

Case Series

Case series of gallstone ileus: only enterolithotomy, one stage or two stage surgery?

Carlos A. C. Velázquez*, José E. L. López, Jessica J. Silva, Juan M. M. Bufajer,
Jesús E. R. Espino, Omar G. Méndez

Department of Surgery, National Medical Center “La Raza”, Mexico City, México

Received: 24 April 2023

Accepted: 18 May 2023

*Correspondence:

Dr. Carlos A. C. Velázquez,

E-mail: albertcordova@hotmail.es

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Biliary ileus is a rare disease and an infrequent cause of intestinal obstruction, occasionally occurs in frail elderly patients and has a certain predilection for the female sex. The diagnosis is complex and requires a high clinical suspicion and complementary examinations such as abdominal radiography and contrasted abdominal tomography. Treatment should be individualized according to the clinical characteristics of each patient, with the alternatives being resolution only by enterolithotomy, one stage surgery and two stage surgery. We report 3 cases of biliary ileus, each one managed with a different surgical procedure. The decision was aimed at resolving the intestinal obstruction by enterolithotomy, and the definitive management was performed according to the clinical characteristics of each patient; however, there is no consensus or algorithm that recommends the ideal surgical technique. The recommended surgical procedure for the resolution of biliary ileus will be discussed.

Keywords: Gallstone ileus, Bowel obstruction, Laparotomy

INTRODUCTION

Biliary ileus is an infrequent cause of intestinal obstruction and a rare complication of gallstones, occurring in approximately 0.5% of these patients. The term biliary ileus was first described in 1654 by Bartholin.¹ It commonly occurs in the elderly female population.² Regarding the pathophysiology, its appearance is due to a cholecystoenteric fistula; in most cases due to a cholecystoduodenal fistula, for which patients present with a clinical picture of intestinal obstruction. Gabinet studies such as simple abdominal radiography, abdominal ultrasound can be useful and abdominal computed tomography is the ideal study for diagnostic confirmation. Treatment can be non-operative or surgical. The one stage surgery consists of performing enterolithotomy, followed by cholecystectomy and repair of the fistula in the same surgical time. The two stage surgery is based on enterolithotomy only, followed by cholecystectomy and repair of the bilioenteric fistula within 6 to 8 weeks.

Enterolithotomy alone has also been described. Management is mainly based on the removal of the gallstone from the gastrointestinal tract for resolution of the intestinal obstruction. The choice of the type of surgery is made on the basis of the patient's general condition.

CASE SERIES

Case 1

A 53-year-old woman, diagnosed with Angeles grade A esophagitis and Sakita A2H2S2 duodenal ulcer treated with omeprazole, with recurrent episodes of biliary colic, was in surgical protocol for cholecystectomy. She presented to the emergency department with clinical symptoms of intestinal obstruction characterized by abdominal pain and vomiting of 24 hours of evolution. On physical examination his body temperature was 36.8° C, blood pressure 80/50 mmHg, and heart rate 120 beats/min.

Laboratory tests on admission showed serum electrolytes and liver function tests within normal parameters.

A nasogastric tube was placed and hemodynamic stabilization was started in the emergency department, and later a simple abdominal X-ray was performed, which showed only dilatation of intestinal loops. Contrast abdominal tomography showed pneumobilia and intestinal obstruction secondary to biliary ileus with a 5 mm bilioenteric fistula (Figure 1). When she presented with hemodynamic instability, she underwent emergency exploratory laparotomy. During surgery, two gallstones of approximately 4 cm were found at 70 and 80 cm from the ileocecal valve (Figure 2). The gallstones were removed by longitudinal enterotomy and the closure was performed transversely. Fistula was evidenced between the gallbladder and the third portion of the duodenum, a severe adhesive process involving the colon and stomach; however, due to hemodynamic instability it was decided to perform a two stage approach. She presented adequate postoperative evolution and was discharged on the fifth day. She was admitted for second stage surgery at 6 weeks. Cholecystectomy was performed, finding a 6×3 cm gallstone, closure of duodenal fistula and feeding jejunostomy. She had an adequate postoperative evolution without complications, and was discharged due to improvement on the fifth postoperative day.

