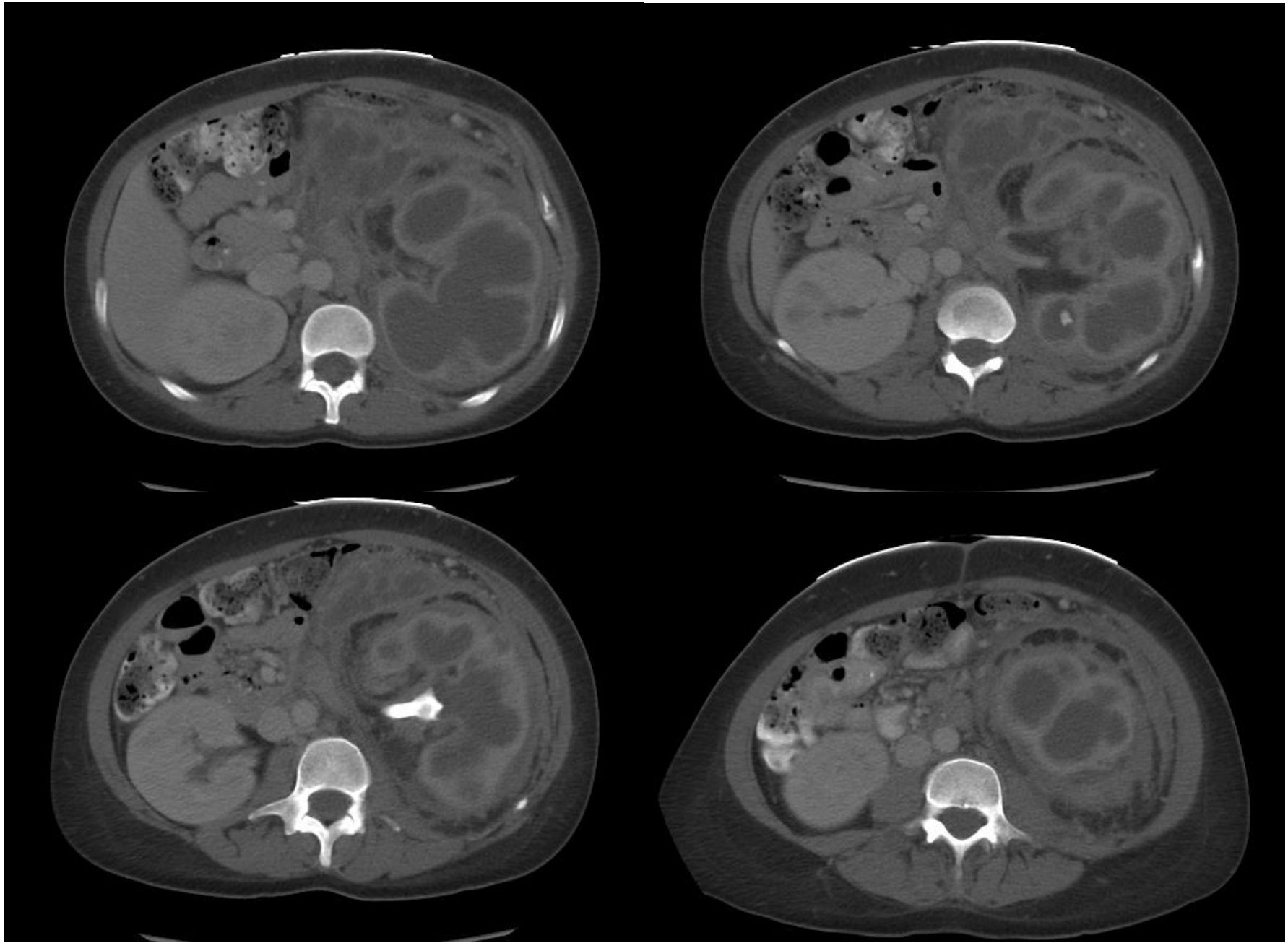


# Case Session #1

Kathryn Fowler, MD

Professor Diagnostic Radiology

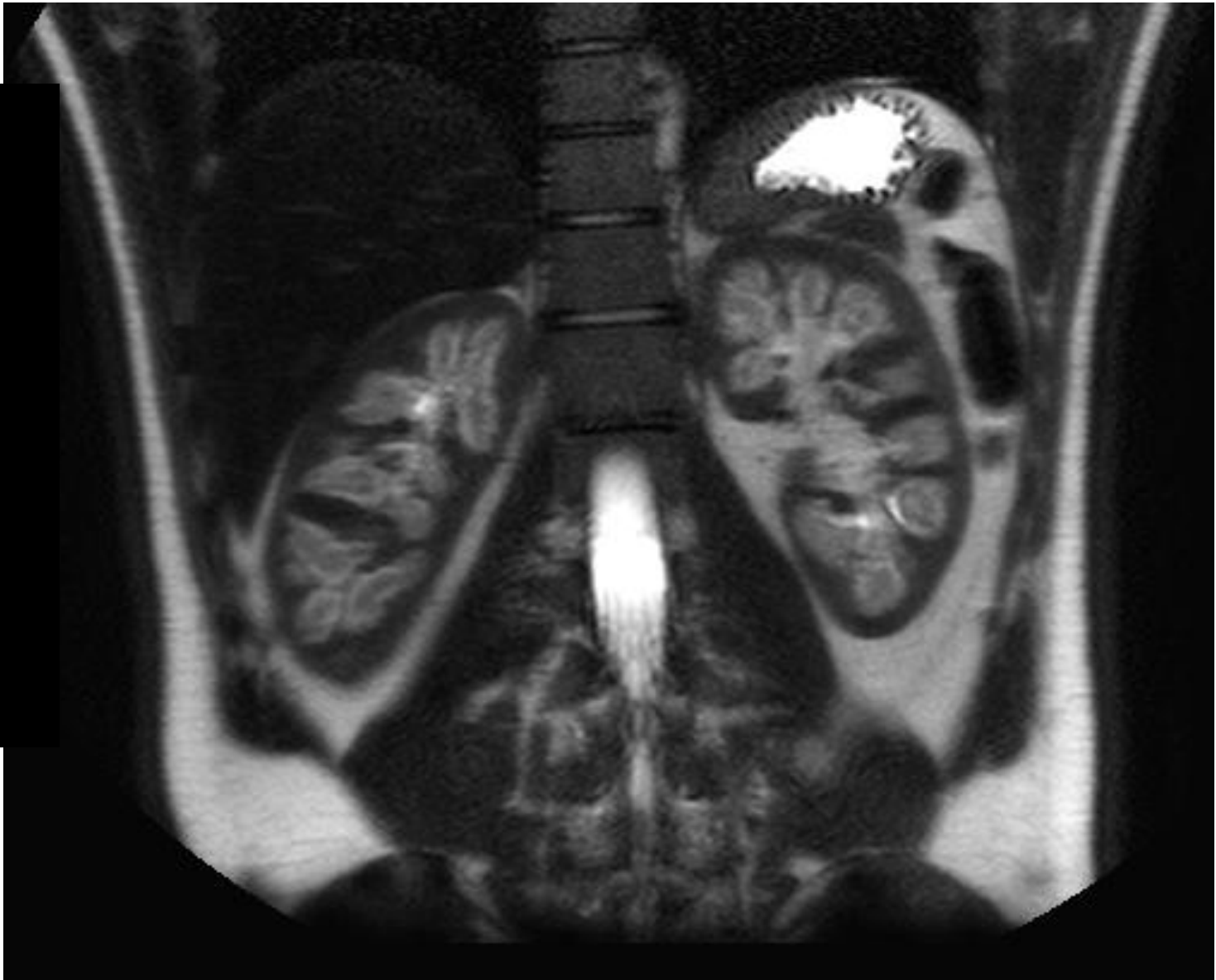
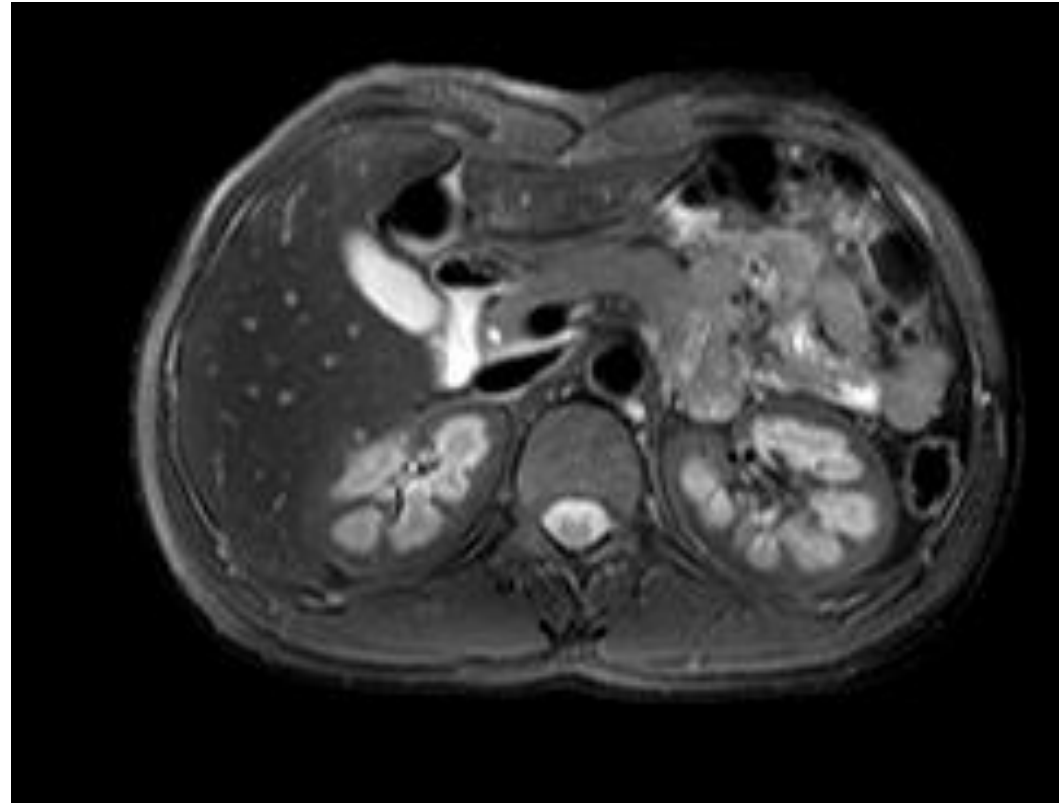
University of California San Diego





# Xanthogranulomatous Pyelonephritis

- Chronic inflammatory disorder
- Destructive granulomatous tissue containing lipid-laden macrophages invades renal parenchyma; up to 20% can be focal; the kidney is usually nonfunctional.
- Most commonly a/w Proteus or E. coli infection; often w staghorn calculus
- DDX neoplasm
- Rx: removal of the kidney



# Hemoglobin Deposition in Renal Cortices

- Sickle cell, Paroxysmal nocturnal hematuria
- Susceptibility – low SI on T2-W, on GRE and on LONG ECHO chemical shift



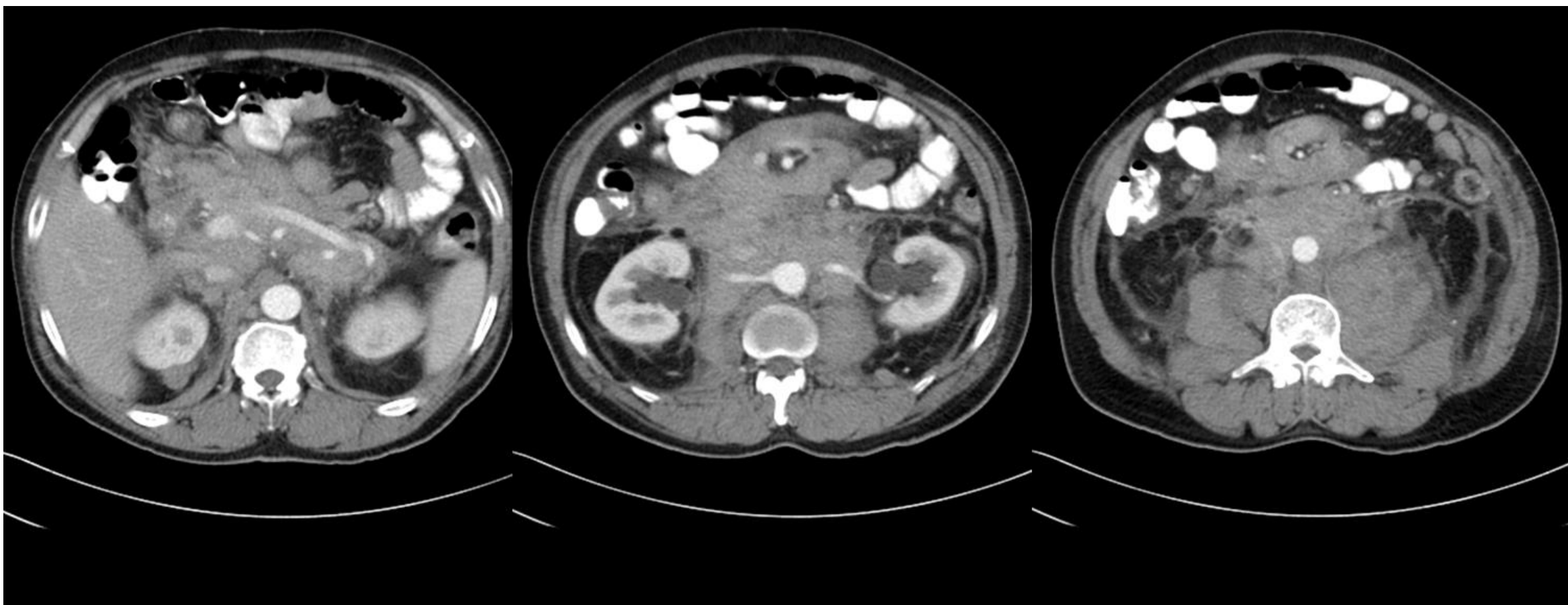




# Multiple Splenic Lesions

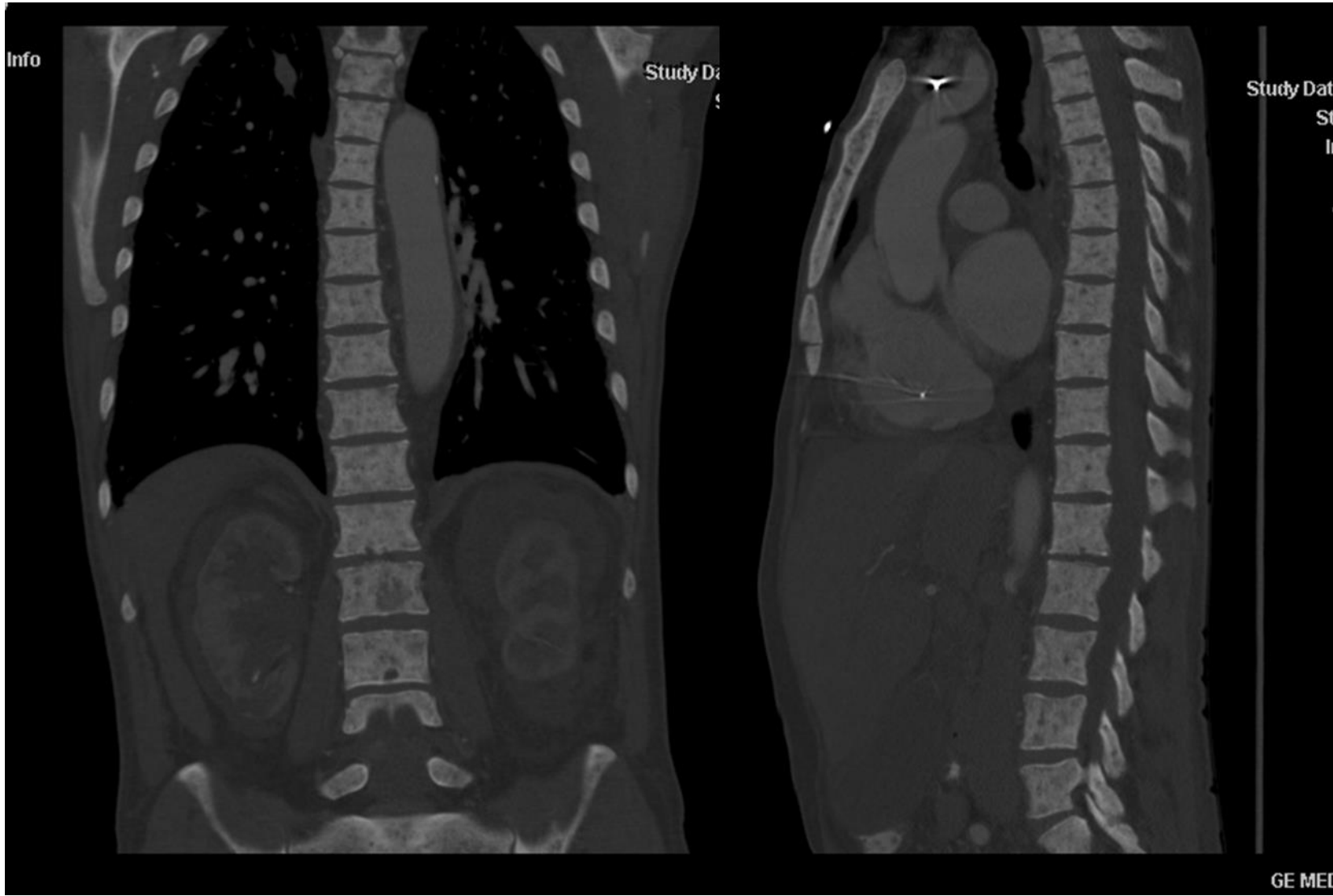
- Infections
  - Bacterial
  - Mycobacterial, fungal
  - Echinococcus
- Inflammatory
  - Sarcoid
- Splenic Neoplasms
  - Lymphomas (secondary involvement most common)
  - Vascular: lymphangiomas, hemangiomas, hamartomas; hemangioendotheliomas, hemangiopericytomas, and Littoral cell angiomas; hemangiosarcomas
- Mets
  - breast, lung, ovary, melanoma, stomach, pancreas, liver, and colon cancer
- Systemic Disorders
  - Gaucher's





Lymphoma





# Perirenal Masses

## ▣ Malignancy

- Lymphoma
- RCC (rare)
- PTLD
- Metastases
- Retroperitoneal Tumor extension

## ▣ Fluid

- Hematoma
- Urinoma
- Abscess

## ▣ Inflammatory

- XGP
- Pancreatitis

## ▣ Proliferative Diseases

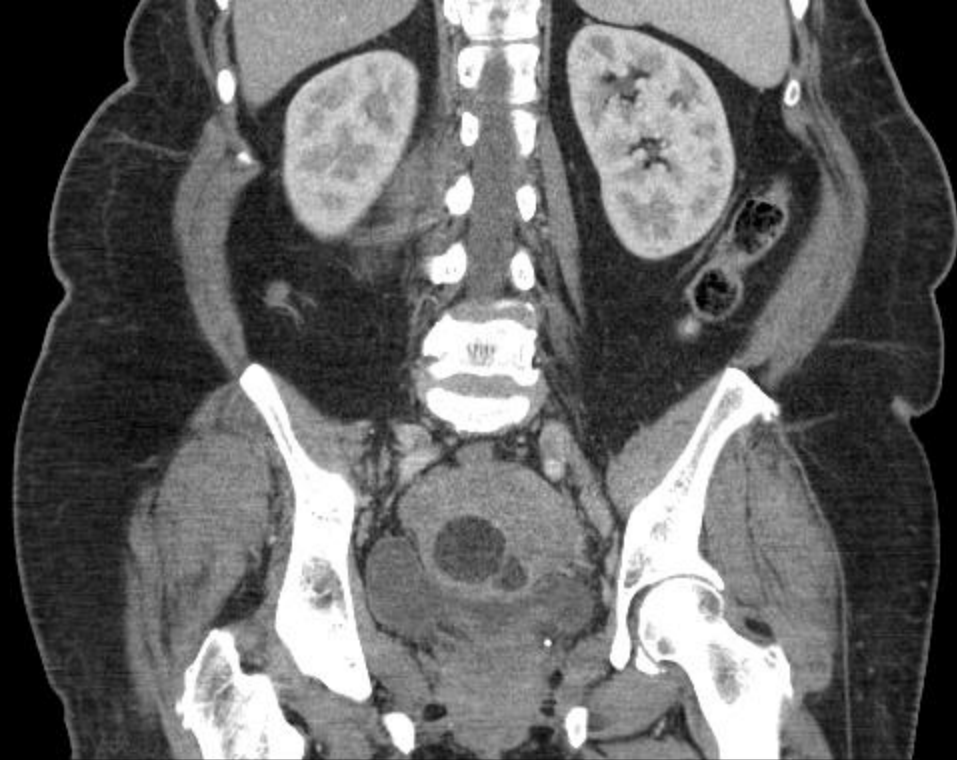
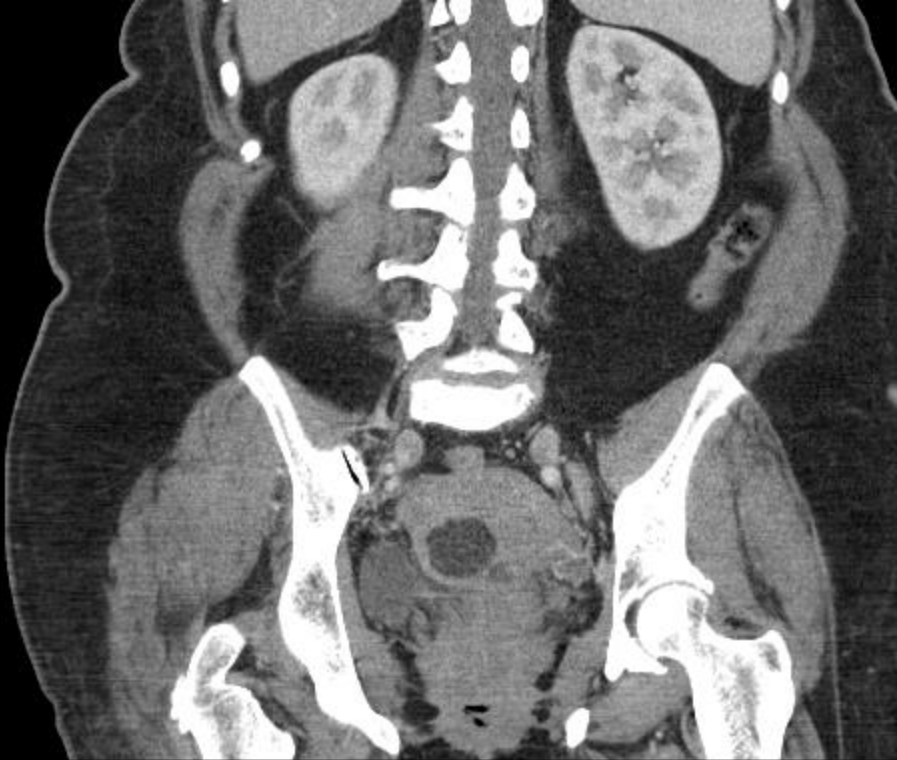
- Extramedullary Hematopoiesis
- Retroperitoneal Fibrosis
- Rosai-Dorfman disease (sinus histiocytosis with massive lymphadenopathy)
- Erdheim-Chester disease (lipoid granulomatosis)

# Extramedullary Hematopoiesis

- May occur in chronic anemia, blood dyscrasias, and replacement of normal bone marrow
- Renal extramedullary hematopoiesis is perinephric
- Hypodense on CT
- Hypointense on T1W and mildly hyperintense on T2W
- This patient had myelofibrosis

