

The Gallstone Ileus, a Retrospective Study and Review of the Literature

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Abstract

Introduction: Gallstone ileus (GI) is a rare complication of cholelithiasis and is one of the most irregular forms of all mechanical bowel obstructions. It is, however, a more common cause of non-strangulating mechanical small bowel obstruction, accounting for 1% to 4% of all patients and up to 25% in the elderly.

The diagnosis is often delayed since symptoms may be intermittent, and investigations may fail to identify the cause of the obstruction. As a result, gallstone ileus continues to be associated with relatively high rates of morbidity and mortality.

The cornerstone of healing is the removal of the stone that represents obstruction. As is the case with cholelithiasis, women are more frequently affected.

Material and Methods: This article aims to review the incidence of gallstone ileus in our country in the literature, addressing the pathophysiology, clinical presentation, radiological findings, and treatment options. A literature search was done on gallstone ileus for 2005-2018.

Results: The patients in the study presentation were both genders and older. They all came to INP because of abdominal pain and general nausea. All had CRP elevation present. Leukocytosis was present in only 2/3 of patients. AST was elevated in one patient and ALT in 2. All changes in laboratory parameters indicate the instability of marker changes and, consequently, the unreliability of use alone without other diagnostic methods. A CT scan was performed on all three patients, but one still needed to be uploaded to the system at the time of writing.

Conclusions: Ileus due to gallstones is a rare disease. It is an uncommon cause of mechanical small bowel obstruction. It is a rare complication of chronic cholecystitis and occurs when a gallstone passes through a fistula between the gallbladder and small bowel before becoming impacted at the ileocecal valve. The use of radiological imaging is invaluable in the diagnosis of gallstone ileus. These authors recommend a low threshold for investigation. There is evidence for using AXR as a quick first-line investigation; however, CT scanning is a powerful and gold-standard tool to diagnose the condition and guide its management.

Keywords: Gallstone ileus, biliary-enteric fistula, enterotomy.

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The diagnosis is often delayed since symptoms may be intermittent, and investigations may fail to identify the cause of the obstruction. As a result, gallstone ileus continues to be associated with relatively high rates of morbidity and mortality. [1, 2, 3]

The cornerstone of healing is the removal of the stone that represents obstruction. As is the case with cholelithiasis, women are more frequently affected [4]

Incidence: IBD is a rare complication of cholelithiasis occurring in less than 0.5% of patients with mechanical obstruction of the small intestine. K56 is a classification that also covers Ileus due to gallstones, but we do not

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keep detailed statistics for subclasses in Slovenia's ICD classification. The incidence of Paralysis ileus and intestinal obstruction without hernia is shown in the graph below.

Etiology and Epidemiology: It was first described in 1654 by Dr. Erasmus Bartholin and is thought to be caused by the impaction of a gallstone in the gastrointestinal (GI) tract after passing through a biliary-enteric fistula. Gallstone ileus is more common in women (the ratio is 3.5 females to 1 male) and older patients, particularly those older than 60. Other factors contributing to gallstone ileus are a long history of cholelithiasis, repeated episodes of acute cholecystitis, and stones greater than 2 cm. According to the literature, approximately 40% to 50% of patients eventually diagnosed with gallstone ileus have a history of recent biliary colic bouts, jaundice, or acute cholecystitis. [5, 6]

Gallstone ileus occurs in 0.3% to 0.5% of all patients with gallstones. It is one of the rarest causes of gallstone ileus, occurring in less than 0.1% of all mechanical obstruction cases and 1% to 4% of non-strangulating mechanical small bowel obstructions. Despite 350 years of medical advances, mortality remains high, ranging from 12% to 27%, partially because of non-specific symptoms, unremarkable biochemical investigations, high misdiagnosis rate, and delayed discovery.

Pathophysiology: The etiology of gallstone ileus results from adhesions forming between an inflamed gallbladder and an adjacent GI tract, followed by gallstones causing pressure necrosis or inflammation between the two tissues—the inflammation or necrosis results in erosion and the formation of a cholecyst-enteric fistula. This direct access allows gallstones to move from the gallbladder to the GI tract. Fistulas can form within any part of the GI tract, with approximately 60% occurring in the duodenum due to the proximity. Less commonly, a gallstone may enter the duodenum through the common bile duct, a dilated papilla of Vater, or after an endoscopic sphincterotomy. A fistula between the gallbladder can also occur with the stomach, transverse colon, and distal small bowel. The pathology may be part of the natural course of Mirizzi syndrome. Spillage of gallstones during laparoscopic cholecystectomy may also result in an intraabdominal abscess that can ulcerate the intestinal wall and lead to an entryway into the bowel lumen. The site of fistula formation, gallstone size, and bowel lumen length will determine the impaction location. Gallstones most commonly impact the terminal ileum and ileocecal valve due to their narrow lumen and potentially less active peristalsis. Most gallstones smaller than 2 cm may pass spontaneously, while more prominent ones are more likely to become impacted. The presence of diverticula, strictures, or neoplasms can also serve as impaction sites. [7, 8]

