

# Uncommon Acute Conditions of the Small Bowel

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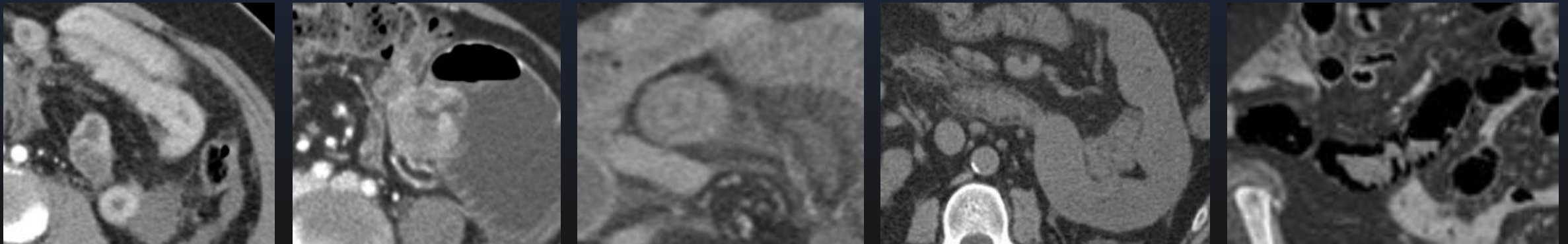
# Goals/Objectives

- 1) Utilize plain film, **CT** and MRI to identify and characterize acute conditions of the small bowel
- 2) Identify conditions of the small bowel that result in obstruction, ischemia, inflammation, and hemorrhage
- 3) Differentiate between surgical and nonsurgical causes of acute small bowel pathology
- 4) Assist referring clinicians to guide management



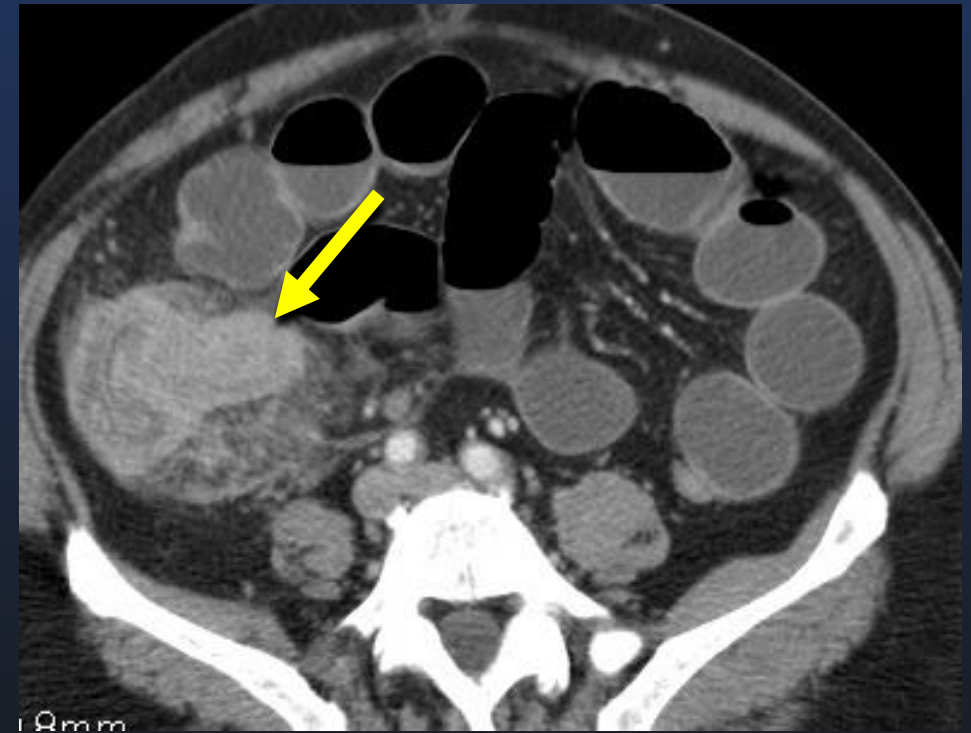
# How to approach Small Bowel Thickening?

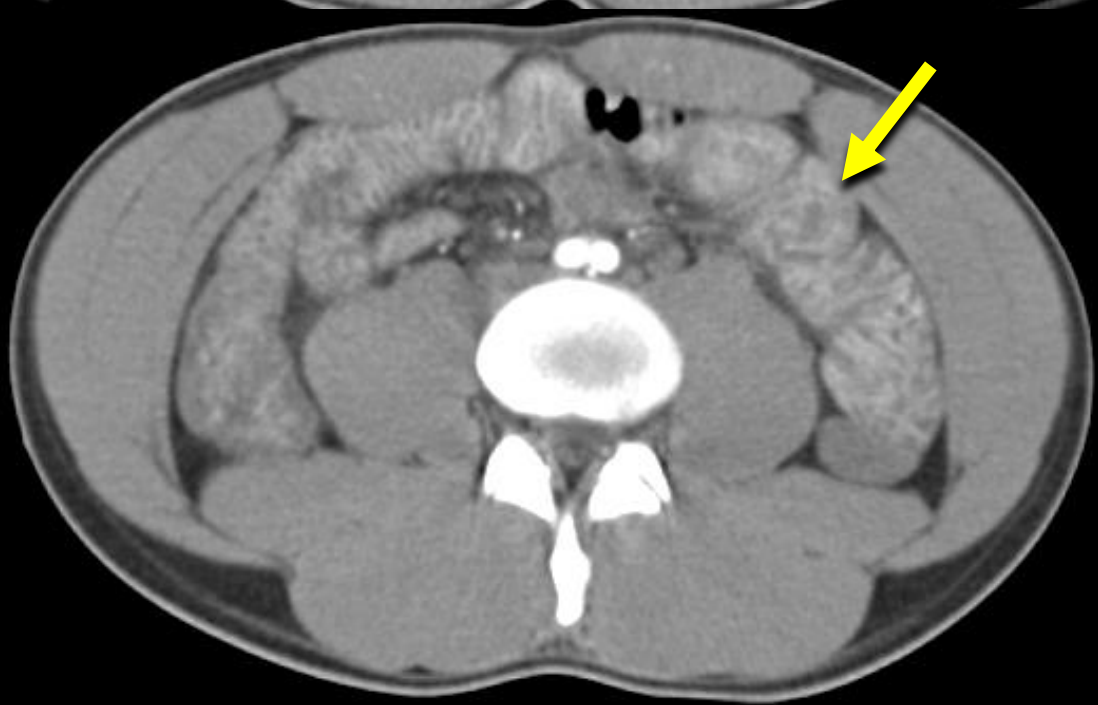
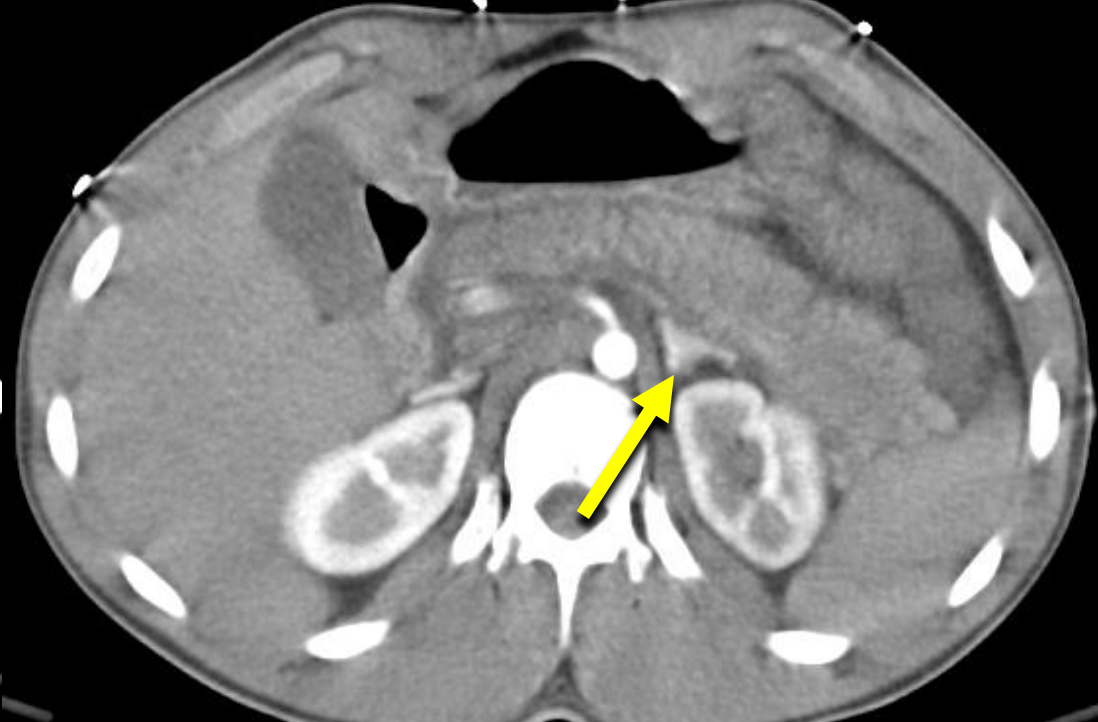
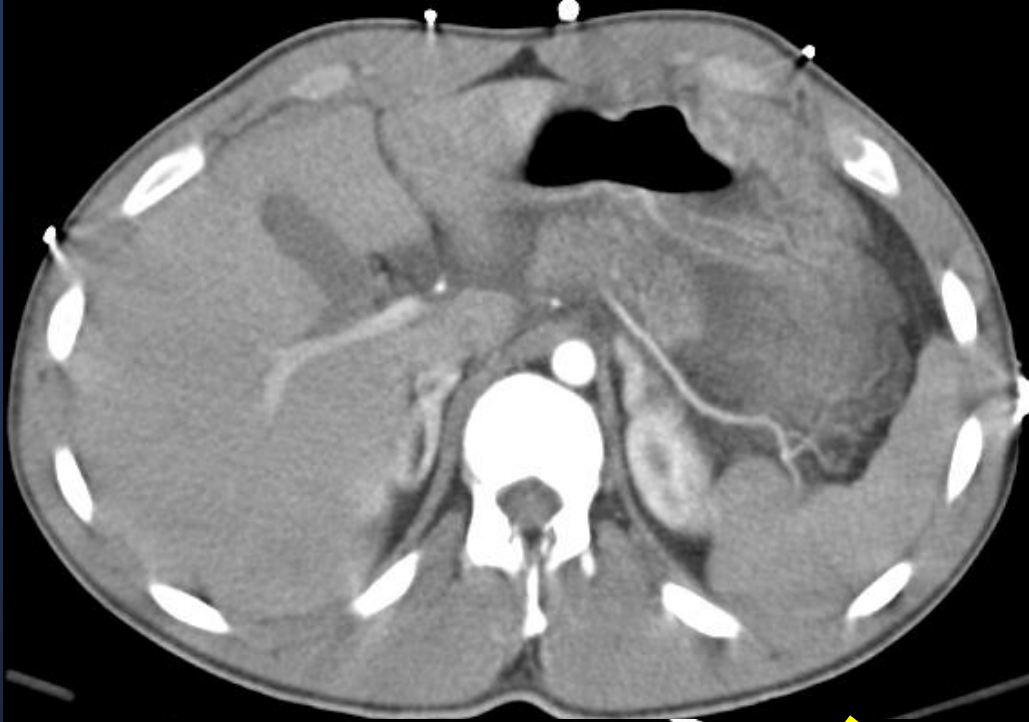
- Distribution – Focal or Diffuse?
- What color is the bowel wall?



# High Attenuation Wall Thickening

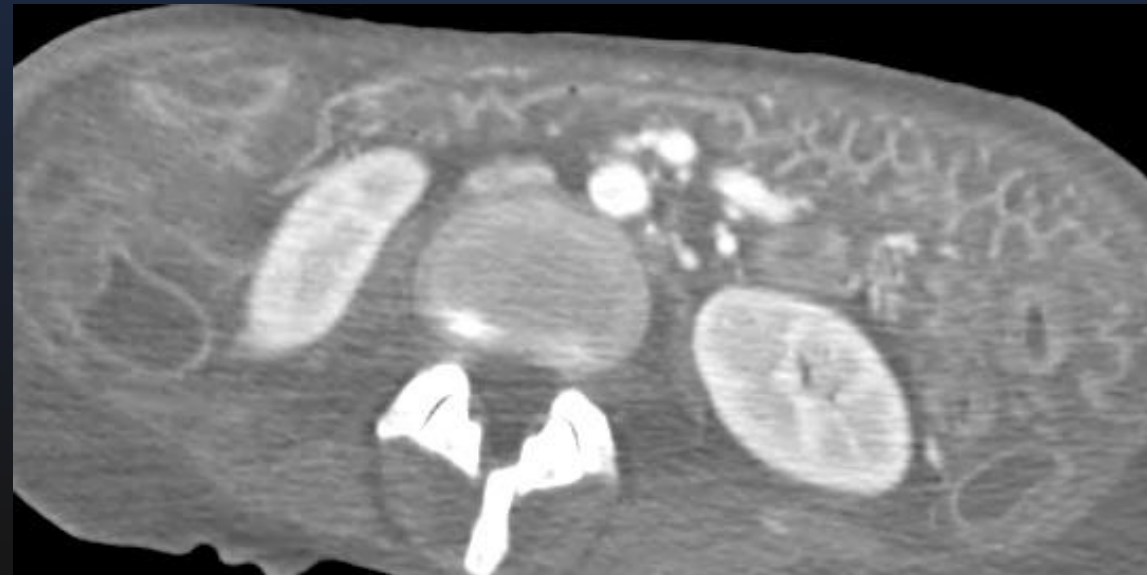
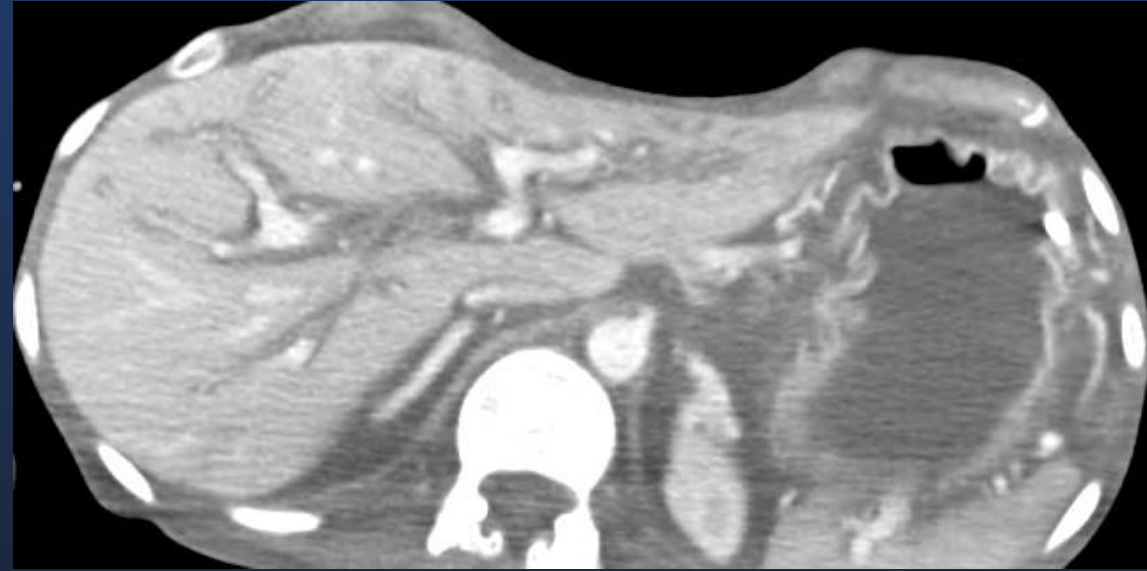
- “White”
- Higher in attenuation than muscle
- Crohn disease (acute)
- TB
- Hypoperfusion
- Acute hemorrhage (noncon)

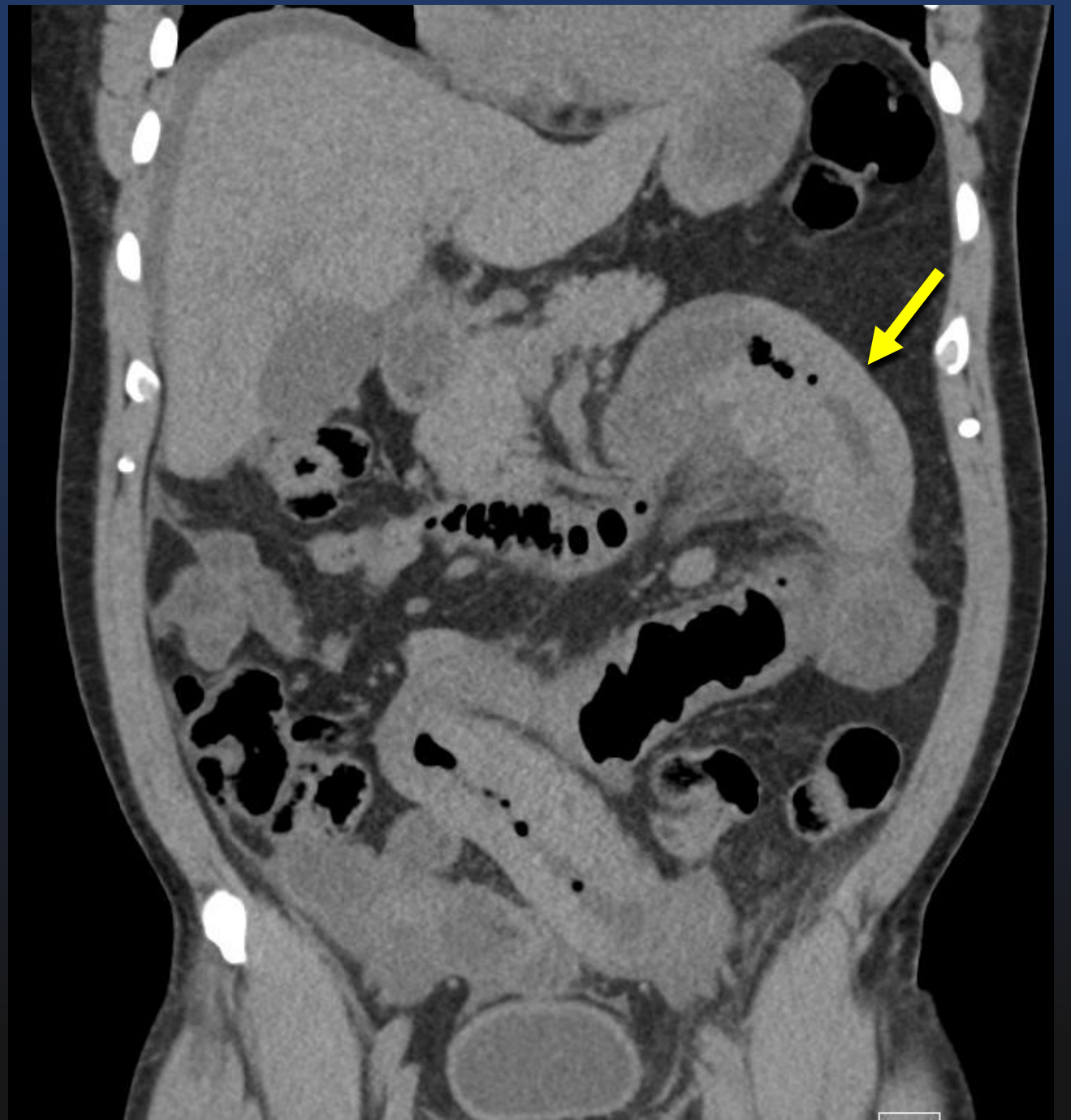
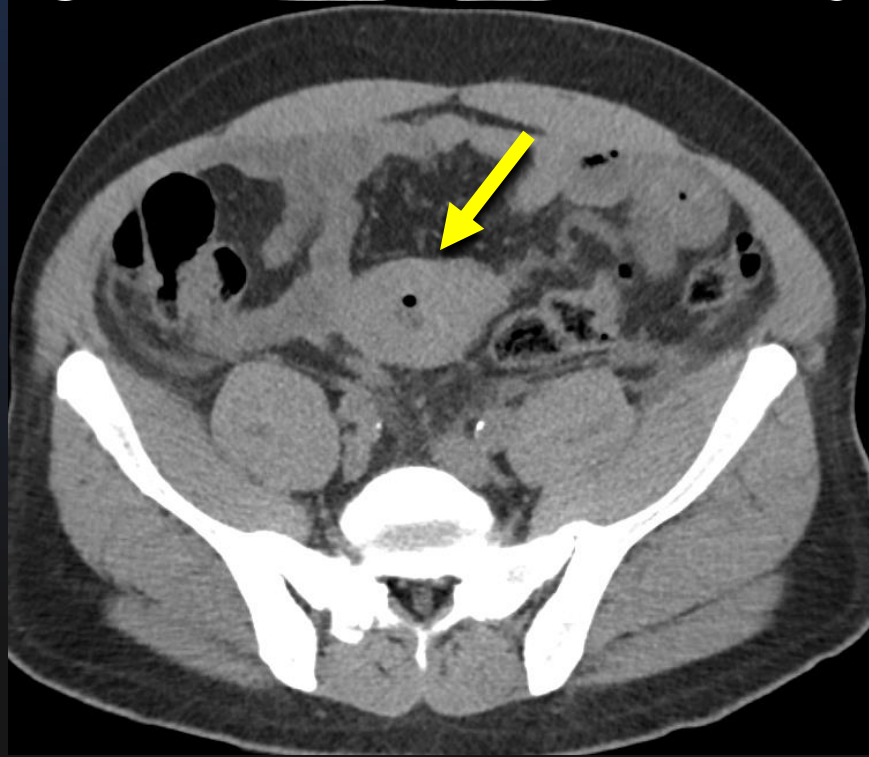
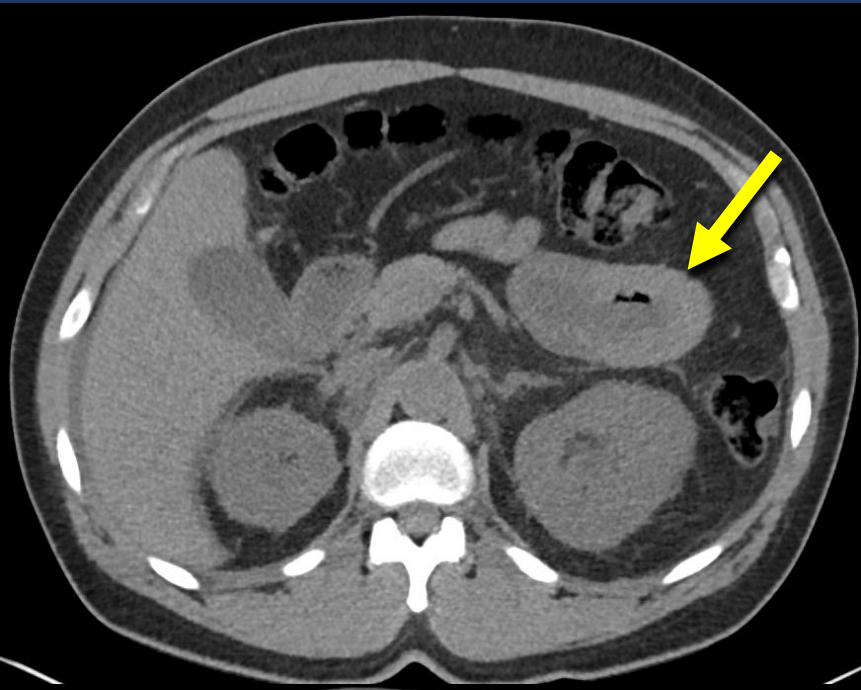




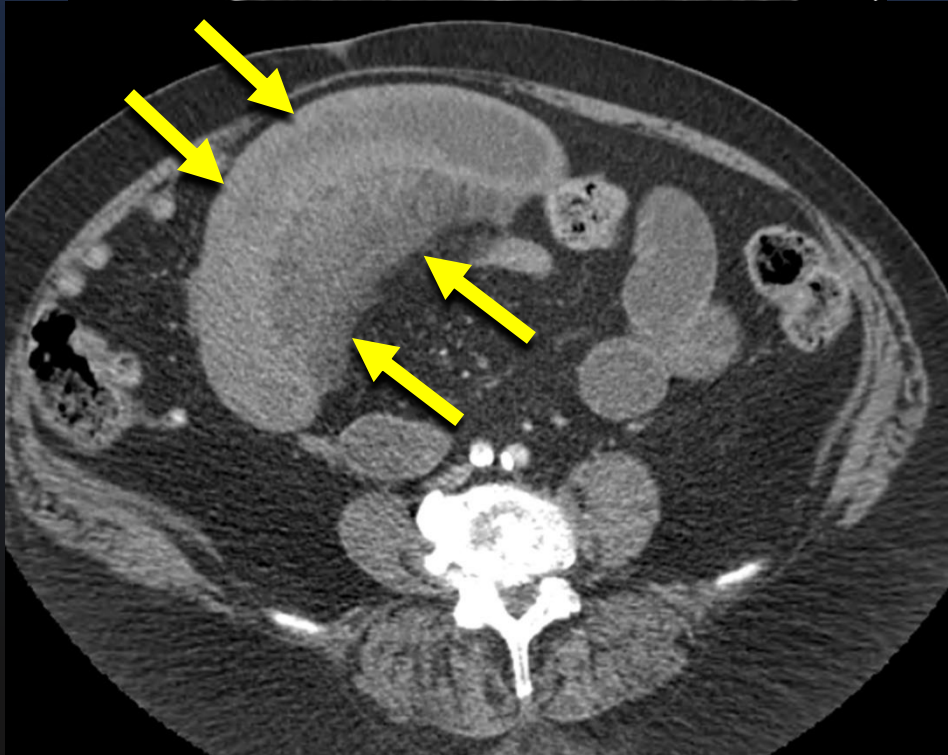
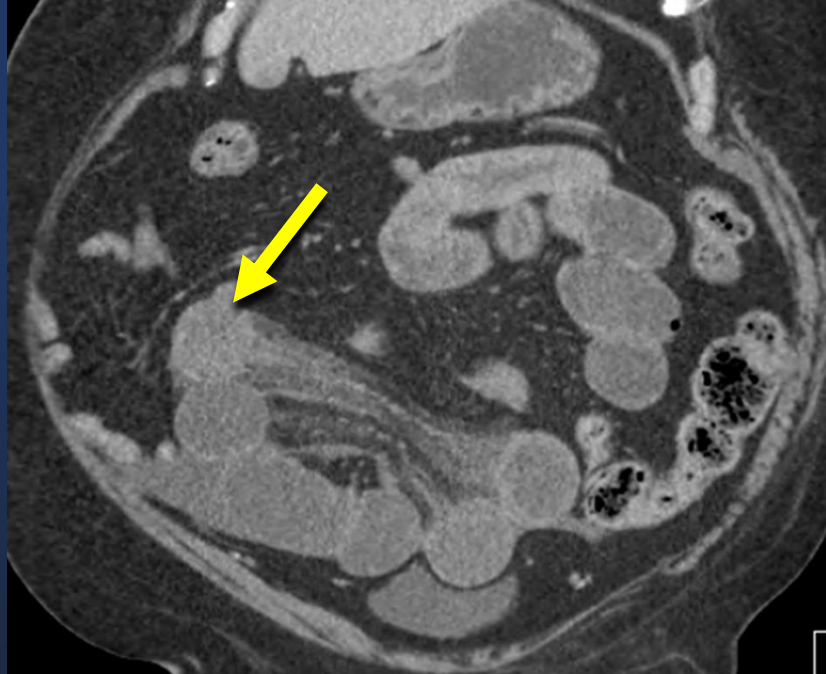
# Hypoperfusion Complex

