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Gallstone Ileus Due to a Cholecystoduodenal Fistula

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ABSTRACT

Gallstone ileus is an infrequent complication of cholelithiasis, which manifests as small distended intestinal loops containing the characteristic radiographic patterns of “air-fluid levels.” Cholelithiasis is associated with high rates of morbidity and mortality. A 64-year-old woman was admitted to the hospital with a history of abdominal pain, nausea, multiple episodes of bilious vomiting, distention, and constipation that had been occurring continuously since the past 7 days. Clinical examination revealed bloating and diffused tenderness in the abdomen. There was no rebound and no defense. Computed Tomography (CT) of the abdomen showed air-fluid levels in small bowel segments, a 50×35 mm calcified gallstone that was obstructing the terminal ileum, air in the gallbladder, and a large impacted ileal gallstone. The patient underwent laparoscopic repair of a cholecystoduodenal fistula, cholecystectomy, and removal of a gallstone by enterotomy with subsequent reconstruction of the terminal ileum. The patient was discharged on the 5th postoperative day with a full resolution of symptoms and no complications. CT of the abdomen is a useful aid in the diagnosis of cholecystoduodenal fistula and gallstone ileus. If the patient’s medical condition is stable and suitable, a one-stage laparoscopic approach with concurring enterotomy, cholecystectomy, and fistula resection is a worthwhile endeavor.

Keywords: Gallstone ileus, cholecystoduodenal fistula, Bouveret’s syndrome

INTRODUCTION

Gallstone ileus (GI) is a rare complication of cholelithiasis, which manifests as small distended intestinal loops with many air-fluid zones and has high rates of morbidity and mortality. Previous literature on the matter suggests that the mortality rate associated with GI is ranges between 7% and 30% (1). GI, which was detailed for the first time by Erasmus Bartolim in late 1654, is a relatively uncommon reason for the obstruction of the gastrointestinal tract (GIT), i.e., gallstone obstructions occur less commonly than other types. GI may develop at any site from the stomach to the rectum, although it has been established that the most common site of occurrence is the small intestine (2). GI takes up approximately 1%–4% of all surgical cases of intestinal obstruction. It is noteworthy that the occurrence of this condition is far more common (with a female to male ratio of 3.5–6.0:1) in patients who are over 65 years of age, with GI being responsible for 25% of non-strangulated small intestine obstruction cases (3). Clinical examples vary depending on whether the condition is acute, chronic, or intermittent. About half of all patients get diagnosed only after an exploratory laparotomy. The ideal treatment of this condition is by way of enterotomy with calculus excision. In addition, certain clinical cases necessitate a cholecystectomy with fistula resolution, which is performed as a wholesome surgical procedure (4, 5).

The current paper reports a case of GI with a large biliary stone that resulted in an intestinal obstruction. At one stage of the laparoscopy, the cholecystoduodenal fistula was corrected, followed by cholecystectomy and resolution of the intestinal obstruction.

CASE REPORT

A 64-year-old woman was hospitalized with a 7-day history of abdominal pain, nausea, repeated episodes of bilious vomiting, distension, and constipation. The patient had been admitted to another hospital 2 months earlier due to sepsis (presumably because of an acute cholecystitis), according to the case history. Clinical examination revealed an abdomen with bloating and diffused tenderness. There was no rebound and defense. The abdominal X-ray demonstrated a small bowel ileus caused by a large gallstone (Fig. 1). Computed Tomography (CT) of the abdomen revealed air-liquid levels in small bowel segments, a 50 mm×35 mm calcic gallstone that was obstructing the end of the terminal ileum, air in the gallbladder, and a sizable impacted ileal gallstone (Fig. 2, 3). Upon upper endoscopy, we identified a cholecystoduodenal fistula engaging the third part of the duo-

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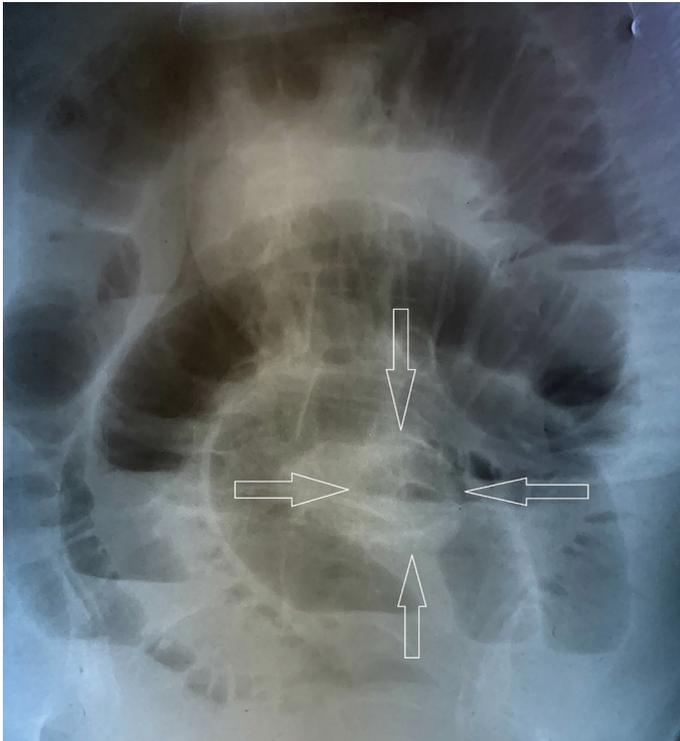


