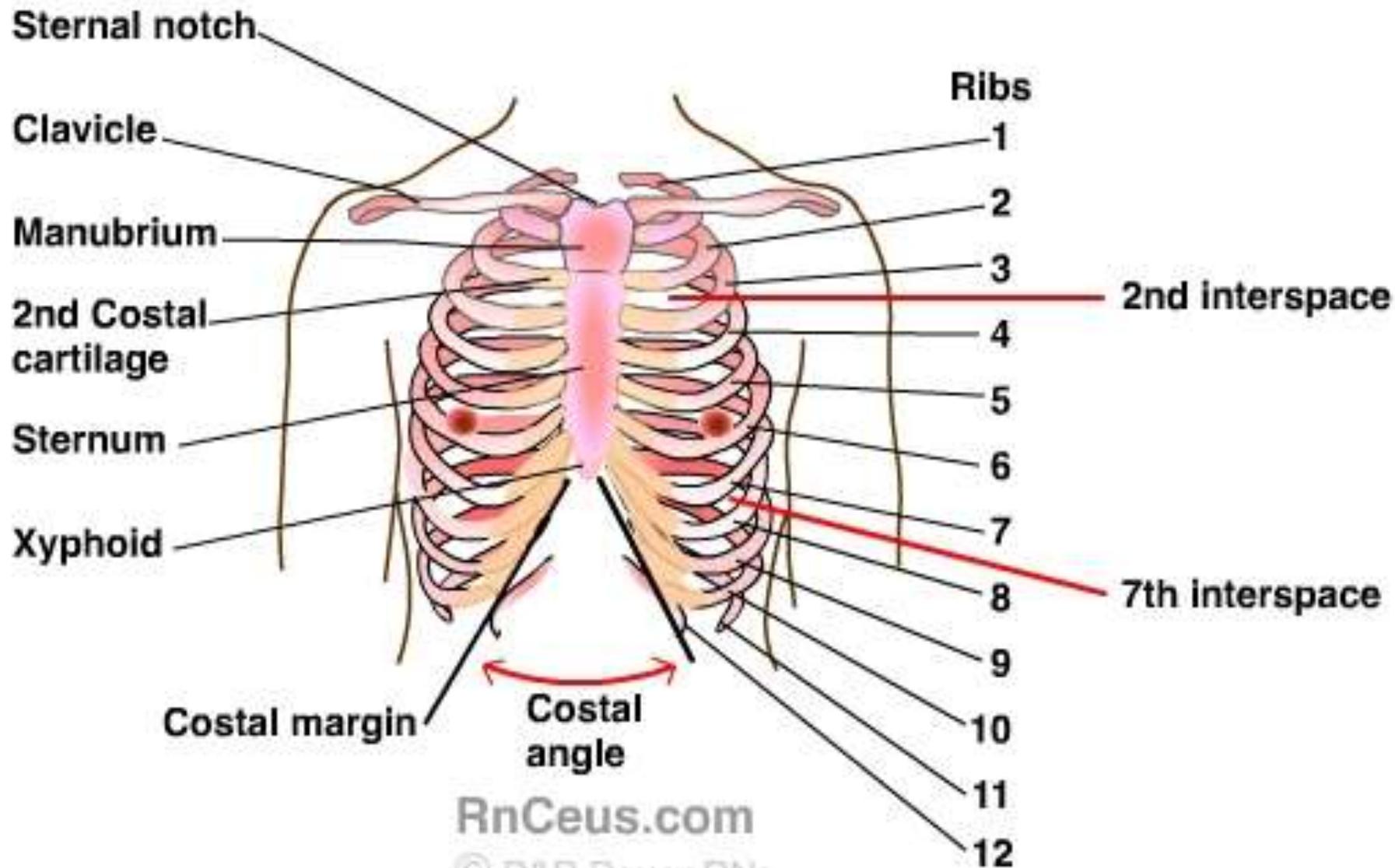


THORACIC TRAUMA



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Trachea "Windpipe" that provides a pathway for air to enter the lungs.

Lymph nodes "Filters" that help prevent illness and infection. They are part of the lymph system.

Pleural space Space between the lungs and chest wall. This space is lined on both sides by tissue called pleura.

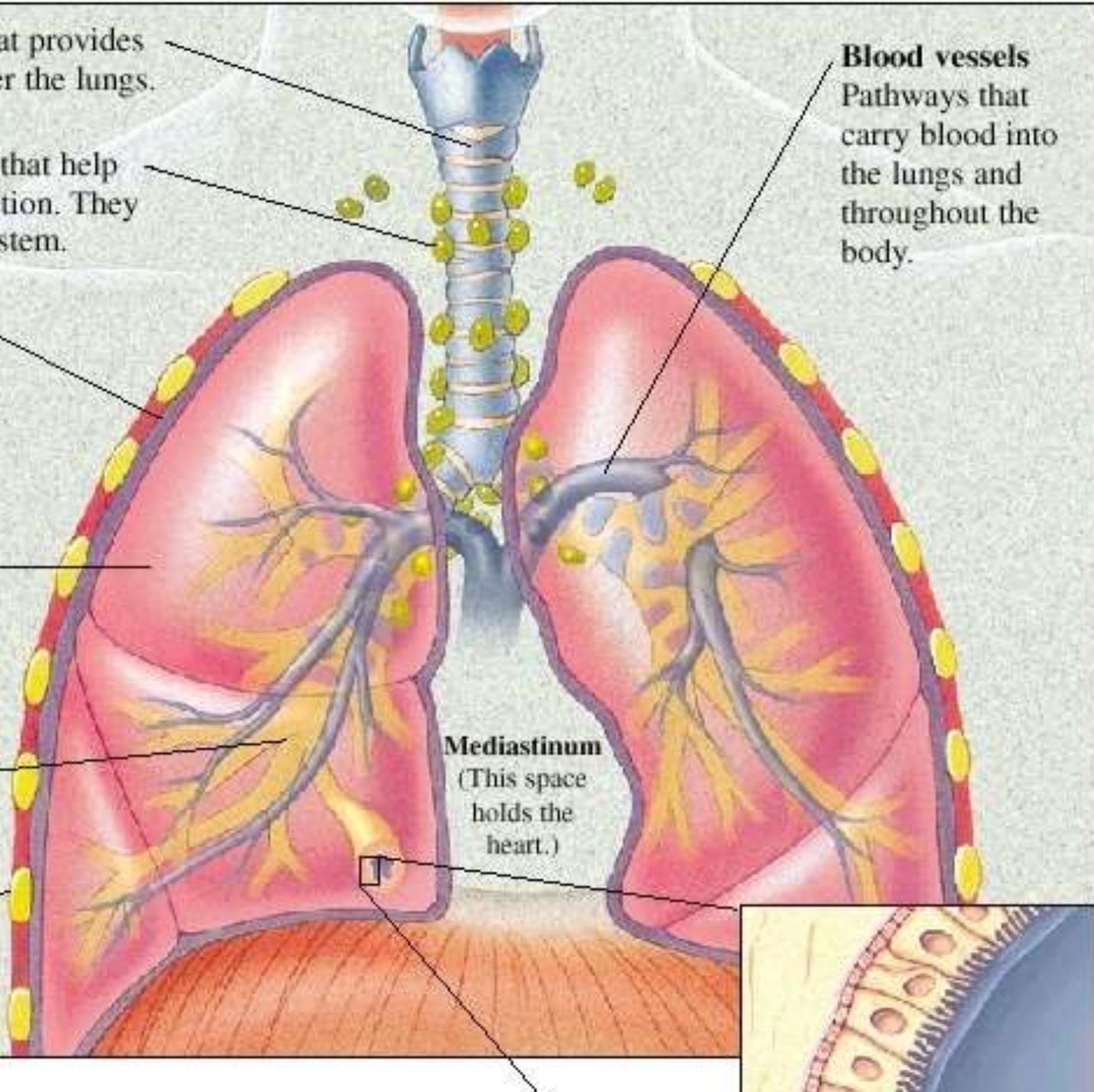
Lobes Sections of each lung. A normal pair of lungs has five lobes.

Bronchial tubes Airway tubes from the trachea to the lungs.

Chest wall Ribs and muscles.

Blood vessels Pathways that carry blood into the lungs and throughout the body.

Mediastinum
(This space holds the heart.)



BLUNT TRAUMA

PENETRATING INJURY

Epidemiology

- 1/3 of patients hospitalized following automobile accidents have evidence of chest trauma.
- 20-25% of trauma death are due the thoracic injuries.
- Blunt trauma from motor vehicle accidents has accounted for 70-80% of thoracic injuries.
- More than 75% of patients hospitalized with thoracic trauma had other associated injuries.

Evaluation and Management

A B C

Rib Fractures

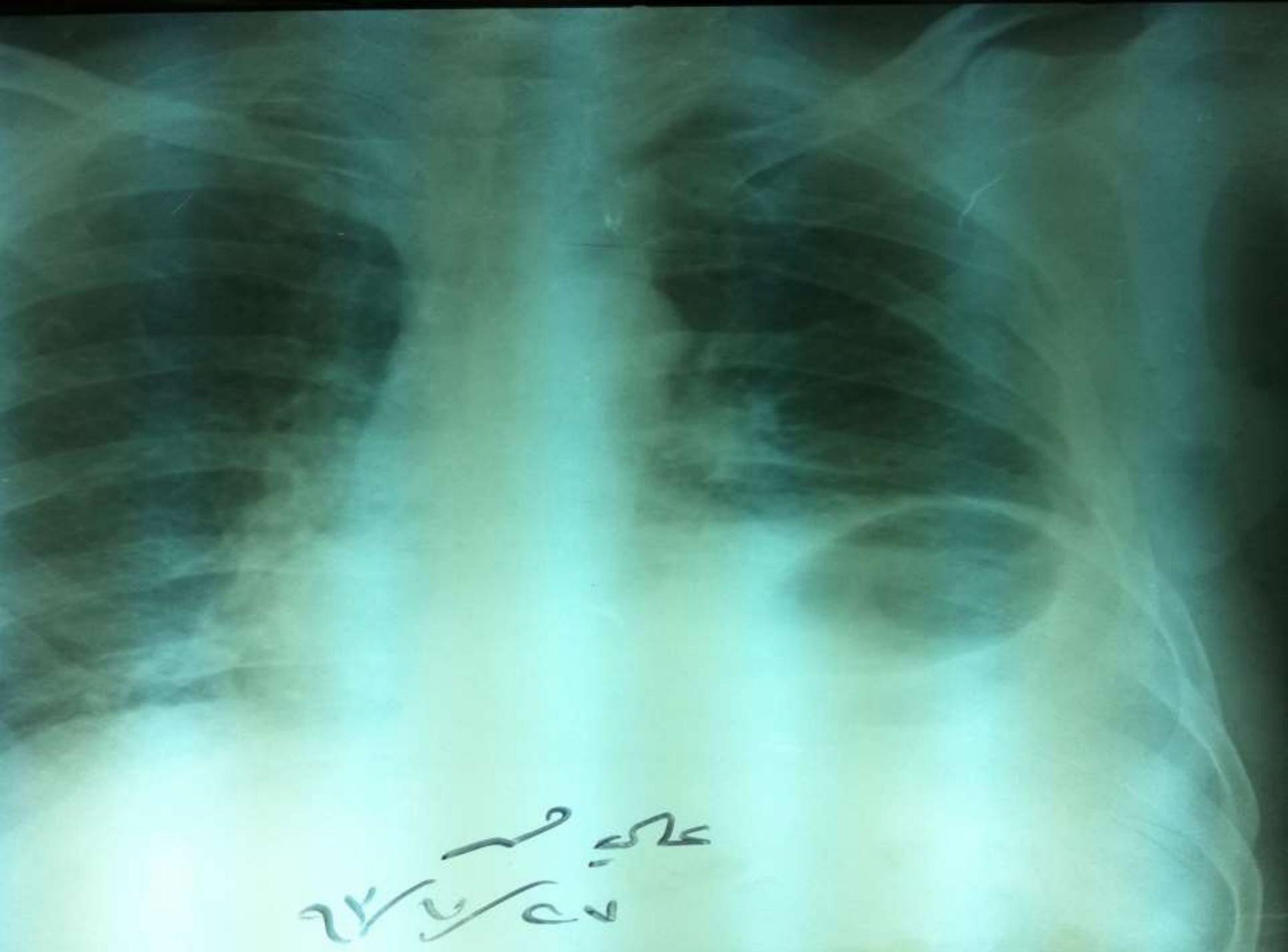
- Most common 35-40%.

