

# Volvulus of Midgut in 7<sup>th</sup> Decade of Life

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Dr Pradeep Garg<sup>6</sup>

**Abstract:** Midgut volvulus is usually encountered in young individuals, but its presentation in 7<sup>th</sup> decade of life is very rare. We report a case of 64 yrs. old male who presented with pain abdomen and abdominal distension with investigations demonstrating mechanical intestinal obstruction due to midgut volvulus. Patient underwent exploratory laparotomy where upon small bowel and mesentery were found twisted anticlockwise. No bowel necrosis was present. This case report reviews the incidence of midgut volvulus in adults.

**Keywords:** midgut, volvulus, obstruction, old age

## 1. Introduction

Twisting of the small bowel around its mesenteric artery axis termed as midgut volvulus, frequently causing luminal obstruction and most importantly compromising blood flow to and from the bowel wall threatening intestinal viability.<sup>1-3</sup> Midgut volvulus can be primary, without finding any associated underlying cause, or secondary to other congenital or acquired conditions. Mid gut volvulus most commonly present in first decade of life.<sup>4</sup> Most presentations of midgut volvulus occur in the first month of life.<sup>4</sup> Midgut volvulus is the most common complication of malrotation in the adult. CECT abdomen plays an important role in the evaluation of patients with this abnormality. The whirl pattern around the superior mesenteric artery found on CECT in patients with midgut volvulus is diagnostic, if clearly seen.<sup>5</sup>

## 2. Case Report

A 64 yrs. Old male presented with complain of pain abdomen associated with obstipation and abdominal distension for 3 days. Pain was acute in onset and colicky in nature and associated with bilious vomiting. On examination, patient was haemodynamically stable but abdomen was distended and bowel sounds were absent. X-ray abdomen showed multiple dilated gut loops with multiple air fluid level (fig. 1,2)



Figure 1: X-ray abdomen (erect)



Figure 2: X-ray abdomen (supine)

CECT Abdomen showed an anti-clockwise rotation of midgut and its mesentery with crowded and twisted vascular pedicle which included superior mesenteric artery and superior mesenteric vein branches and visualisation of superior mesenteric vein below the level of twisted pedicle (fig. 3,4,5).



Figure 3: CECT Abdomen, coronal section

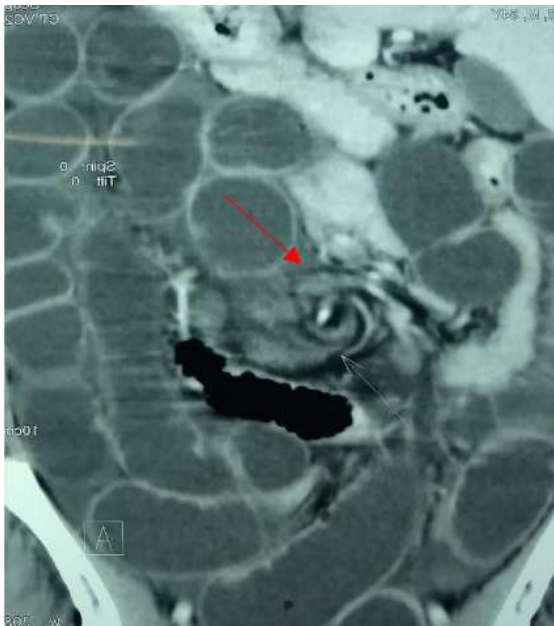


Figure 4: CECT Abdomen, coronal section



Figure 5: CECT Abdomen, transverse section

On exploration, small bowel and mesentery were found to be twisted anti-clockwise around superior mesenteric artery. Mesentery was very short. No bowel necrosis was present as shown in (fig. 6,7)



Figure 6



Figure 7

### 3. Discussion

The term volvulus came from the Latin word Volver, which means to turn or roll.<sup>1</sup>Midgut volvulus occurs due to malrotation of gut.<sup>6-10</sup>During embryologic development, intestinal rotation primarily occurs in the midgut, the segment of bowel supplied by the superior mesenteric artery. During the late stage of gut rotation, anchoring of the mesentery and bowel to the posterior abdominal wall occurs. The small-bowel mesenteric root forms a diagonal line from the Treitz's ligament to the cecum. In malrotation, the mesenteric root is shortened, which allows volvulus to occur.<sup>7,9,10</sup>Ladd bands can also be seen in cases of malrotation leading to obstruction of duodenum .

