

Gallstone Ileus Caused by A Cholecystoduodenal Fistula in A 58-Year-Old Man: A Case Report

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ABSTRACT

Background: Gallstone ileus is an uncommon mechanical bowel obstruction caused by migration and impaction of a gallstone through a bilioenteric fistula. Its nonspecific presentation may delay diagnosis, whereas computed tomography can demonstrate the characteristic combination of intestinal obstruction, pneumobilia, and an ectopic gallstone.

Case presentation: A 58-year-old man with no reported chronic diseases presented with six days of colicky mesogastric and hypogastric pain, nausea, gastrobiliary vomiting, progressive abdominal distension, and absence of stool and flatus. Plain abdominal radiographs showed dilated small-bowel loops and multiple air-fluid levels. After 24 hours without improvement under initial conservative management, computed tomography revealed pneumobilia, gastric and small-bowel dilatation, and a 25-mm ectopic stone in the ileum, consistent with Rigler's triad. Emergency exploratory laparotomy identified a cholecystoduodenal fistula and a 3-cm gallstone impacted 25 cm proximal to the ileocecal valve. Enterolithotomy and primary enterorrhaphy were performed; the gallbladder and fistula were not addressed during the index operation. The patient resumed oral intake after four postoperative days and was discharged on postoperative day six without complications. Subsequent follow-up was reported as favorable.

Conclusion: In patients with otherwise unexplained small-bowel obstruction, early recognition of Rigler's triad can establish the diagnosis of gallstone ileus. Enterolithotomy alone is a reasonable obstruction-relieving strategy when a longer one-stage biliary procedure is not considered appropriate; definitive management should be individualized according to physiologic reserve, intraoperative findings, and biliary symptoms.

KEYWORDS: gallstone ileus; intestinal obstruction; cholecystoduodenal fistula; Rigler triad; enterolithotomy.

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INTRODUCTION

Gallstone ileus is a mechanical intestinal obstruction produced when a gallstone enters the gastrointestinal tract—usually through a cholecystoduodenal fistula—and becomes impacted distally. It accounts for approximately 1–4% of mechanical bowel obstructions and represents a disproportionate share of cases in older adults. Although it most often affects women older than 60 years, the condition should not be excluded in younger or male patients when the clinical and radiologic findings are compatible.^{1–3}

Symptoms are often intermittent and indistinguishable from other causes of small-bowel obstruction. Computed tomography (CT) is therefore central to diagnosis because it can identify the level of obstruction, an ectopic gallstone, pneumobilia, and the bilioenteric fistula. The classic radiologic constellation of bowel obstruction, pneumobilia, and an ectopic gallstone is known as Rigler's triad.^{4,5}

The immediate therapeutic priority is relief of the obstruction. Surgical options include enterolithotomy alone, a one-stage procedure combining enterolithotomy with cholecystectomy and fistula closure, and a two-stage strategy with delayed

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biliary surgery. No universally accepted approach exists; contemporary evidence supports patient-specific selection based on stability, comorbidity, bowel viability, fistula anatomy, and local expertise.^{6–10} We report a case of distal ileal obstruction from a 3-cm gallstone in a 58-year-old man, successfully managed with open enterolithotomy without concomitant biliary surgery.

CASE PRESENTATION

Patient information

A 58-year-old man presented with a six-day history of recurrent colicky pain localized to the mesogastrium and hypogastrium following a high-fat meal. The pain reached 8/10 intensity and was accompanied by nausea and three episodes of gastrobiliary vomiting. On the day of admission, he developed increasing abdominal distension and complete obstipation. He denied known chronic degenerative disease. He reported an 18-year smoking history (reported smoking

index: 8) and alcohol intake of approximately 40 g per week. Other history was reported as noncontributory.

Diagnostic assessment

Standing and supine abdominal radiographs demonstrated gastric and small-bowel dilatation, multiple air-fluid levels, and absence of rectal gas, supporting mechanical small-bowel obstruction. Initial nonoperative management did not produce clinical improvement during the following 24 hours. Abdominal CT subsequently showed pneumobilia, distension of the stomach and small bowel, and an approximately 25-mm oval intraluminal lesion in the ileum. Together, these findings fulfilled Rigler's triad and supported the diagnosis of gallstone ileus. The main differential diagnoses before CT included adhesive obstruction, incarcerated hernia, neoplastic obstruction, inflammatory stricture, and bezoar; the ectopic stone and pneumobilia favored gallstone ileus.



