

## CASE REPORT

# Caecal volvulus in a twin pregnancy: dilemma of a delayed diagnosis

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## ABSTRACT

Intestinal obstruction during pregnancy is rare. I present a case in which a woman of 37 years 18<sup>th</sup> weeks of twin gestation presented with 4 days intermittent abdominal pain with constipation. She was initially admitted for pain relief and treatment for her constipation and nausea. The patient was reviewed and discharged as she felt her symptoms had improved after passing flatus. She was readmitted a day later with severe cramping abdominal pains, feeling unwell, vomiting, sweaty and unable to pass flatus. The patient's symptoms worsened, and eventually she was diagnosed as caecal volvulus and laparotomy was done. A right hemicolectomy with primary anastomosis was performed. Her ongoing antenatal care was unremarkable. She had a vaginal delivery for the 1<sup>st</sup> twin, followed by an emergency caesarean section for the 2<sup>nd</sup> twin due to a transverse lie with a cord prolapse.

**Keywords:** Volvulus, pregnancy, bowel obstruction.

Colonic volvulus causing intestinal obstruction is an uncommon non-obstetric cause of abdominal pain in pregnancy. It can lead to vascular congestion and if untreated can lead to ischemic necrosis and finally perforation. The incidence varies from 1/2500–1/3500 pregnancies<sup>1</sup>. The most common location of volvulus in the large bowel is the sigmoid (60-80%) followed by the caecum (20-40%). Typical time of presentation is in the second trimester between 16-20 weeks, when the uterus becomes an intra-abdominal organ, then between 32-36 weeks, as the foetus enters the pelvis and in the puerperium when there is a rapid change in uterine size<sup>2,3</sup>. Hence, volvulus should be a considered differential diagnosis, with a high index of suspicion, when a pregnant patient presents with severe abdominal pain and

constipation. In pregnancy, the uterus displaces the mobile caecum upwards thus predisposing it to torsion, and in the puerperium the rapid uterine involution will leave an increased intraperitoneal space that can predispose to twisting of the already displaced cecum. Additional factors such as high fibre intake, adynamic ileus, chronic constipation and distant colonic obstruction have been implicated in caecal volvulus formation in anatomically susceptible people, presumably through caecal displacement, hyperperistalsis and colonic distension. Early diagnosis with prompt radiological and surgical intervention may as well minimise the maternal mortality (6-20%), foetal mortality (20-26%) and morbidity, and bowel strangulation requiring resection (23%).

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### Case report

A 37 year multiparous patient presented to the obstetric assessment unit at 18 weeks with twin gestation with a 4 day history of intermittent, crampy abdominal pain, constipation for a week, nausea and very occasionally a non-projectile vomit (small quantities). She had normal bowel habits prior to this episode. She had no history of abdominal or pelvic surgery.

On presentation, her baseline observations, haematological and biochemical tests were within the normal parameters apart from a mildly increased inflammatory marker, C-reactive protein 17(normal<5 mg/l). Physical examination showed marked tenderness on the right side of the abdomen. Vaginal examination was unremarkable. She was admitted for pain relief and treatment for her constipation and nausea, which included stool softeners, bulk laxatives, enemas, antiemetics and simple analgesics (intravenous paracetamol). The following morning, the patient was reviewed and discharged as she felt her symptoms had improved after passing flatus.

She was readmitted a day later with severe cramping abdominal pains, feeling unwell, vomiting, sweaty and unable to now even pass flatus. Her baseline observations, haematological and biochemical tests were again within the normal parameters. Management for pain and constipation with laxatives and analgesics continued throughout the night and the following morning. Her condition deteriorated throughout the course of the afternoon and repeat serum biochemistry suggested the C-reactive protein had risen from 17mg/l to 156mg/l with low potassium levels 3mmol/l (3.5-5.30mmol/l). Clinical examination suggested a distended and tender abdomen. The patient was reviewed by the surgical team who then went onto conservative therapy with insertion of a nasogastric tube, commenced on intravenous antibiotics and intravenous fluid and electrolyte replacement. An abdominal ultrasound was carried out, revealing, “A marked dilatation of the stomach and proximal duodenum with copious gas identified within. The caecum was distended with faecal matter. Fluid was identified in the sluggish peristalsing distal small bowel”. A flatus tube inserted following the scan had brought considerable relief and the patient was able to have an undisturbed night. The following morning, her observations were

stable and her abdominal pains had improved. In view of her continued distended abdomen and increased bilious nasogastric tube aspirates, an MRI (magnetic resonance imaging) was performed (Figure 1).

The findings were that of “a displaced and grossly distended caecum, lying within the upper left quadrant measuring up to 12 cm in diameter. There was a “whorled” appearance at the right upper quadrant with the caecal pole in the left upper quadrant of the abdomen. There was no evidence of a perforation. The remainder of the large bowel was collapsed. The overall appearances were strongly suggestive of a “caecal volvulus”. She underwent an emergency laparotomy.

