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Case Report

Cecal volvulus, a rare cause of intestinal obstruction with incidental jejunal diverticula: an unusual case report

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ABSTRACT

Cecal volvulus refers to the abnormal twisting of the cecum around its mesenteric axis. Although it is an infrequent cause of large bowel obstruction, it poses a potential threat to life, requiring prompt surgical assessment and intervention to avert severe complications like bowel gangrene, cecal perforation and widespread peritonitis. Diagnosing cecal volvulus can be challenging, as its presentation closely resembles that of other causes of intestinal obstruction. Three proposed management options for cecal volvulus include cecopexy/cecoplasty, cecostomy, and resection of the cecum. Jejunal diverticula are rare unusual entity that can be congenital or acquired. Acquired jejunal diverticula are usually pulsion diverticula. Small bowel diverticula are often asymptomatic and discovered incidentally on imaging or laparotomy. The gold standard for diagnosing diverticula is contrast enhanced abdominal computed tomography (CT). Uncomplicated jejunal diverticula can be left untreated. Diverticulitis can be managed conservatively with antibiotics and surgical intervention is required only in case of complicated jejunal diverticulosis.

Keywords: Cecal volvulus, Right hemicolectomy, Jejunal diverticulosis, Laparotomy, Perforation

INTRODUCTION

Volvulus refers to abnormal twisting of bowel around its mesenteric axis causing impairment of the blood supply or obstruction of the bowel lumen which can be partial or complete. Cecal volvulus occurs when the cecum undergoes axial twisting, typically involving the terminal ileum and ascending colon, often caused by the lack of normal cecal fixation.[1] The condition is uncommon, with reported incidence rates ranging from 2.8 to 7.1 per million individuals annually.[2] The clinical manifestation of this condition displays a broad spectrum, ranging from sporadic episodes of abdominal pain to a severe abdominal crisis. The variability depends on the pattern, severity and duration of cecal volvulus causing intestinal obstruction.[3] Mortality rates for this condition range from 10% to 40%, contingent upon whether the intestine is viable or has become gangrenous.[1] Given its rarity and nonspecific presentation, achieving a preoperative diagnosis is seldom possible in the majority of cases.[3]

Jejunal diverticula are rare unusual entity that can be congenital or acquired reported in 0.0006-1.4% of small bowel contrast studies and 0.3-4.6% of autopsies.[4] Acquired jejunal diverticula are usually pulsion diverticula where mucosal and submucosal layer protrude through the weakened area of muscular layer at the crossing point of the vessels to the intestinal wall as a result of intestinal dyskinesia.[5] Small bowel diverticula are often asymptomatic and discovered incidentally on imaging or laparotomy.[6] They may present symptomatic complications like obstruction, volvulus, anaemia, diverticulitis and haemorrhage.[7] The most common complication is diverticulitis with incidence of 2-6 percent. The diagnosis of disease is challenging and radiological findings and contrast enhanced abdominal computed tomography (CT) is cornerstone diagnostic modality.[8]

We present the case of a 76-year-old male who underwent emergency laparotomy due to intestinal obstruction and

was subsequently diagnosed with cecal volvulus and incidental uncomplicated jejunal diverticula**.**

CASE REPORT

A 76-year-old male patient arrived at our hospital's emergency room with a seven-day history of diffuse abdominal pain. The pain, which began suddenly and was initially mild, escalated in severity and had a colicky nature. It occurred intermittently and was associated with absolute constipation, fever and abdominal distension. Before seeking medical attention, the patient attempted to alleviate constipation with over-the-counter medication and enema. He has a known medical history of post-tuberculosis bronchiectasis, for which he is currently on salmeterol and fluticasone, and had received antitubercular treatment ten years prior.

Upon examination, the patient appeared ill, pale, and moderately dehydrated. His pulse rate was 90 beats per minute, and his blood pressure measured 112/70 mmHg. Abdominal examination revealed diffuse abdominal distension, tenderness upon palpation (without signs of peritonism), and high-pitched bowel sounds. Rectal examination revealed an empty rectum. Laboratory investigations showed a hemoglobin level of 10 grams%, a white blood cell count of 14.6/mm^3, and normal results for urea, creatinine, electrolytes, and coagulation screen. On plain radiography, distended large bowel loops were observed extending to the upper abdomen, with multiple air-fluid levels that strongly indicated the presence of obstruction in the large bowel.

