Sigmoid gallstone ileus: A case report and literature review in Japan

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ABSTRACT

INTRODUCTION: Gallstone as a cause of bowel obstruction is rare, and its occurrence in the colon is very infrequent. Here, we report the case of sigmoid gallstone ileus treated with one-stage operation.

CASE PRESENTATION: A 65-year-old man visited our hospital because of abdominal pain and nausea. On the basis of the results of computed tomography, the patient was diagnosed with sigmoid gallstone ileus through cholecystocolonic fistula, and an emergency laparotomy was performed. Enterolithotomy, cholecystectomy, and fistula closure were performed in one-stage operation. Postoperatively, the patient developed biliary leakage, which rapidly recovered with conservative therapy.

DISCUSSION AND CONCLUSION: The surgical treatment of gallstone ileus remains controversial. For postoperative infection control, one-stage operation can be considered for patients with gallstone ileus associated with cholecystocolonic fistula.

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1. Introduction

Gallstone is a rare cause of bowel obstruction, which very infrequently occurs in the colon. Gallstone ileus is described as the mechanical obstruction of the bowel due to the impaction of a large gallstone through a biliary enteric fistula. Cholecystoenteric fistulae are mainly associated with this passage, whereas cholecystocolonic fistulae are rare. In many cases of colonic gallstone ileus, relative stenosis due to diverticulitis may predispose the patients to gallstone impaction [1].

Here, we report the case of sigmoid gallstone ileus with inguinal hernia. Enterolithotomy, cholecystectomy, and fistula closure were successfully performed in one-stage operation. This case has been reported in accordance with the SCARE criteria [2].

2. Case presentation

A 65-year-old man visited our hospital because of abdominal pain and nausea. He presented with a surgical history of appendectomy. On physical examination, his body temperature was 36.5 °C, blood pressure was 105/77 mmHg, and pulse rate was 122 beats/min. He showed tenderness to palpation in the left lower abdomen and left inguinal hernia provoked by standing. Laboratory findings revealed increased inflammatory marker levels (white blood cell count, 21,200/mm3; C-reactive protein level, 10.91 mg/dl) and normal liver function tests. Plain abdominal radiography revealed air bowel distention in the upper abdomen and a round opacity in the left lower abdomen (Fig. 1). Computed tomography revealed cholecystocolonic fistula connecting the gallbladder to the transverse colon, large bowel obstruction secondary to a 7-cm calculus mass impacted in the sigmoid colon, and an underlying left inguinal hernia (Fig. 2).

On the basis of these clinical findings, the patient was diagnosed with sigmoid gallstone ileus through cholecystocolonic fistula. Considering the risk of perforation, an emergency laparotomy was performed.

Laparotomy revealed no perforation, adhesion, or diverticulum of the large bowel; however, a fistulous connection was observed between the transverse colon and gallbladder. The gallstone was incarcerated and mobility was restricted. Two gallstones (Fig. 3) were removed through an incision of the sigmoid colon, and the incision was repaired via absorbable monofilament suture. Then, cholecystocolonic fistula was released (Fig. 4). Subsequently, cholecystectomy and partial transverse colon resection were performed. Finally, drains were placed on Morrison’s pouch and rectovesical pouch.

Following laparotomy, the patient presented with slight biliary leakage through the drain on Morrison’s pouch, but his condition improved in a short period with conservative therapy. The patient was discharged from the hospital on postoperative day 20.

Written informed consent was obtained from the patient for the publication of this case report and any accompanying images.

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3. Discussion

Bowel obstruction due to gallstones is a relatively rare condition, accounting for only 1%–3% of cases of mechanical bowel obstruction [3]. Gallstone ileus is caused by the migration of large gallstones from the gallbladder or common bile duct to the gut by direct passage through a choledochoenteric fistula. Biliary enteric fistulae occur in the setting of inflammation, which is generally associated with an episode of acute cholecystitis and are a result of the formation of adhesions between the gallbladder and a nearby part of the bowel. Approximately 75% of these fistulae are cholecystoduodenal, whereas only 10%–20% are cholecystocolonic [4].

According to Okada et al. [5], the potential causes of impaction in the colon includestenosis due to diverticulitis and adhesion due to laparotomy for gynecological diseases. In our case, the unusual impaction of the gallstone was associated with the stenosis of the sigmoid colon due to inguinal hernia. Since there was no dyschezia and pain due to inguinal hernia, the patient rejected hernia repair.

