

CASE REPORT

Synchronic volvulus of splenic flexure and caecum: a very rare cause of large bowel obstruction

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SUMMARY

Colonic volvulus involving the caecum and splenic flexure of the colon is an extremely rare surgical entity and, as a result, it is rarely entertained as a differential diagnosis for large bowel obstruction. The most common site of volvulus is located at the sigmoid colon (75%) followed by caecum (22%). Rare sites of colonic volvulus include the transverse colon (about 2%) and splenic flexure (1–2%). Synchronous double colonic volvulus is very rare. The presentation of this condition can be similar to the signs and symptoms of large bowel obstruction. CT imaging of the abdomen can be diagnostic; however, the diagnosis is often missed due to the rarity of this condition—in such cases, it can only be made at laparotomy. Management of this condition should be expedited to prevent a fatal outcome. We present the case of a 56-year-old woman with synchronous volvulus of the caecum and splenic flexure of the colon.

BACKGROUND

The rarity of this condition as well as the paucity of documentation in the current literature mandates it be brought to the attention of practising surgeons. There are only two reported cases of synchronous double volvulus in the English literature. The first is a case of simultaneous volvulus of the sigmoid colon and the gall bladder, with the second case being a volvulus of the sigmoid and transverse colon. To our knowledge, there are no reported cases of simultaneous splenic flexure and caecal volvulus in the medical literature. Emphasis should be given to early diagnosis and intervention to decrease morbidity and mortality.

CASE PRESENTATION

A 56-year-old woman presented to the emergency department of San Fernando Teaching Hospital of Trinidad and Tobago, with colicky left upper abdominal pain, abdominal distension and constipation. The patient reported of intermittent abdominal pain over the last few months, which worsened within 48 h prior to her admission. She also reported of having anorexia and nausea, and having no flatus and no bowel movements for the past 2 days. There was no history of change in bowel habit nor of weight loss, and no family history of colorectal cancer. The patient's medical history, surgical history and review of systems were unremarkable. Physical examination revealed mild dehydration and tachycardia with a pulse rate of 102 bpm. Her upper abdomen was grossly distended and tympanic. There was generalised tenderness with mild guarding, no rebound

tenderness, and diminished bowel sounds. Digital rectal examination revealed an empty rectum with no masses and no blood.

INVESTIGATIONS

A complete blood count revealed an elevated white blood cell count (1250/mm³) and normal haemoglobin (12.7 g/dL). The patient's renal function test was within normal limit. An arterial blood gas analysis was performed, which revealed mild metabolic acidosis.

Plain abdominal radiography showed massively dilated loops of the large bowel. CT scan of the abdomen and pelvis with intravenous contrast showed large bowel obstruction with transition at the proximal sigmoid colon (figure 1).

DIFFERENTIAL DIAGNOSIS

The suspected differential diagnosis was left-sided colonic tumour or volvulus, or an internal hernia.

TREATMENT

The patient was admitted into the high dependency unit for resuscitation and optimisation prior to exploratory laparotomy. Intraoperative findings revealed a synchronous volvulus of the caecal and splenic flexure of the colon. The caecum was twisted clockwise and found to be in the left upper quadrant. The point of twisting was at the ascending colon and there were areas of patchy necrosis in this segment. As for the splenic flexure of the colon, the point of twisting was between the distal transverse colon and distal descending colon. The sigmoid colon and rectum were collapsed. The mesentery was long and there was no gastrocolic, phrenocolic or splenocolic ligament to hold the splenic flexure in position (figures 2–5). Both volvuluses were untwisted and a thorough inspection of the large bowel was performed to rule out any



Figure 1 CT scan of the abdomen and pelvis with intravenous contrast—showing large bowel obstruction with transition point at proximal sigmoid colon.



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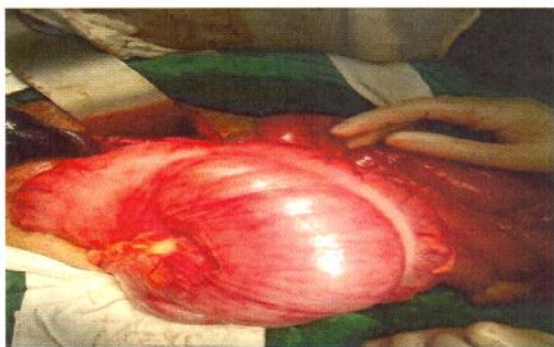


Figure 2 Intraoperative photograph showing volvulus of splenic flexure of colon.

additional pathologies. Subsequently, a subtotal colectomy with ileosigmoid anastomosis was performed after no additional gross findings were detected. The postoperative period was uneventful and the patient was discharged on day 6 postoperation.

OUTCOME AND FOLLOW-UP

At 24 months follow-up, our patient has no recurring abdominal symptoms and is presently doing well.

