CHALLENGING ABDOMINAL EMERGENCIES

- CASE REVIEW -

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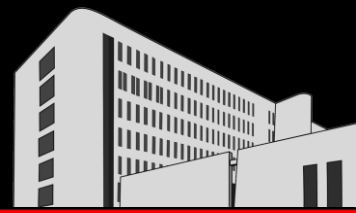
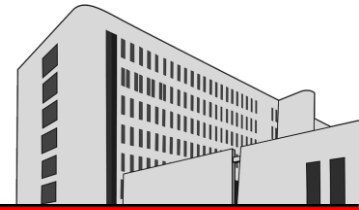


Disclosures

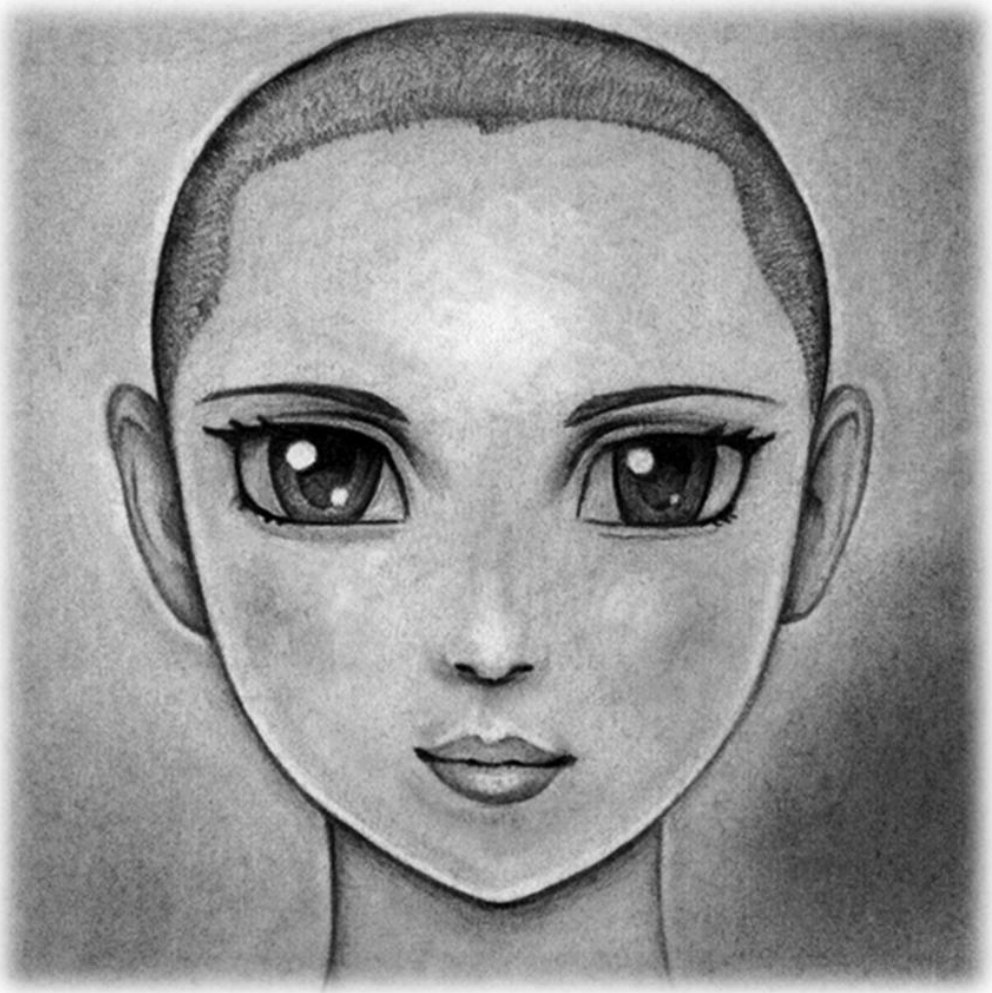
I have no disclosures



Objectives

- Review some atypical presentations of bowel emergencies which can be overlooked or misinterpreted without a high index of suspicion
- View rare and unexpected pathologies that can be recognized once you become familiar with the findings
- Provide practical tips to support accurate diagnosis

Case # 1



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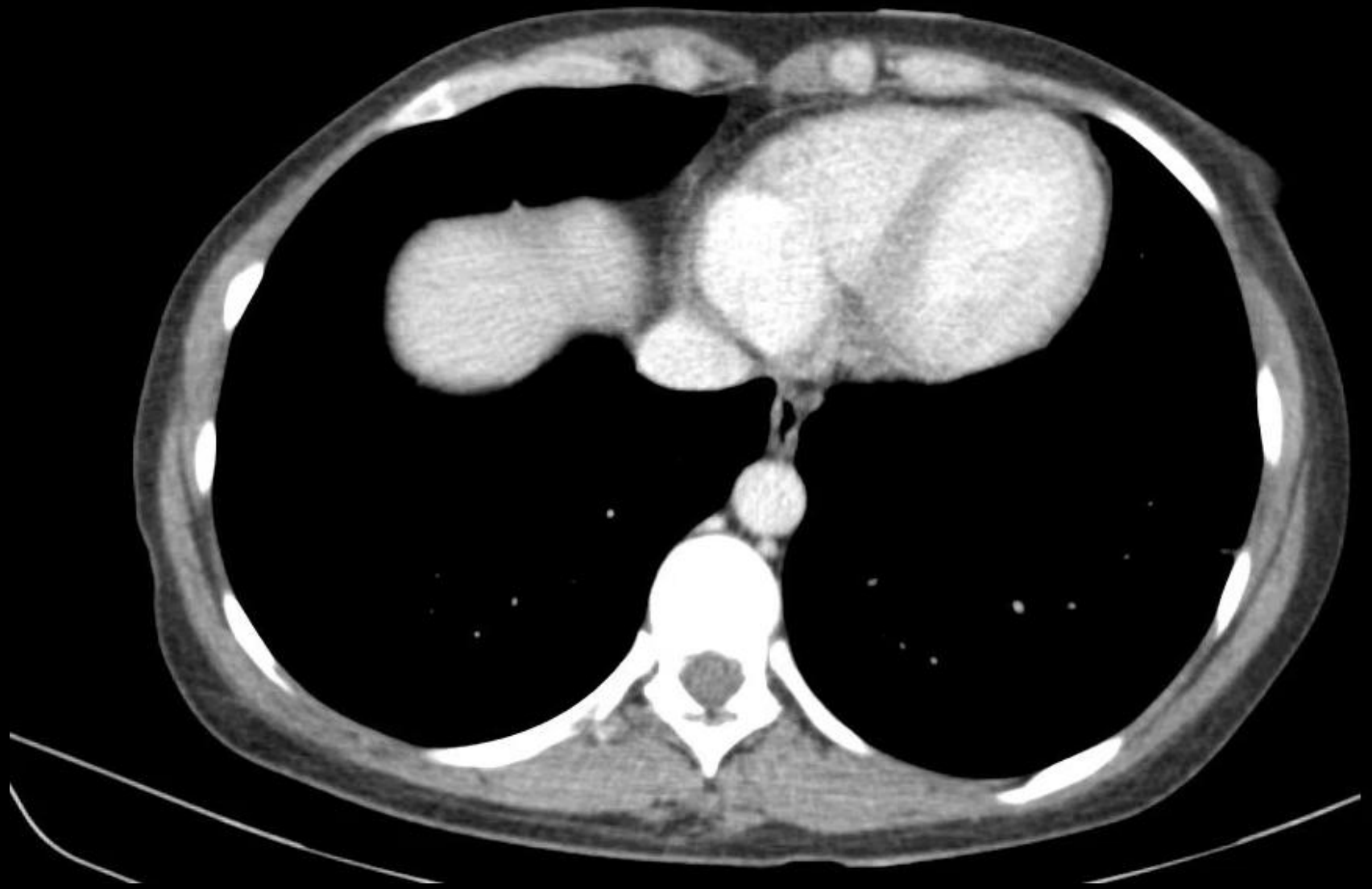
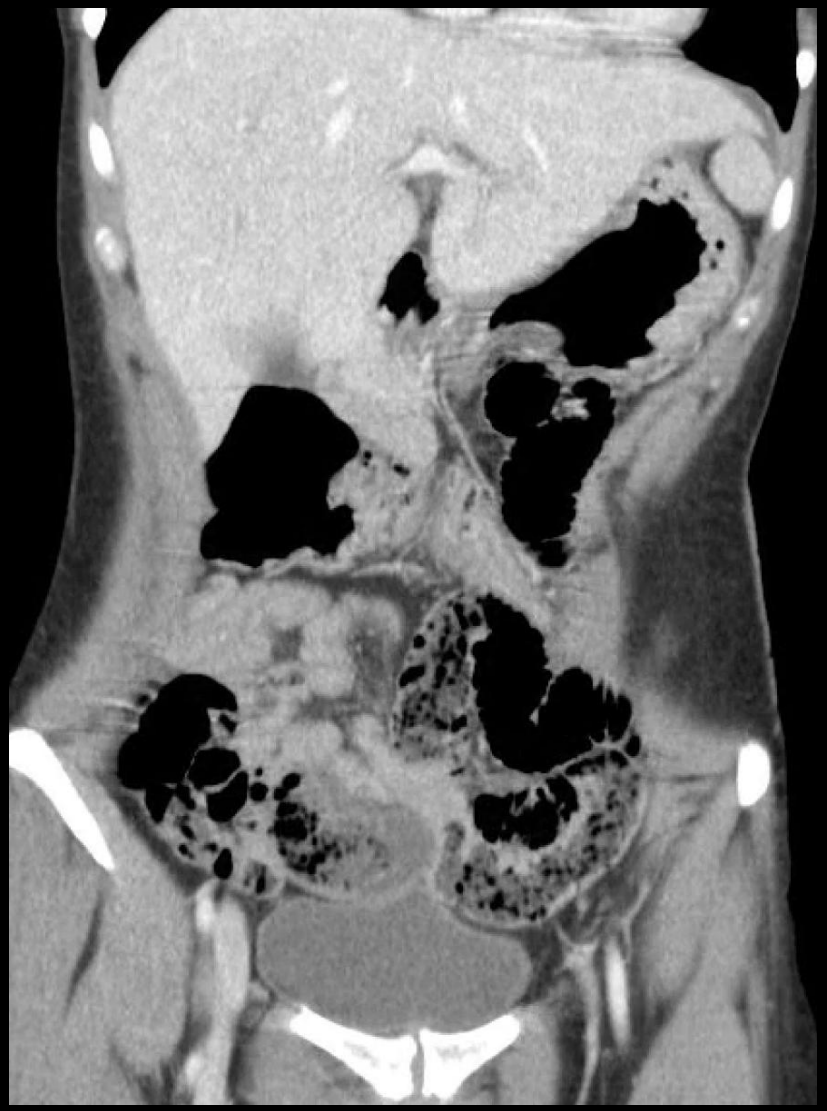
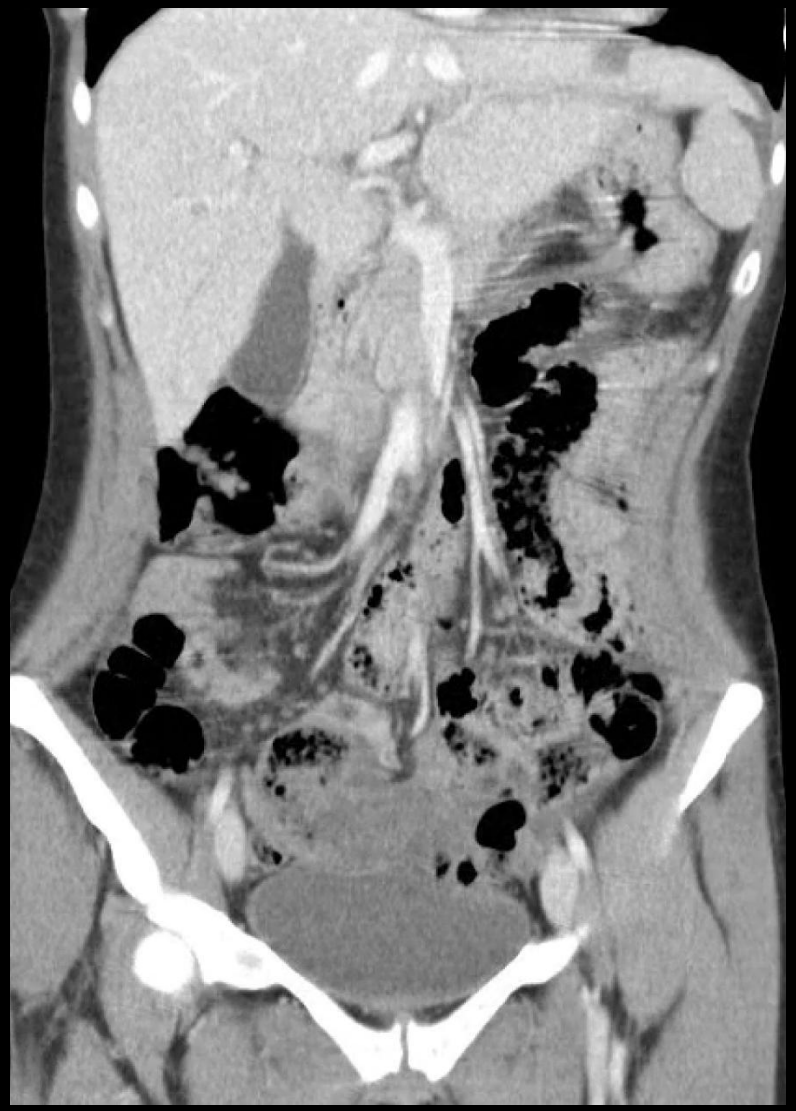
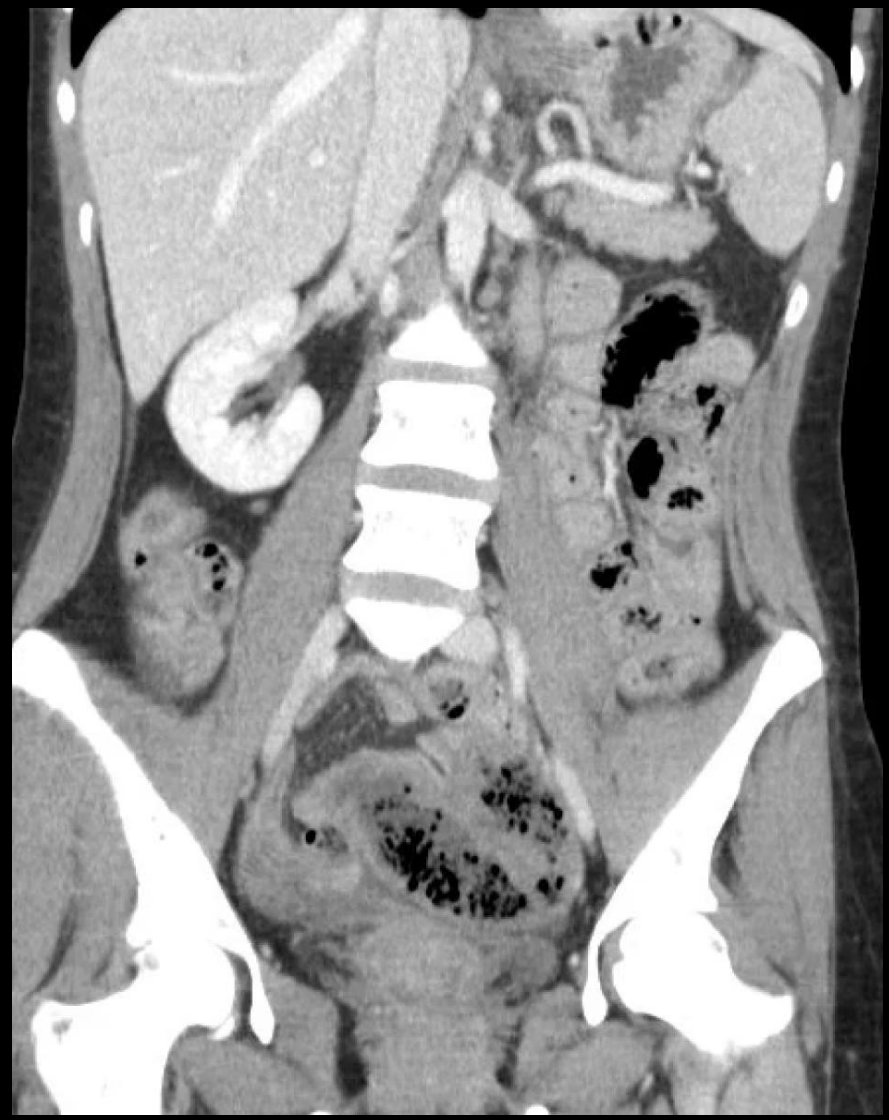
- 36 yo
- Crohn´s disease
- Previous surgery: left colectomy. Terminal colostomy in the left flank
- **Acute and intense abdominal pain**
- Lab: normal parameters

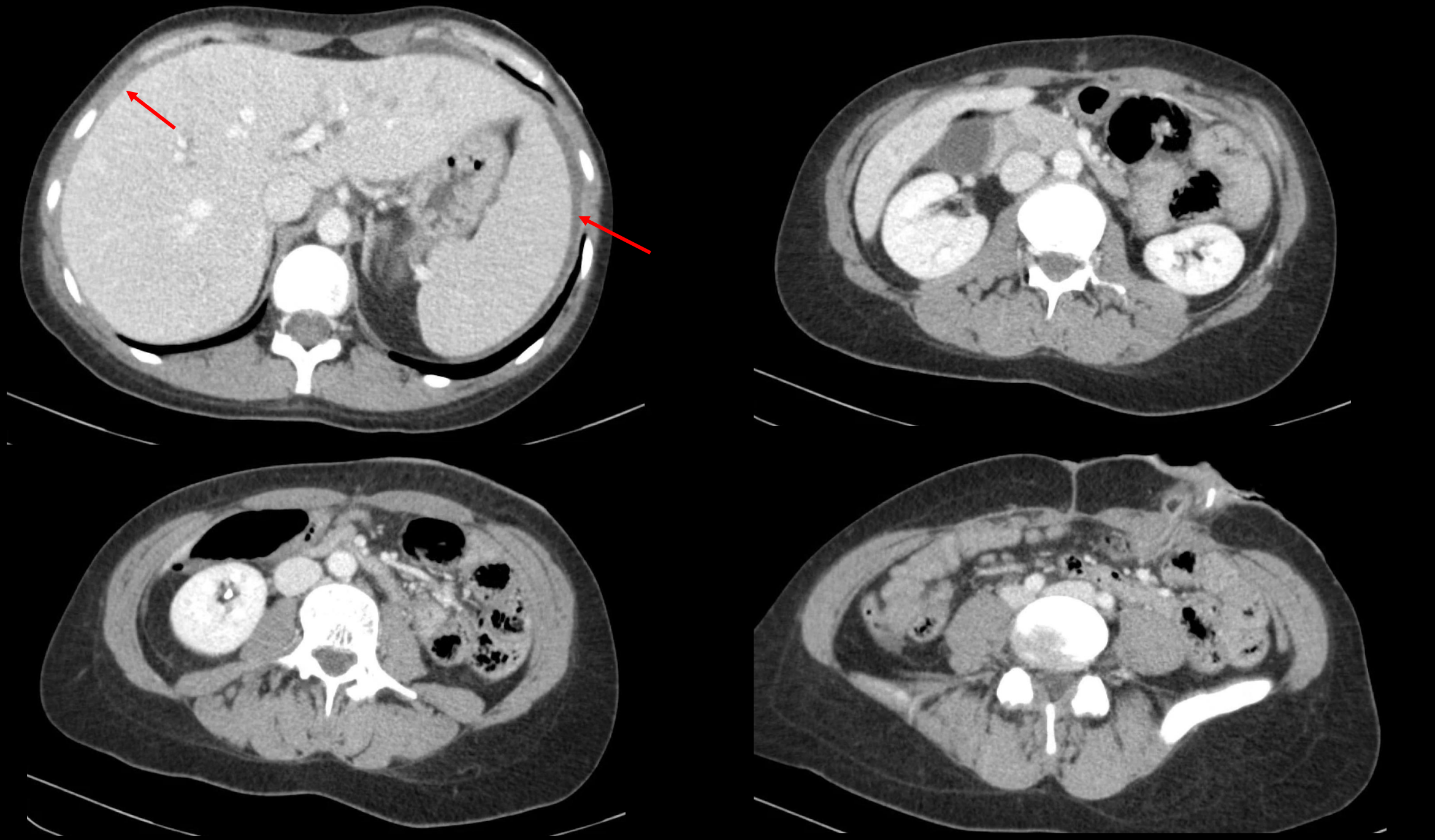
Clinical suspicion: Obstruction, perforation, Crohn´s exacerbation?

