

Injury



Injury

- chest
- abdomen
- limbs

Chest wall

- **fracture of ribs** is the most common thoracic injury
- **pain on inspiration** is the principal symptom
- a **chest x-ray** should be obtained
- therapy - analgetics, intercostal nerve blocks, muscle relaxants
- rib belts and adhesive taping should be avoided - retained secretions, atelectasis

Flail chest

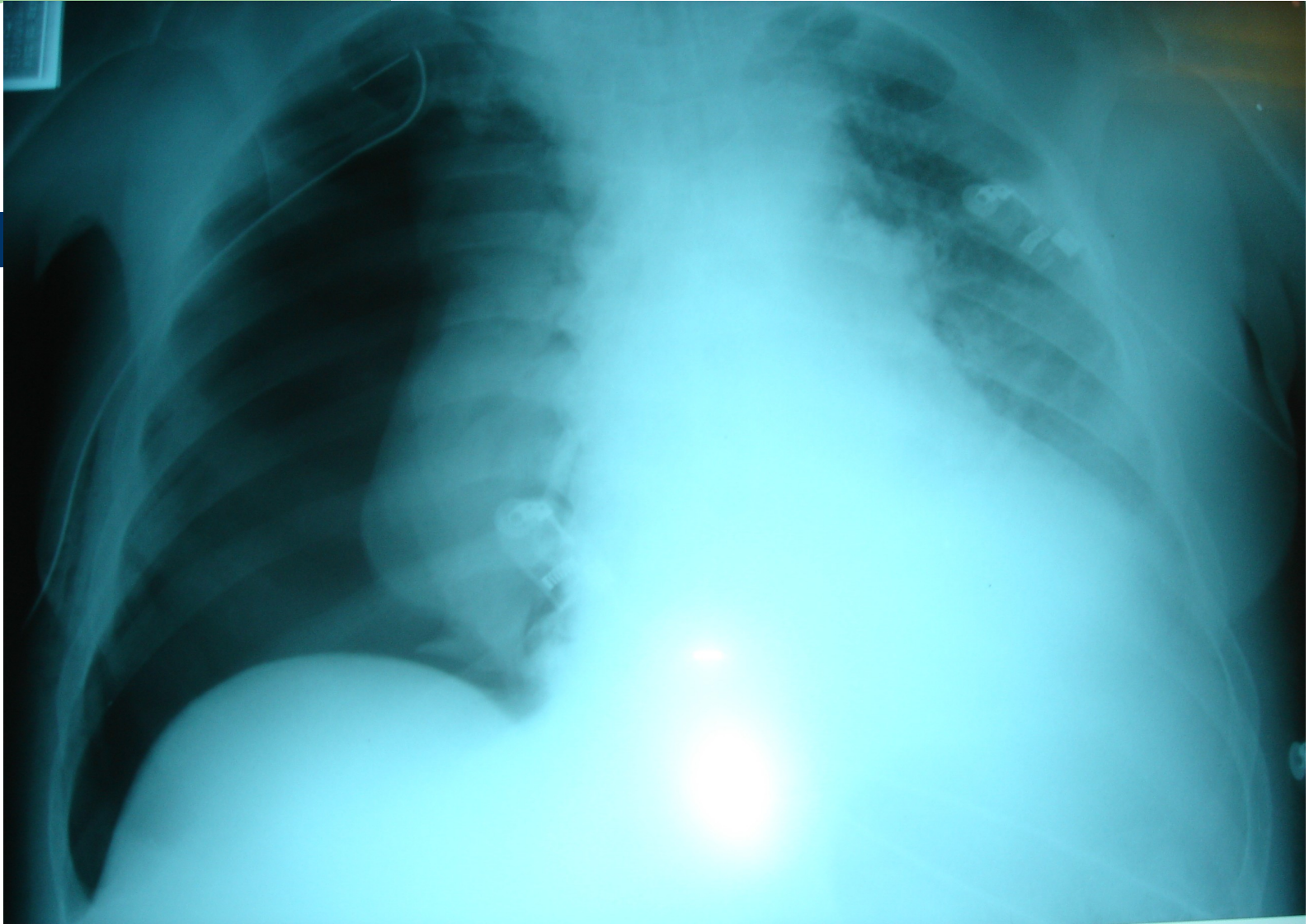
- **unilateral fractures of four or more ribs** or bilateral
- **instability of chest**
(paradoxical respiratory motion results in hypoventilation)
- respiratory difficulty is aggravated by **pulmonary contusion**

