

432 Radiology Team



(13): Diseases of Gastrointestinal tract & Hepatobiliary system

* Many thanks to 431 team for their helpful notes *



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COLOR GUIDE: • Females' Notes • Males' Notes • Important • Additional • 431 team

Objectives

Were not given

Notes:

The whole lecture was about interpretation and making DDx
Pictures that weren't discussed by the dr. are surrounded by
Orange frames

a. Gastrointestinal tract

Contents: Barium swallow, barium meal, barium enema



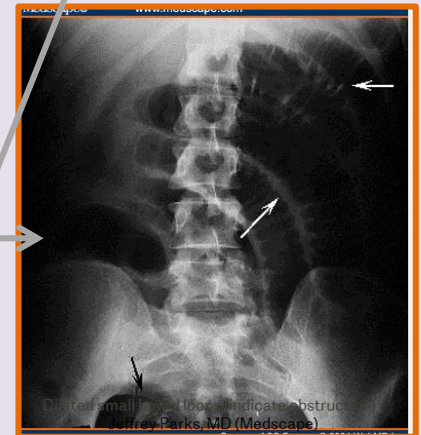
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A 45 year old male with history of abdominal surgery 10 years ago, presented to ER with abdominal pain and vomiting.

Patient's position: Upright position.

What do you see in this plain film?
Air inside loops of small and large bowels with **air fluid levels**, the large and small bowels are dilated.

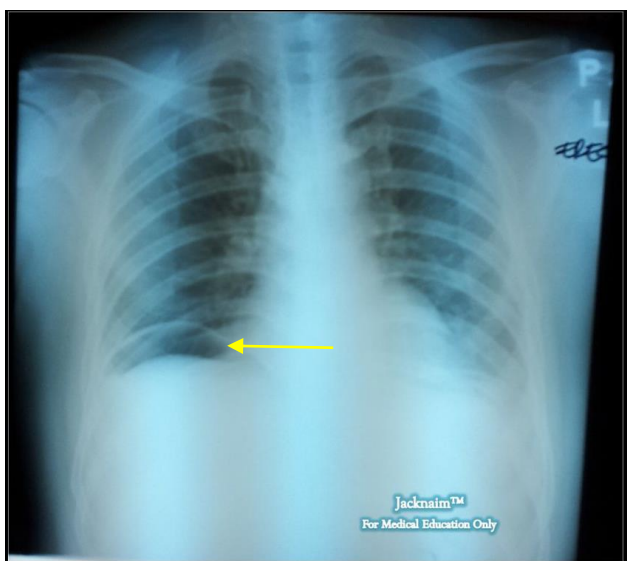
What is the diagnosis? Small and large bowel obstructions



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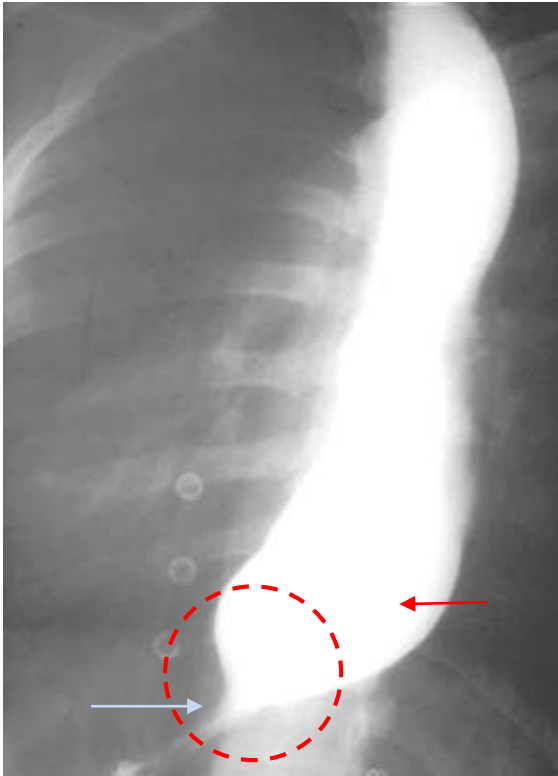
Patient's position (In both images): Supine position.
In this position we can't see the air fluid levels.
We see markedly dilated tense bowel loops indicating obstruction.

1) Barium swallow – single contrast



There is air under the diaphragm (perforation)

