International Surgery Journal
Nicol AV et al. Int Surg J. 2022 Sep;9(9):1631-1634
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/ 10.18203/2349-2902.isj20222242

Case Report

Delayed presentation to regional hospital of gallstone ileus

Alice V. Nicol*, Jessica Y. S. Ng, Rachel Colbran

Department of General Surgery, Mackay Base Hospital, Mackay, University of Queensland, Brisbane, Queensland, Australia

Received: 28 June 2022
Revised: 29 July 2022
Accepted: 05 August 2022

***Correspondence:**
Dr. Alice V. Nicol,
E-mail: alicevnicol@gmail.com

ABSTRACT

Gallstone ileus is a rare cause of mechanical intestinal obstruction accounting for less than 1% of obstructions and results from the migration and impaction of a gallstone within the gastrointestinal tract. It is a rare complication of cholelithiasis seen in as little as 0.3% of patients. Morbidity associated with gallstone ileus has been reported as up to 27% and mortality rate has been reported at rates ranging from 7% to 30%, this is attributed to advanced age, and delay to presentation at treatment. An 86-year old male who presented to a rural hospital with signs and symptoms consistent with small bowel obstruction and imaging demonstrating features consistent with gallstone ileus. Diagnosis was made on computed tomography (CT) of a small bowel obstruction secondary to a large impacted gallstone. Our case highlights the ongoing utility and diagnostic value of abdominal X-ray, particularly in rural facilities with limited resources. The case also highlighted the approach of laparoscopic assisted removal of gallstone alone in medically comorbid patients, in rural facilities and particularly in the elderly population who may not be fit for longer initial surgical procedures or subsequent procedures to close choledochoduodenal fistula.

Keywords: Gallstone ileus, Bowel obstruction, Rural, General surgery

INTRODUCTION

Gallstone ileus is a rare cause of mechanical intestinal obstruction accounting for less than 1% of intestinal obstructions and results from the migration and impaction of a gallstone within the gastrointestinal tract.[1] It is a rare complication of cholelithiasis seen in as little as 0.3% of patients, and a known history of cholelithisis exists reported in 25% to 75% of patients who present with gallstone ileus.[1,3] Morbidity associated with gallstone ileus has been reported as up to 27% and is attributed to advanced age and delay to presentation at treatment.[2] Abdominal X-ray has a diagnostic sensitivity of 40-70% while CT has a reported sensitivity of 93% and specificity of up to 100% in diagnosis of gallstone.[1,2] Treatment aims to remove the impacted gallstone and thus relieve intestinal obstruction.[1] Controversy exists regarding whether closure of the choledochoduodenal fistula should be undertaken at the time of enterolithotomy or at a later stage.[1]

CASE REPORT

An 86-year-old male presented to a rural hospital with a four-day history of profuse vomiting, generalised abdominal pain and obstipation. The patient described no previous abdominal pain or biliary symptoms but review of computed tomography pulmonary angiography (CTPA) performed two months prior showed a large gallstone in a thick wall and oedematous gallbladder. He had a history of atrial fibrillation on rivaroxaban and congestive cardiac failure and past surgeries included tonsillectomy only.

On examination he appeared generally unwell, was tachycardic to 125 beats per minute, had cool peripheries, and his abdomen was distended with epigastric percussion tenderness.

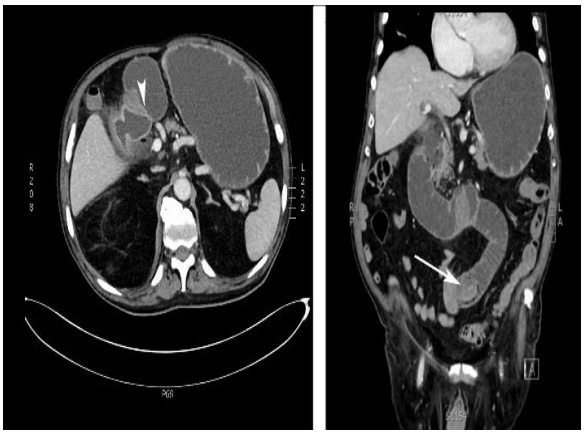

Figure 1: Axial and coronal views of the pre-operative CT scan, demonstrating dilated loops of small bowel and stomach with an impacted gallstone in the jejunum (arrow) and a bilioenteric fistula (arrowhead).

