



# Comprehensive Review of GI Imaging

## Interpretation Skills 2014

**AHMAD AMER AI-BOUKAI**

*Associate Professor & Consultant Radiologist*

Radiology & Medical Imaging Department

King Khalid University Hospital



# Comprehensive Review of GI Imaging

## OBJECTIVES & GOALS

Comprehensive review of the role of Imaging in various GI disorders

Appreciate constraints and limitations

Develop imaging vocabulary in the interpretation



# Comprehensive Review of GI Imaging

## CASE 1

Adult patient presenting with abdominal pain, distension and vomiting for the last 24 hours.



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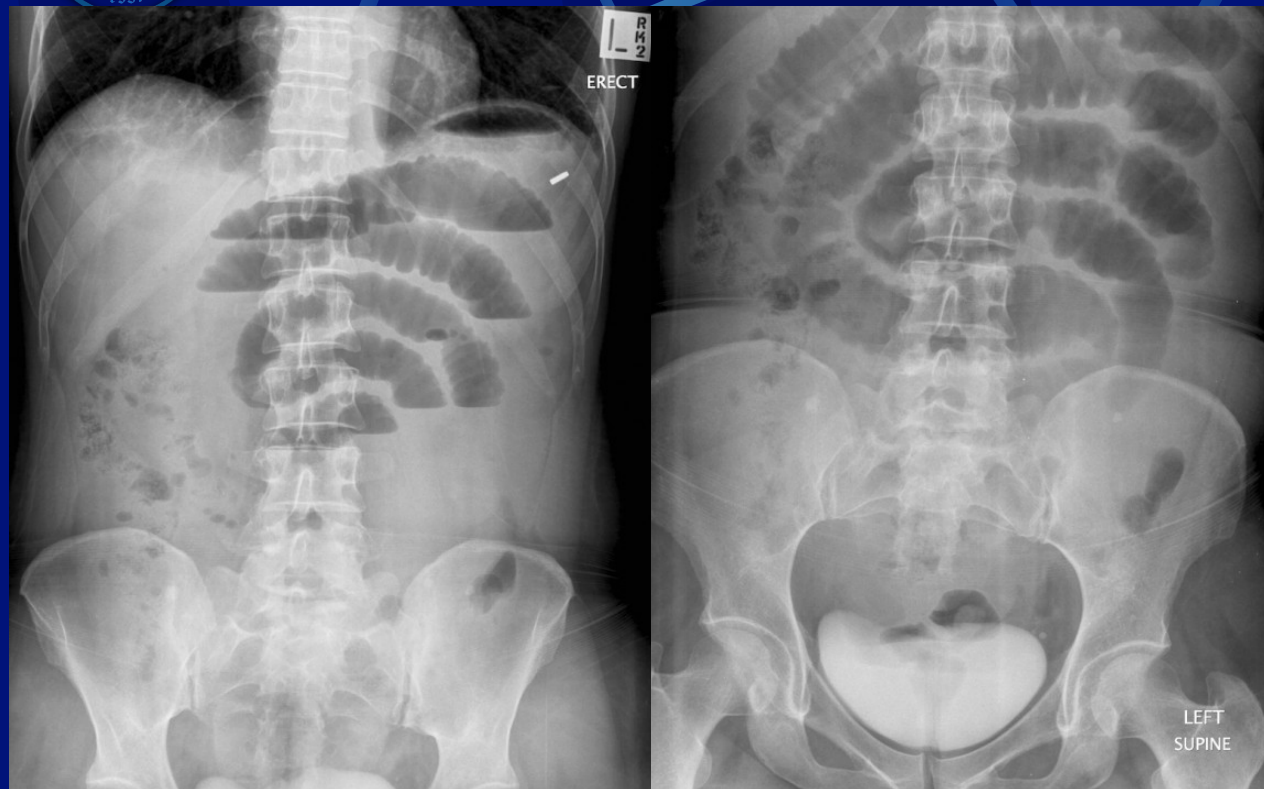
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What is the most likely cause for changes seen on these abdominal X-rays?

- a- Ascites
- b- Bowel perforation.
- c- Intestinal obstruction.**
- d- Pelvic mass lesion.

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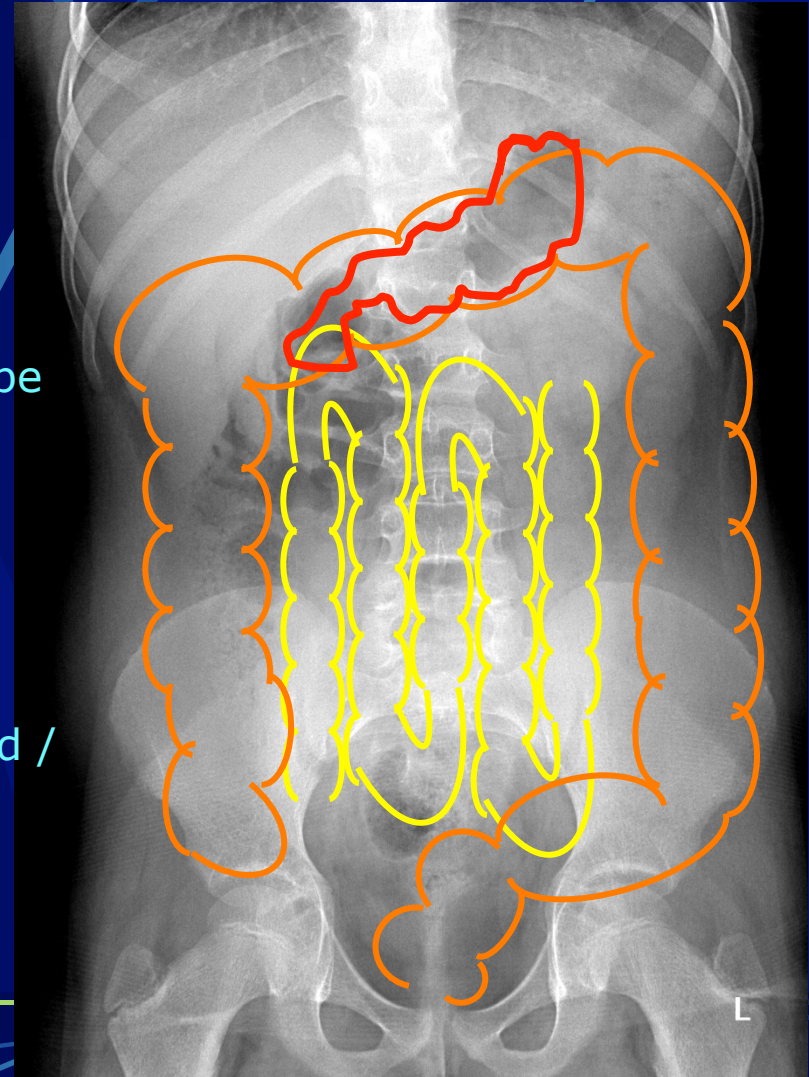
Which of the following anatomical structures is abnormal based on these abdominal X-rays?

- a- Large bowel.
- b- Small bowel.**
- c- Stomach.
- d- Rectum.

## PLAIN FILM - NORMAL

### Normal gas pattern

- Stomach, in the epigastric area - should be present unless “vomiting / NGT”
- Small bowel, 2-3 of non distended loops less than 3 cm in diameter
- Colon, always air in the rectum or sigmoid / contain stool
- Small vs Large Bowel distribution



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## PLAIN FILM - NORMAL

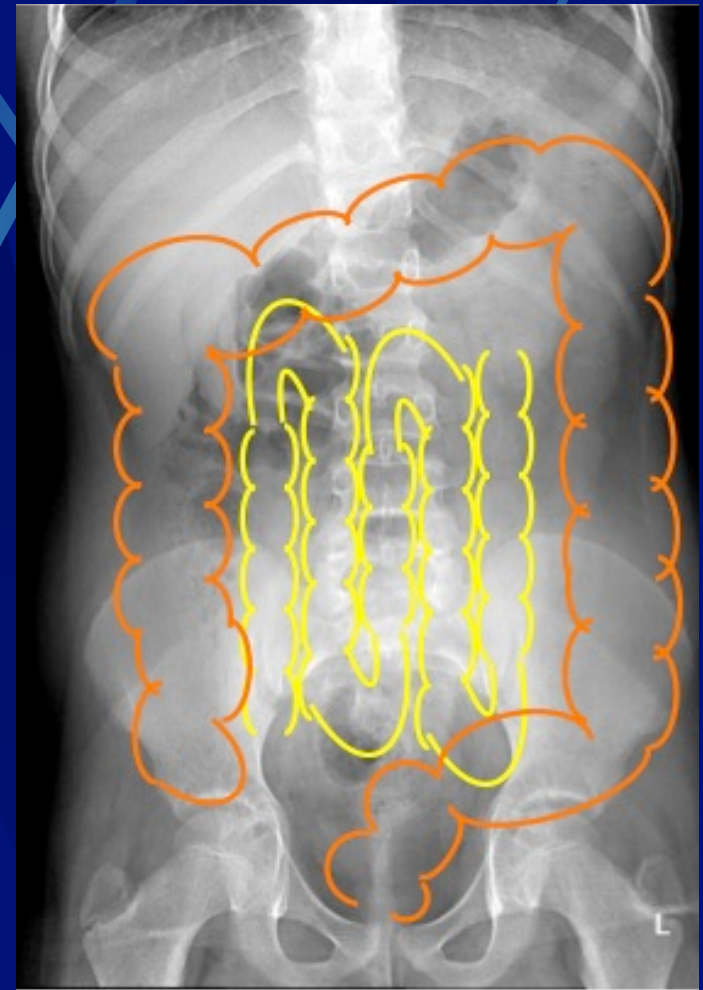
### Bowel mucosal folds

#### Small bowel

- Central
- Valvulae markings extend across lumen
- Maximum dilated diameter is 3 cm

