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Case Presentation: 50 year old state trooper with elevated liver function tests

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Initial Presentation to Family Medicine

50 year old man who works as a state trooper and has a past medical history significant for obesity, gallstones, and kidney stones. He presented to the Family Medicine clinic for follow up on abnormal liver function studies noted incidentally 1 month ago through a hematologic evaluation, which he received for polycythemia.

- Alkaline phosphatase **671**
- AST **197**
- ALT **335**
- Total bilirubin **1.4**

Repeated liver function panel at the time of the Family Medicine visit demonstrated the following:

- Alkaline phosphatase **1,016**
- AST **509**
- ALT **720**
- Total bilirubin **2.5**
- Direct bilirubin **1.6**
- Albumin 4.4
- Total protein 6.7

Of note, the patient had gallstones incidentally noted on a CT in 2019 along with a dilated cystic duct and thickening of the gallbladder wall.

Family Med visit, cont.

- The patient denied abdominal pain and was overall asymptomatic at this time. Minimal alcohol use, no drug use, and no recent altercations or exposure to blood products on the job as a state trooper.

- Physical exam:

109/72 72 97.9 F 99%

The patient is alert and well-appearing. No RUQ tenderness, no hepatosplenomegaly.

- Additional labs: negative for Hep B, Hep C, HIV, CMV
- Patient counseled to report to ED if he develops pain or fever

Hospital Presentation

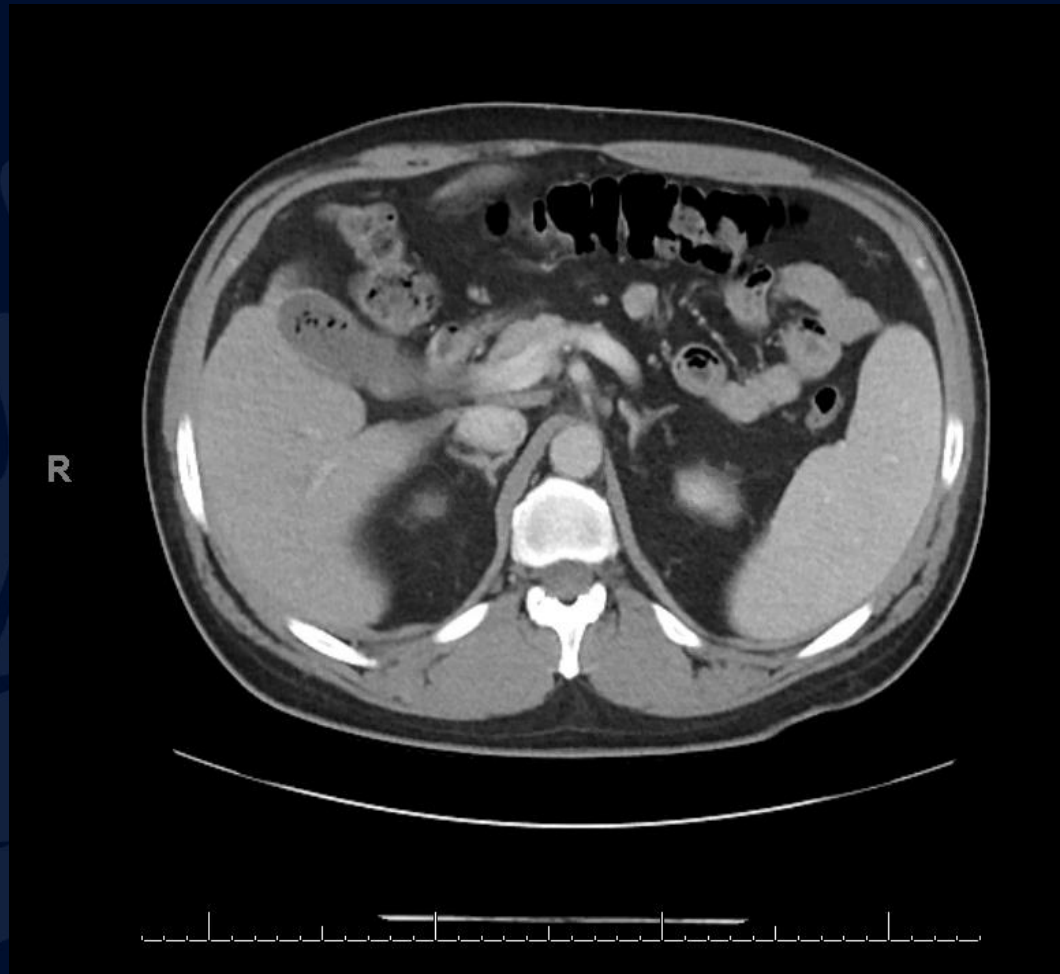
2 days after the Family Med visit, the patient presented to the ED with the following symptoms:

- RUQ abdominal pain
- Mild jaundice of the face
- Nausea
- Pruritus of the lower extremities at night
- Denies fevers, chills, chest pain, SOB, diarrhea, constipation

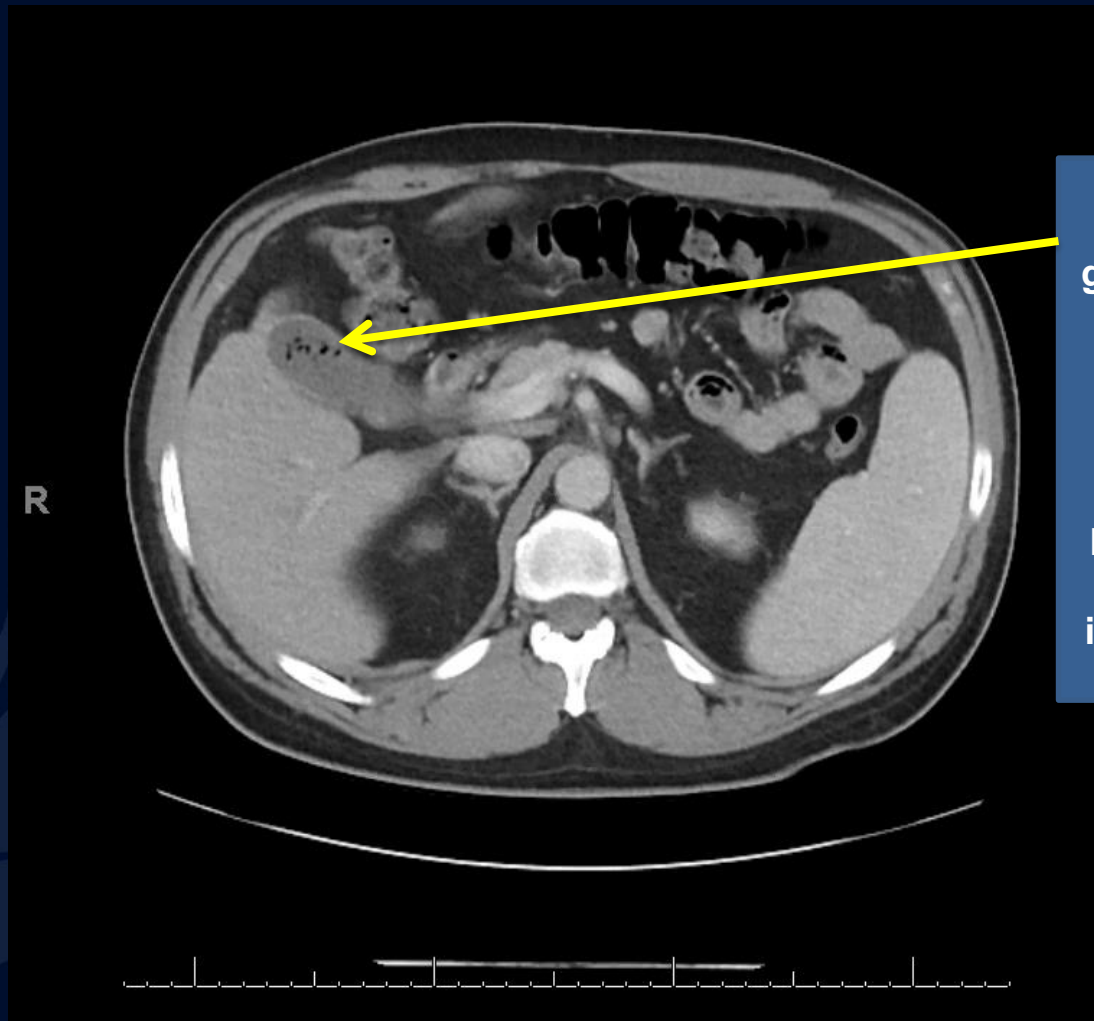
Admitted to medicine team; the following imaging was performed:

- **RUQ ultrasound** → demonstrated cholelithiasis and mild intrahepatic biliary ductal dilatation
- **CT abdomen pelvis with IV contrast**
- **MRI abdomen with and without IV contrast**
- **Magnetic resonance cholangiopancreatography**

CT abdomen pelvis with IV contrast



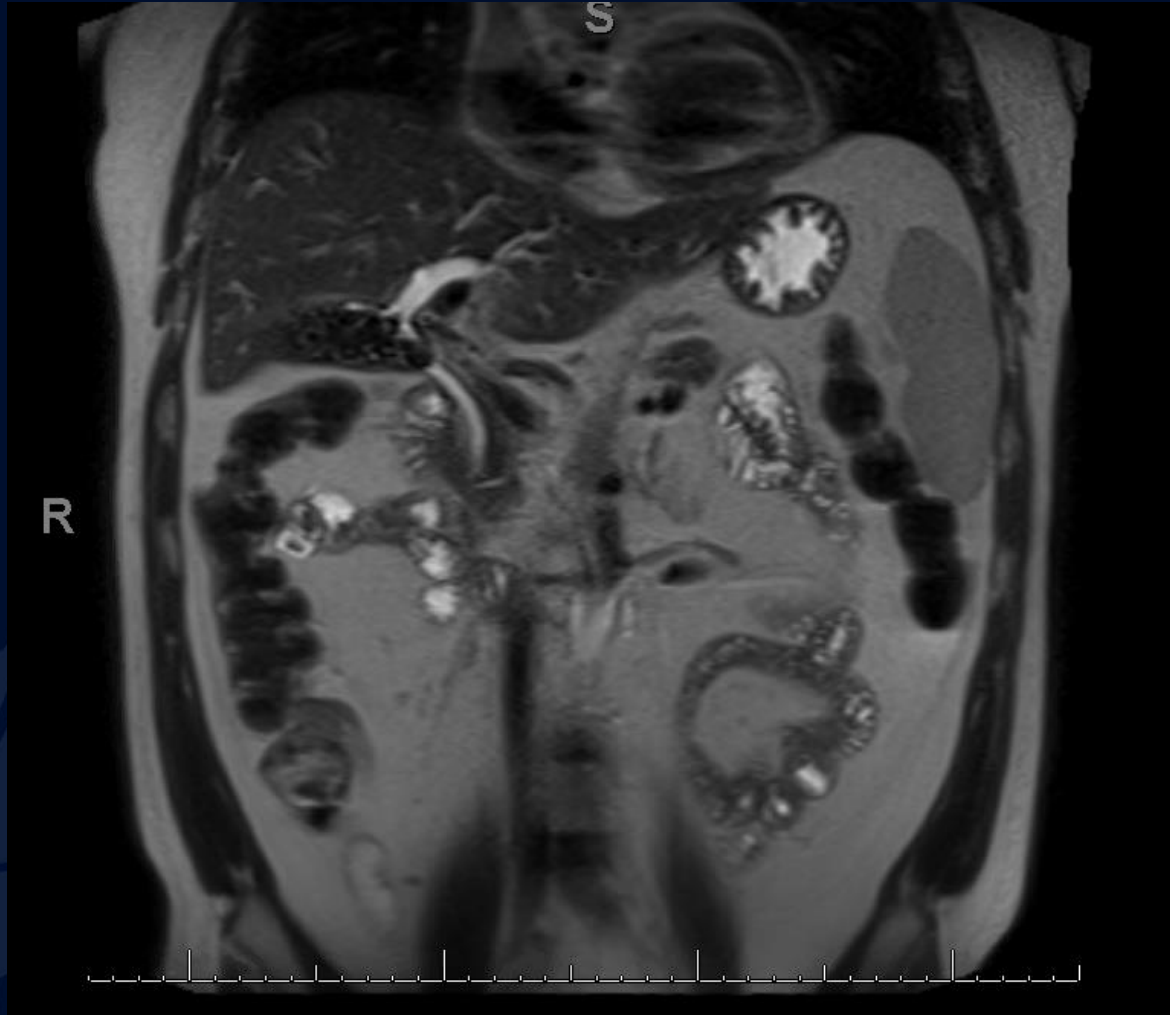
