PNEUMOTHORAX

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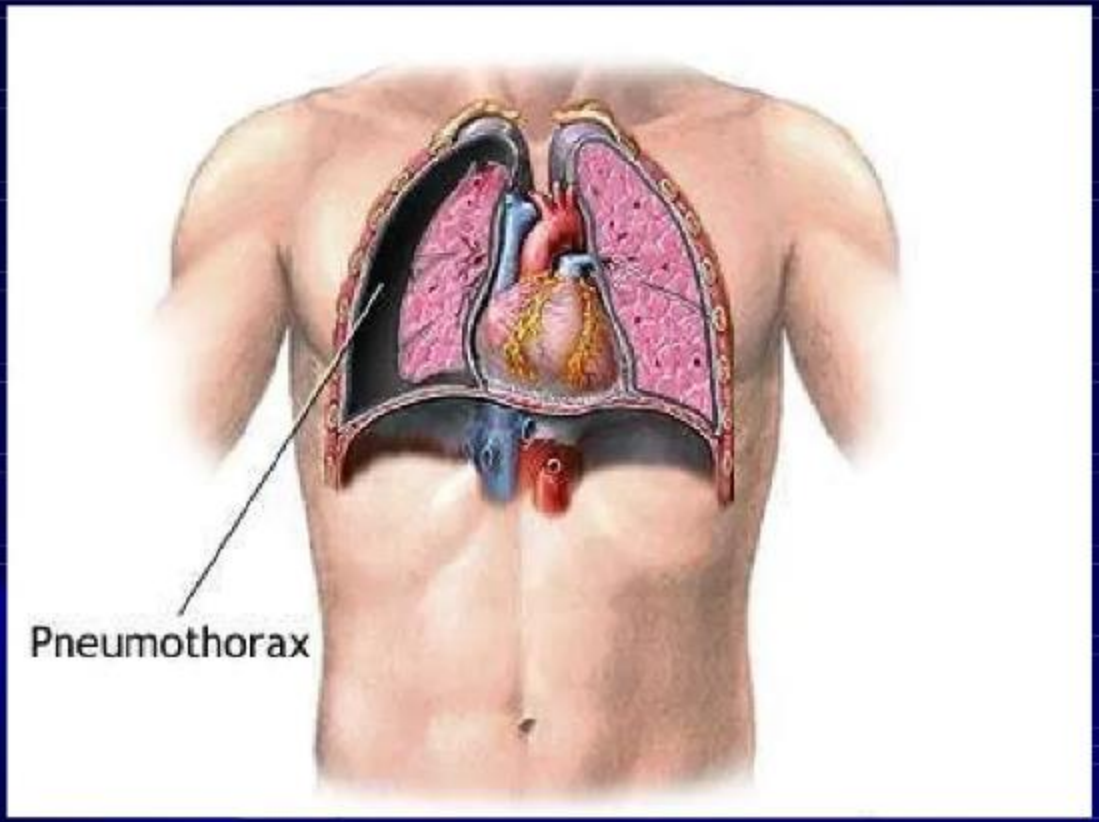
Thoracic surgeon

What is Pneumothorax

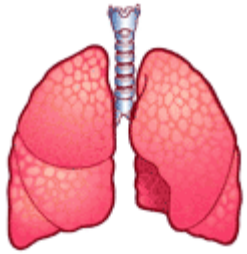


Classification of pneumothorax

- Types
  - Spontaneous
    having an unknown cause or occurring as a consequence of the nature course of a disease process, such as COPD, tuberculosis
  - Traumatic
    following any penetrating or non-penetrating chest trauma, with or without bronchial rupture
  - Iatrogenic
    occurring as the results of diagnostic or therapeutic medical procedure. Intentional or a complication

TRAUMATIC PNEUMOTHORAX

- **Simple /Closed P.**
- **Tension P.**
- **Open P.**

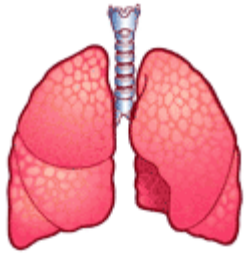


Simple Pneumothorax

- may not come to the attention of the clinician during the initial assessment of critically injured victims.

- A chest radiograph should always be obtained as early as possible during the secondary survey.,

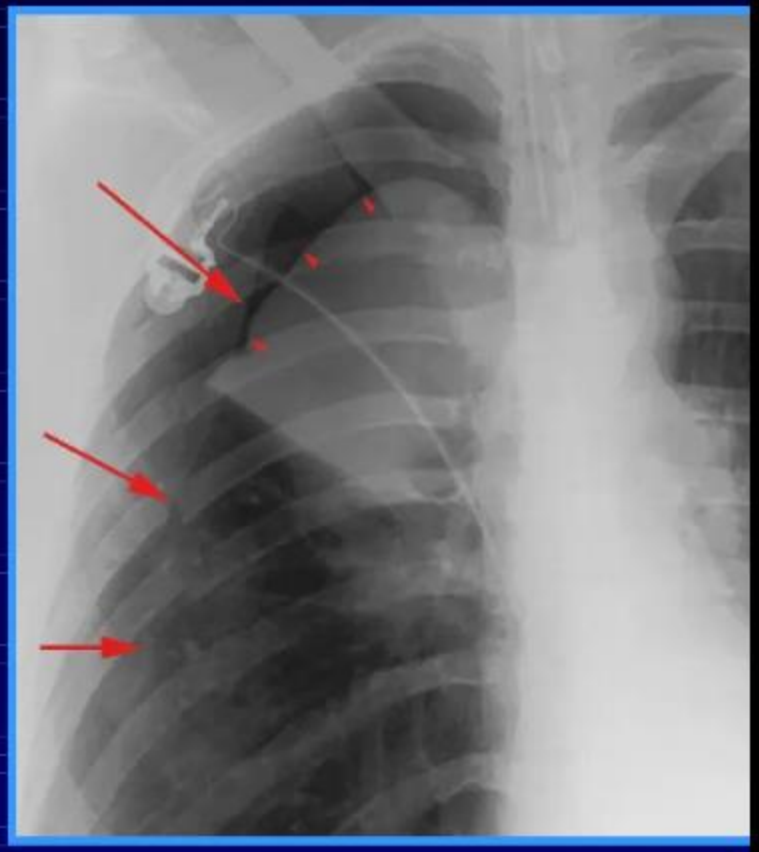
- chest tube drainage is recommended, even for small collections of air, especially in patients who require positive-pressure ventilation.