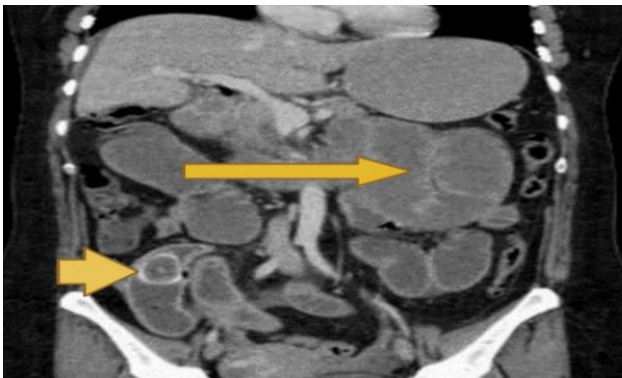


Figure 1: Coronal section of computed tomography of the abdomen showing a 36×32×26 cm (36×32×26 cm) lumen of the terminal ileum (arrowhead) and dilated intestinal loops (long arrow).

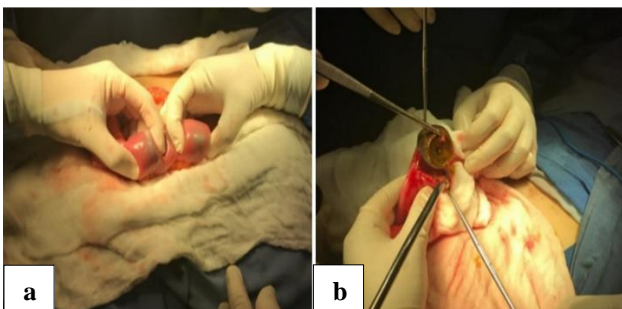


Figure 2: Exploratory laparotomy (a) there is evidence of two gallstones in the intestinal loop, and (b) enterotomy with gallstone extraction.

Case 2

A 78-year-old woman with a history of type 2 diabetes and no history of abdominal surgery. She presented to the emergency department with symptoms of 2 days of evolution characterized by vomiting and abdominal pain. On physical examination, he presented abdominal distension with no evidence of peritoneal irritation, leading to a diagnosis of intestinal obstruction. A standing and decubitus abdominal X-ray showed dilated bowel loops, pneumobilia, hydroaerial levels. The contrasted abdominal tomography showed an image with a rounded morphology of approximately 2.5×2.4 cm, with well-defined regular borders of heterogeneous density at the expense of a hypodense center and hyperdense periphery in relation to a jejunum-embedded gallstone (Figure 3). The diagnosis of biliary ileus was made and the patient was taken to urgent exploratory laparotomy. During the surgery, one gallstone of approximately 3 cm was found at 140 cm of the fixed loop and 120 cm of the ileocecal valve. A scleroatrophic vesicle, cholecystoduodenal adhesions Mazuji IV. Cholecystoduodenal fistula (Mirizzi VB syndrome). Enterolithotomy was performed with transverse closure of the enterotomy with Conell-Mayo stitches and Lembert invaginating stitches. Cholecystectomy and cholecystoduodenal fistula closure. Postoperative evolution was adequate, and the patient was discharged on the fifth day due to improvement.

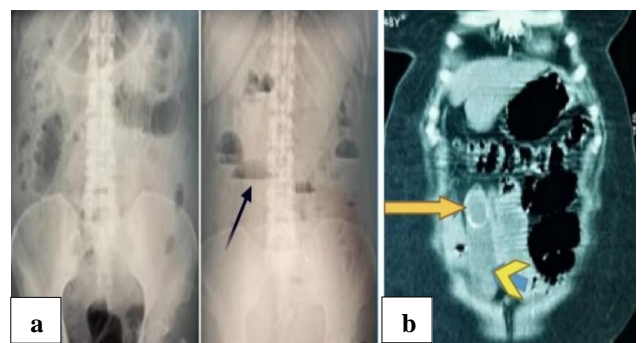


Figure 3: (a) Plain standing abdominal X-ray, dilatation of intestinal loops, hydro-aerial levels (arrow), and (b) abdominal tomography, gallstone of 2.5×2.4 cm embedded in jejunum (long arrow), dilatation of intestinal loops (arrowhead).

Case 3

A 78-year-old man, with a history of systemic arterial hypertension, type 2 diabetes, presented to our hospital with nausea, vomiting, abdominal distension of 48 hours of evolution. She had clinical data of dehydration, so medical management of intestinal obstruction was started. An abdominal computed tomography showed dilatation of small bowel loops up to 5.8 mm with hydro-aerial levels, visualizing a 22 mm gallstone at the level of the terminal ileum. It was associated with pneumobilia, collapse of the gallbladder and apparent fistulous tract between the gallbladder and the first portion of the duodenum. He

underwent exploratory laparotomy and found intestinal obstruction due to an approximately 2×3 cm gallstone impacted at the jejunum level at 150 cm from the fixed loop. Given his advanced age, frailty and comorbidities, it was decided to perform enterolithotomy and primary closure only (Figure 4). The right upper quadrant was intentionally searched, without evidence of palpable lithotripsy. The patient was discharged on the fifth postoperative day, without complications.