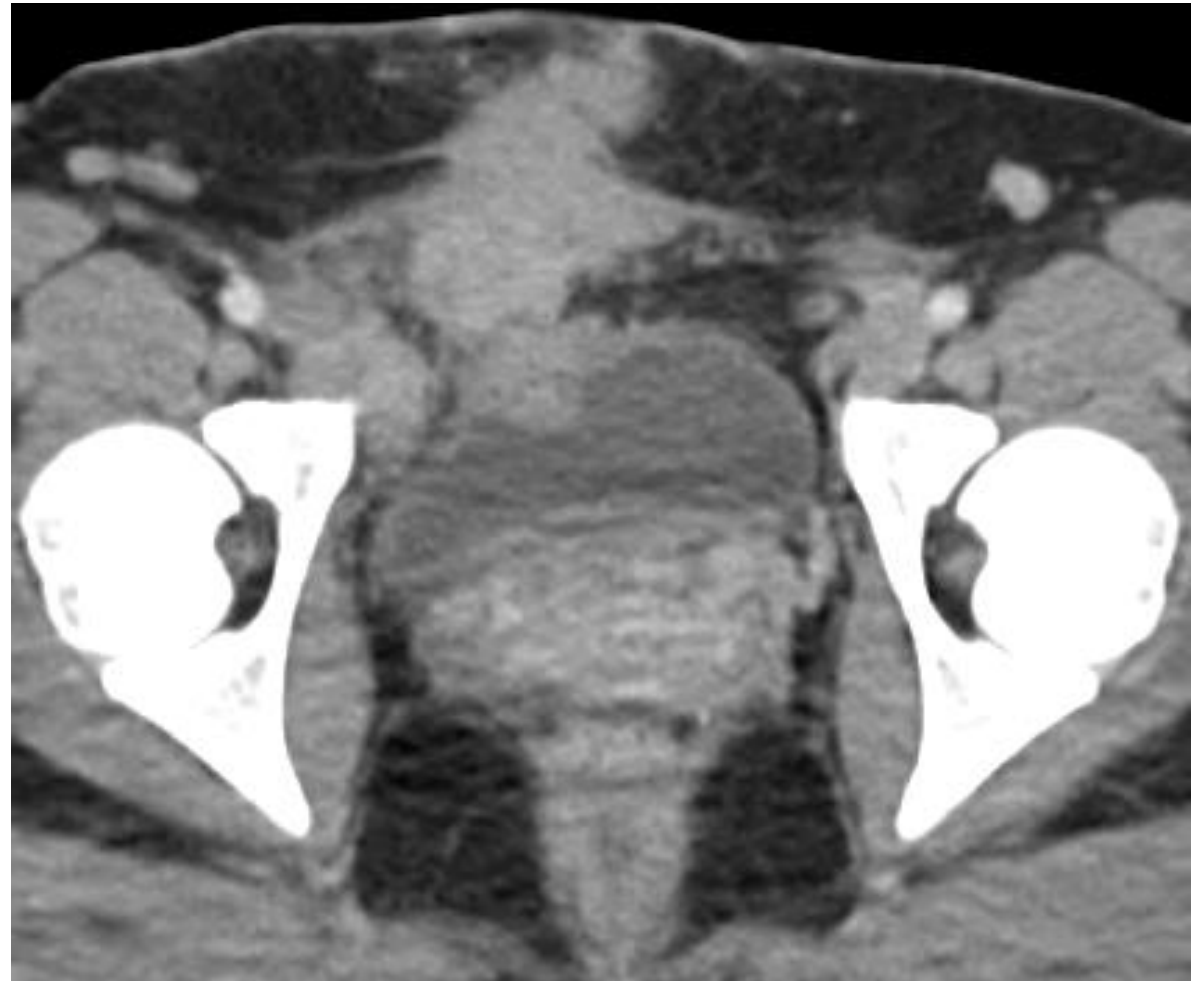
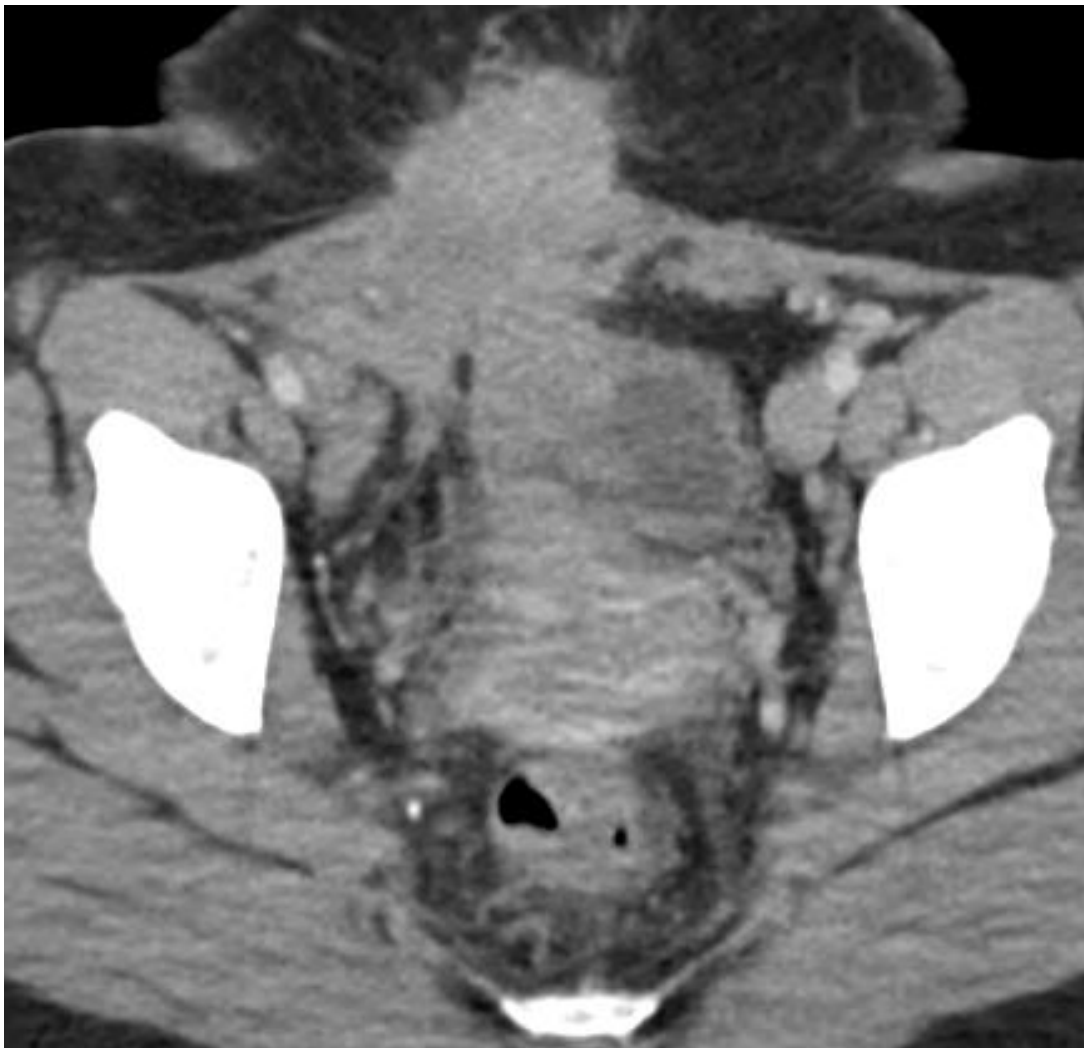


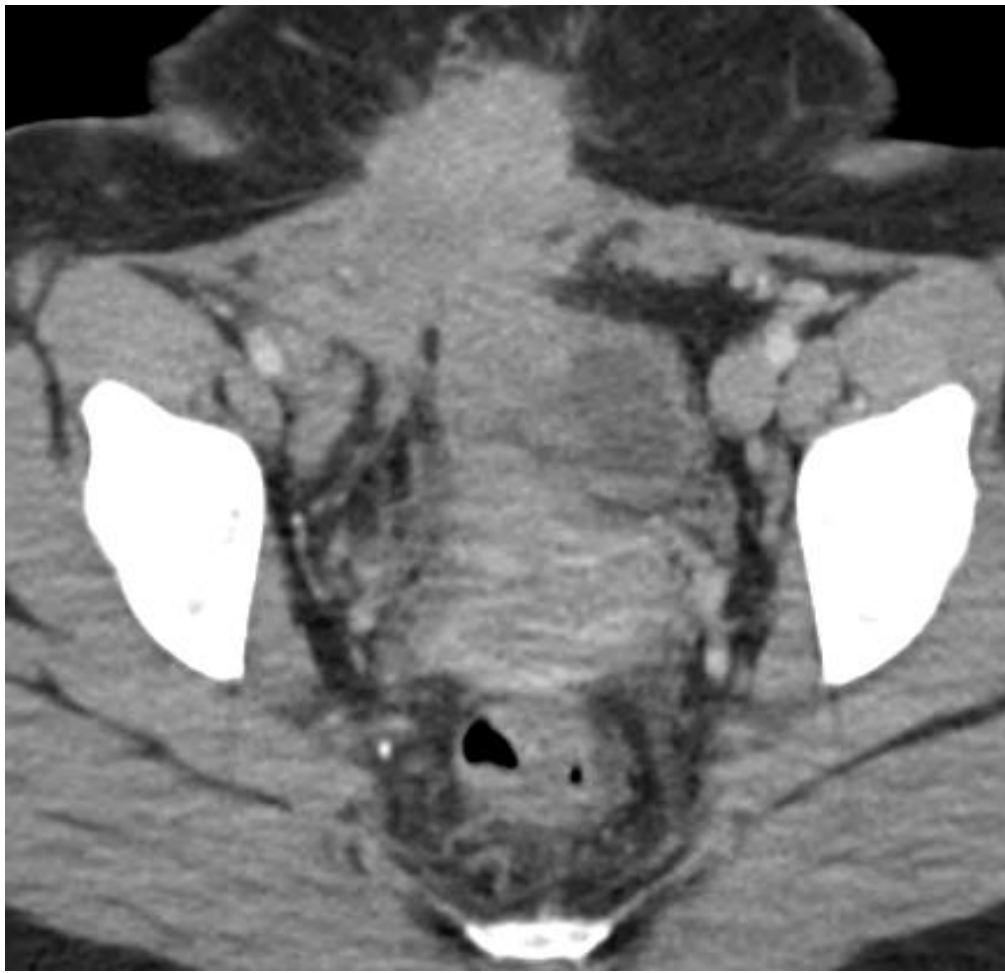




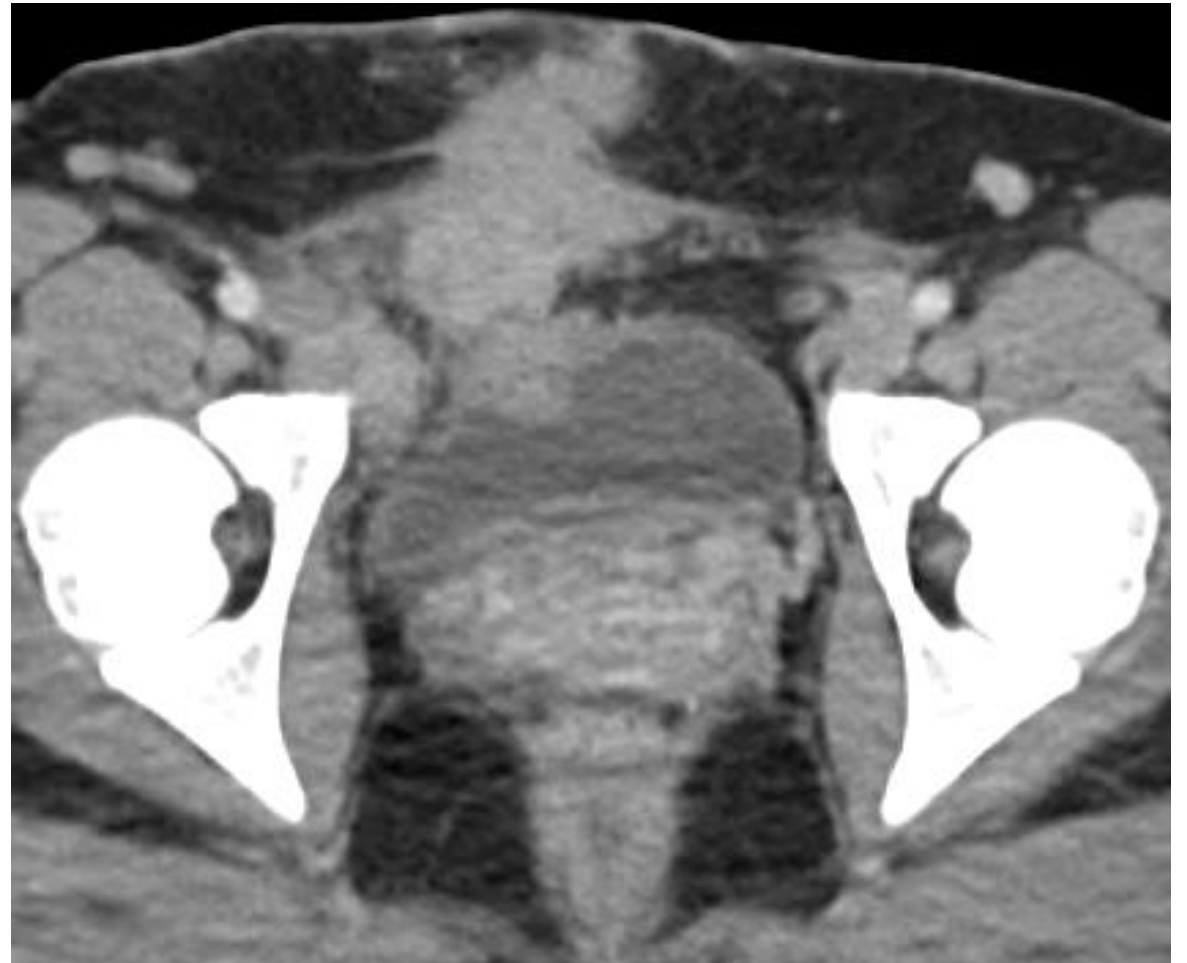
Lipoleiomyoma

Woman with suprapubic pain





Endometriosis implant at c-section scar



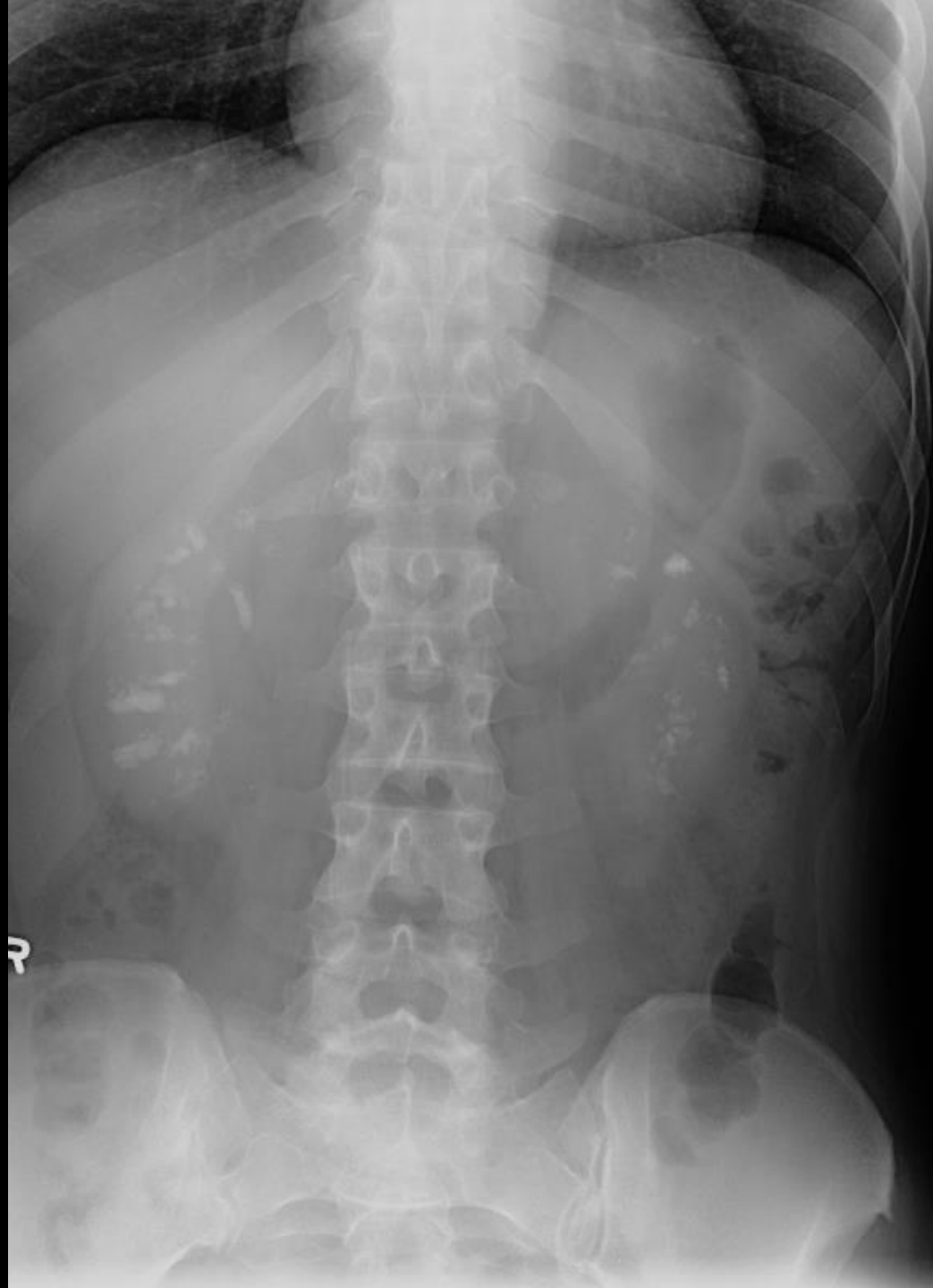


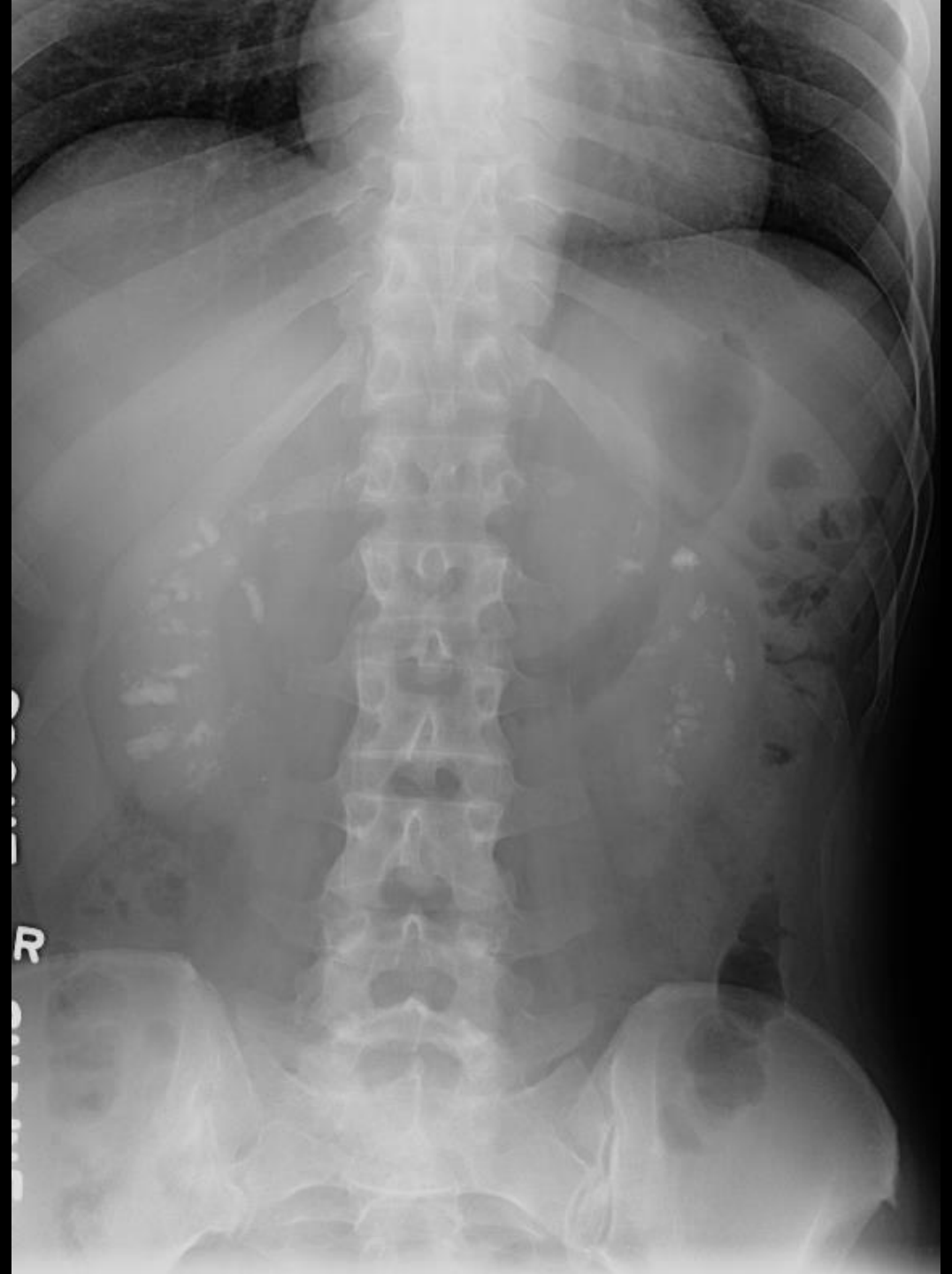
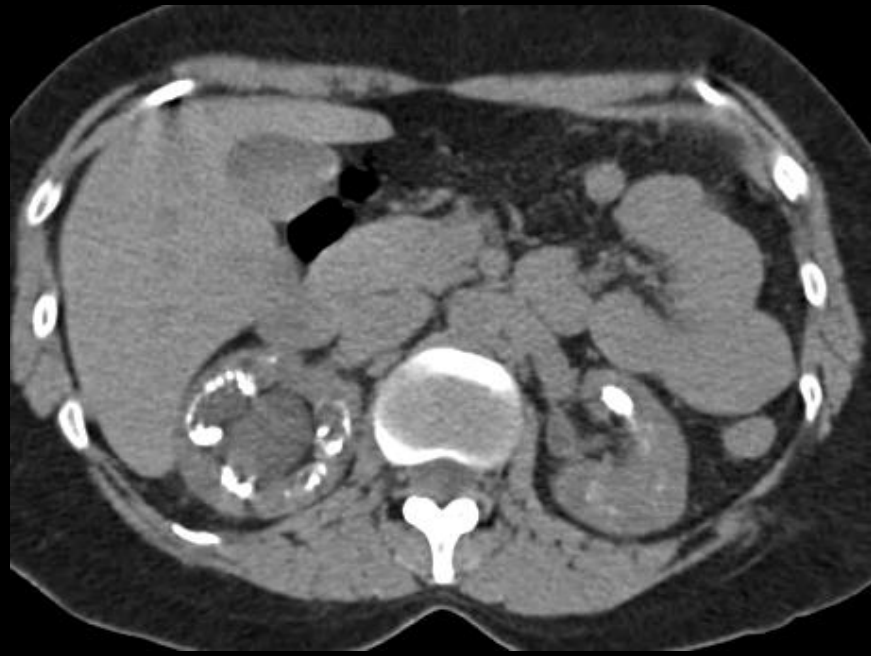


Retained surgical sponges



pain





Medullary sponge kidney





Abdomen  
10MIN DLY :

What surgery?