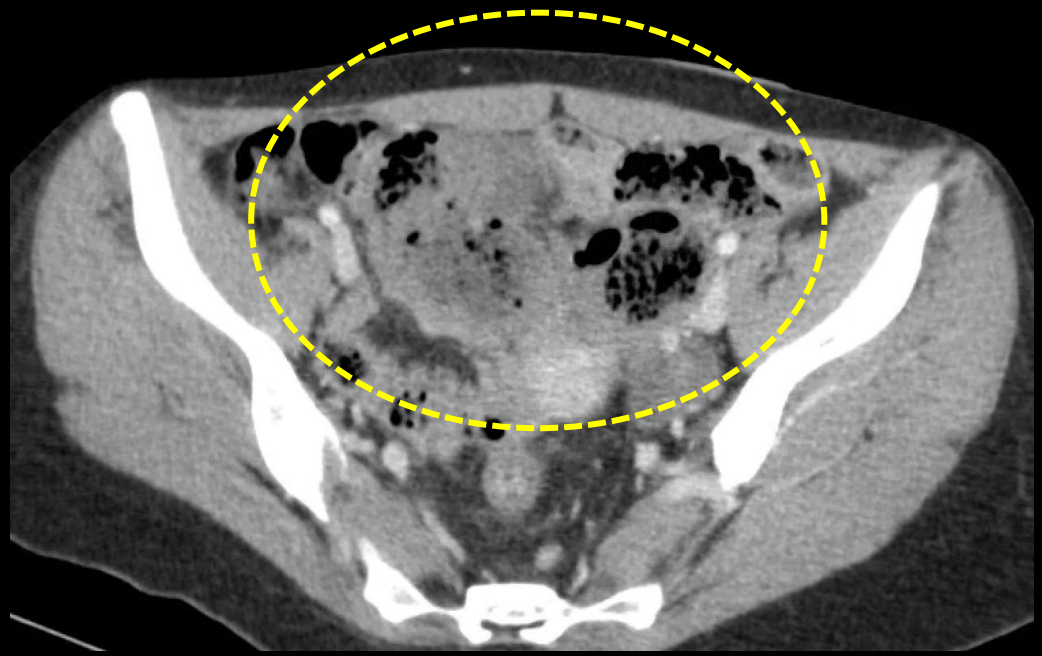


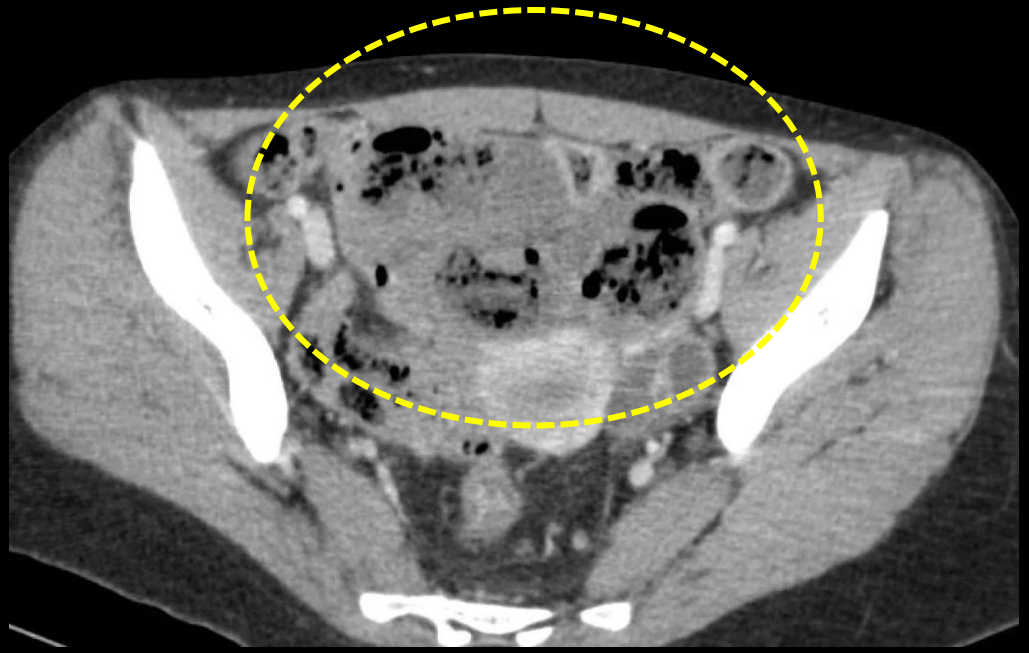




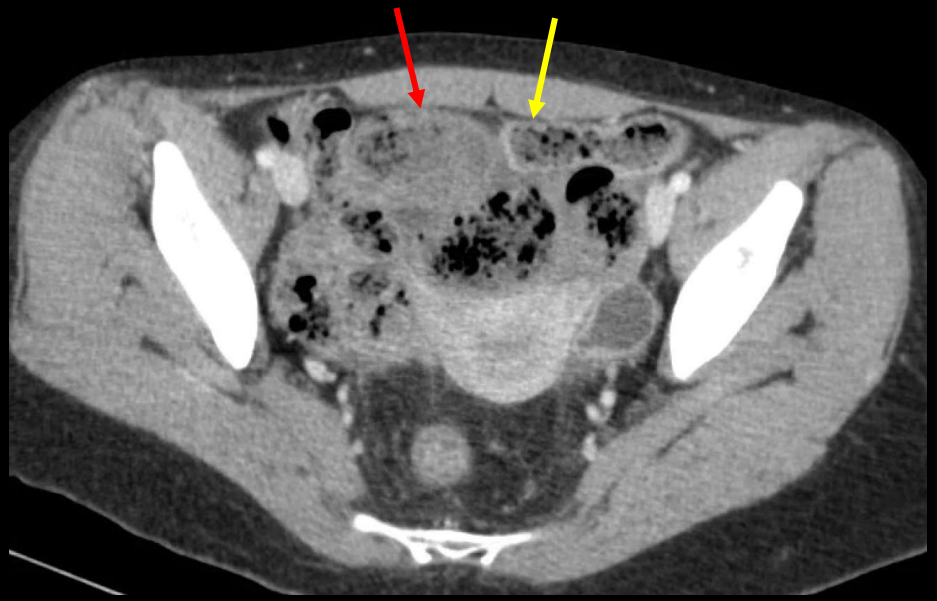
No perforation but, **is there a bowel obstruction**?

