

Chest Tube Thoracostomy

8

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Prior to Procedure

- Review a-----ny chest x-ray and computer tomography prior to initiation of the procedure.
- Confirm laterality.

Preference Card

- Large barrier drapes/blue towels.
- Sterile gloves/gown.
- Mask, eyewear, hat.
- Chlorhexidine.
- Chest tube 28–40 French.
- Hemostats.
- #15 blade scalpel.
- Needle driver.
- Nylon/silk suture.
- Local anesthetic 1% lidocaine.
- Kelly clamps.
- Collection chamber.
- Commercially available chest drainage system with water seal and collection chamber.

Patient Positioning/Operating Room Setup (Fig. 8.1)

- Patient should be supine or slightly lateral decubitus.
- Place the ipsilateral arm of the affected side up and over the patient's head.
- Ensure arm is clear of the surgical field

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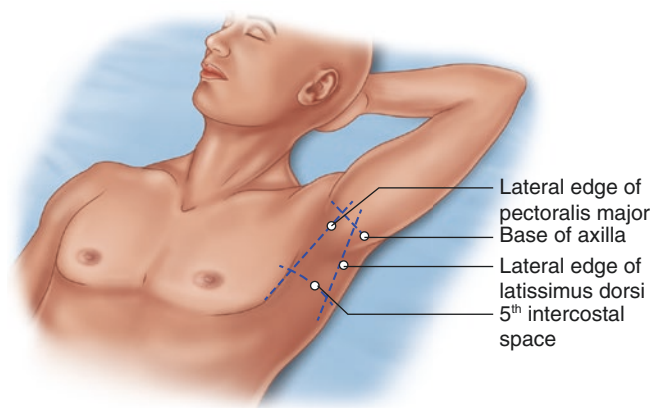


Fig. 8.1 Patient position and landmarks

Nodal Points

Procedure Starts

- Identify incision site – palpate the chest wall to identify the fifth intercostal space, anterior to the mid axillary line.
- Use nipple level as landmark in males to identify the fourth intercostal space.
- In females stay above the inframammary fold.
- Using 1% lidocaine and a 23-gauge needle, infiltrate the skin, subcutaneous tissue, to the periosteum of the underlying rib and the pleura just past the rib.

Incision

- Make a 2–3 cm transverse incision at the predetermined site with a #15 blade scalpel.
- Bluntly dissect the subcutaneous tissue with a Kelly clamp.

- Feel for the top border of the rib and gently push through the parietal pleura to the pleural space. A rush of air or fluid will confirm entry.
- Note: you must enter the pleural space over the top of the rib to avoid damaging the neurovascular bundle that lies along the groove of the inferior border of each rib.
- Once inside the pleural space, gently spread the Kelly clamp, and withdraw while spreading to create a sufficient opening in the pleura for the chest tube.
- Place finger into the surgical site, and rotate 360° to ensure correct location and relieve any adhesions or impediments to placing chest tube.
- Advance chest tube into pleural space posteriorly, and aim superiorly toward the thoracic apex.
- All drainage holes on chest tube should be within the chest cavity.

Fix Chest Tube in Place and Connect to Suction

- Suture the drain in place with 2-0 silk suture.
- Place chest tube to suction at 20 cmH₂O.

Confirm Chest Tube Position and Assess Treatment Response

Insertion of Chest Tube (Fig. 8.2)

- Clamp both the proximal and distal ends of the chest tube, to aid in insertion and contain pleural contents until connected to collection chamber, respectively.
- Obtain anterior-posterior chest x-ray.
- Assess correct placement of the chest tube; rule out remaining pneumothorax and fluid collections.
- Place occlusive dressing with Vaseline/Xeroform gauze and 4 × 4 gauze.

