

# Blunt injuries of neck, thorax and abdomen

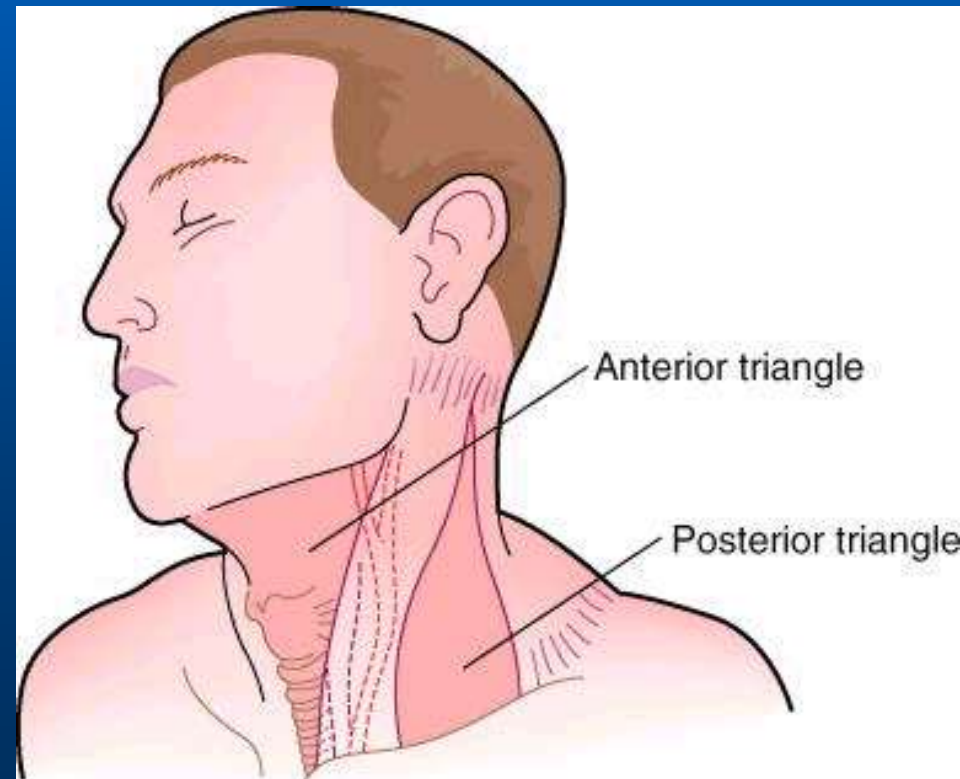
# Blunt injuries of neck

- The neck contains multiple vital structures with little anatomic protection from overlying bone, muscle, and soft tissue.
- Most severe neck injuries are the result of penetrating wounds and may present an immediate threat to life.

# The anterior and posterior anatomic triangles of the neck

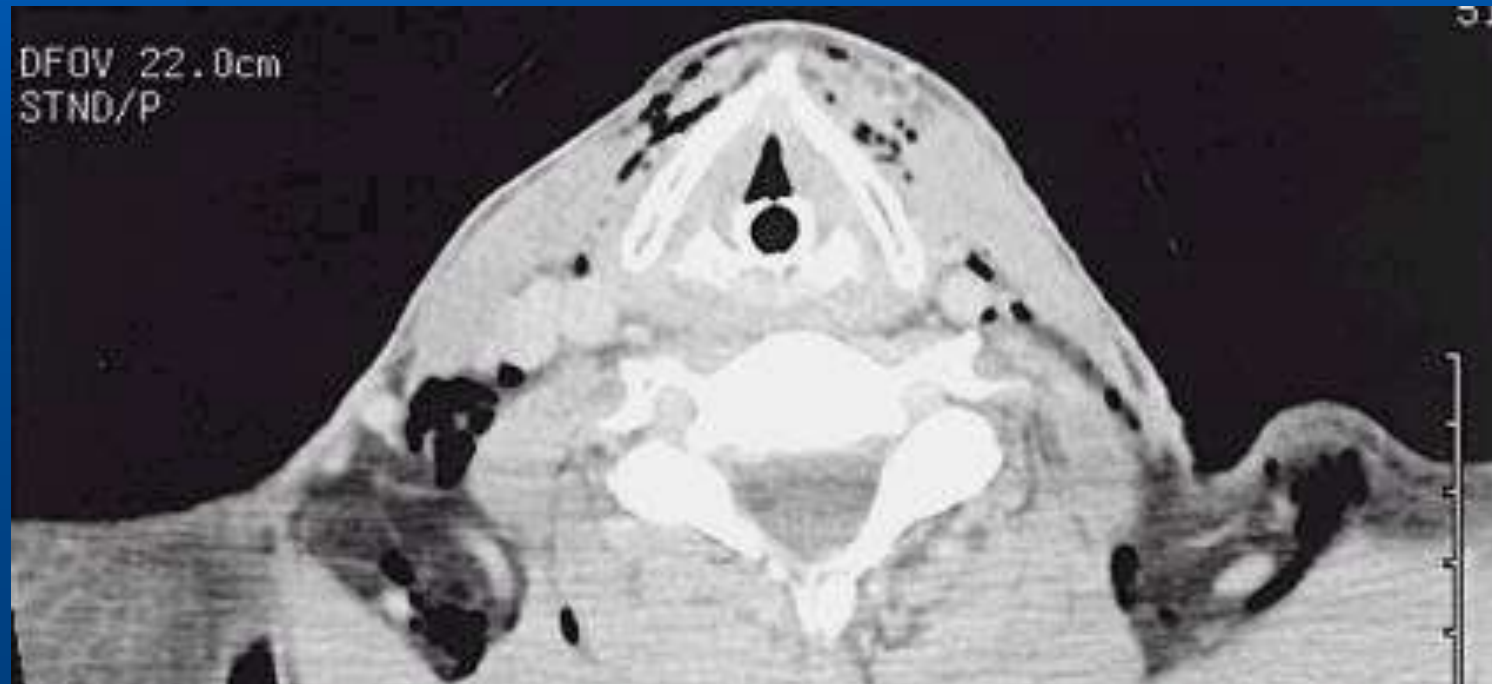
On an anatomic basis, the neck is divided into anterior and posterior triangles:

1. The anterior and posterior anatomic triangles of the neck are defined by the sternocleidomastoid muscle.
2. The major vascular and aerodigestive structures in the neck are contained in the anterior triangle.
3. Wounds involving only the posterior triangle have a low probability of injury requiring urgent surgical intervention.



CT of the neck after blunt trauma shows fracture of the thyroid cartilage, with significant airway swelling and air in the soft tissues surrounding the larynx

Blunt injury to the neck often involves the larynx, and these injuries are difficult to assess by direct laryngoscopy. CT of the neck is commonly used in blunt injury

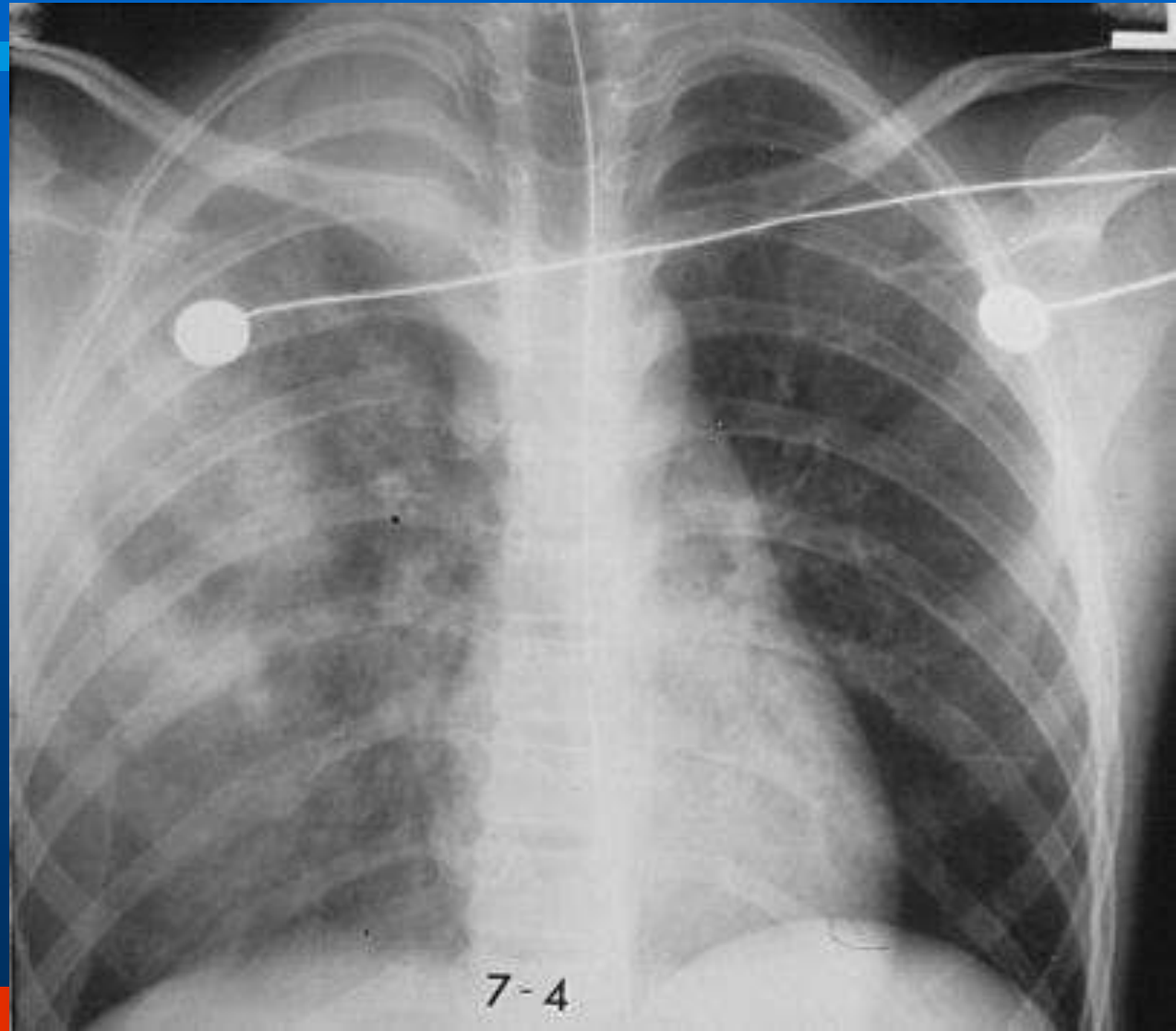


# Thoracic Trauma

- account for 20% to 25% of all trauma-related deaths
