International Surgery Journal
Blaz Zavala RA et al. Int Surg J. 2024 May;11(5):797-800
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20241144

Case Report

One-step approach by enterolithotomy as surgical treatment of biliary ileus associated with bridle: case report and literature review

Rogelio A. Blaz Zavala*, Sandra Lara Trejo, Abril E. Gracia Cerda, David J. Ampudia Chávez

Department of General Surgery, Instituto Mexicano del Seguro Social, Mexico City, Mexico

Received: 28 February 2024
Accepted: 28 March 2024

***Correspondence:**
Dr. Rogelio A. Blaz Zavala,
E-mail: agusblazzavala@facmed.unam.mx

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

Gallstone ileus is a rare cause of intestinal obstruction, more common in adults and in the context of late complications due to gallbladder stones. The pathophysiology describes long-term inflammatory processes of the gallbladder, with biliodigestive fistula development and passage of the gallstone into the intestine, impacting the terminal ileum in most cases. It manifests with data of intestinal obstruction in patients with a chronic history of gallbladder lithiasis. The ideal imaging study is a computed tomography (CT) scan of the abdomen to identify pneumobilia, intestinal obstruction and the lithiasis impacting on the bowel. The surgical approach depends on the context of each patient through laparoscopy or laparotomy in order to perform enterotomy and extraction of the stone or by performing also the management of the fistula and cholecystectomy at the same surgical time. Management must be individualized for each patient. We present the case of a patient in her tenth decade of life with a history of recurrent biliary colic without management, who was admitted to the general surgery department with data of probable intestinal occlusion. Imaging studies were performed, with radiographic evidence of distension of the small bowel loops and tomography with findings suggestive of biliary ileus. Due to the clinical context and comorbidities of the patient, laparotomy with enterotomy and extraction of the stone was performed.

Keywords: Ileus, Biliary, Pneumobilia, Lithiasis, Gallbladder, Occlusion

INTRODUCTION

Biliary ileus is described as a mechanical intestinal obstruction caused by a gallstone secondary to the development of a biliodigestive fistula, accounting for 1% of intestinal obstructions and up to 25% of cases of intestinal occlusion in those over 70 years of age.[1]

Chronic inflammation of the gallbladder wall favors erosion and fistula development, with subsequent passage of stones into the bowel and development of endoluminal mechanical intestinal occlusion. The clinical manifestations are suggestive of intestinal obstruction in the context of a patient with chronic cholelithiasis.[1,2]

We present the case of a 97-year-old female patient with chronic vesicular lithiasis, without other medical history. She presented with clinical manifestations suggestive of upper intestinal obstruction. Initial medical management was decided, and when the patient failed to respond to management, a computed tomography scan of the abdomen was performed, showing biliary ileus. Surgical management was decided by enterotomy and extraction of the stone via laparotomy.

CASE REPORT

We present a 97-year-old female patient with a history of chronic gallbladder stones, without other antecedents. She started her illness characterized by colicky right hemiabdomen pain of variable intensity, as well as abdominal distension, nausea and gastro-alimentary emesis on 4 occasions, combined with inability to pass gas and no bowel movements of 48 hours of evolution. She was admitted to the general surgery department with evidence of high intestinal occlusion.

Laboratory tests were requested with no evidence of a systemic inflammatory response and an abdominal X-ray showed distension of the small bowel loops in relation to upper intestinal obstruction and suggestive pneumobilia (Figure 1). It was decided to start medical management with a nasogastric tube for 72 hours, in addition to fasting and fluid management. The patient persisted with abdominal distension and lack of response to initial medical management, so an abdominal CT scan was requested, identifying pneumobilia, small bowel loop stone and distension of the loops, with evidence of upper intestinal occlusion secondary to gallstone ileus (Figures 2 and 3).

Figure 1: Abdominal X-ray with evidence of small bowel loops distension in relation to upper intestinal obstruction and suggestive pneumobilia.

Figure 2: Computed axial tomography of the abdomen with intravenous contrast identifying data of pneumobilia.

Figure 3: Computed axial tomography of the abdomen with intravenous contrast, identifying distension of the small bowel loops, together with the presence of intraluminal stone towards the small bowel loop, findings related to gallstone ileus.

Surgical management through laparotomy was decided, the surgical findings were peritoneal reaction fluid, without purulent or intestinal collections, distension of the small bowel loops and a 3×3.5 cm stone impacted into the ileum, 60 cm from the ileocecal valve and internal hernia associated with a flange of the distal ileum. It was found that the flange was the cause of ileum stenosis (Figure 4). It was decided to perform a one-stage approach with release of the internal hernia, enterotomy and removal of the stone through longitudinal enterotomy at the antimesenteric border with subsequent primary closure of the small bowel in two planes with continued suture at internal plane with 2-0 Vicryl and external with invaginating stitches with 2-0 Vicryl.

