Radiological aspect of upper GI diseases

(Batch -25)-2018

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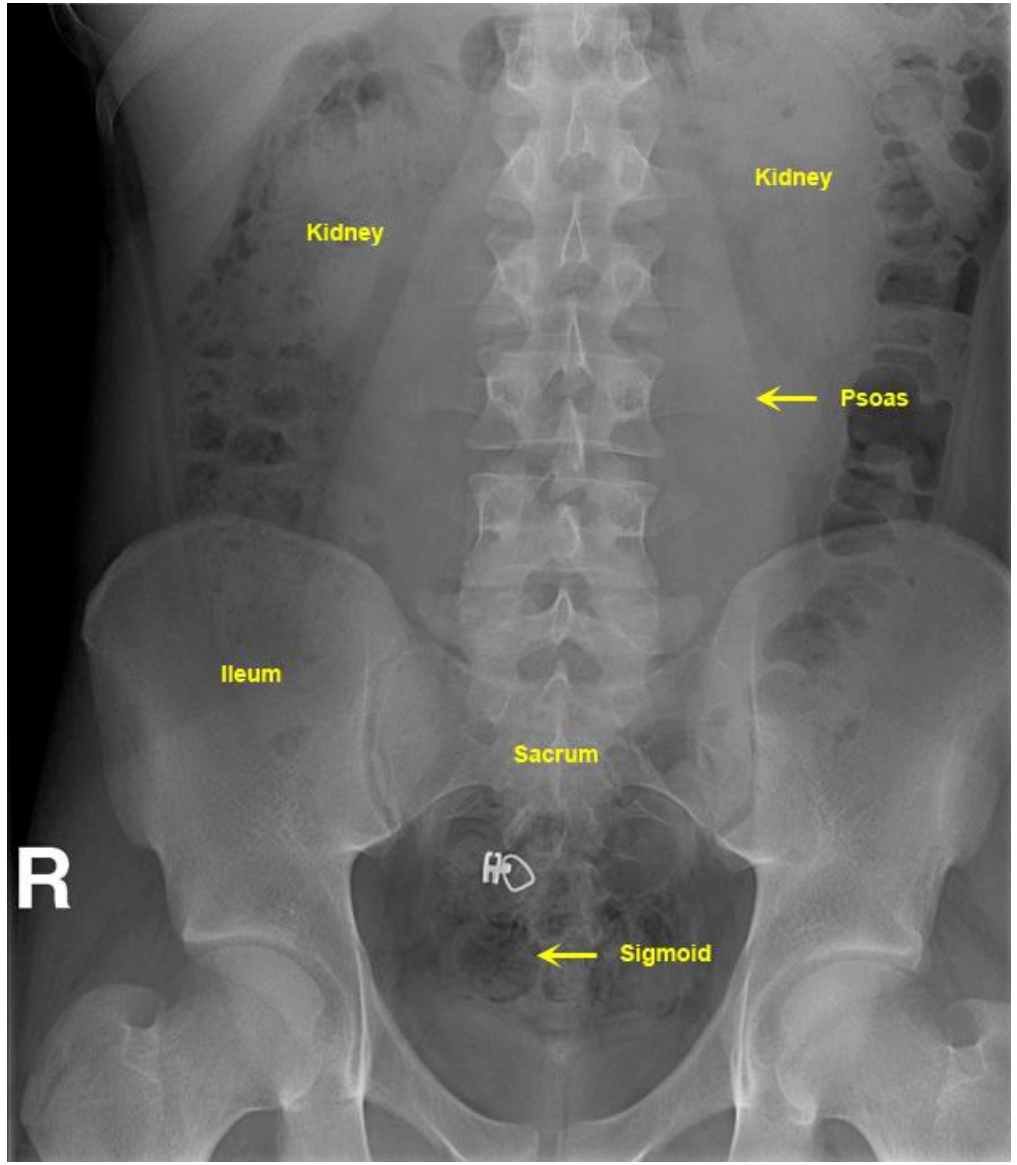
Faculty of Medicine

Ragama

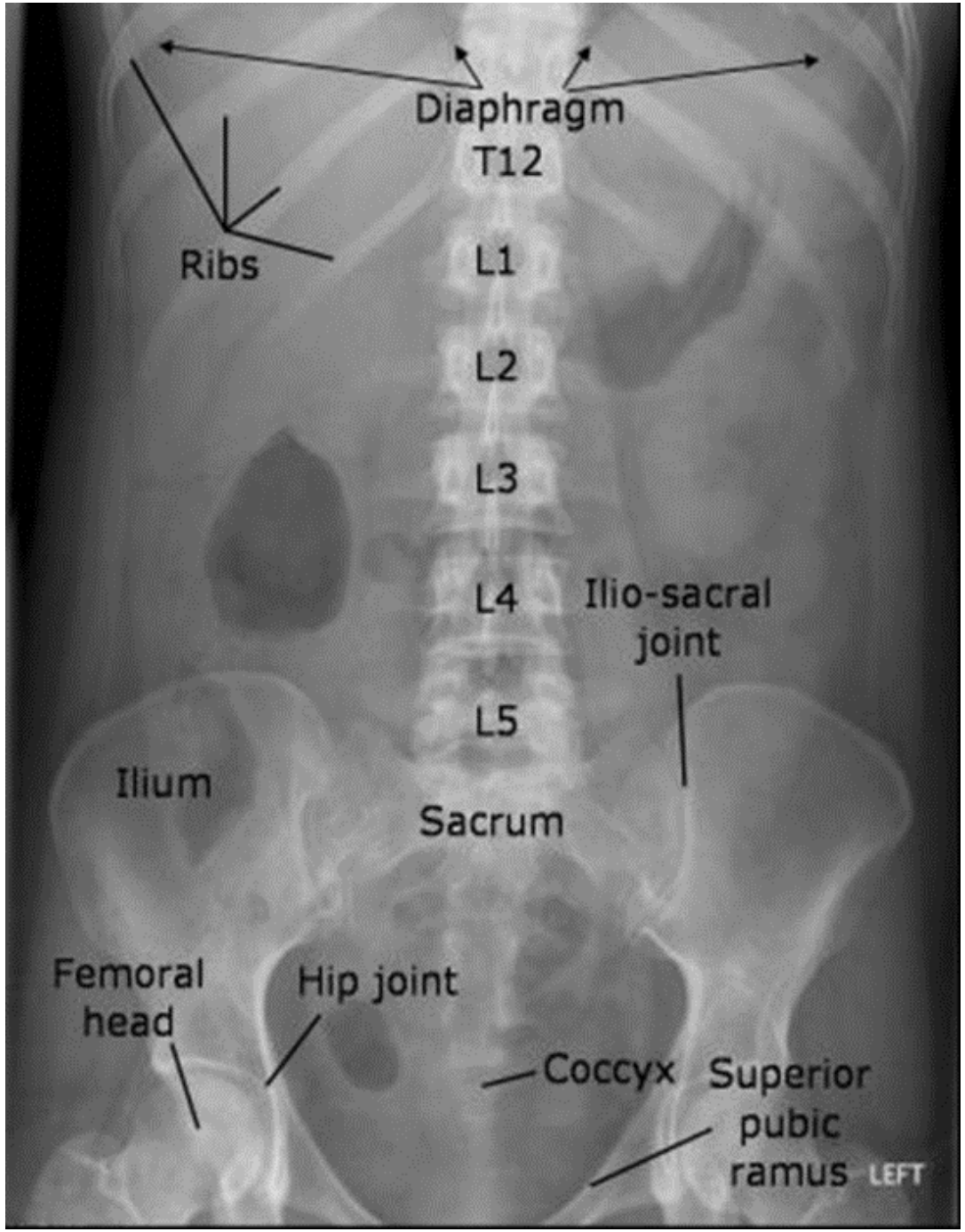
Radiological modalities

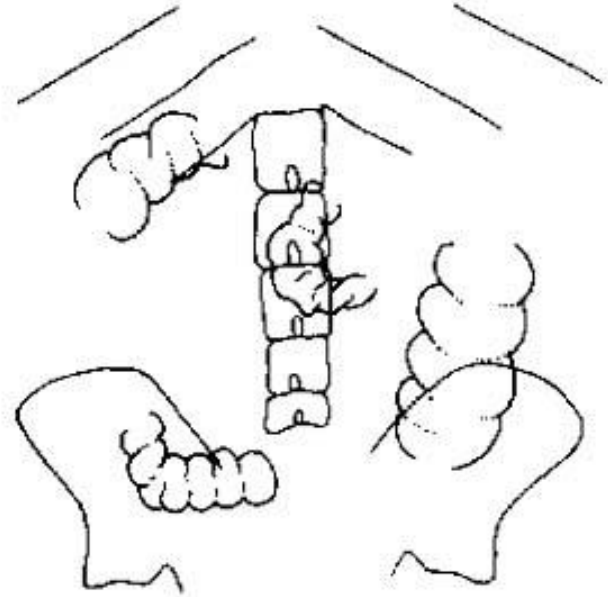
- Plain radiograph of abdomen (KUB)
- Barium studies
- Ultrasound Abdomen
- CT
- MRI
- Angiography

Plain film radiograph

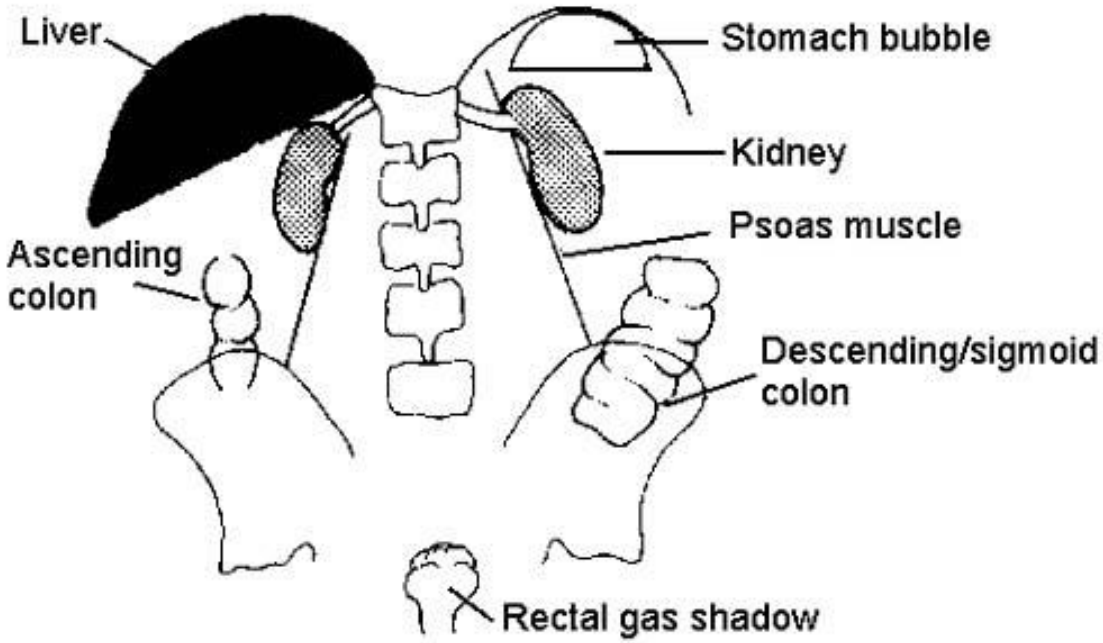


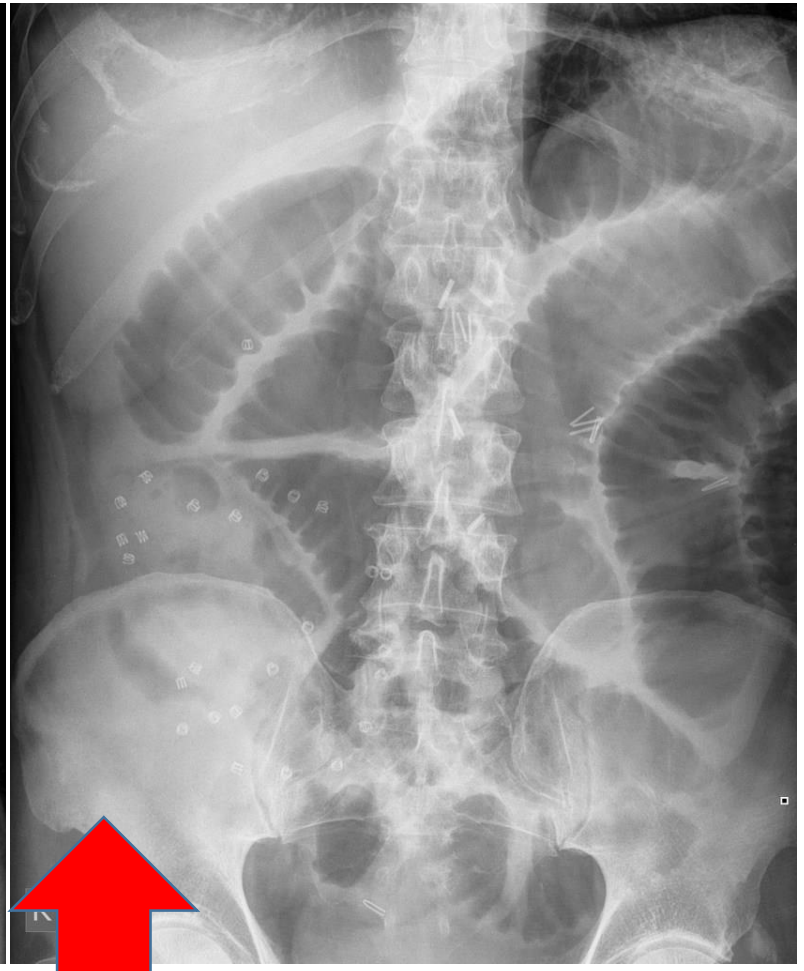
- ✓Hepatic angle
- ✓Splenic angle
- ✓Renal shadow
- ✓Psoas muscle
- ✓Properitoneal fat strip

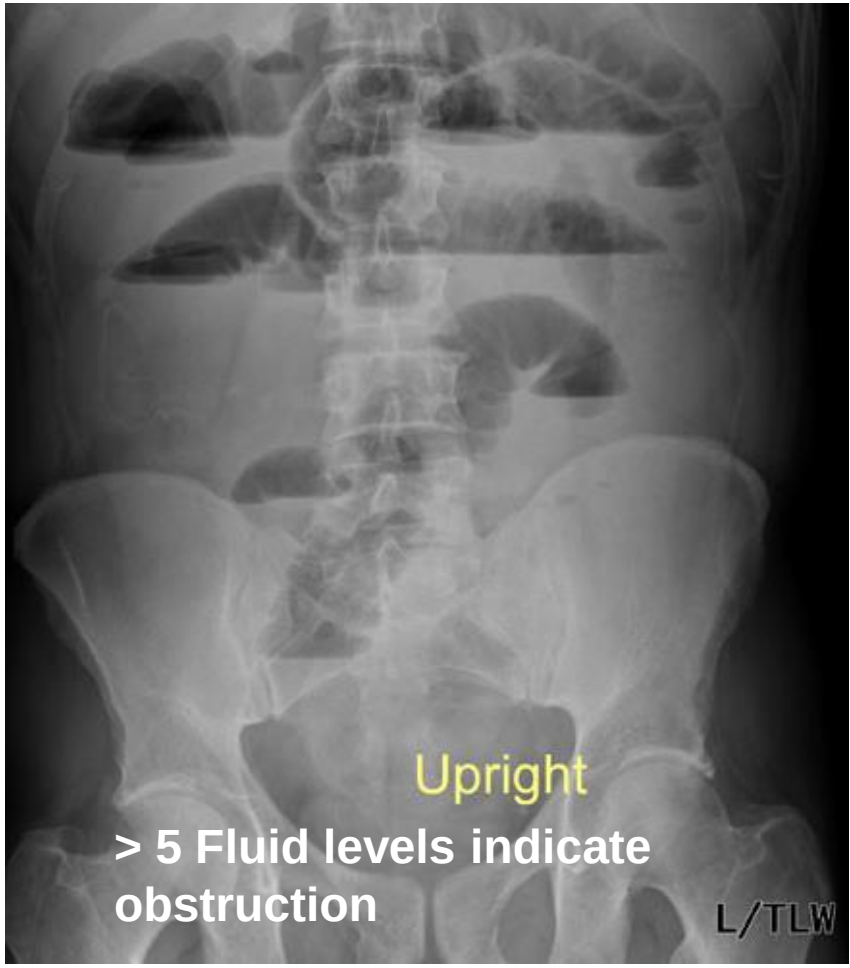




Plain abdo film (structures visible)