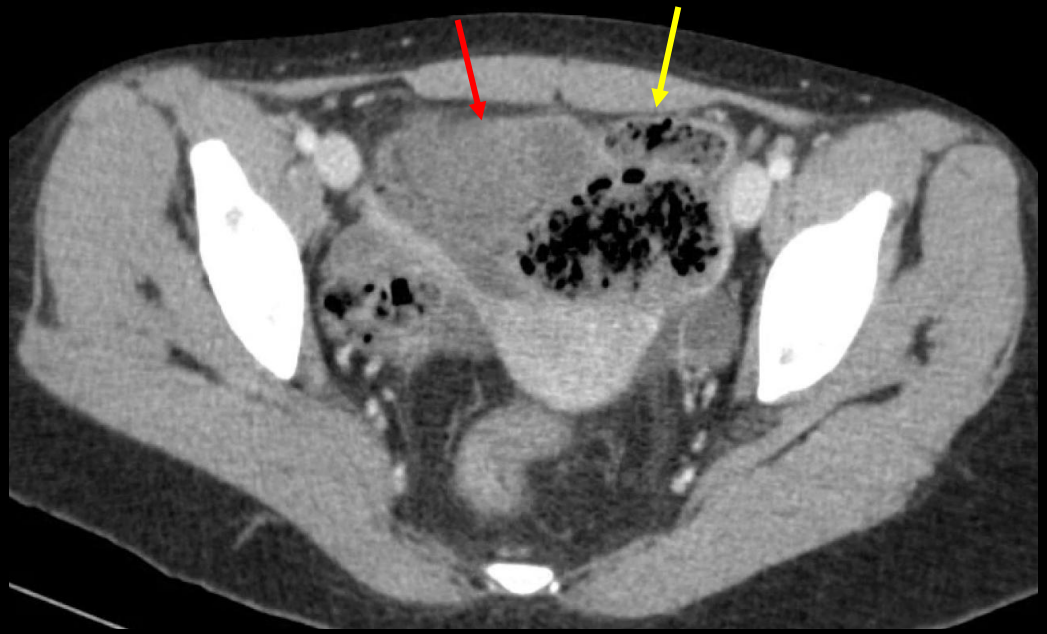
1. Yes
2. No

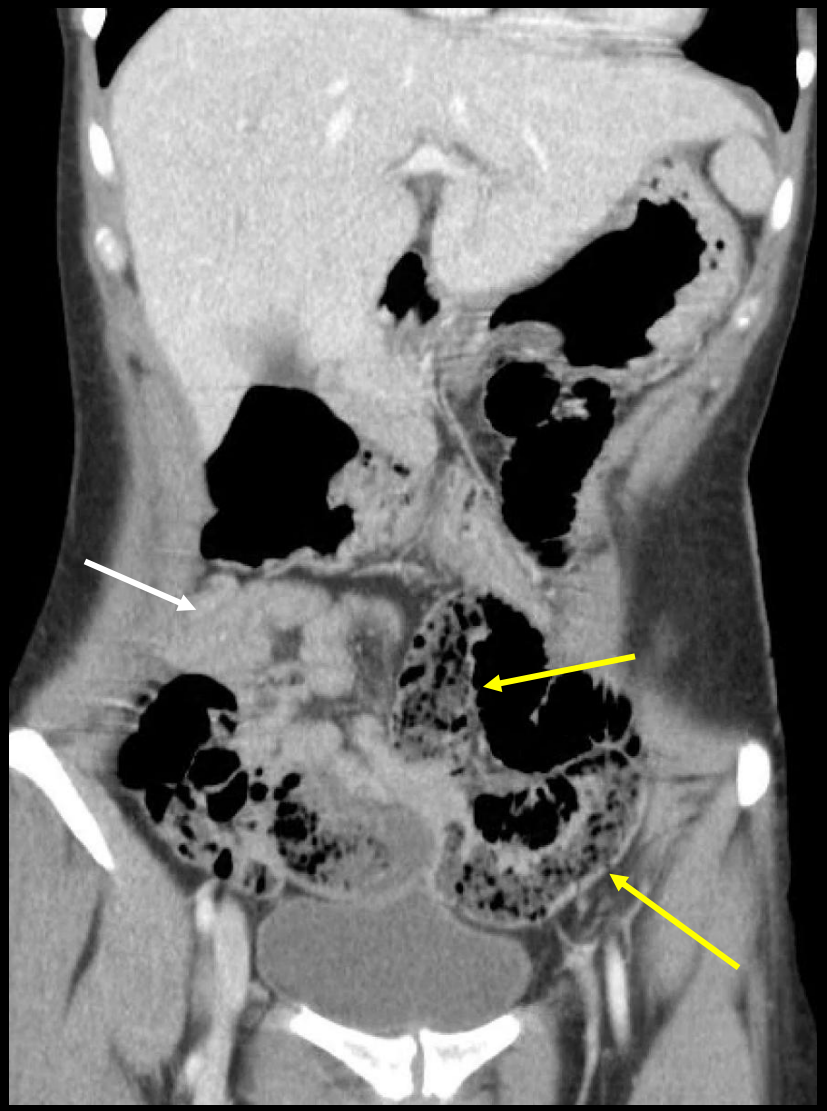




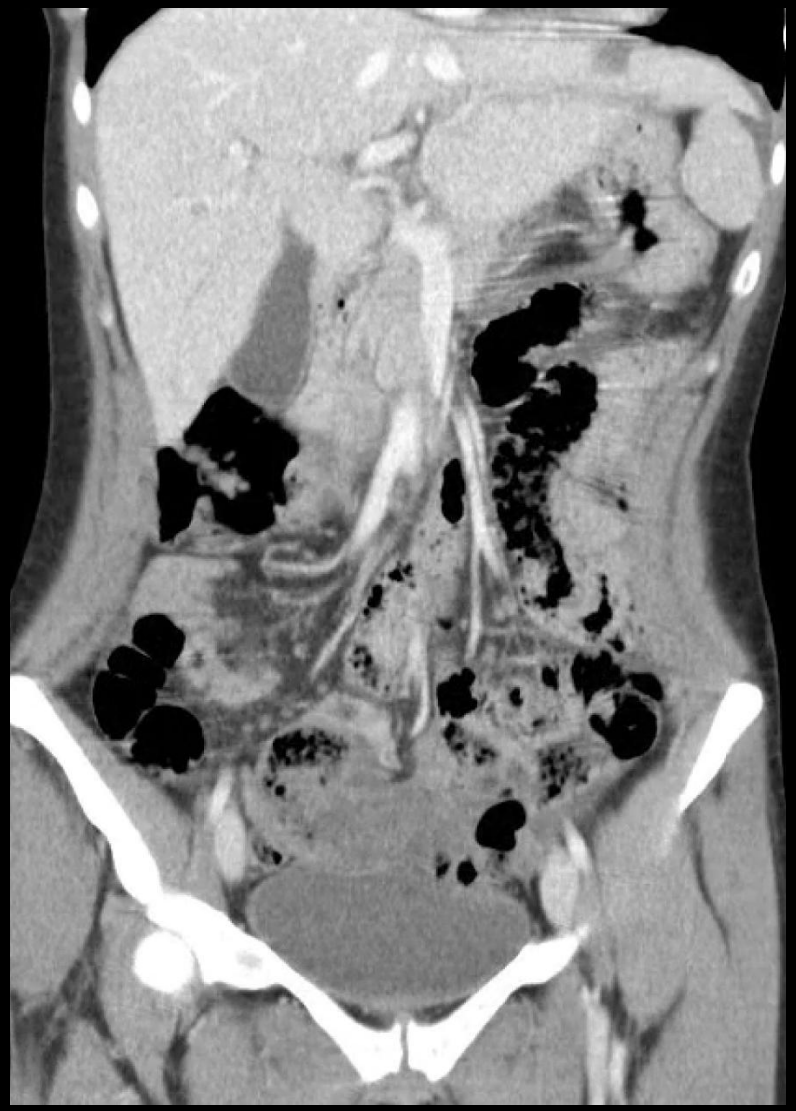




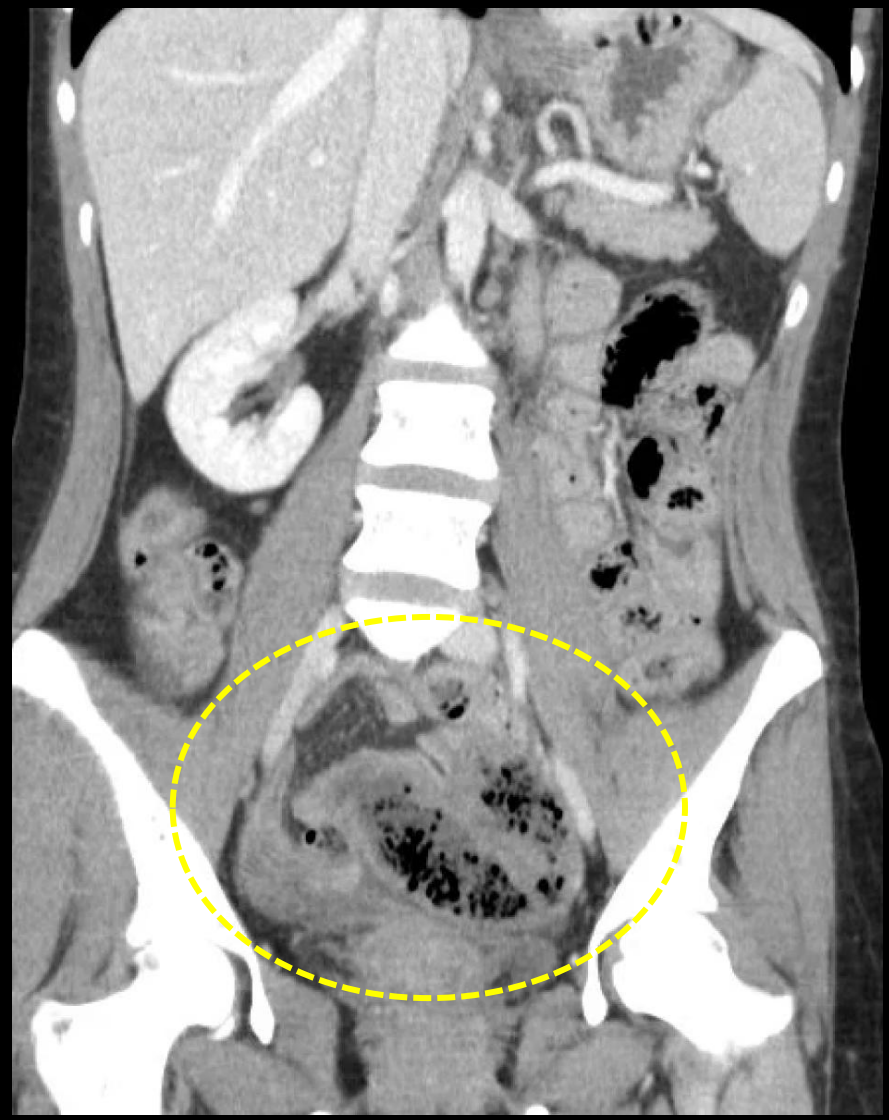




Different caliber SB loops & feces sign



Decreased bowel wall enhancement

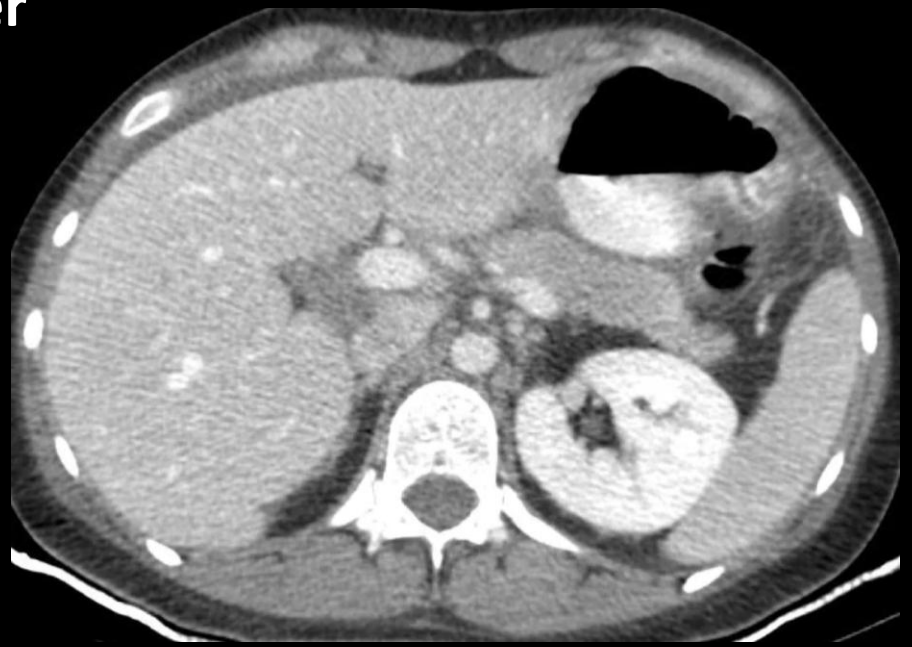


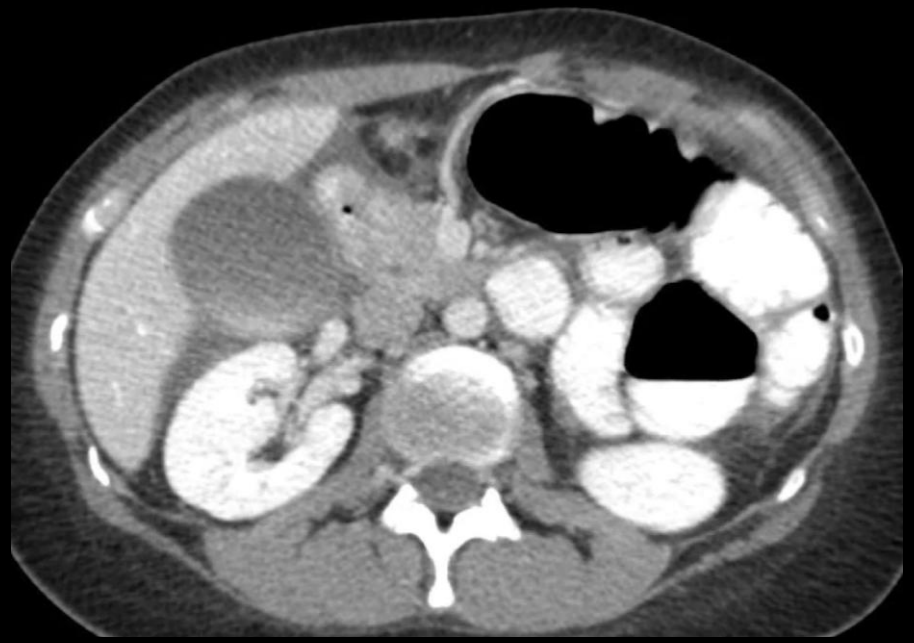
“U shaped”, fatty notches
& double beak sign

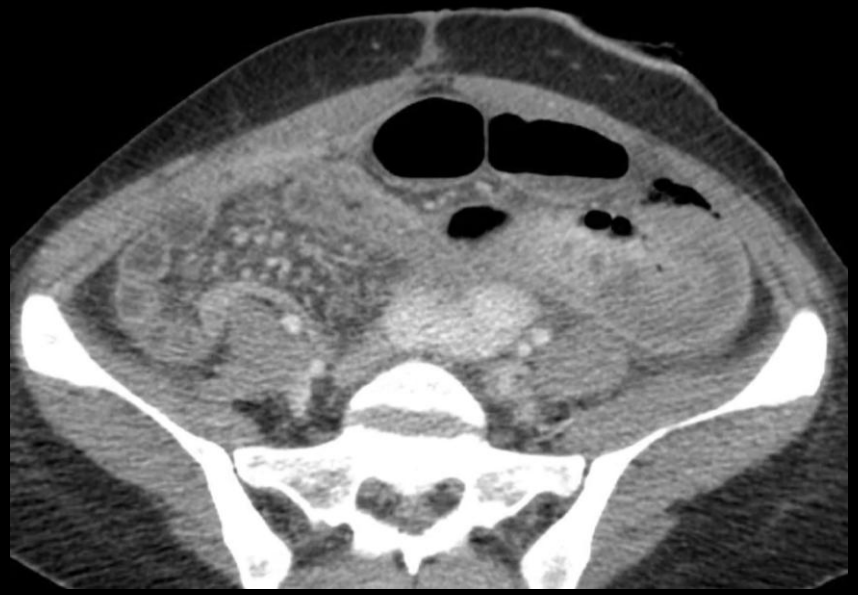
No perforation but, **is there a bowel obstruction**?

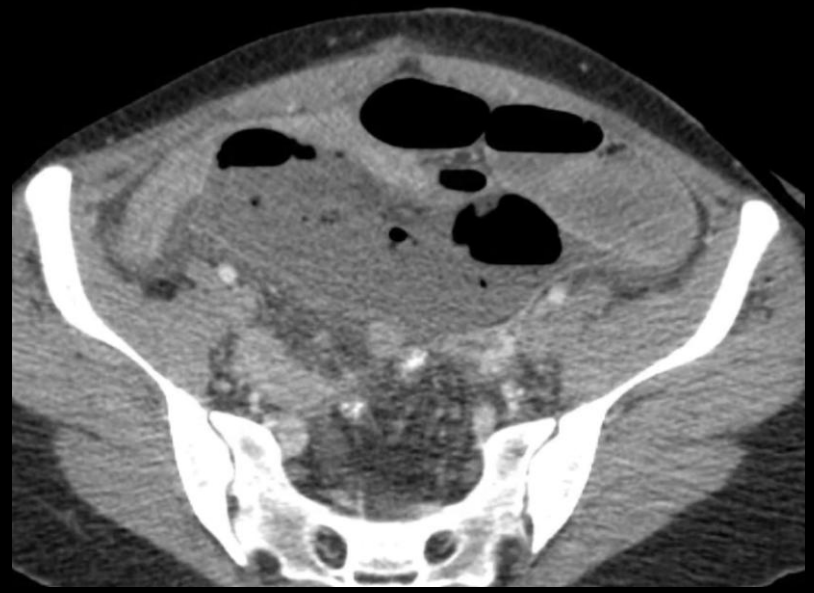
1. **Yes**
2. No

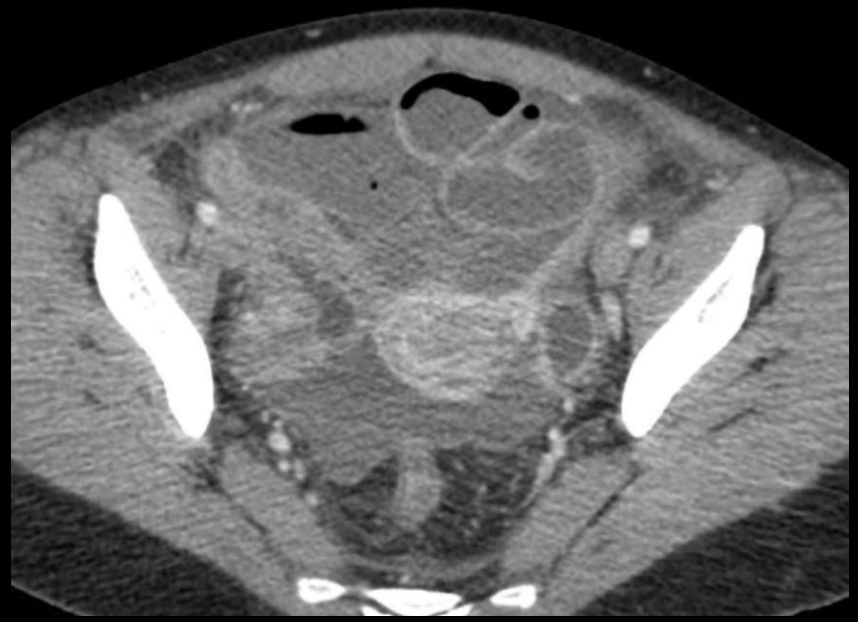
48 hours later



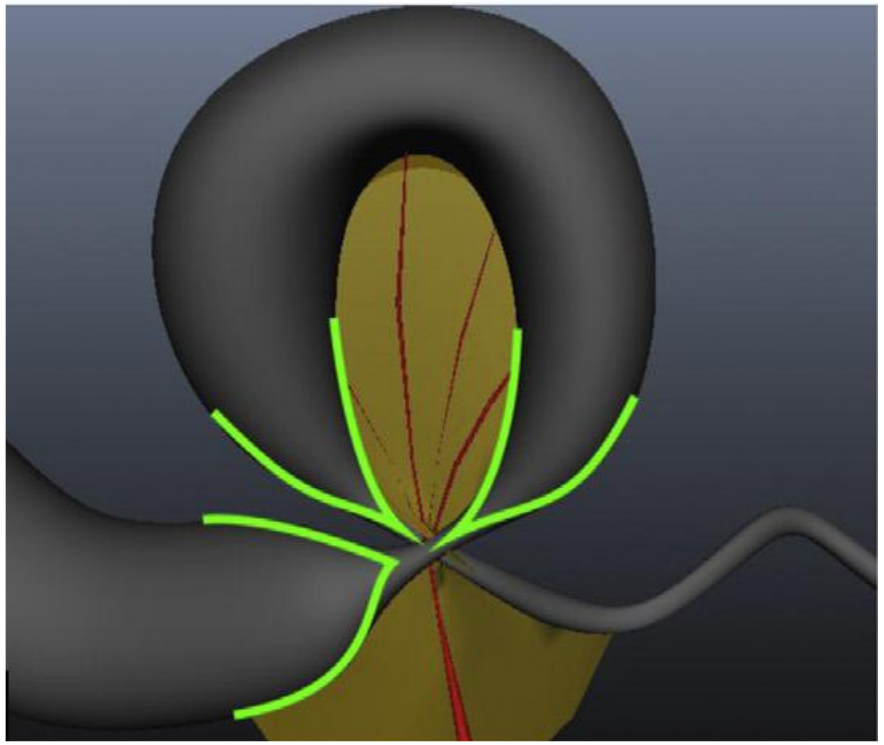




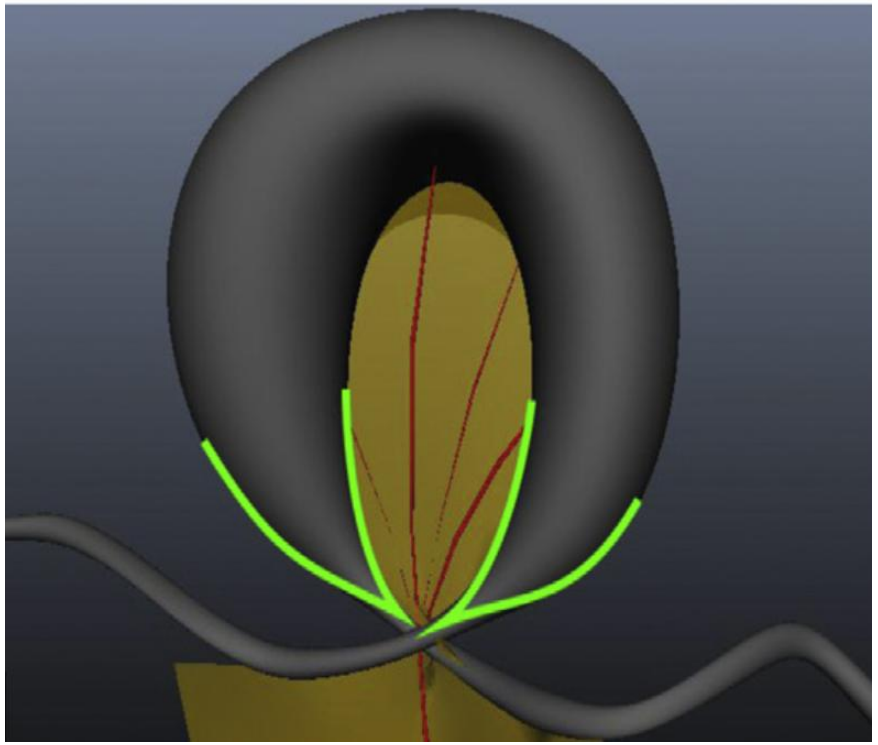




Closed loop obstruction with bowel necrosis, “Flat belly obstruction”



Incarceration with distension upstream

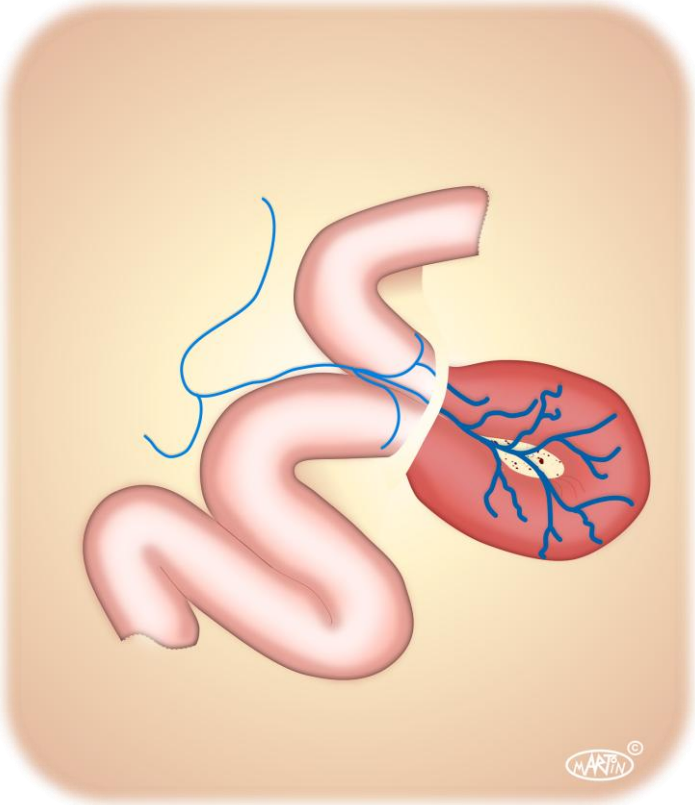


Incarceration without distension upstream (**flat belly obstruction**) -> **ISCHEMIA!!** (no time to dilate upstream)

Mbengue A. Diagn Interv Imaging. 2015

Closed loop obstruction with bowel necrosis, “Flat belly obstruction”

- **Signs of ischemia**:
  - Absent or diminished bowel wall enhancement on CECT
  - Increased attenuation of the bowel wall on unenhanced CT (hemorrhage)
  - Mesenteric congestion
  - Bowel wall thickening
  - Ascites
  - Increased attenuation of intestinal content in the closed loop



Li B. Increased Attenuation of Intestinal Contents at CT Indicates Bowel Necrosis in Closed-Loop Small Bowel Obstruction. Radiology. 2024

AJR

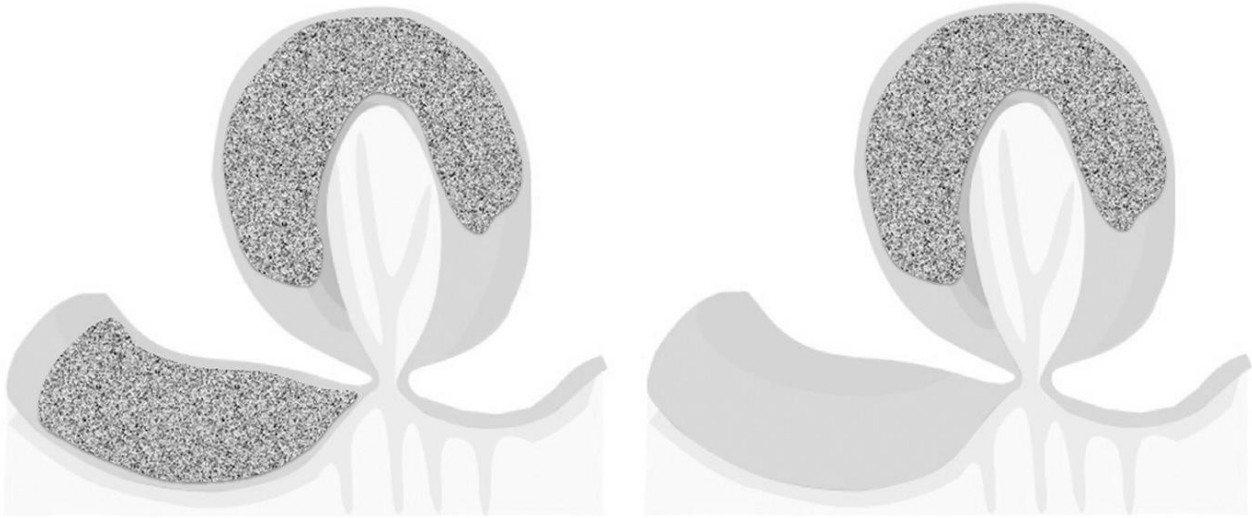
Original Research | Gastrointestinal Imaging | October 18, 2017

Clinical Relevance of the Feces Sign in Small-Bowel Obstruction Due to Adhesions Depends on Its Location

Feces sign: has been associated with **subacute or low grade SBO**

"Transition Zone feces" sign

"Trapped feces" sign



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Original Research | Gastrointestinal Imaging | October 18, 2017