Figure 1. Upright abdominal radiograph showing dilated bowel loops and multiple air-fluid levels.



Figure 2. Axial abdominal CT image demonstrating small-bowel dilatation and pneumobilia.

Therapeutic intervention

Because the obstruction persisted and CT established the mechanical cause, emergency exploratory laparotomy was performed. Marked dilatation of the stomach and small bowel was found, together with a cholecystoduodenal fistula. A 3-cm gallstone was impacted in the ileum approximately 25 cm

proximal to the ileocecal valve. An enterotomy was created, the stone was extracted, and the bowel was closed primarily (enterorrhaphy). No procedure was performed on the gallbladder or cholecystoduodenal fistula during the index operation.



Figure 3. Intraoperative enterolithotomy and extraction of the obstructing gallstone.

Follow-up and outcomes

The postoperative course was uncomplicated. The patient was kept fasting for four days, subsequently tolerated

progression of intake, and was discharged on postoperative day six with outpatient follow-up.

DISCUSSION

This case illustrates three clinically relevant features: gallstone ileus can occur outside the typical demographic profile; CT can establish the diagnosis after nonspecific symptoms and plain radiograph evidence of obstruction; and a limited operation directed at relieving obstruction can yield an uncomplicated recovery. The patient was a 58-year-old man, whereas most series describe a predominance of older women.^{1,3} Demographic atypicality should therefore not lower suspicion when pneumobilia accompanies small-bowel obstruction.

The six-day fluctuating course is consistent with the “tumbling” phenomenon, in which a migrating stone causes intermittent obstruction before final impaction. Stones larger than approximately 2–2.5 cm are more likely to obstruct, most frequently in the distal ileum or near the ileocecal valve because of the narrower lumen and reduced peristaltic activity.^{1,2} In this patient, the 3-cm stone was found 25 cm proximal to the ileocecal valve, matching that expected pattern.

CT is the preferred diagnostic modality because it can demonstrate the obstruction and its cause while also assessing bowel viability, the number and location of stones, and fistula anatomy.^{4,5} Plain radiographs may show components of Rigler’s triad but are less sensitive. In the present case, the initial radiographs identified obstruction, while CT disclosed pneumobilia and the ectopic ileal stone, changing the working diagnosis and supporting urgent operative treatment.

The optimal operation remains debated. Enterolithotomy alone minimizes operative time and focuses on the life-threatening obstruction. A one-stage procedure additionally removes the gallbladder and closes the fistula, potentially preventing recurrent biliary events but increasing operative complexity in an inflamed field. A two-stage approach reserves biliary surgery for a later, optimized setting. A 2023 analysis of 825 ACS-NSQIP cases found broadly similar short-term outcomes with or without concomitant cholecystectomy, although selection bias limits causal interpretation.⁶ A 2024 systematic review and meta-analysis likewise emphasized that no single technique is optimal for every patient and that the trade-off between definitive treatment and perioperative burden should guide selection.⁷ Contemporary case series and reviews continue to identify enterolithotomy alone as the most frequently used strategy.^{8,9} In the present case, enterolithotomy and primary closure relieved the obstruction without extending the emergency procedure to an inflamed cholecystoduodenal fistula. The uncomplicated six-day postoperative course supports the immediate effectiveness of that decision. Nevertheless, leaving the fistula and gallbladder in situ may permit recurrent gallstone ileus, cholecystitis, cholangitis, or other biliary symptoms. This makes structured follow-up essential, including counseling about recurrence and individualized reassessment for elective biliary surgery if symptoms persist,

residual stones are identified, or the fistula does not close spontaneously.^{3,7–9}

CONCLUSION

Gallstone ileus should be considered in adults with small-bowel obstruction even when age and sex are atypical. Identification of Rigler’s triad on CT permits timely diagnosis and operative planning. Enterolithotomy alone can successfully relieve the obstruction while avoiding a more extensive emergency biliary procedure; however, the choice between enterolithotomy alone, one-stage surgery, and delayed biliary repair should be individualized. Documented long-term follow-up is important when a cholecystoenteric fistula remains in situ.

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