

AMSER Case of the Month

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84-year-old female presented with acute abdominal pain, fever, chills, vomiting and diarrhea



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Patient Presentation

- 84-year-old female presented to the ER with one day history of abdominal pain, chills, fever, vomiting and diarrhea.
- Vitals show high temperature and low blood pressure, significantly elevated liver function tests (LFTs)
- EKG shows new onset Atrial fibrillation
- Labs show lactic acidosis, hyperkalemia, elevated troponin
- PMHX of AAA, CAD

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 4.

Hospitalized patient with fever, elevated white blood cell count, and positive Murphy sign

Radiologic Procedure	Rating	Comments	Relative Radiation Level
Ultrasound abdomen	9		○
CT abdomen with contrast	7		⊕⊕⊕
MRI abdomen without and with contrast	6	See statement regarding contrast in text under “Anticipated Exceptions.”	○
Cholescintigraphy	6	This is performed if ultrasound is inconclusive.	⊕⊕
Percutaneous cholecystostomy	6	This can be both diagnostic and therapeutic, particularly with intensive care unit patients. Consider using this for the nonoperative patient or if other causes of sepsis have been excluded. This usually requires imaging first. It is performed only in certain patients (elderly, immunocompromised, etc).	Varies
MRI abdomen without contrast	5		○
CT abdomen without contrast	4		⊕⊕⊕
CT abdomen without and with contrast	3		⊕⊕⊕⊕

Note: Rating scale: 1, 2, and 3 = usually not appropriate; 4, 5, and 6 = may be appropriate; 7, 8, and 9 = usually appropriate.

This imaging modality was ordered by the ER physician

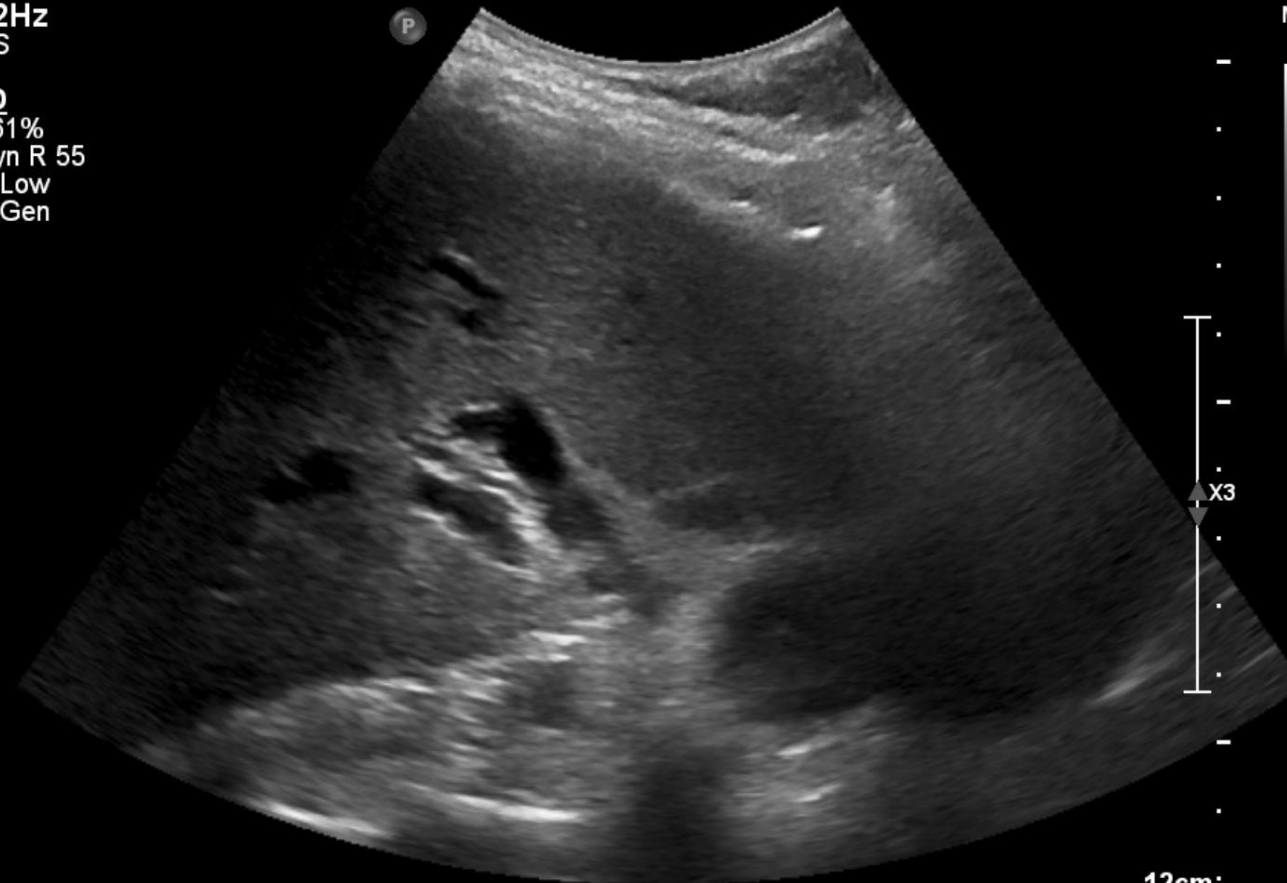
Findings (unlabeled)