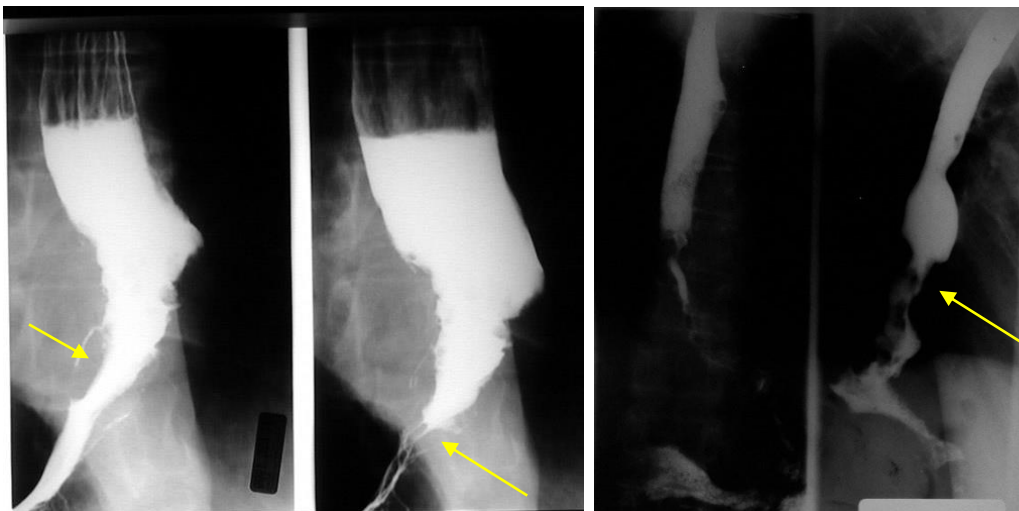
Q: Why do we order a chest X-ray in a patient with small bowel obstruction?
To look for perforation. (indicated by free air under the diaphragm)



Achalasia: Proximal dilatation (red arrow), narrowing (blue arrow), bird peak sign



Benign Stricture: Proximal dilatation, narrowing, the transitional zone looks smooth and free of filling defects



Malignant Stricture:

- The transitional zone looks Irregular & ill defined
- Presence of many filling defects

Main abnormality: filling defect

It shows an irregularity that almost looks like an **apple core lesion** in the esophagus. This is typical in carcinoma of the esophagus DDx: **Adenocarcinoma or Squamous Cell Carcinoma "SCC"**

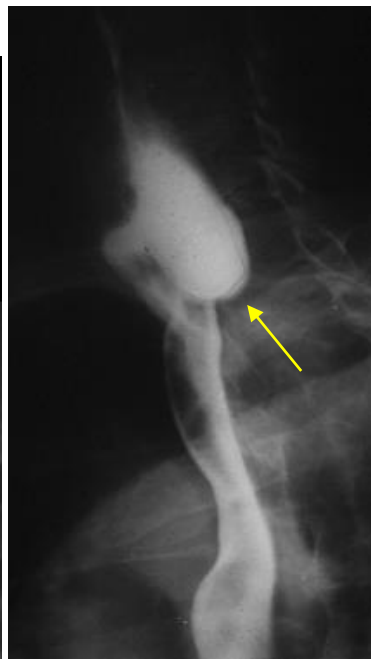
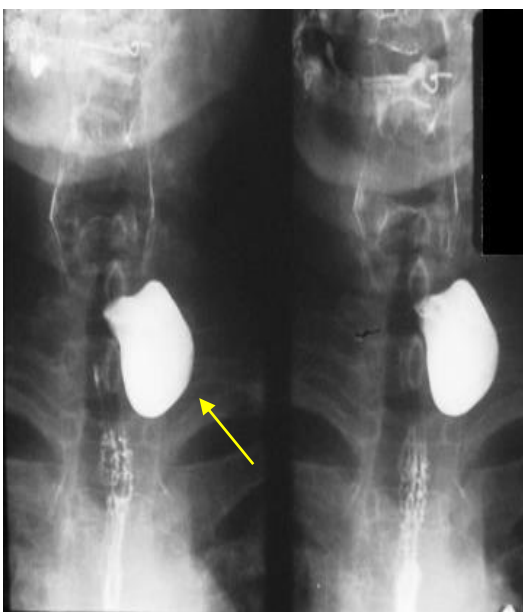


- Irregular Wall & Dilatation:

Tertiary Contraction (Pathological non-propulsive Contraction)

- Funnel Shape Achalasia

Barium swallow in this patient with achalasia reveals a smooth distal tapering caused by the hypertensive lower esophageal sphincter that straddles the diaphragm, and multiple non-Peristaltic contractions throughout the body of the esophagus. This radiographic appearance sometimes has been called "vigorous achalasia". This term has little value, however, because recent studies suggest that patients with so-called vigorous achalasia cannot be distinguished clinically from non-vigorous achalasia.