Diagnosis

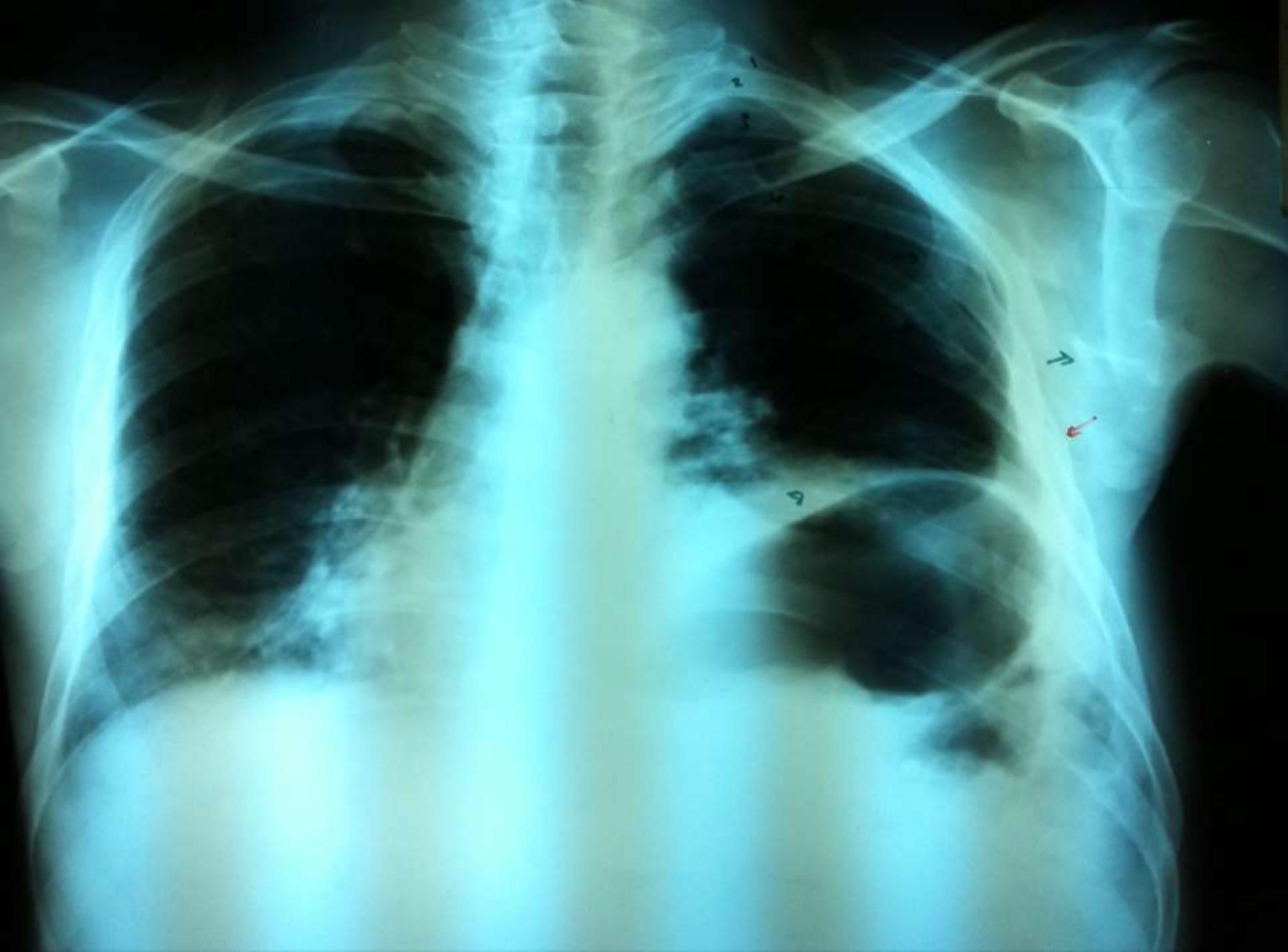
Treatment

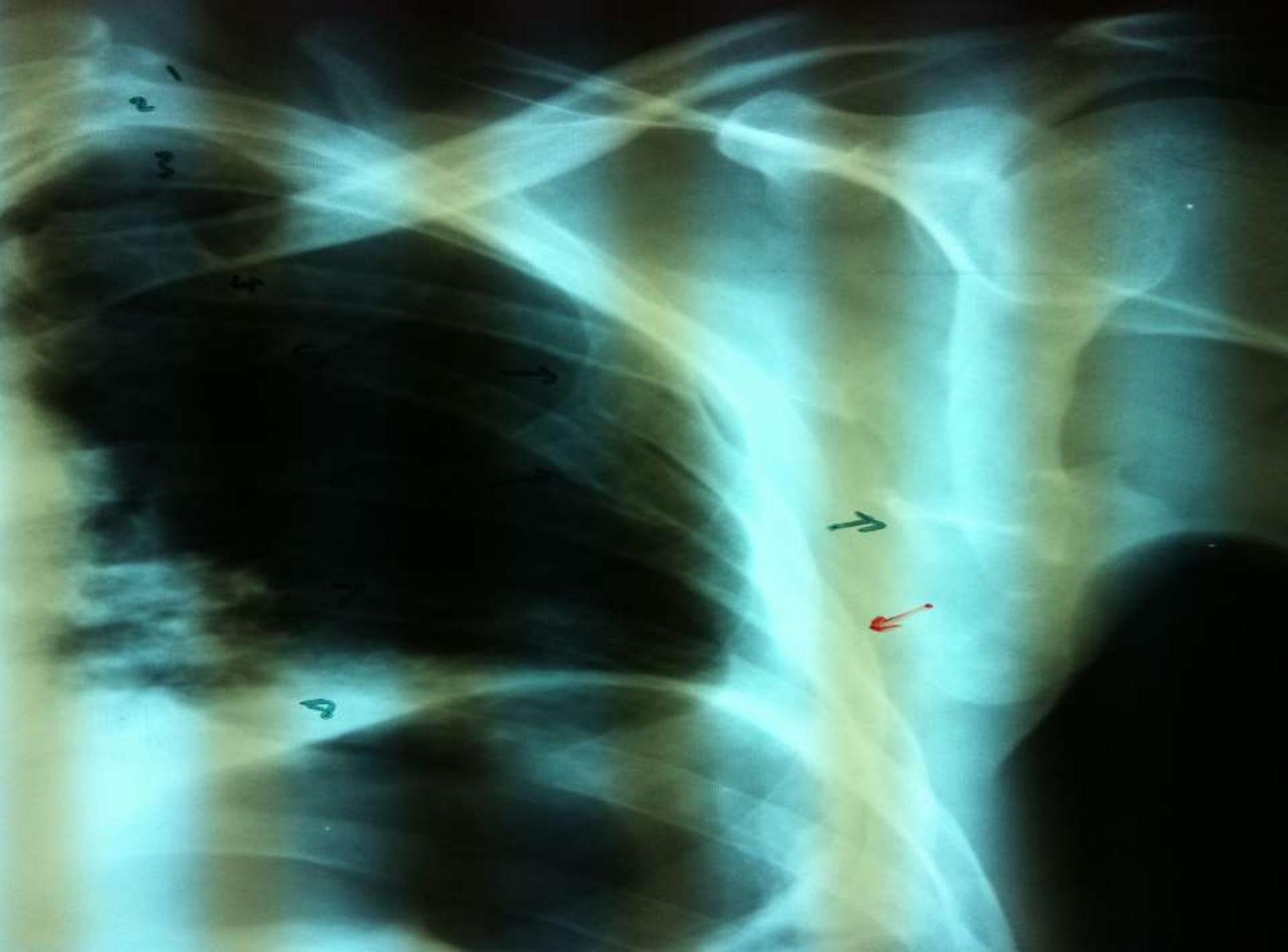
Prognosis

- 1) Number of ribs injured .
- 2) Age.
- 3) Underlying pulmonary status.



علاجی حکم
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Chest Wall Fractures

- Rib fractures: **35-40%**
 - The most common blunt thoracic injuries
 - Ribs 4-10 are most frequently involved.
 - # of ribs 8-12 should raise the suspicion of associated abdominal (splenic, hepatic) injuries

Diagnosis

- **Clinical:**

1-Symptoms : inspiratory chest **pain** and discomfort over the fractured rib or ribs.

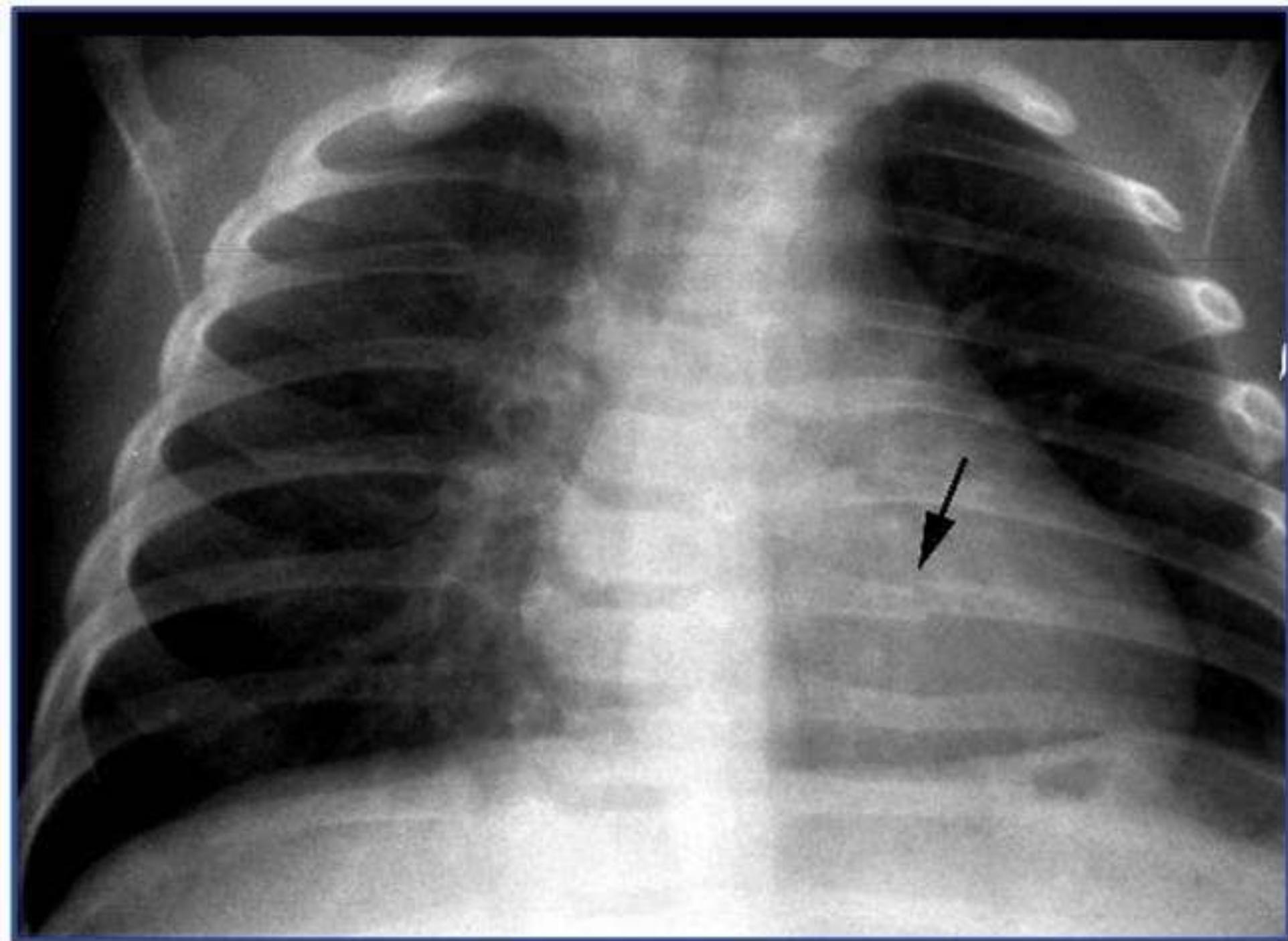
2-P/E : **local tenderness, crepitus** over site of the fracture and **bruises**

- **X-ray:**

1-confirm the diagnosis

2-detects associated conditions :
pneumothorax , hemothorax





- Diagnosis
 - Treatment
 - Prognosis
- 1) Number of ribs injured .
 - 2) Age: Elderly with 3 or more rib # to have a 5-fold increased mortality rate and a 4-fold increased incidence of pneumonia.
 - 3) Underlying pulmonary status.