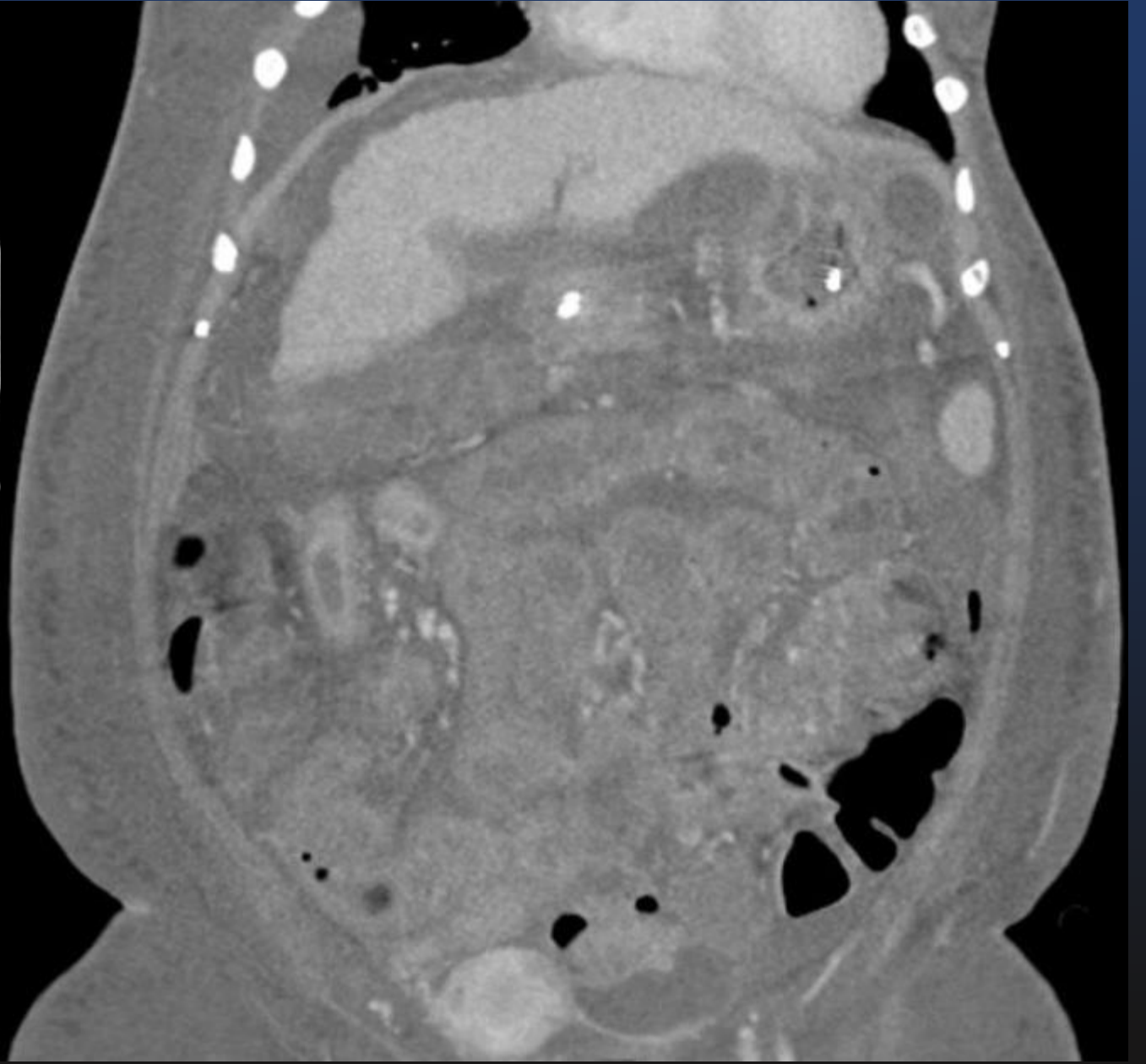
- Shock bowel
  - May be hypo- or hyperenhancement
  - Most commonly increased mucosal enhancement (> psoas muscle)
  - Mural thickening
  - Exclude bowel injury/peritonitis!
- Look for ancillary signs







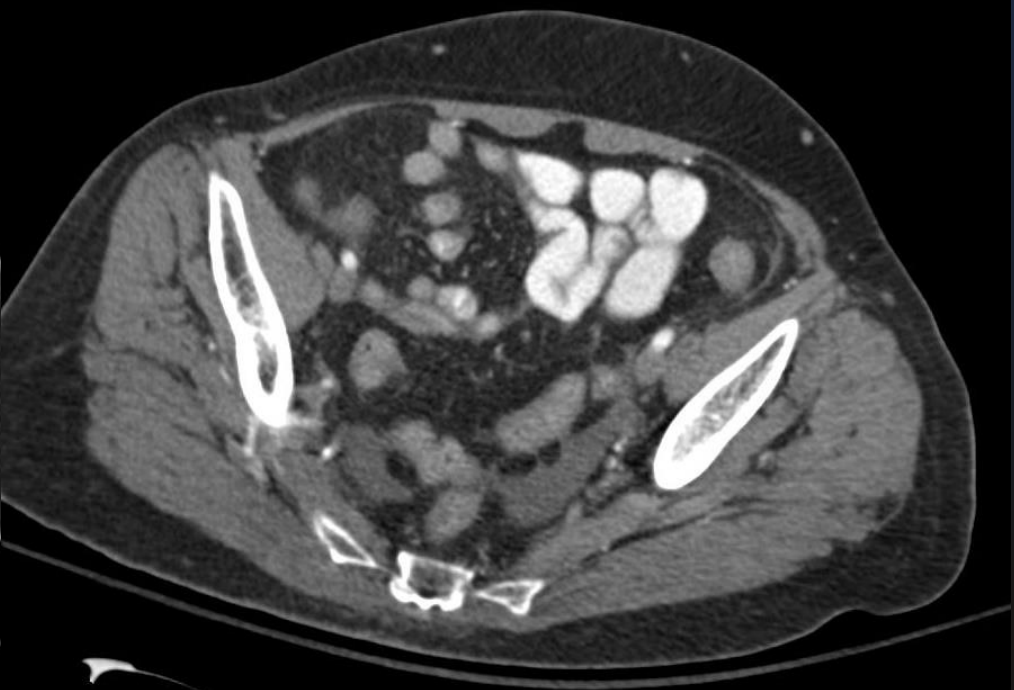
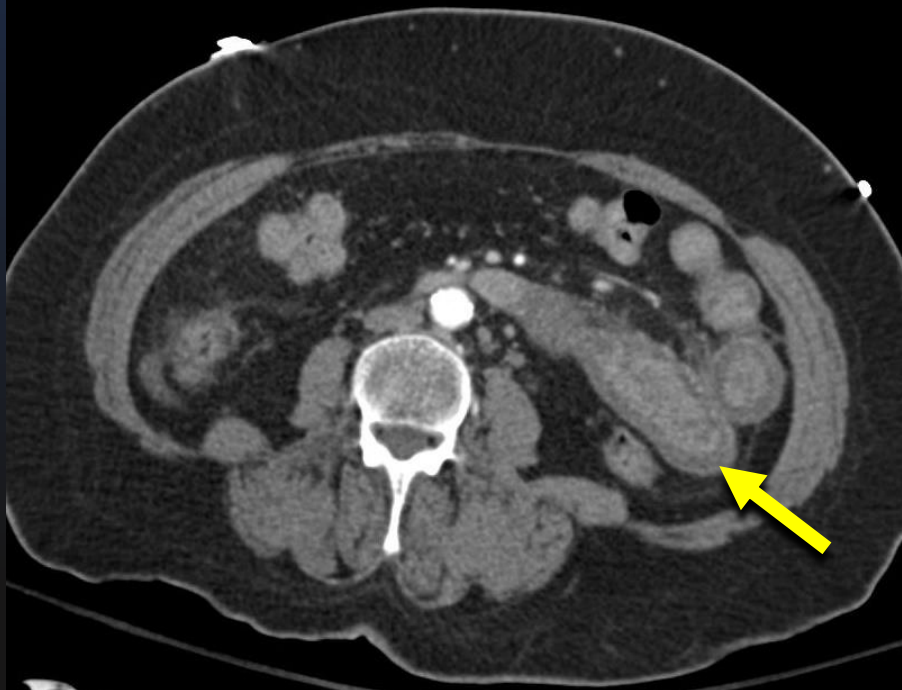
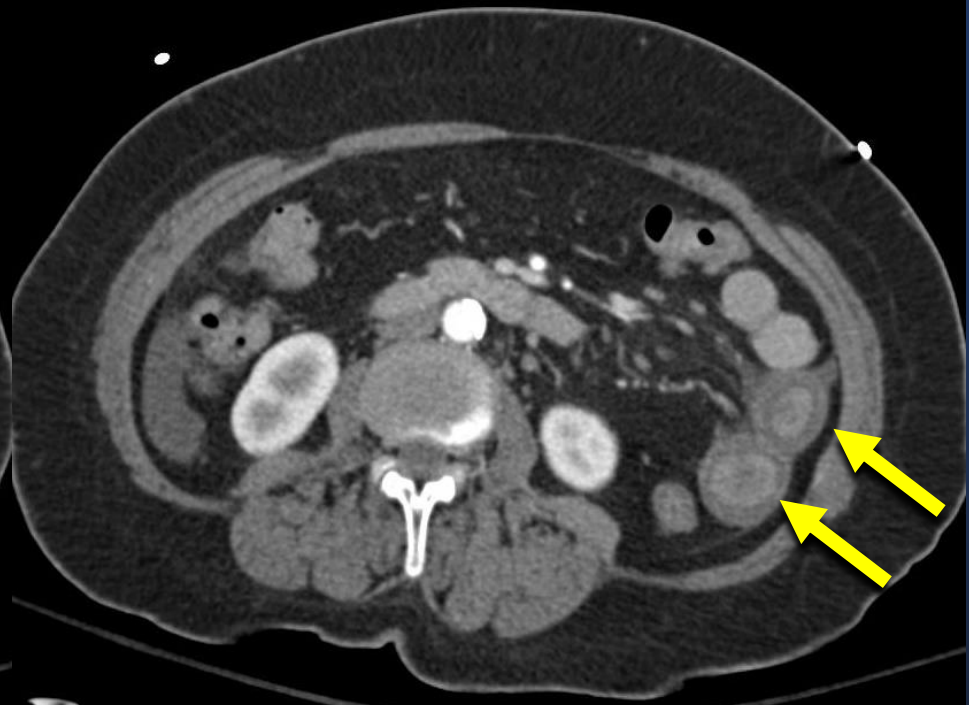
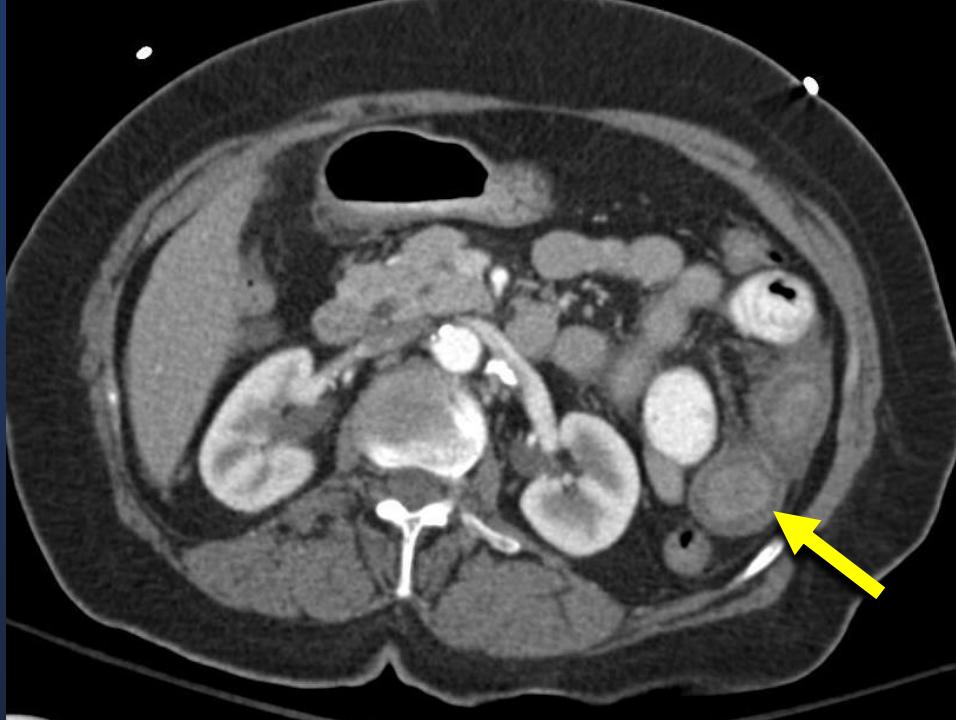




# “Water Halo” sign

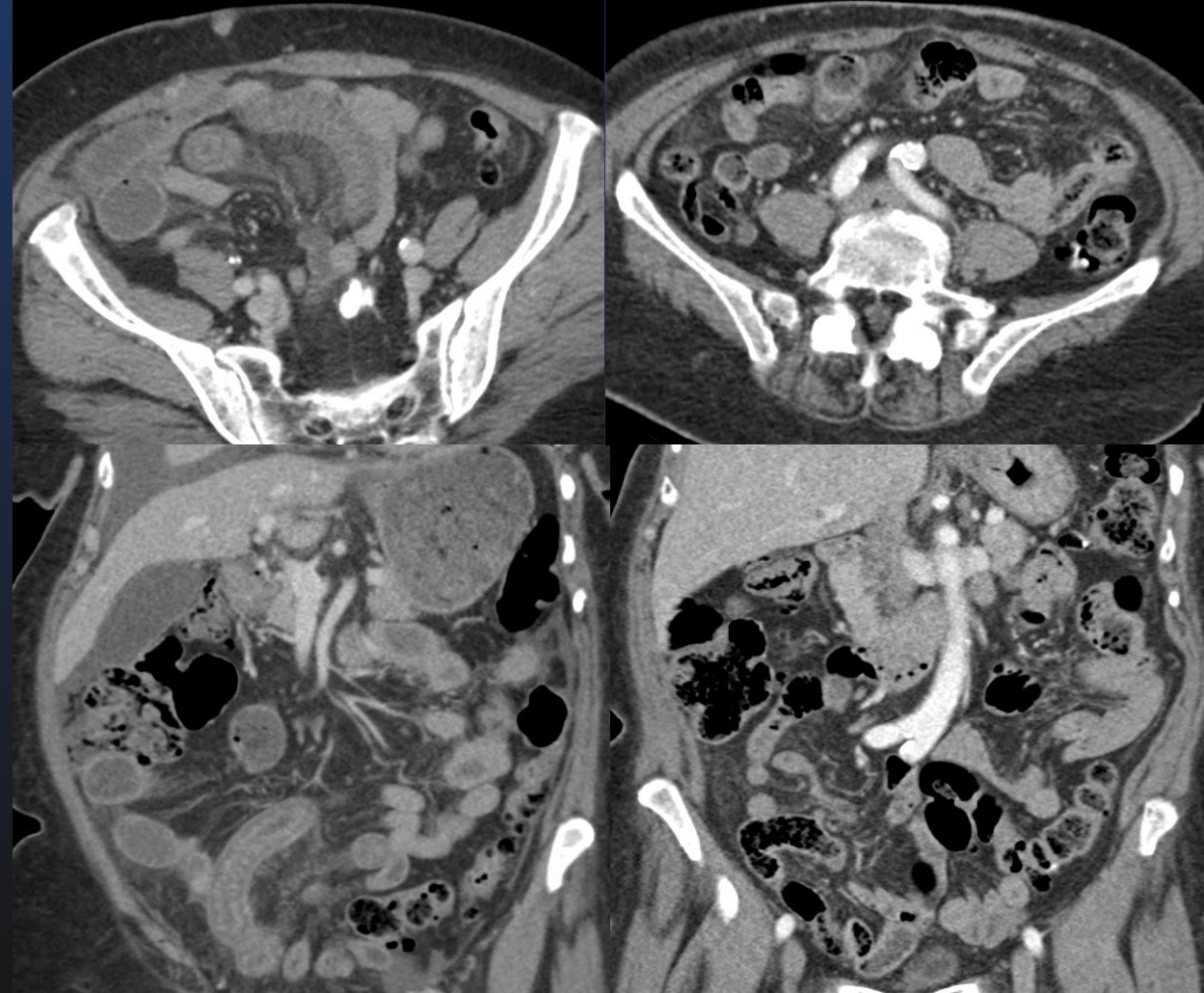
- Low attenuation in submucosa
- Common causes:
  - Third spacing
  - Infection
  - Ischemia

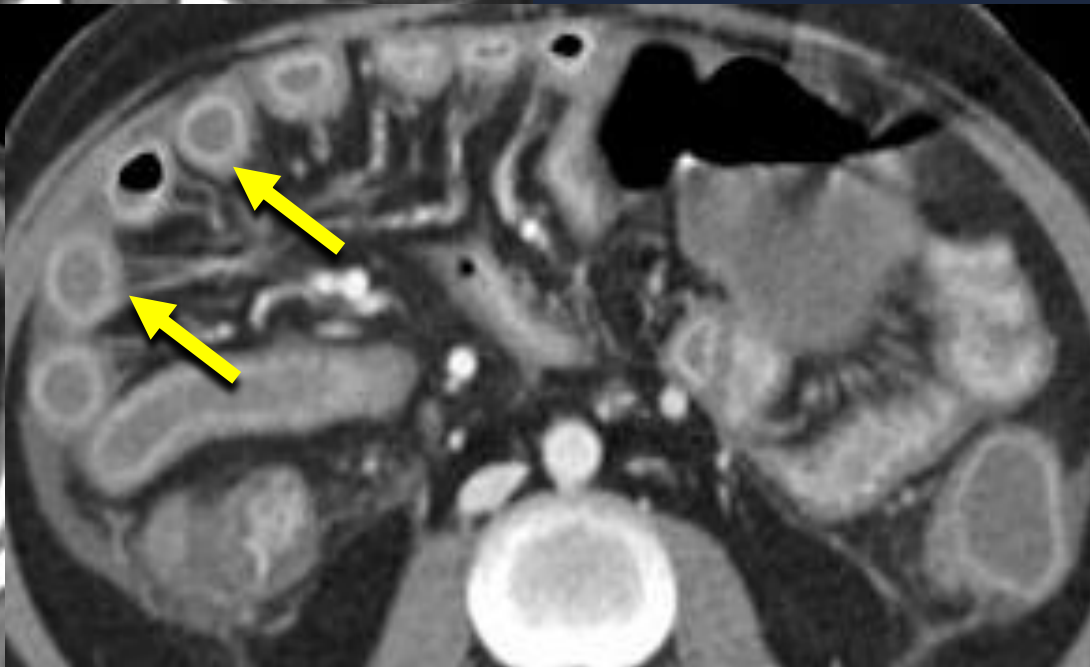
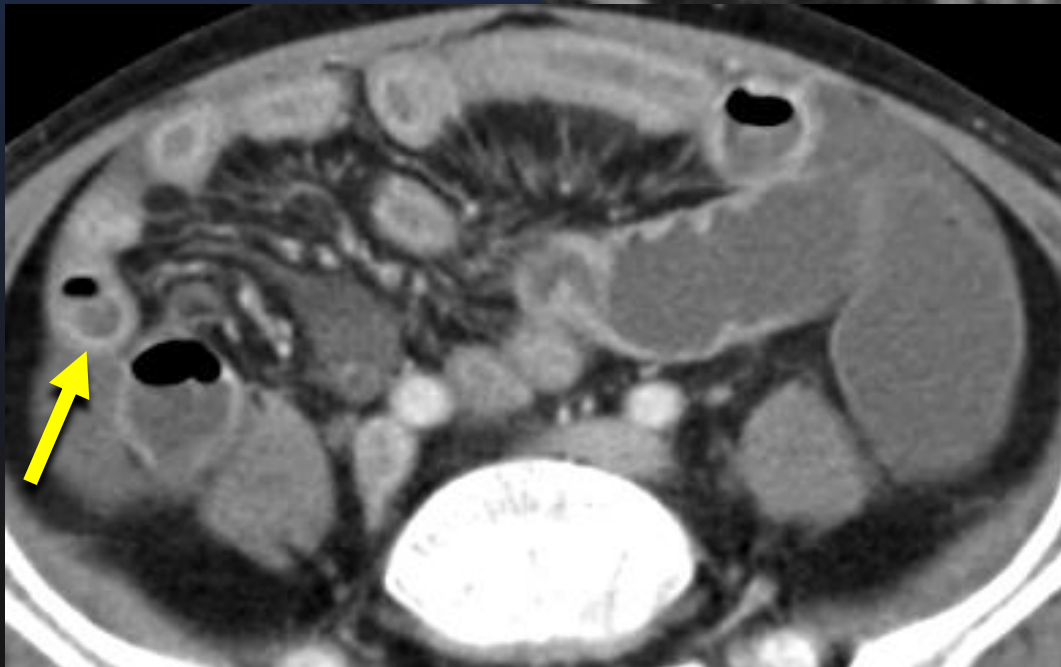
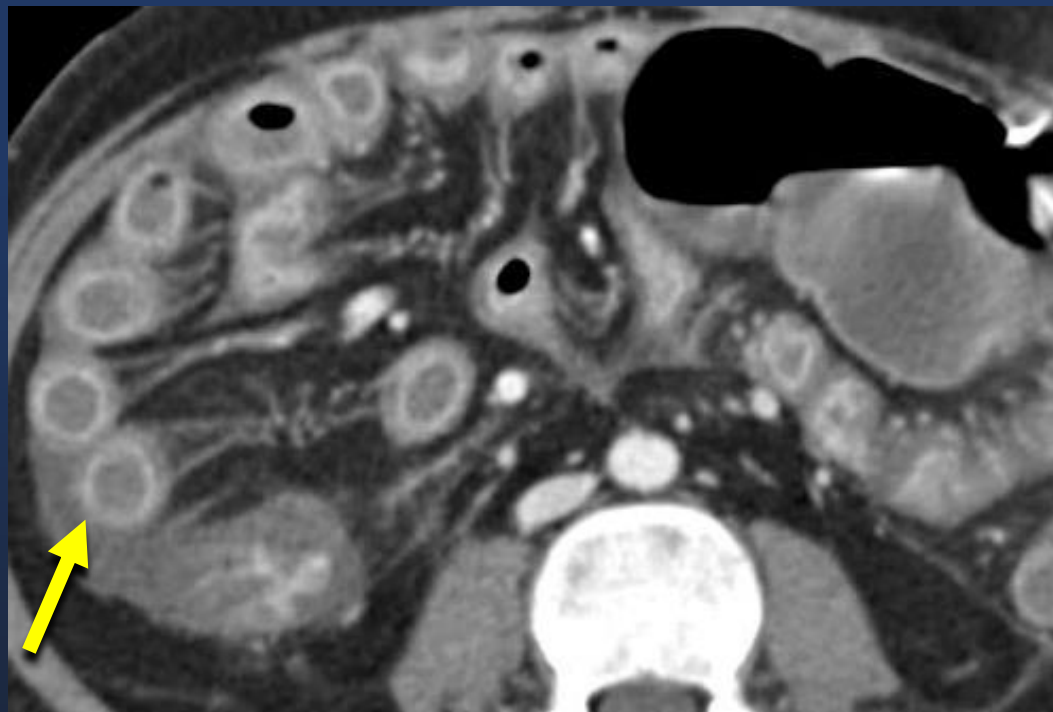