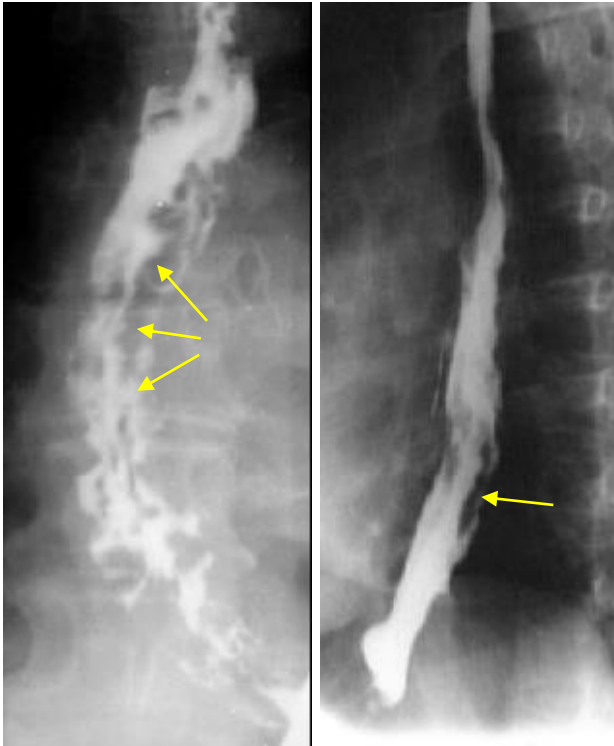


1st pic: **Well Defined Contrast Filled left cervical level sac**

2nd pic: **Pharyngeal Pouch (Zenker's Diverticulum):**

*occurs in an area of anatomic weakness known as **Killian's dehiscence***

No
narrowing



1st pic: Irregular Multiple Filling Defects

Differential Diagnosis Multiple Esophageal Filling

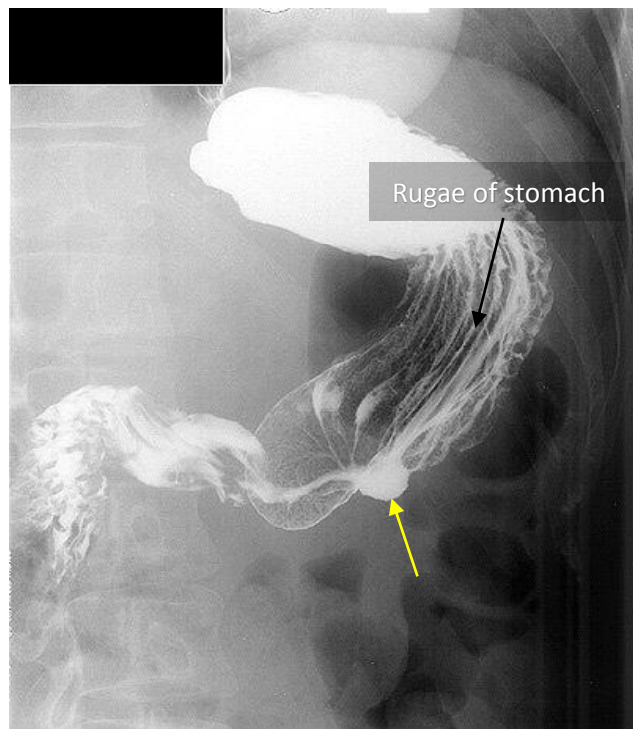
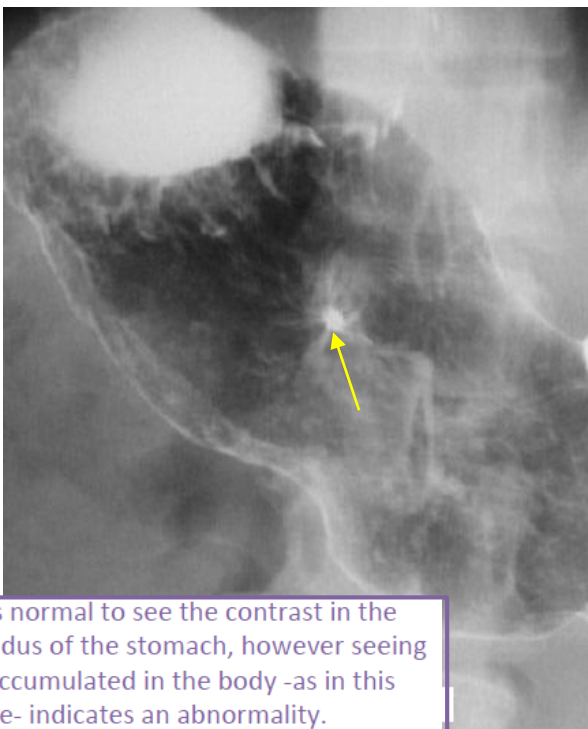
Defects:

1. Fungal Infx
2. Polyps
3. **Esophageal Varices (irregular)**
4. Food Particles
5. Varices Barium swallow examination: AP view: Numerous rounded and elongated smooth-contoured filling defects are present in the inferior two thirds of the esophagus. The contour of the esophagus is irregular and spiculated.