- Early deaths are caused by airway obstruction, major respiratory problems (e.g., tension pneumothorax, massive hemothorax, flail chest and cardiac tamponade).
- These clinical situations are easily managed if recognized promptly.
- The majority of thoracic injuries are managed with simple procedures such as clinical observation, thoracocentesis, respiratory support, and adequate analgesia.
- The remaining 15% to 20% of patients with chest trauma require a thoracotomy for repair of major intrathoracic injuries.
- The chest radiograph is of the utmost importance in thoracic trauma

# pulmonary contusion

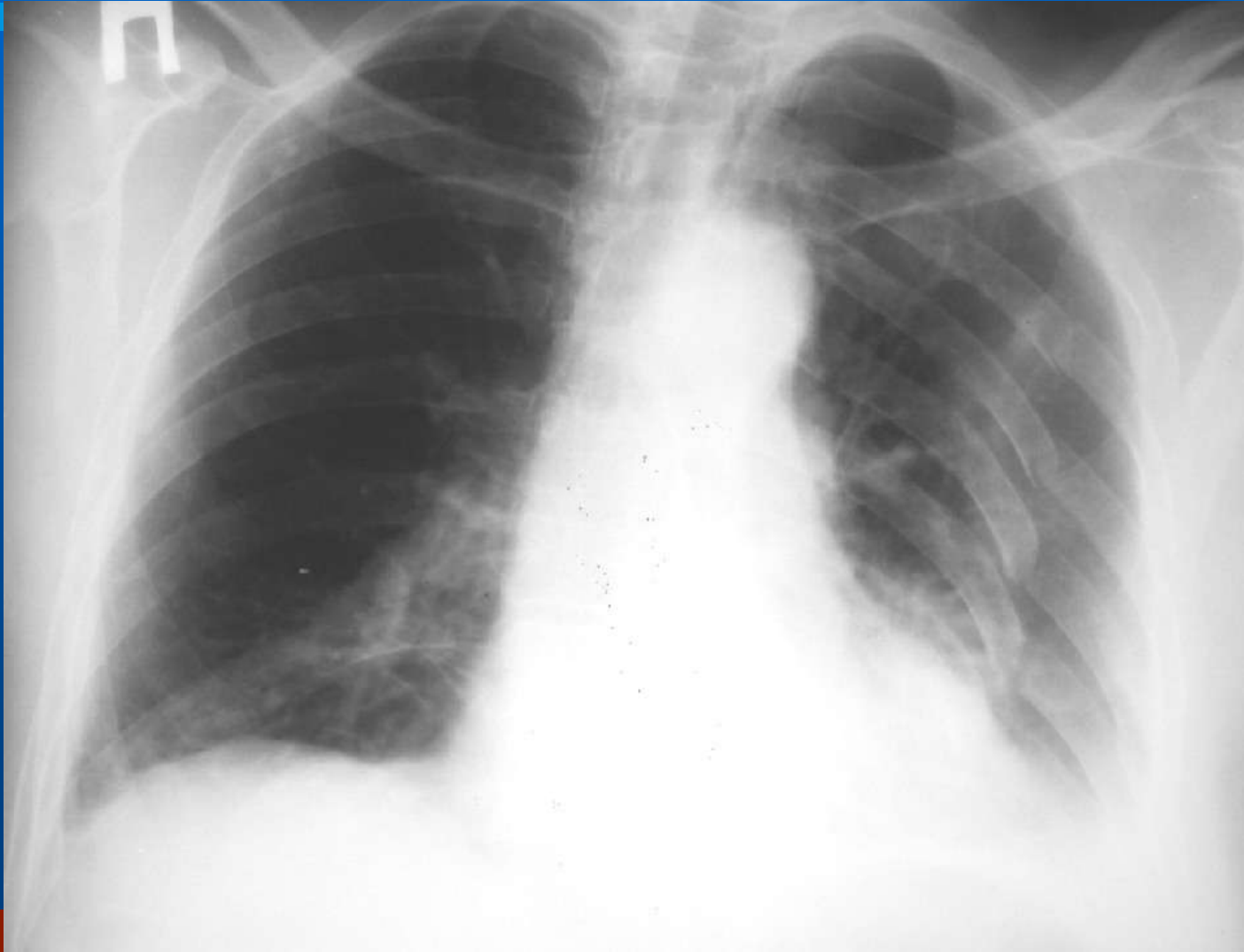
Thoracic Trauma  
may cause to  
underlying  
pulmonary  
contusion



