

# Gallstone Ileus-A Case Report with Review of the Literature

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**Abstract** A 64 years-old female patient referred to our hospital for further treatment of gallstone ileus diagnosed at another hospital. She had a past medical history of thyroidectomy and mild heart failure. After four days of conservative treatment she underwent scheduled laparotomy with enterolithotomy and stone extraction. Although the operation was uneventful, immediately after that in the recovery room the patient presented severe ARDS with pulmonary edema and acute renal failure. The patient deceased two days later.

**Keywords:** gallstone, ileus, enterolithotomy, cholelithiasis, Rigler's triad, pneumobilia

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## 1. Introduction

Gallstone ileus (GI) is rarely seen, occurring in 0.3%-0.5% of patients with gallstone disease [1,2]. Usually affects elderly patients with a history of chronic cholecystitis, due to cholelithiasis. The result of chronic irritation, inflammation and pressure is the formation of a fistula, usually cholecystoduodenal. Through this communication gallstones can pass into the gastrointestinal tract. As stones migrate, depending on their size, they can cause mechanical bowel obstruction, resulting in colicky abdominal pain, distension, constipation and vomiting. For patients not properly treated, dehydration with electrolyte disturbances and deterioration of general medical condition results.

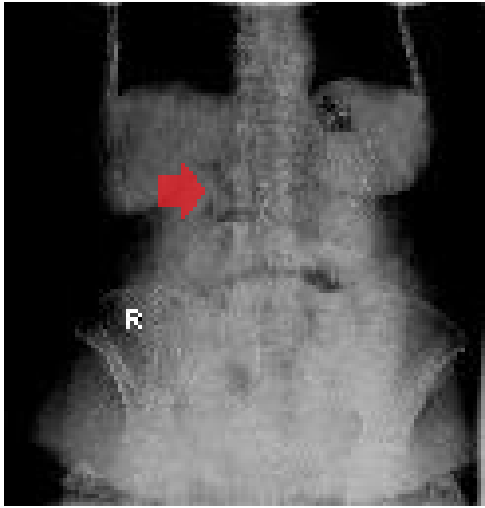
## 2. Case Report

A 64 years-old female patient with a medical history of thyroidectomy and mild heart failure, referred to the

emergency department of our hospital with gallstone ileus, diagnosed at another hospital the same day. She presented there with symptoms of obstructive ileus started few days prior. Initial plain abdominal radiography showed pneumobilia (Figure 1). Suspected gallstone ileus was confirmed with abdominal CT (Figure 2), showing a gallstone impacted into the duodenum, a distended stomach and no visualization of the gallbladder. The patient was admitted to us for further treatment. On physical examination the abdomen was not distended or painful. Blood tests revealed normal white blood cells count and renal function but impaired liver test values (Table 1). The stomach was decompressed via nasogastric tube and a conservative treatment with rehydration was started. The patient underwent MRI of the abdomen, with some additional CT views, which revealed migration of the gallstone to the jejunum, obstructing it (Figure 3). On fourth day of patient's referral to our hospital, she underwent laparotomy, which confirmed the imaging finding.

Table 1. Laboratory Data on Admission

Complete blood cell count Chemistry Coagulation					
WBCs:	8,06x10 <sup>3</sup> /Ul	Glucose:	97 mg/dL	PT (sec):	11.4
RBCs:	4,97 x 10 <sup>3</sup> /uL	BUN:	42 mg/dL	aPTT (sec):	27.1
Hemoglobin:	14.9 g/dL	Creatinine:	0.8 mg/dL	INR:	1
Hematocrit:	45%	K:	4.3 meq/L		
MCV:	90.5 fL	Na:	135 meq/L		
MCH:	29.9 pg	SGOT:	192 IU/L	Immunology	
MCHC:	33 g/dL	SGPT:	927 IU/L		
Platelets:	141 x 10 <sup>3</sup> /uL	ALP:	232 IU/L	AFP:	1.67 ng/ml
Neutrophils	86.7 %	γ-GTP:	197 IU/L	CEA:	1.29 ng/ml
Lymphocytes	5.1 %	Amylase:	29 IU/L	Ca19-9:	16.59 U/ml
Monocytes	5.2 %	T-BIL:	2.2 mg/dL		
Eosinophils	1 %	D-BIL:	1.18 mg/dL		
Basophils	0.5 %	LDH	273 IU/L		
		Protein	6 g/dl		
		Albumin	3,4 g/dl		



**Figure 1.** Plain abdominal radiography showing pneumobilia (red arrow)



**Figure 2.** Abdominal CT scan showing a gallstone impacted into the duodenum, the distended stomach and no imagination of the gallbladder (red arrow)



**Figure 3.** Additional CT scan, showing migration of the gallstone to the jejunum, obstructing it

A gallstone impacted into the intestine, away from the ileocecal valve (Figure 4). Enterolithotomy on the anti-mesenteric surface of the intestine with stone extraction was undertaken (Figure 5). The stone measured 4x3x3 cm (Figure 6). A longitudinal enterotomy was performed and the incision sutured transversely in two layers (Figure 7). The visual and palpable exploration of liver area did not reveal the gallbladder but tense adhesions between duodenum and liver. No further manipulations took place.