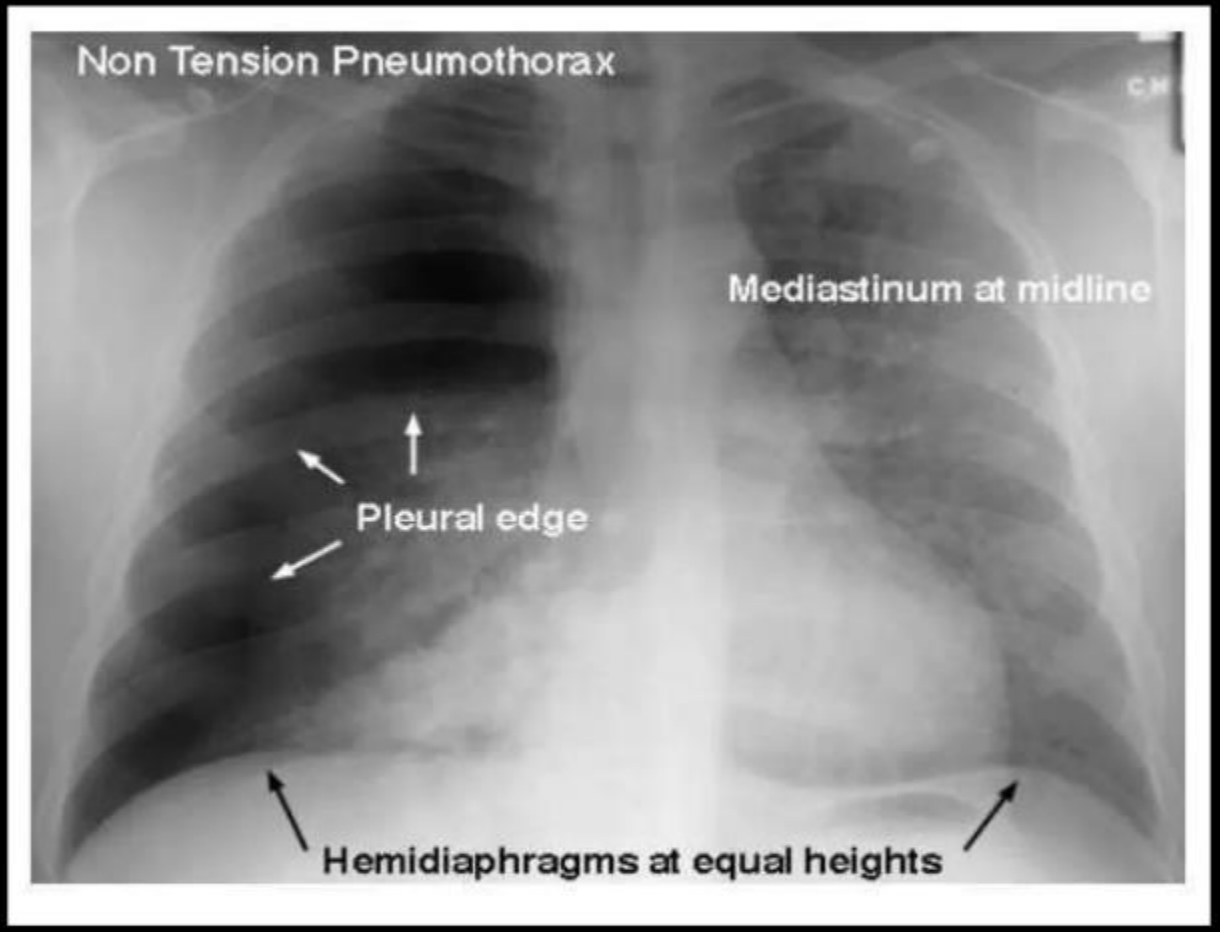


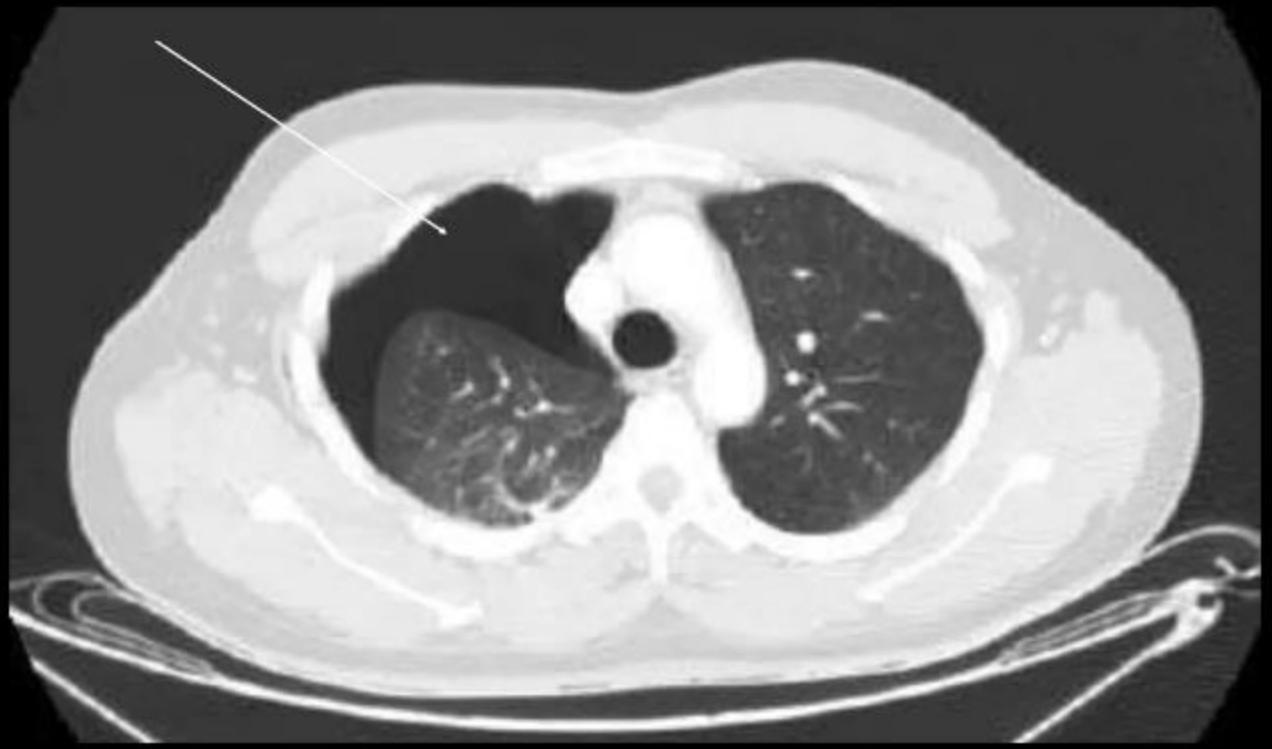
- When a large air leak is present or reexpansion of the lung is incomplete, a tracheobronchial injury should be suspected and prompt flexible bronchoscopy performed

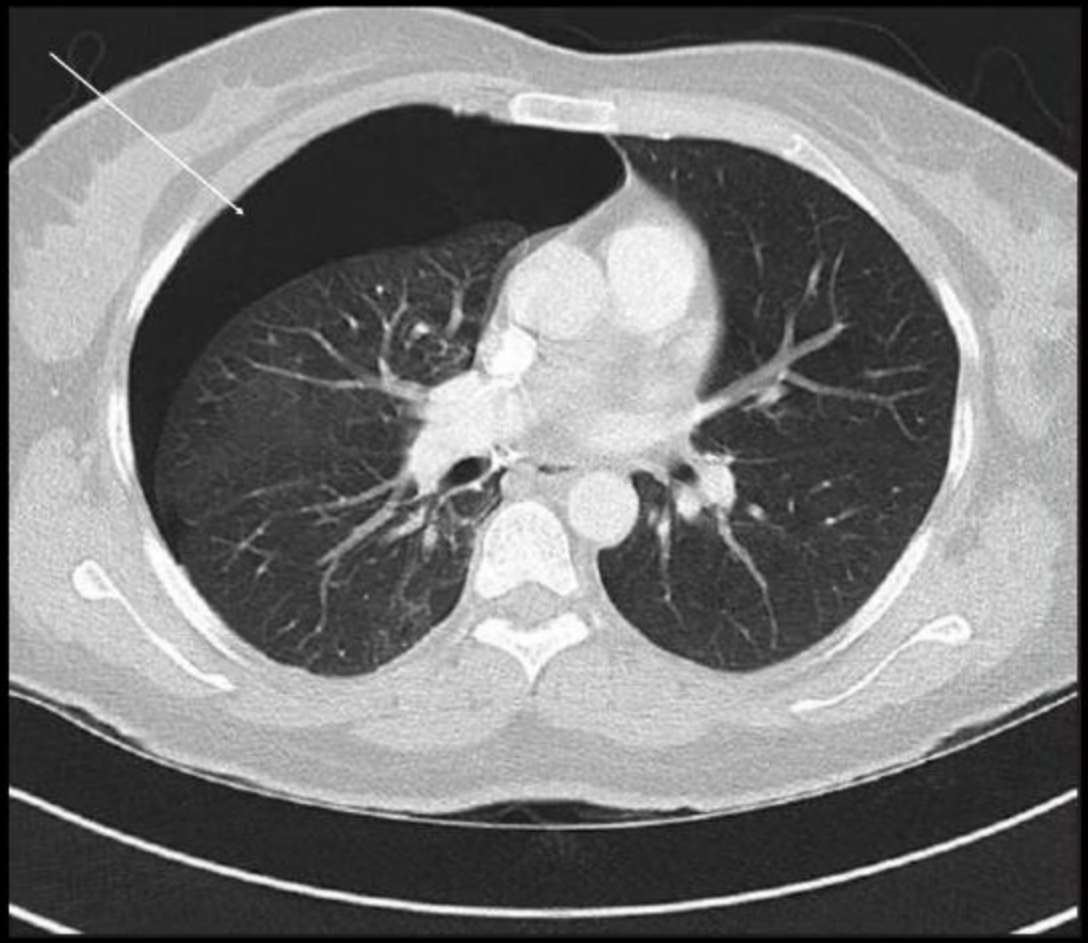
Imaging- Plane chest X-ray film

- Establishing the diagnosis
- The characteristics of pneumothorax
  - Pleural line
  - No lung markings in pneumothorax
- The outer margin of visceral pleura separated from the parietal pleura by a lucent gas space devoid of pulmonary vessels

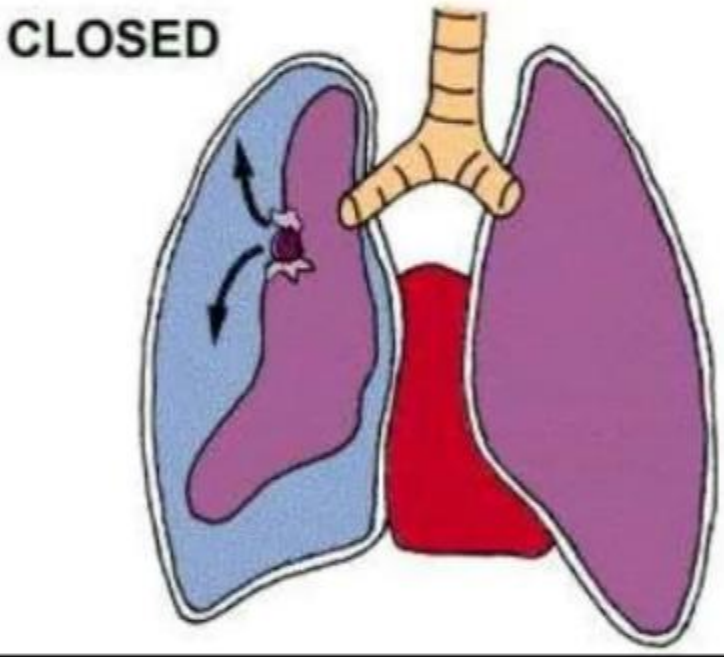


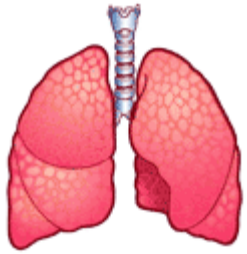

Non Tension Pneumothorax
Mediastinum at midline
Pleural edge
Hemidiaphragms at equal heights





