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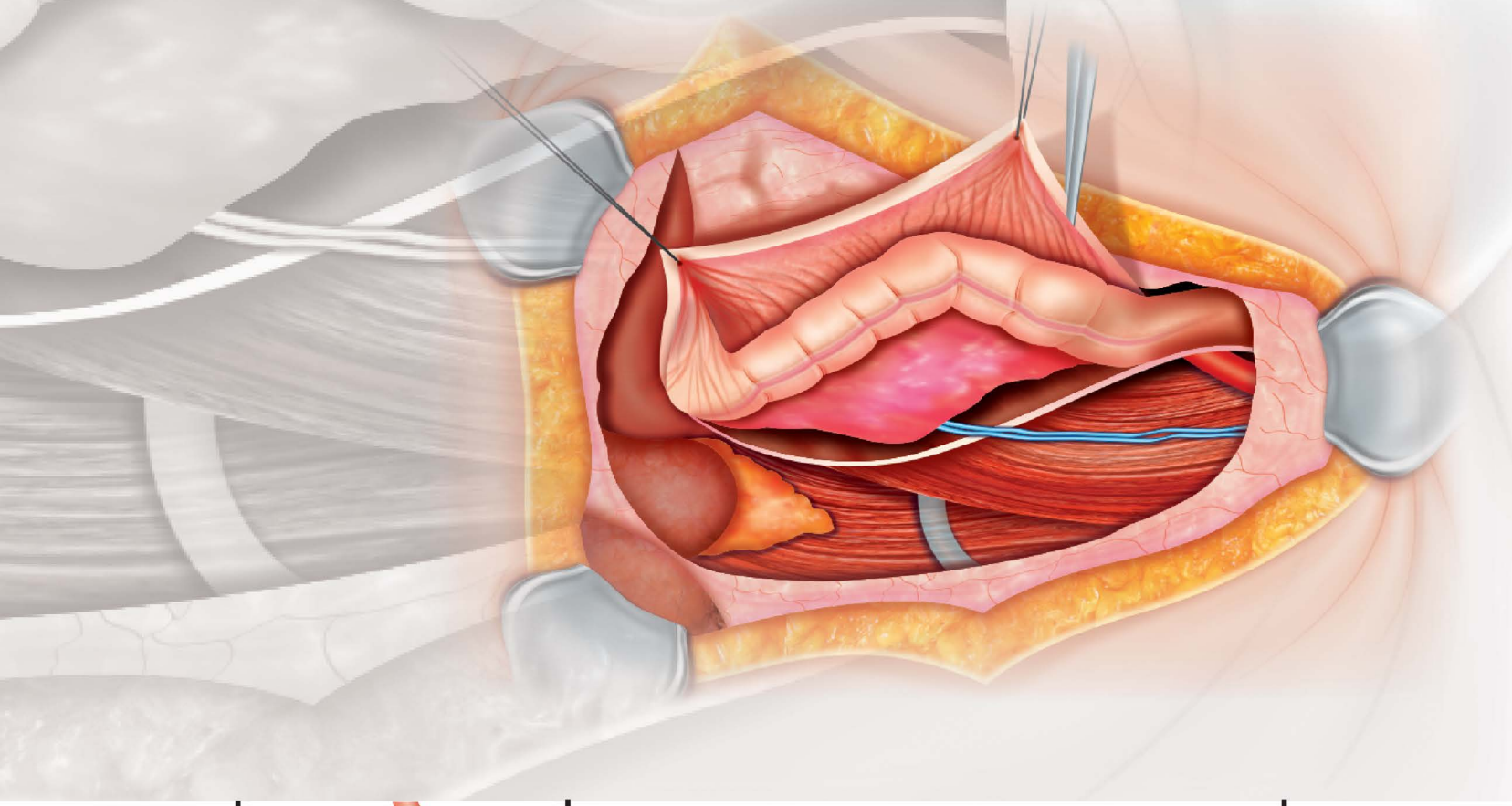
General Surgical Operations



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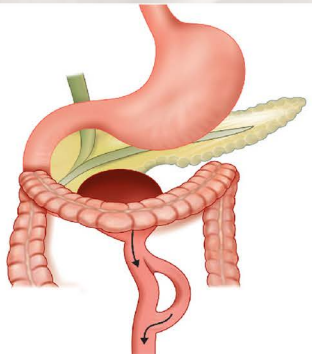

