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A peculiar cause of bowel obstruction

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ABSTRACT

INTRODUCTION: Gallstone disease is one of the most common surgical problems necessitating intervention. It is estimated that approximately 15% of people in the western world will develop gallstones. Of these patients, 35% of patients initially diagnosed with gallstones will later develop a complication which will eventually result in cholecystectomy.[2]

One of these complications is gallstone ileus, which is a rare complication associated with high morbidity and mortality, and the diagnosis is often missed.[3]

PRESENTATION OF CASE: A 66 year old female presented with an acute onset of "colicky" abdominal pain accompanied with vomiting. She had known gallstones diagnosed previously by ultrasound. Her abdomen was generally tender with guarding of the right hypochondrium and absent bowel sounds.

DISCUSSION: Gallstone ileus accounts for 0.5–4% of all cases of small bowel obstruction, and typically affects females over the age of 65.[3,4] The pathophysiological basis of the disease involves fistulation of the gallstone through the wall of the gallbladder into the bowel, where it becomes impacted and leads to obstruction. Mortality of the condition is not sufficiently reported, but surgical intervention in itself conveys significant morbidity, and mortality has been reported to be 18%.[3,9]

CONCLUSION: We report a single large gallstone, which we believe to be one of the largest documented in recent literature, resulting in gallstone ileus. We also present a brief synopsis of the diagnosis and management of the condition, which although rare, should be considered by the astute surgical trainee.

1. Introduction

Gallstone disease is one of the most common surgical problems necessitating intervention. Indeed, in 2003–2005, there were 25,743 emergency admissions with acute gall bladder disease in the UK, 56% of which had biliary colic and 36% had acute cholecystitis.[1] It is estimated that approx 15% of people in the western world will develop gallstones. Factors affecting their prevalence include increasing age, female sex, obesity, diabetes, pregnancy, increased oestrogen exposure, haemolytic disease and cirrhosis. It is thought that approximately 35% of patients initially diagnosed with gallstones will later develop a complication, which will eventually result in cholecystectomy.[2]

The following case report and discussion highlights a rare complication of gallstone disease and its management, which conveys a significant increase in morbidity and mortality.

2. Presentation of case

A 66 year old female presented with a two day history of right upper quadrant pain, colicky central abdominal pain and a 24-h history of vomiting. She had a previous diagnosis of gallstones on ultrasound, but was otherwise fit and healthy. There had been no previous hospital admissions and she had remained otherwise asymptomatic until this presentation.

On examination she was pyrexic, tachycardic and hypotensive with no obvious jaundice. The abdomen was distended and tympanic with generalised tenderness and guarding in the right upper quadrant. Bowel sounds were decreased. Digital rectal examination was normal.

Blood investigations revealed a white cell count of 14.7, CRP of 23. Erect chest X-ray revealed no free air under the diaphragm and abdominal X-ray showed dilated small bowel loops in keeping with small bowel obstruction, and an opacity in the right iliac fossa.

A CT scan of abdomen and pelvis was carried out to ascertain the cause of the obstruction. The scan revealed pneumobilia (Fig. 1) and a large gallstone in the area of the terminal ileum (Figs. 2 and 3), in keeping with gallstone ileus.

At laparotomy, the small bowel was found to be dilated. The terminal ileum was identified and an enterolithotomy performed with the removal of a large gallstone measuring 7 cm in length (Fig. 4).

Post operatively she made a good recovery and was discharged home on day nine.

3. Discussion

Gallstone ileus is a rare complication of gallstone disease, commonly observed in females over the age of 65,[4] and accounts for

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Fig. 1. Pneumobilia can be seen within the hepatic tissues on the CT scan.

0.4–5% of all cases of small bowel obstruction. Biliary enteric fistulae are a rare but well recognised complication of cholelithiasis, and was first described by Courvoisier.[5] The pathological processes involved in the formation of the cholecystoenteric fistula are that of chronic cholelithiasis, inflammation and adhesion with the gastrointestinal tract. This in turn facilitates erosion of the gallstone into the adjacent hollow viscus, with eventual passage of the gallstone into the gut.[6,7] The site at which impaction occurs, and the size required for a gallstone to produce ileus varies considerably. Whilst impaction can occur anywhere within the gastrointestinal tract, impaction commonly occurs at the relatively narrow terminal ileum when the stone is greater than 2.5 cm in diameter.[8] The largest recorded stone was 17.7 cm in maximum diameter and was described by Grey-Turner in 1932.[9] The size of the stone and the luminal diameter are the two main determining factors of impaction.[6]

Rigler described a triad for diagnosis of gallstone ileus which is characterised by the association of an ectopic gallstone, partial or complete bowel obstruction, and gas in the gallbladder or the biliary tree.[10]