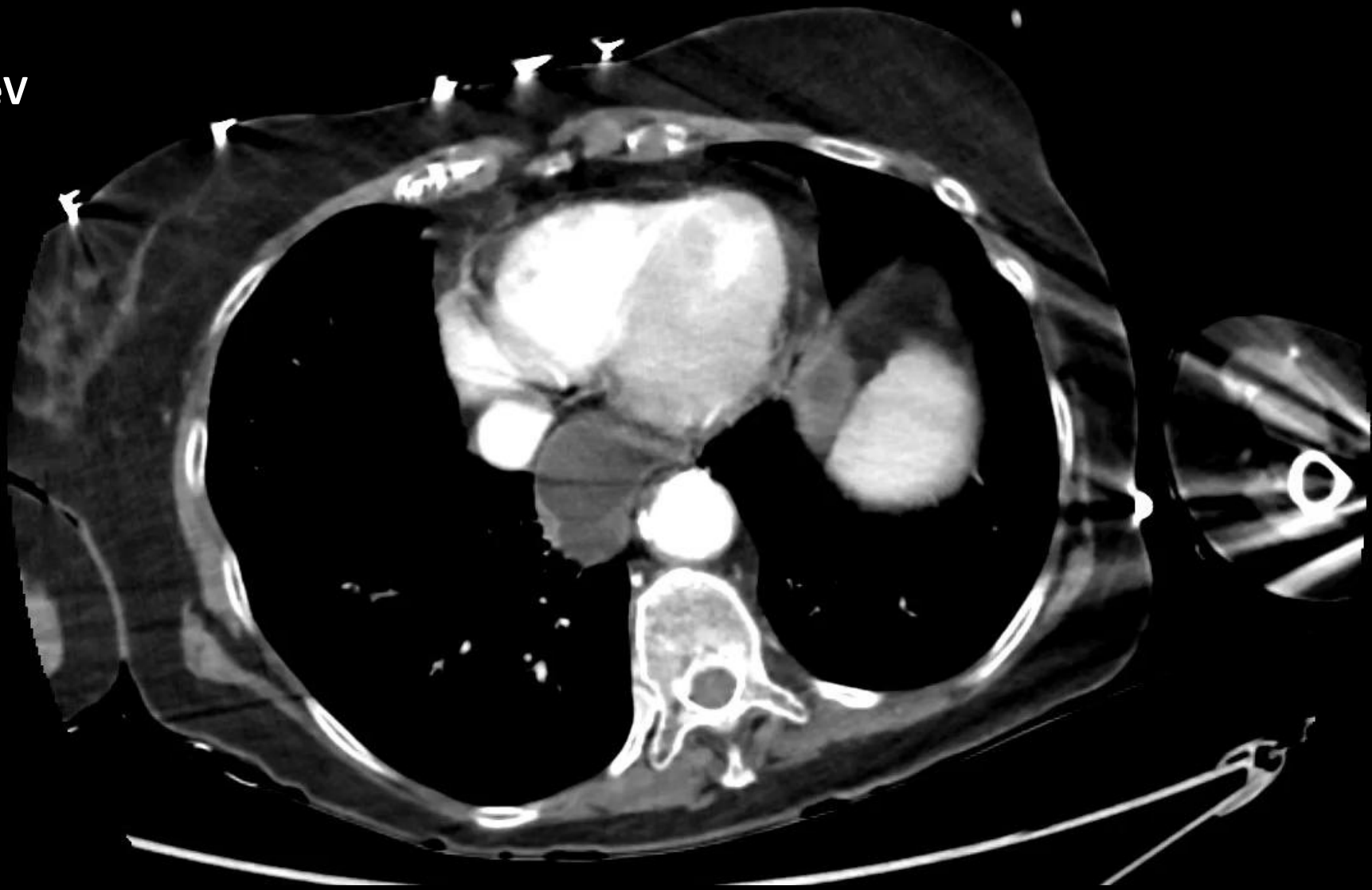
Clinical Relevance of the Feces Sign in Small-Bowel Obstruction Due to Adhesions Depends on Its Location

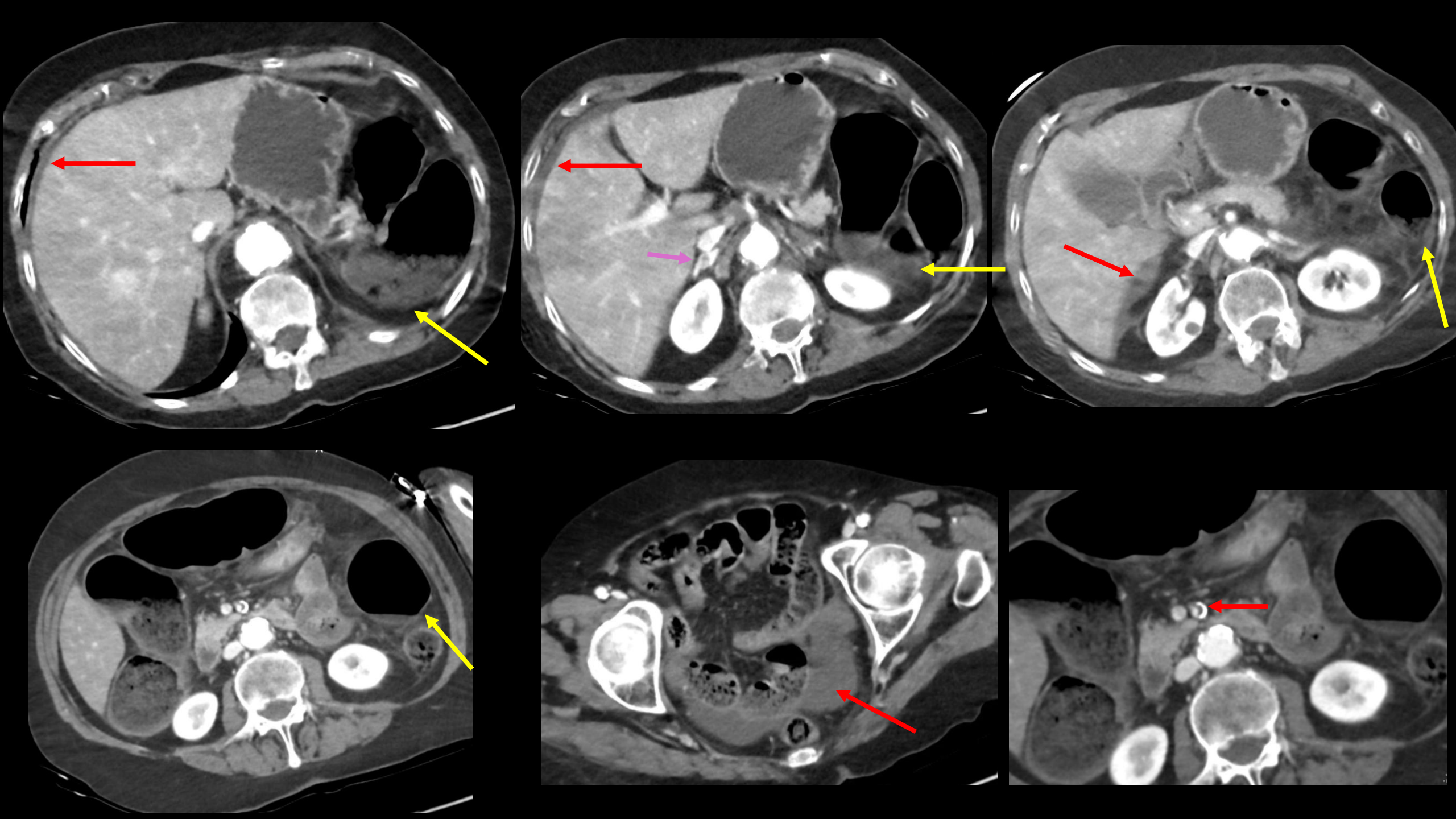
Be aware of "trapped feces" sign = closed loop SBO

Case # 2

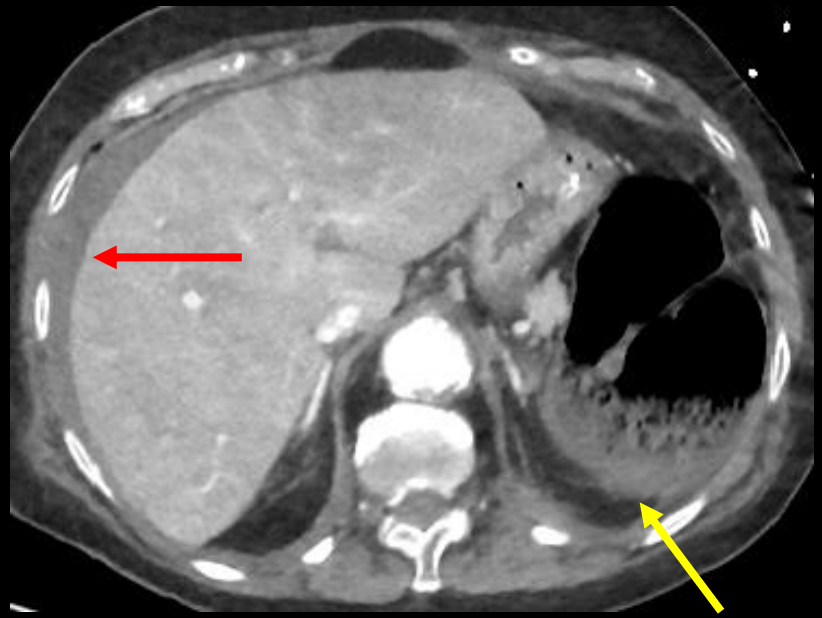
- 71 yo
- History: heart attack 1 week prior - Percutaneous coronary intervention (stent)
- Constipation, abdominal pain for a few days, now intense
- Lab: lactic acidosis

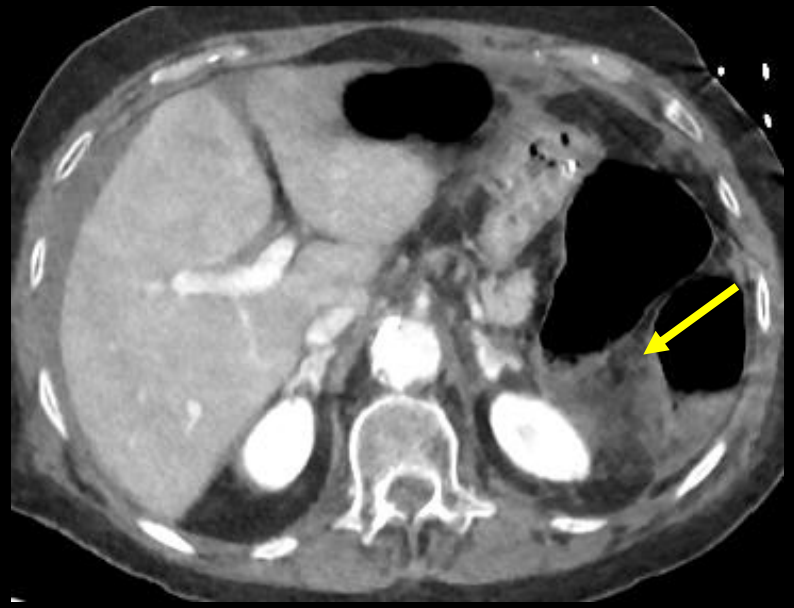
Dual energy CT: monoenergetic images at **55 keV**