The patient underwent postoperative surveillance with adequate evolution, with no evidence of complications, and was therefore discharged home on the fifth day after surgery.

Figure 4: Surgical approach via longitudinal enterotomy at the antimesenteric border with removal of the stone and subsequent transverse primary closure in two planes with 2-0 Vicryl.

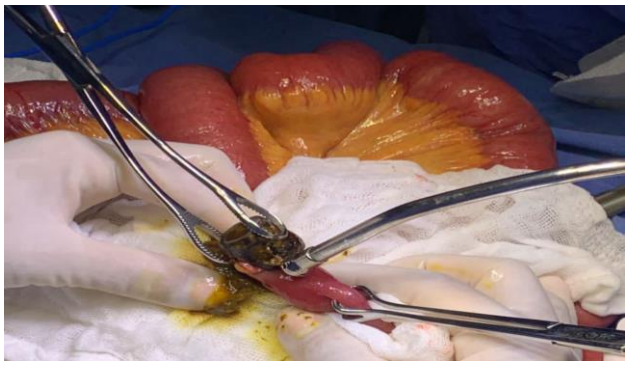

Figure 5: Surgical findings with distension of the small bowel loops and a 3×3.5 cm stone impacted in the ileum 60 cm from the ileocecal valve and internal hernia associated with distal ileum flange.

DISCUSSION

Gallstone ileus is described as a mechanical bowel obstruction caused by a stone, secondary to the development of a biliodigestive fistula.[1] It occurs most

commonly in adults, with morbidity and mortality estimated at 7% in recent years.[2]

The pathophysiology is related to chronic cholecystitis and the development of biliodigestive fistulas, 85% towards the duodenum. It is reported as the most common site of impaction of the stone into the distal ileum in 65% of cases and stones larger than 2.5 cm are described as a risk factor for the development of this condition. It is excreted in stool in only 1.3% of cases.[1]

Chronic inflammation of the gallbladder wall and adjacent structures favours gallbladder wall erosion and the development of fistulas, being more common in the duodenum due to its proximity. In addition, when the stone has migrated, the gallbladder becomes fibrotic and even atrophic.[3]

The related symptoms are those of intestinal obstruction, with patients presenting with abdominal distension, nausea and vomiting, inability to evacuate and pass gas, always taking into account a previous history of gallbladder stones.[1]

The clinical course can be intermittent, chronic or acute, with recurrence of symptoms related to progressive passage of the stone through the bowel to an acute course where the stone is already impacted.[2] It is important to consider that 85% of these patients present with a history of biliary colic.[4]

Intestinal occlusion data are directed to the site of the stone location, considering the dimensions of the stone, the site of bilioenteric fistula formation and the dimensions of the intestinal lumen.[5]

Contrast-enhanced computed tomography is suggested as the study of choice and Rigler's triad, characterized by ectopic stone, pneumobilia and bowel obstruction, present in 77% of cases. The advantages of contrast tomography are the ability to identify intestinal ischaemia and necrosis.[1] Ectopic stone is identified by CT in 86% of cases, pneumobilia in 65% and the presence of fistula in 68% of cases.[4]

Diagnosis may be suggested in case of evidence of 2 of 3 Rigler's triad data, in relation to pneumobilia, known as Gotta-Mentschler sign, intestinal obstruction and radio-opaque stones.[5]

The diagnosis of cases of gallstone ileus depends on the clinical manifestations, findings on imaging studies specifically computed tomography or Rigler's triad data. In addition, a prompt diagnosis should be made in order to offer surgical management.[6]

It is important to note that there are various causes of pneumobilia such as bile duct instrumentation, anaerobic infection, sphincterotomy, cholangitis, liver abscesses or emphysematous cholecystitis.[7]

The management of choice is a surgical approach with 3 management alternatives, through enterolithotomy, extraction of the stone together with cholecystectomy and closure of the fistula in the same surgical time or through two surgeries with enterolithotomy and cholecystectomy in the second surgical time.[1,4] The open or laparoscopic approach is feasible, and the intervention will be managed according to the clinical context and stability of the patient.[2]

The one-step surgical approach is suggested in patients without high surgical risk, considering enterolithotomy, cholecystectomy and fistula closure. Higher mortality is reported in the context of patients in whom multiple interventions are performed in the same surgical time. If the fistula is not managed, recurrence is less than 5%.[7]

