Lemmel syndrome as an uncommon cause of obstructive jaundice. A case report

Yajayra Sanchez Trejo M.D.
Belen Sarai Aguilar Garcia M.D.
Ernesto Alejandro Martínez Castillano M.D.
Vanessa Berenice Esquivel Espino M.D.
Alfonso Giovani Zaragoza Torres M.D.
Roberto Hernandez Tavera M.D.

Guanajuato, Mexico

Case Report

General Surgery

OPEN ACCESS

Background: Lemmel syndrome is an uncommon cause of obstructive jaundice resulting from biliary obstruction associated with a periampullary duodenal diverticulum. A 68-year-old man with chronic smoking and regular alcohol consumption, without known comorbidities, presented with epigastric and right hypochondrial pain after fatty food intake, nausea, jaundice, dark urine, pruritus, and acholic stools. Laboratory tests showed a cholestatic pattern, with total bilirubin of 10.1 mg/dL, direct bilirubin of 7.8 mg/dL, and gamma-glutamyl transferase of 315 U/L. Non-contrast computed tomography suggested gallbladder stones but showed no biliary tract dilation or apparent pancreatic abnormality. Because obstructive jaundice persisted, endoscopic retrograde cholangiopancreatography (ERCP) was performed. ERCP identified a periampullary duodenal diverticulum, mild extrahepatic biliary dilation, a common bile duct measuring 7.7 mm, and no intraductal filling defects. Biliary sphincterotomy and balloon sweeping achieved adequate bile drainage and contrast emptying without immediate complications. The patient had a favorable clinical course, tolerated oral intake, and experienced clinical resolution of jaundice. Lemmel syndrome should be considered in the differential diagnosis of obstructive jaundice when choledocholithiasis or a pancreaticobiliary mass is not demonstrated. Correlation of imaging and endoscopic findings is essential, and ERCP can provide diagnostic clarification and therapeutic biliary decompression in selected symptomatic patients.

KEYWORDS
Lemmel syndrome; obstructive jaundice; periampullary duodenal diverticulum; endoscopic retrograde cholangiopancreatography; biliary obstruction; cholestasis.

Lemmel syndrome is an uncommon cause of obstructive jaundice associated with a periampullary duodenal diverticulum in the absence of choledocholithiasis or a primary pancreaticobiliary neoplasm [1-3]. Periampullary duodenal diverticula are often incidental and asymptomatic, but they may occasionally produce biliary obstruction through mechanical compression, local inflammation, papillary dysfunction, fibrosis, or impacted enteric material [1,2]. The clinical presentation may overlap with choledocholithiasis, cholangitis, and periampullary malignancy, making diagnosis challenging. Computed tomography and magnetic resonance cholangiopancreatography can delineate periampullary anatomy and evaluate competing causes of obstruction, while ERCP can additionally provide biliary decompression when intervention is indicated [1,3,4]. We report a patient with obstructive jaundice in whom ERCP demonstrated a periampullary duodenal diverticulum without intraductal filling defects, followed by clinical improvement after endoscopic therapy.

Case report

This case report was prepared from the patient's clinical assessment, laboratory results, abdominal computed tomography, and ERCP findings. The diagnostic assessment focused on the cause of extrahepatic biliary obstruction. ERCP was used to evaluate the biliary tract and periampullary region and, when no intraductal filling defect was identified, therapeutic biliary sphincterotomy and balloon sweeping were performed to achieve drainage. Written informed consent was obtained from the patient for publication of the case and accompanying clinical images.

ERCP demonstrated a periampullary duod enal diverticulum, mild extrahepatic biliary dilation, a common bile duct measuring 7.7 mm, and no intraductal filling defects (Figure 2). Biliary sphincterotomy and balloon sweeping resulted in adequate bile drainage and contrast emptying without immediate complications. The patient subsequently tolerated oral intake, had clinical resolution of jaundice, and was discharged with clinical improvement and outpatient follow-up.

A 68-year-old man with a history of chronic smoking and regular alcohol consumption, with no known comorbidities, was admitted with abdominal pain in the epigastric and right hypochondrial regions after ingestion of fatty foods, associated with nausea, unquantified fever, jaundice, dark urine, pruritus, and acholic stools. On examination, he was hemodynamically stable and afebrile, with jaundice of the skin and sclerae. The abdomen was soft and depressible, with tenderness in the epigastric and right hypochondrial regions and no signs of peritoneal irritation. Initial laboratory tests showed a cholestatic pattern, with total bilirubin 10.1 mg/dL, direct bilirubin 7.8 mg/dL, gamma-glutamyl transferase 315 U/L, and alkaline phosphatase 128 U/L. Non-contrast abdominal computed tomography showed gallbladder findings suggestive of stones, without biliary tract

From the Radiology Department at Hospital Regional de Occidente, Quetzaltenango, Guatemala. Received on September 13, 2026. Accepted on September 15, 2026. Published on September 25, 2026.

