Successful Endoscopic Therapy of Bouveret’s Syndrome Using Holmium Laser Lithotripsy: A Case Report

by Anubha Sinha, Michelle Nazareth, Ashok N. Shah, Ertal Erturk and Uma Sundaram

Bouveret’s syndrome is a rare clinical condition characterized by gastric outlet obstruction due to a gallstone. Surgery is the mainstay of treatment. In patients with medical co-morbidities, endoscopic therapy with mechanical electrohydraulic or extracorporeal shock wave lithotripsy as well as one case of intracorporeal laser lithotripsy with rhodamine have been reported. Holmium YAG laser has been used in urinary calculi and infrequently in the biliary tract. This is the first case of Bouveret’s syndrome successfully treated with Holmium YAG laser alone. The patient was an 86-year-old white male with a 3-day history of vomiting, abdominal pain and unremarkable physical exam. Endoscopy revealed severe reflux esophagitis. A large gallstone measuring approximately 5 cm was seen beyond the pylorus extending into the duodenum causing complete pyloric obstruction. CT scan demonstrated a 5.3 cm obstructing intraluminal mass in the second portion of the duodenum, pneumobilia, and collapsed gall bladder with air and non-dilated biliary tree. Upper GI with small bowel follow through demonstrated large barium into the biliary tree consistent with fistula to the gall bladder. Diagnosis of Bouveret’s syndrome was made on the basis of the above classic findings. The patient underwent upper endoscopy with Holmium YAG laser lithotripsy under general anesthesia using double channel therapeutic upper endoscope. About 70% of the stone was removed without any complications.

This case illustrates a classic presentation of Bouveret’s syndrome and its unique and novel management using endoscopic Holmium YAG laser lithotripsy alone.

The patient is an 86-year-old man, a nursing home resident, with a past medical history significant for Alzheimer’s dementia, diabetes mellitus, hypertension, coronary artery disease, cardiomyopathy with ejection fraction of 20% and cholelithiasis. He was admitted with behavioral problems to the Psychiatry Department. His physical exam and laboratory results were unremarkable at the time of his admission. Six days later Digestive Disease was consulted because of the three day history of nausea and vomit-
A CASE TO REMEMBER

(continued from page 46)

Figure 1. Endoscopy revealing duodenal gallstone causing obstruction.

...ing, progressing to abdominal pain and coffee ground emesis. His physical exam revealed an elderly frail man, oriented to name only, with mild dehydration and right basilar rales. The abdomen was soft, non-distended with good bowel sounds. Brown stool was heme positive. His laboratory studies showed a WBC of 25,000, PT of 13.4, INR of 1.2, PTT of 22.7, Hct of 37. His liver function tests and amylase were within normal limits, and lipase was 618. The patient was kept NPO, and pantoprazole sodium was added to his existing regimen of risperidone, mirtazapine, digoxin, furosemide, fosinopril and propranolol. Approximately 100 cc of greenish black fluid was suctioned through nasogastric lavage, but the procedure was terminated, as the patient became uncomfortable.

Endoscopy the next day revealed severe reflux esophagitis. The initial view of the stomach was obscured due to increased retention of fluid. About 1800cc of greenish black fluid was suctioned. This enabled us to examine the entire stomach, which was dilated. The pylorus was identified, and a large gallstone measuring approximately 5 cm was seen beyond the pylorus, extending into duodenum causing complete duodenal obstruction (Figure 1). We were unable to pass the scope beyond the point of obstruction. On CT scan, a 5.3 cm obstructing intraluminal mass was seen in the second portion of the duodenum with pneumobilia, consistent with a probable fistula to the gallbladder. The gallbladder was collapsed with air and non-dilatation of the biliary tree (Figure 2). Bibasilar infiltrates were noted—suggestive of aspiration pneumonia. Upper GI with small bowel follow through using thin barium demonstrated prompt emptying of the stomach into the duodenum, large intraluminal filling defect, contrast opacification of bile ducts, and reflux of barium into biliary tree (Figure 3) suggestive of a fistula to the gall bladder. He was started on piperacillin, tazobactam and ciprofloxacin for presumed aspiration pneumonia, and on TPN.