# Rib fractures

- Rib fractures are the most common injuries after blunt chest injuries.
- One or two rib fractures without pleural or lung involvement are usually treated on an outpatient basis.
- rib fractures may lead to decreased ability to cough, reduced vital capacity, and infectious complications.
- Signs of rib fractures:
  - Pain on inspiration
  - tenderness to palpation
  - crepitus
- Intercostal nerve blocks with novocaine are effective for pain control

# Rib fractures



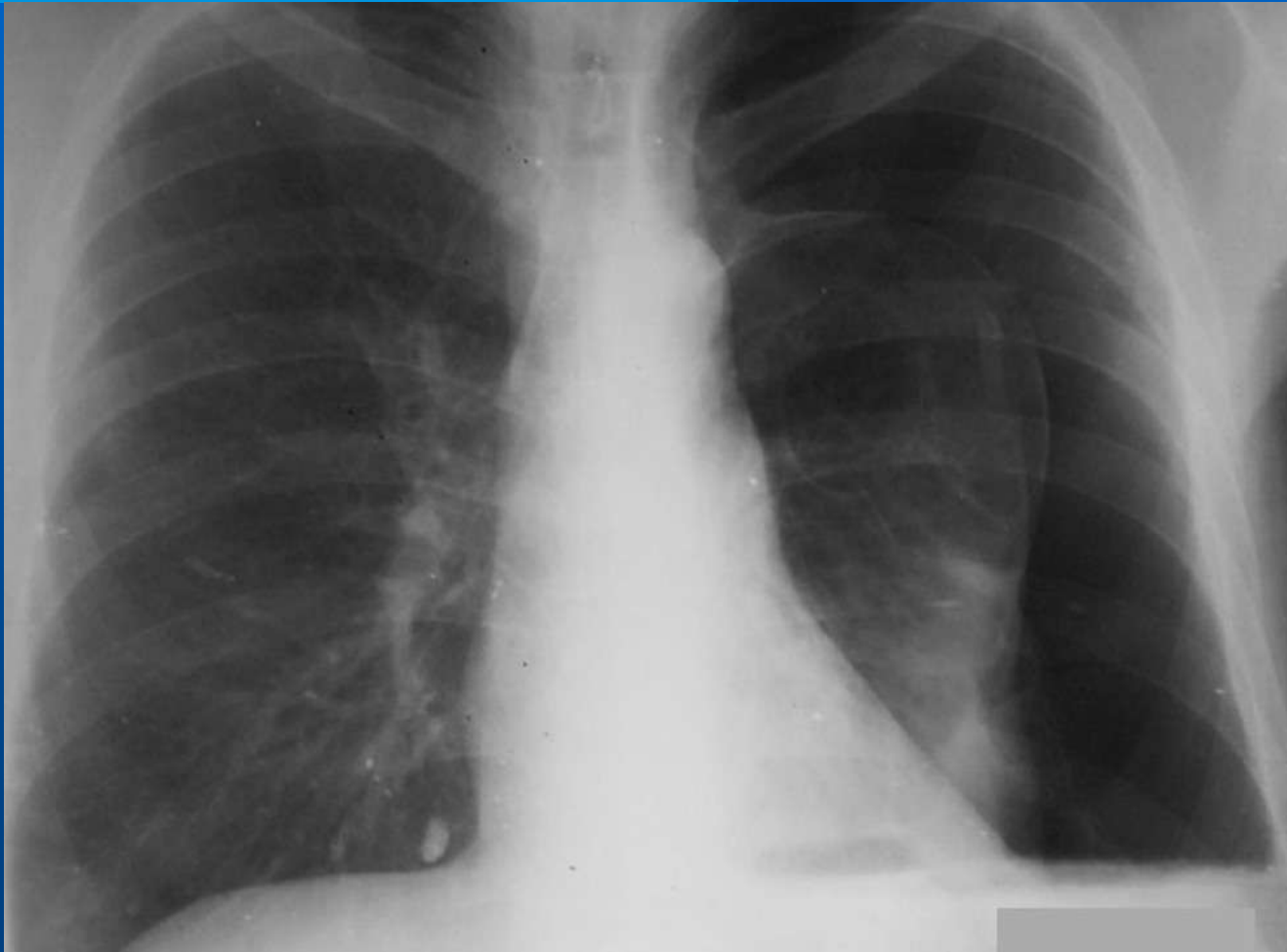




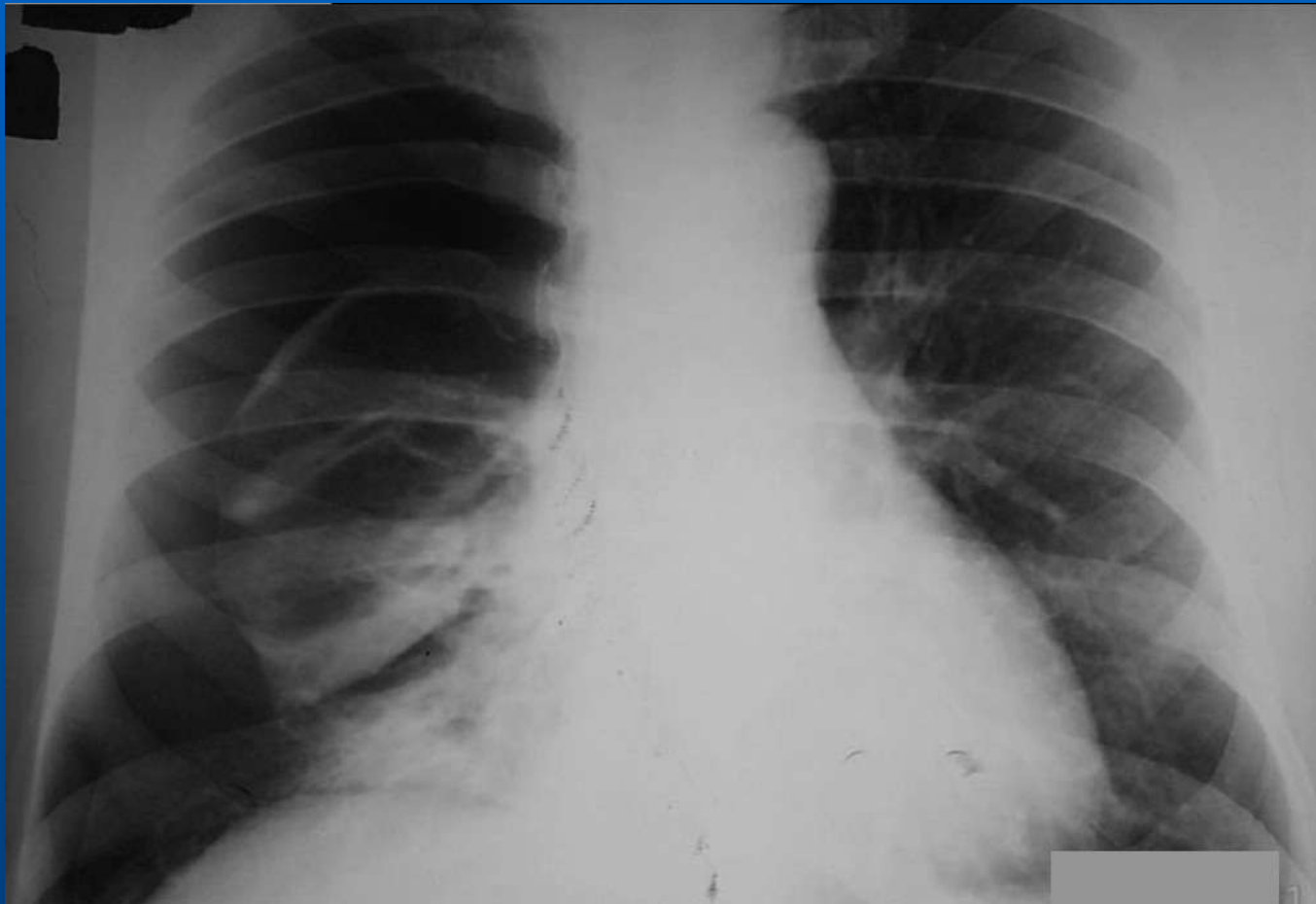
# pneumothorax

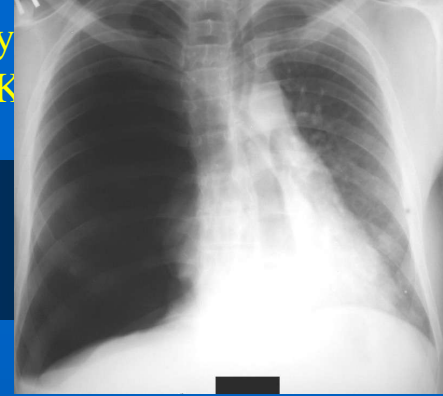
- A pneumothorax occurs when air from an injured lung or airway is trapped within the pleural cavity, increasing the normal negative intrapleural pressure.
- It may be caused by penetrating or blunt mechanisms.
- After blunt trauma, pneumothorax is caused by rib fractures penetrating the lung parenchyma or by lung injuries without chest wall involvement.
- Signs of a pneumothorax include decreased breath sounds, hyperresonance to percussion, and decreased expansion of the affected lung during inspiration.

