

# Cecal Volvulus in Children

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## Abstract

Cecal volvulus is a rare complication of malfixation anomalies and intestinal malrotation in children. Only few cases have been reported. The rarity of the condition, frequently leads to diagnostic delay and complications. The best option for cecal volvulus repair remains unclear. Our aim is to increase the awareness of surgeons about cecal volvulus and to discuss its management.

**Keywords:** Cecopexy, cecum, volvulus

## INTRODUCTION

Cecal volvulus is a very rare complication of malfixation anomalies and intestinal malrotation. This condition is very uncommon in children.<sup>[1,2]</sup> Its rarity leads to lack of informations among young surgeons thus leads to diagnostic delay and complications. Moreover, there is no definite consensus on the treatment of cecal volvulus. Our aim is to make diagnosis without delay and to discuss the appropriate surgical management.

## CASE REPORTS

### Case report 1

An 8-year-old boy with a past history of episodic abdominal pain was admitted to the paediatric emergency department with 2 days' history of abdominal pain, vomiting and no passage of stools. Clinical examination revealed a tender abdomen and rectal examination revealed an empty rectum. The upright abdominal radiograph showed predominantly central dilated loops [Figure 1]. After resuscitation in the intensive care unit, an emergent laparotomy was performed for an initial preoperative diagnosis of intestinal bowel obstruction. The cecum and the ascending colon were twisted clockwise by 180°. There were no signs of intestinal ischaemia [Figure 2]. Detorsion of the cecal volvulus with appendectomy and no fixation were performed [Figure 3]. The post-operative course was uneventful and the patient discharged on the 4<sup>th</sup> post-operative day. The patient had no recurrence during 3 years of follow-up.

### Case report 2

An 11-year-old boy presented with a history of episodic abdominal pain of 2 years' duration. He underwent an appendectomy 4 days before presentation through a McBurney approach; the appendix was inflamed, retro cecal with a mobile cecum. The post-operative course was uneventful and the patient discharged on day 2 after surgery. However, on the 4<sup>th</sup> post-operative day, he presented to the paediatric emergency with painful abdominal distension and bilious vomiting. Abdominal examination revealed a distended tender abdomen. An erect abdominal radiograph showed grossly distended gas filled small bowel suggesting small bowel obstruction. A conservative therapy was started and a gastric tube placed. A day later, the abdominal distension increased with no improvement. After preoperative resuscitation of the patient, an emergent laparotomy was performed. The cecum, the ascending colon and the distal ileum were twisted clockwise by 180° with no fixation to the lateral retroperitoneum. We noticed a necrosis and gangrene of the cecum, appendix stump, the ascending colon and the distal ileum [Figure 4]. Resection of gangrenous segment with end to end ileotransverse anastomosis was performed. The postoperative course was uneventful. The patient discharged on the 7<sup>th</sup> postoperative day. A normal growth after 3 years' follow-up in association with pediatric department.

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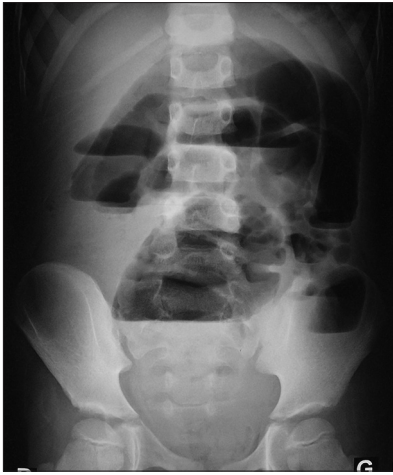
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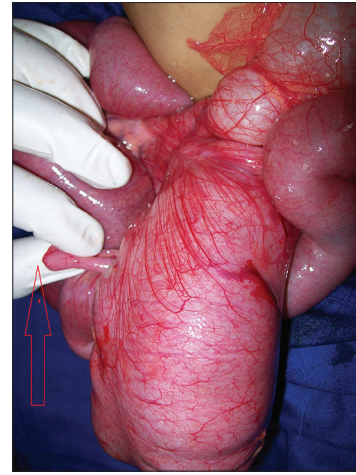
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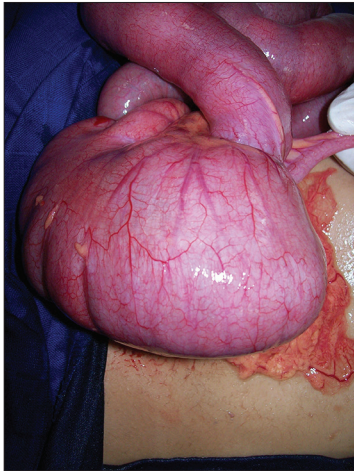
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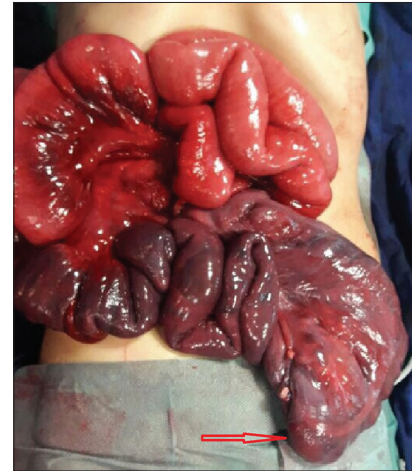
**Figure 1:** The upright abdominal radiograph showed predominantly central dilated loops