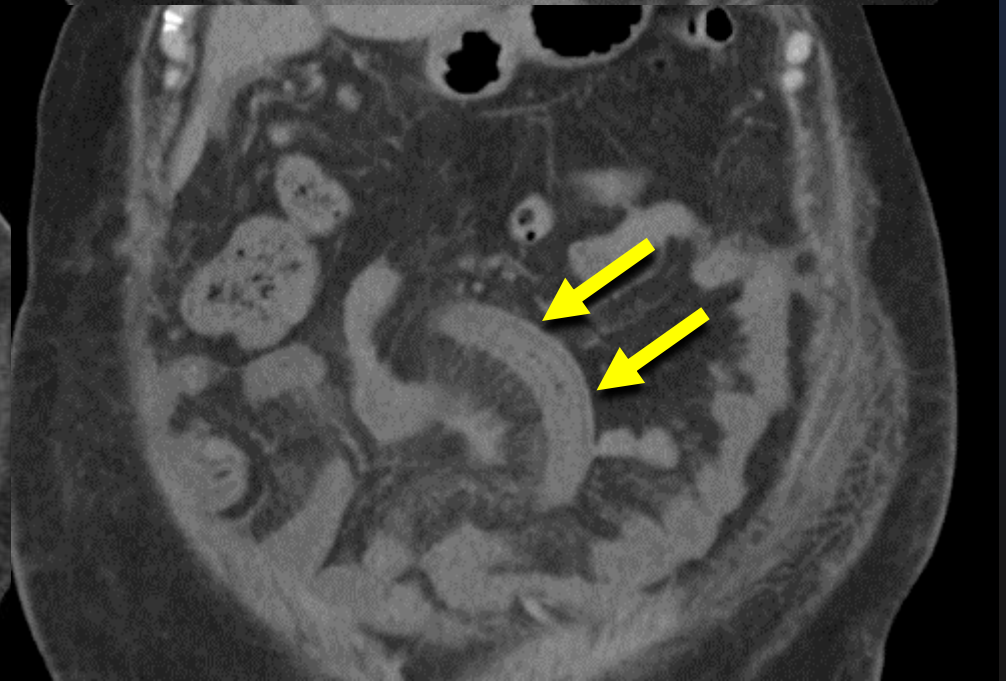
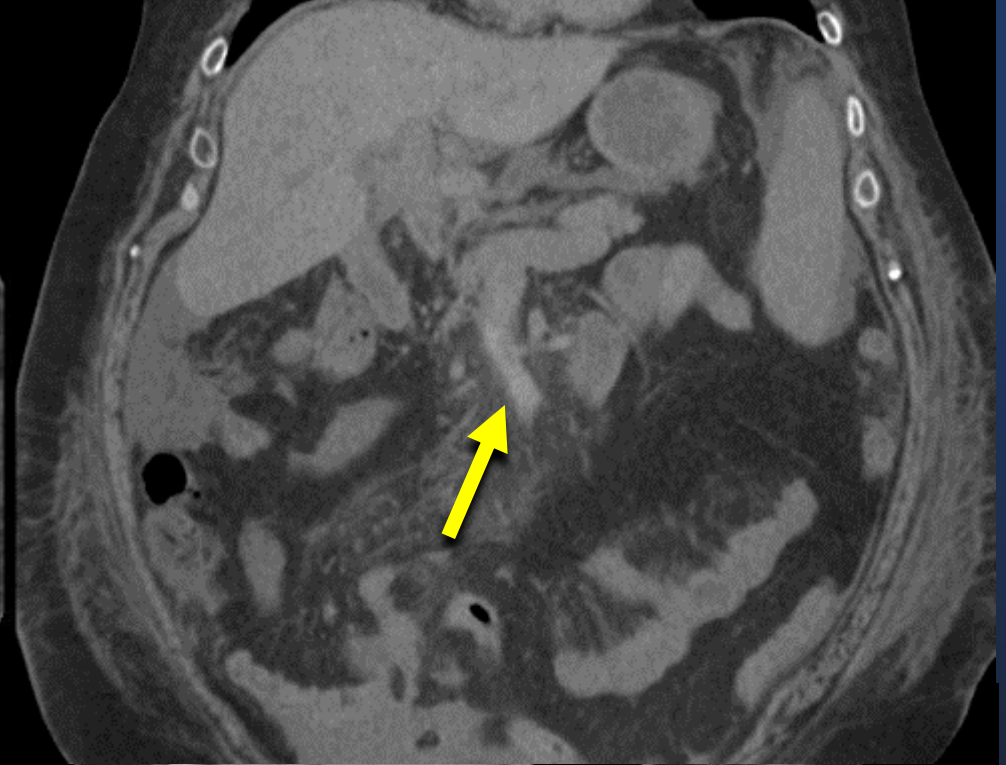


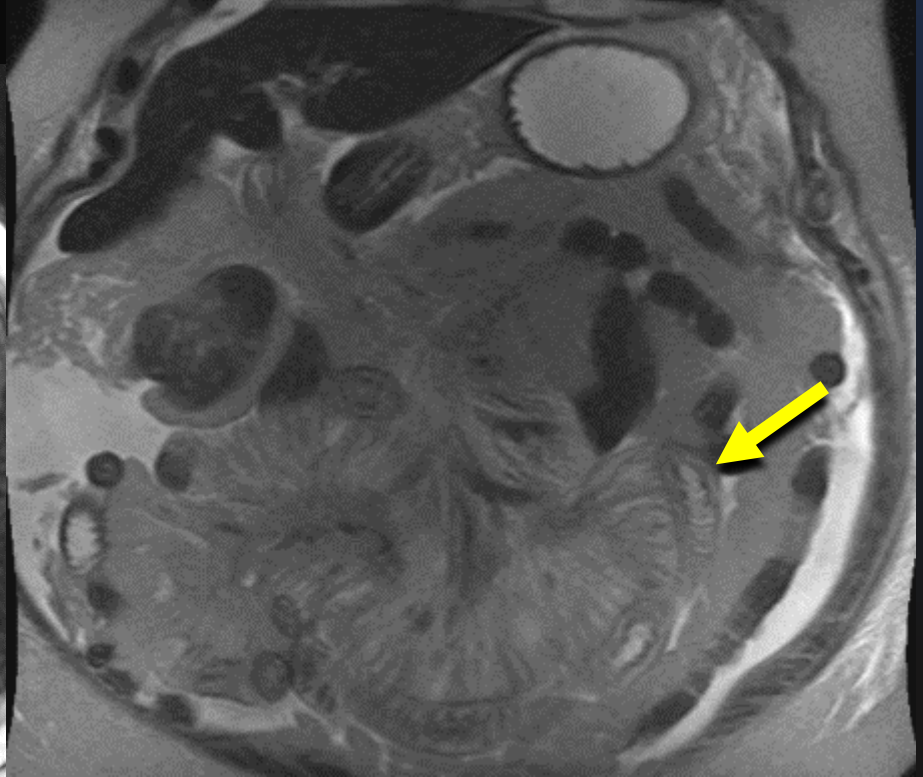
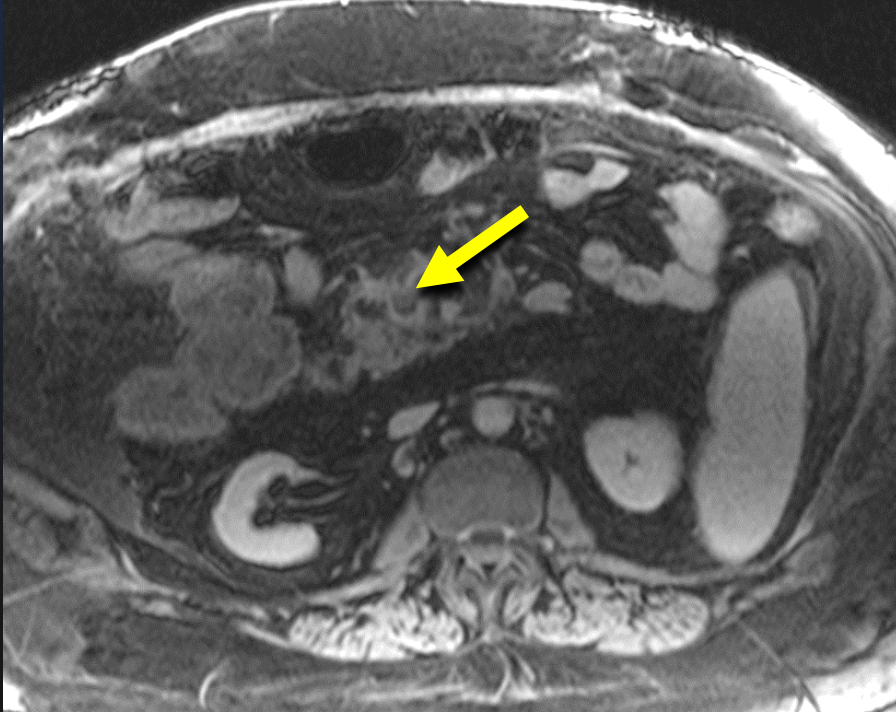
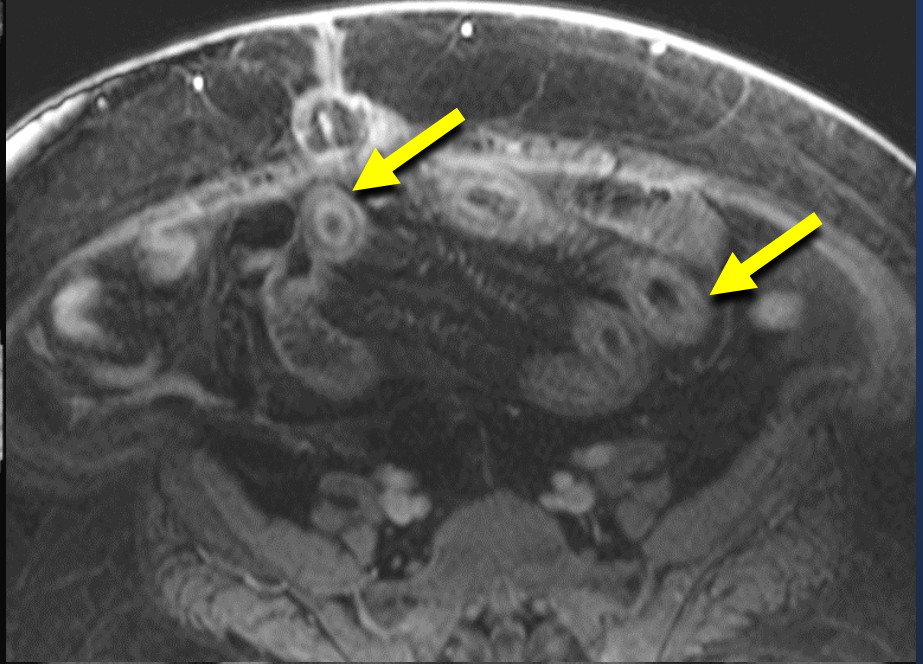
# Water Halo - Angioedema

- Classically described with ACE-I
- Imaging features:
  - Bowel wall thickening
    - Striation
    - Targetoid
  - Mesenteric edema
  - Ascites
  - Pneumatosis, perforation **very atypical**



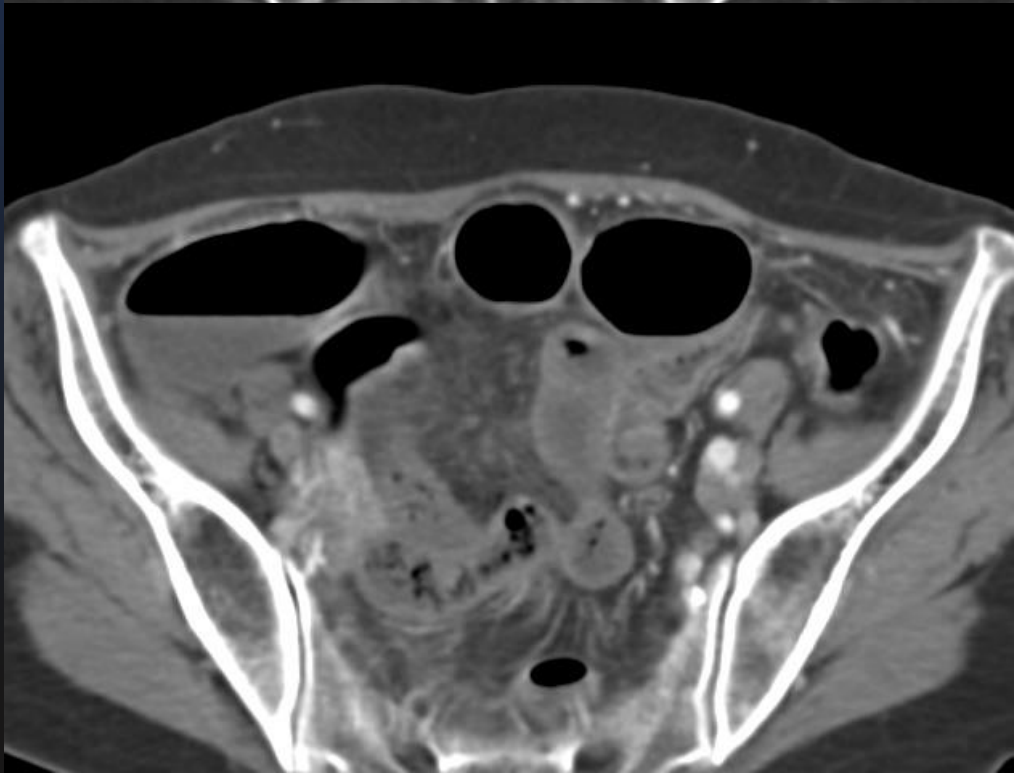
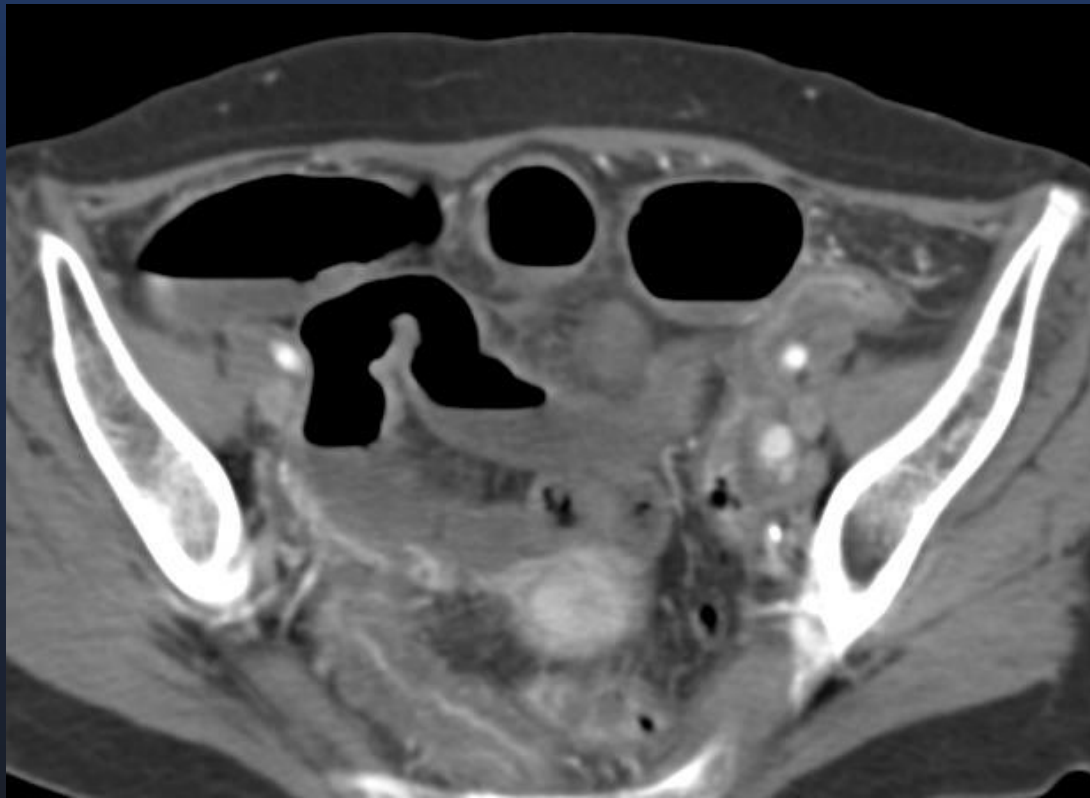
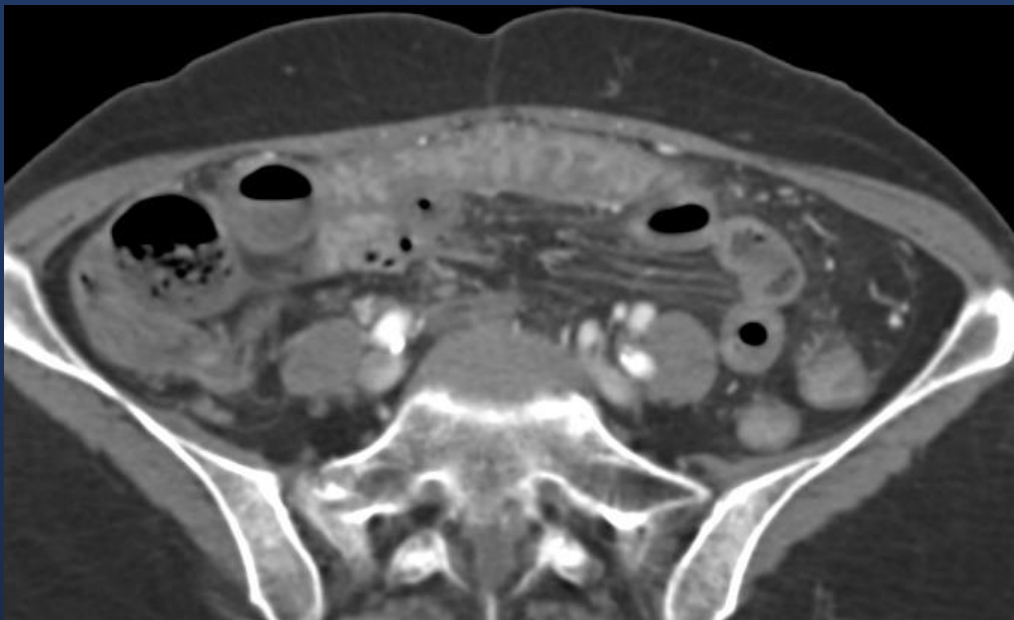








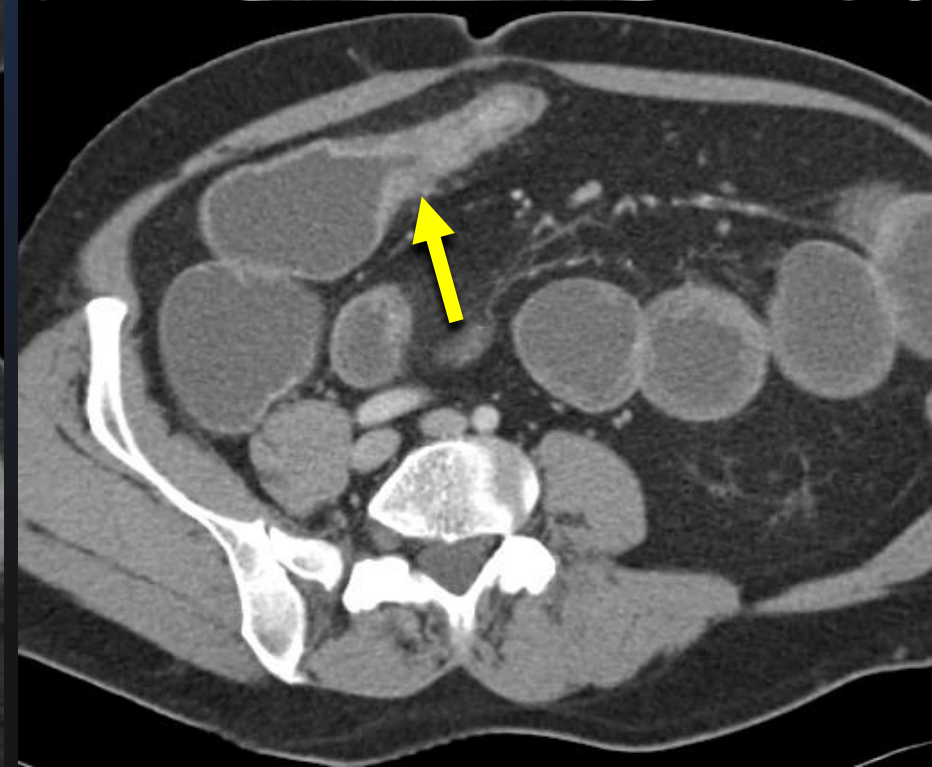
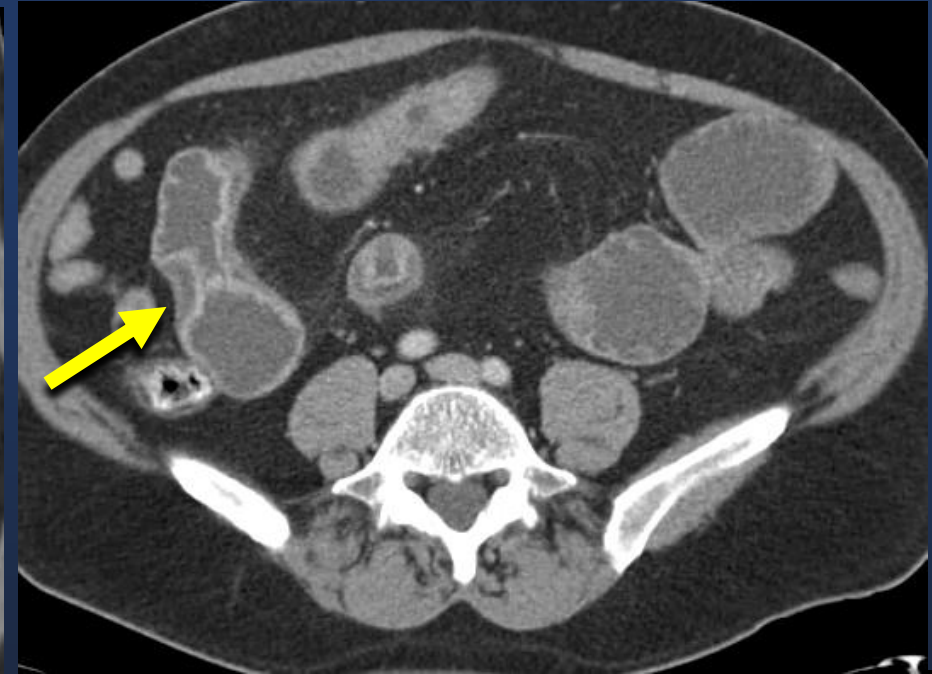


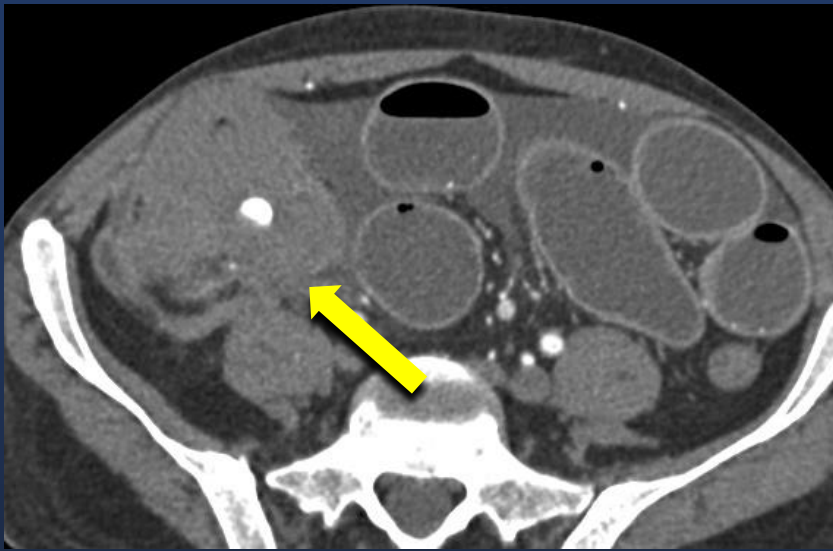


# “Gray” Attenuation

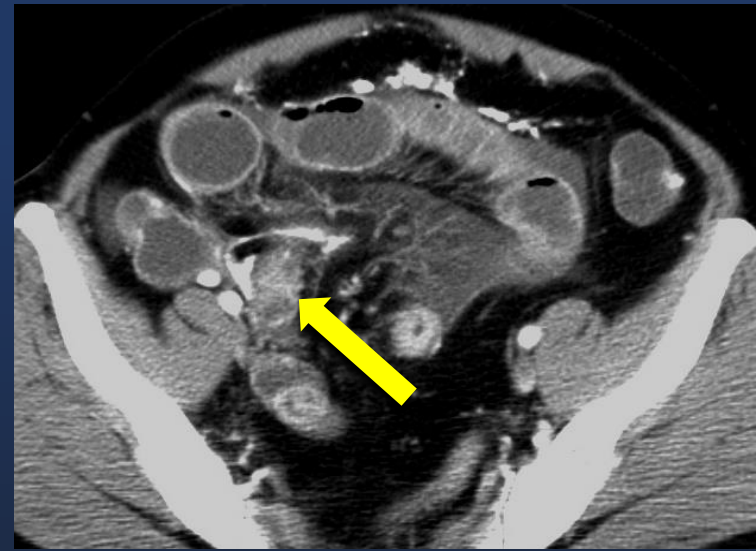
- Similar to skeletal muscle
- Loss of mural stratification
- Crohn disease (chronic)
- Ischemia
- Tumor



