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Case Report

Gallstone Ileus with Jejunal Obstruction: An Uncommon Complication of Cholelithiasis

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SUMMARY

Gallstone ileus is a rare complication of cholelithiasis, predominantly affecting older women and carrying a risk of high mortality and morbidity rates. While Rigler's triad radiologic features can aid in diagnosis, they are only present in a portion of patients. Surgery is a primary method for symptom relief, but discussions persist about the most suitable surgical strategy. This report details a case of gallstone ileus causing jejunal obstruction, successfully treated with laparoscopic-assisted enterolithotomy.

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1. Introduction

Gallstone ileus is a rare complication associated with cholelithiasis, commonly resulting from the migration of gallstones through a bilioenteric fistula. This condition predominantly affects women aged over 70 years, and initial symptoms typically include abdominal pain, nausea, and vomiting. The diagnosis relies on imaging studies, with computed tomography (CT) being the preferred choice. Surgical intervention is often necessary for treatment. This report details a case of gallstone ileus successfully managed through laparoscopic intervention.

2. Case report

This report was approved by the Ethical Committee of Tri-Service General Hospital, Taiwan, and informed consent was obtained from the patient.

The patient, a 92-year-old female with a medical history of hypertension, ischemic cerebral infarction, and gallstones leading to acute cholecystitis after percutaneous transhepatic gallbladder drainage in October 2015, recently experienced a loss of appetite for several weeks. Subsequently, she developed symptoms such as abdominal pain, nausea, and vomiting, prompting her visit to the emergency room (ER).

Upon physical examination, the patient exhibited normal active bowel sounds and mild epigastric tenderness. No rebound pain or muscle guarding was observed. Laboratory findings indicated a normal white blood cell (WBC) count of 6860 cells/uL and an elevated C-reactive protein level of 2.44 mg/dL. Renal functions, liver enzymes, and coagulation function were within normal limits. Lipase measured 75 mg/dL, and total bilirubin was 0.7 mg/dL. Other laboratory parameters fell within normal ranges.

Emergent abdominal computed tomography (CT) revealed

swelling of the colon and small intestine, along with a mass-like lesion exhibiting central high density or calcification at the junction of the duodenum and jejunum (Figure 1A). Pneumobilia in the biliary system and a gallbladder-duodenal fistula were also observed (Figure 1B). Notably, a comparison with the patient's CT scan from October 2015 indicated the disappearance of her gallstone, which had measured 4.0 cm × 3.7 cm × 3.3 cm in the earlier image.

Esophagogastroduodenoscopy revealed no mass. Single-balloon enteroscopy via an oral approach showed a gallbladder-duodenal fistula with a large gallstone impaction in the proximal jejunum, causing gallstone-related jejunal obstruction (gallstone ileus) (Figure 2).

A laparoscopy was performed, revealing the gallbladder-duodenal fistula on the anterior wall of the first portion of the duodenum. One stone was impacted in the lumen of the small intestine around Treitz's ligament region. Incision of the proximal jejunum with enterolithotomy was performed, and a 4-cm gallstone was successfully removed (Figure 3). Following the surgery, the patient was

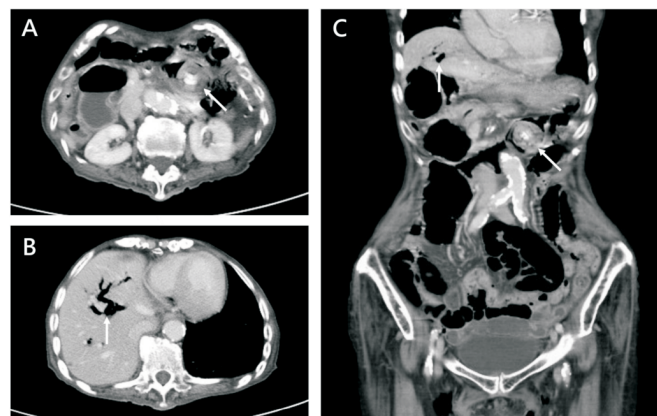


Figure 1. Abdominal computed tomography. A shows an ectopic stone within the bowel lumen (arrow). B shows pneumobilia (arrow). C shows the coronal view of the abdominal computed tomography.