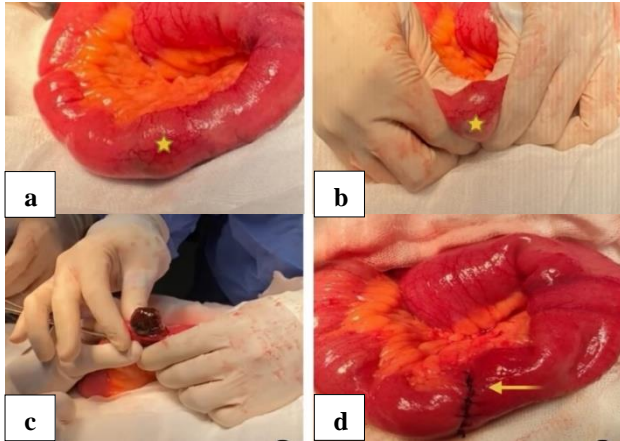


Figure 4: Exploratory laparotomy (a) and (b) presence of one gallstone in intestinal loop (star), (c) enterotomy with gallstone extraction, and (d) transverse closure of enterotomy (arrow).

DISCUSSION

Mechanical intestinal obstruction secondary to gallstones is a rare manifestation of biliary disease, occurring in 0.3%-1.5% of cases of cholelithiasis and is present in only 1-3% of cases of mechanical intestinal obstruction.⁴ It occurs after the spontaneous formation of a biliary-enteric fistula following repeated episodes of cholecystitis, causing adhesions to the gastrointestinal tract until the appearance of a fistula.⁵ There are multiple classifications for Mirizzi syndrome; however, the most widely used is the classification of Csendes.⁶ In most cases, the gallstone is >2 cm in size to cause intestinal obstruction. The presenting clinical picture is one of intestinal obstruction, with transient improvement secondary to the progression of the gallstone through the small bowel and the classic radiological findings are present in only 1/3 of patients with this pathology; which consist of pneumobilia or contrast medium within the biliary tract, intestinal obstruction and ectopic gallstone in the small bowel; known as Rigler's triad. Possible sites of obstruction include the ileum (60%), jejunum (15%), stomach (15%), and colon (5%).⁷ Diagnostic confirmation is made by contrast abdominal tomography, considered the gold standard in diagnosis, with a sensitivity of 93% and specificity of 100%.^{8,9} Treatment can be by non-operative or surgical management, of which three types of procedures have been described. The one-stage surgery consists of performing enterolithotomy to resolve the intestinal obstruction, followed by cholecystectomy and

repair of the fistula in the same surgical time. The two-stage surgery is based on enterolithotomy only, followed by cholecystectomy and repair of the bilioenteric fistula within 6 to 8 weeks. Enterolithotomy alone has also been described, which has been associated with shorter operative time, lower mortality compared to the other procedures, with a low recurrence rate of approximately 5%.¹⁰ Non-operative management can result in high mortality rates, including 26.5%.¹¹

In our series of cases, conservative management was not performed in any case; the first case was treated by two-stage surgery due to hemodynamic instability; performing enterolithotomy in the first surgical stage and 6 weeks later, cholecystectomy and repair of the duodenal fistula were performed, and in this case it was necessary to perform a feeding jejunostomy. The second case was treated by one-stage surgery given the absence of comorbidities and the hemodynamic stability of the patient. The third case was treated by enterolithotomy only, based on the patient's advanced age, comorbidities and surgeon's preference.

Non postoperative complications or recurrence of the disease occurred in any of the patients. It is recommended that in the case of performing only enterolithotomy, the gallbladder should be intentionally checked for retained lithiasis. In a study by Chou et al, 2 cases of biliary ileus were reviewed, one of which was managed by enterolithotomy, cholecystectomy, cholecystoduodenal fistula repair, duodenorrhaphy and feeding jejunostomy, with adequate postoperative evolution without complications.¹² Doko et al, describe that the one-stage surgery should be reserved for highly selected patients with absolute indications.¹³

The choice of surgical option is influenced by the preoperative hemodynamic status of the patient. Koliakos et al reported a series of 6 cases, and in their postoperative results they concluded that frail and elderly patients will benefit from surgical management by enterolithotomy alone; they did not show recurrence of disease related to biliary pathology. Therefore, omitting cholecystectomy seems to be safe in frail and elderly patients.¹⁴ Chuah et al reported four cases with different surgical management, including one stage surgery, one case treated by cholecystostomy, extraction of a lithotripsy and placement of a T-tube in cholecystostomy.¹⁵

The management of this entity through laparoscopic surgery has also been described; however, with a high risk of conversion due to the dilatation of intestinal loops that make its management impossible, associated to the spillage of intestinal material in the abdominal cavity during the extraction of the gallstone, for which reason the decision between open versus laparoscopic surgery must be individualized.^{16,17} The decision of surgical management in its three modalities must be individualized and based on the general conditions of each patient, age, comorbidities, hemodynamic status, transoperative

findings that prolong the surgical time and the surgeon's experience.

