

Recurrent Gallstone Ileus

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Abstract. We present the case of a recurrent gallstone ileus in a 76-year old female patient. In both episodes only a simple enterotomy with stone extraction was performed. Four months later, she is fully recovered and in good health. Recurrent gallstone ileus most often occurs in elderly patients with multiple co-morbidities. In our aging population, its prevalence is expected to increase.

Because of the vague, intermittent symptoms, diagnosis of gallstone ileus is often delayed, contributing to its high mortality rate. CT-scan has become the preferred diagnostic imaging modality. Treatment should be individualized, with stone removal by enterotomy alone being the most commonly used strategy. For symptomatic patients a two-stage procedure with urgent enterotomy followed by a delayed cholecystectomy, can be considered. The one-stage procedure, in which enterotomy is combined with cholecystectomy and fistula closure, should be reserved for those few patients with minimal cholecystitis and in good overall condition.

Introduction

Gallstone ileus is a rare condition, first described by Erasmus Bartholin in 1654 as a mechanical intestinal obstruction due to impaction of a gallstone within the lumen of the bowel. It occurs in 0.3-3% of all patients with cholecystolithiasis and accounts for 1-3% of all mechanical small bowel obstructions (1). However, in patients over the age of 65, gallstone ileus is responsible for 25% of the non-strangulated small bowel obstructions (2). Due to age-related co-morbidities, the occurrence of gallstone ileus at a mean age of 74.3 years results in a high morbidity and in mortality rates ranging from 7.1% to 18% (1-3).

The aetiology of gallstone ileus is an acute or chronic calculous cholecystitis with obstruction of the cystic duct, leading to formation of cholecysto-enteric fistulas (4). Bowel obstruction is uncommon, with 80% of stones being passed spontaneously. However, stones with a diameter of 2 cm or more are more likely to cause true mechanical obstruction (5). Impaction of the gallstone can occur in any part of the bowel, but is most frequently (60.5%) located in the terminal ileum (2, 6). Impaction in the duodenum (3.5%) causes symptoms of gastric outlet obstruction, known as the Bouveret's syndrome (2, 6).

Case-report

A 76-year old Caucasian female with Parkinson's disease, hypothyroidism and cholecystolithiasis, presented at the emergency department with a 4-day history of colicky right upper quadrant pain, nausea, vomiting and obstipation. Clinical examination revealed a distended

abdomen with tenderness in the right upper quadrant. Serology showed an elevated CRP (118 mg/L), leucocytosis ($19.4 \times 10^9/L$) and acute kidney failure due to dehydration (creatinine 28.2 mmol/L, GFR 16 ml/min/1.7). A CT scan demonstrated a mechanical small bowel obstruction by a gallstone, 8.0 cm before Bauhin's valve (Fig. 1). A laparotomy was performed and the stone was extracted through an enterotomy. The gallbladder was left in place. On postoperative day (POD) 1 oral feeding was started. During the next 4 days, oral intake could not be increased, no bowel movement was noticed and the patient developed a pneumonia. A postpyloric nasogastric feeding tube was inserted to deliver enteral feeding and intravenous antibiotics were administered. Over the next days the clinical condition did not improve. On POD 11 we performed an abdominal X-ray that revealed another gallstone in the pelvis. Initially we held a conservative policy, but three days later, the symptoms of mechanical obstruction returned. A new CT scan confirmed the presence of this second gallstone, 2.7 cm before Bauhin's valve (Fig. 2), some smaller stones 15 cm more proximally and no more concrements within the gallbladder. The abdomen was reopened and the largest stone was extracted through a second enterotomy. Again, cholecystectomy was not performed. On POD 3 after the second surgery, the ileus resolved and oral feeding could be increased. The patient was discharged from the hospital on POD 6. At this moment, four months later, she is fully recovered and in good health.

Discussion

Commonly, the clinical presentation of gallstone ileus is non-specific, often with intermittent symptoms of small

