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Gallstone Ileus Managed with One-Stage Laparotomy: A Rare Case Report

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ABSTRACT

Introduction: Gallstone ileus is defined as a mechanical intestinal obstruction due to impaction of one are more gallstones within the gastrointestinal tract. Gallstone ileus has shown a constant incidence of 30-35 cases/1000000 admissions over a 45-year period. Most of the symptoms and signs of gallstone ileus are nonspecific.
Case Presentation: A 61-year-old man presented with abdominal pain and vomiting 3 days prior to hospital admission. The abdominal pain was felt on all of the regions of the abdomen and did not subside with rest. The patient has a history of having gallstones on November 2021. On 3 views abdominal x-ray, it showed high-grade ileus. Exploratory laparotomy with ileal enterotomy were performed incidentally to evacuate the gallstones and continued with cholecystectomy. The patient's condition had improved after receiving surgery. We also provided post-operative pain management and maintained the fluid, electrolyte, and metabolic balances for the patient.
Discussion: Gallstone ileus is a rare complication of cholelithiasis. Its intermittency of symptoms could also interfere the diagnosis. Therefore, it is associated with relatively high rates of morbidity and mortality. The main therapeutic goal of gallstone ileus is a relief of intestinal obstruction by evacuating the gallstones.
Conclusion: Because of nonspecific signs and symptoms, the diagnosis of gallstone ileus is often delayed. It is mostly an incidental finding during abdominal procedures. Therefore, it should be considered in patients presenting with bowel obstruction and known gallstone disease.

Keyword: Gallstone Ileus; Intestinal Obstruction; Open Cholecystectomy.

INTRODUCTION

A mechanical intestinal blockage brought on by the impaction of one or more gallstones in the gastrointestinal tract is known as gallstone ileus. The incidence occurs approximately 0,3 - 0,5 % in all patients with gallstones[1]. Gallstone ileus has shown a constant incidence of 30-35 cases/1000000 admissions over a 45-year period[1]. The percentage increases about 25% in patients over 65 years of age. It occurs more often in women than men with a ratio of 1:3 [2].

The pathophysiology of gallstone ileus begins with chronic inflammation of the gallbladder caused by gallstones, which leads to irritation and erosion of the gallbladder wall. This inflammatory process can cause adhesions and eventually form an abnormal fistula between the gallbladder and the small intestine, stomach, or colon. The most common fistula is the *cholecystoduodenal fistula*. Gallstones then pass from the gallbladder into the intestinal lumen through this fistula. Usually, stones that are large enough (greater than 2.5 cm) can cause obstruction. The migrating stone moves along

with the intestinal contents towards the distal small intestine, most commonly the terminal ileum, which is the narrowest part of the intestine with the slowest peristalsis. A sufficiently large stone can obstruct the intestinal lumen, resulting in mechanical obstruction. Intestinal obstruction caused by gallstone ileus leads to the accumulation of fluid and gas proximal to the obstruction, causing abdominal distension, pain, vomiting, and impaired bowel function. If untreated, it can lead to intestinal ischemia and necrosis.

Gallstone ileus is important to report because it is a serious complication of cholecystitis that can cause mechanical bowel obstruction, especially in elderly patients and women. Reporting this case is crucial for early recognition, proper management, prevention of complications, and optimization of clinical outcomes. Additionally, reporting assists in identifying risk factors, improving management strategies, and supporting a multidisciplinary approach to patient care. The high mortality rate (8-30%) and significant prevalence in elderly patients underscore the urgency of reporting this condition.

Most of the symptoms and signs of gallstone ileus are nonspecific. Its intermittency of symptoms could also interfere the diagnosis. The symptoms may be preceded by a history of previous biliary symptoms in a ratio of 27-80% of patients, such as acute cholecystitis can appear in 10-30% of patients, jaundice is also found in only 15% of patients or less, and biliary symptoms may not appear in 1 in 3 cases.[1]

The main therapeutic goal of gallstone ileus is a relief of intestinal obstruction by evacuating the gallstones. There is not yet to be any consensus on the surgical procedure for gallstone ileus. Currently available procedures are (1) Simple enterolithotomy; (2) enterolithotomy, cholecystectomy, and fistula closure; (3) enterolithotomy with cholecystectomy. Bowel resection is required in some cases after enterolithotomy is performed.[1] The debate between one-stage and two-stage surgery is still ongoing and no consensus has been reached, so this case report can contribute to that discourse