CONCLUSION

Biliary ileus is an infrequent entity of difficult diagnosis, so it must have a high index of suspicion. Surgical treatment is currently the management of choice; however, there is no consensus on the ideal surgical technique. According to the literature review and our experience, we conclude that although surgery at one stage is attractive due to the definitive surgical resolution and adequate postoperative infection control. Enterolithotomy alone should be considered in frail elderly patients, and two-stage surgery should be reserved for patients presenting with hemodynamic instability in order to avoid prolonged operative time. The experience acquired in a third level center is decisive to obtain a successful outcome of the surgical event with optimal results. Multicenter studies are required to determine a standardized treatment.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. Glenn F, Reed C, Grafe W. Biliary enteric fistula. Surg Gynecol Obstet. 1981;153:527-31.
2. Stagnitti F, Tudisco A, Nicodemi S. Biliodigestive Fistulae and gallstone ileus: Diagnostic and therapeutic considerations. Our experience. G Chir J Surg. 2014;35:235-8.
3. Agha R, Fowler A, Saeta A. The Scare statement: Consensus-based surgical case report guidelines. Int J Surg. 2016;34:180-6.
4. Halabi W, Kang C, Ketana N. Surgery for gallstone ileus: A nationwide comparison of trends and outcomes. Ann Surg. 2014;259:329-35.
5. Luu M, Deziel D. Unusual complications of gallstones. Surg Clin. 2014;94:377-94.
6. Sundaram S, Bove K, Lovell M. Mechanisms of disease: inborn errors of bile acid synthesis. Nat Clin Pract Gastroenterol Hepatol. 2008;5:456-68.
7. Gurvits GE, Lan G. Enterolithiasis. World J Gastroenterol. 2014;20:17819-29.
8. Chang L, Chang M, Chang HM. Clinical and radiological diagnosis of gallstone ileus: A mini review. Emerg Radiol. 2018;25(2):189-96.
9. Yu CY, Lin CC, Shyu RY. Value of CT in the diagnosis and management of gallstone ileus. World J Gastroenterol. 2005;11(14):2142-7.
10. Ploneda-Valencia CF, Gallo-Morales M, Rinchon C, Navarro-Muniz E, Bautista-López CA, de la Cerda-Trujillo LF, et al. Gallstone ileus: An overview of the literature. Rev Gastroenterol Mex. 2017;82:248254.
11. Hussain J, Alrashed AM, Alkhadher T, Wood S, Behbehani AD, Termos S. Gall stone ileus: Unfamiliar cause of bowel obstruction. Case report and literature review. Int J Surg Case Rep. 2018;49:44-50.
12. Chou JW, Hsu CH, Liao KF, Lai HC, Cheng KS, Peng CY, et al. Gallstone ileus: report of two cases and review the literature. World J Gastroenterol. 2007;13(8):1295-8.
13. Doko M, Zovak M, Kopljar M, Glavan E, Ljubicic N, Hochstädter H. comparison of surgical treatments of gallstone ileus: Preliminary report. World J Surg. 2003;27:400-4.
14. Koliakos N, Papaconstantinou D, Tzortzis AS, Kofopoulos-Lymeris E, Bakopoulos A, Nastos K, et al. Gallstone Ileus in Octogenarians: Is Cholecystectomy Really Needed? Acta Medica (Hradec Kralove). 2022;65(4):153-7.
15. Chuah JS, Tan JH, Khairudin KB, Ling LLL, Mat TNBT. Case series of gallstone ileus with one- or two-stage surgery. Ann Hepatobiliary Pancreat Surg. 2022;26(2):199-203.
16. Inukai K, Uehara S, Miyai H. Sigmoid gallstone ileus: a case report and literature review in Japan. Int J Surg Case Rep. 2018;49:51-4.
17. Resiner RM, Cohen Jr. Gallstone ileus: A review of 1001 reported cases. Am Surg. 1994;60:441-6.

Cite this article as: Velázquez CAC, López JEL, Silva JJ, Bufajer JMM, Espino JER, Méndez OG. Case series of gallstone ileus: only enterolithotomy, one stage or two stage surgery? Int J Res Med Sci 2023;11:2649-52.