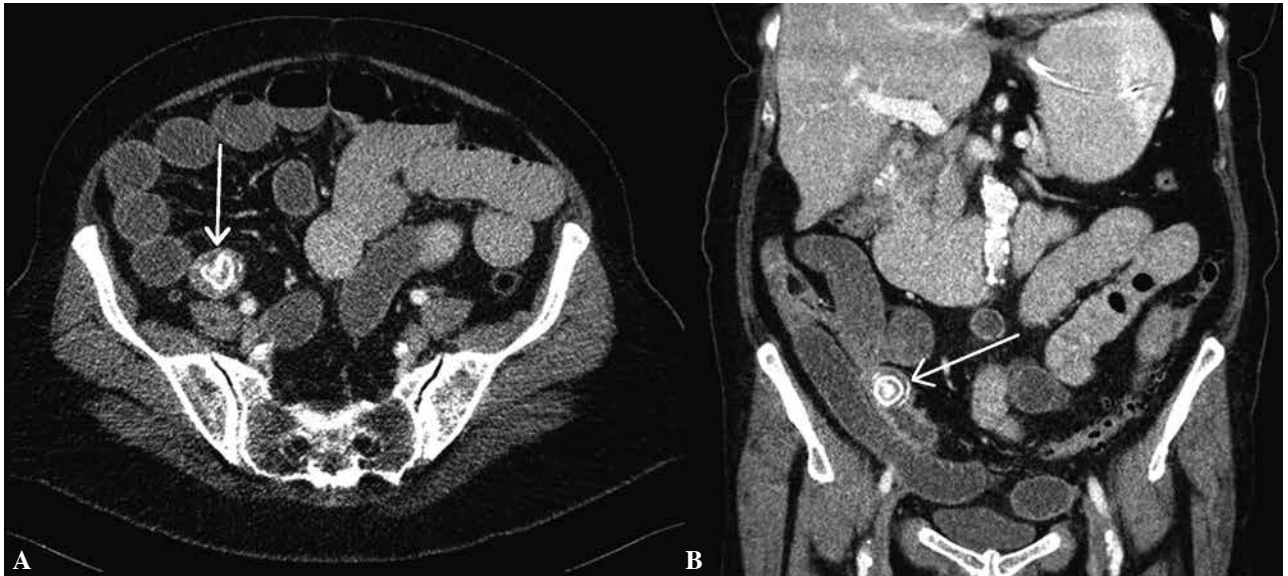


Figure 1. CT-scan demonstrating a mechanical small bowel obstruction by a gallstone, 8.0 cm before Bauhin's valve. A. Transversal plane, B. Coronal plane.

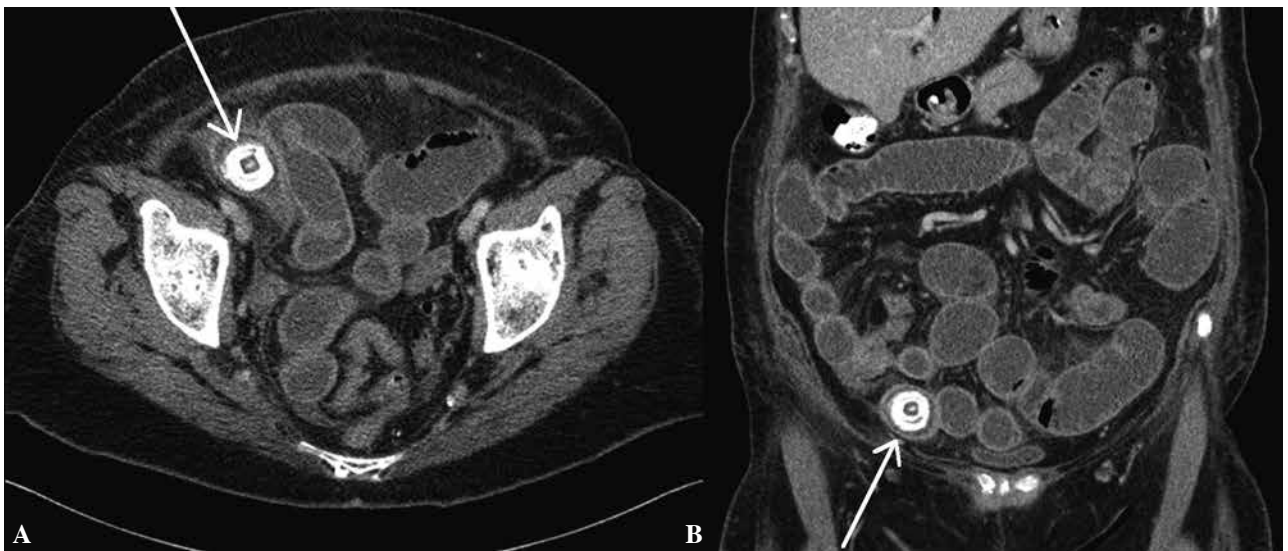


Figure 2. CT-scan, 14 days after initial surgery, demonstrating a second gallstone, 2.7 cm before Bauhin's valve. A. Transversal plane, B. Coronal plane.

bowel obstruction including nausea, vomiting, abdominal distension and pain (7). This so called 'tumbling obstruction' is caused by the intraluminal gallstone, passing through the small bowel while provoking periodical obstructions (5). Usually, the symptoms have been present for 3-5 days before admittance and diagnosis is delayed because of this non-specific presentation (4, 7).