2nd pic: Irregular Multiple Filling Defects

Both pics have the same Dx: **Esophageal Varices**

1) Barium swallow – double contrast

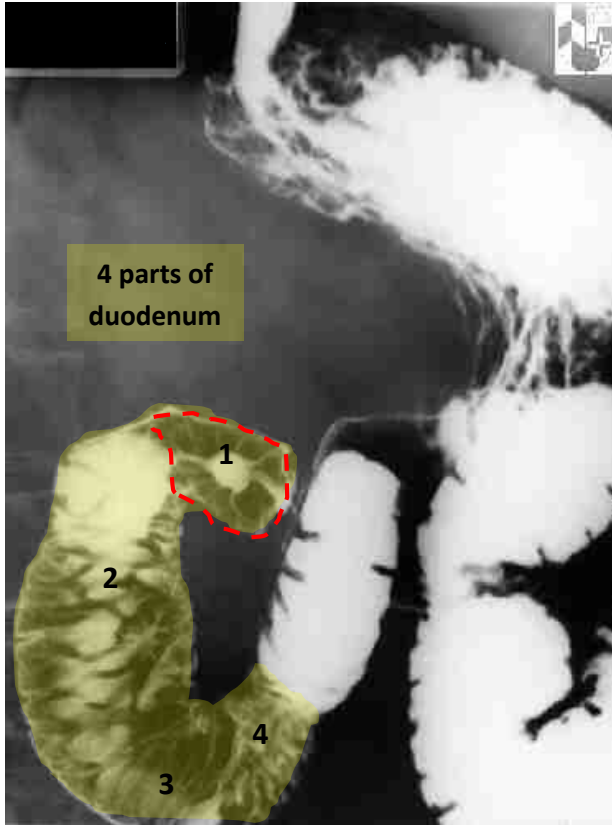


It is normal to see the contrast in the fundus of the stomach, however seeing it accumulated in the body -as in this case- indicates an abnormality.

Contrast Filled **Speculated** Lesion → **Gastric Ulcer**

Contrast Filled Out-pouching at the Greater Curvature → **Malignant Gastric Ulcer**

2) Barium meal – follow through



Contrast Filled Speculated Lesion → Duodenal Ulcer

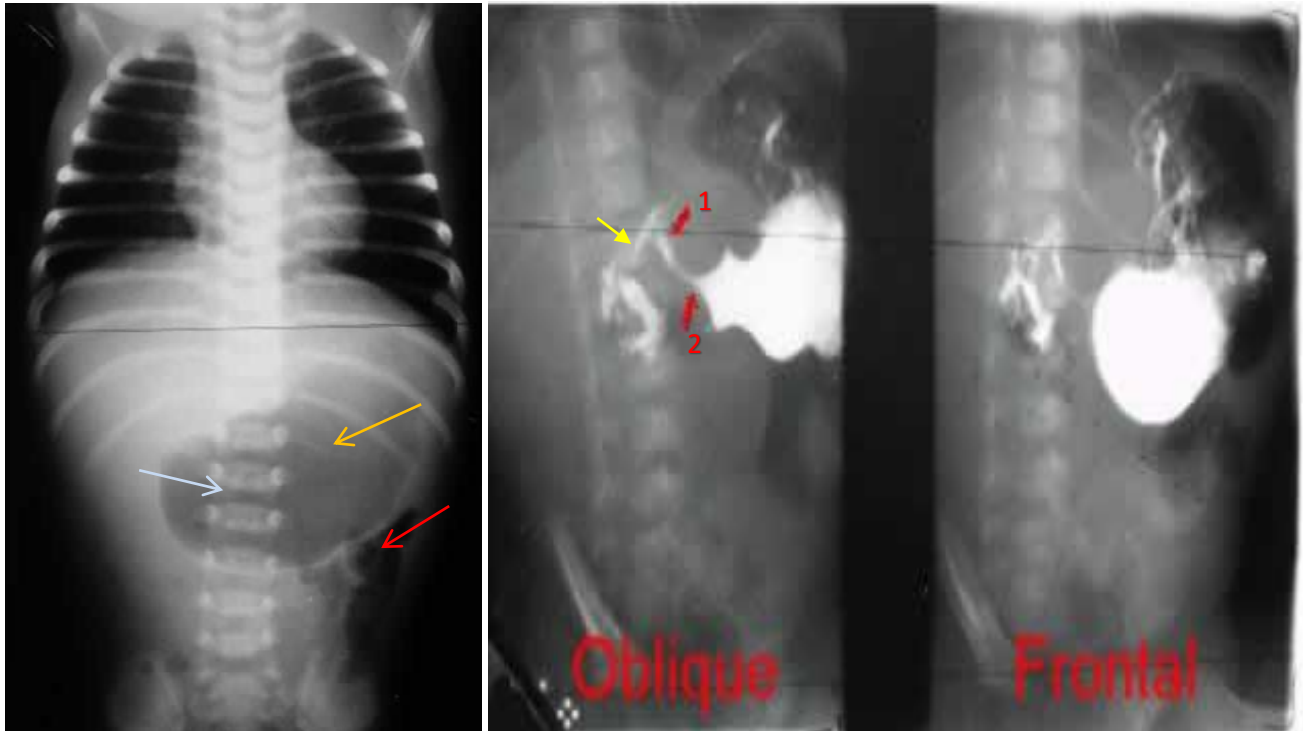
how to differentiate between ulcer and mass?

filling defect – mass

pooling of contrast with seculations – ulcer

pooling of contrast inside a filling defect – ulcerated tumor

3) barium meal – double contrast



Findings:

