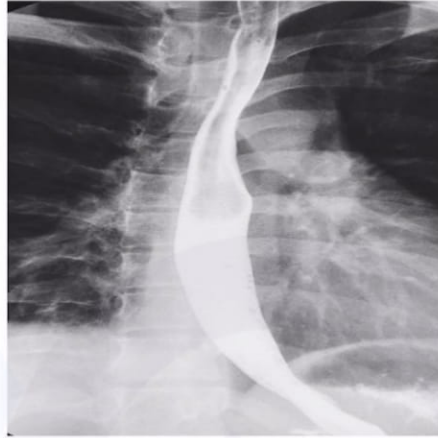


Barium Swallow Studies

00:00:10

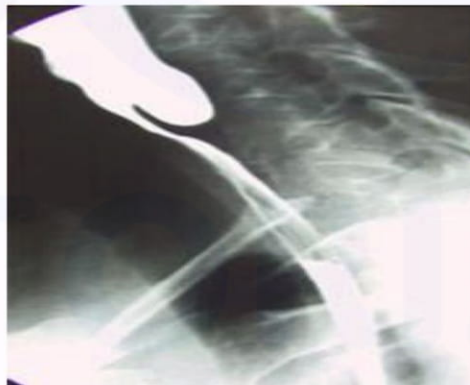
- Normal barium swallow image

Barium swallow images



- **Zenker's Diverticulum:** A posterior midline outpouching of the esophagus is seen on a barium swallow.

Posterior midline Outpouching-



- **Achalasia cardia :** A smooth, rat-tail or bird-beak like tapering of the distal esophagus is seen.

Bird Beak Appearance on Barium swallow /
Smooth Rat Tail -

- Ca esophagus: rat tailing and irregular shouldering on ba swallow

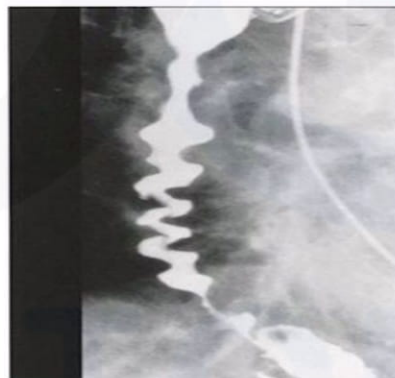
Rat tail with Irregular Shouldering on Barium Swallow



- **Diffuse Esophageal Spasm:** An irregular shouldering and corkscrew appearance of the esophagus is observed

Corkscrew appearance of esophagus-

Diffuse Esophageal

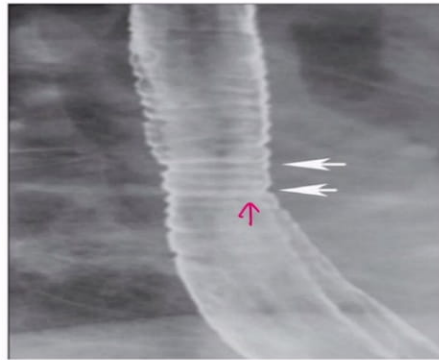


- **Feline Esophagus:** Thin, transient, horizontal mucosal folds, particularly in the distal esophagus, seen in patients with gastroesophageal reflux disease (GERD).

Thin Transient Horizontal Folds in distal esophagus-



- **Eosinophilic Esophagitis:** Multiple concentric rings with narrowing and strictures in the mid-esophagus, giving a pseudo-trachea appearance. History of asthma is seen

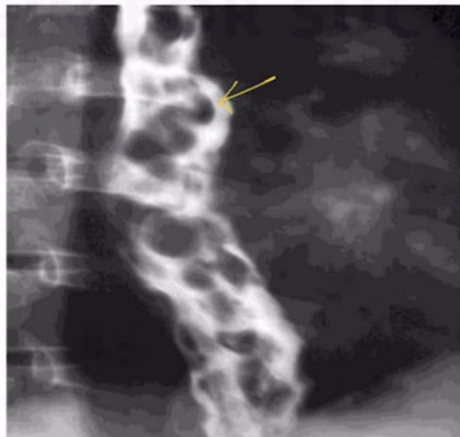


- **Candida Esophagitis:** Irregular mucosal ulcers, giving a shaggy appearance in immunocompromised individuals.
- **CMV Esophagitis:** Large discrete ulcers in AIDS patients at mid esophagus.
- **Leiomyoma of the Esophagus:** A crescent filling defect, potentially with calcifications on a CT scan, is observed.