Evaluation: The diagnosis is usually made three to eight days after symptoms, and a correct preoperative diagnosis is reported in 30% to 70% of cases. As a result, a

high index of suspicion is necessary. Laboratory studies are usually non-specific, as only one-third of patients present with jaundice and alteration of hepatic enzymes. Ultrasound can be used to demonstrate fistulas, pneumonia, impacted gallstones, and residual cholelithiasis or choledocholithiasis, but difficulties in locating stones and distortion by bowel gas make ultrasound suboptimal. Plain abdominal radiographs can also be used for diagnosis, with Rigler's triad being present in some cases with partial or complete intestinal obstruction, aerobilia or contrast in the biliary tree, and an ectopic gallstone. The gallstone can change position on serial films. The sensitivity ranges from 40% to 70%

Computed tomography (CT) scanning is a better entity and has a sensitivity of 93%. Balthazar et al. described a fifth sign: two air-fluid levels in the right upper quadrant on an abdominal radiograph corresponding to the duodenum and the lateral to the gallbladder, yet this sign is only present in approximately 24% of patients at the time of admission. Therefore, a CT scan should be performed if a clinician has a clinical suspicion but the patient has negative X-ray findings. Findings consistent with gallstone ileus include gallbladder wall thickening, pneumonia, intestinal obstruction, and obstruction of gallstones. Aerobilia, a non-specific result, is found in approximately 30% to 60% of patients. A hepatobiliary iminodiacetic acid (HIDA) scan, magnetic resonance cholangiopancreatography (MRCP), and esophagogastroduodenoscopy (EGD) may be performed if there is still a question after CT scanning. However, gallstone ileus is more typically diagnosed intra-operatively when a patient is undergoing laparotomy for small bowel obstruction of unknown origin. [6, 9, 10]

Symptoms: The classic presentation of IBD is an older woman with episodic subacute obstruction. Episodic or. They were tumbling blocks resulting from the rock rolling through the lumen of the intestine. Permanent thickening causes diffuse abdominal pain and vomiting, which give up when the stone is released and goes on. Because of this mechanism, the symptoms “come and go.”

On average, symptoms last about five days before hospitalization. *Hematemesis* is an uncommon complication caused by bleeding at the site of the biliary fistula. Rarely can the GC get stuck in the Pyloric duct—duodenum, which obstructs the gastric pathway (Bouveret's syndrome). Then, the IBD manifests itself as a rapid onset of epigastric pain, nausea, and vomiting.

Material and Methods:

This article aims to review the incidence of gallstone ileus in our country in the literature, addressing the pathophysiology, clinical presentation, radiological findings, and treatment options. A literature search was done on gallstone ileus for 2005-2018.

A retrospective review from 2005 to 2018 was

performed for gallstone ileus cases treated surgically by enterotomy with stone extraction alone (ES), enterotomy and cholecystectomy with fistula closure (EF), bowel resection alone (BR), and bowel resection with fistula closure (BF). Patient demographics, hospital factors, comorbidities, and postoperative outcomes were reported. Patient data were obtained from MEDIS.

The patients in the study presentation were both gender and older. They all came to INP because of abdominal pain and general nausea. All had CRP elevation present. Leukocytosis was present in only 2/3 of patients. AST and ALT were elevated. All changes in laboratory parameters indicate the instability of marker changes and, consequently, the unreliability of use alone without other diagnostic methods. A CT scan was performed on all patients, but

one still needed to be uploaded to the system at the time of writing.

All stones were determined preoperatively. All patients also had Mirizzi's syndrome, consistent with clinical guidelines. Patients underwent surgery through one-step laparotomy as they were not in high ASA grades. All patients were discharged to home care on the seventh day after admission to the ward. Some patient information must be included as it was unavailable at the time of writing. Despite their older age and other comorbidities, the patients survived the intervention and went to home care, which is the best possible conclusion to their condition. Ileus is more common in Slovenes than in Slovenes, increasing slightly from year to year (in 2005, we had 764 patients, and in 2018, 1015). GI has been reported in the literature as more common in older women.



Figure 1. Plain abdominal film at time of admission, note the foreign body in the left lower abdomen (ectopic gallstone), with left-sided loops of dilated small bowel.