W/L:  
Seq

# Psoas Hitch

- Usually performed in cases of tcc where ureter is too short for primary reanastomosis

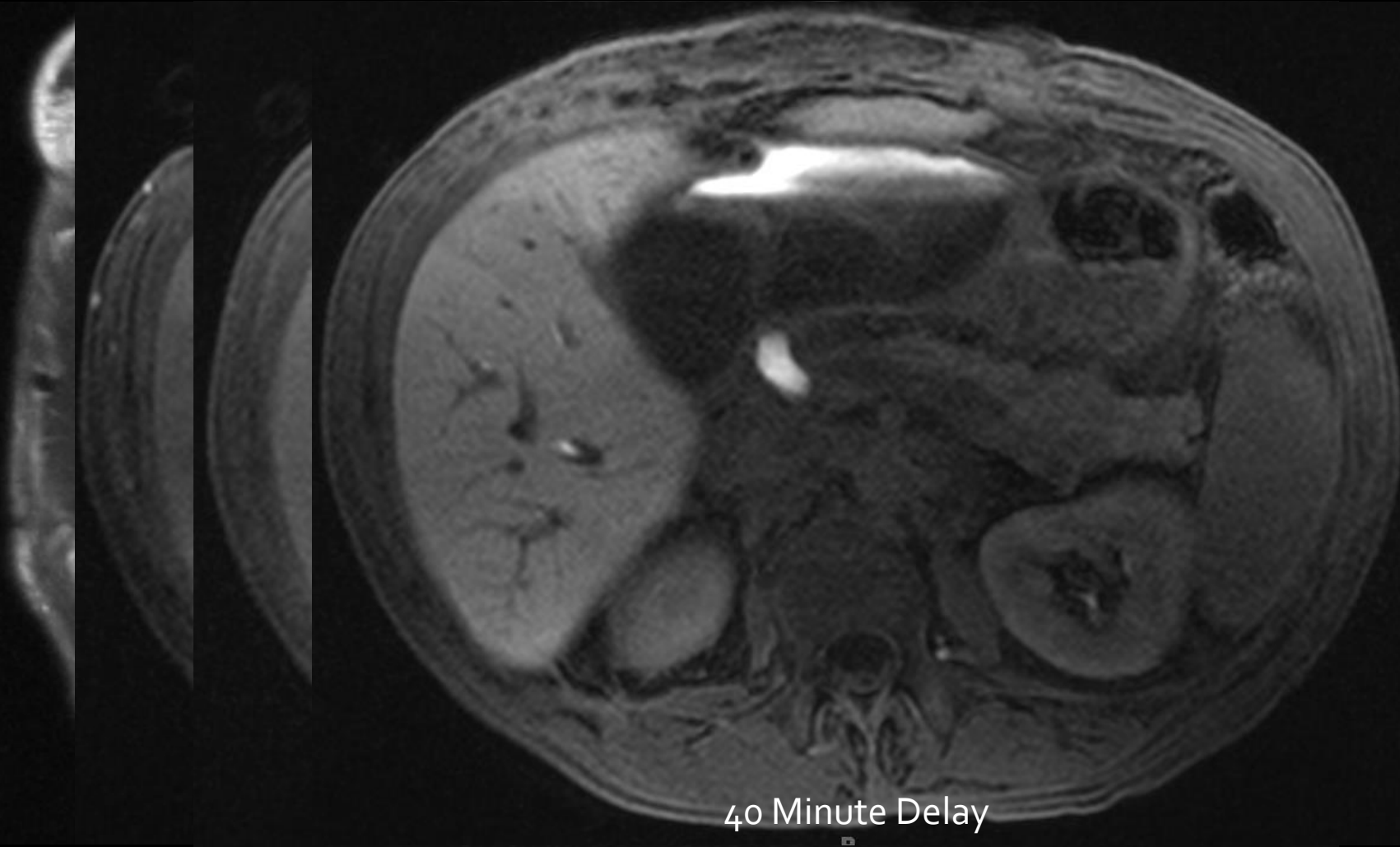
Status post cholecystectomy, elevated bilirubin, abdominal pain



# What is most likely diagnosis?

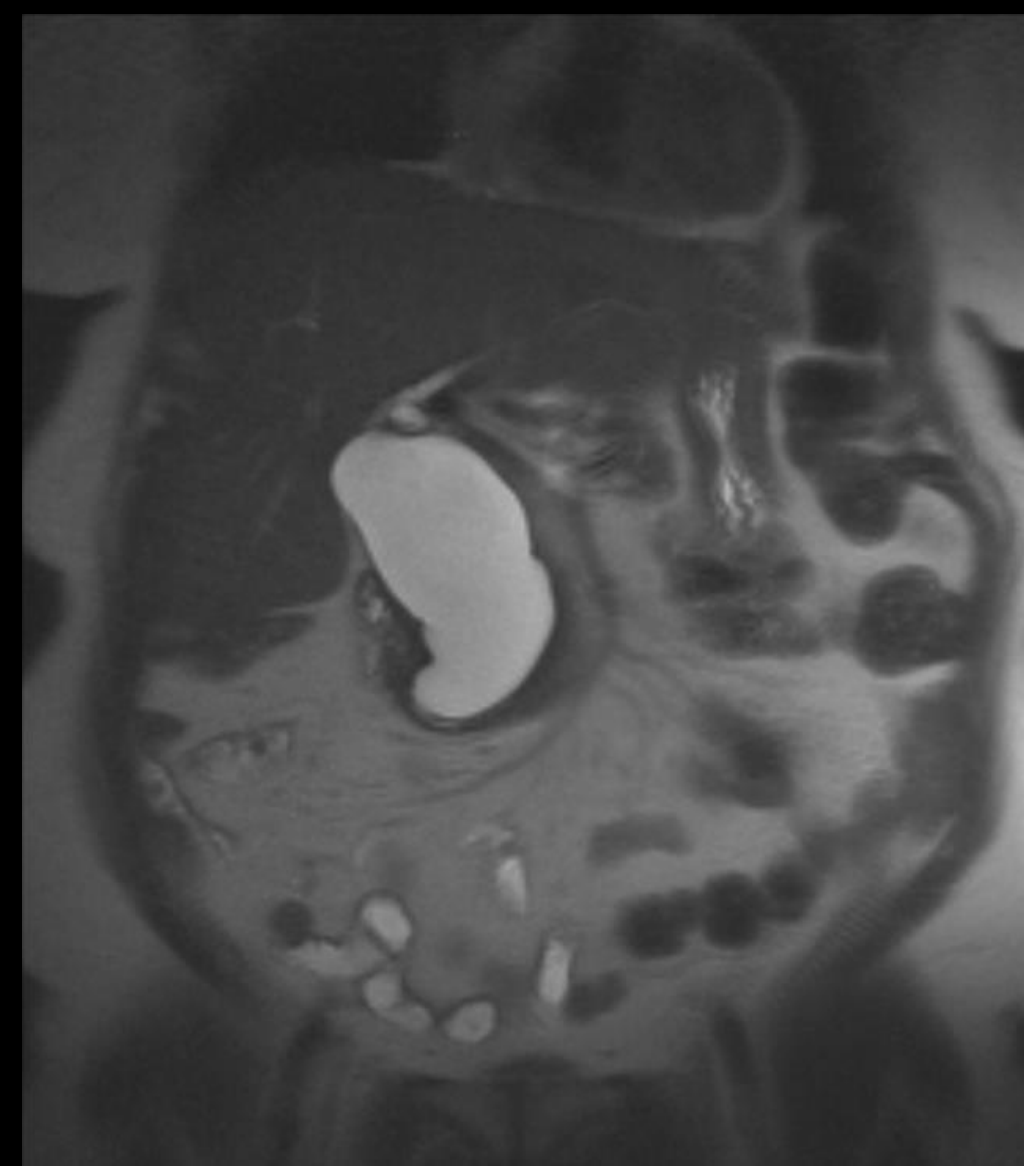
- Pancreatic leak
- Bile leak
- Hematoma
- Pseudoaneurysm

# Bile Leak



Modality: MR

Anatomy: Liver



What is most likely diagnosis?

- a. Pancreatic cancer
- b. Choledochal cyst
- c. IPMN
- d. Lymphocele

# Choledochal Cyst



Ia

Saccular dilatation of cystic duct and  
CBD



Ib

Saccular dilatation of only CBD



Ic

Fusiform dilatation of the CBD and  
CHD



II

Diverticulum arising from  
CBD



III

Intraduodenal  
Diverticulum



IVa

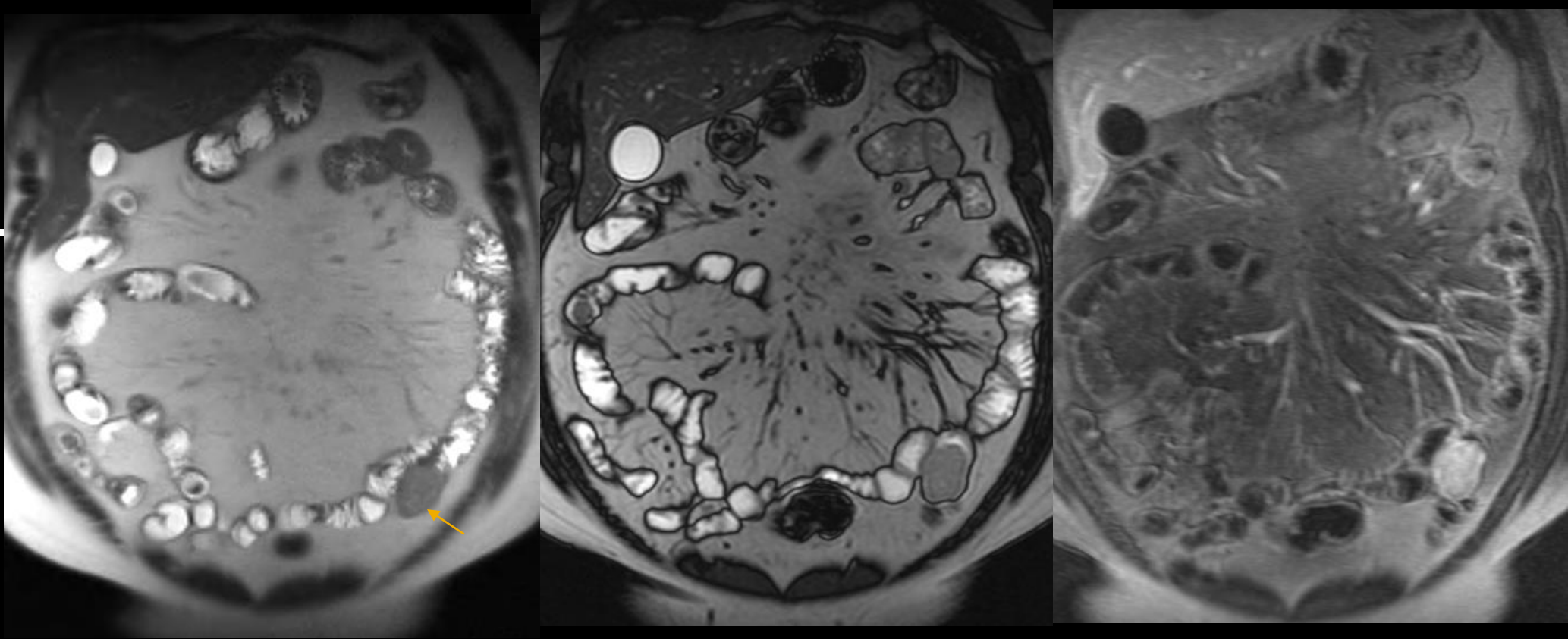
Cystic dilatation of the intra and extrahepatic  
ducts



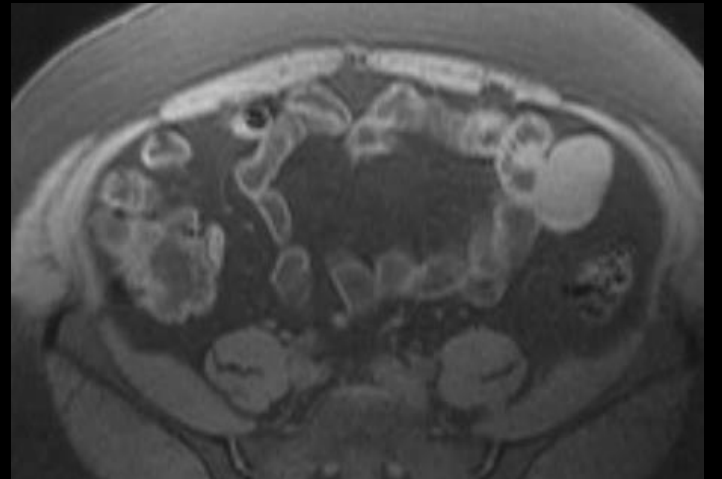
V – Caroli's disease

Cystic dilatation of the intrahepatic  
ducts

Predisposition for stone formation, infectious cholangitis and cholangiocarcinoma



- What is most likely diagnosis in 45 yo man?
  - Inflammatory pseudotumor
  - Adenocarcinoma
  - Lymphoma
  - GI stromal tumor



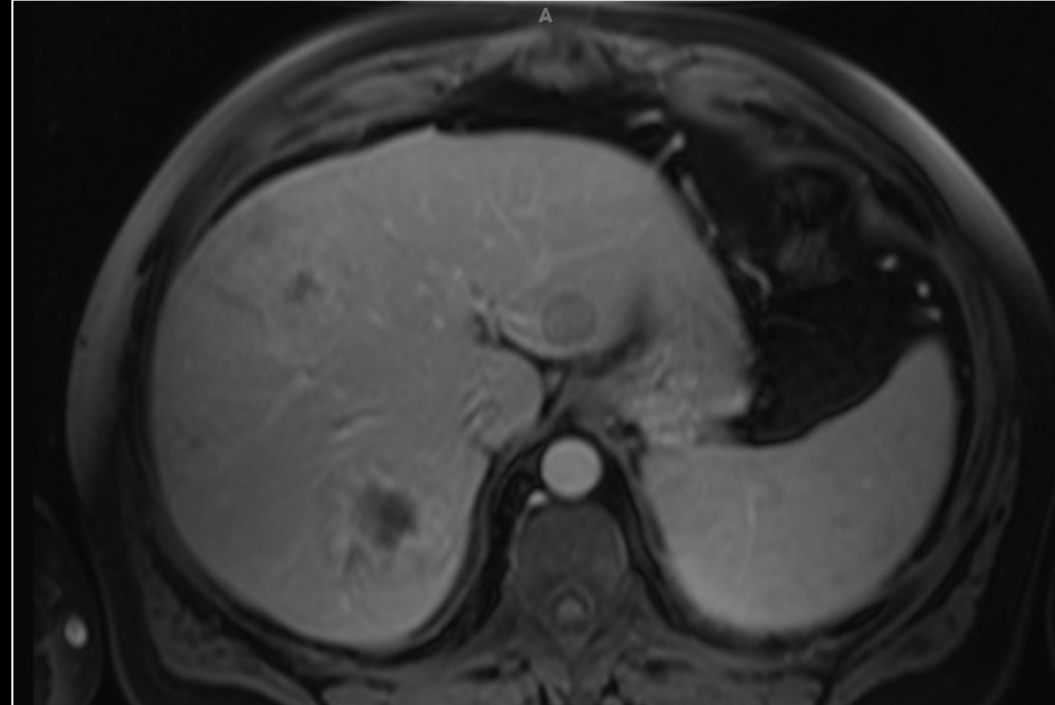
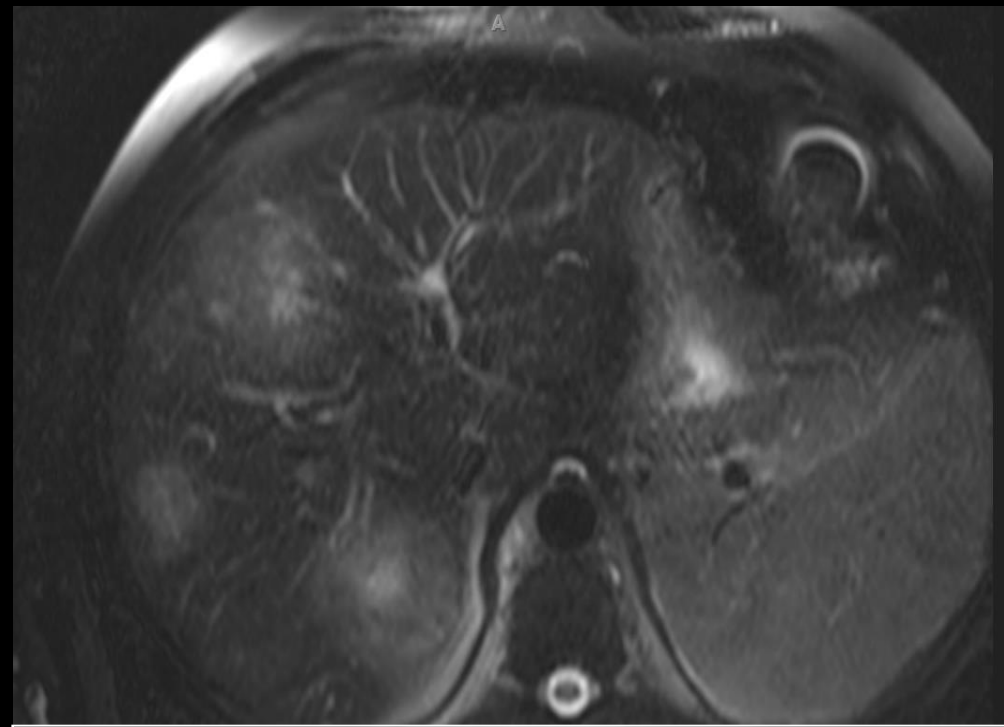


# Small bowel mass-exophytic

- GI Stromal tumor
- Carcinoid
- Mets (melanoma)

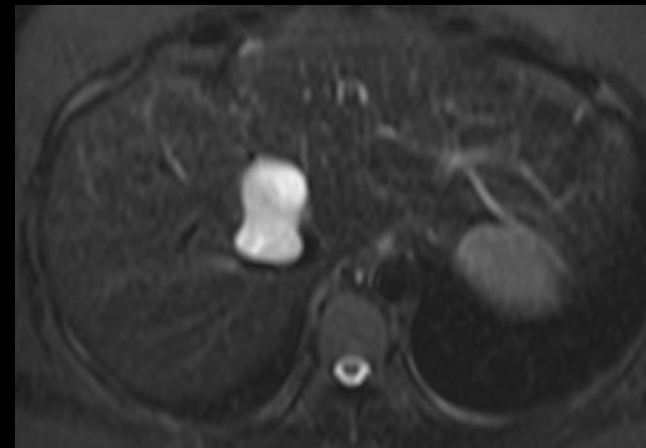
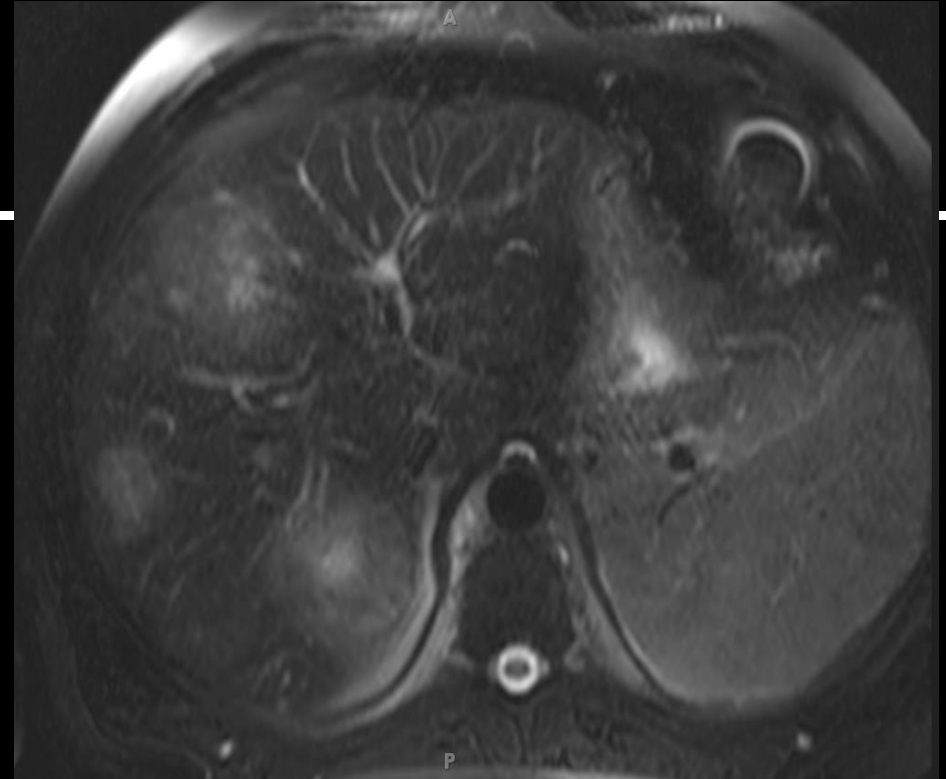
What is most likely diagnosis of these incidentally discovered liver lesions in this 76 yo man?

- a. Metastatic disease
- b. Adenomas
- c. Hemangiomas
- d. Hepatocellular carcinoma



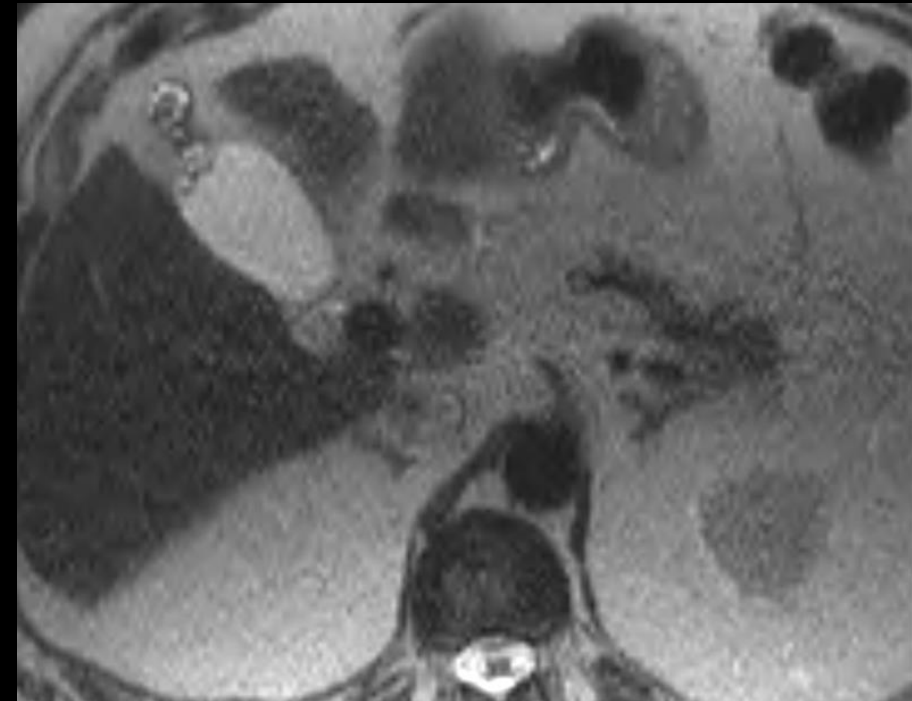
# Metastatic Disease

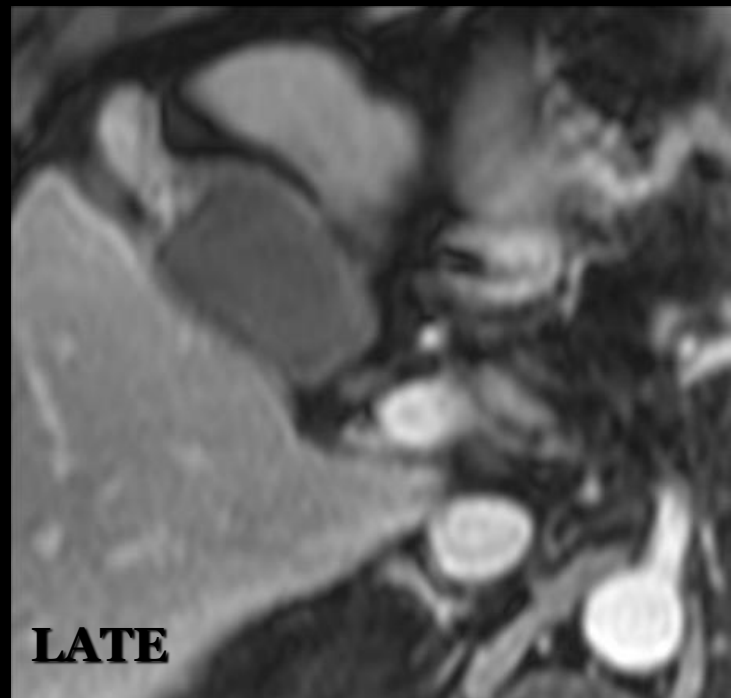
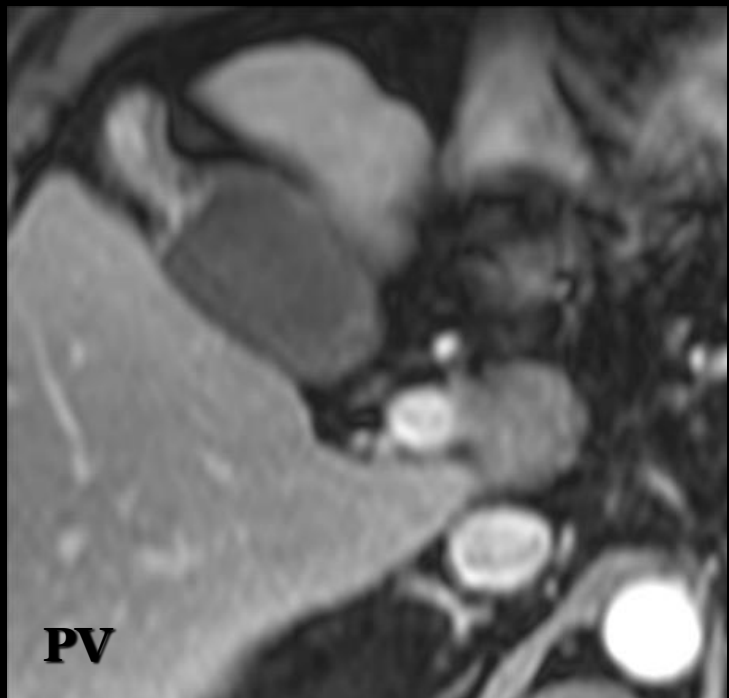
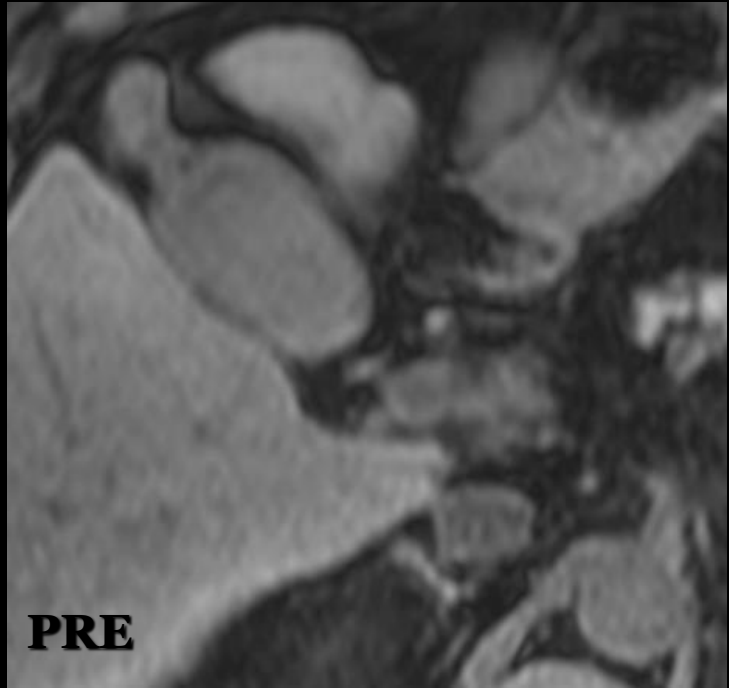
- Intermediate bright/gray on T2
  - (not light bulb bright)