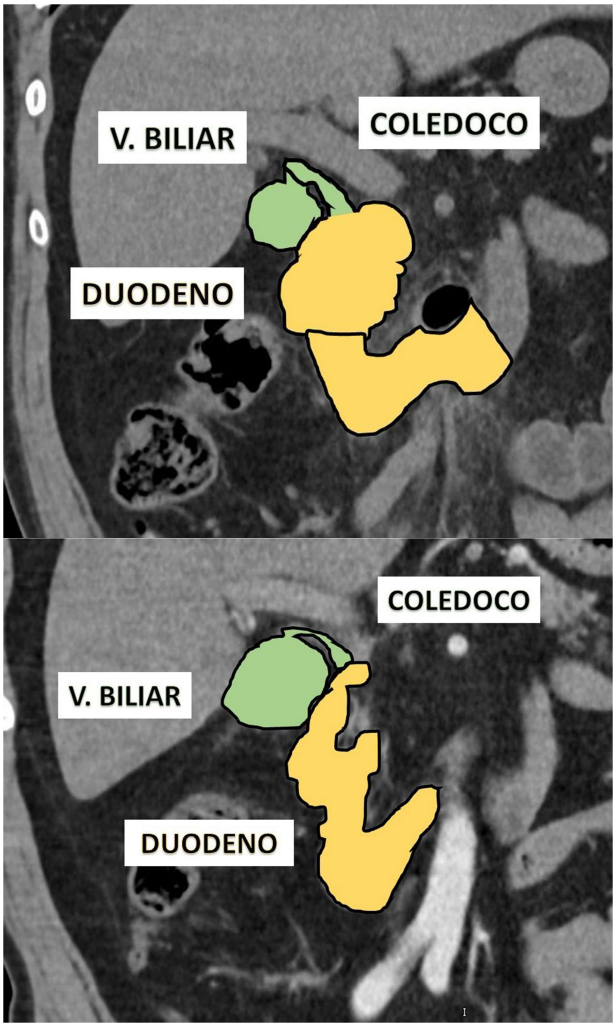


Figure 1. Coronal computed tomography images with author-added overlays illustrating the anatomical relationship among the gallbladder, extrahepatic bile duct, and duodenum in the periampullary region. The upper and lower panels are sequential coronal images demonstrating the close anatomical relationship between the distal common bile duct and the periampullary duodenum.

dilation and without apparent pancreatic abnormalities (Figure 1). Because the patient had persistent clinical and biochemical evidence of extrahepatic biliary obstruction, ERCP was performed. During ERCP, a periampullary duodenal diverticulum was identified, with mild extrahepatic biliary dilation, a common bile duct measuring 7.7 mm, and no intraductal filling defects (Figure 2). A wide biliary sphincterotomy and balloon sweep were performed, with adequate bile drainage and contrast emptying and no immediate complications. In the context of obstructive jaundice, the periampullary diverticulum, absence of an intraductal filling defect, and favorable response to endoscopic decompression supported the diagnosis of Lemmel syndrome. The patient subsequently tolerated oral intake, experienced clinical resolution of jaundice, and was discharged with clinical improvement and outpatient follow-up.

Discussion

Periampullary duodenal diverticula are frequently incidental, particularly in older adults, whereas Lemmel syndrome is an uncommon complication in which a periampullary diverticulum is associated with biliary obstruction without choledocholithiasis or a primary pancreaticobiliary neoplasm [1-3]. Proposed mechanisms include direct compression of the distal common bile duct, chronic periampullary inflammation and fibrosis, sphincter of Oddi dysfunction, and obstruction related to impacted enteric material [1,2,5].

The principal diagnostic challenge is the overlap with more common causes of extrahepatic biliary obstruction. Cross-sectional imaging may demonstrate an air- or fluid-containing periampullary outpouching and associated biliary dilation; MRCP can further define the biliary anatomy, while side-viewing endoscopy and ERCP can demonstrate the relationship between the diverticulum and papilla and permit therapeutic decompression when clinically indicated [1,3,4].

In the present case, the initial non-contrast computed tomography did not demonstrate biliary tract dilation or an apparent pancreatic abnormality, whereas ERCP subsequently demonstrated mild extrahepatic dilation, a 7.7-mm common bile duct, a periampullary duodenal diverticulum, and no intraductal filling defects. The absence of a filling defect reduced the likelihood of retained choledocholithiasis. The periampullary diverticulum, obstructive presentation, and improvement after endoscopic drainage supported Lemmel syndrome as the working diagnosis.

