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Laparoscopic management for gallstone ileus, case report

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ABSTRACT

INTRODUCTION: Gallstone ileus is a rare complication of cholelithiasis leading to small intestinal obstruction. Elderly females are commonly affected more than male. The diagnosis of this condition is challenging and Rigler's triad is pathognomonic. Surgery is mandatory with no clear consensus about the best surgical approach that should be adopted.

CASE PRESENTATION: An elderly female patient, with no previous history of biliary diseases, presented with small bowel obstruction. Contrast enhanced computed tomography of the abdomen showed the classical Rigler's triad. Total laparoscopic enterolithotomy was performed successfully. She had smooth postoperative course and she was followed up regularly without occurrence of any biliary disease symptoms during the follow up period.

CONCLUSION: Gallstone ileus should be considered in differential diagnosis of small bowel obstruction mainly in old females with no previous history of abdominal surgery. Laparoscopic enterolithotomy is safe, feasible and effective when performed by experienced surgeons.

1. Introduction

Gallstone- ileus (GSI), first described by Bartholin in 1654, is a misnomer of a rare complication of cholelithiasis. It accounts for 0.1%–5% of small bowel obstruction (SBO) and 25% of non-strangulating SBO in elderly patients. Females are commonly affected more than male. Previous history of biliary diseases is documented in 50–60 % of cases [1].

GSI is an intraluminal mechanical obstruction caused by impaction of gallstones anywhere between the stomach and the rectum. Gallstones enter into gastrointestinal tract through a pathological biliary-enteric fistula (that is formed most commonly between the gallbladder and the duodenum) and they become usually impacted in the terminal ileum [2].

In 1941, Rigler et al., described the classical radiological triad of GSI namely; pneumobilia, SBO and ectopic gallstones. Before the era of computed tomography scan CT, Rigler's triad was only seen in 14–53% of patients in plain abdominal films. This percentage increased to 93% with the liberal use of CT [3].

Surgery is the mainstay treatment without a clear consensus about best surgical approach that should be adopted; whether one-staged versus two-staged approach and open versus laparoscopic approach. Laparotomy is the conventional approach, however laparoscopy is recently increasingly used by experienced surgeons.

We report a case of an elderly woman who had total laparoscopic management for GSI. This work is reported in line with SCARE criteria [4].

2. Case presentation

A 61-year-old blind female presented to the emergency department with five days history of colicky abdominal pain, bilious vomiting, obstipation and mild distention. She had no previous abdominal surgeries or biliary diseases. She was vitally stable but mildly dehydrated. Her abdomen was distended with no evidence of peritonitis. Routine blood tests were normal. Plain abdominal radiograph was consistent with SBO without identification of ectopic stones or pneumobilia. Contrast enhanced CT abdomen showed the classical Rigler's triad of GSI (Fig.1).

After resuscitation, she underwent a successful laparoscopic enterolithotomy. After general anesthesia, pneumoperitoneum was created using a Veress needle placed in Palmer's point. A 10-mm 30° scope was inserted via an 11-mm infra-umbilical visi-port trocar. Another 10-mm and two 5-mm working ports were inserted in the left hypochondrium, left iliac fossa and right iliac fossa, respectively. Diagnostic laparoscopy revealed distended small bowel loops and extensive adhesions over the gallbladder. The transitional zone was approximately 70-cm proximal to the

