

CASE REPORT

VOLVULUS OF THE CECUM AND ASCENDING COLON: A CASE REPORT AND REVIEW OF THE LITERATURE

Kailash Charokar¹, Nitin Garg²

HOW TO CITE THIS ARTICLE:

Kailash Charokar, Nitin Garg. "Volvulus of the Cecum and Ascending Colon: A Case Report and Review of the Literature". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 01, January 06; Page: 103-108.

ABSTRACT: A volvulus of cecum and ascending colon (cecocolic volvulus) is a relatively uncommon cause of large bowel obstruction. Congenital or acquired anatomic variations with or without precipitating factors may be associated with an increased risk of right colon volvulus. We report a case of 21-year young man, who presented in emergency with progressively worsening abdominal pain, distension and features of peritonitis. The plain abdominal radiograms were suggestive of the cecal loop in the left upper quadrant with likely cecalvolvulus. Patient was taken for an emergency exploratory laparotomy. At surgery volvulus of the cecum and ascending colon involving adjacent terminal ileum with gangrenous changes was found. Right-hemicolectomy with the formation of an ileostomy and a distal mucous fistula was performed. On account of high mortality rate, an early diagnosis and definitive treatment is essential for a favorable outcome. We discuss here this uncommon condition, various management options, its controversies and review the pertinent literature to conceptualize treatment options for the diverse clinical situations. Resection of the affected bowel segment with anastomosis (primary or delayed) is the preferred surgical treatment. The consent has been obtained from the patient and parents.

INTRODUCTION: The condition commonly referred to as cecal volvulus is actually a cecocolic volvulus and consists of an axial rotation of the terminal ileum, cecum, and ascending colon with concomitant twisting of the associated mesentery¹. It is an uncommon variety of colonic volvulus with sigmoid volvulus being more common. Developmental anomaly of the rotation and imperfect fixation of the cecum and ascending colon predisposes to this condition. Studies on cadavers have shown that between 11% - 22% of people have a right colon that is sufficiently mobile to allow a volvulus to occur¹. Other factors that have been implicated in causing a cecocolic volvulus include previous surgery, pregnancy, and obstructing lesions of the left colon. Cecocolic volvulus affects younger age group than sigmoid volvulus and also carries a higher mortality rate than the later.

The diagnosis is often based on the plain abdominal radiograms with distended and translocated, cecal and colonic gas patterns seen in the epigastrium and left-upper quadrant. The treatment in the acute cases is undoubtedly emergency surgical procedure. The management option for gangrenous bowel is a debatable topic. We present a case of cecocolic volvulus with gangrene and discuss the various management options and its controversies. With review of the literature; this article endeavors to formulate operative treatment plan in different situations as per operative findings of a case with varying degree of bowel ischemia and gangrene.

CASE REPORT: A 21-year male presented with a 2-days history of intermittent cramp-like, abdominal pain, vomiting and distension. He had no bowel movements in the past 3-days. Medical history was insignificant with no history of previous surgery.

CASE REPORT

Physical examination revealed a lean & thin young man with tachycardia, and mild pyrexia (100.5°F). The abdomen was distended with tympanic percussion note and sluggish bowel sounds. Severe tenderness was present in the abdomen with rigidity, more so in upper two-thirds. Abdominal X-ray revealed distended cecal gas shadow displaced towards the left upper quadrant (Fig. 1).

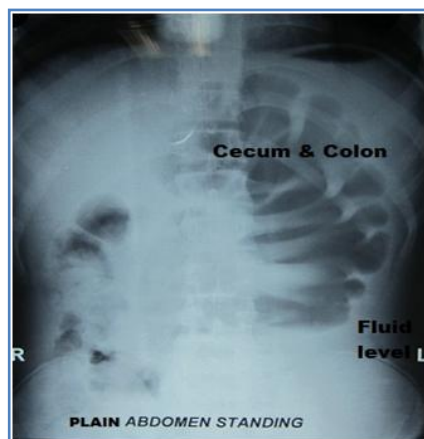


Fig. 1: Radiogram showing cecum and large bowel loops in the left upper quadrant and fluid level in colon.

