EMERGENCY RADIOLOGY CASES.

LECTURER DR HUDA HAMEED SALMAN

TUCOM

A 78-year-old previously healthy man presented with two days of cough productive of thick purulent sputum, fever and dyspnea on exertion.

On examination, he was an elderly man who appeared acutely ill.

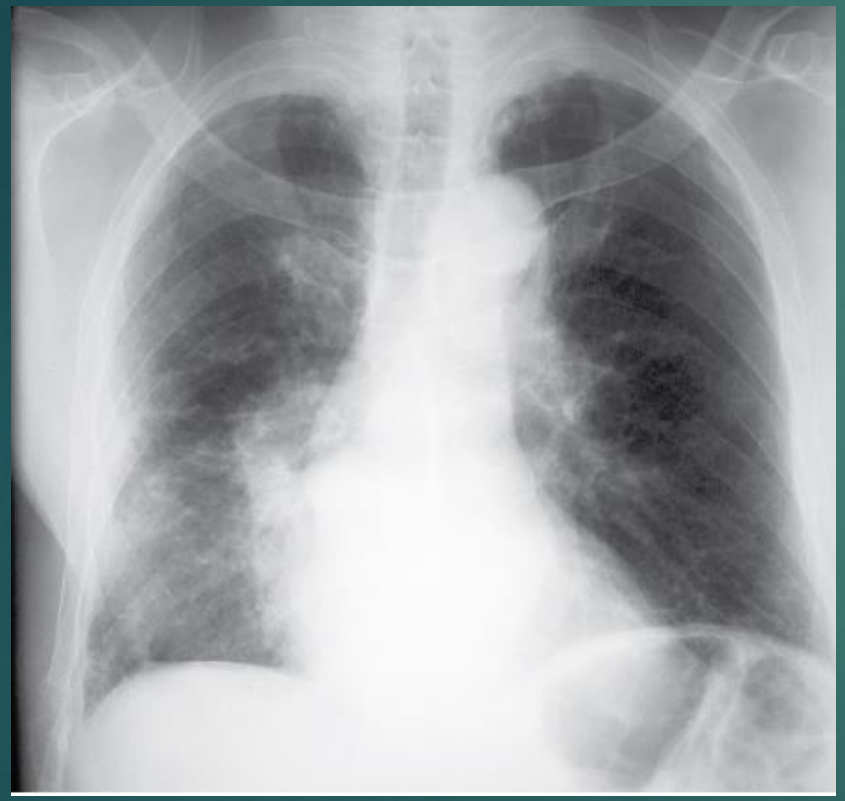
Vital signs—blood pressure 96/60 mm Hg, pulse 116 beats/ min, respiratory rate 24 breaths/min, temperature 103.5°F rectal.

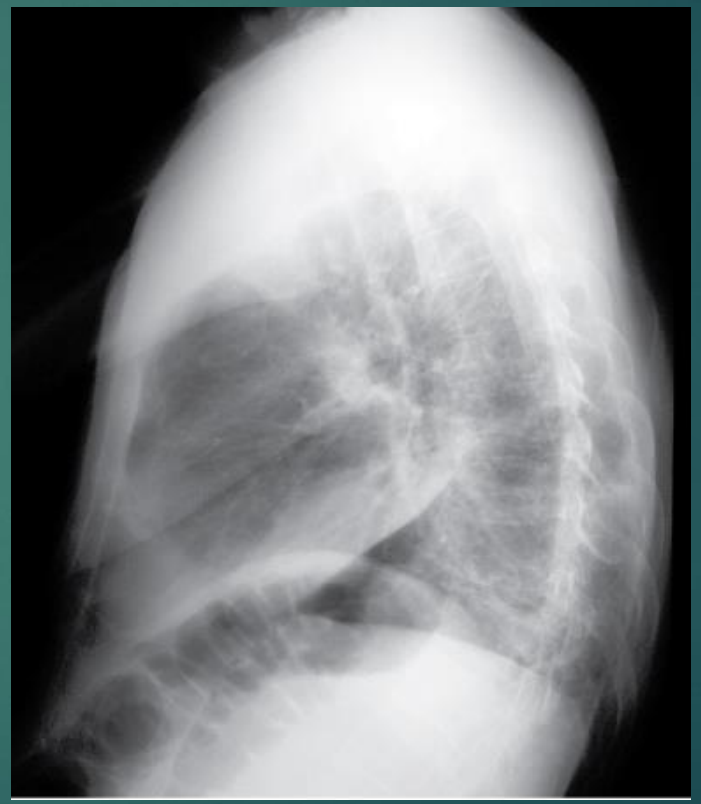
Lung examination revealed scattered ronchi, which were greater on the right than the left.

Blood tests and a chest radiograph were obtained and intravenous antibiotics were administered.

What do the chest radiographs show

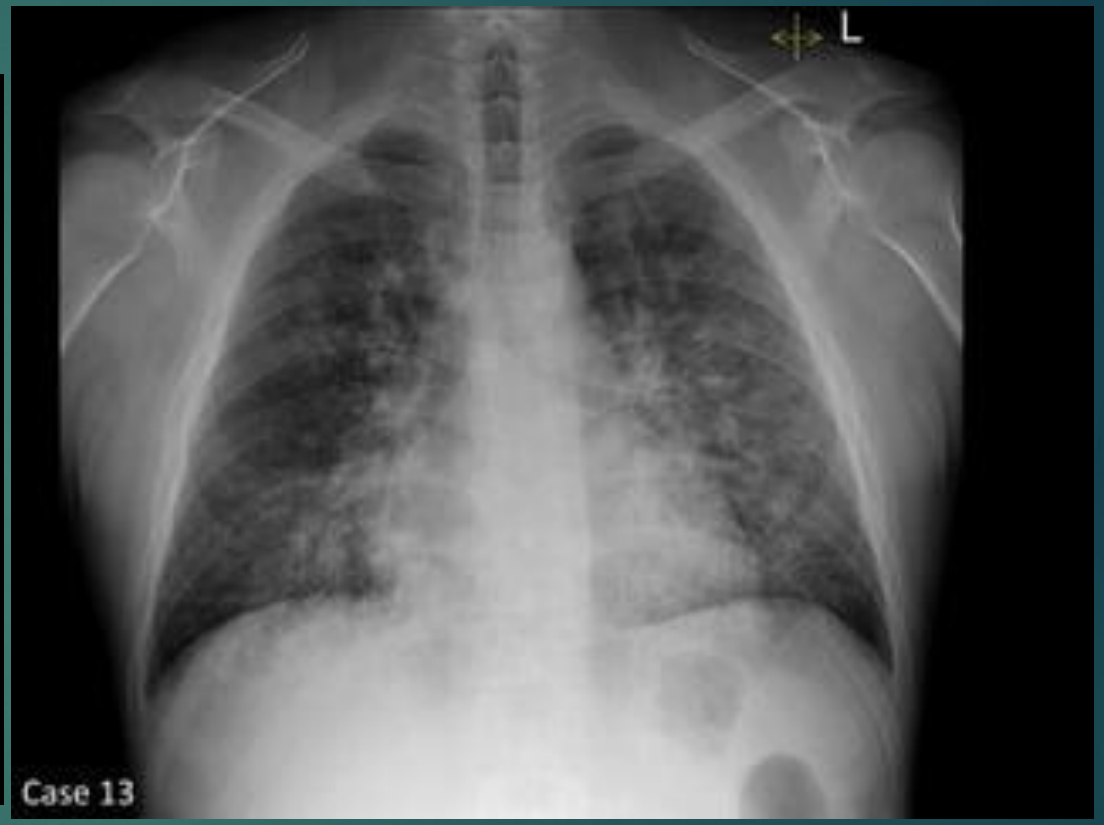
Lobar pneumonia



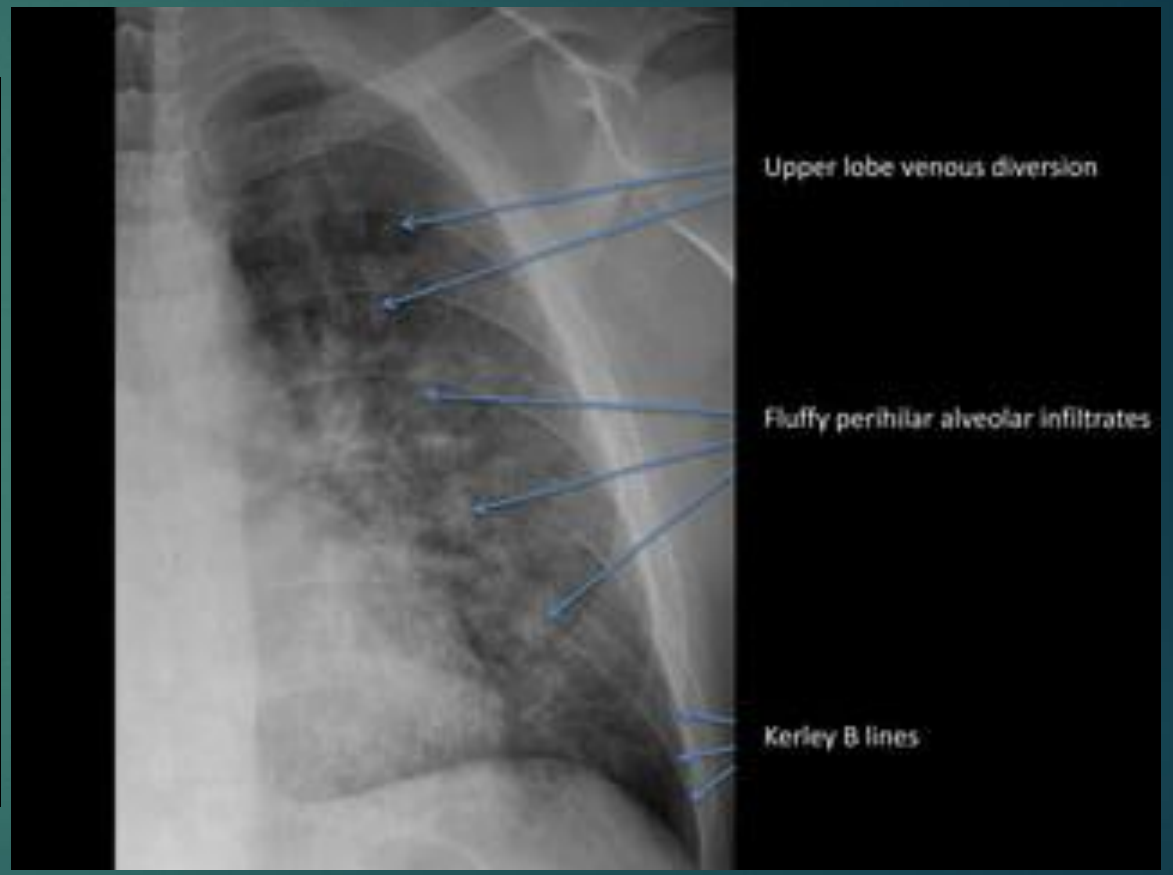


- 77 year old male, presenting with dyspnoea on minimal exertion.

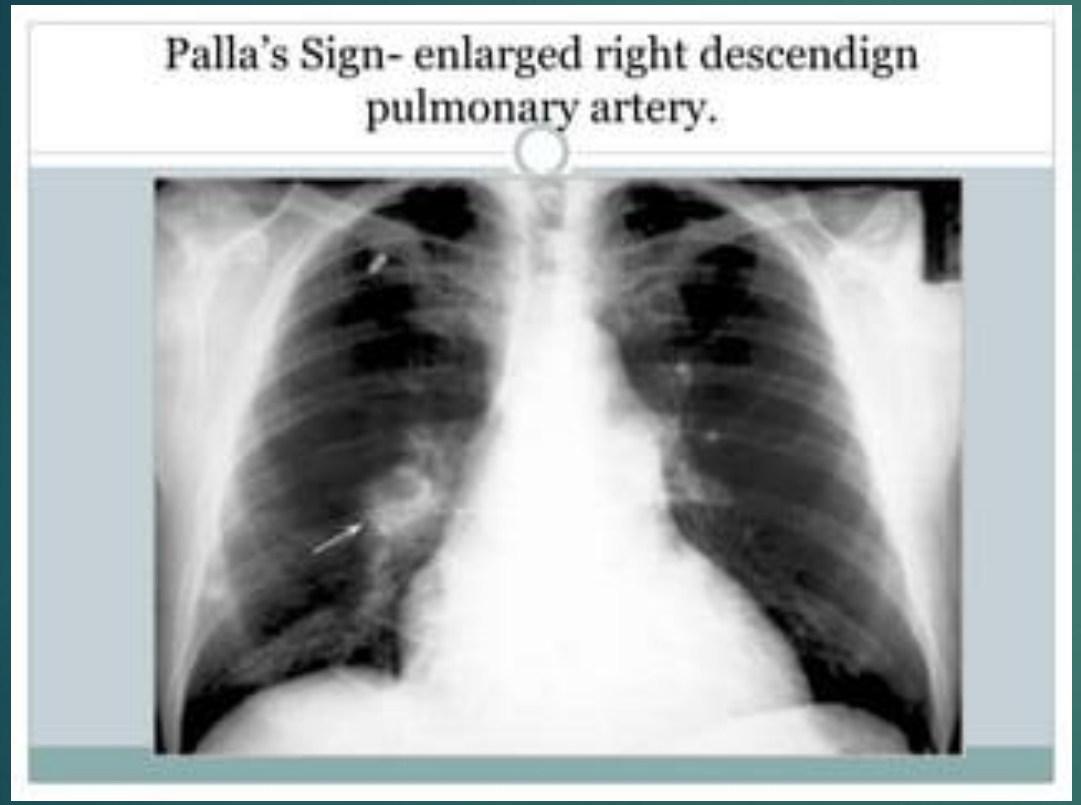
1. Describe the abnormalities on the CXR.
2. What is your diagnosis?

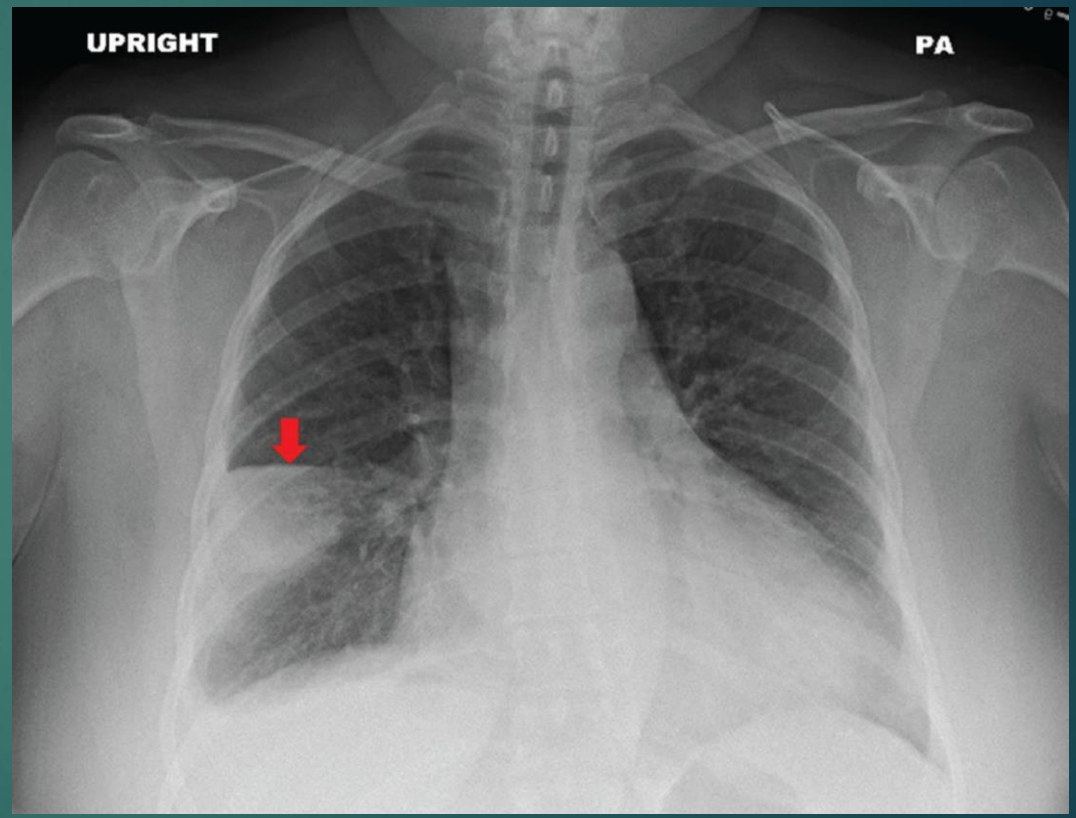


1. The heart is mildly enlarged. There is bilateral perihilar alveolar opacification and there is upper lobe pulmonary venous diversion. Multiple fine linear opacities are demonstrated in the peripheries of both lungs, in keeping with Kerley B lines. There are no pleural effusions.
2. Cardiogenic pulmonary oedema.

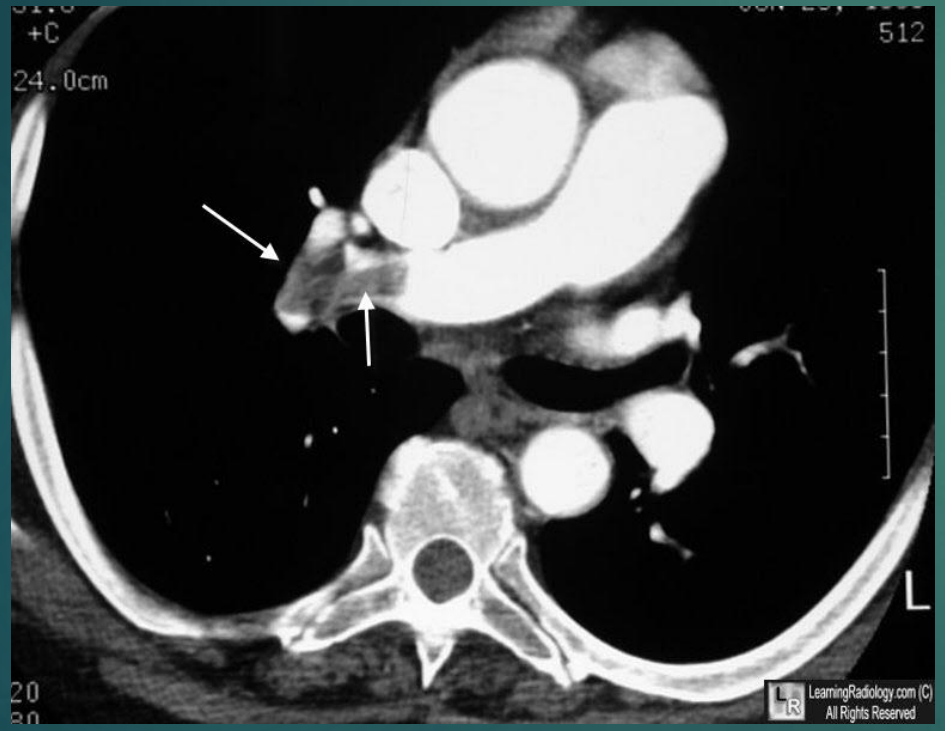


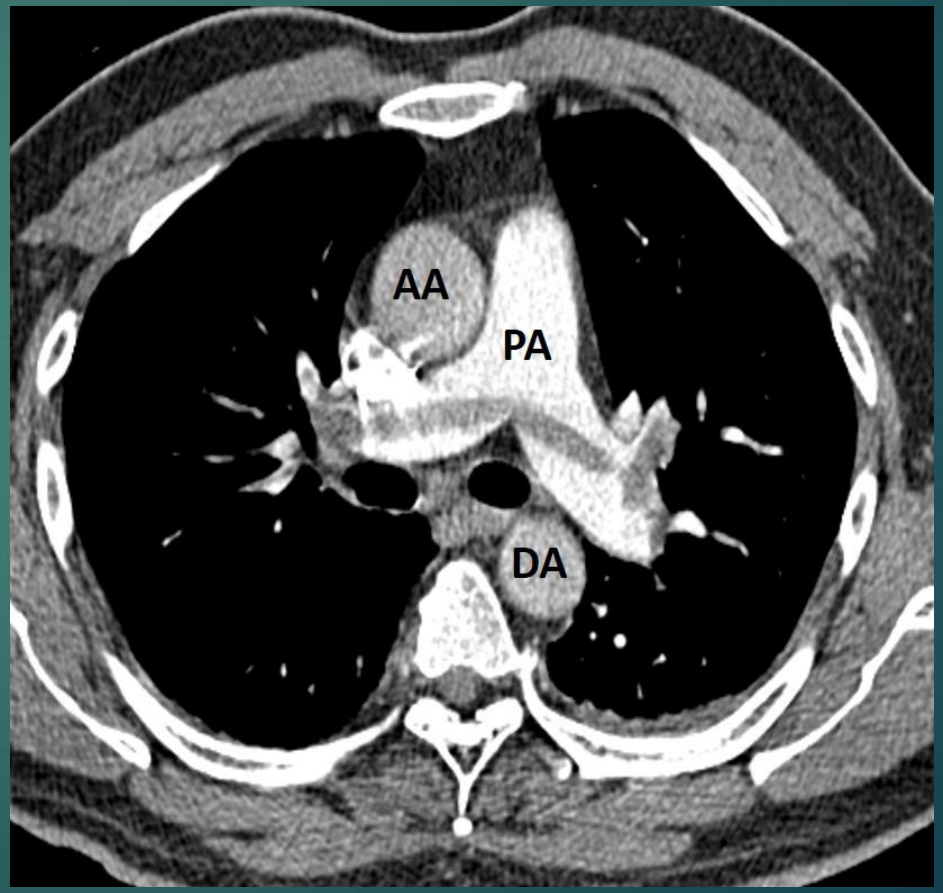
A 34-year-old woman presented to the ED with dyspnea that began three hours earlier.



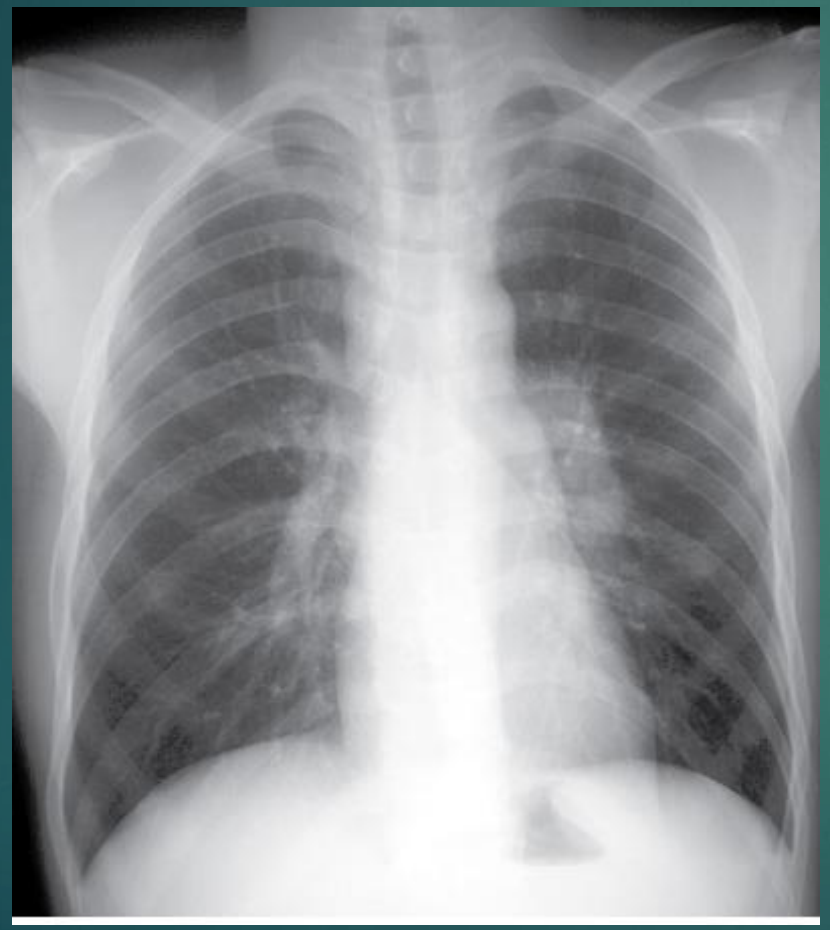


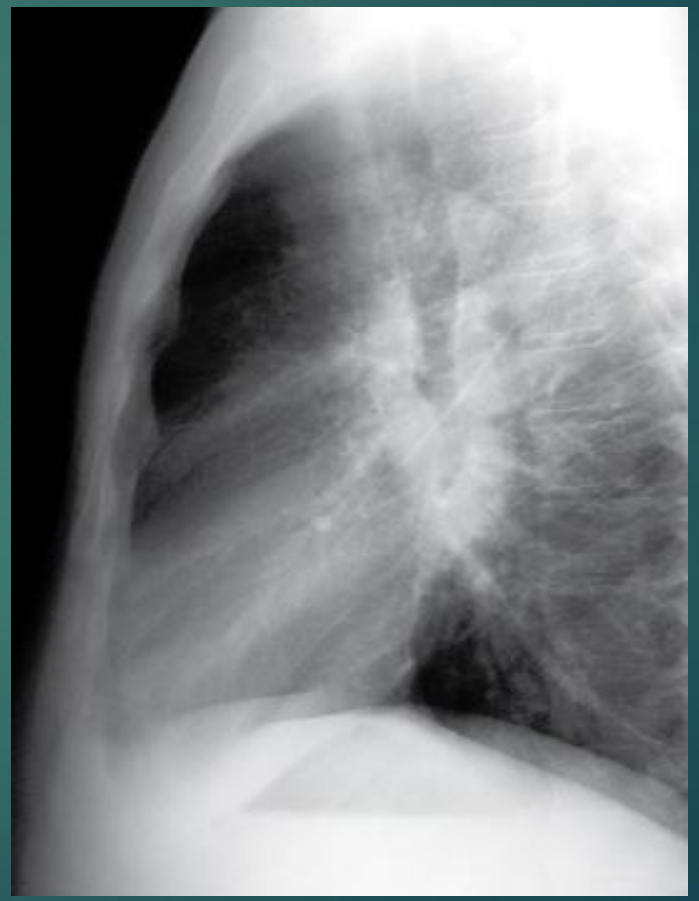
Pulmonary embolism





A 38-year-old man presented to the ED with fever, poor appetite, and a cough productive of yellowish sputum.
Over the previous two weeks, the patient noted progressive weakness and a 10-lb weight loss, worsening cough, and increasing fever and chills. He did not have chest pain or shortness of breath and had never previously been ill.
He smoked one pack of cigarettes per day

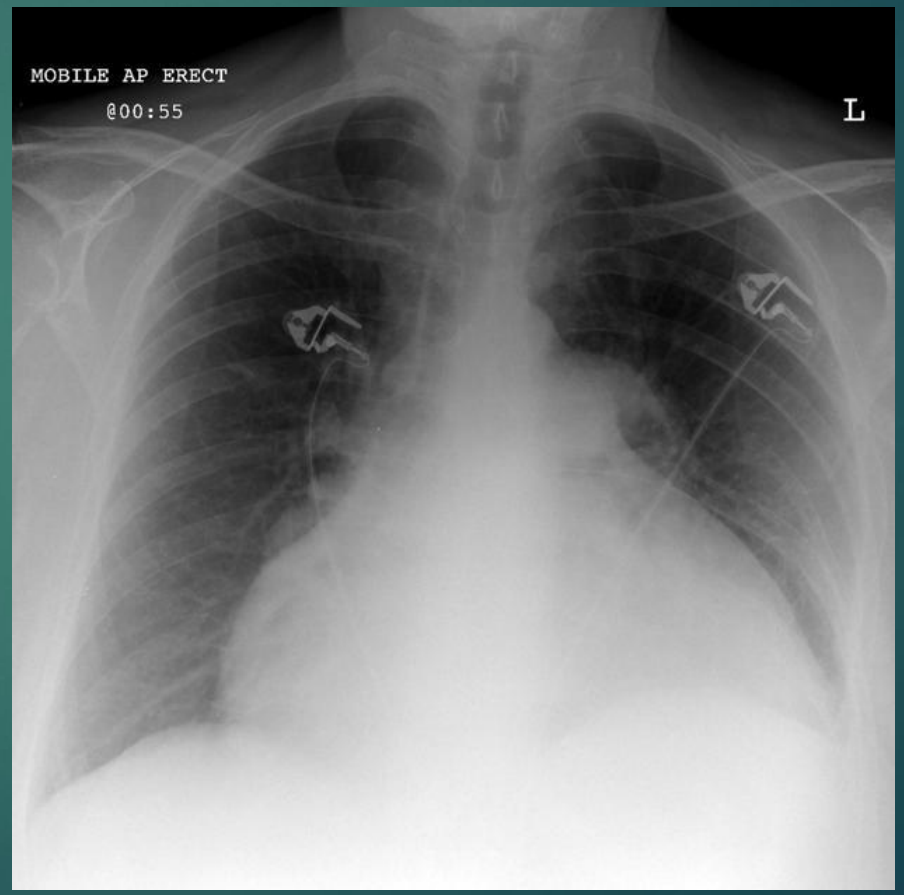


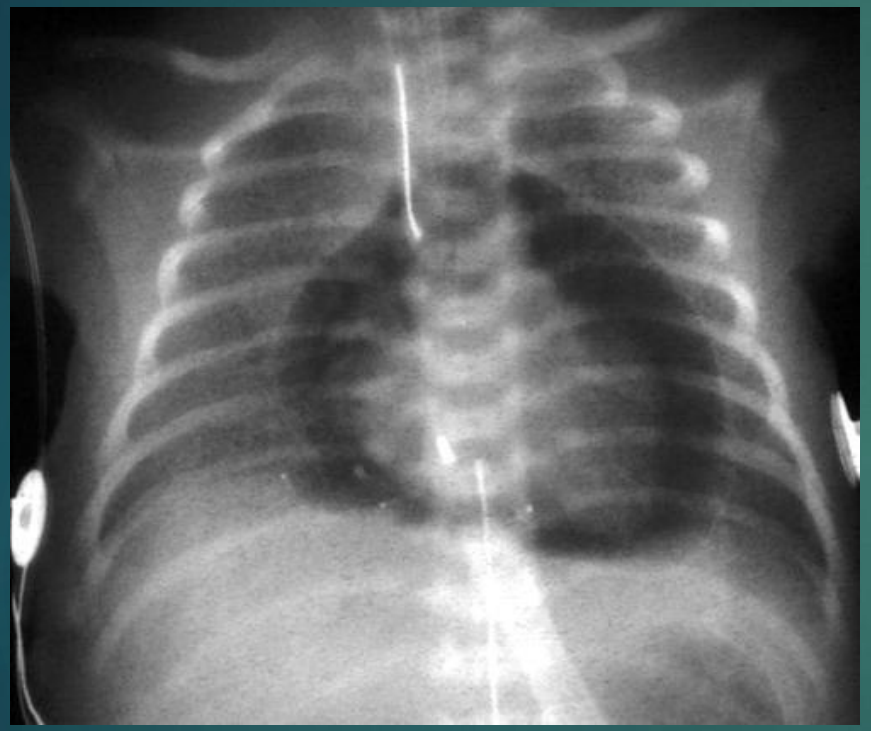


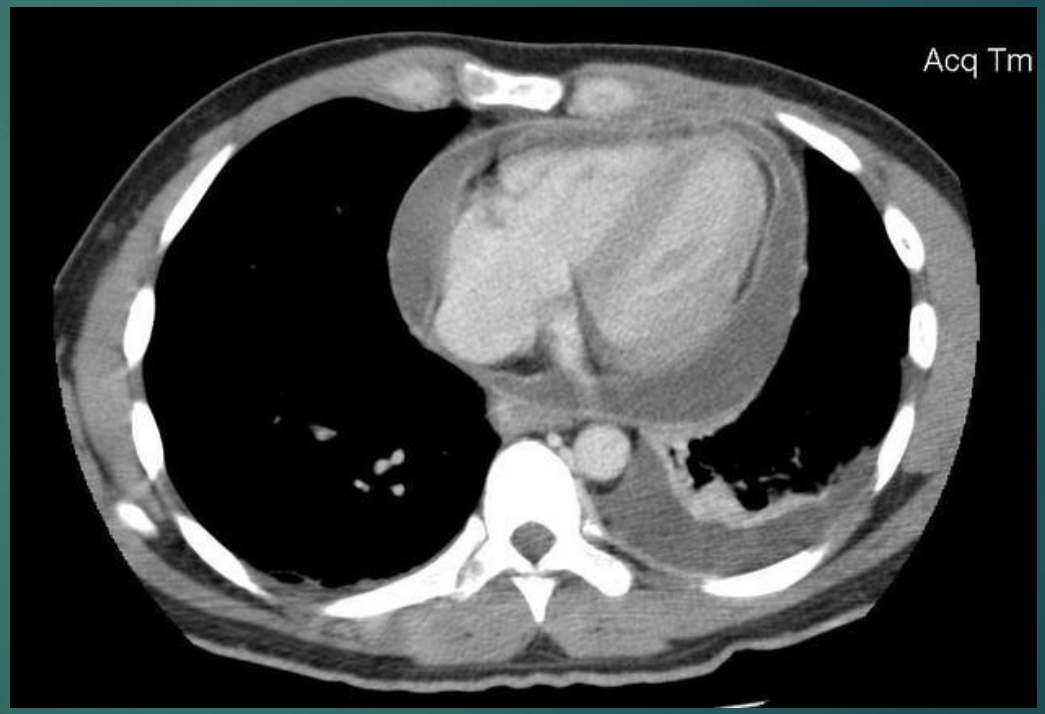
- Hilar adenopathy
  DDx
- TB
  TUMOR
- Enlarged pulmonary artery

A 43-year-old woman with a history of metastatic breast cancer presented to the ED with three days of nausea, weakness, and abdominal discomfort.
Adenocarcinoma of the breast had been diagnosed two years earlier

- On examination
- Pulsus paradoxus is an exaggerated fall in systolic blood pressure of 10 mmHg or more during inspiration.
- The Beck triad consists of muffled heart sounds, hypotension, and jugular venous distension. It strongly suggests tamponade but is present in only a minority of patien