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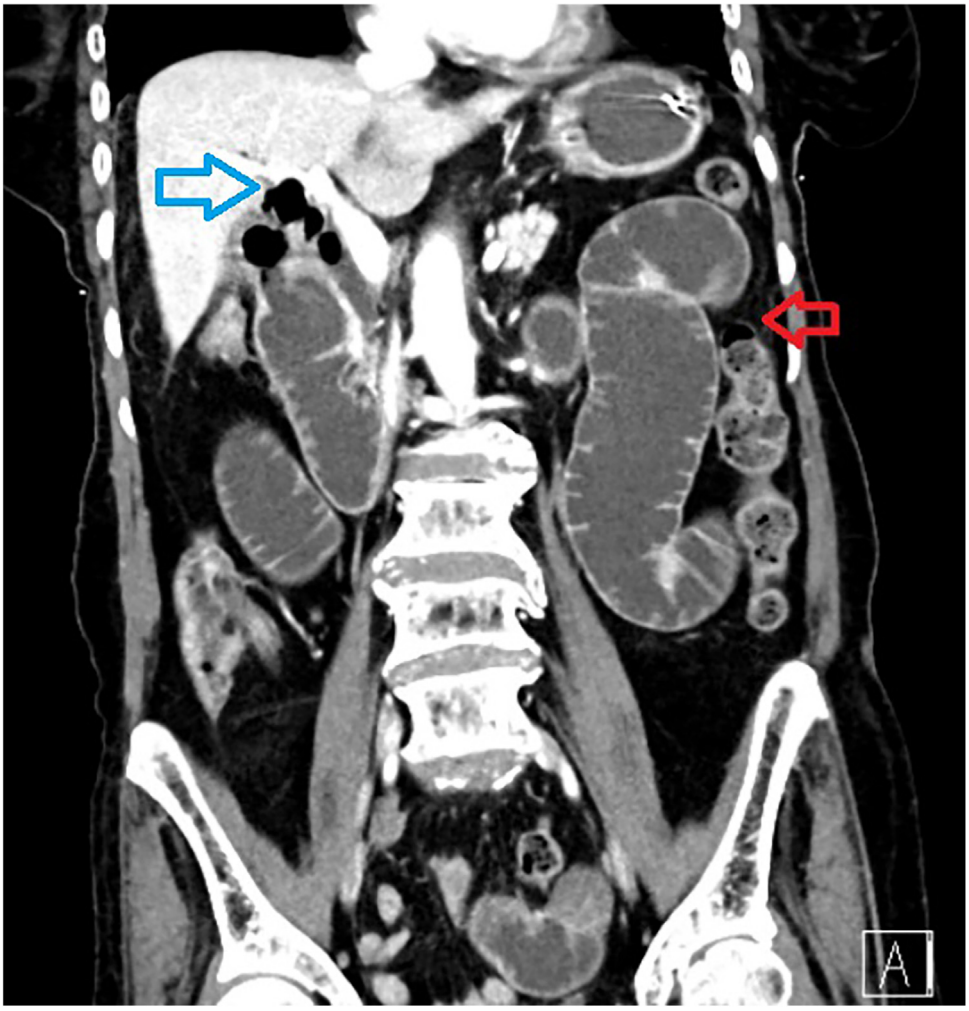

Fig. 1. CT abdomen showing the classical Rigler's triad of GSI. The red arrow indicates the ectopic gallstones. The blue arrow indicates the pneumobilia. Also, notice the dilated small bowel loops.

ileocecal junction. An atraumatic clamp was used to locate the impacted stones (Fig. 2A). After application of two stay sutures using 2/0 vicryl (Fig. 2B), a 3-cm longitudinal enterotomy was made just proximal to the stones (Fig. 2C). Multiple stones were extracted using stone extractor and suction. Stone and bowel spillage was minimized by [1] manipulation of the stay sutures [2], frequent suction [3], application of atraumatic intestinal clamp proximal to the enterotomy and [4] placement of 4 × 4 gauze around the enterotomy. Stones were collected in an endo-bag and removed via the 10-mm working port. The enterotomy was closed transversely by continuous 2/0 vicryl on endo-stitch (Fig. 2D). Thorough abdominal wash was done and a drain was inserted. The whole procedure took around 140 min.

Pre-operative IV antibiotics were given and continued for 48 h postoperatively for minimal spillage. Medical thrombo-embolic prophylaxis and pneumatic compression devices were used. Nasogastric tube and abdominal drain were removed on the second and third postoperative day respectively. Oral diet was resumed gradually on the third day. The patient had smooth postoperative course and was discharged in stable condition on sixth postoperative day. She is followed-up regularly in surgical clinic.

3. Discussion

Despite its rarity, GSI has a higher morbidity and mortality comparing to other causes of SBO as most of the patients are elderly with multiple comorbidities. Late presentation, difficult diagnosis, dehydration as well as electrolyte abnormalities contribute to its high mortality rate. GSI can be classified into 1- acute classical GSI, 2- recurrent attacks of subacute SBO and 3- chronic, known as Karewsky syndrome, due to repeated passage of stones into small bowel [5].

