

Volvulus of Transverse Colon along with Malplaced Duodenojejunal Junction: A Case Report.

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Abstract: Colonic volvulus is twisting of a portion of the colon around its mesentery, causing a colonic obstruction. The sigmoid colon and cecum are the most common portions of the colon involved. Transverse colon volvulus is a rare cause of intestinal obstruction. Very few reviews have been published in surgical literature. This is a case report with a structured review of literature of transverse colonic volvulus presenting as intestinal obstruction. Transverse colon volvulus is associated with both developmental abnormalities, such as a freely mobile right colon, and associated conditions such as chronic constipation, distal obstructions, and autonomic dysfunction. Though rare, the possibility of a transverse colon volvulus must always be part of a differential diagnosis when dealing with an intestinal obstruction, as the mortality rate with transverse colon volvulus is much higher than with a volvulus in any other part of the large intestine.

INTRODUCTION

Volvulus of the transverse colon is a rare cause of intestinal obstruction. No recent reviews of transverse colon volvulus in adult patients have been published in the surgical literature since 1983¹. The sigmoid colon and cecum are the most common portions of the colon involved. In the United States and Great Britain, volvulus accounts for approximately 1% to 7% of all cases of large bowel obstruction². Transverse colon and splenic flexure volvulus occurs but they represent less than 5% of cases in the United States. It is associated with both developmental abnormalities, such as a freely mobile right colon, and associated conditions such as chronic constipation, distal obstructions, and autonomic dysfunction. Such cases present with abdominal pain and distention. The abdominal distention is often very marked, greater than usually seen in a small bowel obstruction or colonic obstruction due to malignancy. Some patients may present with signs of shock due to dehydration, bowel ischemia, or peritonitis³. We report a case of transverse colon volvulus along with malrotation of the small gut; the duodeno-jejunal junction was on the right side of the vertebral column with an error in the attachment of mesentery [Figure 4], which presented as acute-on-chronic complete obstruction.

CASE REPORT

A 50 year old house-wife presented to the emergency with history of pain abdomen, obstipation and central abdominal distention for the past 6 days. She gave a long history of similar symptoms since 2 years, which often resolved spontaneously. She also gave a history of chronic constipation. Abdominal examination revealed a tense, distended and tender abdomen. Bowel sounds were sluggish. The patient was put on conservative management and investigated. Abdominal radiographs were suggestive of both large and small bowel obstruction [Figure 1]. The condition of the patient did not improve, with increasing pain abdomen and distention. She was immediately taken up for surgery.

Upon laparotomy, a volvulus of the transverse colon 270 degrees clockwise [Figure 2] with grossly distended and intact vascularity of mobile cecum, ascending colon and proximal half of transverse colon with no hepatic flexure attachment was discovered [Figure 3]. There was an associated malrotation of the small gut; the duodeno-jejunal junction was on the right side of the vertebral column with an error in the attachment of mesentery. Detorsion of the transverse colon volvulus along with decompression by enterostomy using a purse string suture along with colopexy was done.

DISCUSSION

Colonic volvulus is a well recognized cause of intestinal obstruction. Approximately 3% to 5% of all cases of intestinal obstruction are caused by colonic volvulus^{4,5,6}. Of all areas of colonic volvulus, only 4% involve the transverse colon^{4,5,6}. Volvulus of the transverse colon most often occurs in the second and third decades of life with an additional peak in the

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Figure 1: Abdominal X ray showing both large and small bowel obstruction



Figure 2: Intra-operative snapshot showing the volvulus of transverse colon



Figure 3: Intra-operative snapshot showing the site of volvulus after detorsion, evident as a ring

seventh decade^{4,6} and women outnumber men 2:1^{4,5,7,8}. The mortality rate of transverse colon volvulus is 33%, whereas sigmoid volvulus carries a mortality rate of 21% and cecal volvulus a rate of 10%⁵.

Transverse colon volvulus has been reported to occur in higher incidence in Eastern Europe and Scandinavia⁴. This increased incidence is likely due to the high residue diets common to these areas^{4,5}.

Volvulus of the transverse colon is a closed loop obstruction. The normal anatomy of the transverse colon typically prohibits volvulus in this area. The short transverse mesocolon and the hepatic and splenic flexures act to fix the transverse colon in position. The etiologies of transverse colon

volvulus may be grouped as mechanical, physiological, and congenital^{4,5,6}. Mechanical causes include: previous volvulus of the transverse or sigmoid colons, distal colonic obstruction, adhesions, malposition of the colon following previous surgery, mobility of the right colon, inflammatory strictures, and carcinoma^{4,5,6}. The most common physiological condition which predisposes to volvulus is chronic constipation^{5,6}. Chronic constipation leads to elongation and redundancy of the colon, permitting volvulus even in the presence of a normal mesentery.

Yaseen et al⁵ report a case of transverse colon volvulus associated with *Clostridium difficile* pseudomembranous colitis; Yaseen postulated that the acute inflammation of the mucosa might have permitted the formation of the volvulus. Errors in congenital rotation of the midgut, which result in abnormal fixation of the mesentery, may also play a significant role in permitting volvulus to occur^{5,6}.

Two separate clinical presentations have been described in the literature: acute fulminating and subacute progressive^{4,5,8}. Patients with the acute fulminating type of presentation typically have a sudden onset of severe abdominal pain, vomiting, mild distention, and rapid clinical deterioration. Bowel sounds are initially hyperactive but may later become absent^{4,6,8}. Laboratory studies may reveal a marked leukocytosis in the acute form, perhaps representing ischemia and gangrene^{6,8}. As many as 50% of patients with the subacute form of transverse colon volvulus have reported with similar symptoms in the past^{4,6,8} as our patient exhibited. The patient with the subacute form experiences more gradual and intermittent course of symptoms. Abdominal pain is less severe and vomiting is less or often absent. However, distention is often more prominent^{4,6,8}.

The diagnosis of transverse colon volvulus is not commonly made preoperatively⁴. Plain abdominal radiographs typically reveal colonic distention which may mimic cecal or sigmoid volvulus^{7,8}. The classic plain film description of transverse colon volvulus is a dilated loop of bowel in the upper abdomen with two air fluid levels present^{4,5,6,7}. The

dilated loop may appear as a "bent inner tube with a summation line along the inner margin of the loop"⁴. The classic "birds beak" deformity in the area of the transverse colon seen on contrast enema is diagnostic. However in the acute situation, surgery should not be delayed to perform the contrast study. Additionally, a water-soluble contrast medium should be used to minimize the consequences should perforation occur.

Whereas sigmoid volvulus can often be decompressed by sigmoidoscopy or colonoscopy, transverse colon volvulus must be surgically detorsed^{7,8}. Surgical options include: detorsion alone, detorsion with colopexy, resection with primary anastomosis, or resection with colostomy or ileostomy and mucous fistula. Both detorsion and detorsion with colopexy have a higher rate of recurrence than resection^{5,8}. Of course, resection is indicated if there is any evidence of ischemic or necrotic bowel. Resection with or without primary anastomosis is the treatment of choice for transverse colon volvulus to prevent recurrence⁶⁻⁸. In the event of bowel necrosis, resection with end colostomy or ileostomy and mucous fistula is the surgical procedure of choice due to risk of anastomotic leakage⁷.

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