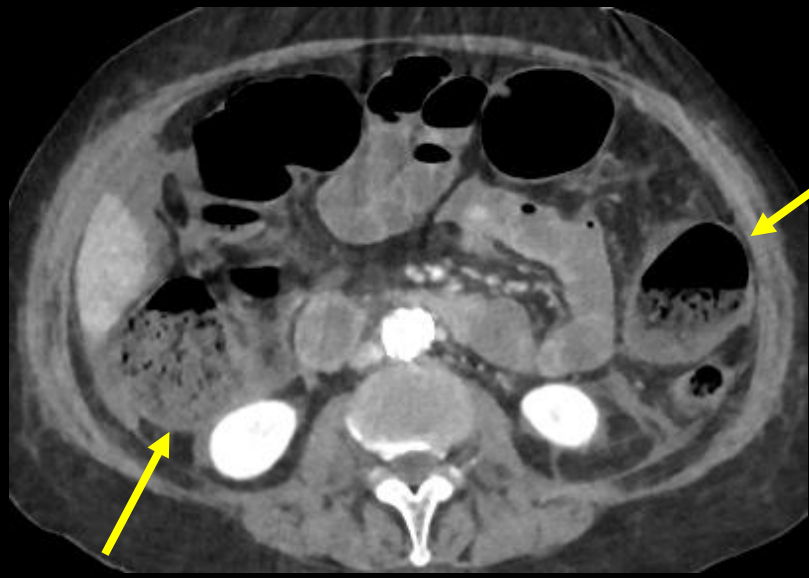


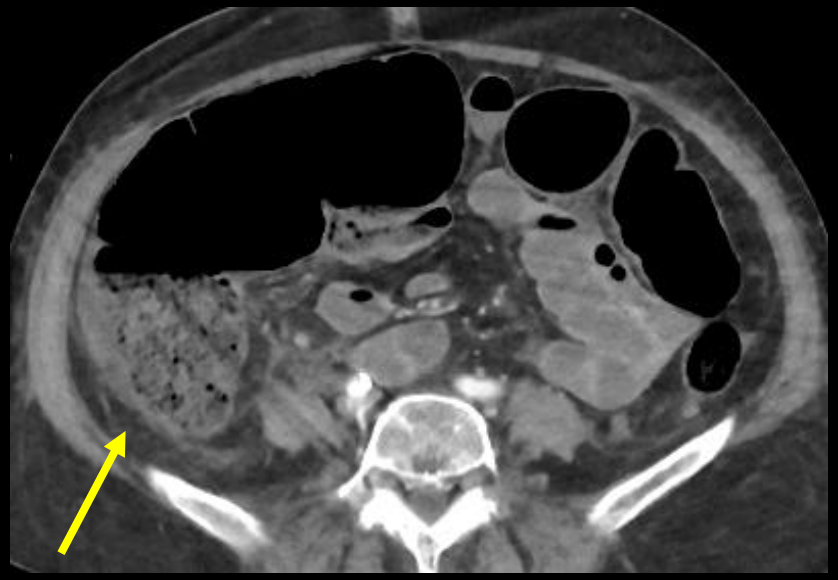


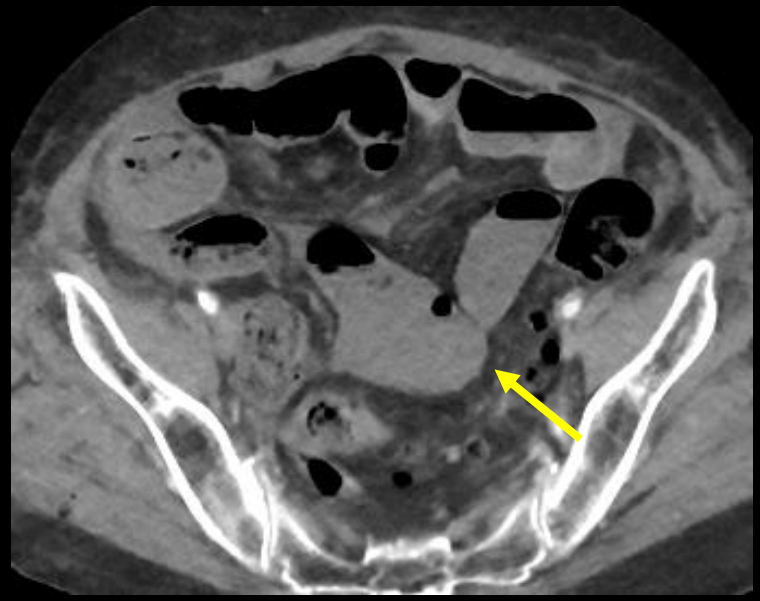
12 hours later. 55 keV

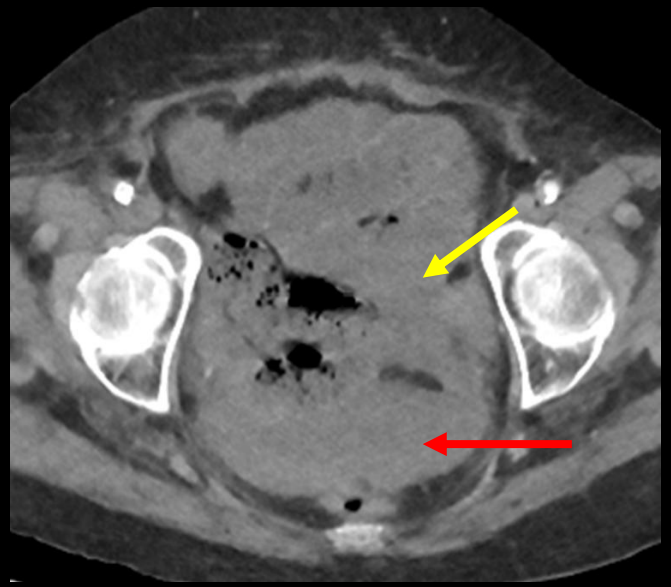


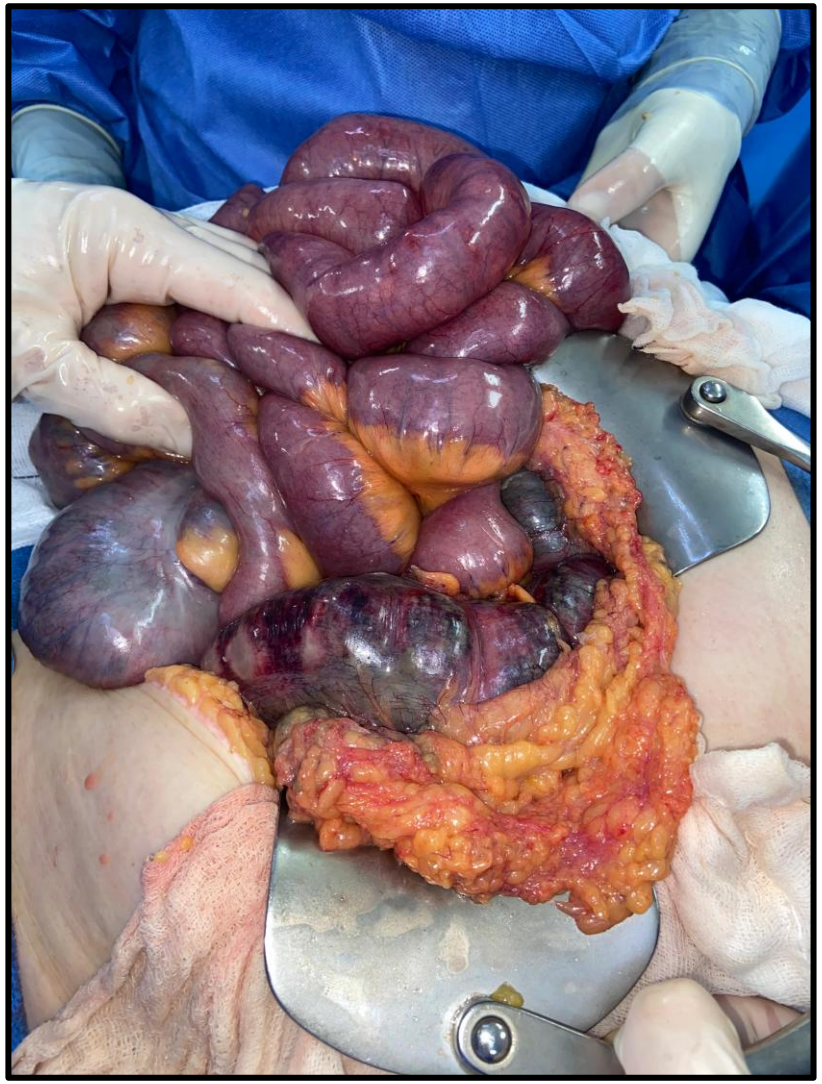


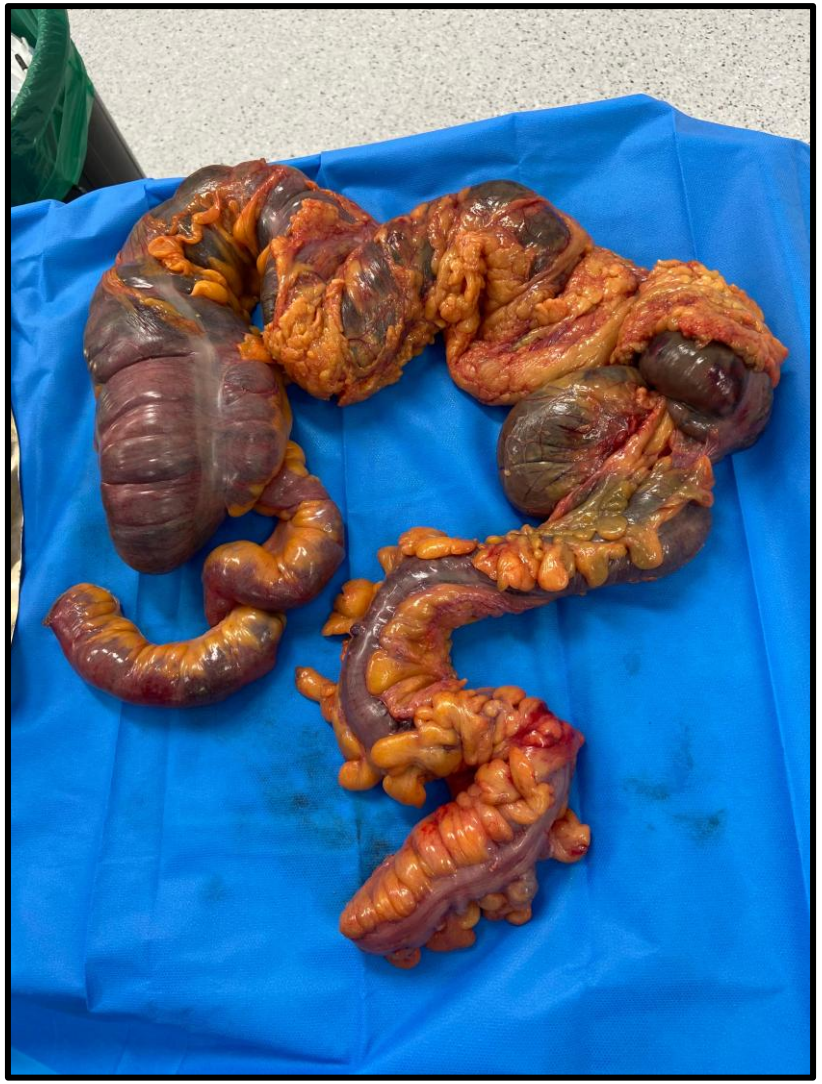












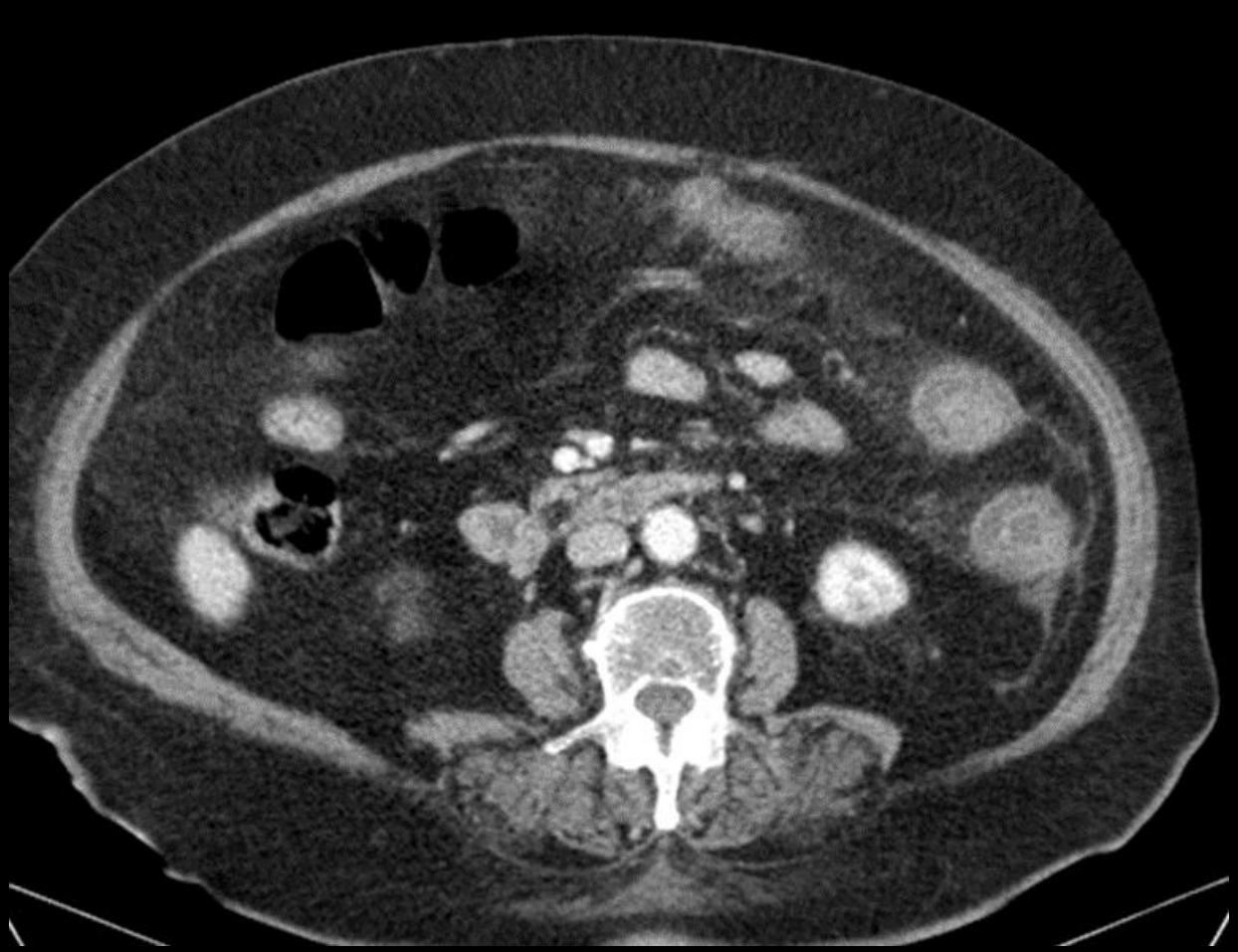
Colonic ischemia / NOMI (Non-Occlusive Mesenteric Ischemia)

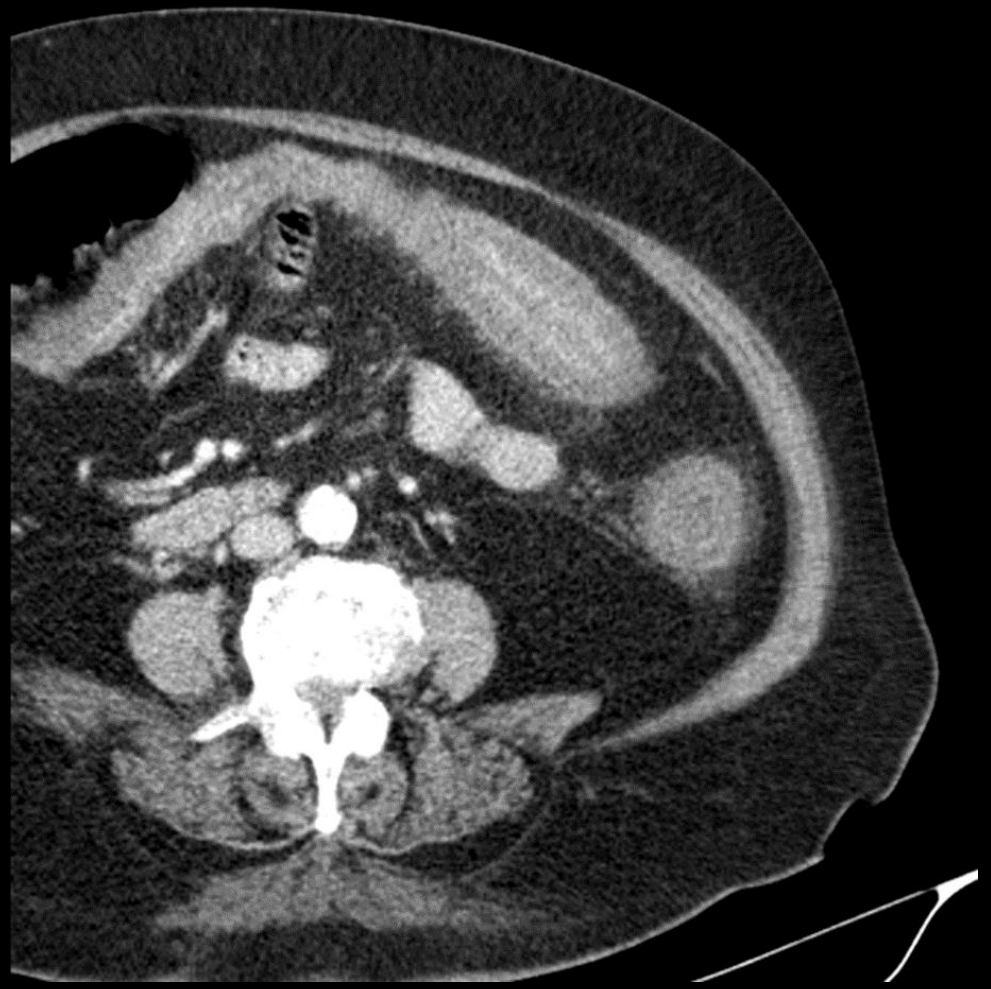
- **Left colon** (most common - 75%):
  - ➢ transient hypoperfusion (most common elderly): mucosa and submucosa - reversible lesions - wall thickening
- **Right colon:** more commonly associated with occlusion of the SMA (equivalent to acute mesenteric ischemia). Poorer outcome
- **Whole colon: NOMI** - Hypoperfusion - vasoconstriction of the SMA & IMA + often aggravated by a pre-existing atherosclerotic plaque. Poor outcome

Mazzei, M.A. Nonocclusive mesenteric ischaemia: think about it. *Radiol med*. 2015

Olson MC. Imaging of Bowel Ischemia: An Update, From the AJR Special Series on Emergency Radiology. AJR Am J Roentgenol. 2023

95 yo female. Abdominal pain, hypotension, rectal bleeding

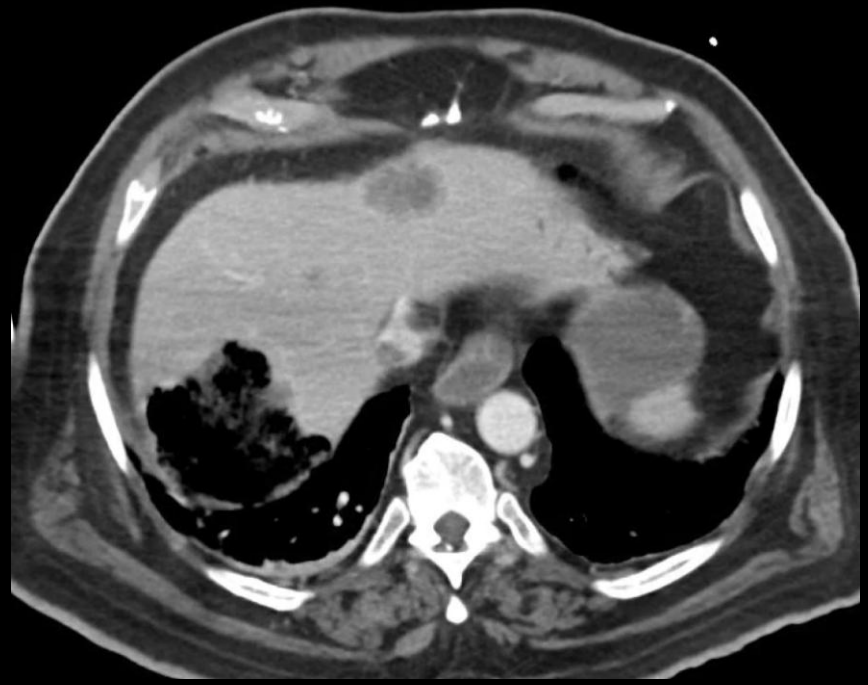
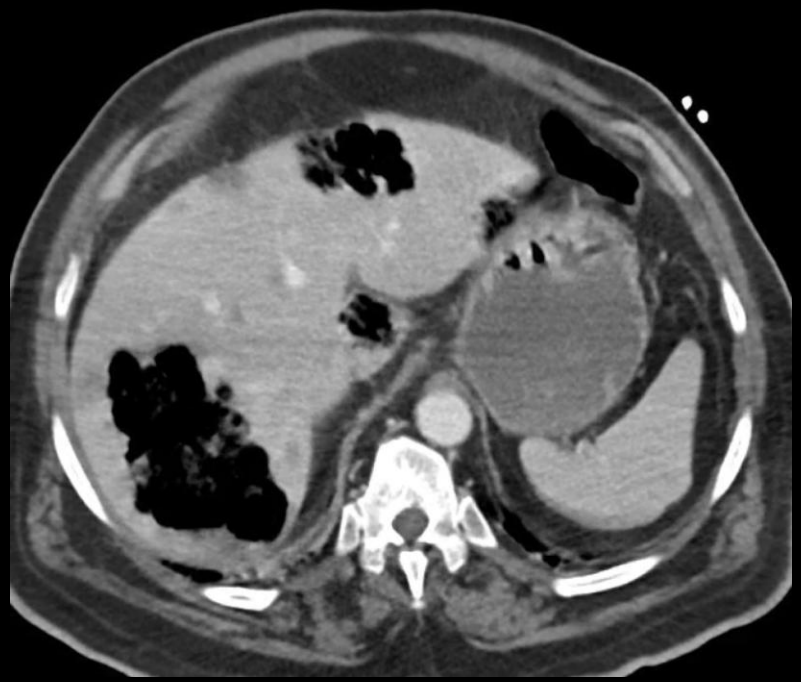
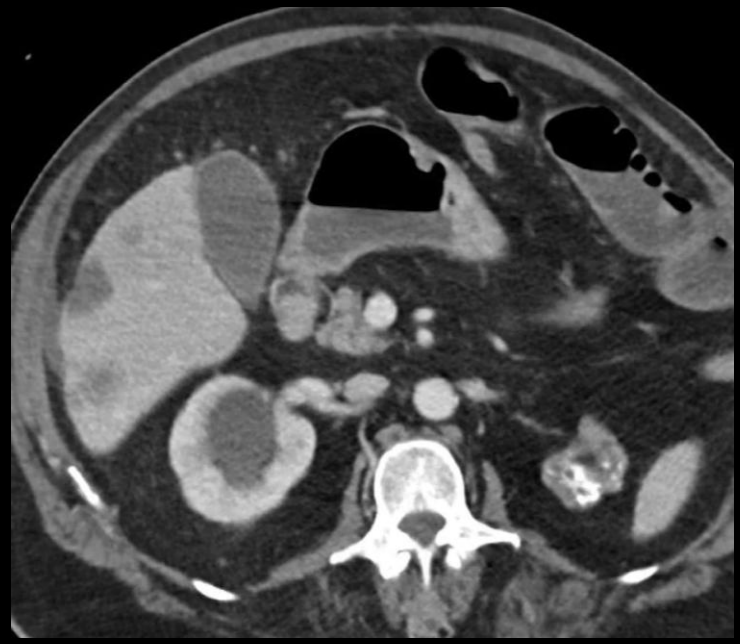
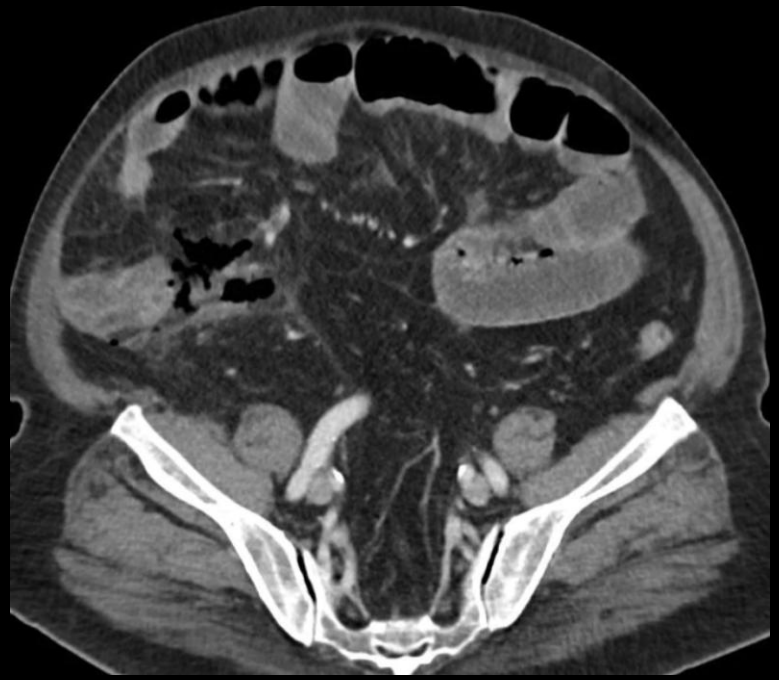
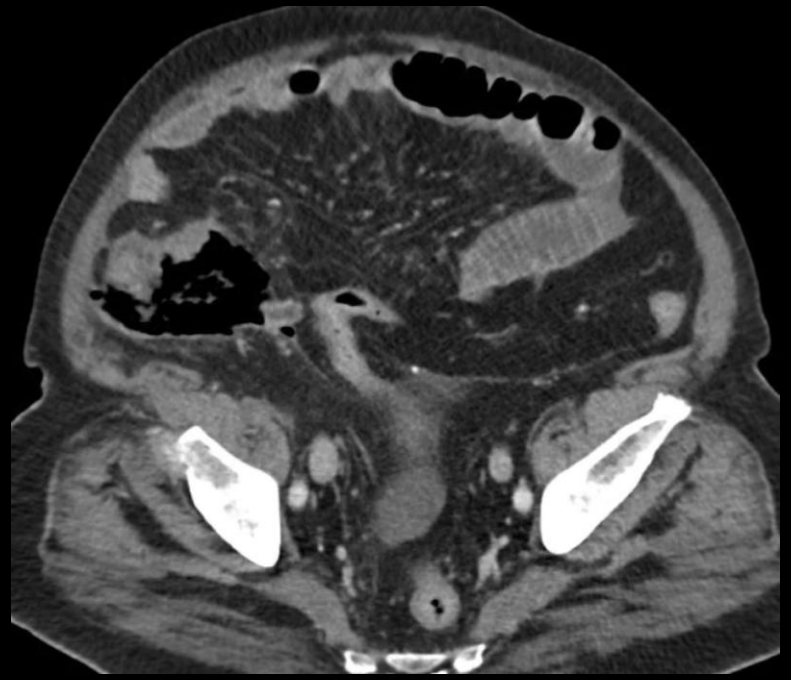
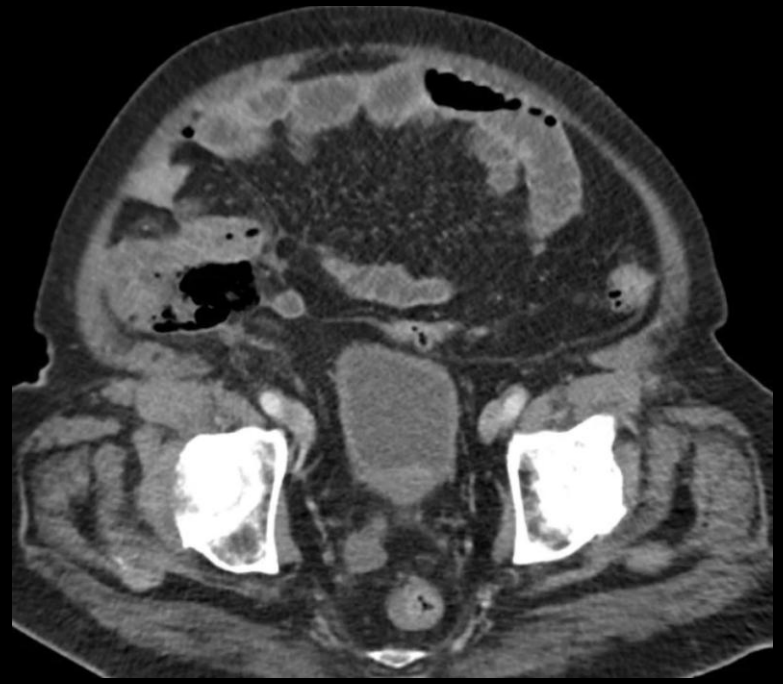




