## Case Report

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# Primary ileal volvulus: a rare cause of small intestinal obstruction

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#### **ABSTRACT**

A 50-year-old lady presented to us in the emergency department with history of acute abdominal pain and vomiting since the past 24 hours. Abdominal examination showed tenderness and guarding in the hypogastrium, lumbar and right iliac fossa region. Initial diagnosis of ruptured appendicitis was considered but exploratory laparotomy gave us an intra-operative surprise. Small bowel volvulus is extremely rare in clinical practice and their symptoms are usually nonspecific. The diagnosis is typically confirmed at surgery most of the time just like in this case. No etiology of this volvulus was found in this patient. Ileal volvulus carries a significant risk of mortality. Awareness of this condition among surgeons will help to reduce the morbidity and mortality associated with this unusual form of intestinal obstruction.

Keywords: Ileum, Volvulus, Laparotomy, Stoma

### INTRODUCTION

Small bowel volvulus (SBV) is defined as torsion of a part of small instestine about the axis of its mesentery without any predisposing anatomical abnormalities, resulting in partial or complete intestinal obstruction. It must be considered in the differential diagnosis for any case of acute abdominal pain.<sup>1</sup>

SBV is an extremely rare and life-threatening cause of small bowel obstruction. Even in western countries, SBV is a rare cause of small bowel obstruction comprising 1-6% of cases.<sup>2</sup> However, it accounts for around 20-35% of small bowel obstructions in Asia, Africa and the Middle East.<sup>2,3</sup>

Primary small bowel volvulus is observed mainly in children and young adults, whereas the secondary type of volvulus is usually found between the age of 40 and 90 years and it is mainly due to adhesions after previous surgery, tumours and mesenteric lymphnodes.<sup>4</sup> Diagnosis is difficult at presentation and the computed tomography scan (CT) remains the most relevant imaging modality

for diagnosis. There are as such very few cases of primary ileal volvulus reported worldwide. This is a rare report case of small bowel obstruction due to primary ileal volvulus.

#### **CASE REPORT**

A 50 years old female presented with unremitting pain abdomen since last 24 hours associated with 5 episodes of non-bilious vomiting. There was no history of previous abdominal surgery, changes in dietary habits, or similar abdominal pain in past. The patient was febrile and had tachycardia with a pulse rate of 120/min. Abdominal Examination revealed tenderness in right hypochondrium, lumbar region and right iliac fossa with guarding and rebound tenderness in the right iliac fossa. There was also lower abdominal distension and absent bowel sounds. Per-rectal examination was normal. Blood investigations revealed neutrophilic leucocytosis (18,000/mm<sup>3</sup>). Erect xray of the abdomen showed dilated proximal small bowel loops (Figure 1). An abdominal ultrasound revealed free fluid in the Morrison's pouch, right iliac fossa and the pelvis (Figure 2).



Figure 1: Abdominal X-ray in the upright position showing dilated air filled small bowel loops suggestive of small bowel obstruction.

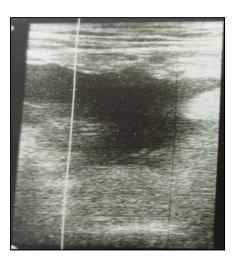


Figure 2: Ultrasound of the abdomen revealing dilated fluid-filled bowel loops and presence of free abdominal fluid between the intestinal loops.

A clinical diagnosis of perforated appendicitis was considered and the patient was considered for emergency surgical intervention. Following initial resuscitation, exploratory laparotomy was performed with a lower midline incision. Haemorrhagic peritoneal fluid of 450 -600 cc was noted. It revealed that there was >1800 clockwise rotation of a 30cm segment of the distal ileum with gangrenous change forming a volvulus about 10cm from the ileocaecal junction (Figure 3). The duodenum and jejunum proximal to the site of obstruction were dilated and the segment distal to the obstruction was collapsed. The gangrenous ileal segment was resected and a double-barrel stoma was created with a proximal loop ileostomy and a distal mucous fistula (Figure 4). The post-operative was uneventful and the patient was discharged after 7 days. Histopathology revealed small bowel showing features of transmural hemorrhagic necrosis consistent with a gangrenous loop of the ileum. After 3 months the patient underwent ileostomy closure.



