

Volvulus of the caecum in a thirteen year old girl: Case Report and literature review

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Abstract: Caecal volvulus is uncommon cause of intestinal obstruction in children. It accounts for 1/7th -1/10th of the sigmoid volvulus. It always congenital caused by incomplete retroperitoneal fixation of the caecum. Acquired causes include: previous surgical mobilization and pelvic masses that may distort the relative position of the abdominal organs. The common presentation of caecal volvulus is as acute abdomen. It is rarely diagnosed clinically, but 50% of the cases can show the characteristic radiological signs (“coffee-bean” (Caecal volvulus) or “tear drop” (caecal bascule)). The aims of the treatment are distortion of the caecum and operative fixation or resection, Caecopexy, Caecostomy, and right hemi colectomy. Caecopexy, Caecostomy have a high rate of recurrence and complications. Mortality rate of caecal volvulus is determined by the degree of bowel ischaemia and vary between 12% for viable bowel and 32% in the presence of gangrene. A case report of a 13-year-old girl with of caecal volvulus that diagnosed intra operatively is reported and discussed.

Keywords: Volvulus of the caecum, diagnosis, organo axial, caecal bascule, children

INTRODUCTION

The term volvulus is derived from the Latin word *volve*, which means to twist. Von Rokitansky first described caecal volvulus in 1841, and, in 1899, Treves reported a process named by Weinstein as caecal bascule. Caecal volvulus represents 1-3% of cases of intestinal obstruction in adults. It accounts for 10- 15% of all cases of colonic volvulus. Although all persons in all age groups may be affected, the incidence peak is in those aged 20-40 years. The condition is not common in children. Caecal volvulus is less common than sigmoid volvulus(1/7th - 1/10th less common)[1- 3].

Caecal volvulus may be organo-axial (true volvulus) or mesenterico-axial(Caecal bascule). The organo-axial type involves the distal ileum and ascending colon twisting around each other, like the same way as sigmoid volvulus. Mesenterico-axial volvulus(Caecal bascule) involves the caecum folding in an axis at right angle to the mesentery.

Caecal volvulus is always due to congenital incomplete retroperitoneal fixation of the caecum or ascending colon. During the final stages of embryogenesis the caecum rotates counter clock wise from the left side of the abdomen to its final position in the right lower abdomen. Simultaneous with the final rotational process, is the fixation of the right colon mesentery to the retroperitoneal structures. Incomplete

intestinal rotation is usually associated with inadequate right colon fixation. Both factors increase the risk of Caecal volvulus. Other factors which predispose to Caecal volvulus include; previous surgical mobilization of the caecum, pelvic masses which may precipitate caecal volvulus by altering the relative positions of the intra -abdominal organs [2,4-8].

Clinical picture and diagnosis:

The common presentation of caecal volvulus is an acute abdomen, with colicky abdominal pain of sudden onset. Vomiting borborygmus, and dehydration are common. Electrolytes disturbance and leukocytosis may be present.

The diagnosis of caecal volvulus is rarely made clinically, and only 50% of the x-ray shows the characteristic “coffee-bean” (Caecal volvulus) or “tear drop”(bascule) appearance[9-11]. Contrast studies with barium or water soluble dye, risk perforation. Barium enema is contra indicated in the presence of symptoms and signs of peritonitis, rectal bleeding, radiological sings of gas in the wall of the bowel or pneumo peritoneum [11]. The role of colonoscopy is debatable since perforation is a hazard, and surgery will usually be required, whatever the finding. CT scan is replacing the contrast studies for the diagnosis of suspected patient with caecal volvulus. The coffee bean and bird peak are common CT signs associated with caecal

volvulus. A gas filled appendix is a sign that suggest dilatation of the cecum from caecal volvulus [8-10].

Treatment:

The aims of the treatment are distortion of the caecum and operative fixation or resection. Colonoscopic decompression of the caecum is frequently unsuccessful because of the hazard of perforation [7,12]. Surgical procedures in the absence of gangrene include Caecopexy, Caecostomy, and right hemi colectomy. Simple distortion alone has a high risk of recurrence [re volvulus] and oedema of the bowel walls may prevent complete relieve of obstruction , and this makes resection or fixation necessary. Caecopexy has a recurrence rate of 20% [2,6,7,12]. Caecostomy as a mode of caecal fixation has a high incidence of complication such as wound infection abdominal-wall necrosis and leakage [6,12].

