Chest trauma

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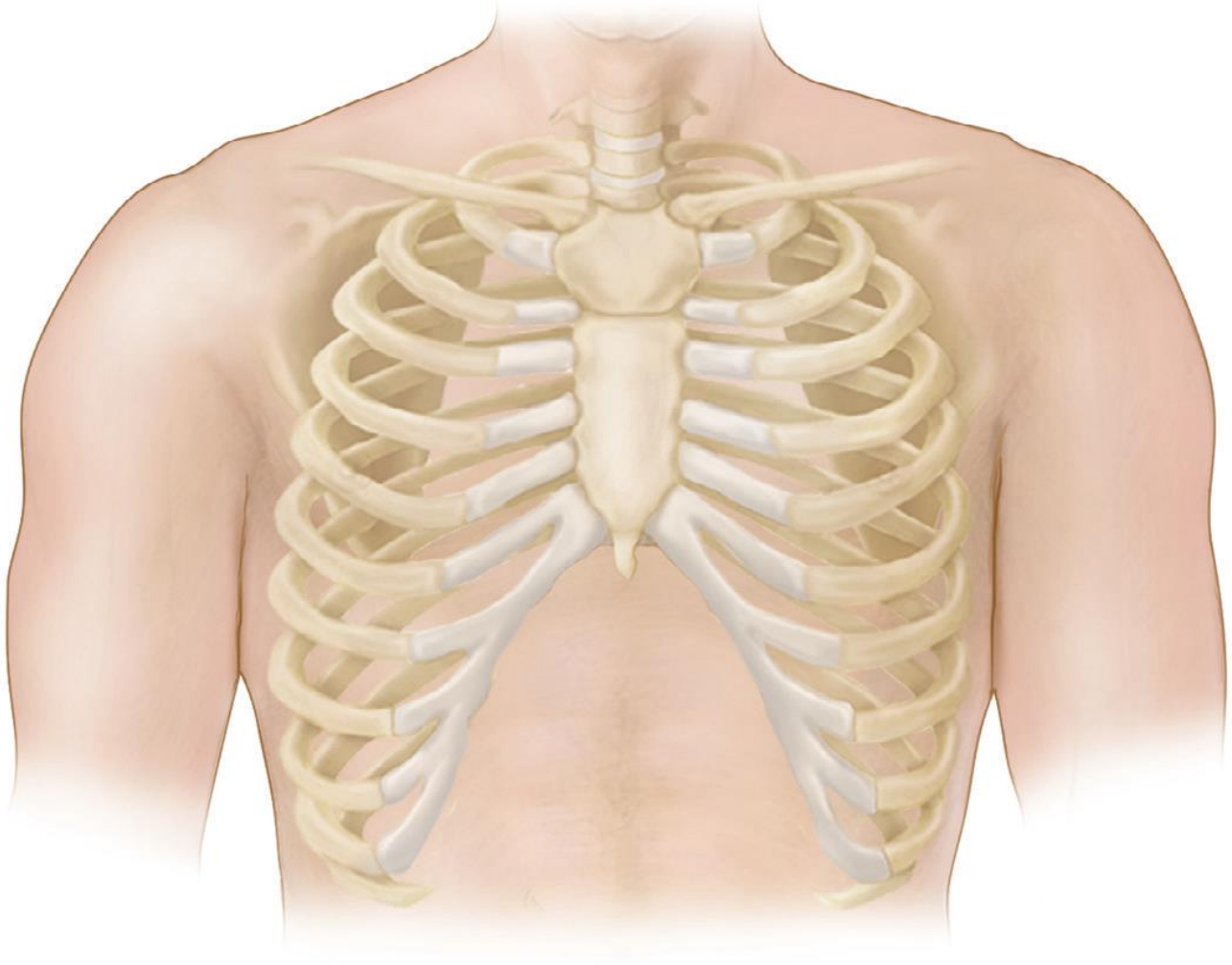


Introduction

- Thoracic trauma is a common occurrence with an incidence of 25% of all traumas.
- Thoracic inj. are commonly ass. with head and abd. trauma with a blunt mechanism.
- Most common thoracic injury is rib fracture & mortality/morbidity increases as number of ribs fractured increases.
- Mortality is most pronounced in the elderly where there is a 19% increase in mortality with each additional rib fract.
- Penetrating trauma accounts for the majority of deaths related to thoracic trauma but overall 85% of penetrating trauma to the chest can be managed with a chest tube.
- Regardless of the mechanism or obvious injuries one should always proceed with a systematic approach to the trauma patient, via ATLS.