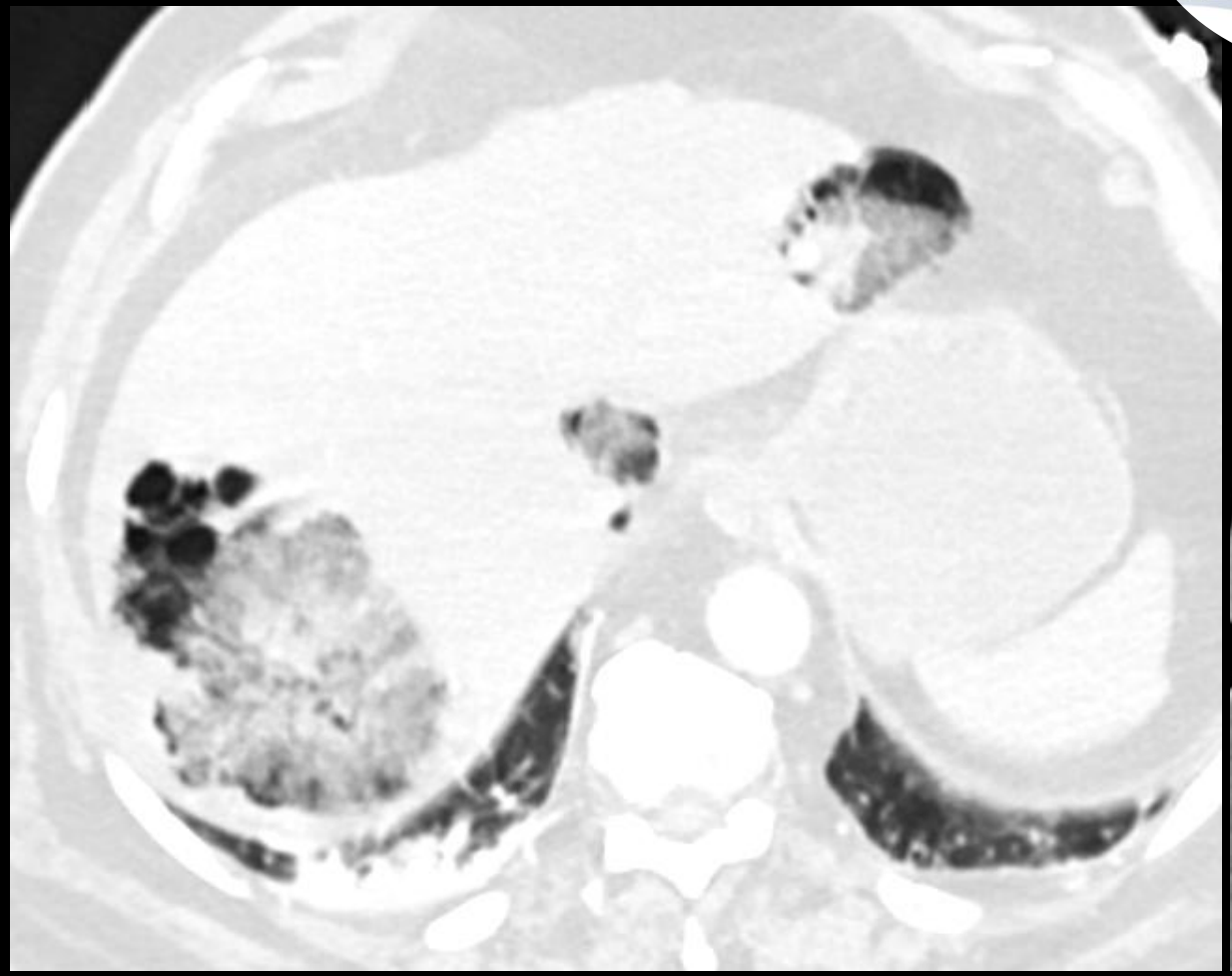
Case # 3

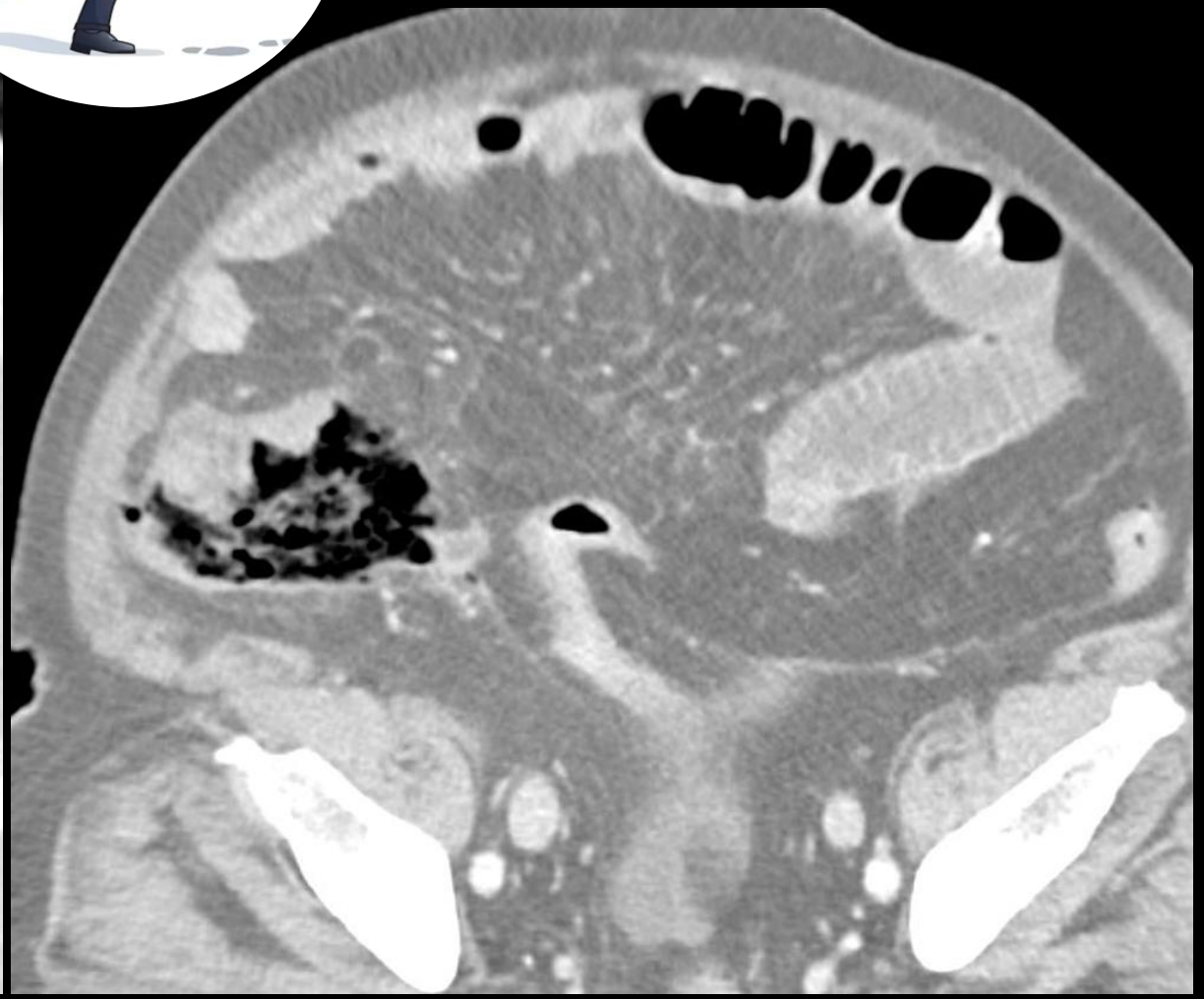
- 78 yo
- No previous relevant medical or surgical history.
- Intense abdominal pain, nausea, vomiting.
- High fever (39C)

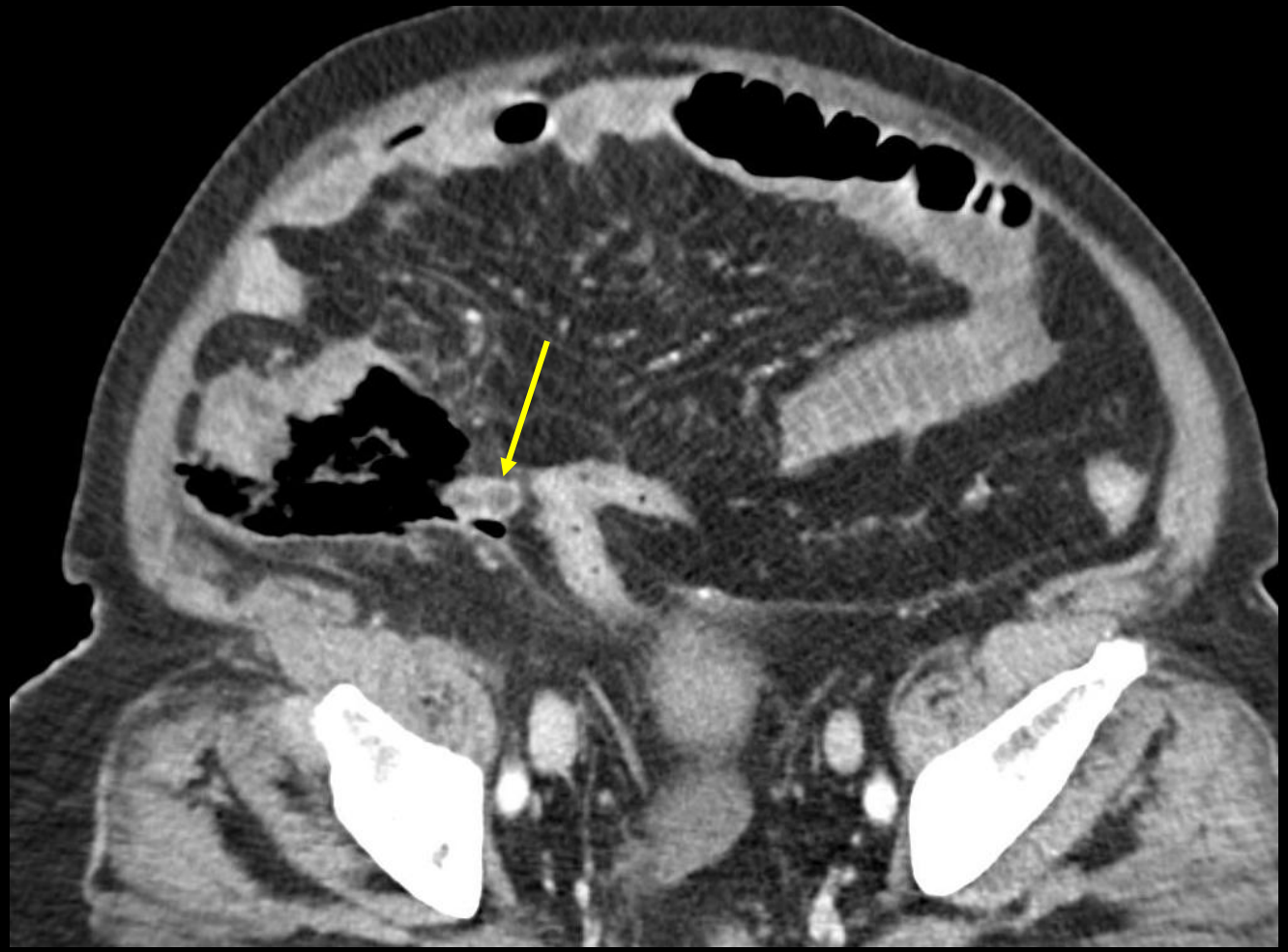
Septic shock

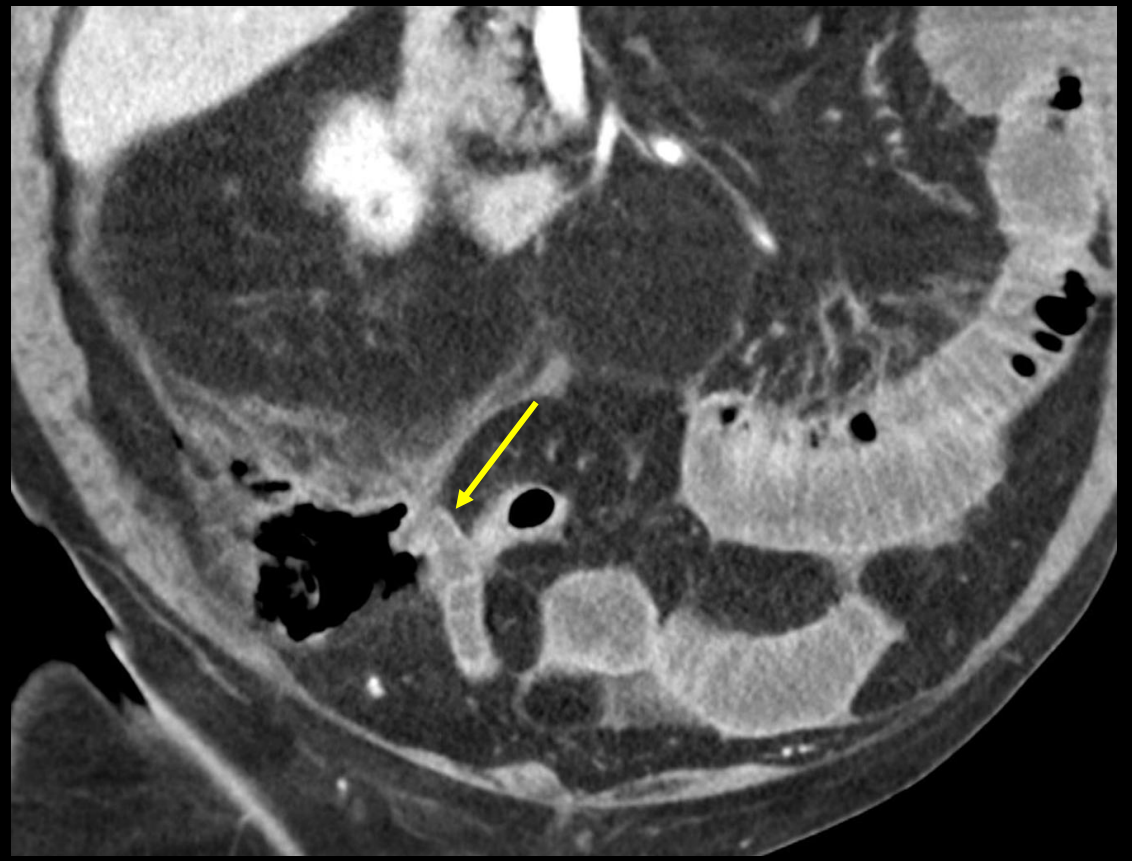







Perforated appendicitis with gas-forming hepatic abscesses?









Clostridium septicum infection of hepatic metastases secondary to cecal cancer. Perforation and sepsis.

- Surgery:
  - Cecal cancer, perforated
  - Liver metastasis
- Percutaneous drainage: **gas**, **no fluid**
- Cultures from the liver abscess: **Clostridium septicum**
- Patient recovered from the infection. Exitus a few months later secondary to tumor progression

Gas-forming pyogenic liver abscesses VS liver metastasis with infection

- **Both** are **uncommon**

Pyogenic liver abscesses:

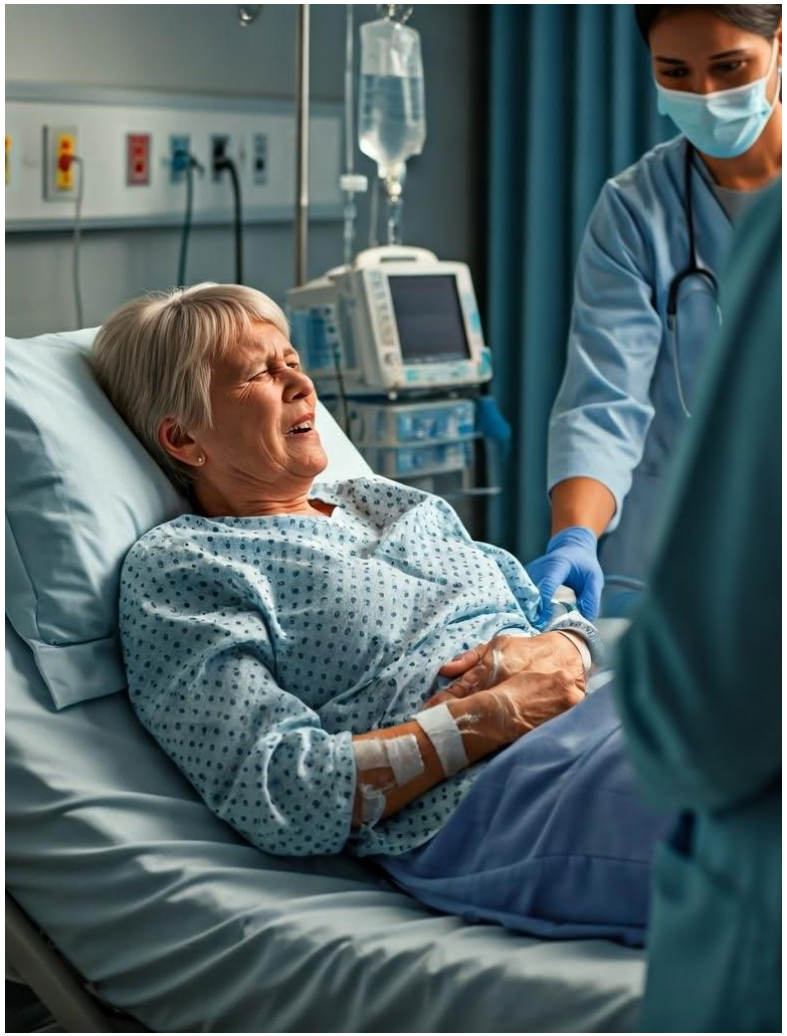
- E. coli, Klebsiella (most frequent causes)
- Klebsiella: gas-forming.
- Diabetes Mellitus is the main underlying condition
- **Imaging**: gas-containing collection with **air-fluid level (pus)**

Gas-forming pyogenic liver abscesses VS liver metastasis with infection

Infected liver metastasis:

- Necrotic solid tissue + gas. No fluid levels
- **Clostridium septicum**: germinates in **necrotic tissue – in the metastasis**. Not in the normal liver.
- Strong association between **C. septicum and colonic cancer**, especially adenocarcinoma of the cecum.
- Important to recognize – **specific antibiotic treatment!** (different from pyogenic abscess).

