Recurrent Gallstone Ileus

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Abstract

One to three percent of mechanical small bowel obstructions are caused by gallstones. Eighty to ninety percent of residual gallstones in these patients will pass through a remaining fistula without consequence. Recurrent gallstone ileus has been reported in 5% of patients. We report the case of a 72-year-old female who presented with mechanical small bowel obstruction caused by gallstone ileus. After successful surgical therapy for gallstone ileus, the patient’s symptoms recurred, and she was diagnosed with recurrent gallstone ileus requiring a repeat operation. While management of gallstone ileus can be achieved through a single-stage operation including enterolithotomy and cholecystectomy with repair of biliary-enteric fistula or by enterolithotomy alone, the literature supports enterolithotomy alone as the treatment of choice for gallstone ileus due to decreased mortality and morbidity. However, the latter approach does not obviate potential recurrence. We present this case of recurrent gallstone ileus to elucidate and review the pathogenesis, presentation, diagnosis, and consensus recommendations regarding management of this disorder.

Keywords: Enterolithotomy; Gallstones/complications; Gallstones/surgery; Ileus; Recurrence
Gallstone ileus accounts for 1% to 3% of all mechanical small bowel obstructions.\textsuperscript{1} Recurrent gallstone ileus is rare, occurring in approximately 5% of patients who had experienced an initial bout of gallstone ileus.\textsuperscript{2-4} The cause of recurrent gallstone ileus is secondary to an enteric or cholecystic gallstone not identified at the time of initial operation. The literature supports enterolithotomy alone as definitive therapy for gallstone ileus, since it is reported that any retained gallstones following initial treatment with enterolithotomy alone will remain asymptomatic in 80% to 90% of patients.\textsuperscript{5} This report describes a case of recurrent gallstone ileus following enterolithotomy and reviews the literature regarding the treatment of gallstone ileus, including enterolithotomy as definitive therapy and the role for delayed cholecystectomy and repair of biliary-enteric fistula for recurrent gallstone ileus.

**Case Report**

A female patient, aged 72 years, presented to our emergency department with a 4 day history of progressive right upper quadrant abdominal pain associated with nausea, vomiting, and abdominal distention. Pertinent laboratory abnormalities included leukocytosis and elevated blood urea nitrogen and creatinine. Abdominal radiographs showed gasless, dilated, fluid-filled loops of small bowel. Computed tomography (CT) of the abdomen showed obstruction and dilatation of the proximal small bowel with an abrupt transition point associated with a central calcification (figure 1). The gallbladder was abnormal with a thickened wall and large central calcification (figure 2). The patient was taken to the operating room for exploratory laparotomy with the diagnosis of gallstone ileus.
At laparotomy, a perforation was identified in the proximal jejunum with extraluminal leakage. The point of obstruction was identified by palpation of a large stone 60 cm distal to the site of perforation. The 2 cm x 3 cm hemispherical stone was milked proximally and removed through the site of perforation (figure 3). The area of perforation was excised to viable tissue and closed. Although there was a retained gallstone within the gallbladder on preoperative imaging, this area of the abdomen was difficult to access due to inflammation, and thus, intervention in the right upper quadrant was not attempted. There were no other stones identified upon palpation of the remaining bowel; therefore, only enterolithotomy was performed. The patient did well during her postoperative recovery, and had begun eating when she developed abdominal pain, nausea, vomiting, and abdominal distention on the seventh postoperative day. A CT scan showed the known cholecystic stone to now be lodged in the distal ileum causing bowel obstruction (figure 4). The patient underwent repeat laparotomy and enterolithotomy. Again, a large 2 cm x 3 cm hemispherical stone was removed. The patient recovered from her second operation and was discharged from our facility 8 days later.

