

Gallstone ileus: dilemma in the management

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diagnosis due to non-specific clinical spectrum, associated comorbidities and advanced age are the causes of high mortality, around 12-27%.²

The ideal treatment of GI remains controversial. The main dilemma in surgical management is between a one-stage procedure, which involves enterolithotomy along with cholecystectomy and closure of the bilioenteric fistula, and a two-stage procedure, where only enterolithotomy is done to relieve the obstruction, followed by repair of the fistula in a subsequent surgery.

Abstract

Gallstone ileus is a mechanical intestinal obstruction caused due to impaction of a large gallstone within the bowel. The ideal treatment of gallstone ileus remains controversial, with the main dilemma being between a one-stage and a two-stage surgical procedure. A 69-year old male patient presented with gallstone ileus. A one-stage procedure with enterolithotomy and primary closure of duodenal fistula was done. His immediate postoperative recovery was uneventful, but after 3 weeks of surgery, he developed respiratory complications and expired of multi-organ failure. In gallstone ileus, patient presents with symptoms of intestinal obstruction. Enterolithotomy alone remains the most common operative method, but the definitive surgical management is still under research. An intraoperative dilemma between a one-stage or two-stage surgery is difficult to resolve in absence of clear guidelines. Hence, more studies are required to come to a consensus in deciding its definitive management.

Introduction

Gallstone ileus (GI) is a rare complication of cholelithiasis, which was first described in 1654.¹ It is described as a mechanical intestinal obstruction caused due to impaction of a large gallstone within the bowel. A bilioenteric fistula, which forms most commonly between the gall bladder and the duodenum, is responsible for passage of the gallstone into the bowel, where it gets impacted, most commonly at the narrowest part of the ileum. It accounts for only 1-4% cases of small bowel obstruction.² Up to 25% of all cases are seen in patients older than 65 years,³ and the overall female to male ratio is 3.5-6:1.⁴

Despite medical advances over the last 360 years, GI is still associated with high rates of morbidity and mortality. Delayed

Case Report

A 69-year old male presented with generalized abdominal pain since 8 days. It was gradually progressive in intensity with multiple episodes of bilious vomiting and a 4-days history of obstipation. Patient was a known diabetic and a chronic alcoholic.

On examination, he had tachycardia and abdominal distension with generalized tenderness. Leucocytosis was found on blood investigations, while other parameters were within normal limits.

Ultrasonography revealed few prominent fluid filled small bowel loops in mid abdomen (maximum diameter 2.8 cm) showing sluggish peristalsis.

Contrast enhanced computerized tomography (CECT) of abdomen and pelvis showed a large hyperdense calculus of size 2.8x2.3 cm in the proximal ileal loop with moderately dilated (3.8 cm) small bowel loops proximal to this calculus (Figure 1A). Gall bladder was partially dilated with a suspicious fistulous communication noted between its body and first part of duodenum. Multiple air foci were seen between gall bladder, common bile duct and left hepatic duct (Figure 1B).

As CECT revealed the 3-pathognomic features of gallstone ileus, known as Rigler's triad, the diagnosis of GI was made and the decision to operate the patient was taken.

Exploratory laparotomy revealed gallstone impacted in ileum approximately 2 feet proximal to ileocaecal junction. Gallstone was milked proximally and removed by enterotomy, which was closed later (Figure 2). Intraoperative findings also revealed a small and thickened gall bladder stuck to the duodenum confirming cholecystoduodenal fistula along with enlarged lymph nodes. A subtotal cholecystectomy and primary closure of duodenal fistula was done, as patient was stable.

Histopathology was reported as chronic cholecystitis with reactive lymphadenitis.

Postoperatively, the patient was started

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on full diet on day 5. Suture line was healthy. The left and right abdominal drains were removed on day 8 and 9, respectively. But despite of vigorous chest physiotherapy in the ward, the patient developed respiratory infection, which gradually worsened by day 12, followed by shock and acute kidney injury. Eventually, he was shifted to an Intensive care unit, where he was intubated and ventilated. He received blood transfusions, intravenous antibiotics, inotropic support and repeated electrolyte corrections. However, he did not respond to the treatment given and succumbed to pneumonia and sepsis 3 weeks after surgery.