Blunt, Penetrating OR Mixed

Isolated OR Combined with…

- Primary survey ABCDEF to……
- Secondary survey; re assessment / AMPLE to…..
- Tertiary survey ; DM to ……

Patient arrived either;

Stable at first later unstable

Or unstable

Or critical

Or gasping/dead

Patient Treated Either;

ER or OT or Both treatment plan

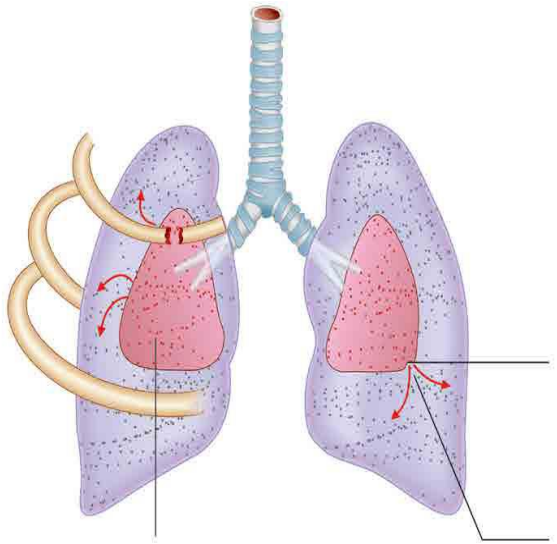
Air / Fluid pleural cavity collection or BOTH

which is more problematic….

- **Haemothorax**
- **Pneumothorax**

[Simple , tension, open pneumothorax]

- **Haemopneumothorax**



THORACOSTOMY / Needle thoracostomy

If: 1,500 mL of blood or more is obtained initially or ongoing bleeding ≥300 mL/hr for 3 hours thoracotomy is indicated.