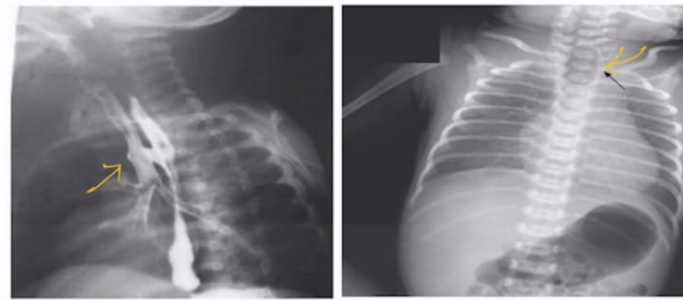
Crescentic filling defect in esophagus
Calcifications can be present

- **Esophageal Varices:** Worm-like, serpiginous filling defects are seen in the esophagus.



Serpeginous filling defect on barium swallow

- **Tracheoesophageal Fistula:** Barium entering the trachea and bronchi is seen on a barium swallow, and a nasogastric tube coiling can be seen on a chest X-ray.

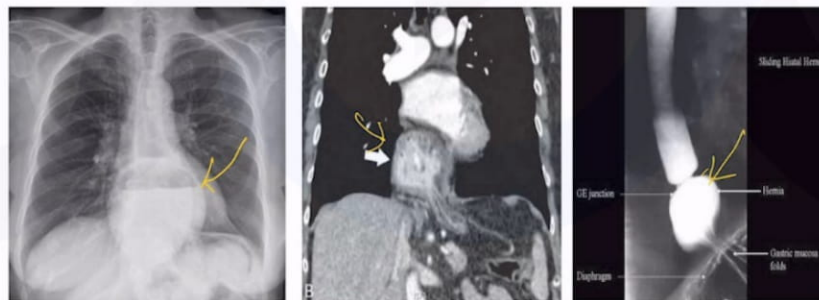


Coiling Of Nasogastric Tube $\Rightarrow$ TEF

Hiatal Hernia

00:04:54

- A retrocardiac air-fluid level is seen on a chest X-ray.
- Part of the stomach is seen herniating into the thoracic region.
- CT with oral contrast is the investigation of choice.

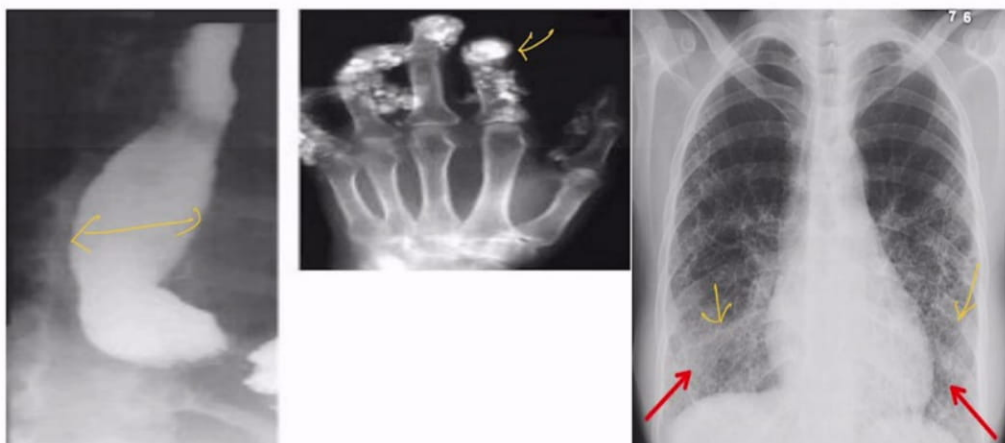


Retrocardiac Air fluid level on CXR

Systemic Sclerosis/Scleroderma

00:05:29

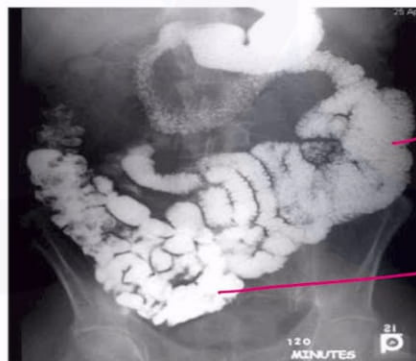
- A dilated, aperistaltic esophagus, soft tissue calcification, and bibasilar reticular opacities on a chest X-ray are seen.