Abd Gen
C5-1
32Hz
RS

2D
61%
Dyn R 55
P Low
HGen

TIS0.2 MI 1.3

M3



CBD Supine |

12cm

Findings: (labeled)

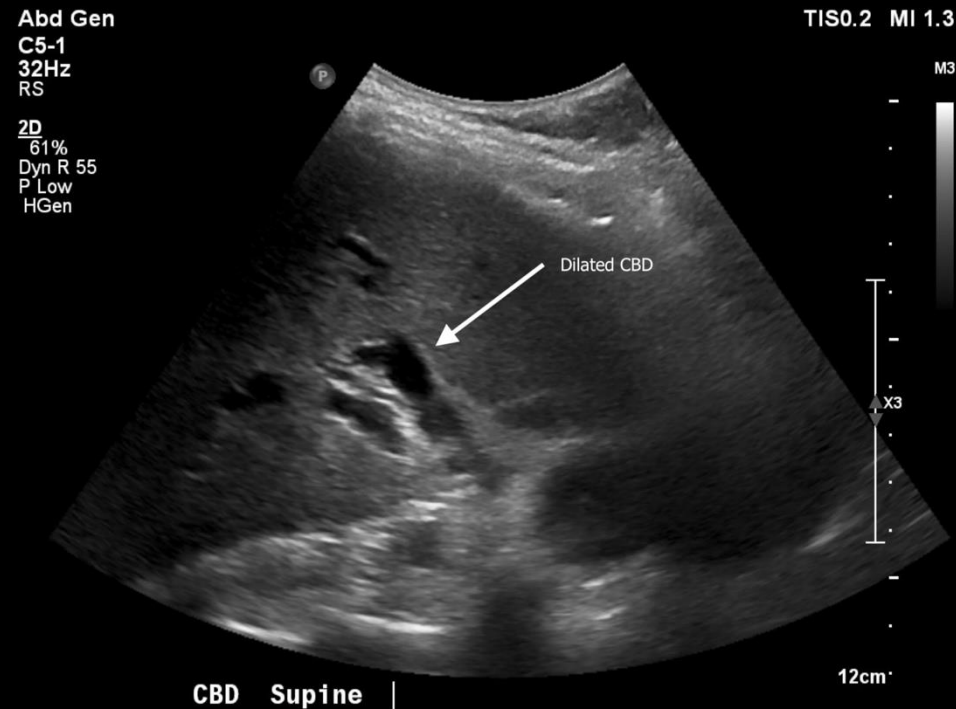


Figure 1: Transabdominal ultrasound depicting a dilated common bile duct. Sonographic evaluation demonstrates a dilated common bile duct with associated mixed echogenic debris

Findings: (unlabeled)



Findings: (labeled)