1st pic: *Single Bubble Sign, Distended Stomach, Gas in Descending Colon*

2ns pic: *Mushroom's Sign (or apple core sign)*

1. String's Sign

2. Shoulder's Sign

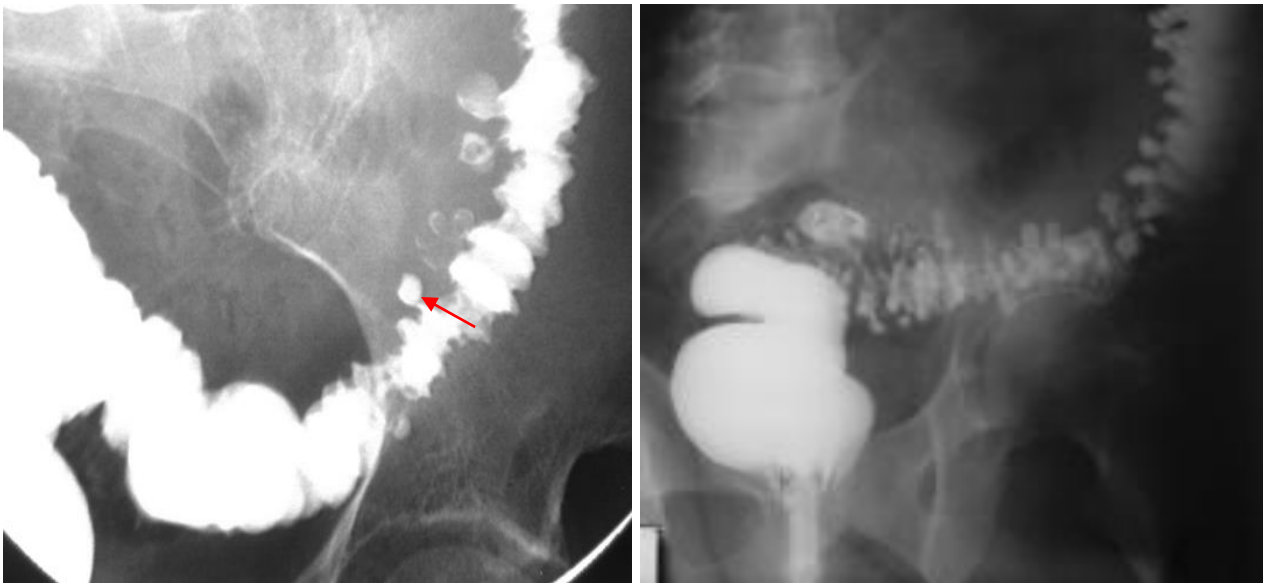
DDx: Gastric Output Obstruction (GOO) → **Pyloric Stenosis**. Most common cause of obstruction in children. The child will come with vomiting

Dilatation of stomach, why not tumor? Because it's a child. In adults you might see stricture or narrowing due to tumors or inflammation (e.g., lymphoma)

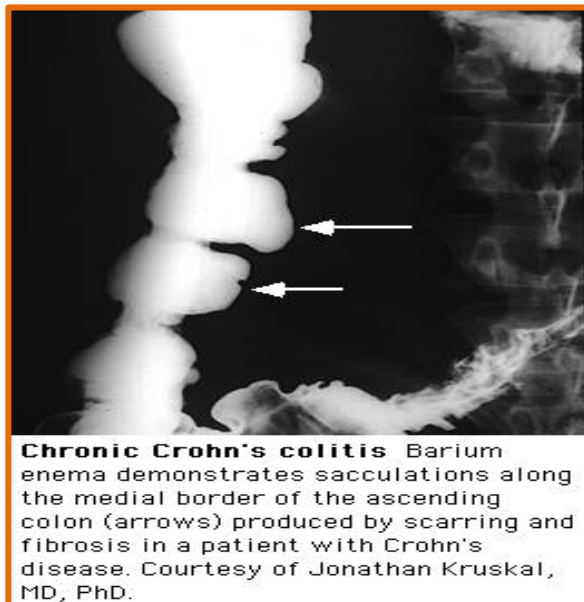
- Distended Stomach
- Gas in Descending Colon (partial obstruction)
- Single Bubble Sign

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4) Barium Enema

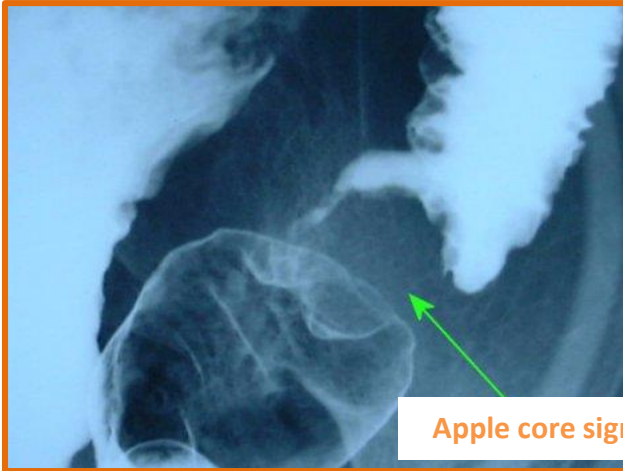


Pouches outside → diverticula
Contrast Filled Sacs (outside the Lumen)
Diverticulosis in Descending & Sigmoid Colon