CASE PRESENTATION

A 61-year-old man presented to the Emergency Department of Dr Moewardi hospital with complaining of abdominal pain on all regions for 3 days prior to hospital admission. Abdominal pain was a sudden complaint that did not precede the occurrence of nausea or vomiting, watery stools, or the use of specific foods or medications. The patient reported experiencing flatus and difficulty defecating for three days in addition to the stomach pain. Activity was found to be severely hindered by the discomfort, which did not go away with rest. The patient additionally reported experiencing nausea, vomiting four to five times a day for the past three days whenever he ate or drank. Fever, chills, and coughing complaints are rejected. Black stools or blood in the vomit are not reported. The patient had yellowish urination four to five times a day. The volume is always 1–1.5 litres each day. Stools that are gritty, red, hot, mixed with pus, or more frequent are all prohibited. According to the patient, he had gallstones in November 2021, but there was only medicine and no surgery. There is no history of hypertension or diabetes mellitus.

On physical examination, it was found that the patient looked weak and pain, the blood pressure is 150/98, the pulse is 96 beats per minute, the respiratory rate 18 beats per minute, the temperature 36.7 C with a pain scale of 4. On abdominal examination, there was no mass, darm contour (-), darm steifung (-), weak bowel sounds with a frequency of 2 times per minute. There was tenderness in the whole abdominal regions, no muscular defense. Rectal examination showed that the ampulla recti was not collapsed, smooth, no mass was seen, feces and blood mucus were found.

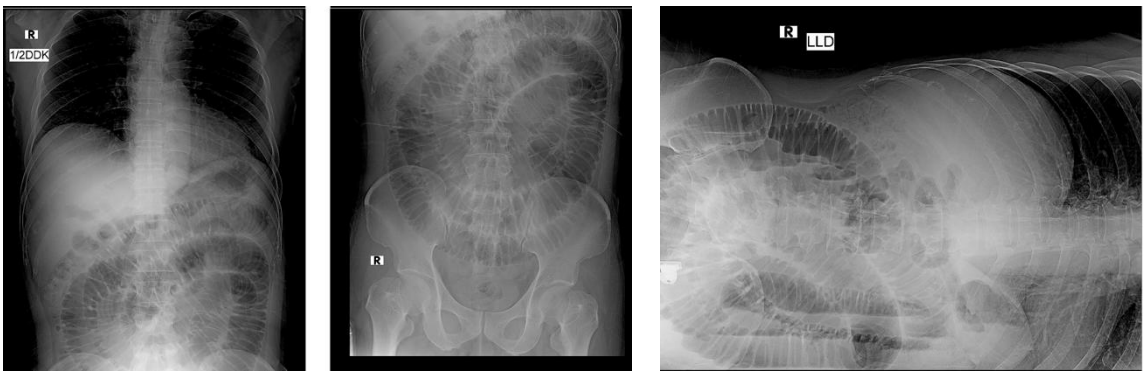

Figure 1. Abdominal X-ray showing features of high-level obstruction without pneumoperitoneum.

From the results of abdominal X-Ray in three positions it was concluded that the obstructive ileus was high, there was no picture of pneumoperitoneum. In addition, the patient underwent initial management in the form of hemodynamic stabilization, provision of nutrition and parenteral fluids, fasting, and placement of a nasogastric tube for decompression. Exploratory laparotomy was then performed. Intraoperatively, a 4 cms gallstone diameter was found in the ileum. It was decided to perform an enterolithotomy and cholecystectomy. After it was confirmed that the bleeding was controlled and the abdominal cavity was clean, the wound was sutured layer by layer.

Figure 2. Intraoperative findings showing a 4 cm gallstone impacted in the ileum

DISCUSSION

Gallstone ileus is a mechanical ileus caused by the passage of gallstones as ≥ 2.25 cm in diameter into the intestine, causing obstruction. In elderly people with comorbidities, the symptoms may be absent, the clinical presentation is non-specific, so it may delay the time of diagnosis[1]. In this patient, a 61-year-old man with complaining of abdominal pain on all regions for 3 days accompanied by inability to defecate and produce flatus and nausea and vomiting especially during meals. The complaints were not relieved by rest. These complaints are signs of intestinal obstruction, but the cause was not specified[3]. Furthermore, the patient admitted that there was a history of gallstone in November 2021. In gallstone ileus, there is usually a history of gallstones[2].

