

## Case Report

### Primary Small Bowel Volvulus

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#### Abstract

Intestinal obstruction is a common surgical condition. It may be small bowel or large bowel obstruction. Small gut volvulus is rare in adults and usually presents with acute intestinal obstruction. We here report two cases with primary small bowel volvulus who presented with acute intestinal obstruction. The gangrenous gut was resected and end to end anastomosis done at laparotomy.

**Keywords:** Abdominal distension, air fluid levels, emergency laparotomy, gangrenous bowel, volvulus

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Date of submission: 3 Feb, 2013

Date of acceptance: 30 Apr, 2013

#### Introduction

Intestinal obstruction is a common surgical condition. It may be small bowel or large bowel obstruction. The causes of intestinal obstruction are mechanical and functional. Among the mechanical causes, volvulus is classified among the miscellaneous causes (1). It is a relatively rare condition in the Western world but is more common in the African and Asian population. The annual incidence is around 24 to 60 per 100,000 populations (2). Volvulus are of two types; primary and secondary. The primary type is seen more often in male patients and is associated with gangrenous bowel in up to 46% of the patients (3). We here present two cases of primary small bowel volvulus (SBV) with gangrenous bowel, which is a rare entity.

#### Case Report

##### *Case 1*

A 55-year-old male patient came to us with history of pain in abdomen which was sudden in onset and colicky in nature, with nausea, vomiting, constipation and abdominal distension for two days. X-ray abdomen erect and supine showed dilated gut loops with multiple air fluid level. Ultrasound abdomen

showed dilated gut loops with minimal amount of fluid in between the gut loops.

##### *Case 2*

A 40-year-old male patient came to us with history of pain in abdomen which was sudden in onset and colicky in nature, with vomiting, constipation and abdominal distension for three days. X-ray abdomen erect and supine showed dilated gut loops with multiple air fluid level. Ultrasound abdomen showed dilated gut loops.

On examination they had tenderness over the umbilical region, left hypochondrium and epigastric region, with the whole abdomen distended, a hyper-resonant note on percussion and no shifting dullness. Bowel sounds were absent. Digital rectal examination was normal. Emergency laparotomy was performed in both the cases.

The intraoperative finding in case 1 was grossly distended gangrenous bowel loop with thrombosed mesentery of ileum. A primary small intestinal volvulus was seen extending up to the ileo-caecal junction, gangrenous bowel was present. Mesentery was long with a narrow attachment. The volvulus was

untwisted (Fig.1), gangrenous ileum was resected and end to side anastomosis was performed between ileum and ascending colon.

The intraoperative findings in case 2 were normal peritoneum and distended gangrenous bowel loop with thrombosed mesentery of ileum. A primary small intestinal volvulus was seen 12-15cm proximal to the ileo-caecal junction. The bowel loop was found to be gangrenous. Mesentery was long and had narrow attachment which was rotated in clockwise direction for 360 degrees in the form of a knot, contributing to the volvulus (Fig. 2). The volvulus was untwisted anticlockwise, gangrenous ileum was resected and end to end anastomosis was done.

In both cases no other cause of volvulus was found. Postoperatively both patients recovered well.

### Discussion

The origin of the word volvulus is derived from the Latin term *volvere* which means to turn or roll. Volvulus is the twisting of a hollow organ about its mesentery which results in obstruction and hampered venous return followed by ischemia ultimately causing gangrene. The incidence of small bowel volvulus compared to caecal and sigmoid volvulus is very low. The reported annual incidence ranges from 1.5 to 5.7 per 100,000 populations in the Western world compared to 24 to 60 per 100,000 populations (0.024-0.06%) in Africa and Asia (1). It presents more commonly in young males in the lower socio-economic strata (4). This is attributed to their habit of eating large meals infrequently. It is also seen more often in Muslim patients during the month of Ramadan (5). Literature quotes that higher incidence of SBV is seen in regions with endemic parasitism (1).