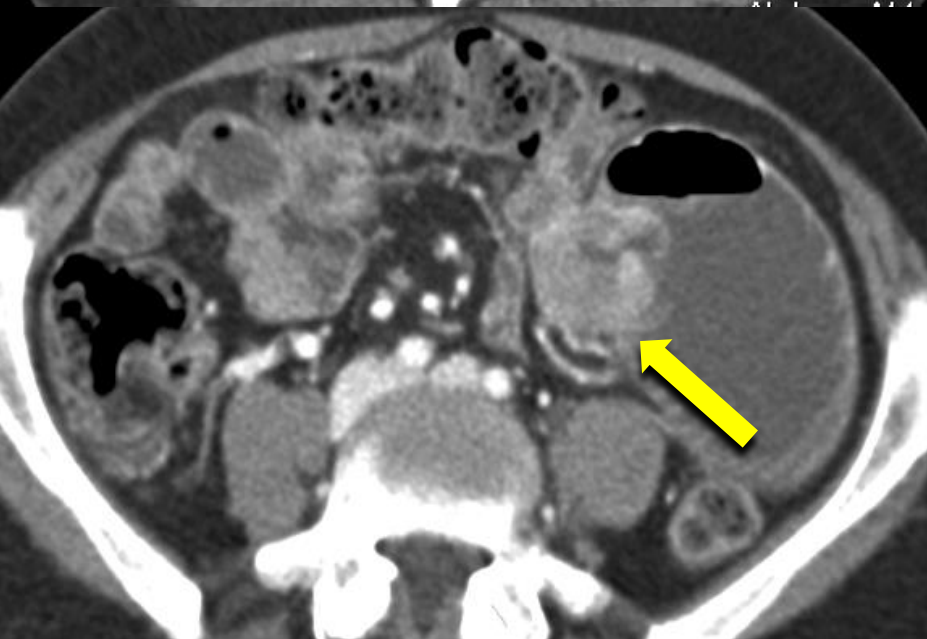




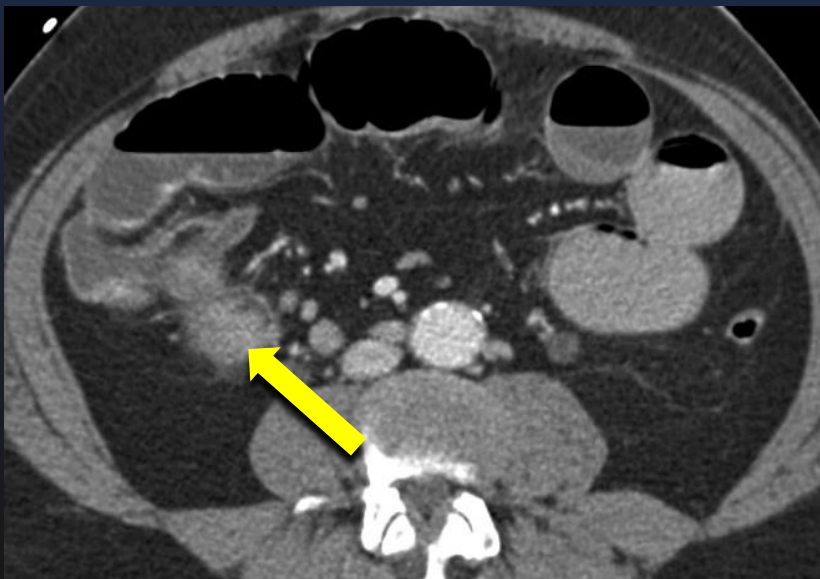
Granulocytic sarcoma



Ovarian cancer



Primary Jejunal Adenocarcinoma



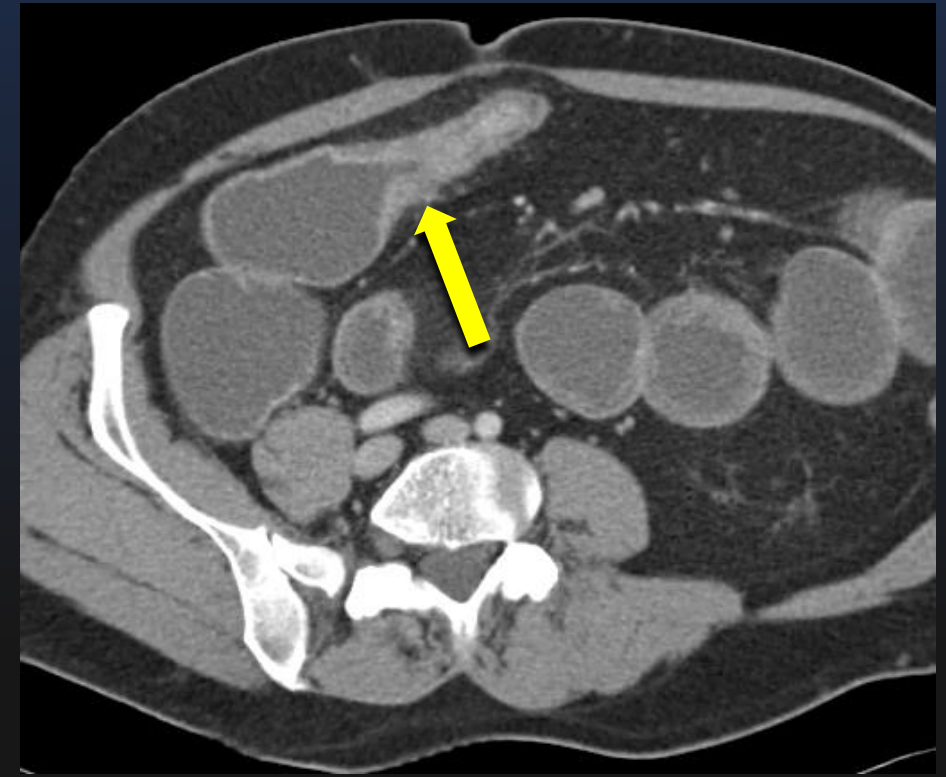
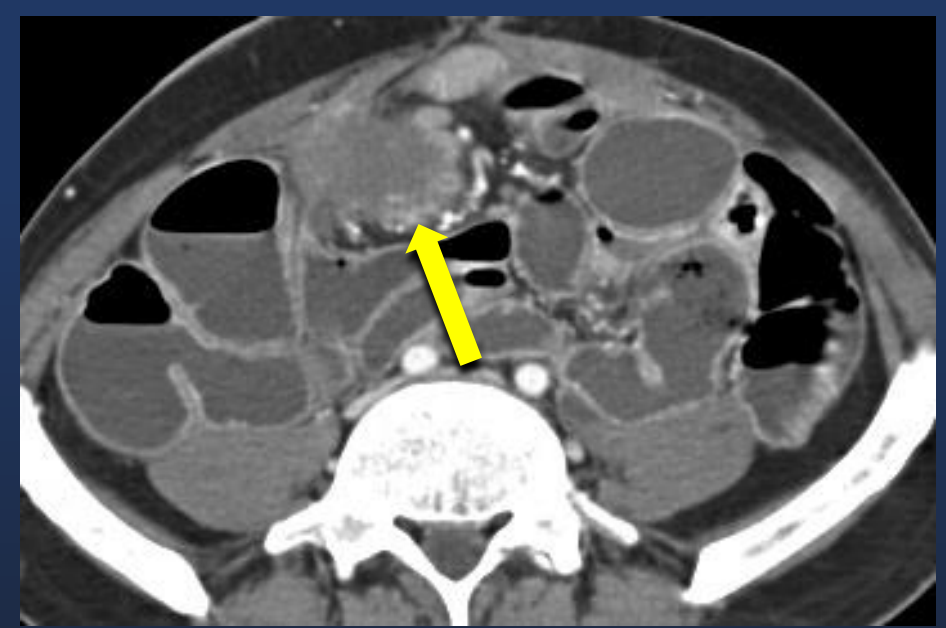
Urothelial cancer



Carcinoid tumor

# Causes of SBO - Tumor

- Metastases >>> primary
- Routes of metastasis:
  - Hematogenous
    - Melanoma
    - Lung
    - Breast
  - Peritoneal carcinomatosis
    - Ovarian
    - Colon
    - Gastric
- Extrinsic compression or intussusception



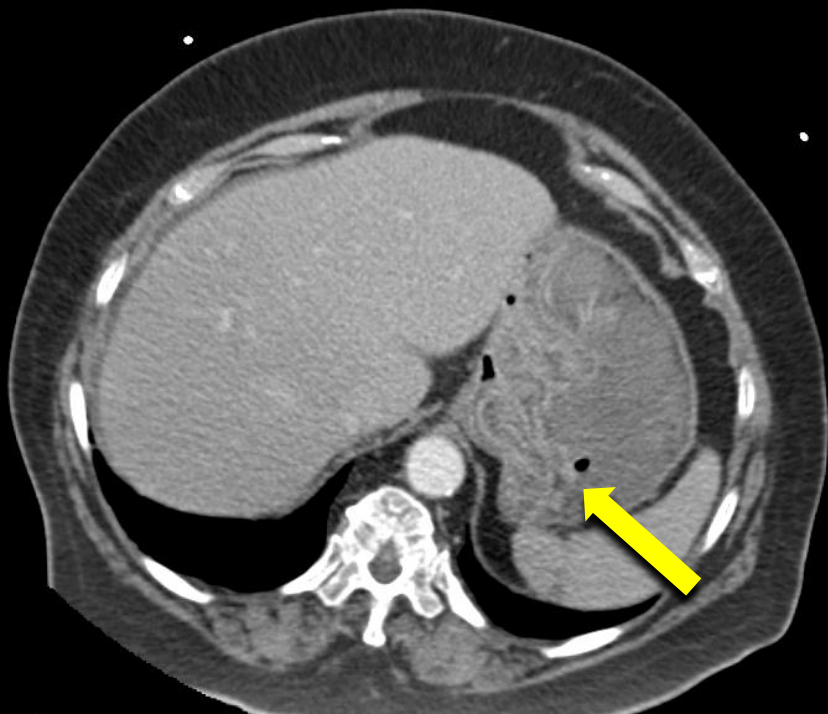


# Pseudofeces

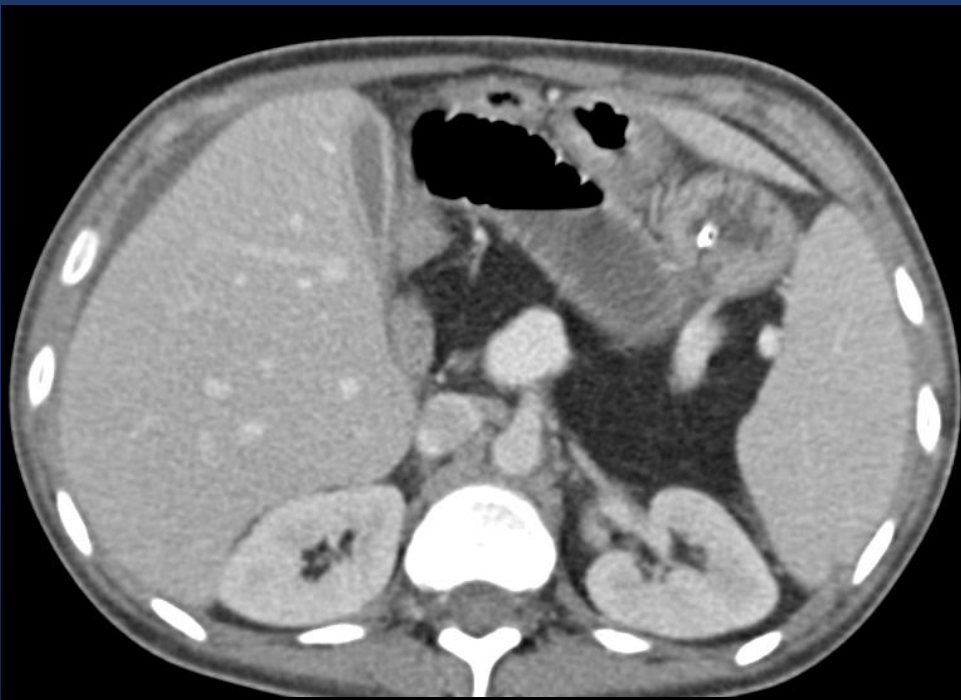
- Feculent material with gas in small bowel lumen
- Subacute or chronic obstruction?
- Meaning?
- Occurs just proximal to TP
- Not specific for obstruction...
  - Jacobs et al Clin Radiology 2007
    - 68% of cases with pseudofeces nonobstructive

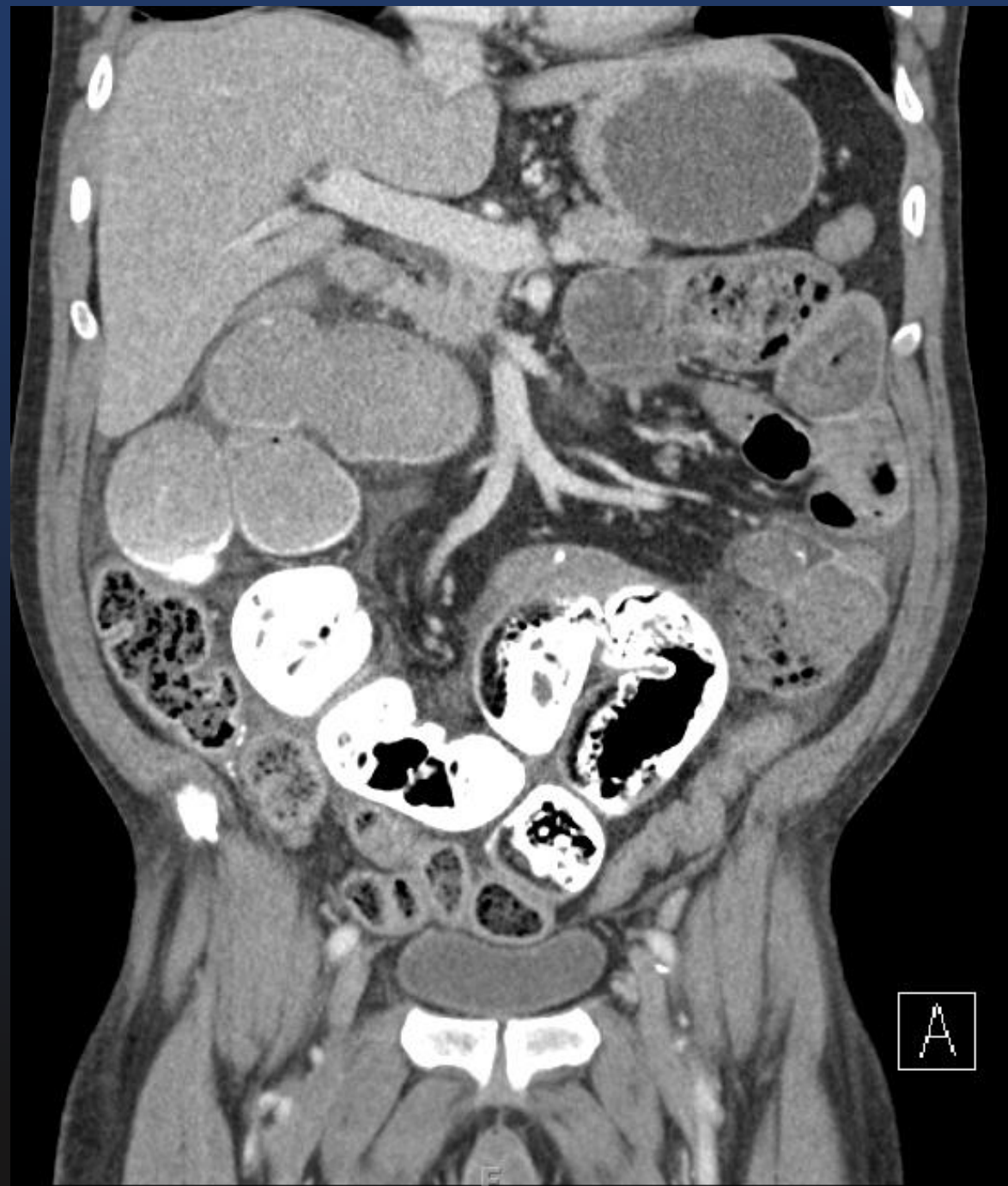
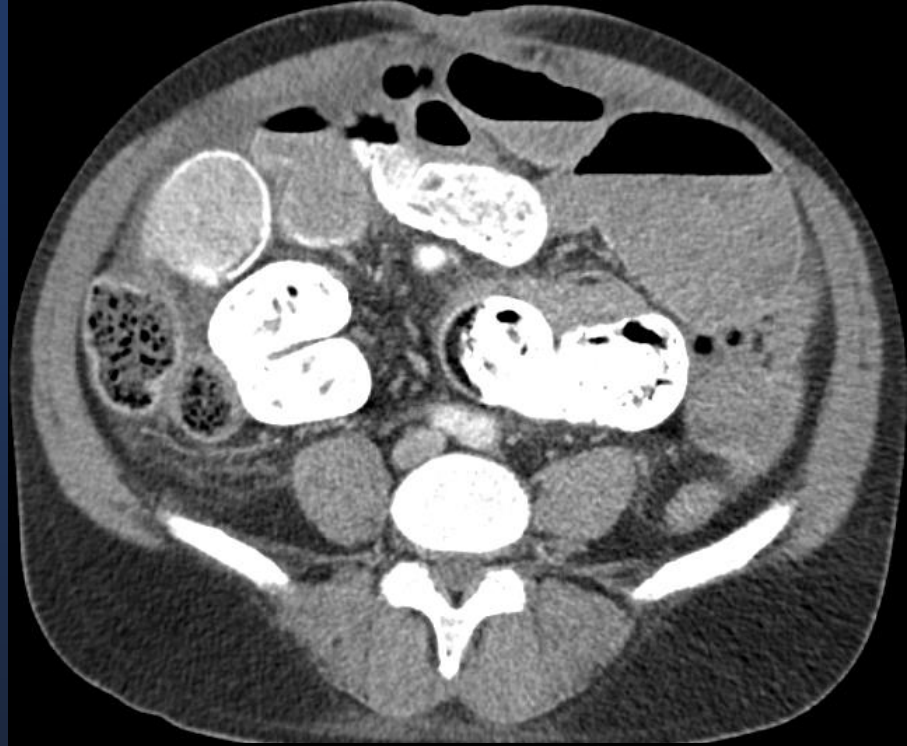


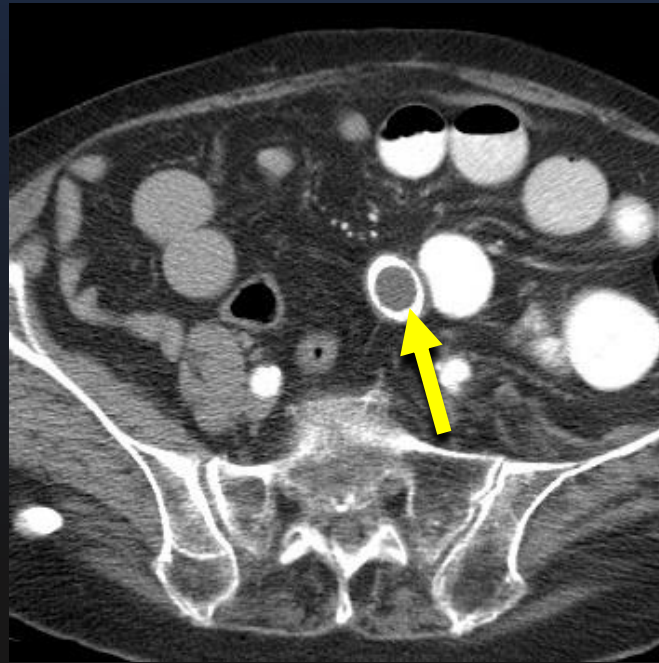
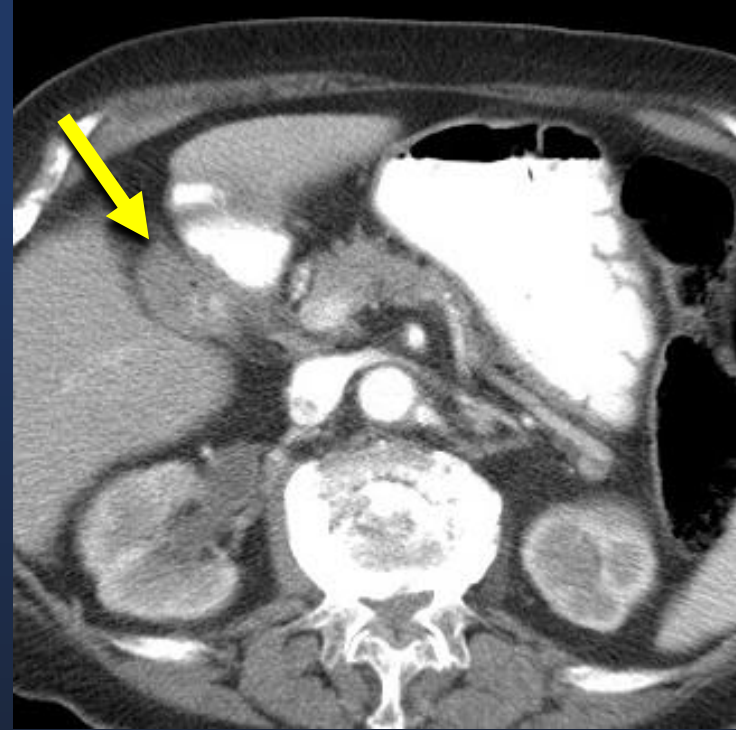


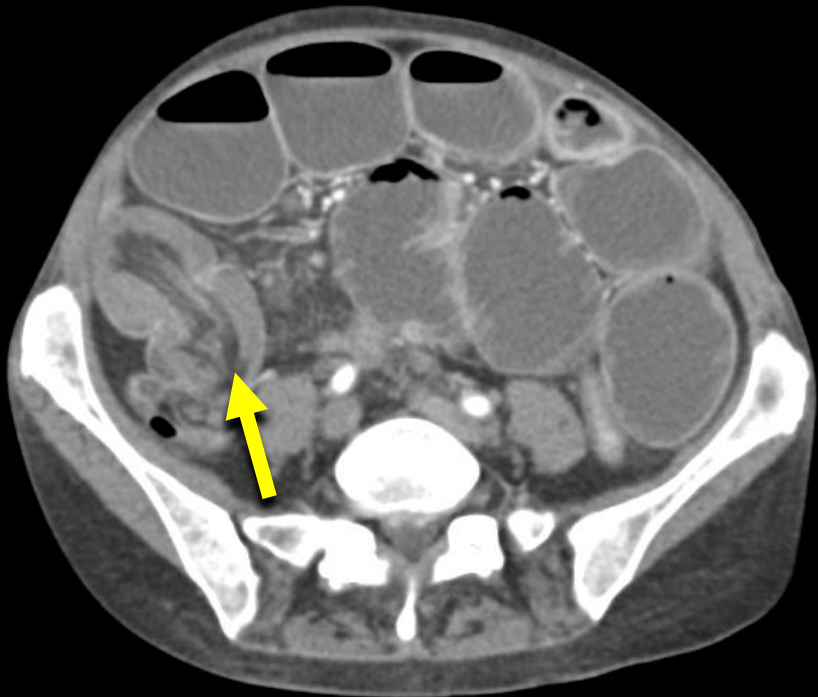
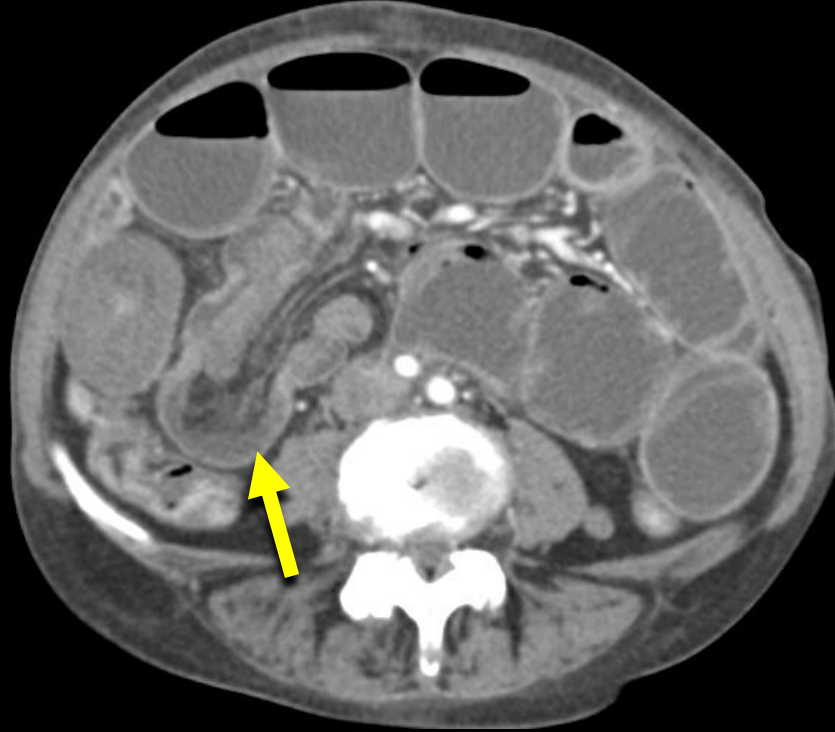


Study Date = 20  
Study Time =  
Rea





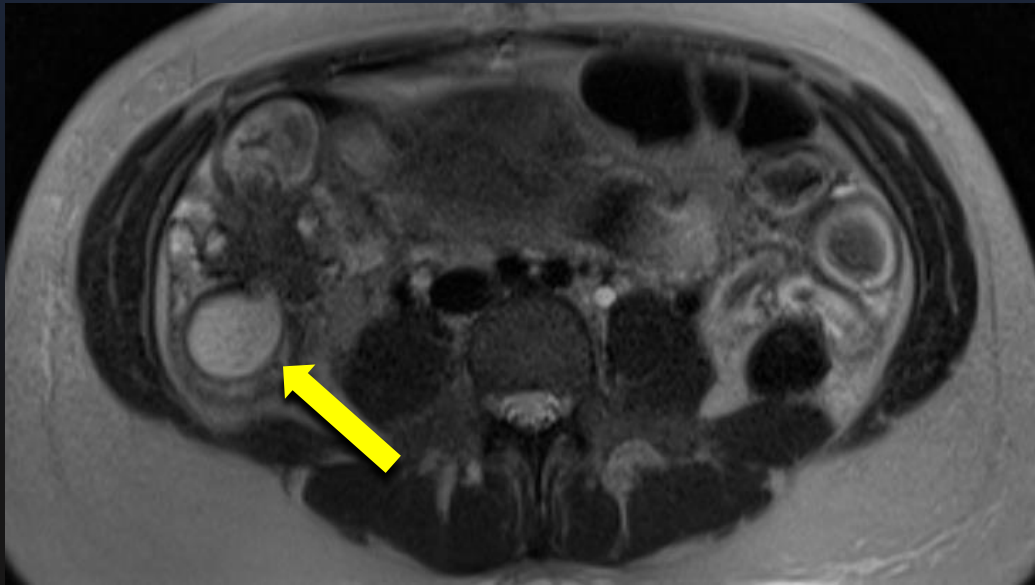
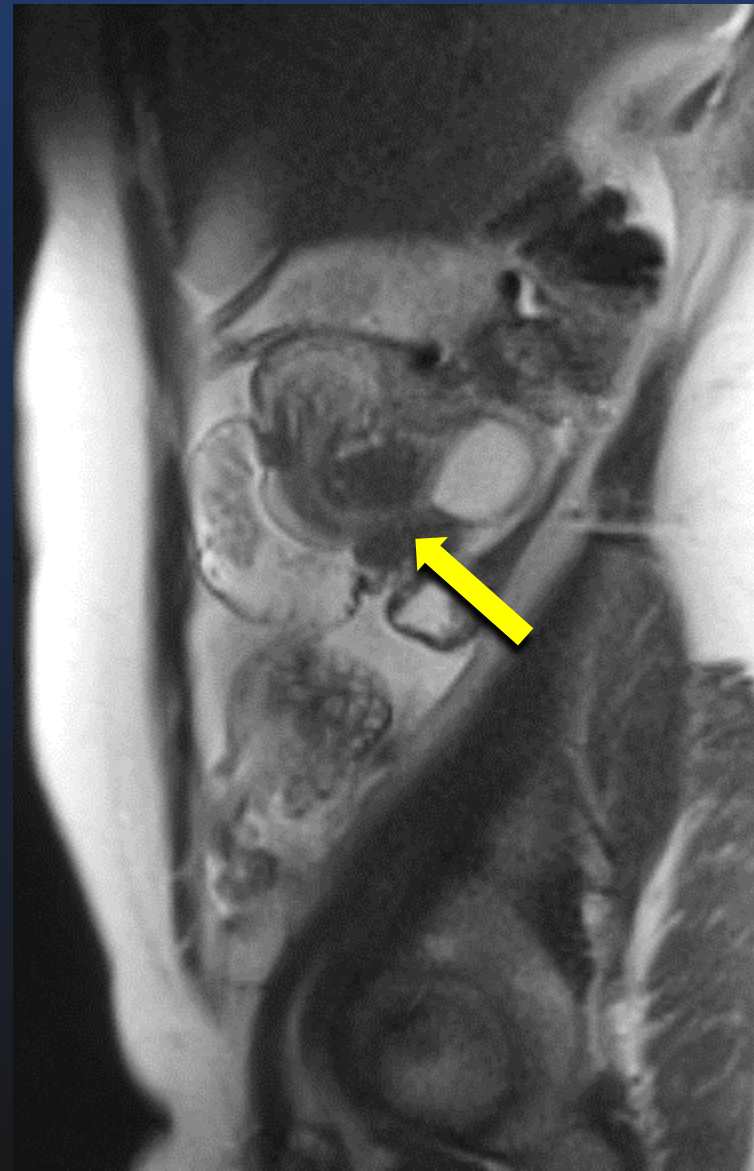
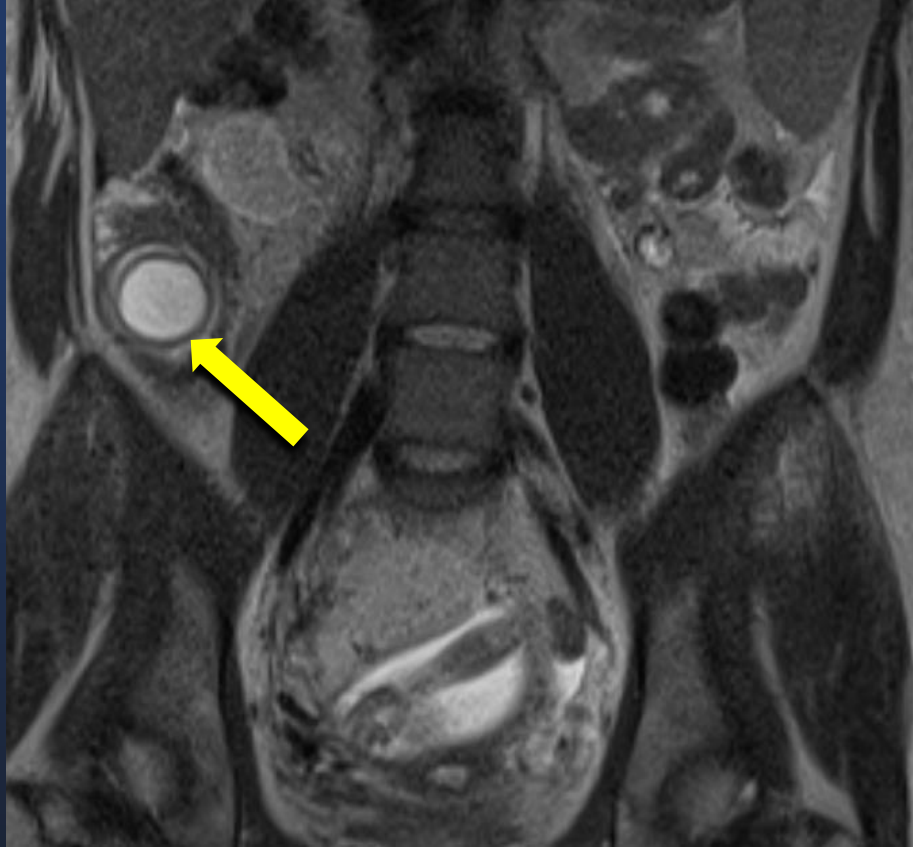