There are a series of case reports in the literature describing large gallstones resulting in ileus, and although a rare cause, it is a diagnosis that was often missed before the advent of ultrasound and CT scanning,[11] the virtues of the latter being demonstrated in this case. The most common site of impaction is at the distal small bowel.Plain films remain the first step in the evaluation of patients with suspected gallstone ileus. Features include signs of bowel obstruction, a calcified stone within the bowel lumen and pneumobilia. Sensitivity of X-ray varies from 40 to 70%.[12] Pneumobilia is present in only one third of cases and recognition of

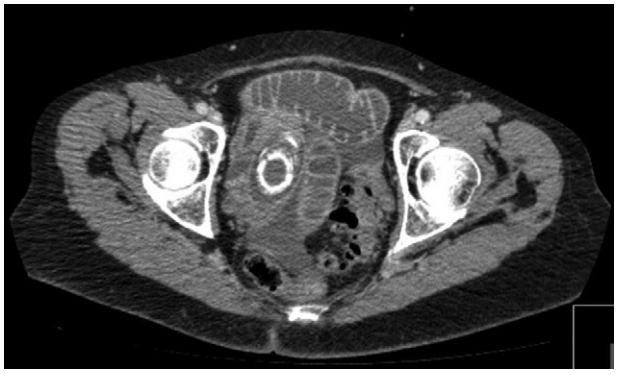

Fig. 2. A gallstone can be seen in the terminal ilium with dilated loops of fluid filled small bowel indicating obstruction.

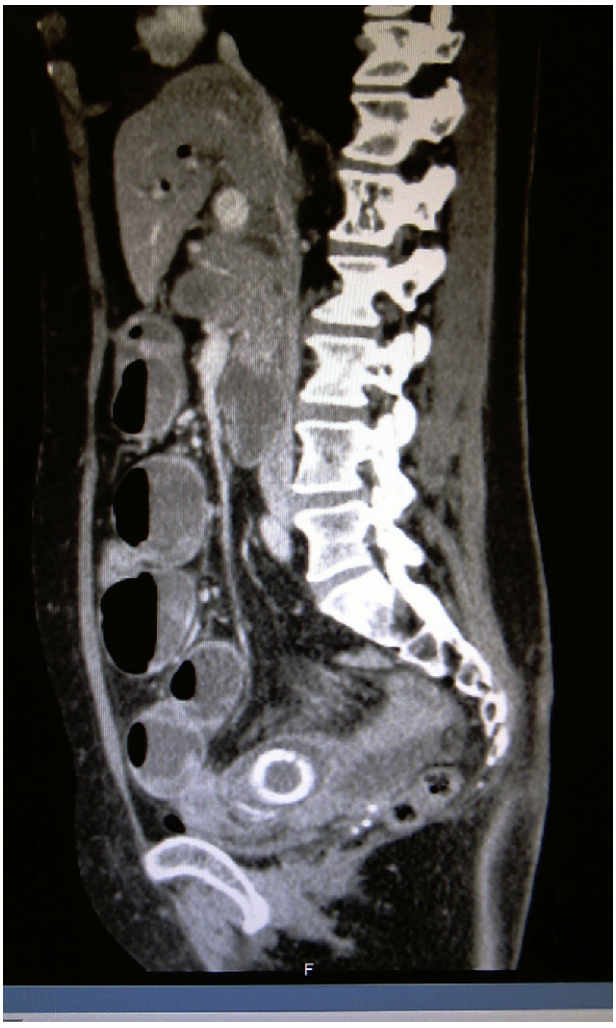

Fig. 3. Sagittal view of the gallstone in the terminal ilium. It gives a characteristic target appearance.

gallstones in the intestinal lumen depends upon the density of calcium in the stone.[10,11] Other diagnostic tools include fistulography, endoscopic retrograde cholangiopancreatography, PTC and operative cholecystography.[13–15]

Optimal treatment of gallstone ileus with fistula formation is challenging and controversial, owing to the therapeutic challenges and the low incidence of the disease itself. Only a few cases have been reported in the literature regarding the management of the most commonplace abnormality – cholecystoduodenal fistula.[16,17] Conservative management of cholecystoenteric fistula without obstruction can be employed with the administration of fluid and electrolyte replacement, antibiotic therapy, nasobiliary drainage and endoscopic sphincterotomy, with removal of further gallstones with or without stenting.[13] This follows the mantra of the principles of fistula management – addressing Sepsis, Nutrition, Anatomical consideration, and interventional Procedure (the "SNAP" mnemonic). Prognosis of these fistulae is good, with less than a 10% risk of mortality.[10]

The presence of gallstone ileus with complete obstruction is an absolute indication for emergency surgical intervention.

Surgical treatment is either by a one stage, or a two stage technique. Enterolithotomy alone is the most common treatment option. The one stage procedure involves enterolithotomy, cholecystectomy and fistula repair.