

# A rare cause of mechanical intestinal obstruction in geriatric population: Gallstone ileus three cases

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## Abstract

Gallstone ileus is an uncommon cause of mechanical intestinal obstruction. It often occurs in the elderly and patients with recurrent cholecystitis episodes. Making diagnosis can be challenging since the entity lacks any specific symptoms or signs. A vast number of patients were reported to be diagnosed during the course of operation. Gallstone ileus has high morbidity and mortality since it occurs in the geriatric population who already has various comorbidities. Abdominal CT provides quite beneficial information for the diagnosis of these patients. Appropriate treatment option should be selected for each patient considering some personal factors (such as age, comorbidity, clinical stability). The article presents three cases with gallstone ileus causing mechanical intestinal obstruction.

**Keywords:** Mechanical Intestinal Obstruction; Ileus; Gallstone.

## INTRODUCTION

Gallstone ileus (GSI), an uncommon complication of gallstones (cholelithiasis), is encountered quite rarely. It accounts for 0.3%-5.3% of mechanical intestinal obstructions. However, cholelithiasis is observed in 0.3%-0.5% of cases (1,2). It rather occurs in the geriatric population and more common in females compared to males. It generally develops secondary to fistulas formed between gallbladder or biliary tract and gastrointestinal tract following recurrent cholecystitis attacks. Cholecystoduodenal fistulas are the most common type of the above-mentioned fistulas. Advanced age, accompanying comorbidities and diagnostic difficulties lead to a mortality rate in the range of approximately 12% to 18% (2,3). Three GSI cases with mechanical intestinal obstruction were discussed with the literature in the present article aiming to elucidate this rare clinical condition with severe morbidity and mortality that occurs frequently in the elderly population.

## CASES

Three female patients were admitted to the emergency department with the complaints of nausea-vomiting,

and distention and they were hospitalized with diagnosis of intestinal obstruction. The patients were 68-73- and 80-year-olds, respectively (Table 1).

Their upright abdominal radiographs showed air-fluid levels (Figure 1).

Physical examination revealed no herniation and abdominal surgery. Contrast-enhanced abdominal computed tomography was performed and it revealed gallstones causing obstruction at intestinal levels (Figure 2-4). The oral contrast material passed through a cholecystoduodenal fistula in one patient (Figure 2).

All patients underwent emergency surgery. The stone was extracted via enterotomy in one patient and incision site was closed primarily. Partial small bowel resection was performed in the other two patients due to malnutrition and impaction of the stones within the mucosa (Figure 5).

A cholecystoduodenal fistula was detected in all of three patients. However, it was not repaired due to their comorbidities. Patients were followed-up in general surgery intensive care unit. On the second postoperative day, the nasogastric drains were taken out and patients were mobilized. On the third day, oral liquid food was started. Patients who were tolerated for oral feeding were discharged on the 6th day post-operatively.

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Table 1. Demographic data of patients						
Patient no.	Age	Gender	symptoms	Radiological Findings	Presence of fistula	Treatment
1.	68	F	Abdominal pain, nausea-vomiting, distension	Air-fluid levels and intestinal obstruction due to gallstones, transition to orally-given contrast-biliary system due to cholecystoduodenal fistula	Yes	Removal of gallstones with enterotomy
2.	73	F	Abdominal pain, nausea-vomiting, distension	Air-fluid levels and intestinal obstruction due to gallstones,	No	Partial ileal resection
3.	80	F	Abdominal pain, nausea-vomiting, distension	Air-fluid levels and intestinal obstruction due to gallstones,	No	Partialilealresection



Figure 1. The air-fluid levels of two patients in the direct abdominal x-ray are observed

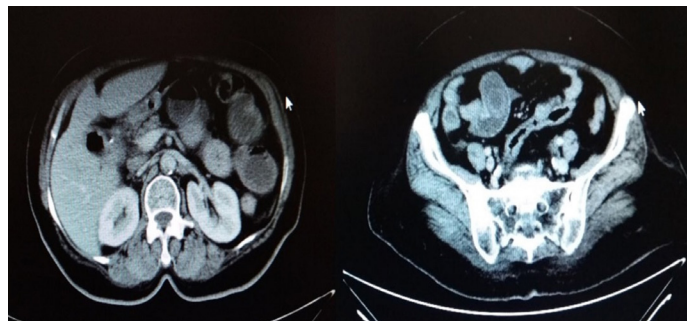


Figure 4. The image of the stone causing obstruction within the lumen of the small intestine



