CASE REPORT

Pneumobilia with gastric outlet obstruction

Gaurav A Kakked,¹ Nikita R Bhatt,² Rajiv Bhatt³¹Medical College Baroda, Vadodara, Gujarat, India²Department of Surgery, SSG Hospital, Vadodara, Gujarat, India³Department of Oncosurgery, Shubhechha Multispecialty Hospital, Vadodara, Gujarat, India

Correspondence to

Dr Gaurav A Kakked, drkakked@gmail.com

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SUMMARY

Complications of peptic ulcer disease (PUD) like gastric outlet obstruction (GOO) and biliary fistula have become extremely rare with the advent of proton-pump inhibitors. This is a case of PUD presenting with GOO, a cholecystoduodenal fistula discovered incidentally on upper gastrointestinal endoscopy, and the presence of pneumobilia on a contrast-enhanced CT of the abdomen. A gastrojejunostomy with internal pyloric exclusion was performed. Since the patient did not have any signs of biliary tract disease, we decided not to operate on the fistula to prevent injury to the bile duct. The patient had an uneventful recovery.

BACKGROUND

Spontaneous biliary enteric fistula caused by peptic ulcer disease (PUD) is a rare phenomenon.¹ They often present without specific clinical symptoms and may be incidentally picked up on an upper gastrointestinal imaging study or endoscopy. This is a case of PUD presenting with a triad of gastric outlet obstruction (GOO) with a cholecystoduodenal fistula (CDF) and reflux oesophagitis.

CASE PRESENTATION

A 55-year-old non-smoking Indian man presented with a 10-month history of postprandial vomiting and weight loss of 15 kg during that period. He had a long-standing history of heartburn, self-medicated with antacids.

On examination, he appeared chronically dehydrated with normal vital signs. Abdominal examination revealed an ill-defined tympanic mass in the epigastric region, which was soft in consistency and moved with respiration. A succussion splash could be auscultated over the mass.

INVESTIGATIONS

An arterial blood gas and electrolyte panel revealed hypokalaemic metabolic alkalosis (pH=7.52, potassium=2.9). All other biochemical investigations were within normal limits. A urease breath test was negative.

Upper gastrointestinal endoscopy revealed diffuse erosion and erythema over the lower oesophagus, and there was free reflux of gastric content in the oesophagus (figure 1). The stomach was full of bilious fluid. There was no evidence of gastric ulcer.

The duodenal bulb was grossly deformed. The junction between the bulbar and postbulbar region was narrowed and did not allow the passage of the endoscope. A steady trickle of bile was seen from a slit-like orifice on the posterior duodenal wall, suggestive of biliary-duodenal fistula (figure 2).

Multiple stomach biopsies were taken from the angulus corpus-antrum junction, greater curvature of the corpus and the greater curvature of the antrum. Biopsies were also taken from the erythematous regions of the oesophagus.

Biopsies from the greater curvature of the antrum revealed polymorphonuclear leucocyte infiltrates of the lamina propria, glands and surface epithelium. Occasional microabscesses were also seen. Occasional areas of mucosal atrophy were seen. There was, however, intestinal metaplasia or dysplasia. Staining of the biopsy specimen with modified genta stain revealed multiple *H.pylori* organisms adherent to the surface of the mucosa.

A contrast-enhanced CT of the abdomen revealed a grossly distended stomach with mild diffuse thickening of its wall along with fluid filled and distended first and second parts of the duodenum (figures 3 and 4).

CT scan revealed dilation of the common bile duct (CBD), left and right hepatic duct. Air was seen in the intrahepatic biliary radicals of both lobes of the liver and in the CBD.

The patient was offered a MR cholangiopancreatography for better evaluation of the biliary system. The patient did not consent to the procedure.

A preoperative diagnosis of GOO with biliary-duodenal fistula was made.

DIFFERENTIAL DIAGNOSIS

- Malignant tumour
- Gallstones (Bouveret's syndrome)
- Infections like tuberculosis
- Infiltrative disorders like amyloidosis

TREATMENT

A gastrojejunostomy with internal pyloric exclusion was planned. An upper midline laparotomy was

Figure 1 Upper gastrointestinal endoscopy showing diffuse erosion and erythema in the lower oesophagus.

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Figure 2 Upper gastrointestinal endoscopy showing a grossly deformed duodenal bulb. A steady trickle of bile was also seen to come from a slit-like orifice on the anterior duodenal wall suggestive of biliary duodenal fistula (asterisk).

performed. The first part of the duodenum was heavily cicatrised. The stomach was distended. A retrocolic isoperistaltic gastrojejunostomy with internal pyloric exclusion was performed. There was no palpable mass. The CDF was not operated on to prevent injury to the bile duct and duodenum.