The duodenum is the most common site for fistula. The gallstones, if larger than 2 cm, usually become impacted in terminal ileum and ileocecal valve. Other sites include jejunum, duodenum, stomach or colon.

Preoperative diagnosis is difficult, challenging and reported in about 43–73% of cases [6]. Plain abdominal films usually show signs of SBO. Rigler's triad is pathognomonic, however, not present in most of cases. Some authors described more radiological signs: change of site of gallstones noted in a previous film, Forchet sign (clear halo of the stone surrounded by snake's head of contrast) and Petren sign (passage of oral contrast through the fistula to gallbladder) [5]. The liberal use of CT in causalities facilitates early diagnosis of GSI with sensitivity reaching up to 93% [7]. Our patient presented with acute SBO without previous history of biliary diseases. CT abdomen rather than plain abdominal films showed the classical Rigler's triad with stone impacted in ileum 70-cm proximal to the ileocecal junction.

The aim of emergency surgery, after resuscitation and stabilization, is to relieve the intestinal obstruction. Four procedures are described: 1- one-stage procedure including enterolitho-

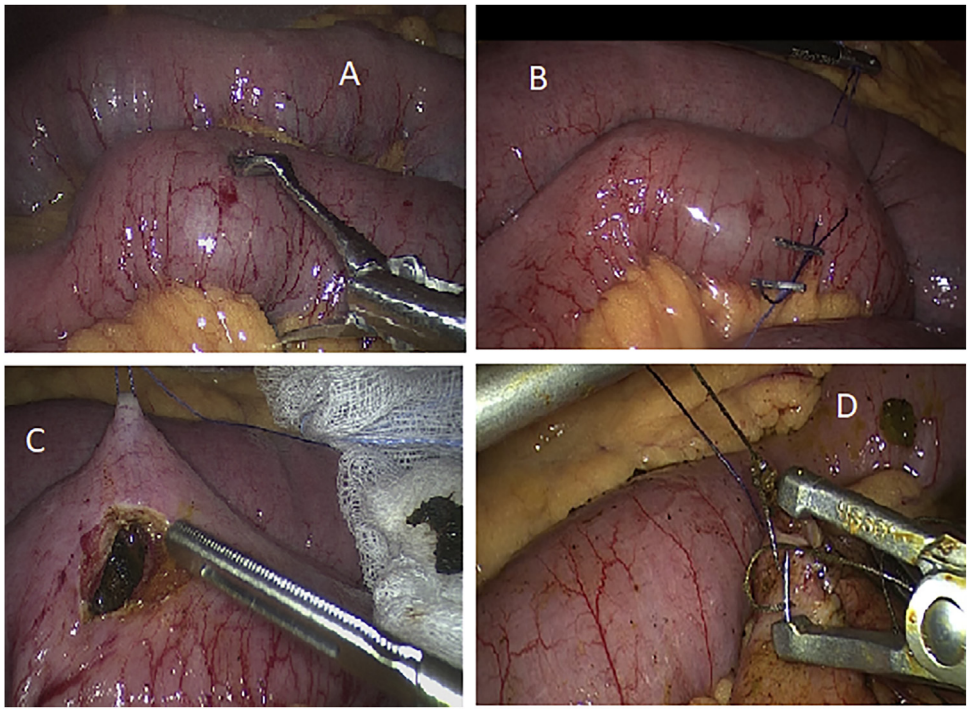

Fig. 2. Intraoperative findings. A: Impacted gallstones were located using atraumatic clamps, B: Applying stay sutures for facilitation of bowel manipulation, C: Extraction of gallstones through enterotomy; notice the gallstones over the gauze and inside the bowel lumen, D: Closure of enterotomy transversely using Endo-stitch.

tomy, cholecystectomy with fistula repair, 2- two-stage procedure with initial enterolithotomy followed by fistula closure and/or cholecystectomy, 3- enterolithotomy alone, 4- bowel resection alone or with cholecystectomy and fistula repair. Open surgery carries significant morbidity (20–57.5%) and mortality (7–18%) [8]. In 1993, Montgomery et al reported the first laparoscopic assisted enterolithotomy for GSI [9]. In 1994, Franklin et al performed complete laparoscopic enterolithotomy [10]. Since then, the laparoscopic approach has been widely attempted. In general, laparoscopic enterolithotomy is preferred if performed by an expert laparoscopic surgeon in a well-equipped center. We prefer laparoscopic enterolithotomy alone as it avoids the complications of fistula closure and cholecystectomy secondary to massive adhesions and obscure anatomy.

