CASE REPORT

A novel surgical approach for treatment of sigmoid gallstone ileus

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SUMMARY

We report a rare case of large bowel obstruction secondary to a gallstone impacted within the sigmoid colon, in the presence of sigmoid diverticular disease. An 89-year-old woman presented with an 8-day history of increasing abdominal distension, pain and associated nausea. Abdominal X-ray demonstrated large bowel dilation. CT scan revealed a fistula between an inflamed gallbladder and the hepatic flexure of the colon, with a large gallstone in the sigmoid colon. Proximal dilated large bowel was evident to the caecum. Flexible sigmoidoscopy was performed as the least invasive potential treatment method with a view to basket retrieval or fragmentation of the stone. Owing to poor views and risk of diverticular perforation, the procedure was abandoned, hence laparotomy was performed. Antegrade manipulation and per-rectal evacuation were attempted but failed due to a thickened, angulated sigmoid colon. Retrograde milking of the stone to the caecum and retrieval via modified appendicectomy was successful.

colon. There was diverticular disease throughout the colon. A large intraluminal high-attenuation mass in the proximal sigmoid colon, thought to be a large gallstone, was identified (figure 2).

INVESTIGATIONS

Abdominal X-ray (figure 1) showed dilation of the large bowel and prominent central small bowel loops.

CT of the abdomen and pelvis (figure 2) showed an inflamed gallbladder, with evidence of fistula formation between the gallbladder and the hepatic flexure of the colon. It also demonstrated an intraluminal high-attenuation mass in the proximal sigmoid colon, thought to be most likely a large gallbladder stone, with dilation of the colon proximal to this point, and prominent small bowel loops. There were multiple diverticular changes in the sigmoid colon without features of acute diverticulitis, and some free fluid in the pelvis and right iliac fossa, in keeping with peritoneal irritation.

BACKGROUND

There are very few reported cases of sigmoid gallstone ileus worldwide. This presentation is a rare example of large bowel obstruction. This case describes the use of a less invasive surgical technique, in an elderly patient with multiple comorbidities, where endoscopic modalities had failed. The fact that large bowel resection was avoided led to a shorter inpatient stay, and obviated the risk of anastomotic leak, and the constitutional complications of potentially having a stoma. This particular technique has not been previously reported, and offers a credible alternative to bowel resection, where endoscopic or conservative management has failed.

CASE PRESENTATION

An 89-year-old woman presented via accident and emergency department, with an 8-day history of abdominal pain, vomiting and absolute constipation. The patient was known to have diverticular disease, hypothyroidism and hypertension, but no previous abdominal surgery.

Examination revealed a distended and tympanic abdomen with lower abdominal tenderness and localised guarding in the left iliac fossa. Abdominal X-ray demonstrated dilated large bowel, with some dilated small bowel loops (figure 1). Subsequent CT of the abdomen and pelvis revealed an inflamed gallbladder, with evidence of fistulation between the gallbladder and the hepatic flexure of the

DIFFERENTIAL DIAGNOSIS

- ▶ Sigmoid stricture (secondary to diverticulitis)
- ▶ Malignancy
- ▶ Sigmoid volvulus
- ▶ Pseudo-obstruction

Figure 1 Abdominal plain film showing large bowel dilation.

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Figure 2 CT scan showing a high-attenuation mass in the sigmoid colon.

TREATMENT

On the basis of age and comorbidities, the least invasive treatment option was attempted first. Flexible sigmoidoscopy was attempted by a consultant colorectal surgeon as well as a consultant gastroenterologist, with the hope of being able to remove the gallstone per-rectum, thus avoiding the need for a laparotomy. Flexible sigmoidoscopy was unsuccessful due to reduced visibility and diverticular disease. Because of the risk of iatrogenic perforation, the procedure was abandoned, and the decision was made to proceed to laparotomy.

The patient was consented and taken to theatre for a laparotomy. Intraoperatively, the gallstone was identified, impacted in a sigmoid diverticular segment. There was pan-colonic dilation, although the caecum was viable. A fistula was identified communicating between the gallbladder and the hepatic flexure of the colon, and left alone. Appearances of the rest of the intra-abdominal viscera were unremarkable.

Figure 3 Large gallstone after removal from the large bowel.

Anterograde passage of the gallstone was not possible due to severe diverticular disease, which was present throughout the majority of the large bowel. The gallstone was milked retrograde along the length of the large bowel to the caecum, where the bowel was healthy and unaffected by diverticular disease. Appendicectomy was performed, with the appendiceal opening dilated, allowing the removal of the gallstone and decompression of the large bowel. The caecal defect was stapled closed with a linear staple device, and the staple line oversewn. The retrieved gallstone measured almost 5×5 cm (figure 3).

OUTCOME AND FOLLOW-UP

The patient was transferred to high dependency unit for 48 h, and her recovery has been unremarkable. She opened her bowels on day 2. Owing to difficult social circumstances, she remained in hospital until day 10 postoperatively. There have been no reported complications to date.

DISCUSSION

A review of the relevant literature reveals a total of 39 cases of sigmoid gallstone ileus. The majority of cases highlighted occurrence within the ninth decade of life. First-line management has commonly centred on endoscopic procedures.

Where endoscopic methods were unsuccessful, or in the event of a perforation,^{1 2} the patient underwent laparotomy for definitive management. This ranged from defunctioning sigmoid colostomy to large bowel resection and colostomy formation.^{3 4} Laparoscopically assisted enterolithotomy⁵ or extracorporeal shockwave lithotripsy⁶ were used less frequently. The surgical technique we have discussed has not been reported before in the peer-reviewed literature. In our case, simple enterotomy and primary closure were considered in the first instance. However, the colon local to the obstruction was affected by severe diverticular disease, with evidence of inflammation. In an attempt to avoid significant bowel resection and complications, it was deemed the safest option to extend the natural enterotomy at the site of the appendix, once it was established that the gallstone could be mobilised retrograde along the colon. The technique we describe may be limited to the magnitude of gallstone in question. However, hypothetically, a modified appendicectomy site could be tailored to an increased stone size.

One approach to surgical management of cholecystoenteric fistula is a one-stage procedure of cholecystectomy and fistula repair (either by stapling or suturing) at the same time as gallstone removal. An alternative option is interval cholecystectomy and fistula repair after the patient has recovered from the initial procedure to relieve obstruction.⁷ The one-stage procedure is associated with reportedly higher morbidity and mortality, and longer operating times, when compared to simple enterotomy.⁷⁻⁹ Laparoscopic¹⁰ and endoscopic¹¹ management of cholecystoenteric fistula have also been described. However, findings from autopsy and at re-operation have demonstrated that cholecystoenteric fistulas can close spontaneously, unless there is persistent cholelithiasis.^{8 12} The patient had not reported any biliary symptoms, nor was there any evidence of further stones in the gallbladder or in the rest of the colon. In view of this, as well as with a desire to avoid prolonged operating times in an elderly patient, conservative management of the fistula was deemed appropriate in this case.

The technique we have discussed for removal of sigmoid gallstone ileus has not been reported before in the peer-reviewed literature. We feel that this case report offers a practical and effective surgical technique for managing similar presentations,

and obviates the risks of bowel resection and anastomosis or stoma formation.

Learning points

- ▶ Sigmoid gallstone ileus is a life-threatening condition that remains rare.
- ▶ Conservative management with flexible sigmoidoscopy should be attempted in the first instance.
- ▶ Gentle manipulation of the gallstone to the caecum and performing an appendicectomy, with modification to the base of appendix, offers the least invasive surgical intervention and a practical management solution for such patients.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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