- Indications for admission:

- Unable to cough and clear secretions adequately.
- Underlying **pulmonary disease (COPD)** .
- Age ≥ 65 years (high incidence of hypoventilation, hypercapnia, atelectasis, and pneumonia)

- **Associations :**

hemothorax, pneumothorax, 3 or more unilateral rib fractures, or pulmonary contusion.

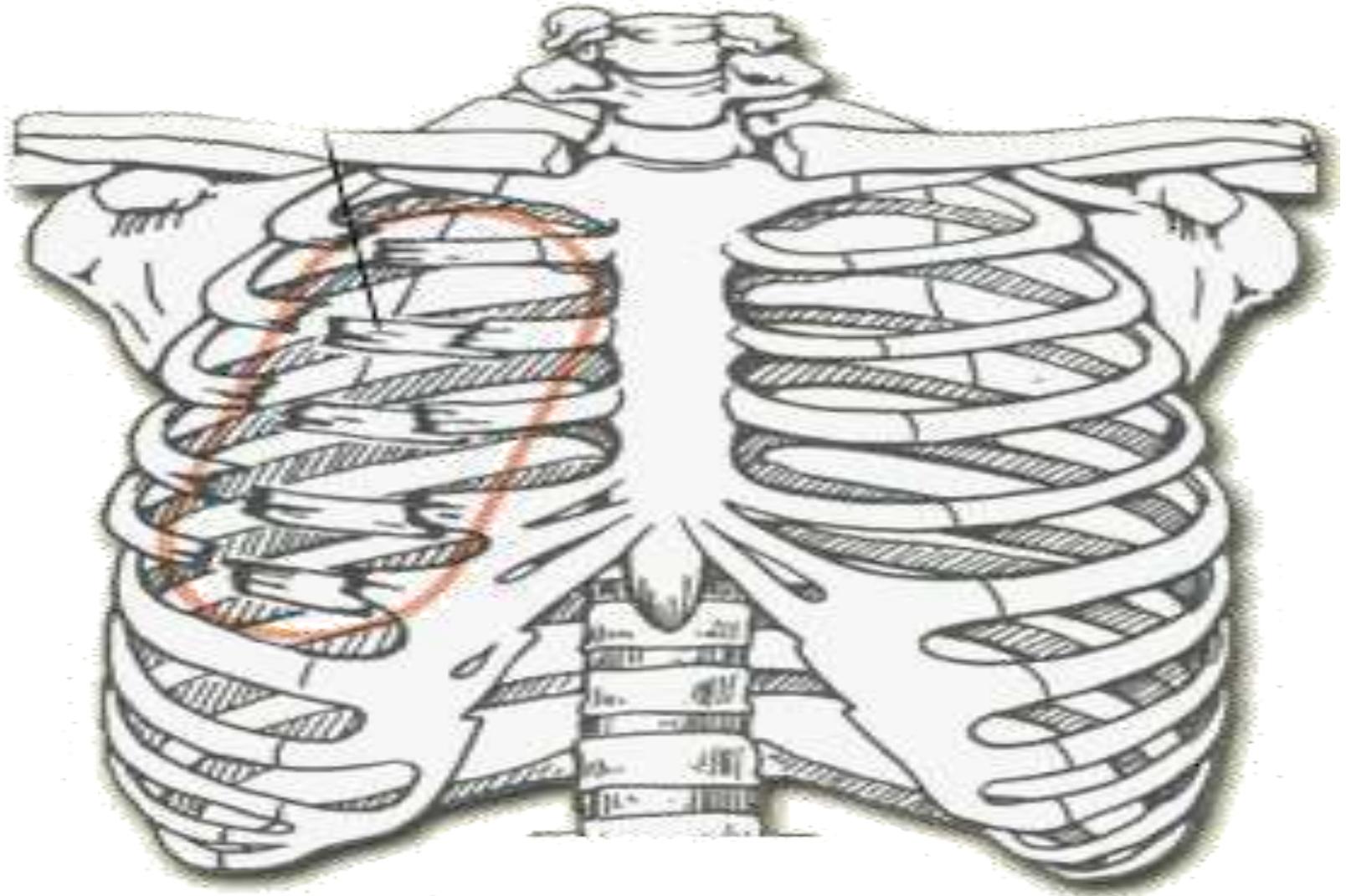
- First and second rib fracture

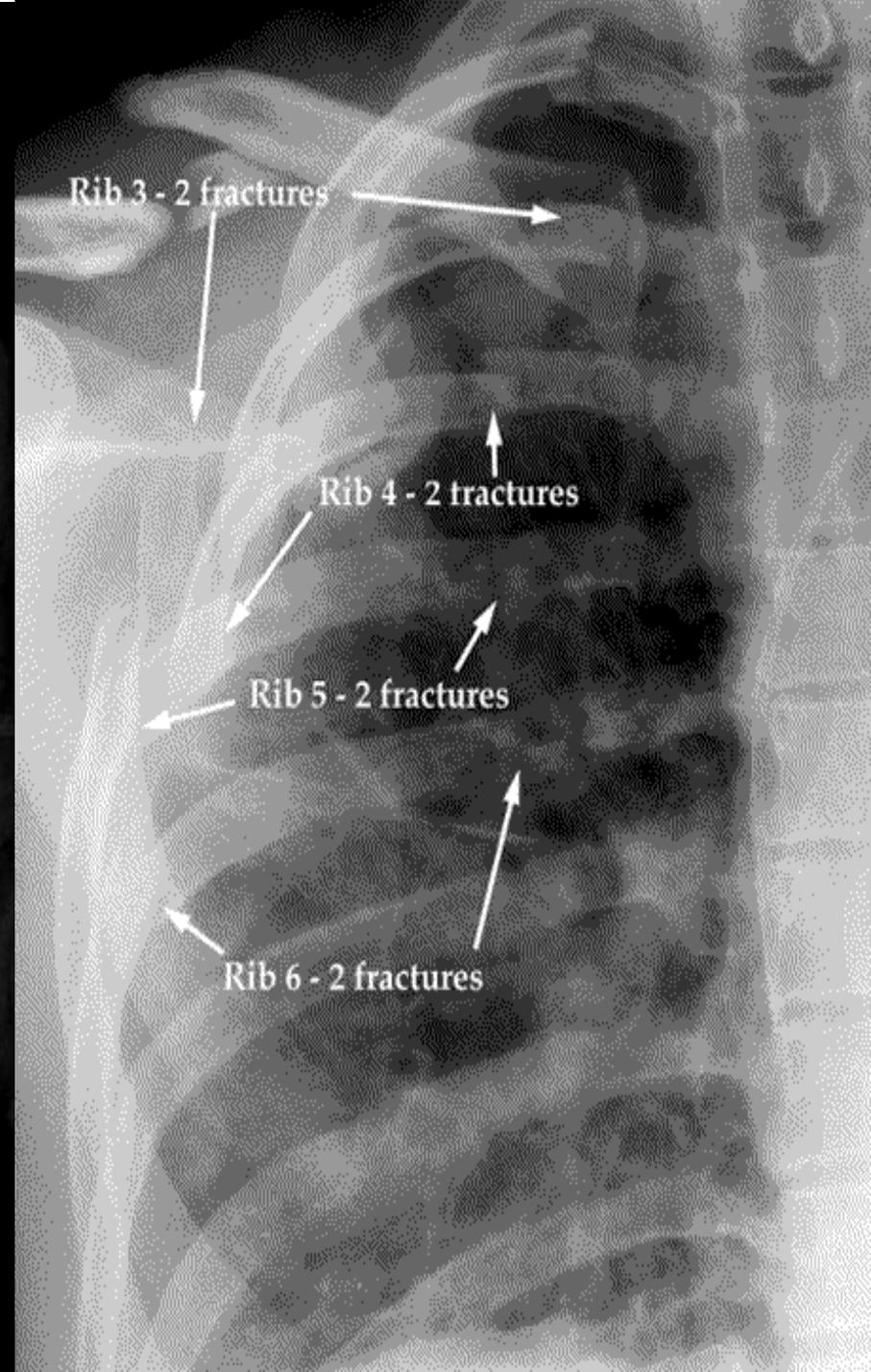
Treatment of rib

- therapeutic goals : Pain relief and the establishment of adequate ventilation.
- **Pain killer** (oral or parenteral):cornerstone of medical therapy for patients with rib fractures.
- **Intercostal nerve blocks** (for those with severe pain who do not have numerous rib fractures)
- **Epidural analgesia** (Patients with multiple rib fractures whose pain is difficult to control)
- **Early mobilization, pulmonary toilet**

Flail Chest

- Instability of the chest wall from unilateral or bilateral multiple rib fractures or from disruptions of the costochondral junctions.
- Paradoxical chest wall motion → reduction in vital capacity → ineffective ventilation + associated pulmonary contusion → ARDS





TREATMENT

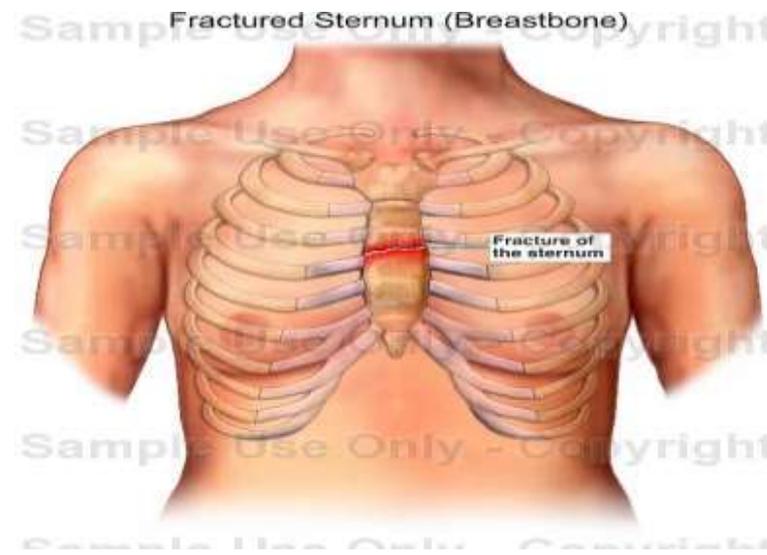
- 1) Aggressive pulmonary physiotherapy .
- 2) Incentive spirometry .
- 3) Deep coughing.
- 4) Bronchoscopy.

Indications for endotracheal intubation

- 1) Respiratory rate $> 30/\text{min}$.
- 2) $\text{PaO}_2 < 60$.
- 3) $\text{PaCO}_2 > 45$.

