Cholecystocolonic Fistula Resulting in Large Bowel Obstruction due to Gallstone

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Introduction

Gallstone disease is one of the most common conditions that general surgeons encounter in Australia, affecting approximately 30% of people above the age of 50 [1]. Spontaneous biliary fistulae are rare inflammatory sequelae of gallstone disease. Mirizzi’s syndrome, gallstone ileus and Boucerat’s syndrome are a few forms of biliary fistulae. The incidence of these conditions account for less than 2% of gallstone diseases in developed countries. [2] Here we demonstrate a rare case of cholecysto-colonic fistula and an impacted gallstone resulting in a large bowel obstruction.

Case

A 75 years old female was admitted after a few days of abdominal pain, bloating, vomiting and examination findings consistent with a large bowel obstruction (LBO). A contrast CT of the abdomen showed a mechanical LBO at the level of the sigmoid colon due to a large impacted gallstone with associated thickening and stranding of the gallbladder wall (Figure 1). The patient was taken to theatre and in the first instance a flexible sigmoidoscopy was performed. The gallstone was impacted at the sigmoid colon and was unable to be removed. Due to the presence of an acute obstruction and the patient’s comorbidities, a Hartmann’s operation rather than a restorative procedure was performed. This was to safely resect the affected sigmoid colon where the stone had been impacted, retrieve the stone and relieve the mechanical obstruction. The fistula was not repaired at the primary operation.

Five months following the initial presentation, a combined cholecystectomy, primary repair of the transverse colon fistula and reversal of Hartmann’s procedure was performed. At the operation, a residual cholecysto-colonic fistula involving the proximal transverse colon was confirmed (Figure 2). An intra-operative cholangiogram excluded Mirrizi’s syndrome. (Figure 3) As such, the fistula was able to be resected and the affected transverse colon primarily repaired without narrowing. Bowel continuity was restored by anastomosing the descending colon to healthy upper rectum, devoid of diverticulae to reduce the risk of anastomotic leak.
Discussion

Fistulae between the gallbladder and the enteric system can occur following acute cholecystitis. Initially, inflammatory adhesions form between the gallbladder and the bowel. Pressure necrosis of the gallbladder wall then occurs due to gallstone impaction, with eventual erosion into the enteric tract and fistula formation. [3] Fistulae most commonly occur to the duodenum, however they can be encountered anywhere along the enteric tract including the stomach, colon or small bowel. [2, 3]

Mechanical bowel obstruction caused by an obstructing gallstone, often termed “gallstone ileus”, accounts for 1-3% of bowel obstructions [4]. It disproportionally affects elderly females by 3-16 folds, and carries a higher mortality than other causes of small bowel obstruction, as patients tend to be older and comorbid[3, 4]

The point of obstruction is ultimately determined by the relative size of the gallstone to the narrowest part of the GI tract. 90% gallstone ileus are caused by stones greater than 2.5cm[5]. Approximately 50%-80% of obstructions occur at the level of terminal ileum and the ileocecal valve[6]. Colonic obstruction due to a gallstone is associated with pre-existing pathology such as a diverticular stricture or inflammatory bowel disease, resulting in a narrowing of the colon [7]. Additionally in a study of more than 5000 patients with cholecystoenteric fistula, 90% of patients were found to harbour co-existing Mirizzi Syndrome[8]. Thus, it should be considered when cholecystoenteric fistula is suspected.

Patients with gallstone ileus present with usual bowel obstruction symptoms of abdominal pain, nausea and vomiting, distention and absence of bowel motions or flatus. An abdominal CT scan is considered the gold standard with a sensitivity of 93% and a specificity of 100%, demonstrating features of mechanical bowel obstruction, pneumobilia, presence of gas in gallbladder and biliary-enteric fistula[9]. Surgical repair is the standard of care which usually involves removal of the stone via enterotomy and repair of the enterotomy or resection of the segment of bowel, depending on the
condition of the bowel. Generally the fistula is not acutely repaired as some studies have shown that entero-lithotomy has a lower mortality rate compared to entero-lithotomy with fistula repair[9]. In the case presented, the fistula was repaired at a second operation with the restoration of colonic continuity when the patient’s physiological status was more favourable and the bowel was healthier and of a normal calibre.

Conclusion

Gallstone large bowel obstruction is a rare complication of gallstone disease as a sequelae of cholecystoenteric fistula formation. It is associated with a higher mortality rate than other causes of mechanical bowel obstruction and surgical enterolithotomy and repair is the standard of care.

Author Contribution

Mo Li: Conceptualization, Data curation, Visualisation, Original draft, Review and Editing

Corina Behrenbruch: Original draft, Review and Editing

Anshini Jain: Review and Editing

Mark Steven: Conceptualization, Investigation, Review and Editing, Supervision

Alex Wong: Conceptualization, Investigation, Review and Editing, Supervision


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