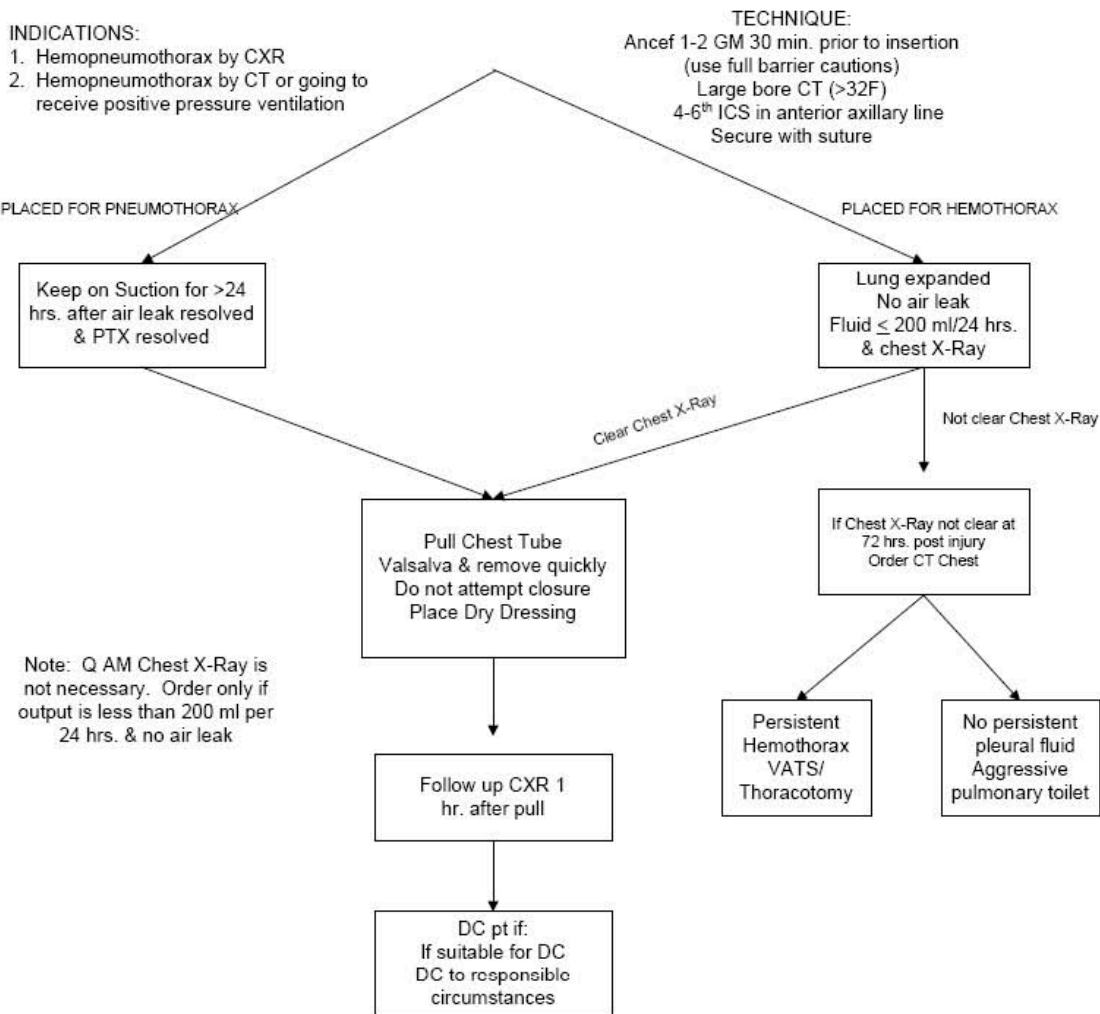
References

1. "Pain Management in Blunt Thoracic Trauma." : An Evidence-Based Outcome Evaluation – 2nd Review 2003" EAST Guidelines
2. Hoff SJ, Shotts SD, Eddy VA, Morris J A Jr., Outcome of Isolated Pulmonary Contusion in Blunt Trauma Patients. Am Surg. 1994 Feb; 60(2):138-42.
3. Bulger, EM, Arneson, MA, Mock CN, Jurkovich GJ, Rib Fractures in the Elderly. J Trauma 2000 June; 48 (6) 1040-47.

Chest Wall Injury Practice Management Guidelines
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Reviewed 2011

II. Chest tube protocol

CHEST TUBE PRACTICE GUIDELINES



References:

Davis JW, Mackersie RC, Hoyt DB, Garcia J: Randomized study of algorithms for discontinuing tube thoracostomy drainage. *J A College Surgery* 1994; 179:553-557.

Evans JT, Green JD, Carlin PE, Barrett LO: Meta-analysis of antibiotics in tube thoracostomy. *AM Surgery* 1995; 61:215-219

Fallon WF, Jr. Wears RL: Prophylactic antibiotics for the prevention of infectious complications including empyema following tube thoracostomy for trauma: Results of meta-analysis. *J Trauma* 1992; 33:110-117.

Luchette et al: EAST PMG 1998: Prophylactic antibiotic use in tube thoracostomy for traumatic hemothorax.

Pizano et al: *J Trauma* Dec. 2002; 53(6) 1073-1077.

Bell et al: *J Trauma* April 2001; 50(4) 674-677.

Maxwell: *J Trauma* Oct. 2004; 57(4) 742-748.

Rao et al: *Heart and Lung* 1999 Jan/Feb;28(1): 15-19

Meyer et al: *Annual of Thoracic Surgery* Nov. 1997; 64(5) 139-147

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III. Open Reduction Internal Fixation (ORIF) of Chest Wall Injuries

Potential indications and inclusion criteria for rib fracture repair

1. Flail chest
 - a) Failure to wean from ventilator
 - b) Paradoxical movement visualized during weaning
 - c) No significant pulmonary contusion
 - d) No significant brain injury
2. Reduction of pain and disability
 - a) Painful, movable rib fractures
 - b) Failure of narcotics or epidural pain catheter
 - c) Fracture movement exacerbates pain
 - d) Minimal associated injuries (AIS B 2)
3. Chest wall deformity/defect
 - a) Chest wall crush injury with collapse of the structure of the chest wall and loss of thoracic volume
 - b) Severely displaced, multiple rib fractures or tissue defect that may result in permanent deformity or pulmonary hernia
 - c) Severely displaced fractures are significantly impeding lung expansion or rib fractures are impaling the lung
 - d) Patient is expected to survive any other injuries
4. Symptomatic rib fracture non-union
 - a) CT scan evidence of fracture nonunion ([2 months after injury)
 - b) Patient reports persistent, symptomatic fracture movement
5. Thoracotomy for other indications (i.e., “on the way out”)

References

1. Nirula Ret al. Rib fracture repair: indications, technical issues, and future directions. World J Surg. 2009;33:14-22.
2. Lafferty PM et al. Operative Treatment of Chest Wall Injuries: Indications, Technique, and Outcomes. J Bone Joint Surg Am. 2011;93:97-11.

USEFUL LINKS

EAST Guidelines Flail Chest
Acute Innovations RibLoc System
Synthes MatrixRib System

<http://www.east.org/tpg/pulmcontflailchest.pdf>
http://www.acuteinnovations.com/files/product_pdfs/RibLoc_IFU.pdf
<http://us.synthesmatrixrib.com/>