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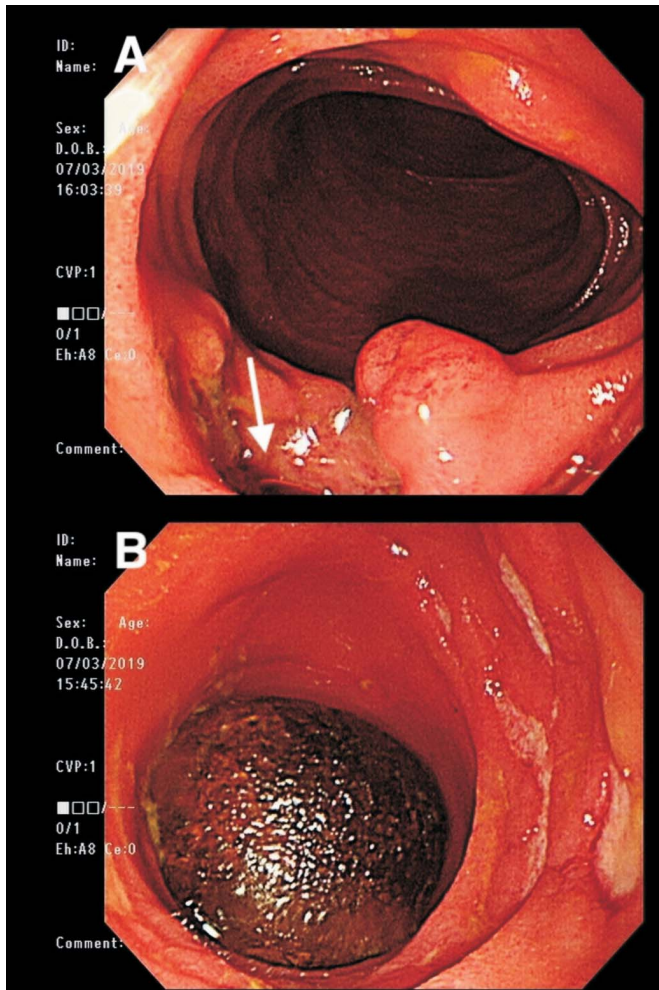


Figure 2. Enteroscopy. A shows a gallbladder duodenal fistula (arrow). B shows a firm and round black stone at the junction of the 4th portion of the duodenum and the proximal jejunum.

monitored in the intensive care unit for two days and then transferred to a regular ward. The patient was discharged one week later without gastrointestinal discomfort.

3. Discussion

Gallstone ileus is a rare complication of cholelithiasis, constituting 0.095% of mechanical bowel obstruction cases.¹ The in-hospital mortality rate is approximately 6.67%.¹ The etiology often involves the migration of gallstones through a bilioenteric fistula; however, it can also occur after endoscopic retrograde cholangiopancreatography (ERCP).² The most frequent type of fistula is cholecystoduodenal, followed by cholecystocolonic and cholecystoduodenocolonic fistulas. The most common site of obstruction is the terminal ileum, followed by the jejunum, colon, and duodenum.^{3,4} In our patient, a cholecystoduodenal fistula was present, and an impacted gallstone with a large size (4 cm in length) was found at the junction of the duodenum and jejunum. Gallstone ileus typically occurs in older women aged over 70 years.³⁻⁶ Advanced age and the presence of comorbidities increase the fatality risk for the patient.