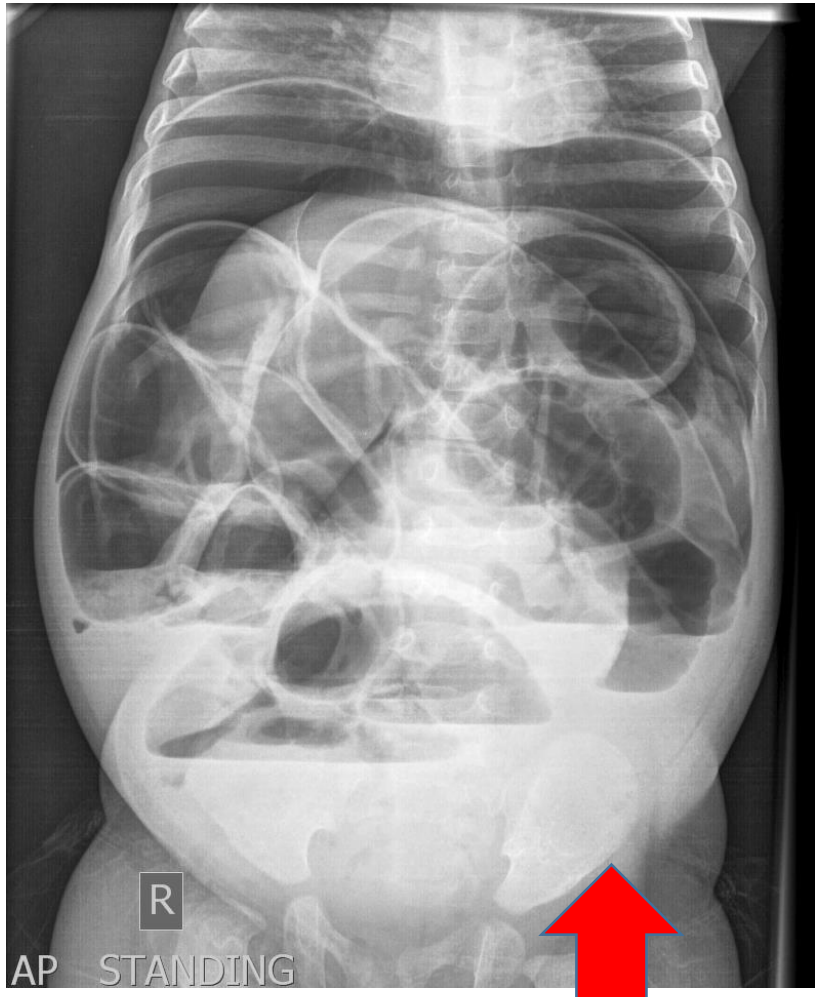


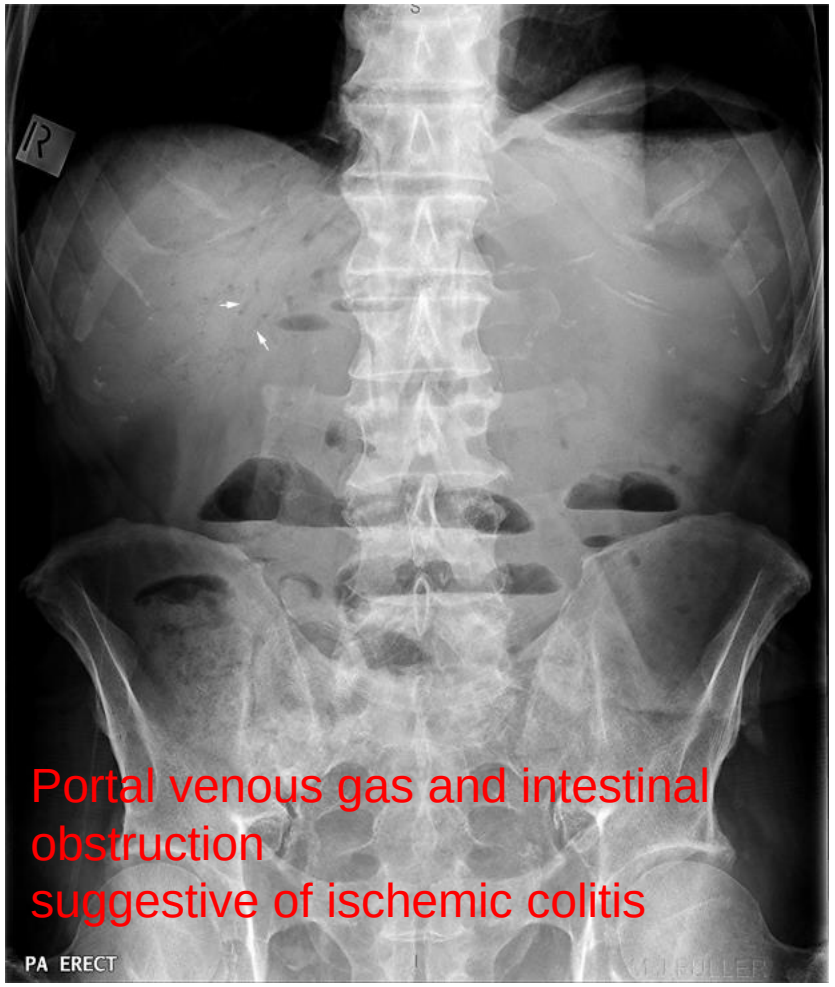




Close loops small bowel obstruction with gangrene

Small bowel obstruction
Note :
Centrally located dilated bowl loops with valvulae conniventes
Surgical clips –RHC region – Hx of hernia mesh repair





Portal venous gas and intestinal obstruction
suggestive of ischemic colitis

- The large bowel is gas filled and distended down to the level of the distal descending colon-sigmoid.
- Small bowel collapsed.
- No free gas.

- Massive pneumoperitoneum -excessive free gas including the bilateral subphrenic spaces and surrounding the **edges of the liver (hepatic edge sign).**
- Double wall sign (Rigler sign) is well-demonstrated.
- Some of the bowel loops are significantly dilated. Gas-fluid levels are seen in the dilated lower abdominal loops.

Barium Swallow

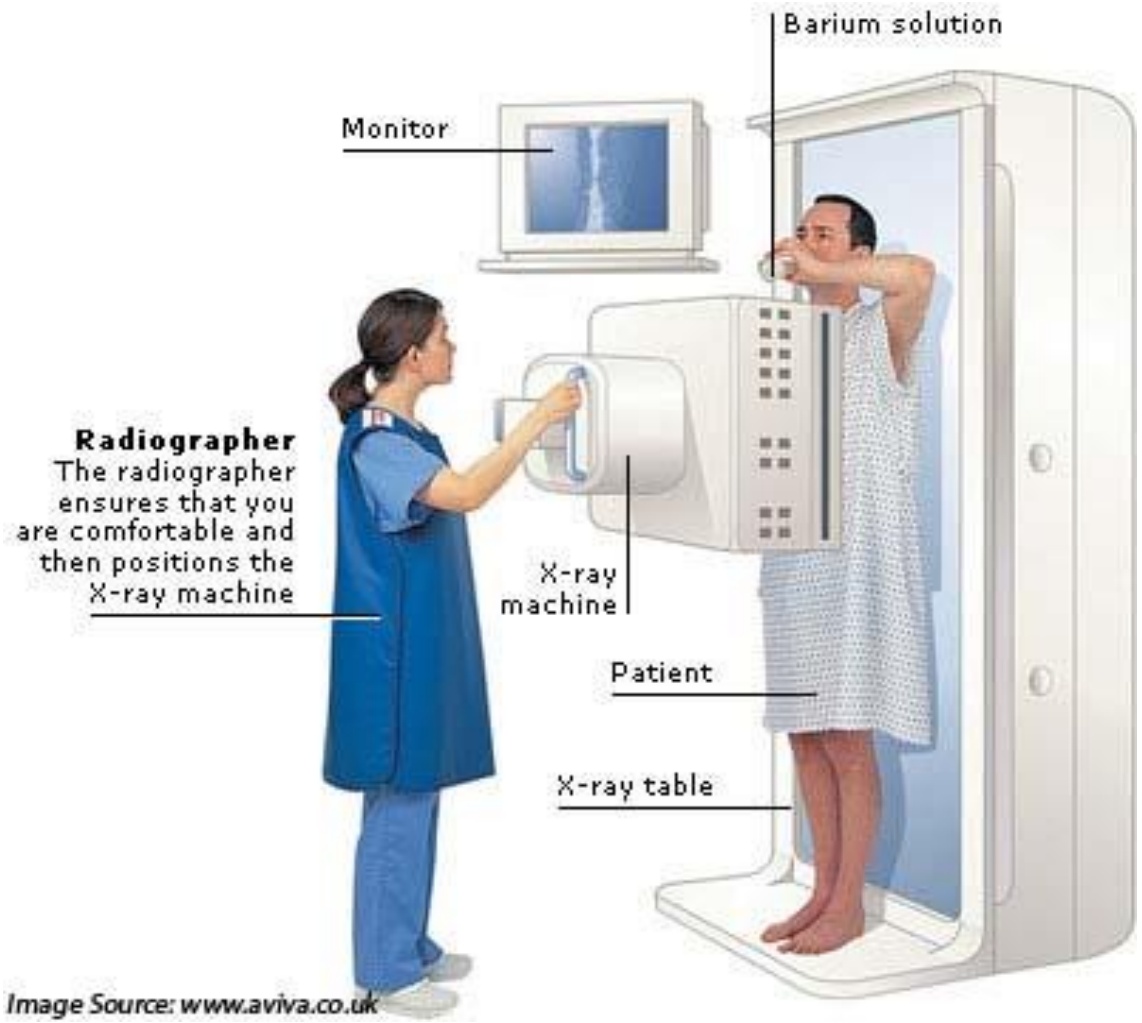
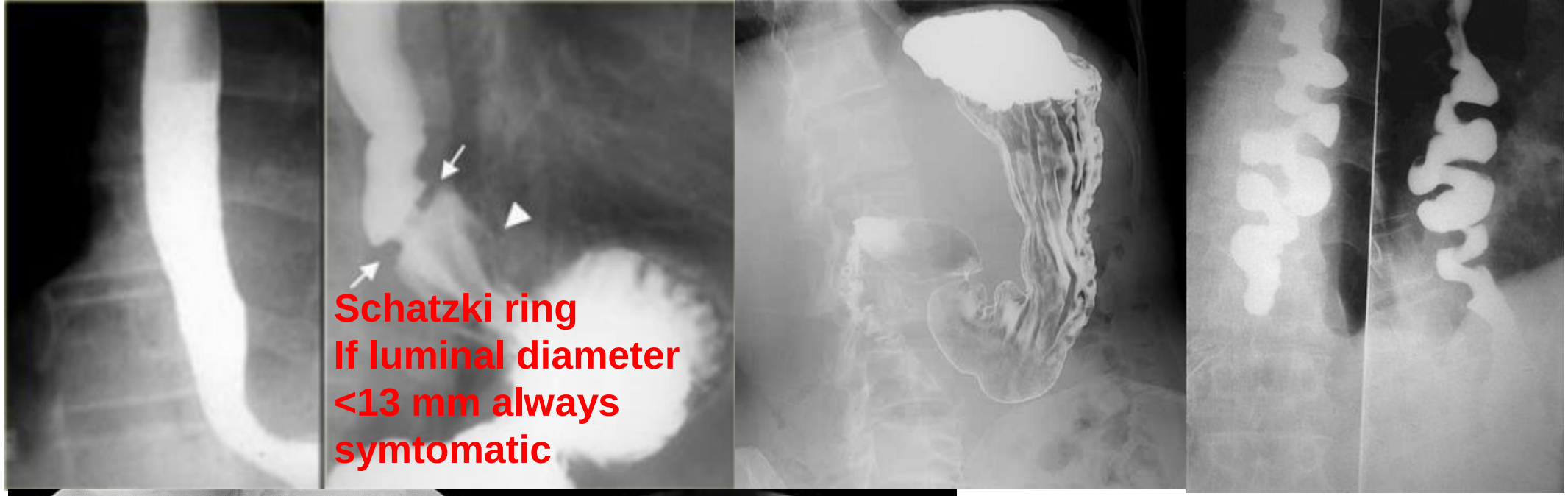
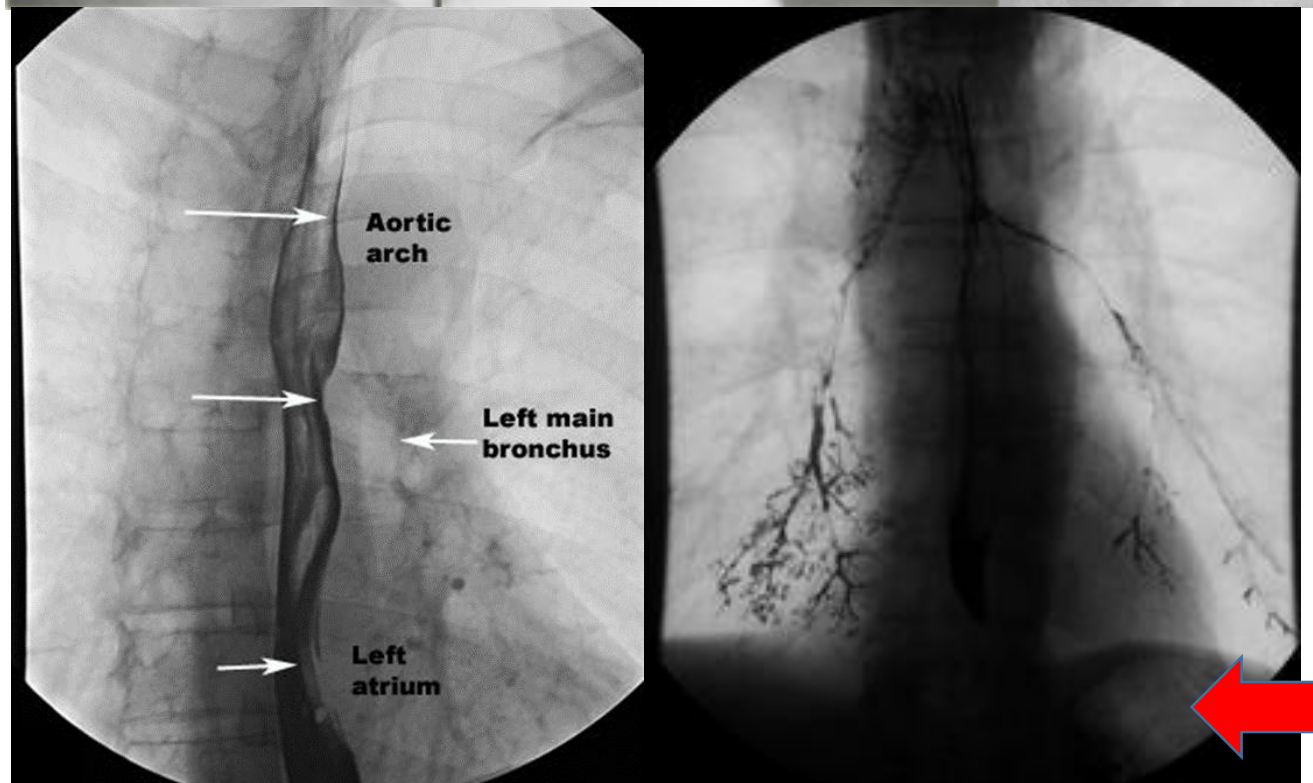


