



Small intestinal obstruction due to a giant gallstone: a rare case report from Syria

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Introduction and importance: Gallstone ileus is a rare and potentially life-threatening condition characterized by the obstruction of the small intestine due to a gallstone. It occurs as a complication of gallstone disease, where a large gallstone erodes through the gallbladder into the gastrointestinal tract, creating a fistula.

Case presentation: A type 2 diabetic woman in her 50s presented to the emergency department complaining of abdominal pain and vomiting. She has not emptied her bowels since 3 days ago. A clinical examination showed tenderness in the abdomen associated with fecal vomiting. A computed tomography (CT) scan was performed and showed a dilated gallbladder with gas. A giant gallstone in a small intestinal loop was observed. The diagnosis was a small intestinal obstruction due to a giant gallstone and a duodenal-biliary fistula.

Clinical discussion: Gallstone ileus is an occasional complication of cholelithiasis, occurring in less than 0.5% of patients. Gallstone ileus frequently occurs in the terminal ileum and the ileocecal valve. Regarding the clinical presentation, abdominal pain is the most common symptom, followed by vomiting and constipation. CT scan is the gold standard utilized to diagnose gallstone ileus. Surgical intervention is the mainstay treatment for giant gallstone ileus, with enterolithotomy being the most commonly performed procedure.

Conclusion: Gallstone ileus is an uncommon but potentially life-threatening condition that can emerge in elderly patients with a history of cholelithiasis. It is crucial for clinicians to maintain a high index of suspicion when encountering older patients with risk factors for cholelithiasis and intestinal obstruction.

Keywords: cholelithiasis, gallbladder, gallstone, giant, ileus, obstruction

Introduction

Gallstone ileus (GI), a rare consequence of cholelithiasis, is defined as a mechanical intestinal obstruction brought on by the impaction of one stone or numerous smaller stones in any area of the digestive tract as well as recurrent episodes of gallbladder inflammation^{1–3}. According to reports from the 1990s, 1–4% of all bowel obstruction cases are caused by an impacted gallstone in the gastrointestinal tract, and this can increase to 25% in patients over 65 years old^{4,5}. Late presentation of GI leads to high morbidity and mortality, between 12 and 27%^{3,4}. Intestinal obstruction occurs due to the spontaneous formation of a biliary-enteric fistula, mainly in the ileum but less commonly in the duodenum and stomach. Colonic obstructions are rare, as the size of the

HIGHLIGHTS

- Gallstone ileus is a rare complication of cholelithiasis, occurring in less than 0.5% of patients.
- We reported a case of small intestinal obstruction due to a giant gallstone and duodenal-biliary fistula in a 50-year-old woman.
- Computerized tomography scan is the golden standard in diagnosing gallstones ileus.
- It is critical to be aware of this illness and consider it as a possible diagnosis in older patients with a history of cholelithiasis.

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gallstones allows them to pass through the colon lumen^{6,7}. Successful endoscopic therapy for enteric gallstone impaction is limited, and surgical intervention is often required⁵. Here, we describe a case of intestinal obstruction caused by an impacted gallstone requiring surgical intervention for the resolution of obstructive symptoms.

This case report has been reported in line with the SCARE criteria for 2020⁸, Supplemental Digital Content 1, <http://links.lww.com/MS9/A221>.

Case presentation

A type 2 diabetic woman in her 50s, with no past surgical history, presented to the emergency department complaining of abdominal pain and vomiting. She had not emptied her bowels since