DISCUSSION

Volvulus is an axial twist of a portion of the gastrointestinal tract along its mesentery. The involved bowel is obstructed partially or completely with a variable degree of arterial and venous occlusion. The colon is the most common site for volvulus. Large bowel volvulus accounts for 1–7% of all large bowel obstructions in the Western world.¹ The most common site of volvulus includes the sigmoid colon (80%), caecum (15%) and transverse colon (3%). The splenic flexure is the least common site of colonic volvulus, constituting 1–2% of all colonic volvulus cases.^{1 2} The first case of a splenic flexure volvulus was reported by Glazer and Adlersberg³ in 1953. There are only 41 reported cases of splenic flexure volvulus.

On the other hand, the term caecal volvulus is a misnomer because, in most patients with caecal volvulus, the torsion is located in the ascending colon above the ileocaecal valve. In general, a partial malrotation is necessary for caecal volvulus to occur, because the caecum and parts of the ascending colon are involved. Early diagnosis is essential to reduce the high mortality rate reported with this condition, which is essentially a



Figure 3 Intraoperative photograph showing volvulus of caecum with appendix in left upper quadrant of abdomen.



Figure 4 Intraoperative photograph showing double volvulus.

closed-loop obstruction that may lead to vascular compromise with consequent gangrene and perforation.¹

There are no reports of synchronous volvulus of the splenic flexure and the caecal volvulus (double volvulus) in the English literature to date. Chittal *et al*⁴ reported a case of sigmoid and gallbladder volvulus. Similarly, Lianos *et al*⁵ reported a case of simultaneous transverse colon and sigmoid volvulus. Recently, Elsharif *et al*⁶ also reported a case of triple volvulus (stomach, caecum and sigmoid colon) in a patient with partial situs-inversus. Unfortunately, none of these publications provided photographs.

Many theories have been postulated in the pathogenesis of colonic volvulus. Congenital absence and surgical excision of the gastrocolic, phrenocolic or splenocolic ligaments have been cited as possible predisposing factors, as has the presence of a long mesentery.^{1 3} Chronic constipation with resultant colonic distension is often associated with mesenteric stretching and may be a predisposing condition.²

We believe that anatomic anomalies (the absence of the gastrophrenic, gastrosplenic and splenorenal ligaments), with associated long mesentery and partial intestinal malrotation, may have played a role in causing the double volvulus in our patient.

The diagnosis is often performed by the clinical presentation of suspected large bowel obstruction alongside radiological examinations. CT scan of the abdomen and pelvis in emergent situations, and barium enema of the colon in non-emergent situations, can often lead to the diagnosis.

However, because of its rarity, the clinical diagnosis of this condition is difficult, leading to delay in treatment and influencing its outcome. In our case, the double volvulus was missed on initial viewing of the CT; however, on retrospective review,



Figure 5 Intraoperative photograph showing the exact point of twisting at ascending colon and at distal transverse colon.

we were able to identify this phenomenon. This emphasises the need for awareness of this phenomenon by radiologists as well as by surgeons. Synchronous volvulus, due to its rarity, can be missed on CT imaging and, as a result, is only diagnosed in the operating room, as in our case.

Mortality depends on certain factors such as location of the volvulus, the presence of peritonitis and the viability of the bowel.⁷ The surgical treatment depends on the viability of the bowel and stability of the patient. If the bowel is not viable, resection is mandatory with either ostomy formation or primary anastomosis. For viable bowel, more options exist such as manual detorsion followed by an elective resection with primary or delayed anastomosis or exteriorisation of the splenic flexure. It should be noted that the large bowel should be thoroughly examined to rule out any other concomitant pathologies that may influence surgical treatment. One such pathology is the presence of a megacolon. In the presence of a megacolon, the

incidence of recurrent volvulus with limited colonic resection can be as high as 82%.⁸ Chung *et al*⁹ stated that concomitant megacolon and megarectum are significant predictors of recurrence. Our patient had a synchronous volvulus of the splenic flexure and caecum, with redundant colon but a relatively fixed sigmoid colon with areas of patchy necrosis in the ascending colon, which allowed us to perform subtotal colectomy and primary ileosigmoid anastomosis.

CONCLUSION

Synchronous double volvulus of the colon is an extremely rare clinical entity. The diagnosis is often missed due to the rarity of this condition. However, once suspected, prompt attention should be given to prevent a fatal outcome.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

Learning points

- ▶ Synchronous double volvulus of the colon is an extremely rare cause of large bowel obstruction.
- ▶ Because of the rarity of this condition, the diagnosis can often be missed.
- ▶ Awareness of this rare cause of colonic obstruction and its radiographic presentation are necessary in planning surgical management for these patients.
- ▶ A high index of suspicion should be kept while admitting a patient with large bowel obstruction.
- ▶ Aggressive resuscitation and prompt treatment should be carried out to decrease morbidity and mortality.

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