Discussion

Gallstone ileus was first described by Dr. Erasmus Bartholin in 1654 as an impaction of the small bowel caused by gallstones. When a population is considered as a whole, gallstone ileus is the cause of 1% to 3% of mechanical small bowel obstructions. In patients over the age of 65 years diagnosed as having a small bowel obstruction, up to 25% of these bowel obstructions are caused by gallstone ileus. Gallstone ileus occurs more commonly in elderly patients, with an average age reported to be between 66 and 77 years. This advanced age, in addition to associated co-morbidities, results in high morbidity and mortality with gallstone ileus. The
youngest reported diagnosis of gallstone ileus was at age 13 years and the oldest at age 97.\(^8\)

Gallstone ileus occurs more frequently in women, with reported female-to-male ratios of 2.3:1 to 16:1.\(^9\)-\(^11\)

The presenting symptoms for gallstone ileus are typical for small bowel obstruction including nausea, vomiting, abdominal distention, dehydration, and abdominal pain. Some patients will present with intermittent obstructive type symptoms due to what is termed, “tumbling obstruction” secondary to a gallstone intermittently obstructing the gastrointestinal tract. Up to one-third of patients have no history of biliary colic symptomatology, and up to one-half have no history of gallbladder disease.\(^9\),\(^12\),\(^13\) Symptoms are usually present for 3 to 5 days before presentation to a medical facility.\(^11\)-\(^16\) Once evaluated by a physician, the time to surgical treatment has a reported delay of another 3.7 days due to delay in diagnosis.\(^13\),\(^17\) A preoperative diagnosis of gallstone ileus is made in only 50% to 60% of patients.\(^5\),\(^13\)

Radiographic modalities used to assist in the diagnosis may include plain abdominal radiography, abdominal ultrasound, and abdominal CT. The Rigler triad includes pneumobilia, ectopic radio-opaque gallstone, and intestinal distention, and is considered diagnostic for gallstone ileus when two of the three criteria are present. The presence of the Rigler triad on plain film radiography ranges from 17% to 87% in the literature.\(^12\),\(^13\),\(^18\) Abdominal ultrasound can identify the presence of a cholecystoenteric fistula as well as a stone lodged in the small bowel, and when combined with abdominal radiography, can increase diagnostic sensitivity to 74%.\(^13\),\(^18\),\(^19\) In a prospective study, Yu et al\(^20\) showed computed tomography to have a sensitivity of 93%, a specificity of 100%, and a diagnostic accuracy of 99% for gallstone ileus.
There are three surgical strategies that have been described for the treatment of gallstone ileus. The first includes enterolithotomy alone without plans for future cholecystoenteric fistula repair based on evidence that recurrent gallstone ileus is rare and reported in 5% to 8% of patients who have undergone enterolithotomy. It has also been reported that 80% to 90% of retained gallstones will pass without consequence and, in the absence of residual gallstones, the majority of cholecystoenteric fistula will close spontaneously. A second approach is a one-stage procedure that would include enterolithotomy, cholecystectomy, and repair of cholecystoenteric fistula. In 1994 a review of 1001 cases of gallstone ileus was performed by Reisner et al, and their findings include a mortality rate of 16.9% for patients undergoing a single-stage operation, in comparison to a mortality rate of 11.7% for those undergoing enterolithotomy alone. A third approach to the treatment of gallstone ileus is a two-stage procedure that includes an initial enterolithotomy, followed by cholecystectomy and repair of cholecystoenteric fistula 4 to 6 weeks after the index operation. The two-stage operation has been suggested for the treatment of gallstone ileus in young patients at risk for subsequent biliary complications and for patients with retained gallstones at risk for recurrent gallstone ileus.

In general, recurrent gallstone ileus is rare, and the usual intraoperative measures such as palpating all portions of bowel and the gallbladder to ensure there are no retained stones obviate the problem. If a faceted gallstone is found at the time of enterolithotomy additional stones are likely to be present. The majority of patients presenting with gallstone ileus are elderly with multiple co-morbidities, and considering the higher mortality associated with a single-stage operation, our recommendation for management of gallstone ileus would be enterolithotomy
alone or enterolithotomy with delayed cholecystectomy. Based on available data, there are several ways to manage gallstone ileus, and treatment is usually individualized to patient presentation and co-morbidities.

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References


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Figures

**Figure 1.** Computed tomography of the abdomen showing obstruction and dilatation of the proximal small bowel with an abrupt transition point associated with a central calcification.

**Figure 2.** Computed tomography of the abdomen showing abnormal gallbladder with a thickened wall and large central calcification.
**Figure 3.** Photograph of the large 2 cm x 3 cm hemispherical stone that had been removed through the site of perforation.

**Figure 4.** Computed tomography of the abdomen showing the known cholecystic stone to now be lodged in the distal ileum causing bowel obstruction.