Barium Meal

- **Normal Anatomy:** The stomach, duodenum (C-shaped loop), jejunum (feathery appearance), and ileum (featureless) can be visualized. The feathery appearance of the jejunum is due to circular mucosal folds. Valvulae conniventes / plica circularis

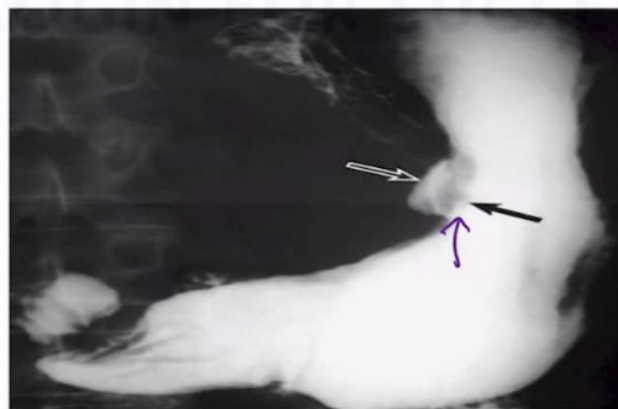


Barium Meal follow through

jejunum → feathery appearance
 Valvulae Conniventes or

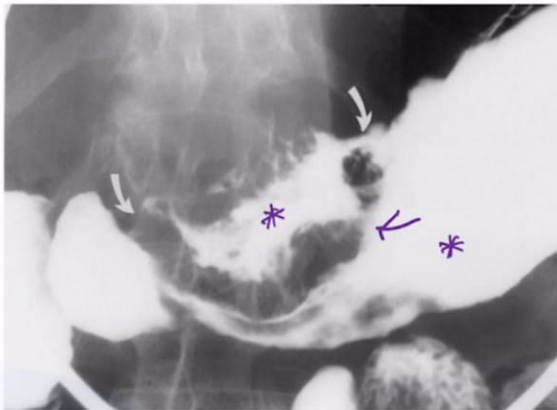
ileal loops

- **Benign Gastric Ulcer:** A Hampton's line or ulcer collar, with the mucosal ridge reaching the ulcer base, is seen.



Hampton line/Ulcer collar → Benign Gastric

- **Malignant Gastric Ulcer:** A concentric or meniscus-like filling defect called a Carman meniscus sign is seen, where the mucosal folds (rugae) do not reach the ulcer base.



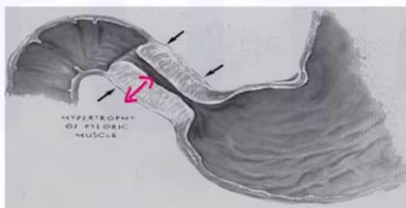
Carman Meniscus sign

→ Malignant Gastric Ulcer

Pyloric Stenosis

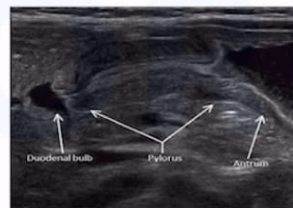
00:09:20

- Thickening of the pylorus is observed.
- **Ultrasound Findings:** A cervix sign and a target sign are seen on ultrasound.
- **Barium Study Findings:** A mushroom cap-like defect in the first part of the duodenum, a thin column of barium in the pyloric canal (string sign), and a "Teat" or "Diamond" recess are observed.
- **Abdominal Radiograph:** A single dilated stomach bubble is seen.
- **Caterpillar Sign:** Gastric hyperperistalsis is noted decreased gastric residue
- **Metabolic Abnormalities:** Hypokalemia, hypochloremic metabolic alkalosis with paradoxical aciduria.