Closed Pneumothorax





Tension Pneumothorax

- Physical examination is more dramatic and may demonstrate

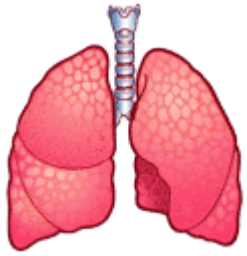
  severe respiratory distress,

  distended neck veins,

  deviated trachea,

  absent breath sounds,

  or tympany to percussion on the affected side

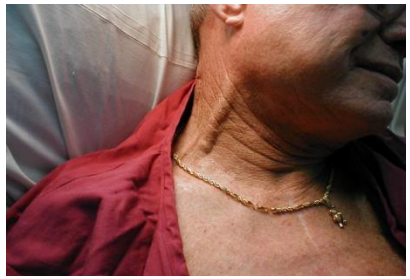


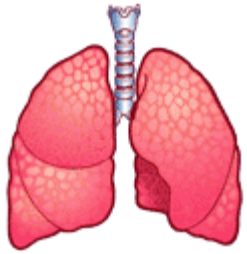
Signs and Symptoms of Tension Pneumothorax

- Anxiety, agitation, and apprehension

- Diminished or absent breath sounds
- Cyanosis

- Rapid shallow breathing
- Distended neck veins





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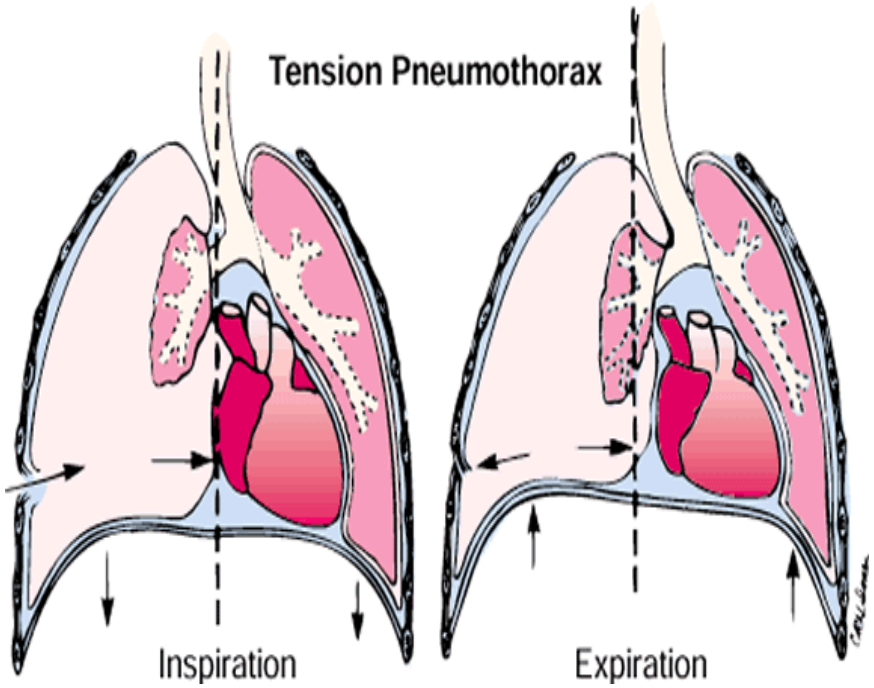

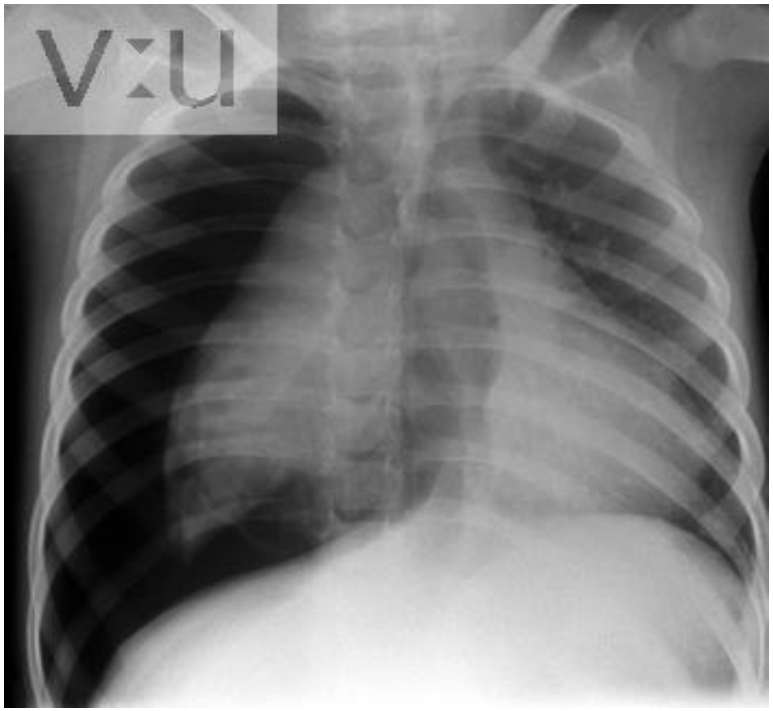

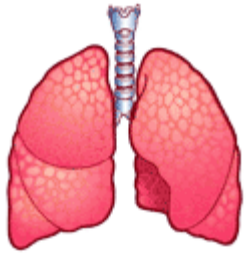

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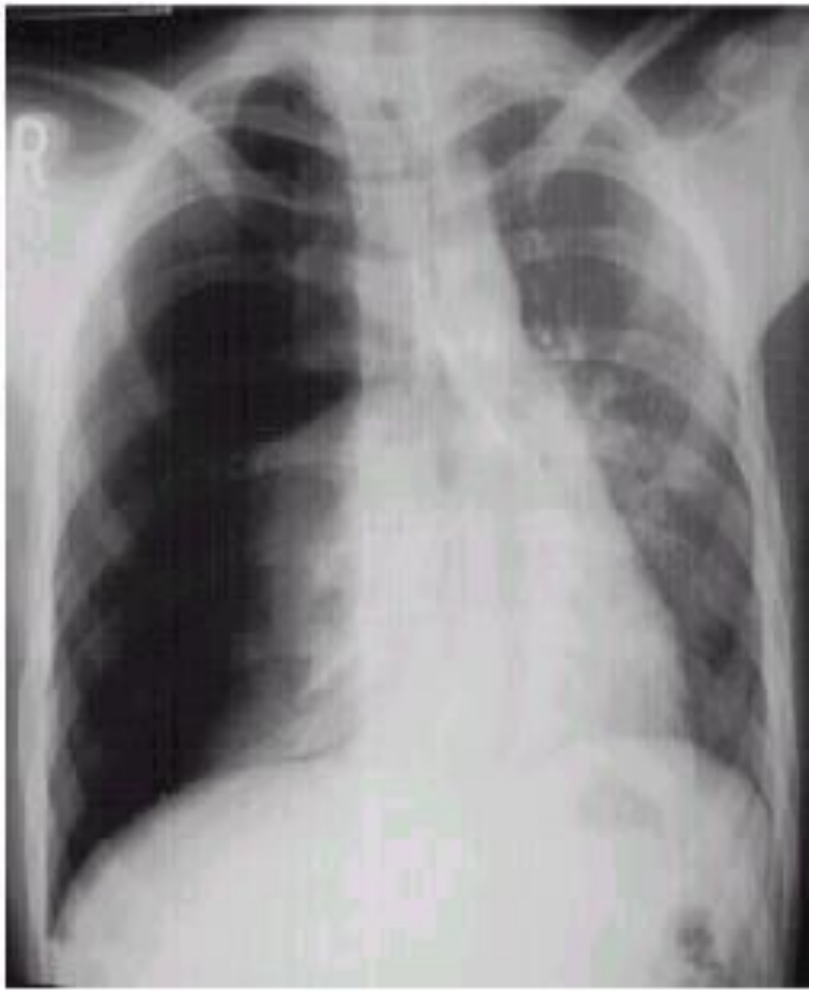