# What is the diagnosis?

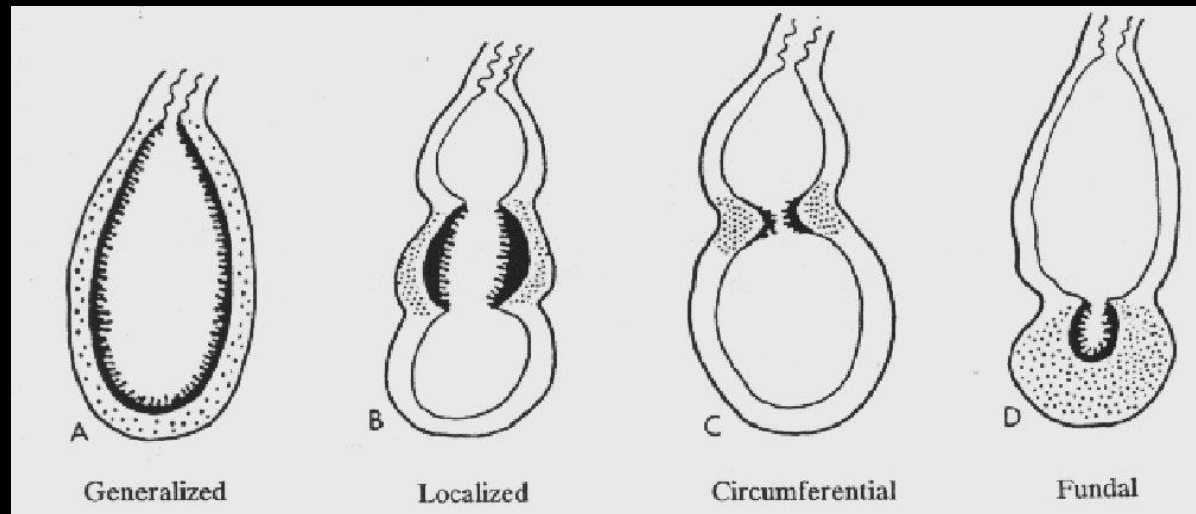
- Gallbladder cancer
- Adenomyomatosis
- Polyps
- Xanthogranulomatous cholecystitis





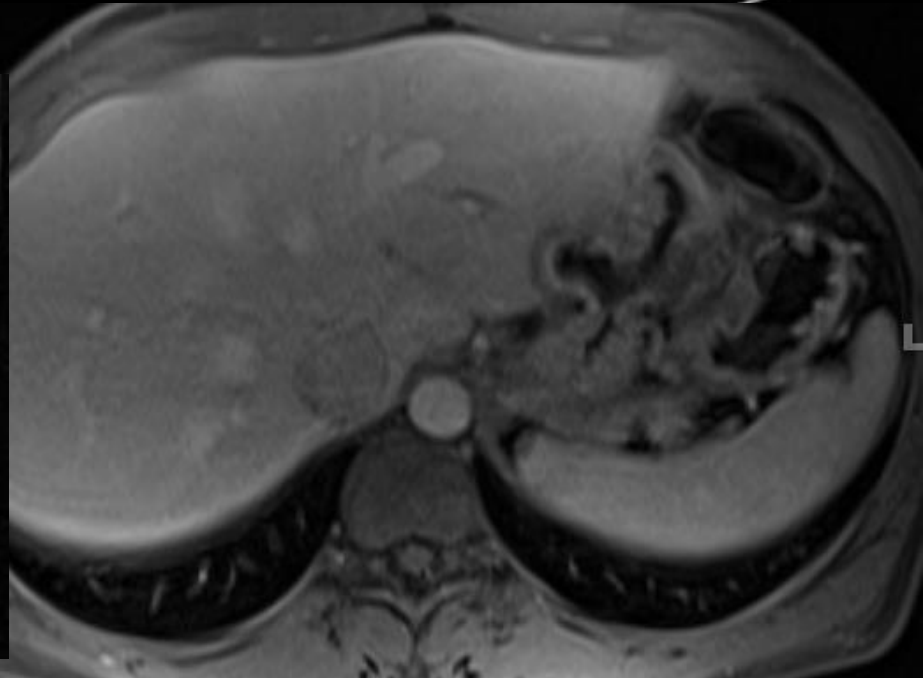
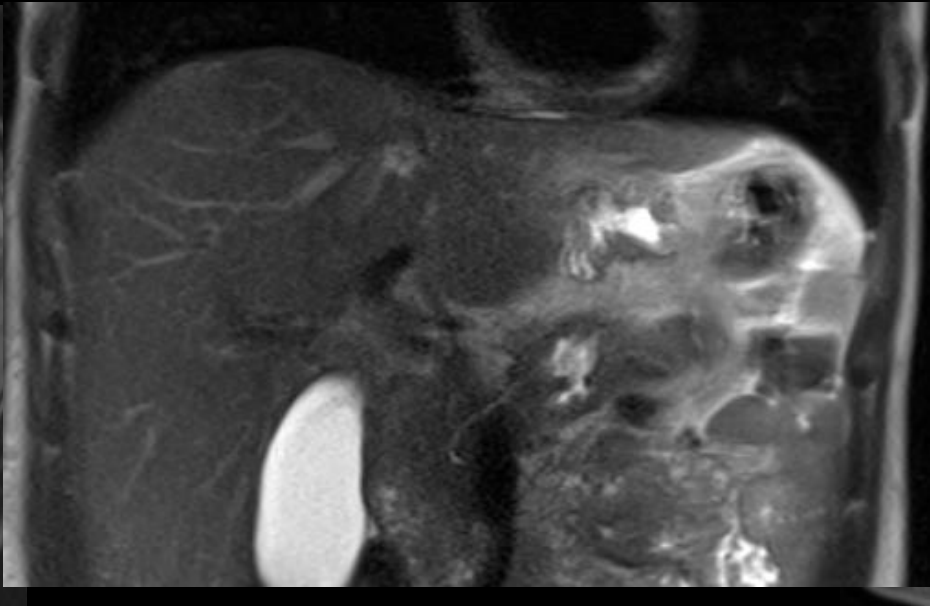
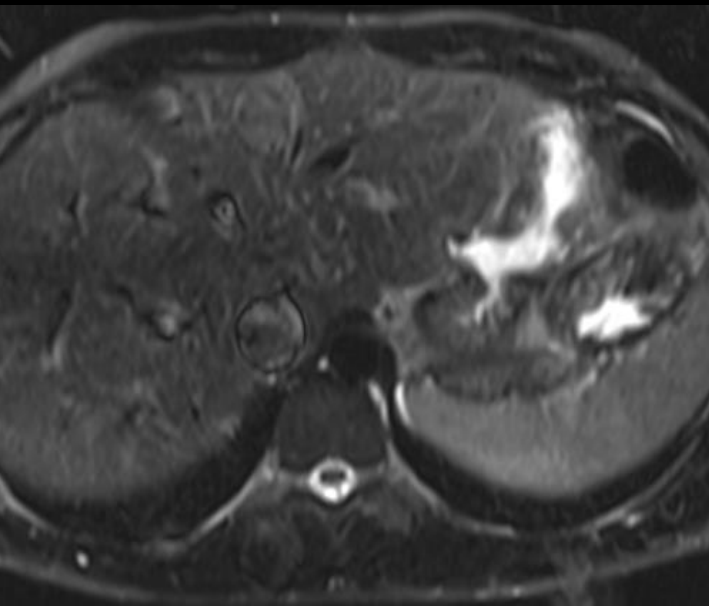
# Adenomyomatosis

- Rokitansky-Aschoff sinuses (thickened folds of epithelial lining) contain bright T2 cystic collections, often in a beaded distribution.
- Gallbladder wall thickening and enhancement will be seen following contrast administration

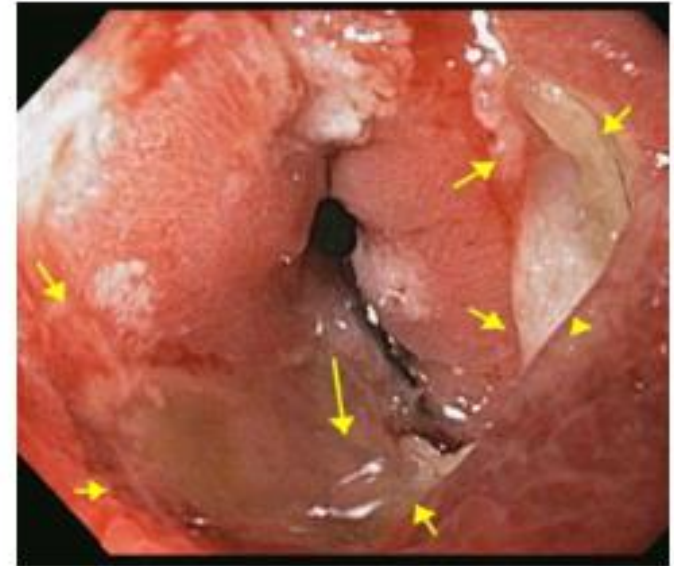
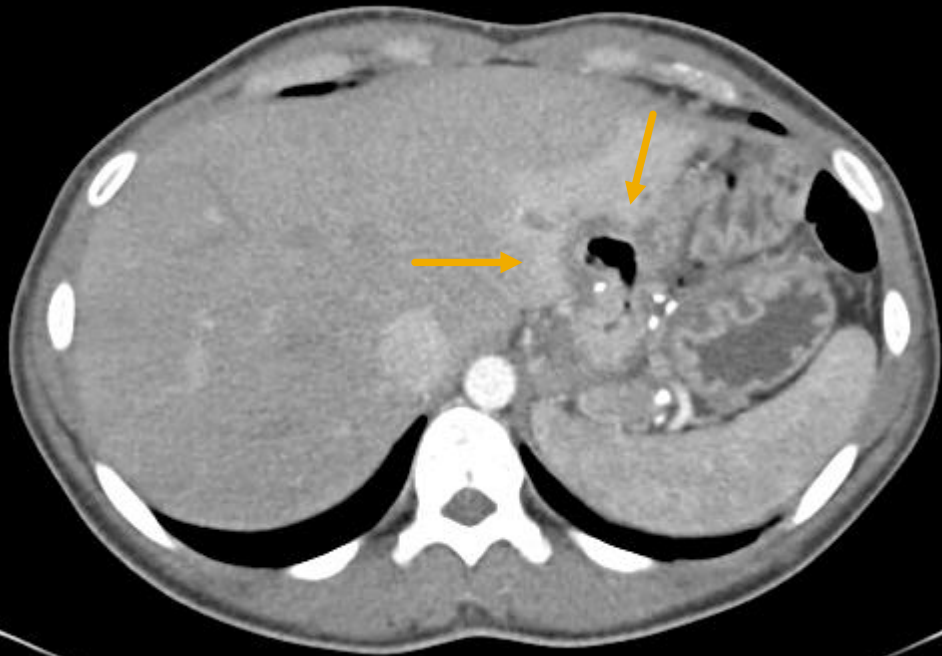


# Gastric

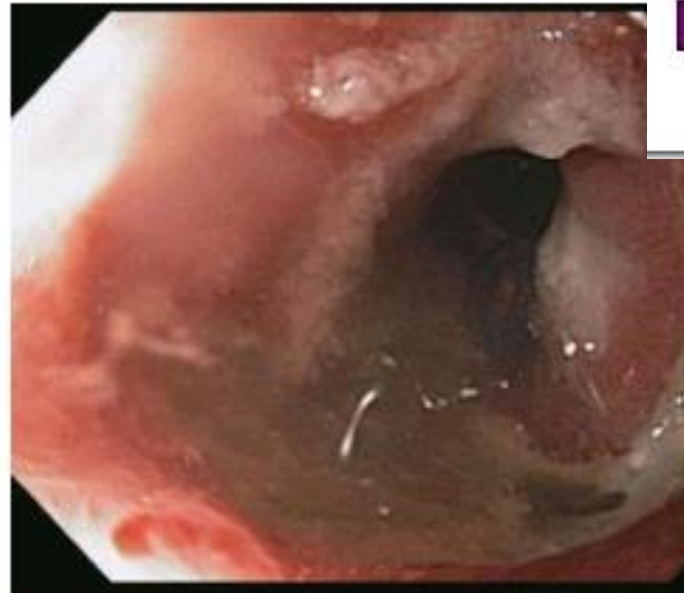
- Pain following R-Y Gastric Bypass
- What is diagnosis?



- Marginal ulcer at gastro-J anastomosis



**6** efferent roux limb with visible clean based ulcer outlined

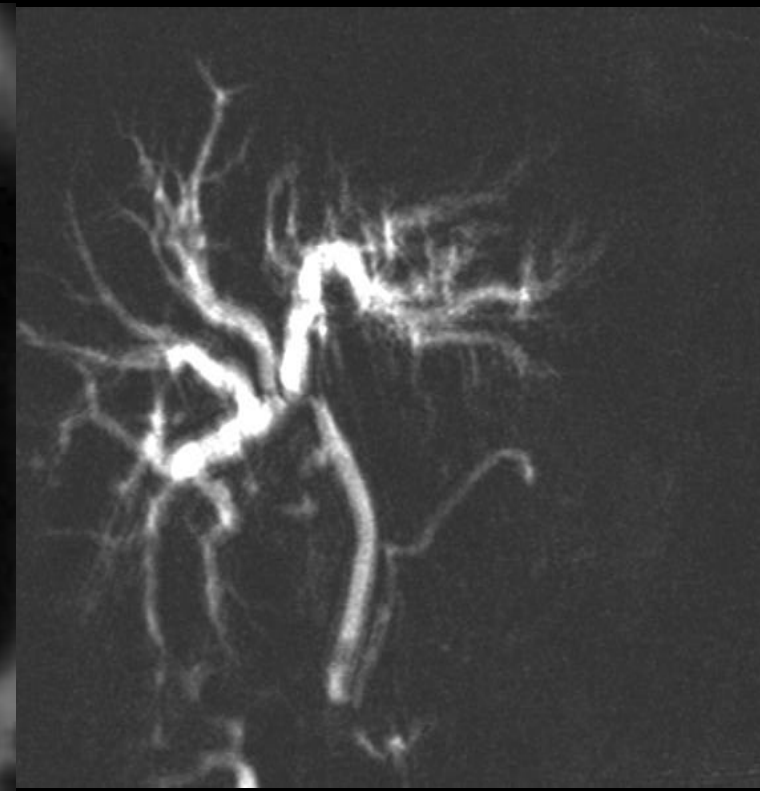
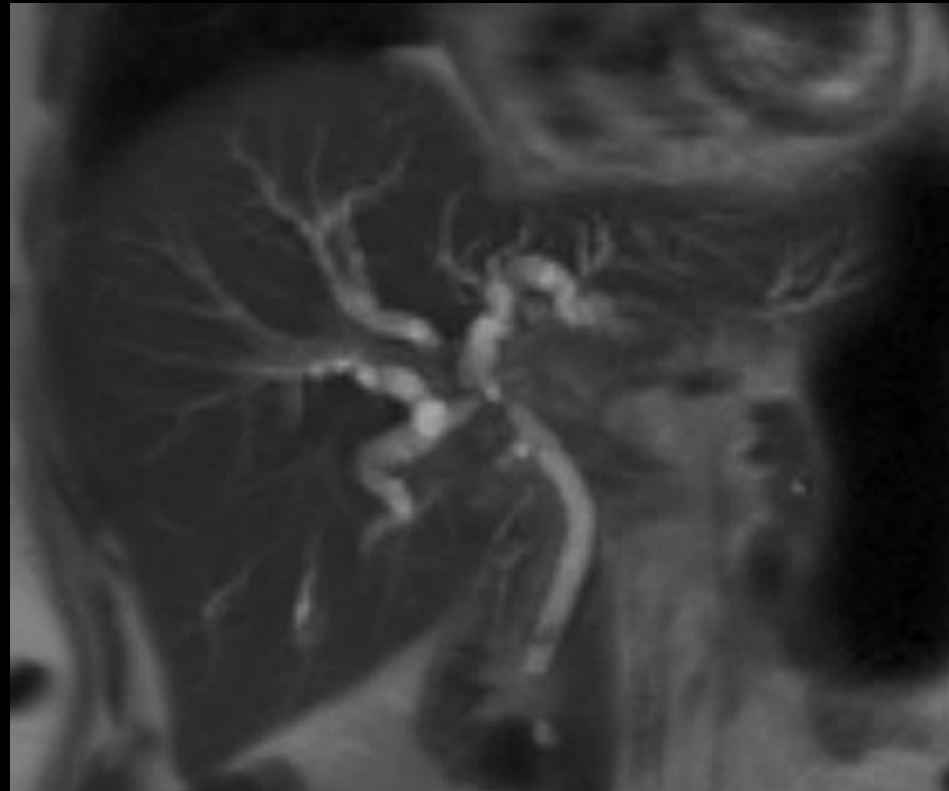


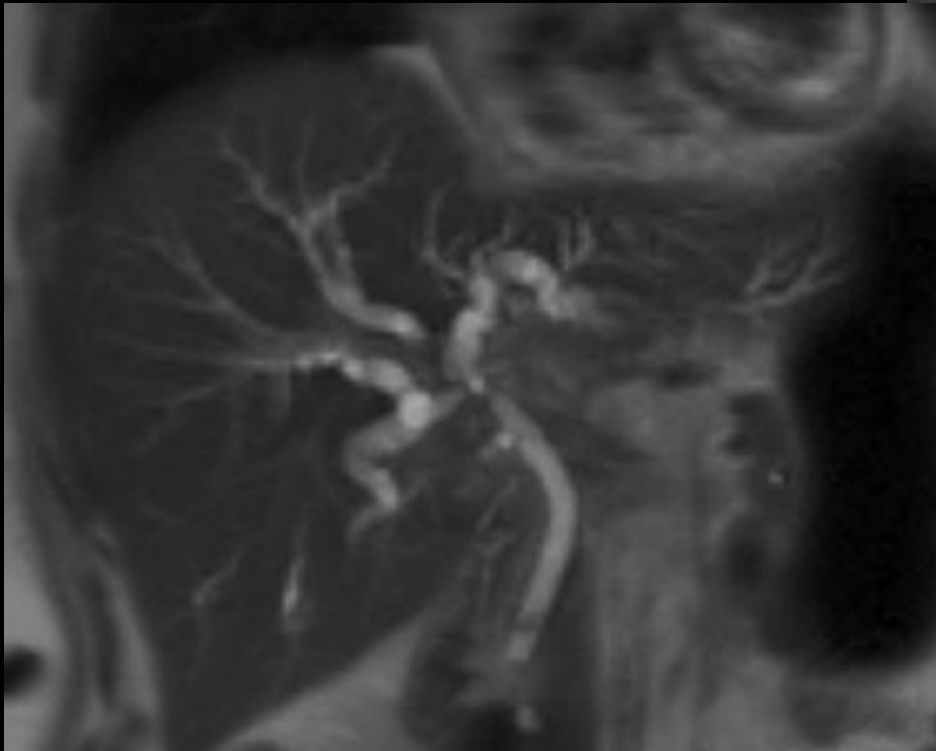
**1** clean based ulcer efferent roux limb

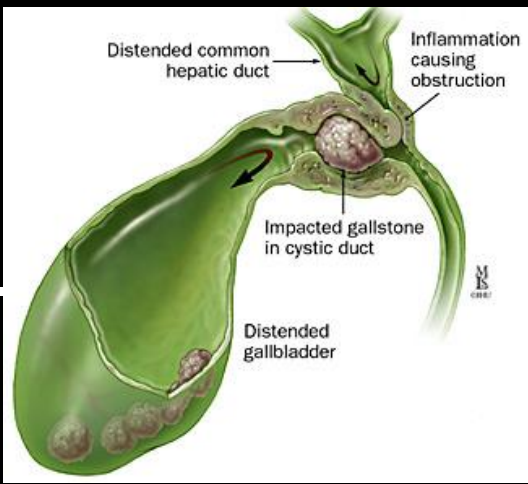


# Biliary system

- What is most likely diagnosis?





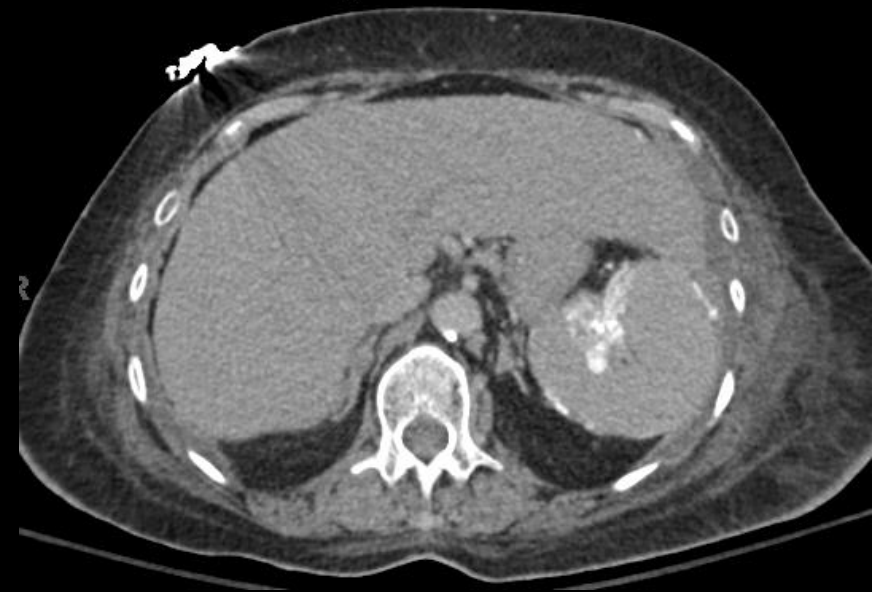


# Mirrizi's Syndrome

- Indirect obstruction of the common hepatic duct by inflammatory changes or external compression from a stone in the in the GB infundibulum or cystic duct.
- Two types:
  - Type I: impacted stone obstructs the common hepatic duct by extrinsic compression.
  - Type II: the stone erodes into the hepatic duct to create a cholecystocholedochal fistula
- Occurs in less than 1% of patients presenting for cholecystectomy.