INDICATION FOR URGENT OPERATIVE INTERVENTION

(1) Hemorrhage

(2) major airway disruption

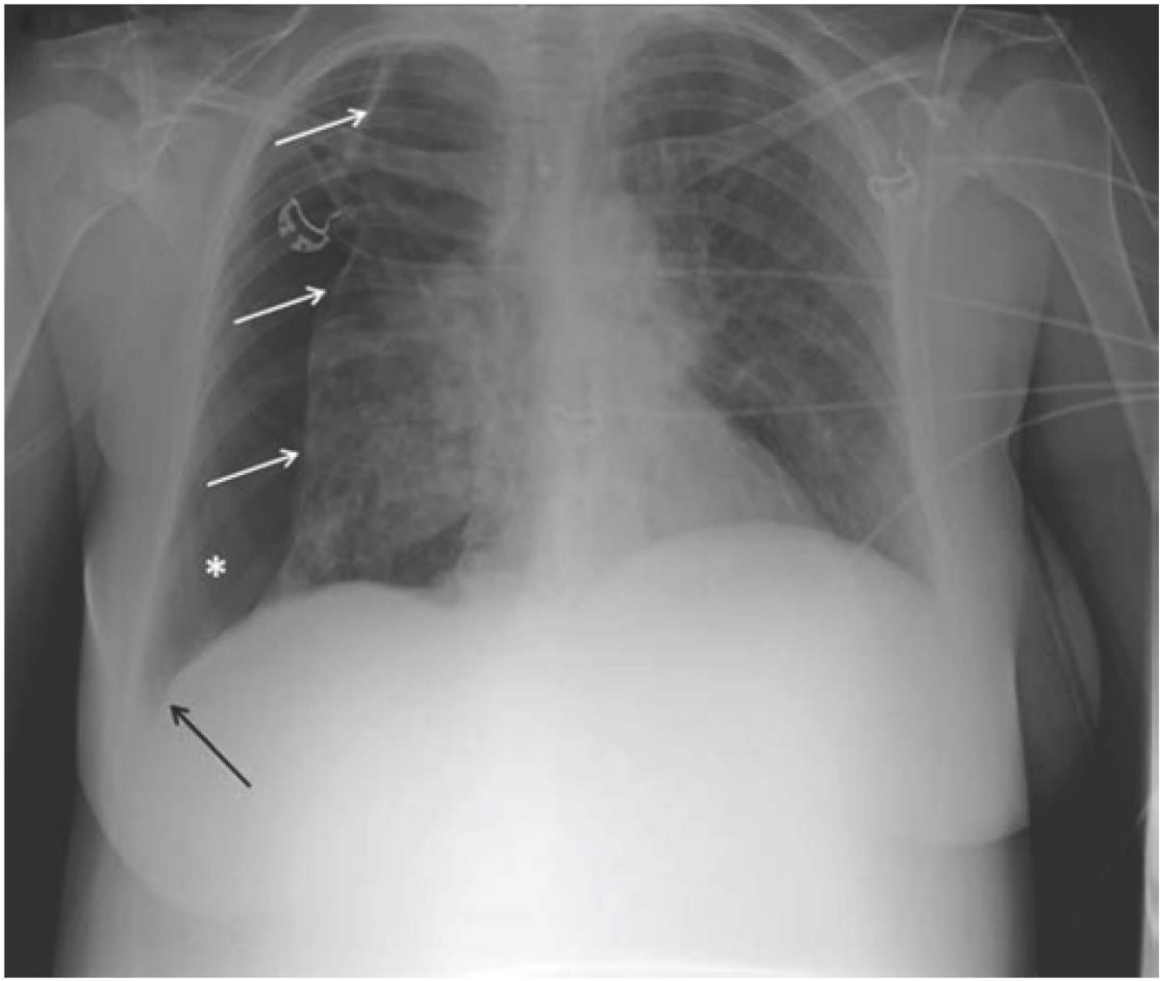
(3) cardiac and vascular injuries

(4) esophageal disruption

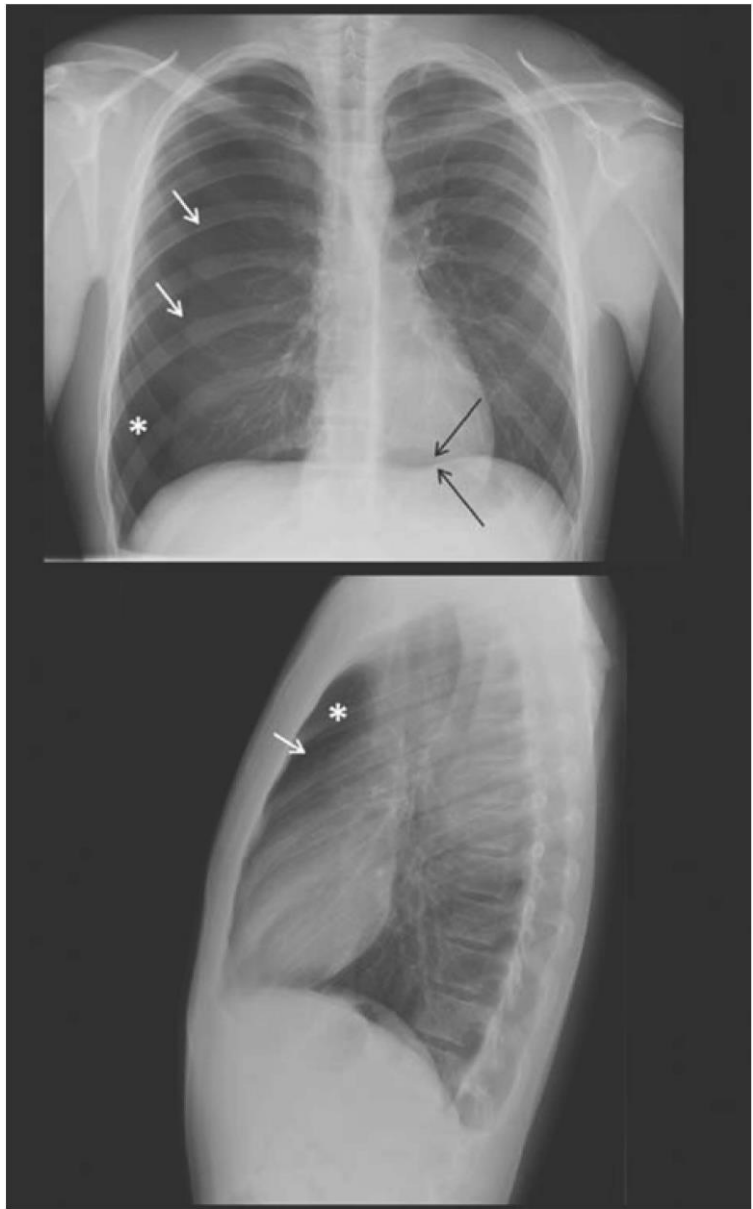
(5) diaphragmatic disruption.