#### Large bowel

- Peripheral
- Haustral markings
- Contain feces







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## PLAIN FILM - NORMAL

Bowel mucosal folds

Haustral pattern in large bowel



Valvulae conniventes in small bowel

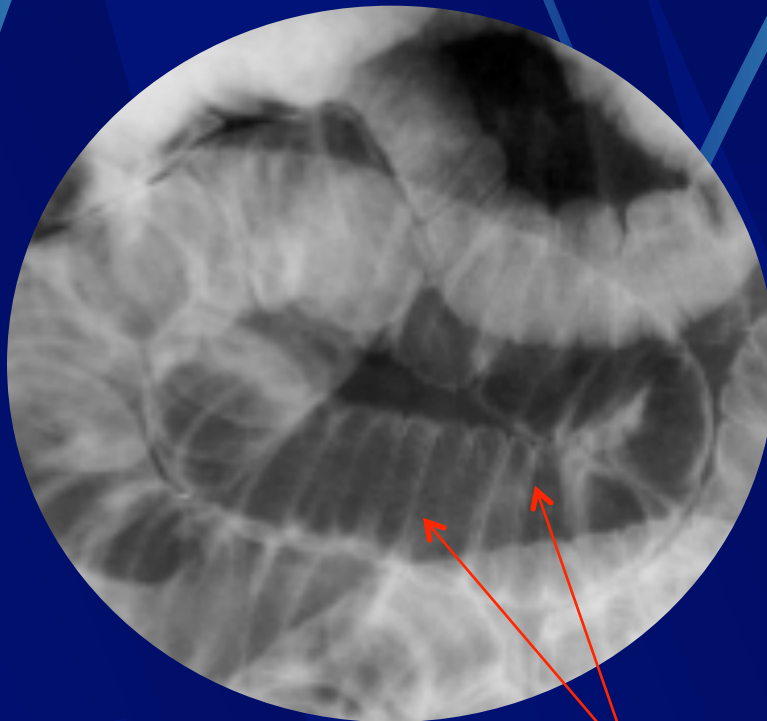




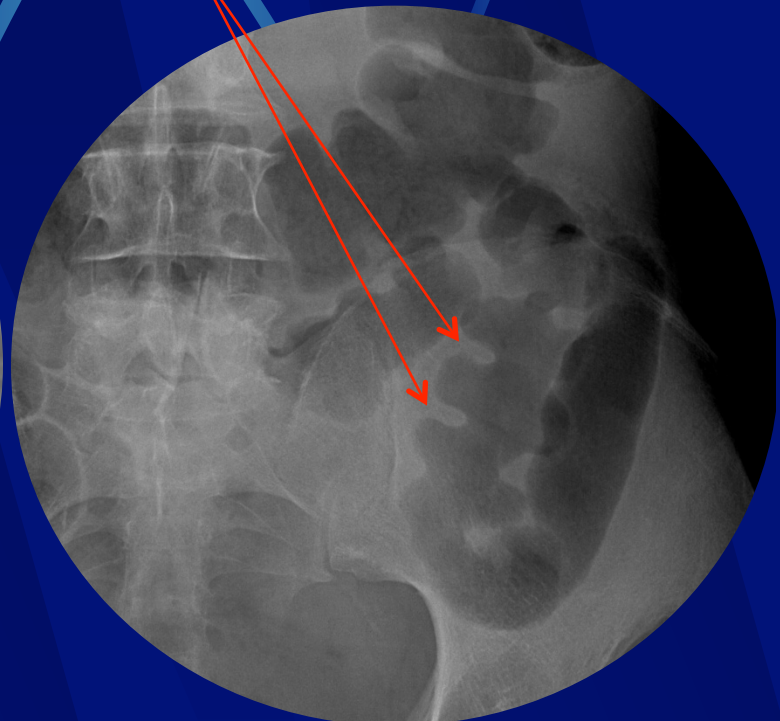
# IMAGING MODALITIES

## PLAIN FILM - NORMAL

Bowel mucosal folds



Haustral pattern in large bowel



Valvulae conniventes in small bowel



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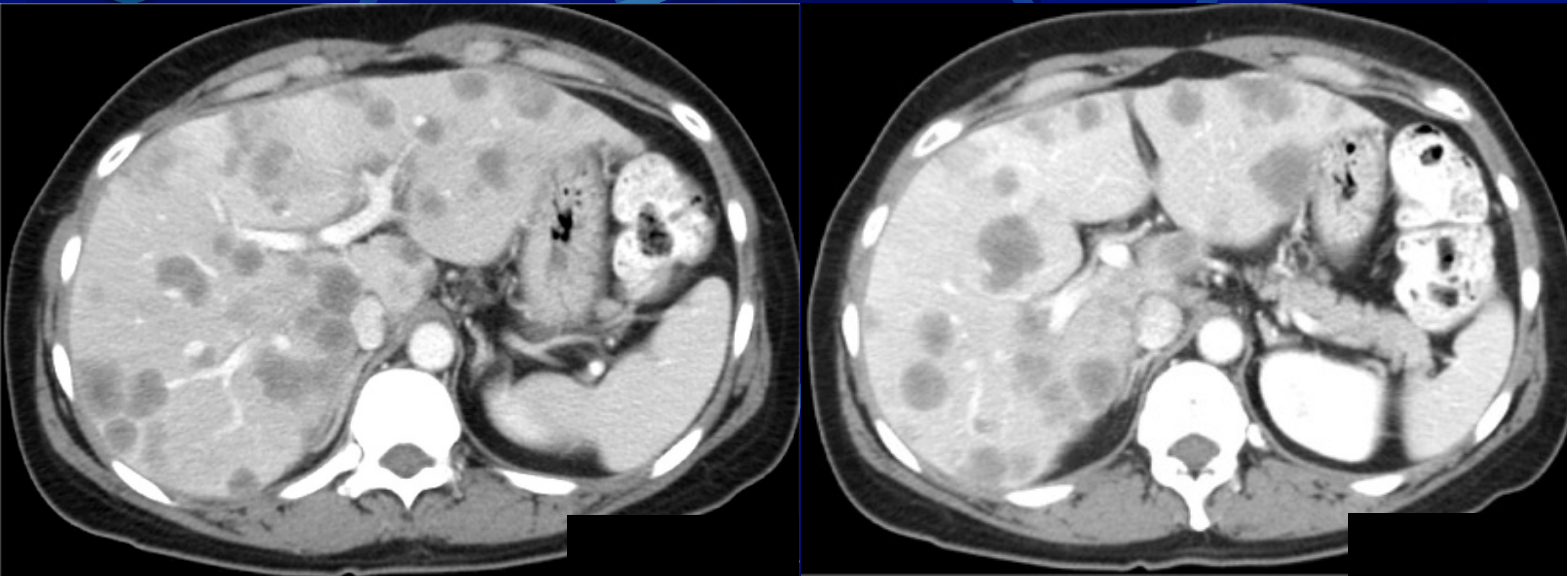
## CASE 2

53 years old patient presenting with weight loss, vague abdominal pain, and melena. Computed tomography of the abdomen was performed.

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Which of the following abnormalities is seen based on the CT scan findings and clinical presentation?

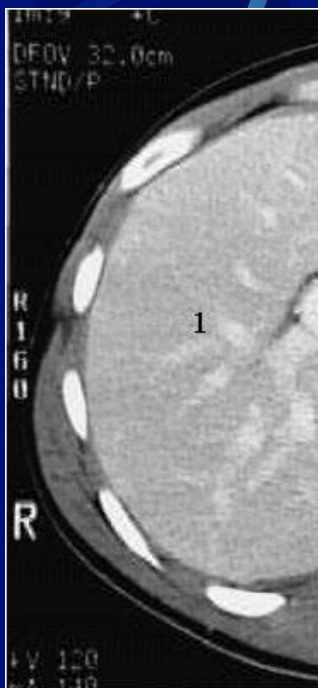
- a- Pancreatic mass.
- b- Gastric distension.
- c- Liver metastasis.**
- d- Splenomegaly.



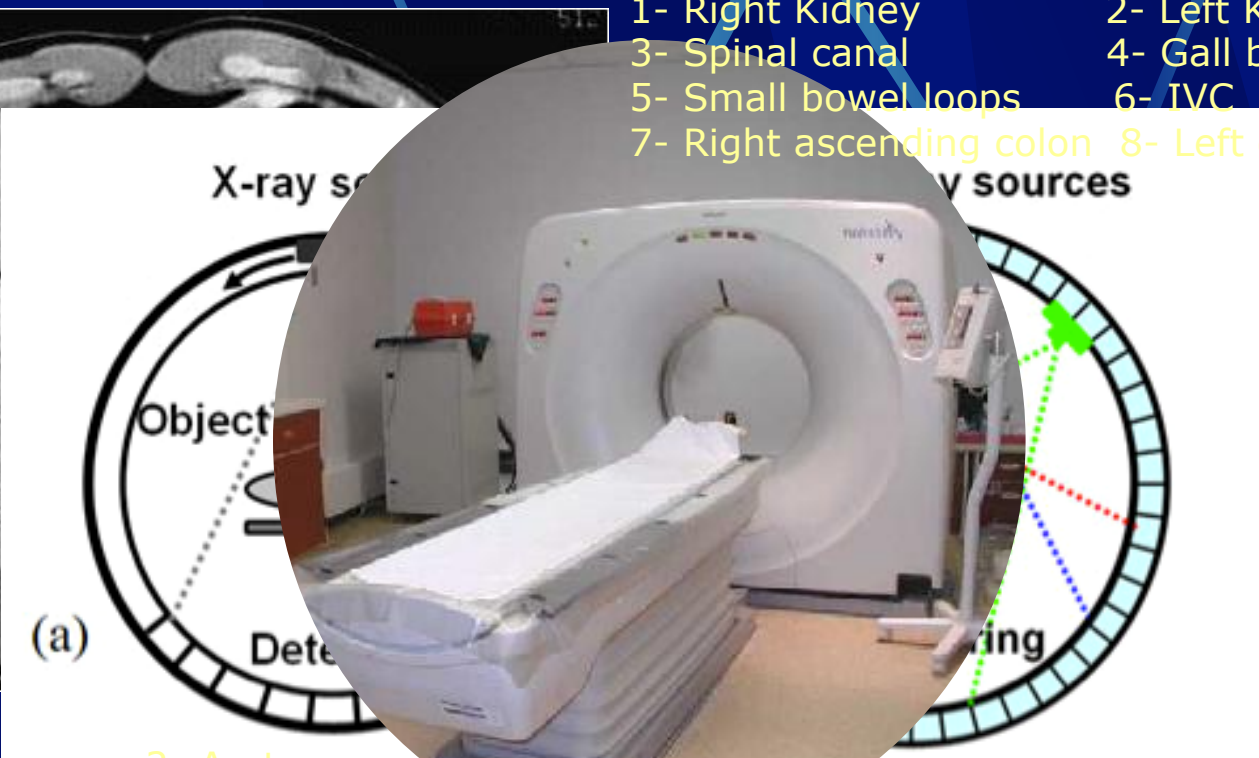
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## IMAGING MODALITIES