The sonography showed significantly dilated bowel loops with free fluid in the peritoneal and pelvic cavity. Laboratory investigations: TLC = 13, 700 x 10⁹/L with 85% polymorphs; blood urea = 92.2mg%, serum creatinine = 1.8 mg%. Clinical diagnosis of Large Bowel Obstruction with Strangulation (? Cecal Volvulus) was made. Appropriate antibiotics, intravenous fluid and continuous gastric aspiration were started. Patient was taken up for emergency exploratory laparotomy.

The peritoneal cavity was entered through mid-line incision. Tan colored peritoneal fluid measuring about 250 ml was encountered. There was axial torsion i.e. volvulus of more than one and half turn in a clock-wise manner produced by a very mobile cecum and ascending colon suspended from the posterior parities by a long anomalous mesentery (Fig. 2). The constricting site on the mesentery was very tight resulting in irreversible ischemia leading to gangrene (Fig. 3).

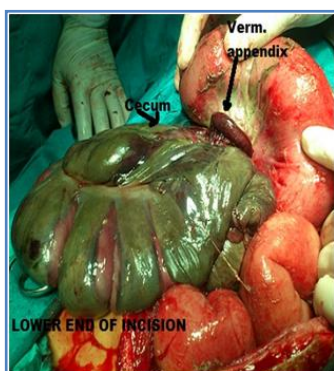


Fig. 2: Per-operative photographs showing Gangrenous Volvulus of the Cecocolon.

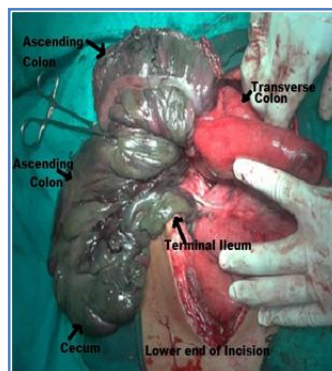


Fig. 3: Volvulus derotated showing the segment of terminal ileum, V. appendix, cecum, ascending colon.

CASE REPORT



Fig. 4: Right-hemicolectomy Specimen

The cecum with appendix, ascending colon and adjoining segment of terminal ileum were gangrenous, distended and thinned-out (cecum measuring 16cm in diameter). The contamination of the adjacent peritoneal surfaces was evident. Rapid resection of the gangrenous portion with its mesentery (Fig. 4), thorough surgical toilet and delivery of the two open loops of the gut in the form of ileostomy and distal mucous fistula was performed (Fig. 5). The abdomen was closed with drainage of the peritoneal cavity. The patient's condition gradually stabilized and was out of ventilatory support within 24 hours. In due course he made a satisfactory recovery, except for superficial surgical site infection which was managed with partial laying open of wound and antibiotics. Histopathology report was consistent with the gross findings, with no additional pathology of the intestines. Patient was discharged on 21st post-operative day. Fortnightly follow-up: the patient was asymptomatic and in good health.



Fig. 5: Ileostomy and distal Mucus fistula

After completion of 6 weeks, he was evaluated for the enterostomy closure. The colonoscopy of the distal large bowel was normal. The cologram showed normal pattern and transit of the contrast in the transverse colon, splenic flexure, descending colon, and rectum (Fig. 6). He was taken up for the enterostomy closure; the continuity of the gut was made with end-to-end ileo-transverse anastomosis and peritonization was done. Post-operatively had normal convalescence. Six months follow-up: asymptomatic and clinically normal.

CASE REPORT



Fig. 6: Cologram showing normal study of the distal colon and rectum.

DISCUSSION AND REVIEW OF LITERATURE: The word volvulus is derived from the Latin word *volvare* meaning "to turn". Although the term cecal volvulus is ingrained in the literature, true volvulus of the cecum probably never occurs¹. There is a well-recognized condition in which the cecum folds in a cephalad direction anteriorly over a fixed ascending colon. This so-called cecal bascule commonly causes intermittent bouts of abdominal pain because the mobile cecum permits intermittent episodes of isolated cecal obstruction that are spontaneously relieved as the cecum falls back into its normal position. Although gangrene may develop, this is exceedingly rare because there is no major vessel obstruction. The other condition that is being discussed here is actually a cecocolic volvulus in which there is twisting of caecum and ascending colon in an axial plane around its long axis in either a clockwise or counter-clockwise motion. This twisting around the anomalously lengthy mesentery causes obstruction and ischemic changes resulting in closed-loop obstruction which has propensity for the vascular compromise leading to gangrene and perforation².