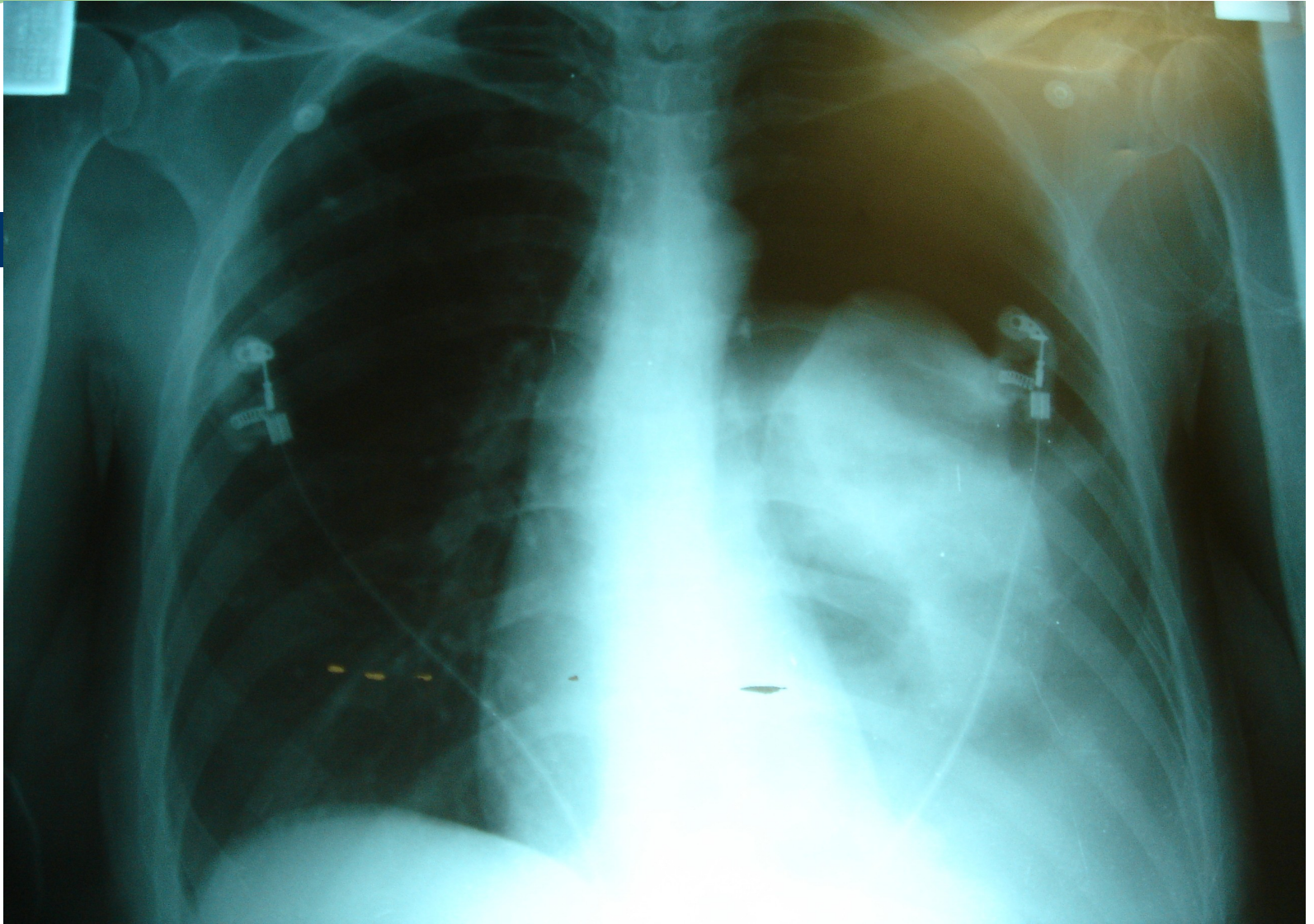
Pneumothorax

- **pneumotorax** results from the lacerations of the chest wall or lung
- **open** pneumothorax- a defect in a chest wall - it is a sucking chest wound - a prompt closure of the defect with a sterile dressing is necessary
- **chest tube** insertion
- intubation, artificial ventilation