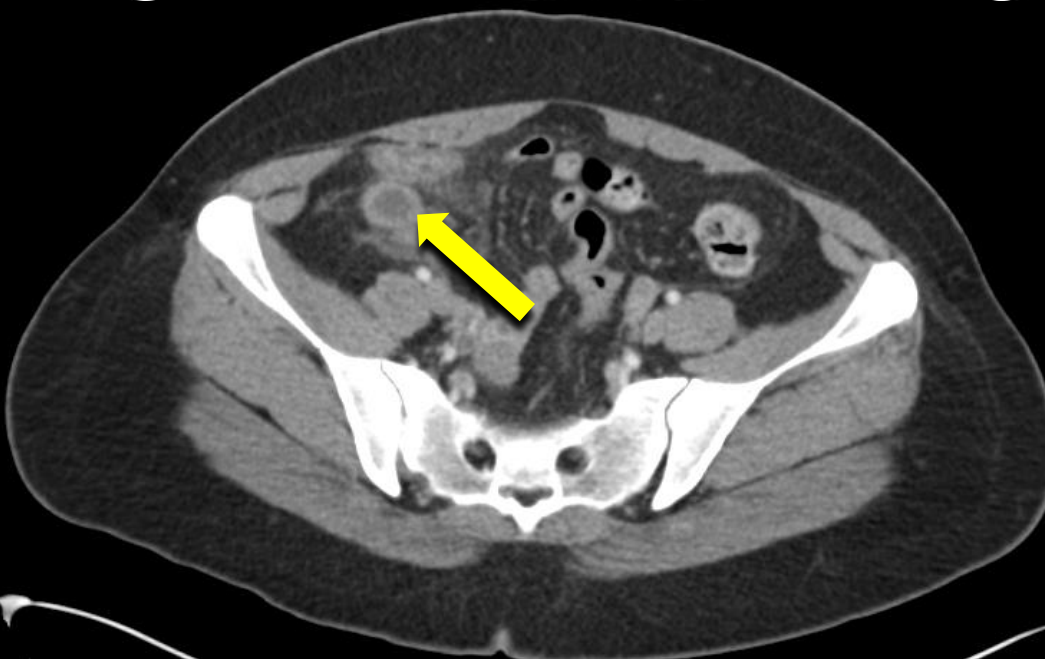
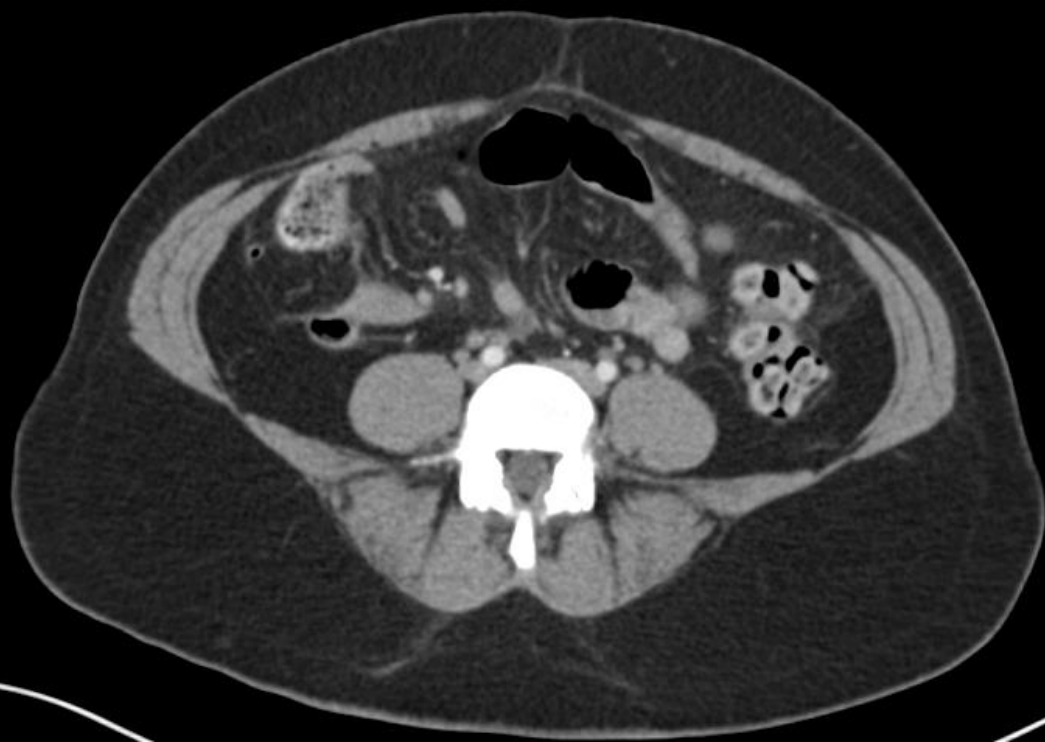


# Bowel contents as clues to SBO:

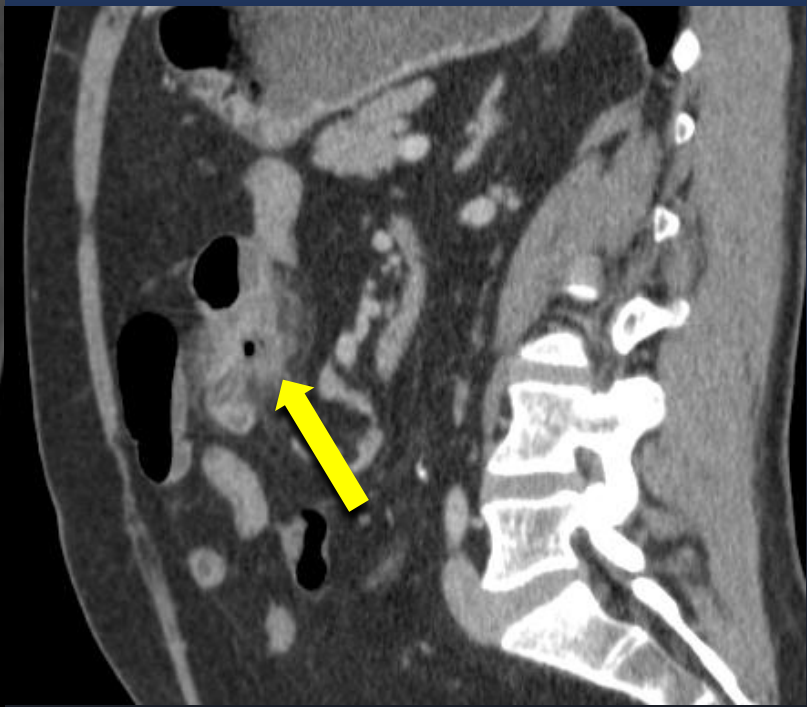
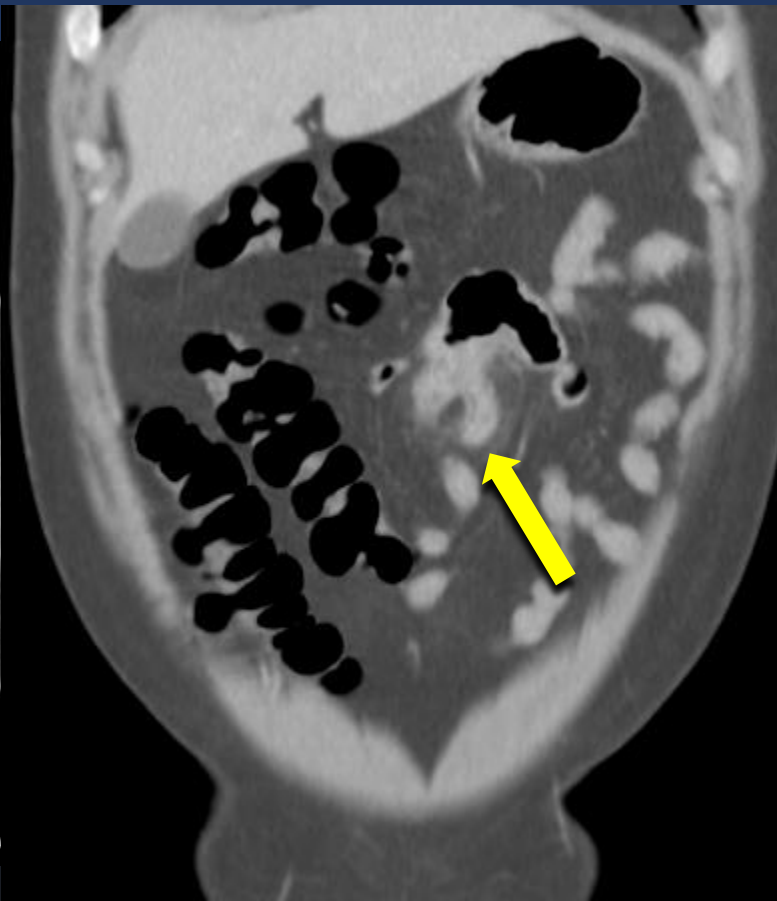
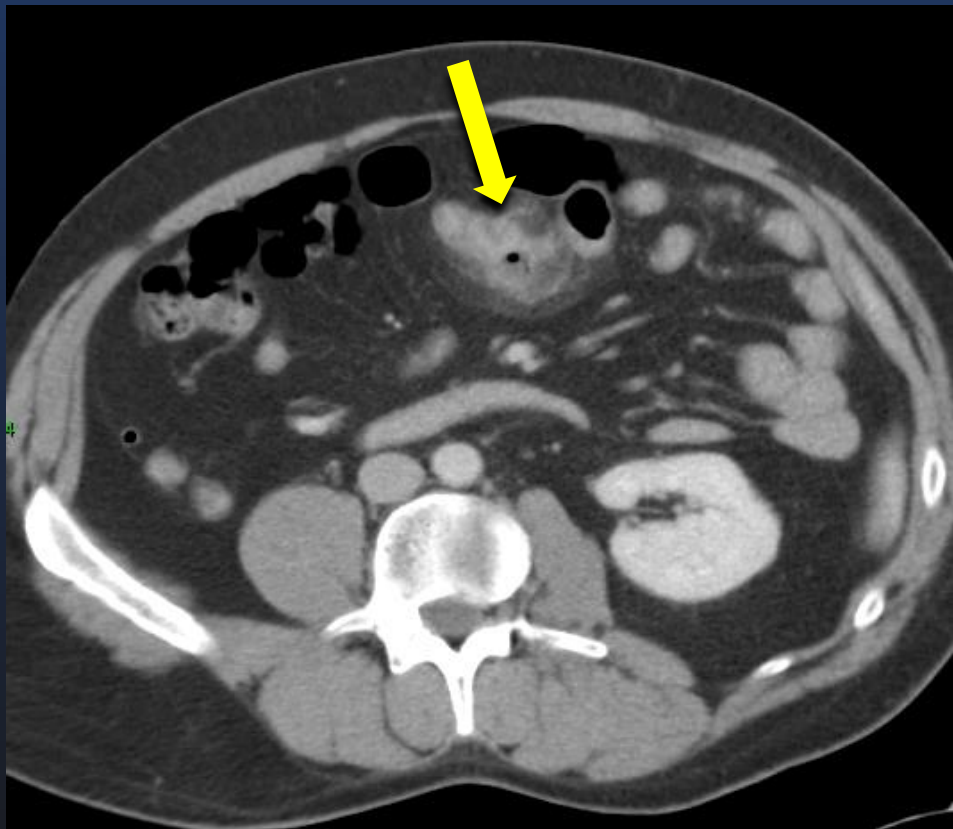
- Pseudofeces
- Bezoars
- Intussusception
- Gallstone Ileus

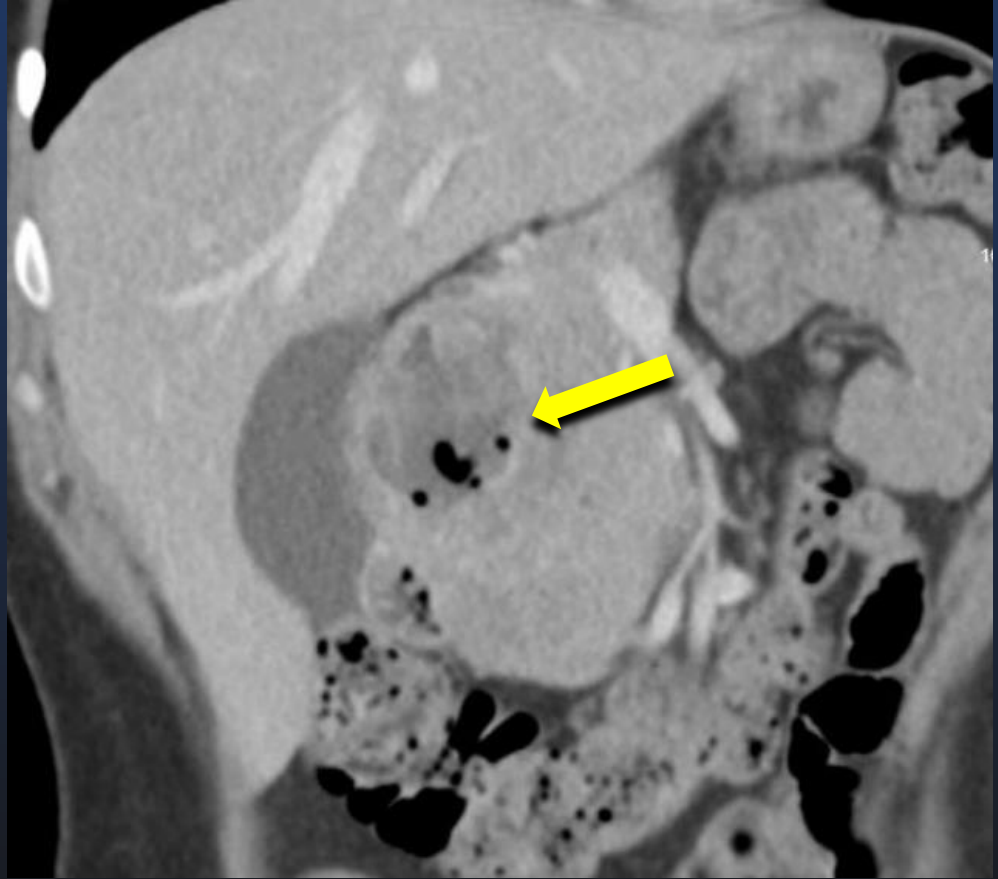
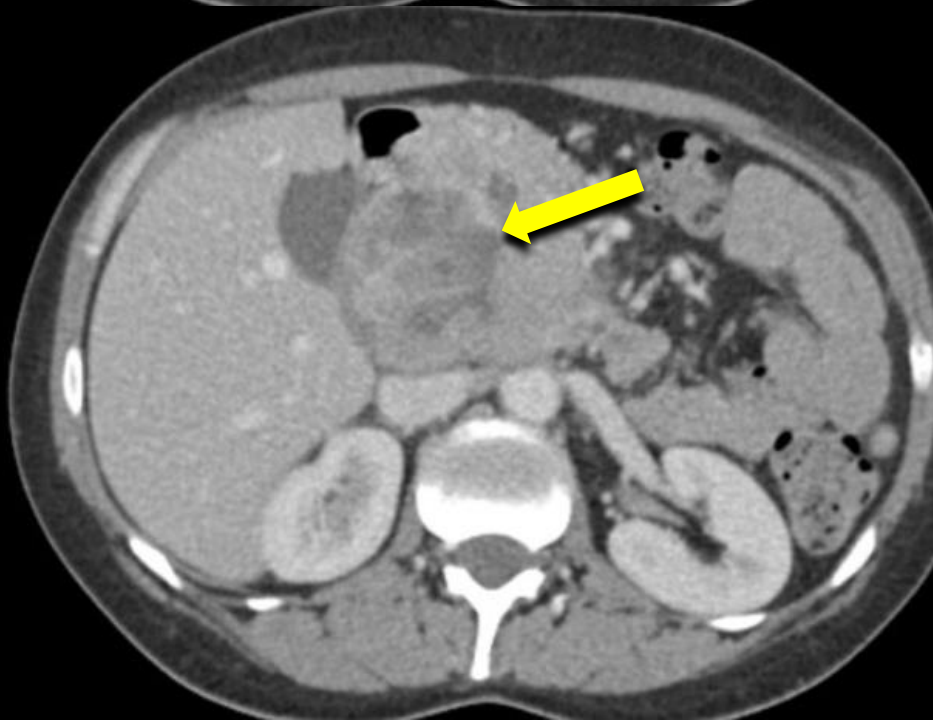
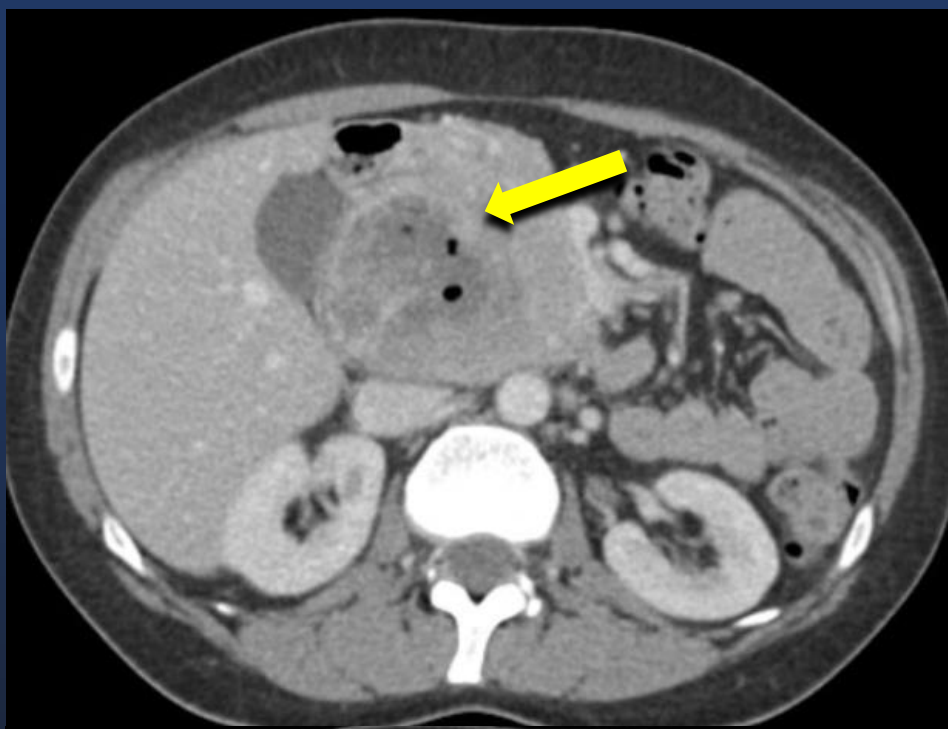


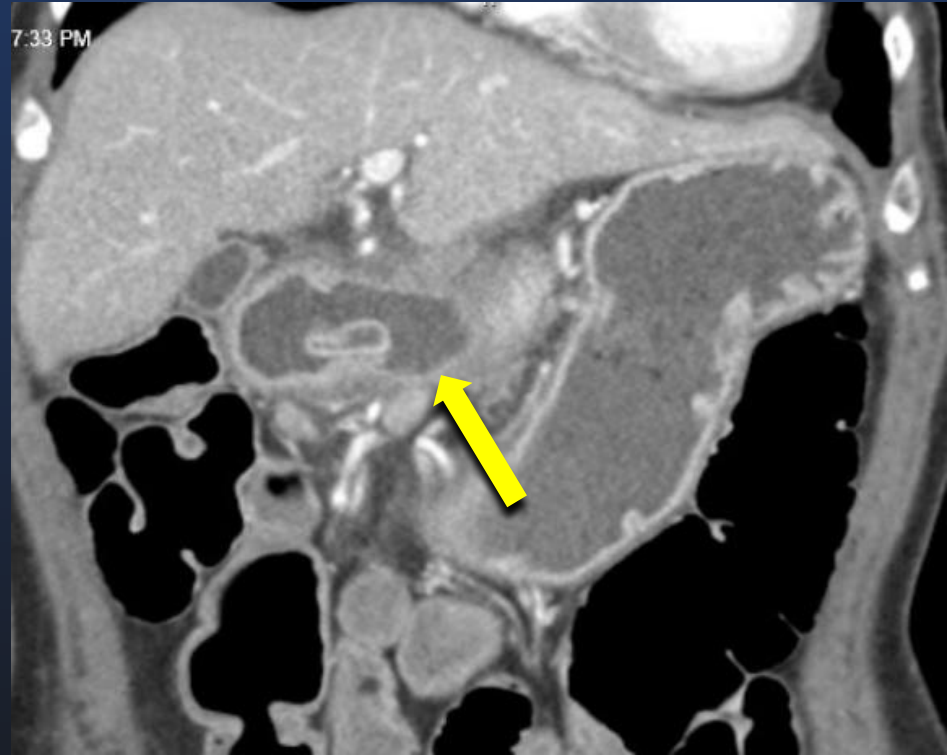
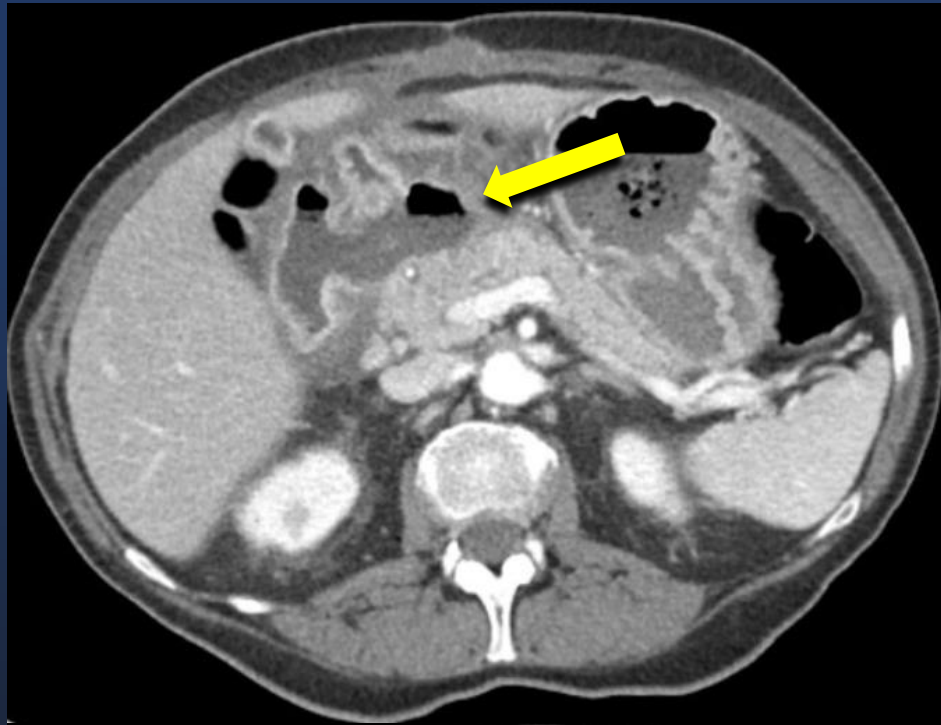