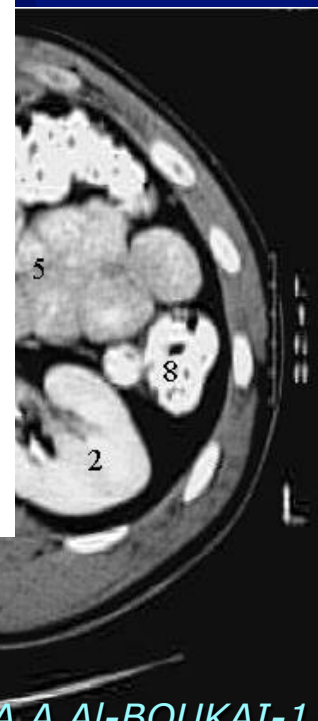
### COMPUTED TOMOGRAPHY



- 1- Liver
- 2- Aorta
- 3- Stomach
- 4- Spleen
- 5- RT diaphragmatic crus



- 1- Right Kidney
- 2- Left Kidney
- 3- Spinal canal
- 4- Gall bladder
- 5- Small bowel loops
- 6- IVC
- 7- Right ascending colon
- 8- Left descending colon

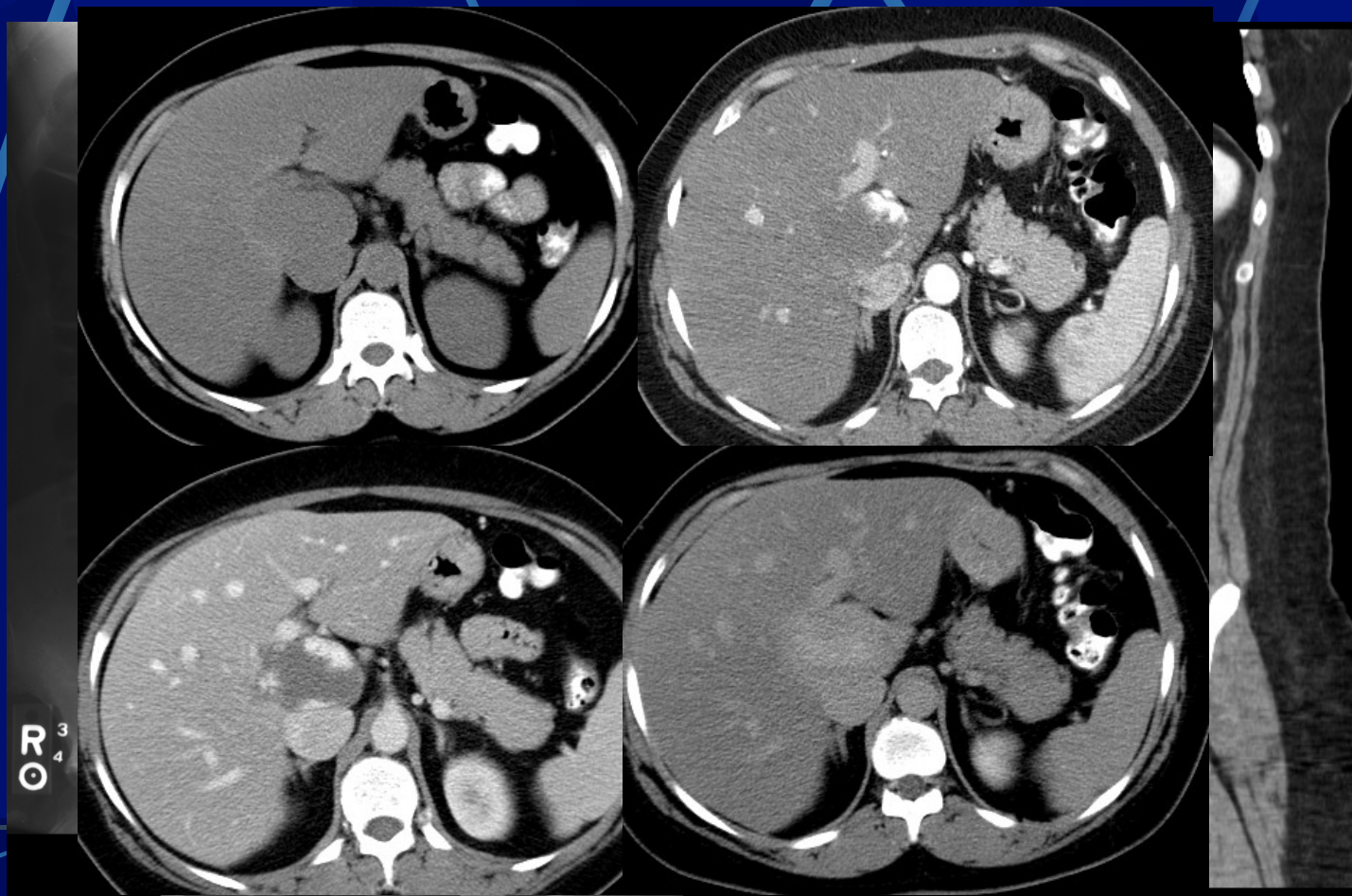




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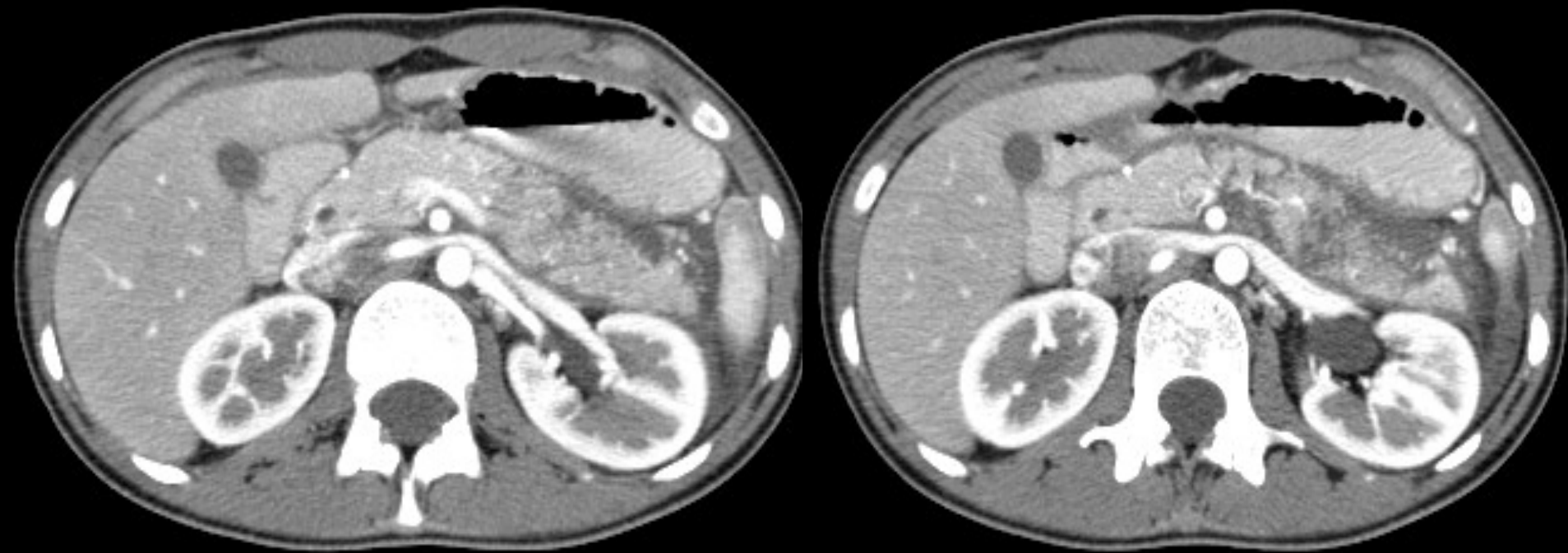
## IMAGING MODALITIES