CT abdomen pelvis with IV contrast



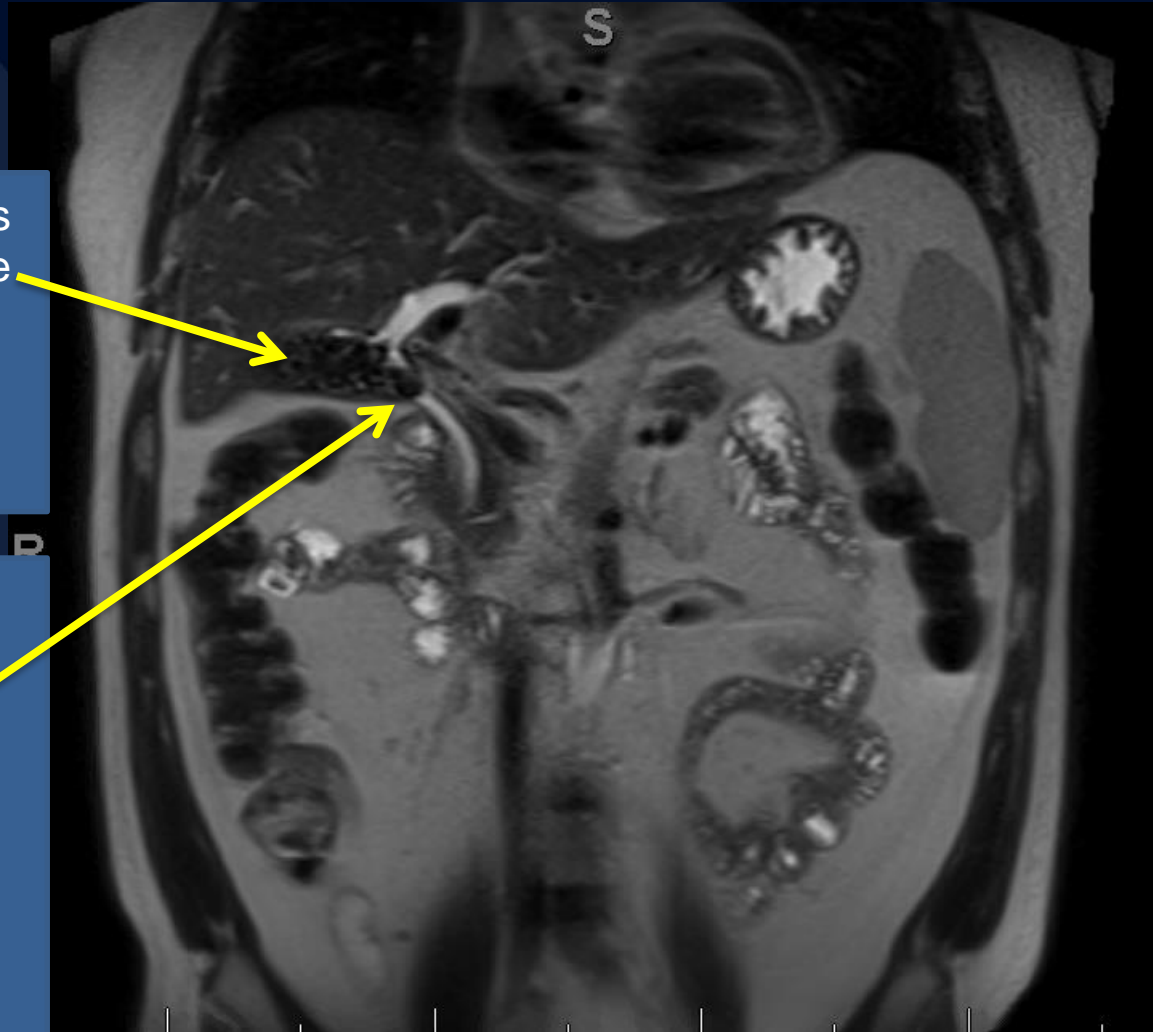
Within the gallbladder, there are multiple foci of gas, which are likely contained within gallstones.

Lack of evidence for pericholecystic inflammation or fluid

MRCP



MRCP



Thin-walled gallbladder is filled with T2-hypointense calculi.