Discussion

GI is a mechanical obstruction caused by one or more large gallstone within the bowel. These gallstones cause recurrent inflammations, which may give rise to a bilioenteric fistula. This results in a large stone migrating directly from gall bladder to intestine. The most common fistulas are between the gallbladder and duodenum (60%-86%), ileum and colon.⁴ The gallstone must be $\geq 2-2.5$ cm in diameter to

cause obstruction. In present case, gallstone was 2.8 cm in diameter, and was impacted in the terminal ileum. The terminal ileum and the ileocecal valve are the most frequent sites of impaction (50%-75%), followed by proximal ileum and jejunum (20%-40%), stomach and duodenum (10%).²

Clinical presentation of GI, due to the intestinal obstruction, depends on the site of impaction and it may be acute, intermittent or chronic. The most common symptoms include nausea, vomiting and epigastric pain. In present case, patient presented with vomiting, abdominal distension and obstipation.

Diagnosis of GI is difficult, and in about 50% of cases is intraoperative. Diagnostic accuracy of plain abdominal film is about 50%, although only 10% of gallstones are sufficiently calcified and visualized radiographically. Classic findings include: pneumobilia, intestinal obstruction and aberrant gallstone location, which constitute Rigler's triad.⁵ The presence of at least two of these three signs is considered pathognomonic and is described in 40%-50% of cases. Ultrasound, associated to a plain abdominal film, can be used to confirm the pre-operative diagnosis, showing cholelithiasis, and in some cases a fistula may also be suspected. However, CECT scan may improve diagnostic accuracy. Moreover, CECT scan of abdomen is reported to have the highest specificity and sensitivity in diagnosing GI.⁶ Present case CECT scan of abdomen showed Rigler's triad and confirmed the diagnosis.

Surgical treatment is still subject of research. Current operative options are: i) Enterolithotomy alone; ii) Two-stage surgery - Enterolithotomy with cholecystectomy performed later; iii) One-stage surgery - Enterolithotomy, cholecystectomy and fistula repair.

Several factors should be considered in the choice of the most appropriate surgical approach. The duration of the bowel obstruction is the most important prognostic factor. In patients with a diagnostic delay, the main goal of the treatment should be prompt relief of the intestinal obstruction by enterolithotomy alone. Patient's age and comorbidity may contraindicate a one-stage surgery. Thereby, preoperative stabilization is essential, with special attention to the fluid and electrolytes balance and the management of comorbid conditions. Furthermore, comorbidity is associated with an increased risk of postoperative complications (enteric or biliary leakage after the closure of the fistula).

Enterolithotomy alone remains the most common operative method in the majority

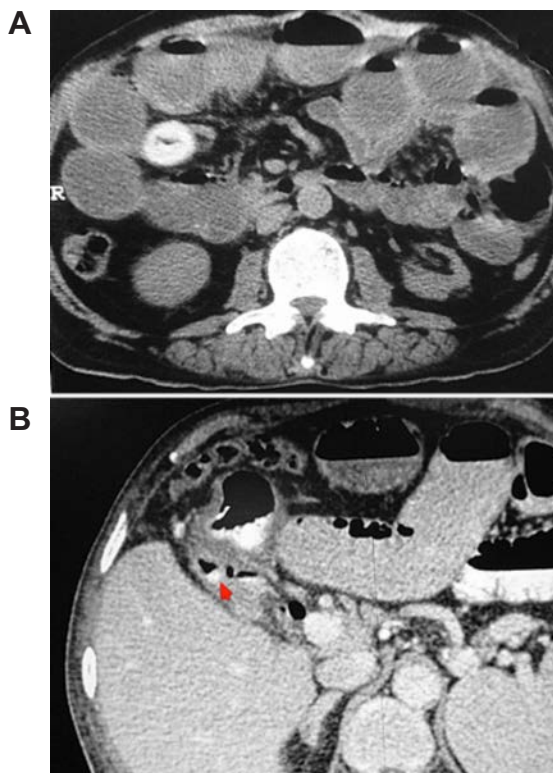


Figure 1. A) Impacted gallstone in terminal ileum causing proximal bowel dilatation; B) Pneumobilia (red arrow) suggestive of cholecystoduodenal fistula.