### COMPUTED TOMOGRAPHY /MAGNETIC RESONANCE IMAGING



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## Acute Abdomen



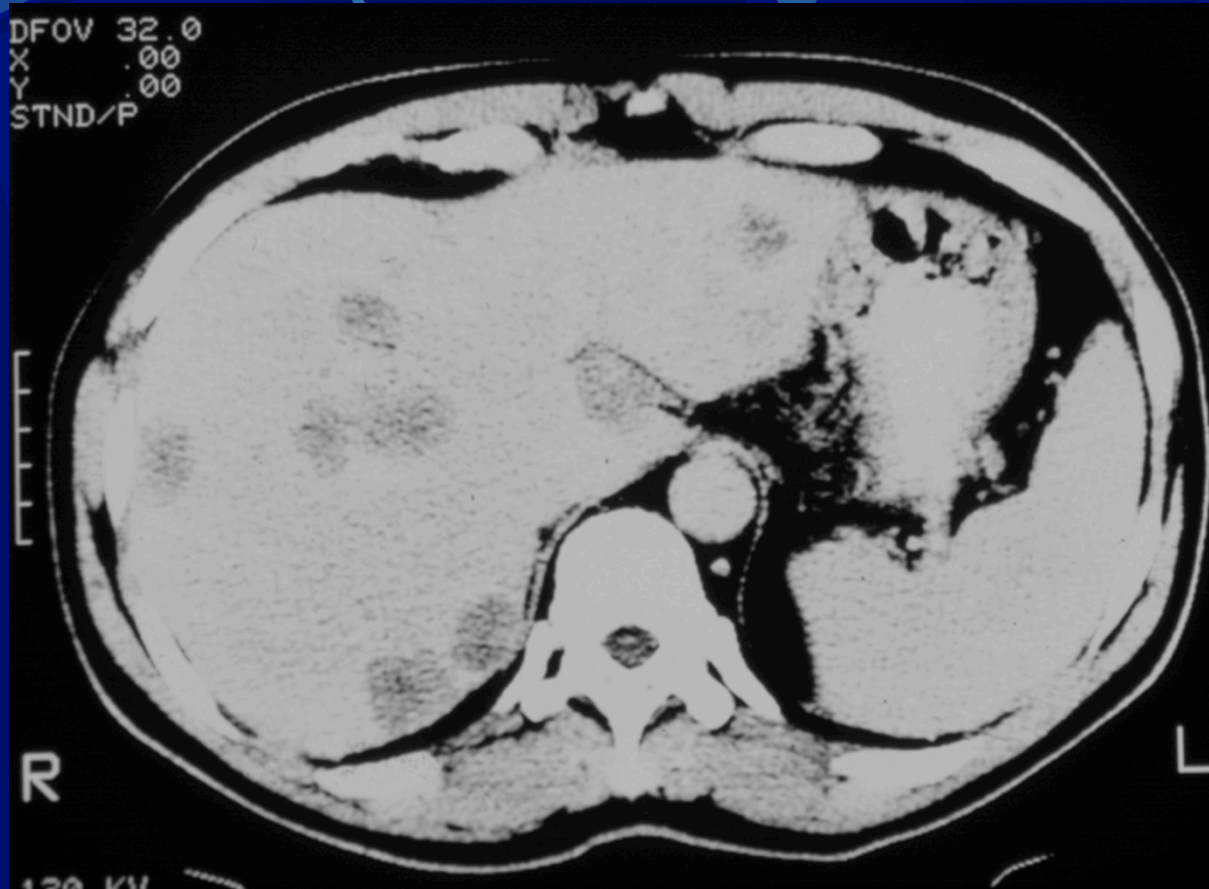
Acute pancreatitis





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## Upper GI Bleeding



**Liver Metastasis**



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## Abdominal Pain



No IV contrast

R

L20 KV  
L70 MA  
MED SFOV  
10 0 MM

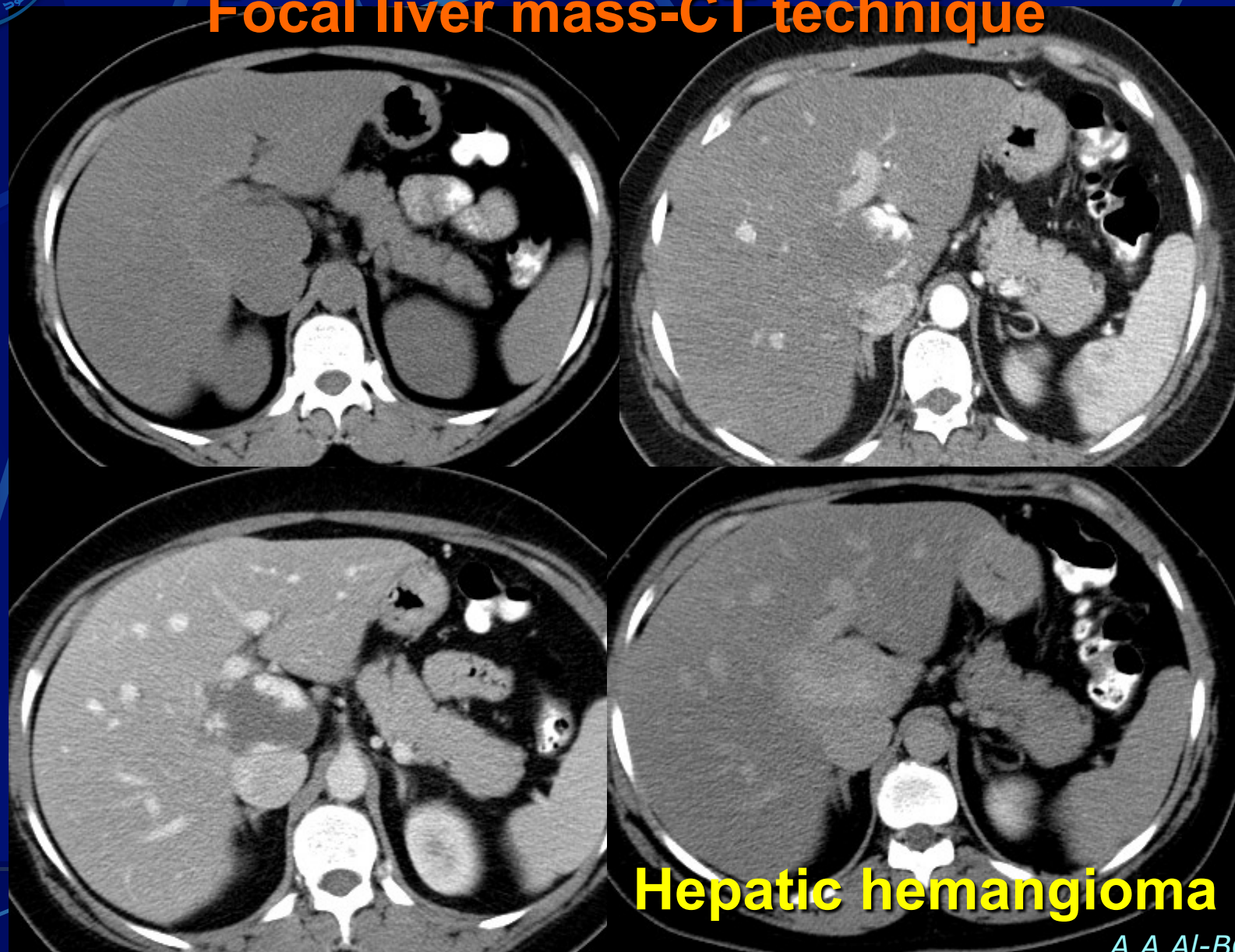


with IV contrast

## Liver Abscess

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## Focal liver mass-CT technique



**Hepatic hemangioma**

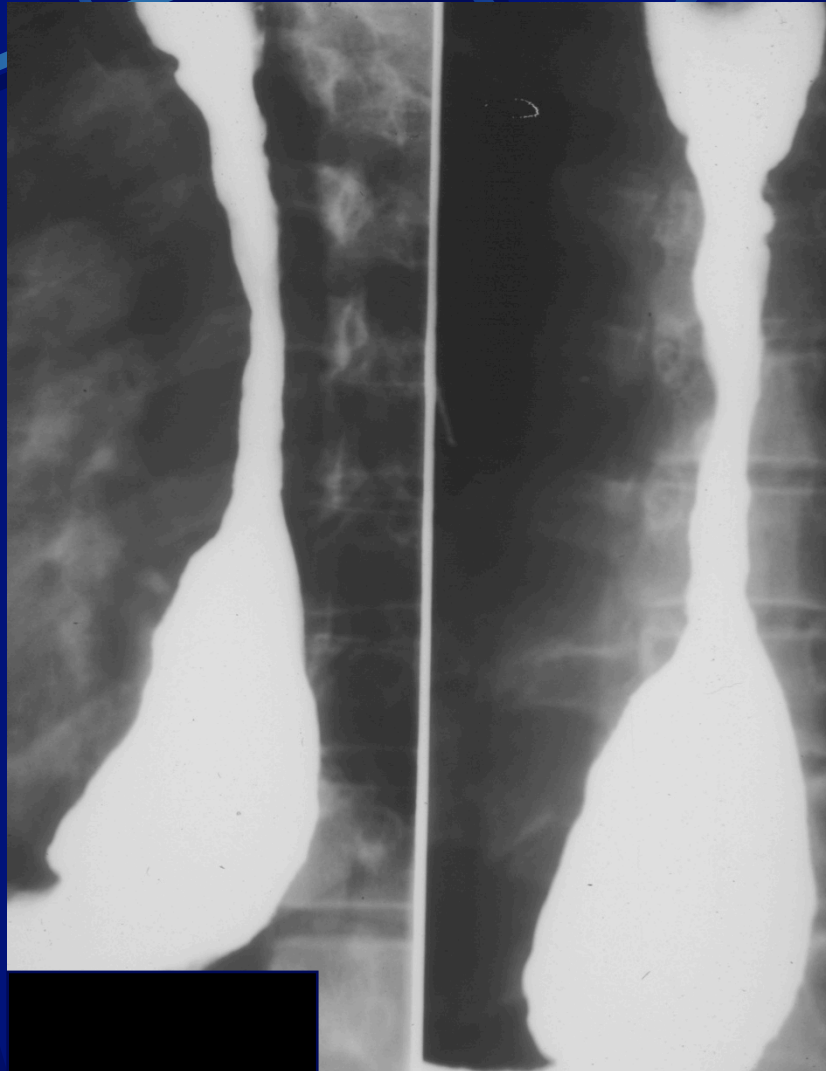


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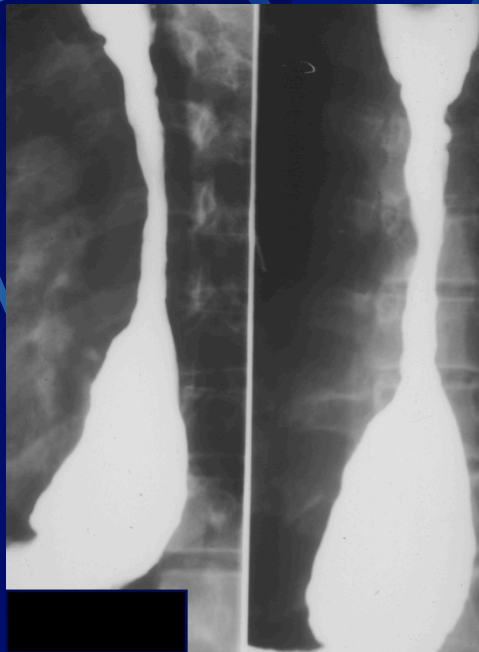
## CASE 3

A child presenting with dysphagia.