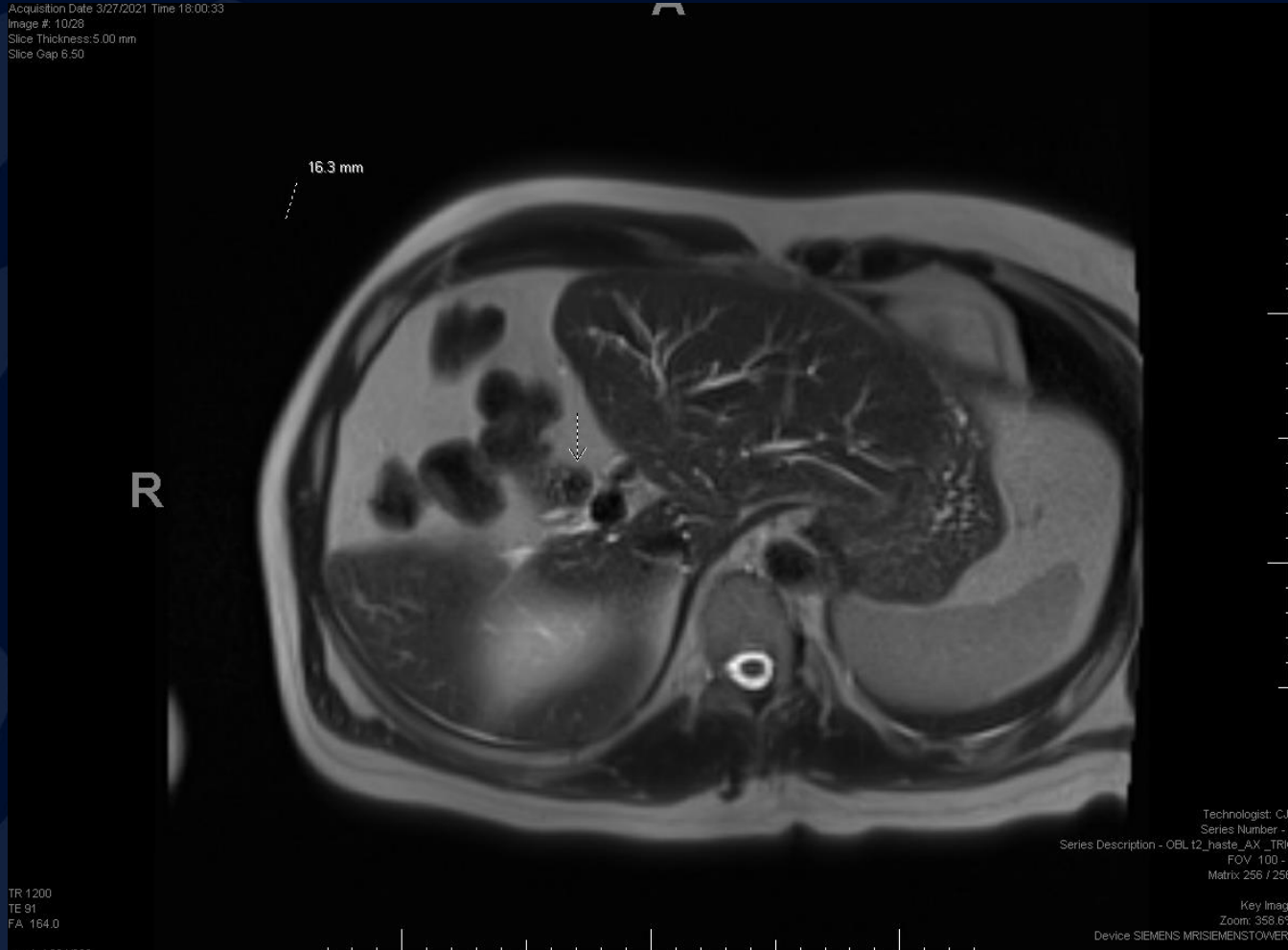
No evidence of acute cholecystitis.

A calculus is seen within the neck of the gallbladder and is exerting a mass effect upon the right lateral aspect of the proximal common bile duct.

Lack of filling defects within the common bile duct itself, so no evidence of choledocholithiasis.

