Bouveret Syndrome in Roux en Y Gastric Bypass

Obstruction in biliopancreatic limb with dilatation of gastric remnant

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Introduction

Bouveret's syndrome is a rare phenomenon in which an impacted gallstone causes a gastric outlet obstruction. Chronic inflammation from Mirizzi syndrome and the subsequent development of adhesions between the biliary and enteric systems results in luminal wall ischemia and bilioenteric fistula formation [1]. Fistulas, most commonly cholecystoduodenal, permit the passage of intraluminal gallstones to the bowel, causing acute obstruction in the stomach or duodenum [2]. Symptoms are nonspecific but may include nausea, vomiting, abdominal pain or distention. This may lead to delayed onset to diagnosis which contributes to the high mortality and morbidity in this vulnerable population [3]. Bouveret' syndrome typically affects elderly females; the median age of affected individuals is 74 years, occurring almost two times more in women than men. A history of cholelithiasis, recurrent biliary colic, jaundice, acute cholecystitis, and stones greater than 2 cm are known risk factors for the disease [3].

Cholelithiasis is a well established complication following Roux-en-Y gastric bypass procedures [4]. This case report highlights Bouveret's syndrome in a 65 year old female with history of laparoscopic Roux-en-Y gastric bypass with duodenal gallstone obstruction of the biliopancreatic limb and gastric remnant. This is a rare occurrence making with significant risk for an upstream perforation of the gastric remnant.

Case Presentation

A 65-year-old former smoker and alcohol use female, presented with a 3-day history of progressively worsening epigastric abdominal pain with associated nausea with no known triggers. She was afebrile, hemodynamically stable, and normotensive. She had surgical history significant for Roux-en-Y gastric bypass 15 years ago, appendectomy and transverse C-section.

On physical examination, the patient appeared well. Abdominal examination revealed tenderness in the epigastric area. Laboratory investigations, including basic metabolic panel and complete blood count, were unremarkable. A CT abdomen and pelvis were ordered, and revealed findings consistent with perforated cholecystitis. There were small collections posterior to the gallbladder, a fistulous connection to the duodenal bulb, and a central gallstone causing obstruction of the gastric remnant with pneumobilia and mild dilatation of the common bile duct. The conclusive diagnosis was determined to be Bouveret syndrome characterized by the passage of a gallstone into the duodenum causing gastric outlet obstruction.

Intraoperatively, patient had severe inflammation and induration in the right upper quadrant abdomen involving the gallbladder, stomach remnant and duodenum. It was difficult to attempt a Kocher maneuver and decided to make an anterior gastrotomy on the gastric remnant to see if we can locate the obstructing gallstone. The pylorus was very thickened with edema. Attempt to put a nasogastric tube to deliver contrast to the gastric remnant was unsuccessful in locating gallstone obstruction; the edema may have been too severe to give a reliable fluoroscopic image. At this point, it was decided to create a decompressing gastrostomy tube through the gastric remnant.

Discussion

Roux-en-Y gastric bypass and subsequent rapid weight loss increase the risk for gallstone formation; one reason for this is biliary stasis. A retrospective study published in 2021 by Fuente et al. found that out of 854 patients who underwent a Roux-en-Y bypass procedure, 57 (8.93%) developed a biliary event that led to a laparoscopic cholecystectomy. During the cholecystectomy, 11 patients were found to have concomitant common bile duct stones, 7 of which were unsuspected [6]. The researchers attributed this to both a change in gastric anatomy and the composition of bile acids following gastric bypasses as well as structural changes over time resulting in ampullary stenosis. Gastro-gastric fistulas have also rarely been reported in the literature as other late-course complications and may be due to the incomplete separation of the gastric remnant and gastric pouch [8]. Cholelithiasis and fistula formation can result in small bowel obstruction; another well established phenomenon in the setting of Roux-en-Y gastric bypass procedures.