Sternal Fractures

- 4% of motor vehicle accidents.
- Typically the fracture is transverse and located in the upper and middle portions of the body of the sternum.



- *Sternal fractures*

4% of motor vehicle accidents.

Typically the fracture is **transverse** and located in the upper and middle portions of the body of the sternum.

- The **upper and middle thirds** are most commonly affected.
- Associated injuries occur in 55-70%
- The most common associated injuries are rib fractures, long bone fractures, and closed head injuries.
- Blunt cardiac injuries are diagnosed in fewer than 20%

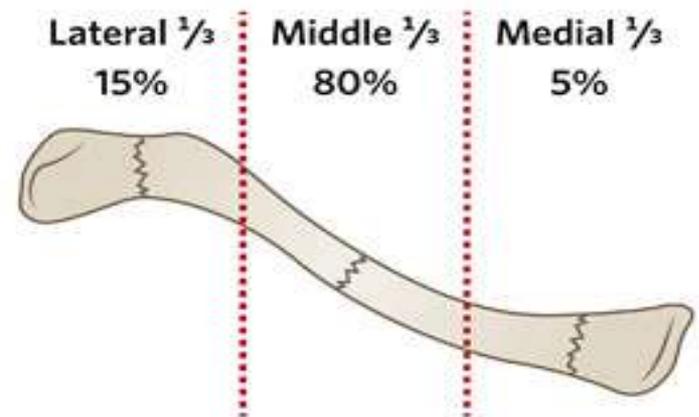
Fracture Scapula

- 80-90% incidence of associated injuries due to significant force of impact.

Fracture Clavicle

- *Clavicular fractures*

- Approximately 75-80% of occur in the **middle third**.
- Nearly all clavicular fractures can be managed **without surgery**.
- Primary treatment consists of immobilization with a figure-of-eight dressing, clavicle





Fractured Side



ADCC RM 10/11
Ex: 3150258
Clavicle AP
Se: 2/2
Im: 1/1

CLAVICLE

AAA

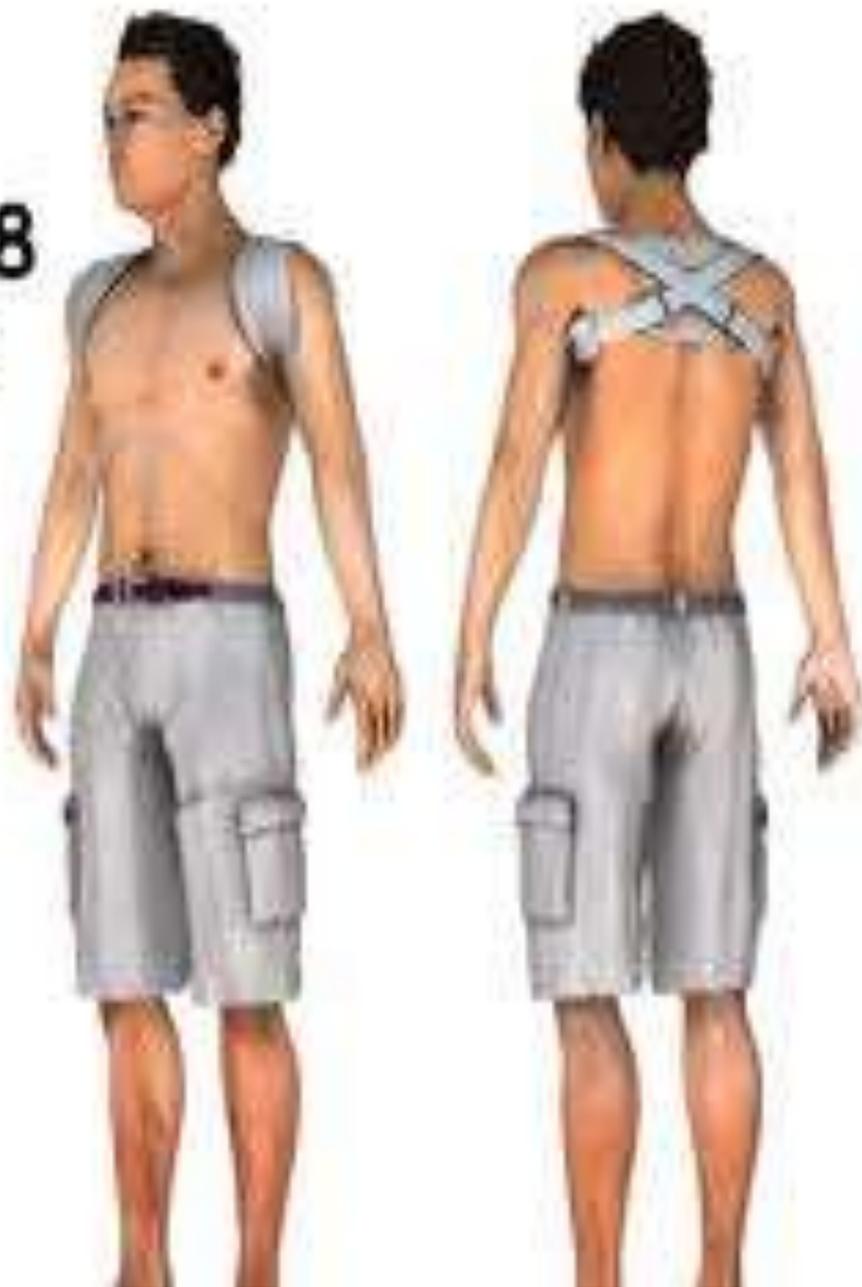
W:2040 L:3075

SWCHSC SB
MAJCHER^THOMAS^K^M
M 2171449
Acc: 3150258
2003 Aug 08
Acq Tm: 20:05:24





**Figure 8
brace**



- **Diaphragmatic injury**

- The left hemidiaphragm is involved in 65% to 80% of cases.
- Blunt > Penetrating

- These injuries do not heal spontaneously and can produce herniation ,so need operative repair when diagnosed because they

- Diagnosis can be difficult; therefore, have a high index of suspicion based on mechanism.
 - Rapid deceleration or direct crush to the upper abdomen
 - Severe chest trauma, lower rib fractures
 - Penetrating injuries to the chest and upper abdomen

- CXR is diagnostic in only 25% to 50% of cases of blunt trauma.
- Possible findings include:
 - Hemidiaphragmatic elevation.
 - Stomach, colon, or small bowel in chest.
- CT scan may miss diaphragmatic injury in the absence of gross hollow visceral herniation.
- **Direct visualization** of the injury by laparotomy, laparoscopy, or thoracoscopy remains the **gold standard for diagnosis**.

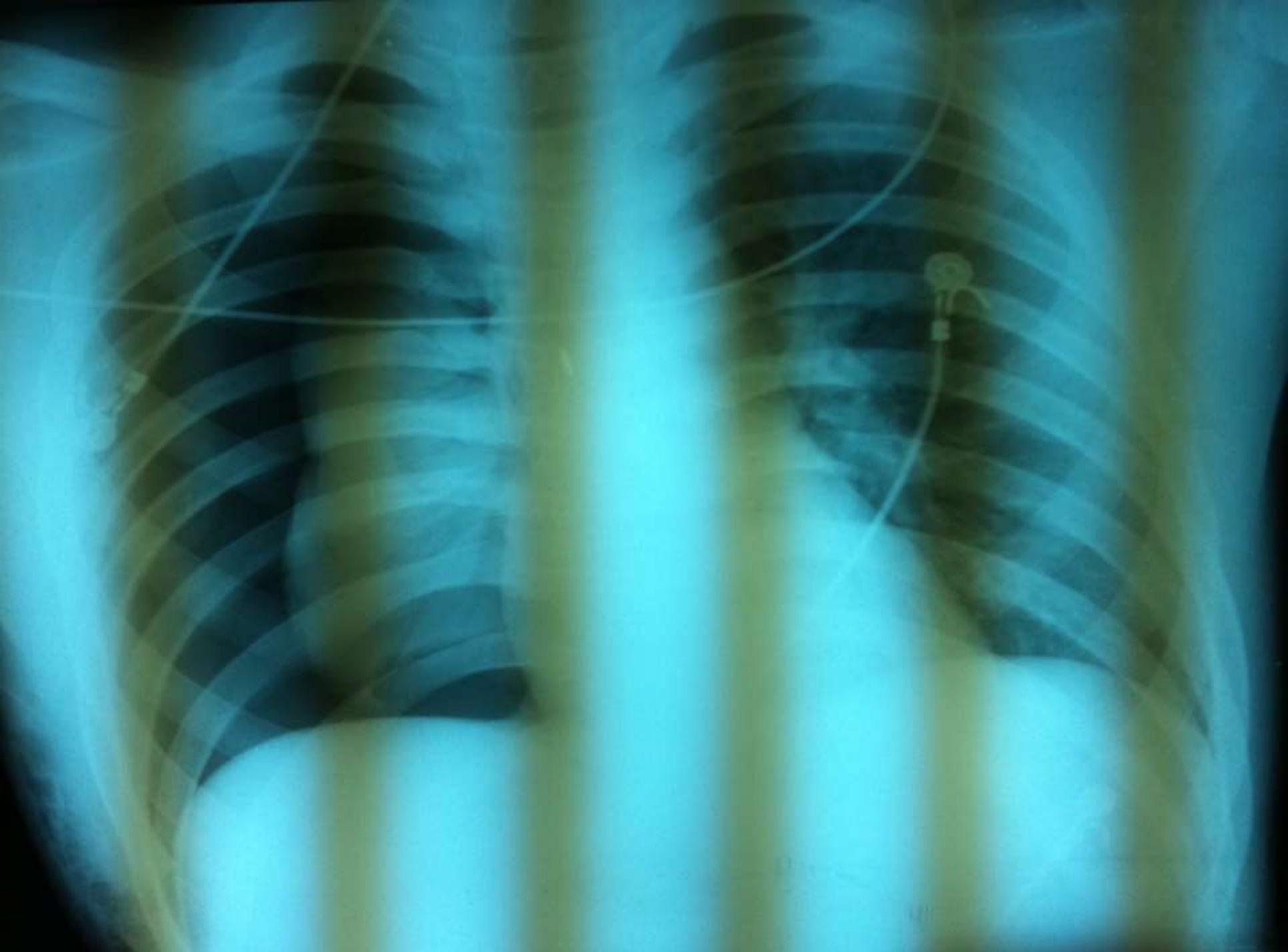


Penetrating Chest wall wounds

- Stab wounds.
- Low velocity gunshot.
- High velocity gunshot or shotgun wounds.

Pneumothorax

- Simple pneumothorax.
- Tension Pneumothorax.
 - 1) Severe respiratory distress.
 - 2) Distended neck veins.
 - 3) Absent breathing sounds.
 - 4) Deviated trachea.
 - 5) Deviated apex pulse.

