CASE REPORT

Colonic gallstone ileus

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SUMMARY

Gallstone ileus is a rare aetiology of bowel obstruction and very infrequently occurs in the colon. Typically, colonic gallstone ileus carries a high morbidity and mortality and requires surgery. This case report describes a cholecystocolonic fistula in a patient with ulcerative colitis with resulting colonic gallstone ileus, which was successfully intervened on via an endoscopic approach.

BACKGROUND

Gallstone ileus is a surgical emergency and a rare cause of mechanical bowel obstruction (1%–4% of all bowel obstructions).^{1 2 3} Nearly 80% of obstructions from gallstones occur in the small bowel; however, obstruction can occur at any location between the stomach and rectum.² Colonic gallstone ileus, the result of cholecystocolonic or choledochocolonic fistula, is extremely rare and is associated with high morbidity and mortality.^{1 4} Colonic gallstone ileus primarily affects elderly female patients (mean age of 72 years with a 3.5:1 ratio of women to men).² The obstruction is typically managed surgically with fewer than 25 reported cases of endoscopic management in the literature. This case illustrates the importance of endoscopic intervention in colonic gallstone ileus to help reduce the possible morbidity and mortality associated with emergency surgery, particularly in the setting of inflammatory bowel disease.

CASE PRESENTATION

A 54-year-old African American woman with medical history of atrial fibrillation (anticoagulated with rivaroxaban), chronic myelogenous leukaemia

Figure 2 Coronal plane view of colonic gallstone ileus in the sigmoid colon.

(CML) treated with imatinib and ulcerative colitis (UC) managed with sulfasalazine presented to our hospital with lower abdominal pain. The abdominal pain began 1 day prior to presentation and was accompanied by nausea, lack of appetite and absence of bowel movements for 3 days. On arrival, ECG demonstrated atrial fibrillation with rapid ventricular response (RVR). Blood pressure was within normal limits and she was afebrile. Her initial evaluation in the emergency department demonstrated a lactic acidosis to 2.8 mmol/L and a CT of the abdomen and pelvis showed a large 4.8×3.6 cm obstructing intraluminal gallstone at the junction of the descending and sigmoid colon (figures 1 and 2). The CT also showed gas in the gallbladder lumen and intrahepatic ducts with suggestion of a cholecystocolonic fistula. There was mural thickening and pericolonic stranding at the site of obstruction without pneumatosis, free intra-abdominal air or mural hypoenhancement. Interestingly, a CT scan of the abdomen and pelvis approximately 17 months prior to presentation showed a single large oblong gallstone with gallbladder wall thickening at the fundus without biliary dilatation (figure 3).

General surgery was consulted, and she was admitted to the surgical intensive care unit (ICU). A diltiazem infusion was started for management of her atrial fibrillation with RVR and rivaroxaban was held. She was started on a heparin infusion in light of her elevated stroke risk secondary to atrial fibrillation and CML. Due to her cardiac status,

Figure 1 Transverse plane view of colonic gallstone ileus in the sigmoid colon.

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Figure 3 Transverse plane view of large gallstone in the gallbladder 17 months prior to presentation.

anticoagulation and other co-morbidities, the surgical team felt she was not clinically stable for surgical management of her colonic obstruction. As a result, a gastroenterology (GI) consult was requested to consider endoscopic management.

Due to her UC, she had recently been evaluated in the outpatient GI clinic and underwent an outpatient colonoscopy 1 month prior, which showed diverticulosis and erythema in her descending and sigmoid colon without significant luminal stricture. Biopsies showed quiescent colitis in her left colon. Based on this information, we felt it was unlikely that a colonic mass prevented passage of the stone through the sigmoid colon, rather that passage was likely inhibited by a subtle luminal narrowing related to chronic inflammation from her UC and perhaps diverticulosis.

TREATMENT

Due to clinical and radiographical evidence of obstruction, endoscopic management was felt to be indicated, though high risk.

Figure 4 Endoscopic image of the impacted gallstone in the sigmoid colon.

Figure 5 Endoscopic image of the impacted gallstone during attempted extraction.

After a multidisciplinary discussion with surgery, critical care and GI, we made the decision to proceed with a trial of endoscopic therapy in the setting of accepting a higher risk of endoscopic complication given that the alternative was emergent surgery. However, prior to endoscopy, a water-soluble contrast enema was performed, which redemonstrated the obstructing stone in the proximal sigmoid colon and did not provoke movement of the stone or result in a relief of obstruction. Therefore, on hospital day 2, a bedside flexible sigmoidoscopy was performed in the surgical ICU. An adult diagnostic gastroscope (Pentax, Montvale, New Jersey, USA; outer diameter (OD) 9.8 mm, 3.2 mm channel) was advanced through the rectum to the proximal sigmoid colon where a large, nearly obstructing, dark ‘stone’ was encountered ([figure 4](#)). The object was firmly seated within the colon, and after numerous attempts to capture the object with a Roth Net (US Endoscopy, Mentor, Ohio, USA), we were able to traverse the obstruction and visualise the colon proximal to the obstruction. The mucosa proximal to the obstruction appeared grossly normal; however, surrounding the object were several diverticula and linear erosions.

Numerous attempts were made to snare the object, which were unsuccessful. We then switched to an adult therapeutic gastroscope (Pentax; OD 12.8 mm, 3.8 mm channel) and loaded a Talon grasping device (US Endoscopy, Mentor, Ohio, USA). Unfortunately, this too was unsuccessful; however, using the therapeutic gastroscope, we reattempted snare with a hexagonal AcuSnare (Cook Medical, Winston-Salem, North Carolina, USA) and were able to snare the object securely ([figure 5](#)). Using steady pressure on the snare and firm scope withdrawal, the object was completely removed from the colon in one piece. On exiting the body, the object was confirmed to be a gallstone measuring approximately 4.5×3 cm ([figure 6](#)).

OUTCOME AND FOLLOW-UP

The patient tolerated the procedure well and had return of bowel function within 12 hours postprocedure. She had an uneventful convalescence with repeat imaging revealing pneumobilia with suspicion of persistent fistula. She subsequently underwent a successful cholecystectomy and fistula take-down.

Figure 6 Image of gallstone after endoscopic extraction from the colon.

DISCUSSION

While gallstone ileus is a rare cause of bowel obstruction, localisation of the ileus to the colon is exceedingly uncommon. Evidence of successful endoscopic management of gallstone ileus is limited, though endoscopic lithotripsy and balloon dilation of distal strictures has been previously reported.^{5–8} Typically, this

condition requires surgical intervention and may result in significant morbidity and mortality.

This case demonstrates the technique and feasibility of endoscopic removal of a colonic gallstone causing obstruction. We also highlight the utility of endoscopic management in patients who are high-risk surgical candidates or not surgical candidates at all. Physicians, particularly gastroenterologists and surgeons, should be aware of and consider endoscopic management of colonic gallstones when there is clinical and radiographical evidence of obstruction without contraindications to endoscopy.

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Learning points

- Colonic gallstone ileus is a rare though important consideration in colonic obstruction.
- The feasibility of endoscopic intervention should be considered prior to surgery in cases of colonic gallstone ileus if there are no contraindications to endoscopy.
- Large colonic gallstones (>3 cm), even if asymptomatic and found incidentally, should be addressed to avoid complications.

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