Case # 4

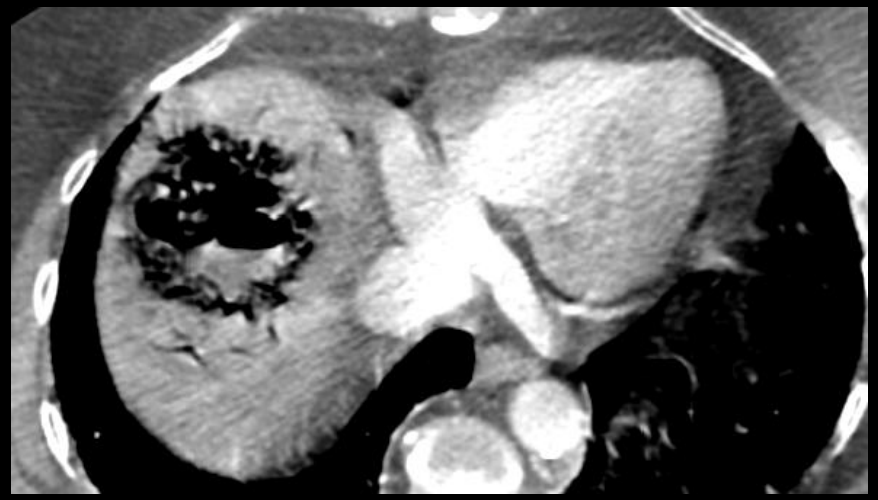
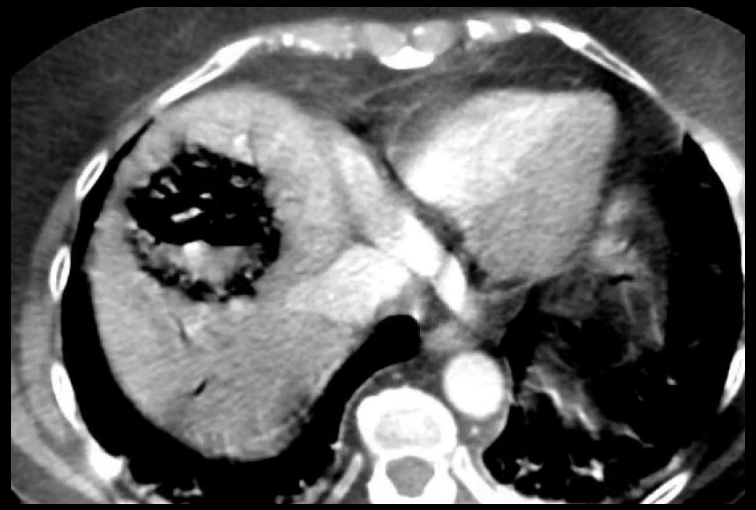
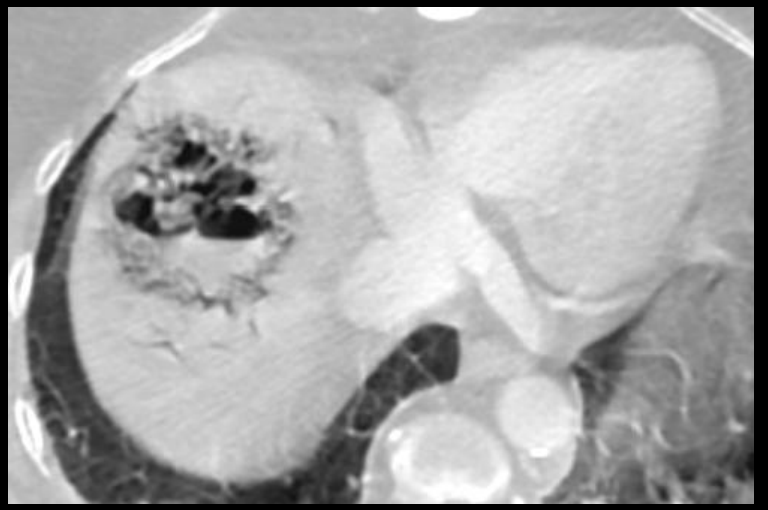
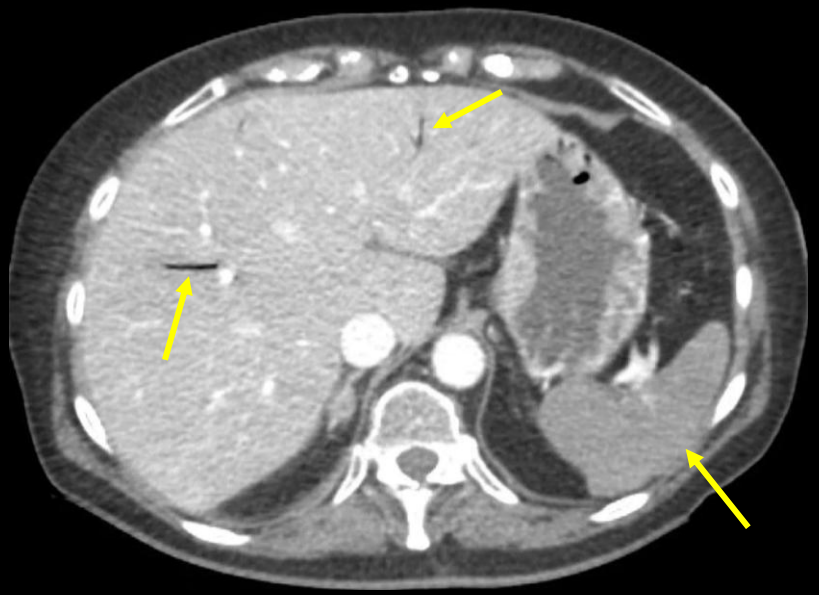
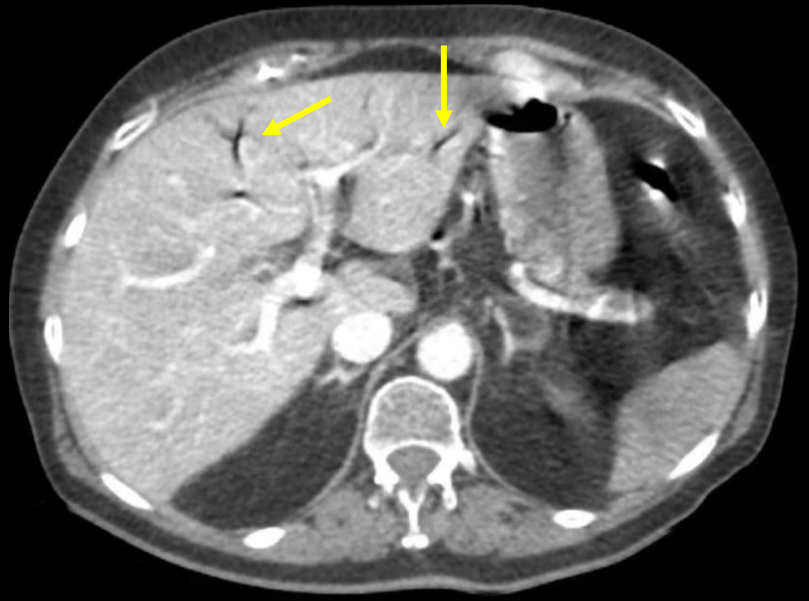
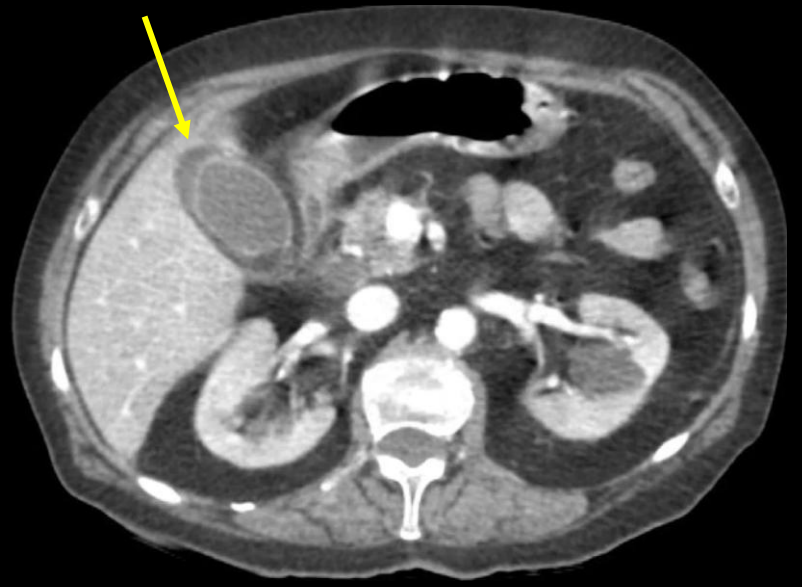


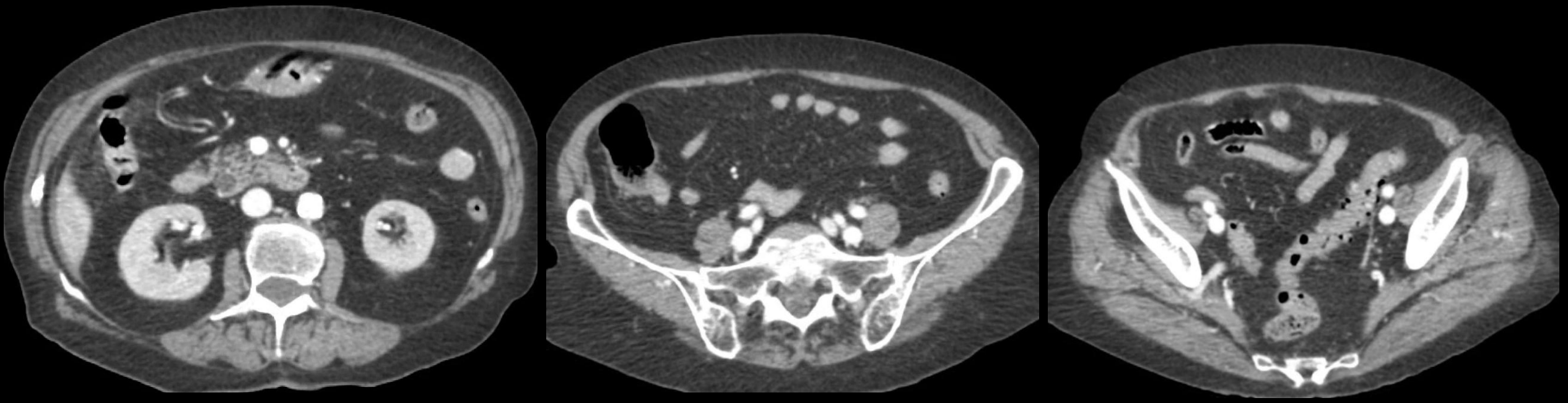
https://gamma.app/#images

Companion case

- 76 yo
- Diabetes mellitus
- Surgery 5 days prior (removal of knee osteosynthesis)
- Abdominal pain, nausea, vomiting

Septic shock and coagulopathy



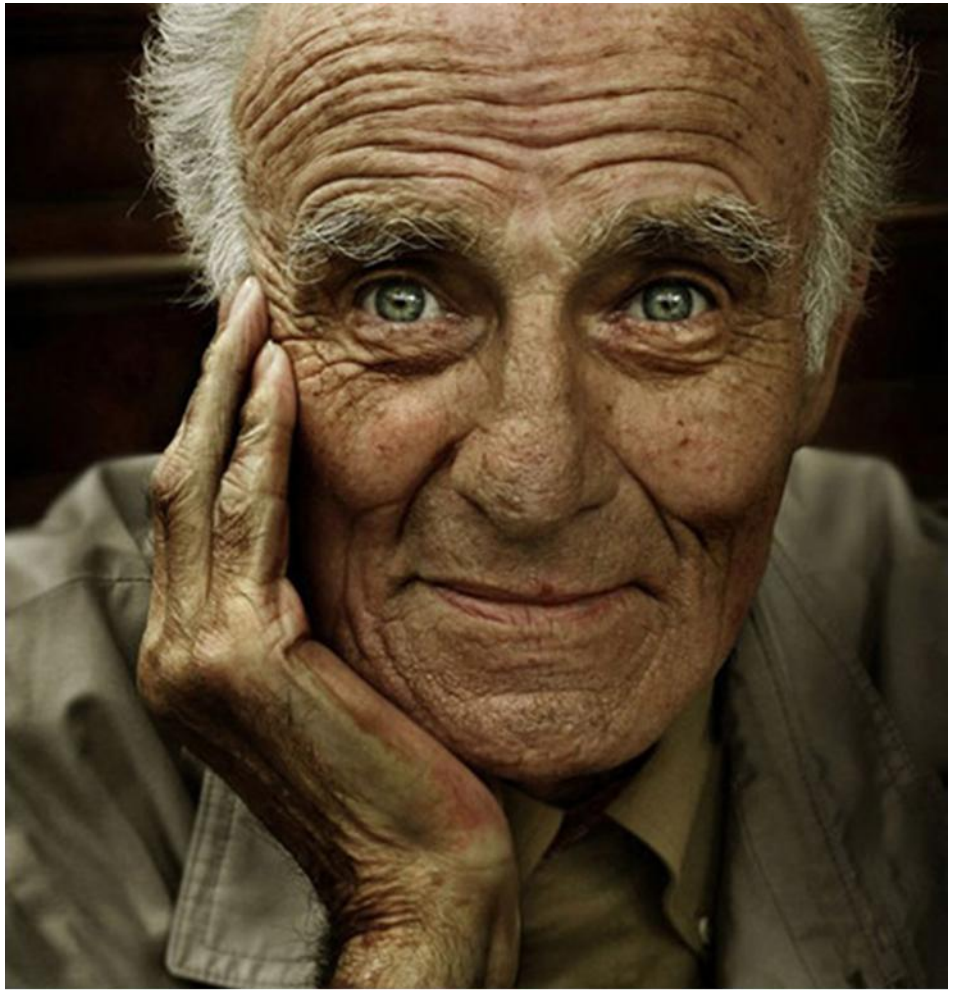
The rest of the abdomen was unremarkable…

Clostridium perfringens causing cholangitis and liver abscess

- Intravascular hemolysis, intense coagulopathy, multiple organ failure, death (a few hours later)
- Cholangitis with liver abscesses and sepsis caused by **C. perfringens** are very rare and rapidly fatal
- Alpha-toxin: associated with massive intravascular hemolysis & gas-gangrene
- More common: pseudomembranous colitis, emphysematous cholecystitis (C. perfringens and E.coli)

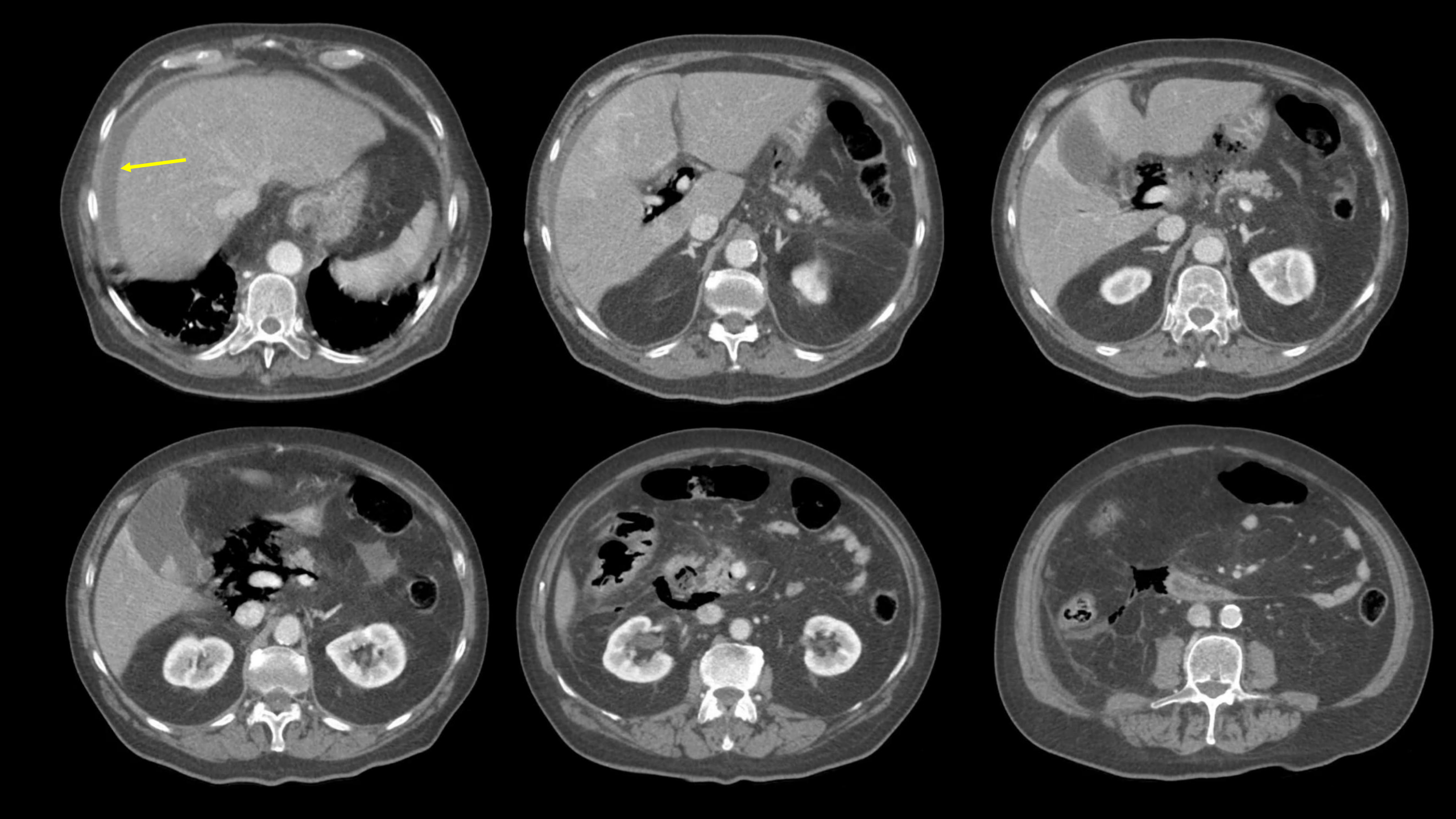
van Bunderen. Clostridium perfringens septicaemia with massive intravascular haemolysis: a case report and review of the literature. Neth J Med. 2010

