

Distal Followed by Proximal Gastrointestinal Obstruction Due to Gallstones

Pritesh Mistry^a, Aikaterini Peleki^{a, c}, Theodore Ngatchu^b, Raj Nijjar^a

Abstract

Gastrointestinal obstruction is a rare complication of gallstone disease. Stones can enter the gastrointestinal tract (GIT) via the biliary system or following episodes of calculous cholecystitis and formation of a cholecystoenteric fistula. Common sites of obstruction are the proximal and distal ileum or distal jejunum; however, duodenal or gastric obstruction is rare. Surgical removal via laparotomy and enterotomy is currently the treatment of choice. We present a case where two gallstone obstructions at different sites occurred during a single admission, which has not been previously reported in the literature, and highlight the use of minimally invasive techniques in the management of gallstone obstruction.

Keywords: Gallstone ileus; Gastric outlet obstruction; Endoscopic removal of gallstone; Bouveret's syndrome

Introduction

Gallstones can cause many complications; however, bowel obstruction resulting from luminal impaction of a stone is rare [1]. It accounts for 1-4% of all bowel obstructions in the general population, and is the cause of 25% of non-strangulated small bowel obstructions in those over the age of 65 [1-3]. It has a female preponderance most probably due to the fact that women are more likely to have gallstones [4]. It is typically a disease of the elderly who have multiple co-morbidities; hence diagnosis and management can be challenging [1, 5]. We present a case where a patient had two complications from gall-

stone ileus during a single admission, which has not previously been reported in the literature, and highlight the use of minimally invasive techniques in the management of such cases.

Case Report

A 78-year-old male presented with a 3-week history of upper abdominal pain and vomiting. On examination, the patient was severely dehydrated. There was tenderness in the epigastrium and a succussion splash was audible. Gastric outlet obstruction was suspected and a CT scan was performed, which confirmed a significant stenosis of the pylorus, with appearances suggestive of a neoplastic process. A gastroscopy was attempted soon after to confirm the diagnosis, but it was inconclusive due to the presence of a large amount of gastric fluid residue.

Gastric drainage was established via nasogastric tube insertion and further gastroscopy revealed non-specific pyloric inflammation, confirmed histologically from biopsy at the time of the procedure.

A significant clinical deterioration over the next 2 days mandated a further CT scan, which revealed cholecystoenteric communication and gallstone ileus, with a calculus within the mid small bowel measuring 3 cm (Fig. 1), as well as gastric outlet obstruction due to ongoing pyloric inflammation. The patient underwent an emergency laparotomy, where the gallstone was retrieved via enterotomy and gross small bowel ob-

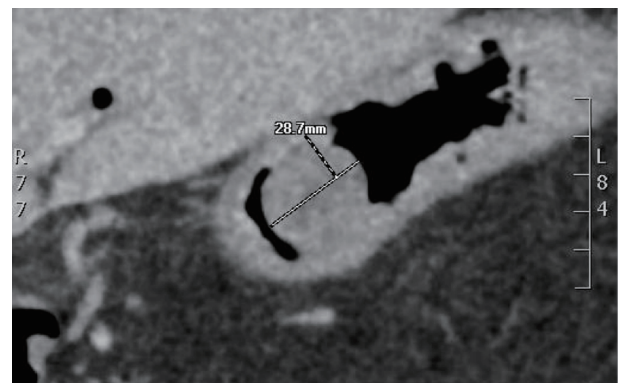


Figure 1. Image from CT scan showing gallstone in the distal antrum causing gastric outlet obstruction.

Manuscript accepted for publication December 16, 2014

^aDepartment of General Surgery, Birmingham Heartlands Hospital, Birmingham, UK

^bDepartment of Gastroenterology, Birmingham Heartlands Hospital, Birmingham, UK

^cCorresponding Author: Aikaterini Peleki, Department of General Surgery, Birmingham Heartlands Hospital, B4 Kenilworth Court, Hagley Road, B16 9NS Birmingham, UK. Email: kpeleki@doctors.org.uk