Image Source: www.aviva.co.uk



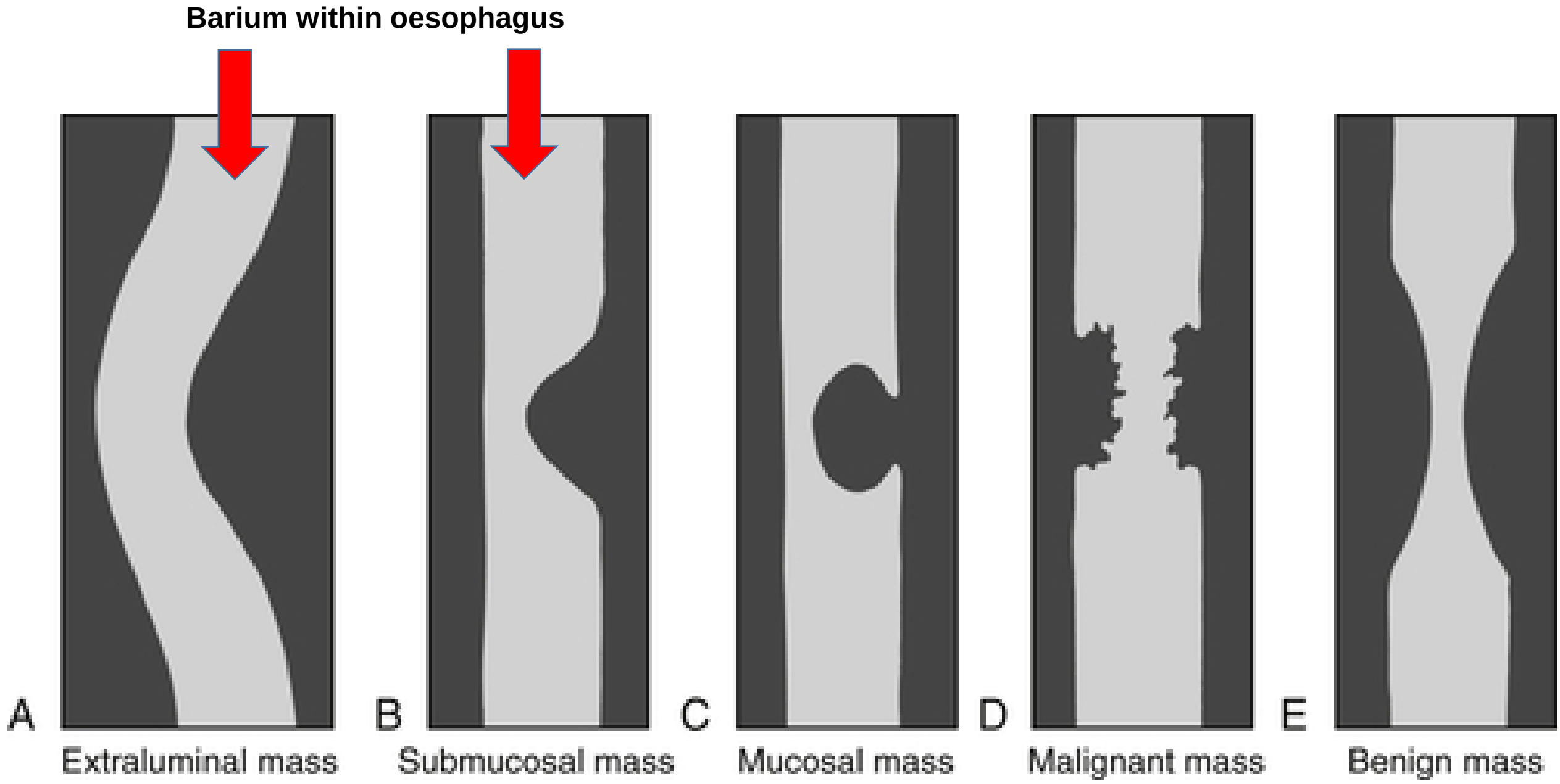


Diffuse/distal oesophageal spasm

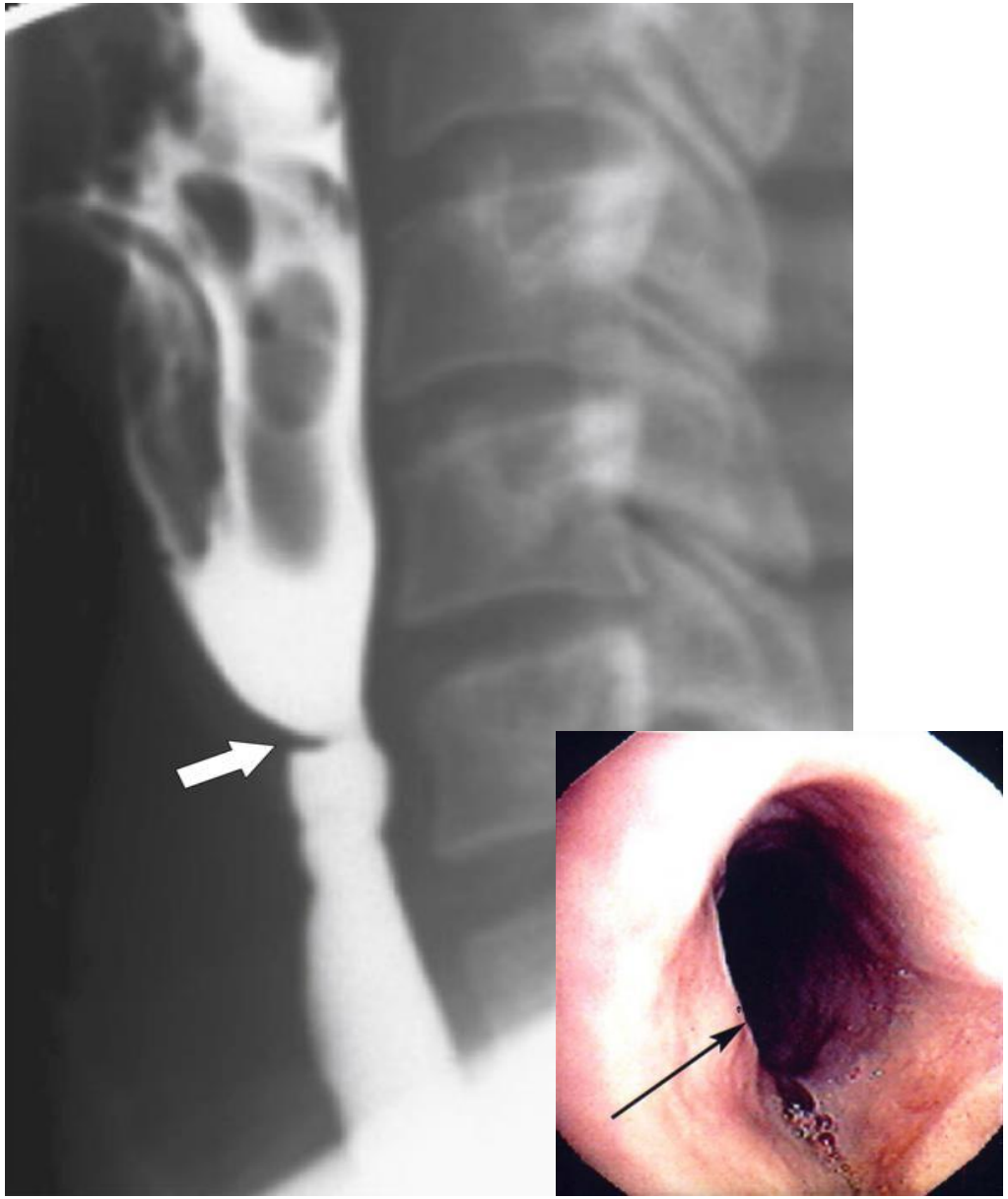
- Patients >50 years old but can occur at any age
- **Chest pain** and **dysphagia** are the primary complaints
- Normal peristalsis not seen
- Many tertiary (non-propulsive) contractions occurring in the distal oesophagus.
- **Ba swallow-"corkscrew oesophagus"**

Barium Aspiration

severity depends on the amount of contrast in the respiratory tract


Barium within oesophagus
A
Extraluminal mass
B
Submucosal mass
C
Mucosal mass
D
Malignant mass
E
Benign mass

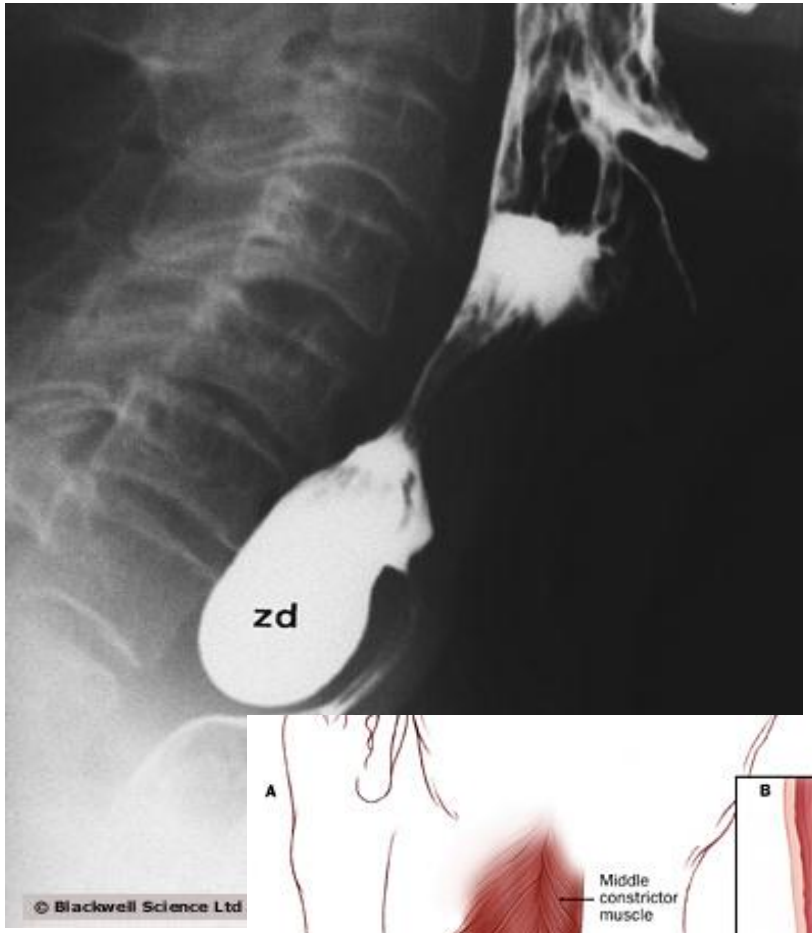
Oesophageal web

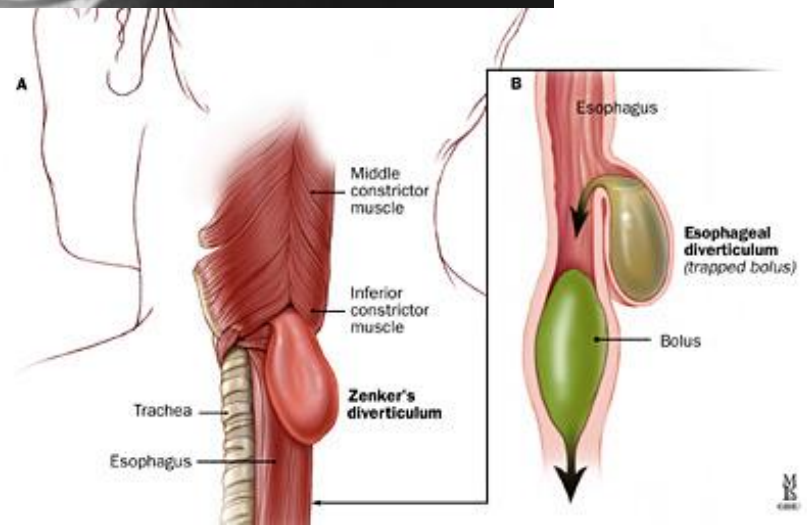


- Thin **membranous band** arising **anterior** upper Oesophageal wall.
- May be multiple
- Recognized association with **post-cricoid CA**.
- Radiologically….
- Fine anterior filling defect on Barium Swallow
- Best seen on lateral projection.

May be incidental: Not always associated with symptoms

Pharyngeal pouch (Zenker diverticulum)





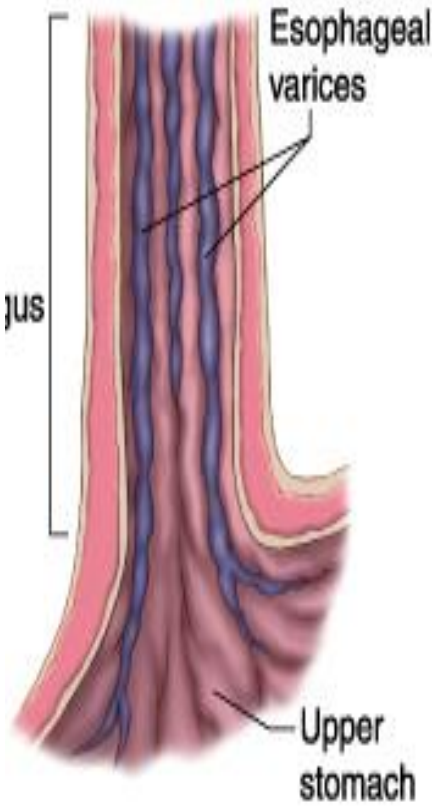
- **Posterior mucosal protrusion** between fibers of inferior constrictor of pharynx.
- Present with :Aspiration pneumonia halitosis ,palpable neck mass.

Radiologically…..

- Posteriorly extended pouch with narrow neck on Barium swallow

Aspiration pneumonia is a important complication

Oesophageal varices.



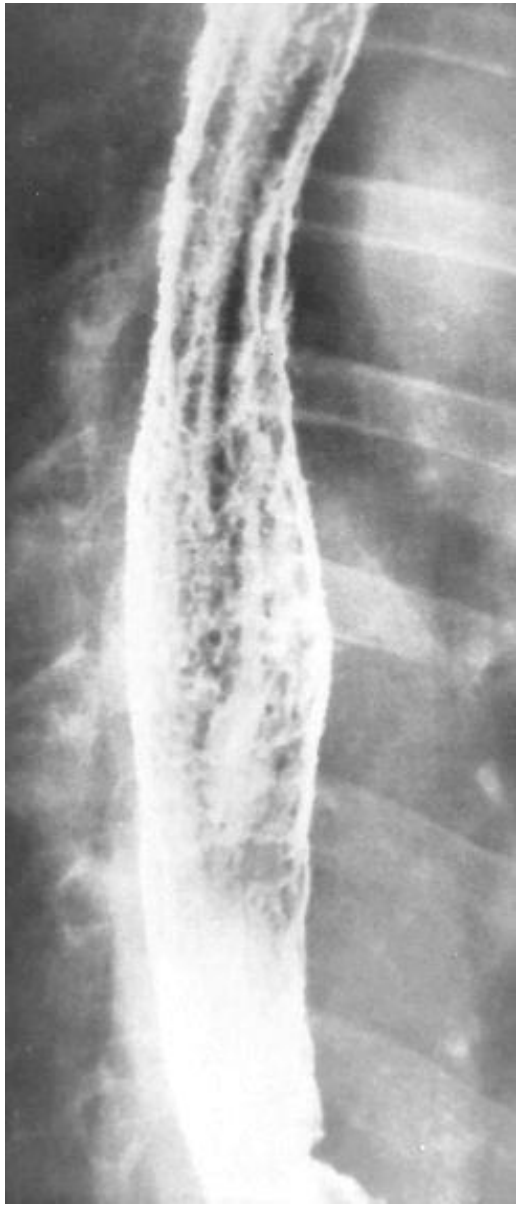
- Venous anastomotic collateral veins
- Due to portal HT or PVT
- Mainly in lower 2/3 –" uphill varices"

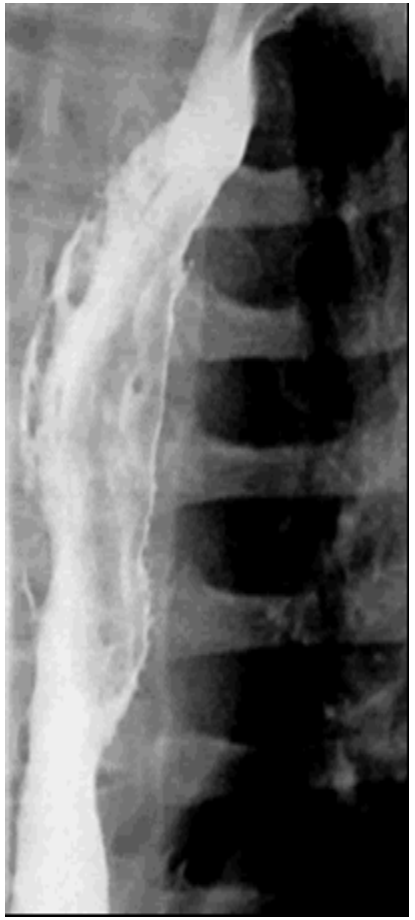
Radiologically……

- Serpiginous tortuous filling defects on barium swallow.

Endoscopy is the investigation of choice in varices

Moniliasis





- Fungal infection with Candida
- In immunosuppressed –AIDS
- Present with **painful dysphagia**
- Radiologically…….
  - Irregular mucosa and filling defects on Ba
  - **“ Cobblestone”** appearance

Almost always occurs in immunocompromised.

Benign oesophageal stricture.

caustic ingestion

After
Radiotherapy

- Many aetiologies –

  corrosive,traumatic,scleroderma,radiotherapy ect

- Often present with dysphagia

- Always suspect Ca esophagus.

Radiologically…..

- **Smooth** tapering margin
- Often proximal dilatation.