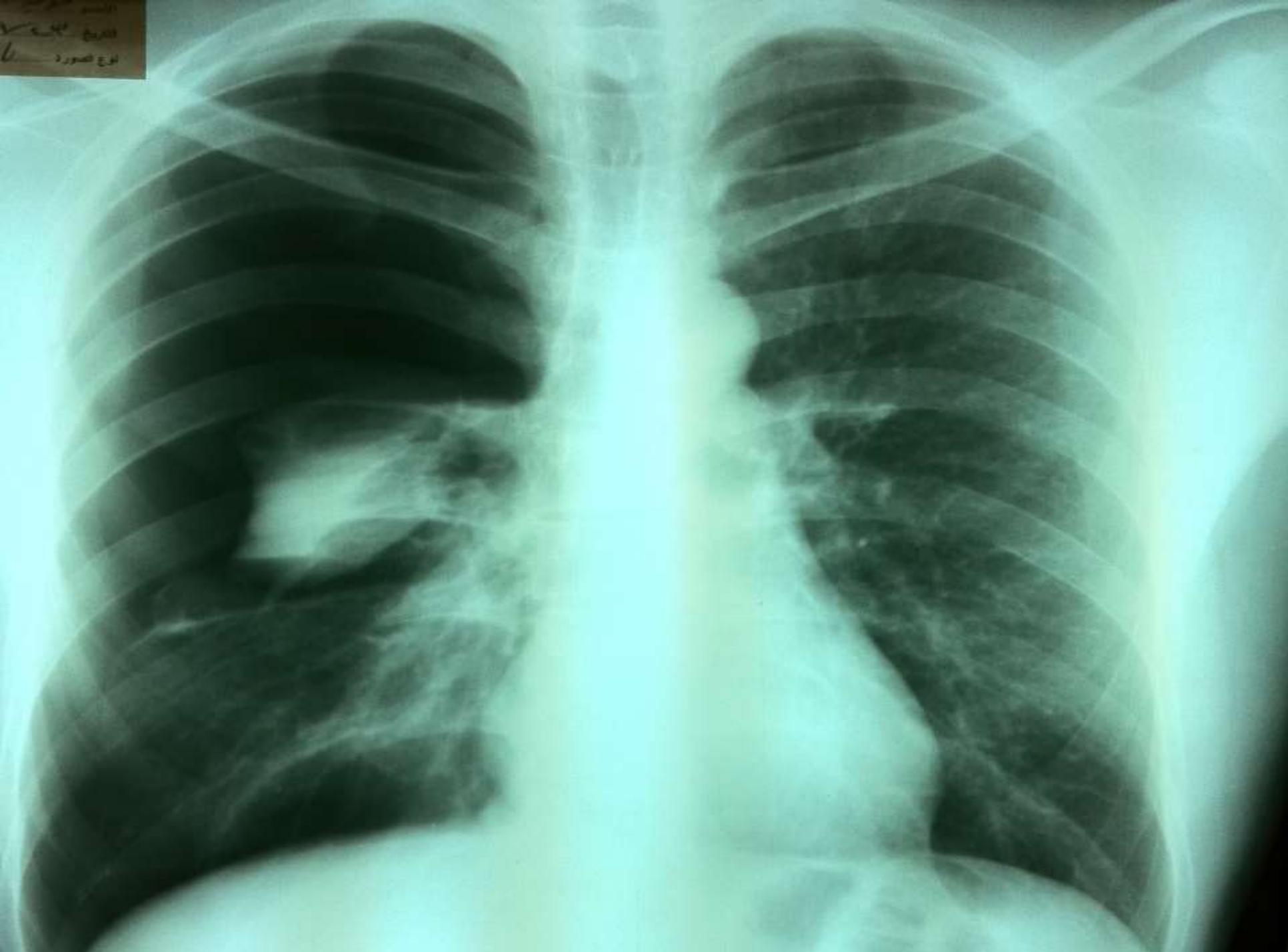


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Dr. A. M. M.



تاریخ: ۱۳۹۷/۰۵/۰۵
نوع تصویر: سینه

HEAMOTHORAX

- Sources of bleeding :
 - 1) Intercostal vessels.
 - 2) Internal mammary artery .
 - 3) Pulmonary paranchymal injuries.
 - 4) Major pulmonary vessels.
 - 5) Injury to the heart or great vessels.

Indications of Thoracotomy

- 1) Initial chest tube output > 1500 cc.
- 2) Hourly output > 200 cc/hour for 2-4 hours.
- 3) Progressive opacification of CXR.

Pulmonary contusion

- Haemorrhage into the alveolar and interstitial spaces.

Pulmonary Haematoma

Pulmonary Lacerations

Treacheobronchial Trauma

- **Mechanisms :**

- 1) Linear rupture of the membranous portion of trachea.
- 2) Disruption of trachea at point of fixation.

Carina and cricoid – shearing forces and rapid deceleration.

- 3) Laceration or transection of trachea near the carina.

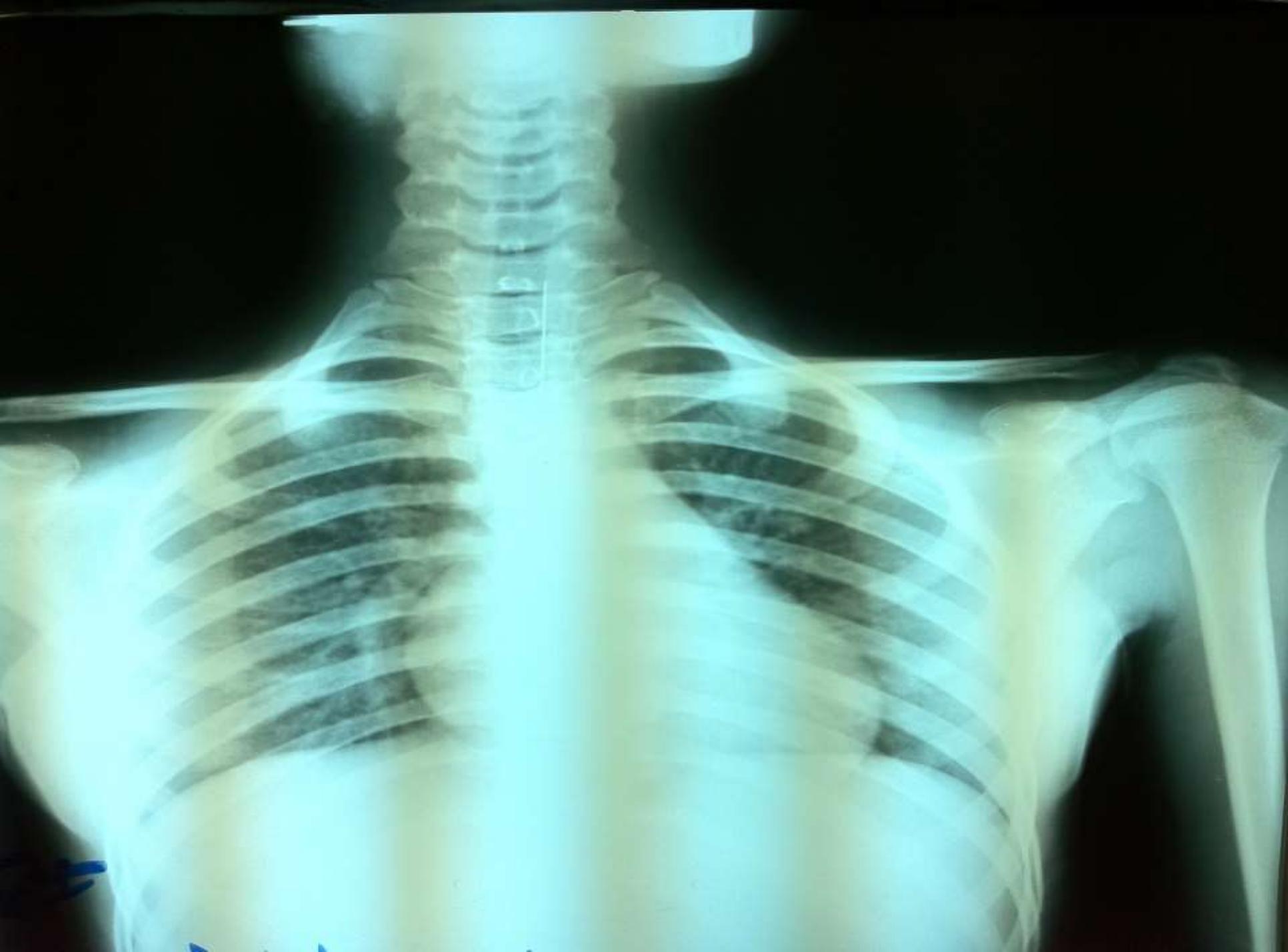
- **Diagnosis:**

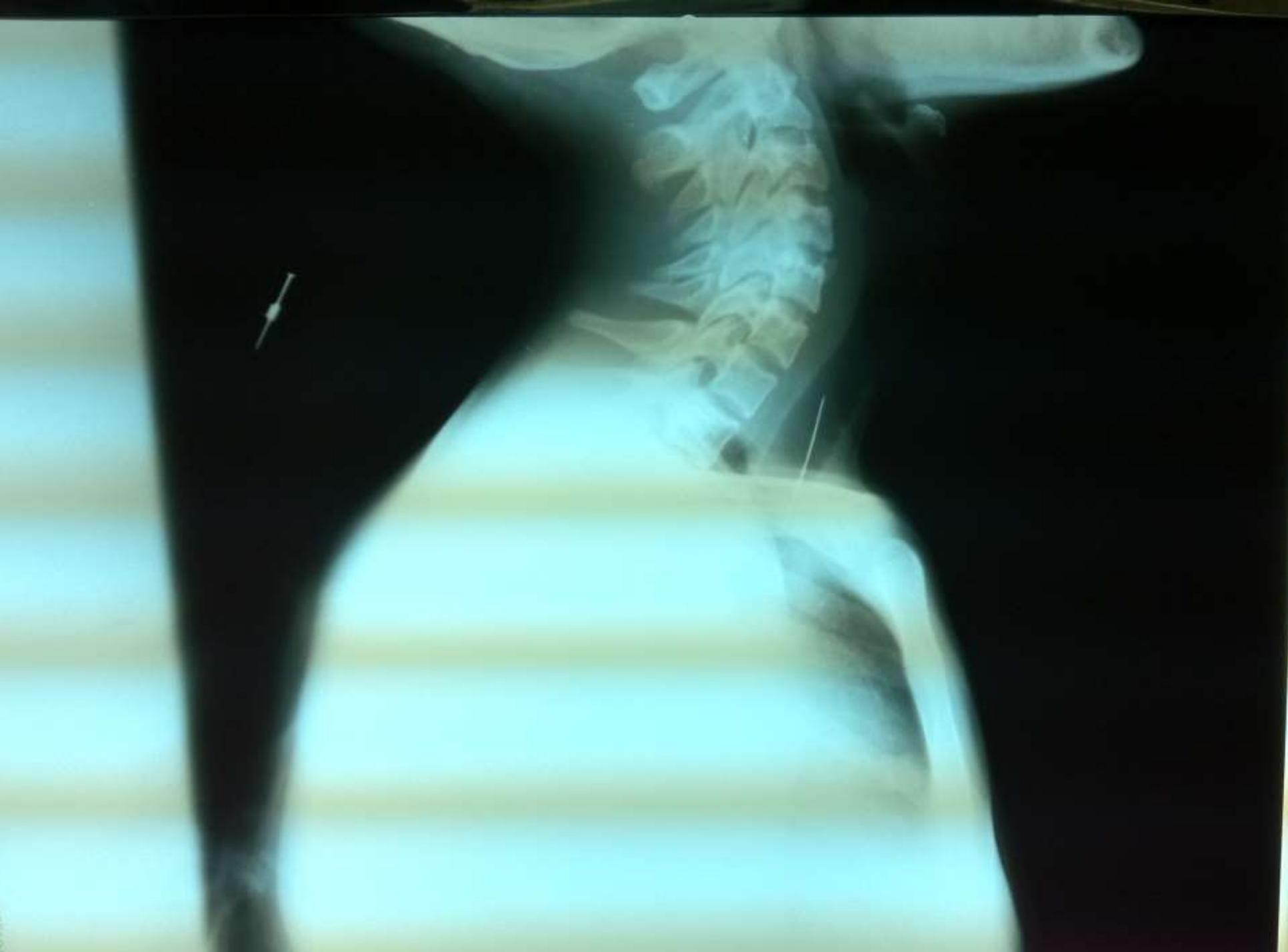
- Subcutaneous emphysema.
- Dyspne.
- Dysphonia.
- Haemoptysis.
- CXR – Fallen Lung Sign.