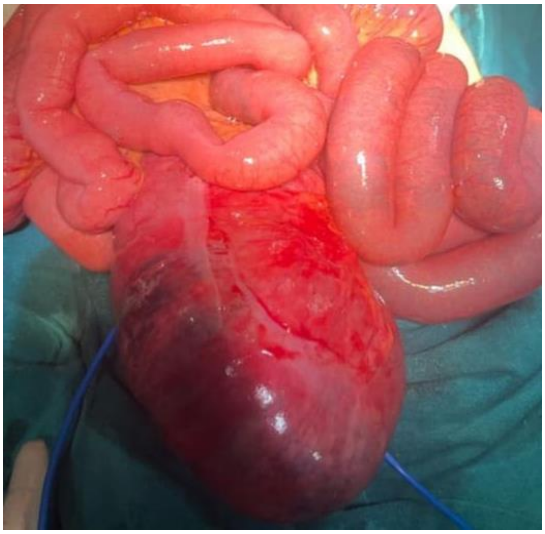

Figure 1: Intra-operative picture showing cecum after derotation.

In response to the emergent situation, an exploratory laparotomy was performed through a midline incision. The caecum was discovered twisted, grossly distended, and situated in the upper right abdomen (Figure 1). Although bowel ischemia appeared irreversible, no perforation was observed. Also a diverticulum was discovered in proximal jejunum 20 cm distal to duodenojejunal flexure which was uncomplicated (Figures 4a and b). A limited right hemicolectomy with end-to-side ileo-ascending colon anastomosis was carried out for cecal volvulus (Figures 2 and 3). The jejunal diverticula was uncomplicated, so no intervention was done (Figure 5). The postoperative period was uneventful, and the patient was discharged eighth postoperative day**.**

Figure 2: Specimen after resection.

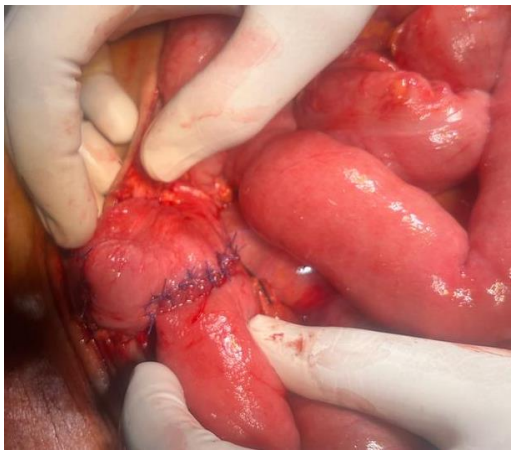

Figure 3: Hand sewn Ileo-ascending anastomosis.

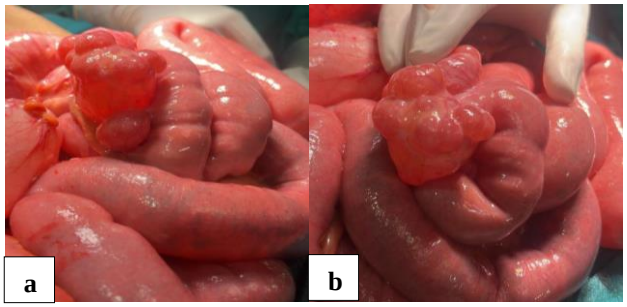

Figure 4 (a and b): Intra-operative picture showing jejunal diverticula.

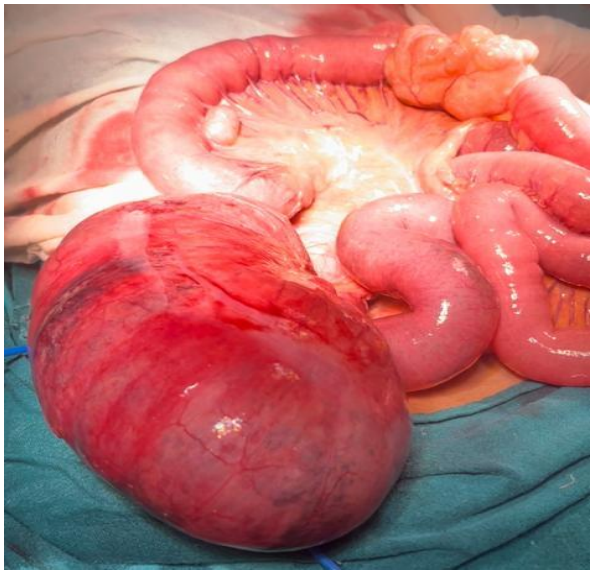

Figure 5: Intra-operative picture showing cecal volvulus and jejunal diverticula.