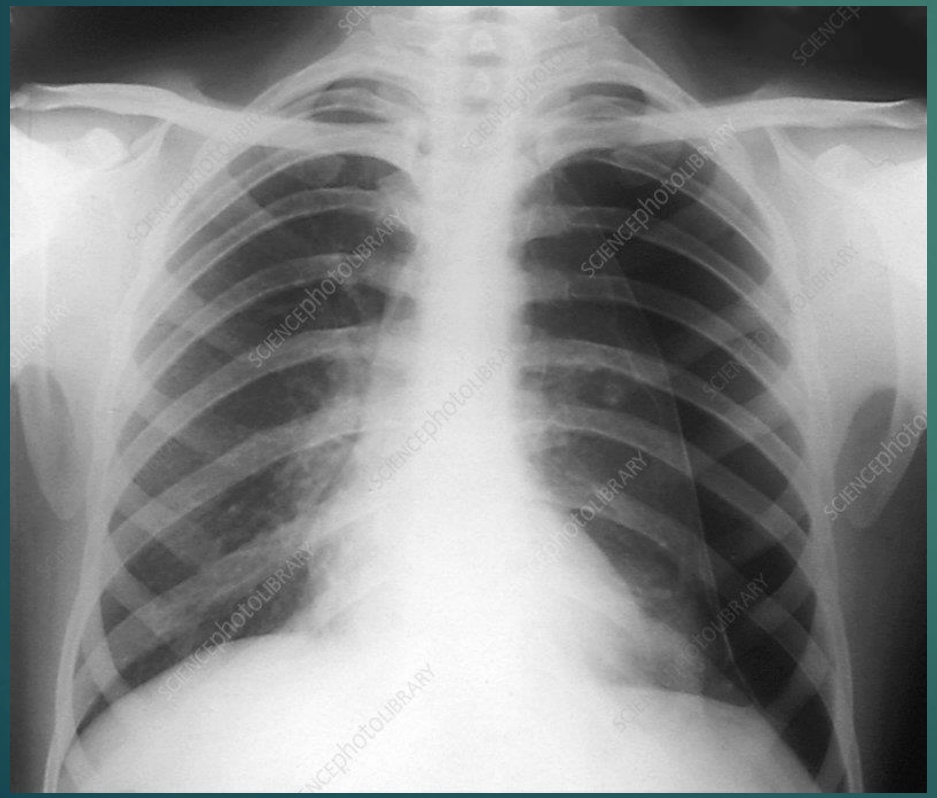


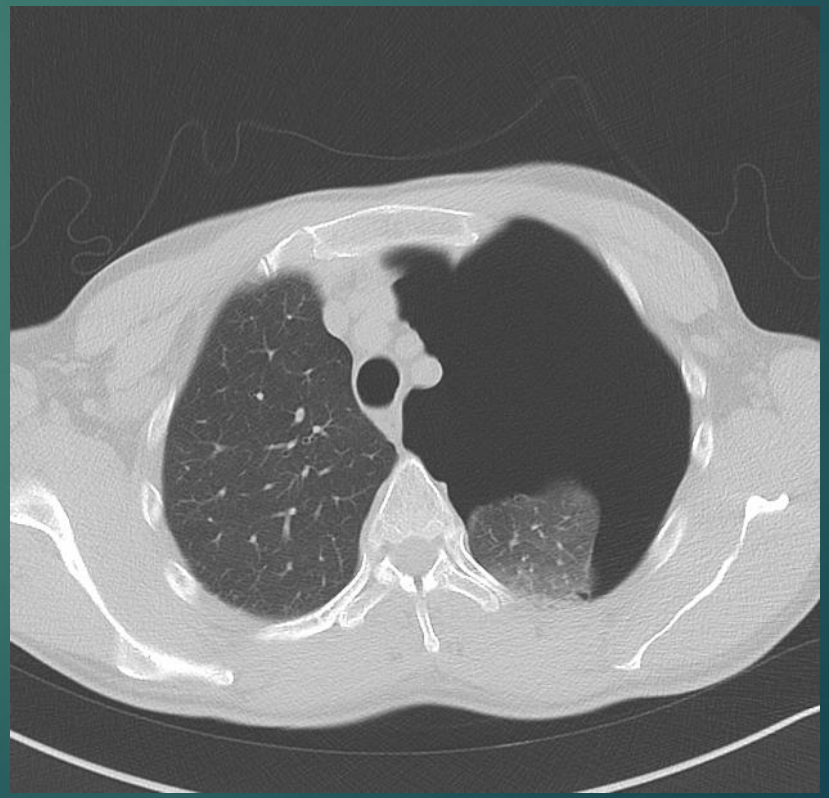


Cardiac tamponade

A 24-year-old man presented to the ED with unilateral chest pain that began about six hours earlier. The pain was initially “sharp” in quality and began abruptly. The pain had been persistent since it began and was now dull and aching. It was worse with deep inspiration

The pain was not relieved by ibuprofen •





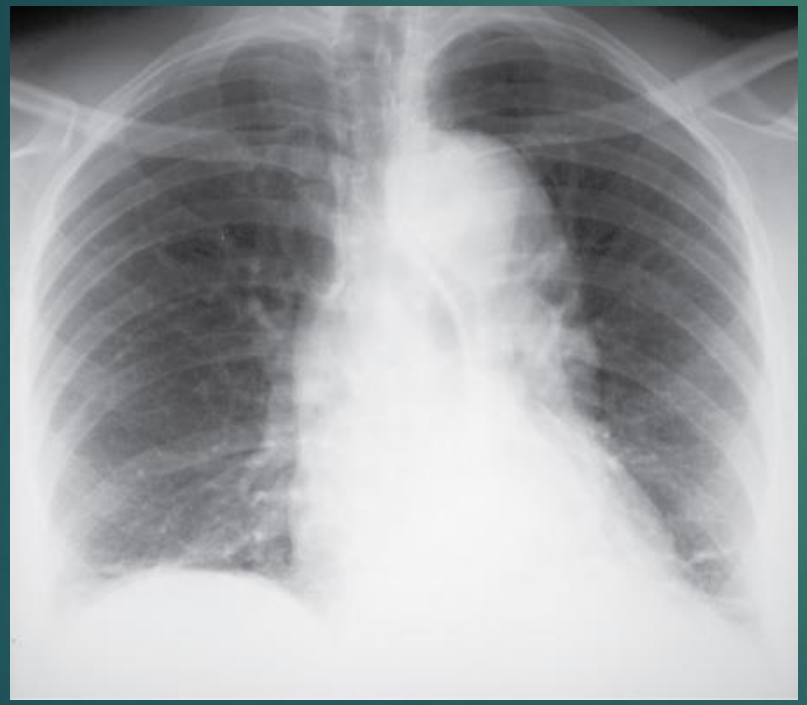
Radiographic features:

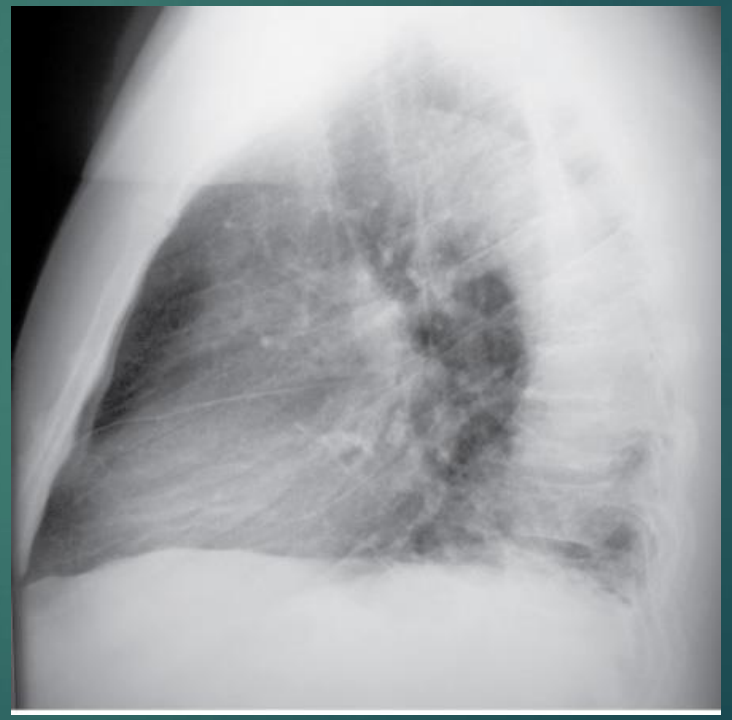
- Hyperexpansion of hemithorax
- ipsilateral increased intercostal spaces
- contralateral shift of the mediastinum
- depression of the hemidiaphragm

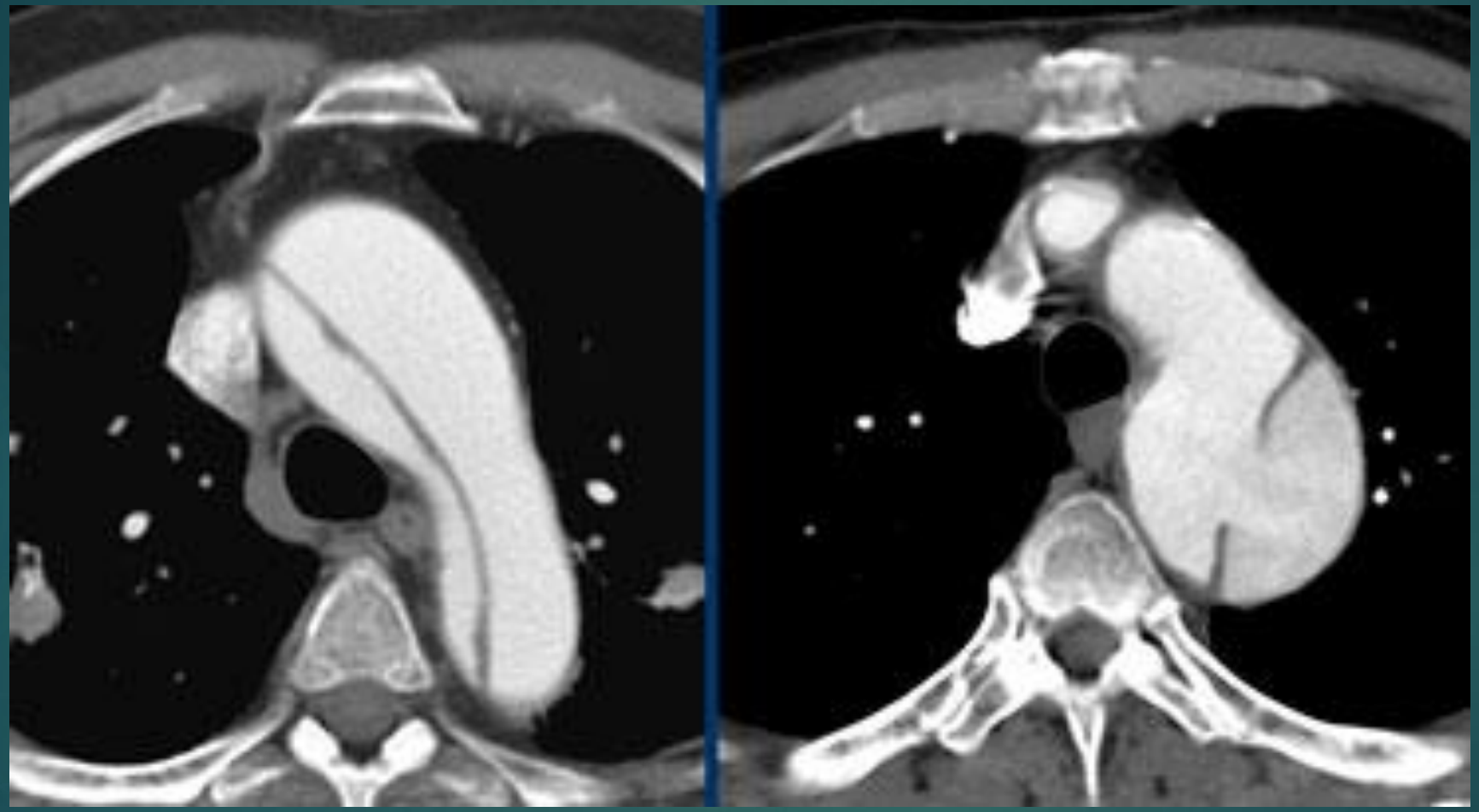
- Treatment
- A needle thoracostomy (e.g. 14G intravenous cannula) can be inserted, typically in the 2nd intercostal space in the midclavicular line, to gain valuable time, before a larger underwater drain can be inserted [1]

DX pneumothorax

A 56-year-old man presented to the ED with abdominal pain that began several hours earlier.
He had locked himself out of his house and was crawling through the window when he experienced an abrupt onset of abdominal pain. He felt something “pop
had hypertension and heavily smoker

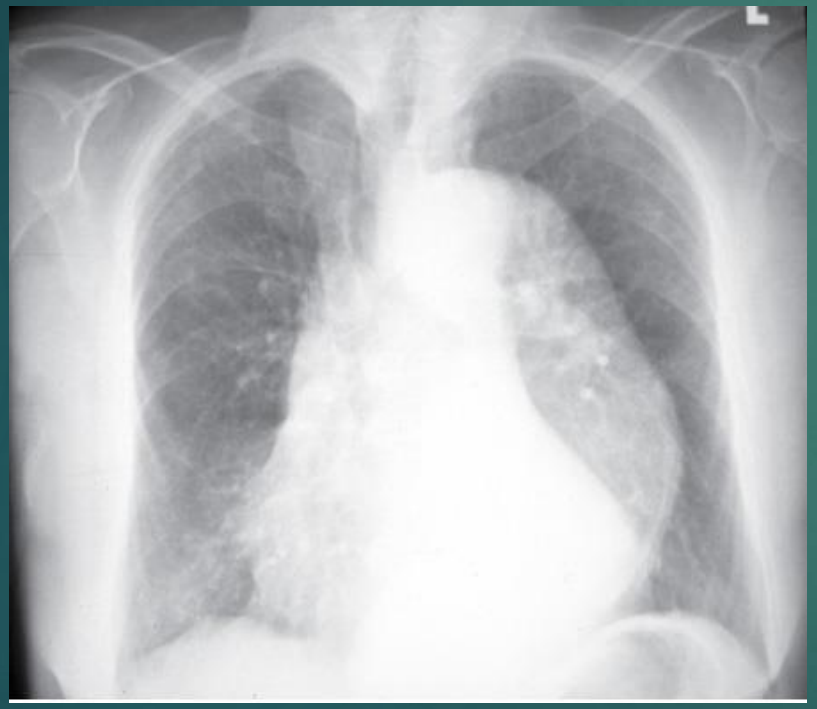


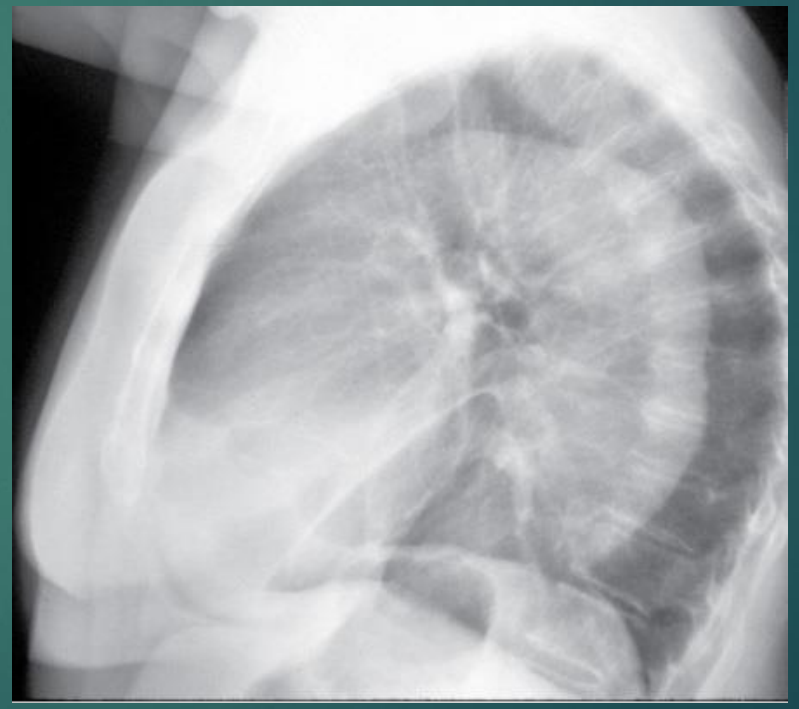


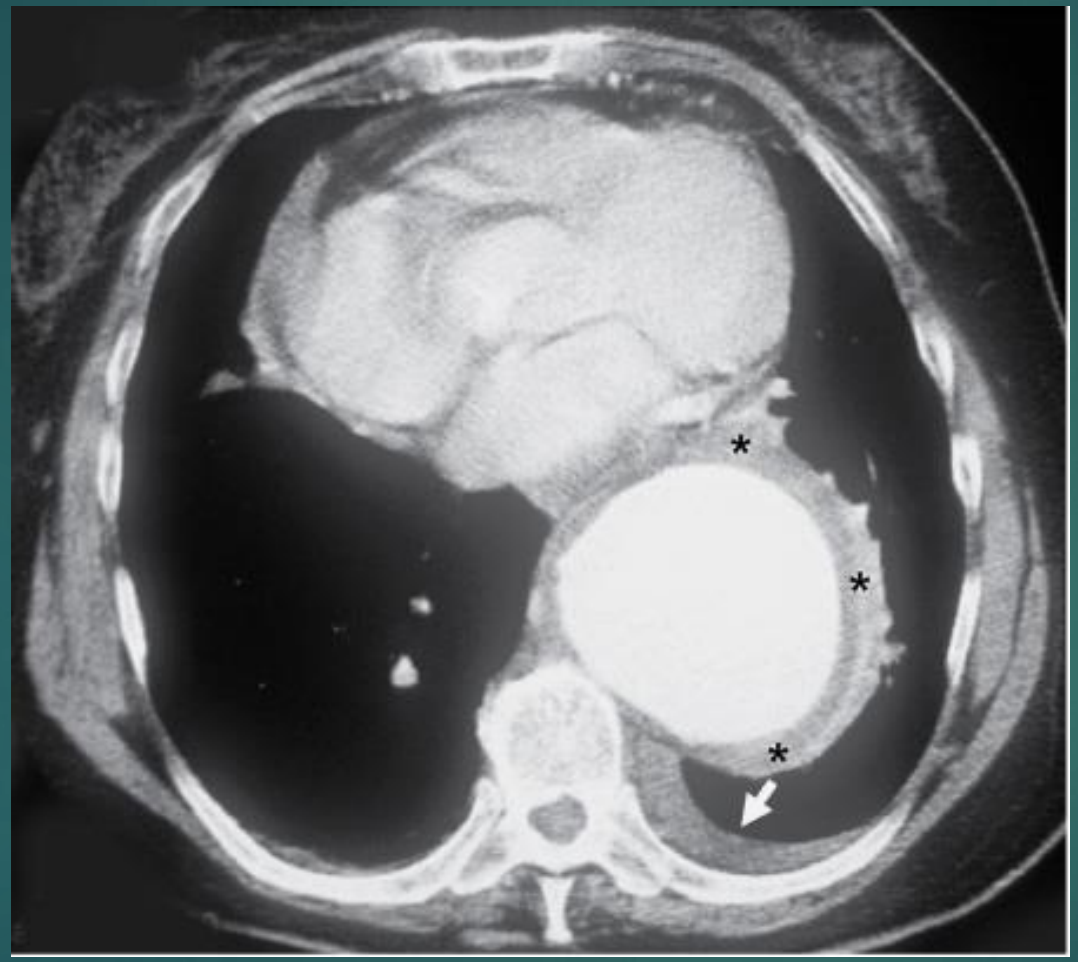


A 73-year-old woman presented to the ED complaining of chest pain and shortness of breath. The pain was in the left anterior chest and left flank. She had a nonproductive cough and slight wheezing. She had had the pain intermittently for 1 week. It had become more severe in the past few hours and was associated with vomiting. She had a history of COPD.

Breaths sounds were diminished bilaterally and there were faint wheezes at both lung apices.







Aortic aneurysm

Emergency Radiology

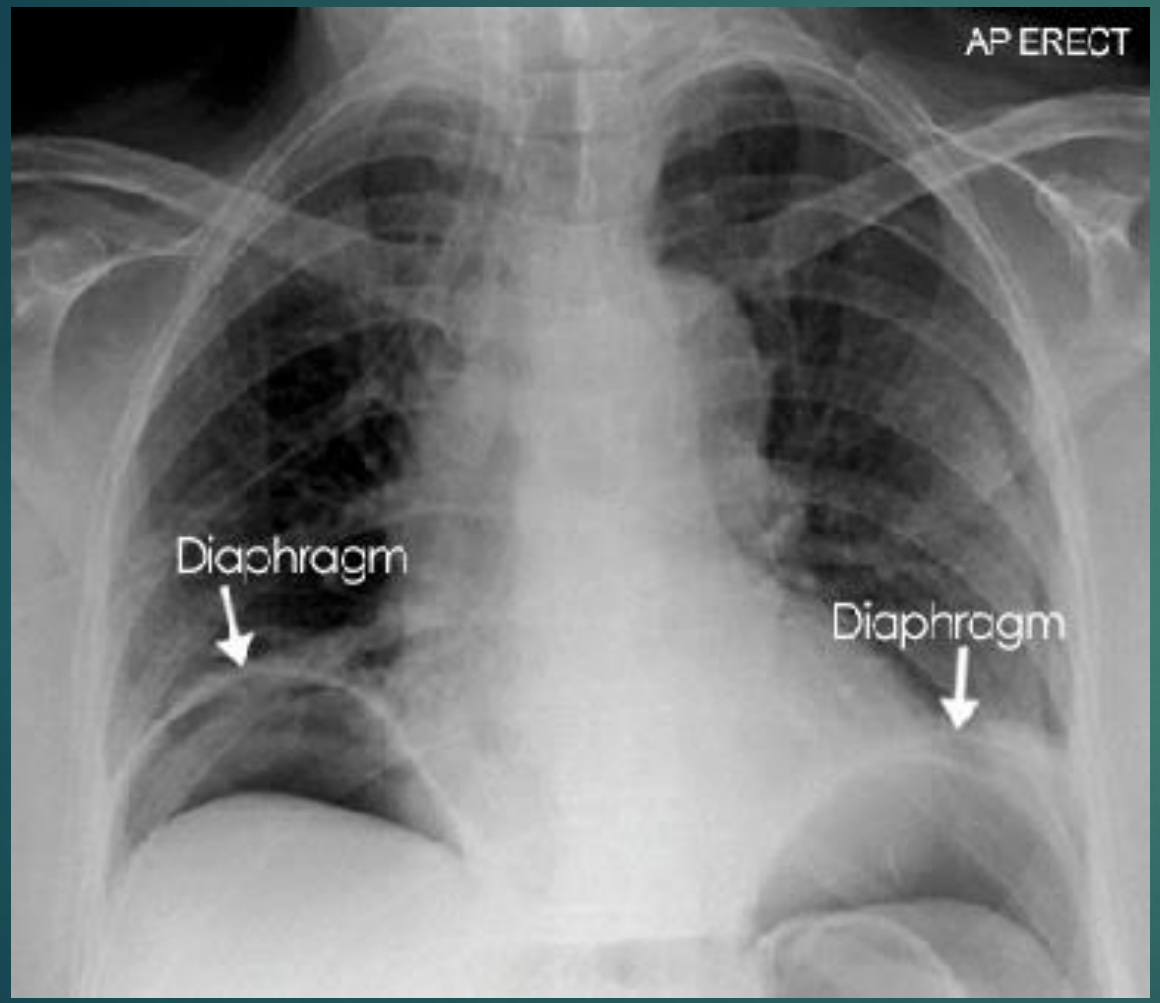
Abdominal Emergencies:

Gut Perforation (e.g. Perforated DU)

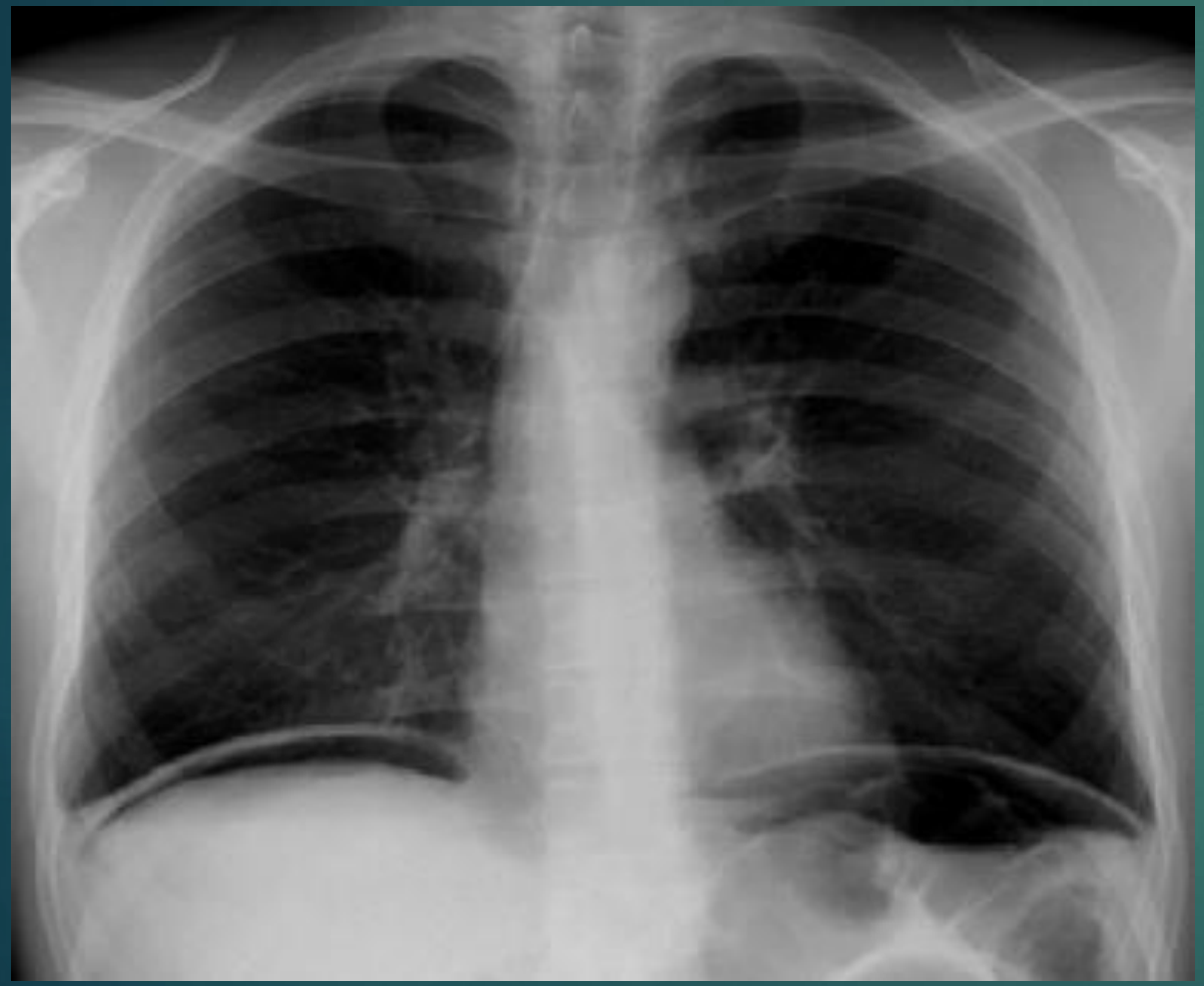
What to order?
Abdominal radiograph (Erect).
US
CT scan

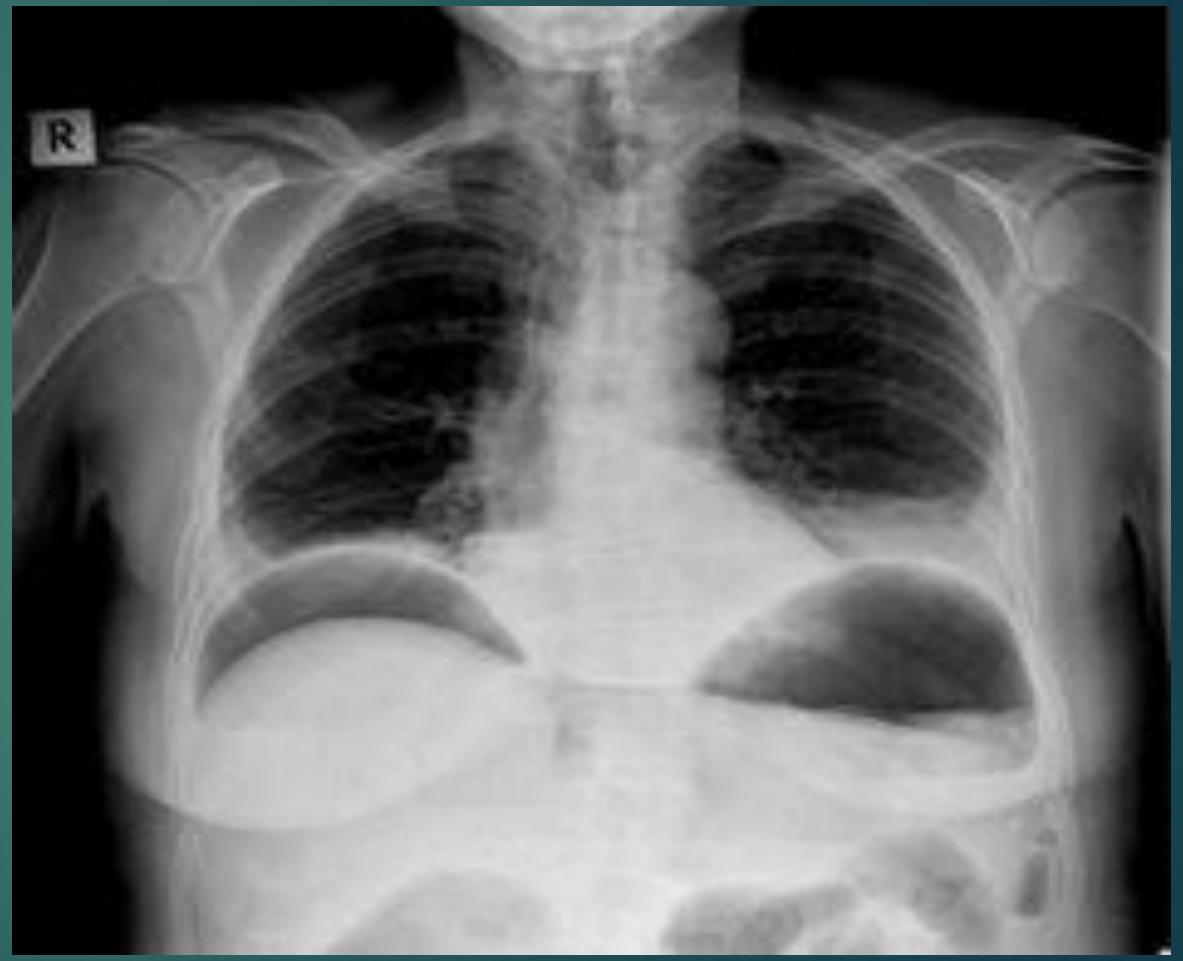
When?
History of peptic ulceration – signs of peritonitis

