

## Small Bowel Volvulus on Incomplete Common Mesentery - A Rare Complication in Adults: A Case Report

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### Abstract

### Case Report

A small bowel volvulus on the common mesentery was discovered in an 18-year-old young adult of occlusive syndrome associated with septic shock. In this observation it is the imaging which made the diagnosis by showing the volvulus and by visualizing the anomaly of intestinal rotation. We are doing a literature review of this rare entity.

**Keywords:** Small bowel volvulus, common mesentery, ultrasound, CT scan.

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## INTRODUCTION

Common mesentery is a birth defect in the rotation of the digestive tract. It is characterized by the persistence of an embryonic anatomical arrangement secondary to an abnormality of rotation of the primary umbilical loop, thus constituting a meso common to the entire intestinal loop and an extremely short root of the mesentery [1]. It is a rare entity in adults. The fact that this pathology is exceptional in adulthood and that its symptomatology is quite varied is a source of many errors, diagnostic and therapeutic delay to the point that the majority of cases are diagnosed post-mortem. The causes of its late revelation are still unknown [2]. The most dreaded complication is total hial volvulus.

We report the case of a small bowel volvulus on an incomplete common mesentery in an 18-year-old patient with no pathological history admitted in our training in occlusive syndrome.

## OBSERVATION

This is an 18-year-old patient admitted for occlusive syndrome which has been evolving for two weeks, complicated by septic shock with altered state of consciousness. On clinical examination, there was hyperthermia (38.6 ° C), hypotension (84/58 mmHg), polypnea 31 cpm; tachycardia at 108 bpm, mucocutaneous pallor, cold extremities with mottling. Glasgow's score was 11/15. In addition, the abdomen was slightly distended with diffuse sensitivity. The

rectal bulb was empty on digital rectal examination. The biological assessment showed hyperleukocytosis (22.2 G/L) predominantly neutrophilic (18.4 G / L), a strongly positive CRP (110 mg / L), hyponatremia (107 mmol / L). It was associated with functional renal failure with low glomerular filtration rate. She has benefited from a medical vascular filling with probabilistic antibiotic therapy. The abdominal ultrasound carried out concluded in an epigastric intestino-mesenteric mass showing the sign of the vortex associated with a significant fluid dilation of the digestive loops (Figure 1, Figure 2). A positional abnormality of the mesenteric vessels was found on color Doppler with the superior mesenteric artery which is located to the right of the vein. Neither the transit of the hial nor the barium enema was performed. Abdominal CT also found a rounded mass centered on the superior mesenteric axis suggesting a common mesentery-type anomaly complicated by volvulus (Figure 3, Figure 4). The patient underwent surgical exploration which confirmed the diagnosis of small bowel volvulus over incomplete mesentery (Figure 5). Furthermore, laparotomy revealed extensive and irreversible necrosis of the small loops with medium abundance suffering fluid. The gesture consisted of an anti-clockwise detorsion of the volvulus with resection of almost all of the small intestine from the first jejunal loop up to 60 cm from the ilio-coecal junction (Figure 6). The postoperative follow-up was unfavorable marked by the death of the patient on D3 postoperative.

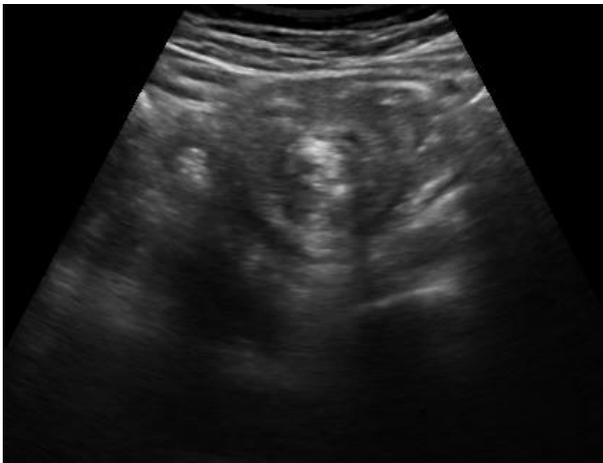
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**Fig-1:** Ultrasound image showing the "whirlpool sign" image



**Fig-4:** CT without injection of Contrast product showing the "vortex" image



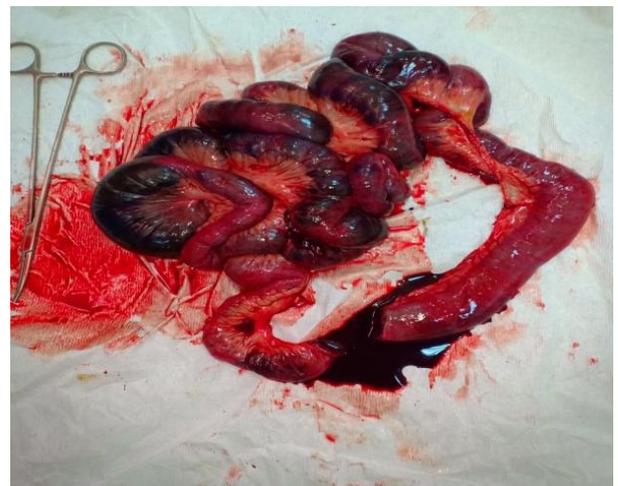
**Fig-2:** Ultrasound image showing the "whirlpool sign" image



**Fig-5:** Per-op image showing the common mesentery and total ischemia of the small intestine



**Fig-3:** CT without injection of Contrast product showing the "whirlpool sign" image



**Fig-6:** Operative resection piece

## DISCUSSION

Intestinal malrotation corresponds to a defect in rotation and mating of the primary intestinal loop during embryonic life.