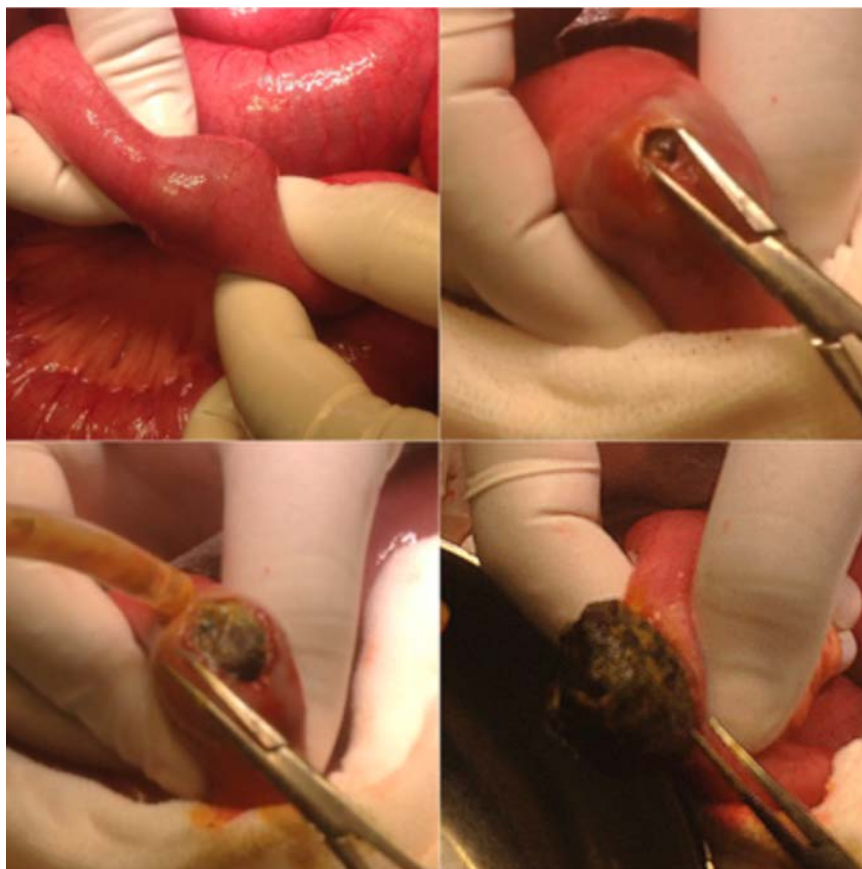


Figure 2. Intraoperative picture showing gallstone being milked from the ileum, followed by enterolithotomy.

of cases, because of its low incidence of complications. A spontaneous closure of the fistulous tract is observed in more than 50% of cases.⁷ Present case showed thickened gall bladder with enlarged lymph node at Porta. As the patient was stable, partial cholecystectomy with closure of bilioenteric fistula was done. However, he had a stormy postoperative course and succumbed to respiratory complications in the late postoperative period. As per Clavien Dindo classification of surgical complications, he suffered from Grade IVa complication, followed by death.⁸

Recently, laparoscopy assisted enterolithotomy and endoscopic removal are becoming the preferred approaches for the treatment of GI.⁹ But delayed diagnosis, concomitant comorbidity and advanced age are the causes of a high mortality rate (7.5–15%).¹⁰

Conclusions

The outcome of the patient in the present case compels us to think of a two-stage approach in all cases of GI irrespective of their hemodynamic stability. It is also a sur-

gical dilemma when a thickened gallbladder with enlarged lymph nodes at Porta is seen intraoperatively. Moreover, a long-standing fistula may result in malignancy or additional stones, which may result in recurrent episodes of GI. This intraoperative dilemma is difficult to resolve in absence of clear guidelines in treatment of GI. Hence, more studies are required to come to design the management of GI. This will result in decreasing the morbidity and mortality related to GI.

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