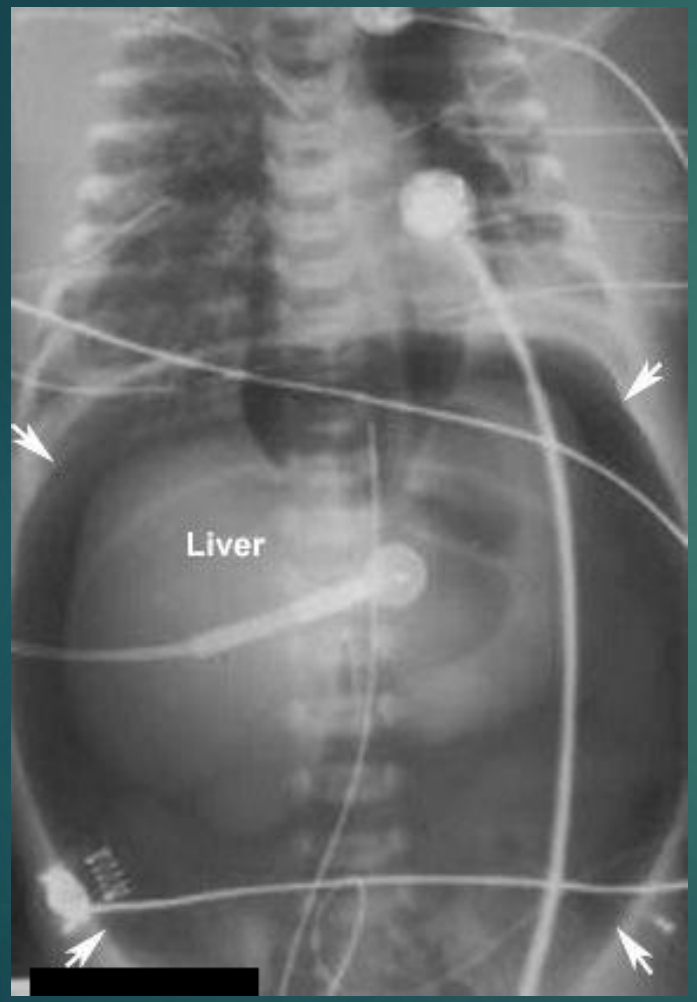
Air under diaphragm

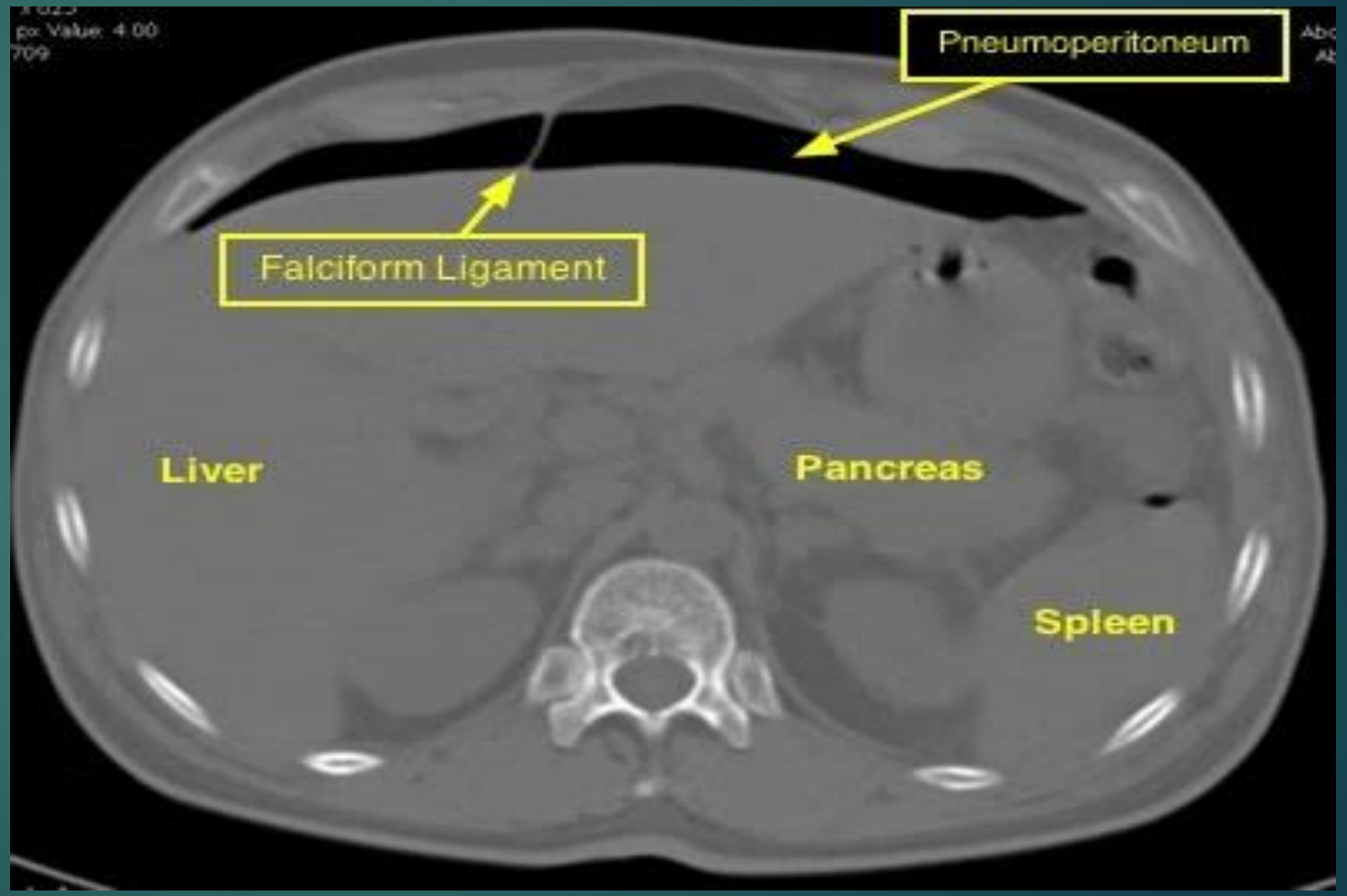


pneumoperitoneum

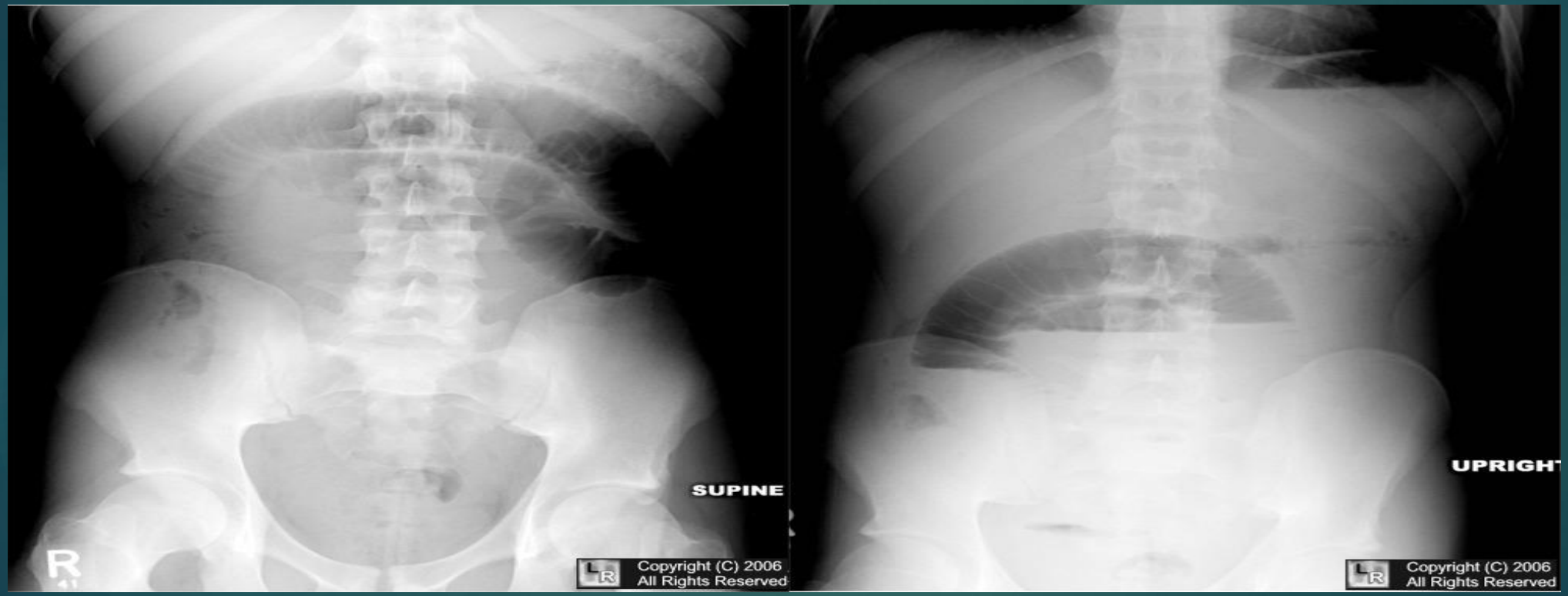


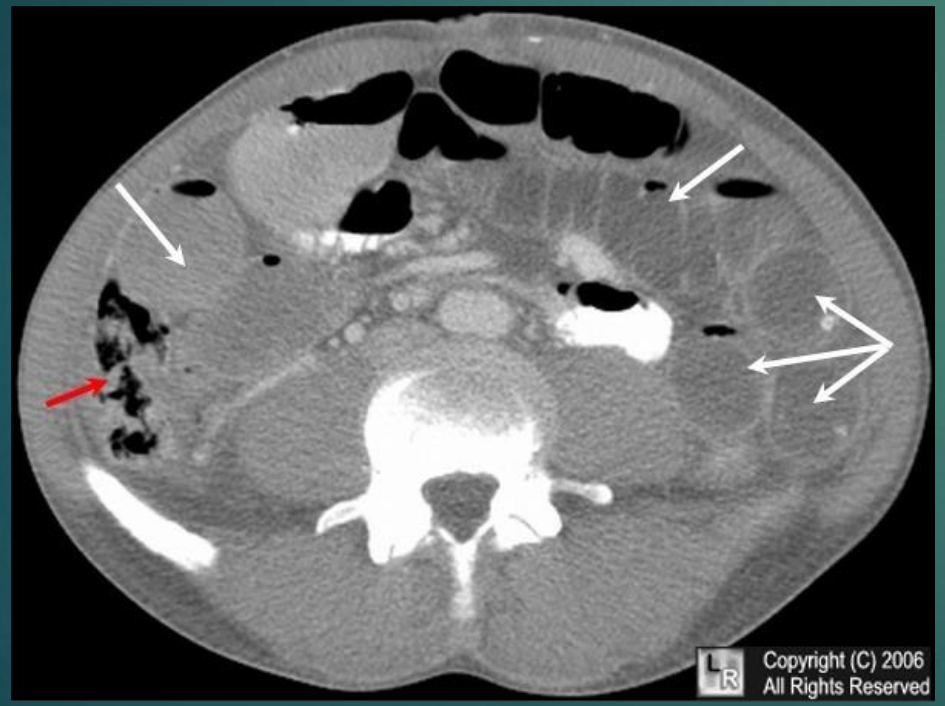



Liver


Pneumoperitoneum
Falciform Ligament
Liver
Pancreas
Spleen

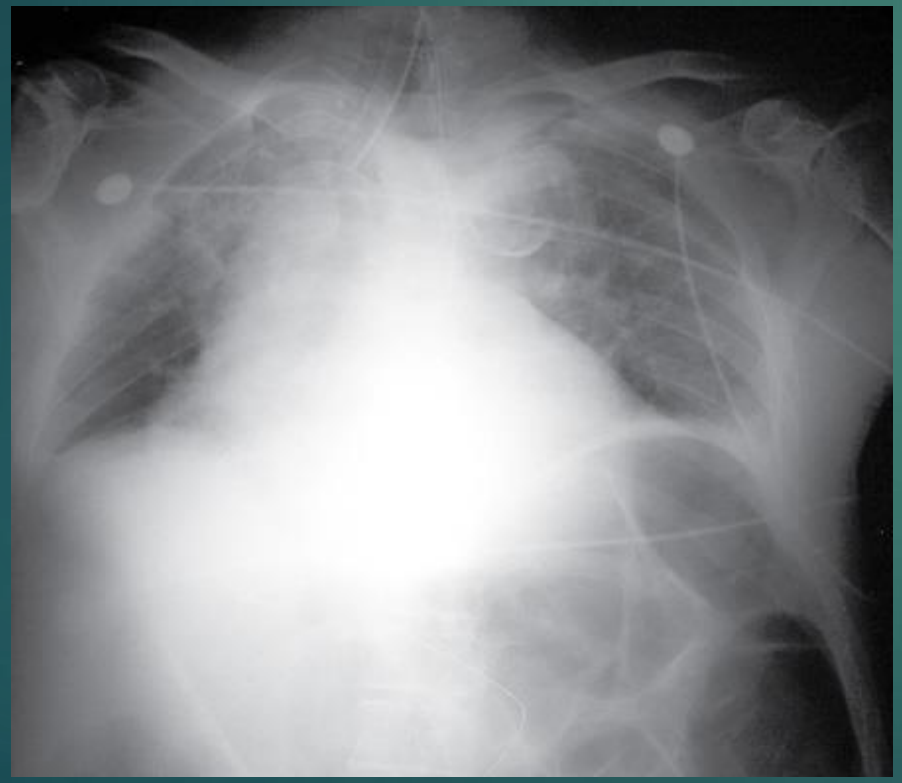
A 50-year-old man complained of periumbilical and left lower quadrant abdominal pain that began earlier in the day. The pain was intermittent, "crampy" in character, and accompanied by anorexia and vomiting. He had a normal bowel movement the previous day. He had not experienced similar pain in the past. There was no history of prior abdominal surgery.
On examination, the patient was afebrile and in moderate distress due to his abdominal pain. Bowel sounds were present, and the abdomen was mildly distended with periumbilical tenderness, but no rebound tenderness.

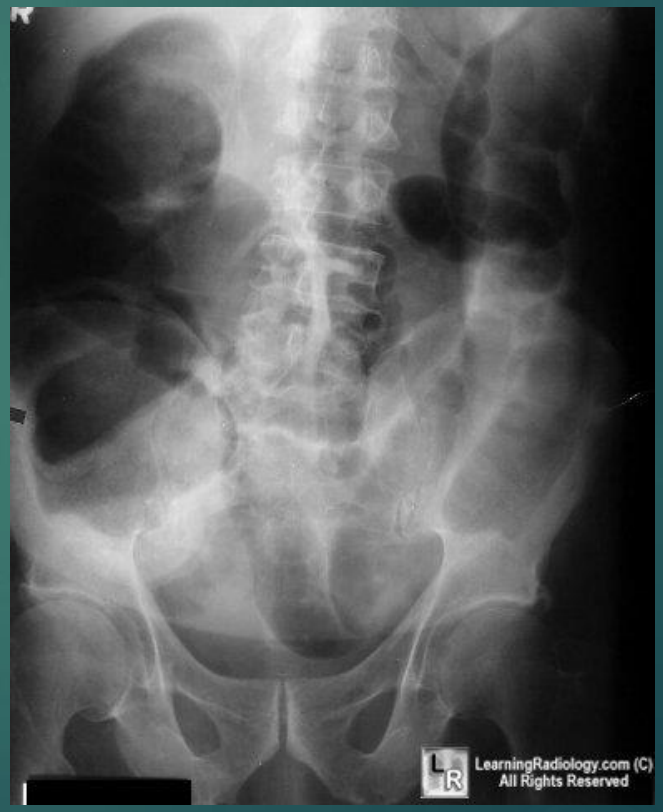


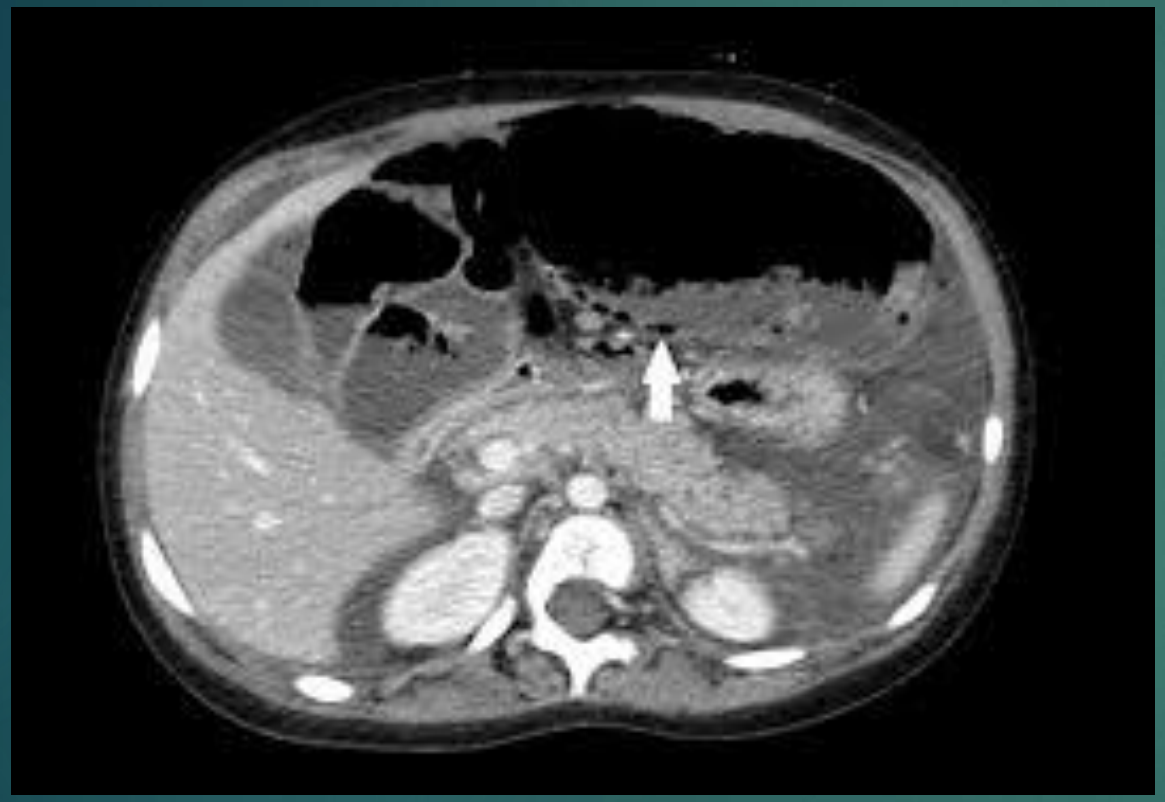


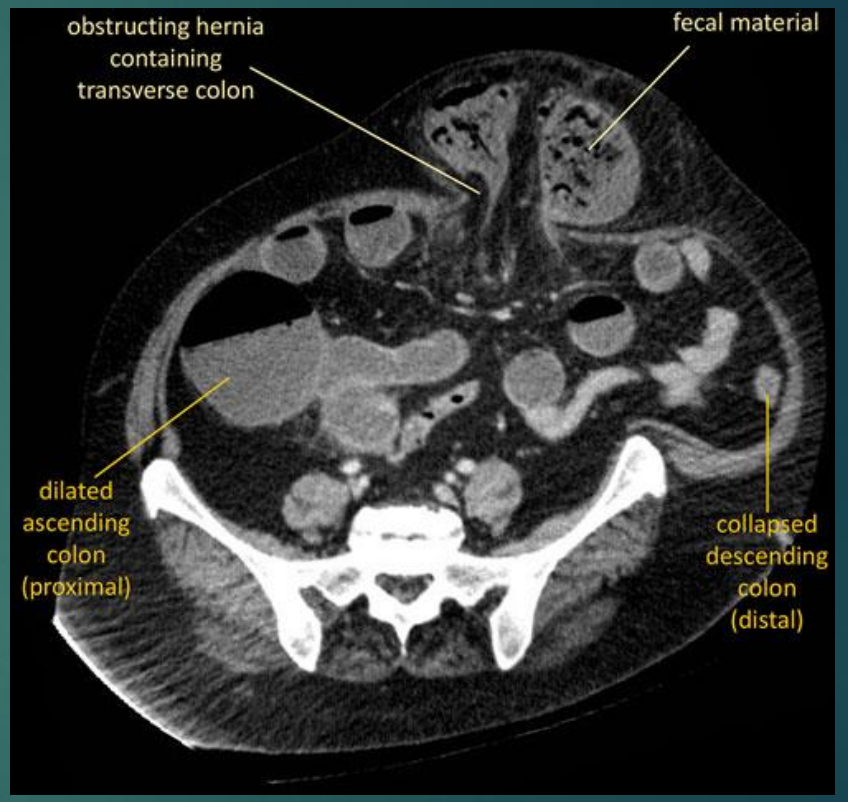
- **Conventional radiography is the study of first choice**
- § Loops proximal to the point of obstruction will become dilated and fluid-filled
- · Usually greater than 2.5-3 cm in size
- § Differential height of air-fluid levels in the same loop of small bowel no longer considered reliable sign of mechanical SBO
- § Absence of, or disproportionately smaller amount of, gas in the colon, especially the rectosigmoid
- § Loops of small bowel may arrange themselves in a ***step-ladder*** configuration from the left upper to the right lower quadrant in a distal SBO
- § Mostly fluid-filled loops of bowel may demonstrate a ***string-of-beads sign*** caused by the small amount of visible air in those loops

An 83-year-old man was brought to the ED by ambulance for progressive shortness of breath of one day duration. On arrival, he was in severe respiratory distress and was unable to provide a detailed medical history.
Vital signs: blood pressure: 150/80 mm Hg; pulse: 120 irregular beats/min; respirations: 36 breaths/min; pulse oximetry SO_2 78% on room air.
On examination, there was poor air movement bilaterally. His abdomen was distended, tympanitic to percussion, and nontender. Bowel sounds were quiet, but present. The patient stated that he had been constipated for six days, but had a bowel movement the previous day.





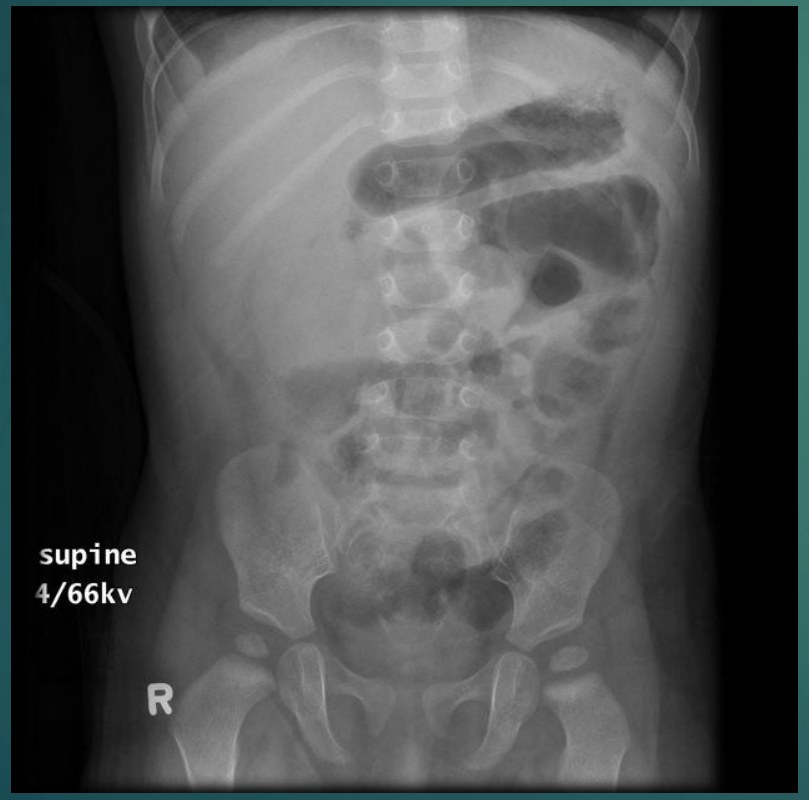


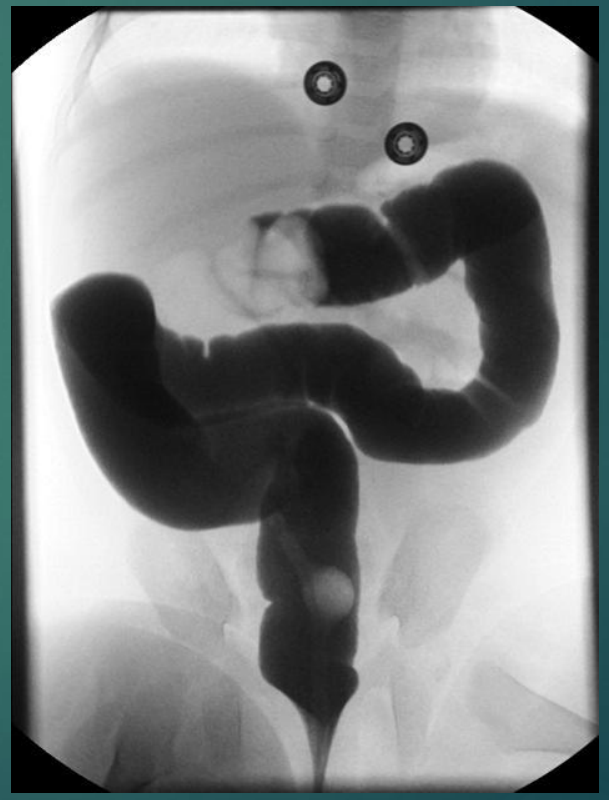


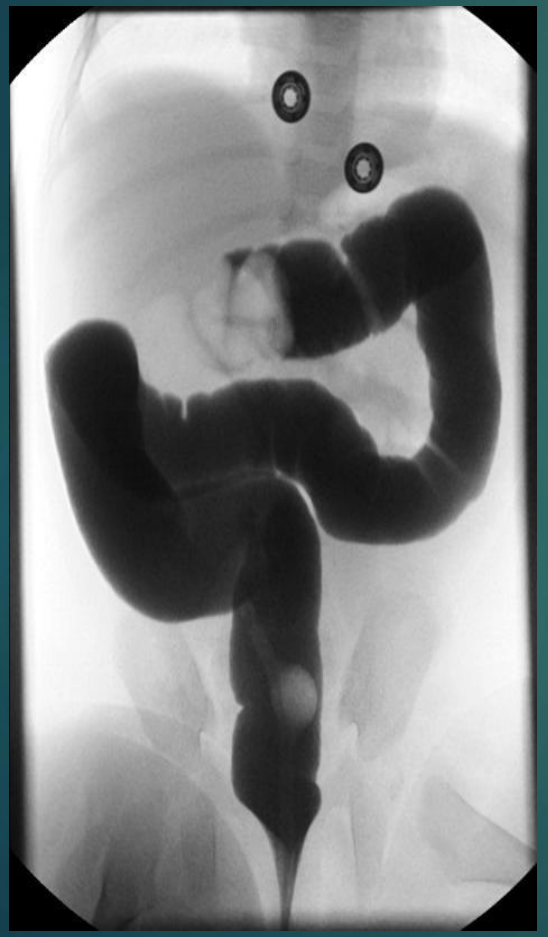
Large bowel obstruction.

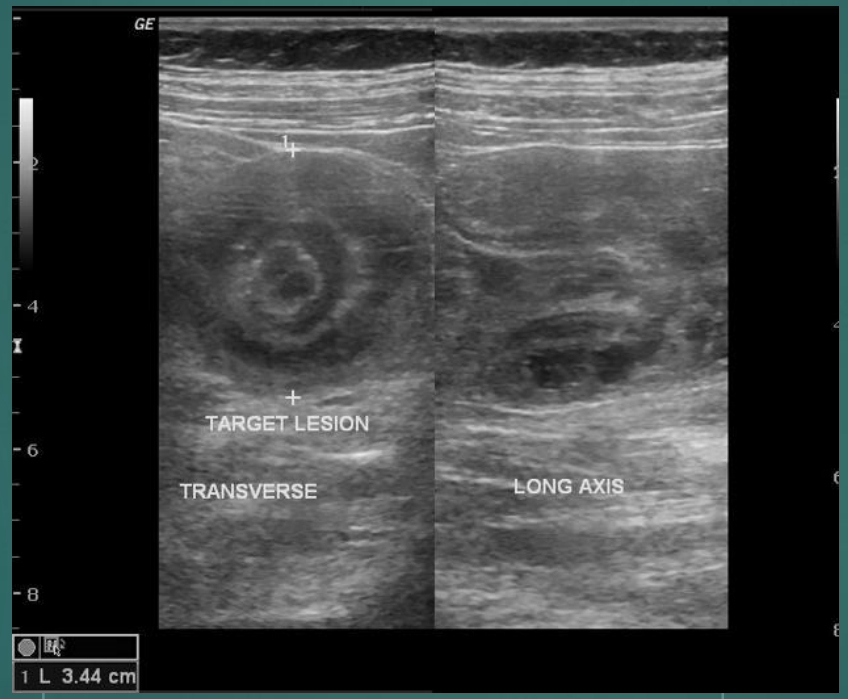
A 2-year-old girl presented to the ED with intermittent abdominal pain that began 18 hours earlier.
The previous evening, she had an episode of abdominal pain accompanied by a large bowel movement.
During the night and following day, she had several bouts of abdominal pain. Her oral intake was poor and she vomited after eating. There was minimal right lower quadrant tenderness with no rebound tenderness or palpable mass.
During the night, the child had intermittent episodes of abdominal pain during which she was doubled-

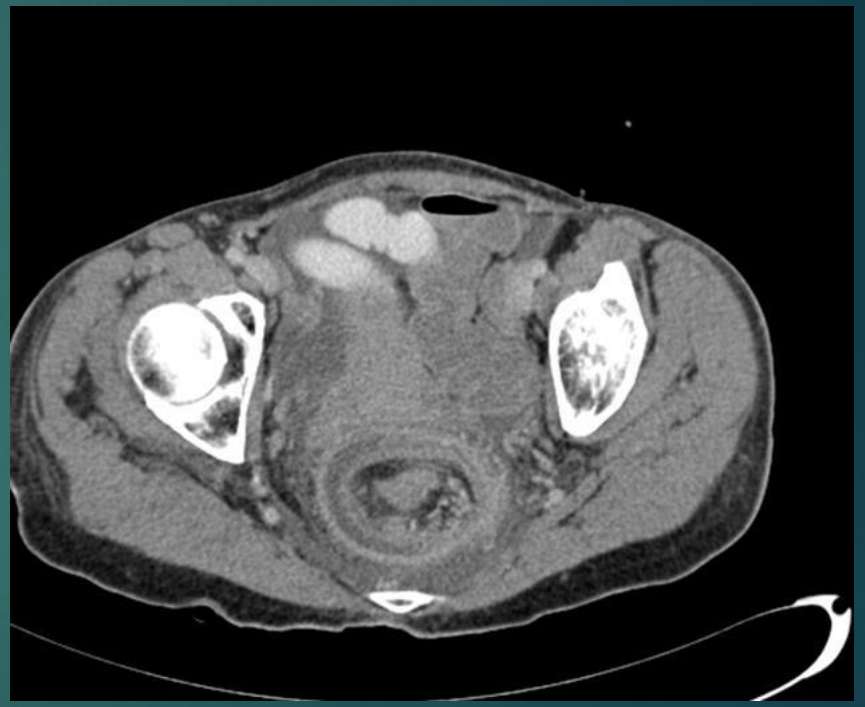
over with her legs flexed .



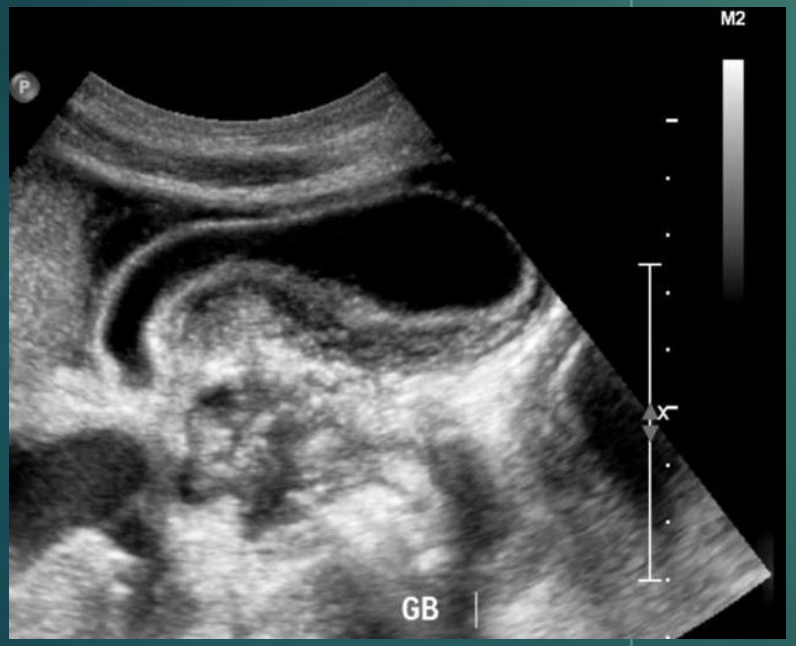


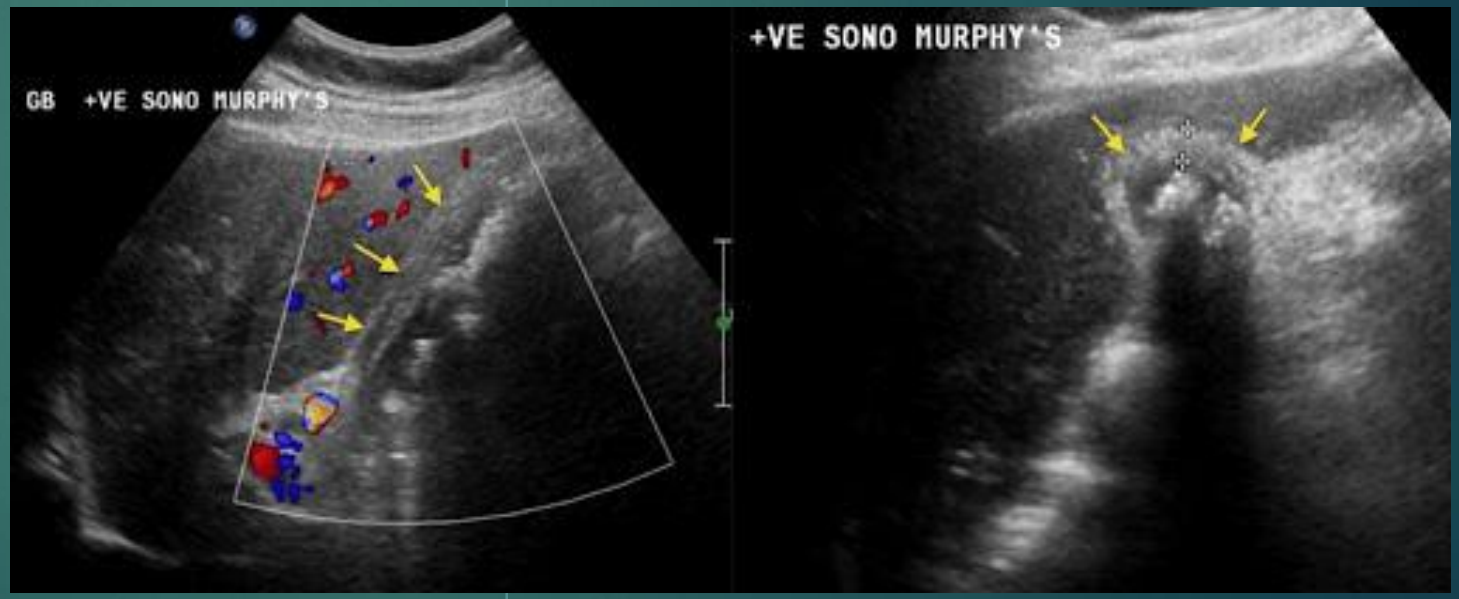


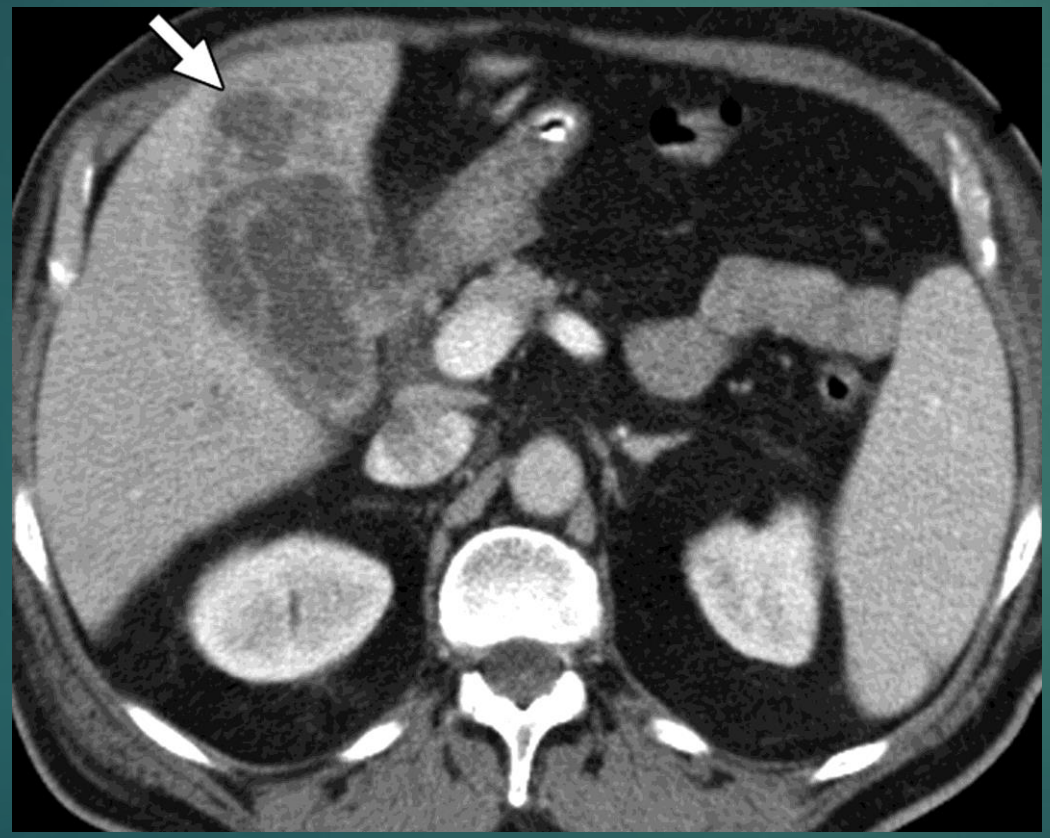

GE
TARGET LESION
TRANSVERSE
LONG AXIS
1 L 3.44 cm



A 71-year-old man presented to the ED with right upper quadrant pain of two day's duration.
The pain began as a dull ache in the midepigastrium and then moved to the right upper quadrant and right flank. He vomited several times and was unable to eat.
Abdominal examination revealed diminished bowel sounds, moderate tenderness in the right upper quadrant, and a Murphy's sign.