The first case report of the cecocolic volvulus was made by Rokitansky in the year 1841. The volvulus of the colon is responsible for about 5% of cases of large bowel obstruction¹. Cecocolic volvulus accounts for 0.8% of all cases of cases of intestinal obstruction and 10.5% of all cases of intestinal volvulus, with overall mortality rate 16.6%³. Other series quotes cecocolic volvulus to be a condition responsible for 1% cases of all intestinal obstruction^{4,5}. In the analysis of 69 patients with acute volvulus of the right colon, the overall mortality rate was 19%, and in the cases with non-viable colon the mortality rate was 40%⁶.

Volvulus of the cecocolon has been reported in all age groups but is commonest in the young adult, more than half of the cases occurring in patients between 20 and 40 years. Further, the volvulus is said to occur more frequently in males than in females in the ratio of 3:1⁷.

The etiology of volvulus of the cecocolon is understood when the embryology of the region is remembered. The embryologic development process of the cecum finally assigns its normal position in the right iliac fossa. This is the end result of three processes: rotation, descent and fixation. Often there are precipitating factors; e.g. constipation, previous irritation of the peritoneum by inflammation or operations, pregnancy, vegetable diet. The final exciting cause is usually considered to be increased peristalsis, commonly after a heavy meal, or after violent purging, although over-exertion and trauma have been cited.

The presentation of the cases is usually of the acute intestinal obstruction with certain specific features; the abdominal distension is enormous with tympanic percussion note and is not

CASE REPORT

relieved by gastric suction. There may be varying degree of tenderness, but characteristically it progressively worsens despite the therapy. Abdominal rigidity is observed in the due course of time or seen in the late reporting cases, indicative of strangulation and peritonitis.

The plain radiogram of the abdomen often shows- dilated large bowel/cecum in an abnormal left upper quadrant and the loops of small bowel distended on the right of the cecum. There may be fluid level seen in the upright colon. If the classic radiographic signs like, severe cecal distention, coffee bean sign, cecum directed toward the left upper quadrant are present; a diagnosis of cecal volvulus is highly likely. Pre-operative diagnosis of the volvulus was made in 60% of the cases based on clinical findings and plain abdominal roentgenograms ⁸. CT is unlikely to yield substantial additional information for the diagnostic exclusion of cecocolic volvulus; however the CT scan helps in further evaluation of gut ischemia when complications occur ⁹.

The options for the management of the cecocolic volvulus include: endoscopic decompression, surgical detorsion alone, cecopexy, cecostomy, and right colectomy with primary anastomosis or stoma formation with delayed anastomosis -- through open or minimally invasive approaches. Unlike the left-colon, endoscopic decompression with cecocolic volvulus is less successful, with rates ranging from 30-50% ¹⁰. Simple surgical detorsion alone has a recurrence rate greater than 50% ¹¹ with morbidity and mortality rate of 10-20%. Cecostomy has been associated with even higher complication rates, greater than 50% in some series, and has largely been abandoned ¹². Detorsion with cecopexy too is associated with high recurrence rate of 10-30% ¹³. Only in high risk cases, cecostomy is justified. Madiba et al., (2002) recommended surgical resection with primary anastomosis as a mainstay of therapy with recurrence rates <10%, and as of today is considered the surgical procedure of choice in cases of uncomplicated cecocolic volvulus ¹⁴.

The management of volvulus in the setting of concomitant necrotic bowel is one of the more controversial topics. Often despite a lack of statistical support, initial reports largely stated that resection with proximal stoma placement was the accepted management technique when gangrenous bowel was encountered. However, some authors recommended, resection with primary anastomosis in the setting of cecocolic volvulus with gangrene, with low anastomotic leak 0-9% and mortality rates 0-23% ¹⁵.

