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TUBE THORACOSTOMY DRAINAGE:
Indications, Procedure and
Complications



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TUBE THORACOSTOMY DRAINAGE: Indications, Procedure and Complications

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OUTLINE

- **INDICATIONS/CONTRAINDICATIONS**
- **When to put a drain**
- **Site of insertion**
- **Choosing the drain**
- **Drainage system**
- **Clamping the chest drain**
- **Time & method of removal**
- **Trouble shooting**

INDICATIONS

- Traumatic haemo pneumothorax
- Pneumothorax (PT): Open/Closed; Simple/Tension PT (after initial needle aspiration)
- Hydrothorax, Chylothorax
- Empyema & complicated parapneumonic pleural effusion
- Malignant pleural effusion
- Post-operative: after oesophageal, cardiac, pulmonary, mediastinal or pleural surgery.
- Treatment with sclerosing agents (pleurodesis)
- Post pneumonectomy bronchopleural fistula

CONTRAINDICATIONS

- Lung adherent to the chest wall
- Uncorrected coagulopathy

MATERIALS REQUIRED

- Chest X-ray at time of insertion except in case of tension pneumothorax



SITE OF INSERTION

- Depends on the location of abnormality
- 5th ICS in mid axillary line- most often

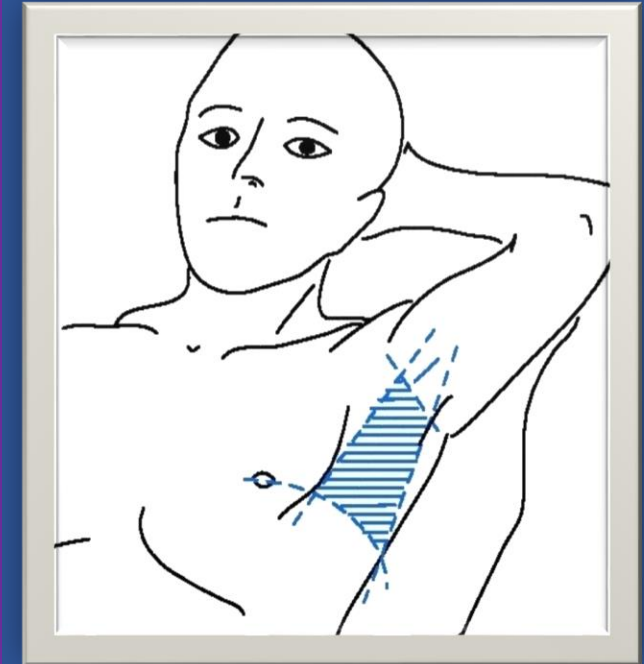


POSITION OF THE PATIENT

- Supine (most preferred), sitting or lateral position with ipsilateral arm behind her/his head
- Patients who are breathless may be asked to sit upright in the bed, leaning over a cardiac trolley with a pillow to place their arms

TRIANGLE OF SAFETY

- Area bordered by the anterior border of latissimus dorsi, the lateral border of the pectoralis major, a line superior to the horizontal level of nipple, with its apex towards axilla
- Corresponds- 5th or 6th ICS, mid-axillary line
- In case of loculated pathology it is good practice to do an Ultrasound or CT guided drainage



TECHNIQUES

• GUIDEWIRE TUBE THORACOSTOMY

- Easiest way to insert a chest tube.
- Usually done under the guidance of either Ultrasound or CT
- This procedure uses the Seldinger technique with guide wires & dilators

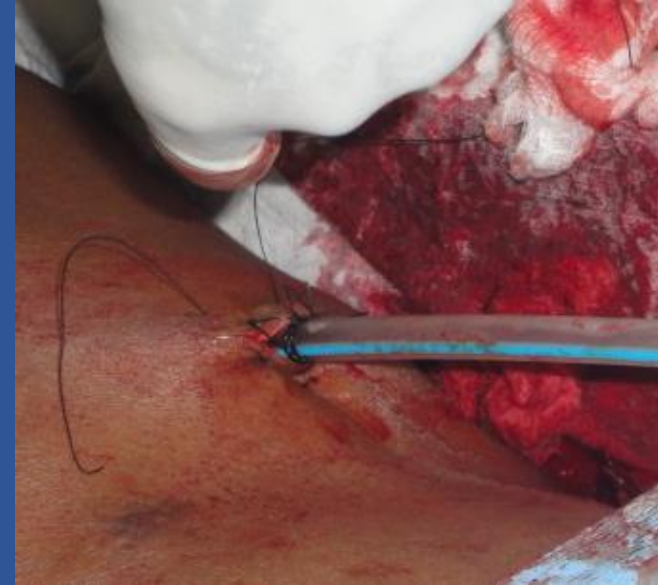
TROCAR TUBE THORACOSTOMY

OPERATING TUBE THORACOSTOMY

SINGLE PORT THORACOSCOPY

MALIGNANT EFFUSION FOR PLEURODESIS	SMALL BORE TUBES 10-14F
HEMOTHORAX	28-32F
PNEUMOTHORAX	8-14F(SUCCESS RATE OF 84-97%)
EMPHYEMAS	24-28F

TECHNIQUES



ONE BOTTLE COLLECTION SYSTEM

• TWO BOTTLE COLLECTION SYSTEM

• THREE BOTTLE COLLECTION SYSTEM



REMOVAL OF THE DRAIN

- Original indication
- Clinical progress
- Daily drainage should be <100ml.
- There should be no air leak
- No fresh or altered blood should be draining from chest tube
- Radiological status-lung should be fully expanded
- End expiration/valsalva

HOW TO DIFFERENTIATE- AIR LEAKS

- Measuring the level of pco₂ in the air coming from chest tube
- Collected in syringe – blood gas analyzer
- Pco₂ >20mmHg (Bronchopleural fistula)
- Pco₂ <10mmHg (Atmospheric air)

COMPLICATIONS

- Injury to the neurovascular bundle in the ICS
- Injury to lung parenchyma
- Injury to diaphragm and consequent injury to intraperitoneal structures may occur
- Injury to heart and other vessels
- Massive bleeding
- Re expansion pulmonary oedema due to rapid evacuation of fluid from the pleural cavity
- Empyema
- Skin excoriation and inflammation
- Subcutaneous emphysema & subcutaneous haematoma