

**4. THORACIC INJURY**

**C. Treatment of Hemothorax and Pneumothorax**

**OBJECTIVE:** To define a standardized modality for the treatment of blunt traumatic hemothorax (HTX) and pneumothorax (PTX).

**GUIDELINE:**

1. If HTX is present on CXR in the trauma bay, insert a chest tube. In the absence of hemodynamic instability, a 14F pigtail catheter should be placed in the mid-axillary line in the 5<sup>th</sup> intercostal space<sup>6</sup>.
2. Hemodynamically unstable patients with HTX should have a chest tube placed in the mid-axillary line in the 5<sup>th</sup> intercostal space.
3. Before insertion, antibiotics should be considered: one gram of cefazolin IV, or 600 mg of clindamycin IV2 if the patient is penicillin-allergic.
4. Post-procedure CXR to assess completeness of evacuation of HTX. If there is radiographic evidence of residual HTX and the CT position is adequate, consider inserting a second CT.
5. If the HTX is present on day 3 on the CXR, obtain a CT scan of the chest for volumetric assessment; if the volume is  $\geq 300$  mL (volume =  $d^2 \times L$ ), schedule VATS procedure as soon as possible.
6. If the patient has contraindication to the performance of VATS, give intrapleural TPA using the following method:
  - a. Use 50 mg of TPA in 100 mL of NS (0.5 mg/mL); inject in CT using sterile technique, clamp CT for one hour, and roll the patient, if possible, to distribute the solution.
  - b. Unclamp the CT and allow drainage
  - c. Repeat the process daily for 3 days
  - d. If HTX < 300 mL on repeat CT scan, no additional intervention is required.
  - e. Remove the CT when drainage is < 200 mL/24 hrs<sup>4</sup>.
4. For PTX, consider placement of pigtail thoracostomy if larger than 35 mm, or chest tube if hemodynamic unstable.
5. Hemodynamically stable patients with pneumothorax should be considered for 14F pigtail thoracostomy.
6. For left-sided hemothorax requiring pigtail thoracostomy, use ultrasound guidance and consider open tube thoracostomy. For left-sided pneumothorax, consider open thoracostomy.

**References**

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4. Volume Threshold for Chest Tube Removal: A Randomized Controlled Trial. J Injury Violence Res. 2009 July; 1(1): 33-6.

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6. A Pilot Study of Chest Tube versus Pigtail Catheter Drainage of Acute Hemothorax in Swine. Journal of Trauma and Acute Care Surgery 2015; 79: 1038-1043.
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