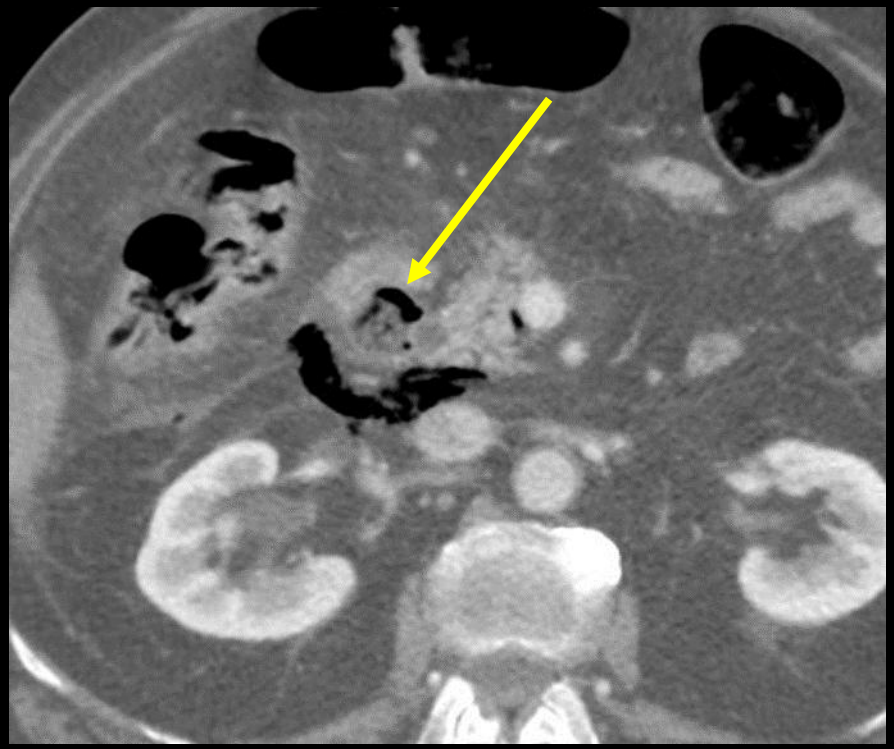
Case # 5

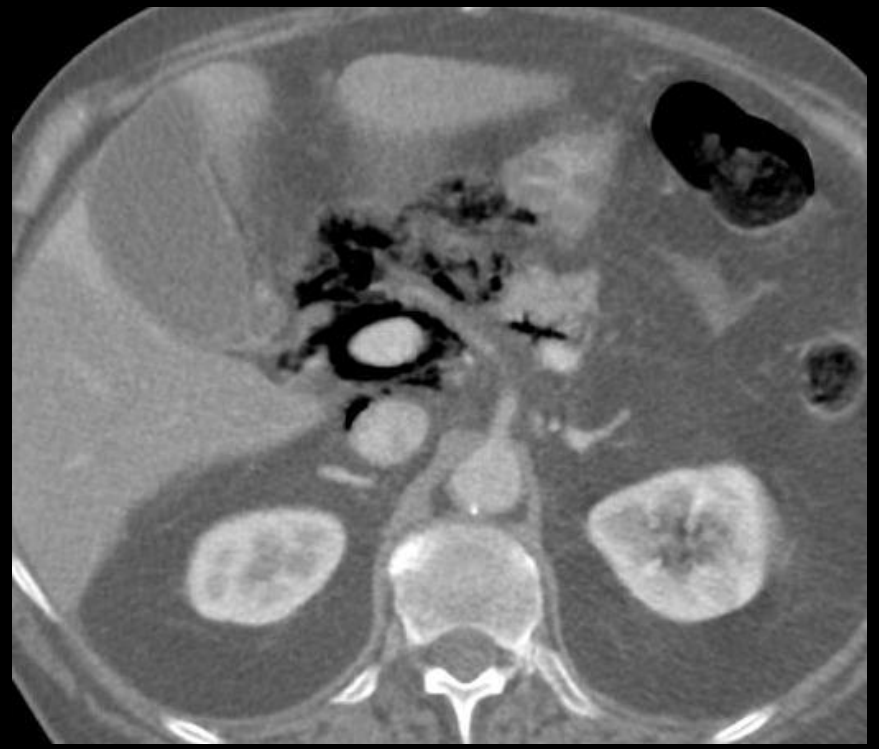


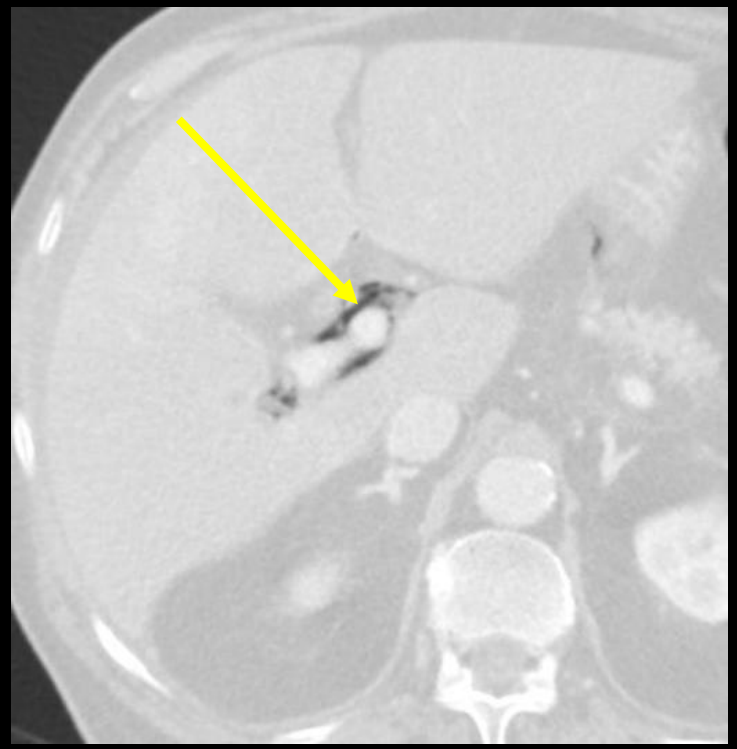
http://rafinchu.files.wordpress.com/2011/10/dragan.jpg? w=450&h=471

- 80 yo
- History: appendicectomy, rectal and prostate cancer surgeries
- No active treatment or immunosuppression
- Intense abdominal pain, nausea, vomiting, fever
- A few hours later: **shock**
- **ICU admission**

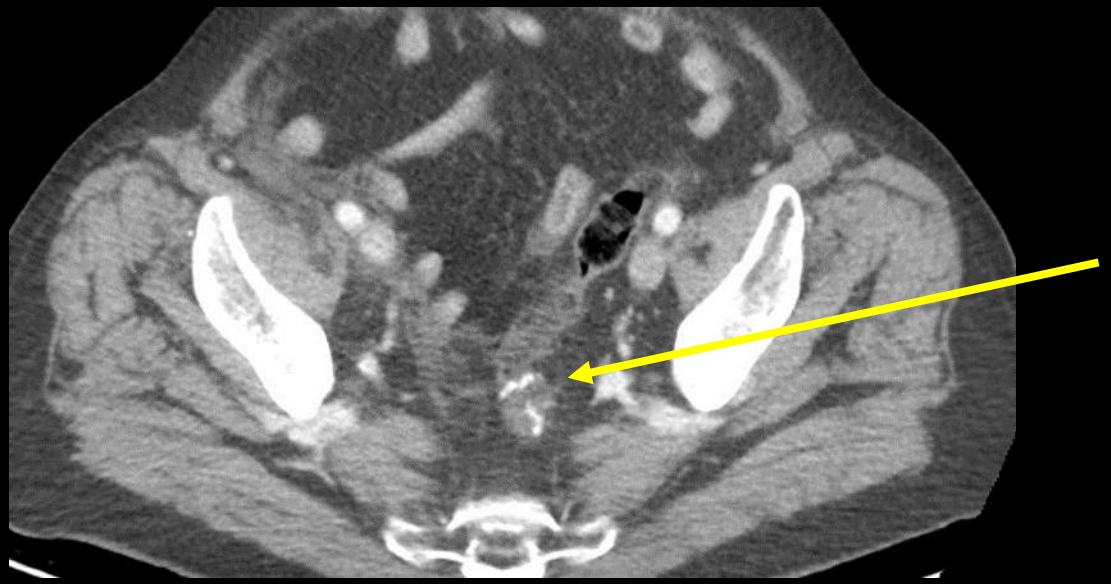








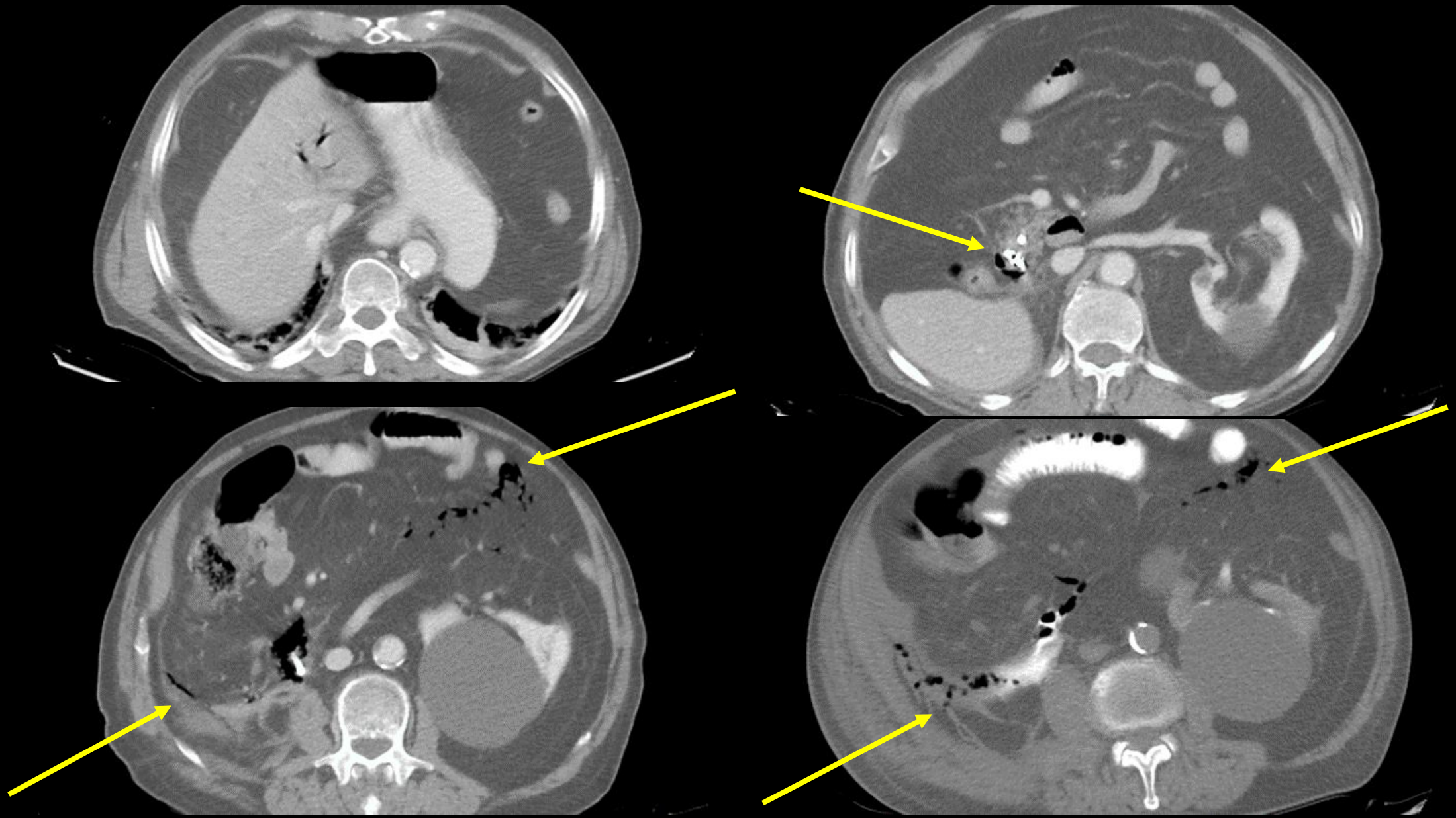
Duodenal diverticulum



"Extraluminal free air in the right anterior pararenal space is a reliable CT finding for diagnosing duodenal perforation beyond the bulbar segment"

Kim SH. Korean J Radiol. 2009

PERFORATION after ERCP



Retroperineal necrotizing fasciitis (NF)

Surgery:

- No perforation (Koher manouver to expose the duodenum)
- Extensive retroperineal gas and nonviable tissue
- Exitus letalis 12 h later
- Cultures: **Enterococcus faecalis and E. Coli**

Retroperineal necrotizing fasciitis (NF)

- Rare infection of the extraperitoneal deep soft tissues and fascial planes of the abdomen and pelvis. **Polymicrobial**, more common in this location
- Rapidly progressive and potentially lethal
- **Gas**: hallmark (not always present)

Retroperineal necrotizing fasciitis (NF)

- Majority of cases: **identifiable source of infection** - perforated appendicitis or diverticulitis, pancreatitis, pyelonephritis, gastrodoudenal perforation, necrotic cholecystitis, perforated bowel tumour, perineal infections /abscesses. **Not in this case!**
- NF is more frequent: perineum (Fournier´s gangrene), lower & upper extremities, abdominal wall
- Treatment: **immediate surgery and debridement**. **High mortality**

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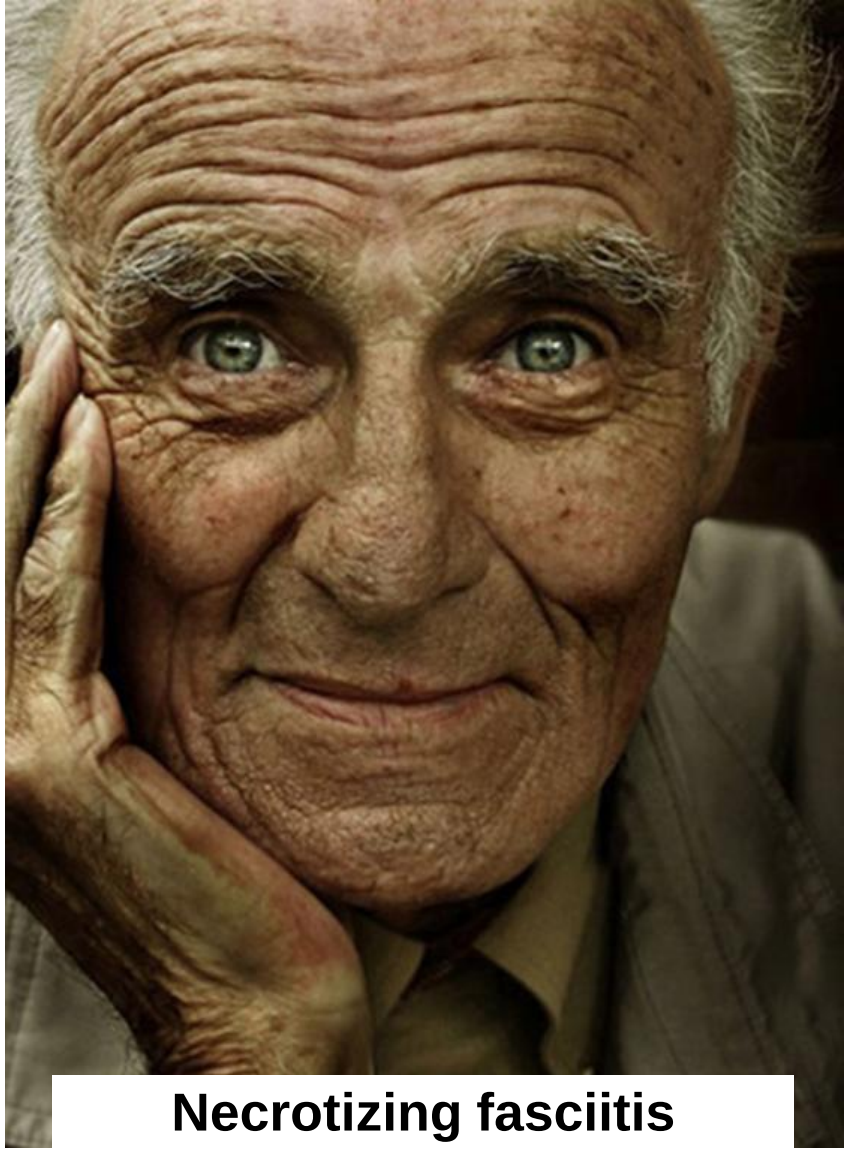
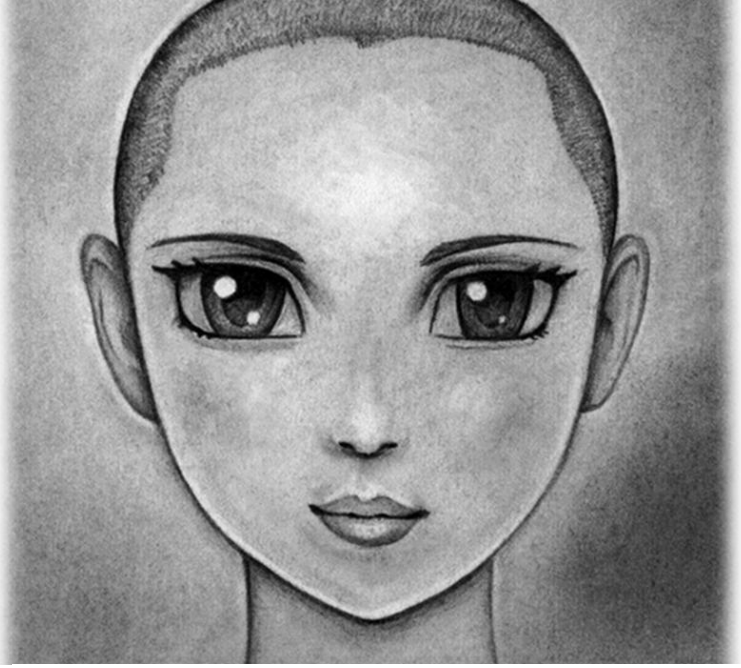
C. Perfringens colangitis



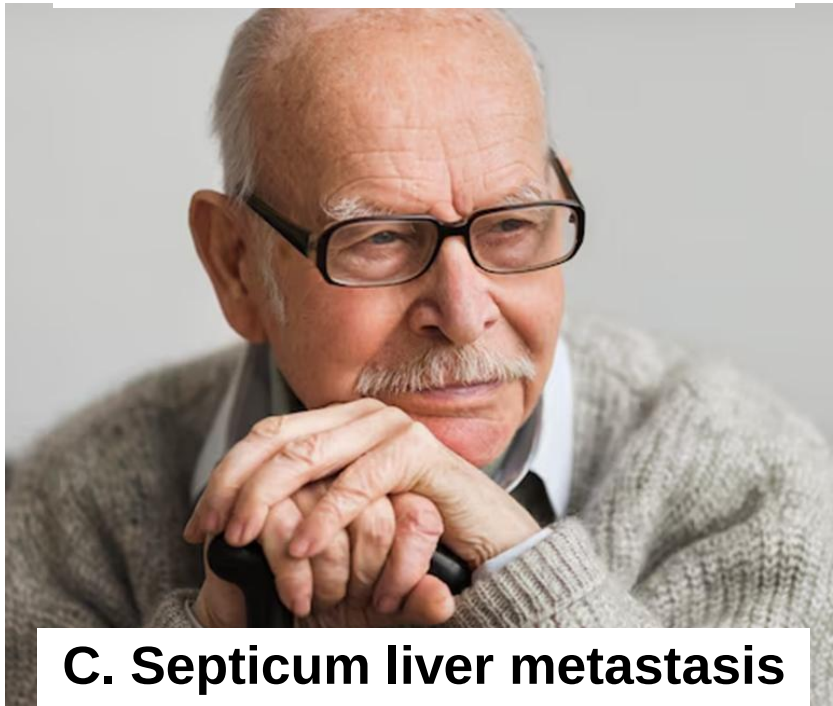
Necrotizing fasciitis



Flat belly closed-loop SBO

NOMI

Learning achieved?



C. Septicum liver metastasis

TUSEN TAKK