

# Gallstone ileus secondary to cholecystogastric fistula.

## Case report

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### Case Report

#### GENERAL SURGERY



**Abstract:** Gallstone ileus represents a diagnostic and surgical challenge. It is defined as a mechanical obstruction due to the impaction of one or more stones of biliary origin, with an incidence of 0.3 to 0.5%, with an increase in incidence in those over 65 years of age; Secondary to the formation of an enteric biliary fistula, the most common being the cholecystoduodenal fistula with an incidence of 32.5-96.5%. Symptoms and signs are not very specific, with the presence of a history of acute cholecystitis or cholelithiasis, treatment should be oriented to the resolution of the occlusive condition and resolution of the biliary disease, since the reported recurrence of biliary ileus is 5% at 8%, for this reason enterolithotomy plus cholecystectomy and closure of the bilioenteric fistula should be performed, all depending on the hemodynamic status of the patient.

**Keywords:** Gallstones, gallbladder ileus, cholecystogastric fistula.

### Introduction

**B**iliary ileus (BI) or gallstone ileus is a rare complication of cholelithiasis and choledocholithiasis with an incidence of 3 / 100,000, the incidence of 0.3 to 0.5%. [1] It is defined as a mechanical obstruction due to the impaction of one or more stones of biliary origin. [2] Stones smaller than 2 or 2.5 cm, manage to spontaneously pass the gastrointestinal tract, however, stones of 5 cm or more tend to suffer impact and occlusion of the intestinal lumen, the largest stone reported is 17.7 cm. [2-4]; Obstruction can be at any level of the gastrointestinal tract, the most frequent area being the terminal portion of the ileum and the ileocecal valve, due to its relatively narrow lumen and its decrease peristaltic movements, however it can occur in the duodenum (Bouveret's Syndrome), colon or stomach. [2-5]

### Case report

43-year-old caucasian female, exhibit colic pain located in right upper quadrant, 2 months of evolution, secondary to the intake of cholecystokinetic foods, she went to the service of Emergencies for 4 days of evolution with diffuse abdominal pain, constipation, progressive abdominal distension, emesis of gastrobiliary content on 3 occasions. On physical examination, moderate dehydration of the mucosa, distension of abdomen, with present peristalsis, metallic fighting at auscultation, diffuse pain on deep palpation, percussion tympanism, no evidence of peritoneal irritation, hemodynamically stable (BP 113/74 mmHg, HR 67 LPM).

Hematic biometry with hemoglobin 12.3 mg / dl, hematocrit 40.6%, leukocytes 9 x10<sup>3</sup> cells / mm<sup>3</sup>, neutrophilia 82.9%, preserved renal function (Urea 25.7 mg / dl, Creatinine 0.6 mg / dl), normal serum electrolytes (Na 139 mmol / L, K 3.5 mmol / L, Cl 105 mmol / L), liver function tests show albumin 4 g / dl, total bilirubin 0.7 mg / dl, direct bilirubin 0.4 mg / dl, indirect bilirubin 0.3 mg / dl, ALT 17 IU / L, AST 19 IU / L, FA 85 IU / L, Hyperlactatemia 2.2 mmol / L.

Abdominal X-ray (**Figure 1**) reveals distention of the small intestine loops, air-fluid levels, and pneumobilia 18 Fr nasogastric tube is placed, with intestinal output, hydration with crystalloids is started, without clinical improvement after 24 hours of medical management, abdominal-pelvic tomography with oral and intravenous contrast is performed, where a hyperdense image is observed, located in the lumen of the small intestine, as well as a hyperdense image in the gallbladder, with a suspected diagnosis of gallstone ileus (**Figure 2**), goes to the operating room,

### Description of the surgical technique

Under general anesthesia an approach by laparotomy, an incision in the midline supra and infraumbilically was made, a systematic review of the cavity, identifying a 2.5 mm x 3 mm stone in the distal ileum, longitudinal enterolithotomy was performed and a stone was extracted (**Figure 3**), later the small intestine was repaired, The gallbladder was explored, identifying cholecystogastric fistula and stone inside the remnant of the scleroatrophic gallbladder, fistula



**Figure 1.** Plain standing AP abdominal radiograph. Small intestine loops dilation is observed with formation of air-fluid levels (white arrows), accompanied by a radiolucent zone in the gallbladder topography in relation to pneumobilia (black asterisk).

was closed and cholecystectomy was performed (one-stage procedure), Jackson pratt-type drainage was placed into Morrison's space, the abdominal wall closed with routine technique.

Mediate monitoring of the postoperative patient presented low biliary output, which subsided after 72 hrs, gastrointestinal function restored in the first 24 hrs, follow-up was given 15 days, 4 and 6 weeks after the procedure, without complications.