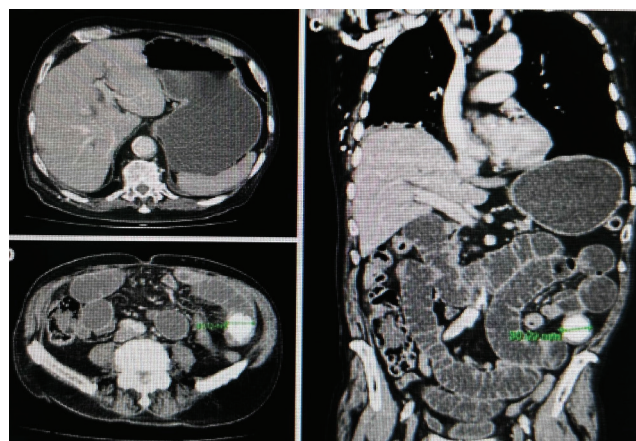


Figure 2. Contrast CT abdomen/pelvis images at time of admission. a) CT slice demonstrating a dilated, fluid-filled stomach and obstructing, calcified mid-jejunal intraluminal stone measuring 3cm in diameter.

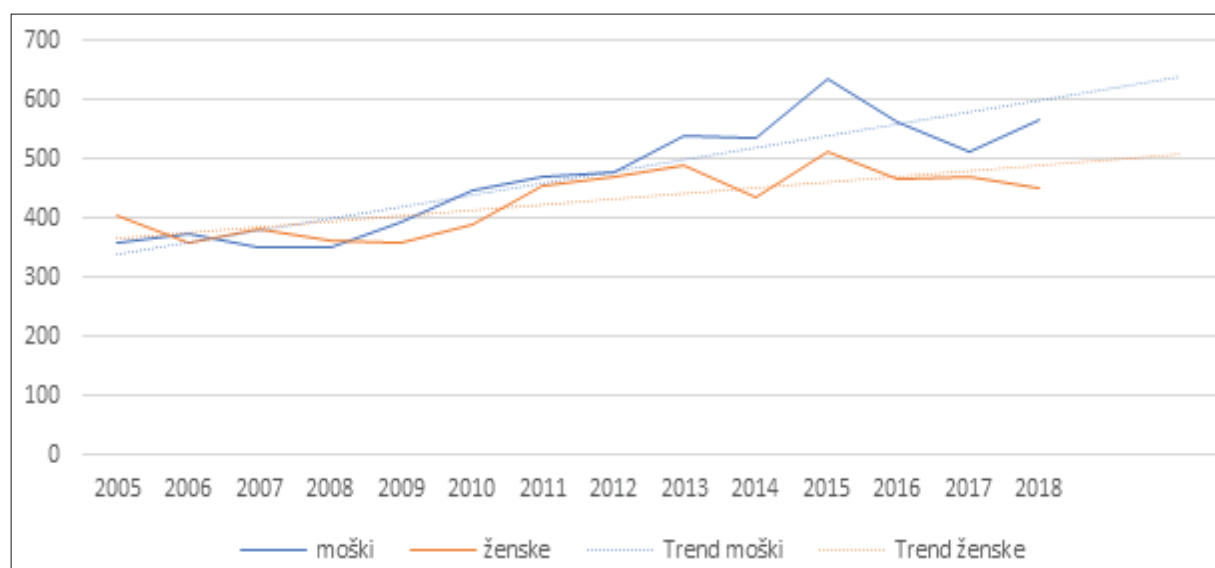


Figure 3. Occurrence of Paralysis ileus and intestinal obstruction without hernia (SOURCE: NIJZ)

Discussion:

The patients in the study presentation were both gender and older. They all came to INP because of abdominal pain and general nausea. All had CRP elevation present. Leukocytosis was present in only 2/3 of patients. AST was elevated in one patient and ALT in 2. All changes in laboratory parameters indicate the instability of marker changes and, consequently, the unreliability of use alone without other diagnostic methods. A CT scan was performed on all three patients, but one still needed to be uploaded to the system at the time of writing.

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Conclusions:

Ileus due to gallstones is a rare disease. It is an uncommon cause of mechanical small bowel obstruction. It is a rare complication of chronic cholecystitis and occurs when a gallstone passes through a fistula between the gallbladder and small bowel before becoming impacted at the ileocecal valve. Due to occasional symptoms, it is not easy to diagnose. Patients are usually older women.

Many associated diseases have high morbidity. The incidence of Ileus in Slovenia is increasing every year. Ileus is more common and is increasing slightly from year to year (in 2005, we had 764 patients, and in 2018 we had 1025 patients). Patients are always treated surgically; depending on their medical condition, we decide whether to undergo one- or two-step surgery. The article presents patients treated for the underlying pathology and their outcomes. It requires a high index of suspicion, particularly in elderly patients presenting with signs of small bowel obstruction. The use of radiological imaging is invaluable in the diagnosis of gallstone ileus. These authors recommend a low threshold for investigation. There is evidence for using AXR as a quick first-line investigation; however, CT scanning is a powerful and gold-standard tool to diagnose the condition and guide its management.

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