# Left pneumothorax



# right pneumothorax

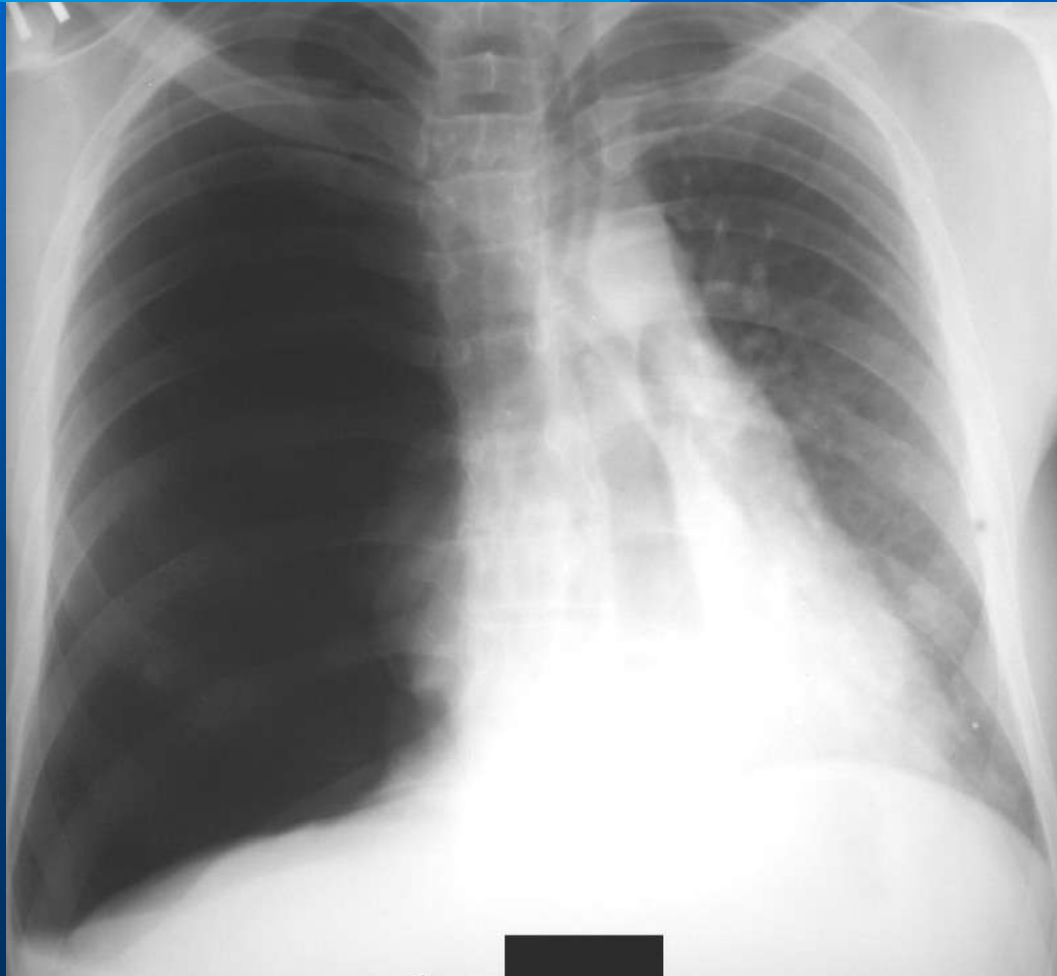




# tension pneumothorax

- Is caused with formation of valve from lung tissue by rib fractures penetrating the lung parenchyma
- in this case each inspiration increase amount of air in pleural cavity
- A tension pneumothorax is characterized by complete lung collapse, tracheal deviation, mediastinal shift leading to decreased venous return to the heart, tachypnea, hypotension, and respiratory distress
- Treatment includes chest decompression:
  1. initially with a large-bore needle inserted in the second intercostal space on the midclavicular line (first aid) and
  2. subsequent tube thoracostomy.

