



One-stage Surgery in a Huge Gallstone Ileus Patient: A Case Report and Literature Review

Chia-Chang Wei, Hsiu-Lung Fan

Division of General Surgery, Department of Surgery, Tri-Service General Hospital, National Defense Medical Center, Taipei, Taiwan

Gallstone ileus is a rare complication of cholelithiasis, with an incidence of 0.5%. In this condition, a biliary stone enters into the bowel through a biliary-enteric fistula. This can occur in different conditions such as cholelithiasis and Mirizzi syndrome. Approximately 60% of biliary-enteric fistulas result in cholecystoduodenal fistulas. Typical symptoms of gallstone ileus include diffuse abdominal pain and vomiting, with an average symptom duration of 5 days before admission. This condition is usually diagnosed using abdominal computed tomography and standing abdominal plain films. Management typically involves enterolithotomy, cholecystectomy, and fistula closure, with the approach depending on the patient's performance and the need for one- or two-stage surgery. Herein, we present a case of gallstone ileus with cholecystoduodenal fistula formation and typical symptoms, which was successfully managed with one-stage surgery.

Key words: Ileus, cholecystectomy, gallstones, incidence, one-stage surgery, older, woman

INTRODUCTION

Gallstone ileus is a rare complication of cholelithiasis, with an incidence of 0.5%.¹ Its pathogenesis involves the entry of a biliary stone into the bowel through a biliary-enteric fistula. Approximately 60% of biliary-enteric fistulas result in cholecystoduodenal fistulas. Typical symptoms of gallstone ileus include diffuse abdominal pain and vomiting that can last for 5 days before admission. Management typically involves enterolithotomy, cholecystectomy, and fistula closure, with the approach depending on the patient's performance and the need for one- or two-stage surgery. However, it remains controversial whether one-stage surgery involving synchronous enterolithotomy, cholecystectomy, and fistulectomy or two-stage surgery involving enterolithotomy followed by interval cholecystectomy and fistulectomy should be chosen. This report presents a case of gallstone ileus with cholecystoduodenal fistula formation that was successfully managed with one-stage surgery. A literature review was also conducted.

CASE REPORT

The patient was a 73-year-old married Taiwanese woman with a history of systemic diseases, including hypertension and type II diabetes mellitus, for which she received regular medication.

She presented to our emergency room with symptoms of poor appetite and vomiting for several days. Physical examination revealed localized tenderness over the right lower region. Laboratory data showed leukocytosis, elevated C-reactive protein levels, and renal function impairment. Upon abdominal imaging, pneumobilia was noted on a standing plain film [Figure 1] and bowel dilatation with a 3.4 cm × 4.1 cm calcified stone was observed at the distal ileum level on abdominal noncontrast-enhanced computed tomography [Figure 2]. She was finally diagnosed with gallstone ileus with cholecystoduodenal fistula formation.

After admission, the patient underwent preoperative evaluations. Then, laparoscopic enterolithotomy, fistula division with primary repair and omentum patch attachment,

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Corresponding Author: Dr. Chia-Chang Wei, No. 5, Ln. 94, Shude Road, Taiping District, Taichung City 411031, Taiwan (R.O.C.). Tel: +886-988528597, #13939. E-mail: andy820225@gmail.com

and cholecystectomy with Jackson–Pratt drain insertion were performed. A large gallstone measuring approximately 6 cm was removed [Figure 3]. Moreover, turbid ascites was

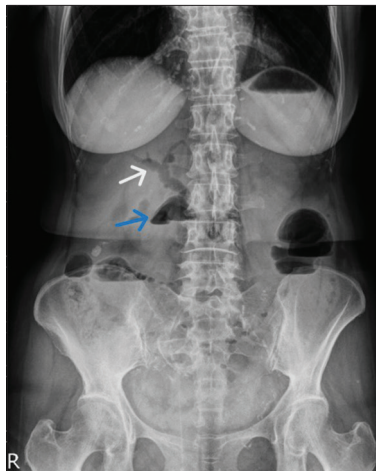


Figure 1: Typical pneumobilia and ileus. The white arrow showing the typical pneumobilia pattern and the blue arrow showing the air fluid level of intestine