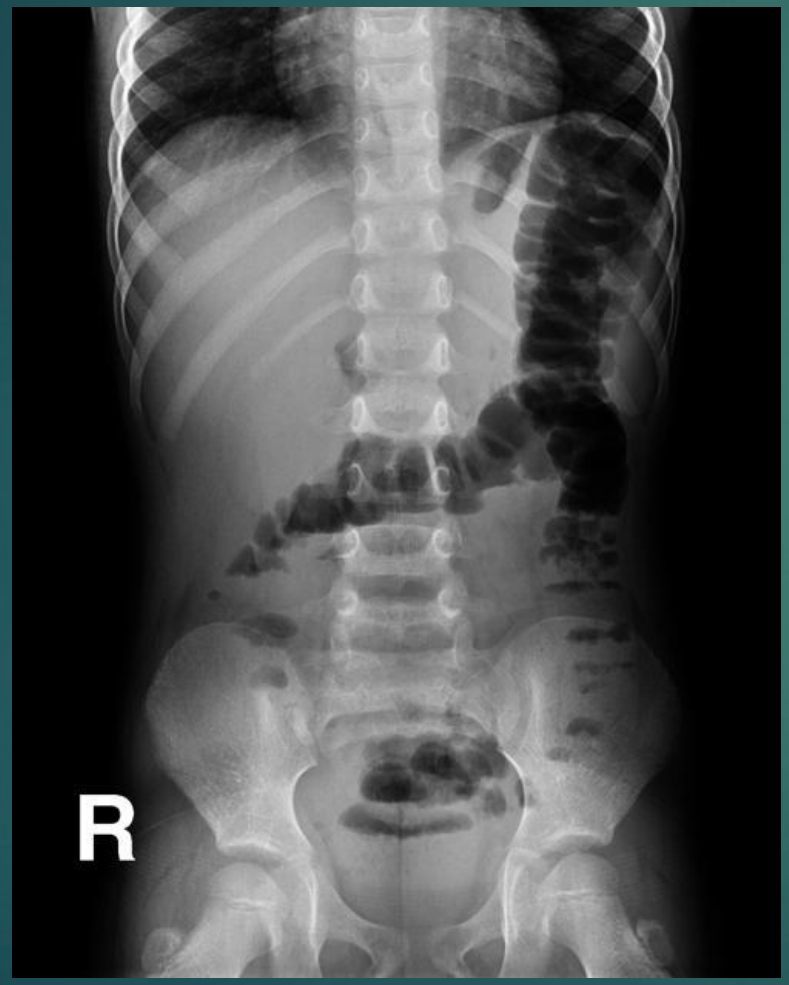


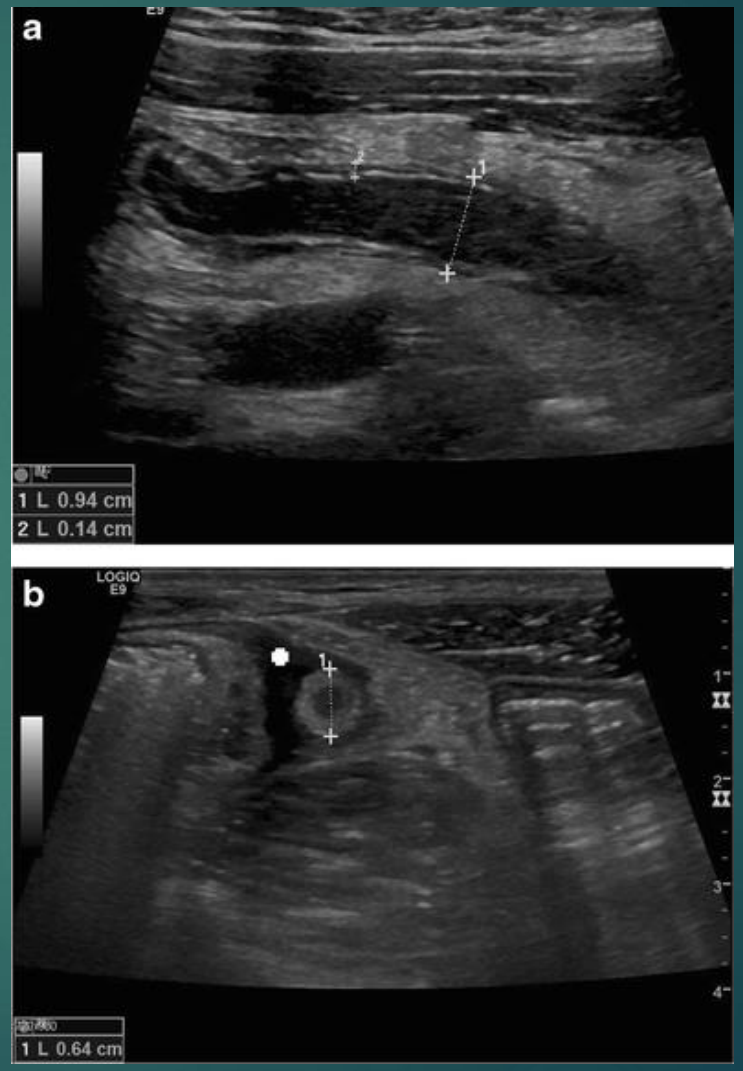


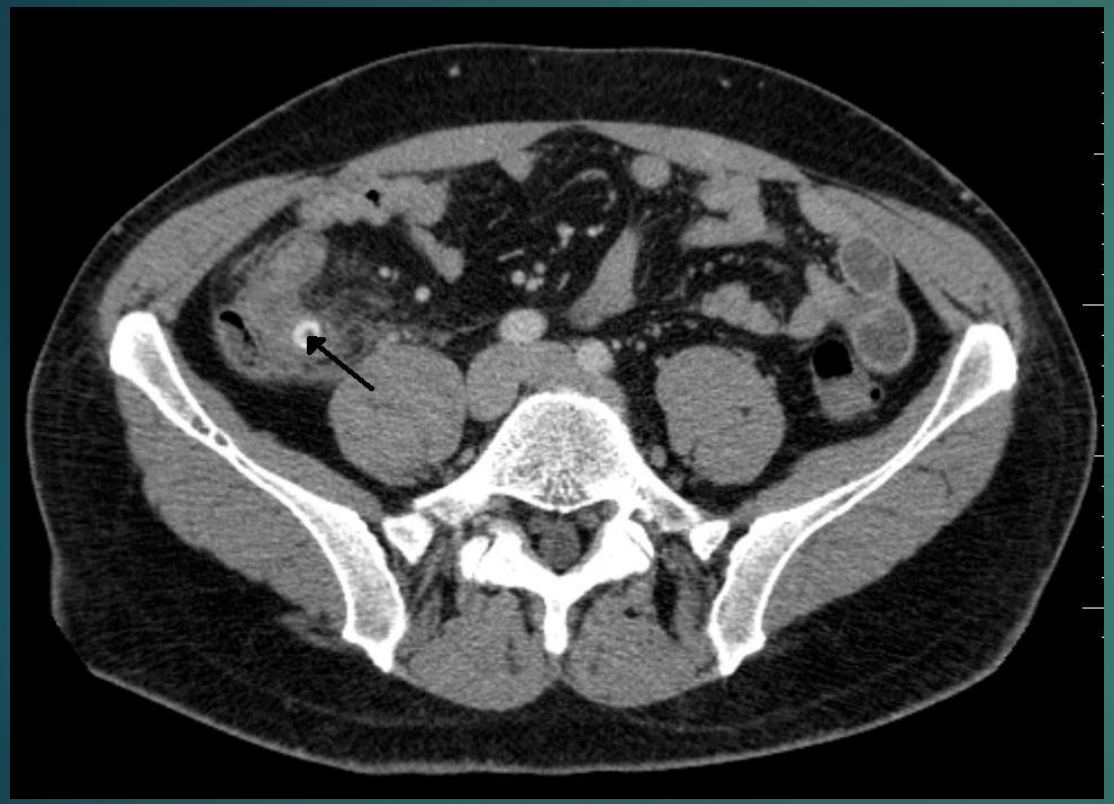
- Acute cholecystitis

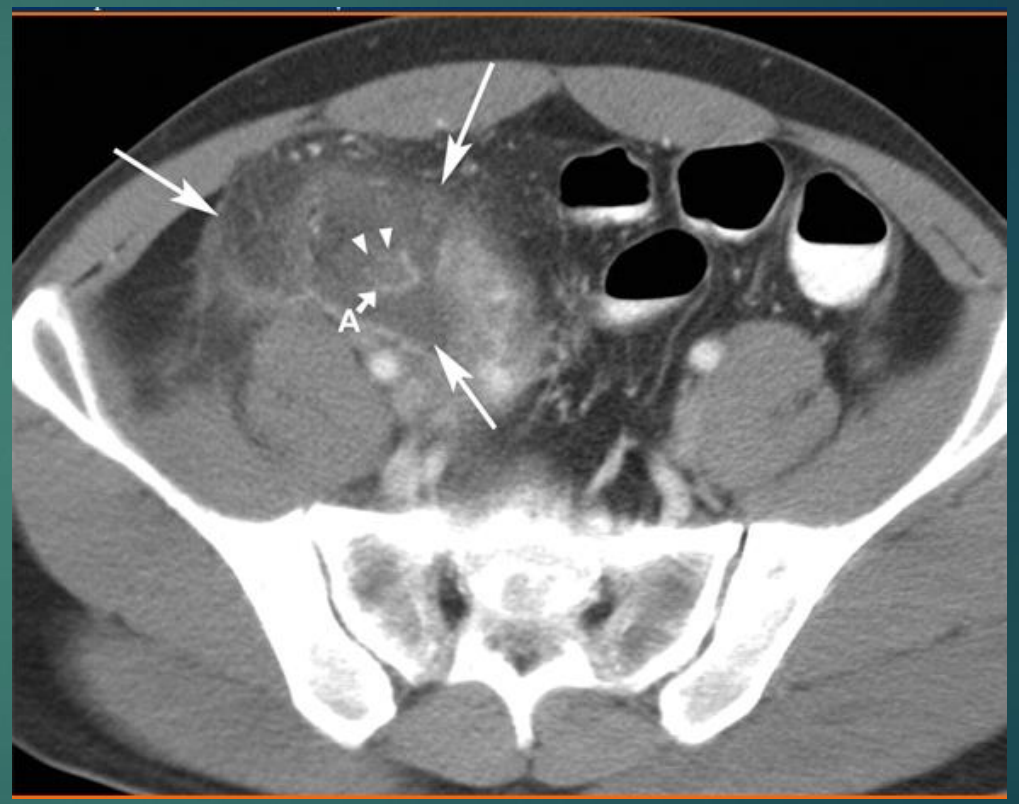
8 years old boy presented with vague abdominal apin with vomiting
Abdominal examination show tenderness manily at right lower abdominal region

WBC count was WBC 19,700/mm^3 ,





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Emergency Radiology

Abdominal Emergencies:

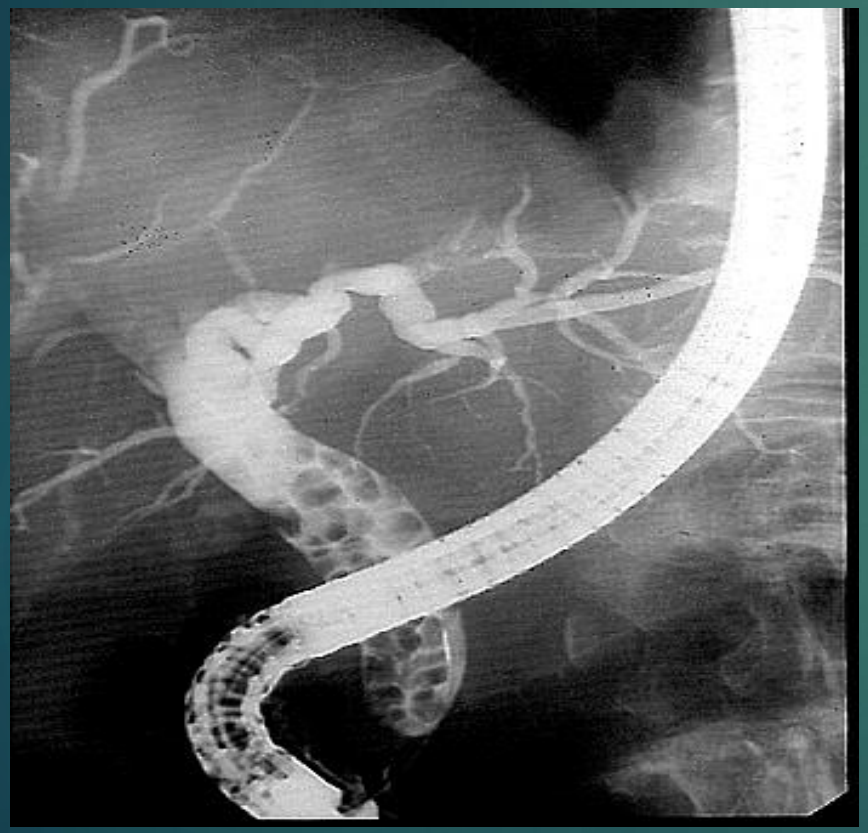
Jaundice

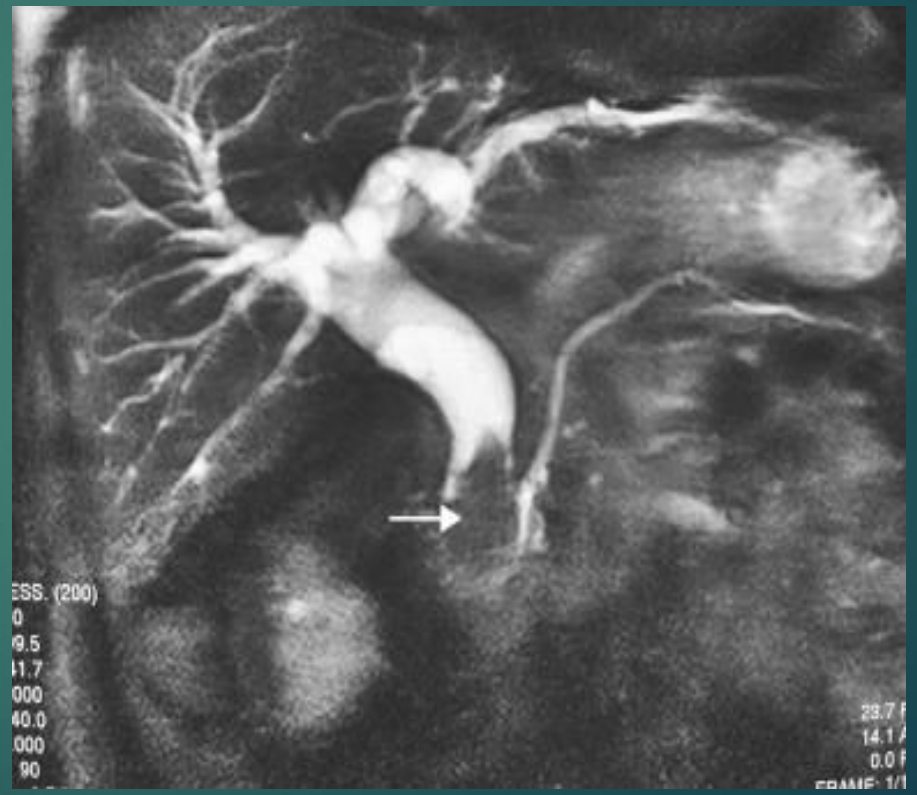
What to order?
Ultrasound
CT scan
PTHC
ERCP

When?
Yellowish discoloration of the skin – dark urine – pale stools

CBD stones ,IHBD

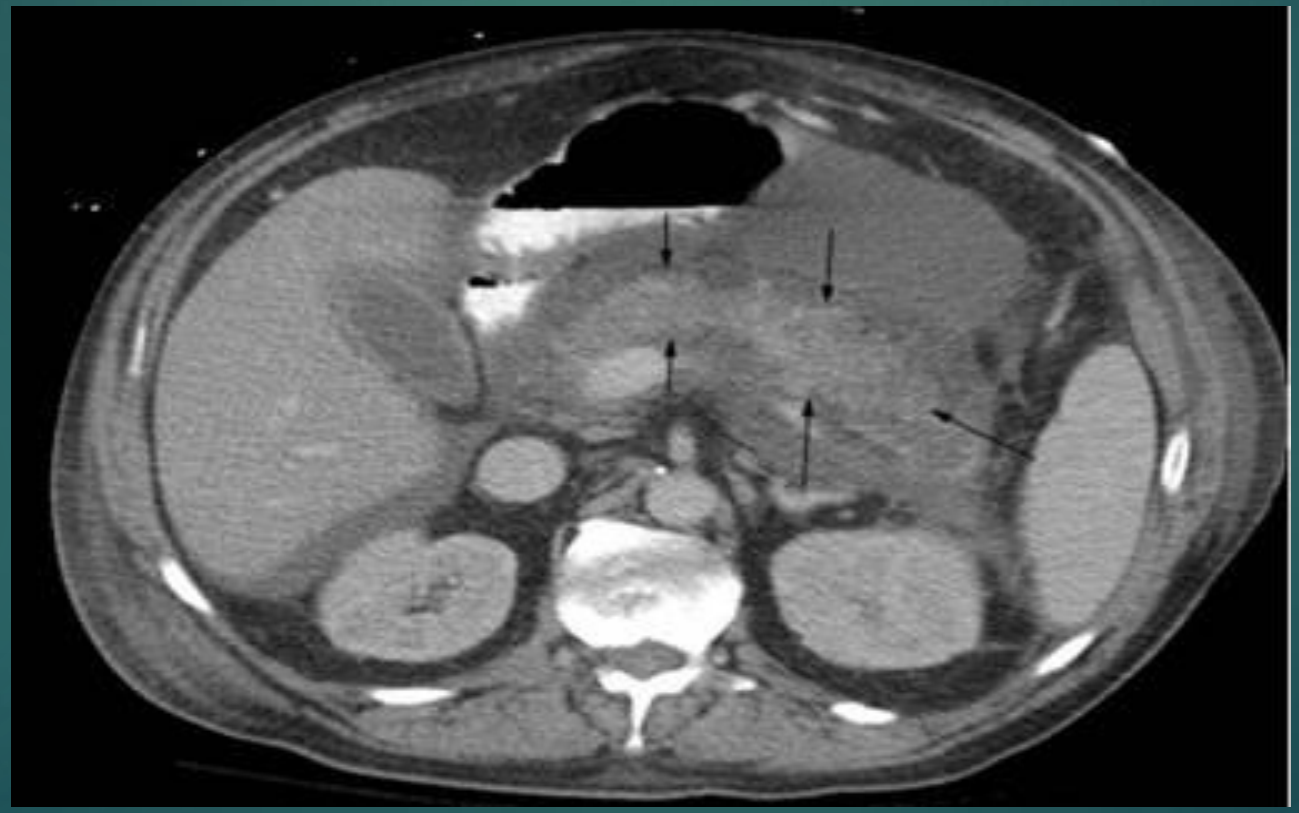
- ERCP





Emergency Radiology

- PANCRATITIS



Emergency Radiology

Abdominal Emergencies:

Abdominal Trauma

- Hemoperitonium
- Visceral injuries (Liver, Spleen, Kidney, UB, etc.)

Non-Traumatic emergencies.

- Intestinal obstruction, Appendicitis, GUT perforation,
- Ascites, Jaundice, peritonitis, GI bleeding

Emergency Radiology

Abdominal Emergencies:

Abdominal trauma:

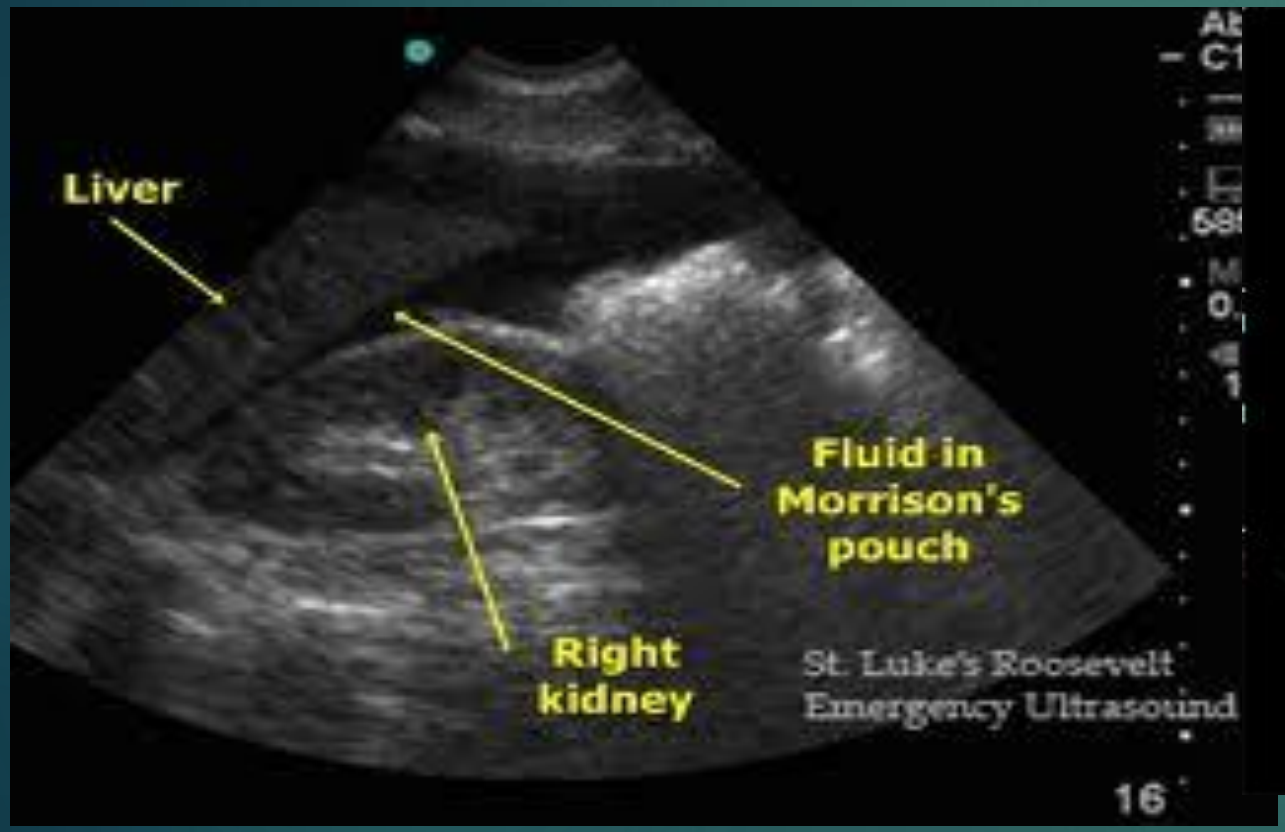
What to order?

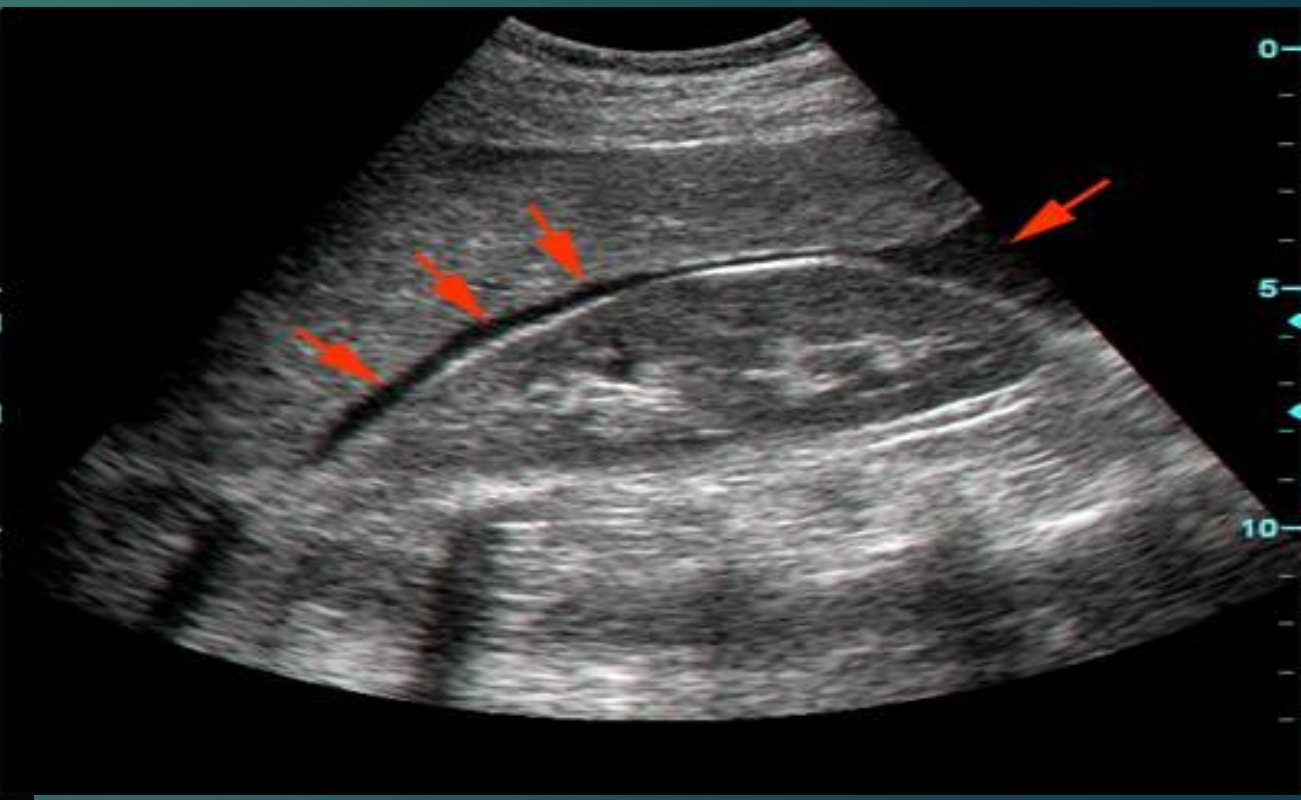
- Chest & Abdominal radiographs.
- Ultrasound (FAST)
- CT scan
- Arteriorgraphy.

When?

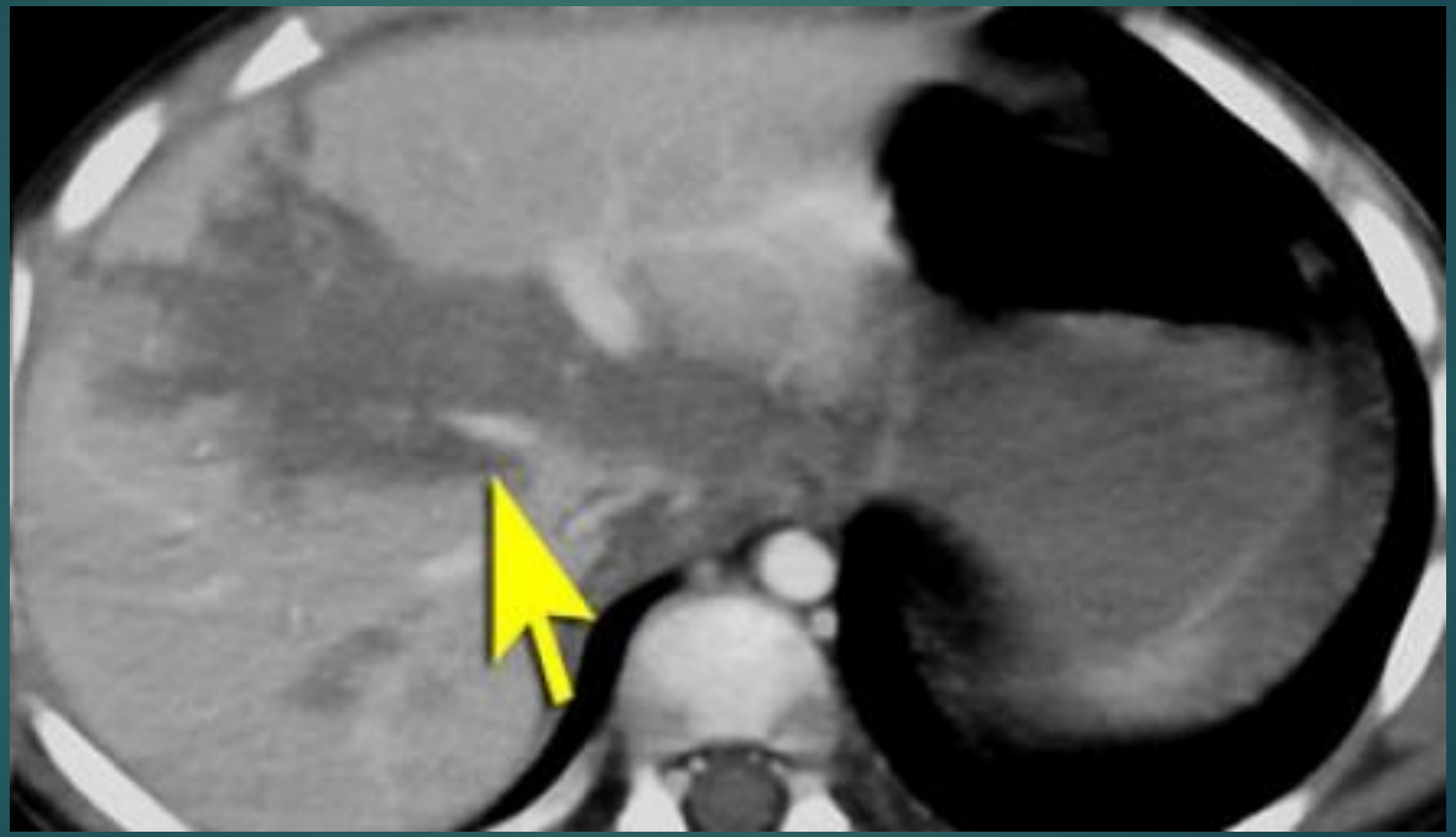
History of trauma to the abdomen – Motor vehicle accidents

