

Single Case

Endoscopic Diagnosis of Bouveret Syndrome

Felix Hesse Mohamed Abdelhafez Christoph Schlag
Roland M. Schmid Tobias Lahmer

Klinik und Poliklinik für Innere Medizin II, Klinikum rechts der Isar der Technischen Universität München, Munich, Germany

Keywords

Bouveret syndrome · Cholelithiasis · Endoscopy

Abstract

Bouveret syndrome is a form of gallstone ileus and a rare complication of chole(cysto)lithiasis. It describes gastric outlet obstruction secondary to an impacted gallstone. Here, we report a case of an 82-year-old female patient with gastric outlet obstruction and penetration of gallstones into the duodenal bulb on endoscopic imaging. Based on these findings Bouveret syndrome was diagnosed and confirmed by computed tomography.

© 2020 The Author(s)
Published by S. Karger AG, Basel

Introduction

Bouveret syndrome is an unusual complication of chole(cysto)lithiasis involving impaction of gallstone in the gastroduodenal transition leading to gastric outlet obstruction. Typically, a fistula from the gallbladder into the intestine involving impaction of gallstone in the intestinal tract could be found. Bouveret syndrome counts among gallstone ileus whose incidence is approximately 0.5% and that accounts for 1–4% of mechanical intestinal obstructions. Bouveret syndrome is more common in elderly and female patients [1–3]. Here, we report a case of an 82-year-old female patient with gastric outlet obstruction and penetration of

gallstones into the duodenal bulb on endoscopic imaging. Based on these findings, Bouveret syndrome was diagnosed and confirmed by computed tomography.

Case Report

An 82-year-old female patient was admitted to our emergency department because of hematemesis with a high-grade suspicion of upper gastrointestinal bleeding. Laboratory analysis revealed decreased hemoglobin (7.6 g/dL) and elevated infection signs (leukocyte count $27 \times 10^9/L$, C-reactive protein 15 mg/dL). Initial physical examination was notable for a soft abdomen with diffuse tenderness but without voluntary guarding. Due to beginning septic shock with increasing hemodynamic instability and loss of vigilance, the patient was referred to our intensive care unit. After need for intubation, a gastroscopy was performed. There was no endoscopic evidence for an upper gastrointestinal bleeding. However, endoscopy showed spontaneous penetration of the gallbladder (shown in Fig. 1) and revealed plenty gallstones in the duodenal bulb (shown in Fig. 1). Subsequent computed tomography confirmed the endoscopic findings demonstrating chronic cholecystitis with pneumobilia and gallbladder penetration in the duodenal bulb with entry of gallstones in the intestine (shown in Fig. 2). Further, it revealed a reflective intestinal atony and a dilated stomach filled with contrast medium. Based on the endoscopic and CT scan findings, Bouveret syndrome due to penetration of gallstones in the duodenal bulb was diagnosed. On account of chronic cholecystitis and sepsis, open cholecystectomy and gallstone salvage from the duodenum were performed. Biliary enteric fistula was not found during surgery. Patient could be discharged after several days from the hospital.

Discussion

Bouveret syndrome is a rare and severe complication of cholelithiasis. In most cases, Bouveret syndrome is caused by biliary enteric fistula [1, 4]. However, as reported in this case, gallstone penetration in the duodenal bulb can be followed by a Bouveret syndrome. In the literature, the combination of gallstone penetration in the duodenal bulb and ileus is hardly reported [5, 6]. The clinical presentation of Bouveret syndrome is not specific, most often symptoms resemble gastric outlet obstructions [4]. More than one-third of patients have no history of biliary symptoms. In the literature, gallstone ileus mortality ranges from 7 to 30% and is attributed to elderly patients, multiple comorbidities, and delayed diagnosis [7]. In our case, the patient was an 82-year-old female patient with comorbidities, i.e. diabetes and arterial hypertension but no history of biliary symptoms. In our case, initial diagnosis of Bouveret syndrome was made by endoscopy because of suspected upper gastrointestinal bleeding. Most likely, hematemesis occurred due to gallstone penetration. Although endoscopy enabled direct visualization of gallbladder penetration, computed tomography is the gold standard for diagnosing. Combined with a high sensitivity, it allows to diagnose the place of obstruction, possible biliary enteric fistula and the accurate size of the ectopic stone [8, 9]. Gallstones generally migrate to the bowel via biliary enteric fistulas, most frequent is a fistulous connection from the gallbladder to the duodenum. Other types of fistulas include the small and large intestines but are less common [7]. However, cases with no fistula or gallbladder have also been documented [10, 11]. As shown in this case, endoscopy may contribute to the diagnosis of