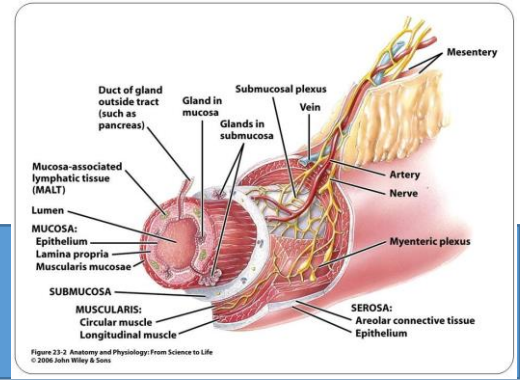
Beware !!! Radiological appearance sometimes misleading

Achalasia

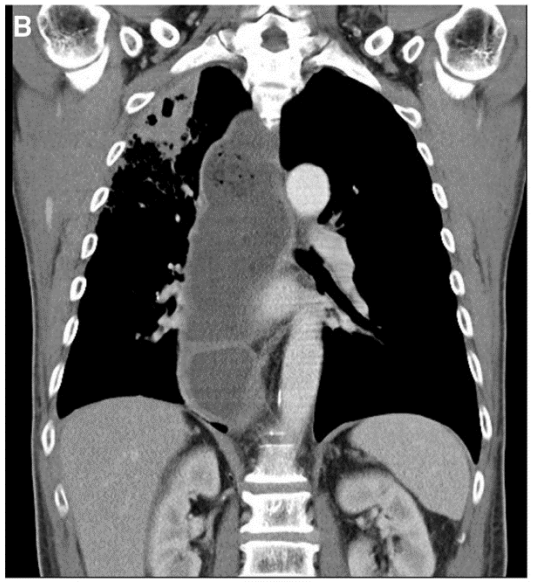
- Abnormality of auerbach (myenteric) plexus.
- Inability to relax LE sphincter
- Present with dysphagia,Aspiration

Radiologically…..

CXR- Wide mediastinum , Fluid level ,small gastric air bubble features of aspiration



Achalasia



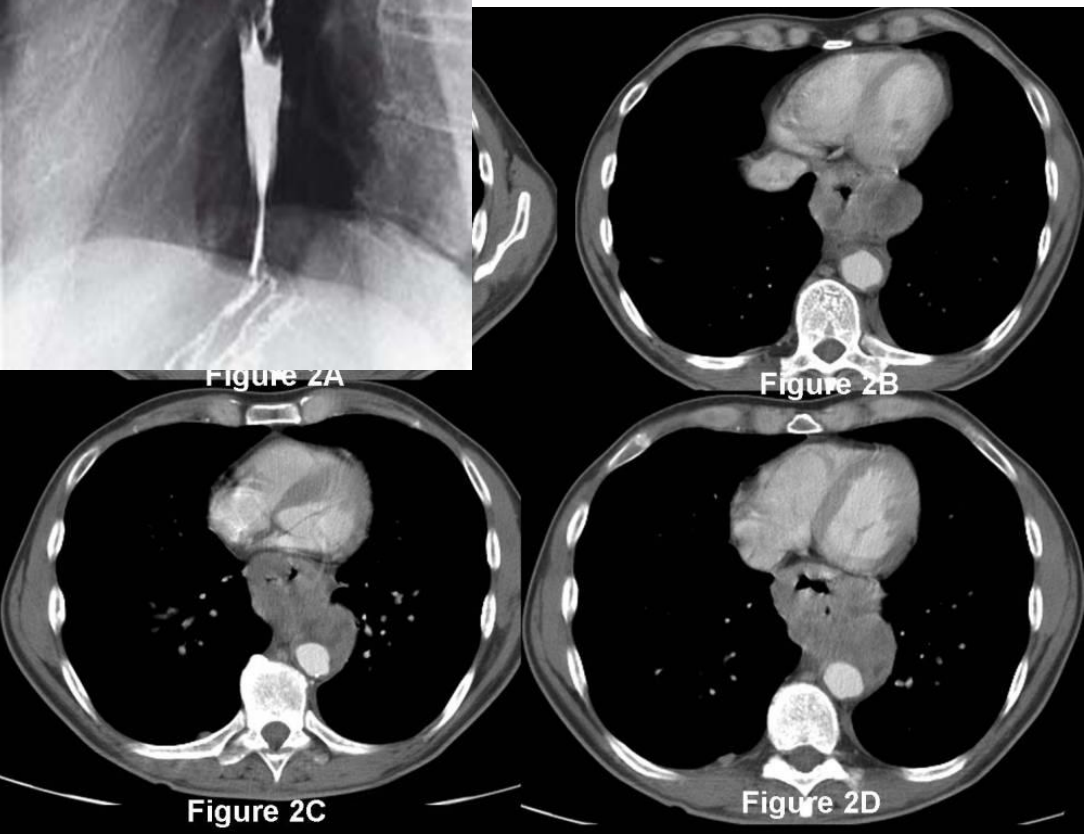
Radiologically…..

Ba Swallow-

- Grossly dilated ,tortuous oesophagus.
- Multiple food particles as filling defects
- Distal end “ Birds Beak “appearance

Increased incidence of oesophageal carcinoma

Osophageal carcinoma



- More frequently in distal 1/3
- Pre disposing factors-Achalasia, Barretts, caustic stricture etc…
- Present with progressive dysphagia, Wt loss
- Rad Ix:
- Barium Swallow, Ultrasound abdomen, CT thorax and abdomen.

CT is must before surgery to assess the local and distal spread

Osophageal carcinoma

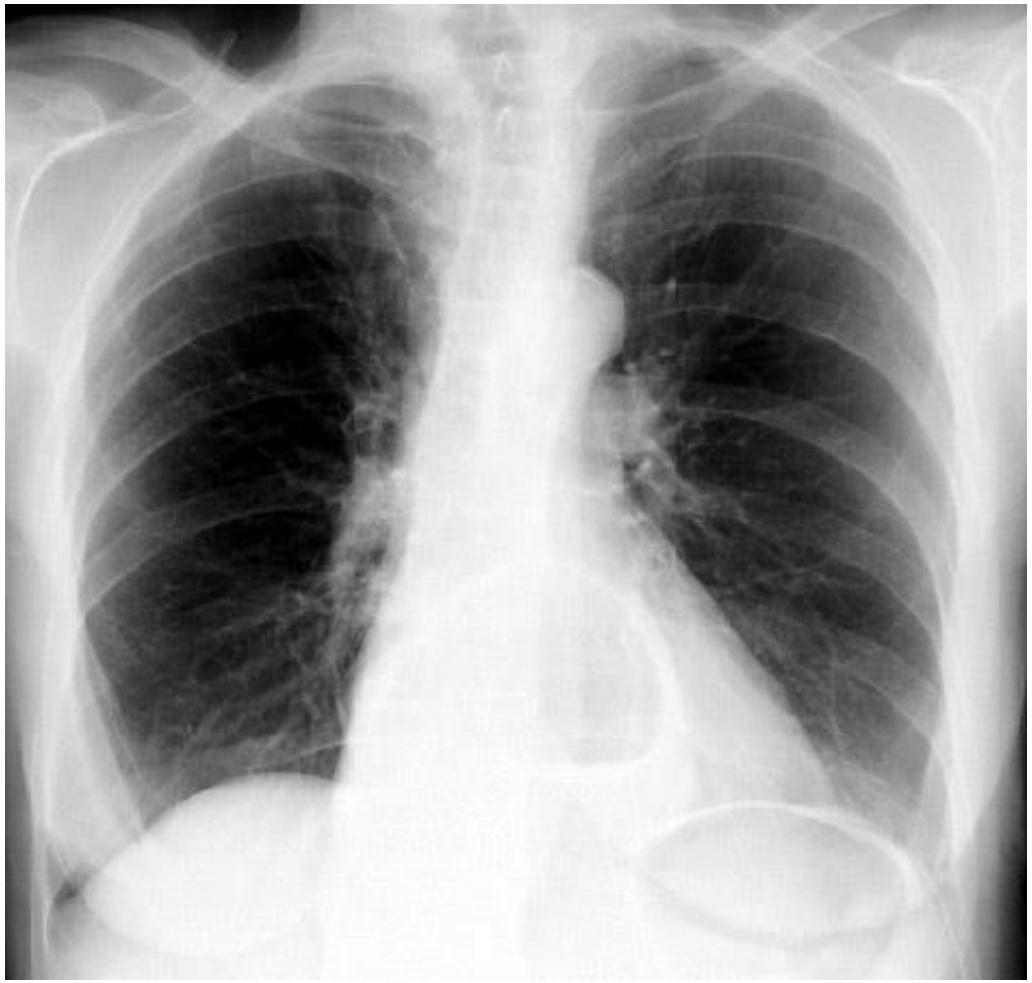
- Radiologically…….
- Polypoidal type:
  - Intraluminal mass protrudes in to oesophageal lumen.
- Infiltrative type:
  - Spread under mucosa
  - Ulceration causing irregular mucosa

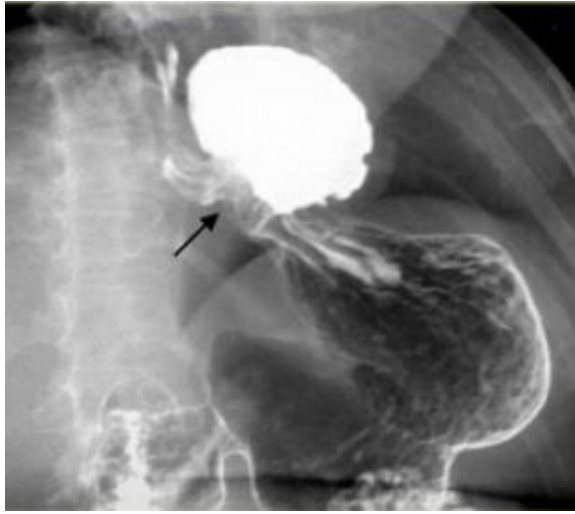
Occasionally may have trachea –Oesophageal fistula

Hiatus hernia

- Protrusion of portion of stomach through oesophageal hiatus
- Sliding hiatus hernia : GEJ and stomach slides to lie above diaphragm
- Paraoesophageal hernia: GEJ normal position; stomach herniating adjacent to the oesophagus

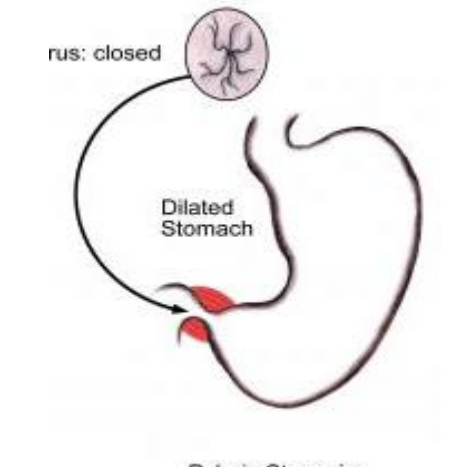
Hiatus hernia





- Radiologically……..
- CXR:
  - Retrocardiac additional soft tissue shadow.
  - May have air fluid level.
- Barium Swallow :
  - Clearly show the herniation
  - May need head down position to see small hernia

Gastric outlet obstruction



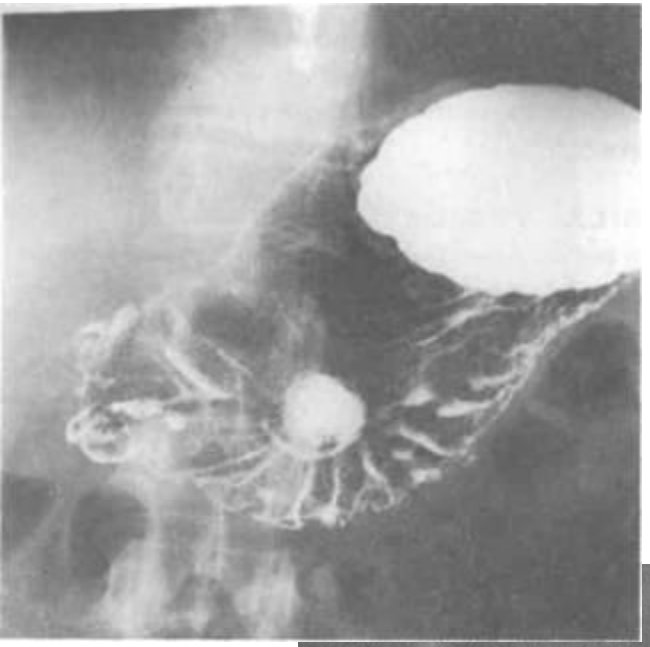
- Mechanical obstruction at pylorus
- Stomach dilate : food accumulate
- Radiologically…..
  - Dilated stomach
  - Food particles as filling defects
  - Delay empting
  - Irregular outlet if malignant infiltration.

Pancreatic carcinoma is the commonest malignant cause of gastric outlet obstruction.

Gastric carcinoma

- Present with dyspeptic symptoms N,V, LOW,haematamesis and melena.
- Rad Ix : Ba meal, Before Sx USS,CT abdomen
- Radiologically…
  - Polypoidal type-filling defect
  - Ulcerative type-irregular margin.
  - Diffuse infiltrating type-Poorly distended stomach

Gastric Ulcer

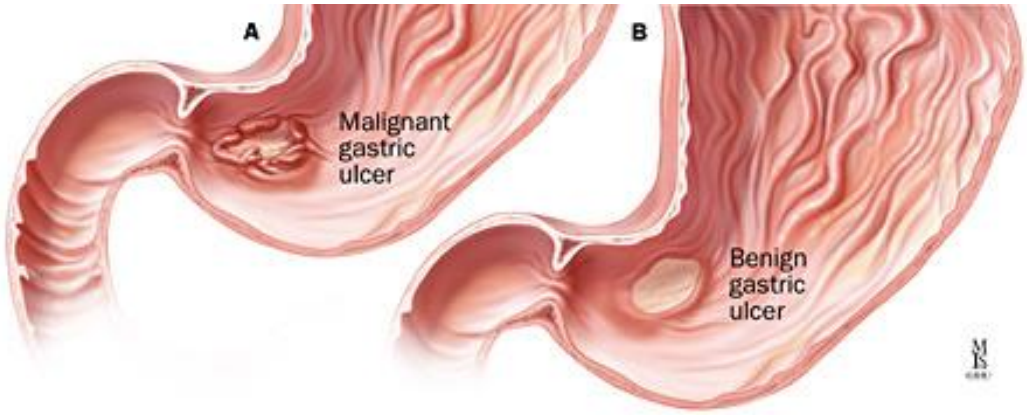


- Commonly at **lesser curvature.**
- Endoscopy is diagnostic.

Radiologically…..

- *Enface* view-ulcer as Ba pool
- *Profile* view-ulcer as out pouching from gastric wall

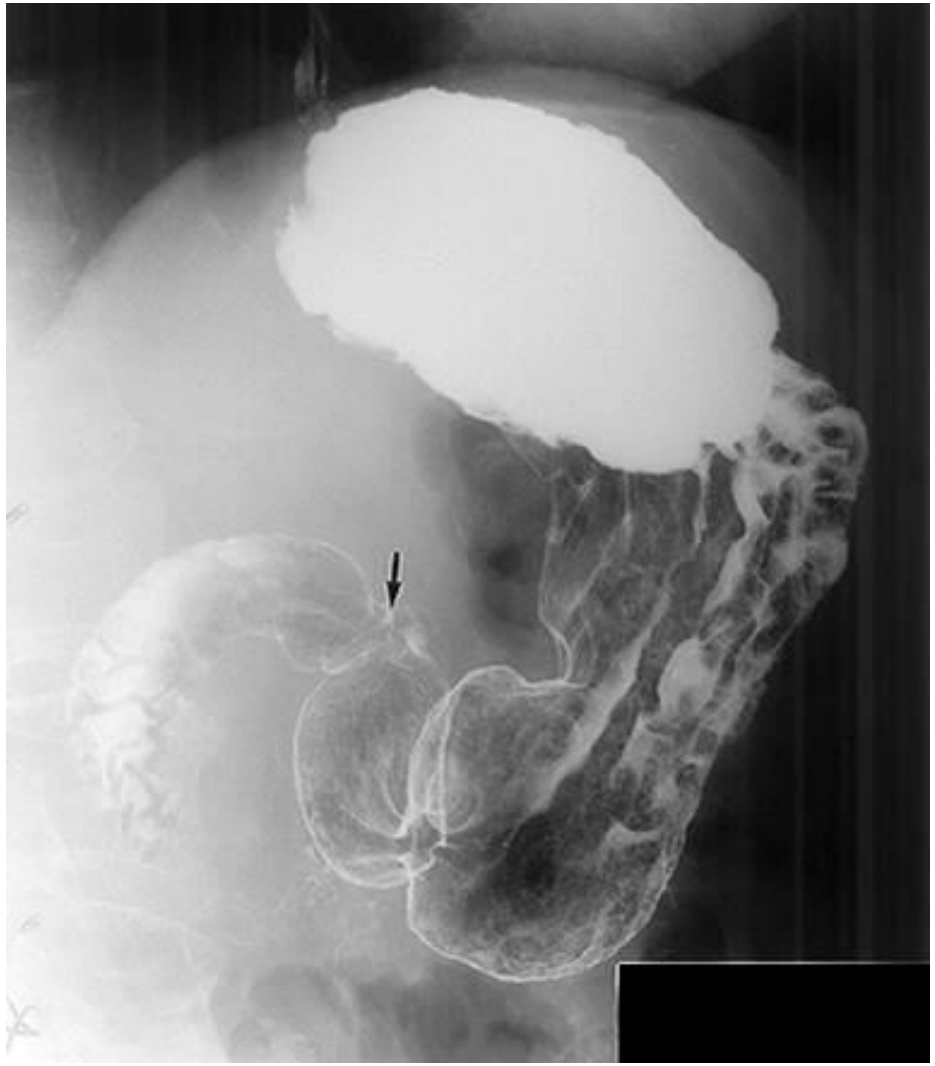
Gastric Ulcer



Radiologically…..