# General

- What is most likely diagnosis in elderly woman with no prior surgery?
  - Abdominal TB
  - Calcified peritoneal carcinomatosis
  - Sclerosing peritonitis
  - mesothelioma



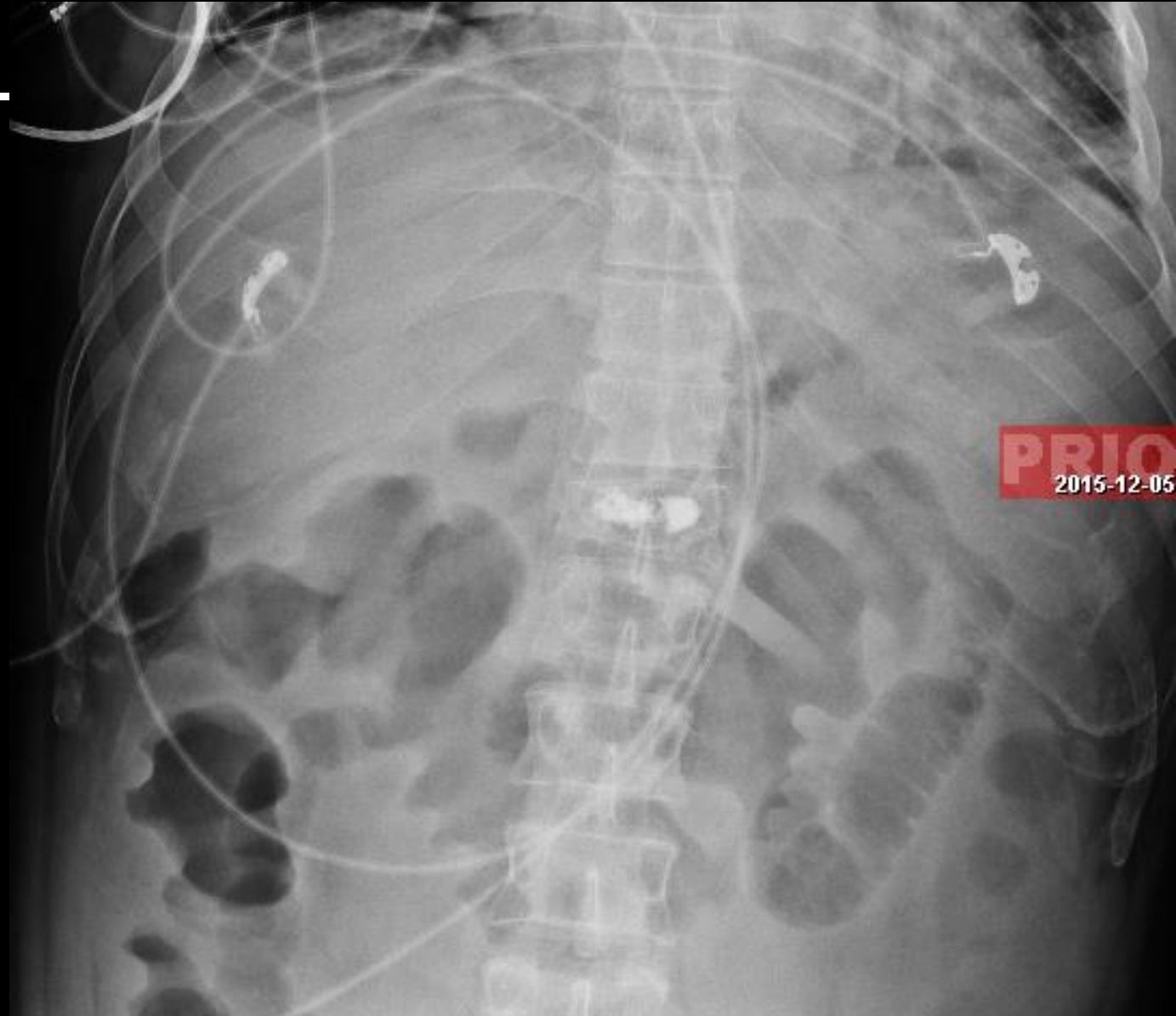
# Peritoneal carcinomatosis

- Calcified-think ovarian primary
- Non-calcified, common causes include
  - Gastric
  - Appendiceal
  - Other adenoca mets (breast, lung)
  - ovary



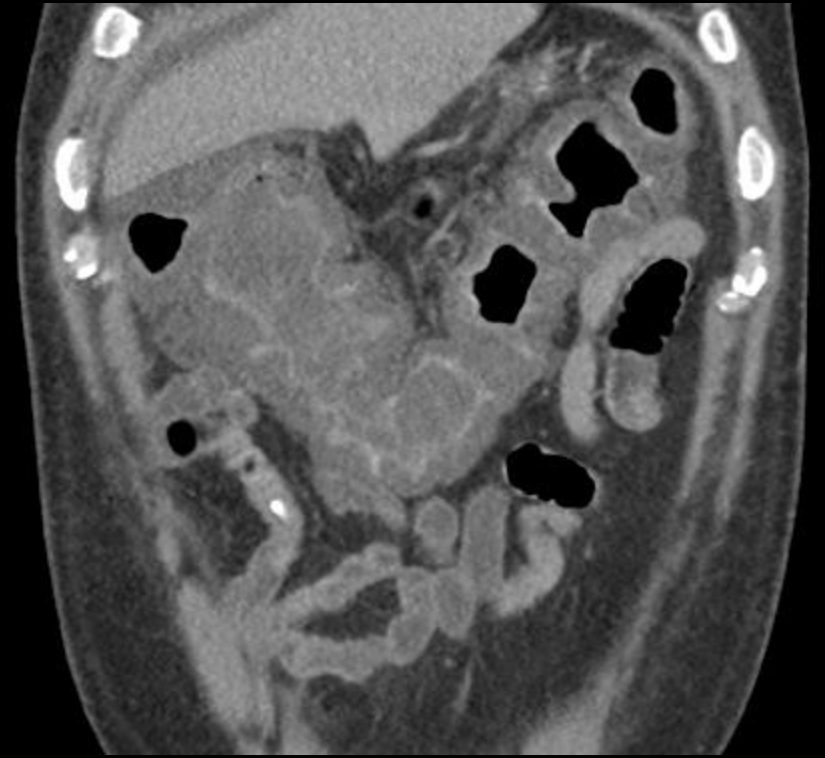
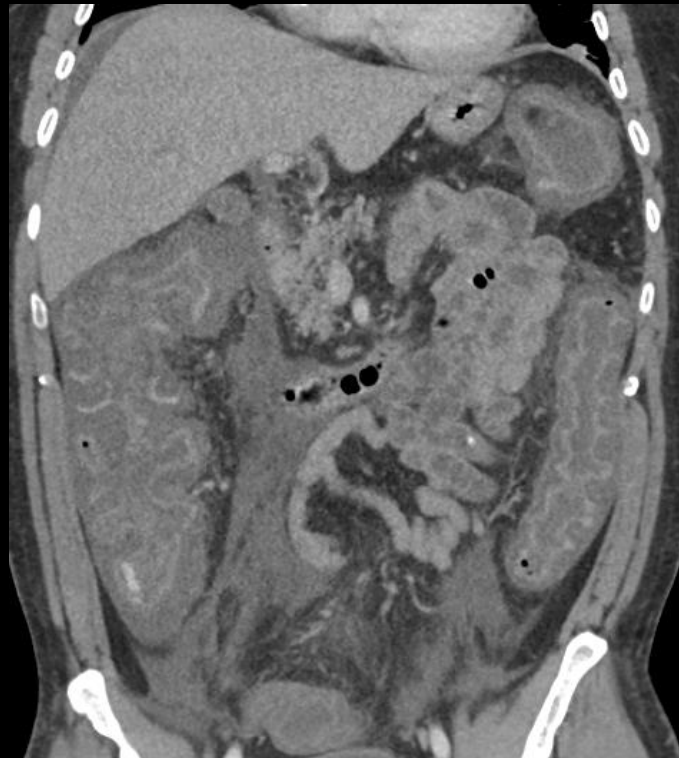
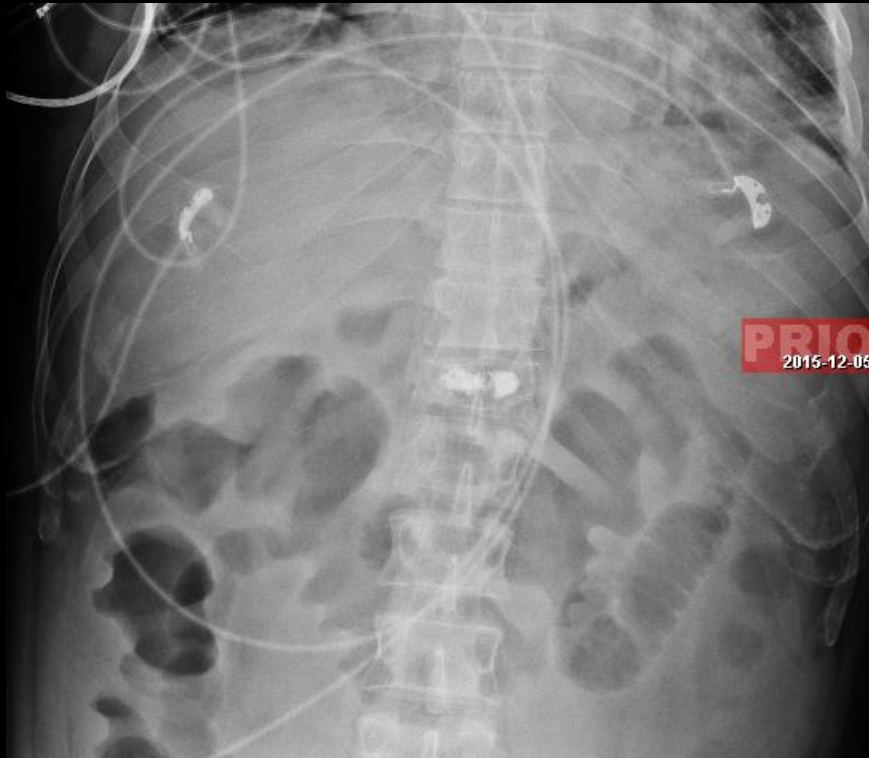
# GI luminal

- What is most likely diagnosis?
  - Pneumoperitoneum
  - Crohn's ileitis
  - Small bowel hemorrhage
  - Colitis



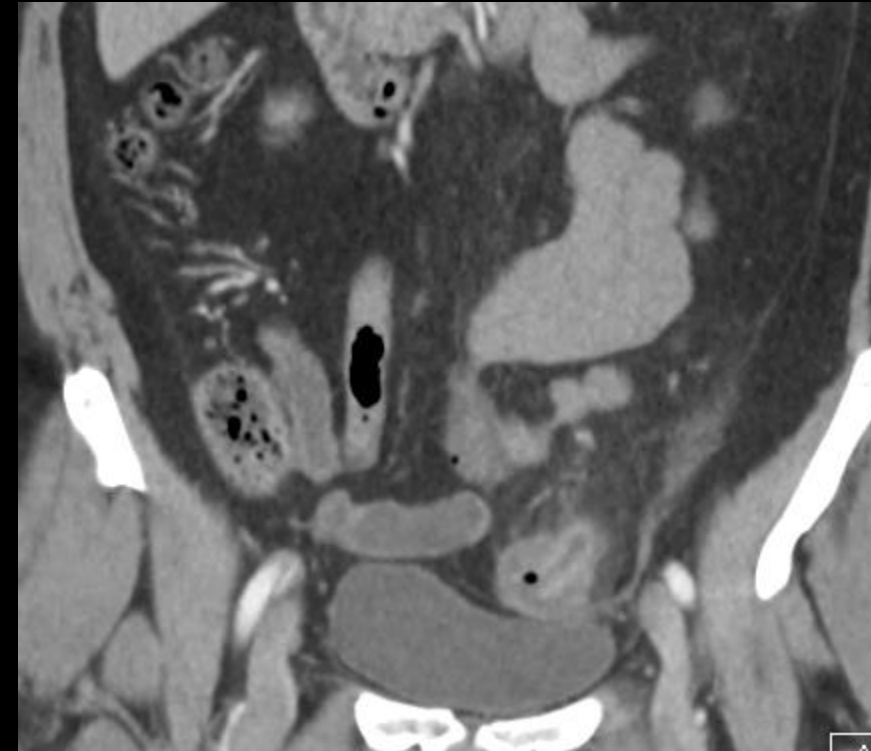
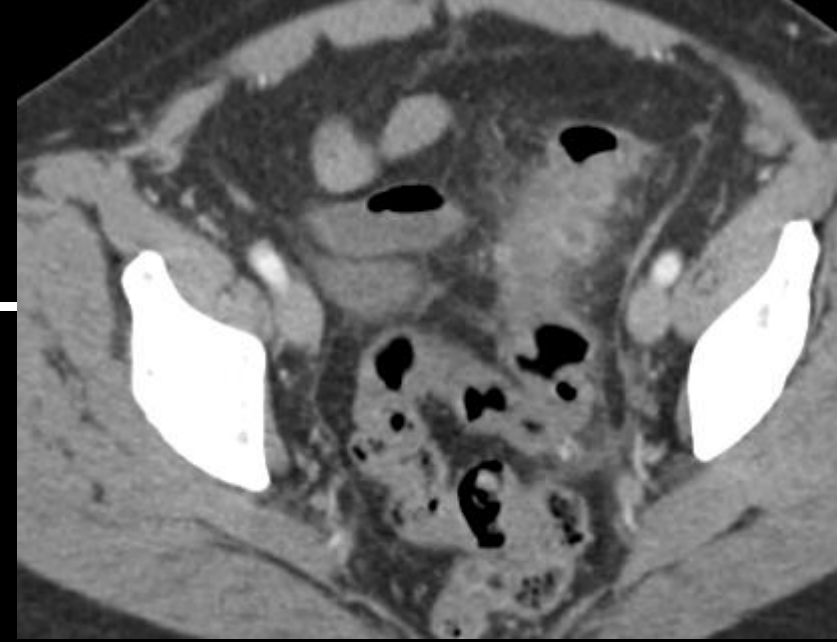
# Colitis-

- Thumbprinting
- A sign of colitis/submucosal edema within colon wall



# GI luminal

- What is most likely diagnosis in 65 yo man?
  - Adenocarcinoma
  - Meckel's diverticulum
  - Diverticulitis
  - Serosal implants



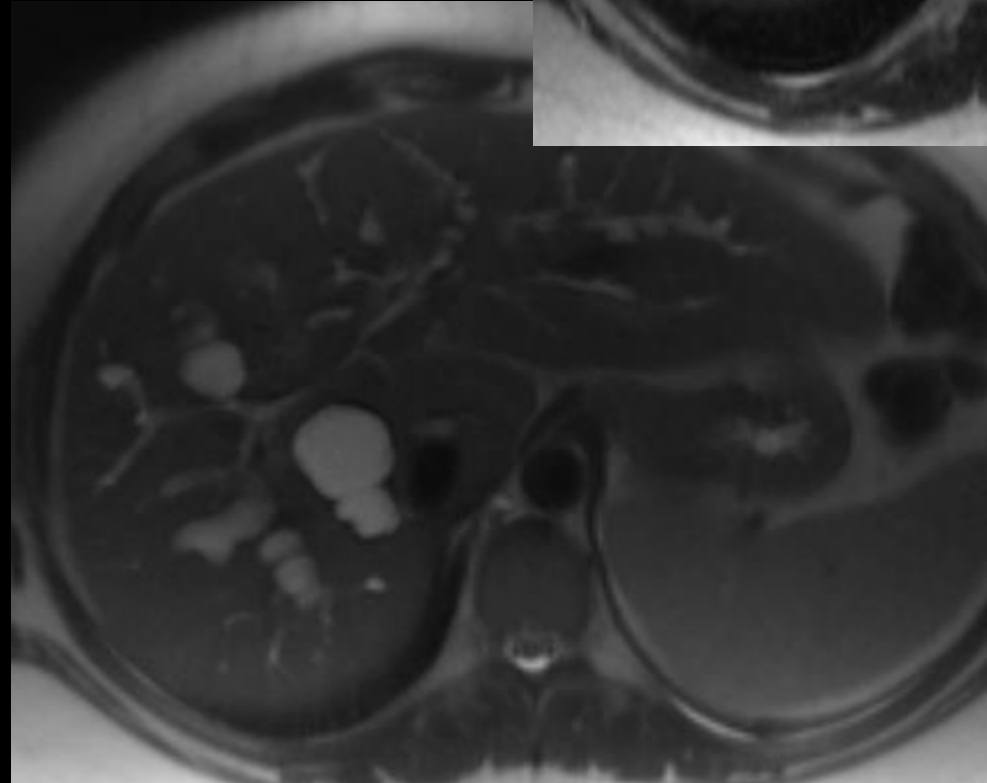
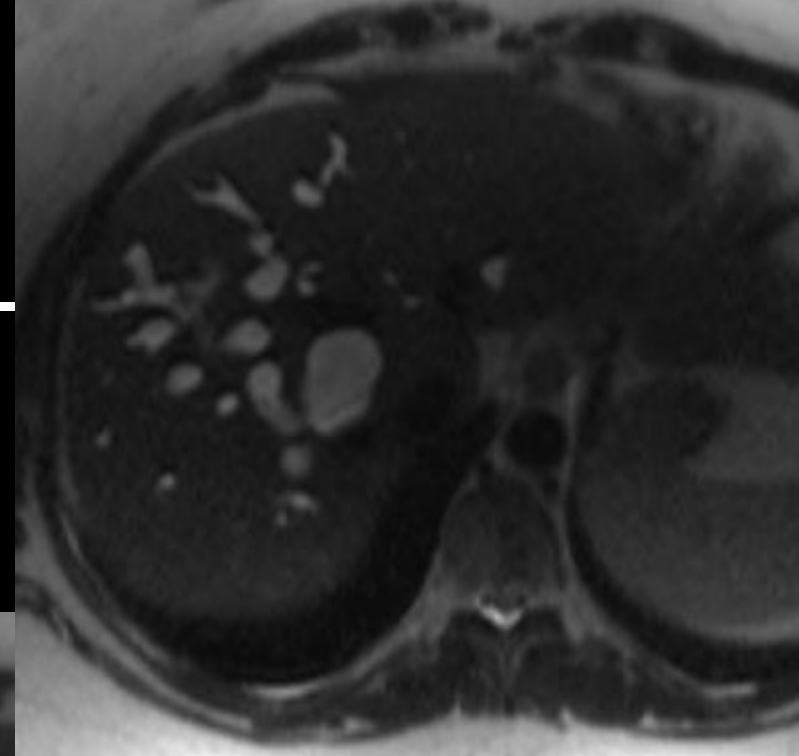


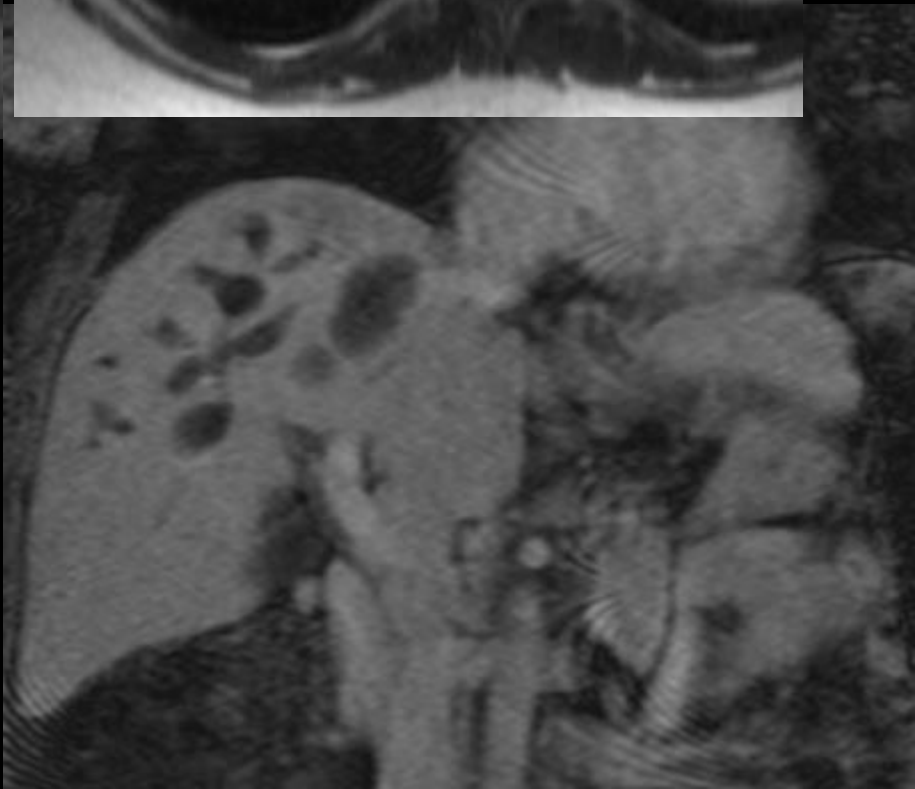
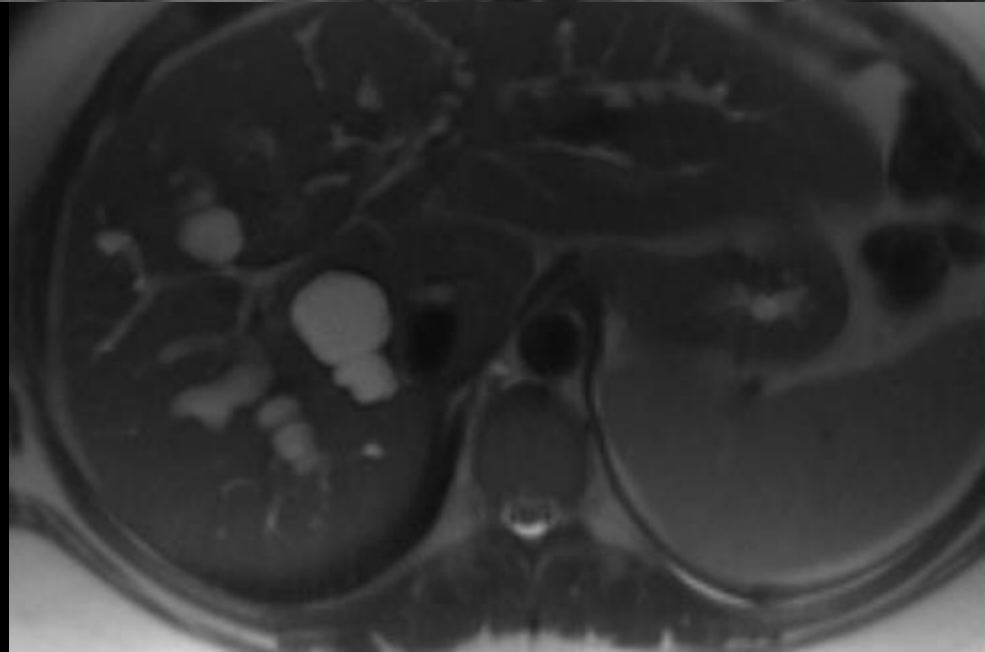
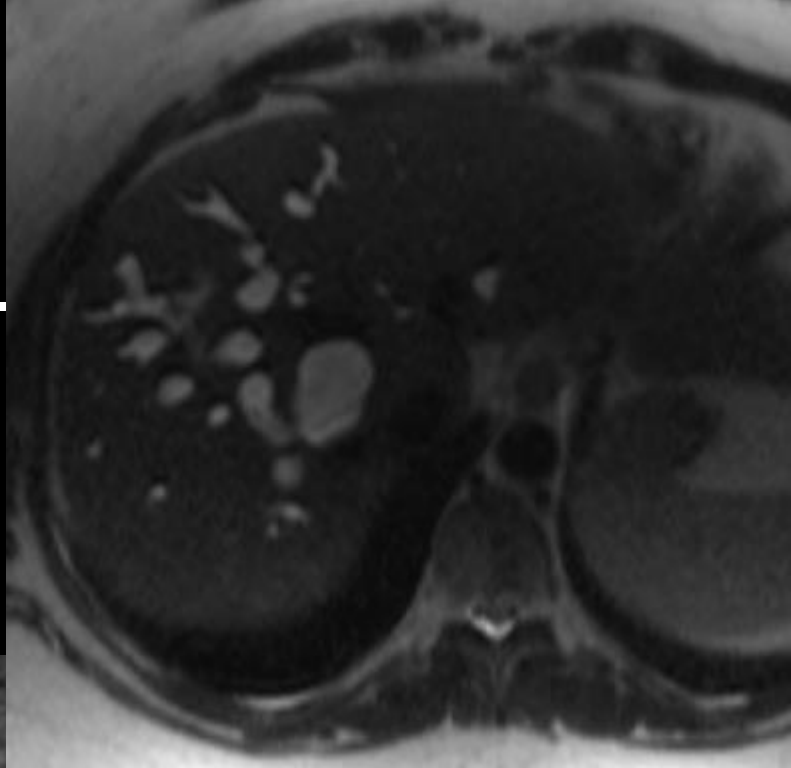
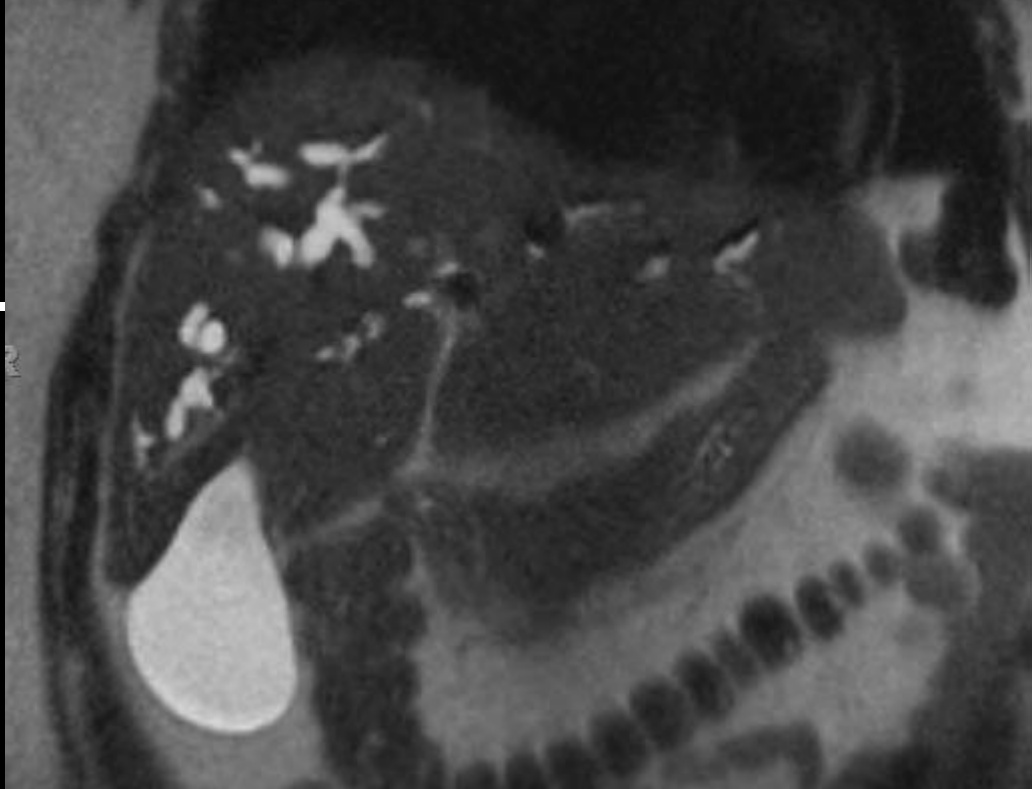
# Diverticulitis

- Lymph nodes are unusual (unlike cancer)
- May have free air
- Look for inflamed tic
- Perforation into adjacent structure-fistula
- Treatment-antibiotics or surgery if recurrent/severe
  