Emergency Radiology

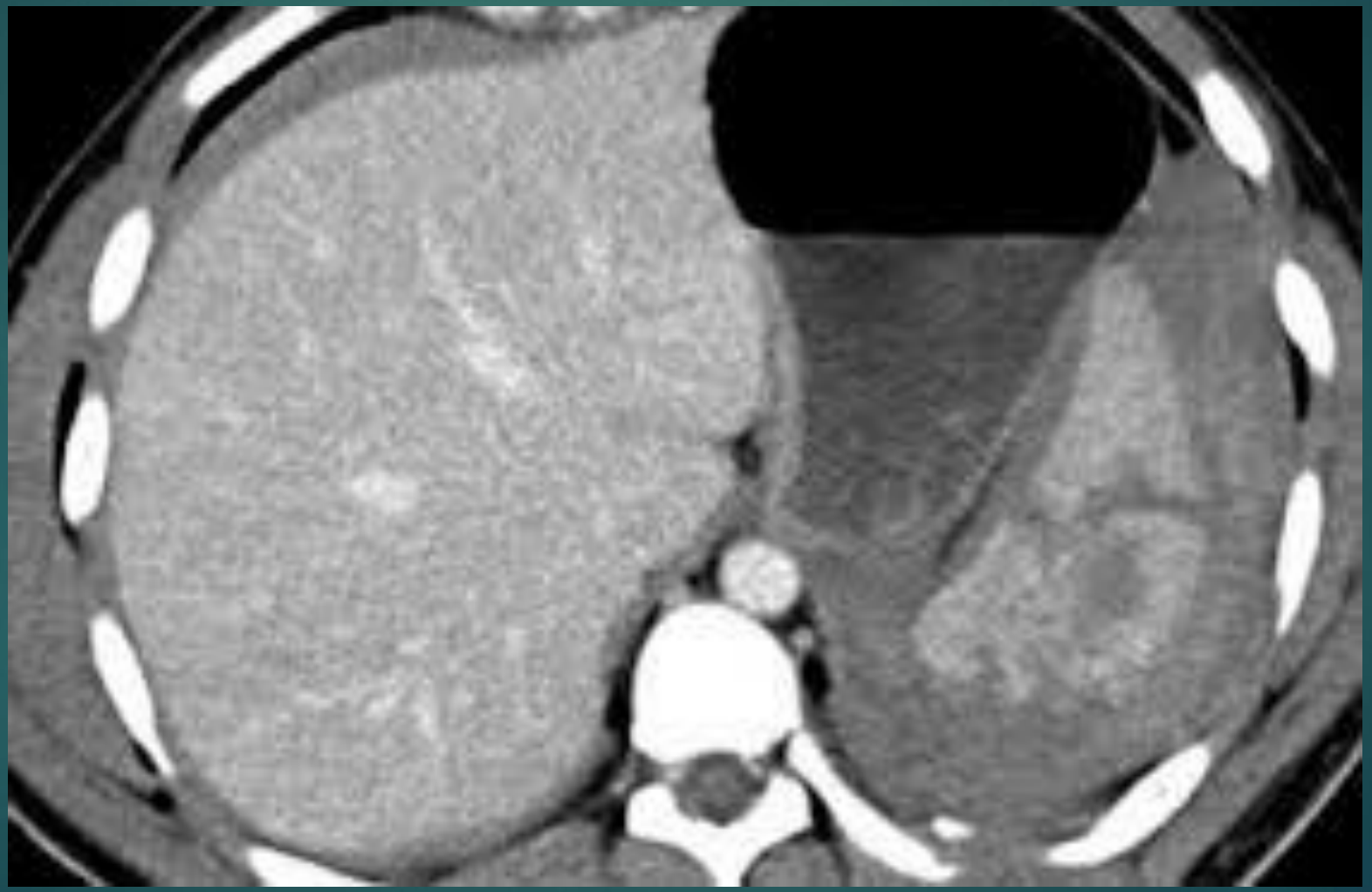




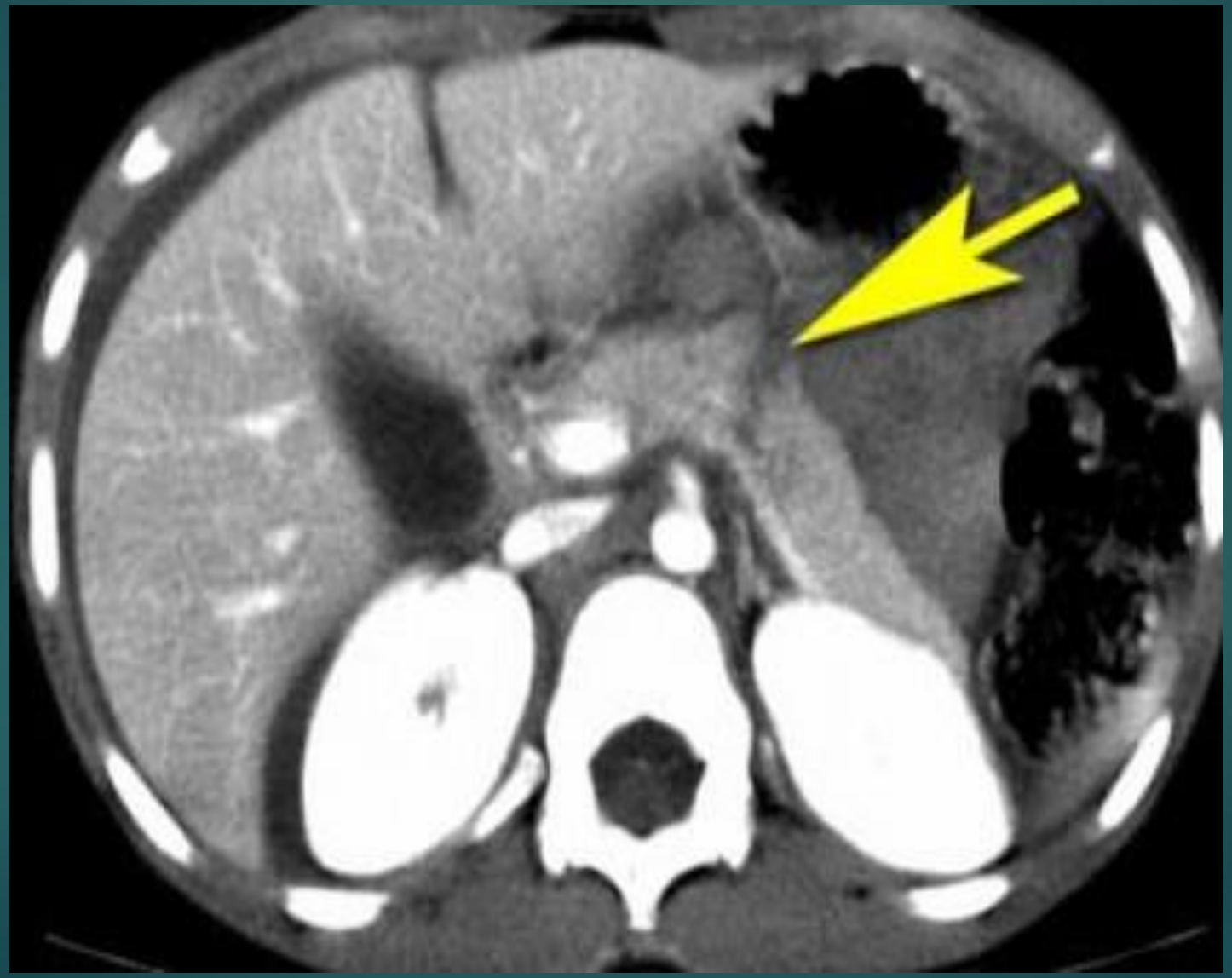
Liver injury



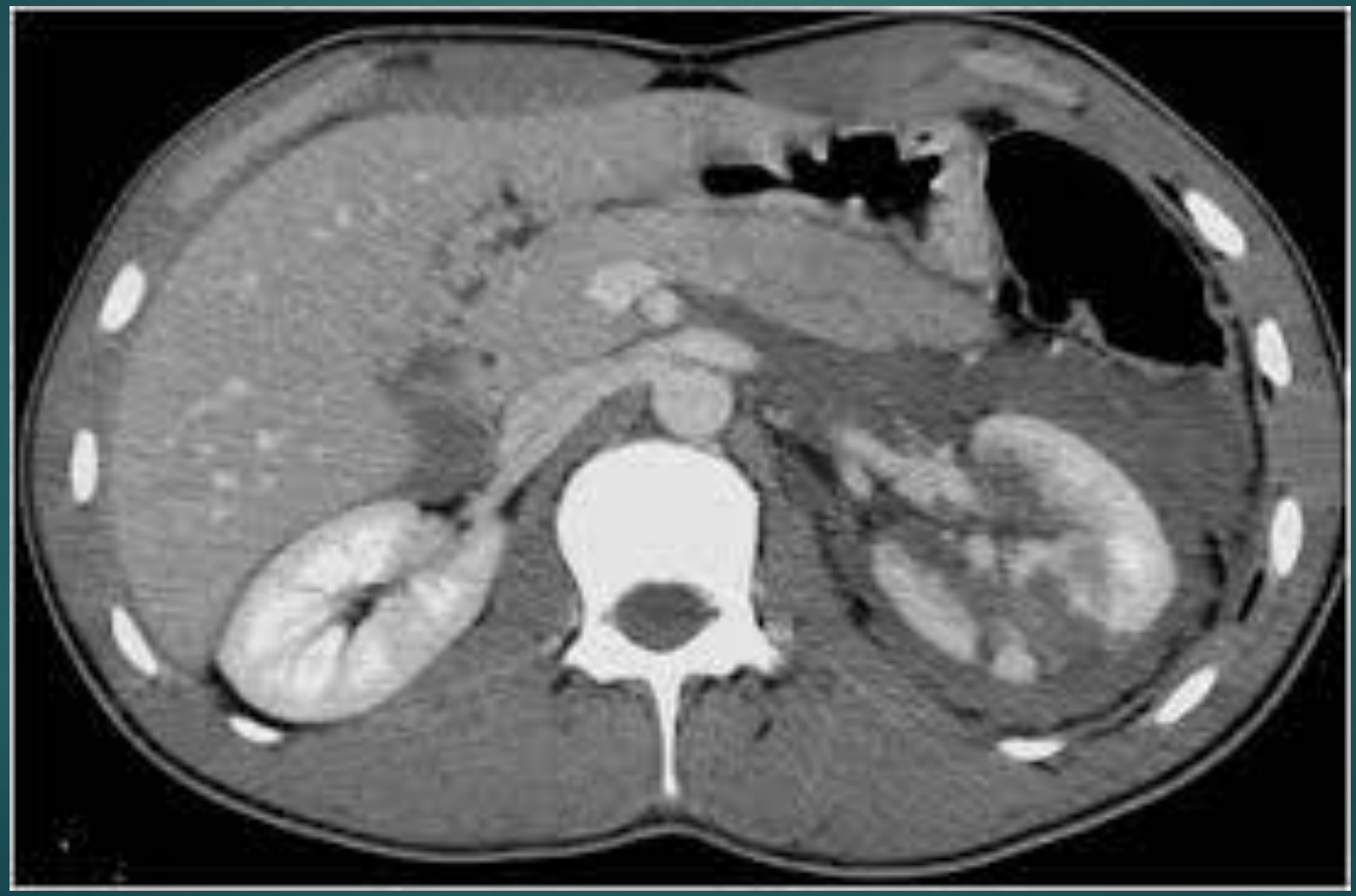
Spleen injury



Pancreas laceration (fracture pancreas)



Fragmented kidney and perinephric hematoma



Emergency Radiology

Genitourinary Emergencies:

- UT stones
- Hematuria
- Urinary tract trauma.
- Urethral Injuries, stones (male)
- Scrotal injuries, swellings, testicular torsion, epididymitis (male)

Emergency Radiology

Genitourinary Emergencies:

Ureteric Stones (Renal Colic):

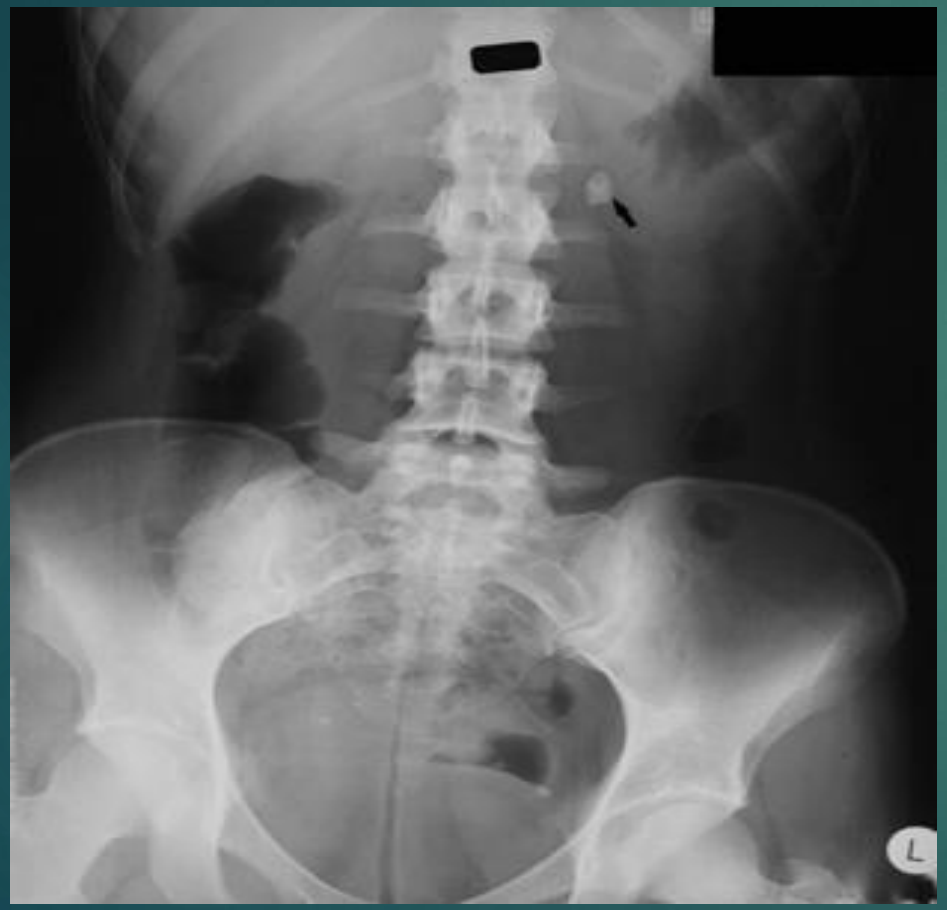
What to order?

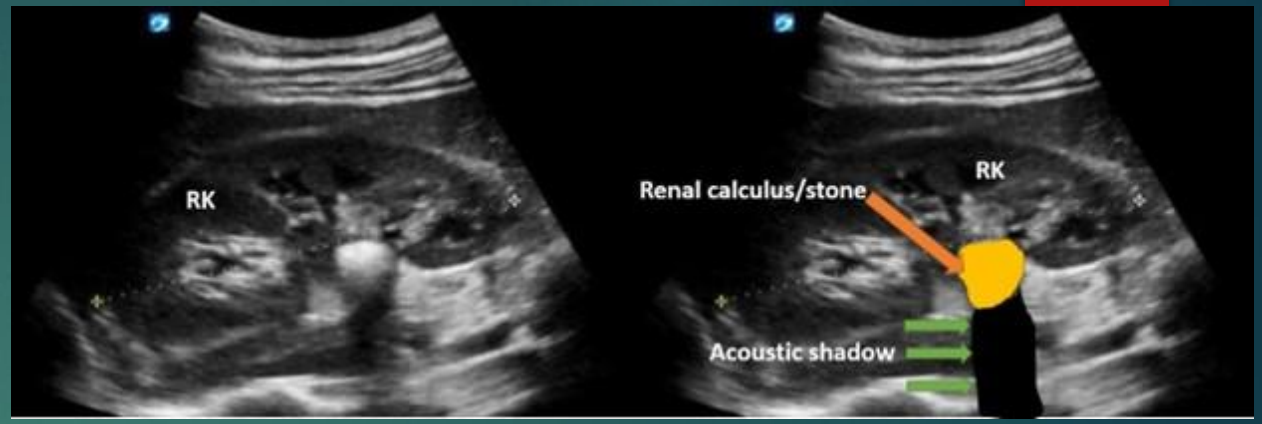
- Plain X-ray of the urinary tract (PUT)
- Ultrasound
- Intravenous Urography (IVU)
- CT of the abdomen

When?

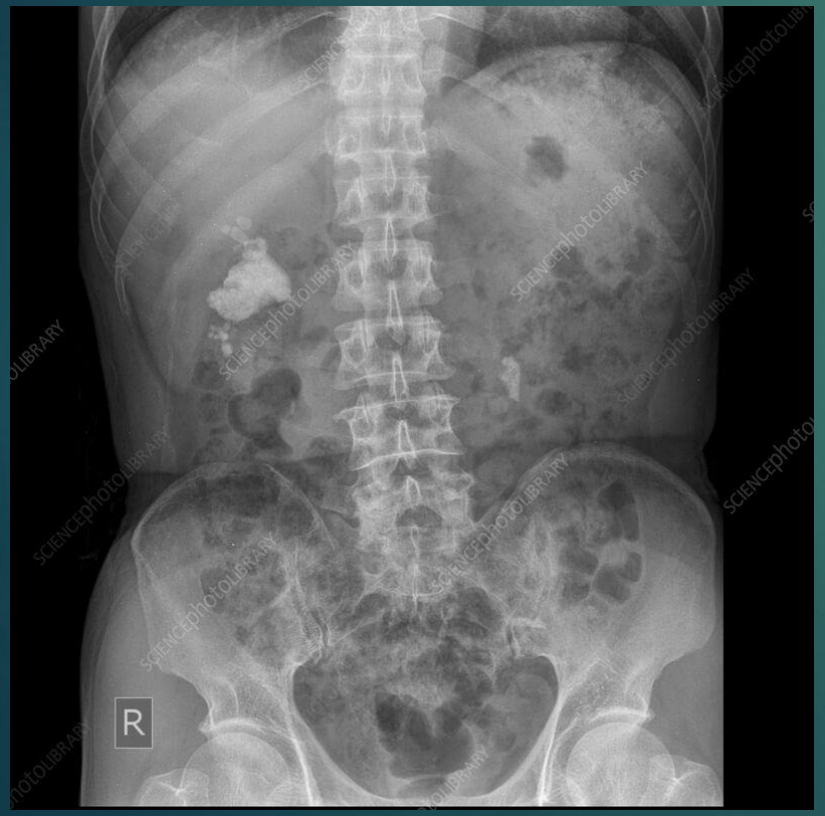
Sudden onset of loin pain radiating to the groin.

