# Midgut volvulus in an adult

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## Introduction

Midgut malrotation is a congenital anomaly referring to either lack of or incomplete rotation of the fetal intestine around the axis of the superior mesenteric artery during foetal development [1] .

It has been estimated to affect approximately 1 in 500 live births [2]. Sixty four to eighty percent of cases present primarily during the neonatal period as acute intestinal obstruction due to volvulus of small intestine. The presentation of intestinal malrotation in adults is rare and occurs in approximately 0.2 to 0.6 % adult population. [3]

## Case report

A 19 year old female patient presented complaining of pain in the upper abdomen and vomiting for 10 days. Vomitus was bilious, contained undigested food particles and was non projectile. On examination the patient was mildly dehydrated, afebrile and hemodynamically stable. The abdomen was moderately distended with significant tenderness in the central, epigastric and right hypochondrial regions. There was an ill defined lump palpable in the right upper abdomen. Routine hematological investigations were normal with slight altered renal functions and electrolyte imbalance. Chest and abdominal radiographs were within normal limits. Ultrasonography of the abdomen showed rotation of bowel loops along the axis of superior mesenteric vein and artery in the second and third part of duodenum, with mesenteric lymphadenopathy and mild free fluid in pelvis. Contrast-enhanced computerised tomography (CT) was obtained which demonstrated features of malrotation with swirl appearance of bowel loops starting from the second part of the duodenum with twisting of the intervening mesenteric vessels involving the superior mesenteric arteries and vein ( whirlpool sign ). Patient was resuscitated to restore normal renal function. Elective laparotomy was done which revealed two clockwise rotation of small bowel over the third part of the duodenum, with a narrow root of mesentry, Ladd's bands extending from posterior peritoneum, crossing over the duodenum (and compressing it) to the caecum and ascending colon without any evidence of bowel ischemia. Multiple dilated venous channels were seen in relation to the superior mesenteric vein. There were multiple enlarged mesenteric lymph nodes. Standard Ladd's procedure was performed after derotating the bowel anticlockwise. Appendectomy was also performed. At the end of the procedure the small bowel loops were lying to the right of the vertebral column while the large bowel was to the left side of the vertebral column. One large mesenteric lymph node was excised for biopsy. Biopsy of the lymph node revealed reactive picture with sinus histiocytosis. Patient had an uneventful post operative recovery and was discharged on fifth post-operative day.

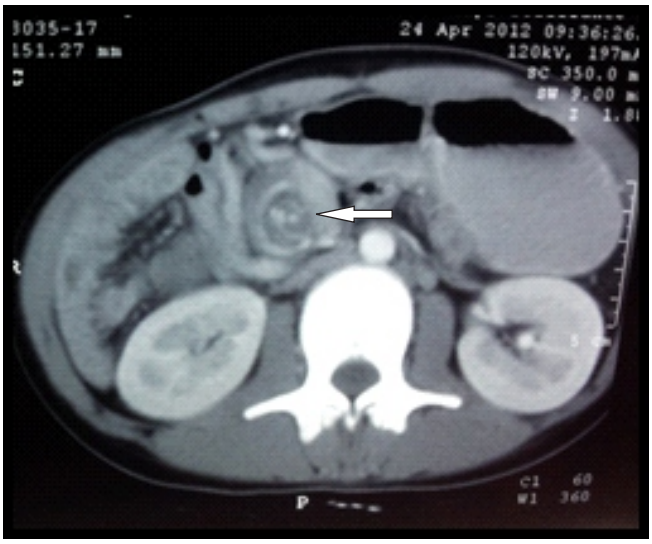


Figure 1. Contrast-enhanced CT scan of abdomen showing " whirlpool sign" (arrow) suggestive of midgut volvulus.

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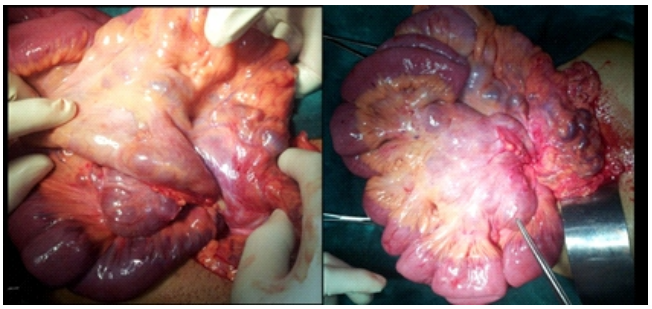

Figure 2.: (left) Showing twisted bowel and mesentery, multiple enlarged mesenteric lymph nodes. (right) anticlock wise derotation of bowel.

**Discussion**

The term volvulus is derived from the Latin word volvere, which means to turn or roll. Midgut volvulus is a life-threatening complication of small bowel malrotation. It occurs early in life and is rare in adults. It is the most common cause of bowel obstruction in an adult with malrotation [4]. Malrotation is the incomplete rotation of the bowel during embryological development. As a result, the mesenteric root which extend from the duodenal-jejunal junction ( ligament of Treitz) to the ileal-caecal junction is shortened. The incomplete rotation will cause the cephalic portion of the superior mesenteric vein to lie to the left of the superior mesenteric artery.

The ligament of Treitz is located in these cases more inferiorly and to the right of its normal position .This short mesenteric attachment of the small bowel can permit rotation of the small bowel around the axis of the superior mesenteric artery, thereby resulting in midgut volvulus [5]. Clinical presentation of midgut volvulus is usually nonspecific. An abrupt onset of signs and symptoms of small-bowel obstruction in a patient without previous abdominal surgery or other obvious causes (hernias), preceded by colicky epigastric or periumbilical pain several days before, should raise suspicion for this entity. Preoperative diagnostic workup includes plain abdominal x-ray, ultrasonography (US), abdominopelvic CT scan and more recently, multidetector CT (MDCT) angiography.

**References**


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**Key points:**

- Midgut volvulus should be suspected in adults presenting with abrupt onset of abdominal pain and signs of intestinal obstruction in a virgin abdomen.
- The imaging modality of choice is the CT scan and MDCT angiography, which can demonstrate the rotated small bowel and mesentery, providing simultaneously information of intestinal ischaemia.
- Early diagnosis and immediate operative intervention are key factors associated with a better prognosis for this group of patients.