Gallstone Ileus 30 Years Status Postcholecystectomy

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ABSTRACT
Gallstone ileus is an uncommon cause of small bowel obstruction which occurs in patients with chronic cholecystitis and gallstones who develop a cholecystoenteric fistula. Although gallstone ileus is relatively rare, it has a substantial mortality rate due in part to patient comorbidities and delays in treatment. We describe the case of a 94-year-old woman who presented with nausea, vomiting, mild abdominal tenderness, leukocytosis, and a 2.5-cm obstruction in her small bowel. Even though this patient underwent a total cholecystectomy 30 years prior, a 2.5-cm gallstone was surgically removed from her ileum. This case illustrates the importance of including gallstone ileus in the differential diagnosis for patients who present with small bowel obstruction even decades postcholecystectomy.

CASE
A 94-year-old woman was admitted to the hospital for rehabilitation after undergoing a right total knee replacement and femur fracture 13 days earlier. Nine days into her rehabilitation, the patient developed nausea and vomiting without abdominal tenderness. At this time, abdominal plain film x-rays were done to investigate the cause of her nausea and vomiting which revealed a small-bowel obstruction. The patient had a significant past medical history of congestive heart failure, paroxysmal atrial fibrillation, hypertension, coronary artery disease, an appendectomy in childhood, ovarian cystectomy, and a cholecystectomy 30 years prior.

The patient initially refused surgical intervention and received conservative medical management for her small-bowel obstruction for 3 days. During this time, she had an elevated troponin and pro-brain natriuretic peptid (BNP) as well as a white blood cell count between 13.5 and 14.3. In addition, the patient was putting out 500-1000 ml/day of dark bilious drainage via her nasogastric tube. On physical exam, she had hypoactive to absent bowel sounds. When her abdomen was palpated, she experienced mild bilateral lower quadrant pain, guarding, and rebound tenderness. The patient underwent a computed tomography (CT) scan of the abdomen with contrast which revealed duodenal diverticulum and a 2.5-cm foreign body in her distal ileum of unknown origin.

On day 3, the patient consented to surgery, and her anticoagulation was reversed prior to being taken for a laparoscopy with lysis of suspected adhesions. Intraoperatively, a large mass was discovered in the distal small bowel. The laparoscopy was converted to an open laparotomy. A dense mass measuring 2.5 cm was retrieved and later positively identified by pathology as a gallstone. Her postoperative diagnosis was gallstone ileus. The patient had an unremarkable recovery with no complications and was discharged from the hospital 5 days after surgery. At her follow-up clinic visit, the patient was healing well and without postoperative complications. The proposed mechanism for the gallstone ileus 30 years after a cholecystectomy is that the patient had an initial cholecystoduodenal fistula secondary to chronic severe cholecystitis. The stone eroded through the fistula into the duodenum and lodged into the patient’s duodenum diverticulum. The fistula subsequently healed, prior to cholecystectomy. Thirty years later, the gallstone dislodged from the diverticulum and caused the small-bowel obstruction. Given the size of the retrieved gallstone, the stone may have
grown during the 30-year interim or simply stayed isolated and unchanged in the duodenal diverticulum over those years.

**DISCUSSION**

This case of a patient who presented with gallstone ileus 30 years postcholecystectomy illustrates the importance of including this rare complication of chronic cholecystitis in the differential diagnosis for all suspected small-bowel obstructions even after cholecystectomy. In this patient, age, anticoagulation related to recent surgery, chronic congestive heart failure, and coronary artery disease were all complicating factors. The anticoagulation was reversed prior to surgery. In addition, the patient initially refused surgery, which delayed treatment of her gallstone ileus for 3 days.

Dr Erasmus Bartholin first described gallstone ileus in 1654 as an impaction of the small bowel caused by 1 or more gallstones.† ‡ A gallstone ileus is a relatively uncommon pathological finding and accounts for only 1% to 4% of all small bowel obstructions.§ ¶ The incidence of a gallstone ileus increases with age and is more common in women than men. The average age of a patient presenting with gallstone ileus is 65 to 75 years. According to Massannat et al, the youngest known patient with a gallstone ileus was 13 years, and the oldest known patient was 97 years.¶ The mortality rate for patients with a gallstone ileus is high (8%) due in part to comorbidities related to their age, as well as delays in treatment.

A gallstone ileus typically presents similar to a small-bowel obstruction, with nausea, vomiting, dehydration, decreased to absent bowel sounds, abdominal distension, and abdominal pain. In 50% of cases, abdominal plain film x-rays can be diagnostic for a gallstone ileus.† In the majority of cases, CT scans are used to diagnose this condition, using Rigler's triad. This triad consists of a partial or complete small-bowel obstruction, pneumobilia, and an ectopic gallstone.¶ A definitive diagnosis in this case could not be made via CT alone because the patient had undergone a cholecystectomy 30 years prior and the ectopic gallstone could not be positively identified.

A gallstone ileus is caused by chronic cholecystitis resulting in inflammation, adhesions, and pressure, which can facilitate the development of a cholecystoenteric fistula in <1% of patients suffering from gallstones.† Through this fistula—most often a cholecystoduodenal fistula—gallstones migrate into the gastrointestinal lumen. Approximately 80% of enteric gallstones are passed via the stool, but 6% can cause clinical small-bowel obstruction.§ Studies have shown that gallstones greater than 2 cm to 2.5 cm in diameter are most likely to cause obstruction.§ ¶ Since this patient had a stone measuring approximately 2.5 cm, it was consistent with the current literature. In 60% of cases, the site of obstruction is at the terminal ileum, as was the case in this patient.† In rare cases, the stone can become lodged in the duodenum, causing gastric outlet obstruction, otherwise known as Bouveret’s syndrome.†

The treatment of a gallstone ileus may consist of 1 of 3 treatment modalities. The first surgical option is an enterotomy and removal of the gallstone. The second treatment consists of an enterotomy to remove the gallstone, followed by a total cholecystectomy and fistula repair. Currently, the former is the treatment modality of choice because it is less invasive and requires less time under anesthesia for these already high-risk patients. Studies indicate there is a 12% mortality associated with an enterolithotomy alone, compared to a 17% mortality with the combined surgery.† In addition, if left un repaired, the fistula is likely to spontaneously resolve if no further gallstones are present.¶ Finally, for those patients who are not surgical candidates or refuse surgery, shock-wave lithotripsy has been shown to be effective as a second-line treatment.† In this case, the treatment choice was clear since the patient had undergone a total cholecystectomy 30 years prior. This patient underwent laparotomy with removal of the gallstone by enterotomy and suffered no postoperative complications.

**CONCLUSION**

When evaluating cases of small-bowel obstruction, the differential diagnosis should always include gallstone ileus, even if the patient previously underwent a cholecystectomy for chronic cholecystitis or gallstones. In this rare clinical situation, a 94-year-old woman presented with a small-bowel obstruction 30 years after a total cholecystectomy. The radiographic studies were inconclusive in determining the nature of the obstruction. After surgical intervention, the patient was found to have a gallstone obstructing her small bowel. Following removal of the stone, she recovered fully.
Funding/Support: None declared.
Financial Disclosures: None declared.

REFERENCES
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