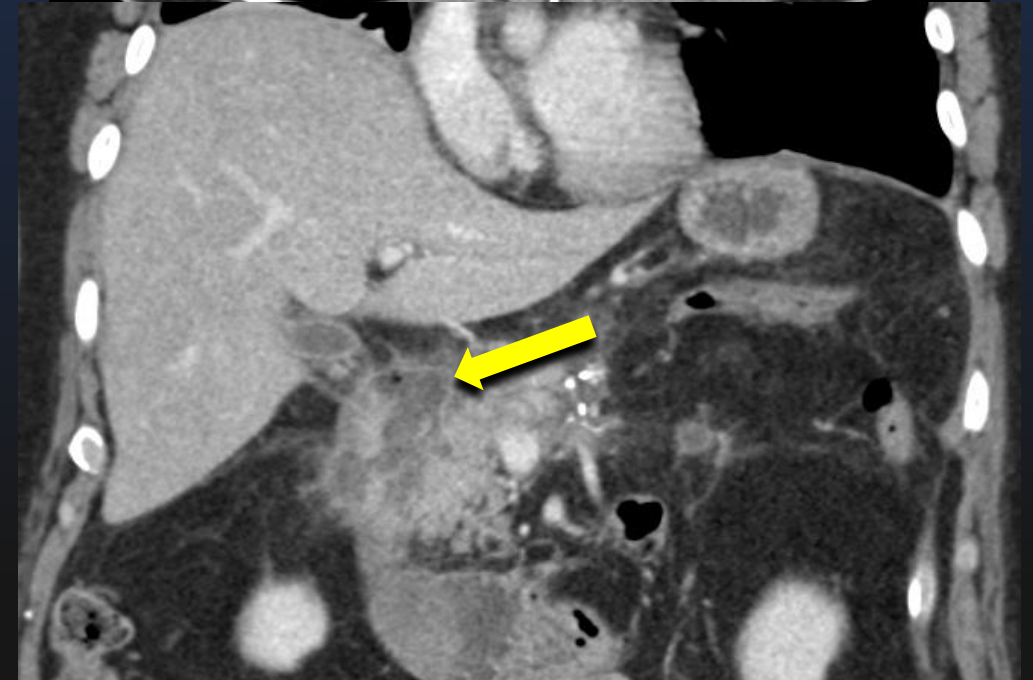
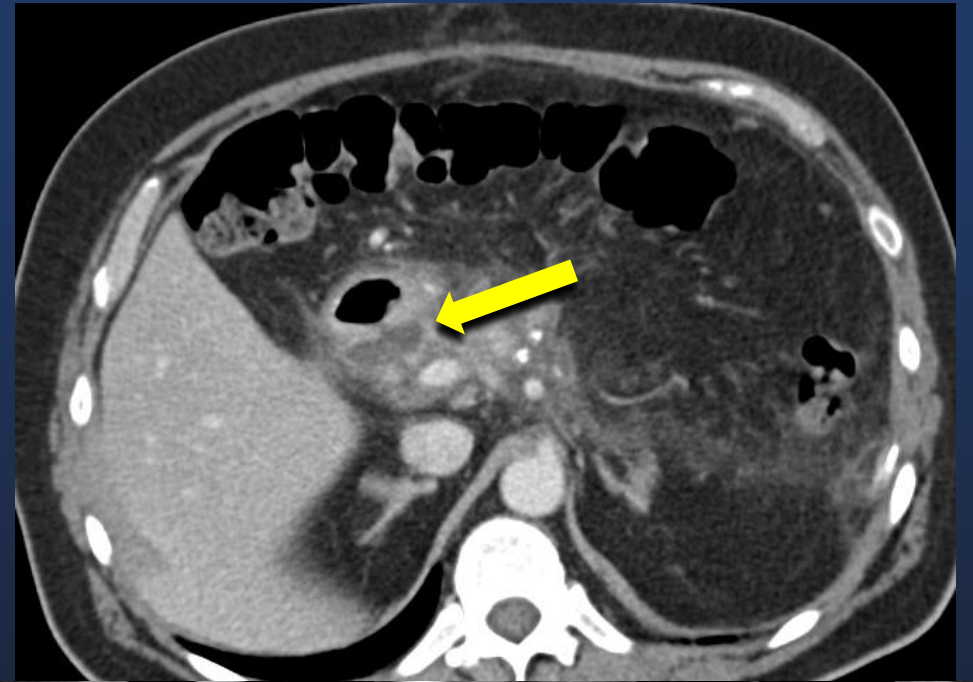


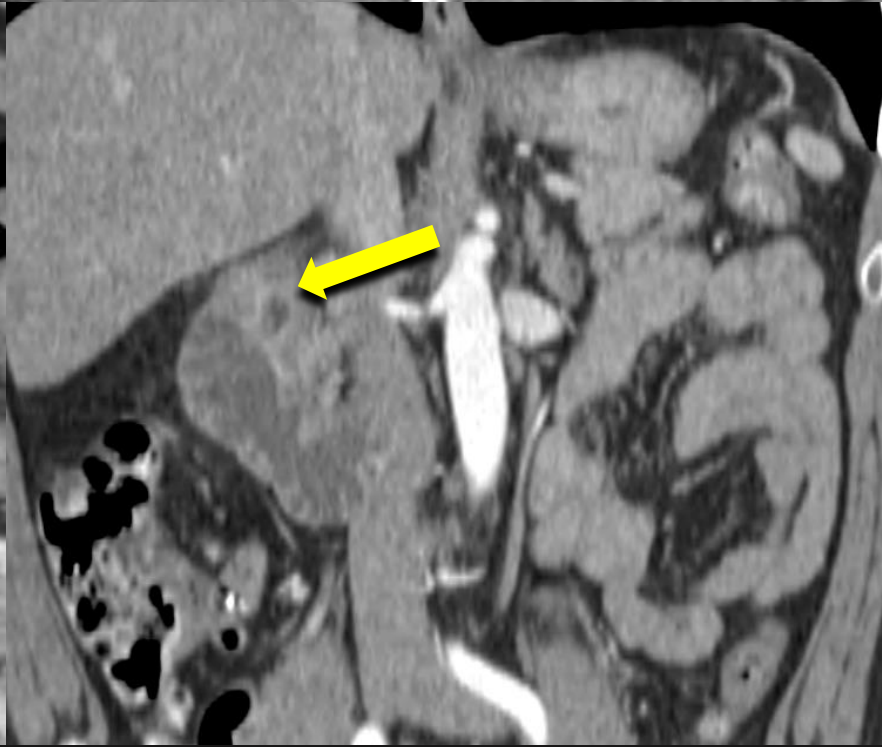
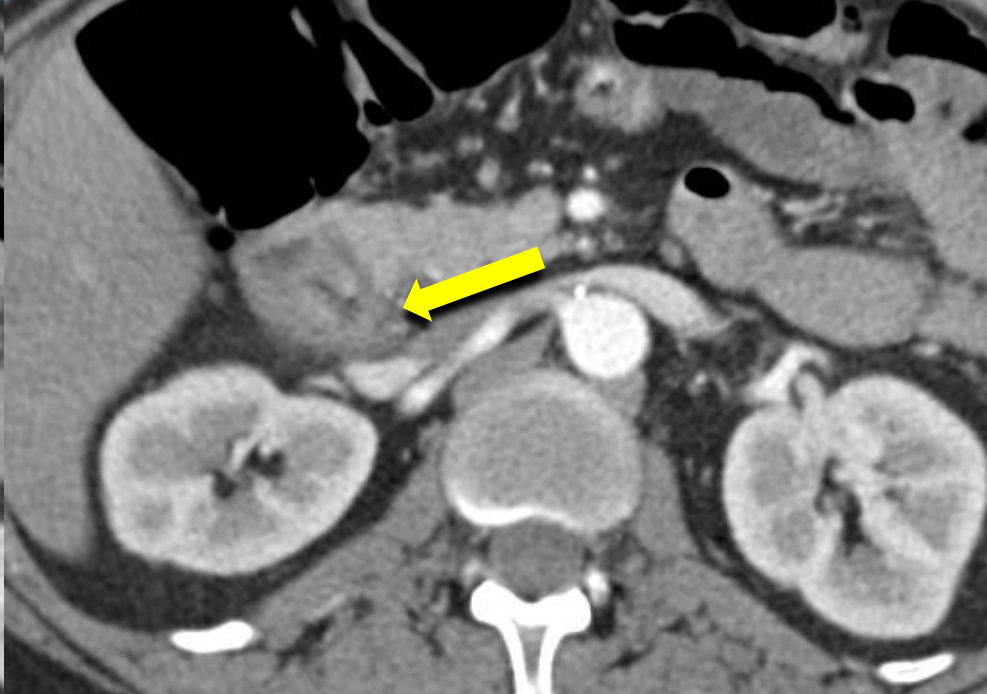
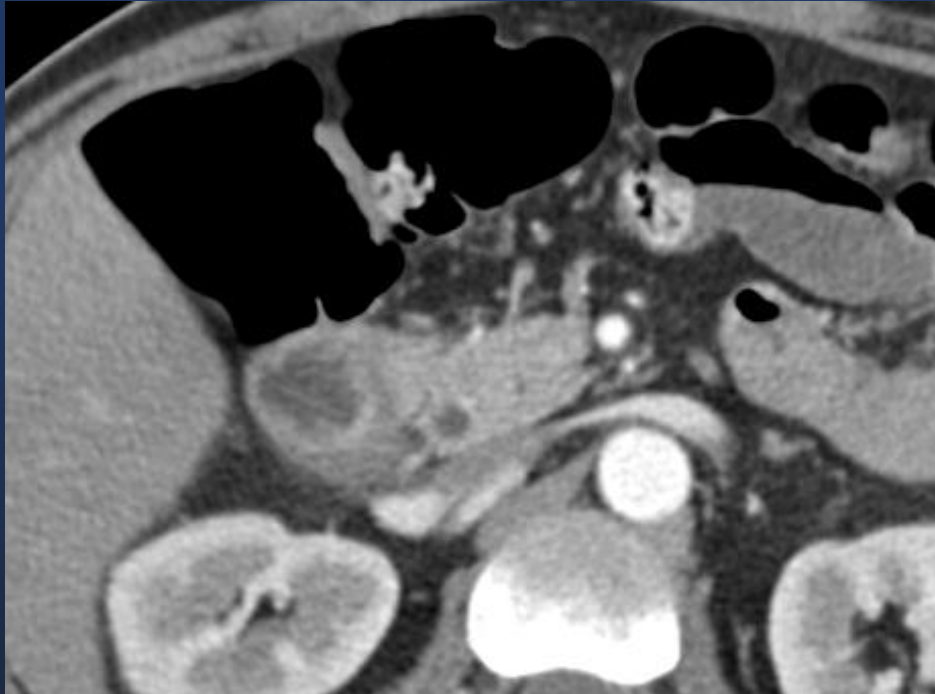




# Peptic Ulcer Disease

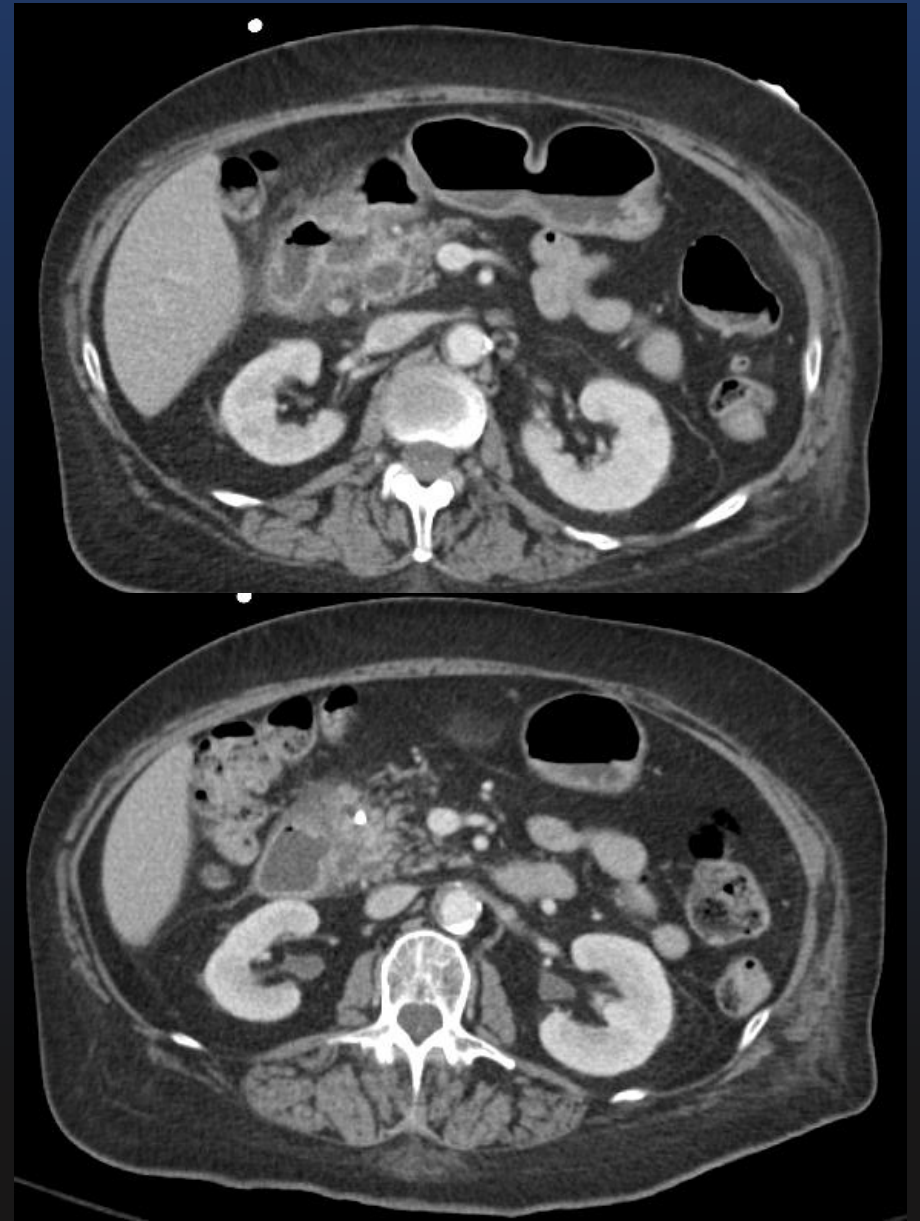
- Duo more common site than gastric ulcers
- Majority (~95%) occur in the duodenal bulb
- Most solitary
- Very low malignant potential
- Typically due to increased peptic acid secretion

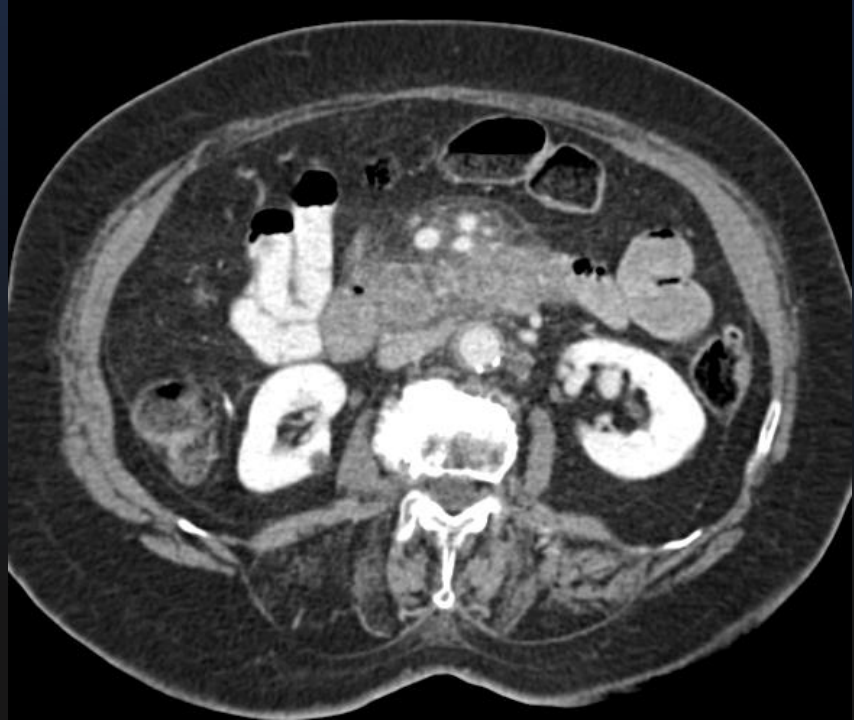
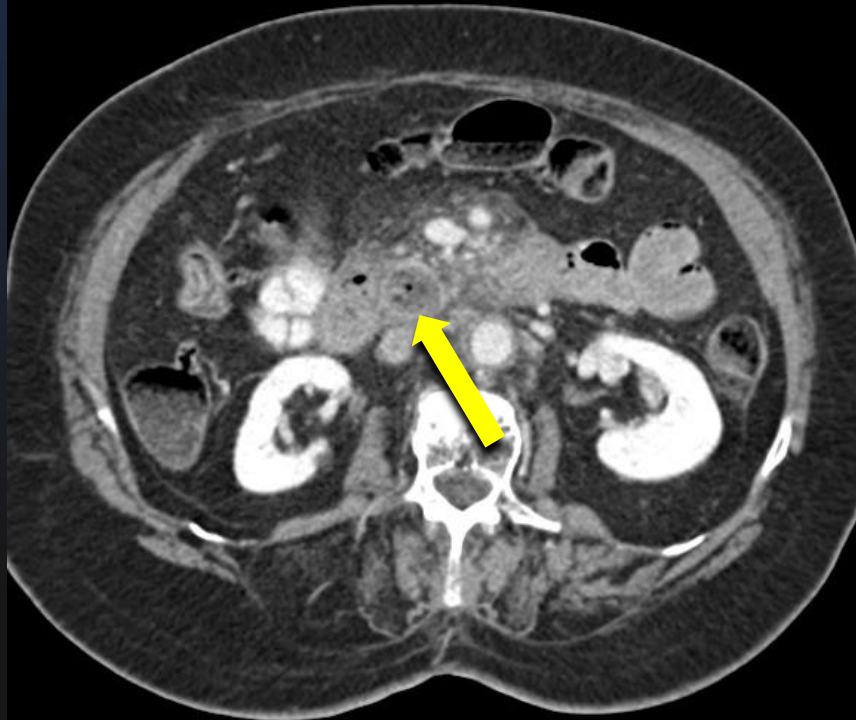
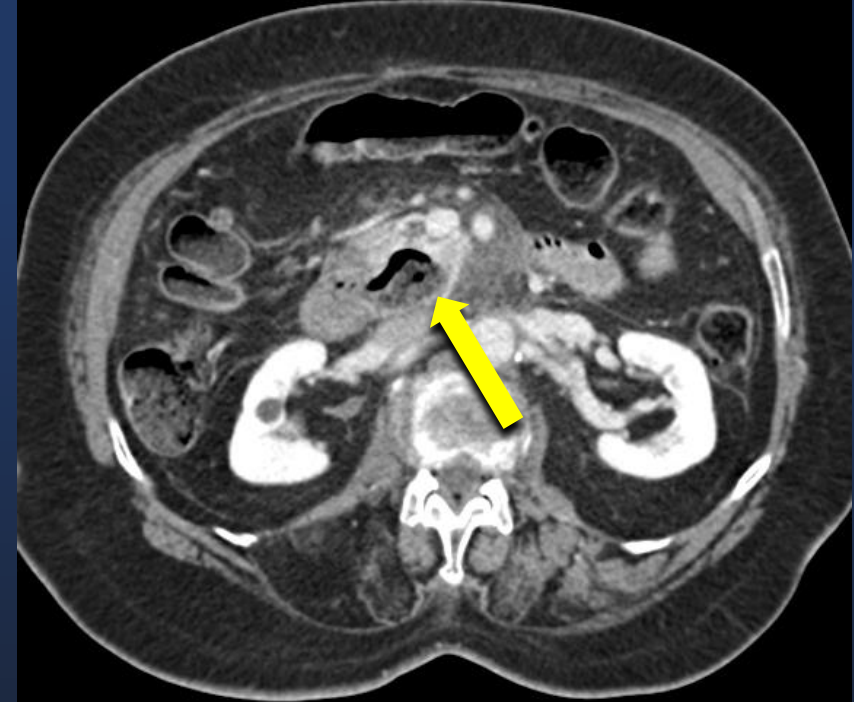
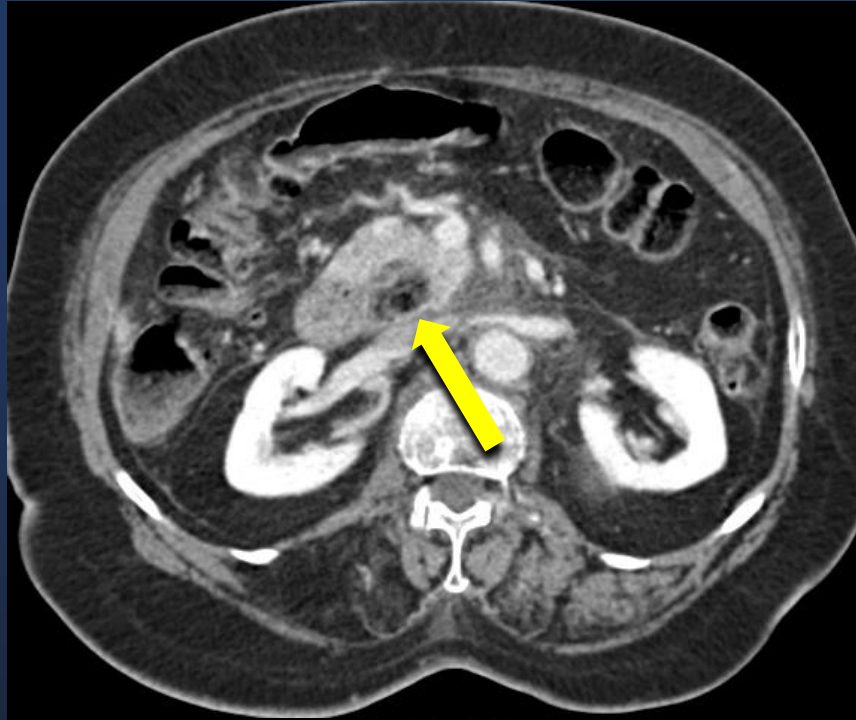