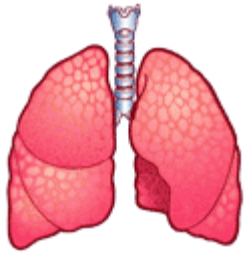

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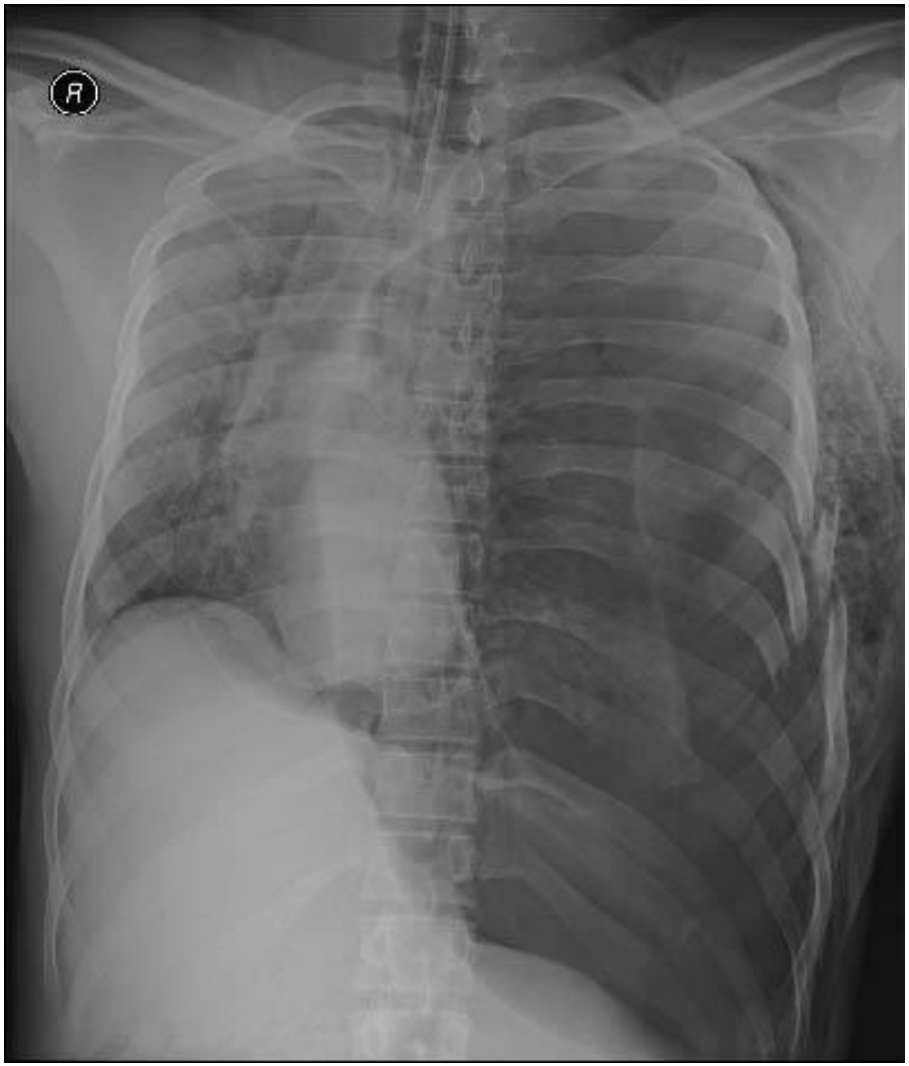
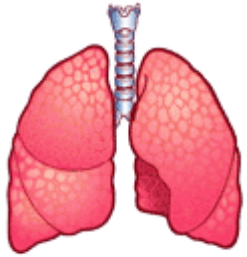
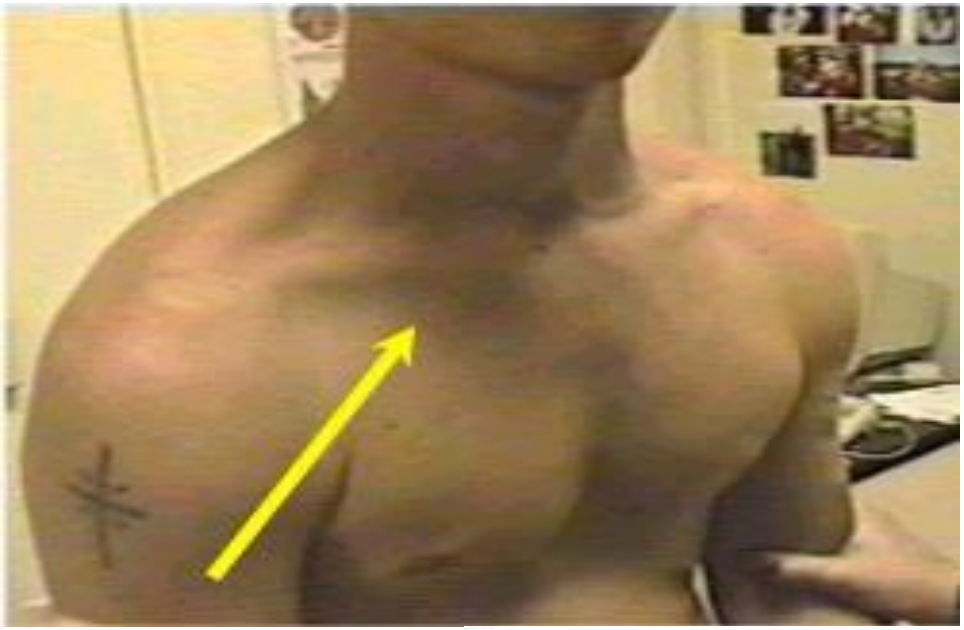
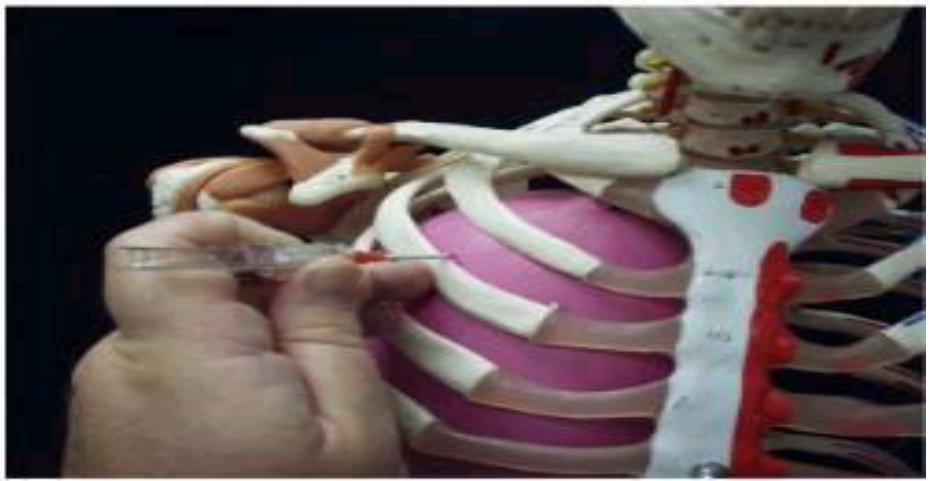


