

## Introduction

- Duodenal diverticula are found in up to 27% of patients who undergo upper endoscopy with periampullary duodenal diverticula (PAD) being the most common and are largely asymptomatic.<sup>1</sup>

## Case Presentation

- 82-year-old man with remote cholecystectomy and ulcerative colitis in remission presents with 1 day of vomiting and non-specific abdominal pain.
- No recent endoscopic or surgical interventions.
- Patient was afebrile and tachycardic to 120 bpm. Vital signs were normal otherwise.
- Patient was well appearing with minimal tenderness on abdominal exam.

### Pertinent Laboratory Data

WBC 10.7	AST 279
	ALT 104
	Alk Phos 205
	Total bilirubin 2.9

## Imaging

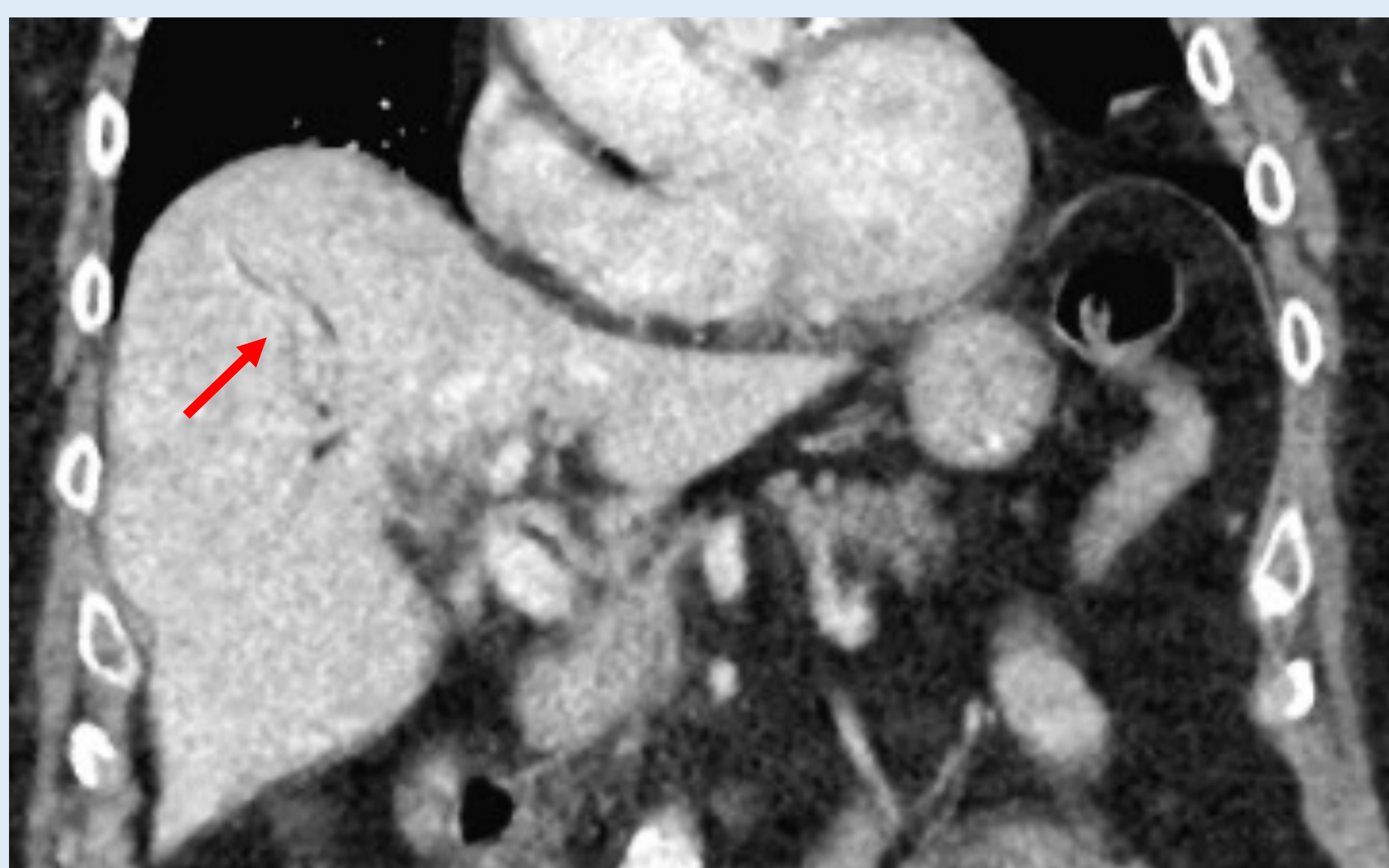


Figure 1.  
Abdominal CT revealed pneumobilia of uncertain etiology.

## Clinical Course

- Antibiotics were initiated for suspected ascending cholangitis.
- Blood cultures grew *Klebsiella pneumoniae*, *Escherichia coli*, *Streptococcus gallolyticus*.
- MRCP showed mild central intrahepatic biliary ductal dilation and two common bile duct (CBD) filling defects.