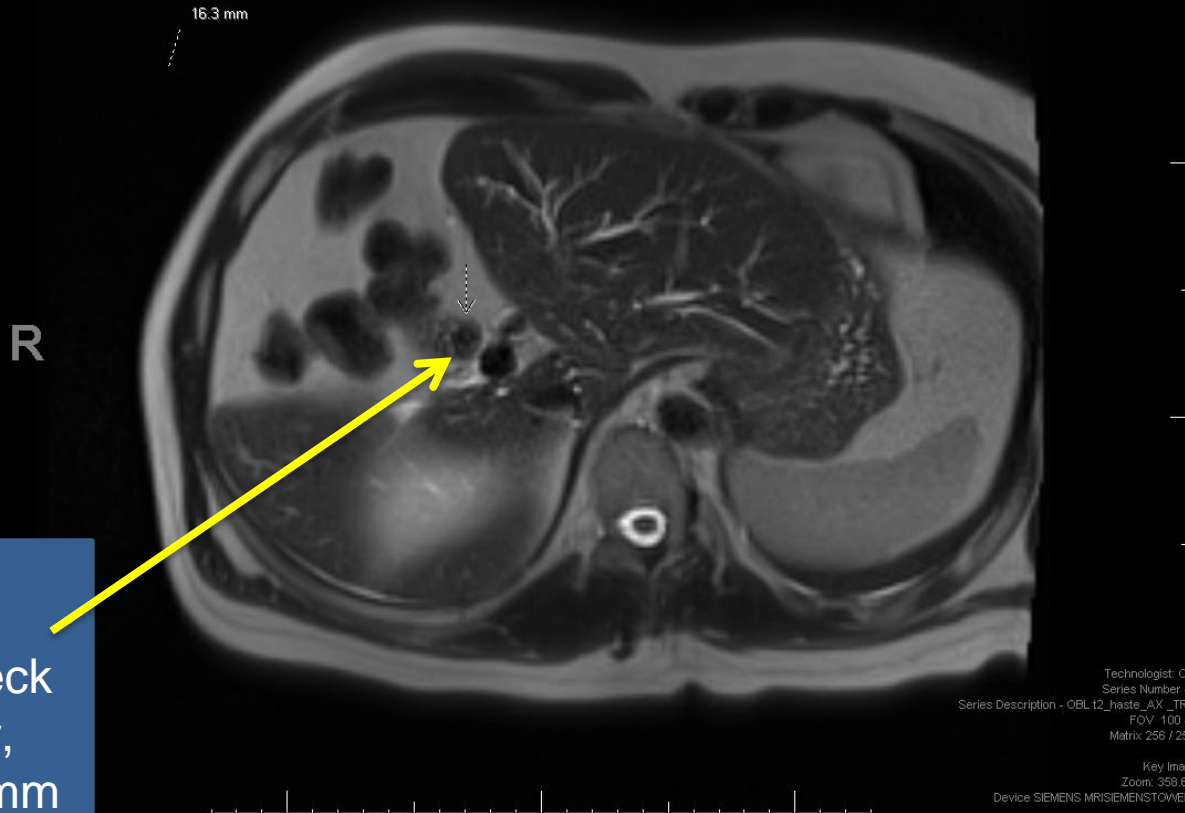
MRCAP

Acquisition Date 3/27/2021 Time 18:00:33
Image #: 10/28
Slice Thickness: 5.00 mm
Slice Gap: 6.50



MRCAP

Acquisition Date 3/27/2021 Time 18:00:33
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Axial view of the calculus in the neck of the gallbladder, measured at 16 mm