Figure 2. The images of cholecysto-doduodenal fistula and gallstone causing obstruction in the contrast-enhanced computed tomography

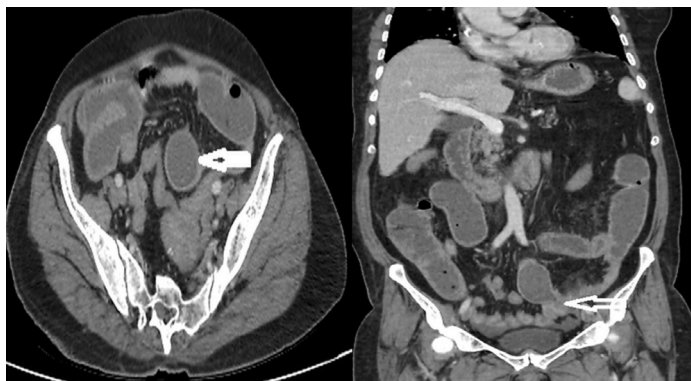


Figure 3. The image of obstruction site and stone causing obstruction in the computed tomography

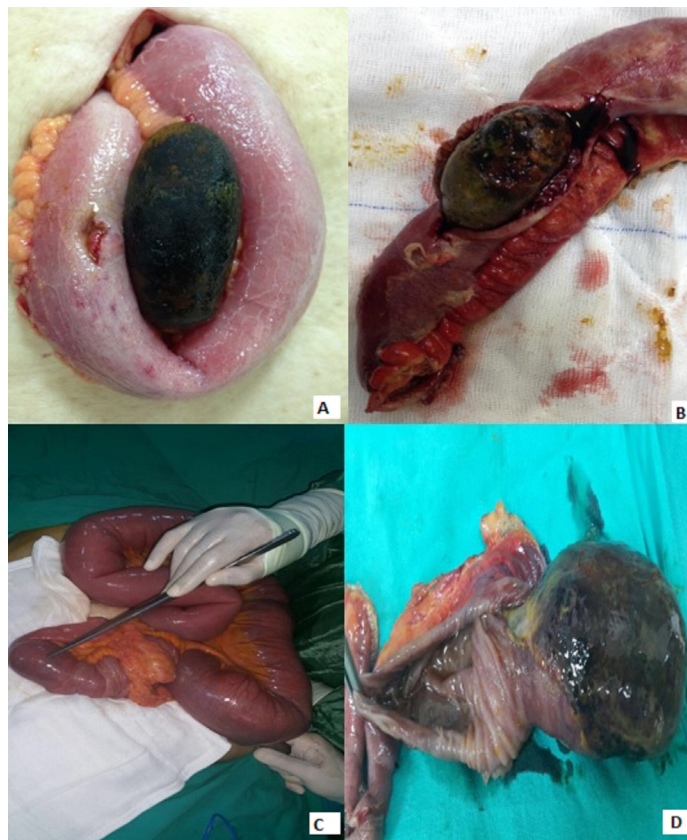


Figure 5. The intraoperative images of gallstone and resection materials. (A) Image of gallstone removed through an enterotomy (B) image of the intestinal segment that is resected due to ischemia (C) and (D) Impacted gallstones on the intestinal mucosa and postresection image

## DISCUSSION

Gallstone was first described by Bartolin in 1654 (4). It accounts for nearly 25% of non-strangulated mechanical intestinal obstructions in patients aged over 65 years. It is three times more common in women than men. The prevalence increases with older age (5). All patients in the present article were female and aged over 65 years.

The differential diagnosis is challenging since the complaints and physical examination signs of patients are similar to other mechanical intestinal obstructions. The literature reports that many patients are diagnosed intraoperatively (6). Its clinical presentation has typical intestinal obstruction symptoms including nausea-vomiting, abdominal distention, pain or acute abdomen. The past medical histories of up to 80% of cases usually point to gallstones or recurrent cholecystitis attacks. Two cases were already internalized and treated medically several times due to acute cholecystitis. One patient had been suffering from chronic cholecystitis symptoms for a long time and all patients had small bowel obstruction symptoms on admission.