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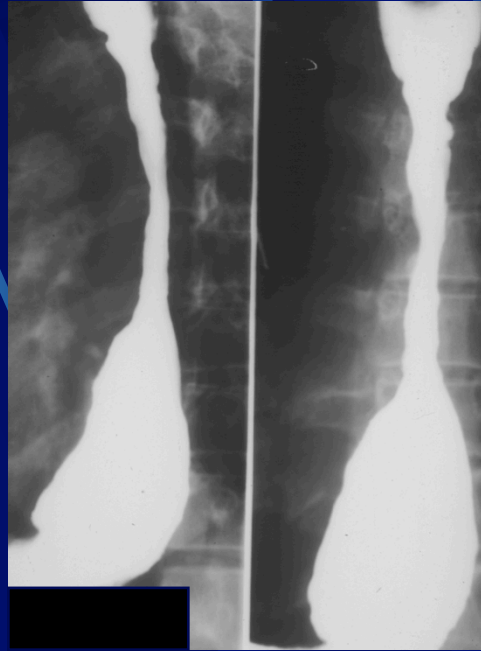
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Which of type study your are shown?

- a- Barium enema.
- b- Barium meal.
- c- Barium follow through.
- d- Barium swallow.**

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Which of the following abnormalities is seen on this Barium swallow exam?

- a- Benign stricture.
- b- Malignant stricture.
- c- Esophageal leak.
- d- Esophageal perforation.

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## Ba Swallow Indications:

- Dysphagia
- Pain
- Tracheo-esophageal Fistula
- Esophageal perforation
- Pre-operative assessment of bronchial Ca





# Comprehensive Review of GI Imaging Barium Swallow

## FLUROSCOPY – Dynamic Contrast Studies

### Natural contrast in the body

- Air
- Fat

### Added contrast in the body

- Barium sulfate
- Iodine (Water Soluble)



# Comprehensive Review of GI Imaging Barium Swallow

## FLUROSCOPY – Dynamic Contrast Studies

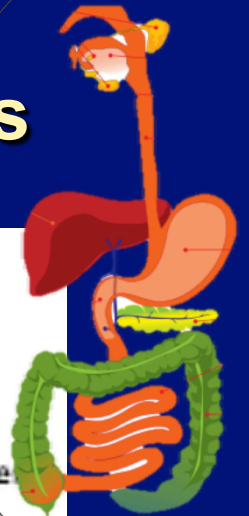
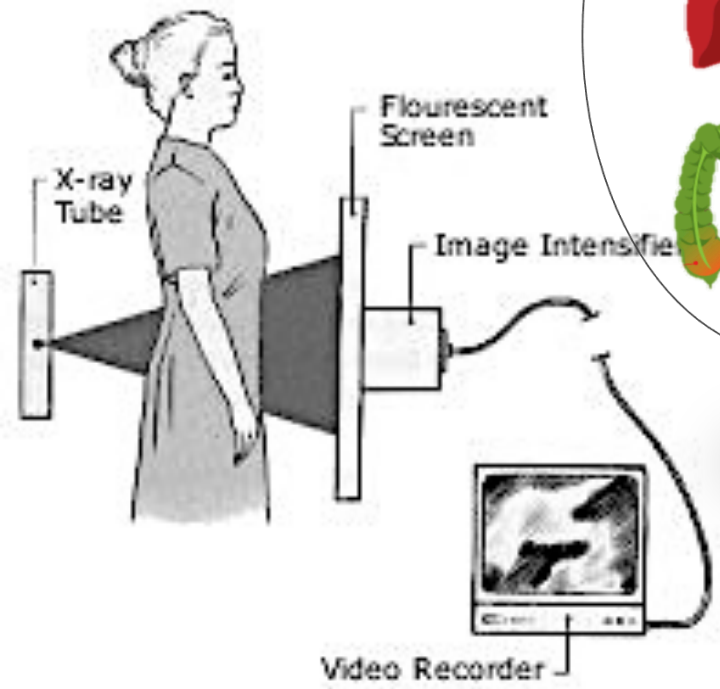
- Barium sulfate
- Iodine (Water Soluble)





# Comprehensive Review of GI Imaging Barium Swallow

## FLUROSCOPY – Dynamic Contrast Studies

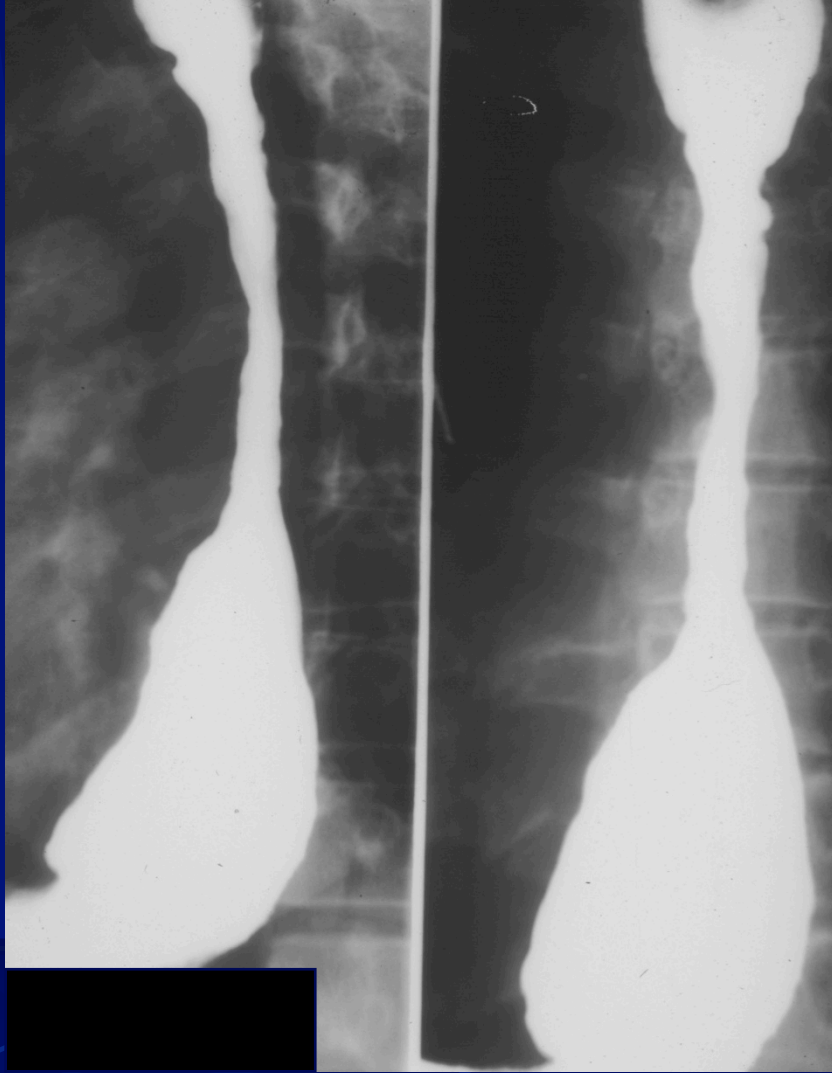




# Comprehensive Review of GI Imaging Barium Swallow

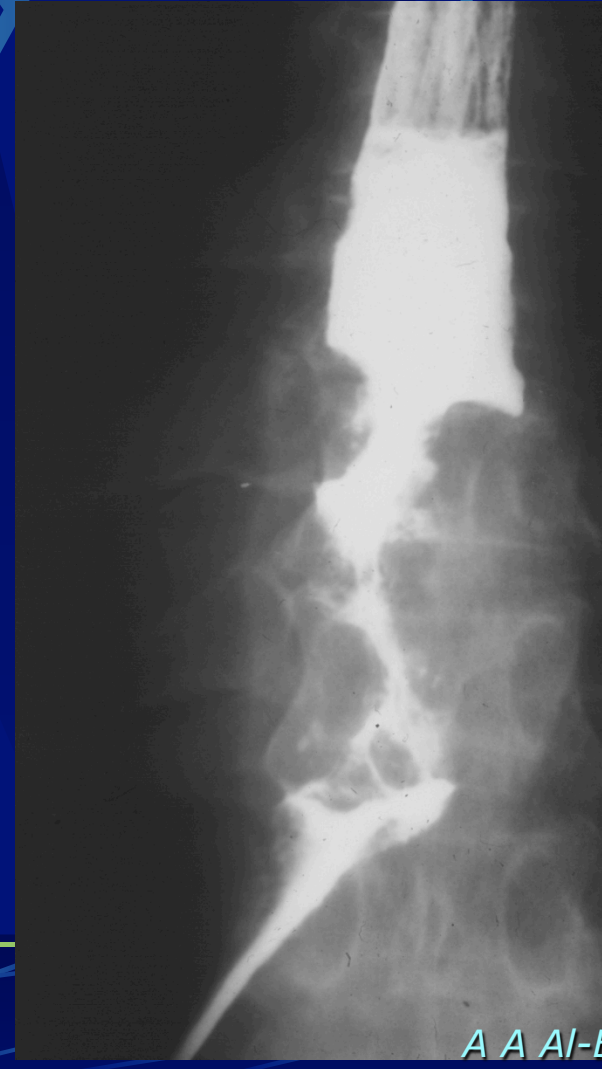
**Benign Stricture**

**Corrosive Esophageal Stricture**



**Malignant Stricture**

**Esophageal Ca**





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## Barium Swallow

Benign Stricture

Esophageal Achalasia





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## Barium Swallow

ALANAZI MUTAIRAN BALCI  
Study Date: 3/31/20  
Study Time: 10:19:38  
MRN: 7506  
DOB: 6/27/19  
Sex:

ALANAZI MUTAIRAN BALCI  
Study Date: 3/31/20  
Study Time: 10:19:38  
MRN: 7506  
DOB: 6/27/19  
Sex:

ALANAZI MUTAIRAN BALCI  
Study Date: 3/31/20  
Study Time: 10:19:38  
MRN: 7506  
DOB: 6/27/19  
Sex:

**Malignant Stricture**  
**Esophageal Ca**



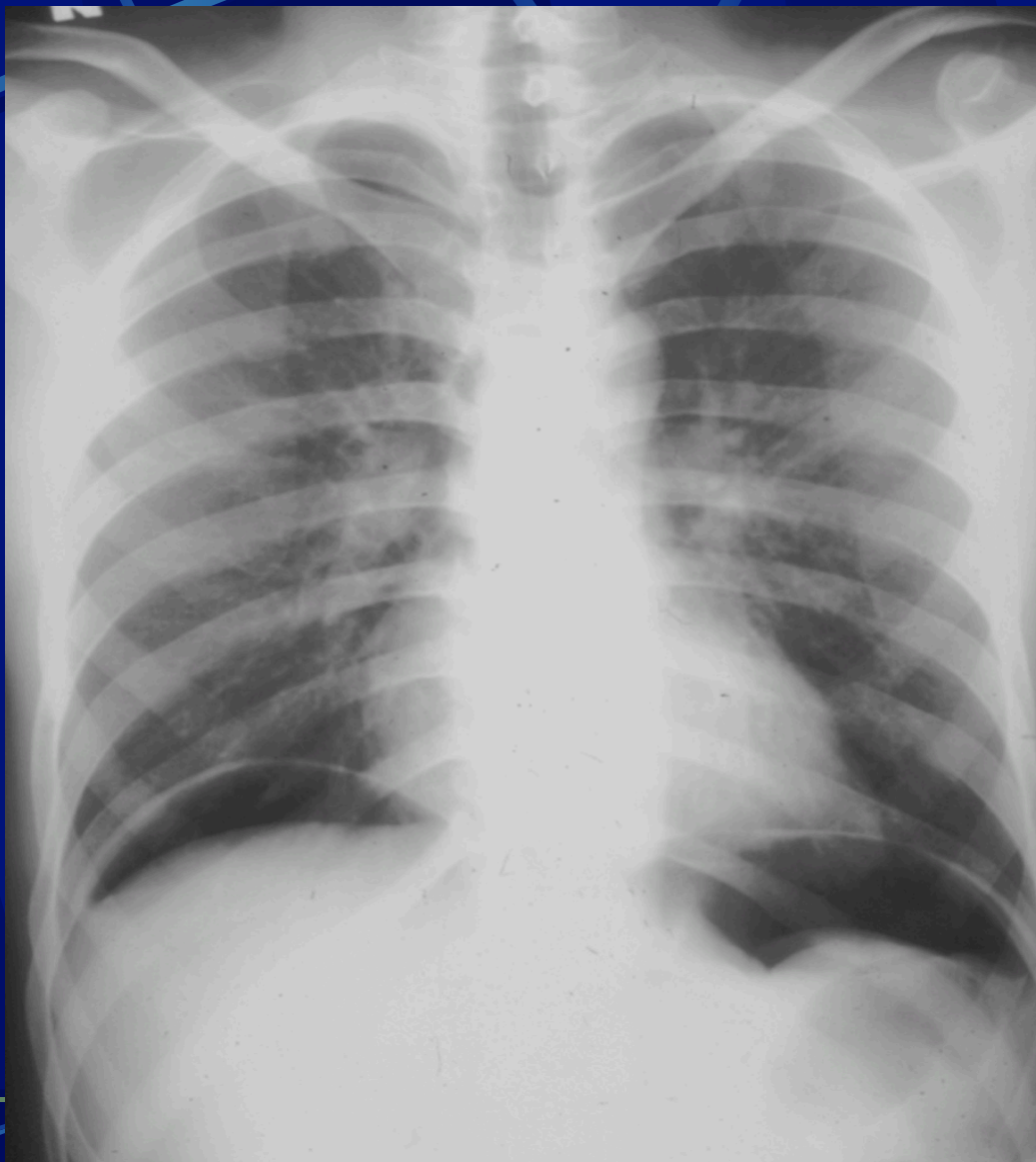
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## CASE 4

Adult patient presenting with epigastric abdominal pain



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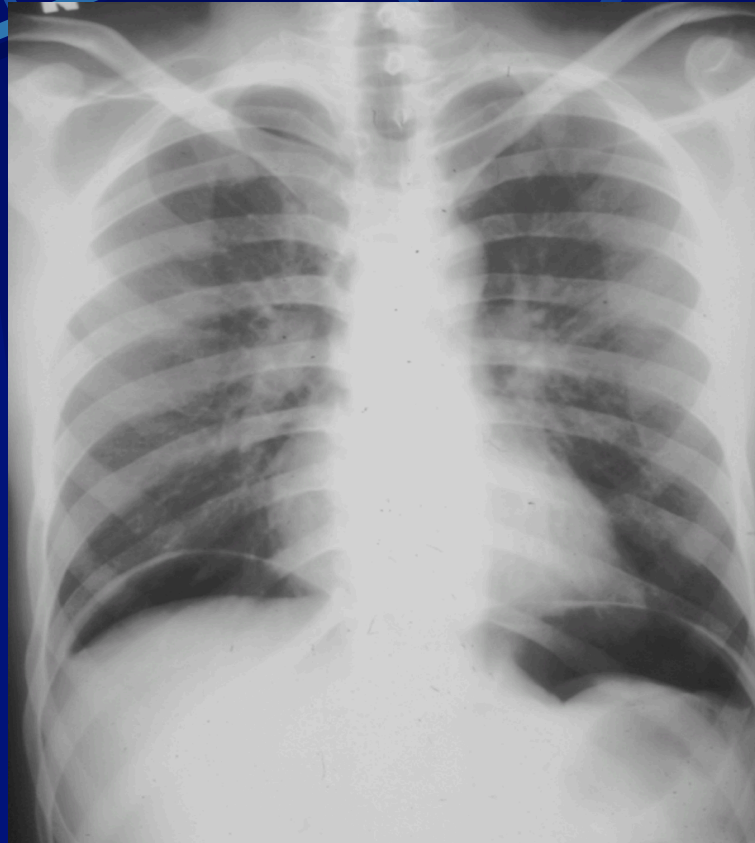
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What is the abnormality seen on this chest PA x-ray?

- a- Right upper quadrant mass.
- b- Bilateral basal lung consolidations.
- c- Bilateral pneumothorax.
- d- Air under both diaphragms.

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What is the likely cause of the chest x-ray findings?

- a- **Pneumoperitoneum.**
- b- Pneumothorax.
- c- Ascites.
- d- Pneumonic consolidation.

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## Pneumoperitoneum

~~Causes~~ Presence of free air within the abdomen.

~~Best view for detection~~ Best view for detection of pneumoperitoneum is erect chest film.

~~Appearance~~ Appearance is a crescentic area of lucency under diaphragm.

~~Complications~~ Complications can be fatal for very ill patient. (! Right/ Left)



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## CASE 5

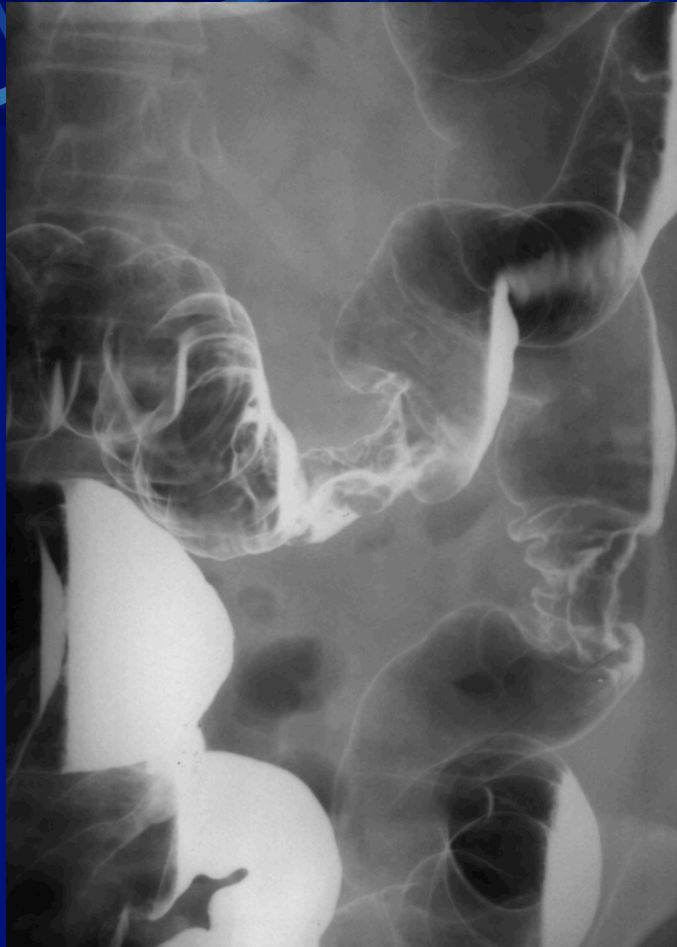
Adult patient presenting with weight loss and lower GI bleeding



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# Comprehensive Review of GI Imaging



What is the abnormality seen on this double contrast barium enema exam?

- a- Colonic polyps.
- b- Colonic diverticula.
- c- Colonic strictures.**
- d- Colonic perforation.

