Case Report:

Cecal volvulus with intestinal malrotation: a rare cause of bowel obstruction

Mohamed Hajri[1], GhofranTalbi[2], KaisAbdelmoula[3], Rami Guizani[4], WaelFerjaoui[5] Hafedh Mestiri[6], Rached Bayar[7], Leila Ben Farhat[8]

Abstract:

Introduction: Cecal volvulus is a rare cause of acute abdomen in adults. It accounts for less than 1% of intestinal obstructions and 25-30% of cases of colonic volvulus. Congenital intestinal malrotation is a complex disorder due to incomplete or faulty rotation and fixation of the gut during the fetal life.Cecal volvulus associated with intestinal malrotation is a very rare presentation. Over 16 cases were reported in the literature. ***Case report:*** A 44-year-old man with no medical history, presented to the emergency department with a 2-day history of abdominal pain and bloating. On clinical examination, the abdomen was distended and tympanic to percussion, with diffuse abdominal tenderness. Abdominal X-ray (standing) showed a distended large intestine with an airfluid colonic level. CT scan showed a markedly dilated cecum measuring up to 14 cm, which were located in the left hypochondrium. A "whirl sign" and a superior mesenteric pedicle swirl were also noted. Emergency surgery was performed. Intraoperative exploration revealed a cecal volvulus with a largely distended hypermobile cecum located in the left hypochondrium, with preischemic signs within its wall. All the small gut was right-sided and the large gut left-sided, suggestive of mesenterium commune and intestinal malrotation. A right hemicolectomy withileo-transverse anastomosis was done. The postoperative course was uneventful. The patient is on regular follow up and is doing well. ***Conclusion:*** We describe a rare case of surgical management of cecal volvulus associated with intestinal malrotation in a middle-aged patient with no medical history. This case highlights the importance of early diagnosis by physical examination and radiological findings to prevent serious complications. Emergent surgery was the key to this successful management and surgical resection could offer better results with lesser recurrence rate.

Bangladesh Journal of Medical Science Vol. 22 No. 02 April'23 Page : 445-448
DOI: https://doi.org/10.3329/bjms.v22i2.65010

Introduction:

Cecal volvulus is a rare cause of acute abdomen in adults. It accounts for less than 1% of intestinal obstructions and 25-30% of colonic volvulus[(1)]. It appears when a hypermobile cecum twist around its own mesenteric pedicle[(2,3)]. Congenital intestinal malrotation is a complex disorder due to faulty rotation and fixation of the gut during 5th-11th week of the fetal life[(1,4)]. This case reports a rare presentation of

1. Mohamed Hajri, Department of General surgery,Mongi Slim University Hospital, Tunis, and Tunisia and Faculty of Medicine of Tunis, Tunis El Manar University, Tunis, Tunisia.
2. GhofranTalbi,Department of General surgery,Mongi Slim University Hospital, Tunis, and Tunisia and Faculty of Medicine of Tunis, Tunis El Manar University, Tunis, Tunisia.
3. KaisAbdelmoula,Department of Radiology,Mongi Slim University Hospital, Tunis, Tunisia and Faculty of Medicine of Tunis, Tunis El Manar University, Tunis, Tunisia.
4. Rami Guizan,Department of General surgery,Mongi Slim University Hospital, Tunis, and Tunisia and Faculty of Medicine of Tunis, Tunis El Manar University, Tunis, Tunisia.
5. WaelFerjaoui, Department of General surgery,Mongi Slim University Hospital, Tunis, and Tunisia and Faculty of Medicine of Tunis, Tunis El Manar University, Tunis, Tunisia.
6. HafedhMestiri,Department of General surgery,Mongi Slim University Hospital, Tunis, and Tunisia and Faculty of Medicine of Tunis, Tunis El Manar University, Tunis, Tunisia.
7. Rached Bayar,Department of General surgery,Mongi Slim University Hospital, Tunis, and Tunisia and Faculty of Medicine of Tunis, Tunis El Manar University, Tunis, Tunisia.
8. Leila Ben Farhat,Department of Radiology,Mongi Slim University Hospital, Tunis, Tunisia and Faculty of Medicine of Tunis, Tunis El Manar University, Tunis, Tunisia

Correspondence: WaelFerjaoui, Department of General surgery,Mongi Slim University Hospital, Tunis, and Tunisia and Faculty of Medicine of Tunis, Tunis El Manar University, Tunis, Tunisia. E mail: farjaoui-wael4@gmail.com. https://orcid.org/0000-0002-4279-9370

cecal volvulus associated with intestinal malrotation in an adult patient.