3 days ago. A clinical examination showed a tenderness in the abdomen associated with fecal vomiting. No palpable masses were present on the rectal exam. Blood tests revealed an elevation of white blood cells ($21\ 600\ \text{mm}^3$) with neutrophilia (93%). Abdominal ultrasound revealed dilated loops of the small bowel with air–fluid levels and stomach distention. A multi-slice computerized tomography (MSCT) scan was performed and showed a dilated gallbladder with gases and adhesions between the thickened gallbladder wall and the duodenal wall. A 42-mm gallstone in a small intestinal loop was observed (Fig. 1). The diagnosis was a small intestinal obstruction due to a giant gallstone and a duodenal-biliary fistula (Fig. 2). The patient underwent laparotomy. Intraoperatively, the jejunum was markedly distended due to an impacted gallstone proximal to the ileocecal junction. The gallbladder was inflamed, with adhesion to the whole first part of the duodenum. Cholecystectomy and enterotomy were done and the stone had been pulled out of the jejunum by the duodenal-biliary fistula, and the stone had been pulled out of the jejunum by the duodenal-biliary fistula (Fig. 3) (Video, Supplemental Digital Content 2, <http://links.lww.com/MS9/A222>). The edges of the fistula had been debrided, and the sewing of the wound had been done in two layers. Postoperatively, the patient was put on intravenous nutrition and antibiotics (meropenem 500 mg and metronidazole 500 mg), along with fluid compensation and blood sugar monitoring. The patient was discharged 8 days later without complications.

Discussion

Gallstone ileus is an occasional complication of cholelithiasis, occurring in less than 0.5% of patients^[3]. When comparing our case with literature reports, it is evident that giant

gallstone ileus predominantly affects elderly females, with a female-to-male ratio of approximately 3:1^[4]. The average age of patients affected by this condition is around 70 years^[3]. Our patient's demographic profile aligns with these findings. The most common location of the impacted gallstone in gallstone ileus is the terminal ileum (approximately 80% of cases), followed by the jejunum (15% of cases), and rarely in the duodenum^[4,6]. In this case, the gallstone was lodged in the terminal ileum, consistent with the majority of reported cases in the literature. Regarding the clinical presentation, abdominal pain is the most common symptom observed in gallstone ileus, followed by vomiting and constipation^[1,4]. In our case, the patient presented with these classic symptoms, further confirming the typical clinical picture associated with this condition. In terms of radiological findings, abdominal X-rays and computed tomography (CT) scans are commonly utilized to diagnose gallstone ileus by detecting Rigler's triad (pneumobilia, intestinal obstruction, and visualization of the stone), with CT being the gold standard^[4,9], as in this case. Surgical intervention is the mainstay treatment for giant gallstone ileus, with enterolithotomy being the most commonly performed procedure^[4]. However, when gallstones are only up to 2.5 cm in size, they can be discharged spontaneously, and conservative treatment can be recommended^[4,9]. The GI surgical management is controversial, and four methods are usually performed for treatment: (1) enterotomy with stone extraction alone; (2) bowel resection alone; (3) enterotomy, stone extraction, cholecystectomy, and fistula closure; and (4) bowel resection with fistula closure^[4]. Our patient underwent a laparotomy with enterotomy, extraction of the impacted gallstone, cholecystectomy, and fistula closure.