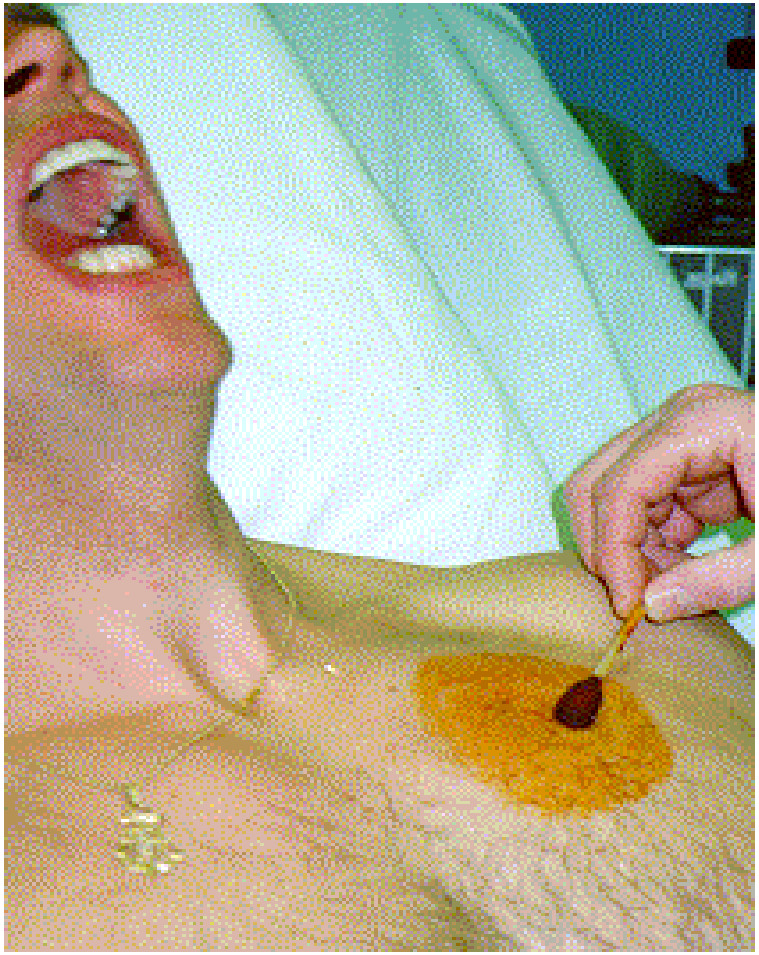


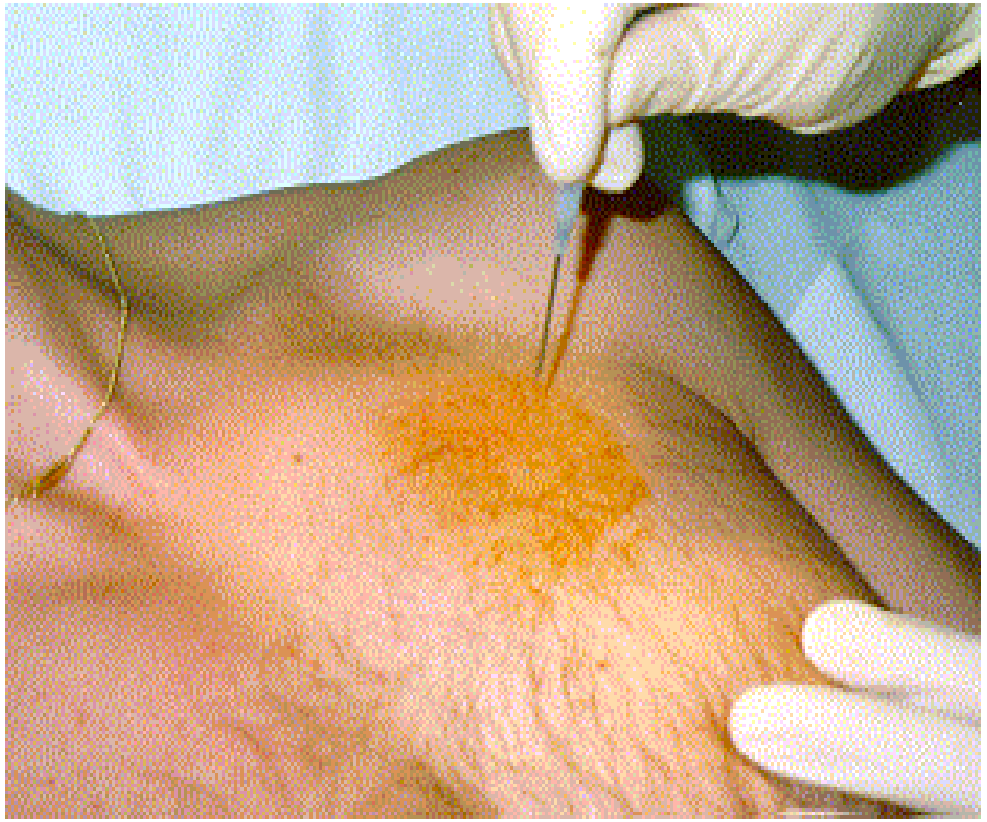
)LE CHEST DECOMPRESSION

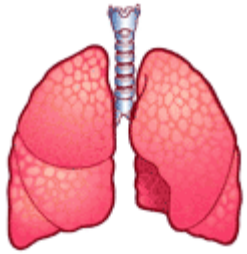




NEEDLE CHEST DECOMPRESSION

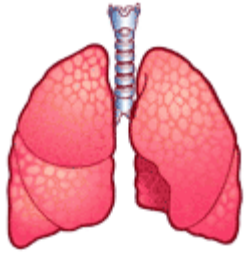






Open Pneumothorax)(sucking chest wounds

- Result of full-thickness loss of a portion of the chest wall, usually from a gunshot wound
- A life-threatening emergency.
- Air can flow freely in and out of the pleural space



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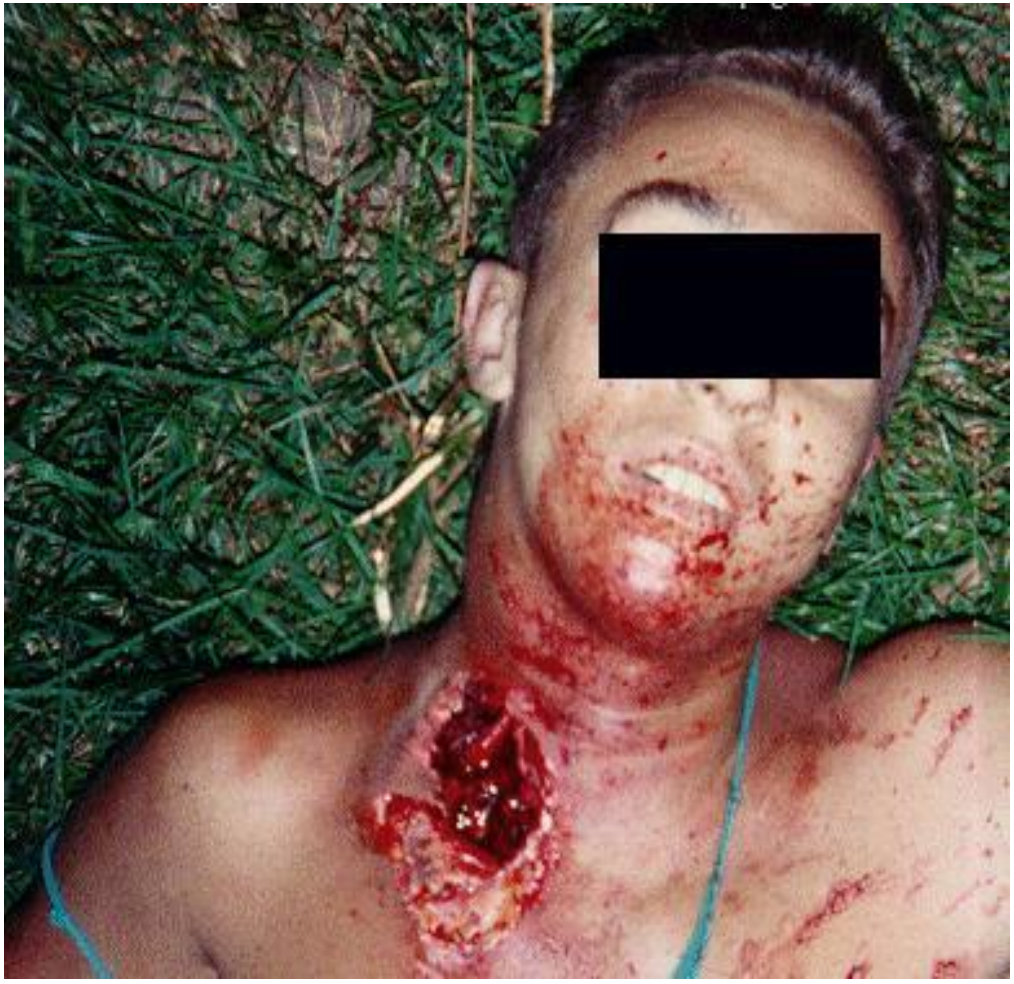