# tension pneumothorax



# Open Pneumothorax

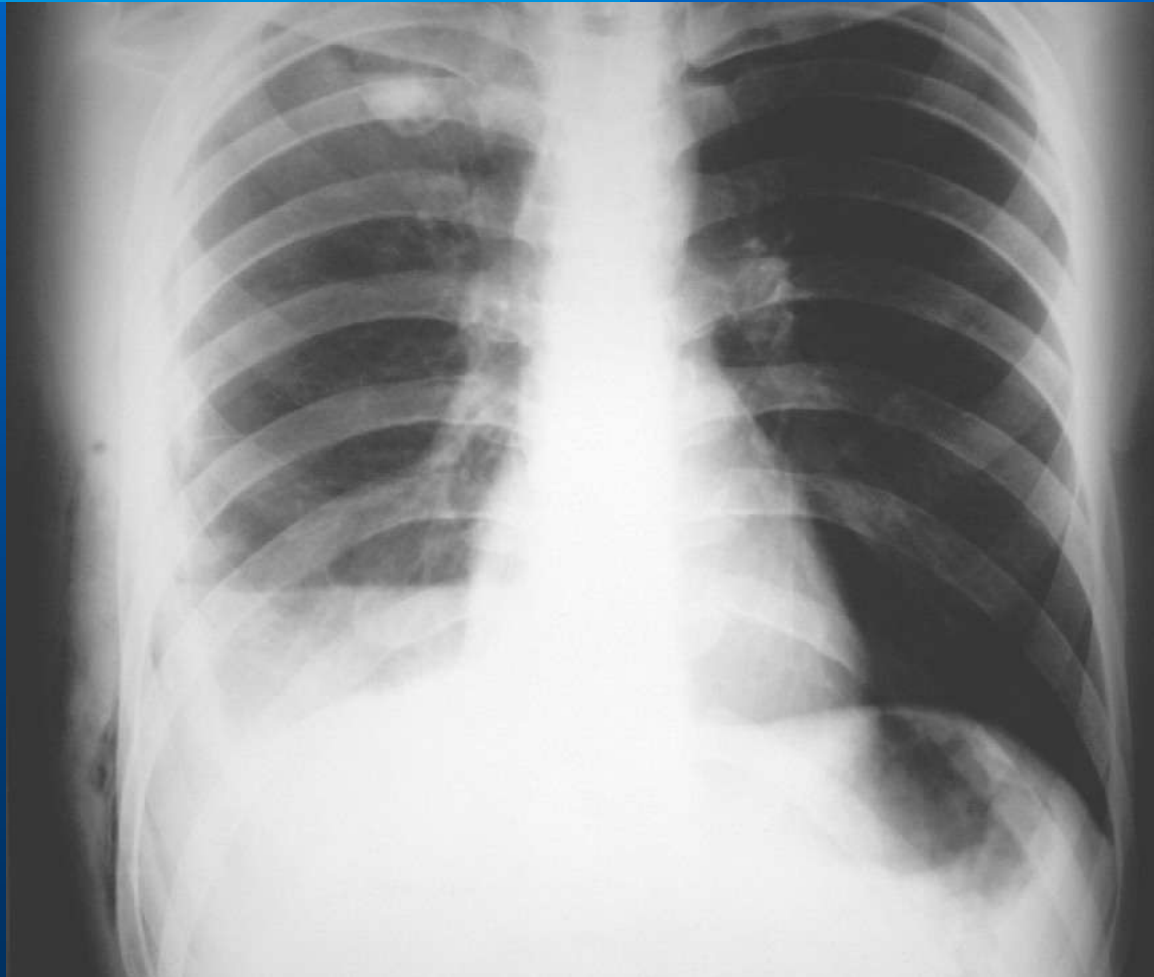
- occurs when there is a significant defect in the chest wall (gunshot wounds), allowing the air to enter from the exterior into the pleural cavity and leading to lung collapse due to a rapid equilibration between the intrathoracic (pleural) pressure and the atmospheric pressure.
- Signs : hypoxia, hypercarbia, hypotension, and respiratory and circulatory failure.
- Management includes:
  1. applying an occlusive dressing (first aid) and
  2. placement of a chest tube.



# Haemothorax

- Severe bleeding is usually due to injuries to the intercostal and internal thoracic arteries.
- Haemothorax divides into mild, moderate and severe (total).
  - In *mild* cases, blood is accumulated only in the pleural sinuses of the pleural cavity;
  - in *moderate* cases, its level can reach the scapular angles;
  - in *severe* haemothorax the pleural cavity is completely filled with blood.
- Owing to the anticoagulant properties the blood that has accumulated in the pleural cavity is not generally inclined to clotting, except for the catastrophic bleeding

# moderate Haemothorax





# severe hemothorax



# The clinical features of haemothorax

- depend on the intensity of bleeding, pressure on and displacement of the lung and mediastinum.
- involves chest pain, restlessness, skin pallor and cyanosis, dyspnoea, cough, dull percussion note, an increase in vocal fremitus, mute breath sounds, fast pulse and low blood pressure.
- The degree of anaemia depends on the amount of the blood loss.
- The aseptic inflammation of the pleura causes an accumulation of serous fluid in the pleural cavity.
- Bacterial contamination of the site of haemothorax resulting from a damage to the bronchus or lung leads to purulent pleuritis.
- To verify the diagnosis of haemothorax X-ray investigation and thoracentesis are used.

# Treatment of haemothorax

- Therapeutic thoracentesis is performed for mild or moderate haemothorax
- total or massive haemothorax requires emergency thoracotomy with ligation of the bleeding vessels or the suturing of the lung rupture.

# Blunt injuries of abdomen

# Injuries of abdomen are divided into:

- Injuries of parenchymal organs (liver, spleen) or mesenteric vessels
  - cause haemoperitoneum
- Injuries of hollow organs (stomach, bowels)
  - cause peritonitis

# The local signs of the haemoperitoneum

- restricted abdominal breathing;
- abdominal pain;
- slight rigidity of the abdominal wall;
- mild peritoneal symptom (Blumberg's sign);
- dull tympanitic sound over the areas of blood accumulation (when about 1,000 ml are accumulated)

# Management of abdomen injury

- The patients suspected of having haemoperitoneum should be closely monitored in dynamics:
  1. A progressive fall of their haemoglobin and haematocrit makes the diagnosis of haemoperitoneum most likely.
  2. Ultrasound examination or CT may also be used. As soon as the diagnosis is confirmed, the patient must be immediately laparotomised with exploration of the abdominal cavity and stoppage of bleeding.
  3. To verify the diagnosis, laparocentesis using a “balloon” catheter, peritoneal lavage as well as laparoscopy play a very important role.