In view of his multiple co-morbidities, surgery was not considered an option. He underwent upper endoscopy with Holmium YAG laser lithotripsy under general anesthesia. A double channel Pentax EG 3830 therapeutic endoscope was passed—in the supine position—into the esophagus, stomach and pylorus and the duodenal stone was visualized. A 600 micron laser probe was passed through the therapeutic channel and was aimed directly at the stone. A total of 6,961 pulses...
were used to deliver 3,297 joules of energy. Total time of laser use was 12 minutes and 17 seconds. Saline flushes through the second therapeutic channel were used several times to clear sloughing of particles and to ensure a clear view of the stone and the duodenal anatomy. The total procedure was completed in 45 minutes. No complications were noted. Approximately 70%–75% of the fragments were removed and sent for analysis (Figure 4). Biochemical analysis of the stone revealed bile pigments. The patient’s abdomen continued to remain soft, non-distended, and he had good bowel movements. He was continued on pantoprazole sodium and started on clear liquids that were advanced to a soft mechanical diet, the next day. He was discharged six days after the procedure.

**DISCUSSION**

The first case of obstruction of the duodenum by a gallstone was reported by Beausier in 1770, but it was only after Bouveret published his two cases in 1896, that the syndrome came to be recognized (1). This is a rare syndrome in which a stone migrates through a cholecysto or choledochoduodenal fistula lodging in the duodenal bulb resulting in obstruction. The pathophysiology includes formation of a cholecysto or choledochoduodenal fistula due to the inflammation and erosive action of the biliary contents, and the passing of the stone into the duodenal bulb causing gastric outlet obstruction (2). The larger the stone, the more proximal the obstruction (3). Within the lumen of the intestine, the stone may either be vomited, or pass through the rectum or it may be impacted and cause obstruction (3). The most common sites of obstruction include the ileum 54%–65%, the jejunum 27%, the duodenum 1%–3%, and the colon in less than 1% of cases (1,4). The most common tract is cholecysto-duodenal fistula (70%), followed by cholecystocolic fistula (14%), then cystogastric fistula (6%) (1). A choledocho-duodenal fistula and duodenocolic fistula are least common. Most fistulas close spontaneously after the passage of the stone (3). Bleeding is another rare complication, which is seen in 8% of the cases, and it could be secondary to the duodenal ulcer that is formed secondary to the stone or due to erosion of the gastroduodenal artery or from erosion of the cystic or hepatic artery (2,5). Patients typically present with nausea and vomiting, and it is usually seen in elderly women, with a prior history of cholelithiasis. Patients may also be dehydrated, with electrolyte abnormalities (4).

The diagnosis of Bouveret’s syndrome is usually made by direct or indirect visualization of the obstructing gallstone, due to non-specific clinical history and physical findings. All of the classic findings of this syn-

(continued on page 52)
Successful Endoscopic Therapy of Bouveret’s Syndrome

A CASE TO REMEMBER

(continued from page 50)

drome were seen in our patient, and have been outlined previously. The major diagnostic modalities include plain abdominal radiographs, in which pneumobilia is seen in 30%–50% of the cases (7) along with gastric or intestinal dilatation and retention and or radio opaque concretions (8). Upper GI series typically reveals gastric outlet obstruction, with filling defects, and reflux of the contrast material into the bile ducts demonstrating cholecysto or choledochoduodenal fistula (2,4). Endoscopy may reveal esophageal and gastric dilatation, with a large gallstone obstructing the duodenum (2,6). CT scan of the abdomen typically shows intraluminal filling defects with enterobiliary fistula, and pneumobilia (4,7). The management includes stabilizing the patient with appropriate fluid and volume resuscitation. The syndrome is usually treated by surgery (93%), but recently has also been treated by endoscopy or extracorporeal shock wave lithotripsy (2,9). Laser lithotripsy has become more suitable in the therapy of difficult common bile duct stone (2,6). There has been documented, a single case report of successful fluoroscopy guided intracorporeal laser lithotripsy with rhodamine in the treatment of Bouveret’s syndrome (2). To the best of our knowledge, this is the first case of successful endoscopic lithotripsy using Holmium YAG laser alone in the treatment of Bouveret’s syndrome.

References

Practical Gastroenterology invites its readers to share their PEARLS OF GASTROENTEROLOGY

Submissions should be brief (about 200 words maximum). Those accepted for publication may be edited for space and style. An honorarium of $25 will be paid upon publication.

Mail your “Pearls of Gastroenterology” to Practical Gastroenterology
99B Main Street, Westhampton Beach, NY 11978
or fax them to us at (631) 288-4435.

Please include your name, address, affiliations, and telephone and fax numbers.

VISIT OUR WEB SITE AT
WWW.PRACTICALGASTROENTEROLOGY.COM