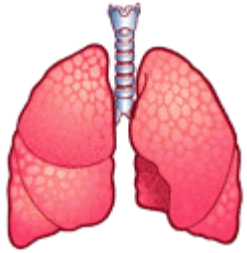

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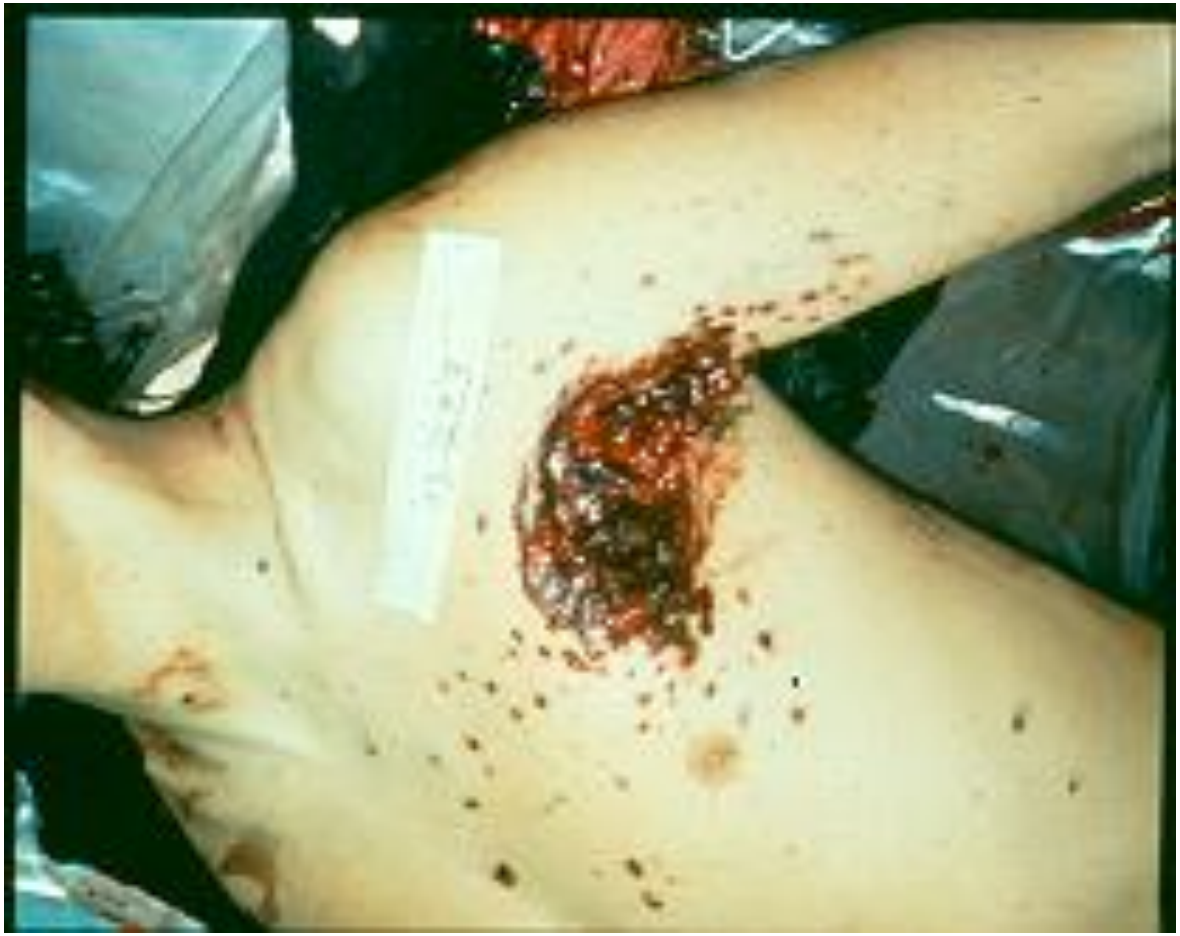
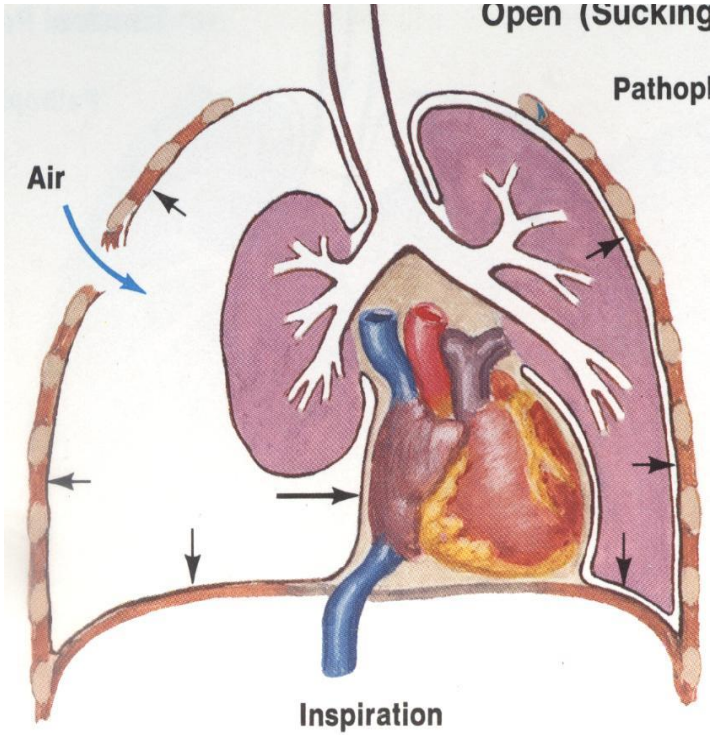
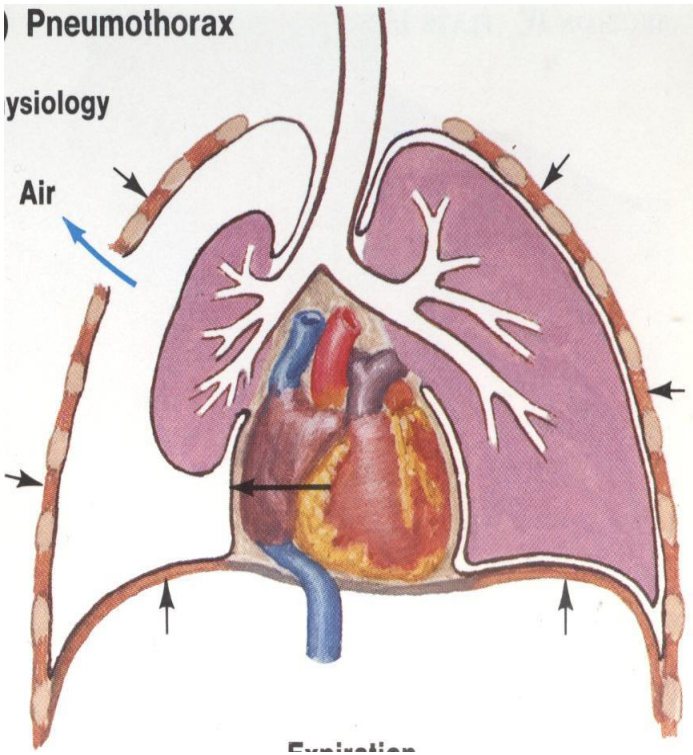
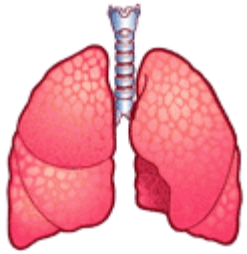


Open(Sucking) Pneumothorax







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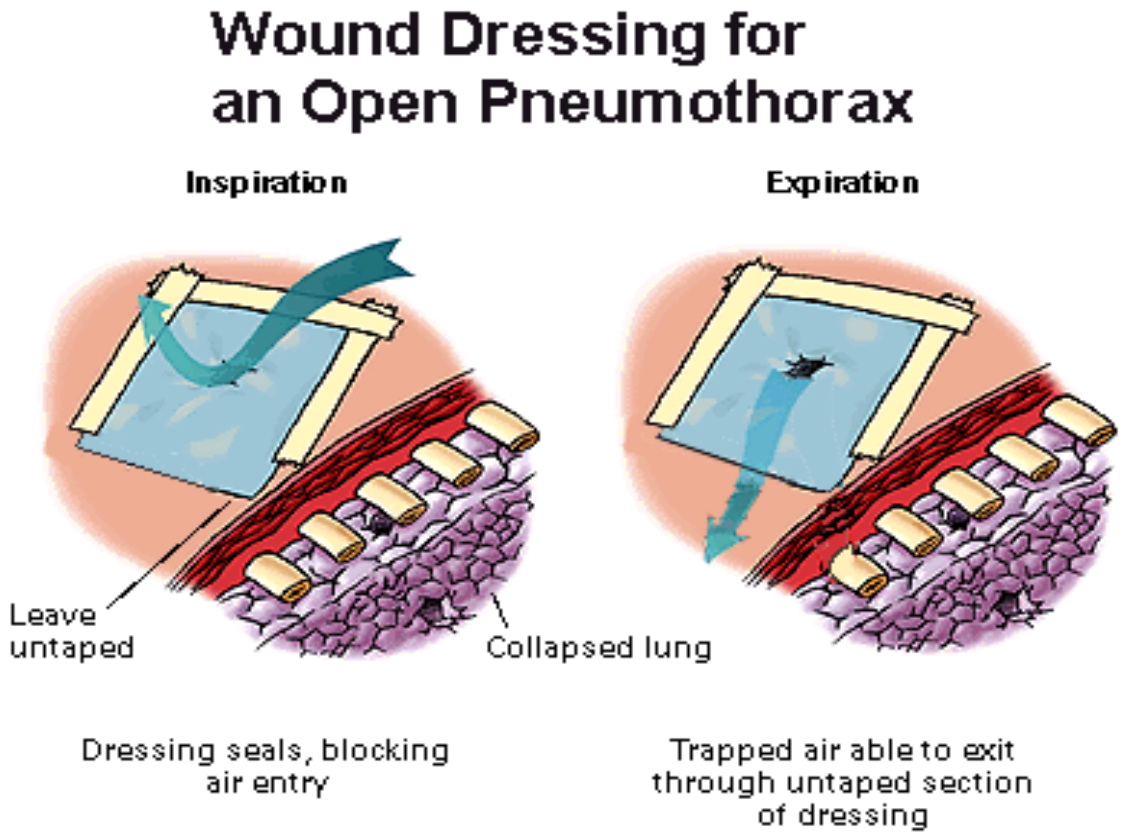
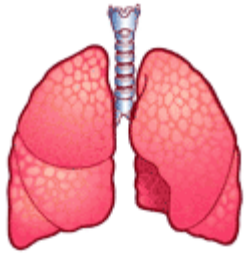
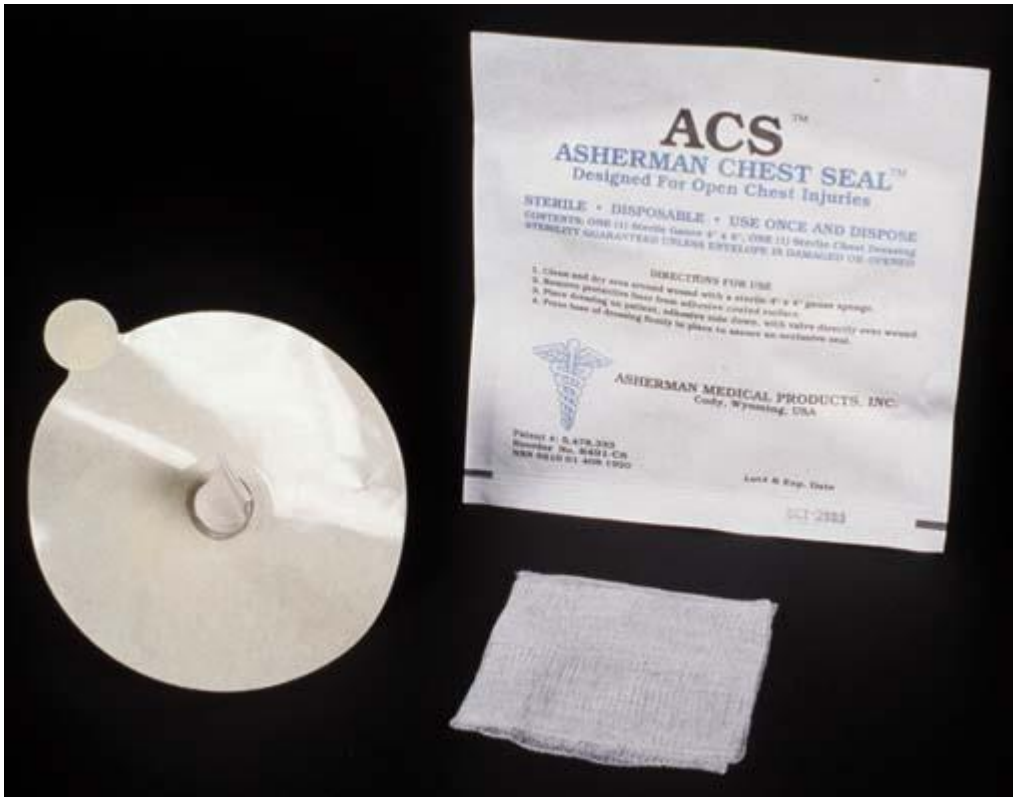
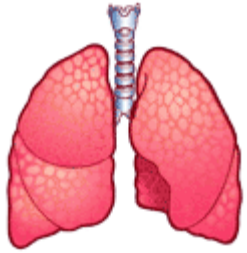