Physical examination of the abdomen revealed no mass, weak bowel sounds at a frequency of 2 times per minute with tenderness throughout the abdomen, and no muscular defenses. The examination showed signs of advanced obstruction as the digestive tract began to experience hypotension. On abdominal x-ray in three positions is an obstructive ileus was seen in a high position without pneumoperitoneum. Management of acute intestinal obstruction is directly by correcting physiologic disorders, resting bowel movements and decompression, and removing the source of obstruction. In this patient, hemodynamic stabilization, parenteral nutrition and fluids were administered, and a nasogastric tube was placed for decompression.

Exploratory laparotomy was decided to remove the cause of the obstruction. Surgery is recommended in patients who have failed to improve within 3-5 days of ineffective non-operative management[3]. For gallstone ileus, surgery currently consists of enterolithotomy, cholecystectomy, and fistula closure. Another option is a two-stage procedure consisting of enterolithotomy and cholecystectomy with fistula closure in the other stage. In this patient, enterolithotomy and cholecystectomy were performed and gallstones with a diameter of 4 cms were found[4].

The one-stage procedure addresses all pathological issues at once: removing the obstructing gallstone from the intestine (enterolithotomy), removing the gallbladder (cholecystectomy), and repairing the fistula between the gallbladder and gastrointestinal tract. This comprehensive treatment decreases the chances of recurrent bowel obstruction and recurrent cholecystitis, thereby potentially reducing the length of hospital stay and accelerating recovery compared to the two-stage procedure[5,6]. This procedure is generally recommended for patients in good general health, those without serious comorbidities, and those who can tolerate major surgery. Elderly or critically ill patients are often better served with a two-stage procedure to minimize operative risk and mortality[7]. There is a higher risk of complications and mortality if the one-stage procedure is performed on high-risk patients or those with severe inflammation and adhesions. In such cases, the safer option is often a two-stage approach[8].

The two-stage procedure is generally preferred based on the patient's clinical condition and stability. In patients who are hemodynamically unstable or have significant comorbidities, the two-stage approach is recommended because a more extensive initial surgery carries a higher risk of complications and mortality[9,10]. The initial step involves enterolithotomy, which is the removal of the obstructing stone from the intestine to relieve the obstruction, without performing cholecystectomy or fistula closure at this stage[11]. Following patient stabilization over several weeks, the second stage addresses the gallbladder and fistula to prevent recurrence and further complications[12]. Other indications for the two-stage procedure include the presence of residual stones in the gallbladder that may cause complications later, and cases where the stone's impaction site is difficult to access or poses a high risk if operated on in a single session[10]. Additionally, the two-stage surgery is recommended for elderly patients with complex medical conditions and in situations requiring a cautious approach to reduce morbidity and mortality[13].

Recent case reports have demonstrated that enterolithotomy is the primary surgical procedure used to relieve small bowel obstruction caused by gallstones, showing good clinical outcomes with minimal postoperative complication[14,15]. Current literature reviews emphasize that a single-stage enterolithotomy is often preferred, especially in high-risk patients, to reduce morbidity and mortality. More extensive surgeries such as cholecystectomy and fistulectomy are generally reserved for stable patients or performed in staged procedures[16,17]. Enterolithotomy alone is effective in removing the obstruction while avoiding more invasive surgeries that increase operative risk, particularly in patients with poor clinical conditions[18]. A one-stage procedure combining enterolithotomy with cholecystectomy and fistulectomy is suggested only for patients who are low-risk and hemodynamically stable to avoid complications[19]. For patients who experience recurrent gallstone ileus, combining enterolithotomy with cholecystectomy may be considered to reduce the risk of recurrence[20].

In this case, the decision to proceed with one-stage surgery was supported by the patient's stable hemodynamics, absence of active inflammation or fistula, and good general condition, aligning with recommendations by American College of Surgeon.

CONCLUSION

Gallstone ileus remains a rare but important differential diagnosis in elderly patients presenting with intestinal obstruction. This case demonstrates the feasibility of a one-stage laparotomy in selected patients and supports the importance of individualized surgical decision-making.

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