Initial laboratory evaluation revealed hypokalaemia K 3.0 mmol/l (3.5-5.2 mmol/l), chloride 93 mmol/l (95-110 mmol/l), total bilirubin 39 umol/l (<20 umol/l), conjugated bilirubin 7 umol/l (<4 umol/l), white cell count 27.8×109 /l (3.5-11×109 /l) and normal liver function tests. CT of the abdomen demonstrated a gallstone ileus associated with a choledochoduodenal fistula and pneumobilia (Figure 1). When compared to a prior CT, interval migration of a large gallstone from the gallbladder into the jejunum was noted. Erect abdominal X-ray demonstrated air fluid levels consistent with bowel obstruction, air in biliary tree and calcified aberrant gallstone in the left upper quadrant (the three components of Rigler's triad) (Figure 2).

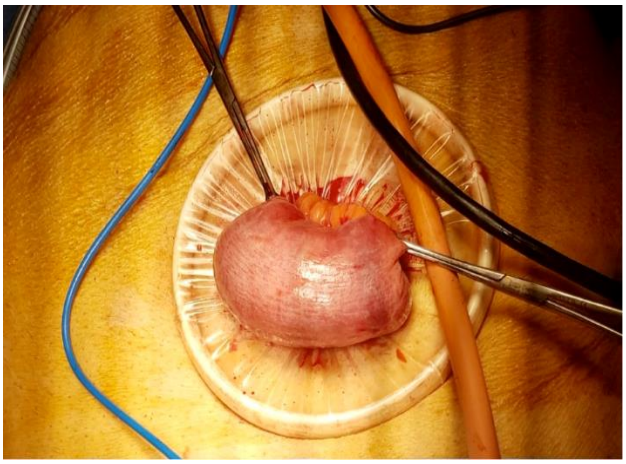

Figure 2: Intra-operative photograph of the jejunum containing gallstone at site of impaction delivered through abdominal wall prior to enterolithotomy.

Figure 3: Erect antero-posterior pre-operative abdominal X-ray demonstrating air fluid levels (arrow head) consistent with small bowel obstruction and calcified aberrant gallstone in right upper quadrant (arrow).

The patient was initially resuscitated with intravenous fluids, large bore nasogastric tube and aggressive electrolyte replacement. He proceeded emergently to a laparoscopic assisted enterolithotomy and removal of gallstone. The gallstone was green-brown in colour and measured 7×4 cm, with laboratory analysis indicating composition of cholesterol and protein (Figure 3).

The patient recovered well and was discharged home on post-operative day seven. After extensive discussion with the patient and family members, decision was made not to pursue operative intervention to close the choldochoduodenal fistula given patient's baseline level of function and medical comorbidities. The patient had subsequently returned to living independently in the community and has had no recurrence of symptoms at six month follow up.

DISCUSSION

Gallstone ileus is a rare cause of mechanical intestinal obstruction accounting for less than 1% of obstructions and results from migration and impaction of a gallstone within the gastrointestinal tract.[1,3] It is a rare complication of cholelithiasis seen in as little as 0.3% of patients with known cholelithiasis and a known history of cholelithisis exists reported in 25% to 75% of patients who present with gallstone ileus.[1,3] Morbidity associated with gallstone ileus had been reported as up to 27%, attributed to advanced age, delayed presentation and treatment.[2,4] Gallstone ileus symptoms and physical examination findings were nonspecific and were often dependent on the site of obstruction.[1,2] Up to 80% of patients reported a

history of biliary symptoms prior to the onset of gallstone ileus and 30% of patients had acute cholecystitis at time of presentation.[1] Typically gallstone ileus was preceded by acute cholecystitis during which pressure from an inciting gallstone caused ischemia, necrosis and erosion of the inflamed gallbladder wall, resulting in bilioenteric fistula formation between the gallbladder and the gastrointestinal tract (the most common site being the duodenum).[1-3] Gallstones in the gastrointestinal tract can become impacted at a point of narrowing, typically the terminal ileum and ileocaecal valve, resulting in intermittent partial or complete mechanical obstruction.[1]

Ischaemia of the bowel wall can occur at the site of impaction secondary to proximal distension and subsequent pressure, this can result in necrosis and perforation of the bowel wall.[1] Up to 80% of all gallstones pass spontaneously and stones less than 2 cm typically pass spontaneously without causing obstruction.[1,5,6]

Abdominal X-ray had a reported diagnostic sensitivity of 40-70% and was reported to be present in between 30% and 36% of cases of gallstone ileus.[2,4] Three common radiological signs seen in gallstone ileus (termed Rigler's triad) had been described; these included partial or complete bowel obstruction, pneumobilia and aberrant gallstones, with two of three occurring in up to 50% of patients with gallstone ileus.[1,2,7] All three elements of Rigler's triad was only seen in 14% of patient with gallstone ileus (Figure 2).[8] Ultrasound can be utilized to confirm presence of cholelithiaisis, choledocholithiasis, pneumobilia or fistula, however had little utility in diagnosis of bowel obstruction.[1] CT had a reported sensitivity of 93% and specificity of 100% in the diagnosis of gallstone ileus and can detect calcified ectopic gallstones, however less calcified gallstones can be missed.[1,4,9] Additional utility of CT was the ability to detect complications of gallstone ileus including ischemic or perforated bowel.[1]

