



Images in Surgery

Bouveret's syndrome: A rare form of gallstone ileus

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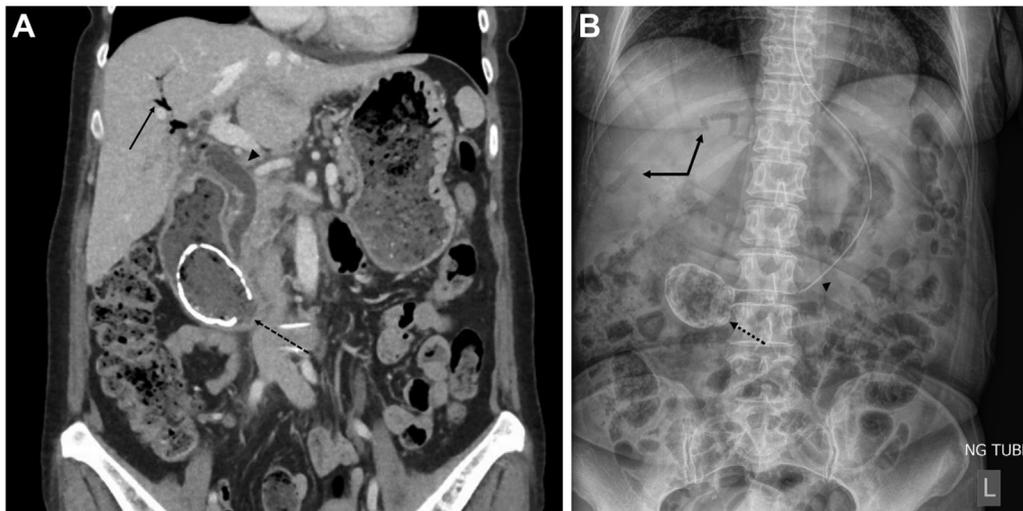


Fig 1. Radiographic images. A) Initial computed tomography of the abdomen showing a large calcified gallstone in the duodenum (dashed arrow), pneumobilia (solid arrow), common bile duct dilation (arrowhead), and a distended proximal duodenum and stomach with fluid/solid contents. B) Abdominal x-ray following nasogastric tube placement revealing major findings of Bouveret's syndrome including a 4.8 cm gallstone in the proximal duodenum (dashed arrow), pneumobilia (solid arrow), and nasogastric tube placement for gastric outlet obstruction (arrowhead).

A 67-year-old female presented with 3 weeks of epigastric pain, multiple episodes of emesis, and weight loss. Physical examination was notable for mild tenderness in the epigastrium. Laboratory evaluation revealed an elevated alkaline phosphatase and transaminitis. A contrast-based computed tomography of the abdomen displayed a dilated fluid-filled stomach and proximal duodenum

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containing a 4.8-cm calcified structure, thickening of the gallbladder wall with pericholecystic fluid, pneumobilia, and external biliary ductal dilatation secondary to mass effect (Fig 1, A). Imaging findings were consistent with Bouveret's syndrome, a rare form of gallstone ileus in which a cholecystoenteric fistula leads to an impacted gallstone in the duodenum and subsequent gastric outlet obstruction.^{1–4} A nasogastric tube was placed for decompression with subsequent abdominal radiography confirming placement and demonstrating the radiopaque impacted gallstone and pneumobilia (Fig 1, B).