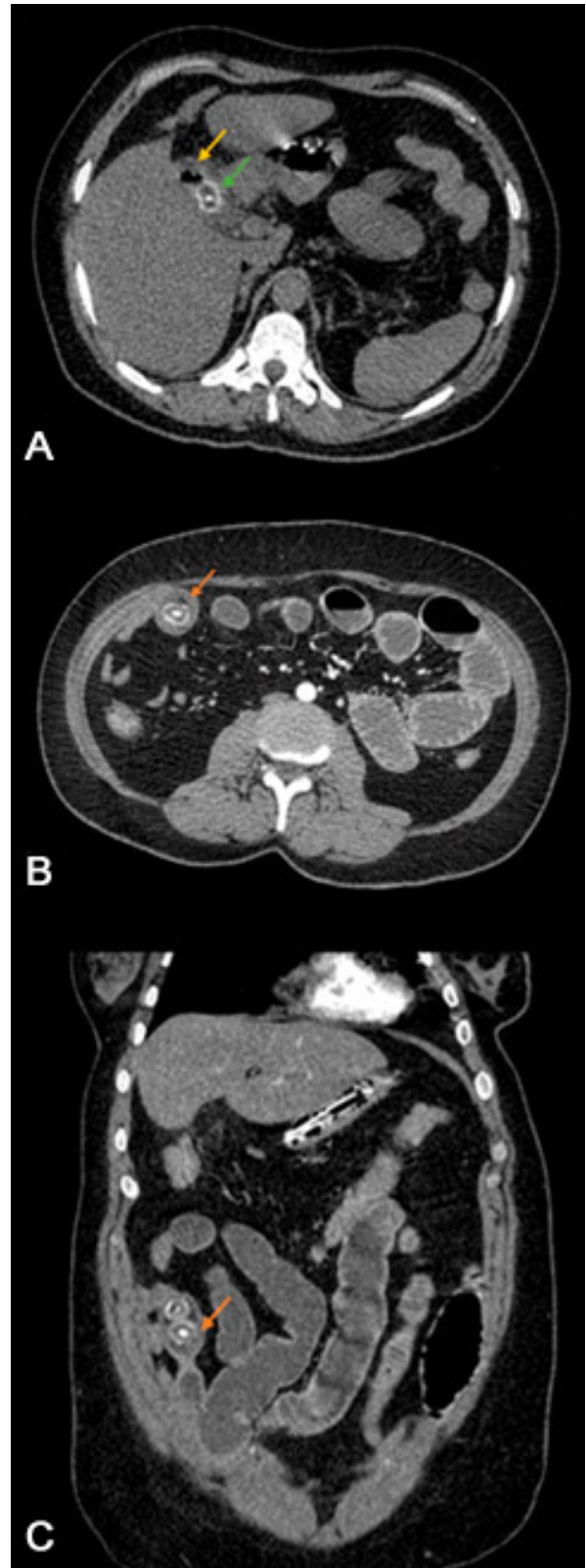
**Discussion**

BI corresponds to 1-4% of all cases of intestinal obstruction, being more frequent in the female sex in a 3.5: 1 ratio, with higher frequency among the elderly [2, 6, 7]

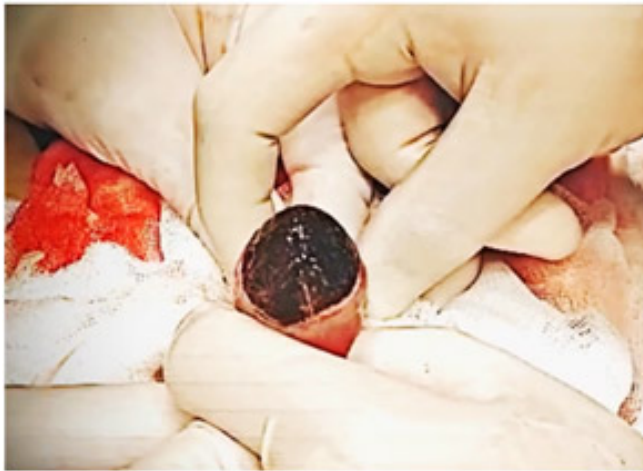
Gallstone ileus as is also known is often preceded by an episode of acute cholecystitis, the resulting inflammation and adhesions facilitate erosion of the affected gallstone, causing communication between the bile duct and the gastrointestinal tract. [8, 9]

The most common bilioenteric fistula is cholecystoduodenal in 32.5-96.5%, cholecystogastric fistula is rare and occurs in 0-13.3%. [10]

Diagnostic suspicion is of utmost importance for time management, clinically the Mordor triad (known cholelithiasis, clinical signs of acute cholecystitis and intestinal occlusion) is presented, as



**Figure 2.** Abdominal CT scan with oral and intravenous contrast. Rigler's triad. **A.** Axial section at the level of the gallbladder, with heterogeneous content at the expense of an image of rounded hypodense morphology with border of calcium density in relation to stone (green arrow) accompanied by a zone of air density suggestive of pneumobilia (yellow arrows). **B** and **C.** Dilation of small intestine loops. Towards the distal third of the ileum there are two images of rounded morphology of hypoechoic content with calcium density borders in relation to stone (orange arrow).