- Chronic diverticular colitis-muscularis/submucosal thickening in setting of chronic tics/inflammation. Moderate length segment thick colon

# Bile ducts

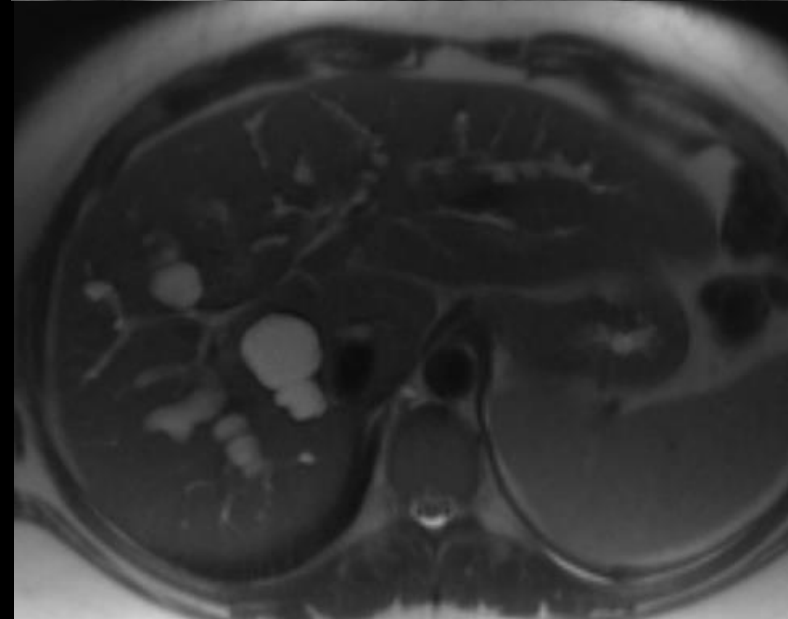
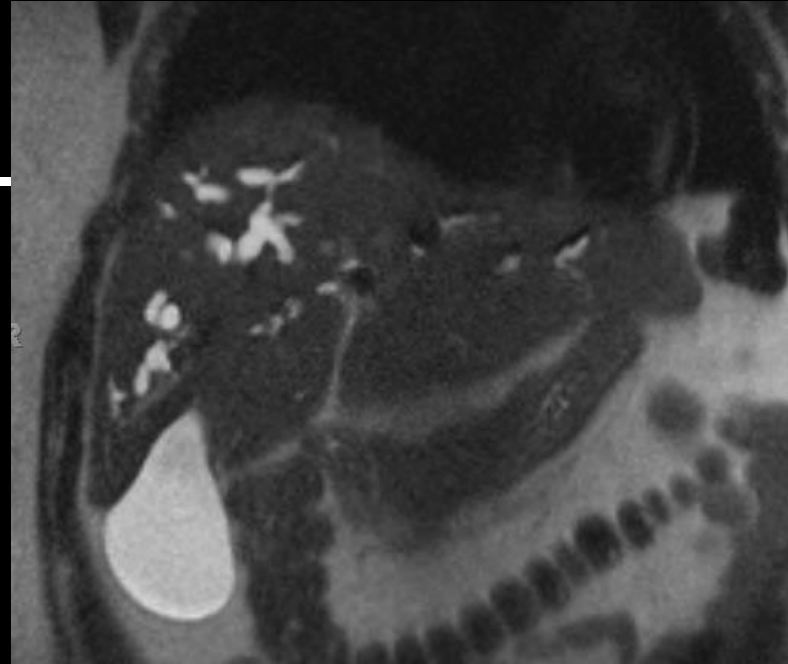
- What is most likely diagnosis?
  - Biliary IPMN
  - Caroli's Disease
  - Polycystic Liver
  - Abscesses





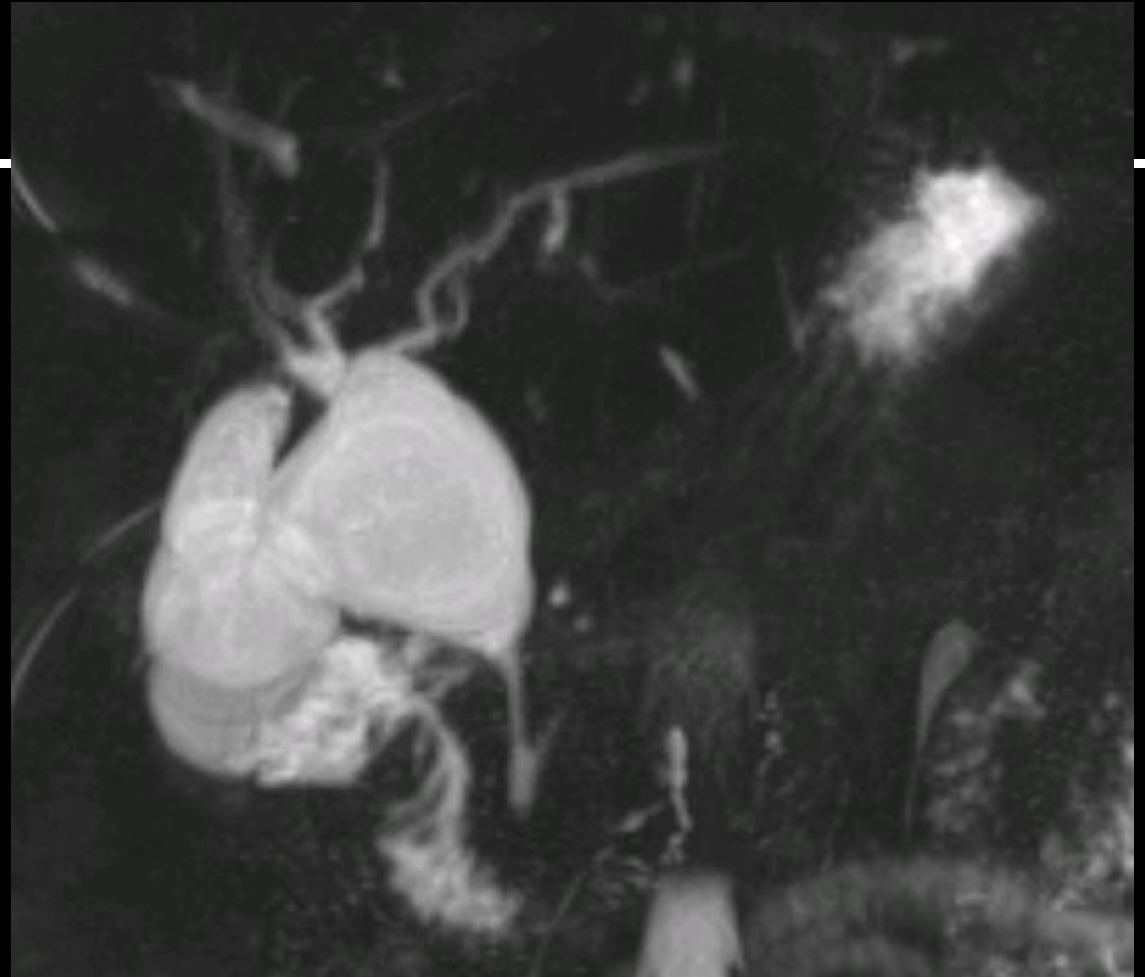
# Caroli's Disease

- Saccular dilation of intrahepatic ducts
- Type V choledochal cyst
- Associated with development of hepatic fibrosis, renal disease (renal tubular ectasia, polycystic ds)
- Risk of recurrent cholangitis, hemobilia, stone formation
- Treatment may involve resection if confined to single lobe or transplant if progressive



# Bile ducts

- What is the diagnosis?
  - Pancreatic cancer
  - Reservoir effect
  - Pancreatitis
  - Choledochal cyst





Note-common  
channel for CBD and  
pancreatic duct



# Choledochal Cyst



Ia

Saccular dilatation of cystic duct and  
CBD



Ib

Saccular dilatation of only CBD



Ic

Fusiform dilatation of the CBD and  
CHD



II

Diverticulum arising from  
CBD



III

Intraduodenal  
Diverticulum



IVa

Cystic dilatation of the intra and extrahepatic  
ducts



V – Caroli's disease

Cystic dilatation of the intrahepatic  
ducts

Predisposition for stone formation, infectious cholangitis and cholangiocarcinoma

Same patient  
what is diagnosis?

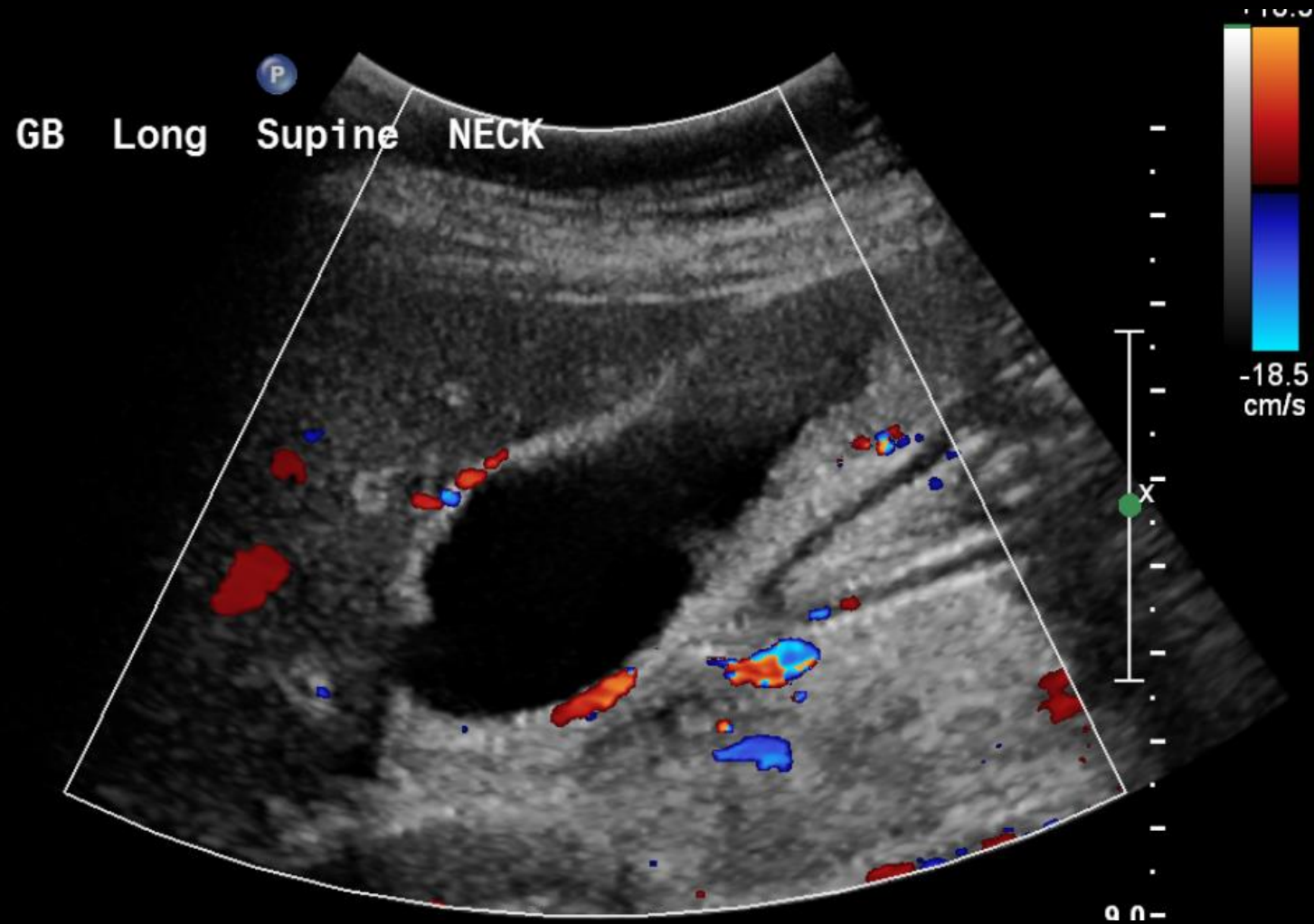




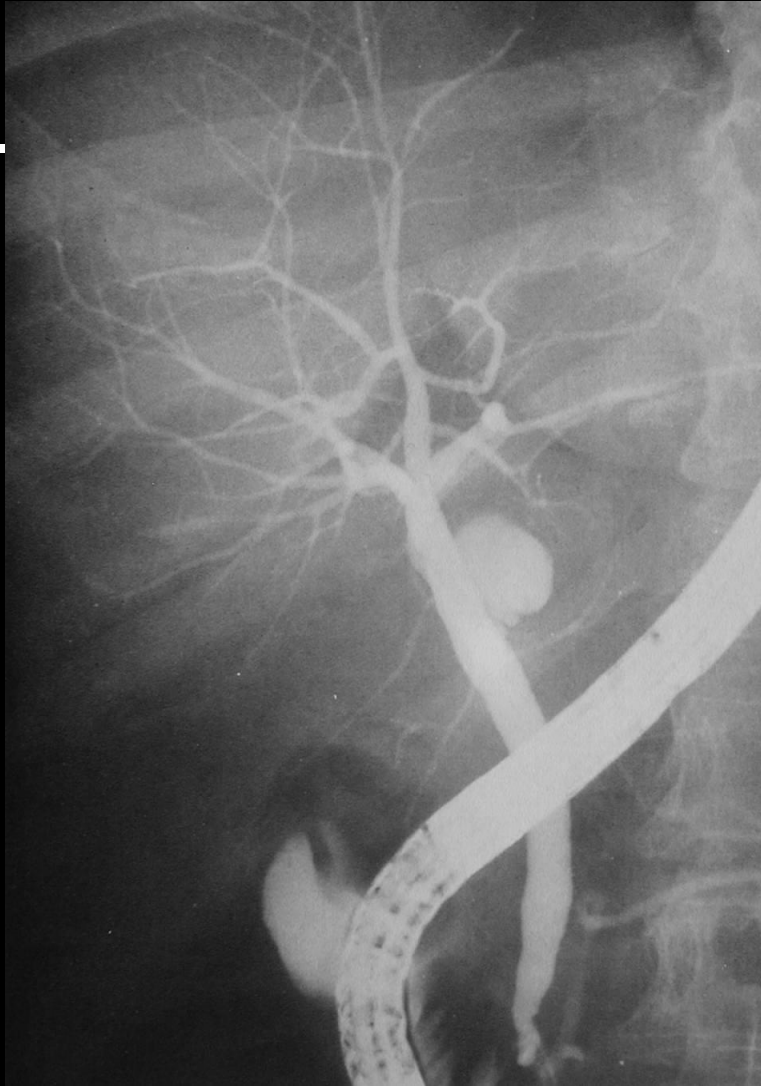
# GB cancer

**2D**  
44%  
C 55  
P Med  
HGen

**CF**  
67%  
1440Hz  
WF 93Hz  
Med



Risk of malignancy entire biliary tract, including GB



## Type 2

- Diverticulum arising from the common bile duct , potentially arising from a tiny stalk



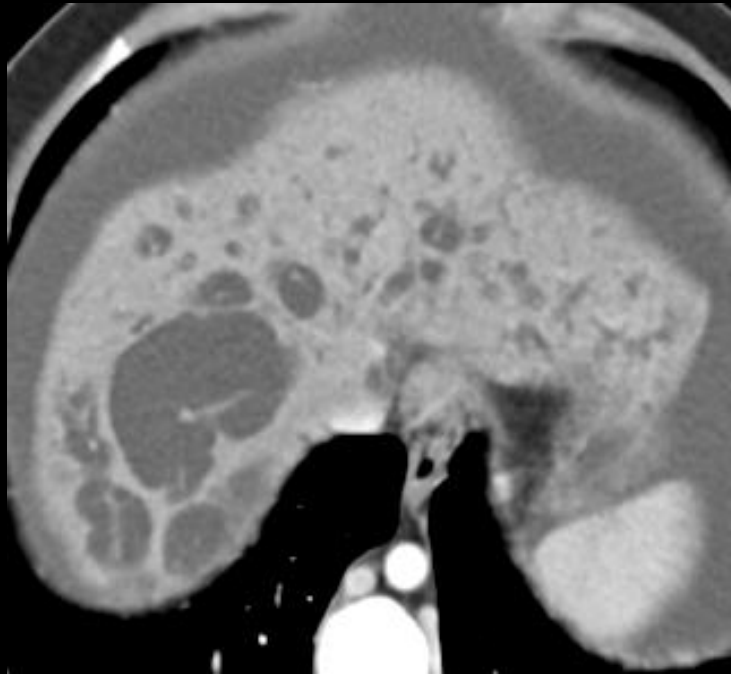
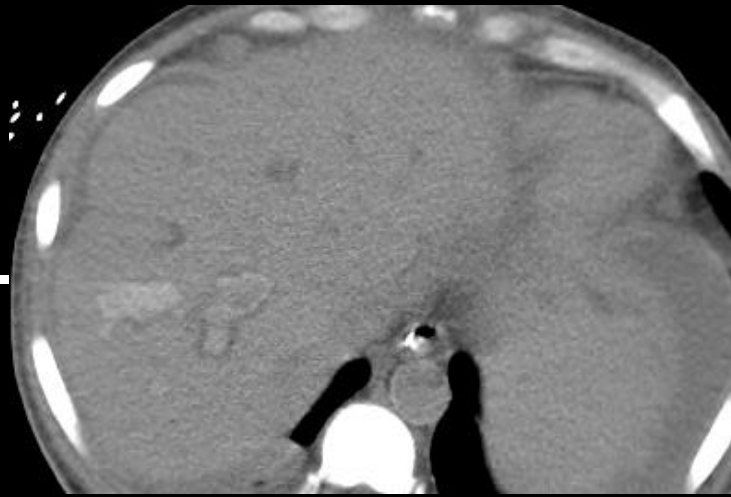
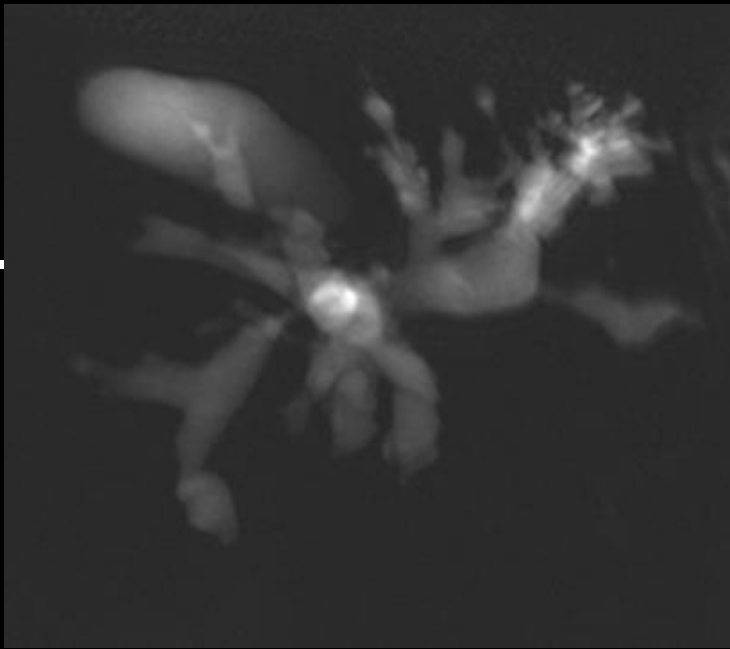
## Type 3

- Diverticular dilatation of the distal common bile duct into the
- Duodenum (choledochocele)
- Not associated with pancreaticobiliary maljunction



## Type 4

- Second most common type of choledochal cyst
- Type IVa
  - intra/extrahepatic duct
- Type IVb
  - multiple extrahepatic dilatations

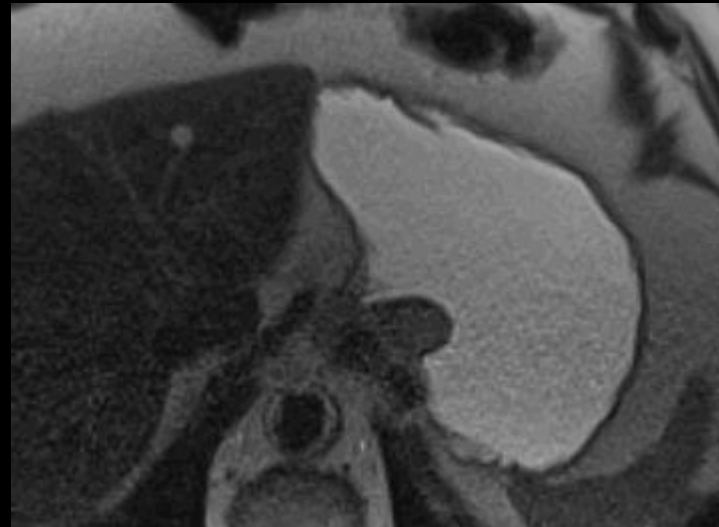
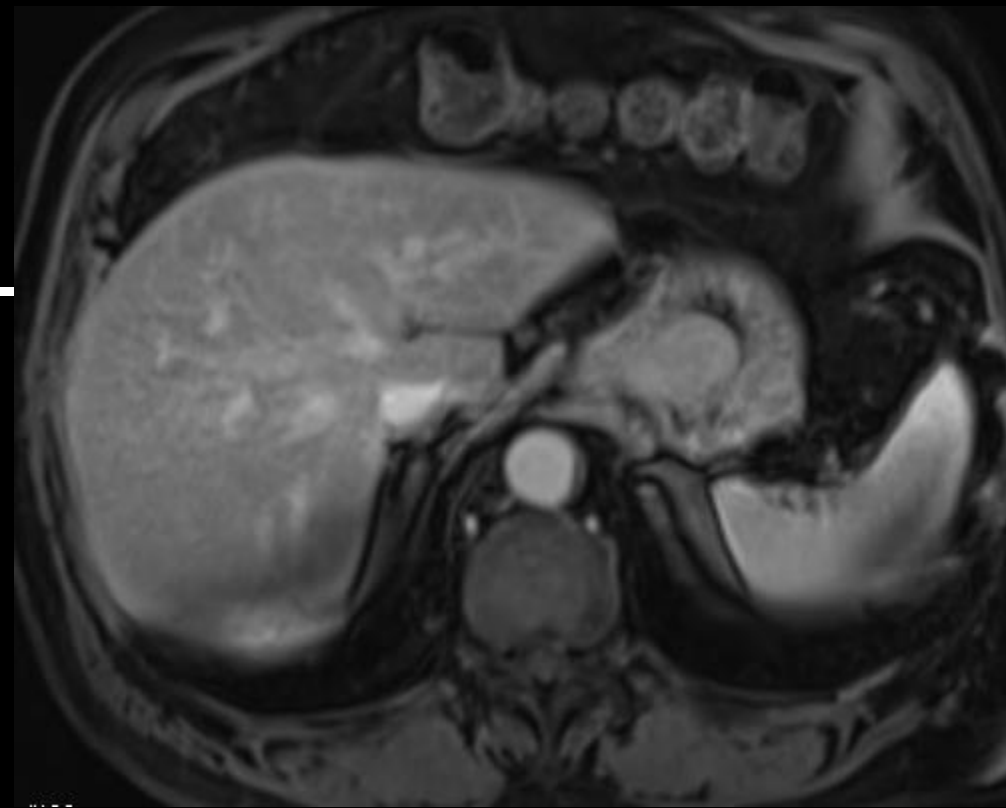


### Type 5 (Caroli's)

- Saccular dilation of intra-hepatic ducts with characteristic central dot sign of portal triad
- Associated with congenital hepatic fibrosis and renal disease
- Complications include liver abscess, cholangitis, stones, cirrhosis, and pancreatitis

# GI luminal

- What is most likely diagnosis?
  - Metastatic disease
  - Hamartomatous polyp
  - GIST
  - Adenocarcinoma



# GIST

- GI stromal tumor
- C-kit positive
- Resection is mainstay, down-sized with Gleevec