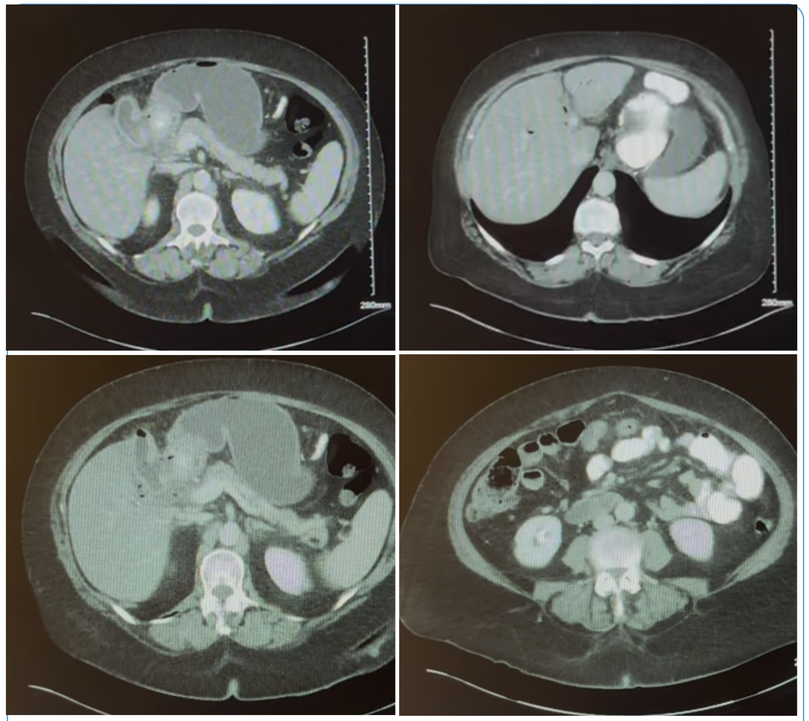


Figure 1: CT AP PO & IV contrast: dilated stomach remnant, choledochoduodenal fistula with obstructing calculus, decompressed biliopancreatic limb, and no obstruction of Roux limb

Stone formation and associated inflammation can lead to Bouveret Syndrome; a rare condition in which an impacted gallstone causes gastric outlet obstruction. The obstruction usually occurs in the proximal part of the duodenum or pylorus secondary to fistula formation [3]. While endoscopy can detect gastroduodenal obstruction in patients, visualizing the gallstone is less common [12]. One study reported that the obstructing gallstone was identified in only 69% of cases [12]. Bouveret Syndrome is usually unresponsive to conservative treatment, but it can be adequately managed with nasogastric tube decompression, endoscopic intervention, and mechanical lithotripsy [3]. Surgery is an option if endoscopic intervention fails. Bouveret Syndrome in the setting of Roux-en-Y gastric bypass procedures has been established; however, many case reports highlight patients with cholecystoduodenal fistulas that lead to gallstone obstruction in the first part of the duodenum [13].

Mainstay treatment used in Bouveret Syndrome are derivatives of endoscopic retrograde cholangiopancreatography (ERCP); a diagnostic and therapeutic tool to relieve gallstone obstructions within the biliary tree. As a result, novel techniques like laparoscopic transgastric ERCP, endoscopic ultrasound-assisted ERC, single or double-balloon ERCP, and transcystic laparoscopic common bile duct exploration, amongst others, have been used in this setting [14]. These approaches allow for more direct access to locations like the second part of the duodenum and the gastric remnant. Treatment strategy largely depends on the clinical status of the patient.

Conclusion

This case report illustrates the rare instance of Bouveret's syndrome in a 65-year-old female patient with a history of laparoscopic Roux-en-Y gastric bypass with a gallstone-induced duodenal obstruction secondary to a fistula between the common bile duct and the bypassed portion of the stomach. The case was complicated by the patient's altered gastrointestinal anatomy, and standard interventions were unavailable such as double balloon ERCP necessitating an urgent exploratory laparotomy.

The structural changes from the bypass as well as the unique location of the gallstone made traditional management techniques, such as decompression with nasogastric tubes and laparoscopic-assisted transgastric ERCP, exceedingly difficult to employ. Due to the time sensitive nature of the condition, an urgent exploratory laparotomy had to be carried out. This type of Bouveret Syndrome has not been defined in the literature and underscores the need for guidelines and management options for patients that are not candidates for less invasive treatments.

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