

Tension Pneumothorax Decompression – 30.210

DEFINITION:

The emergency decompression of a tension pneumothorax using an over-the-needle catheter.

INDICATIONS:

To warrant chest decompression in the field, the patient must be significantly symptomatic or in extremis (at risk of death) with:

- A. High clinical suspicion and;
- B. Progressive respiratory distress and;
- C. Shock symptoms with low or rapidly decreasing blood pressure.

And at least one of the following:

- A. Decreased or absent breath sounds
- B. Consistent history (i.e., chest trauma, COPD, asthma).
- C. Distended neck veins.
- D. Tracheal shift away from affected side (late sign).
- E. Asymmetrical movement on inspiration.
- F. Hyper-expanded chest on affected side.
- G. Drum-like percussion on affected side.
- H. Increased resistance to positive pressure ventilation, especially if intubated.
- I. Persistent Hypoxemia

EMS witnessed traumatic arrest patients with abdominal or chest trauma for whom resuscitation is indicated should have bilateral chest decompression performed even in the absence of the above signs.

PROCEDURE for Anterior-Axillary placement:

- A. Place the patient in either lateral recumbent position with the affected side up, or supine, with the head of the bed up 40-45 degrees.
- B. Identify the fourth or fifth intercostal space in the anterior axillary line. Prep the area.
- C. Insert at least a 14 or 16 gauge angiocatheter with needle placed just above the rib, perpendicular to the skin. As you traverse the pleura, you may hear the distinctive rush of air from the decompressed tension pneumothorax. May attached a 10cc syringe partially filled with saline or water to the end of their angiocath/needle set. This allows them to visualize the “rush of air” which may otherwise not be heard in a noisy trauma bay.
- D. Remove the needle and leave the catheter in place, securing it to prevent dislodgment. Create flutter valve as needed.
- E. Re-evaluate the patient to ensure a positive clinical effect and continue to monitor the patient closely as you complete the evaluation and resuscitation.

PROCEDURE for Mid-Clavicular placement:

- A. Expose the entire chest.
- B. Establish landmarks to identify second intercostal space, mid-clavicular line.
- C. Clean chest vigorously with appropriate antiseptic.

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- D. On affected side, locate the mid-clavicular line and insert a large gauge over-the-needle catheter with syringe attached along **the superior margin** of the third rib.
- E. If the air is under tension, the barrel will pull easily and "pop" out of the syringe.
- F. Remove syringe, advance catheter, and remove needle.
- G. Attach Heimlich valve and secure to patients chest.

NOTES & PRECAUTIONS:

- A. Patient's chest should be auscultated often for return of tension or other respiratory complications.
- B. Tension Pneumothorax is a rare condition, but can occur with trauma, spontaneously, or as a complication of intubation. Tension takes time to develop, but forceful positive ventilation may increase the rate of development.
- C. Simple or non-tension Pneumothorax is not life threatening and should not be decompressed in the field.
- D. The ideal decompression catheter length is three inches.
- E. Possible complications:
 - a. Creation of Pneumothorax if none existed previously.
 - b. Laceration of lung or pericardium. Stop needle advancement once it has popped through the pleura and advance the catheter only.
 - c. Laceration of blood vessels. (Always slide the needle above the rib).
 - d. Infection. Clean rapidly but vigorously; use sterile gloves if possible.
- F. Tension Pneumothorax can be precipitated by the occlusion of an open chest wound. If the patient deteriorates after dressing an open chest wound, remove the dressing.