- Benign Ulcer-
  - Smooth radiating folds
  - Projection of ulcer out of gastric wall
- Malignant ulcers
  - Shallow ulcer with irregular contour
  - Does not protrude beyond gastric wall.

Duodenal Ulcer

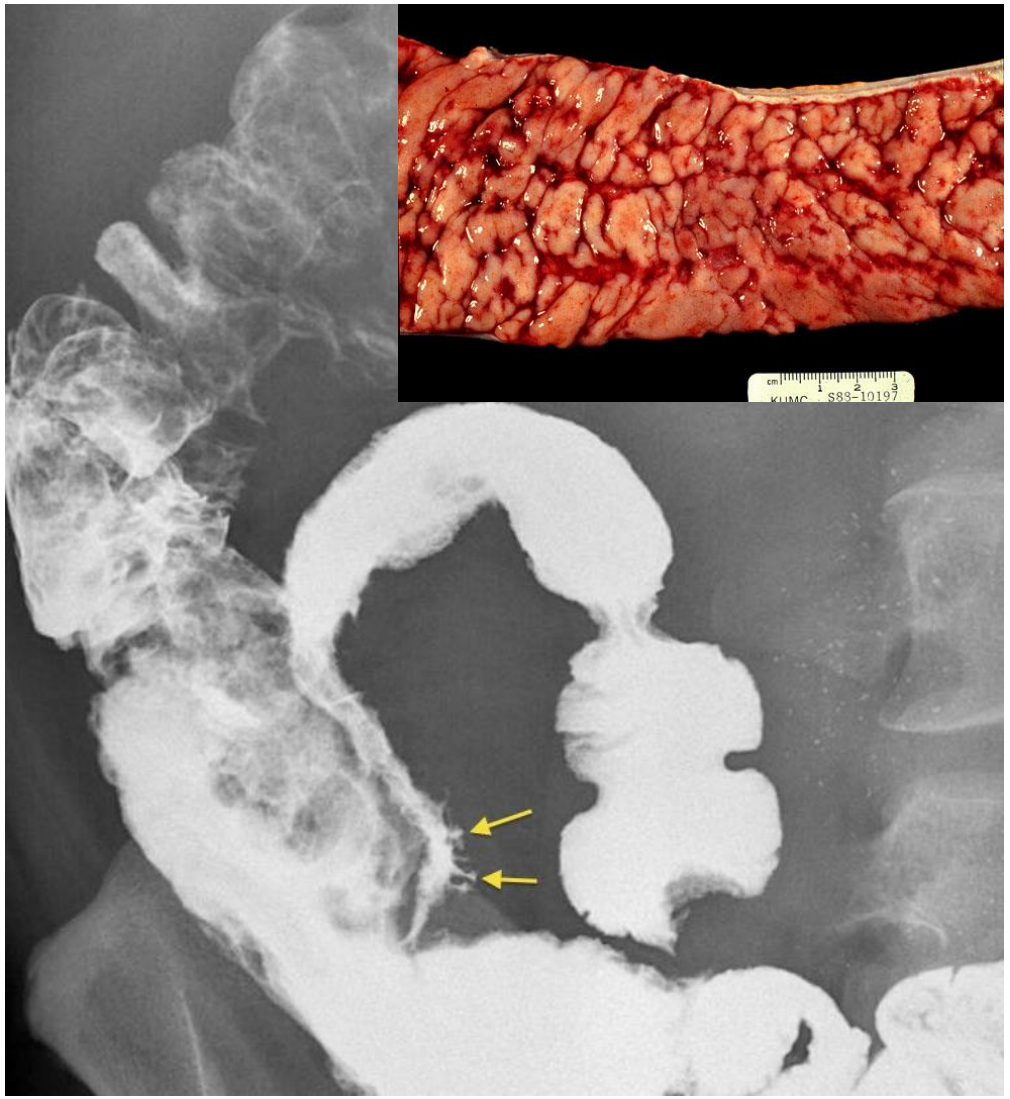


- More common than gastric ulcers
- Proximal duodenum is common site- Cap

Barium meal and fallow through

Small bowel enema

Crohn' disease



- Can affect mouth to anus
- Commonly involve terminal ileum and SI

Radiologically……

Ba meal and fallow through-

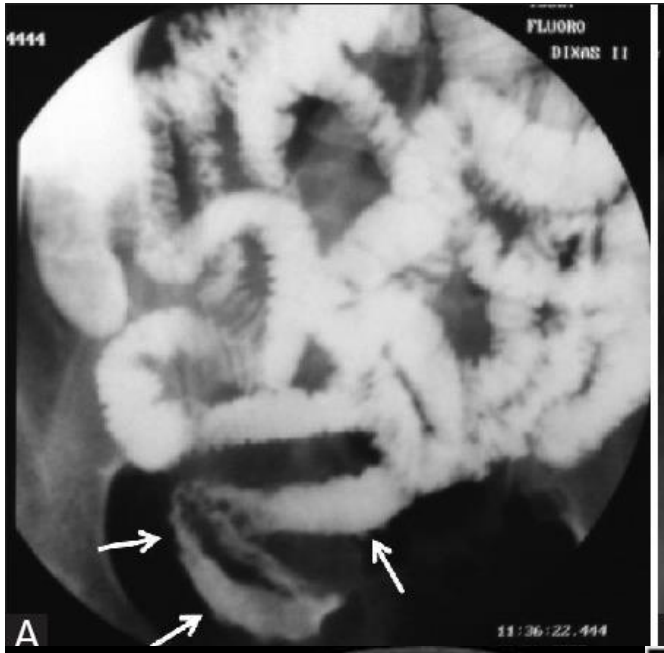
Deep ulcers (Rose thorn)

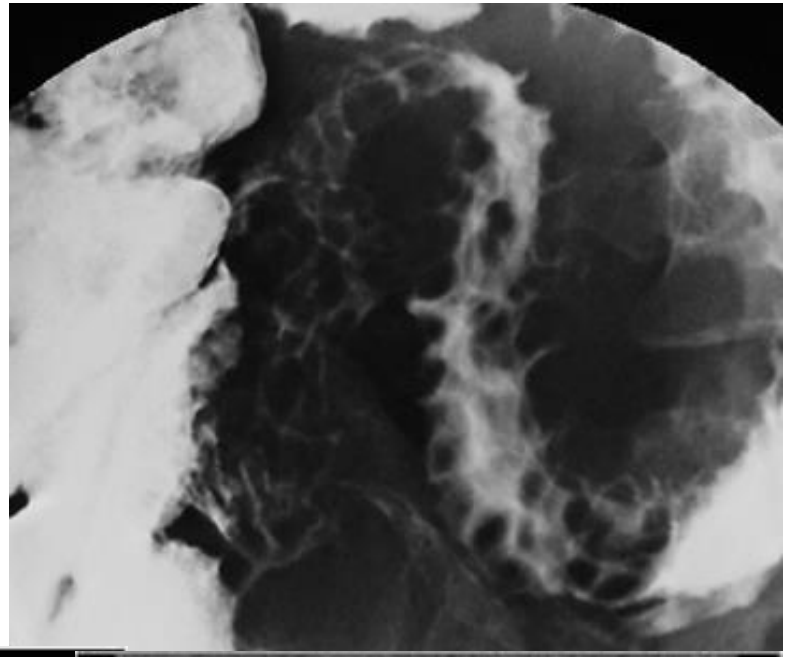
Cobble stone mucosa- oedematous raised mucosa

Thickened bowel wall – separated bowel loops

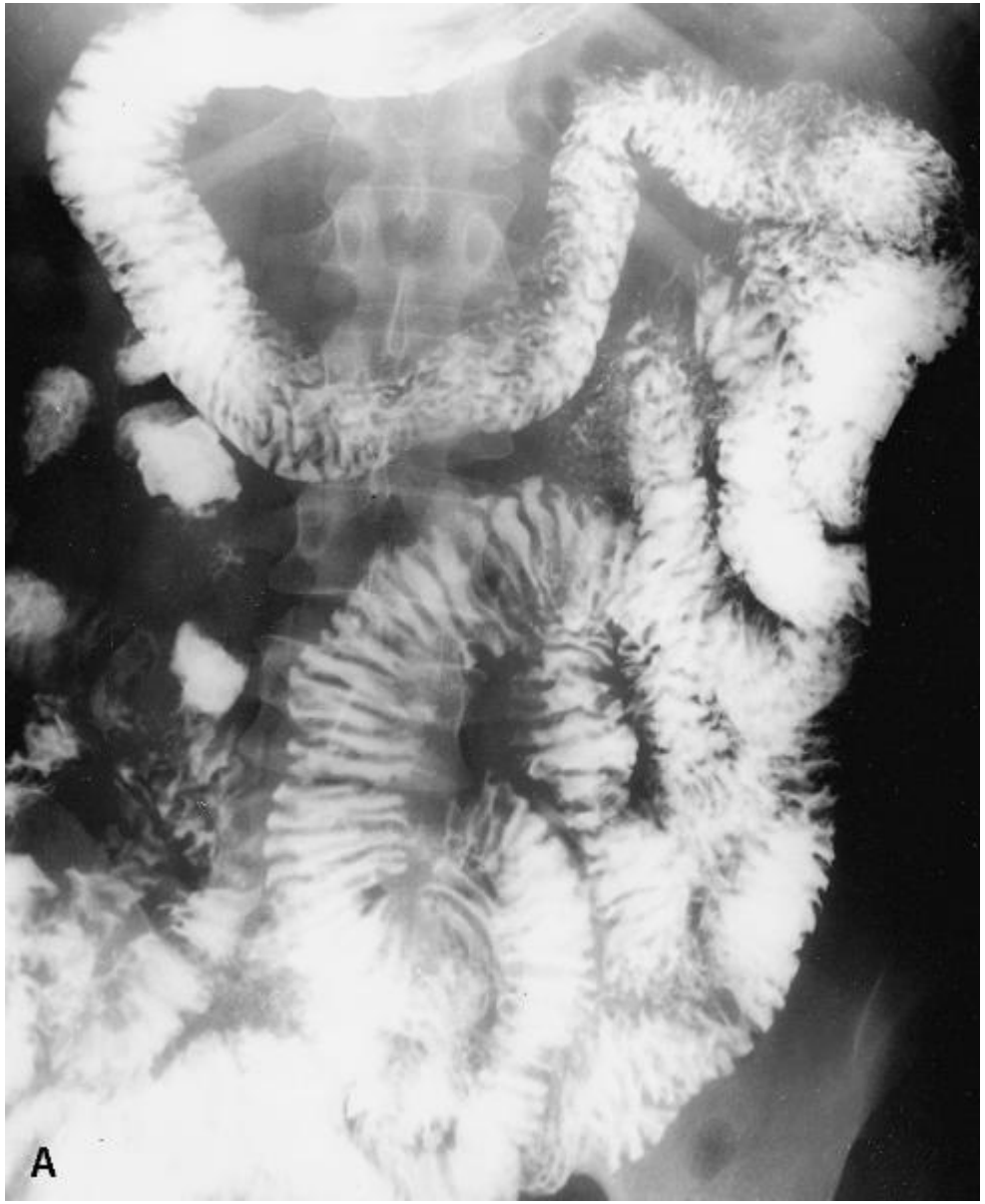
Stricture formation

Crohn' disease



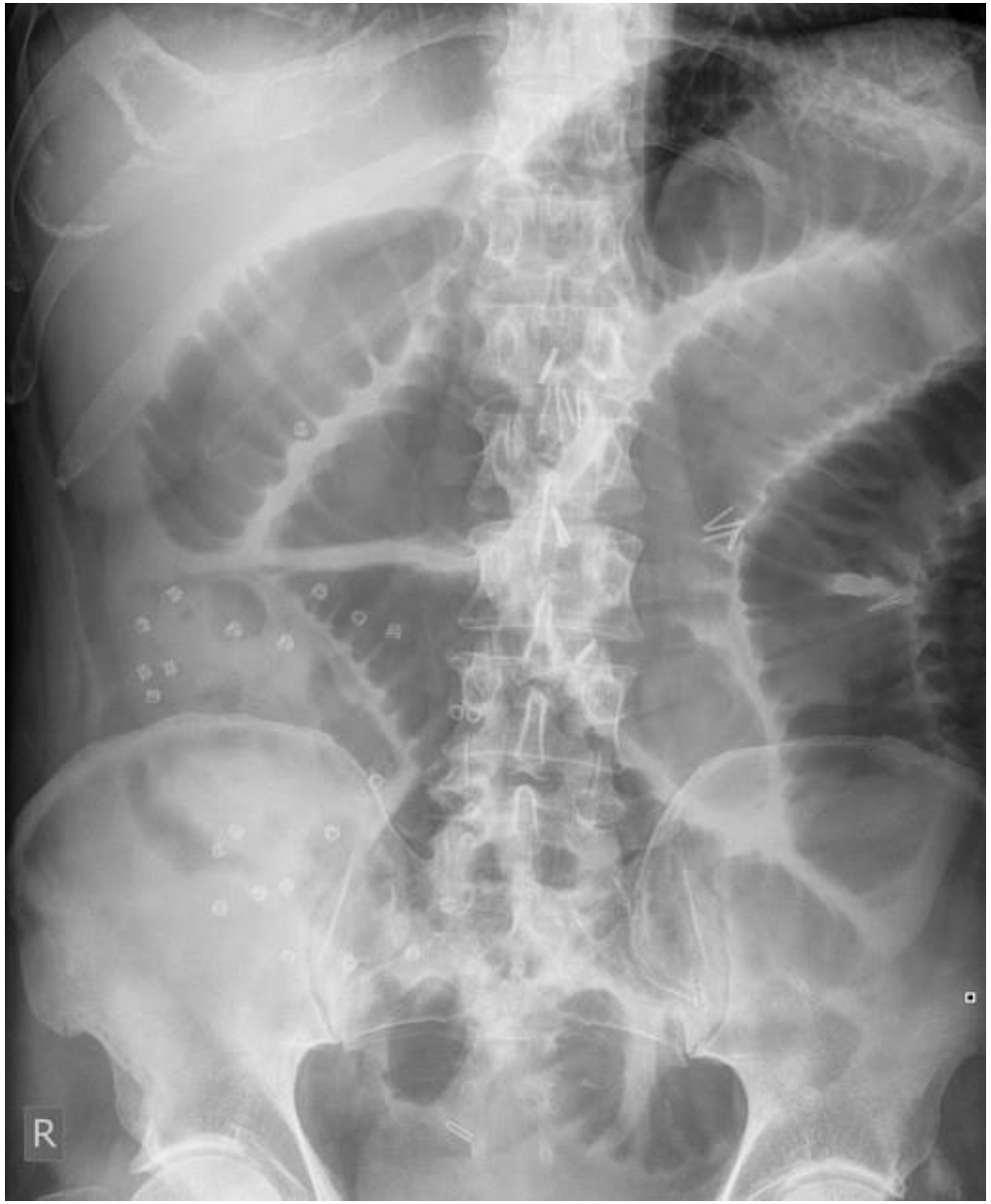


Malabsorption



- Conventionally- Ba meal & FT .
- Now MRI is popular
- Radiologically……
  - Dilated small bowel
  - Prominent valvulae conniventes
  - Thickened bowel wall –separation of adjacent loops

Small bowel obstruction



- Gas and fluid accumulation proximal to obstruction

Radiologically…….