Our preference is right hemicolectomy both in viable and gangrenous colon. When the bowel is viable or having only patchy gangrene with minimal peritoneal contamination, primary anastomosis is the preferred choice. With gross peritoneal contamination due to large gangrenous segment or perforation, as in the present case, resection with intestinal stoma and staged closure at a later date is preferred.

CONCLUSION: Cecocolic volvulus is of infrequent occurrence. Clinical and radiological evaluation often achieves the diagnosis. It usually requires emergency surgery. Resection and primary anastomosis is the preferred method over simple detorsion or fixation techniques even in the situations of viable bowel. Cecostomy is an alternative treatment in the high risk patient with a viable colon. With appropriate antibiotics, better resuscitation, anesthesia techniques and increasing experience has shown the safety and efficacy of resection and primary anastomosis, even in the setting of ischemic bowel with patchy gangrene. Resection and stoma formation is reserved for large segment of gangrenous bowel/perforation of the large bowel with gross peritoneal contamination.

REFERENCES:

CASE REPORT

1. Townsend, Courtney M.Jr.Sabiston Textbook of Surgery, (17Ed, Vol.2), (Philadelphia, Pennsylvania: Saunders, Elsevier) 1422-1424.
2. Perrin RS, Kunberger LE.Case 4: Cecal volvulus. AJR Am J Roentgenol. Sep 1998;171(3):855, 859, 860. [Medline]].
3. Grover NK, Gulati SM, Tagore NK, Taneja OP. Volvulus of the cecum and ascending colon. The American Journal of Surgery 1973; 125(6): 672-675.
4. Habre J, Sautot-Vial N, Marcotte C, Benchimol D. Caecal volvulus. Am J Surg 2008; 196 (5): e48 – e49.
5. Ballantyne GH, Brandner MD, Beart RW Jr, Ilstrup DM. Volvulus of the colon: incidence and mortality. Ann Surg 1985; 202 (1): 83 – 92.
6. Anderson JR, Welch GH. Acute volvulus of the right colon: An analysis of 69 patients. World Journal of Surgery 1986; 10 (2): 336-341.
7. Rankin, F.W.: Surgery of the colon. D. Appleton & Co., N.Y., I, 80, 1926.
8. Gupta S, Gupta SK. Acute caecal volvulus: report of 22 cases and review of literature. Ital J Gastroenterol. 1993; 25(7): 380-384.www.ncbi.nlm.nih.gov/pubmed
9. Rosenbalt JM, Rozenlit AM, Wolf EL, DuBrow RA, Den EI, Levesky JM. Findings of Cecal Volvulus at CT 2010; 256(1): 169-175.www.rsna.org/rsnarights.
10. Renzulli P, Maurer CA, Netzer P, Buchler MW.Preoperative colonoscopic derotation is beneficial in acute colonic volvulus.Dig Surg 2002; 19: 223-29.
11. Montes H, Wolf J.Cecal volvulus in pregnancy. Am J Gastroenterol 1999; 94; 2554-2556.
12. Rabinovici R, Simansky DA, Kaplan O, Mavor E, Manny J.Cecal volvulus.Dis Colon Rectum 1990; 33: 765-9.
13. Tsushimi T, Kurazumi H, Takemoto Y, et al.Laparoscopic cecopexy for mobile cecal syndrome manifesting as cecal volvulus: report of a case. Surg Today 2008; 38: 359-62.
14. Madiba TE, Thomson SR.The management of cecal volvulus. Dis Colon Rectum 2002; 45: 264-7.
15. Majeski J. Operative therapy for cecal volvulus combining resection with colonopexy.Am J Surg 2005; 189: 211-3.

AUTHORS:

1. Kailash Charokar
2. Nitin Garg

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Surgery, Peoples College of Medical Sciences & Research Center, Bhopal (M.P.)
2. Associate Professor, Department of Surgery, Peoples College of Medical Sciences & Research Center, Bhopal (M.P.)

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr.Kailash Charokar,
130, Gomti Colony, Nehru Nagar,
Bhopal (Madhya Pradesh),
PIN – 462003.
Email-kcharokar@gmail.com

Date of Submission: 17/12/2013.
Date of Peer Review: 18/12/2013.
Date of Acceptance: 21/12/2013.
Date of Publishing: 02/01/2014