1HPS

Hypokalemic Hypochloremic
Metabolic Alkalosis
with Paradoxical Aciduria



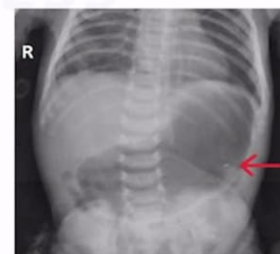
Cervix sign



Target sign



Mushroom sign
String sign

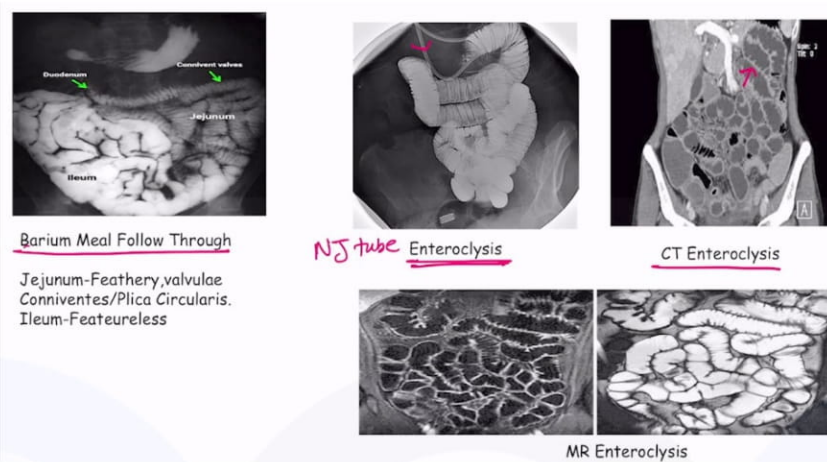


Single Bubble
Caterpillar sign-Gastric Hyperperistalsis

Intraluminal Studies

00:11:19

- **Enteroclysis:** A double-contrast study using a nasojejunal (NJ) tube, with methylcellulose to distend the bowel and barium to coat the mucosa, or CT or MRI.(t2 weighted)



Body Packers

00:13:01

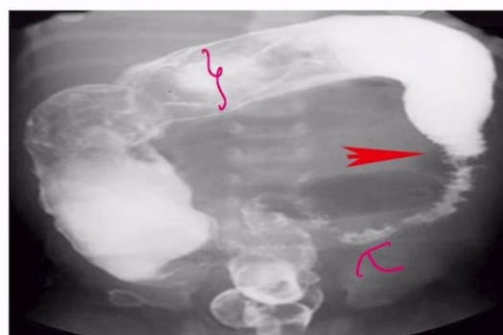
- Oval, smooth, circumscribed opacities on abdominal radiograph in individuals suspected of drug smuggling.



Barium Enema Studies

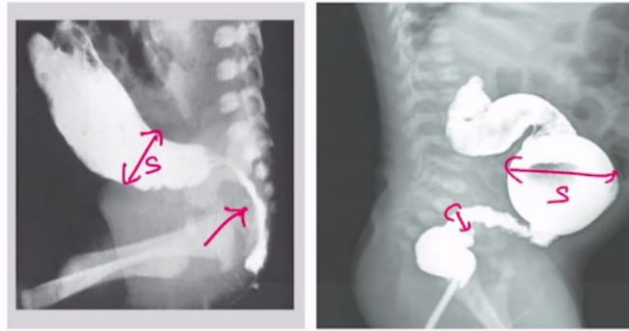
00:13:45

- **Hirschsprung's Disease:** Dilated proximal large bowel (normal) and a narrow, constricted distal large bowel (rectum, sigmoid colon) are seen. The rectum is always involved. The recto-sigmoid ratio is less than one. Colonic aganglionosis



Affected Part-Narrow constricted
Normal Part-Dilated

- **Normal Recto-sigmoid Ratio:** Should be more than one.



Congenital Diaphragmatic Hernia

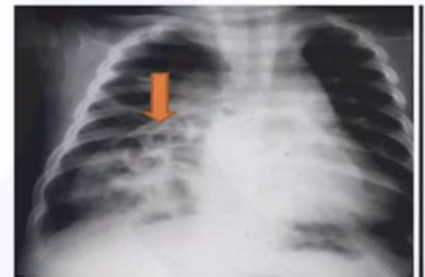
00:16:24

- Bowel loops herniate into the hemithorax.
- The most common type is the left posterolateral defect (Bochdalek hernia).

Congenital Diaphragmatic Hernia



Herniation of bowel in left postero lateral hemithorax
Associated with left lung hypoplasia



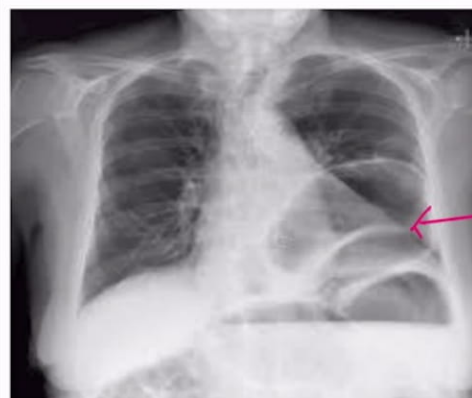
Herniation of Bowel in Right medial hemithorax

- Right anteromedial hernia is called Morgagni's hernia.