The patients with gallstones definitely have a fistula enabling the passage of stone into the intestinal tract. However, 80% of the gallstones passing into the intestinal system through a bilioenteric fistula are expelled out without any incident. If the diameter of a gallstone is over 2.5 cm, an obstruction may ensue. Regarding the incidence of fistula localizations in patients with gallstone ileus, cholecystoduodenal (76%) fistula ranks first, followed by cholecystocolic (11%), cholecystogastric (6%), choledochoduodenal (4%) and cholecystocholedocal (3%) fistulas. The most common site for obstruction is the terminal ileum (70%). It occurs less commonly in the duodenum, jejunum, proximal ileum, and colon (1,3). The site of obstruction caused by the gallstones was the terminal ileum in all of the patients. The diameter of the stones removed was larger than 2.5 cm and a cholecystoduodenal fistula was present in all of them.

Definitive diagnosis is usually made during the course of operation due to nonspecific clinical symptoms and signs of gallstone ileus. The preoperative diagnosis could be made only in 43% of the case series published (6). Upright abdominal radiography is the first imaging modality to be performed for demonstrating mechanical intestinal obstruction. A plain abdominal radiography can reveal obstruction in the small bowel, stone in the intestinal lumen and air signs (pneumobilia) in the biliary system. These findings are known as the triad of Rigler (7). In addition to them, Balthazar and Schechter added two other signs including air-fluid level in the right upper quadrant and air sign in the gallbladder and duodenal bulb (7). Computed tomography (CT) is the gold standard for demonstrating the cause of intestinal obstruction and identifying the localization of fistula. Thus, CT provides a specific diagnosis for GSI. It is also used to determine the number, localization, and size of the impacted stones as

well as passage points of dilated and collapsed intestinal segments. Furthermore, the rim-shaped or totally calcified gallstones with ectopic localization were reported to be detected more easily using contrast-enhanced or non-enhanced CT (4). Abdominal radiography showed air-fluid levels at small bowel level in all of three patients. However, the opacity of gallstone could not be visualized. The intestinal obstructions developed secondary to gallstones were demonstrated by the abdominal computed tomography scans obtained from all patients who denied having any previous operations. A cholecystoduodenal fistula was noted in one patient.

The goal of treatment for gallstone ileus is to eliminate the condition causing obstruction and to enable intestinal passage. Therefore, the treatment modalities ranging from lithotripsy methods to surgical resection were mentioned in the literature. Because of causes such as elder age, comorbid diseases, fluid-electrolyte imbalance and delay in diagnosis, the morbidity rates were reported to range from 12% to 18% (4). Regarding the emergency treatment method, the studies comparing one- and two-stage surgical procedures are available in the literature. Accordingly, the mortality rate could increase up to 19% in one-stage surgeries in some studies whereas it was noted to be quite low in two-stage operations (4,8). The cholecystoduodenal fistula was not repaired in any of three patients and it was deferred for the second stage.

The series by Reisner and Cohen (3) including more than 1000 patients expressed the mortality rate of one-stage surgery as 16.9% while that of enterotomy was reported to be 11.7%. The relapse rate of gallstone ileus varies between 5%-9%. However, reoperation is required in 10% of the patients undergoing only enterotomy due to their biliary system symptoms. The mortality rates of the patients in whom fistulas were repaired were higher compared to the patients who underwent only enterotomy (3,4). Although performing fistula repair and cholecystectomy reduces the complications such as reoperation, cholangitis, cholecystitis, the persistence of fistula and ileus, one-stage surgical procedure (enterotomy, fistula repair, cholecystectomy) results in higher mortality (2,4). Intestinal obstructions were treated surgically. However, fistulas were not repaired. Because all of the patients aged over 65 years and they had comorbidities.

## CONCLUSION

In case of previously unoperated elderly patients having recurrent attacks of cholecystitis with cholelithiasis and mechanical intestinal obstruction, GSI should be considered. Abdominal CT provides quite beneficial information for the diagnosis of these patients. Appropriate treatment option should be selected for each patient considering some personal factors (such as age, comorbidity, clinical stability). Bilioenteric fistula should not be repaired in elderly patients and those with comorbidity in whom the diagnosis is usually delayed. Only, GSI, the cause of mechanical intestinal obstruction, should be treated.

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