doi: <http://dx.doi.org/10.14740/jmc2032e>

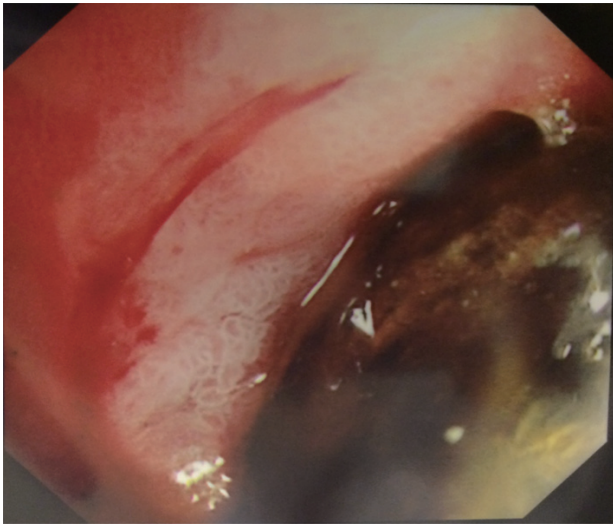


Figure 2. Endoscopy showing the gallstone impacted at the pylorus.

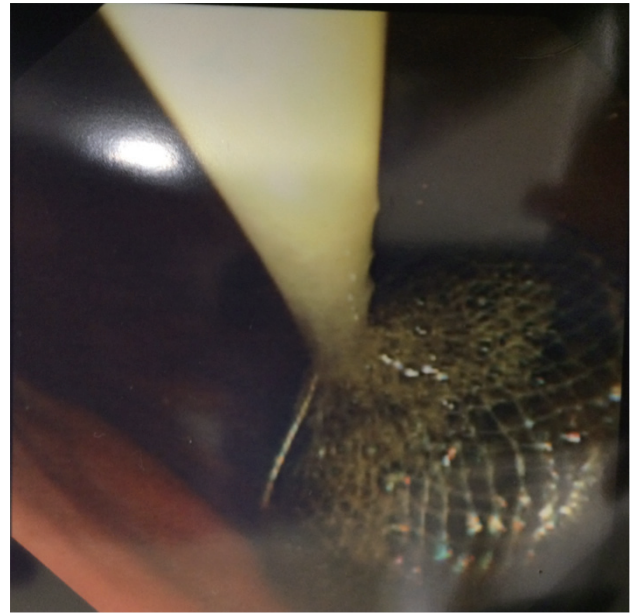


Figure 3. The gallstone being retrieved in the Roth net.

struction was relieved.

Post-operative recovery was initially steady; however, 3 weeks into the admission clinical progress was not satisfactory, with persistent features of proximal obstruction. A third CT scan at that stage showed established gastric outlet obstruction, again highly suspicious of malignancy. The previously taken biopsies revealed inflammation only with no dysplasia.

High volumes of gastric fluid residue required drainage before a further gastroscopy successfully identified a second large gallstone at the pylorus, causing obstruction (Fig. 2). This was retrieved with the aid of a lithotripter to fragment the stone due to its size and Roth net to retrieve the fragments (Fig. 3). All symptoms of intestinal obstruction resolved following this and the patient made a full recovery.

Discussion

A gallstone may enter the gastrointestinal tract (GIT) through the biliary system or via a biliary-enteric fistula. With the latter there are episodes of preceding recurrent calculous cholecystitis resulting in extensive inflammation and adhesions between the gallbladder and GIT [1]. This facilitates the formation of a cholecystoenteric fistula and a channel of entry for the gallstone usually into the duodenum; however, other sites can be the stomach, colon or small bowel [1, 3]. In order of frequency, common sites for obstruction are the terminal ileum, proximal ileum or distal jejunum, colon and only 2% in the duodenum. Obstruction at the duodenal level is known as Bouveret's syndrome where impaction of the stone causes gastric outlet obstruction [3]. It is generally believed that stone size is an important factor and that stones less than 2.5 cm have a possibility of passing spontaneously [6]. Stones larger than this are likely to cause an obstruction. In our case, the stones measured 2.87 cm in diameter.

The mortality rate has improved over time; however, it remains high at 15-18% due to the multiple co-morbidities of

this patient group [2]. In patients presenting with Bouveret's syndrome, the mortality can be up to 24% [7]. A delay in diagnosis can be a contributing factor as the symptoms of obstruction can resolve and then reoccur as the obstructing stone is propelled distally in the small bowel, known as the "tumbling phenomenon" [1, 5]. Symptoms can vary from those classically seen in bowel obstruction with abdominal pain, distension, nausea and vomiting, to fluid and electrolyte imbalances and weight loss [1]. In the case of Bouveret's syndrome early nausea and vomiting and abdominal pain are predominant features leading to dehydration. These patients present a diagnostic dilemma with series reporting a median delay of 3 days between admission and surgery [1].