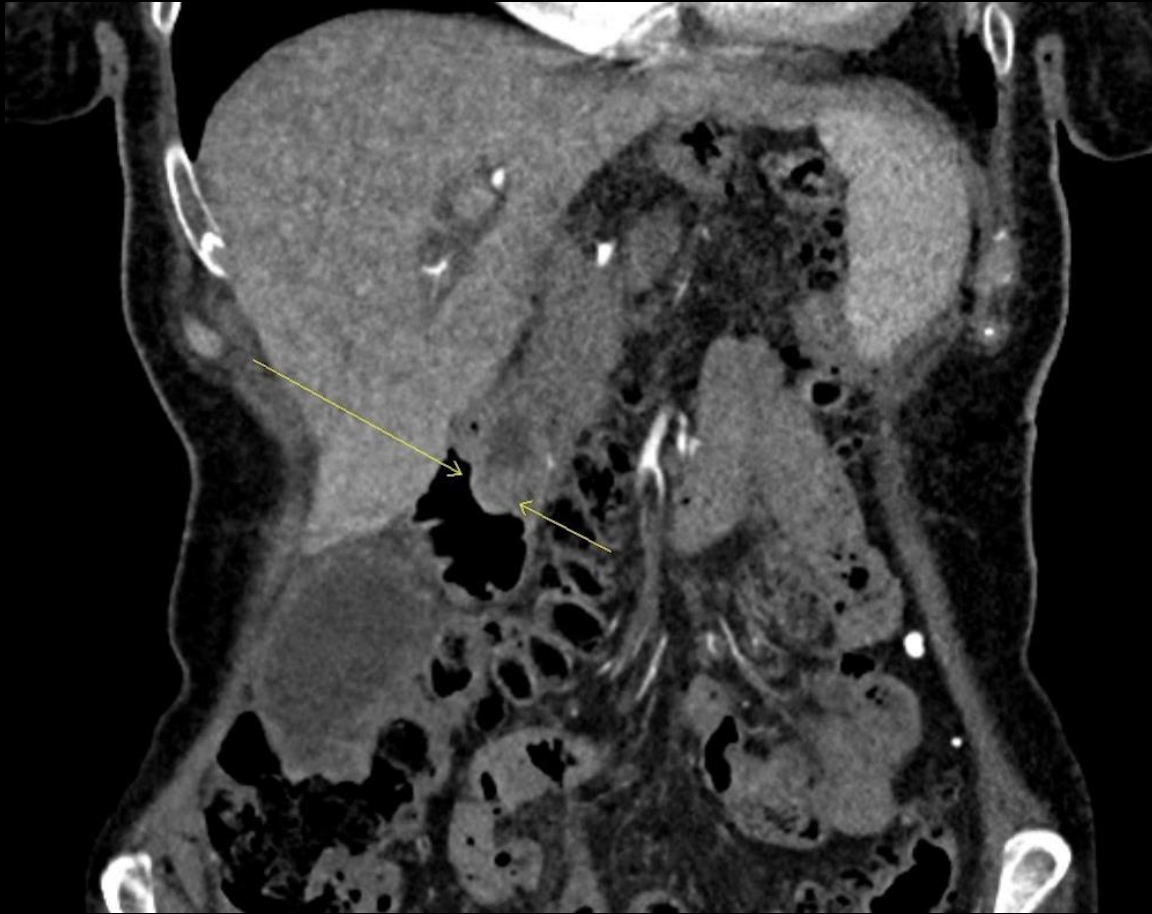


Figure 3 - Coronal contrast-enhanced CT identifying biliary obstruction. The image reveals rounded irregularity in the region of the distal common bile duct favored to represent choledocolithiasis, although incompletely characterized with CT.

Findings: (unlabeled)



Findings: (labeled)



Figure 4 - Initial cholangiogram demonstrating biliary obstruction. This is demonstrating balloon dilation of this sphincter of Oddi to allow for passage of stone fragments. Notice made of several gallstones in the gallbladder lumen.

Findings: (unlabeled)



Findings: (labeled)