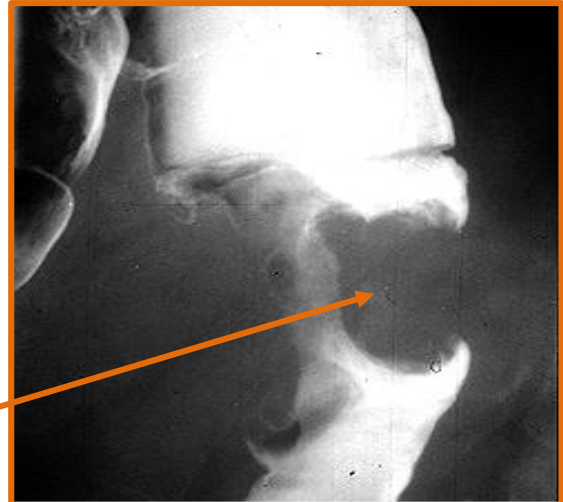


There is abnormal wall thickening, luminal narrowing, and cobblestoning involving a long segment of the distal ileum including the terminal ileum.

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Apple core sign



Cancer of the colon Double contrast barium enema shows an apple-core lesion surrounding the lumen of the descending colon. Courtesy of Jonathan Kruskal, MD.

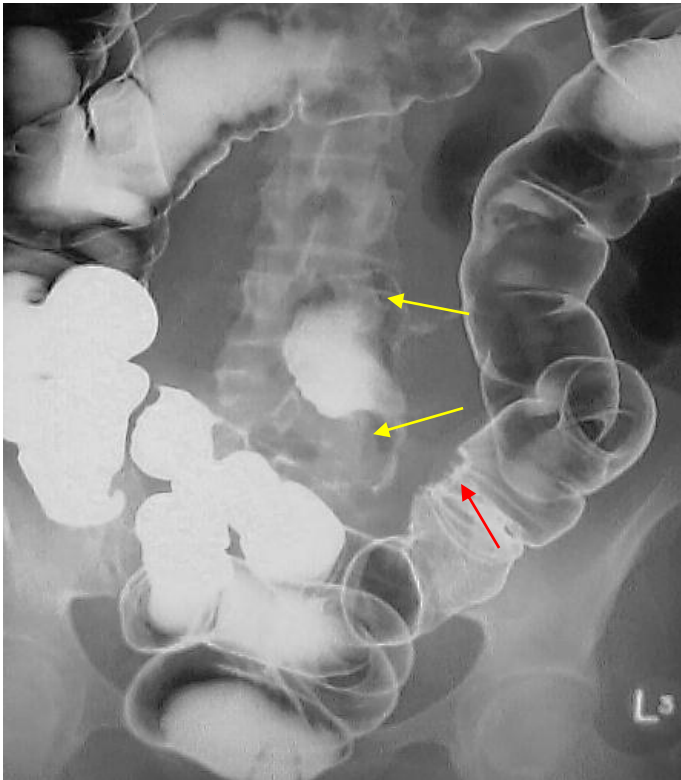


Sigmoid cancer developing in ulcerative colitis Barium enema study demonstrates a focal stricture in the sigmoid colon caused by an infiltrating cancer. The adjacent bowel is featureless and folds are absent, findings characteristic of chronic ulcerative colitis. Courtesy of Norman Joffe, MD.



Hirschsprung's disease Barium enema of an infant with Hirschsprung's disease showing the transition zone between the lower aganglionic bowel and the normal colon above. Courtesy of George D Ferry, MD.

5) Barium enema – double contrast



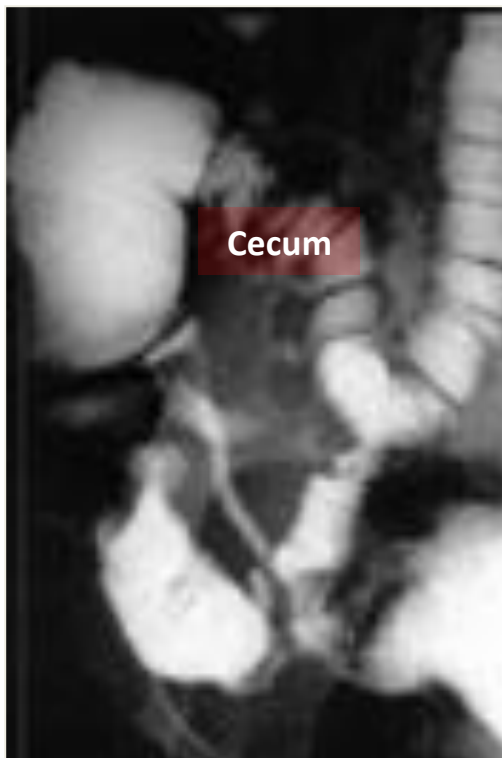
“prone position”

narrowing of the ellium: can be
chronic's, lymphoma or adhesions

Skip Lesions & lesions in Small
intestines → Crohns' Disease

There is a short segment of abnormal
descending colon with asymmetrical
puckering of the mucosal surface, without
stricturing.