Treatment aimed to remove the impacted gallstone and thus relieve intestinal obstruction.[1] It is common for patient to have significant fluid and electrolyte derangement on presentation secondary to delayed presentation requiring appropriate correction prior to surgical intervention, as well as prompt proximal decompression with nasogastric tube.[10] Enterolithotomy via laparotomy was the most commonly performed procedure, only 10% of cases were attempted laparoscopically with laparoscopic approach having a conversion rate to open of 50%.[1,2] A longitudinal incision was made through the antimesenteric border of bowel proximal to site of impaction and the gallstone is then extracted through the incision.[1,2] The bowel was milked to ensure additional proximal gallstones were removed.[1] The incision was then closed transversely to prevent narrowing of intestinal lumen.[1] Controversy existed regarding whether closure of the choledochoduodenal fistula should be undertaken at the time of enterolithotomy or at a later stage.[1] Literature reported a recurrence rate of up to 8% after enterolithotomy alone, with 50% of recurrences occurring within the first month.[1] A two-staged approach may be advantageous in treating the patient's acute condition without exposure to a more prolonged and complicated procedure when acutely unwell. Mortality of enterolithotomy alone was reported at 11.7%, compared to 16.9% in single-staged approaches and it had been suggested that shorter surgical times of enterlithotomy alone can be beneficial in elderly population in reducing morbidity and mortality rates.[2,11] Enterolithotomy alone was associated with an increased incidence of gallbladder malignancy at 15%.[1,2]

CONCLUSION

Our case highlights the ongoing utility and diagnostic value of abdominal X-ray, particularly in rural facilities with limited resources. The case also highlights the approach of laparoscopic assisted removal of gallstone alone in medically comorbid patients, in rural facilities and particularly in the elderly population who may not be fit for longer initial surgical procedures or subsequent procedures to close choledochoduodenal fistula.

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

REFERENCES

1. Nuno-Guzman CM, Marin-Contreras ME, Figueroa-Sanchez M, Corona JL. Gallstone ileus, clinical presentation, diagnostic and treatment approach. World J Gastrointest Surg. 2016;8(1):65-76.
2. Ploneda-Valencia CF, Gallo-Morales M, Rinchon C, Navarro-Muniz E, Bautista-Lopez CA, Cerda-Trujillo LF, et al. Gallstone ileus: an overview of the literature. Revista de gastroenterologia de Mexico. 2017;82(3):248-54.
3. Halabi WJ, Kang CY, Ketana N, Lafaro KJ, Nguyen VQ, Stamos MJ, et al. Surgery for gallstone ileus. Ann Surg. 2014;259(2):329-35.
4. Yu CY, Lin CC, Shyu RY, Hsieh CB, Wu HS, Tyan YS, et al. Value of CT in the diagnosis and management of gallstone ileus. World J Gastroenterol. 2005;11(14):2142-7.
5. Mir SA, Hussain Z, Davey CA, Miller GV, Chintapatla S. Management and outcome of recurrent gallstone ileus: a systematic review. World J Gastrointest Surg. 2015;7(8):152-9.
6. Lobo D, joblin JC, Balfour T. Gallstone ileus: diagnostic pitfalls and therapeutic successes. J Clin Gastroenterol. 2000;30(1):72-6.
7. Ringler L, Borman C, Noble J. Gallstone obstruction pathogenesis and roentgen manifestations. J Am Med Assoc. 1941;117(21).
8. Jakubauskas M, Luksaite R, Sileikis A, Strupas K, Poskus T. Gallstone Ileus: management and clinical outcomes. Medicina. 2019;55(9).

9. Alemi F, Seiser N, Ayloo S. Gallstone disease: cholecystitis, mirizzi syndrome, bouveret syndrome, gallstone ileus. Surgic Clin North Am. 2019;99(2):231-44.
10. Panda N, Cauley C, Qadan M. Gallstone ileus. journal of gastrointestinal surgery. J Soc Surg Aliment Tract. 2018;22(11):1989-91.
11. Zygomalas A, Karamanakox S, Kehagias I. Totally laparoscopic management of gallstone ileus-technical report and review of the literature. J Laparoendosc Adv Surg Techniq. 2012;22(3):265-8.

Cite this article as: Nicol AV, Ng JYS, Colbran R. Delayed presentation to regional hospital of gallstone ileus. Int Surg J 2022;9:1631-3.