The most appropriate surgical procedure for gallstone ileus remains debatable. One-stage operation, including enterotomy, stone extraction, cholecystectomy, and fistula closure, or two-stage operation, including enterotomy followed by cholecystectomy, is generally considered as the treatment modality. In a 1994 review, Reisner et al. [3] have reported the higher mortality rate for gallstone ileus with one-stage operation (16.9%) than with enterolithotomy alone (11.7%); thus, one-stage operation is typically avoided. Furthermore, one-stage operation has been performed in only 11% of the reported gallstone ileus cases [3]. However, in 2014, Halabi et al. [6] have reported mortality rates of 7.32% with one-stage operation and 4.89% with enterolithotomy alone. This discrepancy indicates that the mortality rates have improved over recent years due to the advances in preoperative diagnostic methods and intensive care management.

We searched for the reports on gallstone ileus published from 1983 to 2017 in PubMed and Ichushi Web using the keyword “gallstone ileus.” We yielded only seven cases of gallstone ileus associated with cholecystocolonic fistulae from Japan, including the present case (Table 1). The mean patient age was 77 years (range, 65–93 years), and the male-to-female ratio was 2:5.

In only one case, the gallstone was impacted in the transverse colon, whereas in other cases, it was impacted in the sigmoid colon.

The cause of incarceration was adhesion associated with uterine carcinoma or diverticulitis. In our case, inguinal hernia may have caused the incarceration in the sigmoid colon.

In five cases, a one-stage operation was performed; only one case was treated with endoscopic lithotomy, followed by operation. Favorable surgical outcomes were reported in all cases. In the case treated with enterolithotomy alone, there were risks of the development of secretory diarrhea due to the passage of bile salts directly into the colon as well as retrograde cholangitis because the choledochoenteric fistulae were retained. These symptoms may be more severe than those of cholecystoduodenal fistulae. For postoperative infection control, one-stage operation for colonic gallstone ileus should be performed, except in older patients with significant medical comorbidities (American Society of Anesthesiologists score, ≥III) or evidence of shock, sepsis, or peritonitis.
Table 1

| No. | Author       | Year | Age | Sex | Diameter of gallstone (mm) | Impacted location | Cause of incarceration | Endoscopic lithotomy | Operation | Complications | Outcome | Postoperative hospital stay |
|-----|--------------|------|-----|-----|-----------------------------|------------------|------------------------|----------------------|------------|---------------|---------|----------------------------|
| 1   | Kouno        | 2002 | 93  | F   | 80                          | T                | Splenic flexure        | (-)                  | One-stage  | (-)           | Alive   | NA                        |
| 2   | Muranaga     | 2004 | 78  | F   | 65                          | S                | NA                     | (-)                  | One-stage  | (-)           | Alive   | 18 days                  |
| 3   | Ishikura     | 2005 | 76  | F   | 35                          | S                | Adhesion to uterus     | (-)                  | One-stage  | Surgical site infection | Alive   | NA                        |
| 4   | Okada        | 2011 | 71  | M   | 45                          | S                | NA                     | (-)                  | Enterolithotomy | Septic shock | Alive | 66 days                  |
| 5   | Shimizu      | 2014 | 81  | F   | 42                          | S                | Diverticulitis         | (-)                  | One-stage  | ileus         | Alive   | 16 days                  |
| 6   | Nishizaki    | 2016 | 76  | F   | 40                          | S                | NA                     | (+)                  | Fistula closure, cholecystectomy | (-)       | Alive | 14 days                  |
| 7   | Our case     | 2018 | 65  | M   | 70                          | S                | Inguinal hernia        | (-)                  | One-stage  | Bile leak      | Alive   | 20 days                  |

T, transverse colon; S, sigmoid colon; NA, not available.

Fig. 3. Removal of gallstones from the sigmoid colon.

Fig. 4. Intraoperative findings.
The cholecystocolonic fistula was released. The arrow indicates the fistula on the colonic side.

4. Conclusion

We presented a rare case of gallstone ileus through cholecystocolonic fistulae. Compared with biliary enteric fistulae, the occurrence of cholecystocolonic fistulae is rare. One-stage operation should be considered for treating gallstone ileus.

Conflicts of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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Ethical approval

Ethical approval was exempted by our institution.

Consent

Written informed consent was obtained from the patient for the publication of this case report and its accompanying images.

Author contribution

KI drafted the manuscript. SU, HM, NT, MY, KK, MT and TH have been involved in revising it critically for important intellectual content. MT is a chairperson of our department and supervised the writing of the manuscript. All authors have given final approval of the version to be published.
Registration of research studies

None.

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