Resection of non – gangrenous bowel eliminates the possibility of recurrence, it also eliminates the ongoing bacterial translocation. Resection is indicated in the presence of non-viable or excessively friable bowel .Right hemicolectomy avoids the risk of recurrence and deals definitively with the ischaemic bowel as potential source of sepsis [6,7,12]. Primary anastomosis should be avoided in the presence of peritoneal contamination from perforation. In the presence of perforation diverting ileostomy and distal mucous fistulae is performed .

Mortality rate of caecal volvulus is determined by the degree of bowel ischaemia and vary between 12% for viable bowel and 32% in the presence of gangrene [1,2,6].

CASE REPORT

A thirteen year–old girl presented to the emergency department of Ribat University Hospital, Complaining of Abdominal pain, vomiting and constipation for 3 days. Her present condition started three days prior to presentation by colicky abdominal pain localized in the centre of the abdomen , followed few hour later by vomiting which was infrequent at start becoming bilious and more frequent after several hours , the patient had absolute constipation for 3 days before presenting to the surgical casualty ,no other associated symptoms .

No past or family history of similar attack. The patient had menarche at the age of 12 and the LMP 7 days before admission.

On examination, she was ill, dehydrated , her temperature 38.5°C, pulse 98/minute , BP 110/80 mm Hg and respiratory rate 22/ minute thoracic. No abnormalities were detected on examination of the respiratory and cardiovascular system .The examination of the abdomen revealed distended abdomen that does

not move with respiration. On palpation the abdomen was rigid , tender all over the right side of the abdomen. Percussion revealed tympanitic note especially in the lower abdomen. Bowel sounds were absent, digital rectal examination revealed empty rectum and the examining finger was clean. Laboratory findings showed: leukocytosis $13.3 \times 10^3 / \text{mm}^3$, Hb% 11.4 gr/dL. Urine: was clear. The abdominal ultra sound preformed by obstetrical trainee revealed distended large bowel on the right side of the abdomen with absent peristalsis, No collection of free fluid in the peritoneal cavity. Normal pelvic organs.

A naso gastric tube and urinary catheter were fixed and the patient started on I.V. Fluids and prepared for laparotomy for perforated appendix. Under cover of Cefuroxime 1gr and Metronadzole 500 mg given i.v. at induction of general anaesthesia. the laparotomy performed through lower Rt. Para-median incision that extended upward during exploration. On incising the peritoneum a black intestine identified and found to be the cecum, including the appendix short part of the terminal ileum and short part of the ascending colon, the caecum was freely mobile (not attached the posterior abdominal wall) and so the part of the ascending colon which was gangrenous.(fig1) [an intra-operative diagnosis of caecal volvulus was established].There was small amount of blood stained turbid fluid at the right and left side of the abdomen, no other abnormal finding were noted.

A limited right. hemicolectomy performed, the excised loop consisted of the terminal 15cm of the ileum, cecum, the appendix and about 10 cm of the ascending colon (fig. 2). The continuity of the bowel was restored by end to end ilio- colic anastomosis

The patient uneventfully recovered from anaesthesia. Post operative the patient kept on nil by mouth, I.V. fluids, electrolytes and antibiotics for 96 hours. On the 6th post-operative day the patient discharged uneventfully. Two weeks later the patient seen, she was well, having no complains and clean nicely healed wound.

DISCUSSION:

The present case report illustrates the difficulty of establishing the diagnosis of caecal volvulus clinically. As the volvulus of the caecum is not common in children, we did not suspect its possibility and we explored the patient as a case of perforated appendix. The lower right paramedian approach was justified because more intra operative complications were expected and the paramedian incision can be extended easily. Putting in mind the possibility of volvulus of the caecum and confirmation of the diagnosis by radiological images is a safe way for pre operative diagnosis of caecal volvulus in children.



Figure1: intra operative finding of a gangrenous bowel.



Figure2: The excised loop of intestine showing the gangrenous cecum, appendix and the last 15cm of the terminal ileum.

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