CXR

chest x-ray demon strating rt pneumothorax. Note the clear visceral pleural line (white arrows) and the lucency in the right chest with absent lung markings. A deep sulcus sign is also visible (black arrow), with the right hemidiaphragm depressed and sharply demarcated



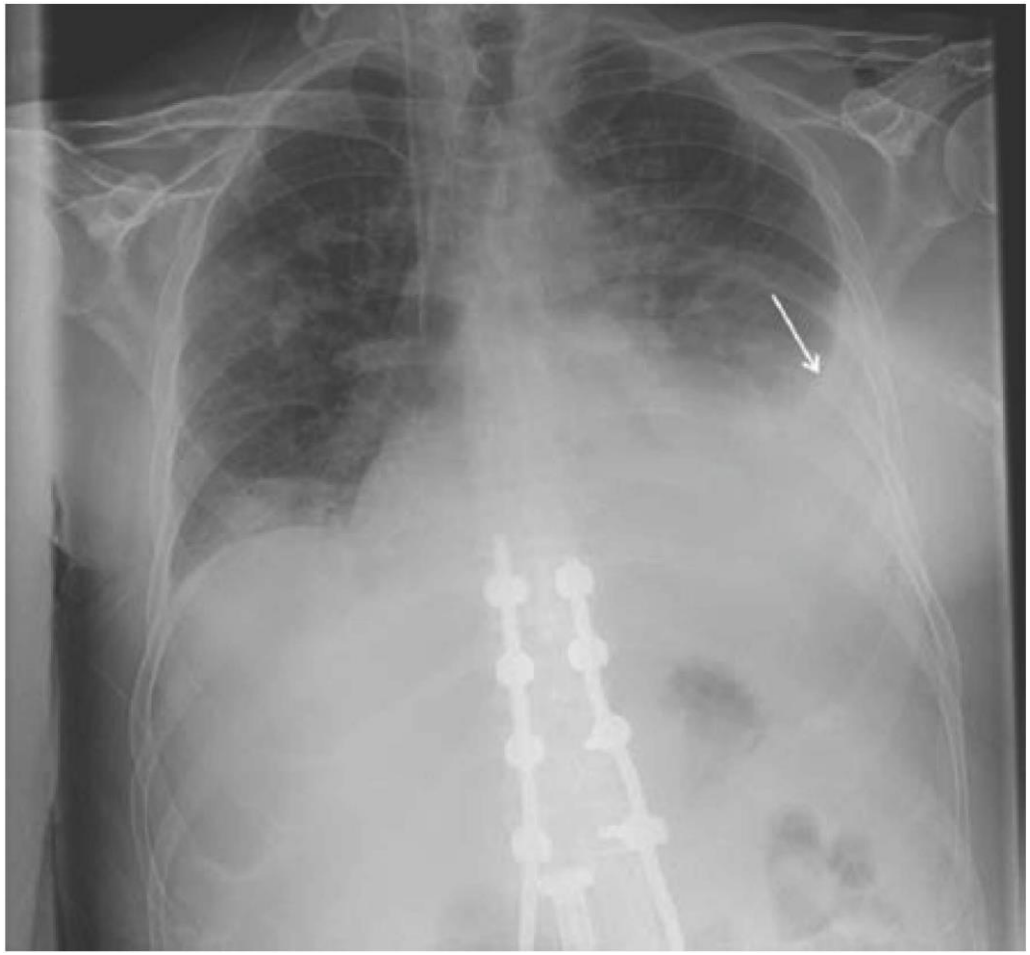
Postero-a nterior and lateral chest x-ray with right pneumothorax. Note the pleural line (white arrows) , lucent hemithorax . a double diaphragm sign, identifiable as a lucency in the contralateral hemithorax (black arrow) . Inthelatera l view, the pneumothorax is best visualized as a pleural line and lucency anteriorly.