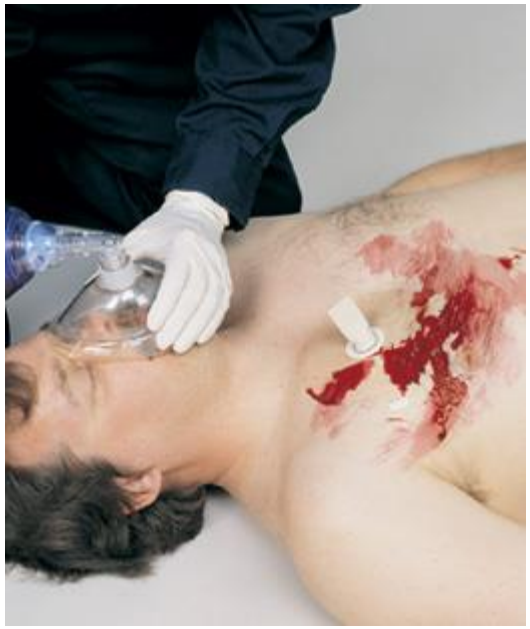
Asherman chest seal

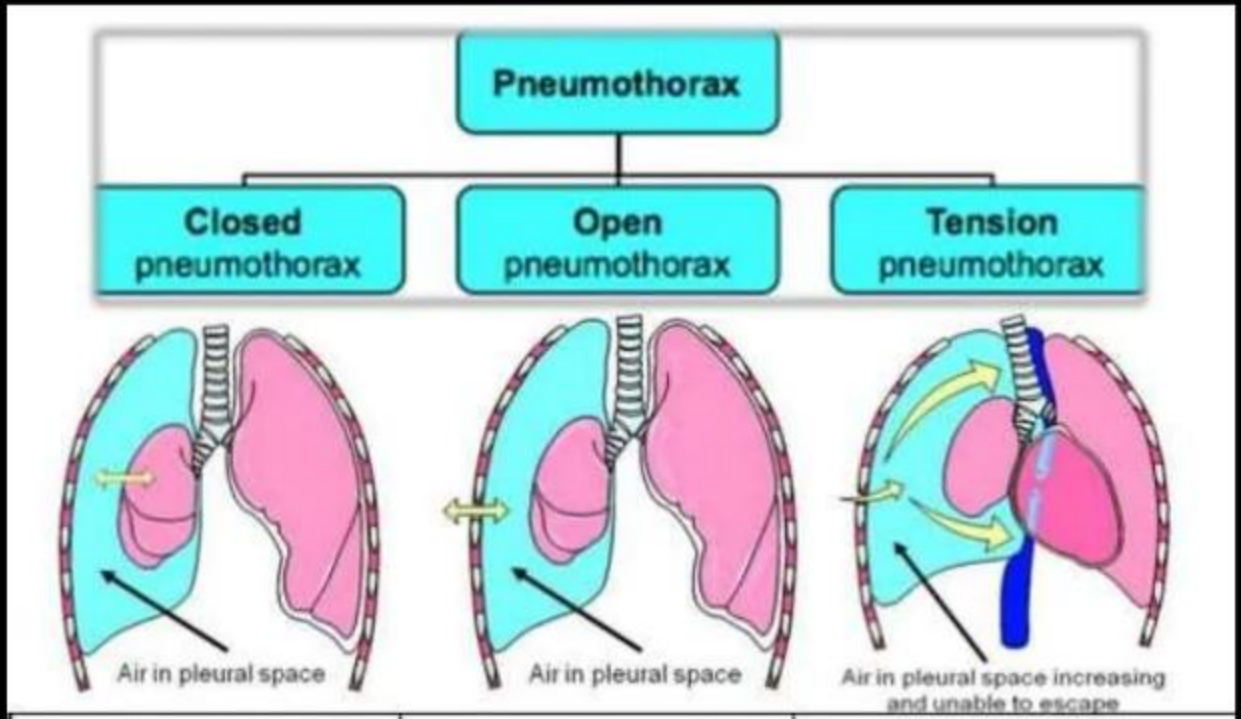




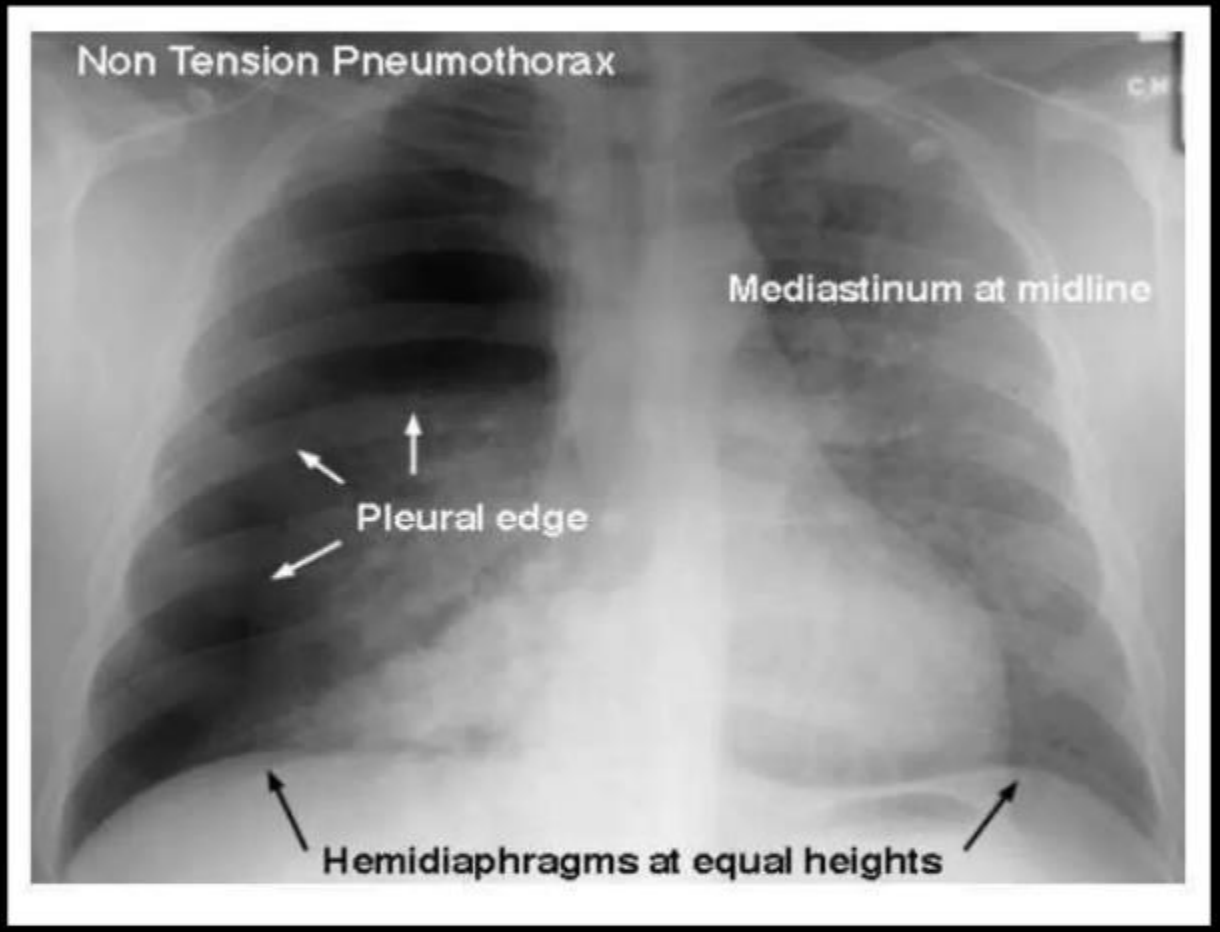
Treatment

- Asherman chest seal – convert sucking chest wounds to simple pneumo/hemothorax





The pleural cavity pressure is < the atmospheric pressure	The pleural cavity pressure is = the atmospheric pressure	The pleural cavity pressure is > the atmospheric pressure