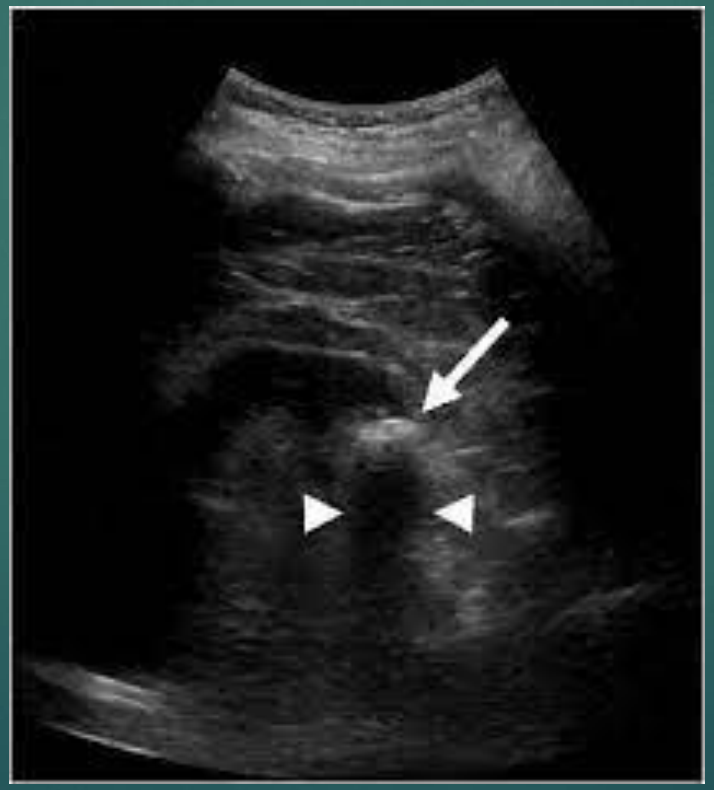
Ureteric stone



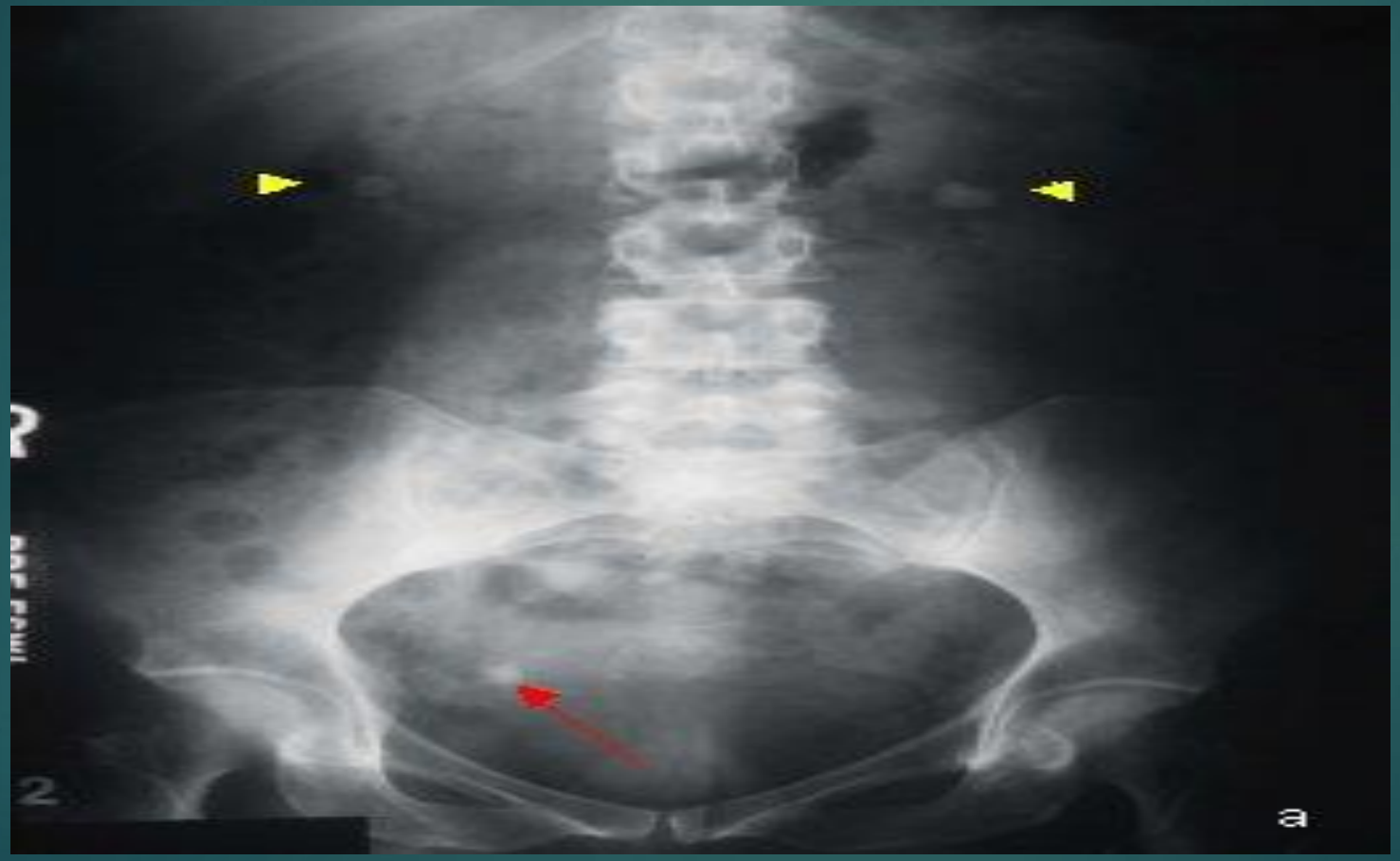


- 27 years old female presented with colicky right loin pain

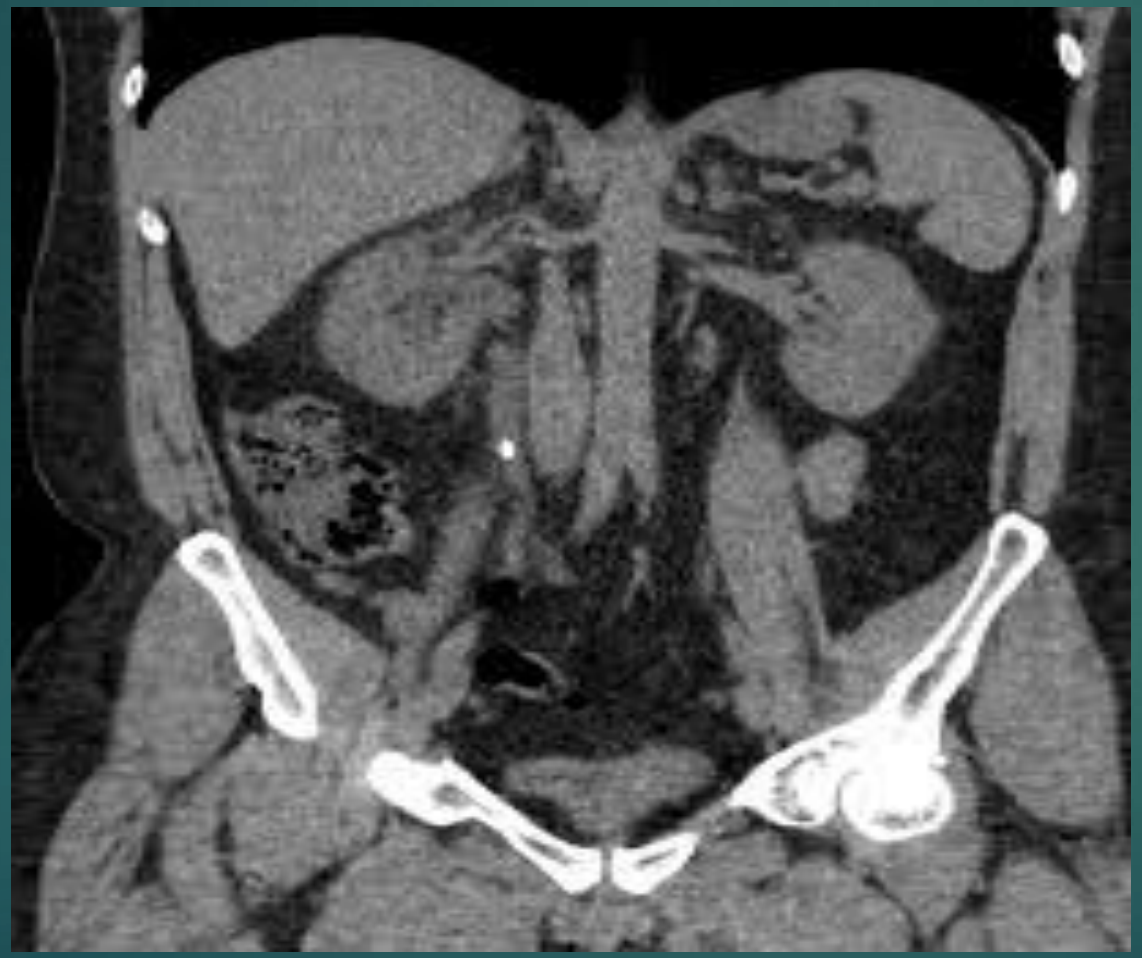




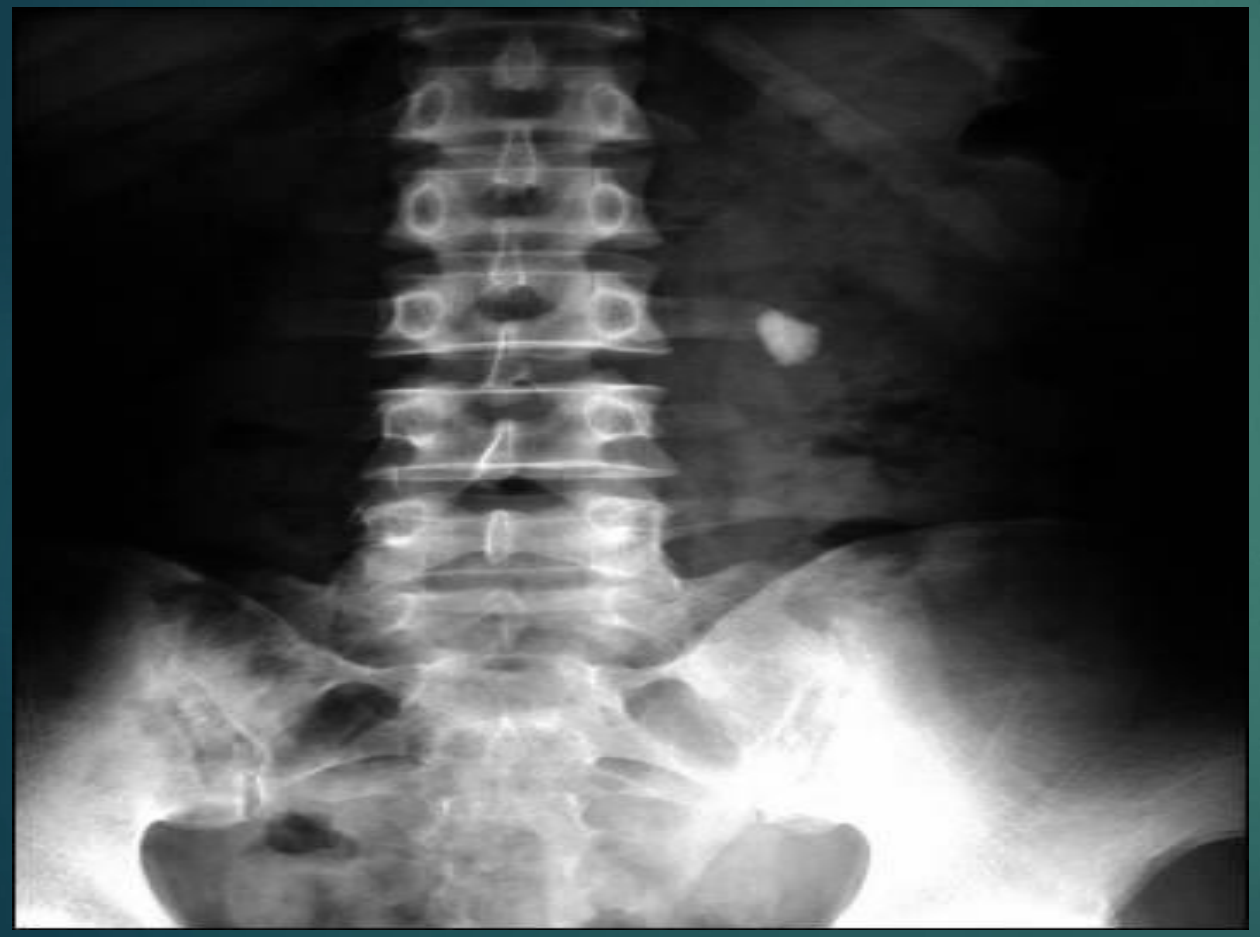
Emergency Radiology

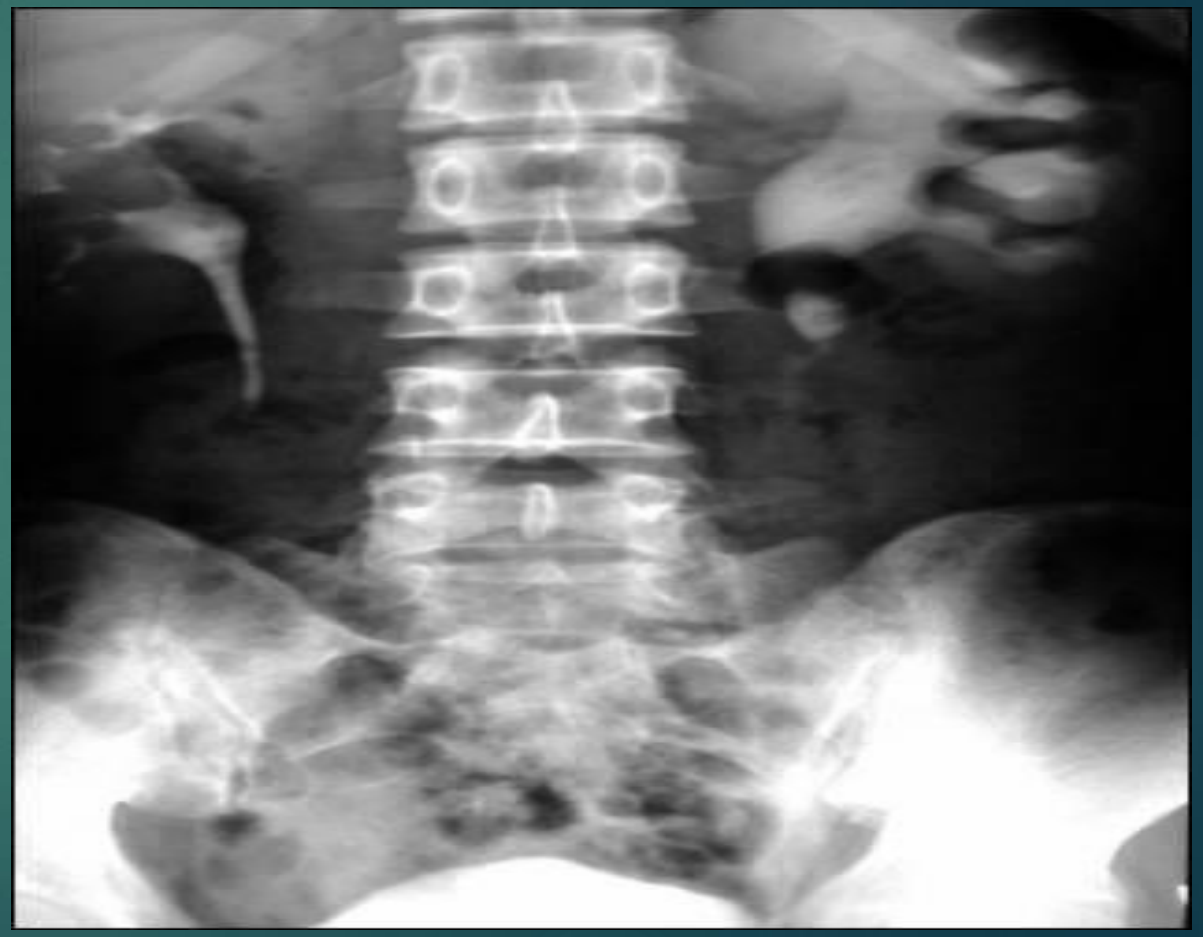


Ureteric stone

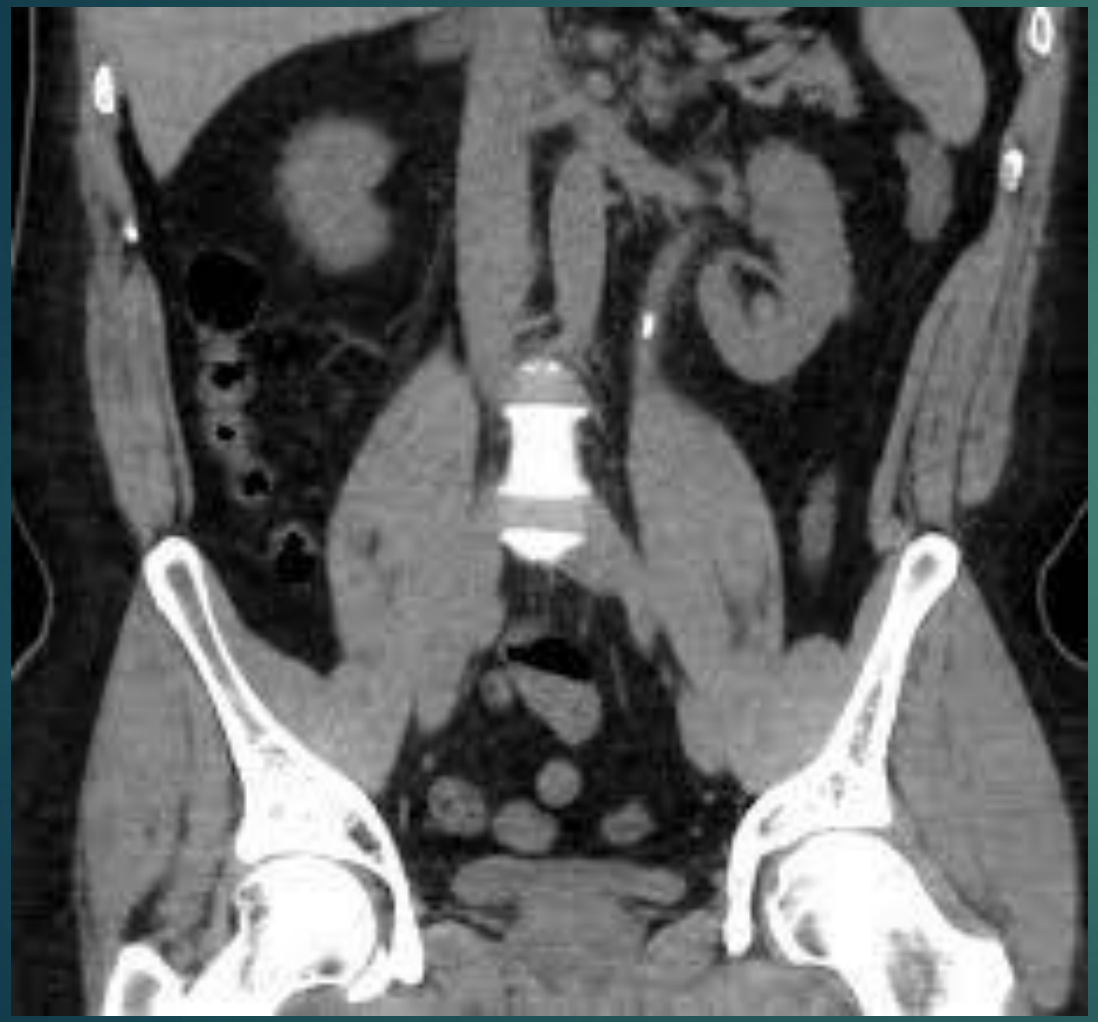


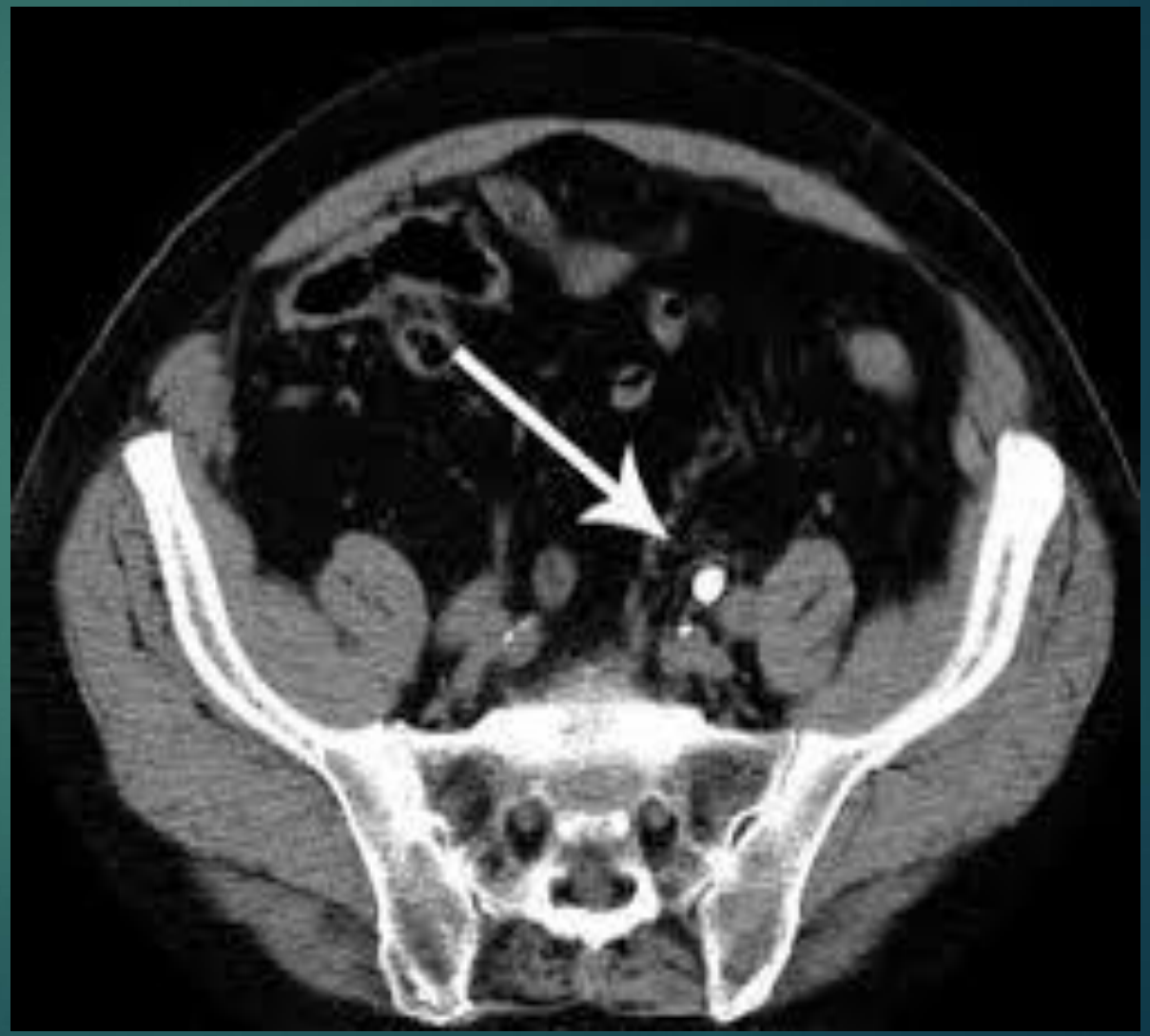
Ureteric stone



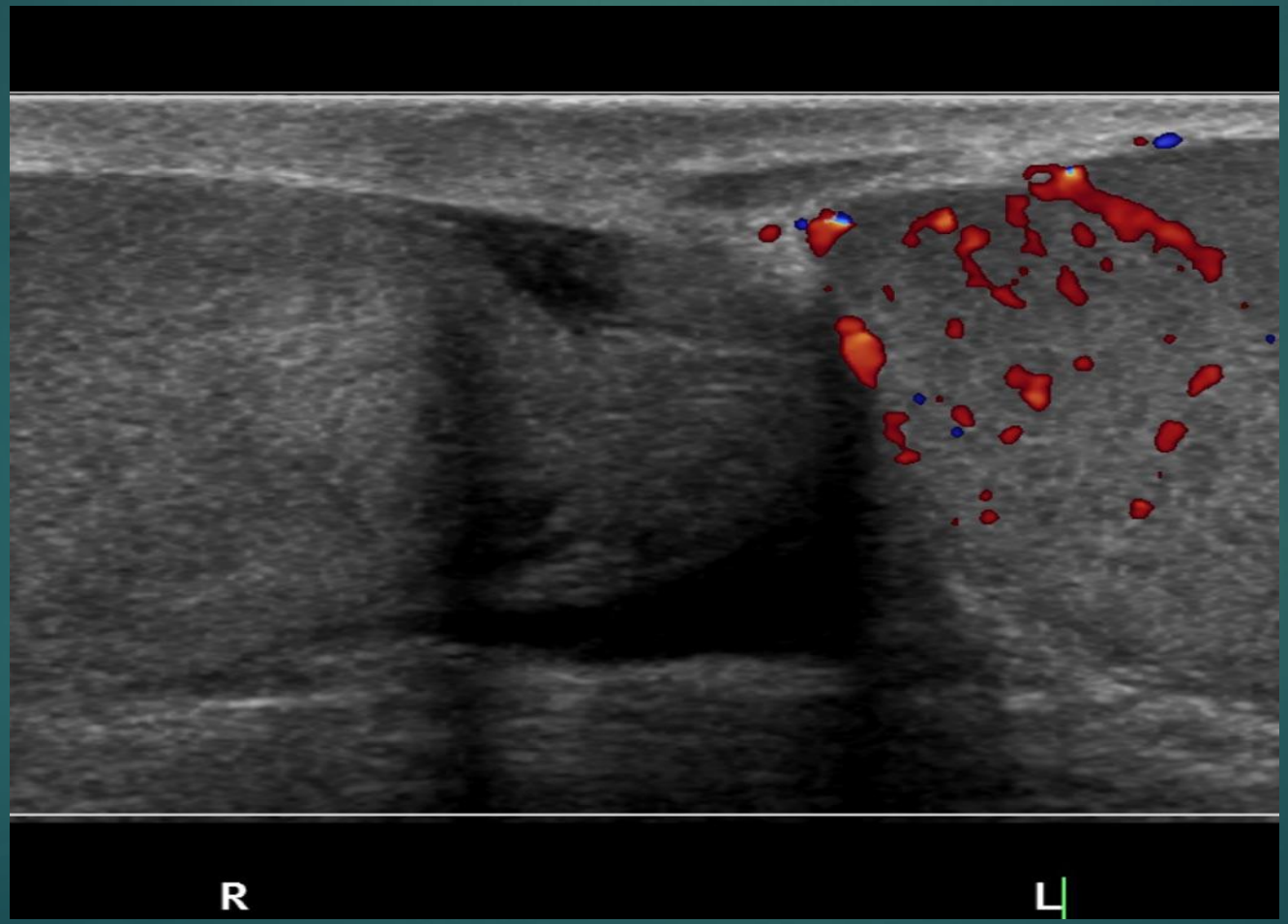


Emergency Radiology

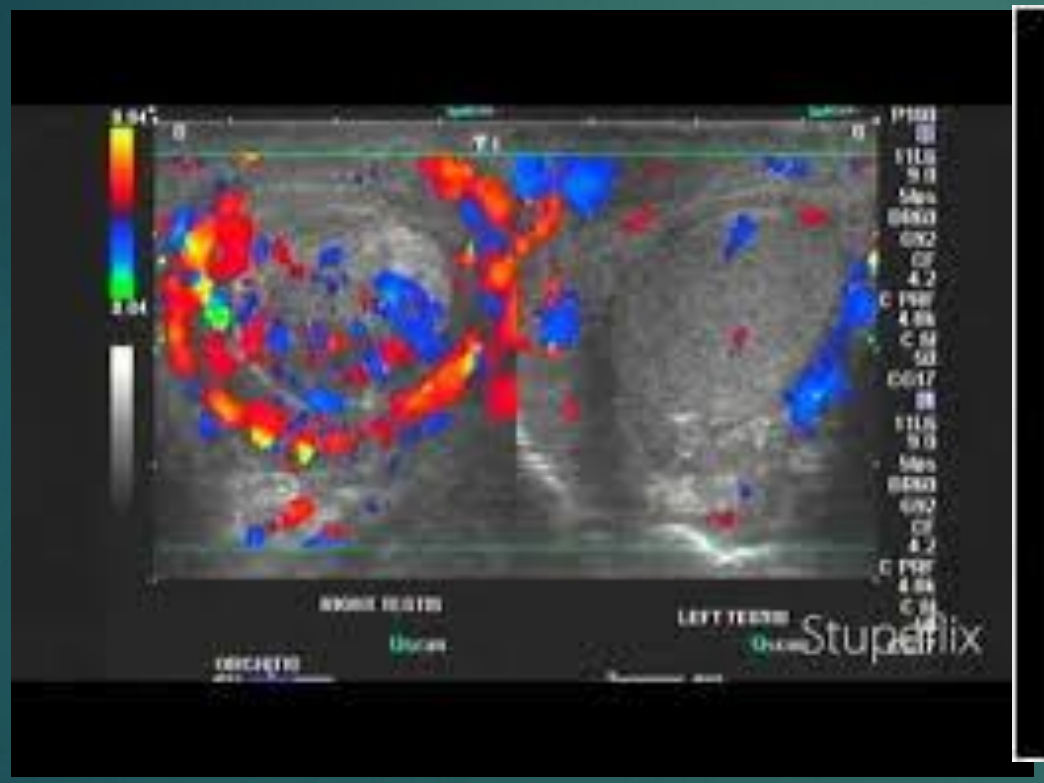


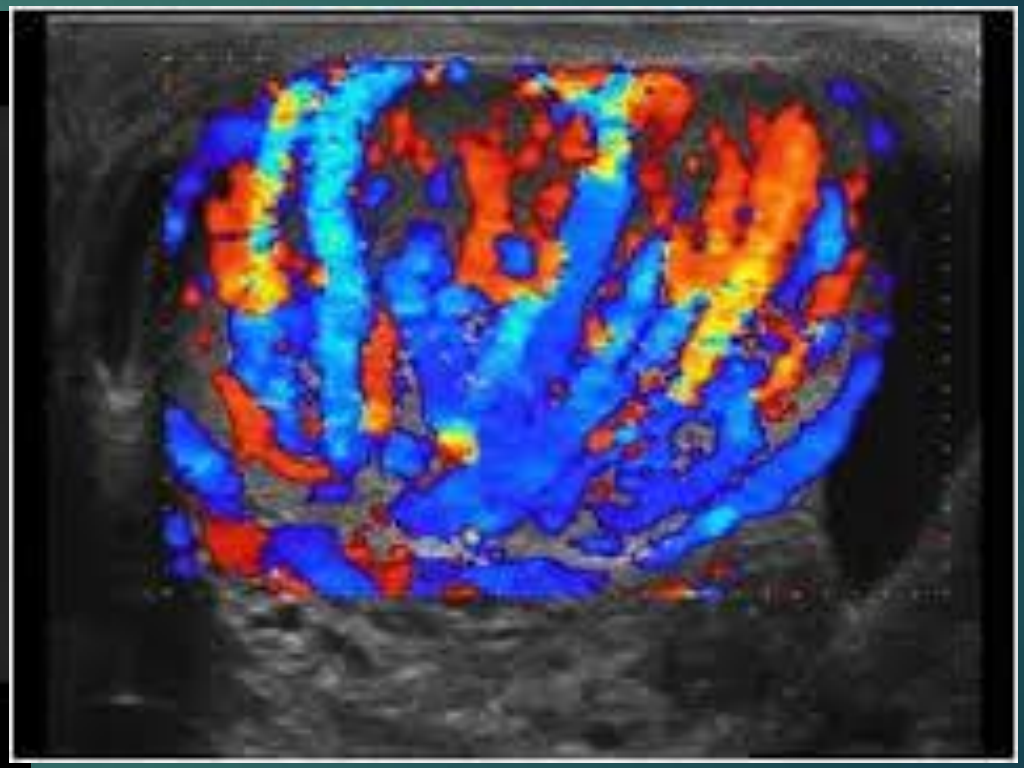


Testicular tortion



Emergency Radiology





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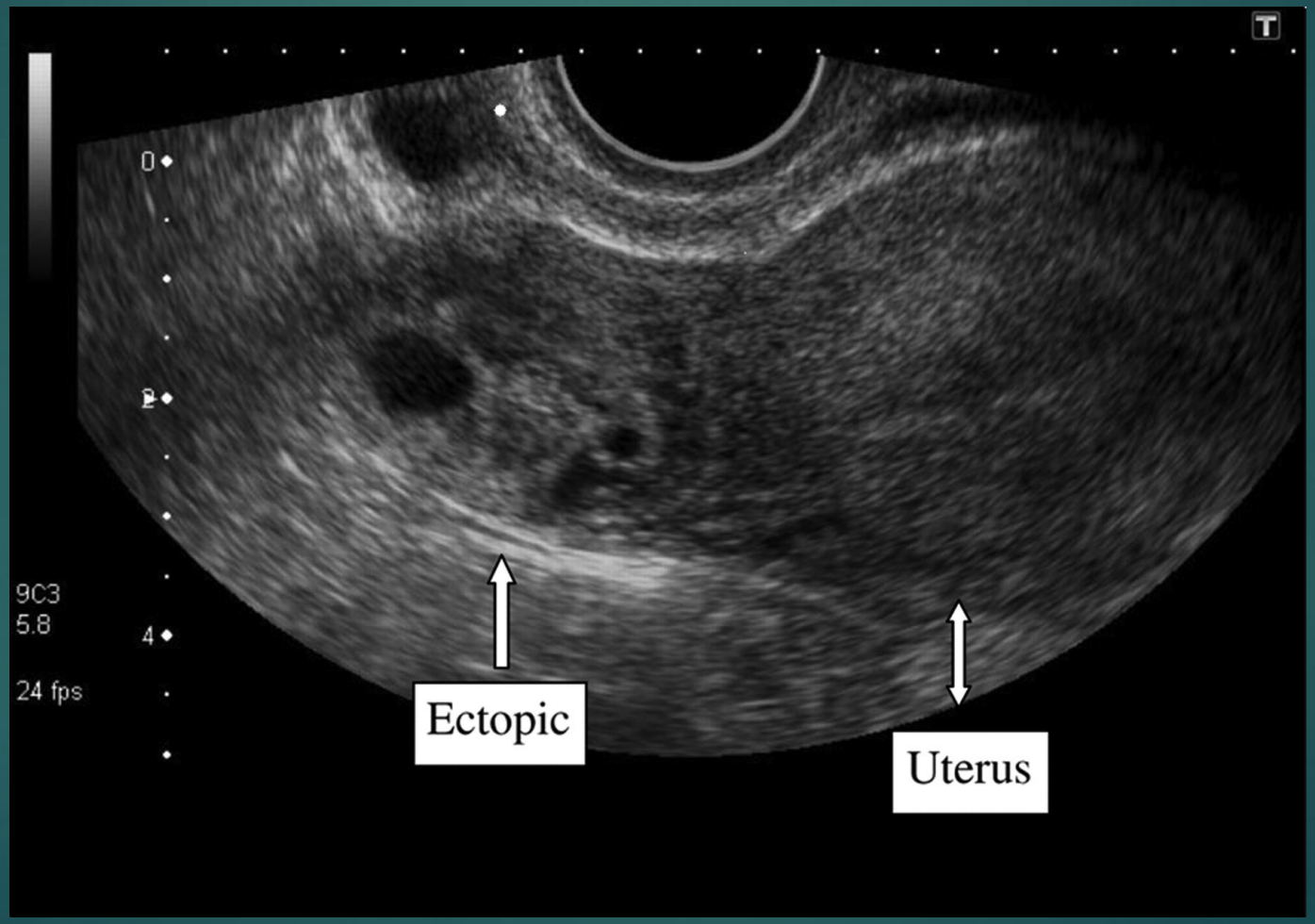
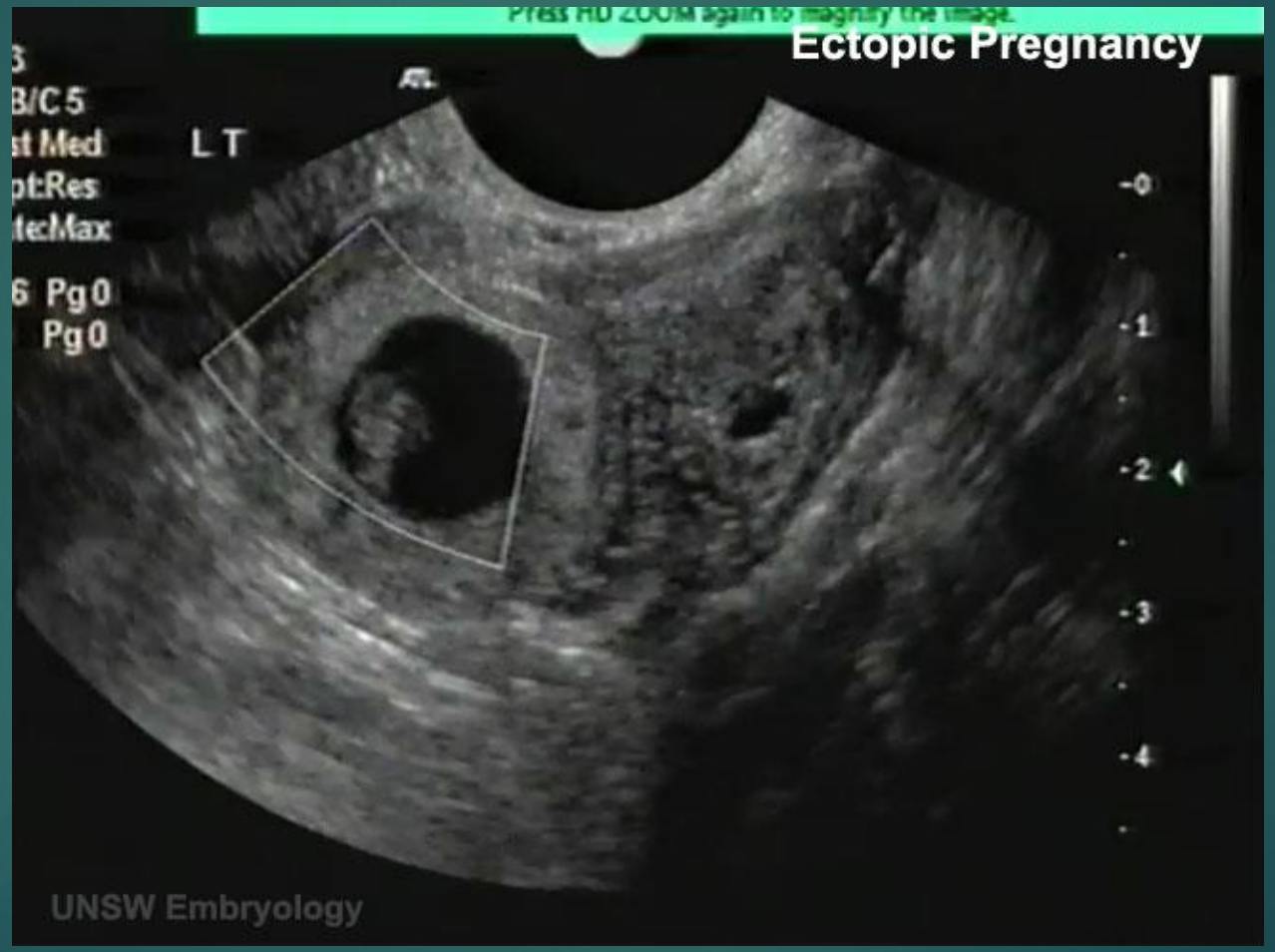
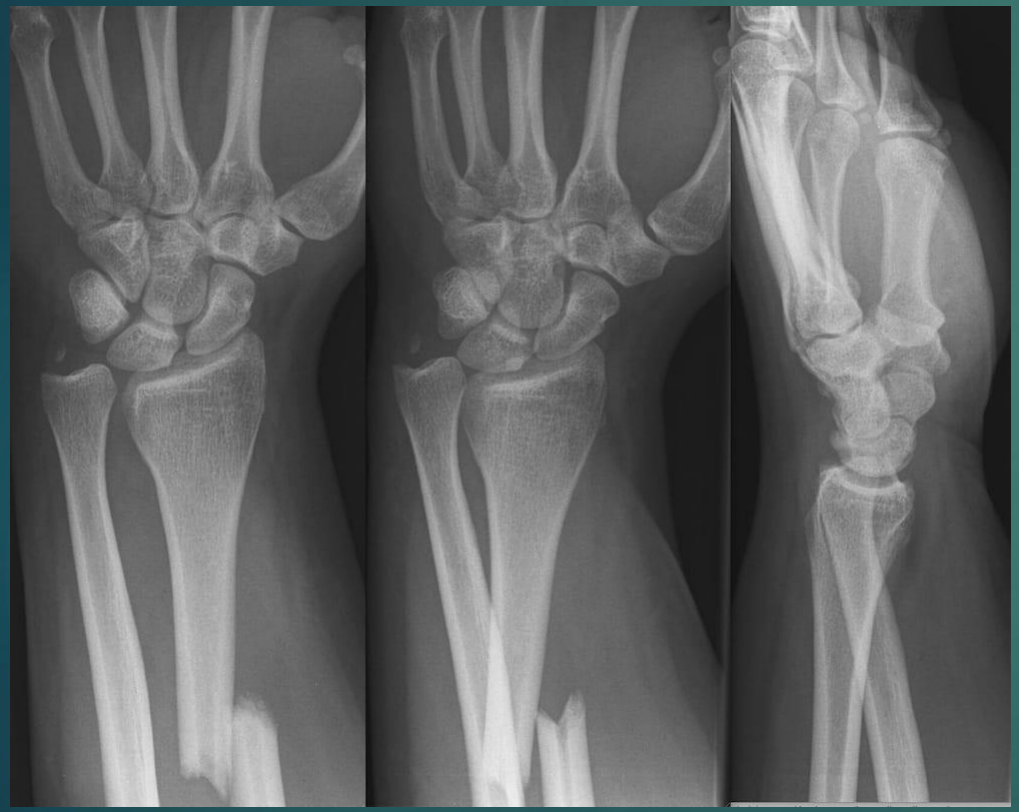
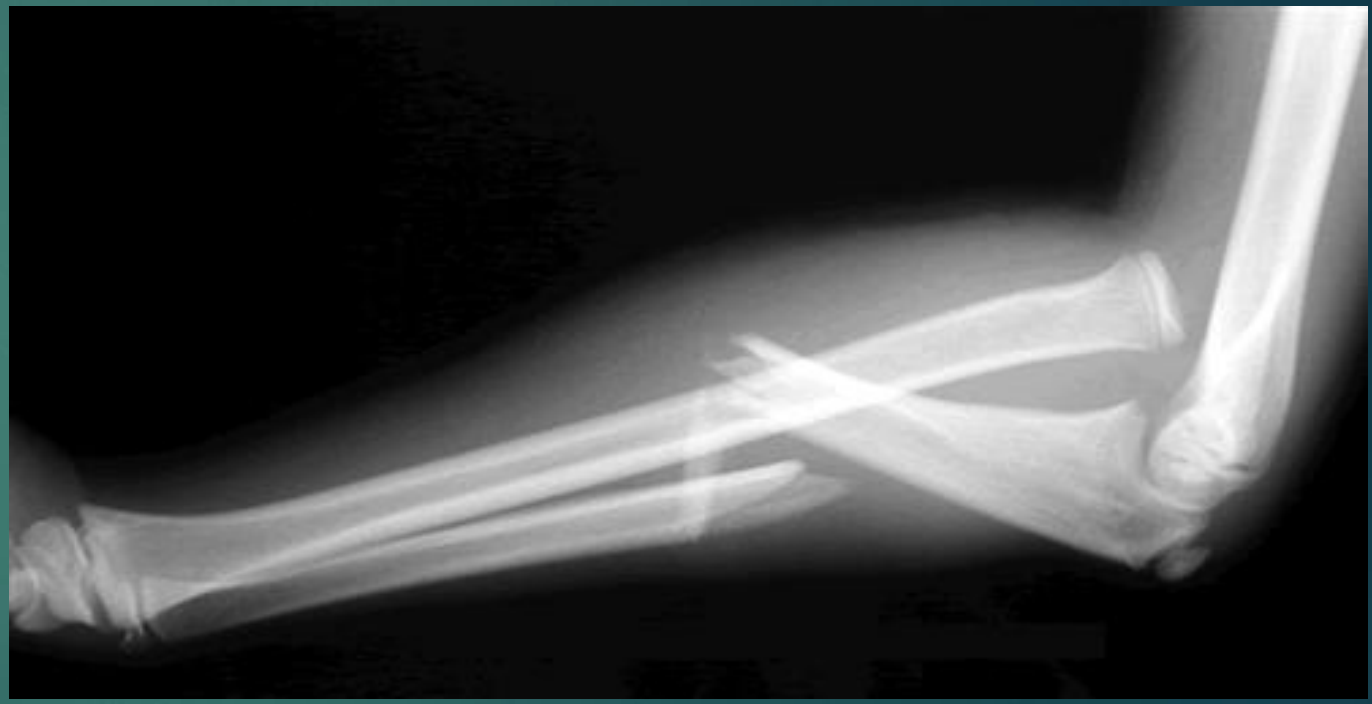


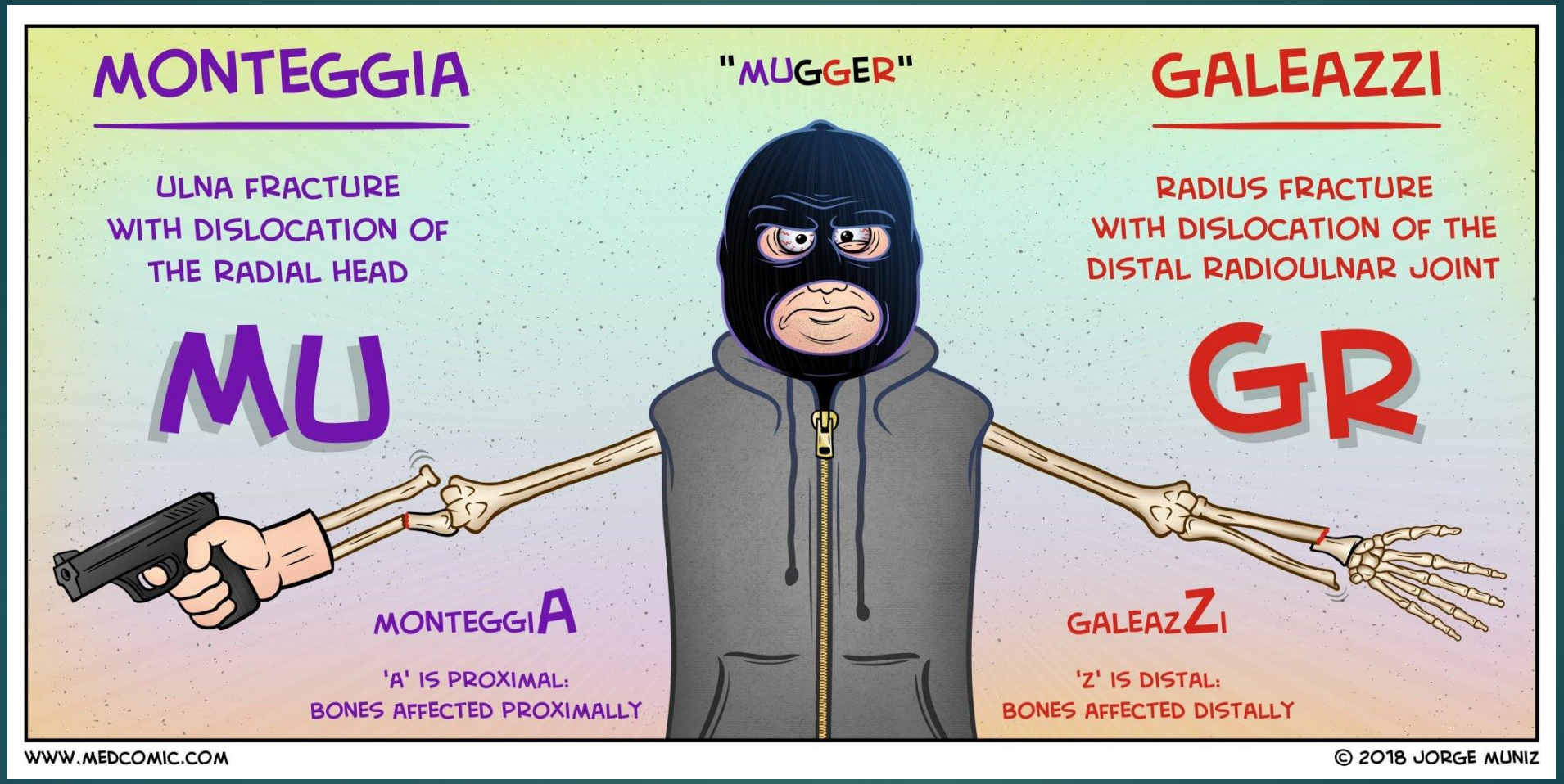
Emergency Radiology



A 78-year-old woman presents with wrist pain after falling on her outstretched arm. There is a dorsally displaced deformity at the area of tenderness.