U p r i g ht ch est fi l m revea l i n g a l eft hyd ro p n e u m ot h o rax. N ote the p l e u ra l l i n e at t h e l eft apex a n d b a s e (a rrows) .
T h e re is h a z i n ess outs i d e t h i s l i n e , rath e r t h a n t h e typ ica l b l a c k l u ce n cy, because t h e patie⎡⎤t h a s a co ncu rre nt p l e u ra l effu s i o n

CXR howing a small loculated l eft pneumothorax i n t h e sett i n g of p l e u ra l sca rr i n g .

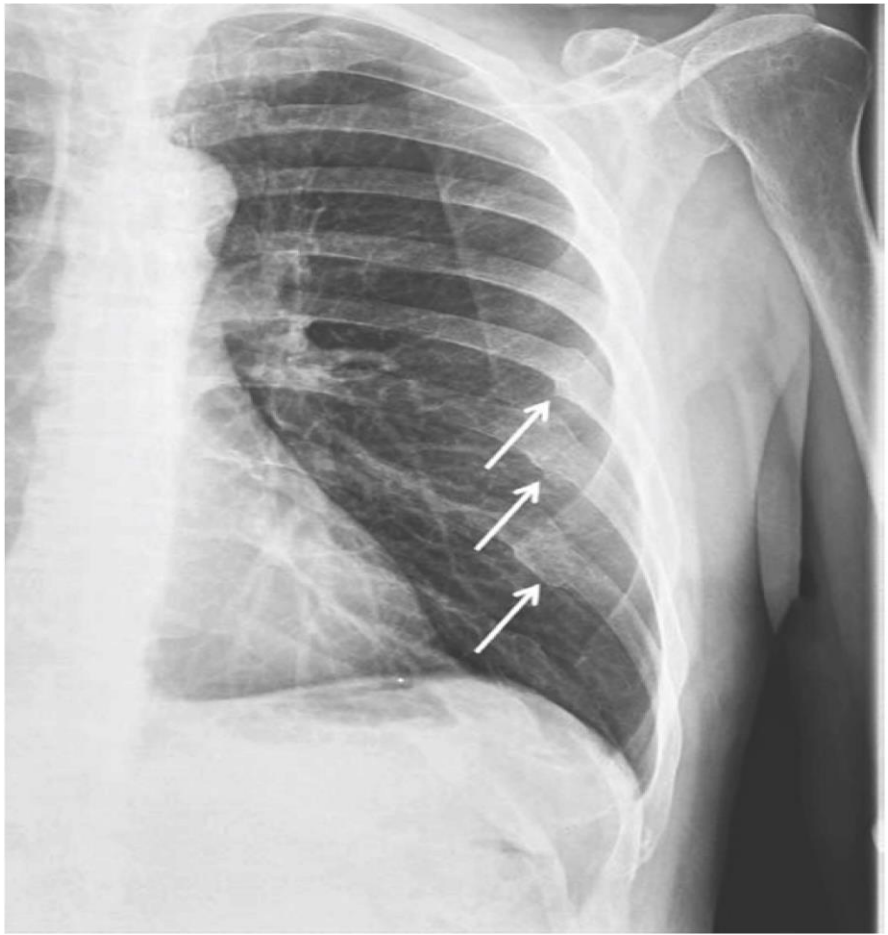
CXR fi lm i n a patient with a l eft h e m ot h o rax



Rib Fractures

Ribs (4–10) are more prone to fracture. Types of rib fracture:

1. Isolated rib fracture
2. Multiple rib fracture
3. Rib fracture with flail segment
4. First rib fracture



Flail Chest

Clinical Presentation and Diagnosis

- Flail chest is the most serious of the blunt chest wall injuries, sually associated with other significant injuries.
- It involves fractures of adjacent ribs, each is fractured in 2 or more places so that with spontaneous respiration a paradoxical motion results. A flail segment may be overlooked in a patient on PPV because there may be no paradoxical motion without inspiratory effort.
- Pathophysiology of flail chest consists of 3 PARTS:

alteration of chest wall mechanics impairing adequate ventilation; pulmonary contusion resulting in hypoxemia; and pain with inadequate pulmonary toilet... subsequent infection.