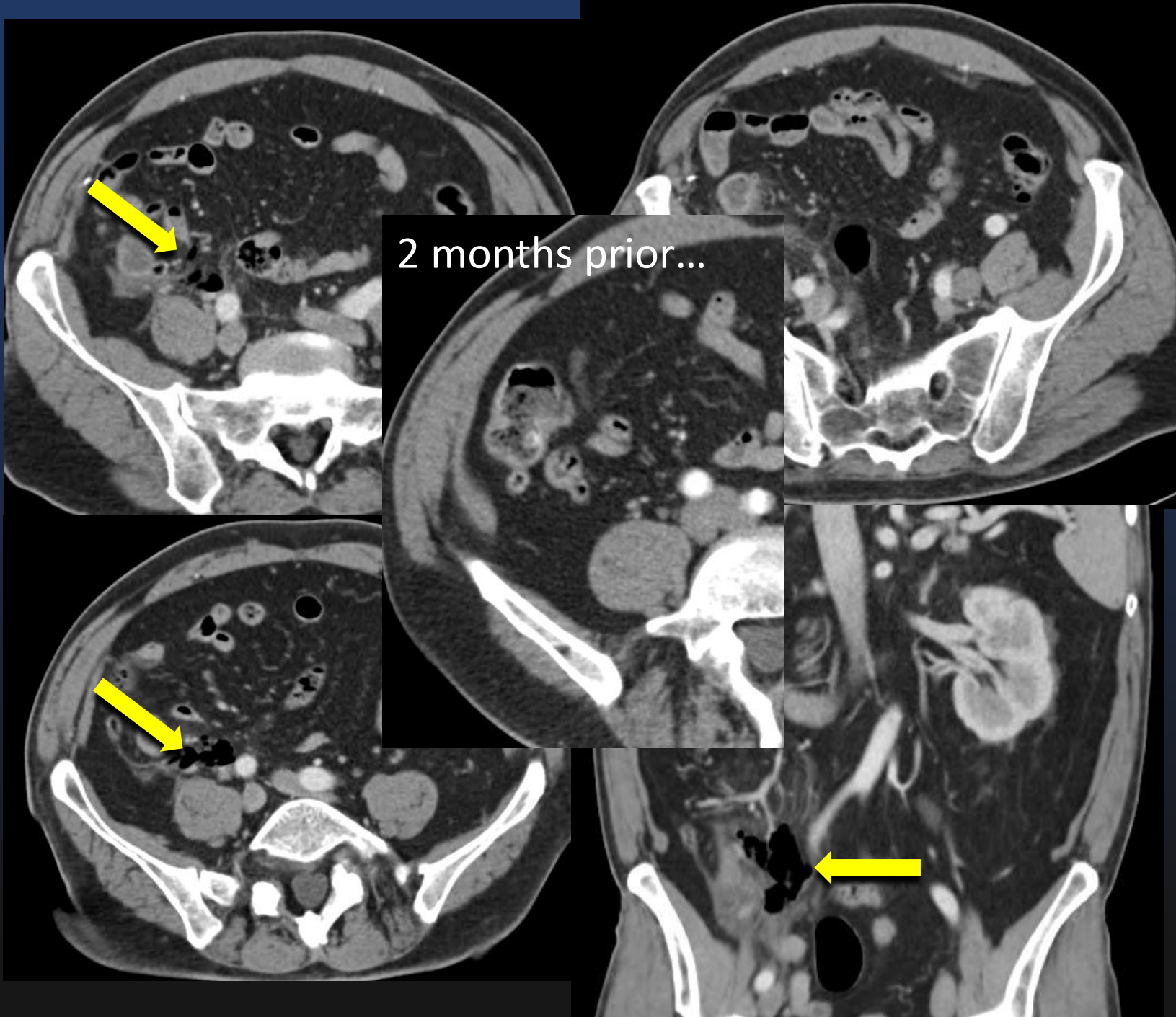


# Zollinger-Ellison Syndrome

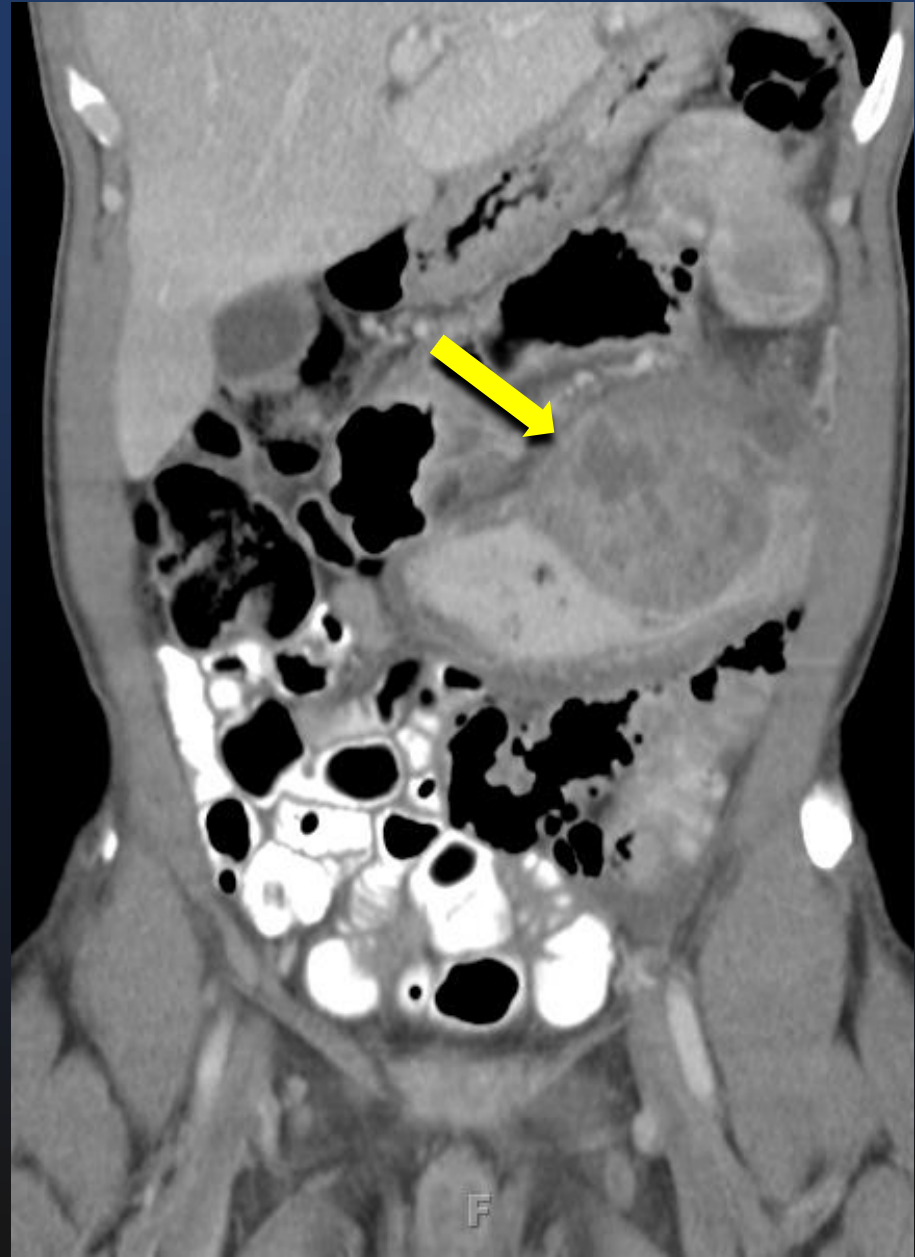
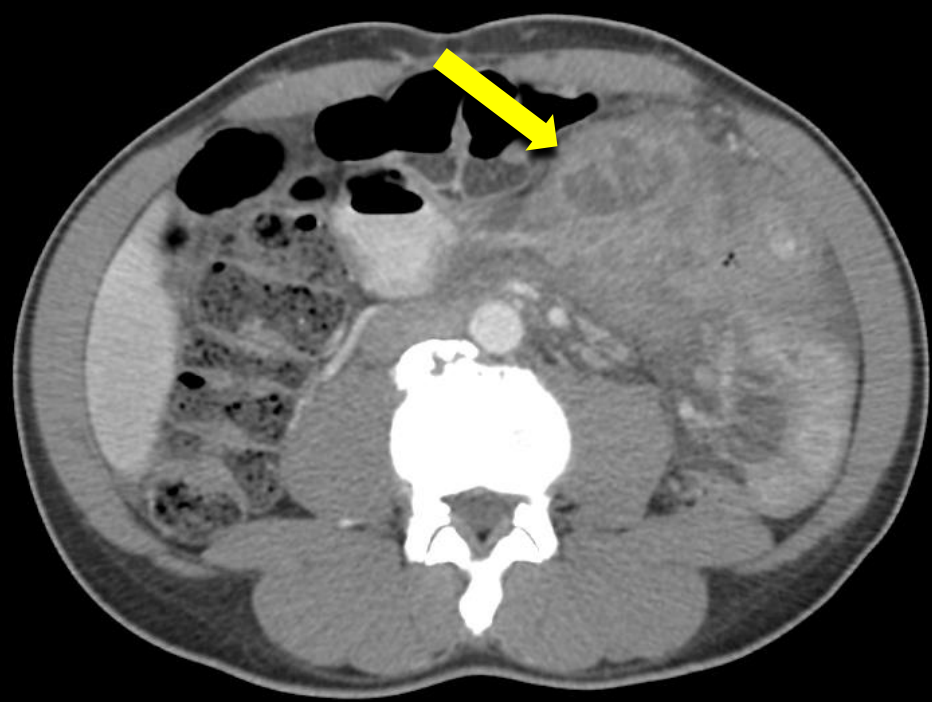
- Gastrin-secreting tumor
  - Stimulates peptic acid secretion
  - Gastrointestinal mucosal ulceration
- CT findings
  - Gastritis
  - May see esophagitis from reflux
  - Duodenal ulcers – multiple, post-bulbar
  - Look for hyperenhancing lesion in “gastrinoma triangle”
- Post-bulbar ulcers are rare – consider Crohn disease or ZES when present





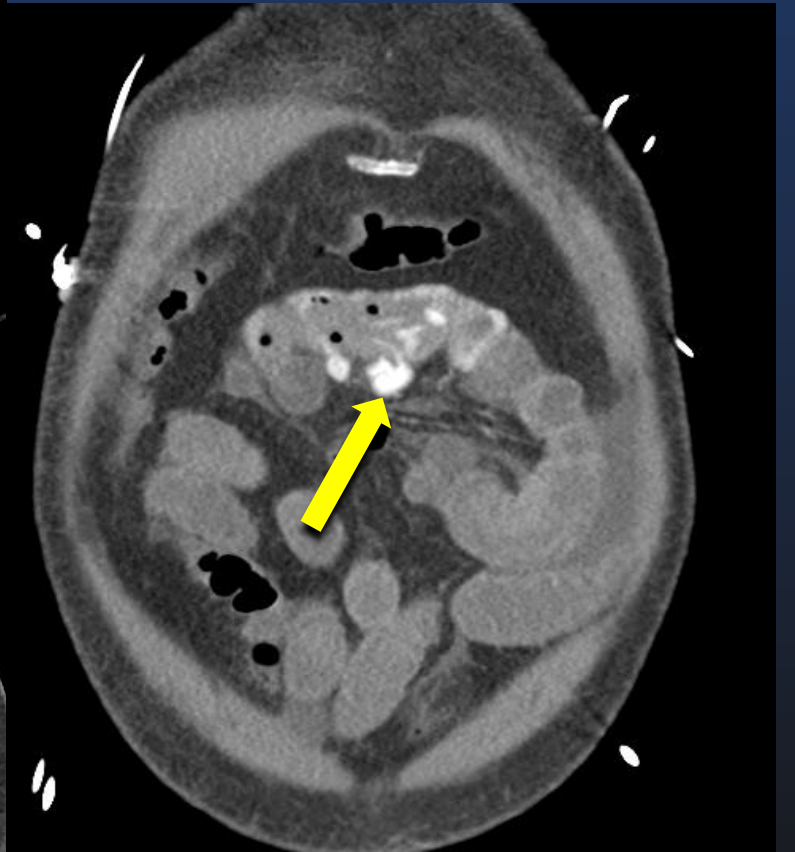
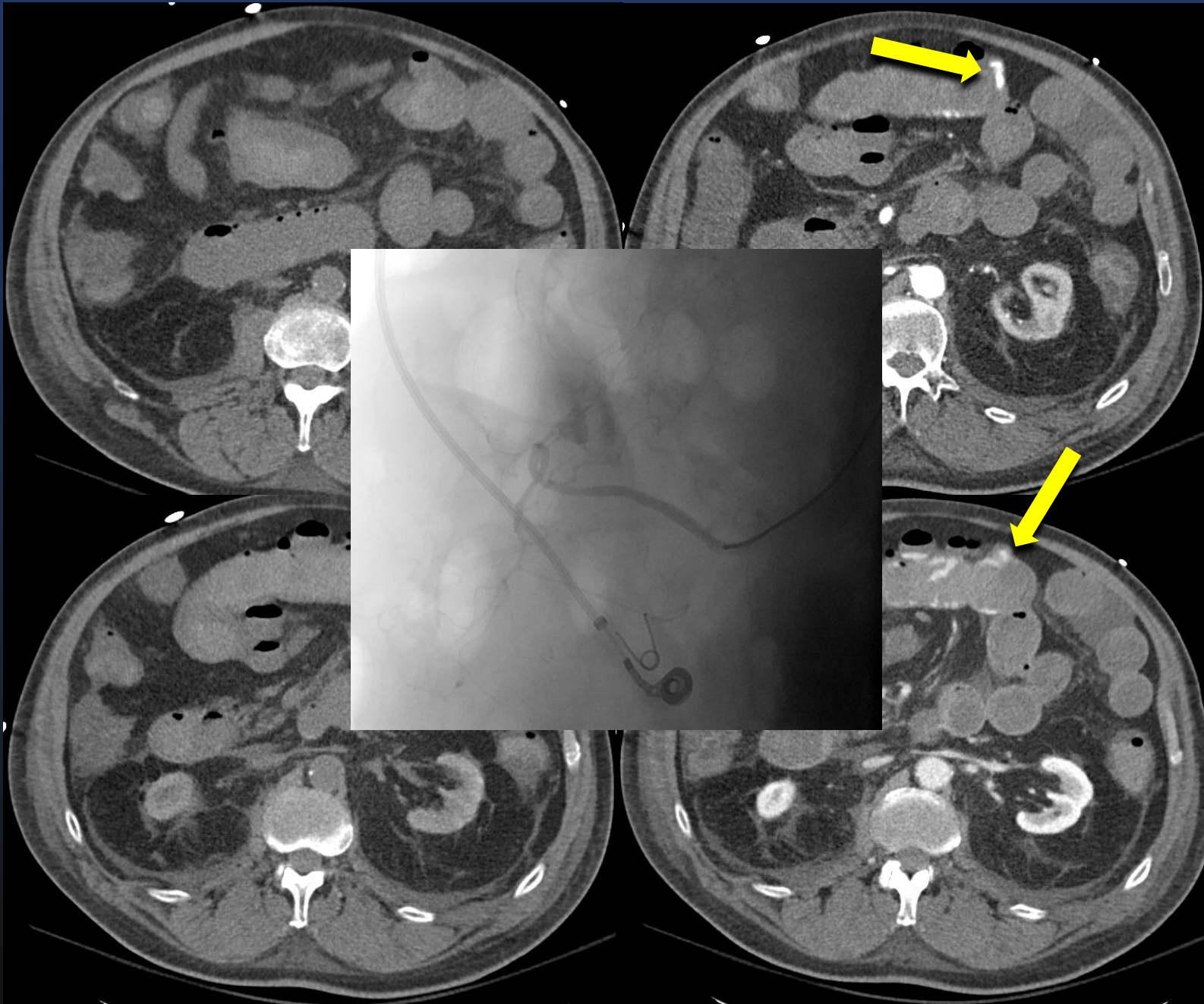


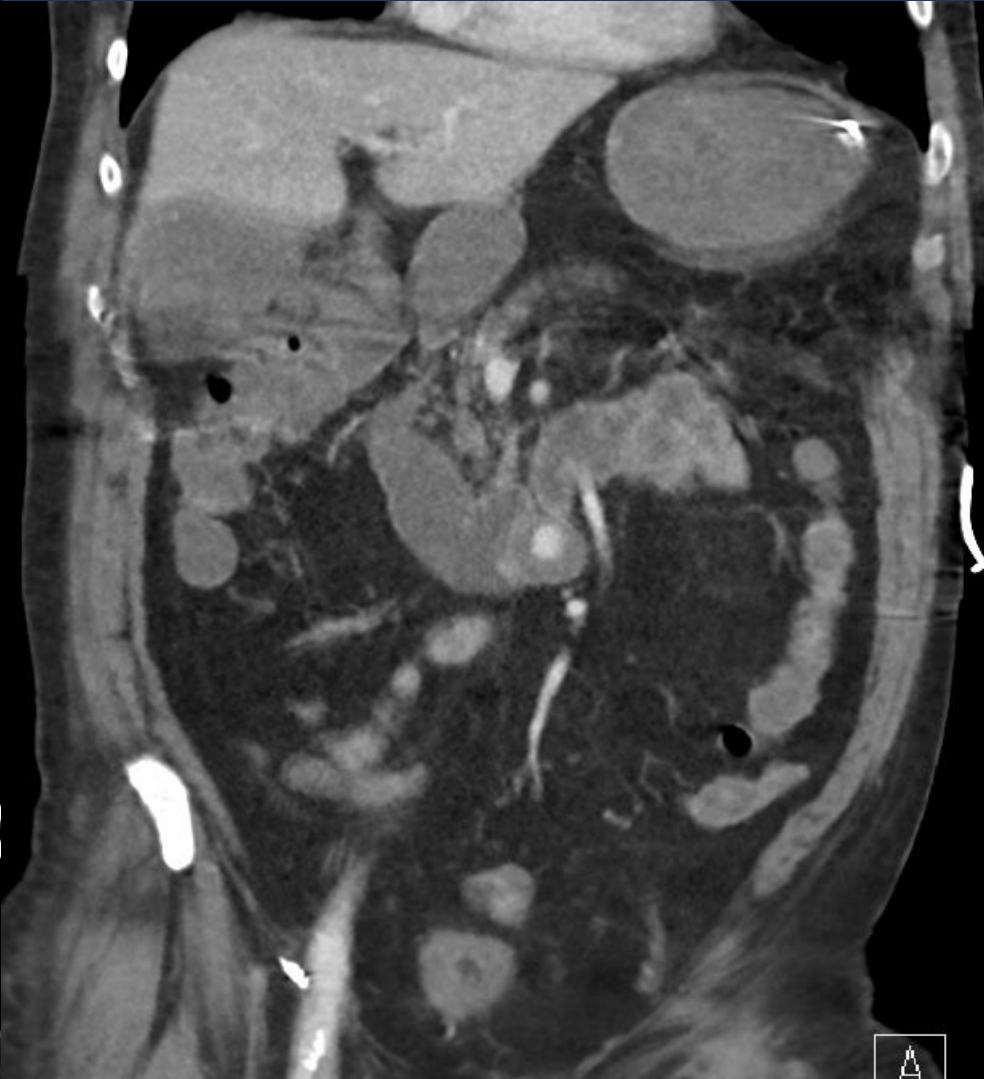
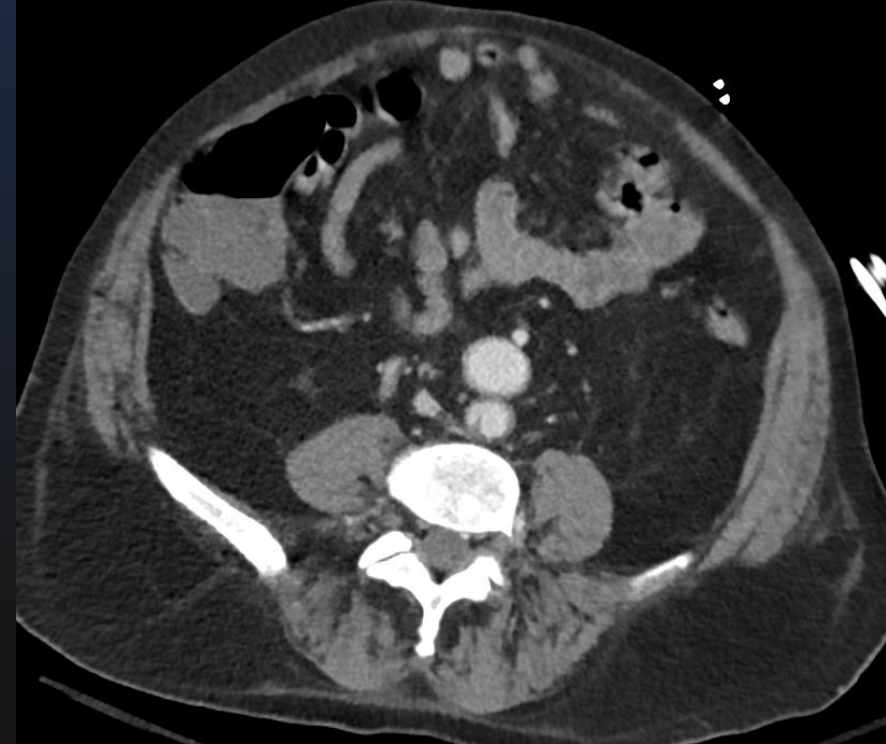
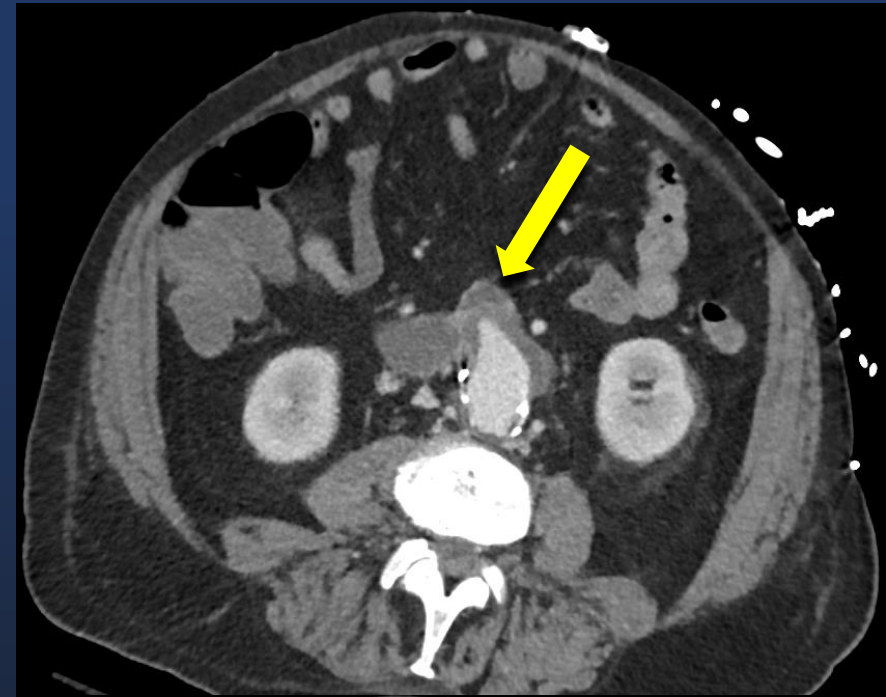




# Contour Abnormality as Key to Diagnosis:

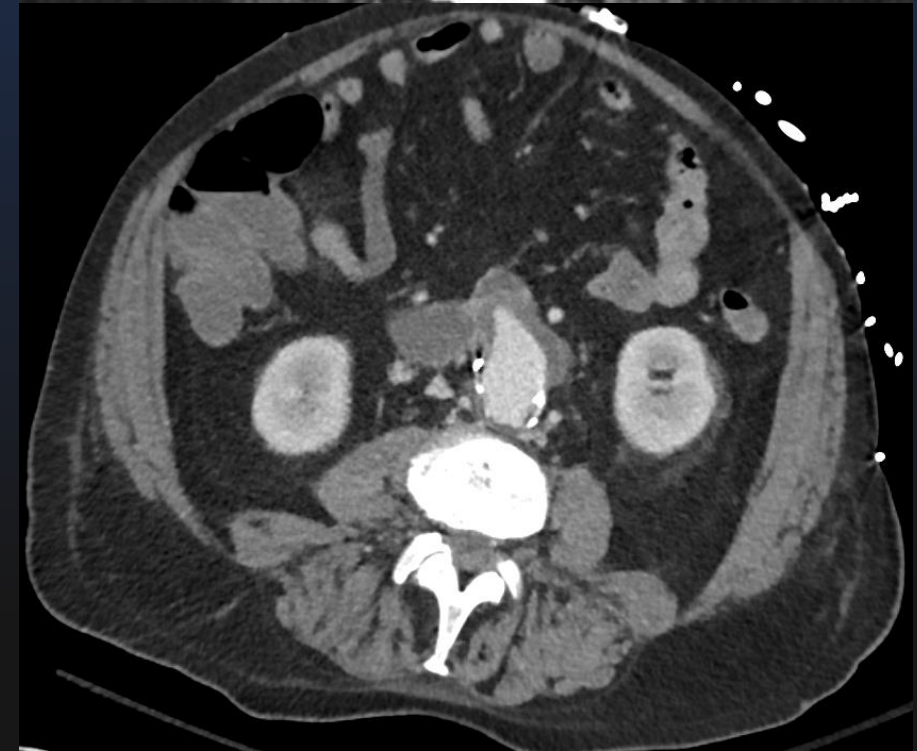
- PUD
- Diverticulitis
- Tumor
- Meckel's
- Chronic perforation

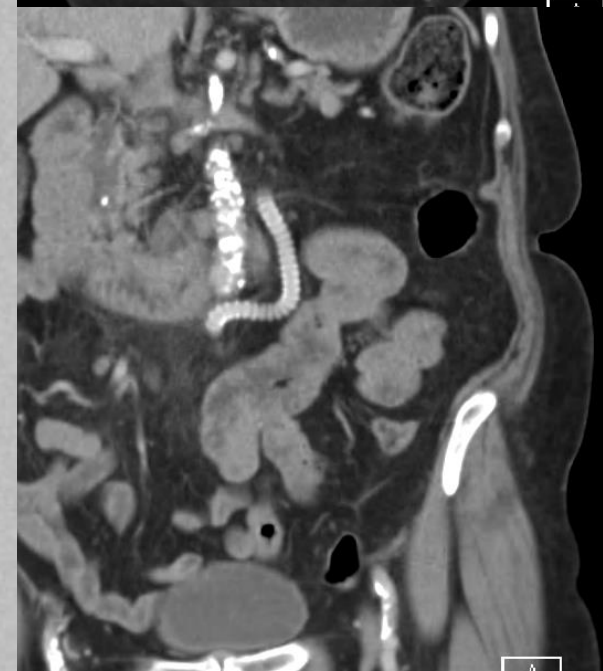
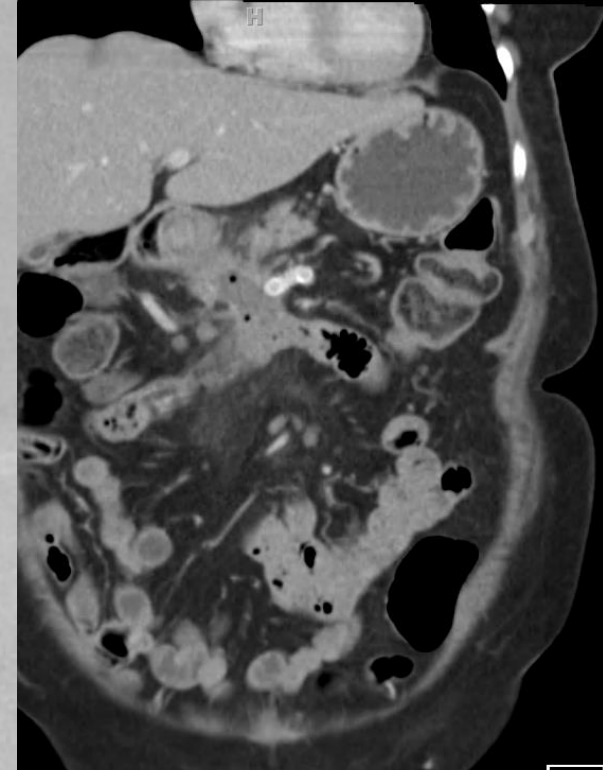
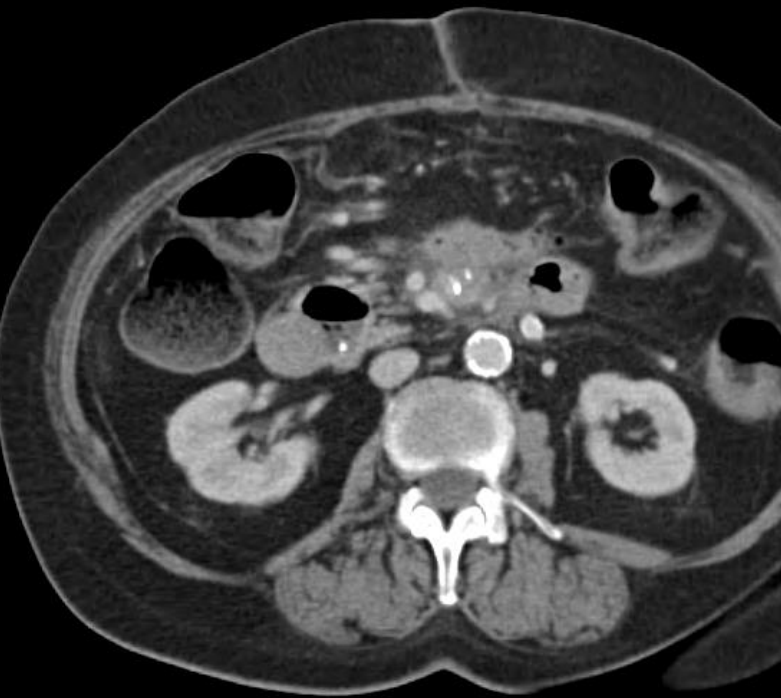
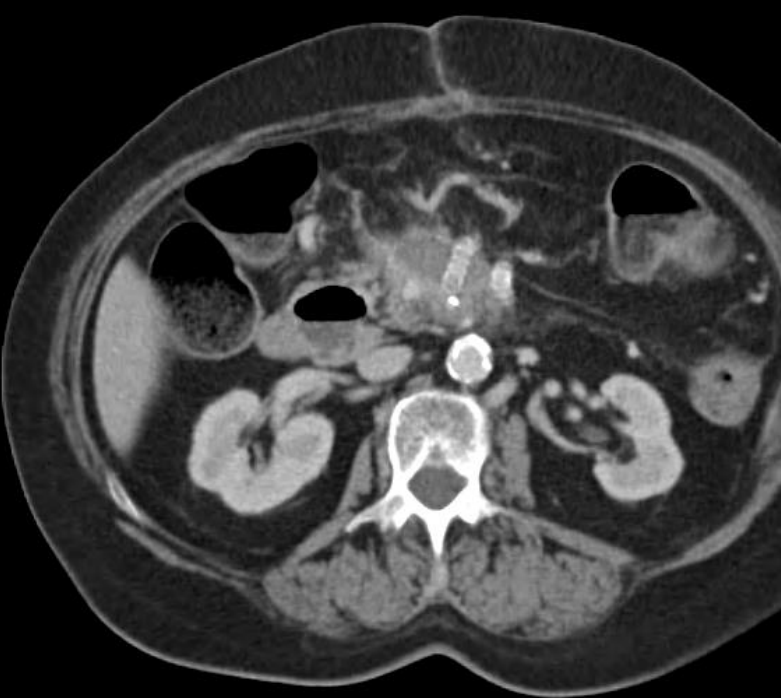