DISCUSSION

Colonic volvulus occurs when a section of the colon twists around its mesentery, leading to either partial or complete bowel obstruction. The sigmoid colon is most commonly involved followed by cecum. Overall, the ratio of sigmoid to cecal volvulus is about 4:1. The other sites, including the descending colon, flexures, and transverse colon, are rarely involved.[9] Cecal volvulus involves the twisting of the cecum, terminal ileum, and ascending colon around the mesenteric pedicle. The primary predisposing factor for cecal volvulus is a mobile cecum, found in 25% of the general population. This mobility is attributed to deficient colonic fixation to the peritoneum or elongation of the colon due to over-rotation during embryologic development.[10] Apart from abnormalities in cecal fixation, cecal volvulus can also occur as a secondary result of adhesions from abdominal surgery, chronic constipation, pregnancy, or prolonged immobility.[1] Small bowel diverticular disease is more common in proximal jejunum (75%), followed by distal jejunum (20%) and ileum (5%).[11] Small bowel diverticula are of two types, congenital and acquired. Acquired jejuno-ileal deverticuosis are common and are subdivided into primary or secondary.[12] Cecal volvulus tends to impact a younger demographic in comparison to sigmoid volvulus, and it predominantly affects females. The incidence of cecal volvulus follows a biphasic pattern, with peaks occurring in the mid-40s and again in the late seventies.[13] Small bowel diverticula is more common in men as compared to females (ratio 2:1) and most commonly seen in sixth to seventh decade of life.[14] Clinical presentations of cecal volvulus may encompass severe abdominal pain, constipation, abdominal distension and vomiting. Diagnosing cecal volvulus can be challenging, as its presentation closely resembles that of other causes of intestinal obstruction.[15] In 50% of patients presenting with acute cecal volvulus, a previous history of chronic intermittent abdominal pain that is alleviated by the passage of flatus can be identified. This specific clinical presentation is referred to as "mobile cecum syndrome".[13] Jejunal diverticula are often asymptomatic and most of the time diagnosis is coincidental (70%). Patients may present with non-specific symptoms like dyspepsia, abdominal pain, abdominal fullness or bloating, malnutrition and anaemia. Patient may present with complications like perforation, intestinal obstruction, abdominal abscess or intestinal haemorrhage.[14] Laboratory investigations lack specificity and sensitivity in diagnosing cecal volvulus, but they may offer insights into the degree of obstruction and the presence of complications.[16] In over half of the cases, the diagnosis can be established through a plain abdominal X-ray, which reveals cecal distention characterized by a distinctive "teardrop" or "comma" appearance.[10] Additional frequently observed findings include cecal dilatation (98–100%), a solitary air–fluid level (72–88%), small bowel dilatation (42–55%), and the absence of gas in the distal colon (82%).[16] Nonetheless, plain radiography exhibits lower sensitivity compared to abdominal CT-scan, which can diagnose cecal volvulus in approximately 90% of cases, with the remaining 10% typically diagnosed intraoperatively. Distinguishing features of cecal volvulus on CT include the presence of the "whirl sign," indicative of the torsion of engorged mesenteric vessels.[13] The diagnosis of jejunoileal diverticula is often difficult and usually confirmed by imaging modalities. The gold standard for diagnosing diverticula is contrast enhanced abdominal CT. In majority of cases, these diverticula are incidentally discovered on barium swallow, laparotomy or autopsy.[17] The approach to managing colonic volvulus is dependent upon factors such as type, site, strangulation, and the presence of other comorbid conditions. Three proposed management options for cecal volvulus include cecopexy/cecoplasty, cecostomy, and resection of the cecum. In contrast to sigmoid volvulus, endoscopic therapy has a success rate of less than 30% for reducing cecal volvulus and should be avoided due to the potential risk of perforating the already compromised and thin-walled cecum. The recurrence rate for detorsion with cecopexy is 12% to 13%, while detorsion with cecostomy has a recurrence rate of up to 33%, accompanied by a similarly elevated mortality rate.[13] Given the limitations associated with non-resective procedures in treating cecal volvulus, right hemicolectomy has emerged as the favoured surgical intervention for most patients with this condition. Moreover, the removal of the volvulized cecum often reveals a healthy-looking terminal ileum and transverse colon, allowing a secure primary anastomosis. Therefore, the preferred surgical approach for acute cecal volvulus in most patients involves resection with primary anastomosis.[9] In case of jejunoileal diverticula, uncomplicated diverticulosis requires no treatment and can be left. Patients with diverticulitis can be managed conservatively with intravenous antibiotics and bowel rest. Complicated jejunoileal diverticular disease like perforation, abscess, obstruction, require surgical intervention.[18]

CONCLUSION

Cecal volvulus is an uncommon occurrence of intestinal obstruction, and its pre-operative diagnosis is challenging due to its nonspecific presentation. Therefore, a high level of clinical suspicion becomes crucial to prevent severe complications such as perforation and generalized peritonitis. The selection of a surgical approach is dependent upon factors such as the patient's overall health, hemodynamic stability and the presence or absence of bowel ischemia. Jejunal diverticula is also rare disease which may have occurred due to increased intraluminal pressure due to volvulus. Contrast abdominal CT is the only gold standard to diagnose this disease. Surgical intervention is required only if complicated**.**

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