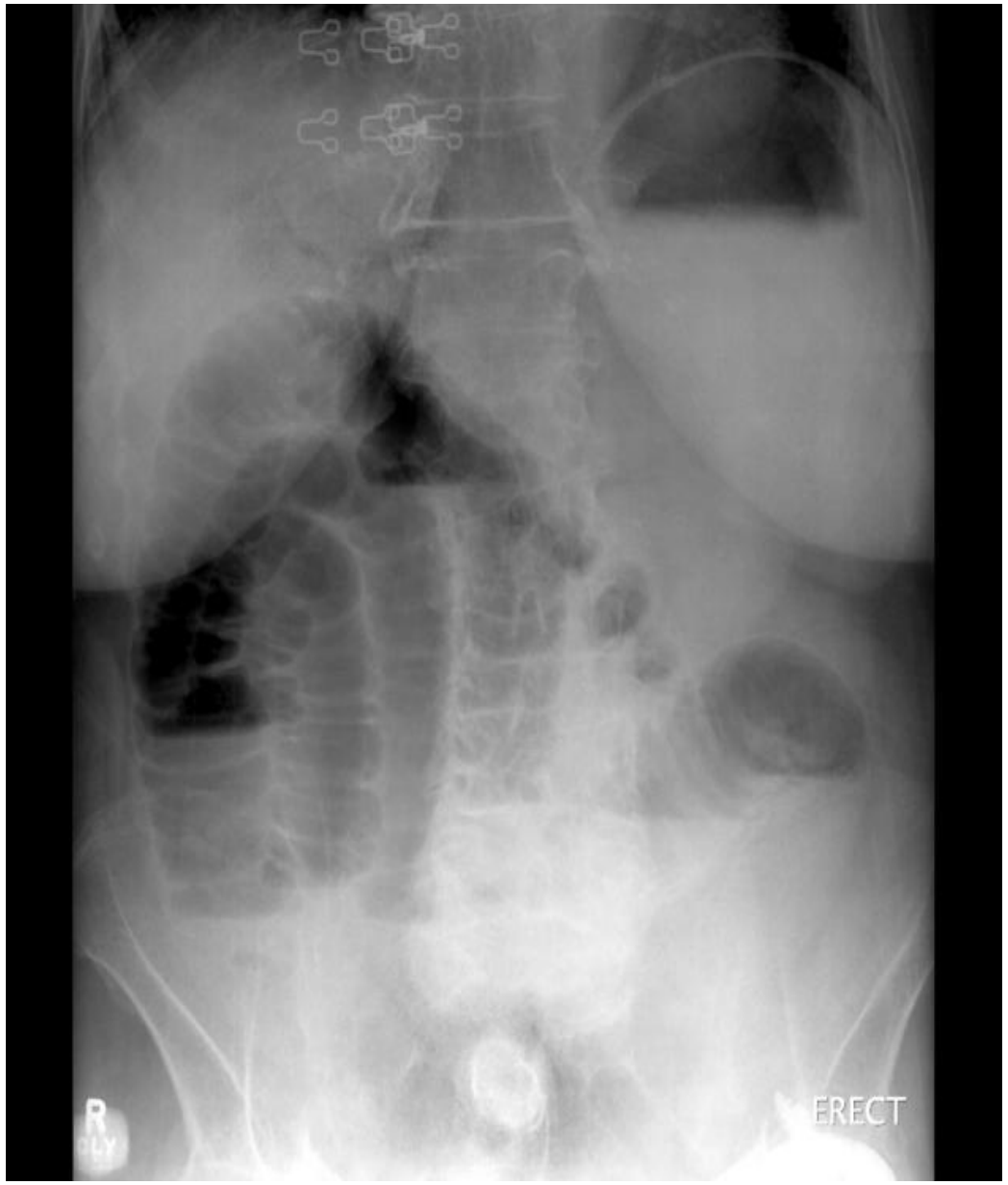
<u>X ray abdomen.</u>

- Distended SI loops in central abd - >3 cm

(Val: conniventes extend whole diameter. Haustra extend half way.)

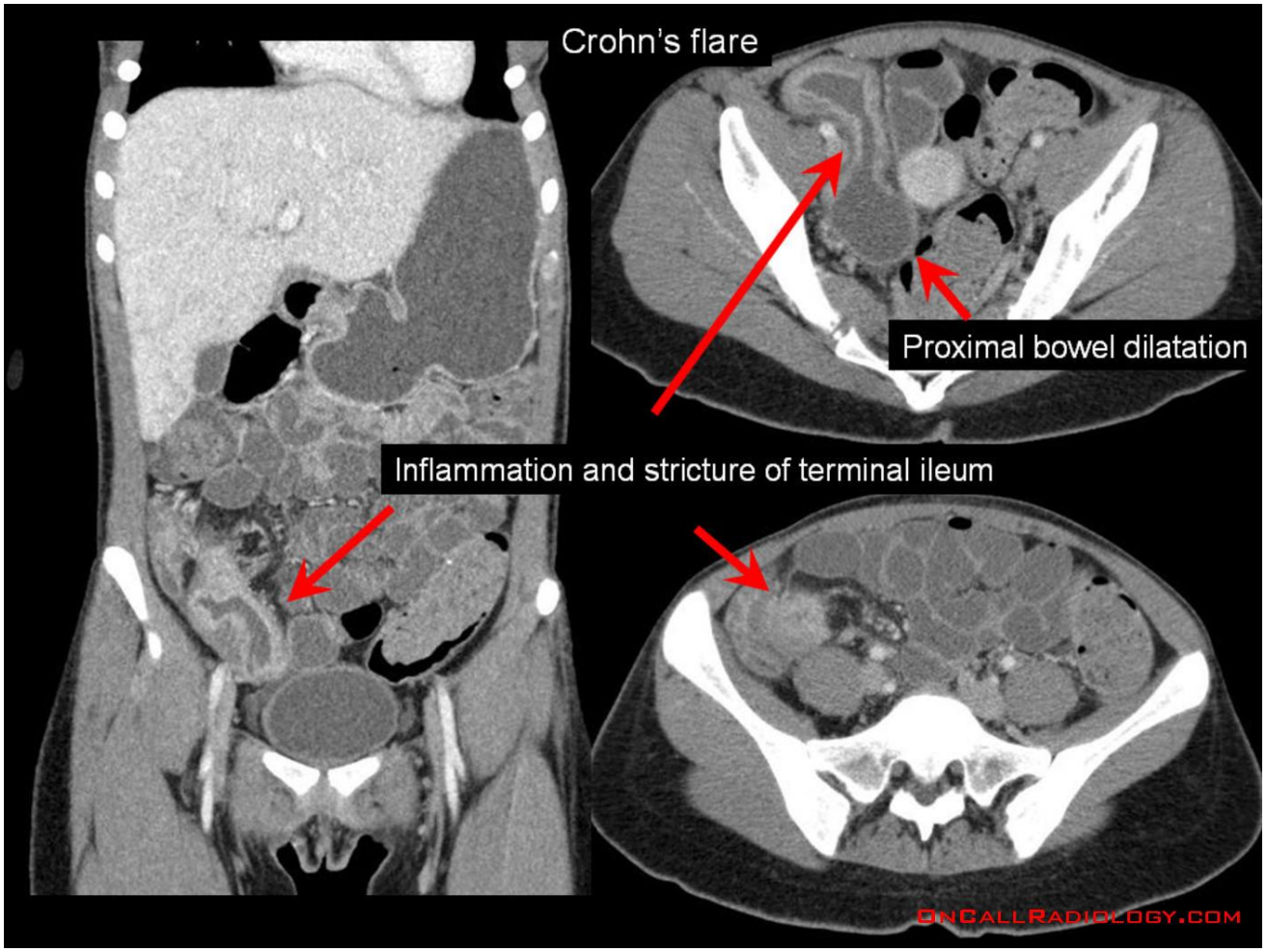
- Absence of gas in large bowel

Small bowel obstruction

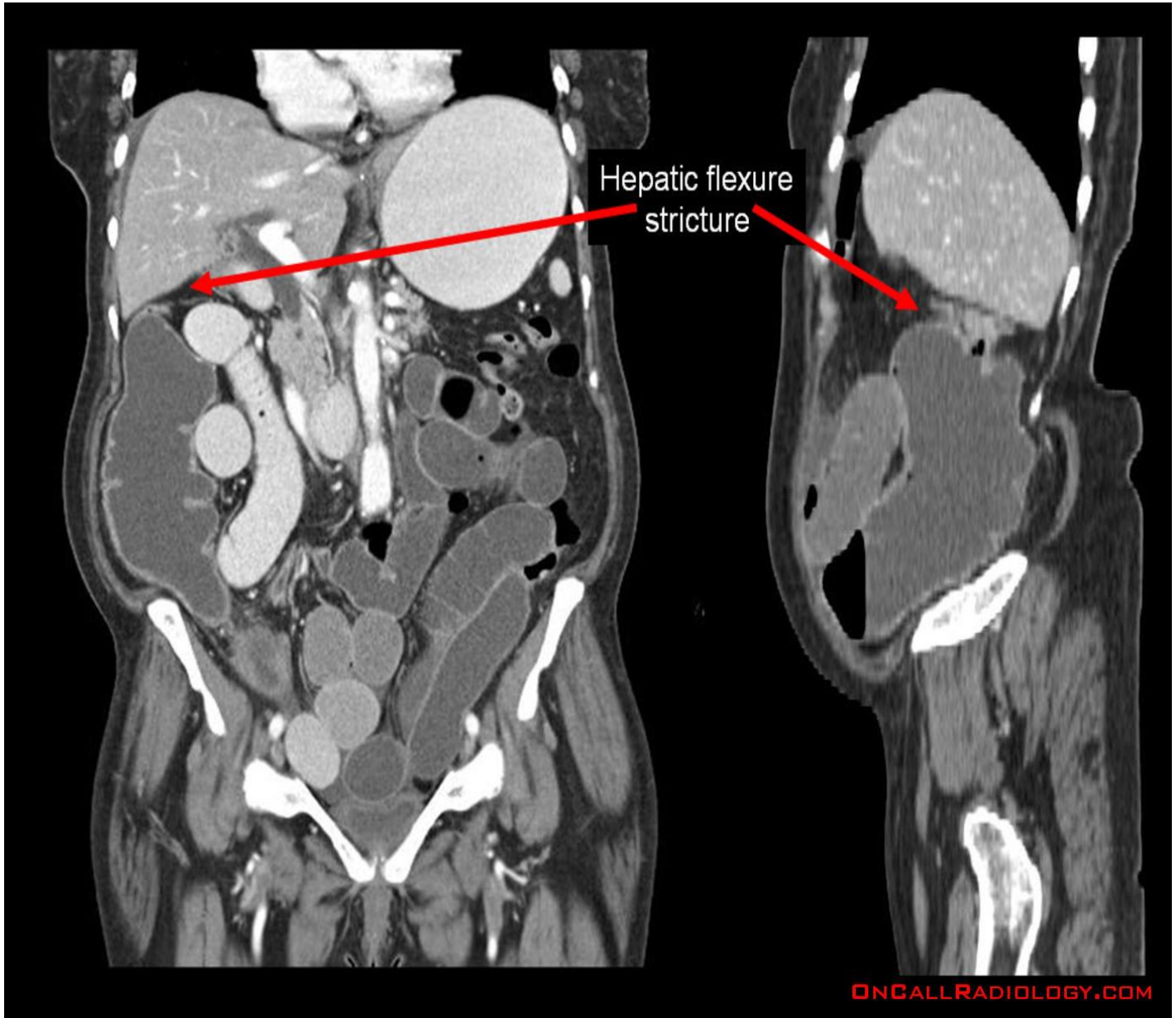


- Radiologically…….
- Few dilated loops- jejunal obstruction
- Multiple dilated loops- distal SI obstruction
- Erect abdomen film- Multiple air fluid levels
- Some times can predict cause and complications of SI obstruction

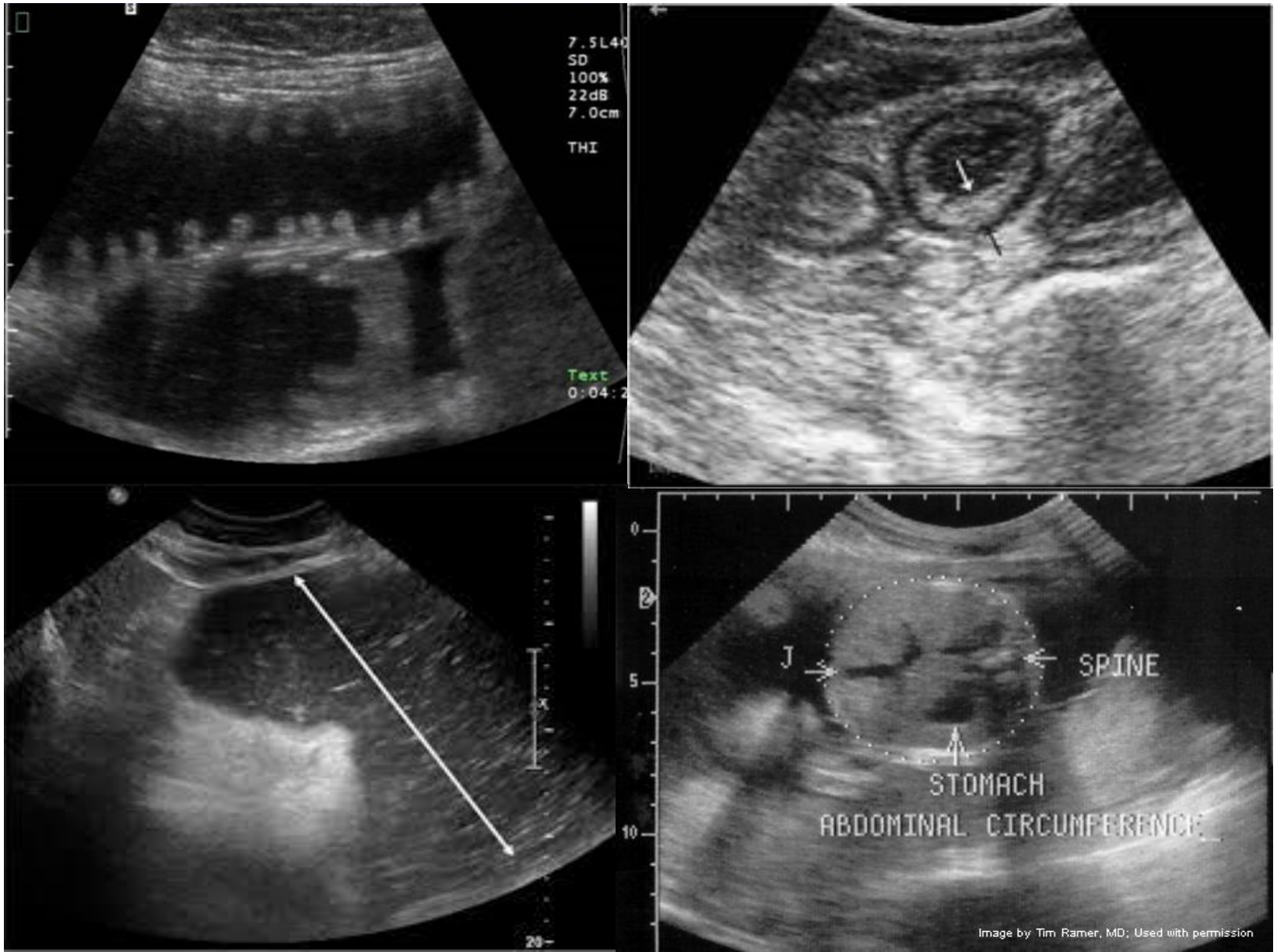
Small bowel obstruction



Large bowel obstruction



Ultrasound


7.5L40
SD
100%
22dB
7.0cm
THI
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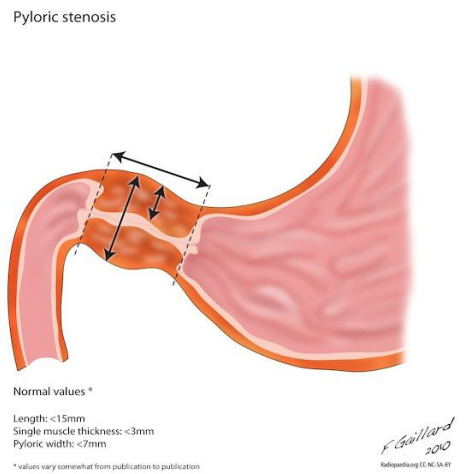
SPINE
STOMACH
ABDOMINAL CIRCUMFERENCE
Image by Tim Ramer, MD; Used with permission