**Figure 2:** Twisted mobile cecum without fusion with the posterior parietal peritoneum. Red arrow showing the appendix



**Figure 3:** After reduction of cecal volvulus, the cecum and the appendix were viable



**Figure 4:** Cecal volvulus with necrosis of the distal ileum, the cecum and the ascending colon. Red arrow showing the cecum with residual appendix stump

## DISCUSSION

Anatomically, the situation that predisposes to cecal volvulus is failure of retroperitoneal fixation of the cecum and ascending colon, such as occurs in malrotation. Although malrotation is a fairly common abnormality in the general population, nonetheless, cecal volvulus does not occur more frequently in children.<sup>[3]</sup> Factors contributing to cecal volvulus include bowel distension (chronic constipation, postoperative ileus and mental disability), postoperative adhesions, weight loss and distal colon obstruction (Hirsch sprung disease).<sup>[4]</sup> In the first case reported, none of these factors was found. An early diagnosis is essential to avoid mesenteric ischaemia and bowel gangrene; however, the clinical symptoms are not specific. Kirk *et al.*<sup>[5]</sup> reported that generalised abdominal pain (90%), abdominal distention (80%), constipation (60%) and vomiting (28%) can be features of the clinical presentation. In plain abdominal radiographs, distended small-bowel loops are often present to the right of the dilated cecum associated with the absence of gas in the distal colon.<sup>[4,5]</sup> Contrast

examination as a diagnostic procedure for cecal volvulus shows the “bird’s beak deformity” corresponding to a narrowed, twisted colon. However, contrast examination is not always useful.<sup>[5]</sup> Abdominal computed tomography has gained more interest for the diagnosis of acute cecal volvulus. The ‘bird’s beak’, and a gas filled appendix are the computed tomography finding associated with cecal volvulus. Twisted ileocecal artery and vein consistent with cecal volvulus could be revealed by Color Doppler ultrasonography.<sup>[5,6]</sup> Some successful volvulus reduction after barium enema and colonoscopic management has been reported. Nonetheless, they are not recommended for patients with advanced obstruction and suspected bowel perforation. Different procedures can be performed, untwisting alone with high recurrence rate or untwisting with non-resectional techniques as cecopexy or cecostomy to prevent recurrence.<sup>[1,4]</sup> Other authors advocate resectional procedures like a right haemicolectomy for gangrenous bowel or to prevent recurrence for viable bowel.<sup>[2,4,7]</sup> Laparoscopic cecopexy has been described more recently.<sup>[4]</sup> In the first case,

the child had no sign of shock or peritonitis. Furthermore, no ischaemic changes were noticed. We decided a derotation and appendectomy without cecopexy, but in the second case, resection and anastomosis were performed because of the ischaemic necrosis of the ileum, cecum and ascending colon.

## CONCLUSION

A higher degree of suspicion is necessary to avoid diagnostic delay. Cecal volvulus unless suspected the diagnosis may be missed, leading to ischaemic necrosis of the involved bowel. We think that detorsion with cecopexy associated or not to appendectomy is the procedure of choice but in the presence of gangrenous bowel resection and anastomosis is indicated.

## Informed consent

written consent was obtained from the parents of the two patients presented in this case presentation.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patient understands that name and

initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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