Protocol: Chest tube placement

Purpose:
To outline the indications and process for needle thoracentesis and chest tube placement. Life-threatening chest injuries identified in the initial assessment include tension pneumothorax; open pneumothorax, massive Hemothorax, flail chest, and cardiac tamponade. There are two life-saving interventions that may be initiated and performed when physicians are unavailable. A needle thoracostomy is used to treat a rapidly deteriorating patient with a tension pneumothorax. Any patient with a tension pneumothorax requiring multiple chest decompression, or patients with significant open/closed pneumothoraces, or hemothorax that are exhibiting signs and symptoms of respiratory distress and hypoxia, should have a chest tube placed.

Indications:
A. Pneumothorax >20%
B. Hemothorax
C. Tension pneumothorax
D. Thoracostomy
E. Empyema
F. Pleural effusion
G. Signs and Symptoms
   • Respiratory distress
   • Tachypnea, use of accessory muscles, tracheal deviation, restlessness
   • Absent or diminished breath sounds
   • Asymmetrical chest movement

Procedure:
A. The Nurse Practitioner will contact the senior physician prior to performing a chest tube and have assistance when available.

B. Chest Tube Placement
   1. Equipment:
      a. Appropriate size chest tube
      b. Spreaders
      c. 1% Lidocaine (if patient awake)
      d. 2-0 nylon suture on straight needle
      e. Scalpel
      f. Dressing material
      g. Betadine
      h. Sterile gloves
      i. Kelly clamp
   2. Procedure:
      a. Oxygen delivery per patient requirements.
      b. Determine insertion site: 5th ICS (usually nipple line on males) anterior to the midaxillary line on the affected side.
      c. Prep and drape the chest.
      d. On an awake patient, locally anesthetize the skin above and below the rib locally, and then proceed to the rib periosteam.
e. Make a 2-3 cm transverse incision at the predetermined site, along the top of the rib, and bluntly dissect through the subcutaneous tissues.

f. Puncture the parietal pleura with the large hemostat being careful not to puncture the lung. Insert a gloved finger into the incision to determine where lung and other organs are before inserting tube. *It is important to confirm your location with a finger before placing the chest tube.

g. Clamp the proximal end of the thoracostomy tube with Kelly clamps and advance the tube into the pleural space being sure all drainage holes are in the pleura. If there is resistance, DO NOT force the tube. Remove the clamp.

h. Look for fogging in the tube with expiration.

i. Connect the end of the tube to drainage system.

j. Suture the tube in place.

k. Apply dressing, and tape the tube to the chest.

l. Obtain a chest x-ray.

C. Document assessment findings, procedure per protocol, and patient response in Star Panel.

D. Document procedure on skill check off sheet

E. NP can only perform chest tube insertion under the direct supervision of a senior level resident/fellow/attending.

Approved:

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Reference: AACN Procedure Manual for Critical Care, 2002