First described in 1915 by Frazer and Robbins [4], bowel rotation occurs gradually in three stages in a counterclockwise direction. The 1st stage takes place in a sagittal plane, following a 90° anti-clockwise rotation around the mesenteric axis. The 2nd stage of the rotation consists of a complete reintegration of the midgut into the abdominal cavity associated with a new 90° anti-clockwise rotation. The 3rd stage consists of an additional 90° anti-clockwise rotation, followed by joining of the duodenum, ascending colon and descending colon, thus giving the so-called "normal" anatomical position of the intestine, at 270°.

When the rotation stops in the 2nd stage, we speak of "incomplete common mesentery" at 180°. This anomaly is exceptional in adults. The prevalence of these birth defects in adulthood is estimated to be in the range of 0.2% to 0.5%; age at which they very often remain asymptomatic and therefore undiagnosed [5].

In these asymptomatic patients, the diagnosis may be revealed during attacks of ectopic appendicitis [6] or incidentally during radiological examination.

On the other hand, the diagnosis of total small bowel volvulus can be made in very varied circumstances, in this case in complicated forms. Indeed, the complications of bowel rotation abnormalities can be acute or chronic in adults. The acute progressive complications include duodenal occlusions by bridge as well as the total volvulus of the small intestine which remains exceptional in adults and whose prognosis is appalling. Chronic complications result from incomplete duodenal stenosis or chronic small bowel volvulus with mesenteric arterial insufficiency.

Thus, small bowel volvulus can be found in circumstances such as: in the emergency room with a picture of acute intestinal obstruction, or even a state of shock that can lead to death, or even before a picture of repeated abdominal pain more or less associated with transit disorders. This is the case of the patient whose observation we report here in whom the diagnosis was revealed by an occlusive syndrome associated with septic shock [7].

Likewise, it has been reported that, rarely, the diagnosis could arise accidentally after another surgery as has been described in cholecystectomy surgery [8,9] or appendectomy [10,11].

Computed tomography (CT) with injection of contrast product is the gold standard for the diagnosis of

total small bowel volvulus on incomplete common mesentery in adults [12].

However, Doppler ultrasound can also approach the diagnosis [13] in this case in children. Non-invasive, it makes it possible to highlight the anomaly of rotation by visualizing the superior mesenteric artery to the right of the superior mesenteric vein [13], and above all, to show the volvulus of the small intestine with its turns of torsion around the mesenteric axis, Superior.

As for the tomodesitometry with injection of contrast product, the sign of the "vortex" seems to be pathognomonic for the majority of authors. It corresponds to the tendril of the mesentery visible in the middle position, in front of the aorta and at the level of the superior mesenteric artery, around which come "wrap" the superior mesenteric vein and the proximal jejunum. Images with injections show the verticalization, or inversion, of the superior mesenteric vessels, with a vein placed above or to the left of the artery [14], although this sign is not constant.

In our case, we did not inject a contrast product, because on the one hand the patient was in renal failure and on the other hand because the ultrasound-CT pair (without injection) was quite suggestive. We do not however refute the importance of the injection of the PDC.

Failure to recognize this diagnosis may result in extensive necrosis of the small bowel which can be fatal or lead to short bowel syndrome [3]. Our case is the typical example with irreversible necrosis of the small intestine discovered during laparotomy.

The treatment of acute small bowel volvulus due to intestinal malrotation is a surgical emergency. Ladd's procedure remains the benchmark [15], both in adults and children. It consists of a median laparotomy followed by reduction of the volvulus by untwisting (in an anti-clockwise direction most often), a section of the flanges responsible for the shortening of the mesenteric root, a fixation of the intestine in complete common mesentery to avoid any recurrence and finally an appendectomy of principle. The evolution is then generally favorable, provided that the diagnosis and the therapeutic management were carried out quickly. In the case reported here.

## CONCLUSION

The volvulus of the colon on common mesentery is a rare entity in adults and whose diagnosis is made by radiological examination; which examination must not show any delay. It is therefore imperative to evoke this diagnosis early, in order to decide immediately on the surgical procedure and to limit the heavy mortality linked to its ignorance. The

prognosis of total small bowel volvulus is that of the occlusive syndrome, of the microbial overgrowth it causes and strongly depends on the time taken to take charge and the terrain.

### Conflicts of interest

The authors declare no conflict of interest.

### Contributions from the authors

All authors have read and approved the final version of this manuscript.

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