Gastric Volvulus

00:17:30

- A coffee bean-like appearance in the epigastric region is seen on an abdominal radiograph.
- **Bochardt's Triad:** Epigastric pain, inability to pass a nasogastric tube, and retching without vomiting.



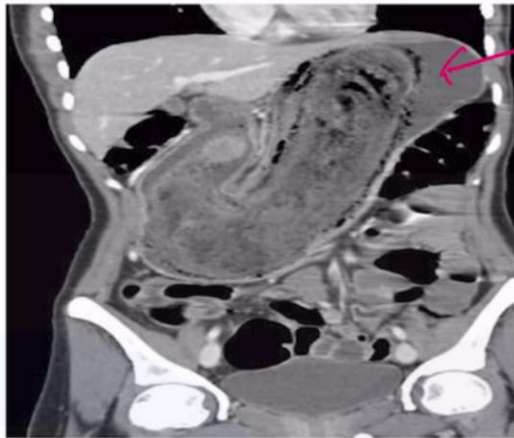
- Epigastric Pain
- Retching without vomiting
- Inability to pass Nasogastric Tube

Gastric
volvulus

Other Findings

00:18:12

- **Trichobezoar/Rapunzel Syndrome:** Distended stomach with mottled faeces in a young female with emotional problems.

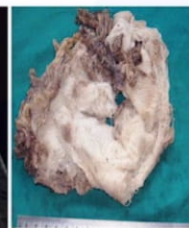
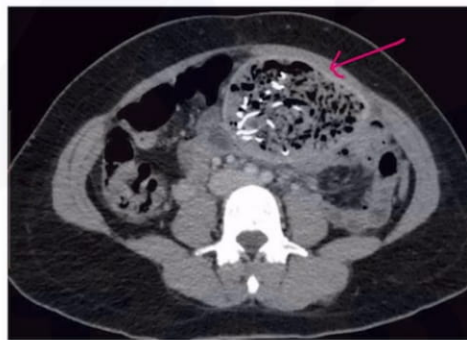


✱
Young female with emotional problems,
 ✱
chronic abdominal pain

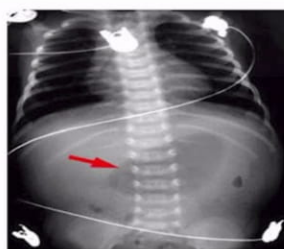
↓
 Tricho bezoar

- **Gossypiboma:** A well-encapsulated lesion with air pockets and opaque fibers is seen at the post-operative site.

Abdominal pain in a post op patient at the incision site



- **Double Bubble Sign:** A dilated stomach and duodenum are seen in duodenal atresia, annular pancreas, or Ladd's bands. Down's syndrome
- **Triple Bubble Sign:** Part of the stomach, duodenum, and jejunum are seen with jejunal atresia



Single bubble

↓
 IHPS



Double bubble

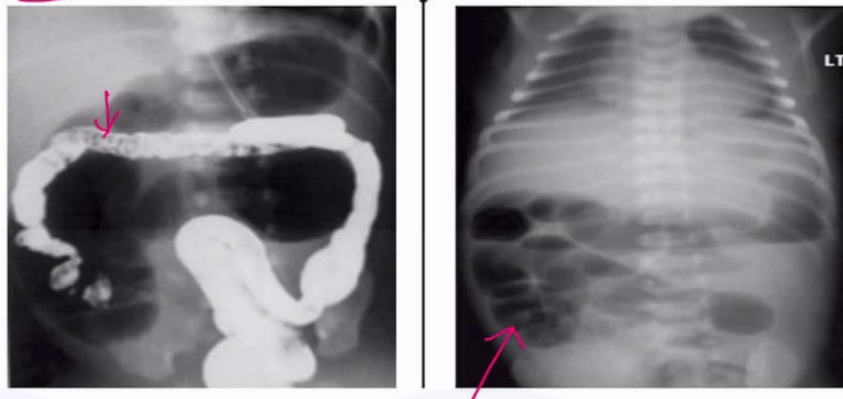
↳ LADD bands
 Annular pancreas
 Duodenal atre
 D



