

PR36: Turkel Needle Thoracentesis

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Applicable To

■ ACP and higher

Introduction

Needle thoracentesis or thoracostomy is a common procedure in which any tube or small catheter is placed through the chest wall into the pleural cavity and used primarily to drain air or fluid. The Turkel device is used by ACPs and CCPs to relieve a tension pneumothorax or hemothorax.

Indications

- Tension pneumothorax or hemothorax with deteriorating vital signs, markedly decreased cardiac output, profound shock, or cardiac arrest.
- Altitude and flight physiology suggests that hemodynamic and patient deterioration may occur due to Boyle's law; the issues regarding in-flight assessment and treatment options may be limited and earlier intervention may be necessary.

Contraindications

- Needle thoracentesis increases morbidity if performed when a tension pneumothorax is suspected but absent.

Caution: (CCPs) The lack of lung sliding with ultrasound is not 100% sensitive or specific of a pneumothorax.

Procedure

1. Identify most appropriate insertion point: the 4th or 5th intercostal space in the mid-axillary line, or alternately, the 2nd intercostal space in the mid-clavicular line (MCL). Consider underlying injury when selecting a site.
2. Clean skin over the selected site.
3. Prepare the insertion site; use surgical scalpel to lacerate the skin at the site of insertion. The nick is not required but will likely aid in the insertion.
4. Hold the device between the thumb and middle finger with the index finger. Hold at the prefabricated finger hold and not at the main body or stopcock.
5. Advance the device through the chest wall until the indicator changes from red to green indicating that the tip is no longer encountering resistance. Stop advancing.
6. Advance the catheter over the needle into the pleural space and withdraw the needle assembly.
7. Additional catheters may be placed as required.
8. To relieve the pressure, open the three-way stopcock.
9. Secure, + or – a Heimlich valve as appropriate. It is not appropriate to put suction directly onto the three-way stopcock. For CCPs, if suction is required, use a Heimlich.

Notes

Children and neonates may benefit from a much smaller gauge needle to avoid lung injury and surrounding structures.

References

Huggins JT, Carr SR, Woodward GA. Thoracostomy tubes and catheters: Placement techniques and complications.

2020. [\[Link\]](#)

Blackwell T. Prehospital care of the adult trauma patient. 2020. [\[Link\]](#)