Note also however that contrast has
refluxed into the terminal ileum and small
bowel, and there are several strictures
present within it. One of these lies
adjacent to the large bowel abnormality.



You can't detect part of body by only looking
at this magnified picture, dr. said this kind of
pictures are only for teaching purposes not
for the exam (in exam you will have better
quality ones)

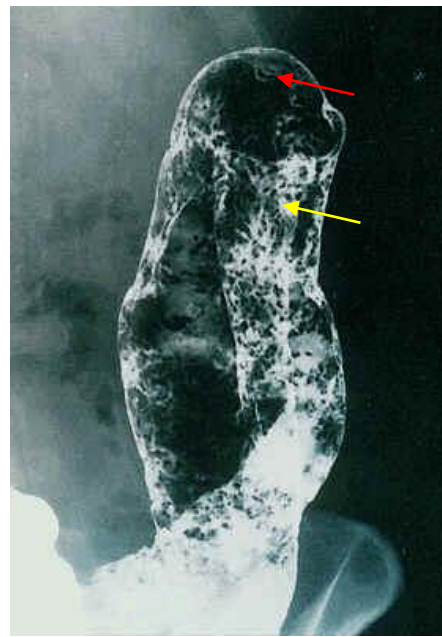
Differential Diagnosis of Terminal
Ileum Narrowing:

1. Tumor → Lymphoma
2. Iatrogenic → Adhesion
3. Inflammatory (IBD)

There is smooth narrowing of the terminal
ileum and an adjacent loop of more proximal
ileum as it crosses to the right side of the
pelvis. There is no visible mucosal fold
thickening or ulceration.



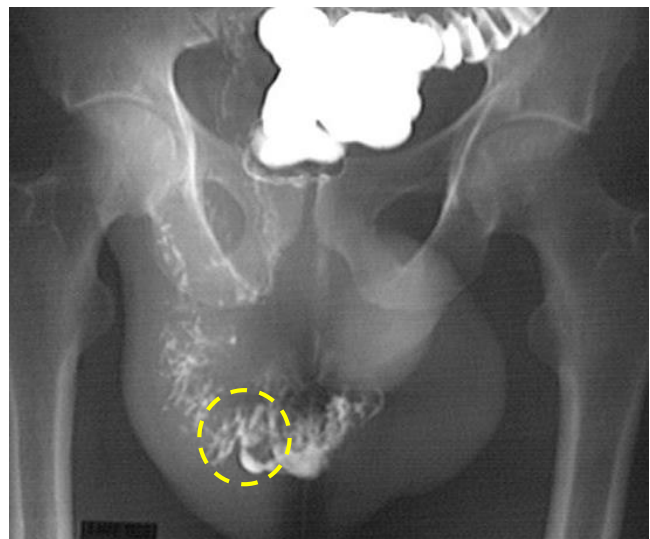
Multiple Small & Round Filling Defects
DDx: **Multiple Polyps**



Granular mucosa + loss of haustration = **ulcerative colitis**
Two short strictures are present in the descending colon, but there were no malignant features radiologically.



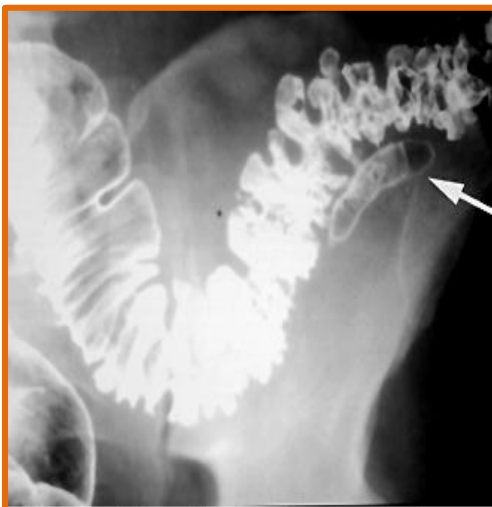
Irregular narrowing + apple core appearance = cancer (yet, some tumors have a regular surface, it's not a verse from Quran ☺)
DDx: **colon cancer**



Huge right indirect hernia in the scrotum



A huge mass that has displaced the intestines (Splenomegaly)



Intramural diverticular abscess Double contrast barium enema in a patient with numerous sigmoid colon diverticulæ demonstrates an air-containing intramural abscess cavity (arrow). Courtesy of Jonathan Kruskal, MD, PhD.