Triple bubble

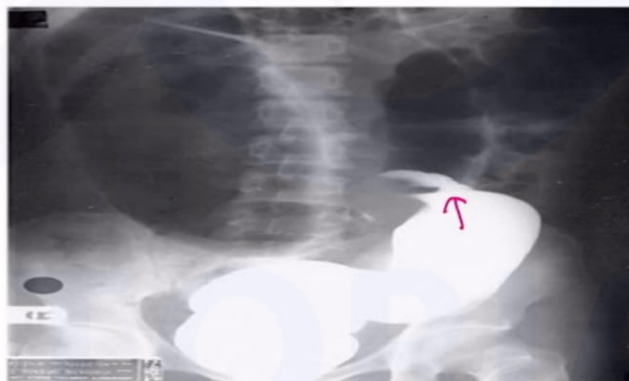
- Ileal atresia

Microcolon and multiple air fluid levels ⇒ *Ileal atresia.*



- **Sigmoid Volvulus:** A coffee bean or inverted omega/bent tyre-like appearance with two loops extending from the left iliac fossa to the right upper quadrant, in elderly patients with neurological symptoms, liver overlay sign. A bird beak appearance on barium enema.

Bird Beak Appearance on Barium Enema * ⇒ *Sigmoid volvulus*
Bird of Prey Appearance



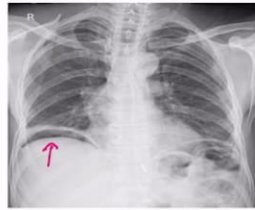
- **Cecal Volvulus:** A single loop with haustral markings, often in a young female with a history of pelvic surgery, with small bowel obstruction.

Young Female with history of pelvic surgery

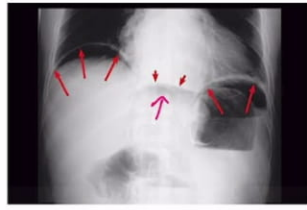


Haustra +
 1 loop
 Embryo sign
 Associated SBO

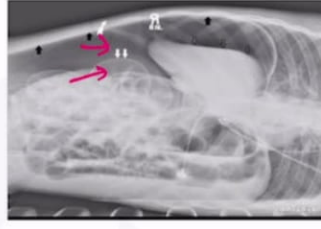
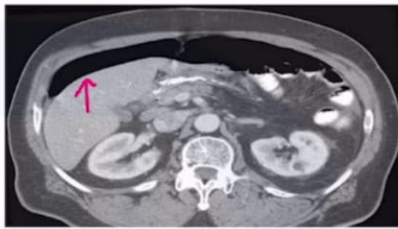
- **Pneumoperitoneum/ hollow viscus perforation:** Air under the diaphragm, cupola sign, football sign, Rigler sign, tell-e -tale triangle sign, Morrison's free gas (Doges cap sign), inverted v sign, urachus sign and visualization of ligaments.



Air under Right Hemidiaphragm

Air under central tendon of diaphragm

Foot ball sign



Air on either side of bowel



Tele -e-tale Triangle sign

- **Small Bowel Obstruction:** A stepladder pattern, string-of-beads appearance, and valvulae conniventes (plica circularis) solid faeces sign are observed.

Step ladder Pattern

String of beads



Plica circularis/Valvulae Conniventes

- **Large Bowel Obstruction:** Dilated peripheral loops with haustra are noted.



Peripheral dilated loops with haustrations

- **Functional Ileus:** Dilated loops with haustra and rectal air are observed.
- **Rectal Foreign Body:** Foreign bodies impacted in the rectum.

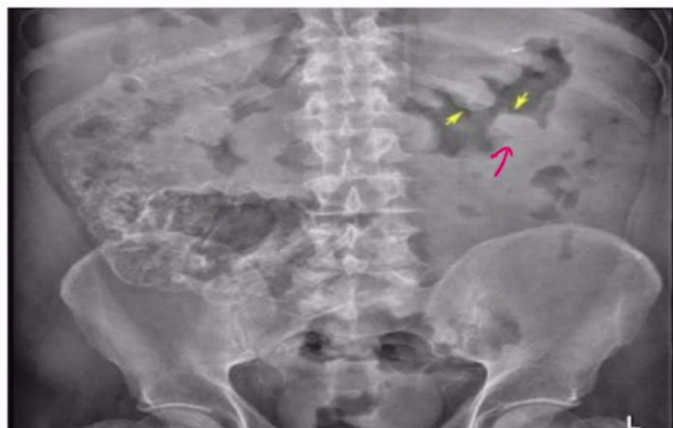


Rectal Foreign

- **Invertogram:** Used to assess high vs. low anorectal malformations. The distance between rectal air and a metal button is measured. Greater than 2 cm indicates a high anal lesion abdominal approach done. less than 2 cm indicates low anal atresia perineal approach preferred. Done 24 hours after birth done in imperforate anus / anal atresia