**Figure 3.** Longitudinal enterotomy with Stone extraction of 2.5 x 3 cm.

well as paraclinical studies that describe Rigler's triad (pneumobilia, presence of stones extra-vesicular and intestinal loop distention), computed axial tomography is considered the study of choice, and with greater sensitivity. [11]

The main therapeutic objective is to resolve the intestinal obstruction with the extraction of the impacted gallstones; The resolution of biliary disease may take a backseat depending on the patient's hemodynamic status, in patients with high risk ASA III or IV, shock, electrolyte imbalance or metabolic disorders, only simple enterolithotomy should be performed and when the patient's conditions improve, perform cholecystectomy and repair the fistula (two-stage procedure), however the recurrence of biliary ileus reported is 5% -8%, as well as the development of acute cholangitis is high. A potential long-term complication of bilioenteric fistula is the development of gallbladder cancer with an incidence of 15% compared to 0.8% in patients who underwent fistula resection and cholecystectomy. [12]

In patients with low risk ASA I or II, without acute disorders or shock, enterolithotomy, cholecystectomy, and fistula closure (one-stage procedure) is the procedure of choice. The enterolithotomy should be performed in the portion proximal to the occlusion, on the anti-mesenteric side in a longitudinal direction and transverse closure, to prevent stenosis of the small intestine. In the presence of ischemia, or perforation, a resection may be necessary. [9-11]

Simple enterolithotomy is associated with a mortality of 11.7% compared with 16.9% in enterolithotomy with cholecystectomy and fistula closure. [10]

Late diagnosis, comorbidities and advanced age are the causes of a high mortality rate of 7.5% - 15% [6, 7, 9, 13]

Several studies have shown that the average time between the onset of symptoms and the time of admission ranges from 1 to 8 days. [9]

### Conclusion

IB represents less than 1% of intestinal occlusion causes, with a higher frequency among the elderly. The cholecystogastric fistula is one of the most infrequent, representing 0-13.3%, associated with this a high mortality in the delay of diagnosis. therefore the identification of the triad of Mordor is important for early diagnosis. Computed tomography has proven to be the most accurate diagnostic modality, with the identification of Rigle's triad. Enterolithotomy continues to be the treatment of choice, however, the appropriate choice of the one-stage procedure vs two-stage procedure according to the clinical characteristics of each patient, directly impacts the incidence of complications and recurrences, therefore, the quality of life of the patient.

### Conflicts of interest

None of the authors has a financial interest in any of the products, devices, or drugs mentioned in this manuscript.

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### References

1. Alexiou K, Ioannidis A, Sikalias N, Konstantinidou E, Fotopoulos A, Karanikas I, et al. Gallstone Ileus: A Case Report and Our Clinics Experience J Surgical Science. 2014;Vol.05No.01:5.
2. Abou-Saif A, Al-Kawas FH. Complications of gallstone disease: Mirizzi syndrome, cholecystocholedochal fistula, and gallstone ileus. Am J Gastroenterol. 2002;97(2):249-54.
3. Fox PF. Planning the operation for cholecystoenteric fistula with gallstone ileus. Surg Clin North Am. 1970;50(1):93-102.
4. VanLandingham SB, Broders CW. Gallstone ileus. Surg Clin North Am. 1982;62(2):241-7.
5. Doycheva I, Limaye A, Suman A, Forsmark CE, Sultan S. Bouveret's syndrome: case report and review of the literature. Gastroenterology research and practice. 2009;2009:914951.
6. Ray MS, Deepak BS. An unusual cause of sub-acute intestinal obstruction. 2016. 2016;3(4):4 %J International Surgery Journal.
7. Rodríguez Hermosa JI, Codina Cazador A, Gironès Vilà J, Roig García J, Figa Francesch M, Acero Fernández D. [Gallstone Ileus: results of analysis of a series of 40 patients]. Gastroenterol Hepatol. 2001;24(10):489-94.
8. Glenn F, Reed C, Grafe WR. Biliary enteric fistula. Surgery, gynecology & obstetrics. 1981;153(4):527-31.

9. Conzo G, Mauriello C, Gambardella C, Napolitano S, Cavallo F, Tartaglia E, et al. Gallstone ileus: One-stage surgery in an elderly patient: One-stage surgery in gallstone ileus. *International Journal of Surgery Case Reports*. 2013;4(3):316-8.
10. Nuño-Guzmán CM, Marín-Contreras ME, Figueroa-Sánchez M, Corona JL. Gallstone ileus, clinical presentation, diagnostic and treatment approach. *World J Gastrointest Surg*. 2016;8(1):65-76.
11. Salazar-Jiménez MI A-DJ, Fermín-Contreras MR, . Íleo biliar, revisión del manejo quirúrgico. *Cir Cir*. 2018;86(2):182-6.
12. Bossart PA, Patterson AH, Zintel HA. Carcinoma of the gallbladder. A report of seventy-six cases. *Am J Surg*. 1962; 103:366-9.
13. Avlund TH, Thomsen H. [Gallstone ileus of the colon]. *Ugeskr Laeger*. 2011;173(50):3275.

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