In 1941, RIGLER *et al.* described the classic radiologic triad of pneumobilia, small bowel obstruction and an ectopic gallstone on abdominal X-ray, as being specific for gallstone ileus (7). However, since only 10% of gall-

stones are radiopaque, and Rigler's triad is only present in 14.8% of patients submitted to this investigation, plain abdominal X-rays have a very low sensitivity (3, 8). Upper GI tract series could show the intraluminal stone and the fistula, as can abdominal ultrasound when combined with plain abdominal X-rays with an increased diagnostic sensitivity to 74% (3, 4, 7). Today, computed tomography is the diagnostic golden standard for gallstone ileus as it is more sensitive (93%), more specific (100%) and has a diagnostic accuracy of 99% (9). Thereby it can show the location of multiple gallstones and identify the

various levels of obstruction (10). But, preoperative diagnosis of gallstone ileus is only made in 50-60% of patients (2, 6, 7).

The proper treatment of gallstone ileus remains subject to discussion. Because of the dilated and oedematous bowel, laparoscopy-assisted methods appear to be more challenging and are therefore reserved for individual cases (4, 6). In the presence of an impacted stone with imminent perforation, resection of small bowel is necessary (3). Generally, there are three surgical strategies. The first and most commonly used method is an enterotomy with stone extraction alone, using a longitudinal incision placed on the anti-mesenteric border proximal to the site of impaction and with transverse closure of the enterotomy to prevent narrowing of the intestinal lumen (6). Recurrence of gallstone ileus after this procedure is low : overall recurrence rate is 5-8.2%. Half of the recurrences occur within the first six months, the rest within 2 years (2, 8). However, only 5% of patients who undergo enterotomy alone will develop biliary symptoms and many fistulas will close spontaneously (> 50%) (5, 6). The second method is a one-stage procedure whereby the enterotomy is combined with cholecystectomy and fistula closure. The idea behind this procedure is to prevent complications such as recurrence of gallstone ileus, cholecystitis, cholangitis and malabsorption due to the presence of a cholecystocolic fistula (5). This one-stage procedure has a longer operating time and should therefore be reserved for those few patients that present with minimal cholecystitis and are in good overall condition (2, 3, 5). The third strategy is a two-stage procedure allowing a delayed cholecystectomy, to prevent recurrence and to avoid the increased incidence of gallbladder cancer among patients with fistulas (15%) (5). This two-stage procedure is applied in patients with symptoms of cholecystolithiasis (10). As our patient had several comorbidities and no more cholecystolithiasis were seen on the second CT-scan, the repeated stone extraction alone,

without a concomitant or second stage cholecystectomy, appeared to us the most appropriate treatment strategy for this recurrent gallstone ileus.

Acknowledgements

The authors would like to thank Marc VAN DET and Katja THIJSSENS for their valuable help regarding the patients' medical care and Jan DENING for providing the figures.

References

1. WEBB L. H., OTT M. M., GUNTER O. L. Once bitten, twice incised : recurrent gallstone ileus. *Am J Surg*, 2010, **200** : e72-e74.
2. REISNER R. M., COHEN J. R. Gallstone ileus : a review of 1001 reported cases. *Am Surg*, 1994, **60** : 441-446.
3. KIRCHMAYR W., MÜHLMANN G., ZITT M., BODNER J., WEISS H., KLAUS A. Gallstone ileus : rare and still controversial. *ANZ J Surg*, 2005, **75** : 234-238.
4. FITZGERALD J. E. F., FITZGERALD L. A., MAXWELL-ARMSTRONG C. A., BROOKS A. J. Recurrent gallstone ileus : time to change our surgery ? *Journal of digestive diseases*, 2009, **10** : 149-151.
5. DAI X. Z., LI G. Q., ZANG F., WANG X. H., ZHANG C. Y. Gallstone ileus : case report and literature review. *World J Gastroenterol*, 2013, **19** : 5586-5589.
6. HAYES N., SAHA S. Recurrent gallstone ileus. *Clinical medicine & research*, 2012, **10** : 236-239.
7. RIGLER L. G., BORMAN C. N., NOBLE J. F. Gallstone obstruction : pathogenesis and roentgen manifestation. *JAMA*, 1941, **117** : 1753.
8. HUSSAIN Z., AHMED M. S., ALEXANDER D. J., MILLER G. V., CHINTAPATLA S. Recurrent recurrent gallstone ileus. *Ann R Coll surg Engl*, 2012, **92** : 1-3.
9. CLAVIEN P. A., RICHON J., BURGAN S., ROHNER A. Gallstone ileus. *Br J Surg*, 1990, **77** : 737-742.
10. PRONIO A., PIROLI S., CAPORILLI D. *et al.* Recurrent gallstone ileus : case report and literature review. *G Chir Vol*, 2013, **34** : 35-37.

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