Bouveret syndrome since in most cases a fistulous connection from the gallbladder to the duodenum is etiologic, and impaction side of the gallstone is the gastroduodenal transition. The preferred treatment option is to mechanically remove the impacted stones. This is done either endoscopically using mechanical lithotripsy, laser lithotripsy, and direct endoscopic removal or surgically using open and laparoscopic approaches [3, 4, 12]. In this case, due to chronic cholecystitis an open cholecystectomy and gallstone salvage from the duodenum was performed. In summary, our report shows the importance of including gallstone penetration as an underlying pathology in the differential diagnosis of gallstone ileus. Further, endoscopy can be expedient in combination with a CT scan and should be considered in the diagnosis and treatment of Bouveret syndrome.

Statement of Ethics

Written informed consent was obtained from the patient.

Conflict of Interest Statement

All authors have no conflict of interest to disclose.

Funding Sources

The authors received no financial support for the research, authorship, and publication of this article.

Author Contributions

Felix Hesse: Drafting the work and substantial contributions to the acquisition, analysis and interpretation of data for the work.

Mohamed Abdelhafez: Revising the work critically and interpretation of data for the work.

Christoph Schlag: Substantial contributions to the conception of the work and analysis such as interpretation of data for the work.

Roland M. Schmid: Revising the work critically for important intellectual content such as final approval of the version to be published.

Tobias Lahmer: Substantial contributions to the conception and design of the work such as revising it critically for important intellectual content.

References

- 1 Jakubauskas M, Luksaite R, Sileikis A, Strupas K, Poskus T. Gallstone Ileus: Management and Clinical Outcomes. *Medicina (Kaunas)*. 2019 Sep;55(9):E598.
- 2 Clavien PA, Richon J, Burgan S, Rohner A. Gallstone ileus. *Br J Surg*. 1990 Jul;77(7):737–42.
- 3 Philipose J, Khan HM, Ahmed M, Idiculla PS, Andrawes S. Bouveret's Syndrome. *Cureus*. 2019 Apr;11(4):e4414.

- 4 Haddad FG, Mansour W, Deeb L. Bouveret's Syndrome: literature Review. *Cureus*. 2018 Mar;10(3):e2299.
- 5 Geinitz W. [Gallstone penetration into abdominal wall]. *Med Klin*. 1954 Jul;49(27):1080–1.
- 6 Reisch D. [Gallstone penetration in the duodenal bulb]. *Fortschr Geb Rontgenstr*. 1953 Sep;79(3):393–4.
- 7 Ayantunde AA, Agrawal A. Gallstone ileus: diagnosis and management. *World J Surg*. 2007 Jun;31(6):1292–7.
- 8 Chang L, Chang M, Chang HM, Chang AI, Chang F. Clinical and radiological diagnosis of gallstone ileus: a mini review. *Emerg Radiol*. 2018 Apr;25(2):189–96.
- 9 Yu CY, Lin CC, Shyu RY, Hsieh CB, Wu HS, Tyan YS, et al. Value of CT in the diagnosis and management of gallstone ileus. *World J Gastroenterol*. 2005 Apr;11(14):2142–7.
- 10 Lindsey TM, Katz-Unger A, Strickland WM Jr. Gallstone ileus in the absence of a gallbladder. A case report. *Arch Surg*. 1975 Apr;110(4):448.
- 11 Newman JH. A case of gall-stone ileus in the absence of a biliary-enteric fistula. *Br J Surg*. 1972 Jul;59(7):573–5.
- 12 Muthukumarasamy G, Venkata SP, Shaikh IA, Somani BK, Ravindran R. Gallstone ileus: surgical strategies and clinical outcome. *J Dig Dis*. 2008 Aug;9(3):156–61.



Fig. 1. Emergency upper gastrointestinal endoscopy revealed plenty of gallstones in the duodenal bulb (asterisk) caused by a spontaneous penetration of the gallbladder (black arrows). No bleeding source was identifiable.



Fig. 2. Contrast-enhanced CT scan presents gallbladder penetration in the duodenal bulb and entry of gallstones into the intestine (orange arrow) with a reflective intestinal atony.