1 Gastric Cardia



2 Gastric Body



3 Gastroesophageal Junction



4 Gastric Cardia



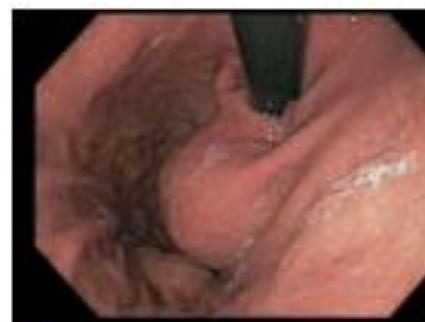
5



6



7



8 Gastric Body



9 Gastric Body



10 Gastric Body

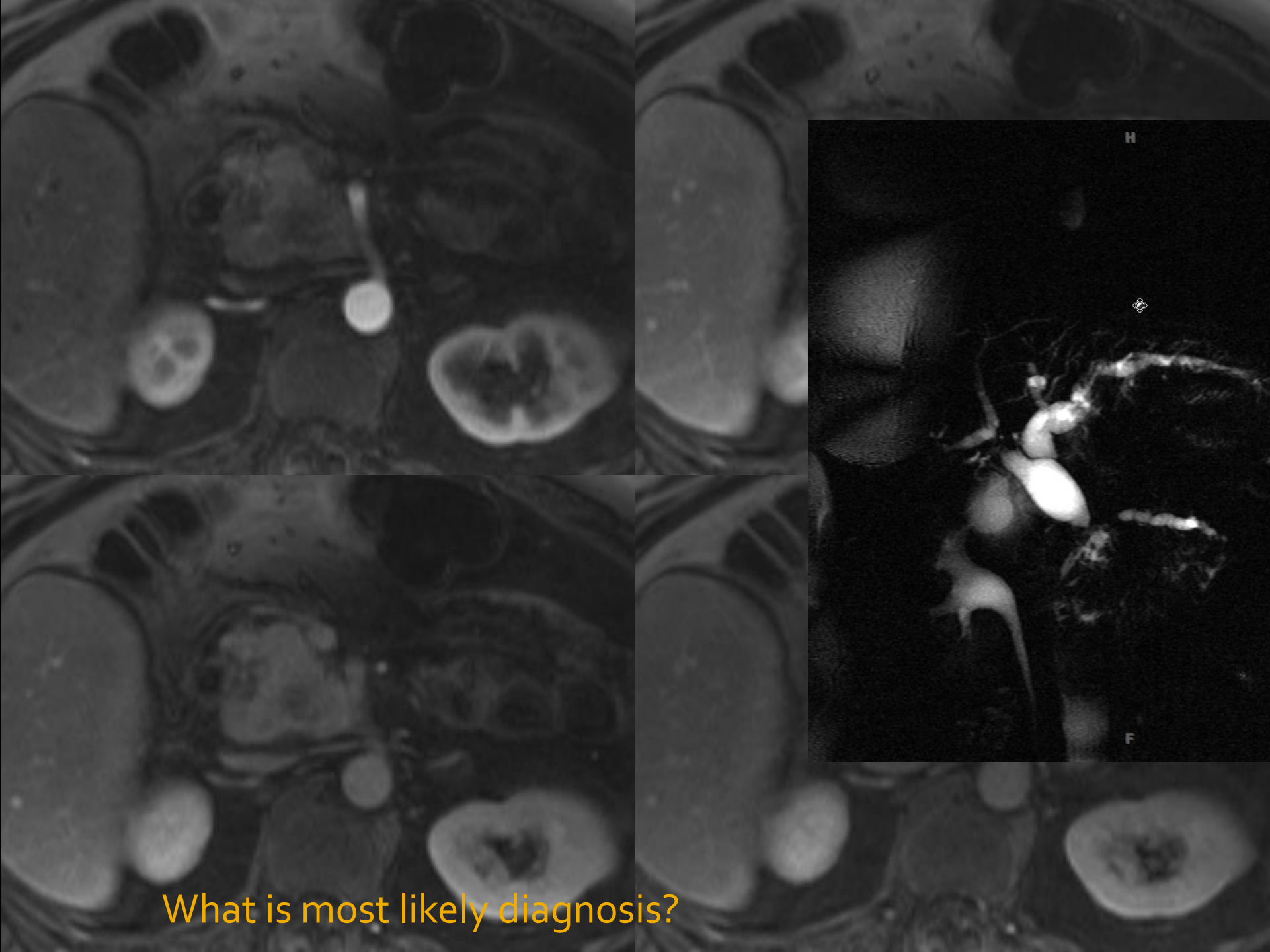


11 Gastric Fundus

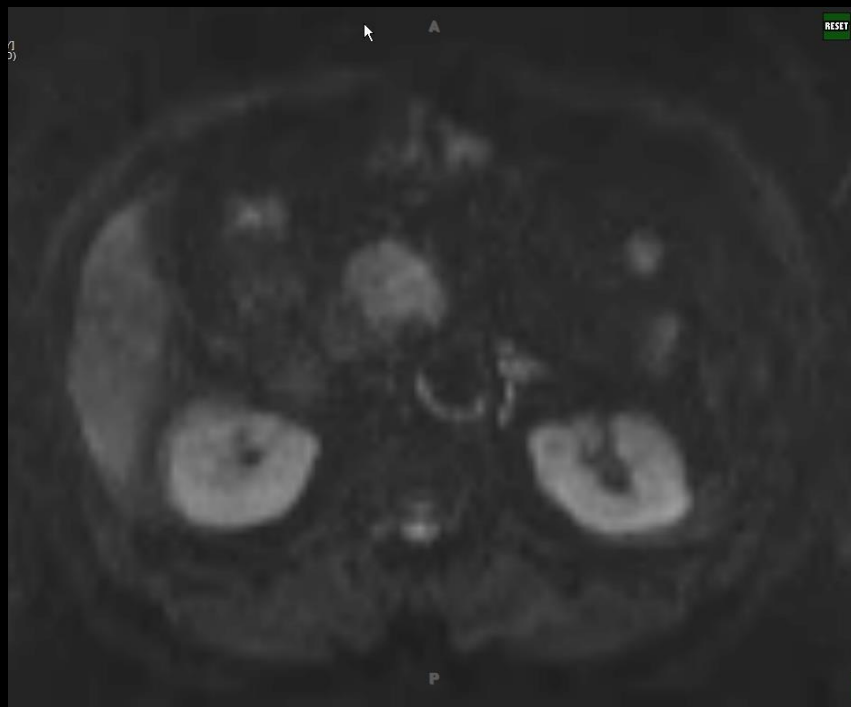


12 Gastric Cardia

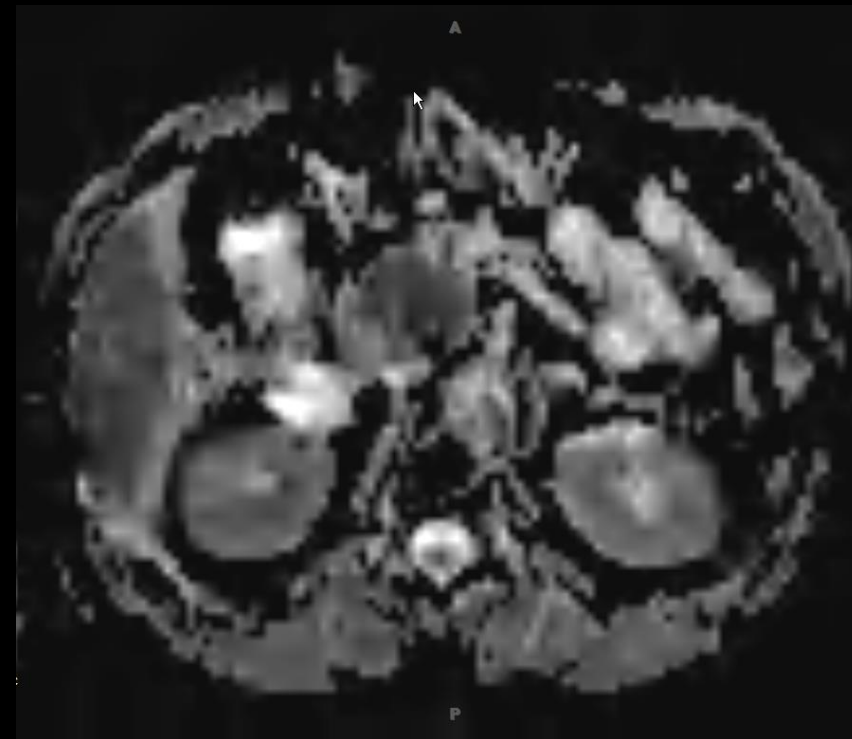




What is most likely diagnosis?



DWI



ADC Map

# Double Duct Sign



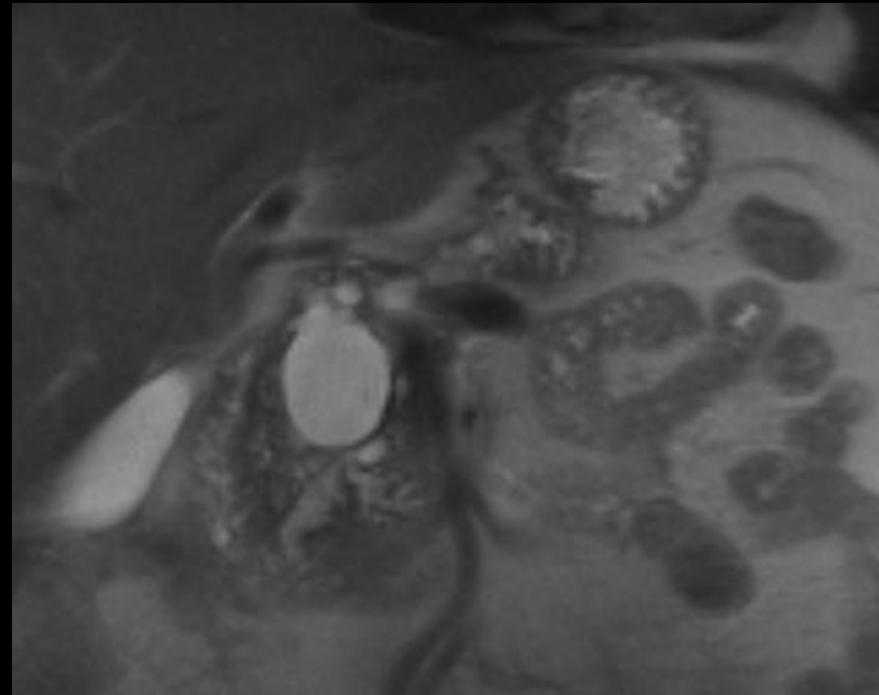
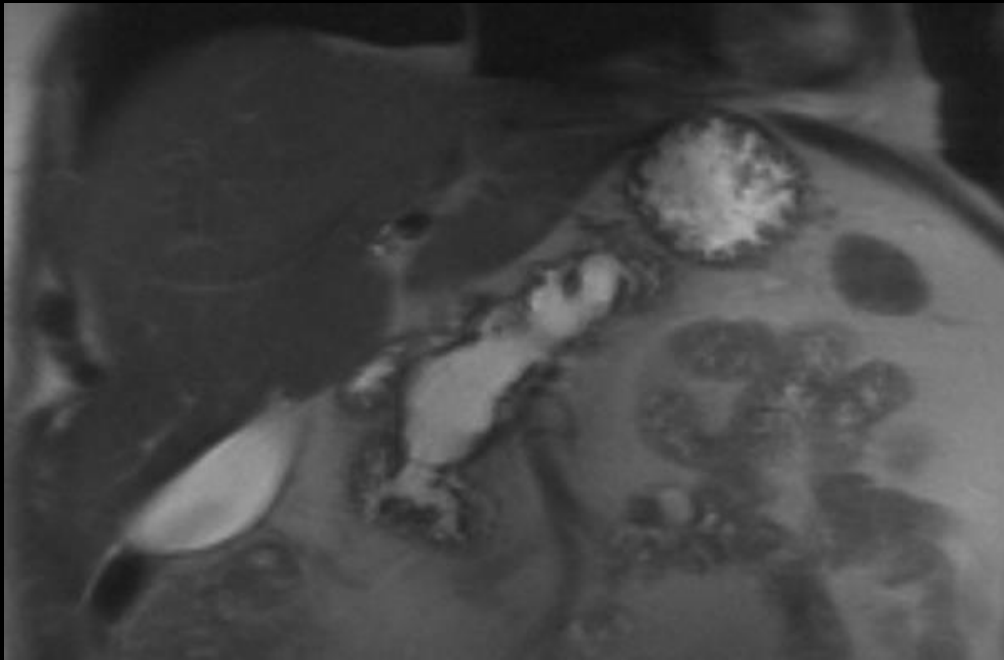
MRCP

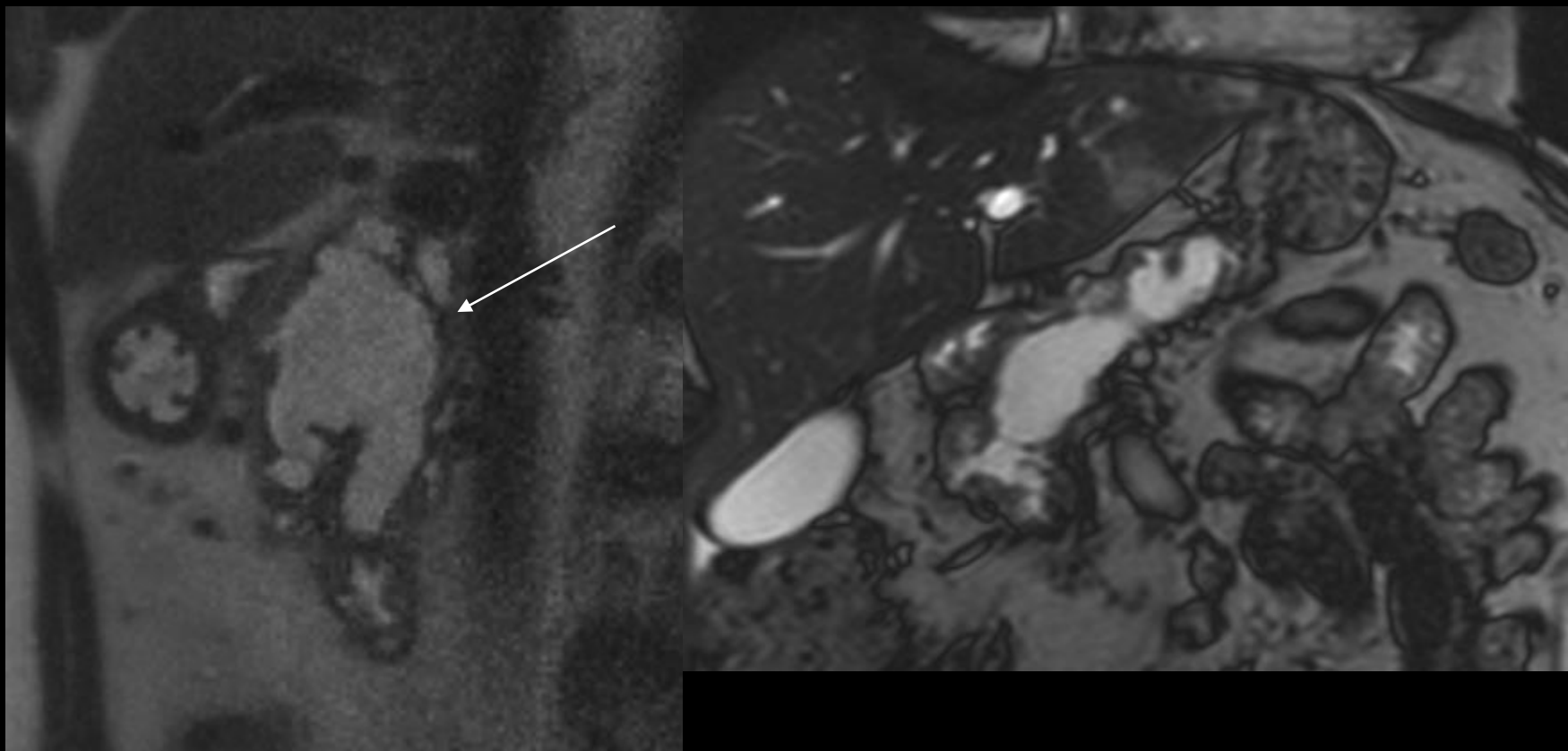
# Pancreatic Adenocarcinoma

- Normal pancreatic tissue has high T<sub>1</sub> signal – adenocarcinoma does not.
- Normal pancreatic tissue has avid arterial enhancement. Adenocarcinoma is hypovascular.
- Usually seen in association with dilatation of the pancreatic duct or even the “double duct sign.”
- Must look closely for involvement of adjacent vasculature.

# Pancreas

- What is diagnosis?





Oblique Sagittal T2 HASTE and Coronal True FISP



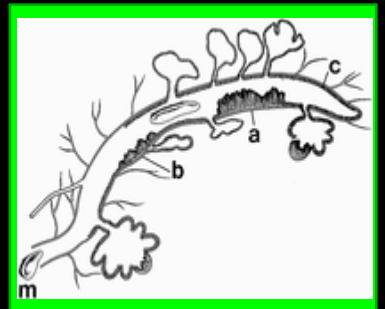
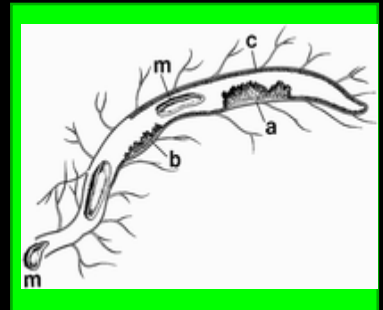
■ MRCP



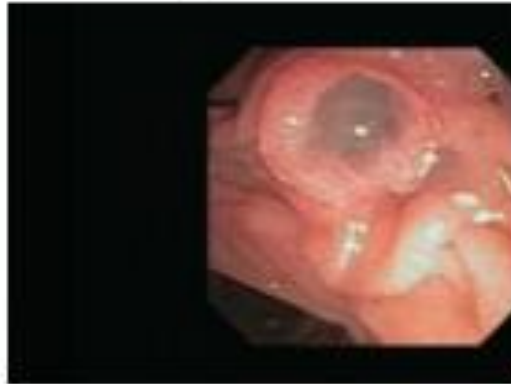
# Intraductal Papillary Mucinous Tumor

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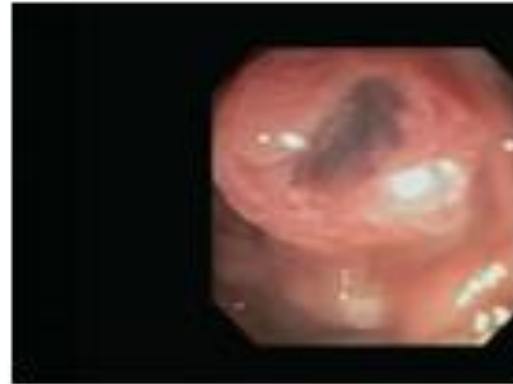
- Mucinous cystic neoplasm of the pancreatic duct which demonstrates variable invasiveness.
- Types:
  - Side Branch Duct – cystic dilation of one or multiple side branches of the pancreatic duct without dilation of main PD
  - Main Duct – diffuse/segmental dilation of the main PD
  - Combined type