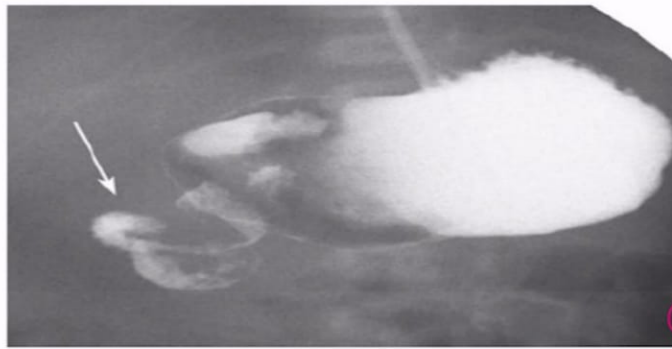


- **Ischemic Colitis:** Thumbprint sign due to mucosal thickening, especially at the splenic flexure.



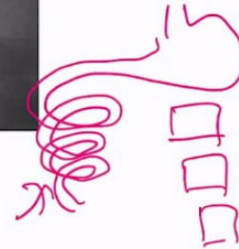
Thumb Print sign $\Rightarrow$ *Ischemic Colitis*

- **Midgut Volvulus:** A corkscrew appearance of the duodenum and whirlpool sign are seen.

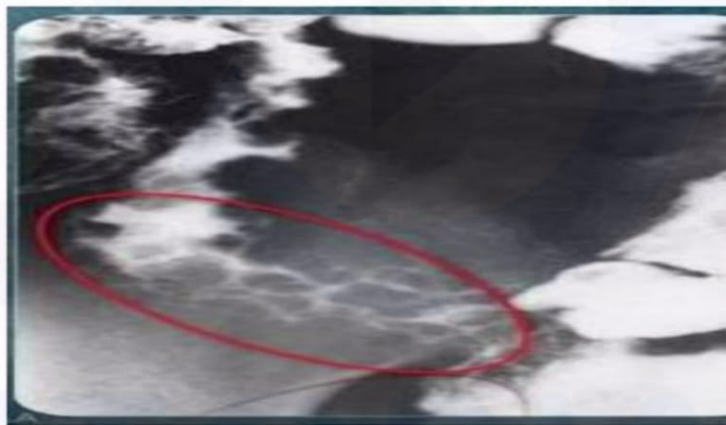


*corkscrew
appearance
of
Duodenum*

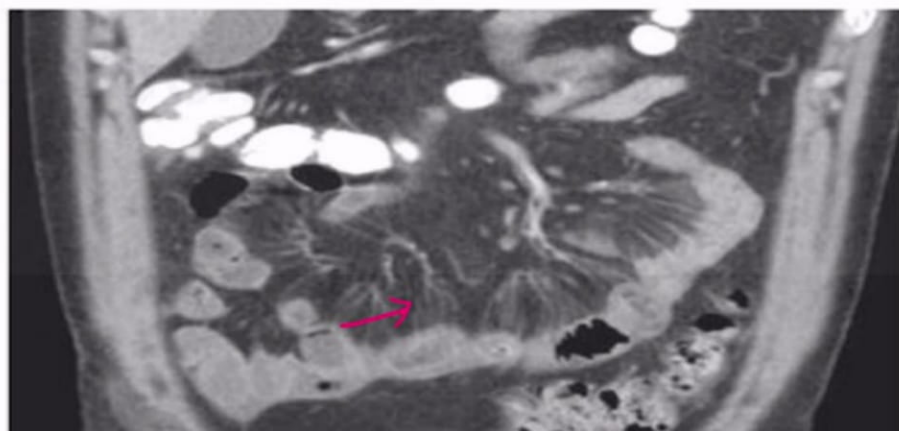
Whirlpool sign



- **Crohn's Disease:** A cobblestone appearance, skip lesions, transmural inflammation, creeping fat, target sign, and comb sign. String sign of Kantor are seen.



Cobble stone Appearance → *Crohn's disease*



Creeping fat sign
→ Comb Sign

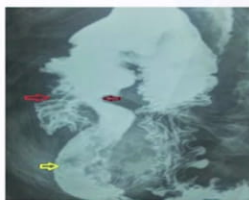
- **Ulcerative Colitis:** Ahaustral loops (lead pipe appearance), mucosal granularity, and buttonhole ulcers involving the mucosa and submucosa.