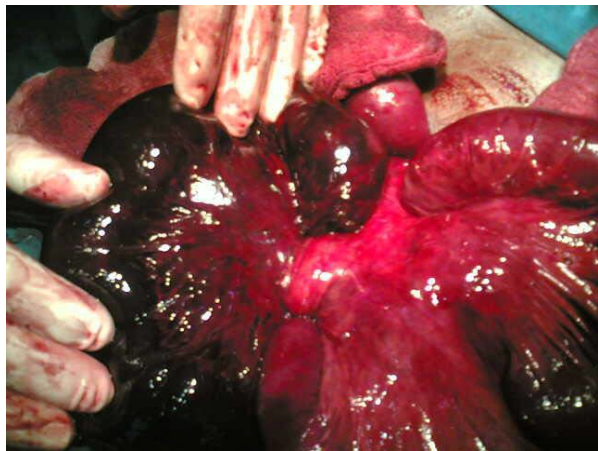
Taking all these observations into account, a popular theory for SBV is that rapid filling of the proximal intestines with high bulky chyme pulls it down into the pelvis and pushes the empty distal bowel loops upward, thereby initiating a twist or volvulus.

Clinically, the patient presents with signs of small bowel obstruction and central abdominal pain which is sudden in onset (1). The suspicion of vascular jeopardy must be kept in mind with associated features of fever, tachycardia, peritoneal signs, acidosis and leukocytosis.

An erect X-ray of the abdomen shows dilated bowel loops with air-fluid levels which are non-specific for SBV. CT gives a lot of information for the diagnosis of the condition. It gives a characteristic of a radial



**Figure 1:** Intraoperative picture showing gangrenous terminal ileum.



**Figure 2:** Mesentery with long and narrow attachment, rotated in clockwise direction in the form of a knot, contributing to the volvulus.

distribution of dilated bowel loops converging at a single point of torsion or a C-shaped loop. The rotation of the mesentery gives a 'whirl' sign which is pathognomonic of SBV (6).

The treatment involves an emergency laparotomy with exploration of the abdomen, resection of the gangrenous bowel and end-to-end anastomosis.

Literature does not mention any clear-cut treatment options for SBV without bowel ischemia. There are no prospective, randomised studies or retrospective studies on the recurrence of torsion. Most studies prescribe doing a simple detorsion without resecting the bowel. The risk of recurrent volvulus is not well established; however, the resection of the involved non-ischemic bowel can be done to prevent recurrence (1). Post-laparotomy intra-peritoneal adhesions are thought to be the factor to prevent recurrence.

Although small bowel volvulus is a rare diagnosis, the condition is life-threatening and generally requires emergency surgical treatment to prevent serious morbidity or mortality. The development of small bowel volvulus has been associated with eating fiber-rich foods and heavy meals. Patients often present with nonspecific symptoms that include abdominal pain, nausea, and vomiting. Laboratory test results may vary and are rarely conclusive. In cases of bowel obstruction, CT scanning is the most effective imaging modality to help diagnose this condition and suggest appropriate treatment. Often a whirl sign is present. When the diagnosis is small bowel volvulus, immediate surgery is advisable to prevent serious complications, such as ischemia and gangrene.

### References

1. Tito WA, Sarr MG. Intestinal obstruction. In: Zuidema GD (ed). *Surgery of Alimentary Tract*. Philadelphia, PA: WB Saunders, 1996, pp 375-416.
2. Iwuagwu O, Deans GT. Small bowel volvulus: a review. *J R Coll Surg Edinb* 1999; 44(3): 150-155.
3. Roggo A, Ottinger LW. Acute small bowel volvulus in adults. A sporadic form of strangulating intestinal obstruction. *Ann Surg* 1992; 216(2): 135-141.
4. Gulati SM, Grover NK, Tagore NK, Taneja OP. Volvulus of the small intestine in India. *Am J Surg* 1973; 126(5): 661-664.
5. Duke JH Jr, Yar MS. Primary small bowel volvulus: cause and management. *Arch Surg* 1977; 112(6): 685-688.
6. Balthazar EJ, George W. Holmes Lecture. CT of small-bowel obstruction. *AJR Am J Roentgenol* 1994; 162(2): 255-261.