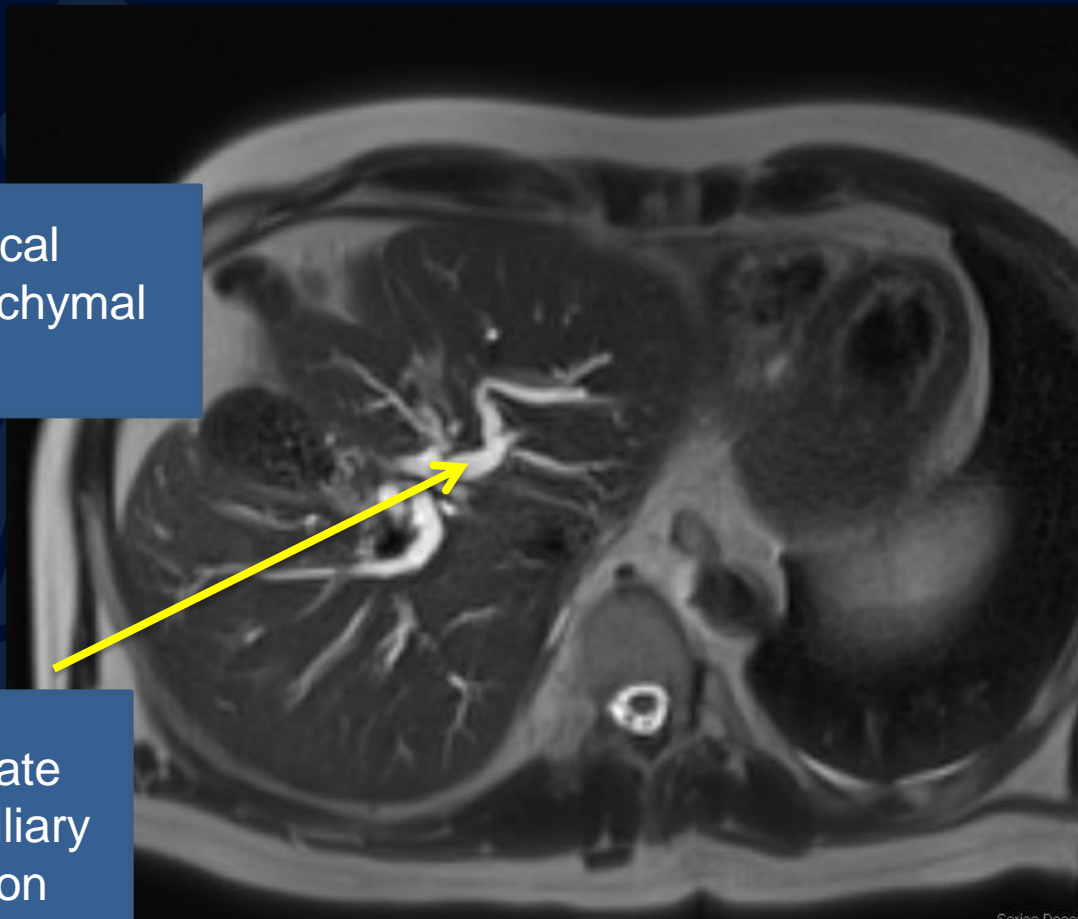
MRCP



MRCP

Absence of focal
hepatic parenchymal
lesion

Mild to moderate
intrahepatic biliary
ductile dilatation



Differential Diagnosis

1. Choledocholithiasis

- Presents with fever, jaundice, RUQ pain (usually subacute/prolonged pain), ↑alk phos and ↑bilirubin
- Would require at least 1 gallstone to be stuck in common bile duct

2. Acute cholecystitis

- Presents with sudden onset of RUQ pain, sonographic Murphy's sign, and gallbladder wall thickening
- Would not cause ↑alk phos or ↑bilirubin by itself; that would require a secondary process causing cholestasis

3. Mirizzi syndrome

- Presents with recurrent episodes of jaundice and cholangitis with biliary type RUQ pain
- Dilated common bile duct on abdominal imaging
- MRCP classically shows a large impacted gallstone in the gallbladder neck or cystic duct