Plain abdominal radiography is usually the first investigation carried out in patients presenting with bowel obstruction and can occasionally yield a definitive diagnosis of gallstone ileus. The classical Rigler's triad of dilated bowel loop, pneumobilia and an aberrantly located gallstone is seen in less than 50% of cases [3]. More often other imaging modalities are required and in a minority of cases the diagnosis is made at operation. With the widespread availability of CT scanning, information regarding the site and cause of the obstruction can give a rapid diagnosis in the acute setting [1, 5, 8]. USS and contrast studies can also be useful. CT scanning was used in both presentations of our case. With regard to the gastric outlet obstruction, OGD can make the diagnosis; however, the gallstone is visualized in only 69% of cases, with the remaining requiring a combination of imaging techniques [9]. It is not uncommon for the stone to be obscured at endoscopy in cases of Bouveret's syndrome due to it being embedded in the mucosa or there is compression of the lumen [10]. Although up to 90% of patients require surgery [7], it has to be remembered that OGD can be therapeutic as well as diagnostic. In this case, it avoided a second laparotomy in a patient who had undergone

a major procedure 10 days previously.

There is no consensus on how these patients should be managed; however, many advocate that enterolithotomy and stone extraction is all that is required due to the elderly population this condition commonly affects [1, 2, 8, 9]. There is a higher morbidity and mortality associated with a one stage approach involving the above with the addition of a cholecystectomy and fistula closure. This can be done with a two stage approach with the cholecystectomy and fistula closure being carried out at a later date. Recurrence of gallstone ileus and ongoing biliary symptoms occur in 5% and 10% of patients respectively and spontaneous closure of the fistula can be seen in up to 50% of cases [2].

In Bouveret's syndrome, various treatments have been suggested including endoscopic removal, endoscopic laser lithotripsy, intracorporeal electrohydraulic lithotripsy and surgery [10]. In patients who are at high risk with multiple comorbidities, it can be a viable option; however, multiple sessions may be required and there is a risk that if the stone is not removed *en masse*, distal obstruction may ensue [10]. In the case presented above, the stone was evacuated in a single procedure.

Conclusion

Our case highlights that the management of this rare condition should be tailored to the patient and clinical scenario. If a patient is fit enough, surgery offers the best solution. Select high-risk cases can be successfully managed with minimally invasive endoscopic techniques.

References

1. Ayantunde AA, Agrawal A. Gallstone ileus: diagnosis and management. *World J Surg.* 2007;31(6):1292-1297.
2. Reisner RM, Cohen JR. Gallstone ileus: a review of 1001 reported cases. *Am Surg.* 1994;60(6):441-446.
3. Clavien PA, Richon J, Burgan S, Rohner A. Gallstone ileus. *Br J Surg.* 1990;77(7):737-742.
4. Stinton LM, Shaffer EA. Epidemiology of gallbladder disease: cholelithiasis and cancer. *Gut Liver.* 2012;6(2):172-187.
5. Halabi WJ, Kang CY, Ketana N, Lafaro KJ, Nguyen VQ, Stamos MJ, Imagawa DK, et al. Surgery for gallstone ileus: a nationwide comparison of trends and outcomes. *Ann Surg.* 2014;259(2):329-335.
6. Farooq A, Memon B, Memon MA. Resolution of gallstone ileus with spontaneous evacuation of gallstone. *Emerg Radiol.* 2007;14(6):421-423.
7. Lowe AS, Stephenson S, Kay CL, May J. Duodenal obstruction by gallstones (Bouveret's syndrome): a review of the literature. *Endoscopy.* 2005;37(1):82-87.
8. Tandon A, Usha T, Bhargava SK, Bhatt S, Bhargava S, Prakash M, Durgadas AA. Resolution of gallstone ileus with spontaneous evacuation of gallstone: a case report. *Indian J Surg.* 2013;75(3):228-231.
9. Cappell MS, Davis M. Characterization of Bouveret's syndrome: a comprehensive review of 128 cases. *Am J Gastroenterol.* 2006;101(9):2139-2146.
10. Doycheva I, Limaye A, Suman A, Forsmark CE, Sultan S. Bouveret's syndrome: case report and review of the literature. *Gastroenterol Res Pract.* 2009;2009:914951.