Treatment is individualized according to symptom severity and the mechanism of obstruction. Asymptomatic periampullary diverticula generally require no intervention. In symptomatic biliary obstruction, endoscopic treatment may include sphincterotomy, extraction of obstructing debris when present, and/or biliary stenting; surgery is generally reserved for selected patients in whom endoscopic treatment is unsuccessful or unsuitable [1,2,6]. In this patient, biliary sphincterotomy and balloon sweeping achieved adequate drainage without immediate complications, followed by clinical resolution of jaundice. Published reports further illustrate the heterogeneous clinical spectrum of Lemmel syndrome. Azzam et al. described Lemmel syndrome presenting with prolonged right hypochondrial pain [7]. León Moreno et al. reported Lemmel syndrome as a rare cause of acute cholangitis [8]. Saha et al. described a case in which periampullary duodenal diverticulitis complicated by Lemmel syndrome occurred concomitantly with sigmoid diverticulitis [9]. Castro et

DOI 10.5281/zenodo.22970836
Copyright 2026 © Unauthorized reproduction of this article is prohibited.

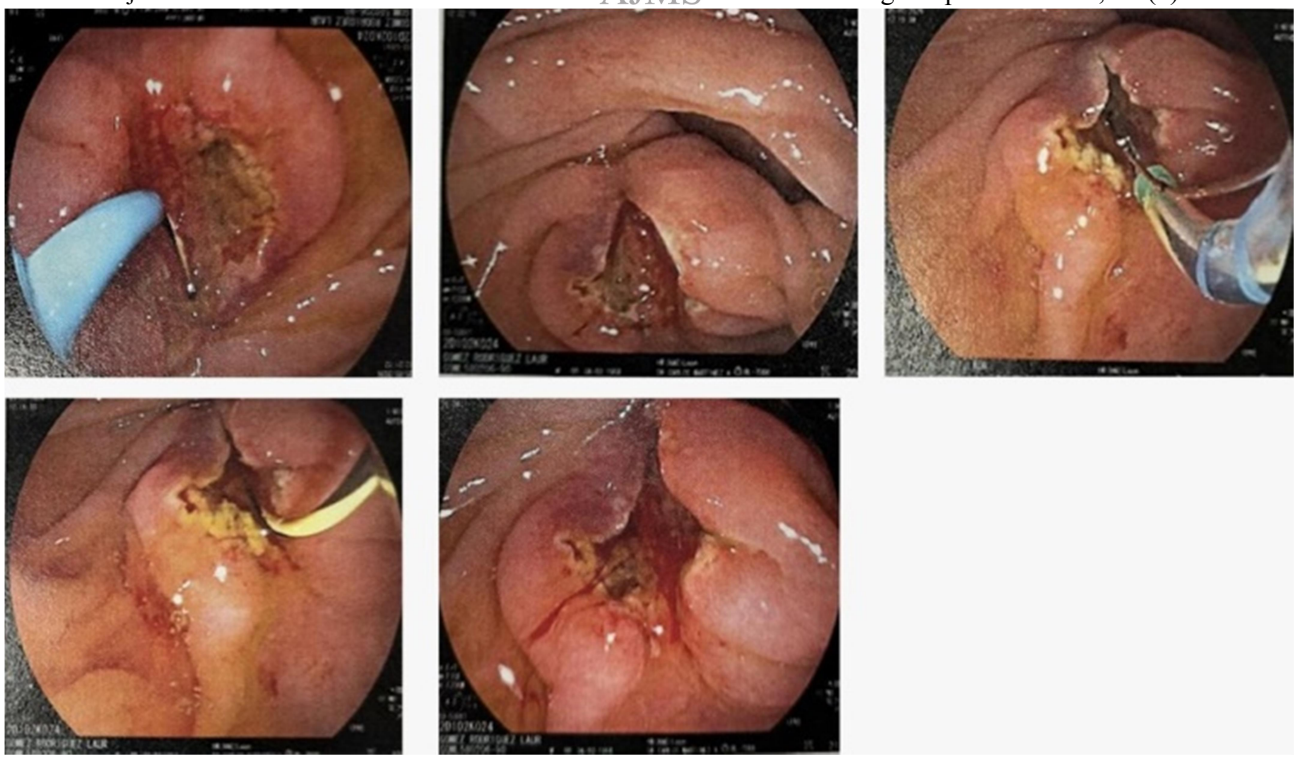


Figure 2. Endoscopic sequence obtained during endoscopic retrograde cholangiopancreatography (ERCP), demonstrating a periampullary duodenal diverticulum and its relationship with the major duodenal papilla. The five endoscopic images show the periampullary region and sequential steps of endoscopic intervention. Cholangiography demonstrated mild extrahepatic biliary dilation, with a common bile duct measuring 7.7 mm and no intraductal filling defects. Endoscopic biliary sphincterotomy and balloon sweeping were performed, resulting in adequate bile drainage and contrast emptying without immediate complications.