Figure 3: Distal ileum and the mesentery which were gangrenous, having undergone a volvulus.

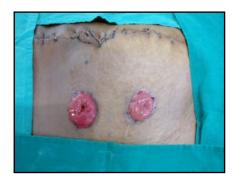


Figure 4: Double barrel stoma.

#### **DISCUSSION**

Volvulus is most commonly encountered in the large bowel in clinical practice followed by small bowel volvulus. Small bowel volvulus is a rare cause of intestinal obstruction.2 It can occur at any age, usually in males. The ileum is considered to be one of the least common sites of volvulus in the small bowel. However, primary ileal volvulus is a rare entity and very few cases of the same have been reported in the literature. Small bowel volvulus (SBV) accounting for <7% of all cases of small bowel obstruction.5 Prevalence of this condition is slightly higher in the Middle East, Asia and Africa accounting for 20-35% of cases compared to 1-6% seen in Western countries.<sup>2,3</sup> Small bowel volvulus can be primary, without any predisposing factors, or secondary to any congenital or acquired lesions. Primary ileal volvulus is most commonly seen in children and young adults, whereas the secondary type is usually found in the ages of 40 and 90 years.<sup>5</sup> Many mechanisms of primary small bowel volvulus have been suggested in past that includes a strong anterior abdominal muscle tone, high peristaltic tone of the bowel, a bulky high fiber meal in the small bowel after a prolonged period of fasting, longer mesenteric length and shortness of the mesenteric root allowing abnormal mobility of a small bowel segment, etc.<sup>6</sup> None of these mechanisms were found in our case. Secondary causes of volvulus include postsurgical adhesions, malrotation and presence of congenital fibrous bands. The most common symptom is an acute onset of severe abdominal pain. The abdominal pain is variable and it is characterized as crampy, constant or intermittent and it becomes more intense if complications such as bowel ischemia or perforation ensues. Abdominal pain is directly related to the duration of vascular compromise that has occurred but is unrelated to the degree of intestinal obstruction.

Plain abdominal radiographs may be normal in initial phase or it may show features of small bowel obstruction. Investigation of choice remains a contrast-enhanced CT scan with a sensitivity rate being up to 80%.<sup>2</sup> The most characteristic finding that can be seen is presence of "whirl sign" which is torsion of loops of small bowel around the mesenteric vessels and mesentery and the presence of gas within bowel wall indicating infarction.<sup>2</sup> Other radiographic signs, such as the "spoke wheel," "beak," and "barber-pole" signs, have been described in the literature.<sup>9,10</sup>

Recent studies suggest the mortality rate about 6% with higher rates reported when gangrenous bowel is present. The mortality rate is also higher in those patients with previous abdominal surgery and cardiopathies. The recurrence rate is around 3.9% and is usually associated in those scenarios where simple devolvulation was done.

In order to avoid ischemia and gangrene, early recognition of this disease is essential and several therapeutic options have been proposed till date. Surgical de-torsion and mesenteric decompression recommended to avoid necrosis, prevent intestinal resection and improve outcomes.<sup>11</sup> Some authors have recommended management of primary volvulus with simple de-volvulation if there is no bowel necrosis while others recommend resection and anastomosis in all small bowel volvulus regardless of whether gangrenous bowel is present or not.1,5 In this case, resection of the gangrenous segment with a proximal diversion ileostomy and the distal mucous fistula was done as a procedure in view of it being an emergency and unexpected diagnosis and after 3 months closure of the ileostomy was performed. It is said that in primary volvulus, where there is no gangrenous changes, fixation is recommended if resection is not performed, with reports of recurrence being as high as 30% in those cases who underwent simple de-volvulation only.4

#### **CONCLUSION**

A high index of suspicion is required to identify small bowel volvulus which is rare in clinical practice. Owing to its variable presentation and high mortality, one must consider SBV as a possible diagnosis in a patient with abdominal pain. Emergency computed tomography of the abdomen and early surgical intervention are key to avoid adverse outcomes.

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