Figure 3 Contrast-enhanced CT of the abdomen (coronal section) revealed a grossly distended stomach with mild diffuse thickening of its wall (arrow).

Figure 4 Contrast-enhanced CT of the abdomen transverse section revealing air in intrahepatic biliary radical (pneumobilia) (star).

OUTCOME AND FOLLOW-UP

The postoperative period was uneventful, and the patient was discharged on the 10th postoperative day. On discharge, the patient was prescribed a 14 day anti-*H. pylori* regimen consisting of esomeprazole, clarithromycin and amoxicillin. The patient is doing well 2 years after the surgery.

DISCUSSION

PUD, once the most common cause of GOO, has witnessed significant decline in incidence due to the discovery of *H. pylori* and proton-pump inhibitors.² Previously, malignancy accounted for only 10–39% of GOO cases. In contrast, in recent decades, 50–80% of cases have been attributed to malignancy.²

Obstruction is the least common complication of PUD and occurs in only 2% of cases. In the acute stage inflammation-induced oedema, spasm, tissue deformation and pyloric dysmotility can lead to GOO, while in the chronic stage stricture can lead to obstruction.²

Biliary-enteric fistulas are well documented in the literature, but are uncommon. Gallstone disease accounts for 90%; peptic ulcer disease, 6%; and neoplasm, trauma, parasitic infestation and congenital anomalies, the remaining 4%.

Cholecystoduodenal fistulae constitute 72–80% of biliary-enteric fistulae; cholecystocolic fistulae make up 8–12%; cholecystogastric and CDF are almost equal in frequency at 3–5%, while other bilioenteric fistulae (2–3%) are mostly combination fistulae such as cholecystogastroduodenal or cholecystoduodenocolic.^{3 4}

CDF can further be divided into proximal and distal types. Proximal CDF is located in the posterior or the superior portion of the duodenal bulb. The usual aetiological mechanism is a penetrating duodenal ulcer. Owing to the extremely high success rate of medical therapy for PUD, there has been a drastic reduction in the number of cases of proximal CDF. The distal type is peripapillary and typically connects the distal 2 cm of the common bile duct. Distal CDF is usually caused by cholelithiasis.

Symptoms resulting from the fistula are unusual, and cholangitis occurs in <10%. Signs and symptoms of biliary tract disease are absent in most patients; it is often detected incidentally in the imaging studies (presence of pneumobilia (15–60%), contrast reflux in the biliary tree). Preoperative diagnosis is made in 43–53% of the cases.^{4 5}

More often, the diagnosis is made as contrast material from a barium meal refluxes up the common duct to outline a normal-sized functioning gall bladder. Endoscopic demonstration of an ostium in the duodenal bulb discharging bile during an endoscopy is the most common means of diagnosis.

Treatment of proximal CDFs remains controversial. Healing of ulcers frequently leads to the healing of the fistula. With recent advances in acid suppression therapy, many authors advocate medical therapy.³

Surgery must be reserved for patients with poorly controlled or recurrent ulcer symptoms, major ulcer complications, such as perforation, haemorrhage or obstruction, or exceptional cases with cholangitis or biliary obstruction. An exclusion type gastrojejunostomy with Billroth II gastrectomy has been recommended.⁶⁻⁷ In the absence of primary biliary disease, there is minimal risk of cholangitis,⁸ which makes it unnecessary to operate on the fistula. If the bile duct is distally obstructed, temporary biliary decompression, using a T-tube in the common duct or some type of internal drainage procedures

like cholecystoduodenostomy or Roux-en-Y drainage, must be performed.⁸ A cholecystectomy should be performed if the fistula communicates with the gall bladder as biliary stasis can increase the risk of cholangitis.

Our patient presented with weight loss and postprandial vomiting secondary to GOO. Hence, the internal pyloric exclusion with gastrojejunostomy was performed. Since there was a complete absence of biliary tract signs or symptoms, the CDF was not operated on.

Contributors GAK and NRB were involved in conception and design, acquisition of data or analysis and interpretation of data; drafting the article or revising it critically for important intellectual content and final approval of the version published.

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Learning points

- ▶ With the advent of proton pump inhibitors, complications of peptic ulcer disease like gastric outlet obstruction and biliary fistula have become very rare.
- ▶ Choledochoduodenal fistulae can be asymptomatic.
- ▶ In the absence of biliary signs or symptoms, cholecystoduodenal fistulae should not be operated on to prevent injury to the bile duct.
- ▶ Exclusion type gastrojejunostomy can be curative.

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