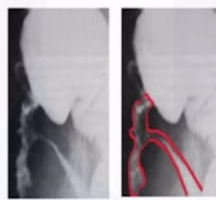
Ahaustral bowel loop-Lead pipe appearance

Superficial involvement
Mucosal Granularity
Button hole ulcers

- **Ileocecal Tuberculosis:** Pulled-up cecum, widening of the ileocecal angle, thickening of ileocecal walls (Fleischner sign or inverted umbrella sign), a narrowed terminal ileum, and gooseneck deformity. A rapid emptying of barium "Steirlin sign" is noted, characterized by the rapid emptying of barium from the affected area. Transverse ulcers are seen so Napkin ring stenosis occurs



Pulled up cecum
Widening of Ileocecal Angle



Fleischner Sign/Inverted Umbrella Sign-
Thickening of ileocecal Valve

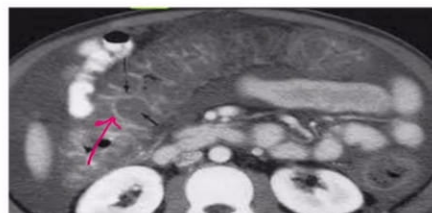


Goose Neck Deformity



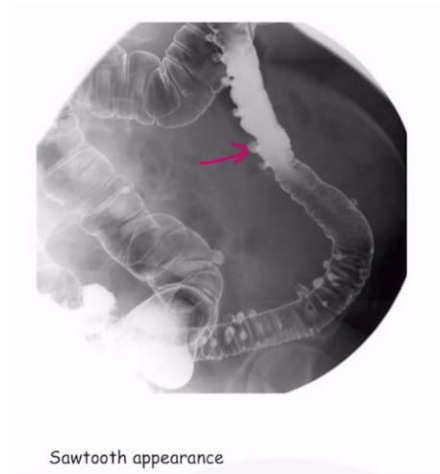
Rapid Emptying of Barium-Steirlin Sign

- **Typhoid:** Longitudinal ulcers.
- **Pseudomembranous Colitis:** An accordion sign, with thin columns of barium between inflamed bowel loops.



Accordion Sign → pseudomembranous colitis

- **Diverticulosis:** A sawtooth appearance due to outpouchings involving the mesenteric side of the bowel.



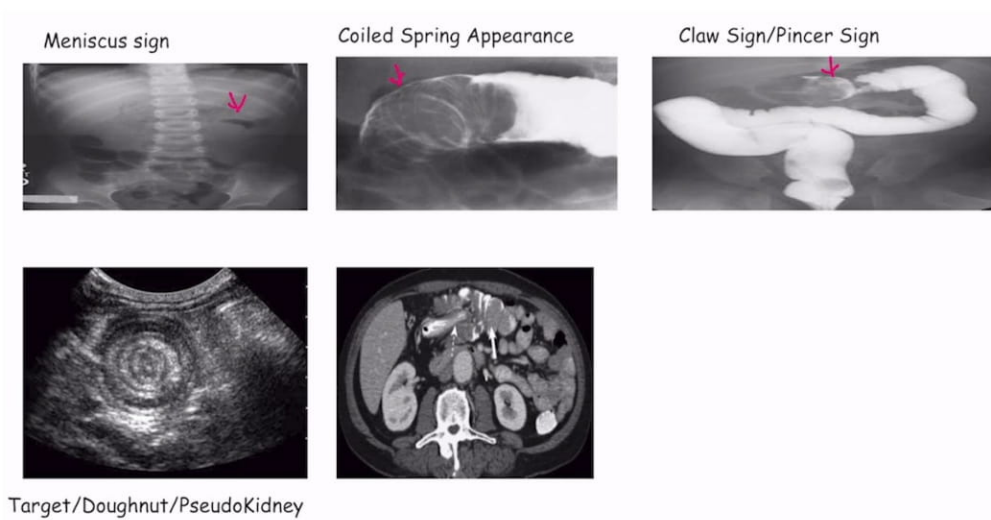
Sawtooth appearance

- **Ca colon:** apple core appearance



Apple core Appearance → Ca Colon.

- **Intussusception:** A meniscus sign on X-ray, pincer or claw sign on barium, a coil spring sign when reduced, and a target or donut sign on transverse ultrasound, and a pseudokidney appearance on longitudinal ultrasound.



Target/Doughnut/PseudoKidney

Mind Map

