Enterolith from Small Bowel Diverticulum as an Uncommon Cause of Acute Small Bowel Obstruction and Literature Review

Yegi Sandy Kim*, Joyce Lok Gee Ma, Vladimir Bolshinsky

Frankston Hospital, 2 Hastings Road, Frankston, Victoria, Australia

*Corresponding author: Yegi Sandy Kim, Frankston Hospital, 2 Hastings Road, Frankston, Victoria 3199, Australia

Citation: Kim YS, Ma JLG, Bolshinsky V (2022) Enterolith from Small Bowel Diverticulum as an Uncommon Cause of Acute Small Bowel Obstruction and Literature Review. J Surg 7: 1639. DOI: 10.29011/2575-9760.001639

Received Date: 18 November, 2022; Accepted Date: 25 November, 2022; Published Date: 28 November, 2022

Abstract

Small bowel diverticula, though rare, can cause serious complications requiring surgical interventions. We report a case of a 73-year-old male presented with a mechanical small bowel obstruction secondary to enterolith from a small bowel diverticulum. The patient underwent a diagnostic laparoscopy and enterotomy with removal of dislodged enterolith in the setting of small bowel diverticular disease.

Introduction

Small bowel or jejunoileal diverticular disease is a rare condition and was first reported in 1807 by Sir Asley Cooper. It is commonly seen in an elderly population [1] and the exact aetiology is still unknown. Symptoms of small bowel diverticular disease can be vague and could result in diagnostic challenge. Complications that arise from small bowel diverticular disease such as chronic abdominal pain, malabsorption from bacterial overgrowth, bleeding, diverticulitis, perforation or primary enterolith formation causing small bowel obstruction [2] as demonstrated in our case. We detail this case to serve as a reminder to clinicians as a rare, yet important differential diagnosis for patients who presents with a small bowel obstruction.

Case History

A 73-year-old man presented to hospital with clinical evidence of a partial small bowel obstruction with intermittent passing of flatus. Significant past history included a prior laparoscopic cholecystectomy. Abdominal and pelvic Computed Tomography (CT) scan demonstrated dilated loops of small bowel consistent with a transition point in the distal ileum. At the transition point, there was a 37 x 20mm intraluminal mass (Figures 1, 2), thought to be an ingested foreign body, causing a mechanical obstruction. A gallstone ileus was excluded based on the patient’s history and given the past history of abdominal surgery a gastrograffin follow through was than performed to confirm a mechanical obstruction. Diagnostic laparoscopy revealed an enterolith causing small bowel obstruction in the distal ileum with proximal bowel dilatation and mild faecalization. Proximal to this were multiple large jejunal diverticula without palpable masses in situ. It was presumed that the enterolith was formed in one of the diverticula and migrated distally where it became obstructed. The small bowel was delivered via a small midline incision. An enterotomy was made (Figure 3), the enterolith (Figure 4) was removed and after excluding mucosal ulceration due to friction with the enterolith, the enterotomy was closed in a Heineke-Mikulicz fashion [3]. The rest of the small bowel was palpated and no other palpable masses were identified. The patient’s post-operative course was uneventful and he made a full recovery.
Outcome and Follow Up

The patient was followed up by the surgical team. There were no complications related to the surgery, nor any other symptoms related to the small bowel diverticula.

Discussion

Small bowel diverticulosis is false diverticula and is an acquired condition [4]. This is as oppose to true diverticular disease, Meckel’s diverticulum which is a congenital condition of the gastrointestinal system [5]. It originates from vitelline duct that fails to obliterate completely [5]. Non-Meckel’s small bowel diverticulosis has only mucosa and submucosa layers formed by increased intraluminal pressure and are located on the mesenteric side of the small bowel [6]. Small bowel diverticula are usually asymptomatic and difficult to diagnose. The reported incidence of jejunoileal diverticula is shown to be over 7% but is thought to be likely underestimated [4,7]. The incidence of enterolithiasis in this setting is thought to be less but is difficult to quantify exactly [8]. Often the small bowel diverticulosis is incidentally found on imaging or during exploratory laparoscopy or laparotomy [4]. Small bowel diverticulosis predisposes enterolith formation due to altered luminal propagation and peristaltic function causing stasis as well as changed luminal pH and bacterial overgrowth [8]. This results in deconjugating bile salts which precipitate into a stone forming enterolith [8]. Enteroliths may be composed of food particles with chemical foreign material or from choleric acid [8].