The presentation of gallstone ileus can vary, posing challenges in diagnosis. Initial symptoms typically involve abdominal pain, nausea, and vomiting, as observed in our patient.⁶ Laboratory tests revealed signs of inflammation. Diagnosis often relies on imaging studies, and various modalities such as plain abdominal radiography,

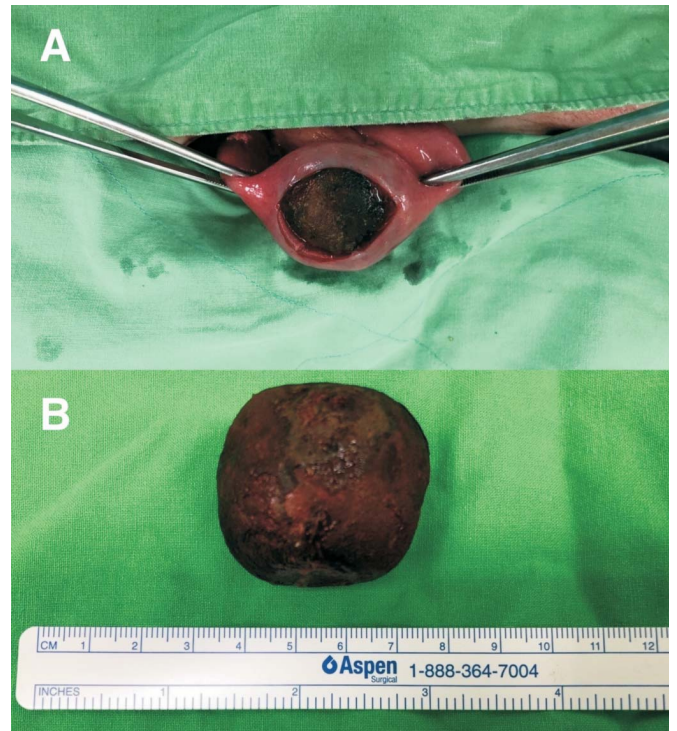


Figure 3. Laparoscopic-assisted procedures. A shows an impacted gallstone at the junction of the duodenum and jejunum. B shows a 4-cm gallstone extracted from the case.

abdominal ultrasonography, and CT scans can be employed. Among these, CT is considered the most sensitive imaging technique. The typical radiological features associated with gallstone ileus include mechanical bowel obstruction, the presence of an ectopic stone within the bowel lumen, and pneumobilia. Rigler’s triad, encompassing these features, is identified only in one-third to half of the cases.^{6,7} Additionally, gallstones causing bowel obstruction are typically larger than 2 cm.^{6,8}

The management of gallstone ileus remains controversial, with surgery being the primary approach for symptom relief. The disease can be treated through enterolithotomy, either with or without fistula resection and cystectomy.^{1,3,5,6} Enterolithotomy is the preferred and most frequently performed procedure.^{1,6,9,10} While the operative time for enterolithotomy alone is shorter, patients treated solely with enterolithotomy later experienced prominent biliary complications. Enterolithotomy combined with fistula resection and cystectomy has been shown to prevent recurrence.^{4,11}

Considering the older age and multiple comorbidities, most patients are classified as American Society of Anesthesiology (ASA) class III or IV. Surgical plans should be tailored to each patient. We opted for an initial endoscopic intervention, considering the patient’s age and complex medical histories, with the added advantage of visualizing the fistula. However, the migrating gallstone proved too large to extract through the endoscope. Consequently, we switched to laparoscopic-assisted enterolithotomy. The postoperative course was uneventful, with no related complications or comorbidities noted.

Given the complexity of laparoscopic procedures, particularly in cases with multiple comorbidities, the involvement of a surgeon skilled in advanced laparoscopic techniques is essential. Other non-surgical options, such as extracorporeal shockwave lithotripsy or electrohydraulic lithotripsy treatment, may be considered for individuals who are not suitable candidates for surgery.¹²⁻¹⁴

In summary, we present a unique case of gallstone ileus. De-

spite the patient's older age and multiple comorbidities, single-balloon enteroscopy was performed but failed to extract the stone. Consequently, the patient underwent laparoscopic-assisted enterolithotomy, and the procedure was successful.

Gallstone ileus, though rare, poses significant health risks and is primarily treated through enterolithotomy to alleviate intestinal obstruction. Central to treatment planning is a comprehensive assessment of the patient's overall health condition, which informs decisions on further surgical procedures such as cholecystectomy and fistula closure, tailored to individual risks and health status.

Declaration of any potential financial and non-financial conflicts of interest

There are no conflicts of interest to declare. The IRB statement was approved by Institutional Review Board of Tri-Service General Hospital, National Defense Medical Center.

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