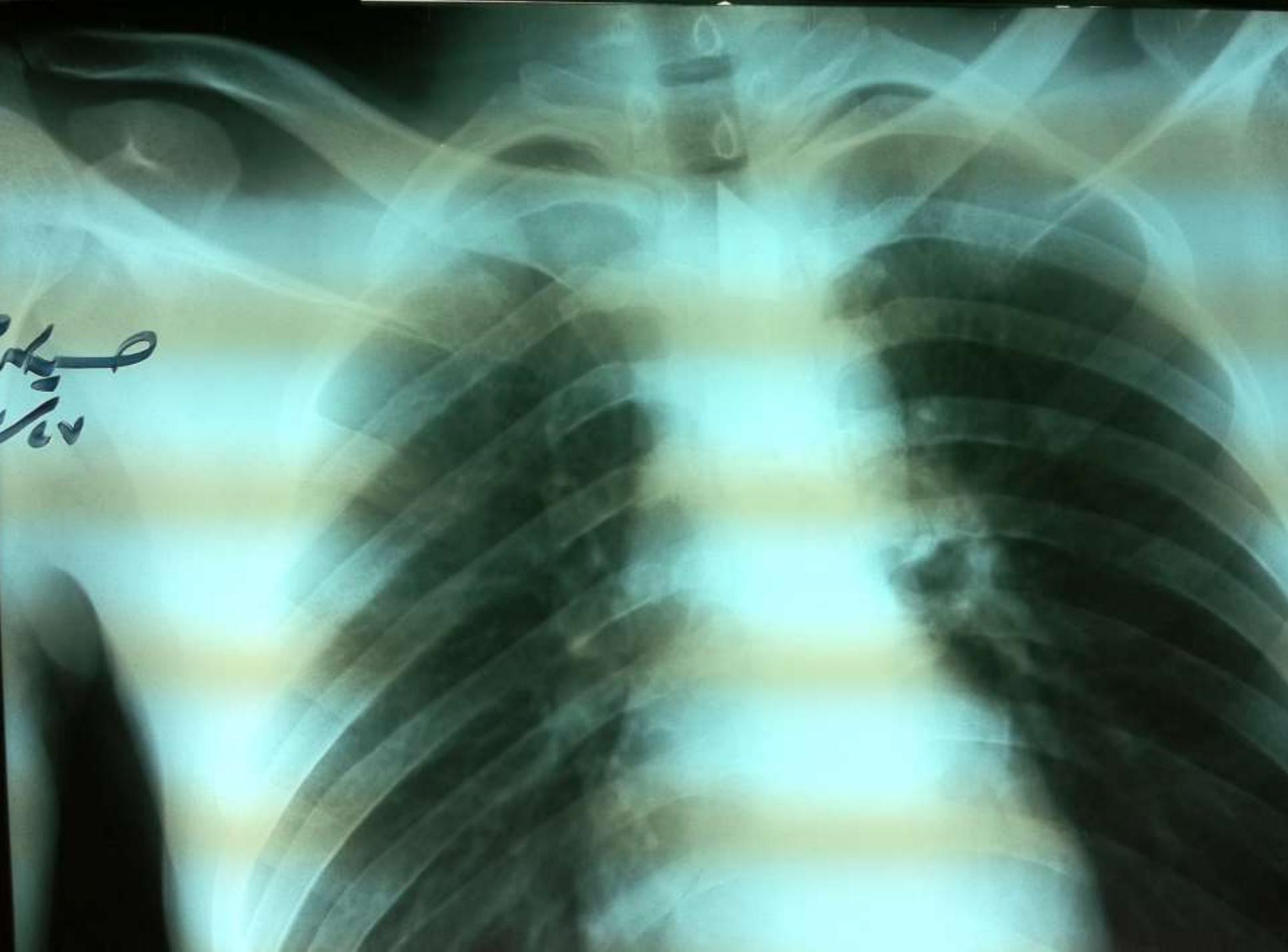
Complications

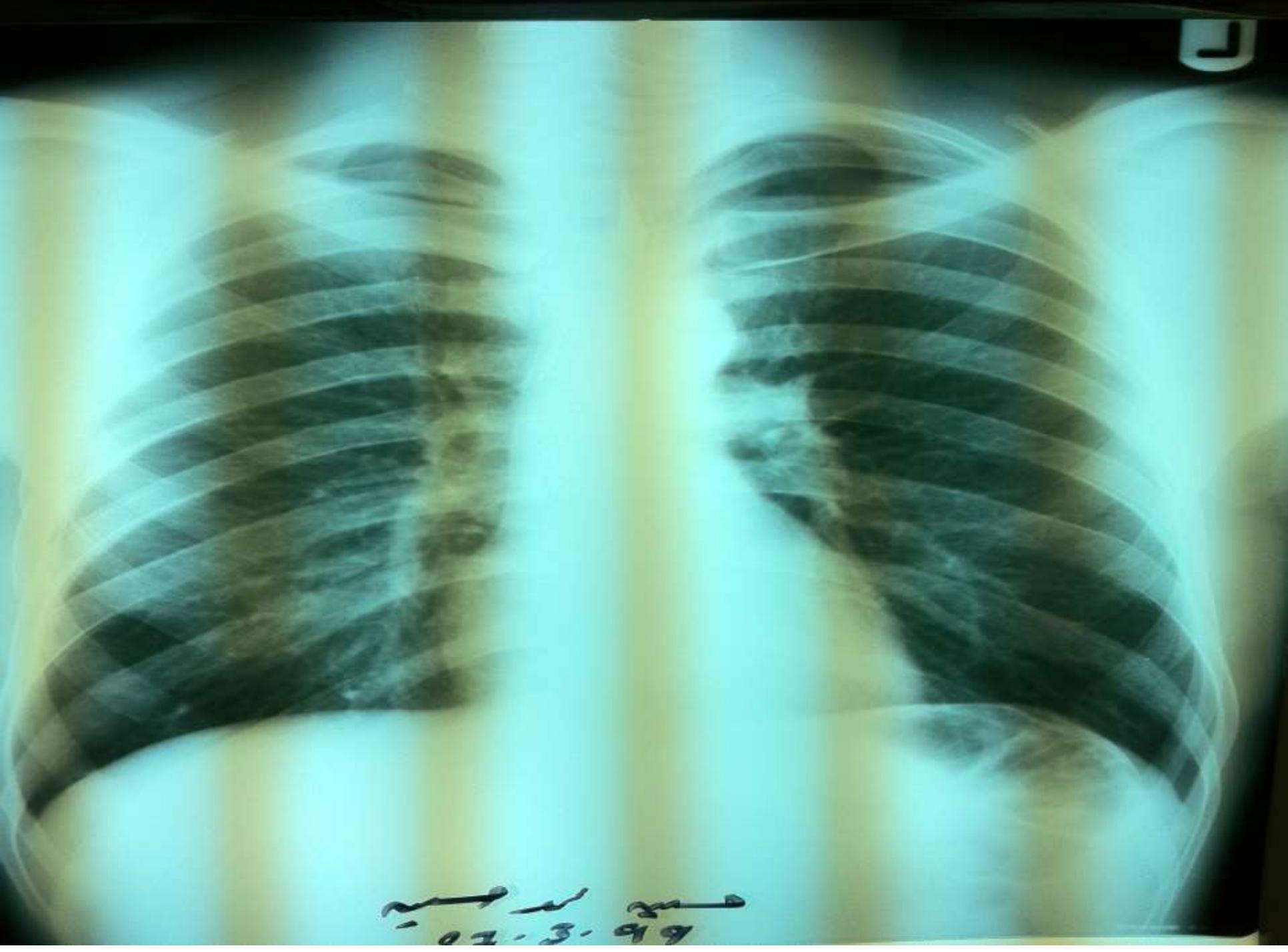
- Empyema.
- Clotted Haemothorax.
- Bronchopleural fistula.
- Bronchial stenosis.
- Chylothorax.