al. also reported clinical cases of Lemmel syndrome, adding to the published case-based evidence for this uncommon entity [10]. Together, these reports emphasize that Lemmel syndrome can present with variable hepatobiliary manifestations and should be considered when a periampullary duodenal diverticulum is identified in the appropriate clinical context [7-10].

Conclusion

Lemmel syndrome is an uncommon but important differential diagnosis of obstructive jaundice when choledocholithiasis and pancreaticobiliary malignancy are not demonstrated. In this patient, ERCP identified a periampullary duodenal diverticulum with mild extrahepatic biliary dilation and no intraductal filling defect, and endoscopic sphincterotomy with balloon sweeping was followed by clinical improvement. Careful correlation of clinical, imaging, and endoscopic findings is essential because the diagnosis is frequently one of exclusion. Endoscopic therapy can provide effective biliary decompression in appropriately selected symptomatic patients.

Conflicts of interests

None declared by the authors

References

1. Love JS, Yellen M, Melitas C, Yazici C, Zar F. Diagnosis and management of Lemmel syndrome: an unusual presentation and literature review. Case Rep Gastroenterol. 2022;16(3):663-674. doi:10.1159/000528031.
2. Krisem M, Hirunpat P, Tungtrongchitr N. Lemmel syndrome, a rare cause of obstructive jaundice by periampullary duodenal diverticulum: case report and review of the literature. J Clin Imaging Sci. 2023;13:11. doi:10.25259/JCIS_9_2023.
3. Goroztieta-Rosales LM, Gómez-Farías J, López-García KD, Davila-Rodriguez DO. Lemmel syndrome: an extraordinary cause of obstructive jaundice-a case report. J Surg Case Rep. 2022;2022(1):rjab593. doi:10.1093/jscr/rjab593.
4. El Aouadi S, Imrani K, Tabati S, et al. Lemmel's syndrome: a case report with insights from a literature review on diagnosis and management. Egypt J Radiol Nucl Med. 2025;56:71. doi:10.1186/s43055-025-01486-1.
5. Zorzetti N, Lauro A, Cervellera M, et al. Debris-filled duodenal diverticulum and Lemmel's syndrome. Dig Dis Sci. 2022;67(7):2805-2808. doi:10.1007/s10620-022-07571-z.
6. Rojas RA, Reyes MC, Peñaherrera MV, Gualacata EV, Morillo G, Villacres OP. Lemmel's syndrome: presentation of an uncommon cholangitis cause and a risk factor for failed endoscopic retrograde cholangiopancreatography. Int J Surg Case Rep. 2022;90:106698. doi:10.1016/j.ijscr.2021.106698.
7. Azzam AZ, Alsinan TA, Alrebeh GA, Alhaider T, Alnaqaeb LJ, Amin TM. Lemmel syndrome as a rare cause of prolonged right hypochondrial pain: a case

 DOI 10.5281/zenodo.22970836
Copyright 2026 © Unauthorized reproduction of this article is prohibited.

report. Cureus. 2021;13(12):e20093. doi:10.7759/cureus.20093.
8. León Moreno JF, Wong Nano CD, Dominguez Vega SJF. Lemmel's syndrome: a rare cause of acute cholangitis. Acta Gastroenterol Latinoam. 2022;52(1):101-105. doi:10.52787/agl.v52i1.170.
9. Saha B, Jang S, Friesen JN, Kalinoski-DuBose V, Verma A, Mundell W. Concomitant sigmoid diverticulitis and periampullary duodenal diverticulitis complicated by Lemmel syndrome: a case report. Clin Med Insights Case Rep. 2024;17:23247096241253342. doi:10.1177/23247096241253342.
10. Castro RDRB, Cavalcante MS, Goes ACAM. Síndrome de Lemmel: relatos de casos. Rev Med UFC. 2021;61(1):1-4. doi:10.20513/2447-6595.2021v61n1e44516p1-4.

Yajayra Sanchez Trejo
Department of General Surgery
Hospital Regional ISSSTE de León
León, Guanajuato, Mexico

 DOI 10.5281/zenodo.22970836
Copyright 2026 © Unauthorized reproduction of this article is prohibited.