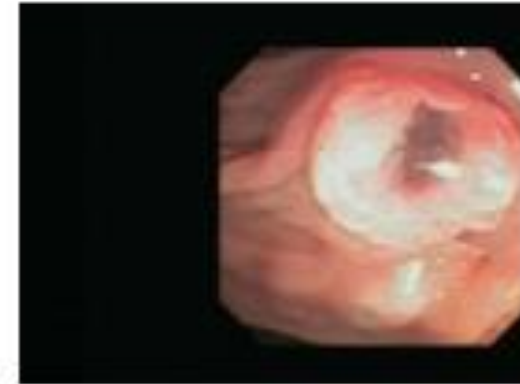




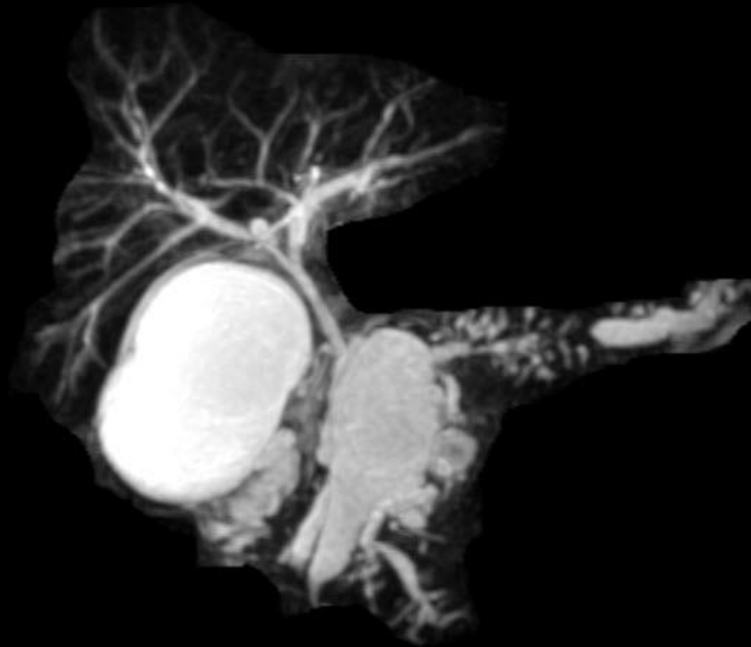
1 Fish Mouth Papilla



2 Fish mouth papilla

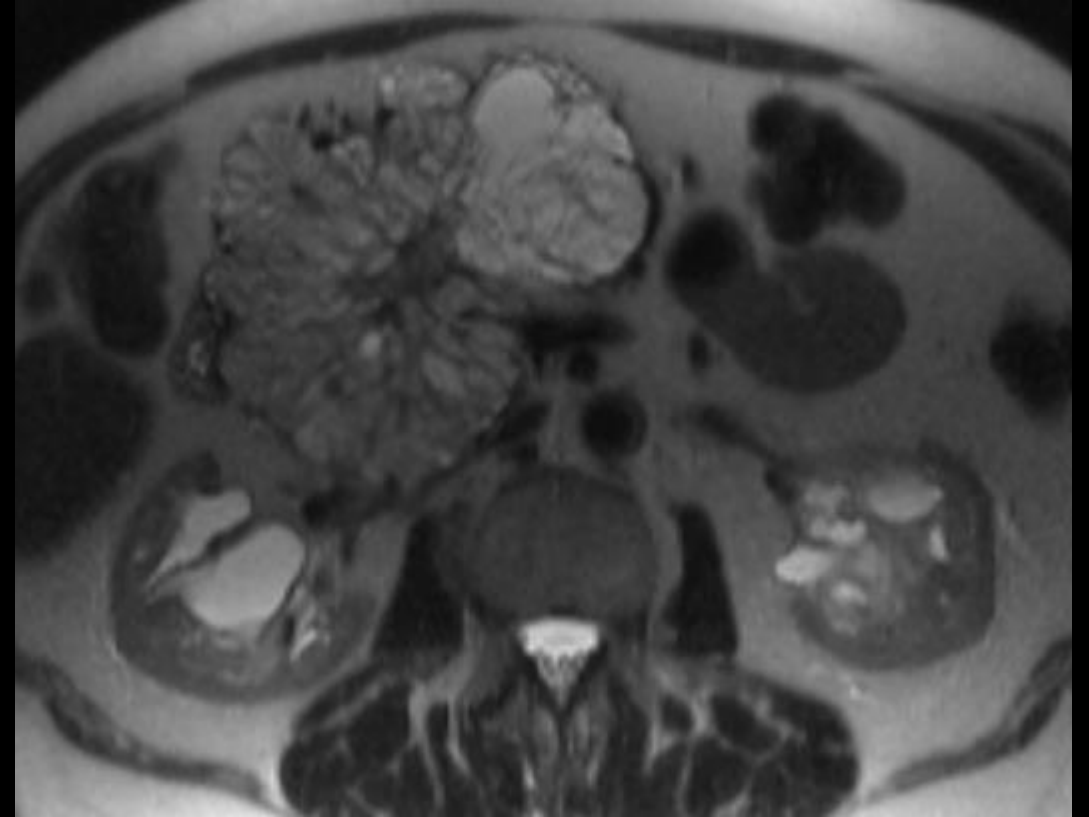


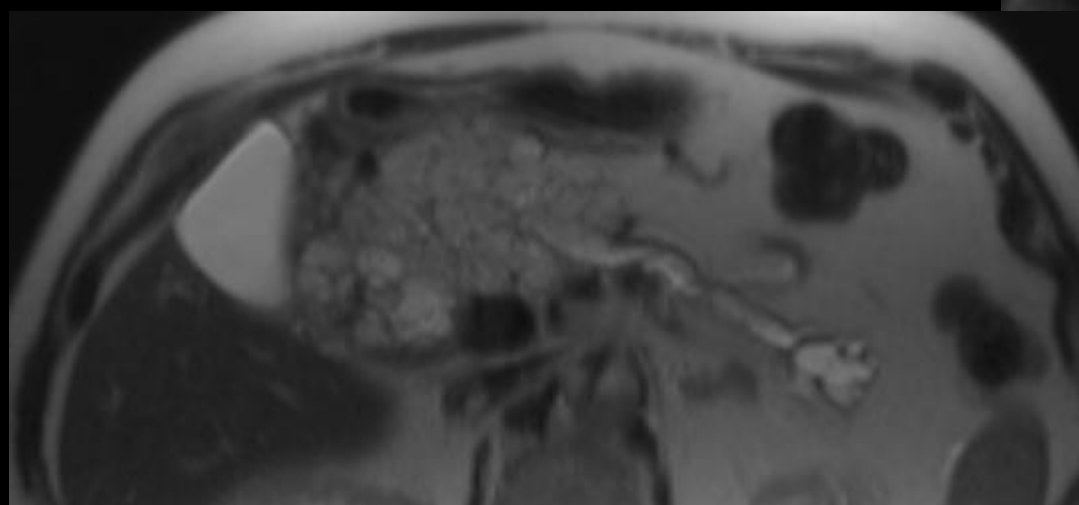
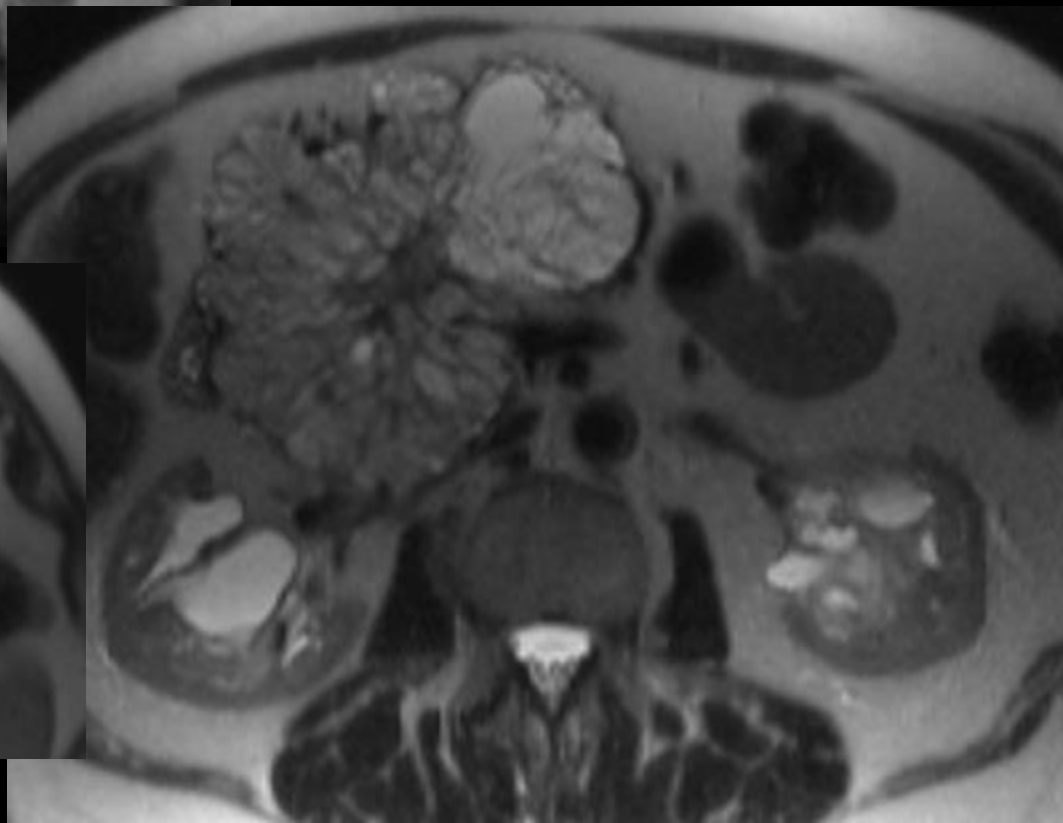
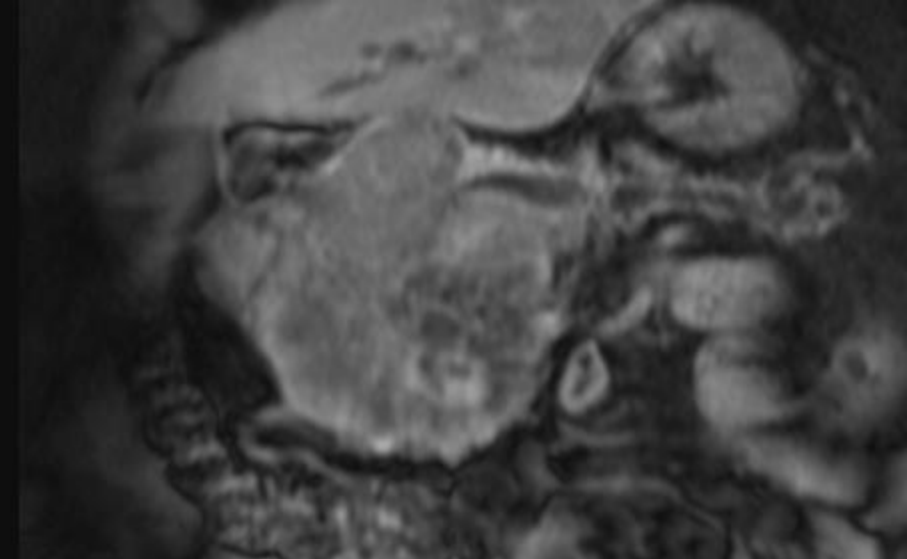
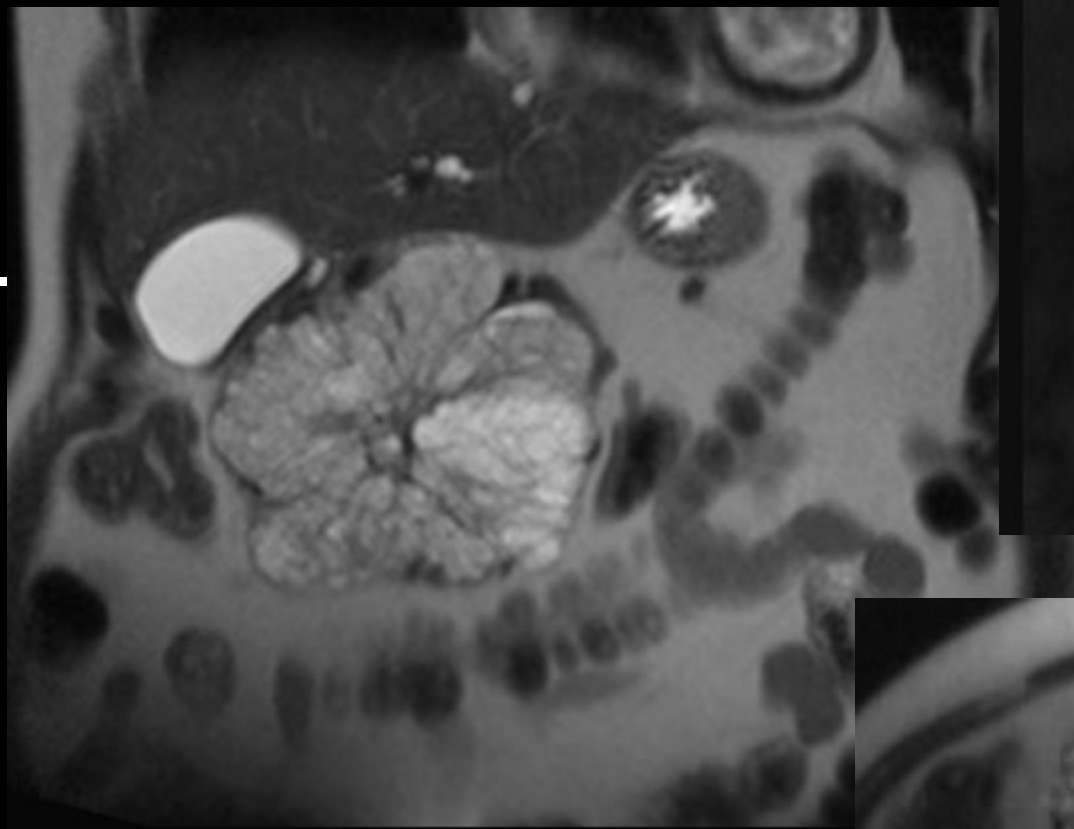
3 Fish mouth papilla

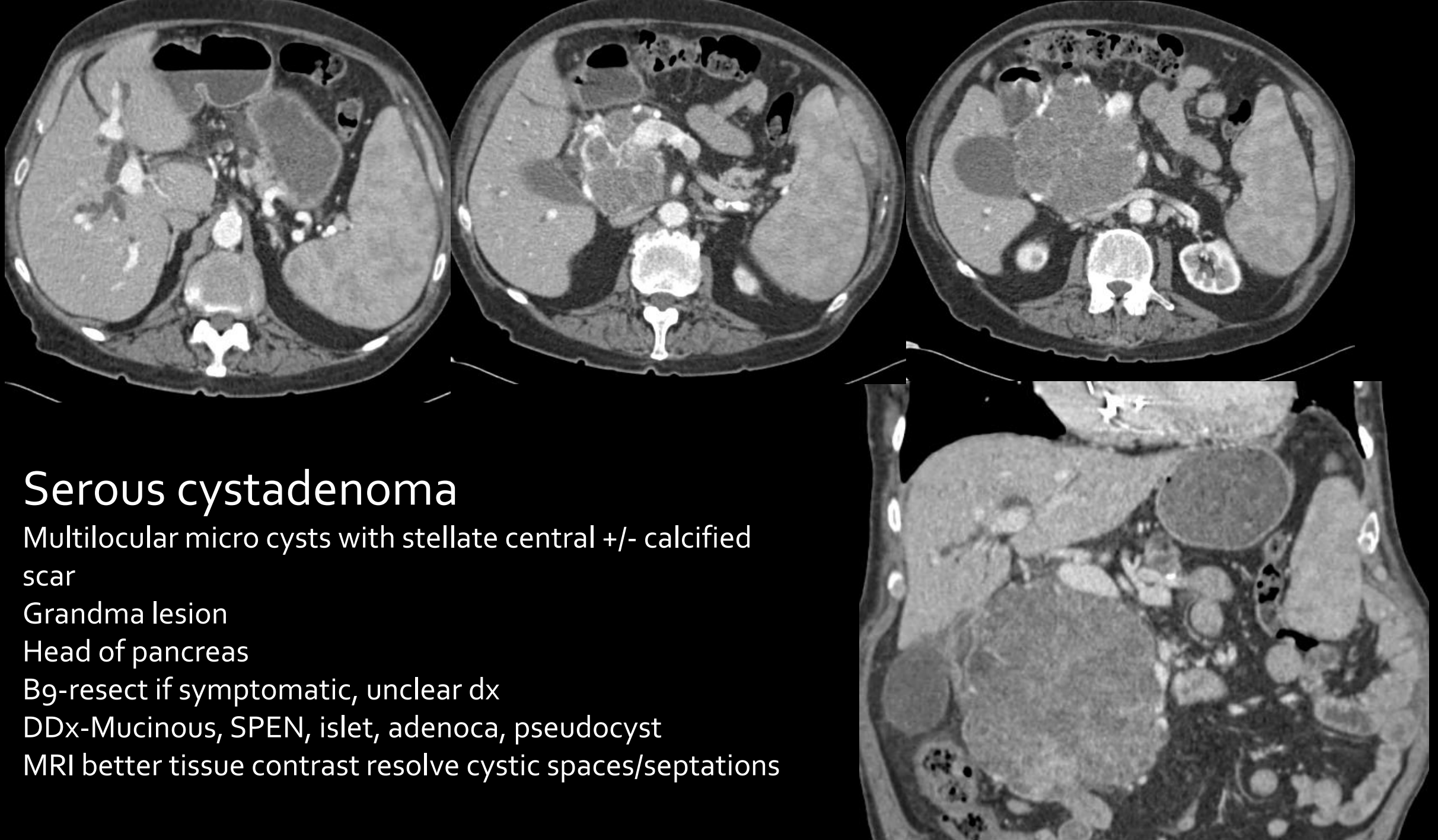


# Pancreas

- What is most likely diagnosis?
  - Mucinous neoplasm
  - Serous cystadenoma
  - SPEN
  - Islet Cell tumor







## Serous cystadenoma

Multilocular micro cysts with stellate central +/- calcified scar

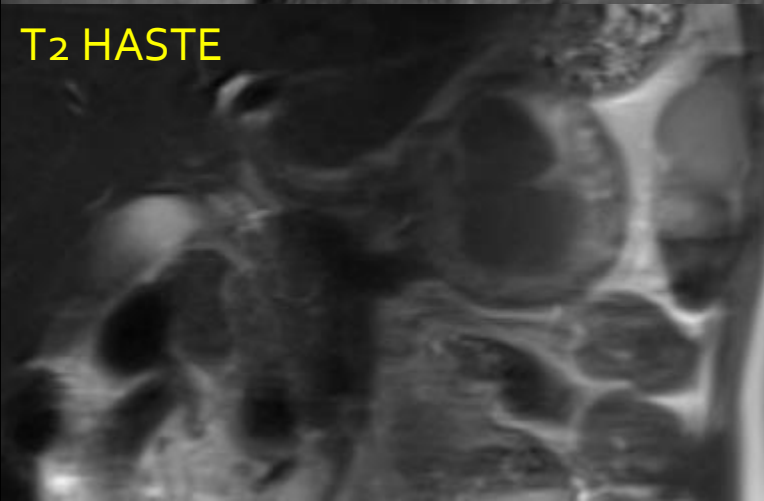
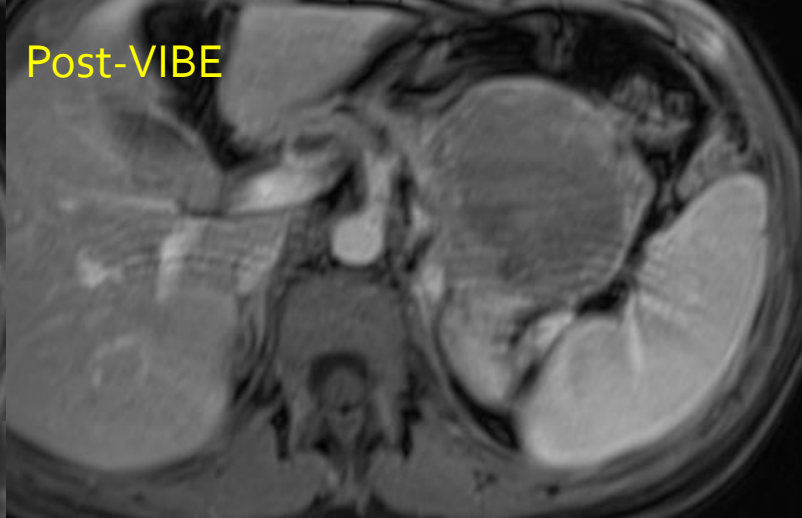
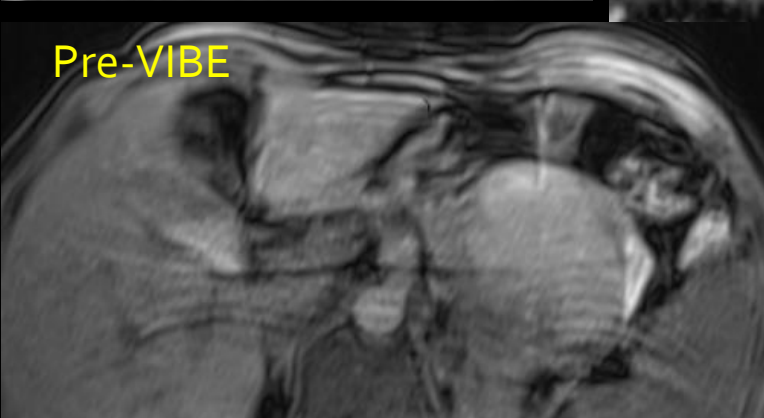
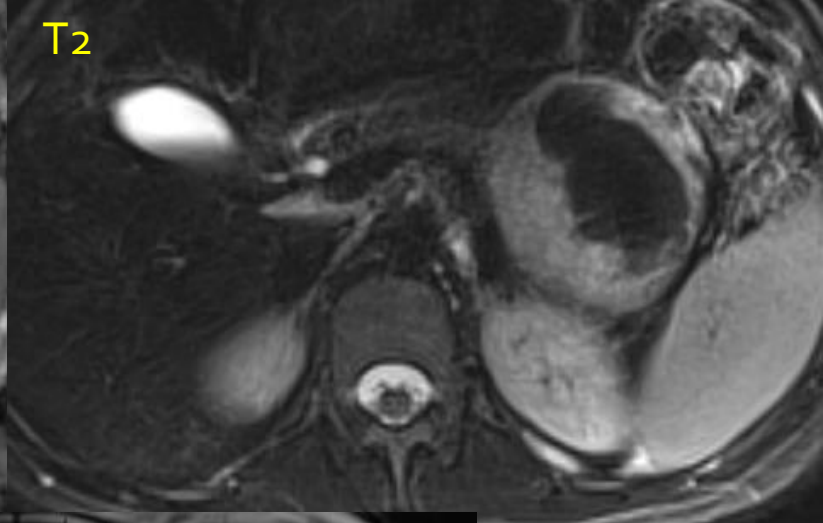
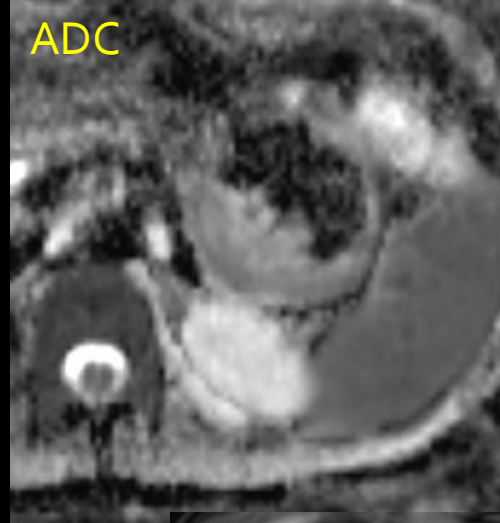
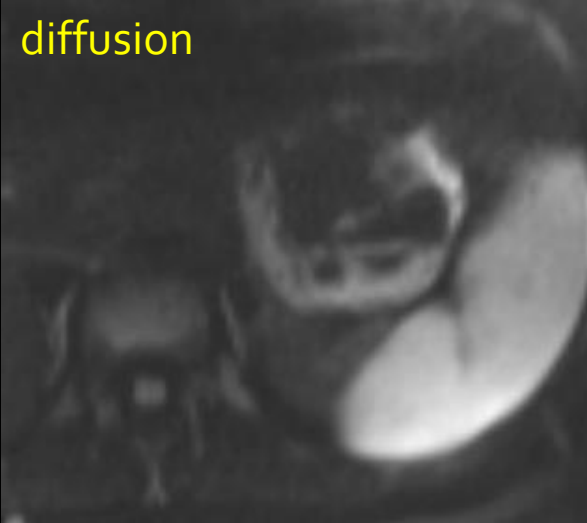
Grandma lesion

Head of pancreas

Bg-resect if symptomatic, unclear dx

DDx-Mucinous, SPEN, islet, adenoca, pseudocyst

MRI better tissue contrast resolve cystic spaces/septations



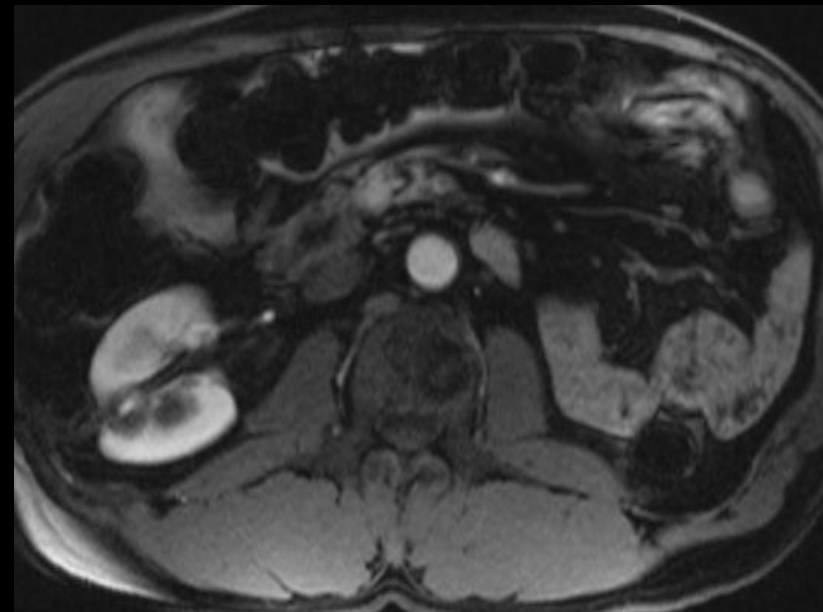
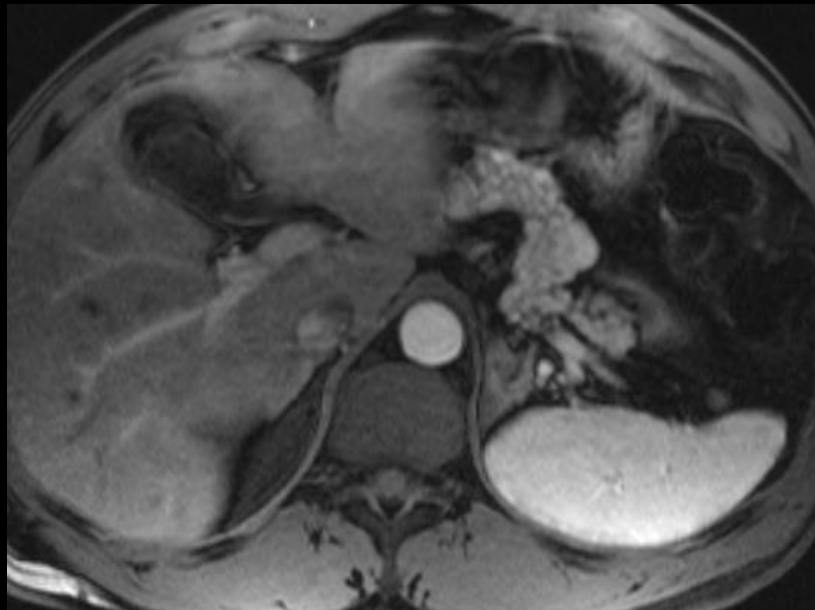
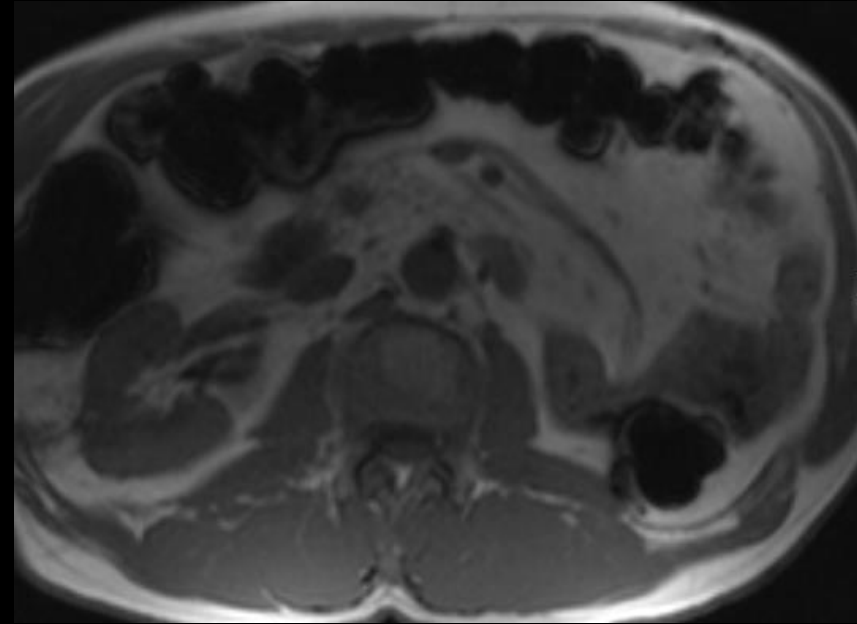
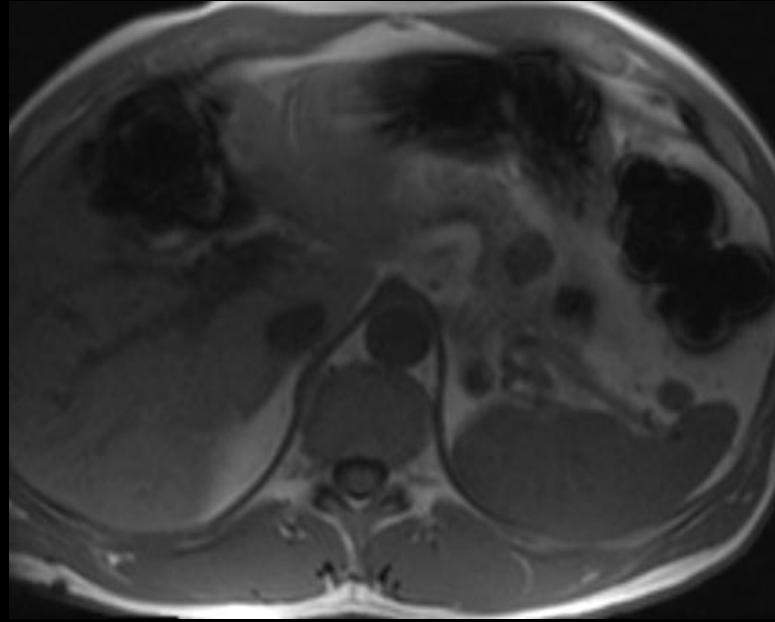
19 yo girl, abdominal pain

What is your leading differential diagnosis?

# SPEN

- Solid and pseudopapillary epithelial neoplasm
- Young, asian women
- Cystic/hemorrhagic/heterogeneous

# What is diagnosis?



# Pancreatic metastases

- Commonly renal cell, but also melanoma
- Arterial enhance
- Similar to neuroendocrine, but multiple or in setting of primary malignancy
- Treated with antiangiogenesis
  - Response may be seen as decreased enhancement w/out change in size



The end