## ERCP

- ERCP was performed, confirming the MRCP findings but also found a large 2 cm PAD.
- A therapeutic sphincterotomy and successful balloon extraction of two brown pigmented CBD stones was completed. Occlusion cholangiogram confirmed clearance of CBD stones but was notable for a **persistent, smooth distal CBD narrowing at the area of periampullary diverticulum, suggestive of extrinsic CBD compression by the diverticulum.**

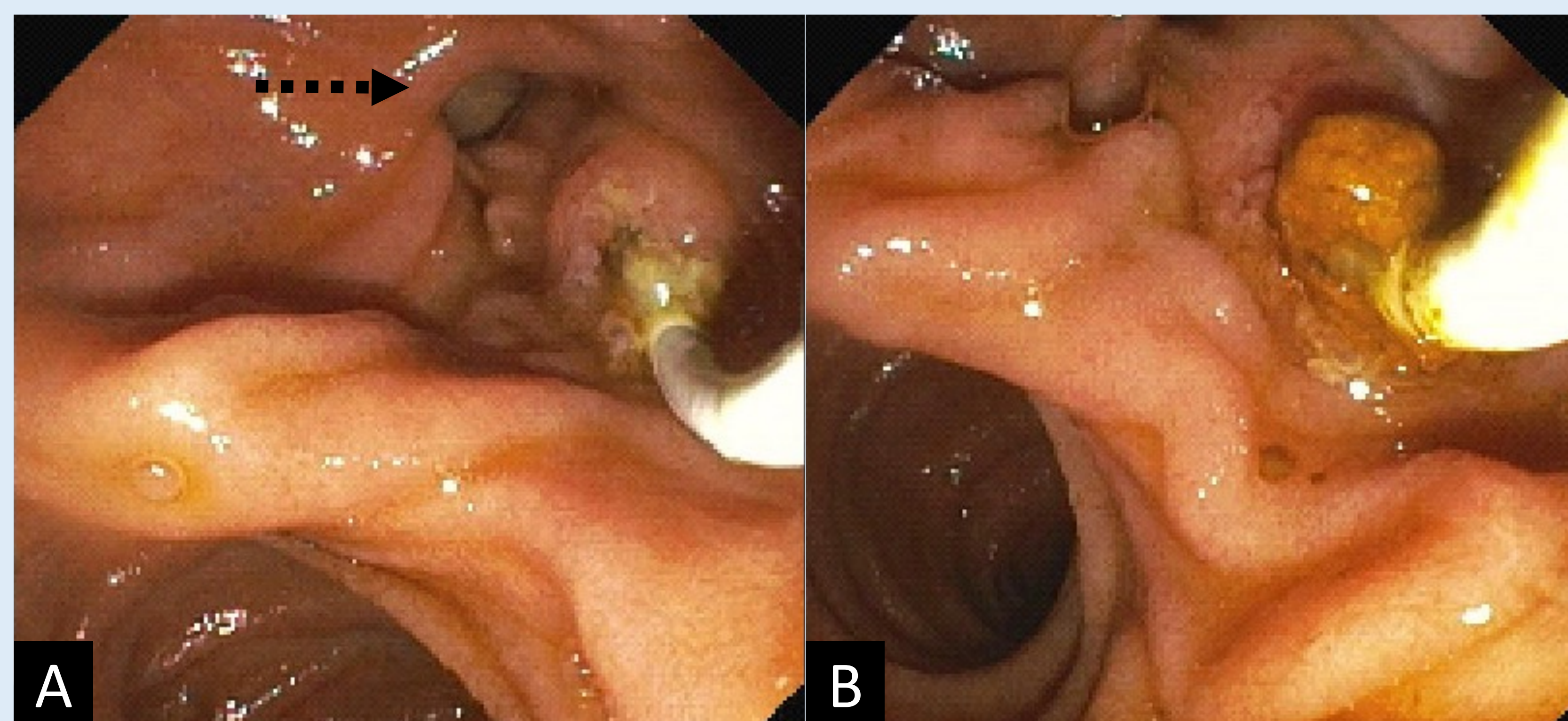


Figure 2.  
A) ERCP revealed large periampullary diverticulum (black arrow).  
B) Removal of brown pigmented stone from Ampulla of Vater.

## Final Diagnosis and Management

### Final diagnosis

- Early ascending cholangitis secondary to extrinsic compression by periampullary diverticulum, primary choledocholithiasis and bacteremia.

### Management

- Therapeutic decompression was performed with stone clearance and plastic CBD stent placement, in addition to broad spectrum antibiotics.
- Patient had immediate clinical recovery with improvement in liver function tests and resolution of bacteremia.

## Discussion

- Lemmel syndrome is defined by obstructive jaundice caused by a PAD resulting in CBD compression and upstream biliary obstruction.<sup>2</sup> However, as in our case, the absence of jaundice is possible early in the clinical course.
- Proposed mechanisms include:
  - Stasis-induced primary choledocholithiasis
  - Colonization and bacterial overgrowth of beta-glucuronidase producing bacteria
  - Deconjugation and precipitation of calcium bilirubinate stones
- While pneumobilia is most often found after iatrogenic biliary tract manipulation, gas-forming bacteria in cholangitis can also cause pneumobilia.<sup>3</sup>
- Endoscopic interventions are often successful and sufficient, especially in older patients who may be poor surgical candidates.

## Conclusion

While periampullary diverticula are common, symptomatic manifestations are rare.

Extrahepatic biliary obstruction secondary to PAD can lead to CBD dilation, choledocholithiasis, and ascending cholangitis.

## References

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2. Dávila Arias C, García Pérez PV, Moya Sánchez E. Acute cholangitis in the context of Lemmel syndrome with signs of diverticulitis. Rev Esp Enferm Dig. 2021 Apr;113(4):298-299. doi: 10.17235/reed.2020.7095/2020. PMID: 33207900
3. Sheikh AAE, Ahmed KH, Avula S, Shah NJ, Aloysius MM. Spontaneous Pneumobilia: Not So Benign. Cureus. 2021 Apr 14;13(4):e14486. doi: 10.7759/cureus.14486. PMID: 34007742; PMCID: PMC8121122