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# Necrosed Primary Ileal Volvulus Presenting As Appendicitis: A Very Rare Presentation

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## I. Background

Small bowel volvulus (SBV) refers to the abnormal twisting of a loop of small bowel about the axis of its mesentery[1-4]. This leads to mechanical intestinal obstruction which may be partial or complete and further causing bowel ischemia, necrosis, perforation, and peritonitis[5,6]. SBV is a rare cause of small bowel obstruction accounting 1–4% cases in Western World, but up to 20–35% cases are seen in Asia, Africa, and the Middle east[7].There are no known predisposing factors for primary small bowel volvulus, it occurs mainly in children and young adults, whereas the secondary type is usually found between the age of 40 and 90 years[8,9]. Volvulus may present as central abdominal pain occurring after meal with severity out of proportion to clinical examination and pain which is not relieved on analgesic medications[1,10]. Diagnosis is difficult at presentation and the investigation of choice is abdominopelvic computed tomography scan (CT) in which the "whirl sign" can be appreciated[7,11,12]. Prompt diagnosis and urgent surgical intervention remain the cornerstone for prevention of bowel necrosis and associated increased morbidity and mortality[7,12].

Acute appendicitis is one of the most common general surgical emergencies worldwide, with an estimated lifetime risk reported to be 7–8%[13]. Acute appendicitis occurs at a rate of about 90–100 patients per 100000 inhabitants per year in developed countries. The peak incidence usually occurs in the second or third decade of life. Direct luminal obstruction can cause appendicitis (often by a faecolith, lymphoid hyperplasia, or impacted stool; rarely by an appendiceal or caecal tumour) but these tend to be exceptions rather than regular occurrences. Although several infectious agents are known to trigger or be associated with appendicitis[14,15]. Patient presents with peri umbilical pain in early period which may shift to Right iliac fossa along with complains of vomiting and fever. On palpation lump can be present. For management appendicitis can be managed surgically by doing appendectomy. But if the lump is felt patient is to be managed conservatively by giving Antibiotic and analgesics and can be operated after few weeks.

## II. Case Presentation

A 23 year old hindu female with no known co-morbidities presented with a history of abdominal pain in right iliac fossa since 4 days and few episodes of vomiting along with fever. There was no history of previous abdominal surgery, per rectal bleeding or constipation. The patient had normal vaginal delivery 1 month back. She had tachycardia with remaining vital signs in normal limit.

On examination of abdomen tenderness was noted in right iliac fossa and bowel sounds were sluggish. On CBC, TLC was raised to 15000 and other blood investigations were in normal limits. Abdominal Ultrasonography was done which revealed acute to subacute appendicitis, with wall thickening of small bowel loops in the right iliac fossa region with surrounding inflammatory changes. A clinical diagnosis of acute appendicitis was made. Patient was taken up for surgery and Grid Iron incision was given. On opening the peritoneum yellowish fluid was present in cavity. The appendix was hard to reach so the incision was extended. After which there was unusual intraoperative finding seen. Appendix was normal (Figure 1) and there was a necrosed small bowel loop which was caused by small bowel volvulus about 60 cm from ileocecal junction (Figure 2).

**Figure 1**

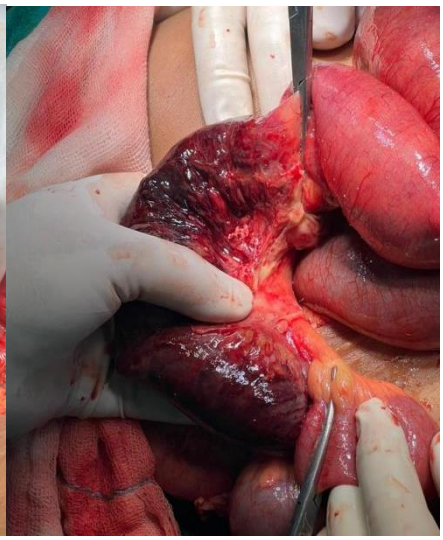

**Figure 2**

Bowel loops proximal to the site were dilated and distal loops were collapsed. Resection of the necrosed part was done followed by anastomosis of proximal and distal bowel (Figure 3). The appendix and rest of the bowel were found to be normal. Abdominal drain was placed in pelvic cavity, dilated bowel loop were decompressed and abdomen was closed. The postoperative period was uneventful and patient was discharged on postoperative day ten.

**Figure 3**

## III. Discussion and Conclusion

Volvulus is an axial twist of a portion of the gastrointestinal tract along its mesentery. The involved segment of the bowel may be either completely or partially occluded with associated arterial or venous occlusion. The most common site for volvulus is the colon [16].

Small bowel volvulus is rare and only few cases have been reported worldwide. The annual incidence of SBV is 1.7–5.7 cases per 100,000 population in North America and western Europe, but rates as high as 24–60 cases per 100,000 population have been reported in Africa, Asia and the Middle East, thought to be related to dietary habits such as ingestion of a large volume of fibre after prolonged period of fasting in Muslim communities[3,7,11,17].

On the basis of aetiology, SBV can be primary or secondary. Volvulus is considered to be primary in the absence of predisposing factors and is most commonly seen in children and young adults, whereas secondary SBV occurs in the setting of an underlying lesion upon which the mesentery can rotate. Various theories have been postulated to explain the occurrence of primary SBV such as long mobile mesentery with a shorter mesenteric base, strong abdominal muscles, increased peristaltic tone and ingestion of a large volume of fibre-rich diet after

prolonged period of fasting. Volvulus may occur secondary to adhesions, fibrous band, Meckel's diverticulum, congenital malrotation of gut, tumors, mesenteric lymph nodes, parasitic infestations, internal hernias, lipomas, pregnancy, endometriosis and hematomas[1,2,4,9,10]. Plain abdominal radiographs are nonspecific and fail to demonstrate the cause of small bowel obstruction[1,4]. Contrast-enhanced CT Scan of abdomen pelvis is the investigation of choice with findings such as the "whirl sign", "spoke wheel sign", "beak sign" and "barber pole signs" suggests the diagnosis of SBV.

Our patient presented with abdominal pain with vomiting and fever. But there were no significant complains of altered bowel habit. According to these diagnosis of appendicitis was made and appendectomy was planned. Necrosed bowel with volvulus and appendix was normal. During surgery no secondary cause of volvulus was identified in our patient even after thorough exploration. This was the unusual presentation of small bowel volvulus which is rare entity in itself.

Emergency surgery is the treatment to be undertaken with the aim of untwisting the volvulus and re-establishing the blood flow[6]. If the bowel is necrotic, resection is needed but the management of primary SBV cases with viable bowel is controversial, the options being either resection or simple derotation, with or without fixation of the involved bowel[4,6]. Resection in viable bowel cases results in longer hospital stays with increased morbidity while derotation alone can result in recurrence rates up to 30%[6,11]. Surgical fixation of small bowel is technically challenging and its long term results are not documented[6]. For secondary SBV, the underlying cause should be addressed during laparotomy[1,6].

In our case resection anastomosis was done. In spite of being a rare entity, primary ileal volvulus should be kept in differential for small bowel obstruction. Early diagnosis and urgent surgical intervention remain the cornerstone for prevention of bowel necrosis and associated increased morbidity and mortality.

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