Case report:

A 44 year-old man with no medical history, presented to the emergency department with a 2-day history of abdominal pain andbloating. There was no history of chronic constipation or previous abdominal surgery. On clinical examination, we noted: tachycardia at 110 bpm, blood pressure at 100/70 mmHg, polypnea with a respiratory rate of 22cpm and a temperature at 37.5°. The abdomen was distended and tympanic to percussion, with diffuse abdominal tenderness. Blood investigations showed hemoglobin at 13.2 g/dl, blood cell count at 16500/µL and C-reactive protein at 130 mg/L. serum electrolytes and kidney function tests were normal. Abdominal X-ray (standing) showed a distended large intestine with an airfluid colonic level. Contrast enhanced abdominal CT scan showed a markedly dilated cecum measuring up to 14 cm, which were located in the left hypochondrium (**Fig. 1 a**). A "whirl sign" (**Fig. 1 b**) and a superior mesenteric pedicle swirl were also noted. All these findings were suggestive of cecal volvulus on intestinal malrotation. Emergency surgery was performed through a midline laparotomy. Intraoperative exploration revealeda cecal volvulus with a largely distended hypermobile cecum located in the left hypochondrium (**Fig. 2 a**). Preischemic and preperforation signs were noted within the cecal wall (Fig. 2 b). All the small gut was packed on the right side of the abdomen, while the large gut was on the left side, suggestive of mesenterium commune and intestinal malrotation.A right hemicolectomy with hand-sewn end-to-side ileo-transverse anastomosis was done. The postoperative course was uneventful, and patient moved bowels on the 2nd postoperative day. He was discharged at home on postoperative Day 4. He is on regular follow up and is doing well.

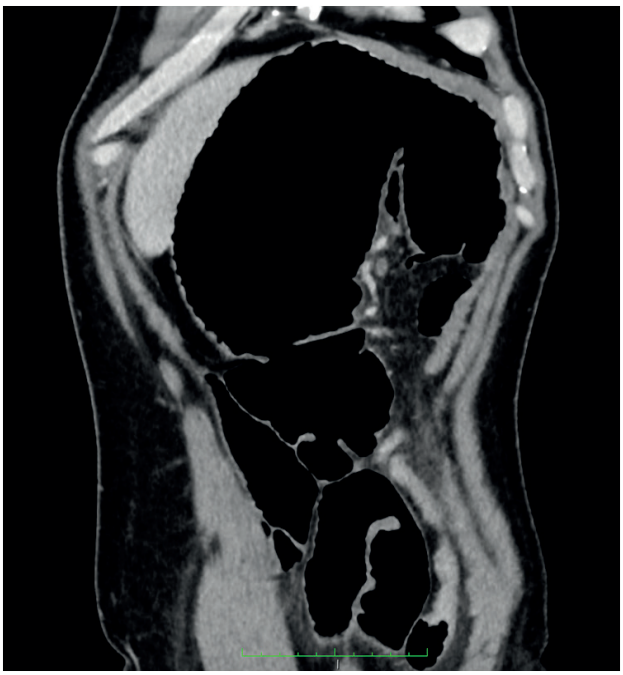

Fig. 1. (a): sagittal abdominal CT scan showing the appendix and the dilated cecum in the left hypochondrium

