Bouveret syndrome as a rare cause of gastric outlet obstruction

Pujitha Kudaravalli, MBBS^a , Sheikh A. Saleem, MBBS^b , Alexandra Goodman, MD^a , Venkata Satish Pendela, MD^c , and Muhammad Osman Arif, MD^b

^aDepartment of Internal Medicine, Upstate Medical University, Syracuse, New York; ^bDepartment of Gastroenterology, Upstate Medical University, Syracuse, New York; ^cInternal Medicine, Rochester General Hospital, Rochester, New York

ABSTRACT

Biliary-enteric fistula is a rare complication of cholelithiasis that can lead to gallstone ileus. Gallstone impaction in the duodenum and pylorus is extremely rare and can lead to gastric outlet obstruction, a condition known as Bouveret syndrome. Bouveret syndrome needs to be diagnosed and managed in a timely fashion, as it has a high mortality rate. We describe a case of an elderly patient who presented with Bouveret syndrome secondary to impaction of the biliary calculus in the first part of duodenum.

KEYWORDS Endoscopy; gallstone ileus; gastric outlet obstruction

Gallstone ileus is a rare complication of cholelithiasis, with an incidence of 1% to 3%, and Bouveret syndrome is even rarer, constituting 1% to 3% of gallstone ileus.¹ A fistula formed between the biliary and enteral systems leads to gallstone ileus. After passing into the gastrointestinal tract, gallstones are eliminated in 85% of cases through the feces or vomitus. However, in 15% of cases, they become entrapped in the gastrointestinal tract, most commonly in the terminal ileum.² We describe a case of an elderly patient who presented with Bouveret syndrome secondary to impaction of a large biliary calculus in the first part of the duodenum, causing gastric outlet obstruction.

CASE DESCRIPTION

A 91-year-old man presented to the hospital with a 1-week history of nausea, vomiting, and abdominal pain. Examination disclosed right upper-quadrant abdominal tenderness. Computed tomography (CT) of the abdomen with oral contrast showed findings concerning for gastric outlet obstruction secondary to a large lamellated gallstone along with a choledochoduodenal fistula (*Figure 1a*). Ultrasound of the abdomen showed hyperechoic structures in the gallbladder suggestive of gallstones. Esophagogastroduodenoscopy

showed a large immobile gallstone obstructing the first part of the duodenum (*Figure 1b*). An attempt to remove the stone endoscopically by various techniques including mechanical lithotripsy and net extraction was unsuccessful. Exploratory laparotomy was performed, and a 7 cm gallstone partially contained in the gallbladder and extending to the duodenum was then successfully removed by open partial cholecystectomy with stone extraction followed by primary duodenal and choledochoduodenal fistula repair. The patient recovered well without any complications after the surgery.

DISCUSSION

Bouveret syndrome was described initially in 1896 by Leon Bouveret, and about 300 cases have been reported subsequently. It is hypothesized that recurrent inflammation of the gallbladder causes adhesions between the biliary and enteral systems. Gallbladder wall necrosis caused by the stone subsequently leads to the formation of a fistula between the two systems. Choledochoduodenal fistulas are the most common, accounting for 60% of the cases. The risk factors for fistula formation are advanced age (>60 years), large gallstones (2–8 cm), and recurrent episodes of acute cholecystitis.^{2,3}

Corresponding author: Pujitha Kudaravalli, MBBS, Department of Internal Medicine, Upstate Medical University, 225 Wilkinson Street, Apt. 227, Syracuse, NY 13204 (e-mail: kudaravp@upstate.edu)

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Figure 1. (a) CT scan showing a large gallstone in the first part of the duodenum. (b) Upper gastrointestinal endoscopy showing the large gallstone.

A high clinical suspicion is needed when an elderly patient with multiple comorbidities and a history of gallstones/cholecystitis presents with symptoms and signs of gastric outlet obstruction. It is commonly seen in older women, with a mean age of 69 years.⁴ The location of abdominal pain can vary depending on the location of the stone. Hematemesis caused by erosion of the celiac or duodenal artery or due to expulsion of stones in the vomitus is seen in 15% of patients.^{3,5}

Timely diagnosis of Bouveret syndrome is challenging, as the symptoms are nonspecific, leading to a mortality as high as 33%.⁴ Radiographs of the abdomen can show a dilated stomach, pneumobilia, and radiopaque shadow, which constitute the Rigler's triad suggestive of Bouveret syndrome.⁶ Historically, endoscopy was used for the diagnosis of Bouveret syndrome. With advancements, CT is now the imaging modality of choice, with a sensitivity of 93% and a specificity of 100%. It better enhances and identifies the Rigler's triad in addition to identifying the size and number of stones and the presence of a fistula and abscess. Oral contrast is used to enhance the appearance of the stone and for better visualization. If oral contrast is contraindicated, magnetic resonance cholangiopancreatography is the imaging modality of choice.^{4,6}

Management of Bouveret syndrome depends on patient comorbidities, the location of obstruction, the size of the stone, and the presence of a fistula.⁷ Endoscopy should be the first step in patients with advanced age and comorbidities. Cappell et al⁵ reported that endoscopy identified a gastroduodenal obstruction in all reported cases, but a stone was identified in only 69% of cases. Many endoscopic techniques, such as endoscopic removal, net extraction, mechanical lithotripsy, electrohydraulic lithotripsy, and intracorporeal

laser lithotripsy, or combinations of these techniques, are used for extraction of the stone. Endoscopy is successful if the stone is small to medium sized and mobile but often fails in large, immobile stones.⁸ If endoscopic intervention fails, surgical interventions are sought.

ORCID

Pujitha Kudaravalli <http://orcid.org/0000-0002-9937-6651>

Sheikh A. Saleem <http://orcid.org/0000-0002-7067-4831>

Alexandra Goodman <http://orcid.org/0000-0001-7518-0921>

Venkata Satish Pendela <http://orcid.org/0000-0003-0351-1829>

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