Regarding single-stage management by enterolithotomy, a longitudinal incision is made at the antimesenteric border of the affected bowel segment, with removal of the stone and transverse closure in order to avoid stricture. This procedure is associated with lower mortality compared to performing fistula management in the same surgical time.[7] Intestinal resection should be performed in case of ischaemia or perforation of the affected segment depending on the conditions.[8]

Fistula closure is reported to be spontaneous in 61.5% of cases, and its persistence is associated with recurrence of biliary ileus, retrograde cholangitis and risk of neoplasia.[8] The purpose of management with enterolithotomy alone is to free the intestinal occlusion, avoiding interventions that would complicate the patient context.[9]

Regarding the two-stage surgical management, enterolithotomy is performed, followed by fistula management and cholecystectomy, with an estimated interval of 4-6 weeks between the two surgeries.[9] In the case of patients who are not offered management with cholecystectomy after the first surgery, the use of ursodeoxycholic acid may be suggested to reduce the risk of gallbladder stones.[10]

In the approach to patients with gallstone ileus, surgical management should always take into account haemodynamic status, comorbidities, transoperative complexity, operative time and the experience of the center where these cases are treated.[10]

The evolution and mortality of patients with gallstone ileus is related to comorbidities, time of admission and time of surgery, with morbidity up to 50% and mortality between 12-27% of cases.[5] Recurrence is reported in 2-8% of cases presenting in up to 50% of cases during the first month after surgery.[6]

CONCLUSION

Gallstone ileus is one of the complications related to chronic gallbladder stones, presenting with intestinal

occlusion secondary to the formation of a bilioenteric fistula due to the chronic inflammatory process of the gallbladder wall, leading to the passage of stones into the intestine and consequent mechanical intestinal obstruction. The approach involves studying the patient's clinical manifestations, imaging studies, with tomography being the imaging of choice, which allows the study of Rigler's triad and intestinal complications such as ischaemia and perforation. Surgical management involves the extraction of the stone from the intestine and depending on the context of each patient fistula closure and cholecystectomy at the same surgical time could be offered.

ACKNOWLEDGEMENTS

Authors would like to thank the patients of the Instituto Mexicano del Seguro Social as well as the surgical, imaging, pathology and clinical archive teams.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Zabeirou A, Saidou A, Younssa H, James Didier L, Younoussa M, Sani R. An authentic radiological triad of Rigler allowing the diagnosis of gallstone ileus: A case report. Radiol Case Rep. 2024;19(4):1565-7.
2. Shanmugarajah I, Letting TS, Rustad H. Gallstone ileus. Tidsskriftet. 2023;143(6).
3. Beji H, Chtourou MF, Zribi S, Laamiri G, Bouassida M, Touinsi H. Gallstone ileus: A case report and review of the literature. Int J Surg Case Rep. 2023;106:108221.
4. Augustin G, Bruketa T, Kunjko K, Romić I, Mikuš M, Vrbanić A, et al. Colonic gallstone ileus: a systematic literature review with a diagnostic-therapeutic algorithm. Updates Surg. 2023;75(5):1071-82.
5. Pichardo J, Zapata J, Echavarría R, Ubiñas R, Báez P, Gómez Á. Gallstone Ileus With Cholecystoenteric Fistula in an Elderly Female: A Case Report. Cureus. 2023;15(4):e37077.
6. Valencia-Martínez JG, Reynoso-Saldaña D, Reynoso-González R, Estrada-Hernández D, Ángeles-Santillán M, Aja-Sixto V. Gallstone ileus, a rare cause of intestinal occlusion. A case report. Cir Cir. 2023;91(2):284-9.
7. Louis M, Gibson B, Jones L, Singh H. Mechanical Small Bowel Obstruction Due to Gallstone Ileus: Diagnostic Challenges and Surgical Management. Cureus. 2023;15(8):e44153.
8. Gkionis IG, Kokkinakis TG, Strehle AF, Flamourakis ME, Giakoumakis MI, Mannaris MA, et al. An unusual case of mechanical bowel obstruction due to cholecysto-intestinal fistula and impacted gallstone: A case report and literature review. SAGE Open Med Case Rep. 2023;11:2050313X231153756.
9. Vera-Mansilla C, Sanchez-Gollarte A, Matias B, Mendoza-Moreno F, Díez-Alonso M, Garcia-Moreno Nisa F. Surgical Treatment of Gallstone Ileus: Less Is More. Visc Med. 2022;38(1):72-7.
10. 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.

Cite this article as: Blaz Zavala RA, Trejo SL, Cerda AEG, Chávez DJA. One-step approach by enterolithotomy as surgical treatment of biliary ileus associated with bridle - case report and literature review. Int Surg J 2024;11:797-800.