Figure 1. Abdominal X-ray demonstrated by a small bowel ileus, caused by a large gallstone (arrow)



Figure 2. Computed tomography of the abdomen showed air-liquid levels in small bowel. Segments and a 50×35 mm calcic gallstone obstructing the end of the terminal ileum

denum. Repair of the cholecystoduodenal fistula was performed by a laparoscopic approach using the Tri-Staple Endo GIATM (30 mm), and a consequent cholecystectomy and removal of the gallstone by enterotomy with subsequent reconstruction of the terminal ileum. The patient was discharged on the 5th postoperative day due to complete resolution of symptoms and an absence of complications. Written informed consent was obtained from the patient who took part in the present study.



Figure 3. Computed tomography of the abdomen showed air in the gallbladder (arrow) and a gallstone localized in the distal segment of the ileum with dilatation of the proximal intestinal segments

DISCUSSION

Acute cholecystitis/pancreatitis, choledocholithiasis accompanied or not accompanied by cholangitis, and a gangrenous gallbladder are among the most common exacerbations of gallstone disease, while Mirizzi syndrome, cholecystoduodenal fistulae, and GI are rare complications (6). The biliary-enteric route (by way of fistula formation) is the main pathological pathway for the occurrence of GI. There is a general belief that pericholecystic inflammation after cholecystitis and necrosis that occurs due to exertion of pressure by the gallstone on the biliary wall, are the primary mechanisms behind the pathogenesis of biliary-enteric fistulae. Fistula formation is a problem in about 2% to 3% of all cases of cholelithiasis with concomitant cholecystitis (7). A biliary-enteric fistula allows for movement of sizable gallstones, which enter the bowel and may lead to GI. At present, the most extensive and rigorous review of reported cases of GI was done by Reisner and Cohen, who in 1994, examined 1001 cases of GI and detailed the most common locations for the occurrence, congestion, and obstruction of gallstones. The terminal ileum and the ileocecal valve were the most common locations, the reason for which were their anatomical and physiological characteristics, i.e., small diameter, lower rate of peristalsis, etc. (3).

GI is a medical condition that commonly affects elderly women and presents with nonspecific abdominal symptoms such as pain, vomiting, and constipation. Patients with GI may present with radiographic findings of the Rigler's triad: pneumobilia, small intes-

tine obstruction, and an ectopic gallstone. Surgery is the treatment of choice to resolve the obstruction. There is still much ongoing debate regarding the choice of the surgical procedure, particularly if a one-stage procedure is better than a two-stage one, or if enterolithotomy alone is the best option. The one-stage procedure consists of enterolithotomy, cholecystectomy, and fistula repair. The two-stage procedure involves an immediate enterolithotomy, followed 4–6 weeks later by cholecystectomy and fistula closure. The effectiveness of the laparoscopic technique has been reported in the management of GI (8). However, one should bear in mind that laparoscopy might turn out to be the more challenging approach in patients with a dilated and edematous bowel, and would require gentle manipulation of the bowel to prevent perforation. Furthermore, one should not forget that instances of a second stone have been described in 3%–15% of patients, therefore, there is a need to run through the bowel either by using a laparoscope or by performing a mini-laparotomy.

In conclusion, CT of the abdomen has merit in the diagnosis of cholecystoduodenal fistula and GI. If the patient's medical condition is stable and fitting for the approach, a one-stage laparoscopic procedure with concurrent enterotomy, cholecystectomy, and fistula resection is a feasible and suitable choice.

Ethics Committee Approval: This study was approved by the Ethics Committee of the Naval Hospital, Varna 9010 (No. 2019-8).

Informed Consent: Written informed consent was obtained from the patient who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: DK proposed the study. DK and VK performed research and wrote the first draft. DK and VK collected and analyzed the

data. All authors contributed to the design and interpretation of the study and to further drafts. DK is the guarantor.

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