Small bowel volvulus is categorized as primary and secondary. Primary small bowel volvulus occurs usually in children and young males, in which there is no predisposing abnormality found during laparotomy. Where as, secondary volvulus occurs usually in sixth to eighth decade of life, affecting equally both sexes, in which the intestine is twisted around an underlying point of fixation.<sup>11</sup>In these patients a history of earlier operation is found including gut handling. So the most frequently encountered cause is postoperative adhesions. But many other causes have been reported in case

reports or series, including internal hernias, tumours, mesenteric lymph nodes, Meckel's diverticulum, mesenteric lipoma, mesenteric lymphangioma, pregnancy, endometriosis, abscess, mycobacterial disease, aneurysms, and hematomas.

Midgut volvulus is a life-threatening complication of small bowel mal-rotation which usually occurs early in life and is a very rare finding in adults.<sup>12</sup> It is however the most common cause of bowel obstruction in the adult with malrotation.<sup>13</sup> Clinical findings depend on the severity of the twist around the SMA and include abdominal pain, bilious vomiting, and bloody stools. If twisting exceeds 3.5 turns, ischemia of the bowel will occur thereby resulting in necrosis of the entire jejunum and ileum.<sup>13</sup> If less pronounced, only the venous and lymphatic structures can be impaired, which might result in protein loss leading to hypoproteinaemia.<sup>12</sup>

The CT appearance of midgut volvulus may or may not be diagnostic always. The bowel's rotation around the superior mesenteric artery creates a distinctive whirl pattern.<sup>7,8,14,15</sup> The volvulus causes the mesenteric veins and lymphatics to become congested which causes mesenteric oedema.<sup>16</sup> The relationship of the superior mesenteric vein to the superior mesenteric artery as shown by CECT can suggest the diagnosis of bowel malrotation but is not pathognomonic.<sup>15,17</sup> The proximal superior mesenteric vein is normally anterior and to the right of the superior mesenteric artery. The superior mesenteric vein position can be to the left of the superior mesenteric artery in bowel mal-rotation.<sup>17</sup> However, a normally positioned superior mesenteric vein does not exclude the diagnosis of bowel malrotation.<sup>18</sup>

To diagnose volvulus in infants as symptoms can not be obtained we rely on upper gastro intestinal examination and a small bowel follow through is helpful.<sup>6</sup> The small bowel's wrapping around the superior mesenteric artery on an oral contrast-enhanced study has a spiral or corkscrew appearance that is diagnostic of mid-gut volvulus.<sup>16</sup> By this we can easily differentiate cause of obstruction is due to Ladd's band or volvulus.

Management of volvulus is not conservative, mostly surgery is required to correct volvulus.<sup>9</sup> Procedure most commonly done is Ladd's procedure. It consists of de-rotation of the volvulus, inspection of the mesenteric root, division of Ladd's bands, complete mobilization and straightening of the duodenum, and wide separation of the duodenum and cecum, often with appendectomy.<sup>16</sup> After surgery recurrence rate of 7% is seen but recurrence rate of operated adult cases is not studied.<sup>6,9</sup> Volvulus if not corrected in due time it can lead to gut gangrene eventually death of patient.

#### 4. Conclusion

Malrotation leading to midgut volvulus is rare in adults. The CT findings in midgut volvulus can be pathognomonic if the classic whirl pattern around a central superior mesenteric artery is seen.<sup>7,8,14,15</sup> CT allows the rapid diagnosis and surgical treatment of this unusual condition in the adult patient presenting with abdominal pain or bowel obstruction of uncertain cause.

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