Dhiraj Choudhury

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SECTION

4

Thorax

- **Basic Surgical Procedures**
  Dhiraj Choudhury

JAYPEE BROTHERS

CHAPTER

27

Basic Surgical Procedures

Dhiraj Choudhury

JAYPEE BROTHERS

CHEST DRAINS

Indications

- Pneumothorax due to chest trauma
- Hemothorax due to chest trauma
- Pneumothorax in ventilated patient
- Bilateral pneumothorax
- Pleural effusion malignant or infective
- Postoperative thoracotomy for surgery of esophagus, lungs.

Technique

As an emergency, a *wide bore needle* is introduced into pleural cavity through second intercostal space 4 cm from sternum.

Intercostal Tube Drain (Closed Drainage)

An intercostal tube connected to underwater seal is central to management of pneumothorax, hemothorax and pleural effusion.

- *Technique:* The safest site for insertion of a tube drain into chest is in the triangle of safety. It lies:
  - Anterior to midaxillary line
  - Above the level of nipple
  - Below and lateral to pectoralis major muscle, it indicates the fifth intercostal space
- *Position*: The patient lies on the back with arms abducted
- *Anesthesia*: Local infiltration with 1% xylocaine
- An incision 1 cm in length is made in the overlying skin. The trocar and cannula are introduced by steady thrusting movement accompanied by rotation. The instrument is kept as close as possible to rib below. The trocar is withdrawn and stretched catheter is introduced. The cannula is now removed.
- *Underwater seal*: Connect the outer end of the drainage tube to a long tube passing well below the level of a measured amount of water in the bottle so that the water acts as seal preventing entry of air into the chest (Fig. 27.1). After completion, check the position of drain by taking chest X-ray.

DRAINAGE BY RIB RESECTION

This is indicated when pus is thick or when there is organized fibrin. It is preferably carried out under general anesthesia.

THORACOTOMY

Thoracotomy may be done as an emergency or elective procedure.

Emergency thoracotomy: This is indicated in case of chest injury for the following situations:

- Persistent shock
- Hemothorax with massive or persistent bleeding
- Cardiovascular injuries
- Thoracoabdominal injuries.

Elective thoracotomy is indicated for lesions of lung, heart, esophagus and blood vessels.

According to route of approach thoracotomy may be:

- Posterolateral thoracotomy
- Anterolateral thoracotomy
- Median sternotomy.