MONTEGGIA
ULNA FRACTURE WITH DISLOCATION OF THE RADIAL HEAD
MU
MONTEGGIA
'A' IS PROXIMAL: BONES AFFECTED PROXIMALLY
"MUGGER"
GALEAZZI
RADIUS FRACTURE WITH DISLOCATION OF THE DISTAL RADIOULNAR JOINT
GR
GALEAZZI
'Z' IS DISTAL: BONES AFFECTED DISTALLY
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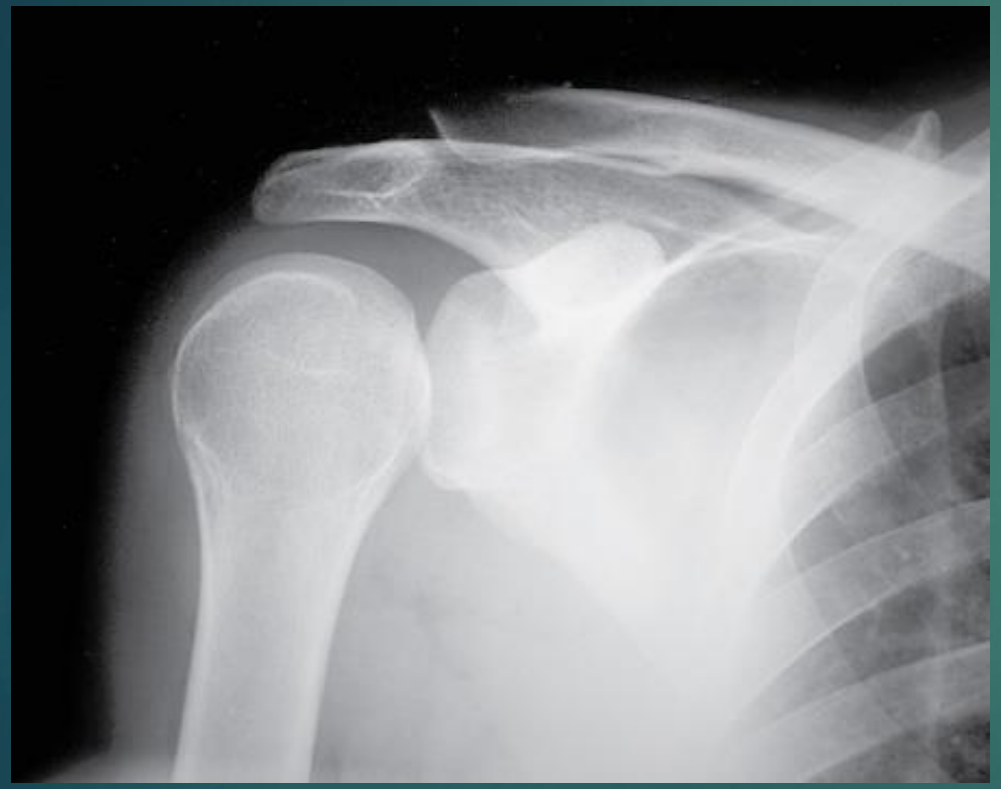
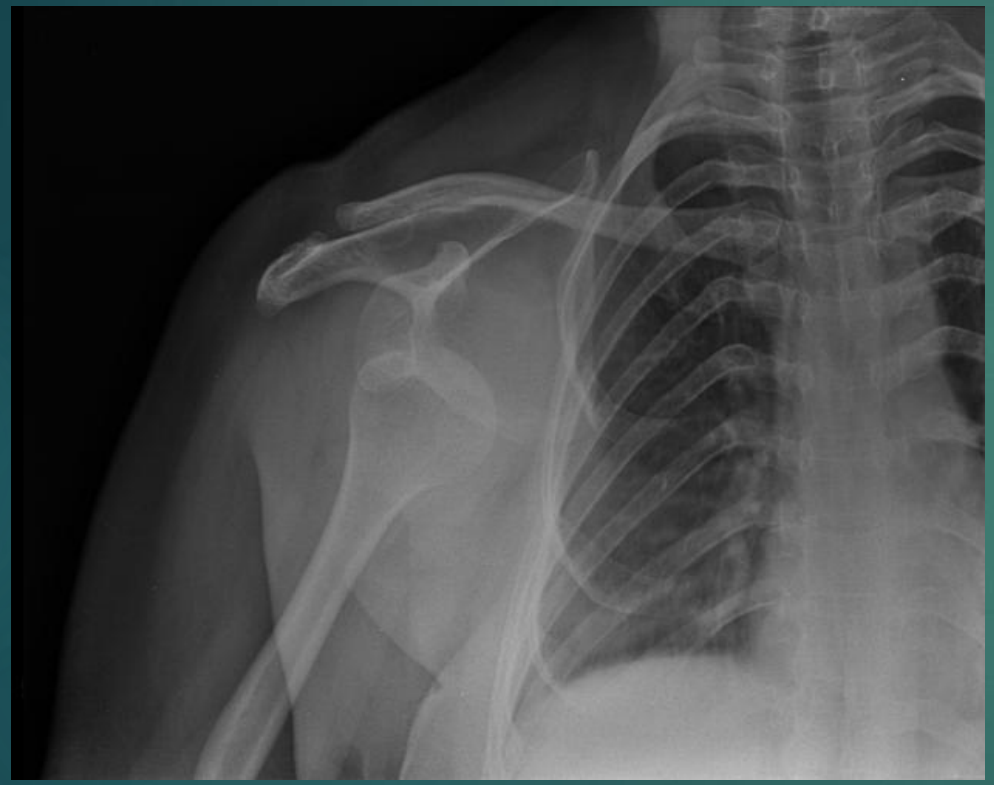
A 25-year-old man lost his balance while getting onto his bicycle and fell forward, landing on his outstretched right arm. He complained of pain in his right shoulder. There is no other injury. He presents holding his arm as shown in the photograph. He found it painful to move his shoulder from this position. There was no shoulder deformity or localized tenderness.



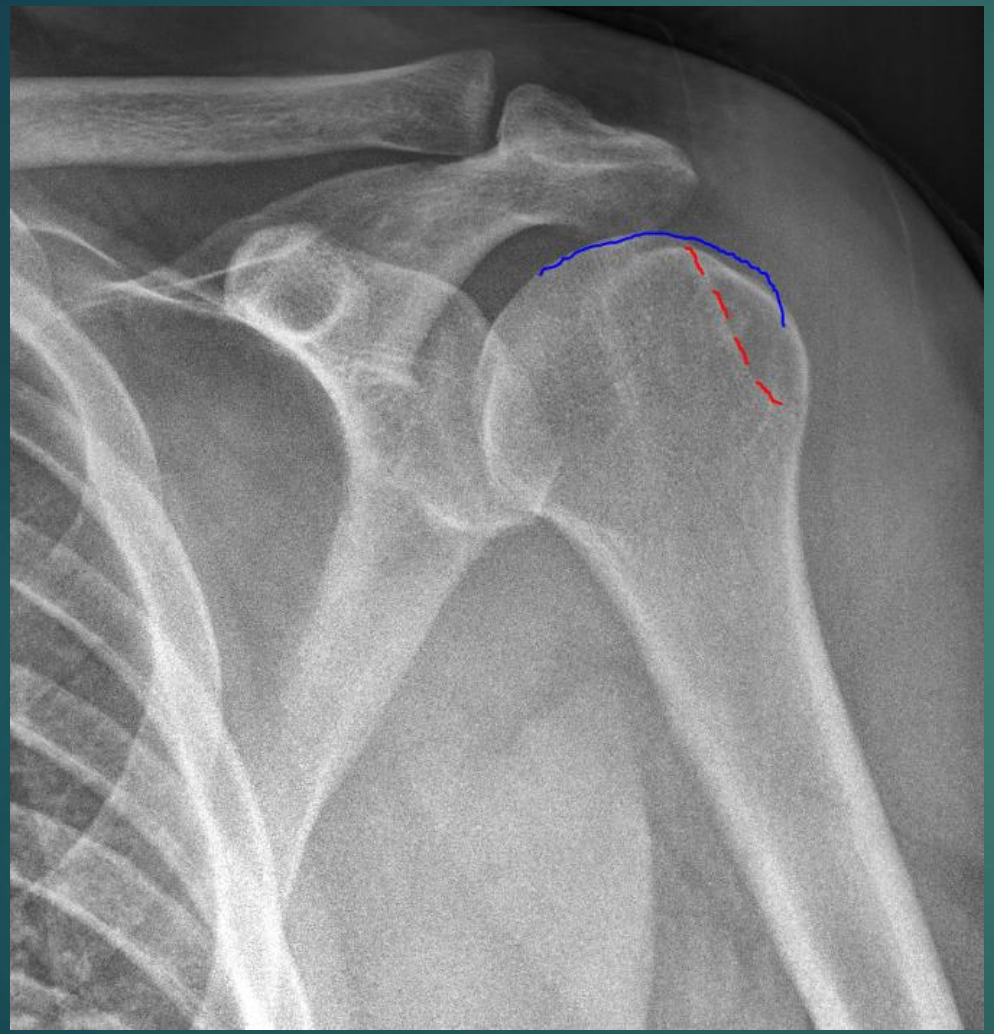
Posterior shoulder dislocation

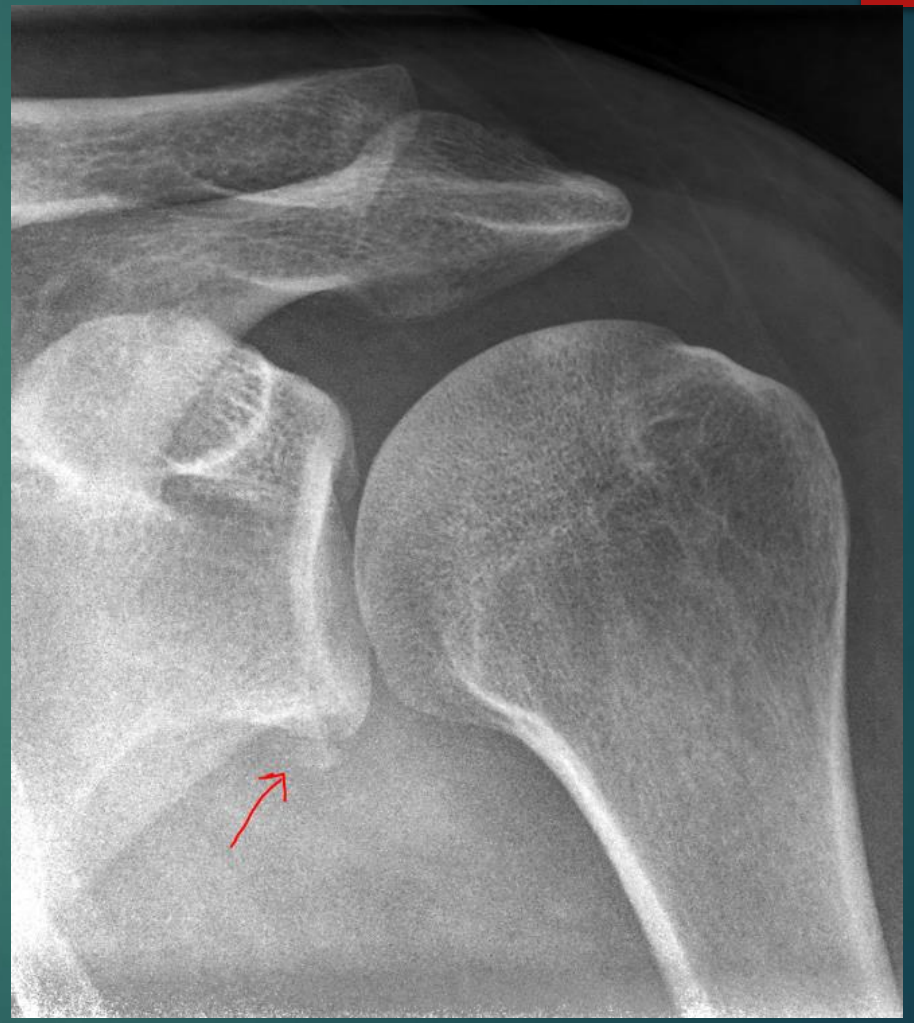
- Radiographic findings include [ref]:
- absence of external rotation on images in a standard shoulder series is a clue
- lightbulb sign: fixed internal rotation of the humeral head which takes on a rounded appearance [2]
- trough line sign: dense vertical line in the medial humeral head due to impaction of the humeral head
- loss of normal half-moon overlap sign, in which the glenoid fossa appears vacant due to the lateral displacement of the humeral head
- rim sign: widened glenohumeral joint >6 mm
- reverse Hill-Sachs defect
- reverse Bankart lesion



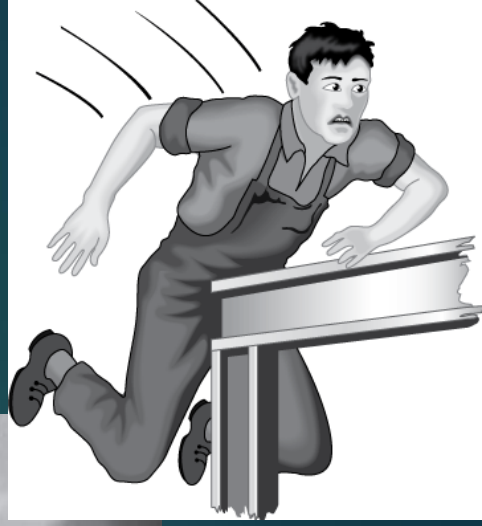
Anterior shoulder dislocation

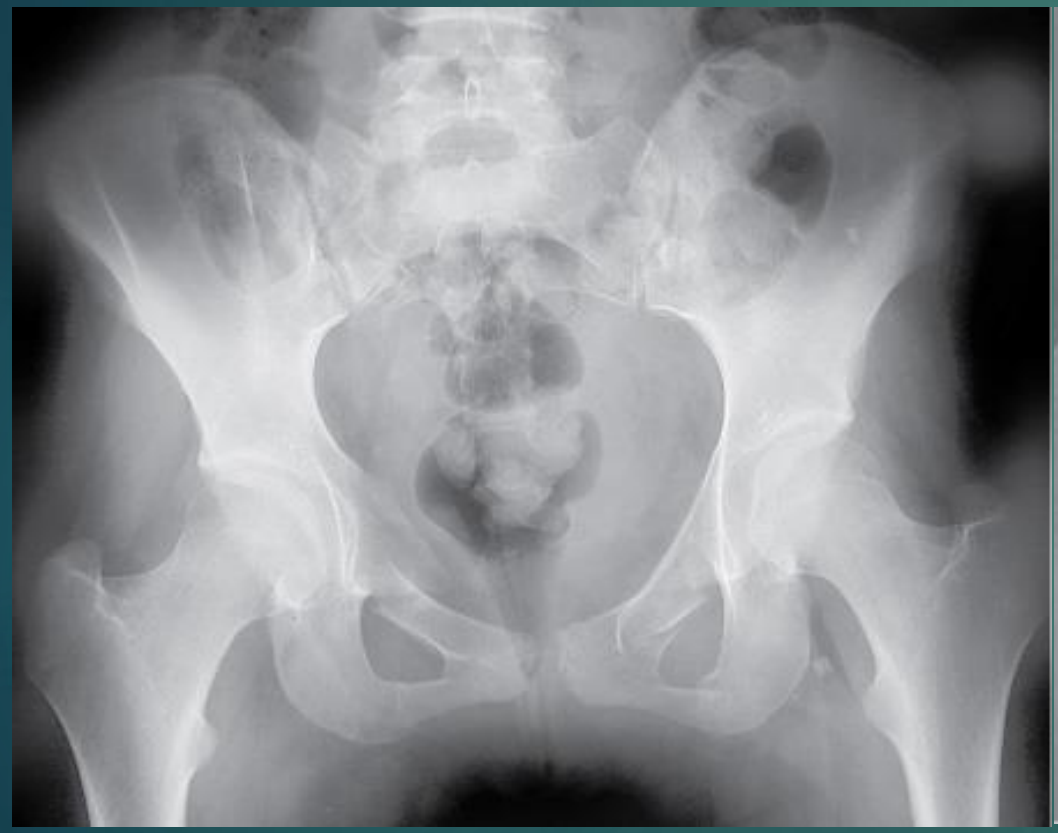
- Hill-Sachs defect (50%) is a depression fracture of posterolateral surface of humeral head from impaction of the head against glenoid rim in subglenoid type
  - Best demonstrated on the AP projection with the arm internally rotated
- Bankart lesion is a fracture of anterior aspect of inferior glenoid rim

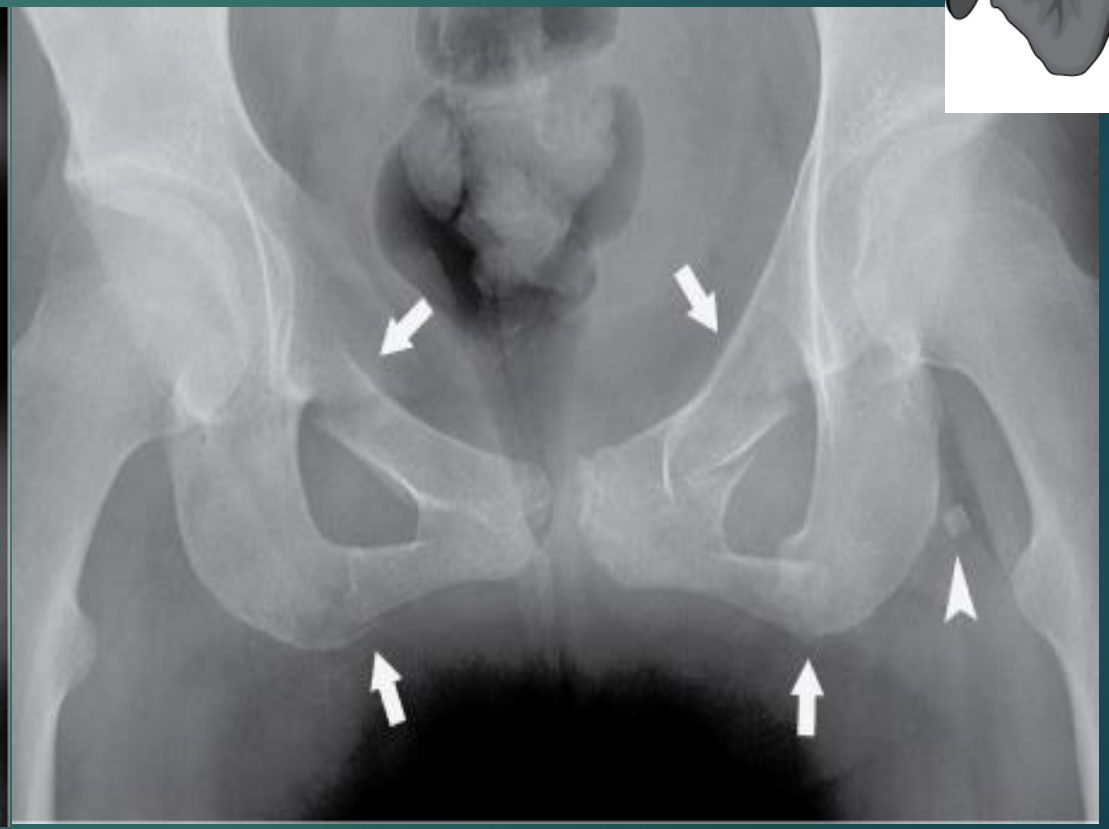




An 18-year-old woman was an unrestrained back seat passenger of a car that was struck on the passenger side by another vehicle. The automobile was significantly damaged on the side of the impact. None of the other occupants of the car were injured. She was removed from the vehicle and immobilized by the ambulance crew.



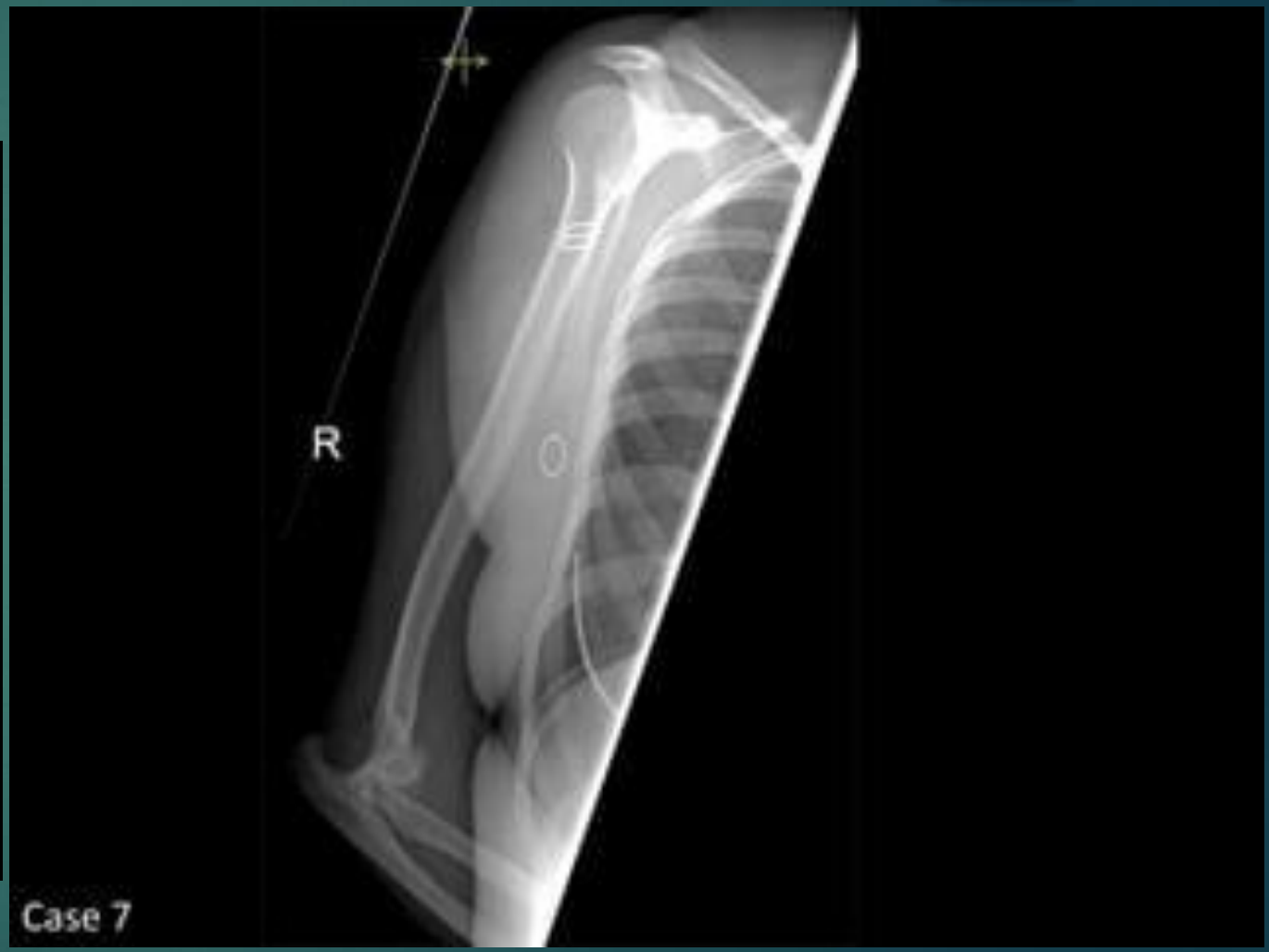




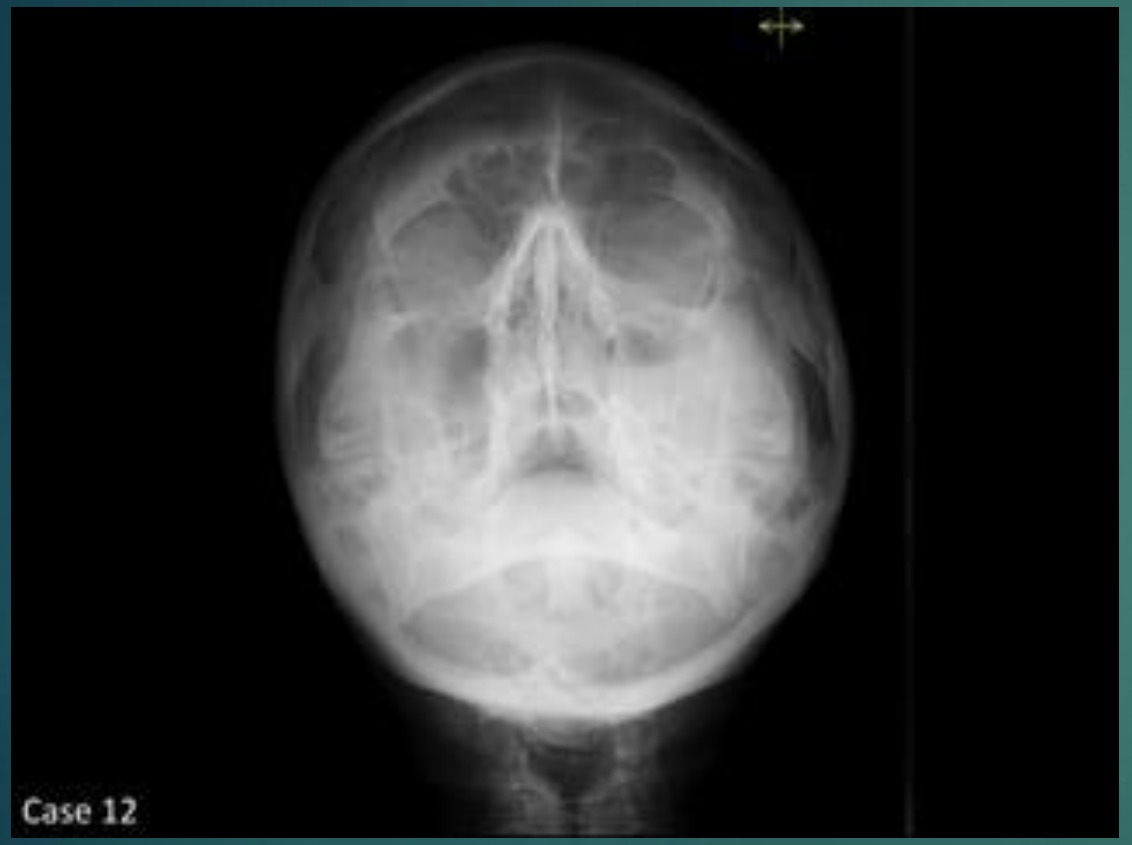
Bilateral pubic rami fracture

- 24 year old woman, fell while ice-skating.

1. What abnormality is shown?
2. The orthopaedic team want to be certain that there aren't any associated fractures – what imaging test would you suggest be performed next?



1. There is posterior dislocation of the right elbow (see magnified slide, next). Almost all elbow dislocations occur in the posterior direction.
2. Although none is visible on this radiograph, it is not uncommon for elbow dislocations to be associated with fractures. The most common fractures in this setting are of the capitellum (from impaction by the radial head) and of the coronoid process of the ulna (impacting against the trochlea of the humerus). CT is ideal for evaluating for such injuries and is performed routinely in patients with elbow dislocations.



- 17 year old male, punched in left side of face. Complaining of pain, swelling, and blurred vision.

1. Describe the salient abnormality.
2. What secondary radiographic sign(s) of the above do you know of, and which of them is present in this case.
3. Given the patient's diplopia, what would you recommend next and why?

1. There is a step in the floor of the left orbit, indicating a fracture.
2. Helpful signs which may allow us to diagnose an otherwise subtle orbital floor fracture are:
   - An air-fluid level in the maxillary sinus (present in this case), caused by haemorrhage into the sinus
   - A lucency in the orbit above the globe (orbital emphysema) due to air leaking from the sinus
3. A CT facial bones should be arranged, to assess for additional fractures and to look for herniation of the inferior rectus muscle through the orbital floor (an orbital blow-out fracture)

A 75-year-old man was found lying on the sidewalk outside his door . There was a 2-cm laceration on the back of his head. Upon arrival in the ED, he appeared intoxicated. Because of the patient's age and evident head trauma, a head CT was obtained

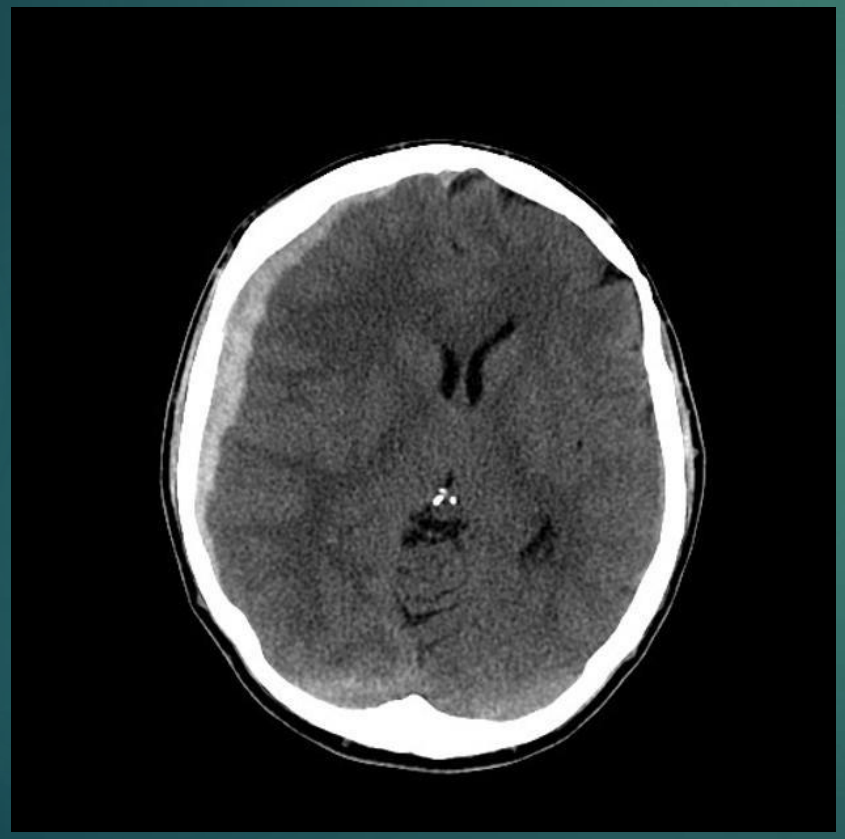
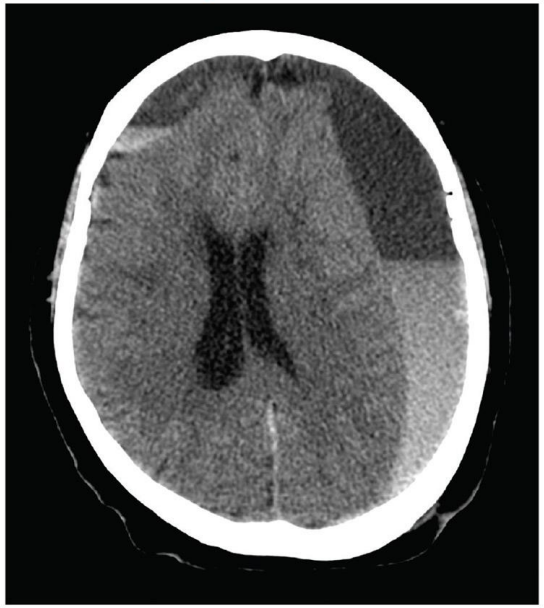


FIGURE 2

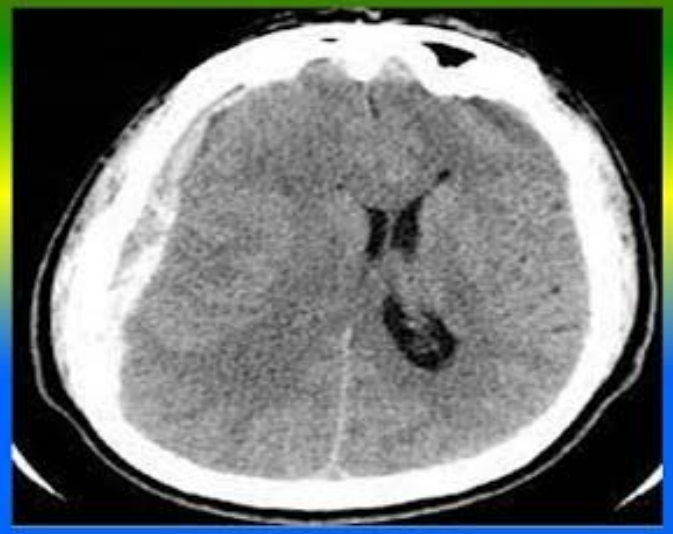
Revealing CT scan 2 weeks after initial presentation



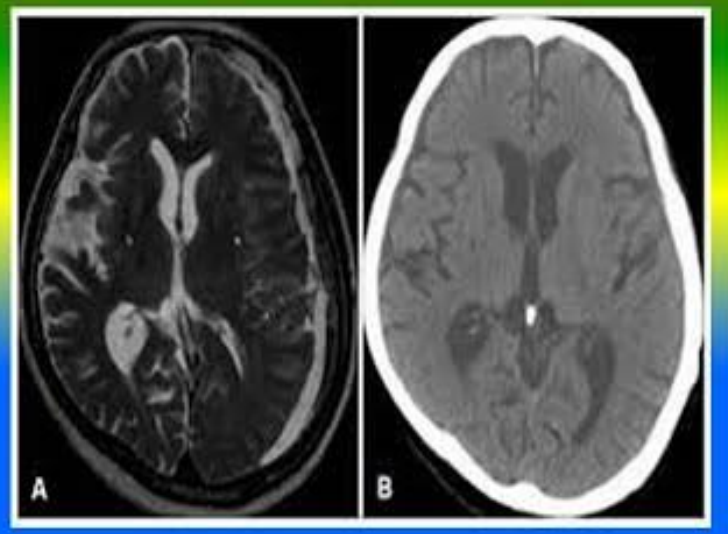
A head computerized tomography (CT) scan 2 weeks after the patient's initial presentation revealed an acute on chronic large left frontotemporoparietal and a right frontoparietal subdural hematoma with resultant left to right subfalcine herniation.

