

NEEDLE THORACENTESIS

Indications:

- **Diagnostic thoracentesis:**
 - Evaluates the cause of a pleural effusion.
 - Requires removal of 50-100mL of fluid.
- **Therapeutic thoracentesis:**
 - Goal is to help relieve dyspnoea associated with large effusions.
 - Typically requires removing a much larger volume of pleural fluid.

Contraindications:

There are no absolute contraindications to this procedure.

- It is generally recommended that patients with severe clotting abnormalities (such as platelets < 50 or INR > 2) will have correction prior to initiation of the procedure.
- It is best to avoid skin puncture through a site of cellulitis or herpes zoster.

The Procedure:

The specific technique and equipment for thoracentesis is one of personal choice and experience as no specific device has proven superior.

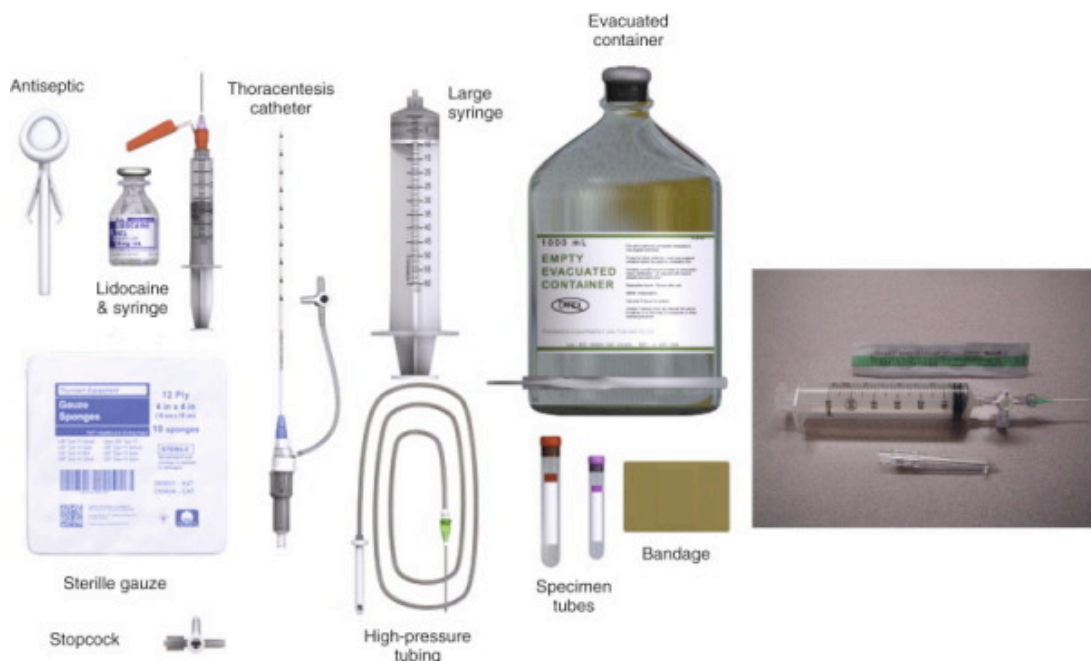
It is appropriate to use:

- 16-18 gauge IV catheters / three-way stopcock / syringe.
- Commercial kits.

For small effusions or those that are loculated, consider the use of US or CT guidance.

Patient preparation:

- Consent.
- Correct site / side (confirmed by physical examination or CXR).
- Establish IV access.
- Oxygen / continuous pulse oximetry.



Patient position & Insertion site:

Typically the patient will sit upright on the edge of the bed with extended arms resting on a bedside table.

Locate the height of the effusion with percussion (dull note) or bedside ultrasound.

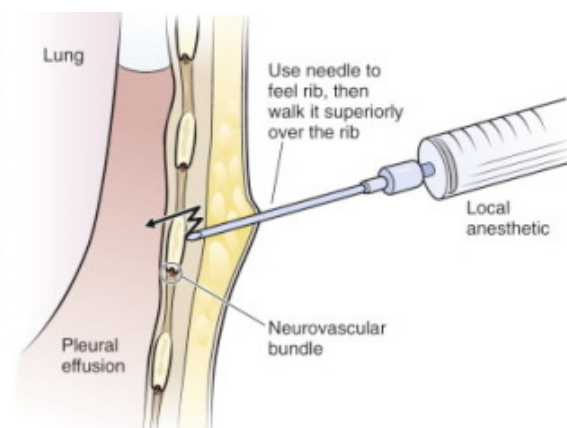
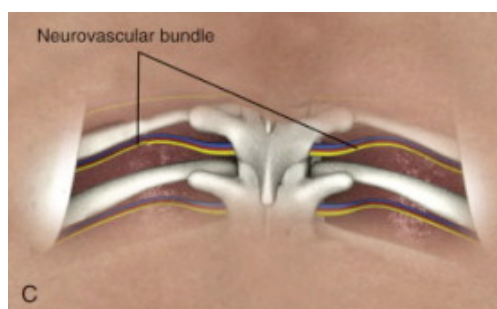
The site should be 1-2cm below the highest point of the effusion, in either the mid-scapular or posterior axillary line.

Never insert needle below the 8-9th IC space.

**Anaesthesia & Pleural Fluid Localisation:**

Using a 22-25 gauge needle attached to a syringe containing 5-10mL of 1% lignocaine, raise a skin-bleb on the upper edge of the rib just below the chosen intercostal space.

There should be constant aspiration as the needle is advanced, and walked above the superior aspect of the rib, through the intercostal space until the pleural space is entered.



Once local anaesthetic has been delivered, the needle is withdrawn (taking note of the approximate depth from skin to pleura). The same path is followed the with needle performing the thoracentesis.

Alternative Methods:

- Commercial 'over-the-needle' kits
- Seldinger kits
- Standard triple-lumen central line kits

Termination of Procedure:

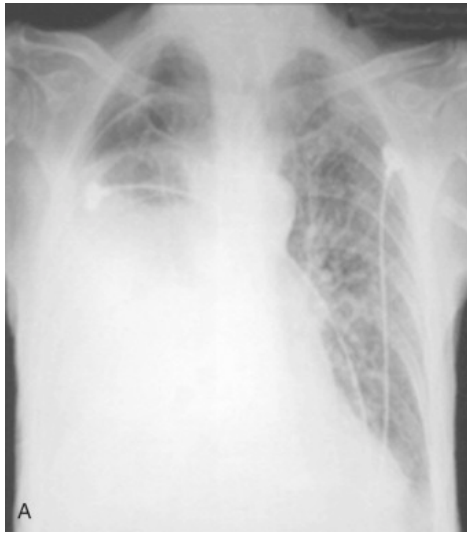
The most common reason to terminate the thoracentesis is removal of the desired volume of fluid. This is usually 50-100mL for diagnostic purposes. For therapeutic purposes, this should be tailored to the patients symptoms (or >1500mL).

Other reasons to stop the procedure include:

- Aspirating air.
- Change in symptoms / worsening dyspnoea.
- Abdominal pain.

Post-Procedure Radiograph:

This is routine in most centers, however has been proven to be unnecessary in patients with simple, single-needle pass procedures.

**Complications:**

- Pneumothorax
- Cough
- Infection

The uncommon / rare (<1%) include:

- haemothorax
- splenic rupture
- abdominal haemorrhage
- unilateral pulmonary oedema
- air embolism
- catheter fragmentation (left in pleural space)