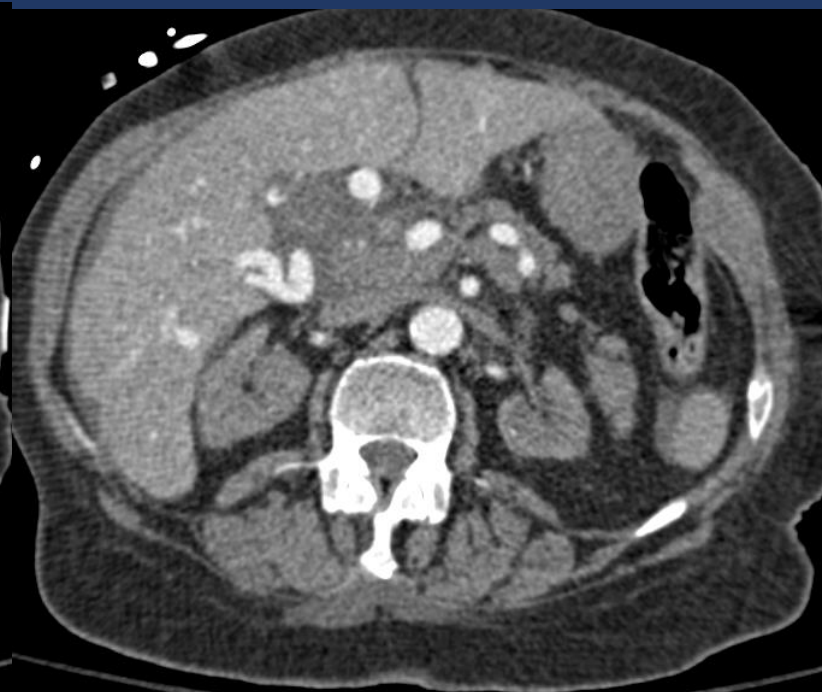


# Aortoenteric Fistula

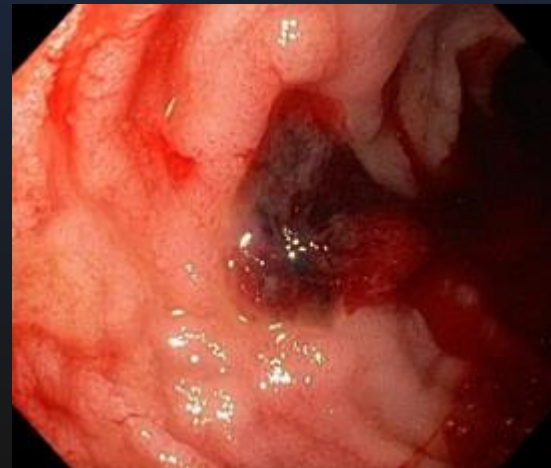
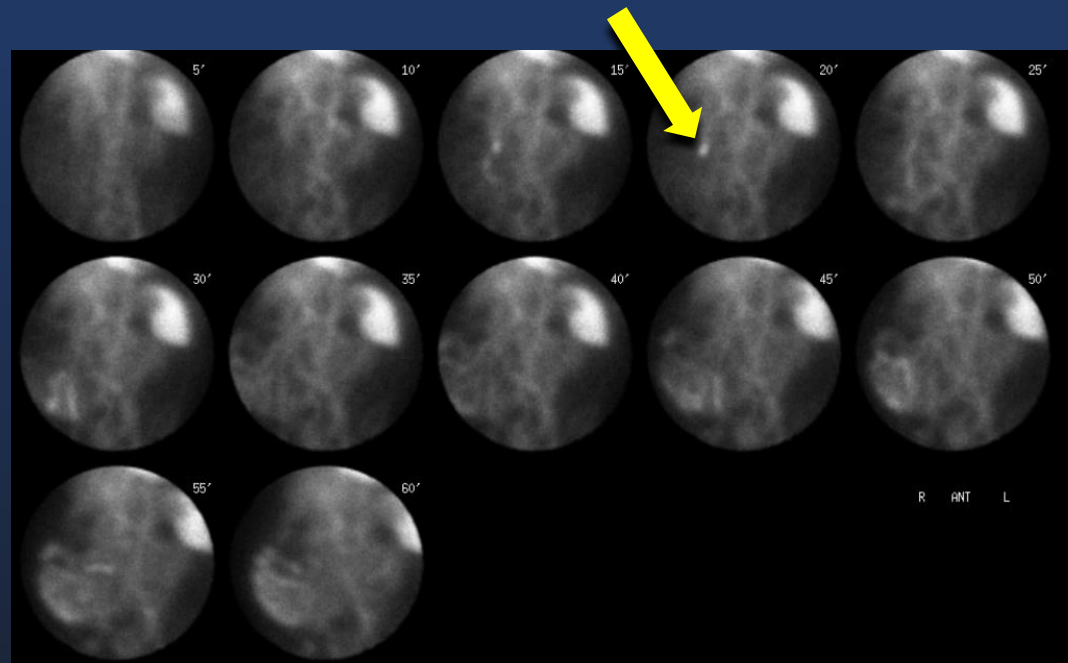
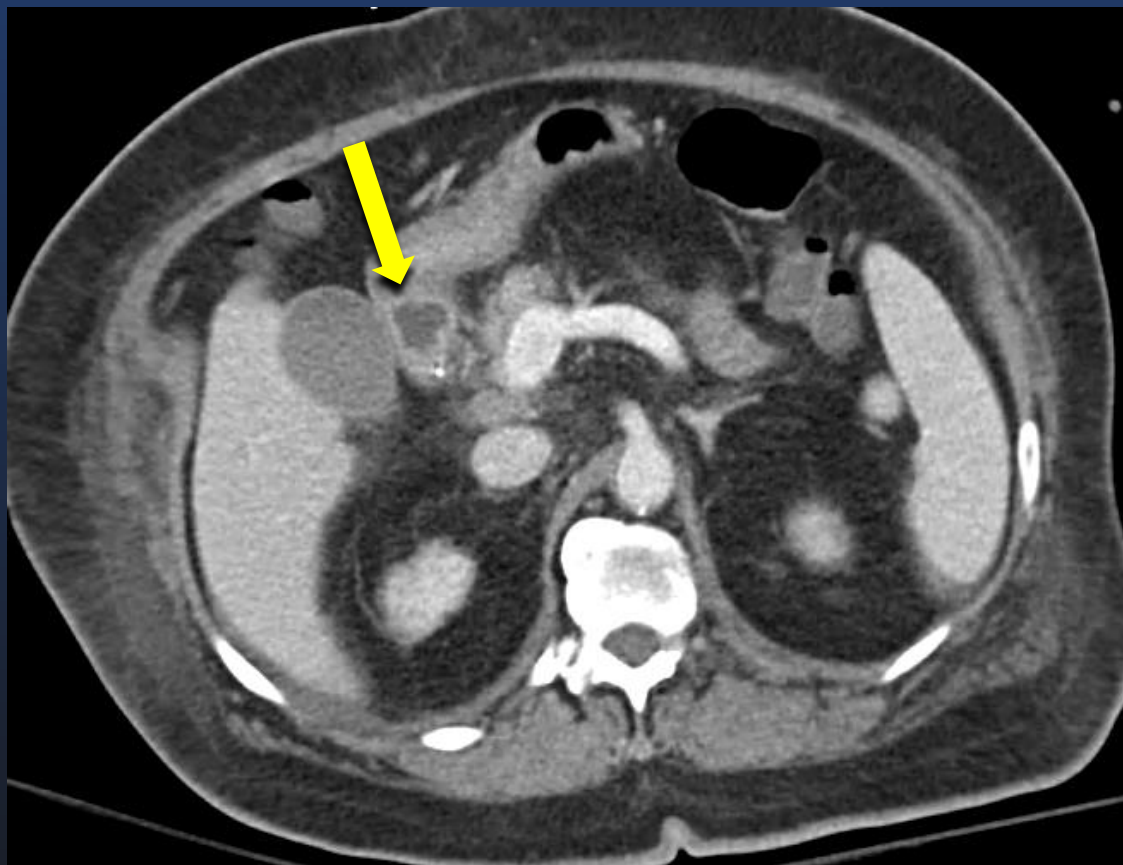
- Most often follows open repair of AAA
- Clinical presentation:
  - “Herald” bleed—typically a unit or less
  - Followed by exsanguinating hemorrhage
- CT findings:
  - **DO NOT NEED TO SEE LUMINAL CONNECTION (RARE)**
  - Disruption of the aortic wall
  - Loss of fat plane between aorta and adjacent bowel
  - Perigraft fluid and gas beyond perioperative period
  - Pseudoaneurysm formation



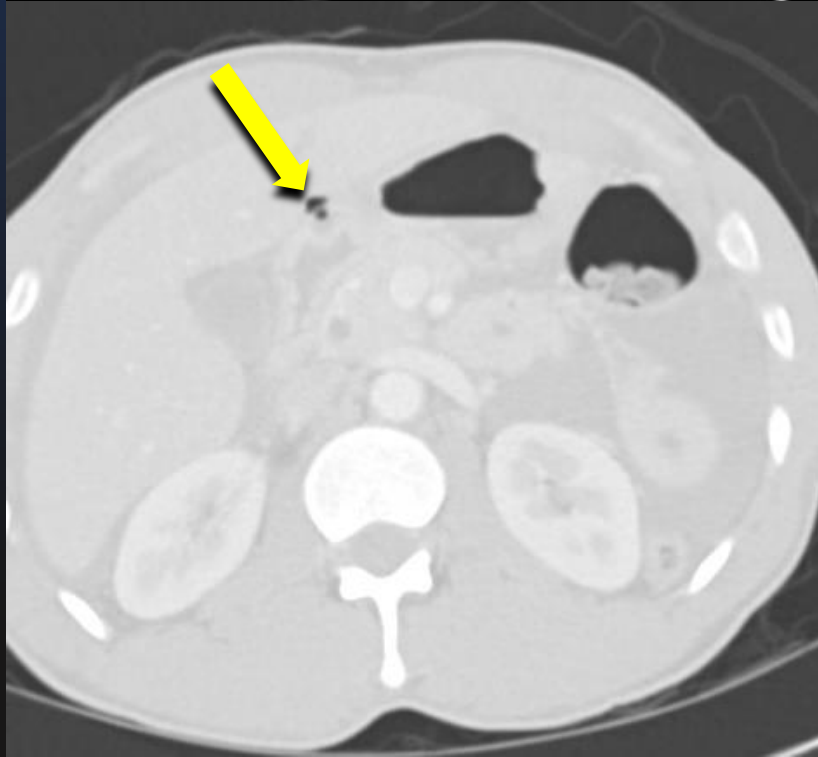
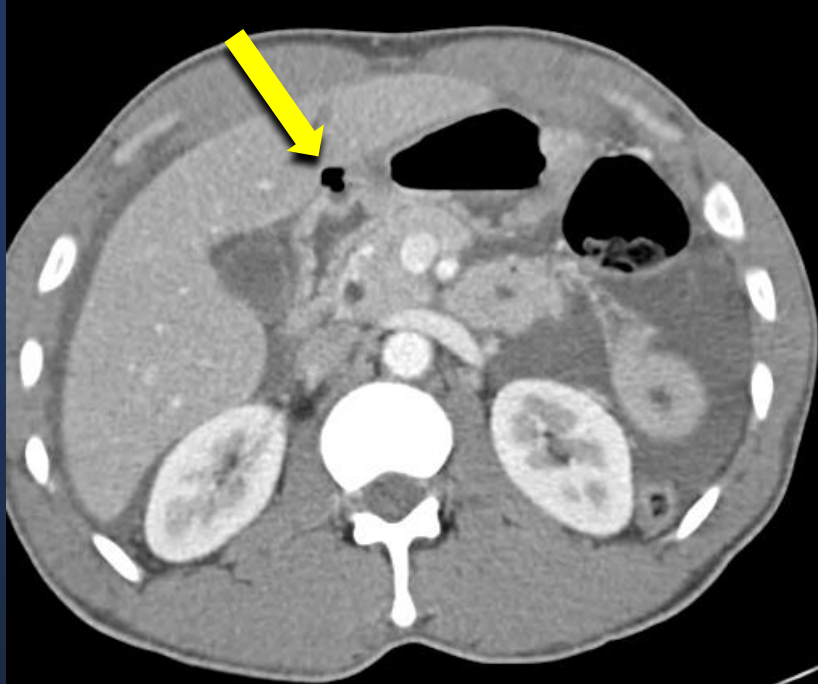


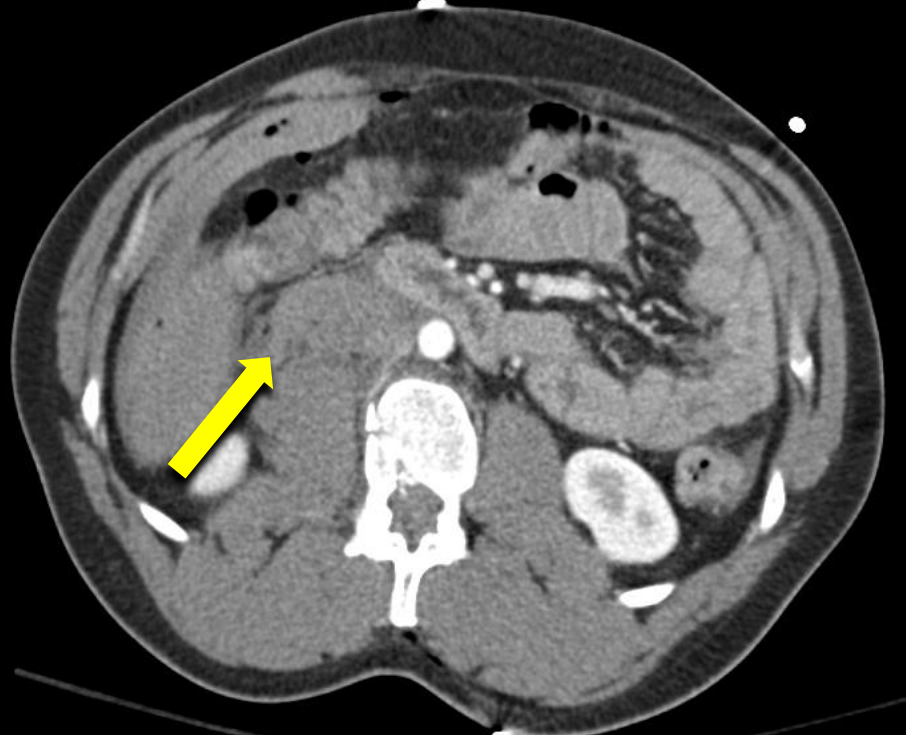


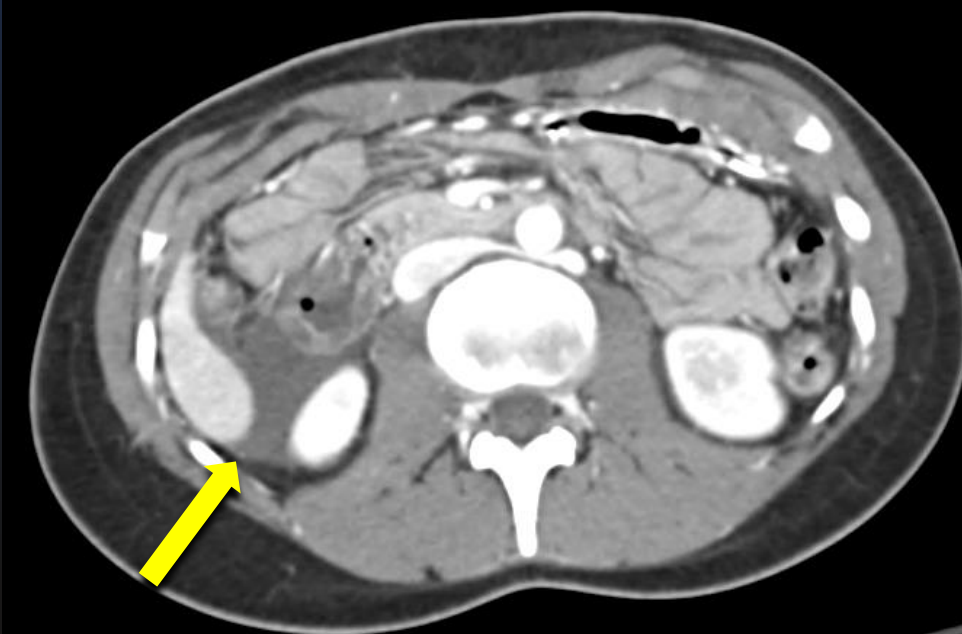
**1** active brisk oozing from  
duodenal bulb  
telangiectasia

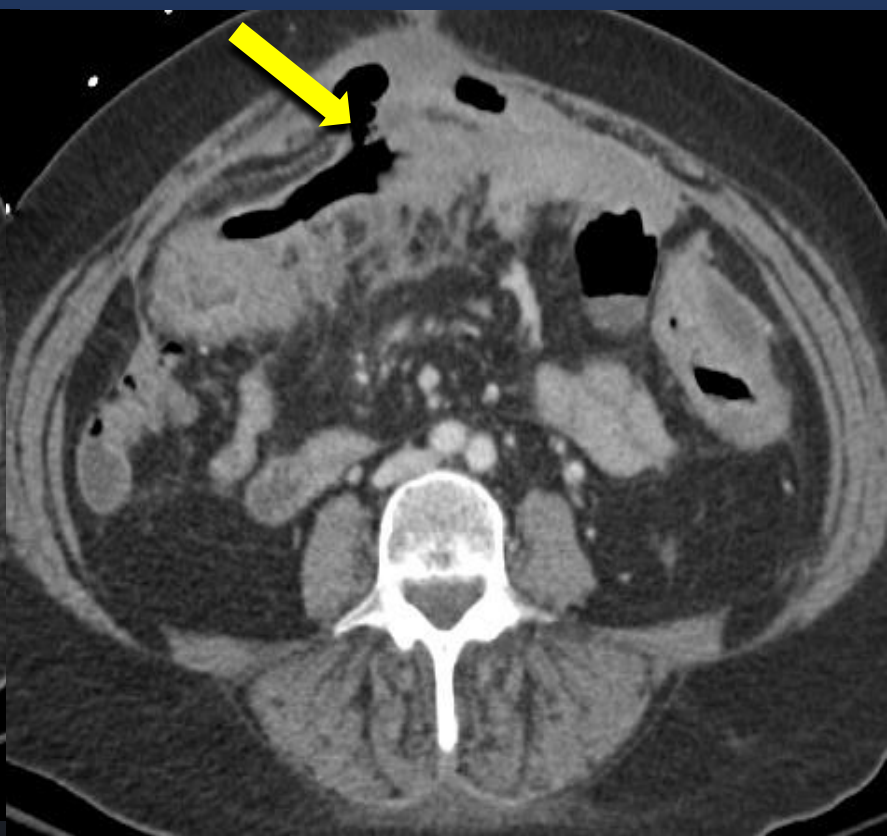
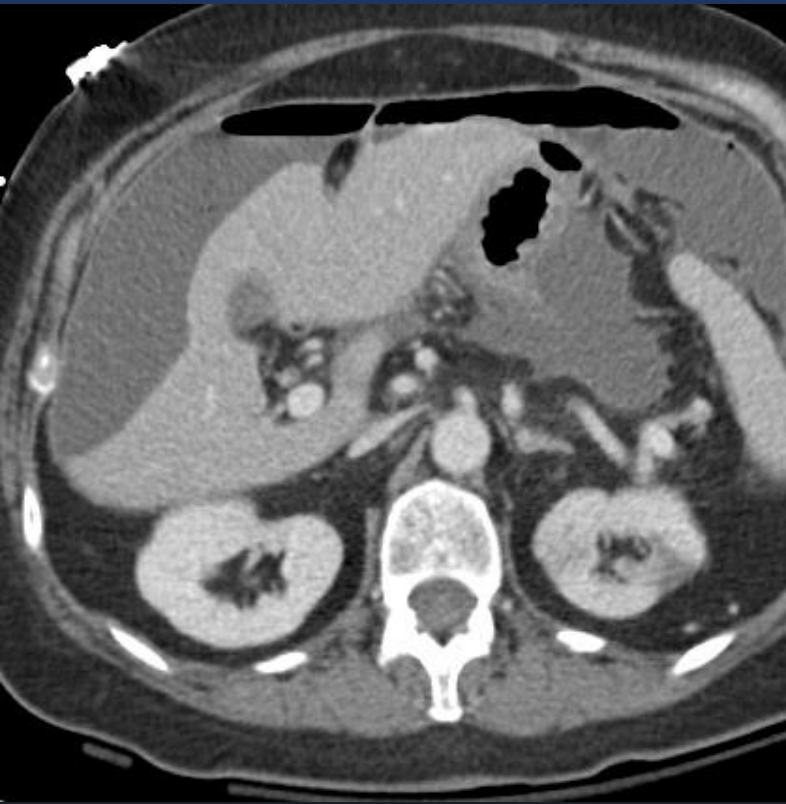








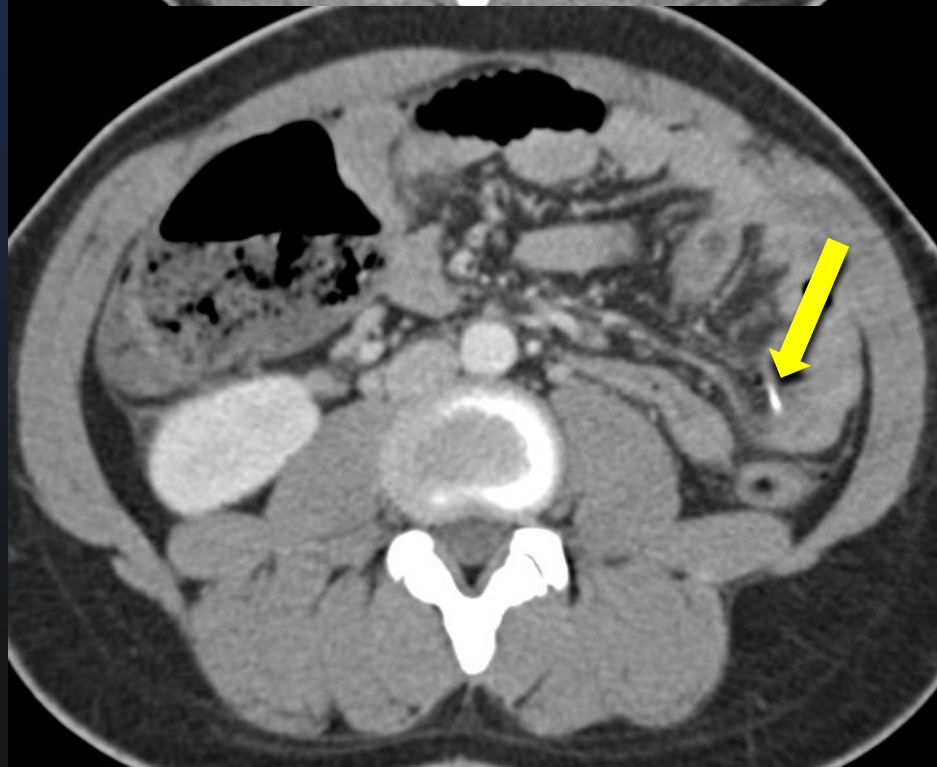
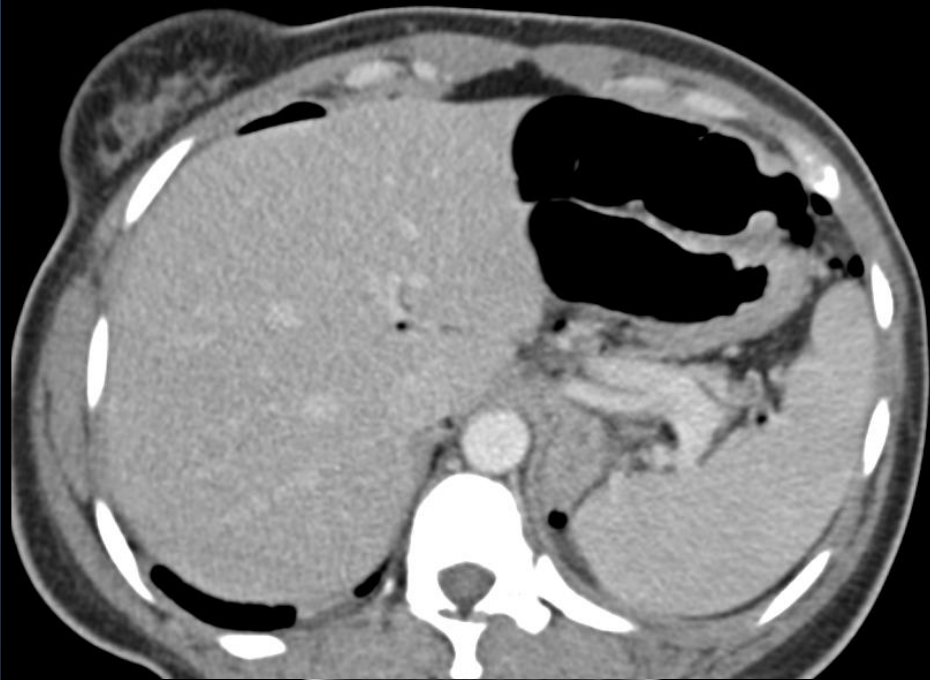




# Perforation: Oncologic Therapy

- Mechanism:
  - Ischemia due to changes in bowel microvasculature
  - Necrosis of primary tumor
  - Serosal implants
- Impaired healing:
  - Diverticulitis
  - Prior surgery
  - Radiation enteritis
- May be extraluminal or result in fistula





# Conclusions

- Small bowel obstruction
- Wall thickening
- Luminal contents
- Contour abnormalities
- Compromised wall integrity
  
- **To avoid looking less smart than you are:**
  - Patient history
  - Prior studies