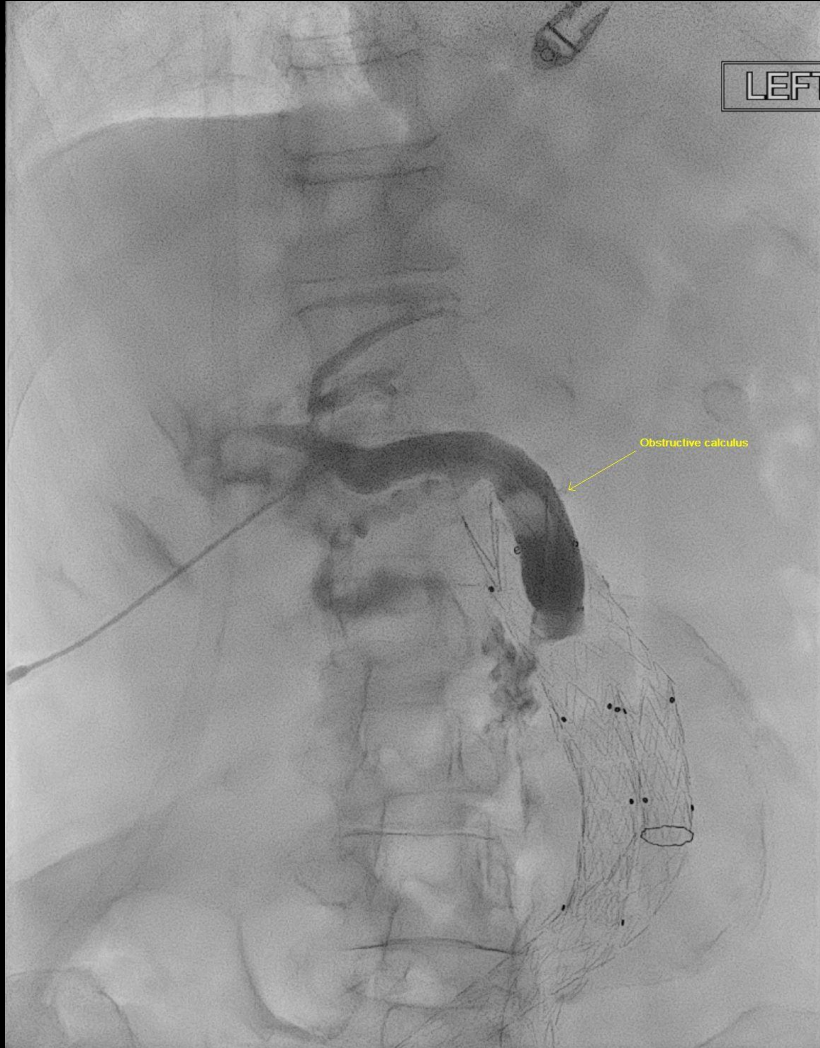


**Figure 5 - cholangiogram
Demonstrate calculus in mid
common bile duct**

Findings: (unlabeled)



Findings: (labeled)