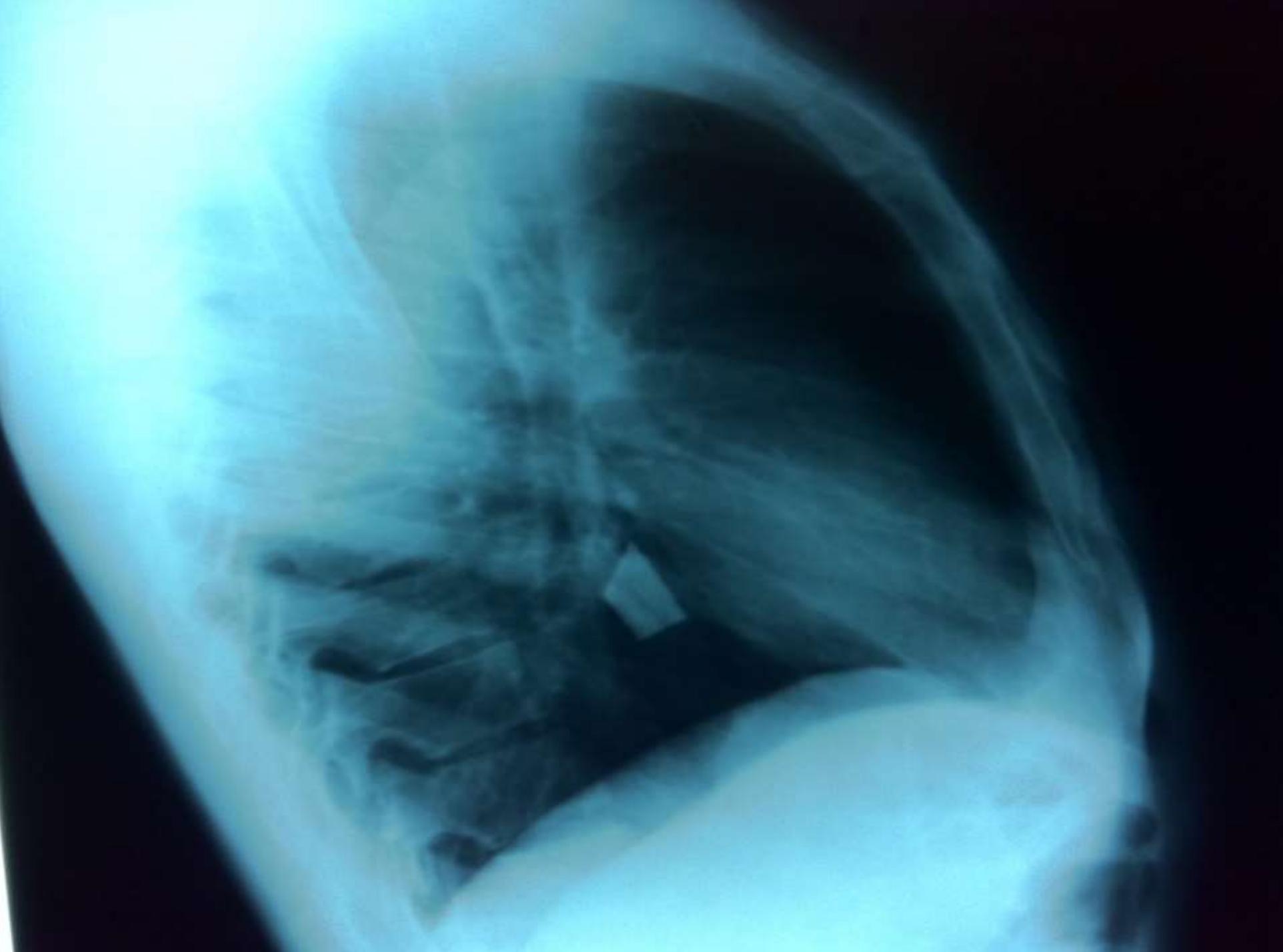


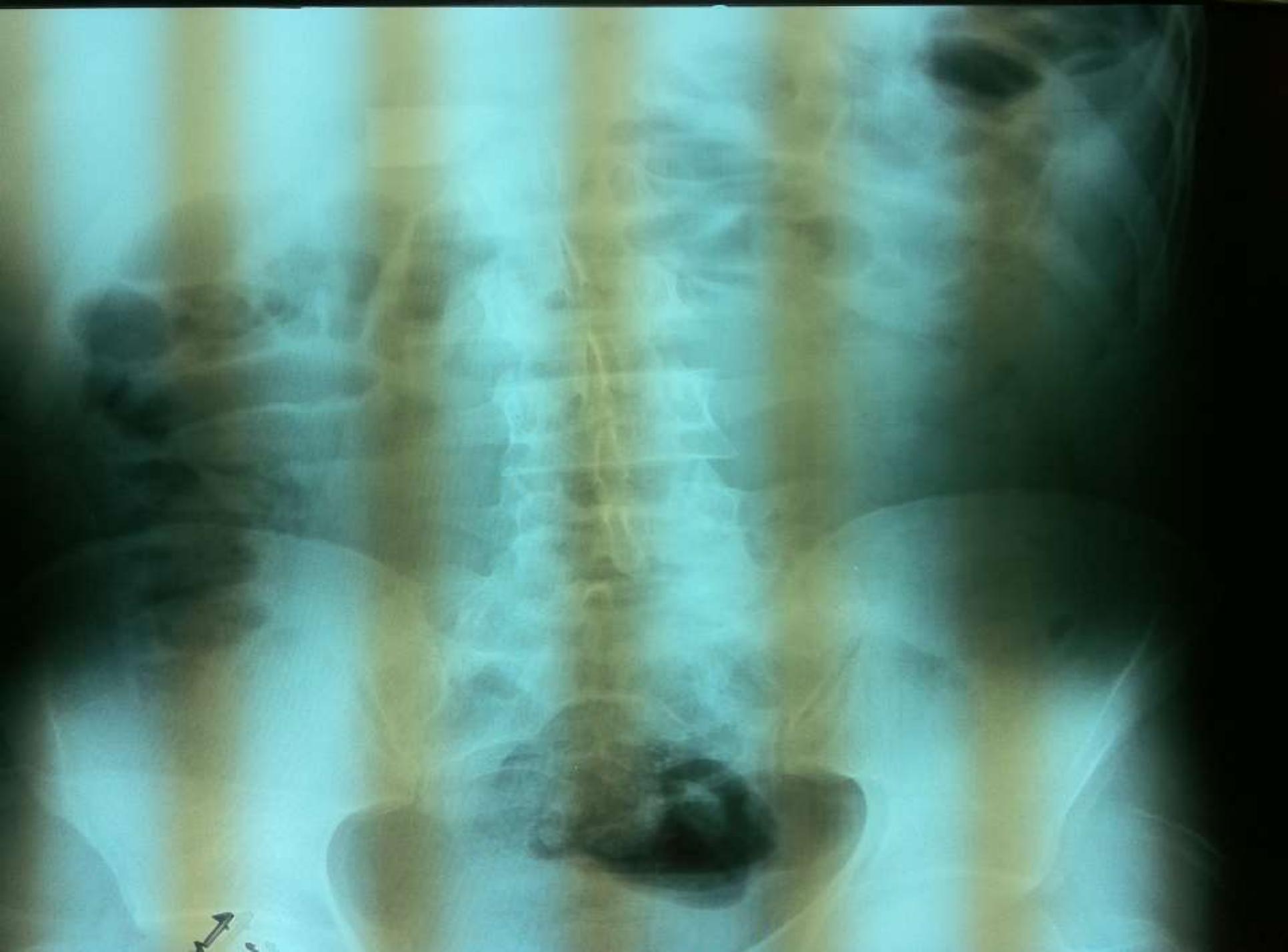


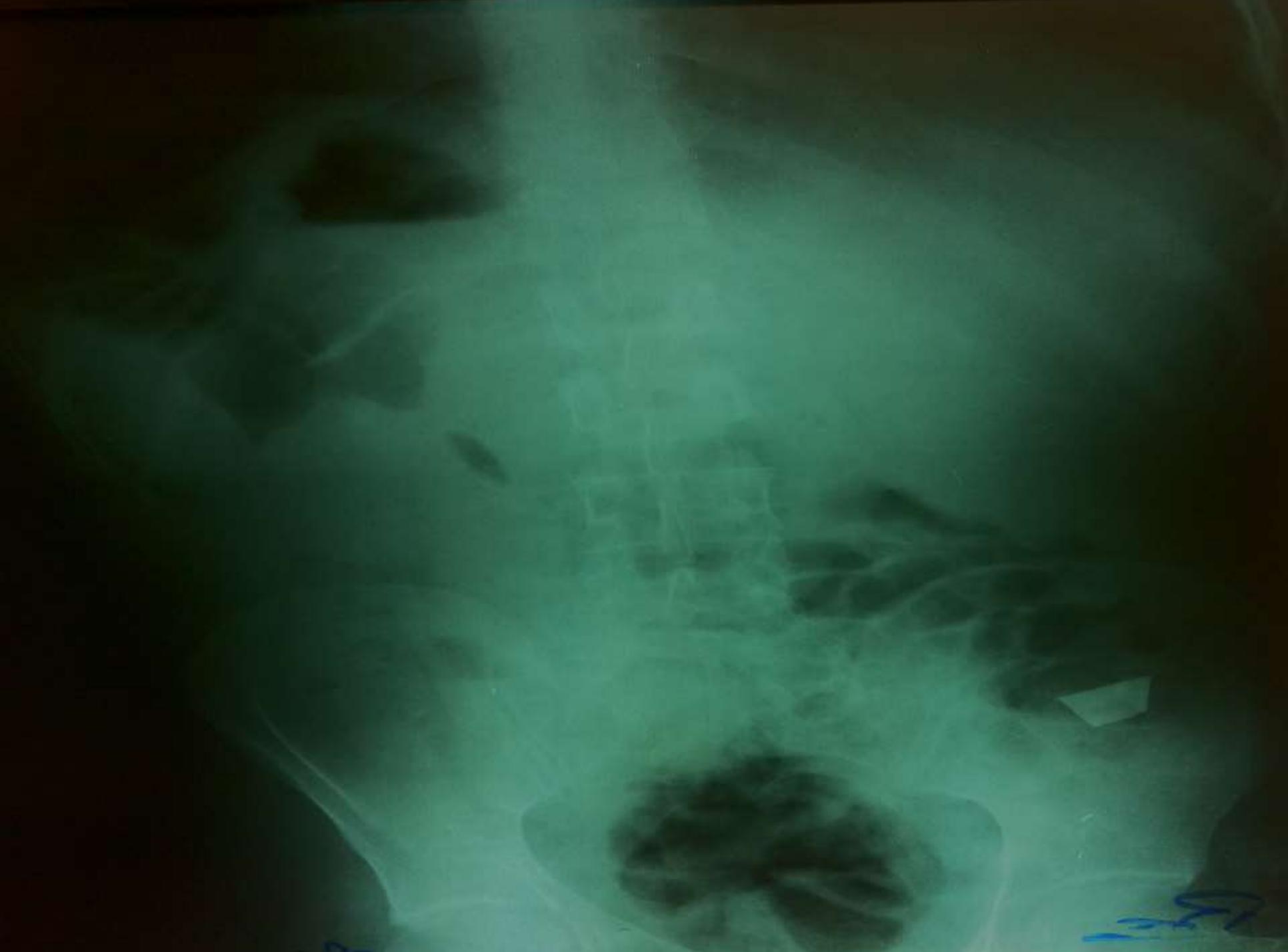




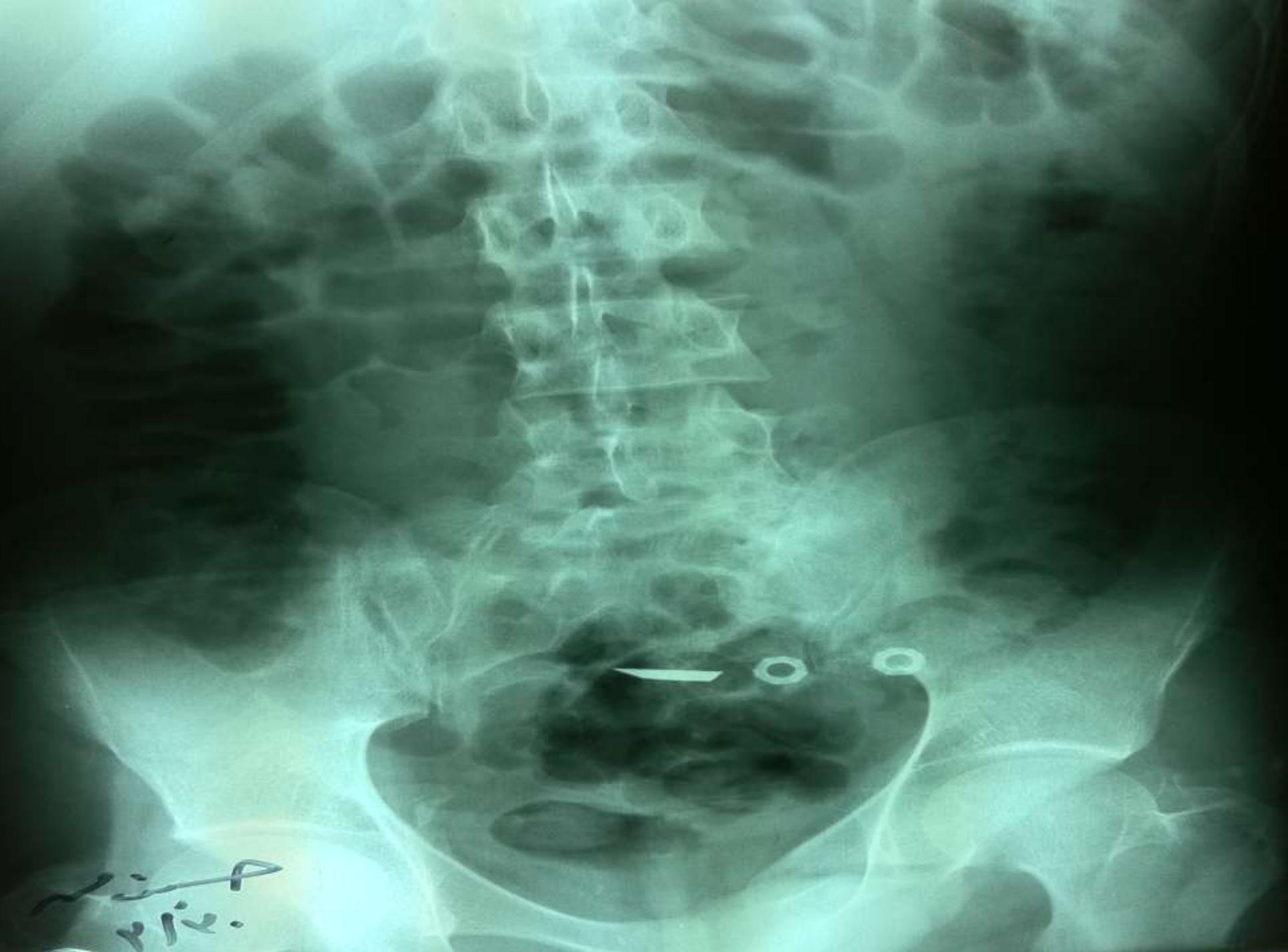
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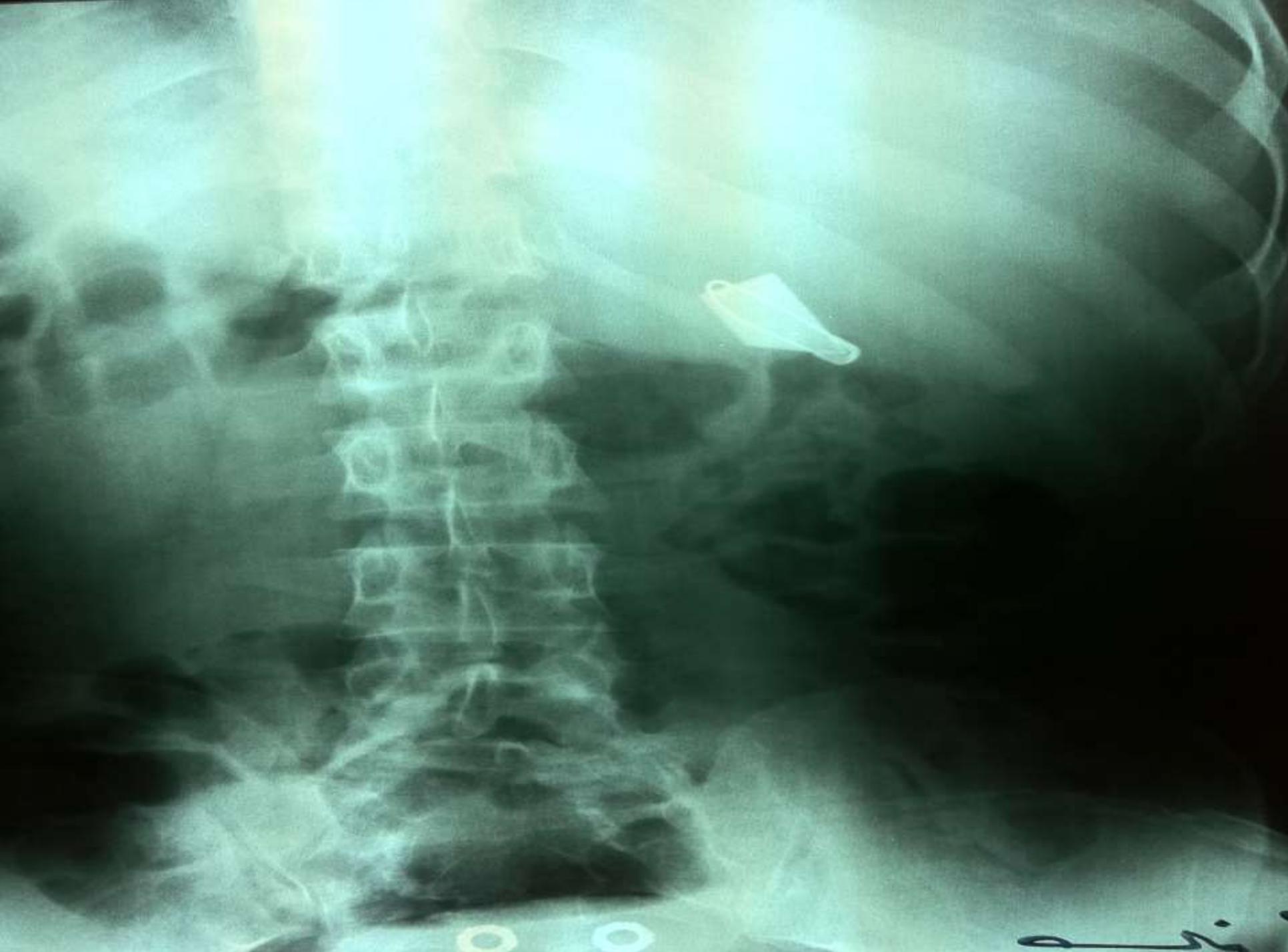