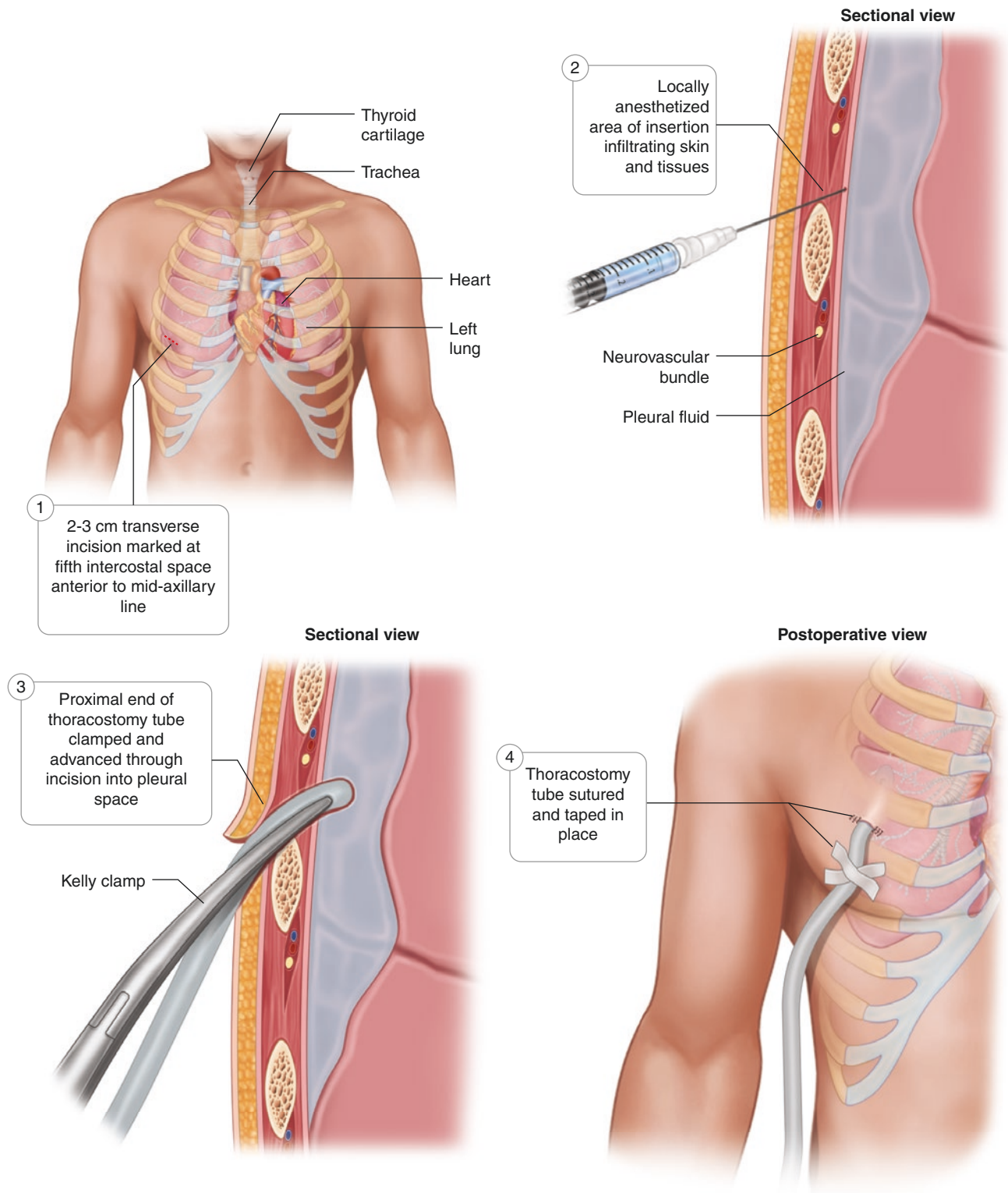


Fig. 8.2 Chest tube placement

Access Reader Checklist Appendix

READER CHECKLIST Chest Tube Thoracostomy

PREFERENCE CARD

- ▶ **Instruments**
 - Large barrier drapes/blue towels
 - Sterile gloves/gown
 - Mask, eyewear, hat
 - Chlorhexidine
 - Chest tube 28 – 40 F
 - Hemostats
 - #11 blade scalpel
 - Needle driver
 - Nylon/silk suture
 - Local anesthetic 1% lidocaine
 - Kelly clamps
 - Collection chamber
 - Pleurovac
 - Review chest x-ray and verify site

NODAL POINTS

- ▶ **Procedure Starts**
 - Identify incision site
 - Palpate chest wall to identify 5th intercostal space, anterior to mid axillary line
 - Use nipple level as landmark in males to identify 5th intercostal space
 - In females, stay above inframammary fold
 - Using 1% lidocaine and 23-gauge needle infiltrate skin, subcutaneous tissue, to periostum of underlying rib and pleura just past rib
- ▶ **Incision**
 - Make 2-3 cm transverse incision at predetermined site with #15 blade scalpel
 - Bluntly dissect subcutaneous tissue with Kelly clamp
 - Feel for top border of rib and enter parietal pleural
 - Note:* enter pleural space over top of lower rib to avoid damaging neurovascular bundle that lies along groove of inferior border of each rib
 - Penetrate pleura in controlled fashion to avoid lacerating lung with the hemostat
 - Once inside pleural space, spread hemostat and withdraw while spreading to create a sufficient opening in pleura for chest tube
 - Place finger into surgical site and rotate 360° to ensure correct location and relieve any adhesions or impediments to placing chest tube

PATIENT POSITIONING/ OPERATING ROOM SETUP

- ▶ **Patient Position**
 - Patient should be supine or slightly lateral decubitus
 - Place the ipsilateral arm of the affected side up and over patient's head
 - Ensure arm is clear of the surgical field

▶ **Insertion of Chest Tube**

- Clamp both proximal and distal ends of chest tube to aid in insertion and contain pleura contents until connected to collection chamber, respectively
- Advance chest tube into pleural space posteriorly and aim superiorly towards thoracic apex
- All drainage holes on chest tube should be within chest cavity

▶ **Fix Chest Tube in Place and Connect to Suction**

- Suture drain in place with 2-0 silk suture
- Place chest tube to suction at 20 cmH₂O

▶ **Fix Chest Tube in Position and Confirm Treatment Response**

- Obtain anterior-posterior chest x-ray
- Assess correct placement of chest tube, rule out remaining pneumothorax and fluid collections
- Place occlusive dressing with Vaseline/xeroform gauze and 4x4