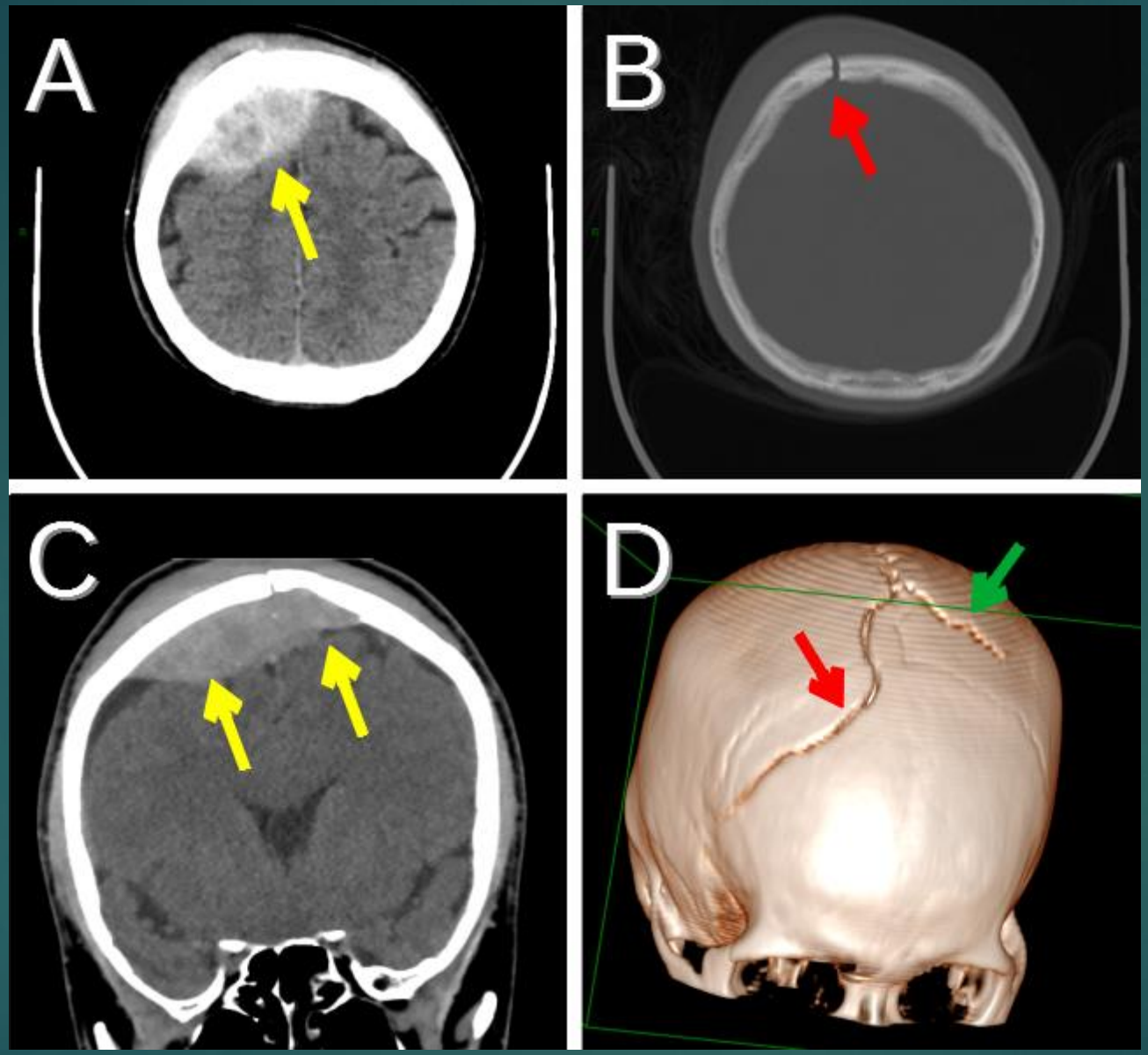
Difference Between

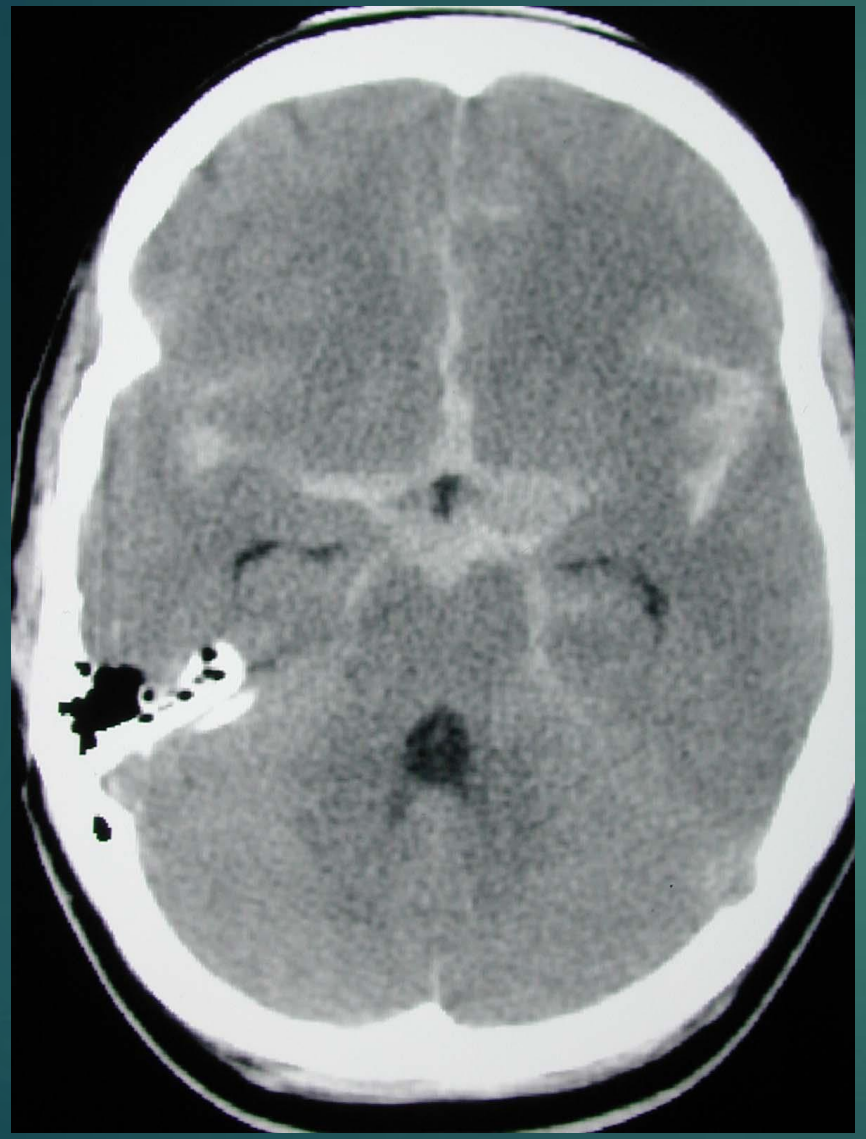
Acute Subdural Hematoma

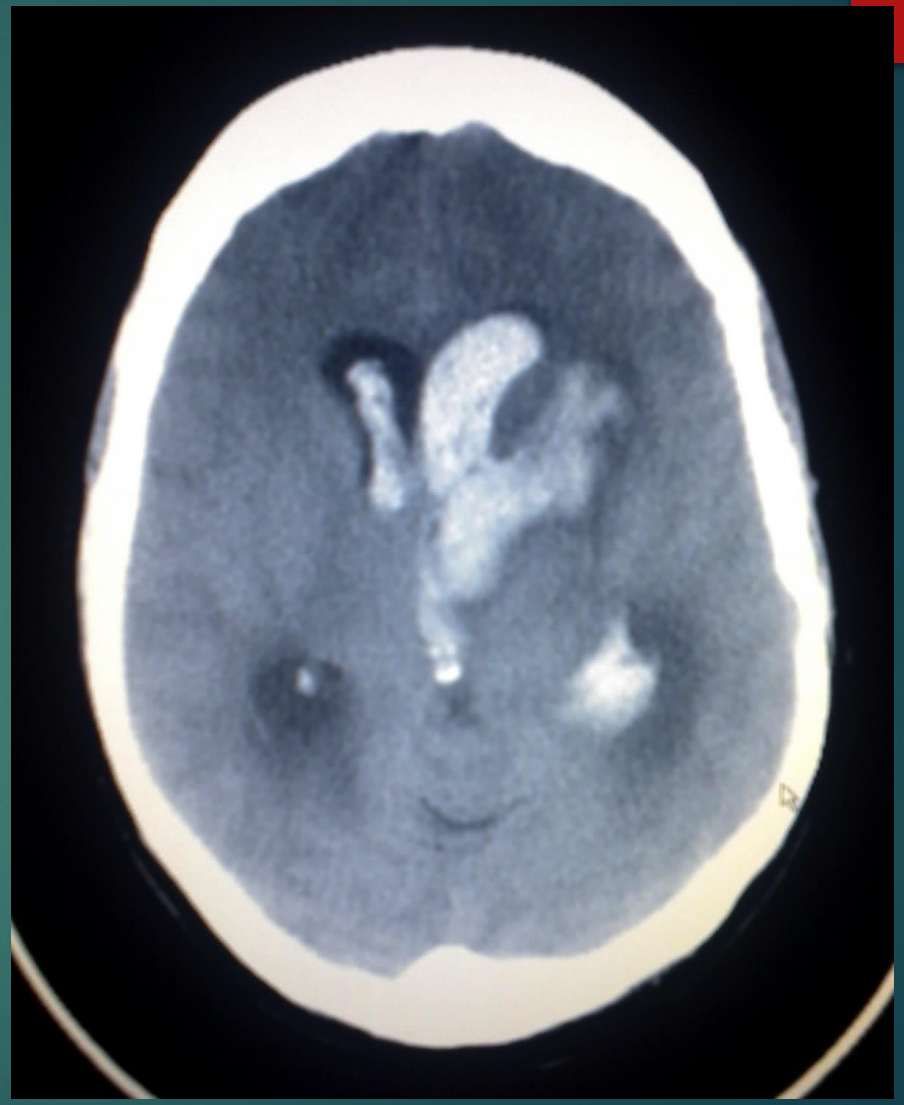


Chronic Subdural Hematoma




A
B
C
D





A 65-year-old man awakened from an afternoon nap and noted a complete hemiparesis involving his arm, face, and leg. he was brought to the ED within half an hour.
A noncontract head CT was obtained immediately after the patient's arrival

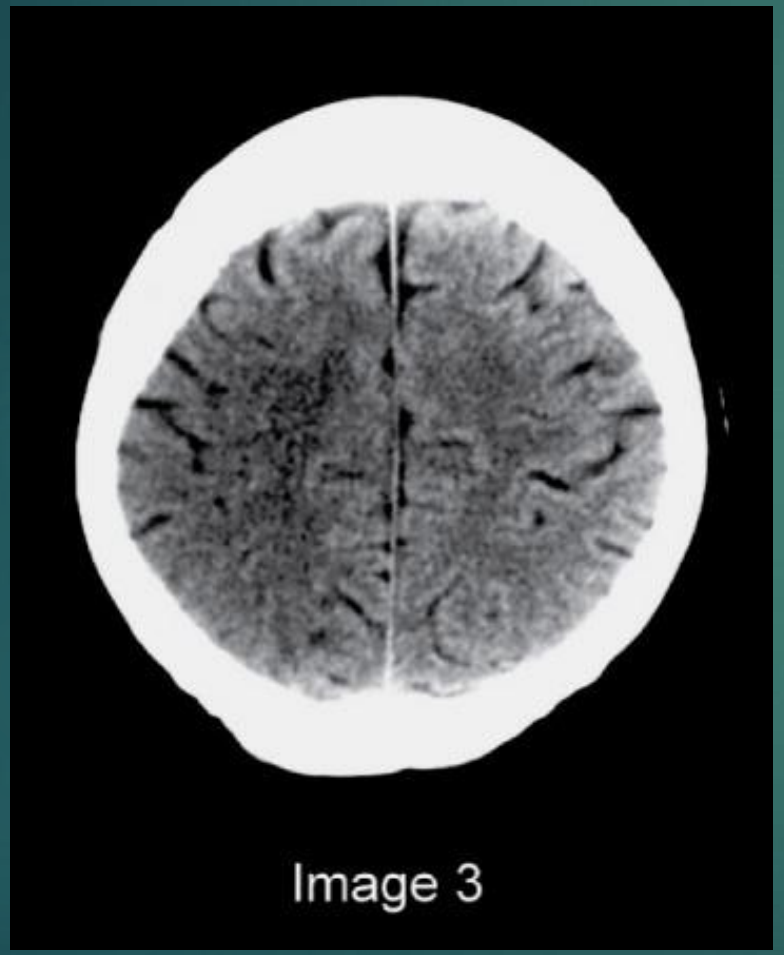
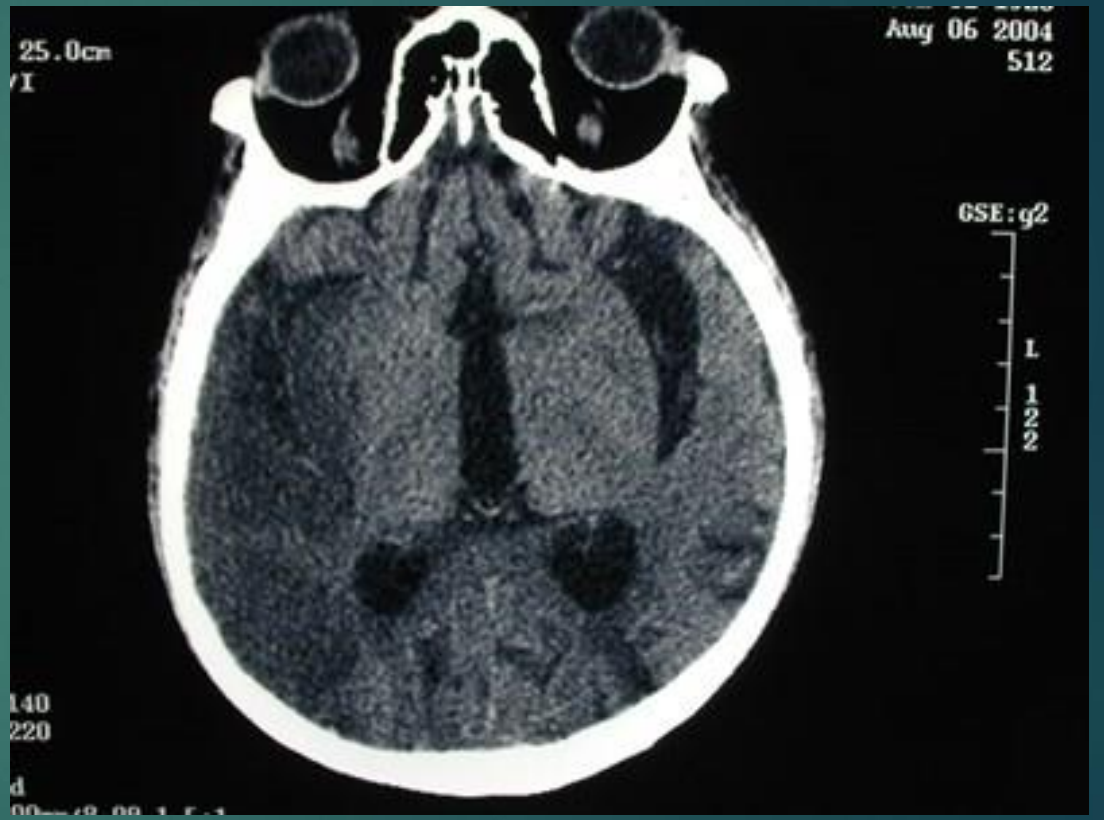
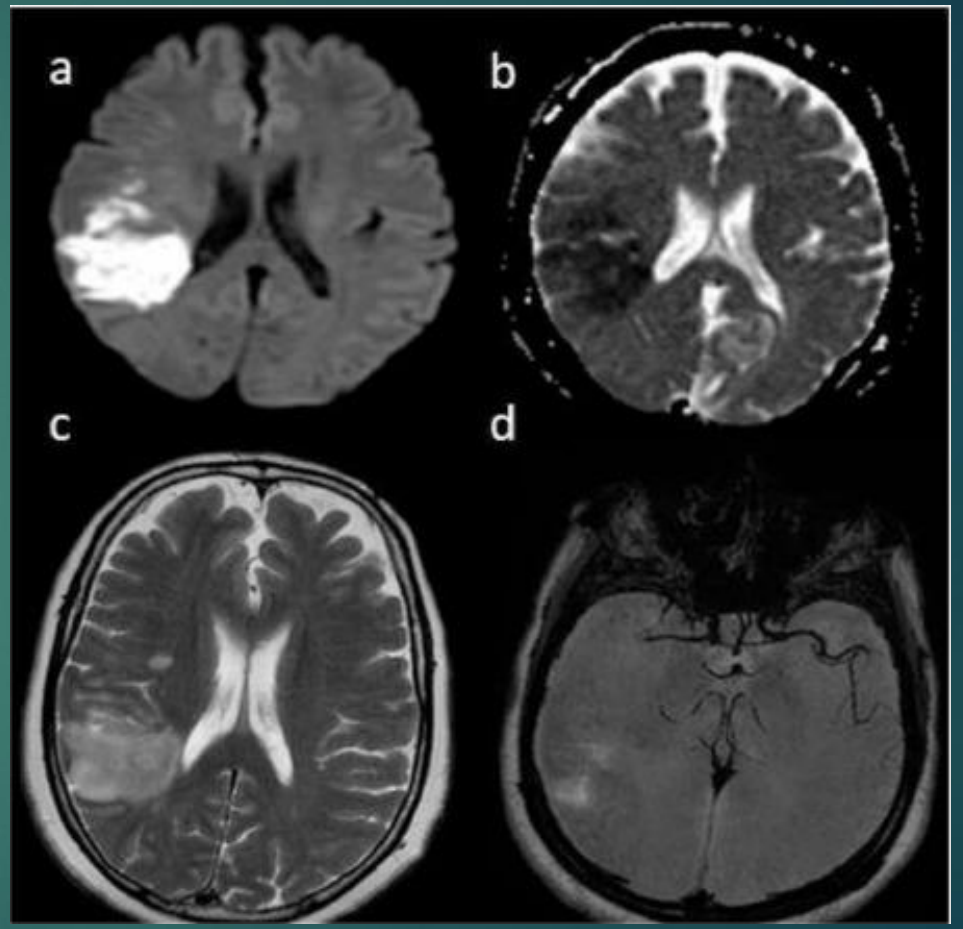


Image 3

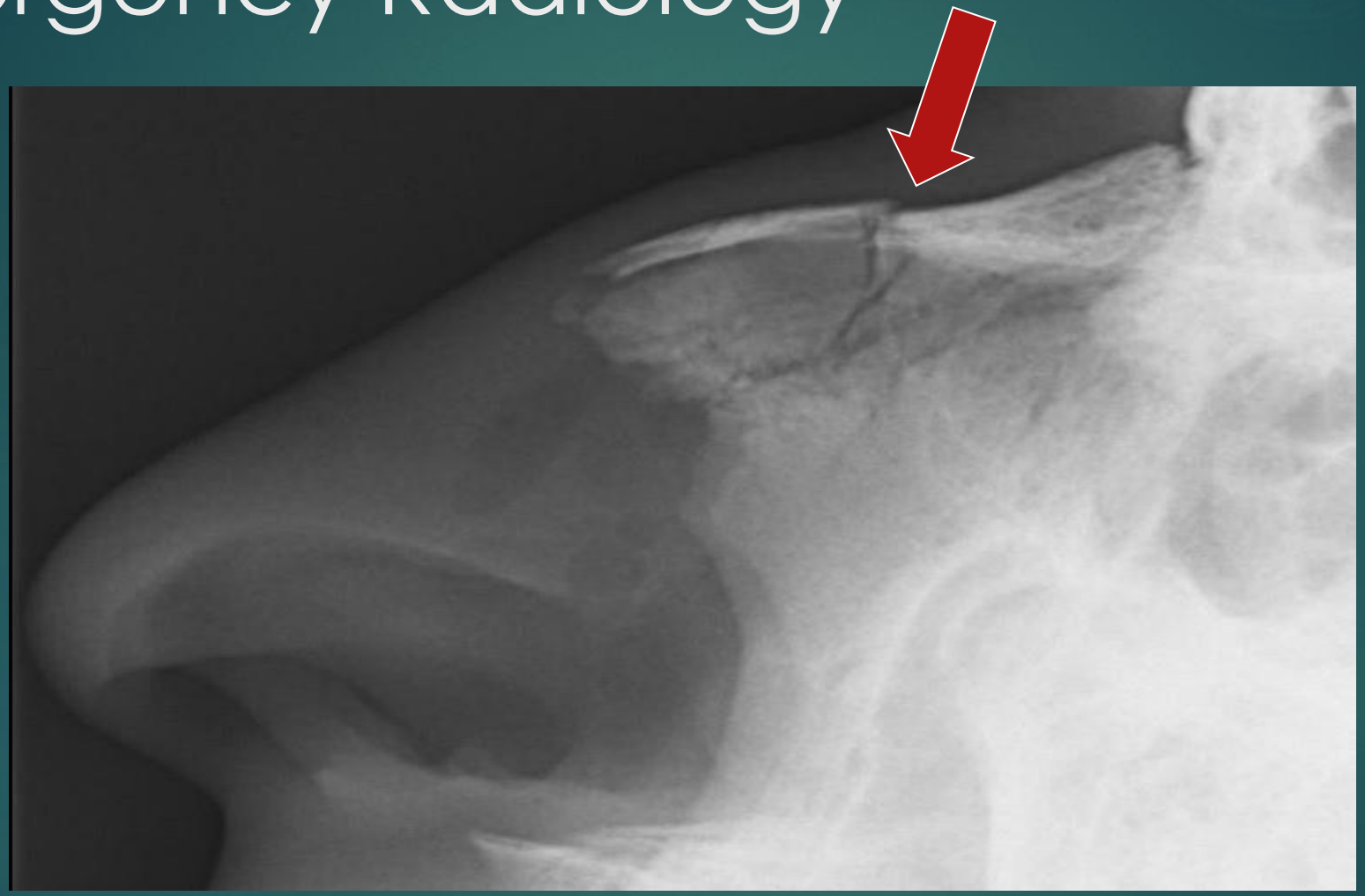


CT early signs

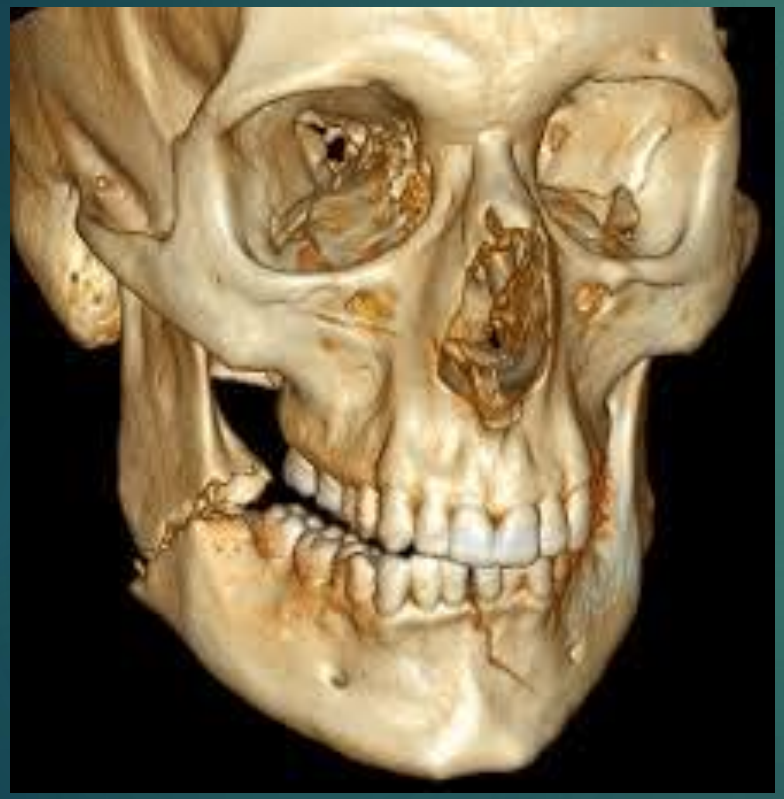
- Hypo attenuating brain tissue
- Obscuration of lentiform nucleus
- Dense MCA sign
- Insular ribbon sign
- Sulcal effacement

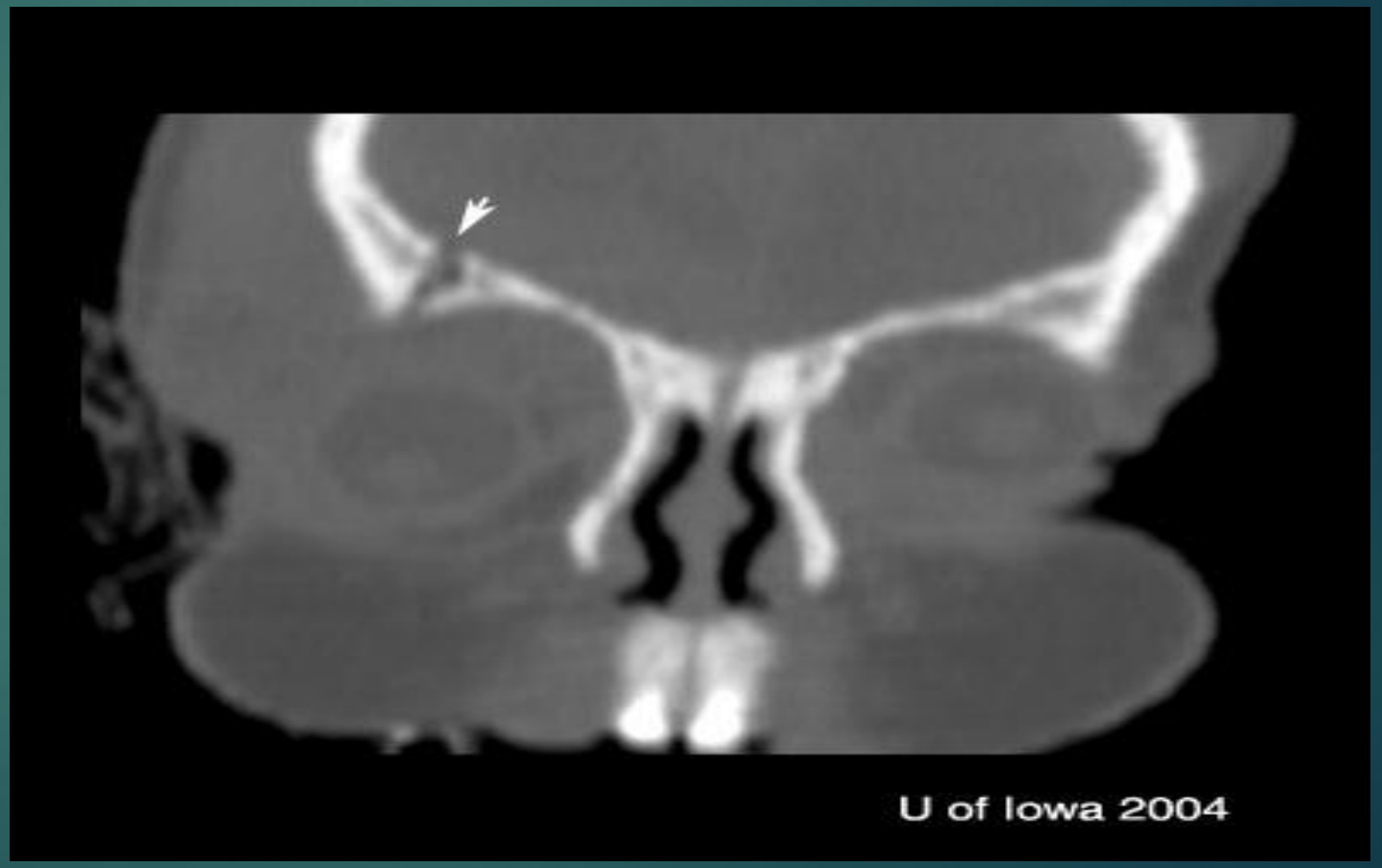


Emergency Radiology



Nasal bone fracture

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Emergency Radiology

Spinal Emergencies:

Trauma

- Vertebral fracture (Varieties)
- Spinal cord injuries.

Emergency Radiology

Spinal trauma:

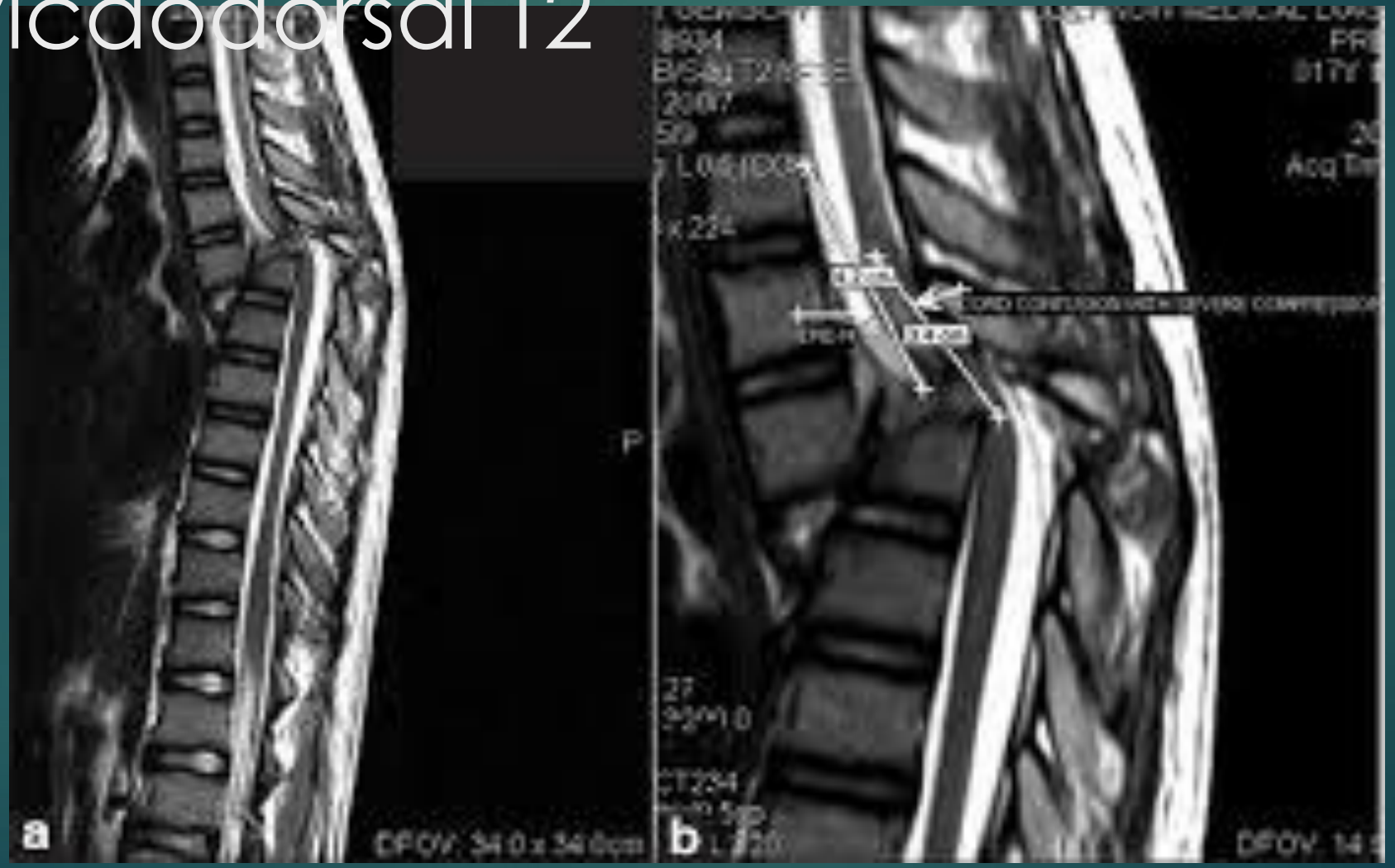
What to order?

- Plain X-ray of the spine (Lateral view – AP view)
- Computed Tomography of the Spine (Bone & Soft tissue settings–3D recon.)
- MRI of the spine. (for cord injury)

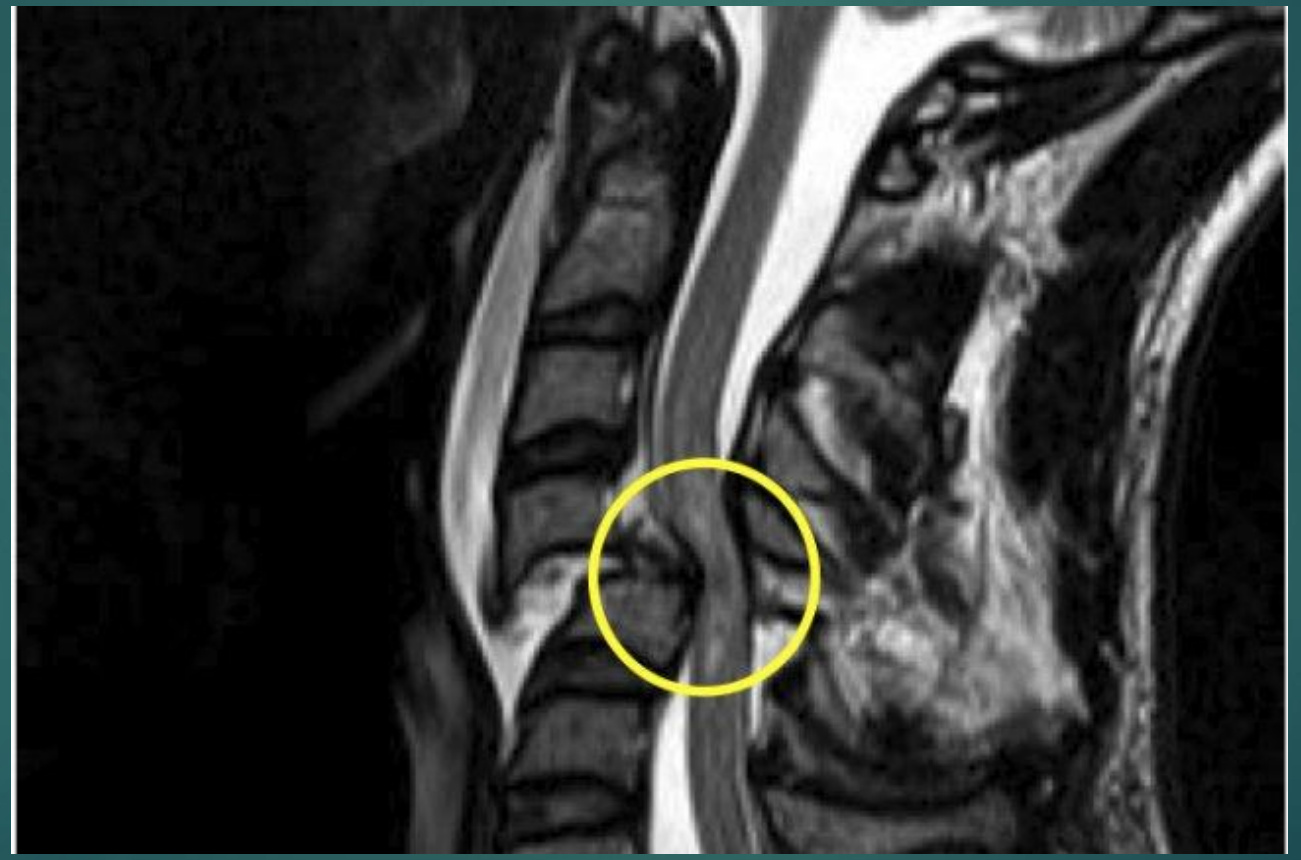
When?

- History of trauma – Falling from height.

Spinal cord injury .MRI cervicaodorsal T2



MRI sagittal T2 .spinal cord injury




THANK YOU!