Spillage is a concern especially in laparoscopic approach. Owera et al described the use of nylon tape proximal to the site of enterotomy [8]. Shiwani used atraumatic clamps [11]. In our patient, we preferred to do enterolithotomy only due to extensive adhesions in the right upper quadrant. We used a combination of stay sutures, atraumatic clamps, suction, abdominal gauze around enterotomy site and fashioned endo-bag for stone retrieval. This technique resulted in an uneventful recovery of our patient. The patient did not experienced any biliary symptoms necessitating cholecystectomy or fistula closure after 2 years of follow-up.

4. Conclusion

Gallstone ileus should be considered in differential diagnosis of small bowel obstruction mainly in old females without previous history of abdominal surgery. CT is helpful in diagnosis. Laparoscopic enterolithotomy is safe, feasible and effective when performed by experienced surgeons.

Conflicts of interest

No conflicts of interest.

Sources of funding

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Ethical approval

Case reports are exempted from ethical approval.

Consent

Witten informed consent was obtained from the patient for publication of this case report.

Author contribution

Dr. M Khalid Mirza Gari: main author, study design, reviewing article.

Dr. Ahmed Eldamati: writing the paper, study design, data collection.

Dr. Mohammed S. Foula: writing the paper, corresponding author.

Prof. AbdulMohsen Al-Mulhim: reviewing article.

Dr. Abdulrahim Ahmed Abdulmomen: data collection.

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References

[1] R.M. Reisner, J.R. Cohen, Gallstone ileus: a review of 1001 reported cases, Am. Surg. 60 (6) (1994) 441–446.
[2] D. Soto, S. Evan, M. Kavic, Laparoscopic management of gallstone ileus, J. Soc. Laparoendosc. Surg. 5 (2001) 279–285.
[3] L. Chang, M. Chang, H.M. Chang, A.I. Chang, F. Chang, Clinical and radiological diagnosis of gallstone ileus: a mini review, Emerg. Radiol. 25 (2) (2018) 189–196.
[4] R.A. Agha, A.J. Fowler, A. Saeta, I. Barai, S. Rajmohan, D.P. Orgill, for the SCARE Group, The SCARE statement: consensus-based surgical case report guidelines, Int. J. Surg. 34 (2016) 180–186.
[5] M. Beuran, I. Ivanov, M.D. Venter, Gallstone ileus–clinical and therapeutic aspects, J. Med. Life 3 (4) (2010) 365–371.
[6] A.A. Ayantunde, A. Agrawal, Gallstone ileus: diagnosis and management, World J. Surg. 31 (6) (2007) 1292–1297.
[7] C.M. Nuño-Guzmán, Gallstone ileus, clinical presentation, diagnostic and treatment approach, World J. Gastrointest. Surg. 8 (1) (2016) 65.
[8] A. Owera, J. Low, B.J. Ammori, Laparoscopic enterolithotomy for gallstone ileus, Surg. Laparosc. Endosc. Percutan. Tech. 18 (5) (2008) 450–452.
[9] A. Montgomery, Laparoscope-guided enterolithotomy for gallstone ileus, Surg. Laparosc. Endosc. 3 (4) (1993) 310–314.
[10] M.E. Franklin, J.P. Dorman, W.W. Schuessler, Laparoscopic treatment of gallstone ileus: a case report and review of the literature, J. Laparoendosc. Surg. 4 (4) (1994) 265–272.
[11] M.H. Shiwani, Q. Ullah, Laparoscopic enterolithotomy is a valid option to treat gallstone ileus, JSLS 14 (2) (2010) 282–285.