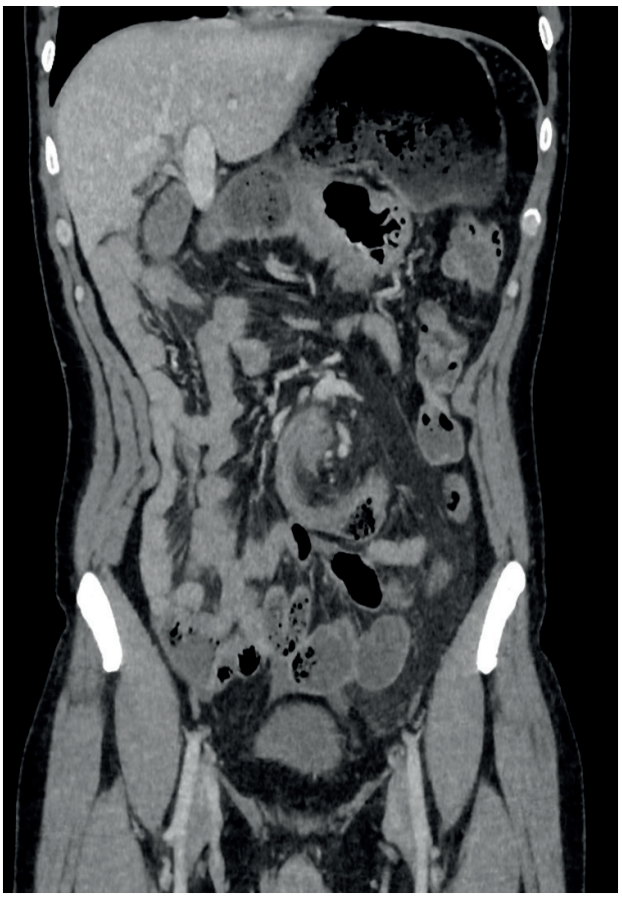

Fig. 1. (b): Coronal abdominal CT scan showing the "whirl" sign (arrowhead) and the dilated cecum in the left hypochondrium

Discussion:

Cecal volvulus associated with intestinal malrotation is an extreme rare presentation. To our knowledge, over 16 cases were reported in the literature. Gut malrotation is a rare condition that develops during fetal life because of an incomplete intestinal rotation around the superior mesenteric pedicle. The majority of intestinal malrotation cases present within the

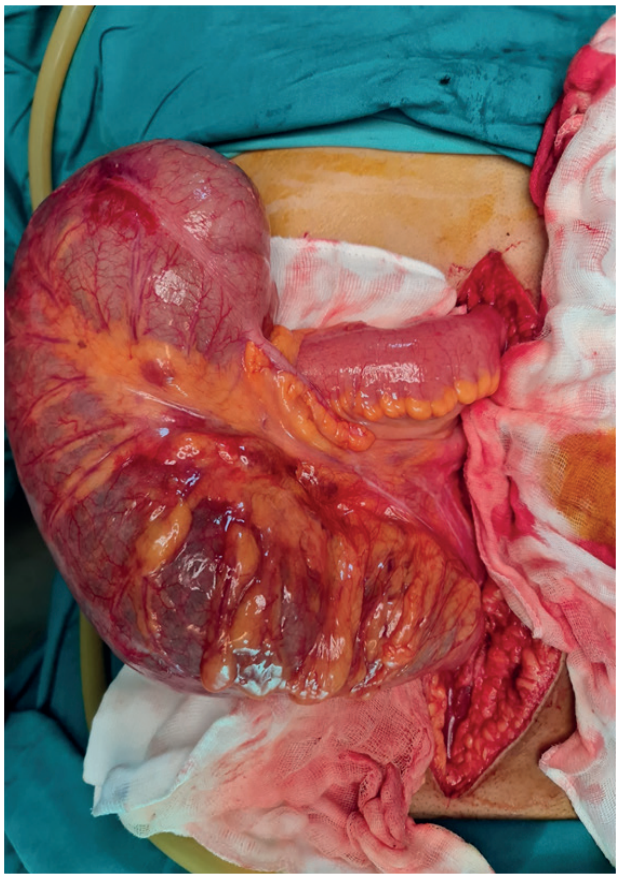

Fig. 2. (a): Intraoperative image of the appendix and the dilated cecum that were located in the left hypochondrium.