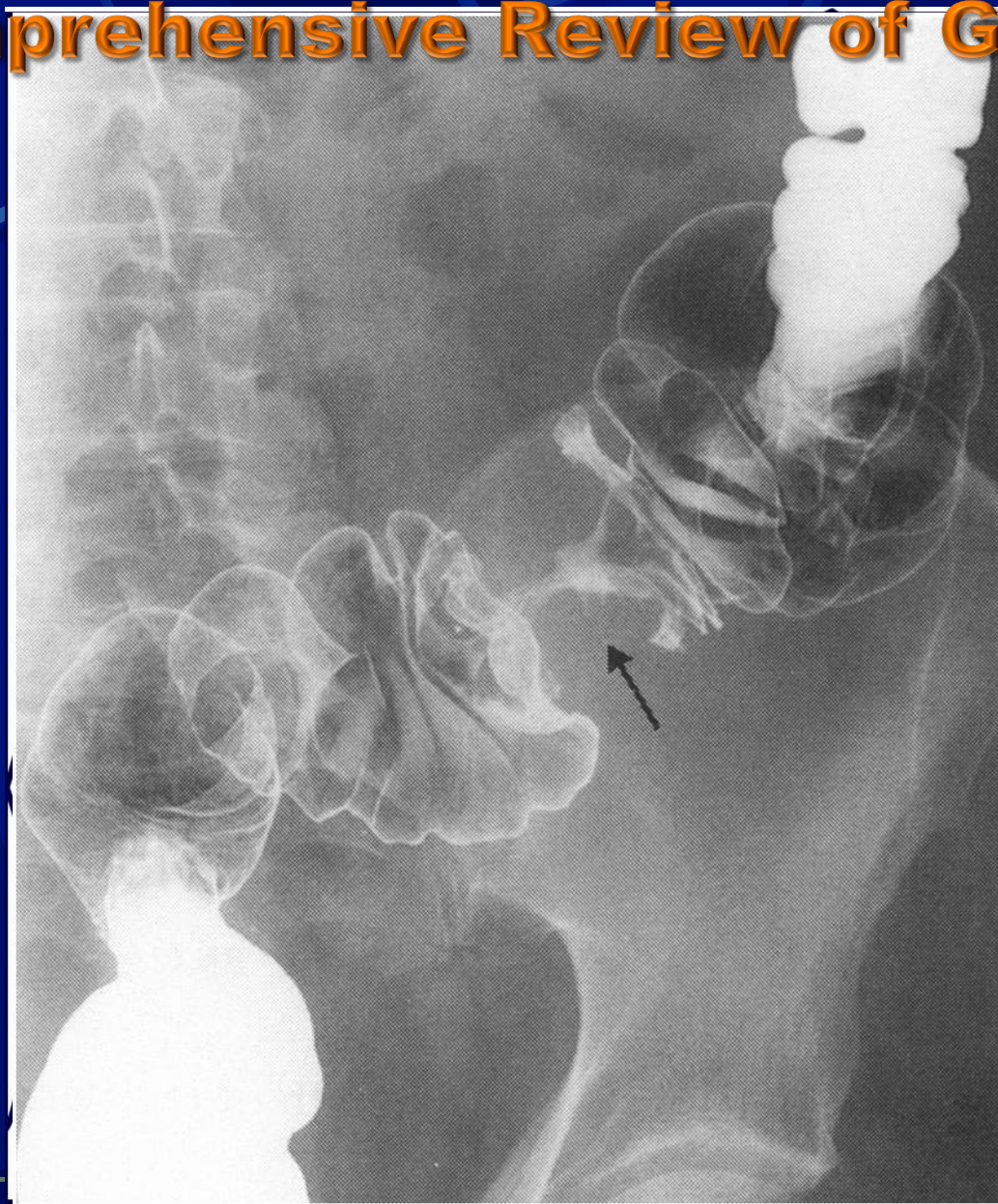
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Based on the clinical and the double contrast barium enema exam, which of the following is the likely cause of the findings?

- a- Colonic polyps.
- b- Colonic diverticulitis.
- c- Colonic carcinoma.**
- d- Colonic perforation.

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# Comprehensive Review of GI Imaging



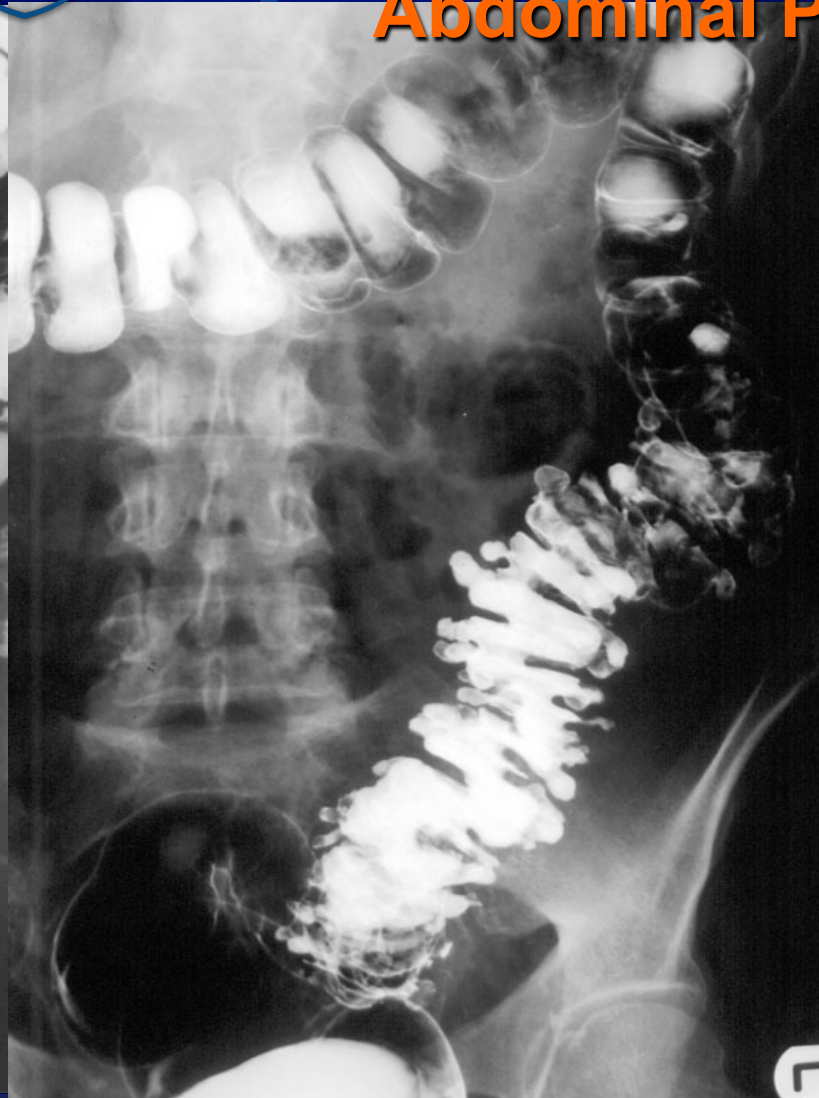
### Ba Enema Indications:

- Pain
- Change in bowel habit
- Bleeding / Melaena
- Obstruction



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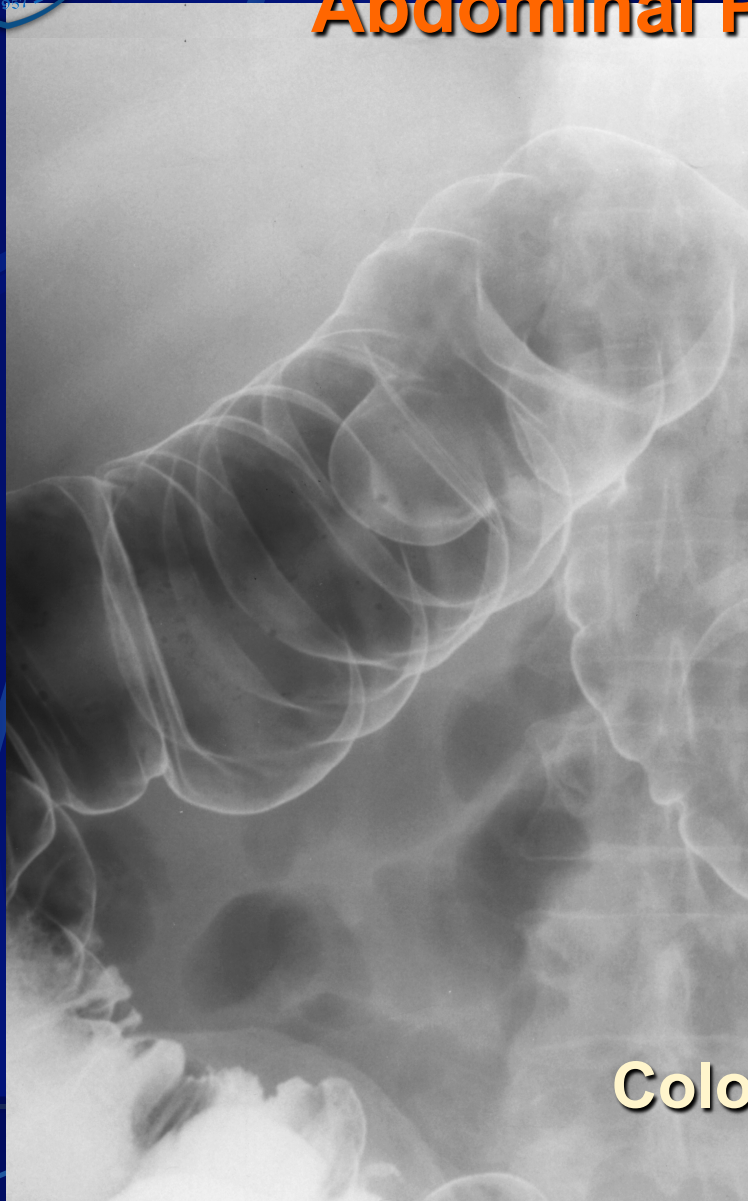
## Abdominal Pain & Diarrhea