The operation was uneventful, the patient extubated and transferred to the recovery room. While remaining there, the patient presented acute and severe respiratory deterioration. EKG and heart U/S weren't indicative of myocardial infarct or pulmonary embolism, while plain chest radiograph showed severe ARDS. The patient died two days later in ICU.



**Figure 4.** Laparotomy image of the gallstone impacted into the intestine, with the dilated loops (on the left side of the picture, the pincher points exactly the impacted gallstone)



**Figure 5.** Laparotomy image of the enterolithotomy on the anti-mesenteric surface of the intestine



**Figure 6.** The gallstone.



**Figure 7.** The repair of the enterotomy

GI is a rare complication of cholelithiasis, accounting for 1%-4% of all cases of bowel obstruction [3,4,5,6]. Appears more often in elderly people, with 70% of patients being over 65 years old [7] and usually females, as the ratio is 3.5:1 [8,9].

Bowel obstruction occurs when gallstones measure  $\geq 2.5$  cm in diameter [10,11,12]. For gallstones smaller than 2.5 cm spontaneous passage through the bowel is possible, accounting for 1.3% of cases. Any part of the bowel can be affected, i.e. the ileum (60.5%), jejunum (16.1%), stomach (14.2%), colon (4.1%) and duodenum (3.5%). Usually stone impaction occurs in the terminal ileum and the ileocecal valve because of the anatomically natural narrowing of the lumen [13,14].

The diagnosis is difficult to be made based only on symptoms of nausea, vomiting, abdominal distension and pain, although many patients have a history of cholecystolithiasis. On plain abdominal radiography, classical signs of Rigler's triad (pneumobilia, dilated intestinal loops, aberrant gallstone) aid diagnosis [15].

A preoperative diagnosis of GI is feasible in only 50%-60% of patients [16]. In 50% of cases definitive diagnosis is made at laparotomy [13]. With imaging studies (CT, MRI) the preoperative diagnosis is easier. Abdominal CT has an overall sensitivity, specificity and diagnostic accuracy of 93%, 100% and 99%, respectively [17].

The interval between initial symptoms and admission ranges from 1 to 8 days, while the interval between admission and operation ranges from 3 to 4.5 days, due to delays in diagnosis and initial conservative treatment [18].

Besides conservative treatment and endoscopic efforts for stone extraction, there are various surgical options: 1) enterotomy with stone extraction only (more common), 2) enterotomy, stone extraction, cholecystectomy and fistula closure, 3) bowel resection only, and 4) bowel resection with fistula closure [3,9]. The surgical approach is based on the clinical condition of the patient [5,9,19]. Usually, the patients with GI are elderly with significant comorbidities and clinically unstable on admission, due to ileus. For such patients, enterolithotomy alone appears sufficient. Enterotomy is made by longitudinal incision placed on the antimesenteric side of the bowel, closely to the impaction site and subsequently closed in two layers transversely, to avoid eventual narrowing of the intestinal lumen.

Treatment of fistulas remains controversial. Cholecystoduodenal fistula accounts for 60% to 86% of cases [18,19,20]. Intraoperative exploration hardly reveals fistulas. As a result, the operative time and intraoperative complications are increased, leading to higher prevalence of mortality. It ranges from 11.7% for the enterolithotomy procedure to 16.9% for the singlestage procedure (enterolithotomy, cholecystectomy, fistula closure) [3,13,19,21] to even 20% [22].

Spontaneous closure of the fistulas has been described in more than 50% of cases [3,4,13,23]. Prevalence of recurrent gallstone ileus is between 5%-9% and of biliary malignancy between 2%-6% [3].

In the literature, wound infections and dehiscence are the most common postoperative complications (25%-50%). Nonetheless, in some reports acute renal failure with pulmonary edema represents the most common postoperative complication [3,22].

### 3. Discussion



The patient in our case, although aged, had no significant personal medical record and was admitted to our hospital in good general condition. The intervals between symptoms and admission, as well as between admission and laparotomy were in the range of those mentioned in the literature. The operation was short and uneventful, with minimal intervention. Despite all these, the immediate recovery was complicated with acute respiratory deterioration, manifested initially with severe ARDS. Hemodynamic instability established progressively with renal failure, which led to fatal outcome 48 hours later in the ICU.

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