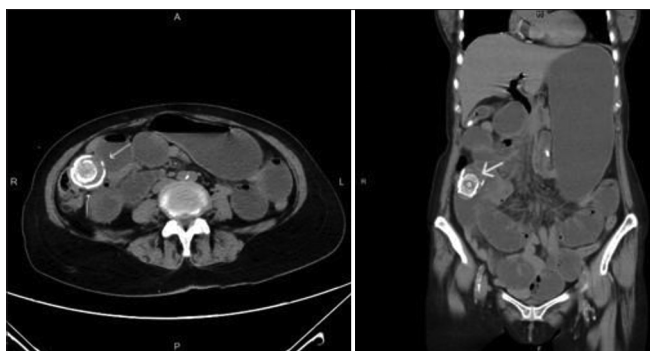


Figure 2: Computed tomography revealing the presence of calcified stones (white arrow) in the bowel with ileus



Figure 3: Calcified gallstones with a size of up to 6 cm and cholecystoduodenal fistula division through cholecystectomy

detected, possibly resulting from duodenal leakage. Hence, she underwent conservative treatment with preoperative fasting and percutaneous drainage. Consequently, she recovered gradually and was finally discharged on postoperative day 40.

DISCUSSION

The primary management for gallstone ileus is surgical intervention, which can be performed in different ways, such as enterolithotomy only; one-stage surgery involving synchronous enterolithotomy, cholecystectomy, and fistulectomy; and two-stage surgery involving enterolithotomy followed by interval cholecystectomy. Each surgical intervention has advantages and disadvantages. For example, synchronous enterolithotomy, cholecystectomy, and fistulectomy have high complication rates. However, the patient in the present case successfully underwent one-stage surgery without major complications.

Enterolithotomy leads to reduced inhospital mortality, less intraoperative blood loss, shorter operative times, and shortened hospital stays.^{2–4} Thus, it is suitable for patients with advanced age or multiple comorbidities. Cholecystectomy may not be necessary in patients with gallstone ileus.⁵ As the recurrence rate of biliary symptoms following enterolithotomy is approximately 10%, definite cholecystectomy and fistulectomy are advised to prevent gallstone ileus recurrence. However, it remains controversial whether one-stage surgery involving synchronous enterolithotomy, cholecystectomy, and fistulectomy or two-stage surgery involving enterolithotomy followed by interval cholecystectomy should be chosen.

In a previous report, compared with the enterolithotomy-only group, the one-stage surgery group had higher morbidity rates but showed similar mortality rates; therefore, low-risk (American Society of Anesthesiologists Classification class I or II) patients should consider undergoing one-stage surgery.⁶ However, high morbidity and mortality rates in the one-stage group have been reported previously.^{4–6} Thus, emergency one-stage surgery is only advocated in patients with complications of cholecystitis, gallbladder gangrene, or residual stones. Furthermore, one-stage surgery is recommended only in patients with low risk and strong indication of gallstone ileus. Considering the increased difficulty of one-stage surgery, a minilaparotomy approach should be adopted.⁷

Gallstones with a size of 2.5–4.0 cm can cause gallstone ileus. A larger size may indicate a wider fistula. Furthermore, fistula division may increase postoperative complications. However, the relationship between gallstone size and postoperative complications has not yet been investigated.

In the present case, we decided whether one- or two-stage surgery should be performed. To reduce the recurrence rate and resolve the symptoms, we initially selected one-stage surgery,

after which the patient recovered gradually. After reviewing the literature regarding the complications that may occur after undergoing one-stage surgery, we decided to monitor the patient for more time. However, bile leakage occurred, and we immediately managed the condition by reducing the amount of bile leakage and maintaining her drainage function. Considering the patient's condition and morbidity status, if they develop postoperative bile leakage or other complications, more time is needed for close observation.

CONCLUSION

This case demonstrates the characteristic radiological findings and typical symptoms of a large gallstone complicated with a biliary-enteric fistula. Its diagnosis is crucial for ensuring appropriate surgical intervention. Based on the consistent findings in the literature, one-stage surgery was chosen to reduce the patient's recurrence rate. Although the hospital stay was prolonged and the patient developed bile leakage, their condition continued to improve until discharge. Thus, this case report indicates that one-stage surgery is feasible, but longer hospital stays are needed for close monitoring and management of possible complications.

Ethical approval

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of Tri-Service General Hospital with No.A202415058; 2024/4/23.

Declaration of patient consent

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and its amendments. The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Data availability statement

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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