**Diverticular Disease**



# Comprehensive Review of GI Imaging Abdominal Pain & Bleeding



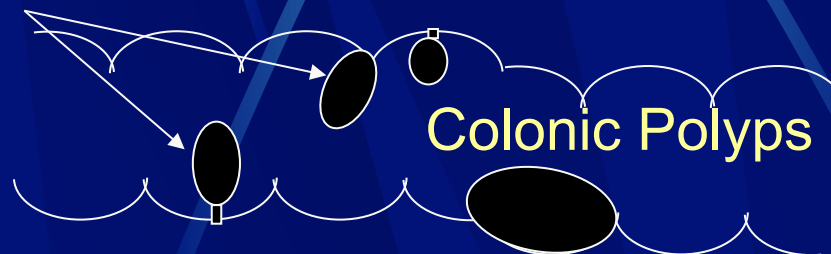
**Colonic Polyps**

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Diverticulae



Polyps





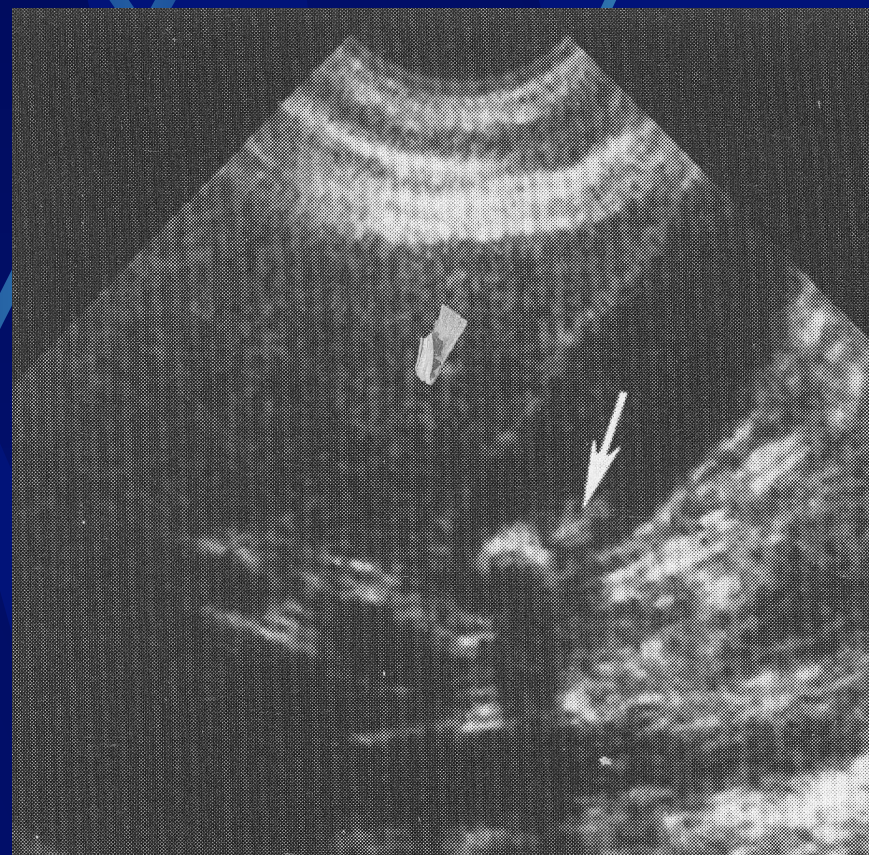
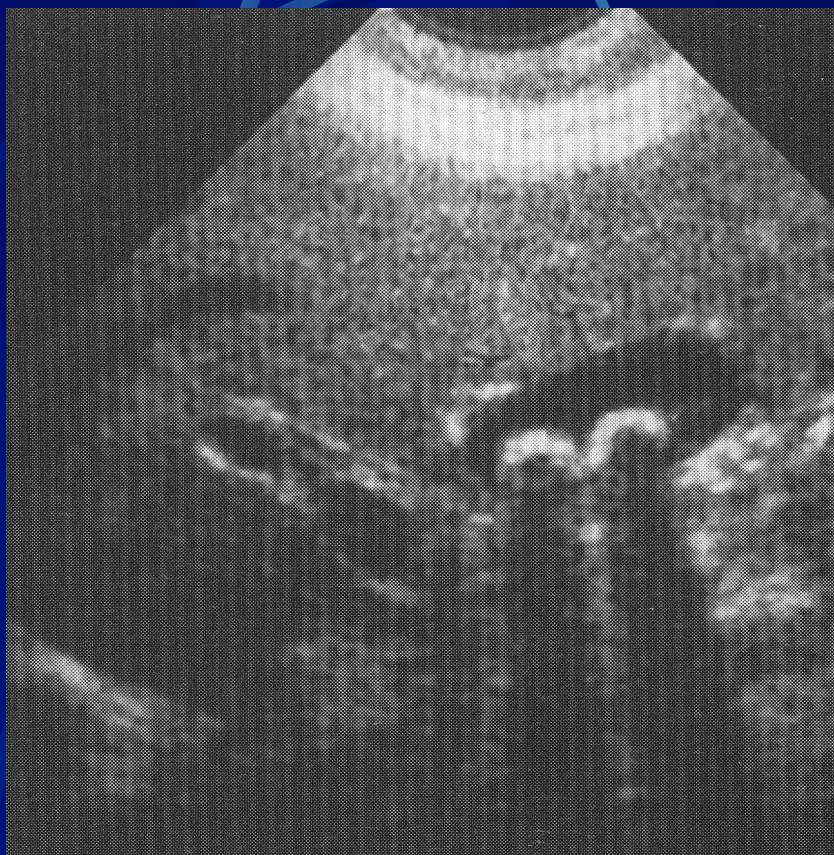
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## CASE 6

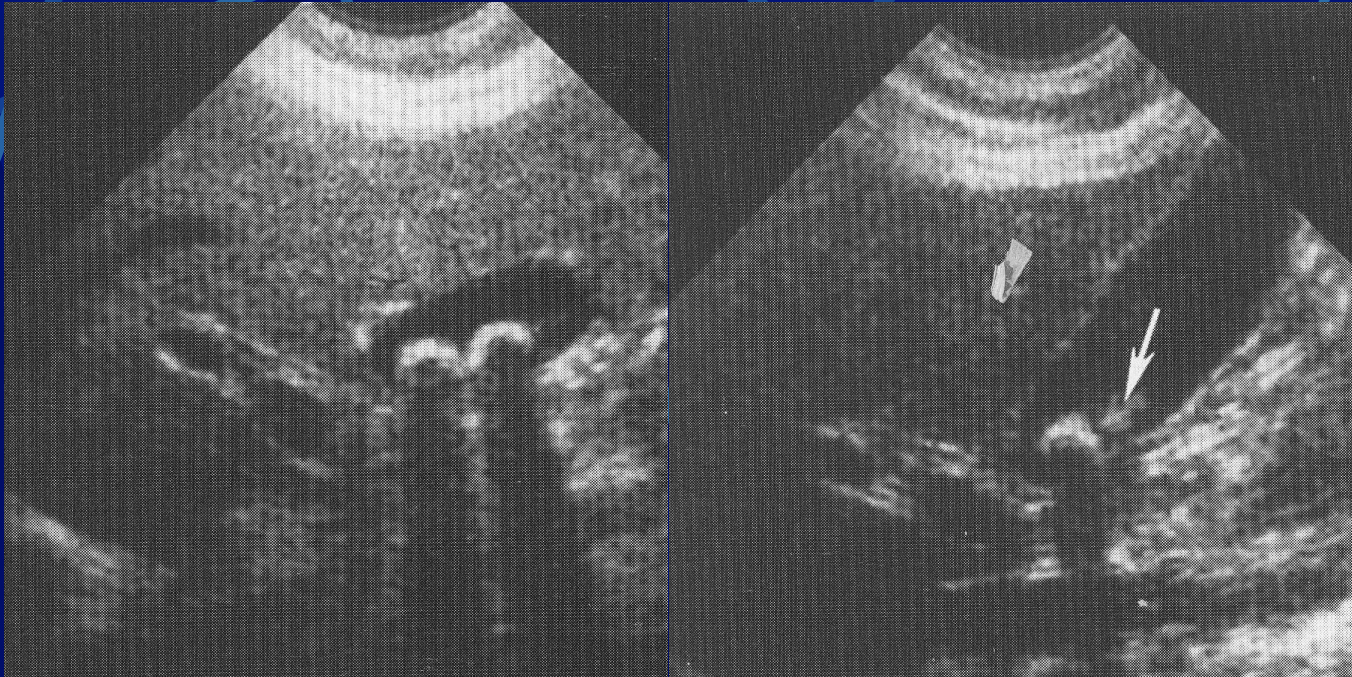
Adult female patient presenting with right upper quadrant pain.



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What is the abnormality seen on this upper abdominal ultrasound exam?

- a- Liver abscess.
- b- Gall stones.**
- c- Pneumoperitoneum.
- d- Colonic stricture.



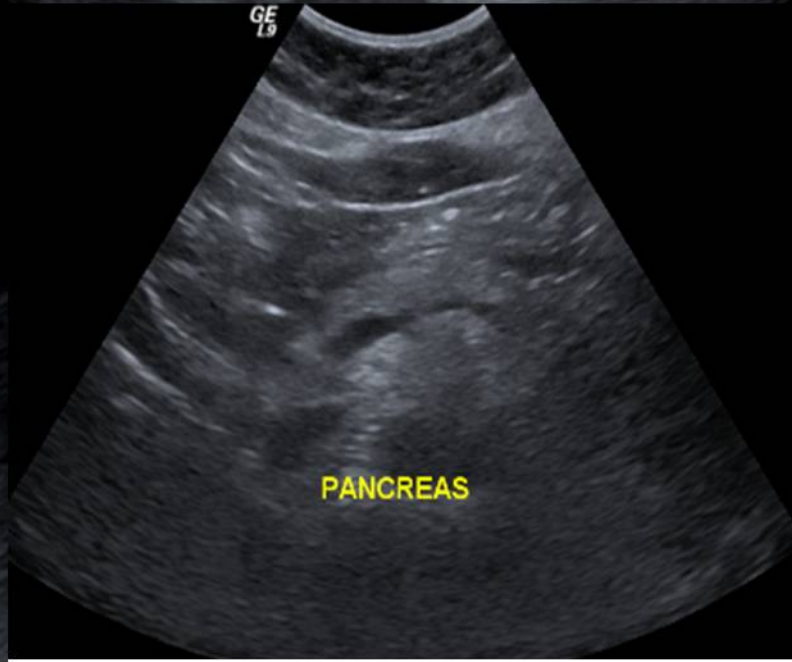
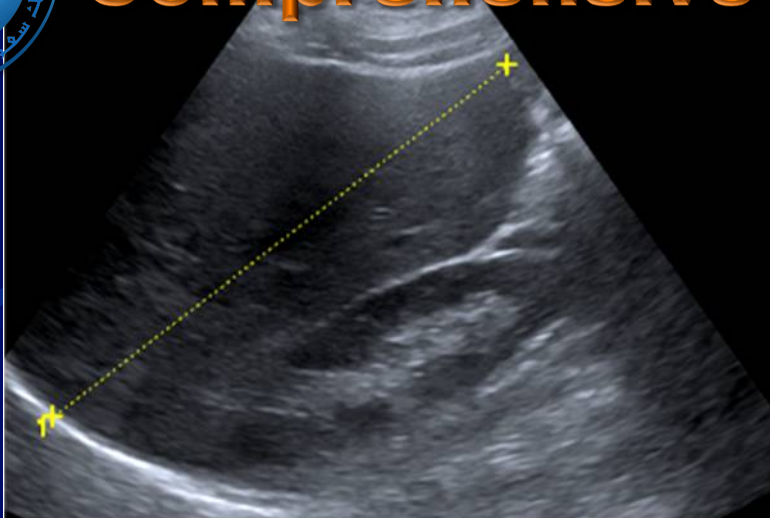
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## ULTRASOUND





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## Acute abdomen

GB LO SITTING

TR SUPINE

GB LO

GB

## Cholelithiasis