PNO







Tension pneumothorax

- develops when a flap valve leak allows air to **enter the pleural space** but prevents its escape
- intrapleural pressure rises, causing total **lung collapse** and a **shift of the mediastinum** to the opposite side
- this pressure must be relieved immediately to avoid interference with ventilation on the opposite side and **impairment of cardiac function**
- tension pneumothorax is a **true surgical emergency**, requiring chest tube insertion
- subcutaneous emphysema, absent breath sounds, mediastinal shift, acute respiratory distress warrant chest tube insertion - without chest x-ray

Hemothorax

- **hemorrhage into pleural space**
- occurs in some quantity in almost every patient with a chest injury
- blood loss can vary from slight to extensive
- the lung itself is a low pressure system
- it is necessary to **place the chest tube and check the blood loss**
- in some cases - **thoracotomy** / acute hemothorax of 1500ml
- various techniques can be used - simple oversewing or resection of injured segments

Hemothorax



Trachea and Bronchus Injuries

- mediastinal and deep cervical **emphysema**
- subcutaneous crepitation
- or **PNO** with a **massive air leak**
- **respiratory distress** is frequent
- endoscopic evaluation prior intubation
- emergency treatment - inserting the endotracheal tube beyond the injury
- small lesions may be managed without surgical treatment
- for an early stricture either resection or an bronchoplastic procedures /stents/

Heart and Aorta

Blunt cardiac injury

- spectrum of cardiac changes - from wall bruise to ventricular, septal or valvular rupture
- diagnosis is difficult
- arrhythmia can occur
- many cardiac contusions are unrecognised

Tamponade

- Cardiac tamponade is most frequently caused by **penetrating thoracic injury**
- occasionally in blunt thoracic trauma
- accumulation of as little as 150 ml of blood in pericardial sack may **impair diastolic filling**
- distended neck veins, muffled heart sounds, **hypotension, cyanosis**
- therapy - **pericardiocentesis** - echocardiography is advisable
- 15% of pericardiocenteses give false negative results because of a clotted hemopericardium

Aorta

- rupture of a thoracic aorta is the most lethal injury
- most patients die immediately from **exsanguination**
- who survive the initial period develop a false aneurysm that can slowly enlarge over a period of months to years

Other injuries

- **Ruptures of diaphragm** - may result of herniation of viscera
- herniation of viscera may not occur immediately
- **Esophagus** - blunt injury of oesophagus is rare

Abdomen

- motor vehicle accidents
- pedestrian accidents
- penetrating trauma - knife wounds are more common than gunshot wounds
- **diagnostic techniques:**
 - peritoneal lavage - in the past
 - ultrasonography
 - CT
 - diagnostic laparotomy - a limited role

Ultrasonography



CT



Spleen

- is the most commonly injured intraabdominal organ
- diagnosis is confirmed by **CT scan**
- **therapy - splenectomy**
- overwhelming postsplenectomy sepsis
- nonoperative management - delayed rupture maybe due to an enlarging subcapsular hematoma

Liver and Biliary Tree

- The **liver** is the most commonly injured organ.
- **CT** examination
- therapy - **surgical** (suture, resection)
- Deep liver lacerations should not simply be sutured closed.
- This predisposes to liver abscesses and hemobilia

Stomach

- Most gastric injuries are due to **penetrating trauma**
- Blunt trauma is rare
- If **vomitus** or gastric aspirate is **bloody**, an injury to the stomach should be suspected.
- Therapy: **laparotomy**: can be treated simply with debridement and closure in layers.

Other injuries of abdomen

- Duodenum
- Pancreas: pancreatic trauma is relatively uncommon
- Intestines
- Colon and rectum
- Major abdominal vessels
- Urinary tract: hematuria is present

Pelvic Fractures

- Crush injuries
- **massive blood loss**
- therapy - skeletal fixation

- Perineal wounds

Limbs

- **Hemorrhage** can be also life-threatening
- Early fixation of long bone fractures decreases the exidence of ARDS and **fat embolization**
- Early patient mobilization lessens the likelihood of pneumonia, **venous thrombosis**
- Soft tissue injuries: complete debridement of all devitalized tissue is a prevention of infection.
- Primary amputation
- **Tetanus**: prophylaxis is recommended

Limbs