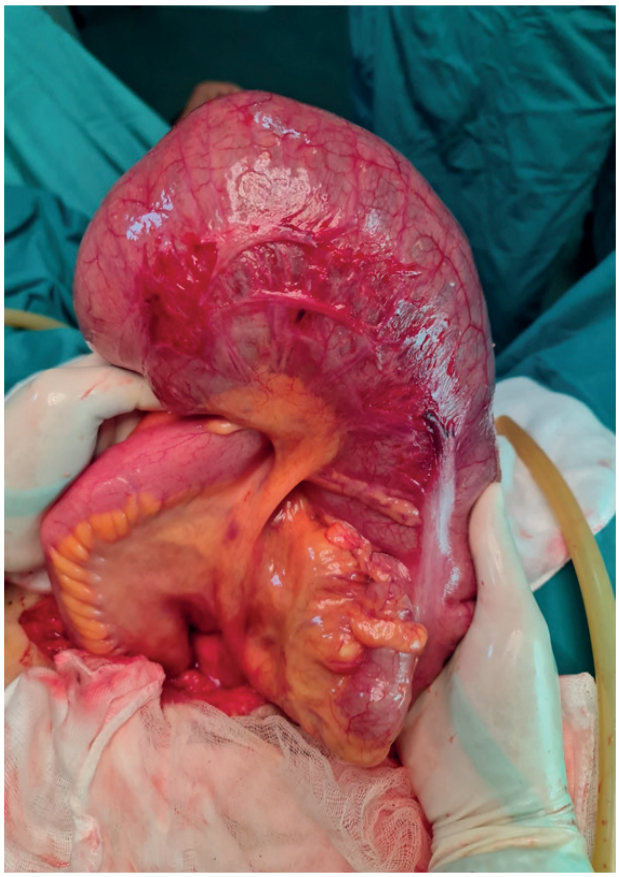

Fig. 2. (b): intraoperative image of the volvulus of the cecum with preperforation signs and mesenterium commune

first two weeks after birth [5]. It is uncommon for malrotation to appear in adulthood[5,6]. The diagnosis is often delayed, especially in patients with no past medical history, as in our case. However, colonic volvulus should be considered in cases of acute abdominal pain and bowel obstruction.

The physio-pathological mechanism of volvulus occurrence is due to redundancy and non- fixation of the colonic segment. Acquired or congenital anatomical modification, such as intestinal malrotation, may increase the risk of volvulus [4,7,8].

In the majority of the reported cases, accurate diagnoses were made based on surgical findings[9]. Computed tomography remains the investigation of choice[5]. Many signs were reported in the literature such as the "whirl" sign, the "bird's beak" sign, and the situation of the superior mesenteric vein to the left of the superior mesenteric artery[9,10].In our case, the "whirl sign" and a superior mesenteric pedicle swirl were noted.

Cecal volvulus is a life-threatening surgical emergency, which may lead to intestinal necrosis and perforation. Several authors have reported successful endoscopic reduction. However, the low success rate and the risk of perforation support surgical management as the most appropriate treatment [11]. Surgical procedure largely depend upon the intraoperative findings such as cecal viability and degree of distension[1]. In cecal volvulus due to malrotation without ischemic signs, the surgery may limit to detorsion and cecopexy plus-minus Ladd's procedure to prevent gut volvulus. In our case, because the cecum was extremely distended, surgical resection by right hemicolectomy was necessary. The performance of primary anastomosis depends essentially on hemodynamic state and grade of contamination [10,14]. According to many authors, surgical resection is actually the best method of treatment for cecal volvulus, even in cases without bowel necrosis, in order to prevent the high risk of recurrence[11,15,16].

Conclusion:

We describe a rare case of surgical management of cecal volvulus associated with intestinal malrotation in a middle-aged patient with no medical history. This case highlights the importance of early diagnosis by physical examination and radiological findings to prevent serious complications. Emergent surgery was the key to this successful management and surgical resection could offer better results with lesser recurrence rate.