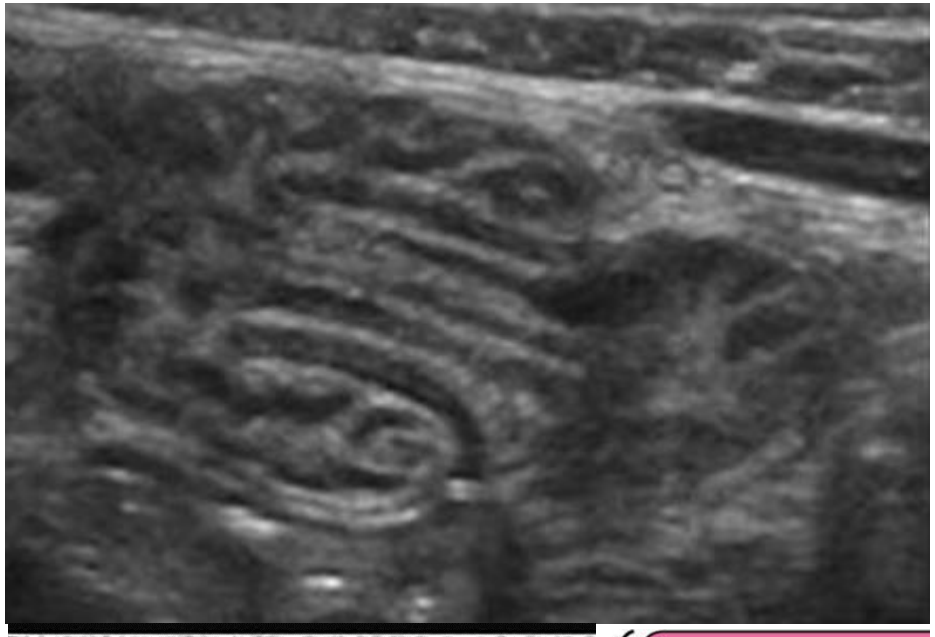
Pyloric stenosis

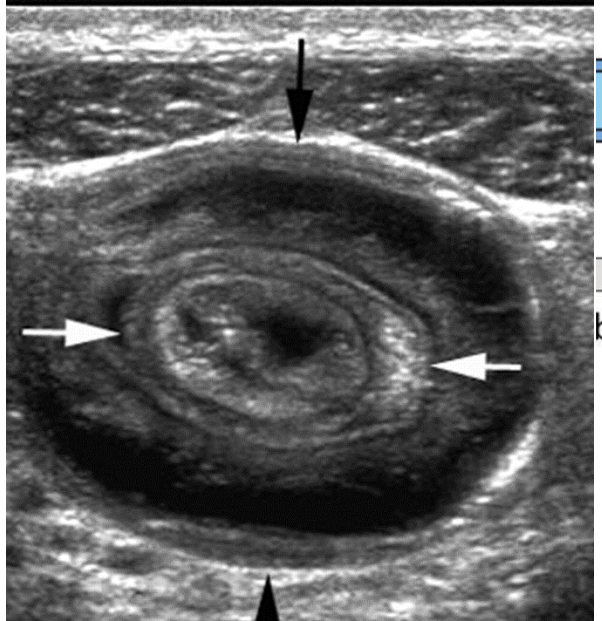


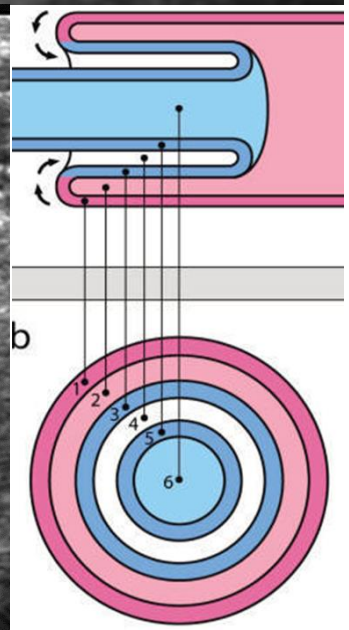
- Hypertrophy of smooth muscle in pyloric region.
- Usually 3 Wks-6Wks of age
- Clinically palpable
- Radiologically….
- USS-Thickened elongated low echogenic pyloric muscle

Present with projectile vomiting / Most common in boys 4:1

Intussusception







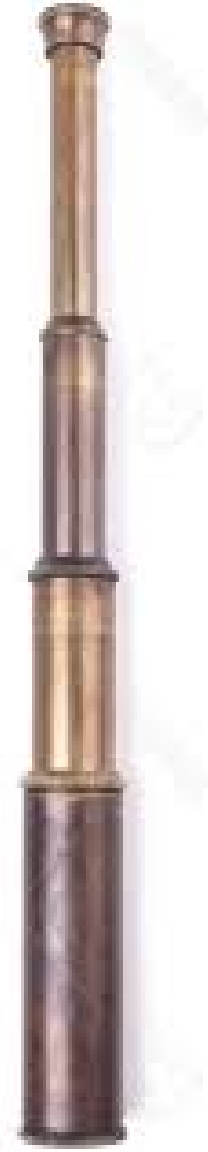
- Telescoping of bowel in to a bowel
- Common in lieo-caecal area
- Children up to 2 yrs

Radiologically……..

X Ray – sings of bowel obstruction

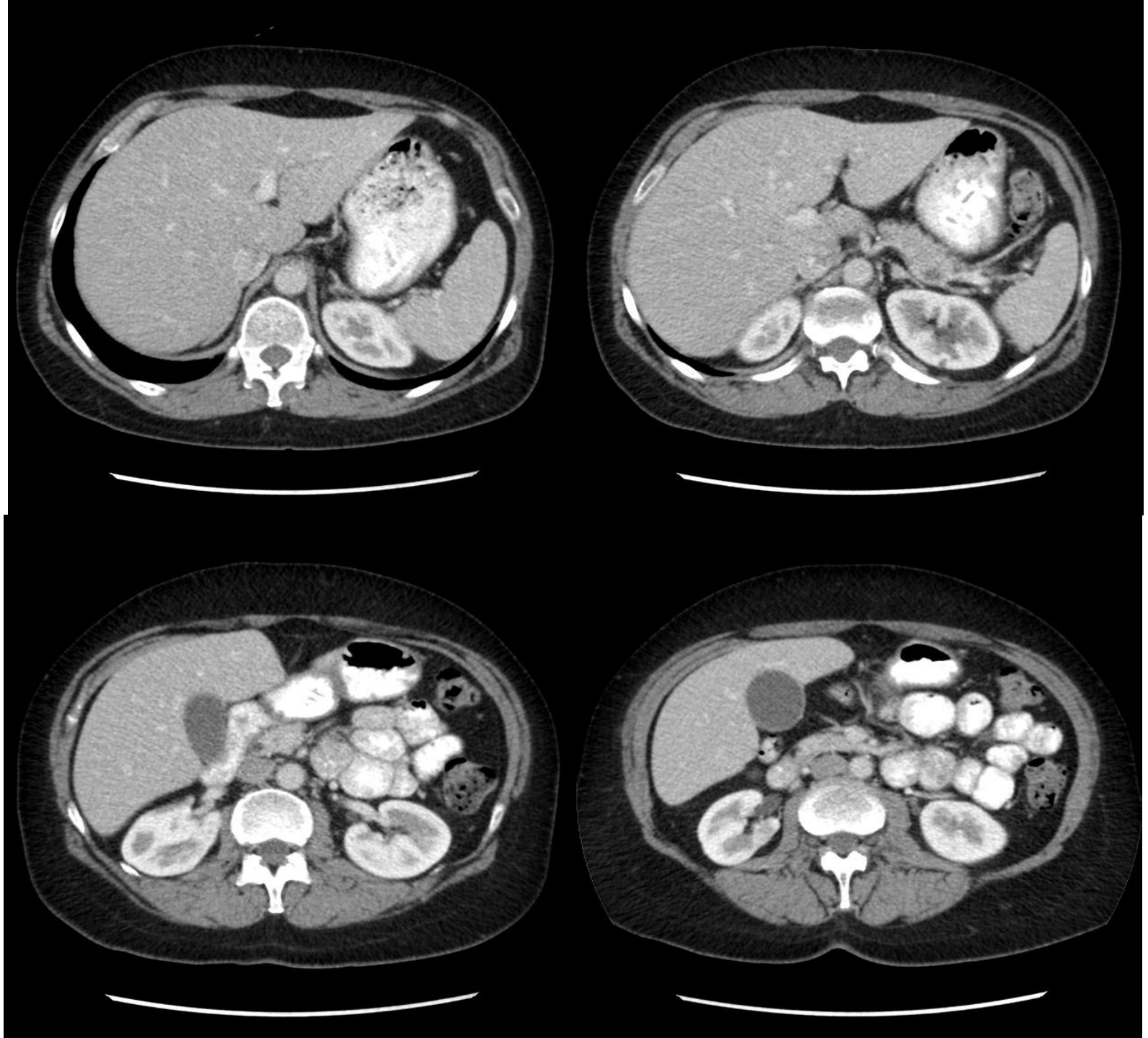
USS- Bowel in bowel

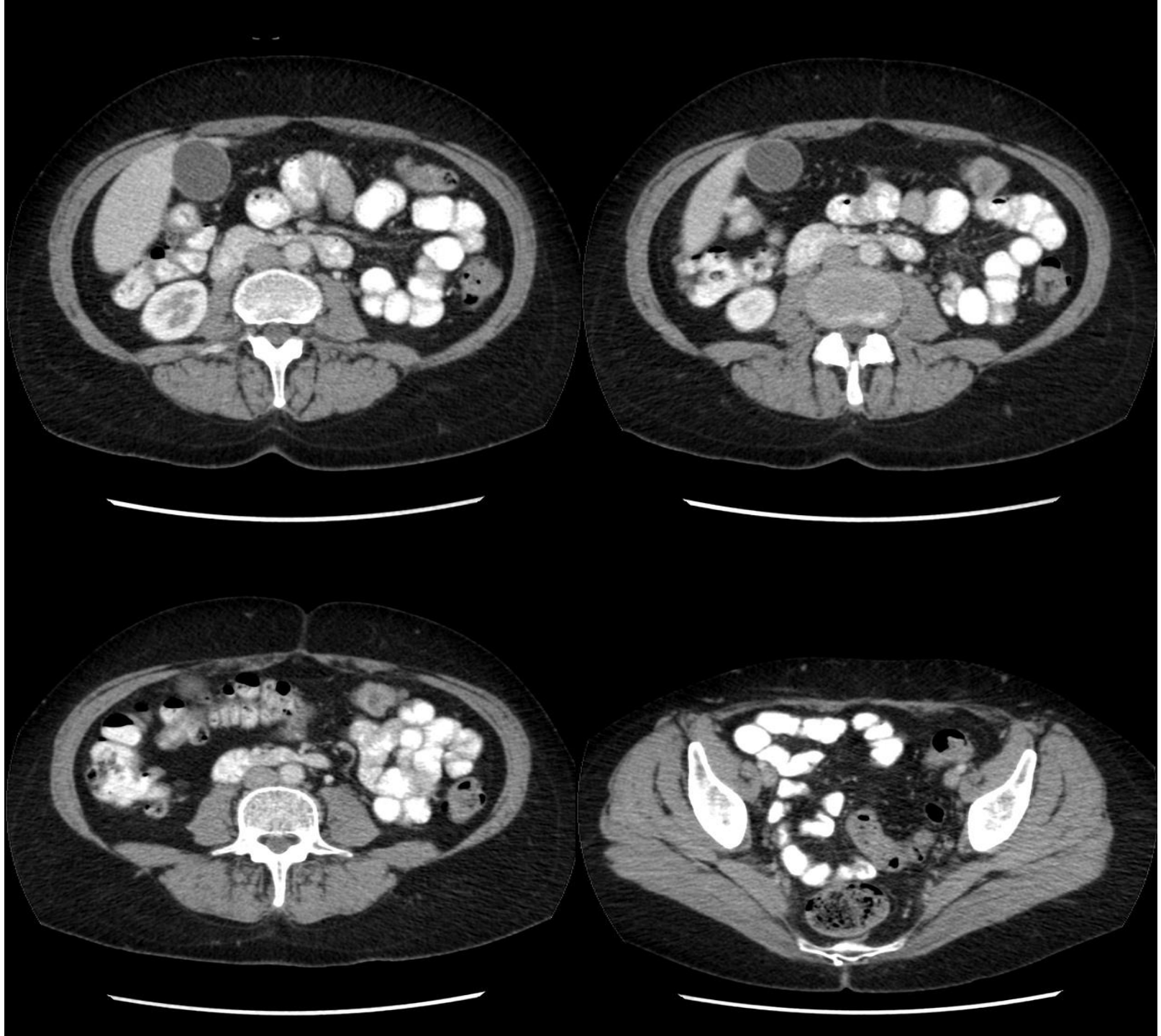
Pseudo kidney or douhnut appearance.