# Diagnostic peritoneal lavage

- A catheter is placed into the peritoneal cavity below the umbilicus and the contents aspirated
- if gross blood or succus are aspirated, surgical examination is indicated
- if initial syringe aspiration is negative, 1 L of crystalloid is infused through the catheter and then the fluid is drained



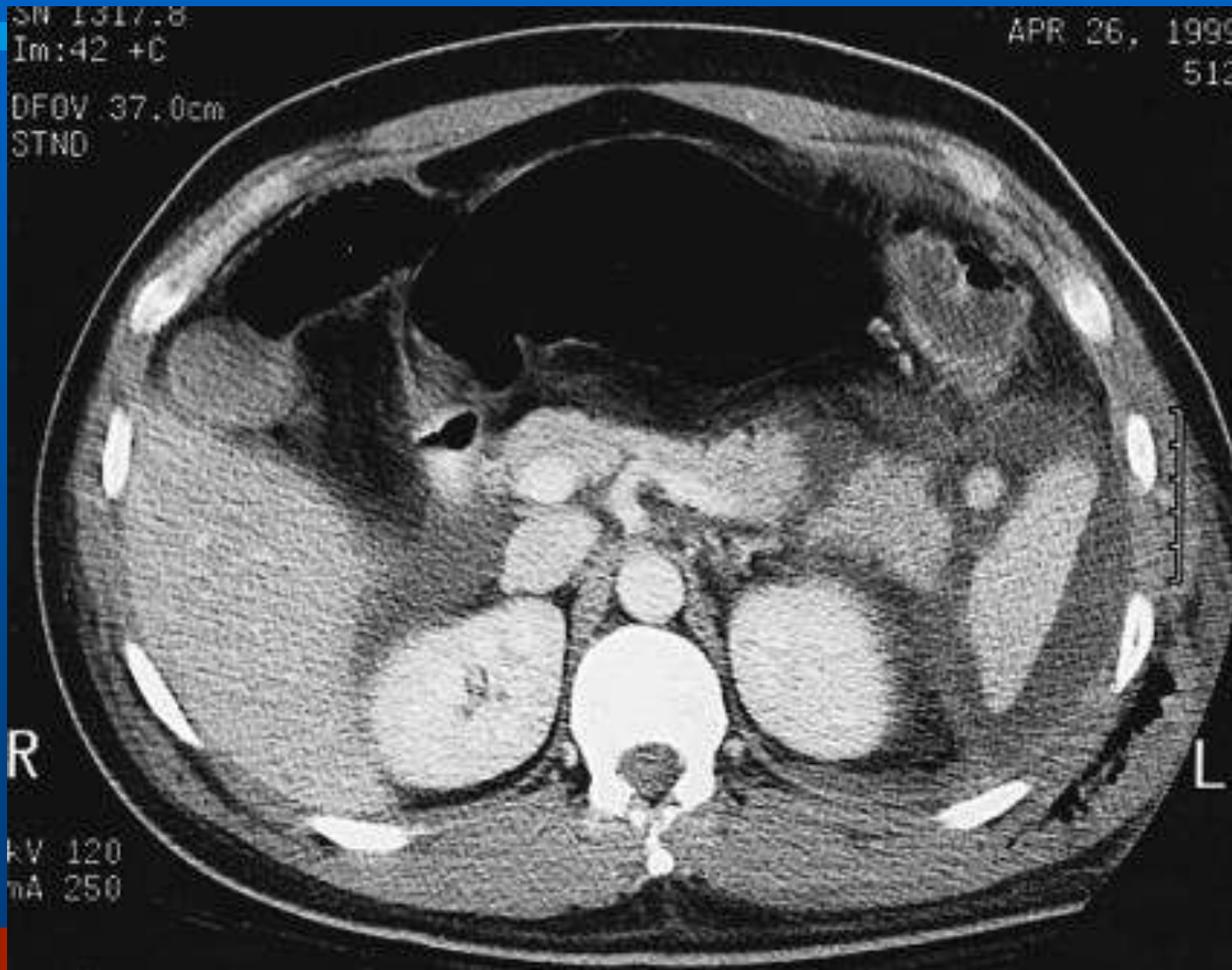
# liver laceration



# splenic laceration



# pancreatic transection



# Urinary Tract Injuries

- **Signs of upper urologic tract injuries :**
  - gross or microscopic hematuria.
- **Signs of lower urinary tract injuries :**
  - blood in the urethra,
  - a floating or displaced prostate on rectal examination,
  - bladder distention,
  - inability to void,
  - large perineal hematomas or other perineal injuries

# Urethrogram shows a complete urethral injury





# Cystogram shows a bladder injury