Ulcerative colitis

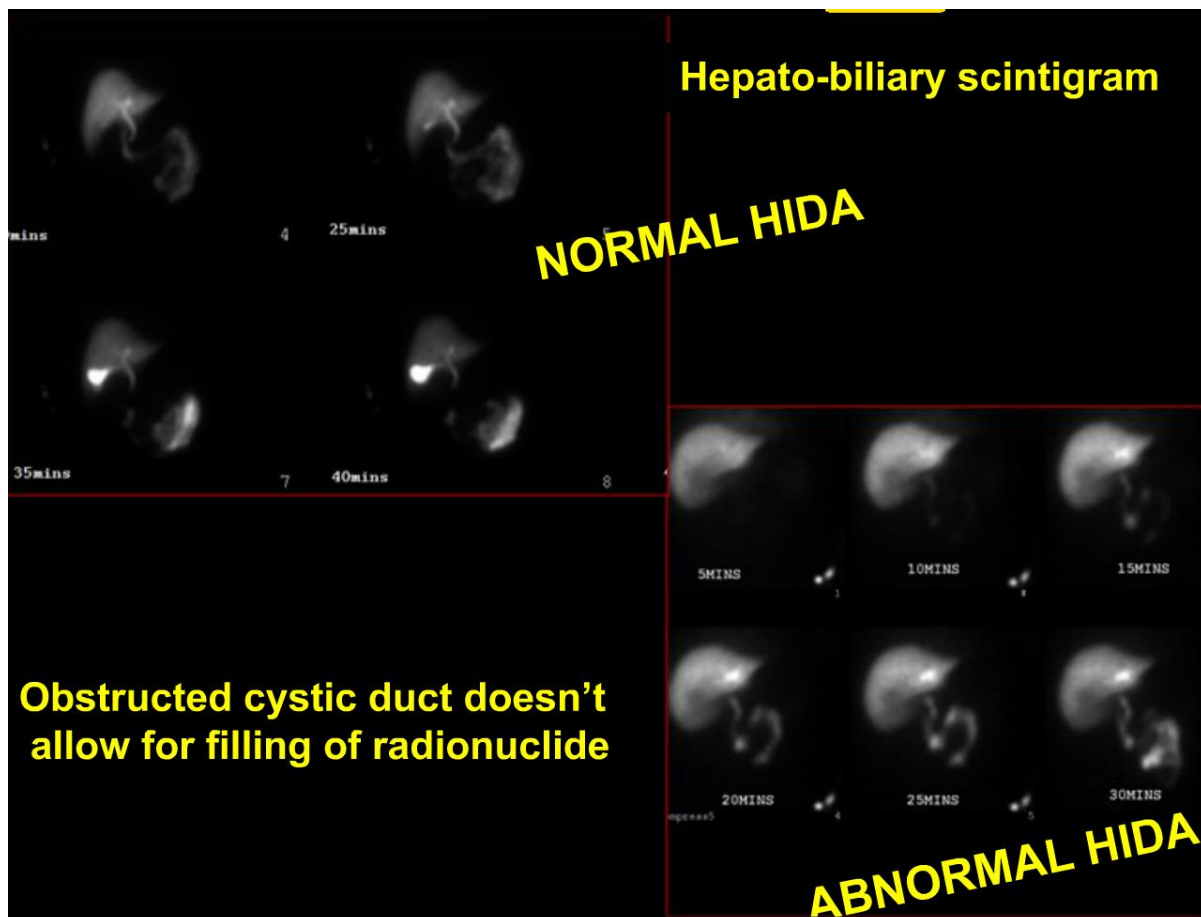
b. Hepatobiliary system

HIDA scan (*hepatobiliary iminodiacetic acid*)

We give an IV nuclear agent to the patient, then scan him/her, and watch the agent passing his liver and bile duct

In normal cases it'll pass liver, common bile duct and reach the bowel

In case of obstruction – gallstones – it won't pass



IMPORTANT:

There are plenty of pictures regarding hepatobiliary disease; they weren't included here because the doctor didn't explain any of them. You can go through the original slides (starting from slide 31 to slide 77).

SUMMARY

1. GI tract:
 - Bird peak sign → Achalasia
 - Ulcers: speculations + pooling of the contrast
 - Masses: irregular -usually- filling defect
 - Ulcerated tumor: filling defect contains speculations and pooling of contrast

2. Hepatobiliary:
 - HIDA scan: to assess the bile duct

Questions

1) A 35yo female presents with RUQ pain and jaundice, her US was performed. What's the most likely diagnosis?

- a. Pancreatic duct stone.
- b. Cholecystitis.
- c. Pancreatic tumor.
- d. A common bile duct stone.



2) A 55 yo male presented with progressive Dysphagia. Which of the following is the most likely Diagnosis.?

- a. Hiatus Hernia.
- b. Esophageal Vaices.
- c. Esophageal web.
- d. malignant stricture.



432 Radiology Team Leaders

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Answers:

1st Questions:B

2nd Questions:D