Source of fund: NONE

Conflict of Interest: NONE

Ethical clearence: NONE

Authors's contribution:

Data gathering and idea owner of this study: Mohamed Hajri, GhofranTalbi

Study design: KaisAbdelmoula,Rami Guizani

Data gathering: ,WaelFerjaoui, Leila Ben Farhat

Writing and submitting manuscript: HafedhMestiri

Editing and approval of final draft: Rached Bay

References:

1. Khan ZA, Khan MA, Shah GA. Rare presentation of congenital gut malrotation as adult cecal volvulus. *Indian J Colo-Rectal Surg. Medknow Publications*; 2020;**3**(1):26.
2. Lee SY, Bhaduri M. Cecal volvulus. *CMAJ*. Can Med Assoc; 2013;**185**(8):684-684.
3. Katoh T, Shigemori T, Fukaya R, Suzuki H. Cecal volvulus: report of a case and review of Japanese literature. *World J Gastroenterol WJG. Baishideng Publishing Group Inc*; 2009;**15**(20):2547.
4. Bouali M, Yaqine K, Elbakouri A, Bensardi F, Elhattabi K, Fadil A. Ischemic volvulus of the transverse colon caused by intestinal malrotation: A case report. Int J Surg Case Rep. *Elsevier;* 2021;**83**:105971.
5. Khougali HS, Hamad Y, Abdelhamid A, DiNicola V. Caecal volvulus associated with complex small bowel malrotation and congenital bands: A case report and literature review. *J Surg CaseRep*. 2021;2021(4). DOI: 10.1093/jscr/rjab040
6. Ayane GN, Kadimo K. Diagnosis and surgical management of congenital intestinal malrotation presenting with midgut volvulus in an adult: high index of suspicion (case report). *Pan Afr Med J.* African Field Epidemiology Network; 2018;**29**.
7. Hinkle JK, Smith TR. Malrotation with volvulus of the transverse colon and duodenal obstruction secondary to Ladd's bands. Clin Imaging. *Elsevier;* 2008;**32**(1):65-8.
8. Sana L, Ali G, Kallel H, Amine B, Ahmed S, Ali EM, et al. Spontaneous transverse colon volvulus. *Pan Afr Med J*. African Field Epidemiology Network; 2013;**14**.
9. Abe S, Tamura N, Hamasaki S, Umetani N. Laparoscopic surgery for repeated cecal volvulus with intestinal malrotation: *A case report. Asian J Endosc Surg*. Wiley Online Library; 2020;**13**(3):419-22.
10. Rojas CS, Duarte RV, Vivanco DMG, Montalvo-Javé EE. Cecal Volvulus: A Rare Cause of Intestinal Obstruction. *Case Rep Gastroenterol. Karger Publishers*; 2020;**14**(1):206-11.
11. Perrot L, Fohlen A, Alves A, Lubrano J. Management of the colonic volvulus in 2016. *J Visc Surg*. Elsevier; 2016;**153**(3):183-92.
12. Pramod S, Kumar G. Rare presentation of acute intestinal obstruction: Cecal volvulus with malrotation. *J Case Rep*. 2019;**9**(1):33-5.
13. Yadav DK, Khanna K, Jain V, Samie AU. Caecal volvulus with intestinal malrotation: need for caecopexy? Case Rep. *BMJ Publishing Group*; 2017;2017:bcr-2017.
14. Osiro SB, Cunningham D, Shoja MM, Tubbs RS, Gielecki J, Loukas M. The twisted colon: a review of sigmoid volvulus. Am Surg. *Southeastern Surgical Congress*; 2012;**78**(3):271-9.
15. Madiba T, Thomson S, Church JM. The management of cecal volvulus. Dis Colon Rectum. *Springer*; 2002;**45**(2):264-7.
16. Faruk, M. O., Bhuiyan, M. J. H., Parvin, M., Jalil, M. A., Hasan, M. E., Aziz, M. M., & Ahmed, M. (2021). Intussusception in Adult due to Lipomatous Polyp - An Uncommon Case Report. *Bangladesh Journal of Medical Science*, ***20***(1), 204–207. https://doi.org/10.3329/bjms.v20i1.50373