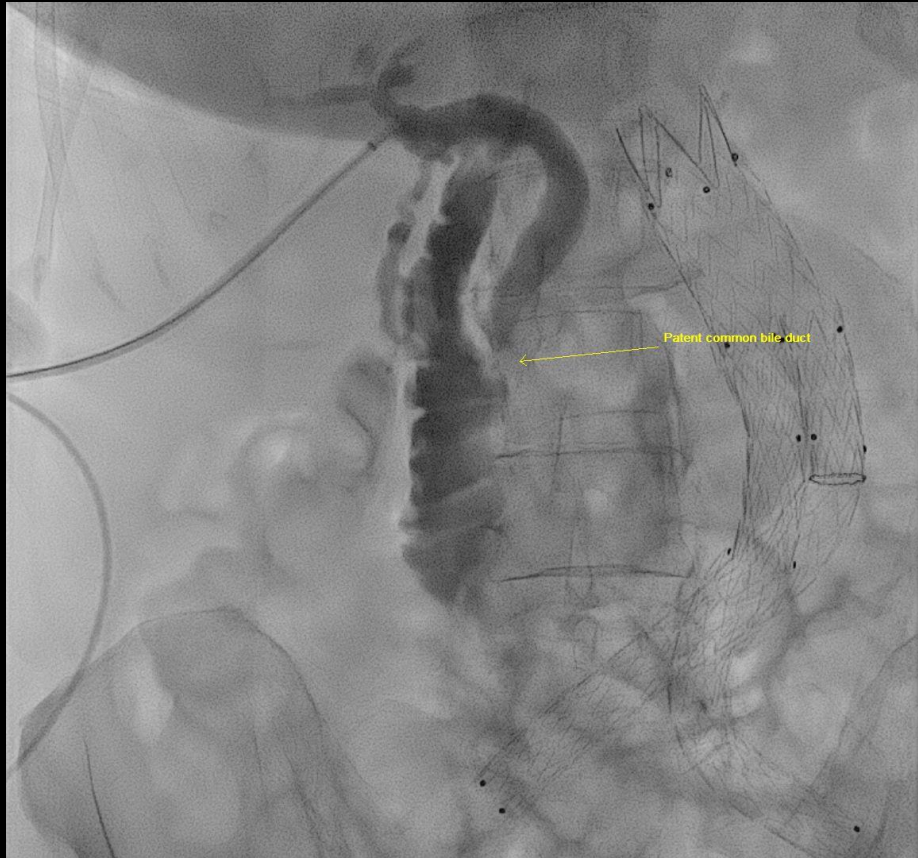


Figure 6 - **Cholangiogram post-lithotripsy demonstrating stone clearance.** Following electrohydraulic lithotripsy, contrast opacification shows a widely patent common bile duct with free flow into the duodenum, indicating successful decompression.

Final Dx:

Acute Choledocholithiasis

Case Discussion

Clinical Presentation

- 84-year-old female presented with acute abdominal pain
- Diagnosed with E. coli bacteremia secondary to gallstone pancreatitis, acute calculous cholecystitis, and choledocholithiasis
- Significantly elevated liver function tests (LFTs) indicated biliary obstruction

Imaging and Diagnostic Workup

- Abdominal ultrasonography confirmed choledocholithiasis within the common bile duct (CBD) (Figure 1)
- EGD revealed a large hiatal hernia with organoaxial gastric rotation
 - Scope could not advance past the duodenal bulb, making ERCP infeasible
 - Severe circumferential esophagitis with ulcerations and friability
- CTA abdomen/pelvis showed:
 - Pronounced gallbladder hydrops
 - Extensive biliary ductal dilation
 - Suspected 1.6 cm obstructive lesion or stone in the periampullary region
- Percutaneous antegrade cholangiogram confirmed significant extrahepatic biliary dilation and a 16 mm obstructive CBD stone.

Case Discussion and Intervention

Intervention

- Transhepatic cholangioscopy with shockwave lithotripsy is an effective minimally invasive option when ERCP is contraindicated or technically infeasible¹
- Because ERCP wasn't possible, percutaneous transhepatic cholangioscopy was performed
- Electrohydraulic shockwave lithotripsy fragmented the stone
- Balloon dilation of the sphincter of Oddi allowed stone debris to be cleared into the duodenum

Background on PTCSL

- Percutaneous transhepatic cholangioscopic lithotripsy (PTCSL) lets the operator see bile duct stones directly and remove them with minimal invasion
- Intraoperative ultrasound guidance can improve accuracy and safety²
- Current guidelines recognize it as an essential approach for complex biliary stones when standard endoscopic techniques can't be performed¹

Case Discussion and Intervention

Supporting Evidence

- The ACR supports percutaneous biliary stone removal, especially with complex anatomy or failed ERCP³
- A recent multi-institutional retrospective study showed fluoroscopy-guided percutaneous rigid lithotripsy was effective and safe for large lumen-occupying gallstones in poor surgical candidates⁴
- Advantages of the cholangioscopic approach:
 - Direct visualization
 - Precise targeting
 - Efficient stone fragmentation

Conclusion

- This case adds support for transhepatic cholangioscopy with shockwave lithotripsy as a safe and effective treatment for obstructive choledocholithiasis
- It is especially useful in anatomically challenging cases where ERCP is contraindicated or technically infeasible

References:

1. Williams E, Beckingham I, El Sayed G, et al. Updated guideline on the management of common bile duct stones (CBDS). *Gut*. 2017;66(5):765-782.
2. Lin W, Chen M, Li B, Wang W, Li S, Lyu G. Intraoperative ultrasound-guided percutaneous hepatocholangiostomy applied in the cholangioscopic lithotripsy for hepatolithiasis and choledocholithiasis. *Surg Endosc*. 2023;37(1):486-493.
3. Expert Panel on Interventional Radiology:, Fairchild AH, Hohenwarter EJ, et al. ACR Appropriateness Criteria Radiologic Management of Biliary Obstruction. *J Am Coll Radiol*. 2019;16(5S):S196-S213.
4. Smirniotopoulos JB, Jain NK, Sens JN, et al. Multi-institutional Retrospective Study of Percutaneous Cholangioscopy-Assisted Lithotripsy for Inoperable Calculous Cholecystitis. *J Vasc Interv Radiol*. 2023;34(4):653-659.