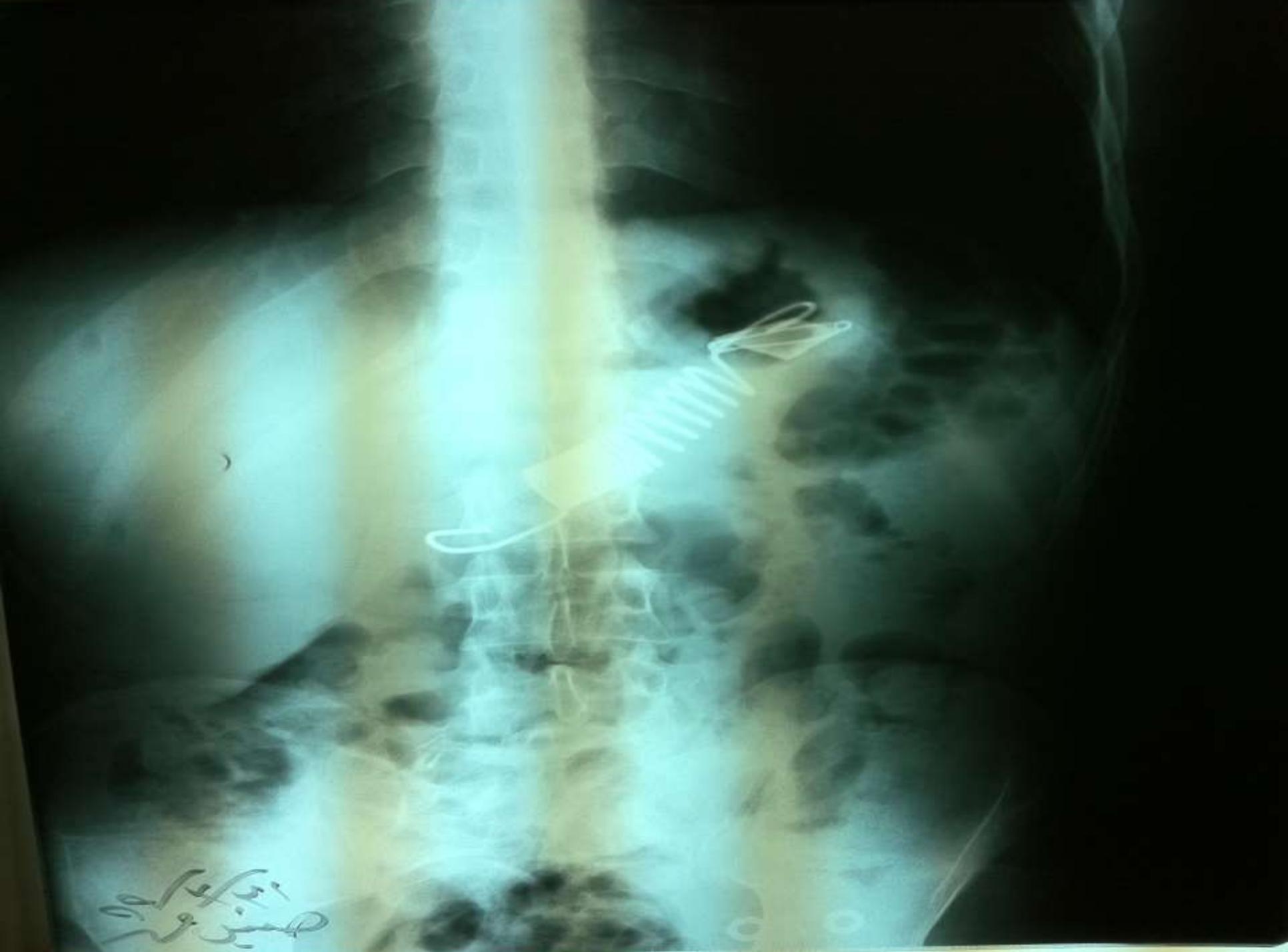




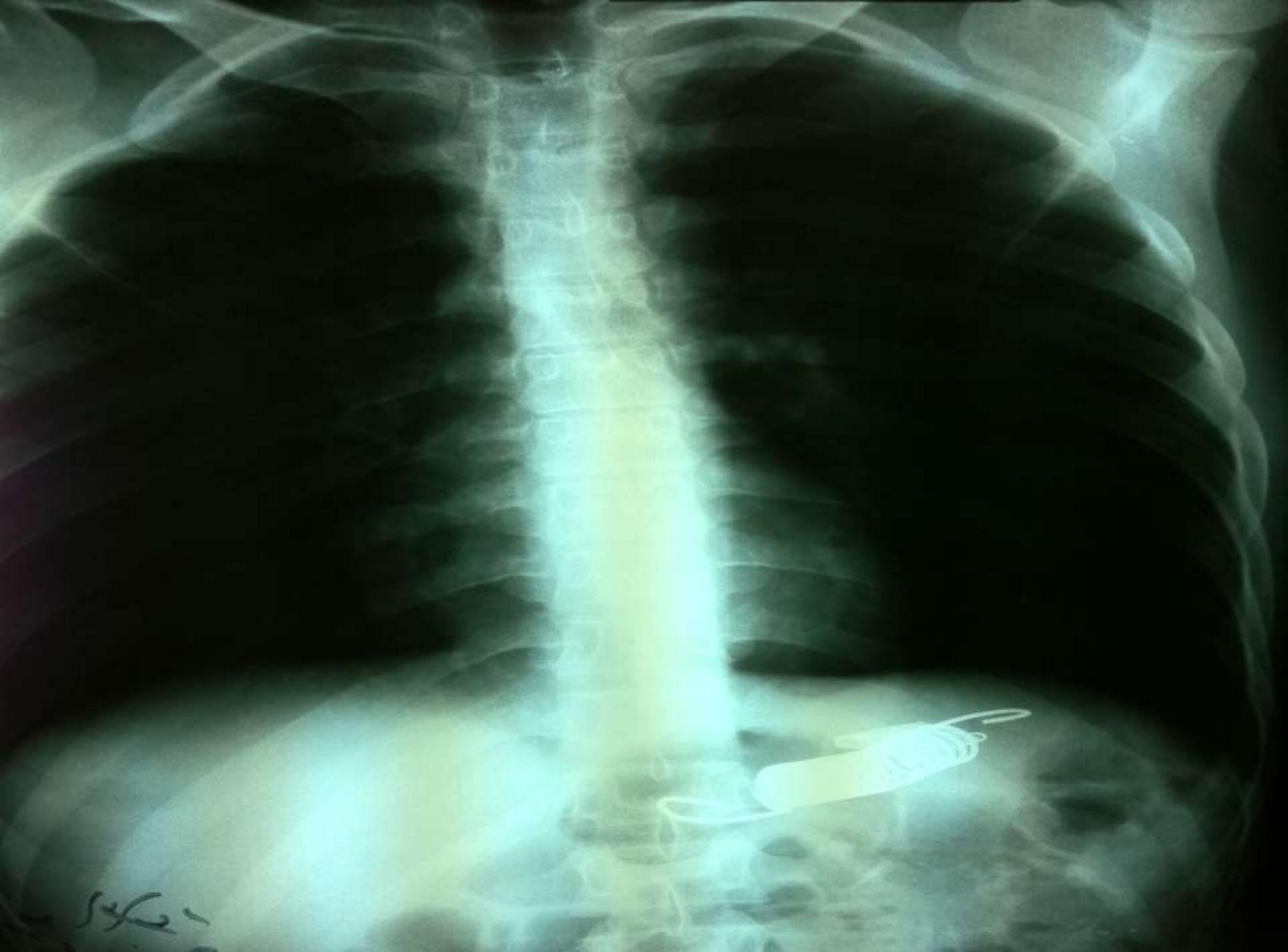


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طبيب
مستشار



سنگ

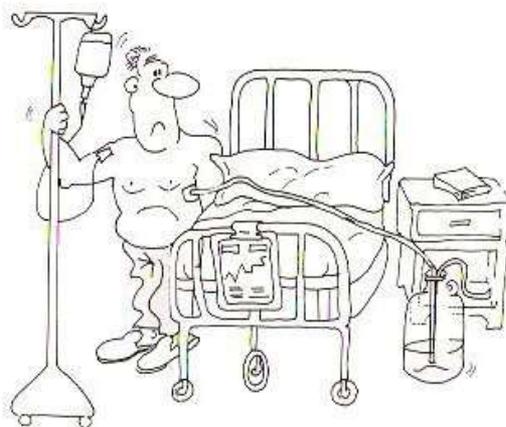


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UNDER NO CIRCUMSTANCES



Leave the ward if you are on suction



Get out of the bed the wrong side



Kick your bottle or knock it over



Lift the bottle higher than your chest



Drop the bottle or knock it over



Swing your bottle