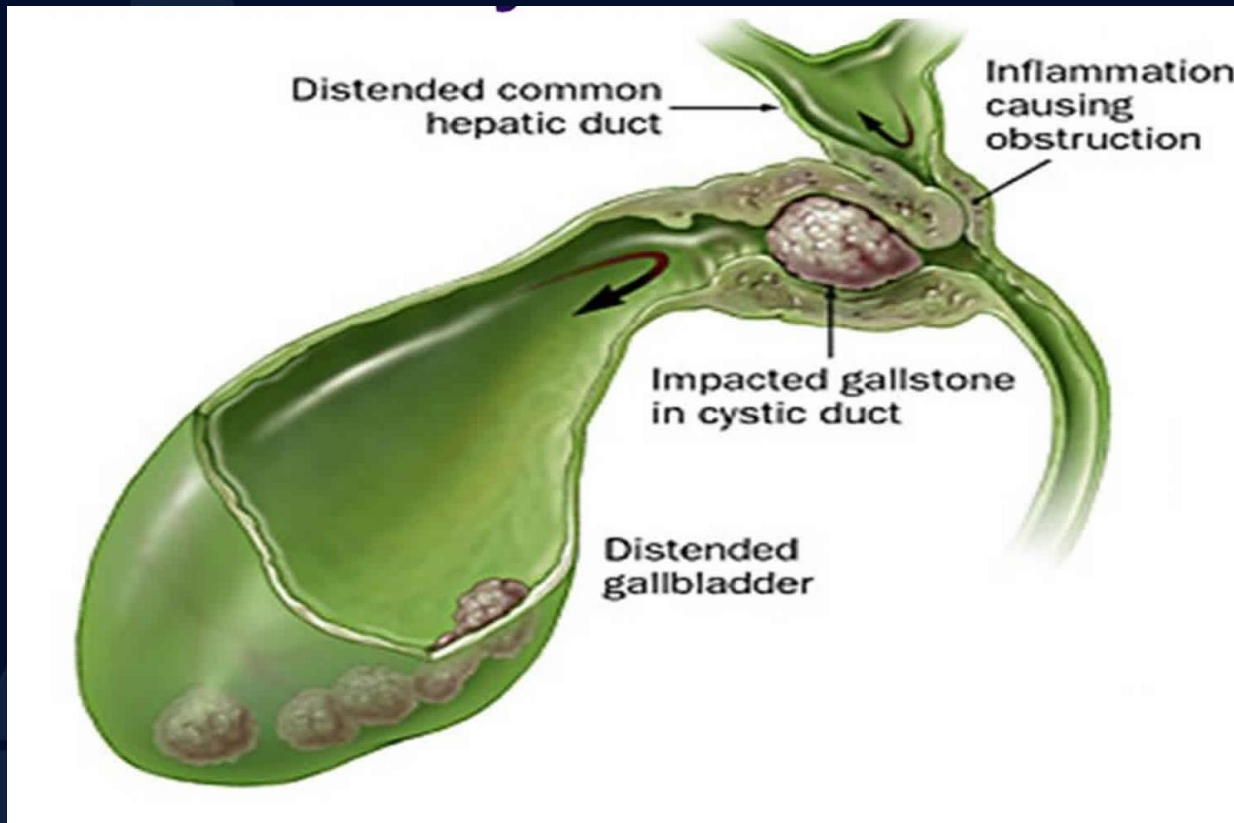
4. Cholangiocarcinoma

- Presence of tumor(s) within bile ducts, either intrahepatic or extrahepatic

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Diagnosis?

Diagnosis: Mirizzi Syndrome



Discussion

- Mirizzi Syndrome = extrinsic compression of an extrahepatic biliary duct caused by one or more calculi within the cystic duct or infundibulum of the gallbladder
 - Relatively rare
 - Can lead to acute cholecystitis, or eventually to fistulae between the gallbladder and common duct
 - Classified into types I-V depending on these complications and their severity
 - Associated with gallbladder cancer – likely due to recurrent inflammation and biliary stasis
 - Treatment of choice: cholecystectomy

Later Hospital and Surgical Course

- No surgical intervention anticipated at first
- HIDA scan 2 days later showed nonvisualization of the gallbladder → now concerning for acute cholecystitis
- Went for laparoscopic cholecystectomy with intraoperative cholangiogram
- Converted to open cholecystectomy and Roux-en-Y hepaticojejunostomy for a chole-choledocho fistula, discovered intraoperatively
- Further complications including likely abdominal bleeding led to a transfer to the ICU and a long hospital stay before his eventual recovery

Sources

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2. Vadera S, Weerakkody Y, et al. *Radiopaedia*. Available from: <https://radiopaedia.org/articles/mirizzi-syndrome?lang=us>
3. Valderrama-Treviño AI, Granados-Romero JJ, Espejel-Deloiza M, et al. Updates in Mirizzi syndrome. *Hepatobiliary Surg Nutr*. 2017;6(3):170-178. doi:[10.21037/hbsn.2016.11.01](https://doi.org/10.21037/hbsn.2016.11.01)
4. Umashanker R, Smink D. Mirizzi Syndrome. [Updated 2019 Feb 14]. *Uptodate*. Available from: <https://www.uptodate.com/contents/mirizzi-syndrome#H2767415925>

Illustration from: <https://healthjade.net/mirizzi-syndrome/>