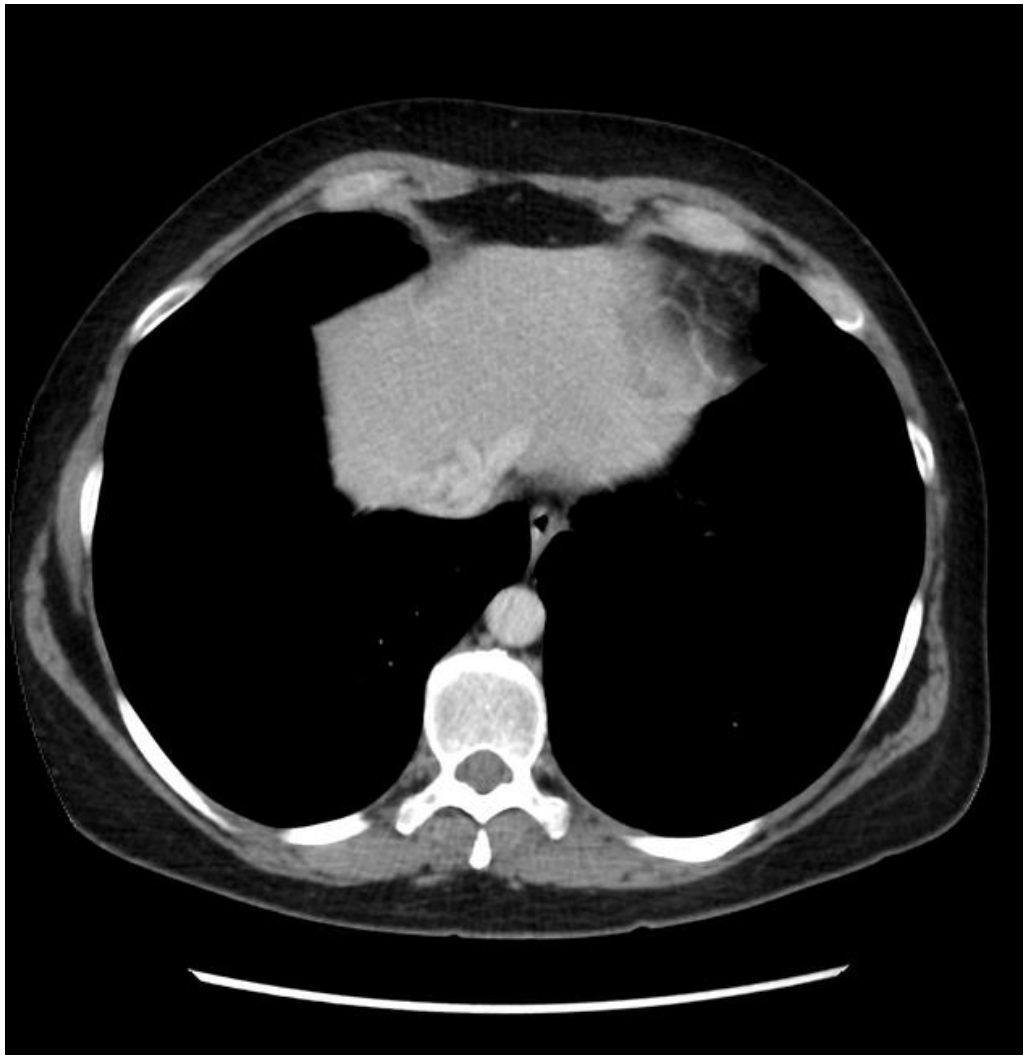


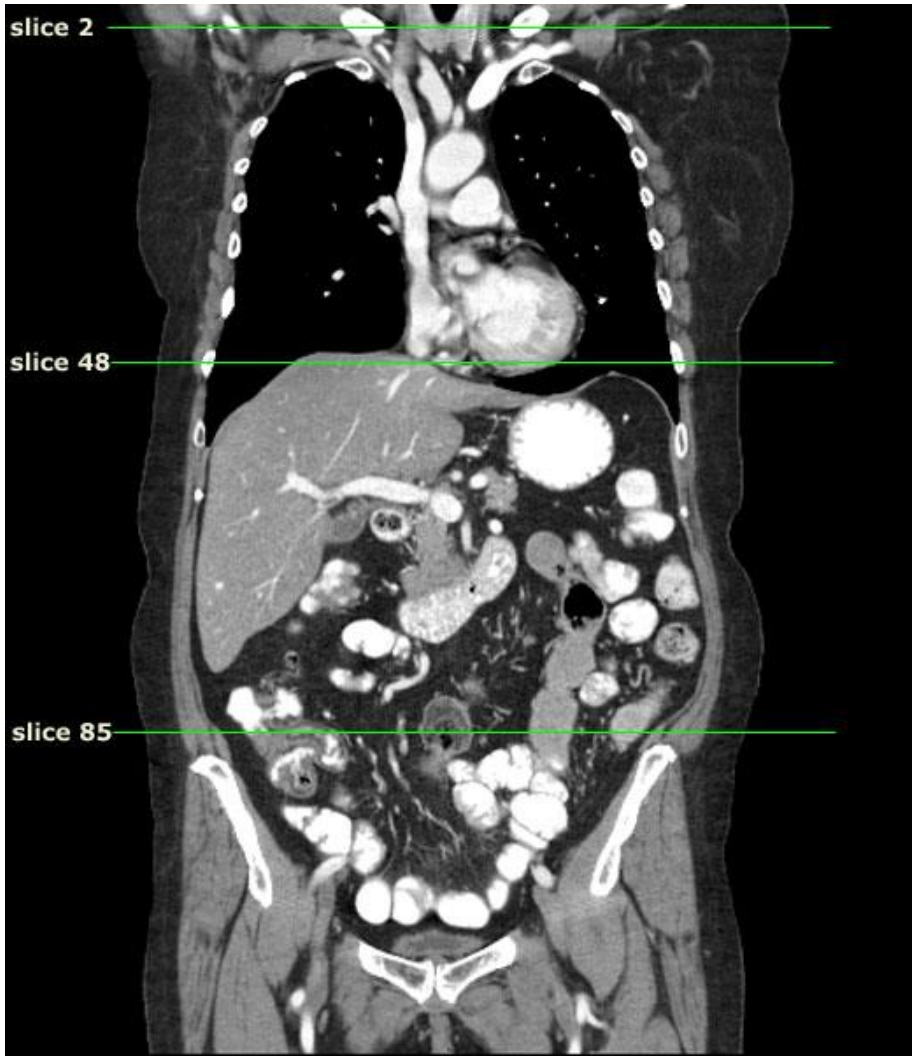
Rx - USS guided hydrostatic reduction

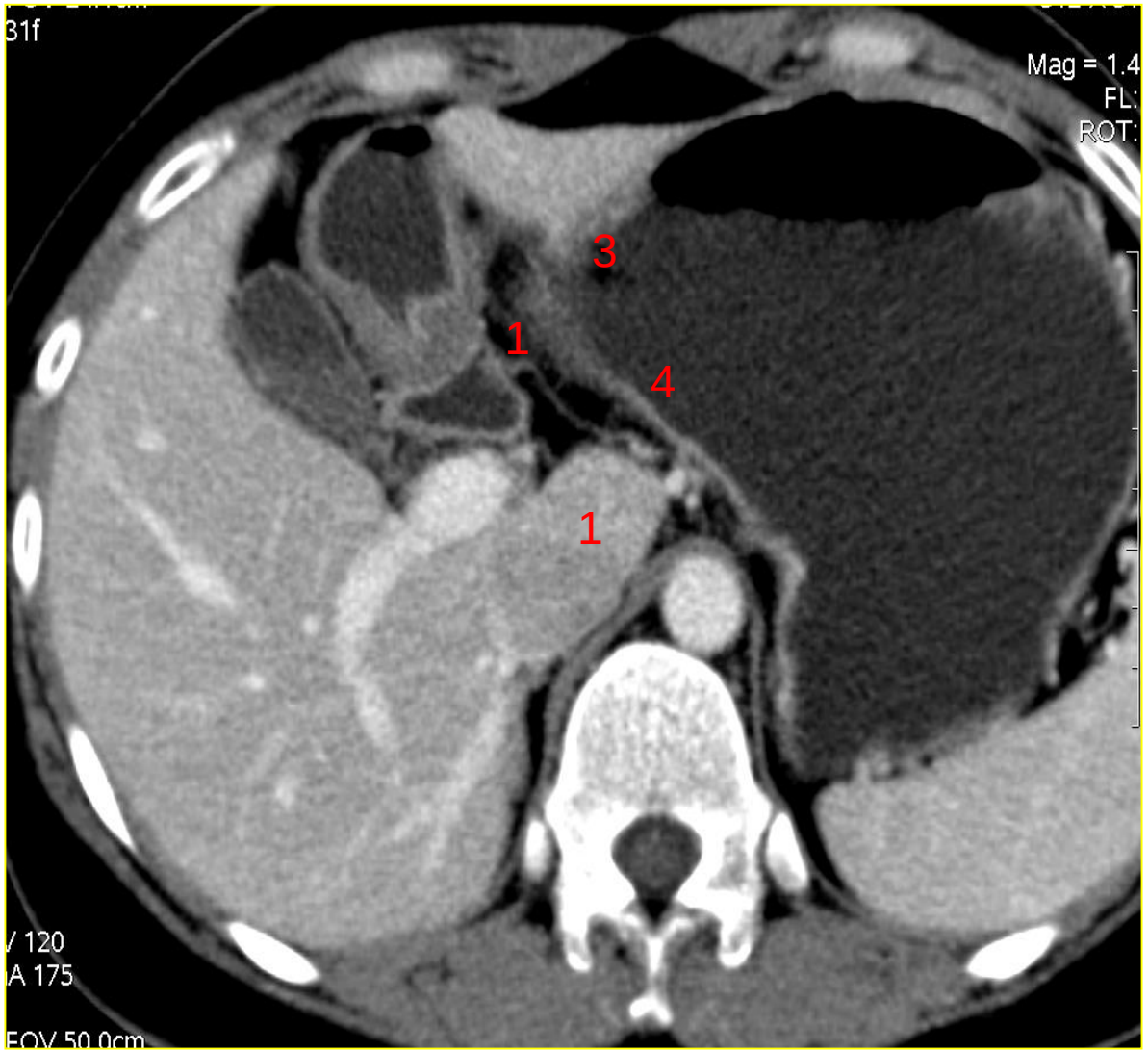
CT








slice 2
slice 48
slice 85

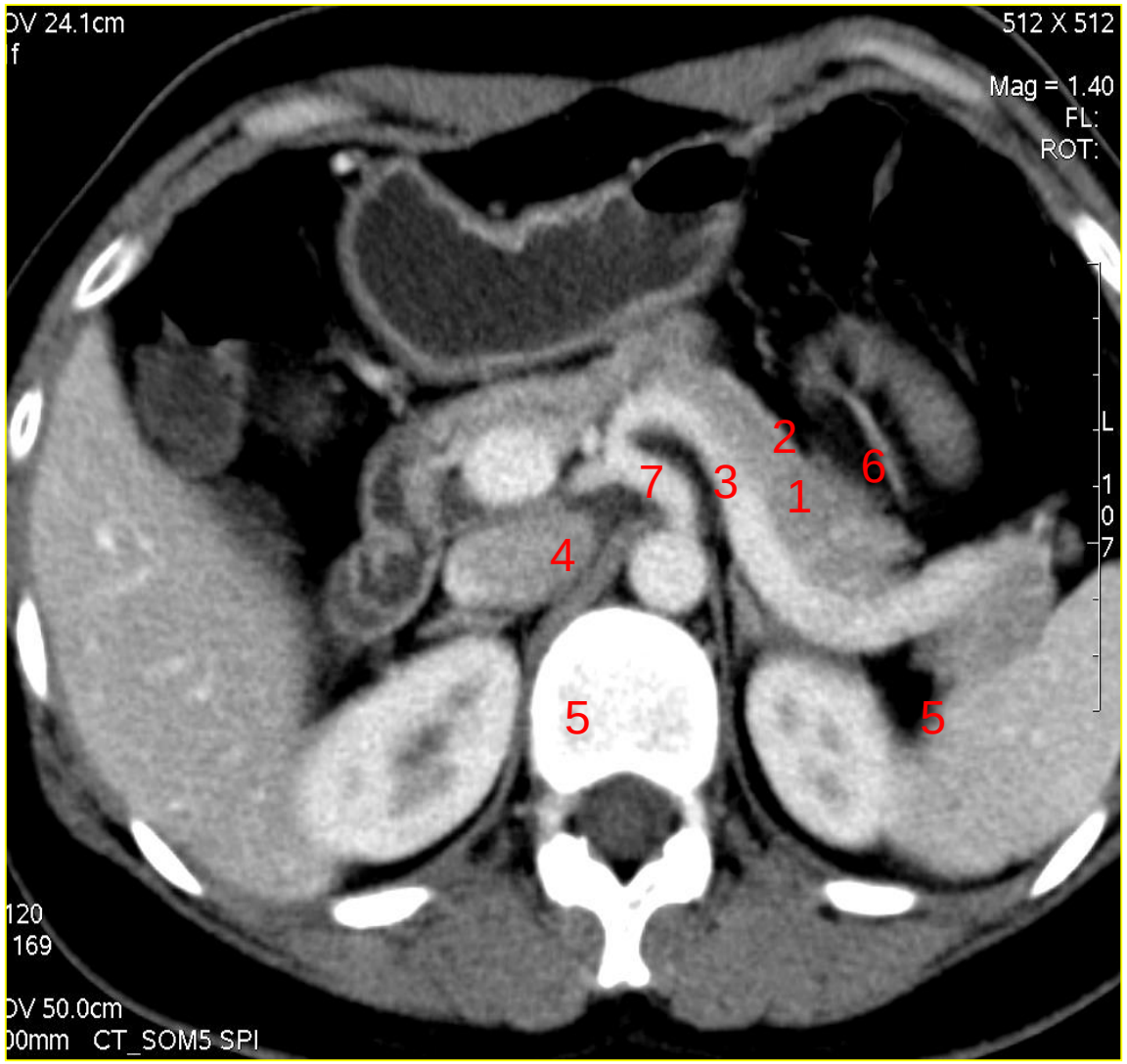


1.Gallbladder

2.RPV, right portal vein

3.antrum

4.duodenal bulb



1.CA,celiac axis

2.Splenic artery

3.common hepatic artery

4.Duodenum

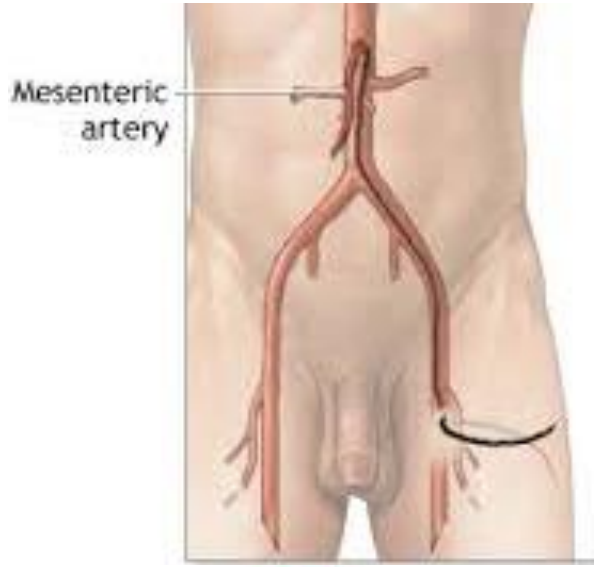
5.Kidney

6.Pancreas

7.Portal vein

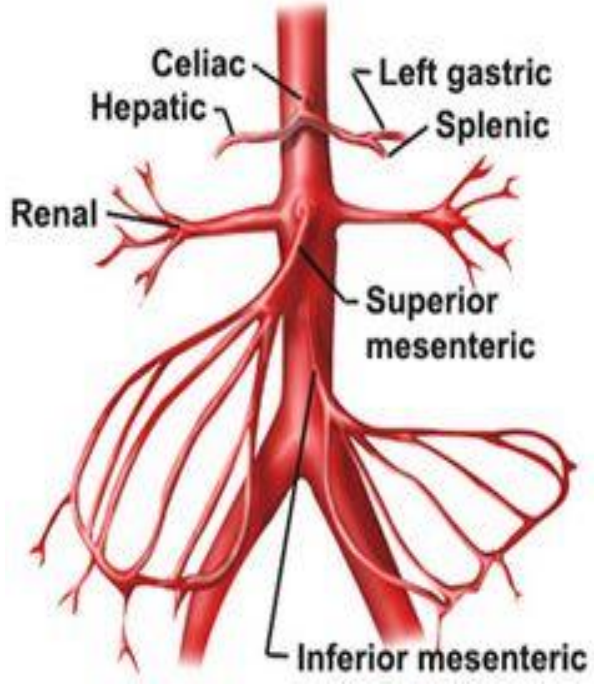
8.Adrenal gland

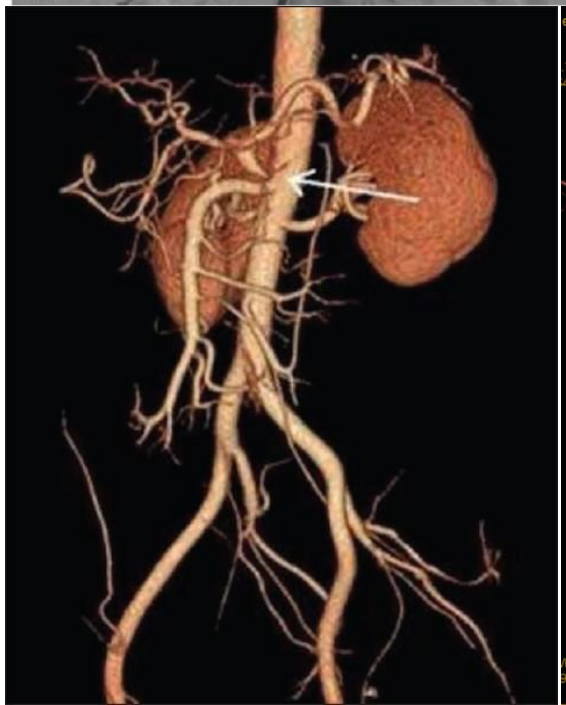
Angiogram


Mesenteric
artery

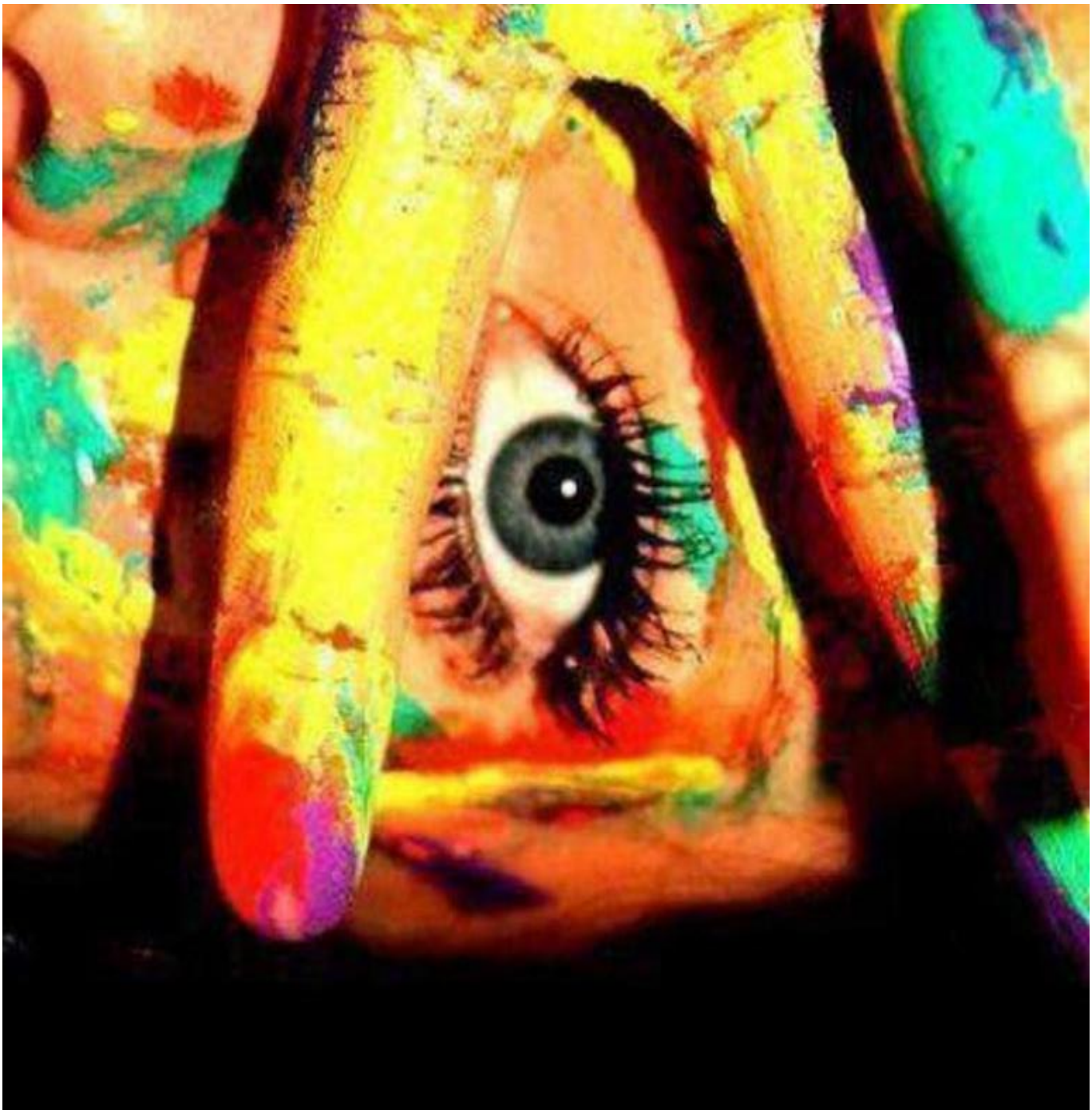

A


B


Celiac
Hepatic
Left gastric
Splenic
Renal
Superior
mesenteric
Inferior mesenteric




endering No cut
Ex:Oct
7 cm
40 No Filter
HE+ 39.4mm/rot
984:1/0.62sp



Thank you