Patients with jejunoileal diverticulosis may have non-specific symptoms such as chronic abdominal pain, nausea, vomiting [7]. They may also experience altered bowel habits such as diarrhoea or constipation, weight loss or malabsorption [4]. Jejunoileal diverticulosis, can lead to serious complications such
as diverticulitis, haemorrhage, abscess formation, perforation and bowel obstruction [1,4]. Perforation is one of fatal complications of small bowel diverticula with high mortality rate if untreated [9]. Mansour et al. reported the incidence of perforation as 2.1-7% [9]. It can be caused by direct erosion of enterolith of the diverticulum or by mural necrosis in bowel dilatation from obstruction [10] and usually is managed with surgery of the affected region [2, 11]. As previously reported, excision of single diverticulum carries high complication risk hence segmental resection is recommended [2]. However, long term data regarding complications from remaining small bowel diverticulosis post resection has not been studied before. There is also a limited data on how long it will take for enterolith to form or solidify hence it is difficult to estimate the risk of another complication arising even post resection. On the basis of this, we do not advocate prophylactic resection, or imbrication of small bowel diverticula as an incidental finding during a laparotomy, though palpation of the small bowel may be of benefit.

Mechanical obstruction by enteroliths, which are dislodged from the small bowel diverticulum, is a rare complication of the small bowel diverticulum. More common aetiology of acute luminal obstruction in case of small bowel diverticulum is adhesional or inflammatory stenosis from recurrent diverticulitis [7]. Other reported causes include shear pressure of the diverticulum onto the small bowel, intussusception or volvulus [7,12]. In our case, gallstone ileus, which accounts for less than 5% of mechanical small bowel obstruction [13], was excluded however; we did not completely exclude the adhesional cause of small bowel obstruction given the patient’s history of laparoscopic cholecystectomy. One multicentre, retrospective study showed that the prevalence of adhesional small bowel obstruction with history of previous cholecystectomy was 0.11% [14]. Investigations such as abdominal x-ray or CT scan can guide in making diagnosis and management. Traditionally abdominal x-ray was used as a first-line to identify enteroliths especially calcium salts [15]. Nowadays, CT abdomen is readily available and used to identify the presence of enteroliths, their locations, underlying pathology as well as any complications [15]. Many studies have used CT abdomen on presentations which aided in making diagnosis early [10,16-23]. One case study [13] used a barium meal follow-through in their month follow-up to ensure no further obstruction or fistula was present.

Surgical interventions are often required in serious complications of small bowel diverticulosis. As demonstrated in our case, the bowel obstruction was managed by diagnostic laparoscopy, enterotomy and removal of the enterolith. Careful and thorough intraoperative examination was performed by palpating the small bowel diverticular to ensure there was no more enterolith that could potentially cause complications. The less invasive approach in managing enteroliths is crushing and milking the stone passed ileocaecal valve [13,24], however this will not address the potentially compromised bowel due to the impacted stone. Enterotomy is performed to deliver enterolith or furthermore, segment of small bowel may require to be resected in more serious cases [25]. The decision making during the operation can be challenging given there may be multiple diverticular present and not all can be resected. This is more challenging in cases of uncomplicated small bowel diverticulum where patients have vague symptoms such as nonspecific abdominal pain with no clear diagnosis [7].

Conclusion

Clinicians need to be aware that the patients with a prolonged history of small bowel diverticulosis can present with small bowel obstruction. Small bowel diverticulum and its complications also can present with vague symptoms hence can lead to diagnostic challenges. Serious complications can lead to significant morbidity and mortality hence early diagnosis is crucial to deliver an appropriate management for these patients as they often require surgical interventions.

References


