



## Clinicoradiological Findings in Diagnosis of Midgut Volvulus: A Case Study.

Dr Kaushik Debbarma,<sup>1</sup> Dr Nahid Niaj,<sup>2</sup> Dr Tanusri Debbarma<sup>3</sup>

*1. Medical Officer Grade III, MD Paediatrics, IGM Hospital, Agartala,*

*2. Post Graduate Trainee, Department of Paediatrics, AGMC & GBP Hospital, Agartala*

*3. Assistantt. Professor, Department of Paediatrics, AGMC & GBP Hospital, Agartala*

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**ABSTRACT:** Midgut volvulus with malrotation is typical in newborns. But here We presenta 11 years old to emphasize the importance of suspecting midgut volvulus as a cause of abdominal pain also beyond infancy, particularly in relation to malrotation, and the relevance of ultrasonographic (US) signs in its diagnosis. A patient came with the complaint of vomiting after having food. On USG, The transducer was placed under xiphoid, and, with axial projection, the presence of anatomic position reversed between superior mesenteric vein (SMV) and superior mesenteric artery (SMA), as a sign of malrotation, and the presence of "whirlpool sign" (WS) (wrapping of the SMV and the mesentery around the SMA), as a sign of midgut volvulus, were evaluated. On Barium meal study reveals cork-screw appearance of proximal jejunum with D-J flexure in right side. DJ junction is in right side of the vertebral column with abrupt beaking. Contrast CT study shows cork-screw like rotation of mesentery and bowel loops. Distended and edematous duodenal wall with .Inverted SMA-SMV relationship was noted. Midgut volvulus with malrotation can appear beyond the neonatal age group as demonstrated in our case. The WS sign is sufficiently sensitive for its diagnosis and should be routinely researched at all ages of pediatric population. Anatomic inversion between SMV and SMA seems to be not enough sensitive in isolated malrotation diagnosis.

### I. INTRODUCTION:

Volvulus occurs when the arrest of rotation occurs beyond the stage of nonrotation, i.e., two 90° rotation occur in the counterclockwise direction which brings the DJ junction and cecum nearer to each other. It results in a shorter mesenteric root which is not fixed with a narrow base from which the bowel is suspended which has a tendency to twist on its axis. This twist leads to extrinsic compression of the bowel causing bowel obstruction, and if the twist persists, it may lead to occlusion of the mesenteric vessels.<sup>1</sup>

### II. CASE FINDINGS :

A 11 years old female presented with chief complaints of vomiting after food intake for last 6 months at surgery OPD. Routine blood investigation within normal limits .The patient is subsequently referred to Department of Radiology for ultrasonography, where she underwent USG, Barium study and CT.

On Barium meal study reveals cork-screw appearance of proximal jejunum with D-J flexure in right side. DJ junction is in right side of the vertebral column with abrupt beaking. Ultrasonography shows 'whirlpool' appearance. Inverse SMA-SMV relationship; Superior mesenteric artery is left and posterior to the superior mesenteric vein. Proximal dilation of duodenal loops with edematous wall thickening of malrotated loops. Contrast CT study shows cork-screw like rotation of mesentery and bowel loops. Distended and edematous duodenal wall. Inverted SMA-SMV relationship.

### III. DISCUSSION

Intestinal malrotation is a congenital anomaly, often considered a pediatric disorder since most patients are diagnosed within the first year of life.<sup>2</sup>

This occurs when the arrest of rotation occurs beyond the stage of nonrotation, i.e., two 90° rotation occur in the counterclockwise direction which brings the DJ junction and cecum nearer to each other. It results in a shorter mesenteric root which is not fixed with a narrow base from which the bowel is suspended which has a tendency to twist on its axis. The horizontal part of the duodenum rotates and lies posterior to the mesenteric vessels.<sup>3</sup>

This twist leads to extrinsic compression of the bowel causing bowel obstruction, and if the twist persists, it may lead to occlusion of the mesenteric vessels. This twist of malfixed intestines around the short mesentery is called a midgut volvulus.<sup>4</sup>



Surgery for simple intestinal malrotation is very effective. If the patient has intestinal volvulus without intestinal necrosis, symptoms such as chronic abdominal pain, digestive and absorption dysfunction, anemia, and malnutrition may remain after the operation.<sup>5</sup>

#### IV. CONCLUSION:

Ultrasonography has been introduced as an alternative method for the diagnosis of malrotation, with an emphasis on the relationship of the SMV and SMA and the so-called “whirlpool sign” in cases of volvulus. The sonographic whirlpool sign is a valid and highly sensitive sign for the diagnosis of midgut volvulus secondary to malrotation. The whirlpool sign is valuable for the preoperative diagnosis of mesenteric vessel malrotation and midgut volvulus.

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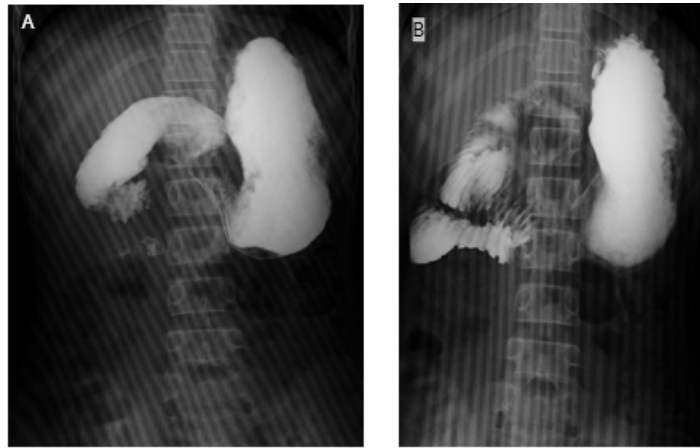


Image-A and B -Barium meal study showing a cork-screw proximal jejunum, with the DJ-flexure never reaching the left side of the abdomen and right of the vertebral column.

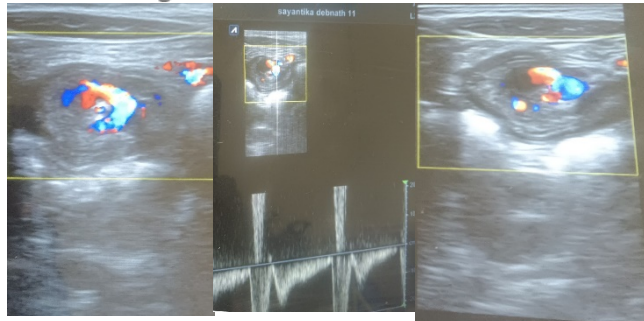


Fig: 2: Image A,B & C ;USG color and pulse doppler with linear high frequency probe showing 'whirlpool' appearance .Inverted SMA-SMV relationship. Thick edematous wall of malrotated bowel loops.



Fig:3. CECT whole abdomen study transverse image showing inverse SMA-SMV relationship with clockwise rotation of bowel loops.