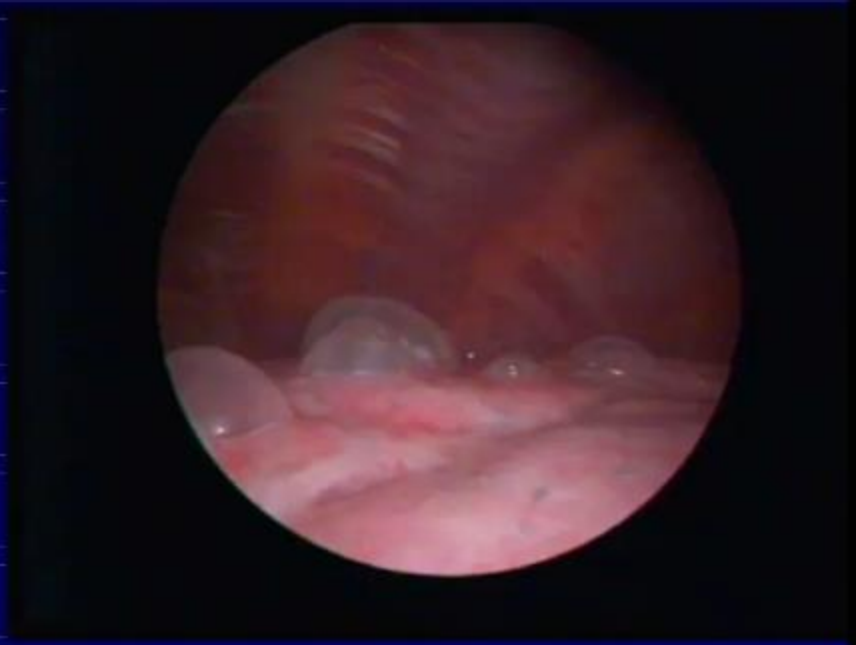

Non Tension Pneumothorax
Mediastinum at midline
Pleural edge
Hemidiaphragms at equal heights

Clinical typing of pneumothorax

- Spontaneous pneumothoraces are subclassified as:
  - Primary spontaneous pneumothorax (PSP)
    - Healthy people, most young people
  - Secondary spontaneous pneumothorax (SSP)
    - Underlying diseases
    - Chronic obstructive pulmonary disease (COPD), pulmonary tuberculosis

Blebs

The patient, a 22-year-old male, was admitted to hospital, complaining of left chest pain and palpitations.



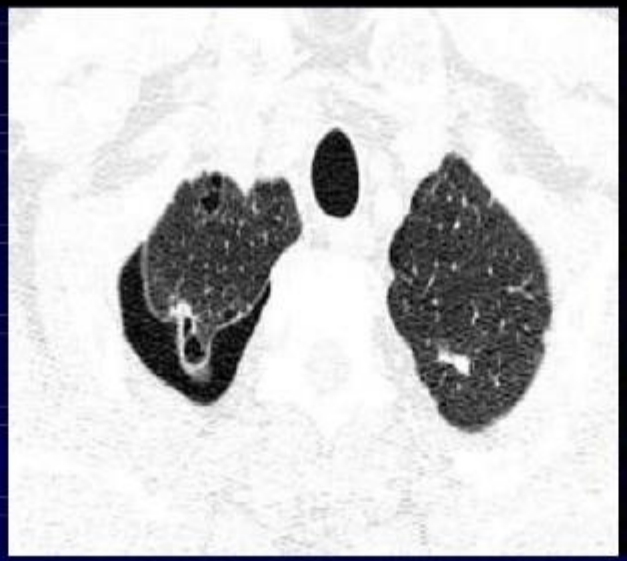
Pathophysiology

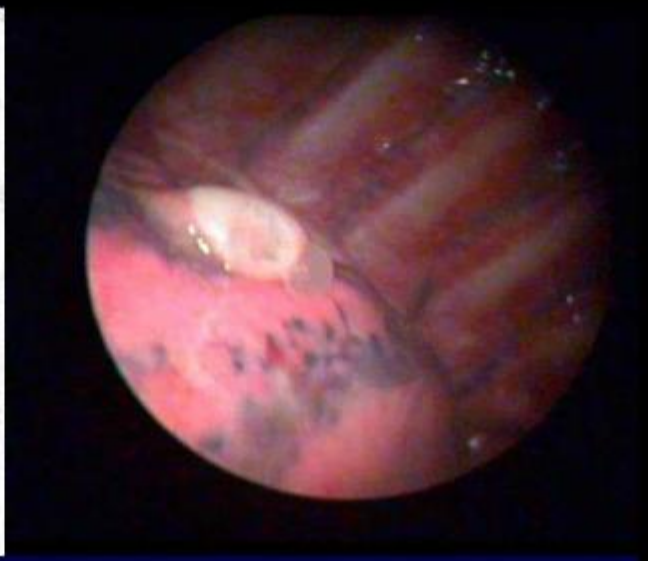
- Blebs and bullae are also known as emphysema-like changes (ELCs)
- The probable cause of pneumothorax is rupture of an apical bleb or bulla
- Because the compliance of blebs or bullae in the apices is lower compared with that of similar lesions situated in the lower parts of the lungs

Pathophysiology

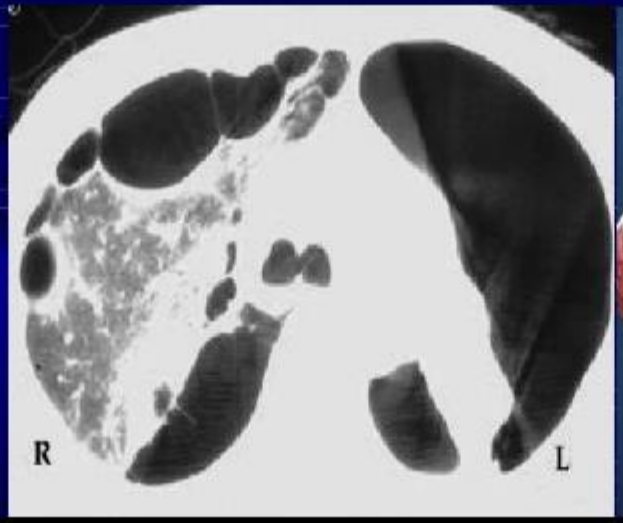
- It is often hard to assess whether bullae are the site of leakage, and where the site of rupture of the visceral pleura is
- Smoking causes a 9-fold increase in the relative risk of a pneumothorax in females
- A 22-fold increase in male smokers
- With a dose-response relationship between the number of cigarettes smoked per day and occurrence of PSP

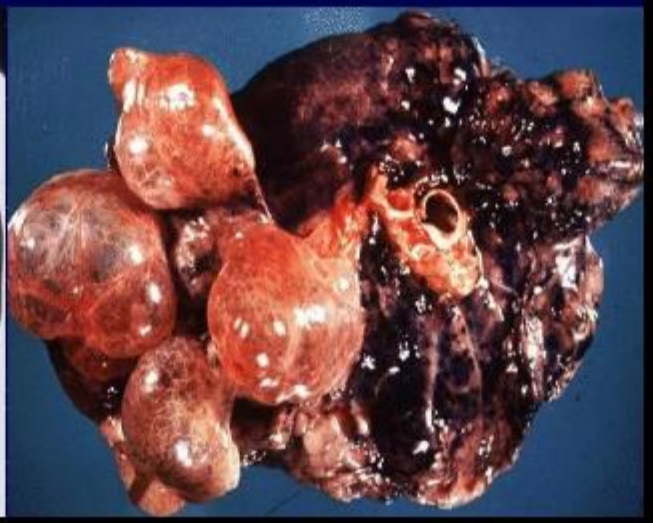
- PSP





- SSP





Primary pneumothorax

- If the lung edge is < 2cm from the chest wall and patient is not breathless

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Resolves normally with out intervention

Secondary pneumothorax

Even a small secondary pneumothorax may cause respiratory failure, so all such patients require

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Intercostal tube drainage

[Intercostal drains are inserted in the 4th ,5th or 6th intercostal space in the midaxillary line ,connected to an under waterseal]

- Clamping of the drain is potentially dangerous
- Should be removed 24hrs after the lung has fully reinflated and bubbling stopped .
- Continued bubbling after 5 -7 days is an indication for surgery .
- All patients should receive supplemental oxygen

- If intercostal tube drainage fails

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Thoracoscopy (VATS) or thoracotomy with stapling of blebs and pleural abrasion is indicated

- If surgery is contraindicated, **pleurodesis** should be done .

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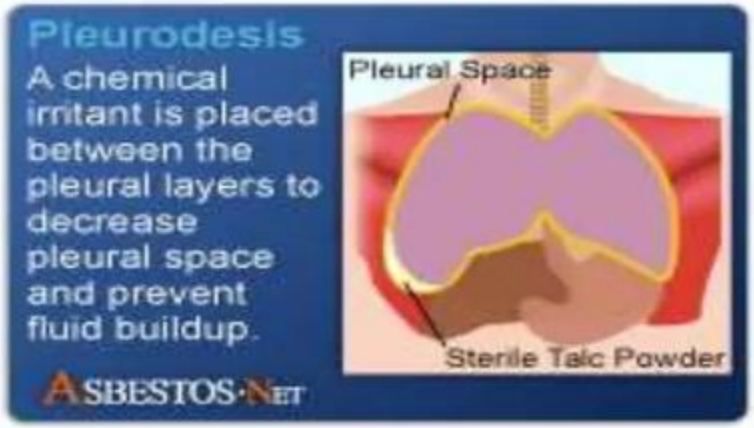
Intrapleural injection of sclerosing agent



Tension pneumothorax

- It is a medical emergency.
- A large bore needle is inserted into pleural space through 2nd intercostal space.
- Needle should be left in place until a thoracostomy tube can be inserted.

Recurrent spontaneous pneumothorax

- Surgical pleurodesis is recommended in all patients following a 2nd pneumothorax(even if ipsilateral)

thank you