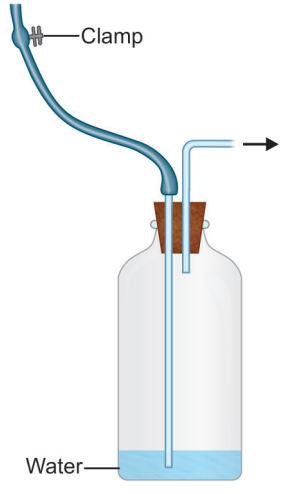

Fig. 27.1 Underwater seal drainage

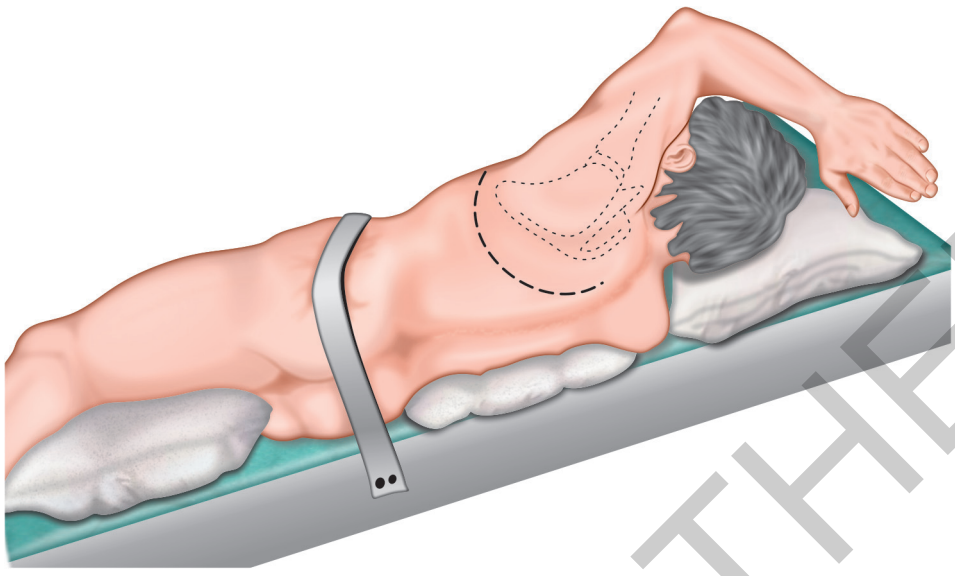

Fig. 27.2 Position and incision for posterolateral thoracotomy

POSTEROLATERAL THORACOTOMY

The standard route into thoracic cavity is through posterolateral thoracotomy.

Indications

- Lung operation
- Esophageal operation
- Operation for posterior and middle mediastinum
- Repair of coarctation of aorta, division of patent ductus arteriosus and thoracic aneurysm.

Steps

1. *Position* of the patient lies in the lateral position with affected side up. The lower leg is flexed at hip and knee with a pillow between legs.
2. *Anesthesia:* General anesthesia with endotracheal intubation.
3. *Incision:* The standard incision is through 5th interspace running from midway between the midline and medial border of scapula posteriorly and passing forward to anterior axillary line (Fig. 27.2).
4. *Dissection:* The incision is deepened thorugh subcutaneous tissues to latissimus dorsi which is divided with diathermy. A plane of dissection is developed by hand deep to scapula and serratus anterior. The periosteum of the upper border of the 6th rib is divided and stripped with periosteum elevator. The pleura is now opened along the length of the wound and a rib spreader is inserted and opened gently. Divide any adhesions and proceed with the procedure.

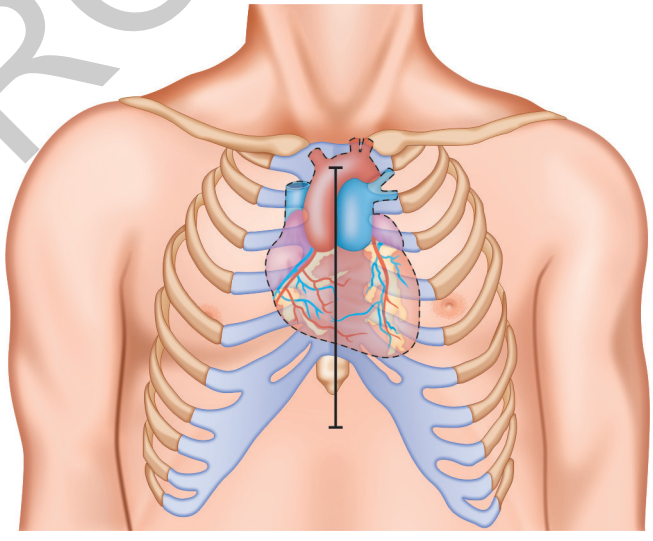

Fig. 27.3 Median sternotomy

5. *Insertion of drain:* Large caliber (24–28F) intercostal drain is inserted at the end of procedure and brought out through seventh or eighth intercostal space anterior to midaxillary line.
6. *Closure:* Close the intercoastal layer with continuous suture using vicryl.

ANTEROLATERAL THORACOTOMY

Indications

- Operations on heart, pericardium and lungs
- Rarely used for closed mitral vavotomy

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- May be used for open cardiac massage
- May be used for open pericardial drainage.

Steps

1. *Position:* Patient lies obliquely rotated with ipsilateral hip and shoulder supported on pillows.
2. *Anesthesia:* General anesthesia endotracheal intubation.
3. *Incision:* An incision is made following the line of fifth rib starting close to midline and extending to axilla.
4. *Dissection:* The pectoralis major muscle is divided in the line of incision while the serratus anterior muscle is split along the line of rib. The periosteum is stripped from the upper border of the rib posteromedially.
5. *Procedure:* It depends on the indication.

Closure: Insert a drainage tube through a separate incision laterally below the main wound. The intercostals layer is sutured with vicryl. Skin is closed with ethilon.

MEDIAN STERNOTOMY

This is the best thoracotomy approach for cardiac operations using cardiopulmonary bypass. The sternum is split in midline (Fig. 27.3).

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