Treatment

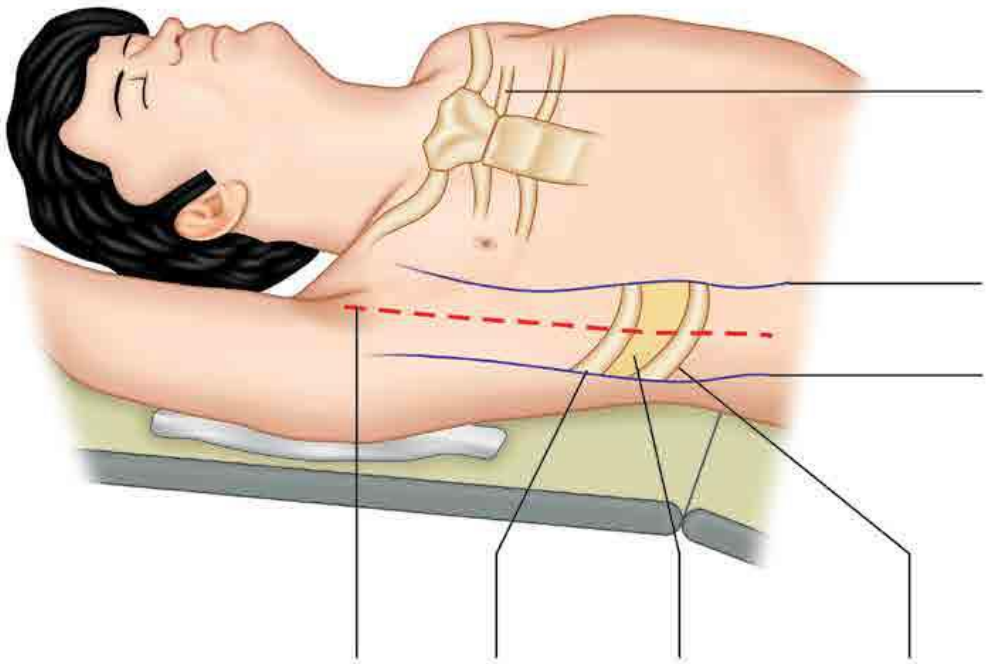
- Early and aggressive pain mx. to allow an adequate tidal volume & a forceful cough.
- Parenteral narcotics are effective, esp. if administered in a pt-controlled analgesia (PCA) device. Intercostal nerve blocks provide dramatic pain relief, but only for short periods.
- Epidural anesth. provides immediate comfort, dramatically improves vital capacity and tidal volume, and most enables the patient to produce a forceful cough. Ambulation is encouraged, and frequent coughing is required. There is no role for antibiotic prophylaxis or steroid use in the
- Operative repair of rib fractures is the most beneficial although not required in the majority of instances.

Cardiac injuries

Beck's triad (hypotension, distended neck veins, and muffled heart sounds).

- Pericardial **tamponade** results from accumulation of fluid within pericardial space that compresses heart and prevents cardiac filling.
- The sac-like pericardium has poor compliance and as little as 50 mL of blood can effectively cause tamponade.
- Presence of cardiac tamp. based on clinical findings of a distinctive dusky, plethoric facial complexion associated with distended neck veins, hypotension & evidence of pericardial effusion on US
- Sensitivity of US in the detection of hemopericardium is markedly diminished in presence of a significant hemothorax where blood may escape from injured heart directly into thoracic cavity leaving only small amounts in pericardium.
- The patient with tamponade, they should either undergo PCC or be taken to the operating room immediately for formal chest exploration.

Describe



How chest drain helps

Prevents development of tension pneumothorax from simple pneumothorax

Allows reexpansion of the lung-expanded lung compresses the injured vessels and reduces further blood loss

- Allows the mediastinal structures to return to the midline and relieve compression of contralateral lung

Prevents further development empyema thoracis.

- SS

Technique of chest drain insertion—

- ZZ Skin is cleaned with **bactericidal solution** (povidoneiodine) solution and covered with sterile drapes.
- ZZ Skin, soft tissue and intercostal muscle at the site of insertion is infiltrated with local anesthetic (about 10 ml of 1% lignocaine).
- ZZ A 2–3 cm transverse incision is made in the 5th intercostal space, along the midaxillary line, close to upper border of the lower rib.