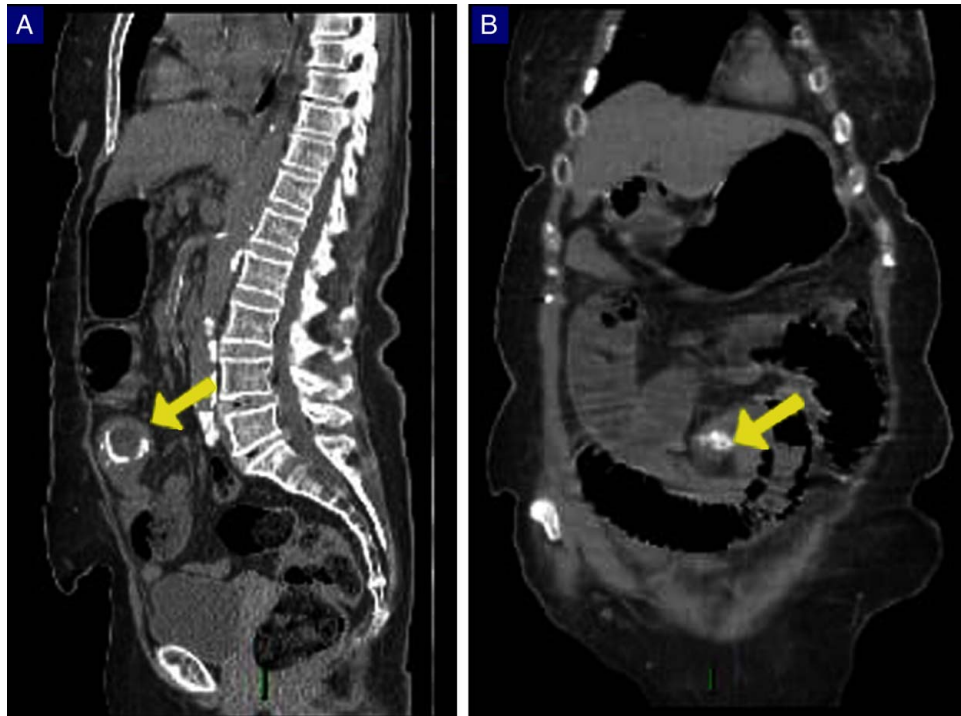


Figure 1. Computed tomography scan images (A) of sagittal and (B) coronal sections show a 42-mm gallstone in a small intestinal loop (yellow arrow).



Figure 2. Computed tomography scan image coronal section shows a duodenal-biliary fistula (blue arrow).

Conclusion

Giant gallstone ileus is a rare and life-threatening condition. It is crucial for clinicians to maintain a high index of suspicion when encountering older patients with risk factors for cholelithiasis and intestinal obstruction. Overall, early recognition and appropriate intervention are vital in improving patient outcomes and reducing morbidity and mortality rates associated with giant gallstone ileus.

Ethical approval

This study is exempt from ethical approval in our institution (Faculty of Medicine, Tartous University).

Consent

Written informed consent was obtained from the patient for the publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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Author contribution

F.S.: study design, data collection, data analysis, and writing; G.S. and A.S.: study design, data analysis, and writing; A.H.: performing the surgery; M.H.A.-j.: reviewing the manuscript.

Conflicts of interest disclosure

The authors declare that they have no conflicts of interest.

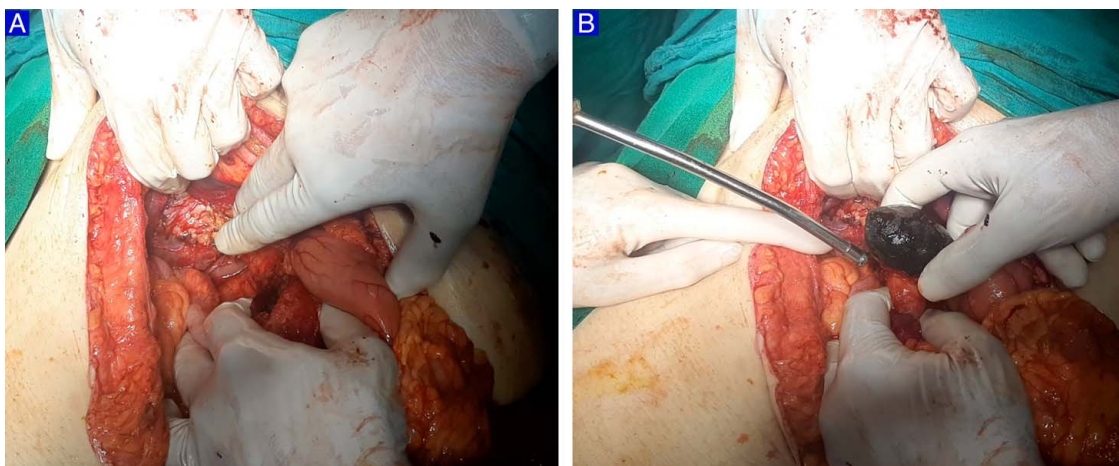


Figure 3. Surgical images (A and B). (A) shows the hepatic aspect after cholecystectomy. (B) shows how the stone was pulled out of the jejunum by the duodenal-biliary fistula.

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