The patient underwent an exploratory laparotomy for removal of the obstructing duodenal structure. There was evidence of a

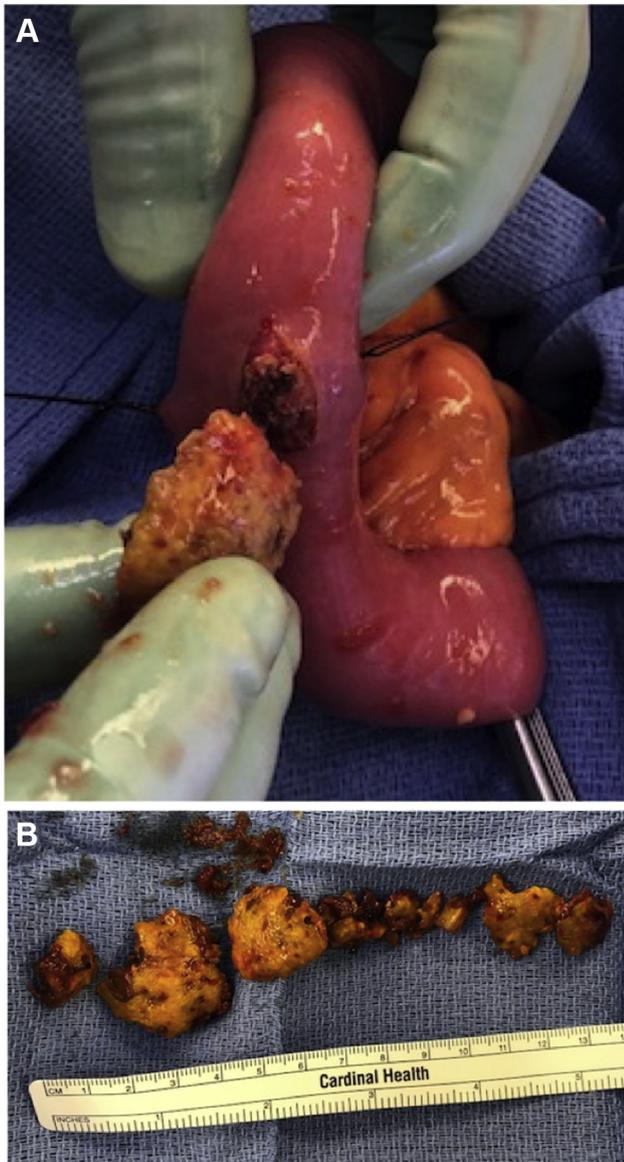


Fig 2. Intraoperative photographs. A) Extraction of calcified gallstone by laparotomy, ligament of Treitz takedown, manual fragmentation of stone, and removal through a distal jejunotomy. B) Fragments of extracted gallstone.

cholecystoduodenal fistula, which was not disturbed. A large gallstone was detected at the interface of the second and third portion of the duodenum. A bowel clamp was placed distally on healthy jejunum (to protect fragments from traveling distally) and extrinsic compression was used to fragment the duodenal gallstone and propel it distally. To fully traverse the duodenum, the ligament of Treitz was taken down from the infracolic compartment. A longitudinal enterotomy was created proximal to the bowel clamp and large fragments were extracted from the jejunum, thereby avoiding the need for a duodenotomy (Fig 2). On-table enteroscopy was performed and confirmed all fragments were retrieved between the bowel clamp distally and the pylorus proximally. The enterotomy was closed transversely and the patient's postoperative recovery was uneventful. Follow-up imaging revealed the absence of gallstones and resolution of radiographic signs of inflammation. Given the resolution of the inciting cause, we have not pursued cholecystoduodenal fistula takedown and cholecystectomy as a second-stage procedure.

Comment

In 1896, Leon Bouveret described the first 2 cases of the eponymous Bouveret's syndrome. In 1%–3% of gallstone ileus cases, a cholecystoduodenal fistula forms, and passage of a large gallstone (>2.5 cm) can result in gastrointestinal obstruction at the duodenal bulb.^{1–4} Treatment involves extraction of the gallstone proximally through a gastrotomy or distally through an enterotomy in the jejunum. Preoperative lithotripsy, intraoperative manual fragmentation of the stone, and taking down the ligament of Treitz may assist in passing the stone to an uninvolved portion of the gastrointestinal tract for safe removal.^{3,4} Clinical judgment dictates the necessity of subsequent cholecystectomy and fistula repair, either during the index operation or as a second-stage procedure.

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