At laparotomy, the findings were that of “enormous



**Figure 1: MRI Findings**

caecal distension with linear serosal tear and a point of imminent perforation with bead of pus. The whole right colon was on mesentery. A copious amount of free serous fluid was present”. Based on the findings, the patient underwent a right hemicolectomy. She was then transferred to the critical care unit to continue intravenous resuscitation of fluids and electrolytes. An ultrasound scan the following day confirmed the presence of an ongoing twin pregnancy. The patient made an uneventful recovery and was transferred back to the obstetric ward on the 4<sup>th</sup> post-operative day and finally discharged home on day 7. Surgical histology of the resected specimen suggested patchy severe caecal ulceration with the diameter of the distended caecum being 15 cm. There was also evidence of early acute appendicitis.

Her ongoing antenatal care was unremarkable. Serial growth scans were put in place in view of the twin pregnancy and also as her previous baby was small for

gestational age as plotted on the antenatal GROW (Gestational Related Optimal Weight) chart. Induction of labour was carried out between 37-38 weeks as per unit policy. She had a vaginal delivery for the 1<sup>st</sup> twin, followed by an emergency caesarean section for the 2<sup>nd</sup> twin due to a transverse lie with a cord prolapse.

### **Discussion**

Intestinal obstruction is a rare cause of abdominal pain in pregnancy. It has a reported incidence of 1:1500 to 1:66,431 pregnancies<sup>1, 4</sup>. Adhesions related to previous abdominal-pelvic surgery or pelvic inflammatory conditions relate to about 60-70% of the cases of bowel obstruction in pregnancy<sup>1, 5</sup>. Colonic volvulus (sigmoid, caecal and transverse) accounts for approximately 25% of cases<sup>5, 6</sup> of bowel obstruction of which sigmoid volvulus accounts for 44%<sup>4, 7</sup> and caecal for 25-44%<sup>8</sup>. This vastly differs from non-pregnant patients where the incidence of colonic volvulus is between 3-5%<sup>5, 8</sup>. The incidence of caecal volvulus is reported to range from 2.8-7.1 per million people per year and the process is responsible for 1-1.5% of all adult intestinal obstruction and 25-40% of all volvulus involving the colon.

Caecal volvulus is an uncommon but important cause of bowel obstruction in pregnancy with an increased risk of both maternal mortality (6-20%)<sup>9, 10</sup> and foetal mortality (20-26%)<sup>10, 11</sup>. In a study done in Zimbabwe, the incidence of intestinal obstruction in pregnancy was 1:7179 and there had not been any reports of caecal volvulus in that series that included 93,000 deliveries<sup>12</sup>. There are two types of caecal volvulus: a) Loop and b) axial torsion. In the loop type of volvulus, the distended caecum both twists and inverts moving to occupy the upper left quadrant as were evident in this case based on MRI (magnetic resonance imaging).

In the axial torsion, the caecum twists in the axial plane rotating clockwise or anti-clockwise around its own long axis and remains in the right lower quadrant. Radiological findings may reflect the differences. There is a variant called a caecal bascule, which accounts for 10% of all caecal volvulus. It is due to the upward and anterior folding of the ascending colon. Although anatomically different, they share similar clinical features including the potential for strangulation and bowel obstruction. All three types result in a closed loop obstruction with a risk of mesenteric ischaemia. Pregnancy is one of the factors

that contribute to the development of a caecal volvulus due to the upward displacement of the caecum, hence increasing the incidence of caecal rotation around a fixed point. There is mal-fixation of the caecum due to some degree of malrotation.

The diagnosis of intestinal obstruction in pregnancy is difficult especially when there is no history of any abdomino-pelvic surgery as evident in our case. Clinical case series have reported 23-53% of patients presenting with caecal volvulus who have had a history of abdominal surgery. It is probably due to the fact that postoperative adhesions contribute to the formation of a fixation point and acts as a fulcrum for rotation of the mobile right colon, thereby facilitating the development of a volvulus. Due to the rarity of a colonic volvulus, commonest causes such as constipation, nausea, vomiting are usually taken into account as pregnancy-associated complaints.

The patterns of clinical presentation are categorised as acute obstruction, acute fulminant and recurrent intermittent or mobile caecum syndrome. In the mobile caecum syndrome, there is abdominal distension, intermittent abdominal pain either generalised or localised to the right lower quadrant with spontaneous resolution of pain after the passage of flatus. This presentation pre-sets the onset of an acute volvulus by about 50%. In acute obstruction, there is cramping abdominal pain and vomiting that does not resolve spontaneously. Timely intervention leads to a decreased incidence of bowel necrosis, which is seen in acute fulminant obstruction, a toxic state with peritonitis where there is strangulation and perforation of the caecum. Laboratory investigations are often unremarkable in patients with intermittent symptoms and early acute obstruction. These are neither specific nor sensitive to the diagnosis of a caecal volvulus. In advanced obstruction, abnormal blood picture do reflect the obstructive process. The diagnosis of a volvulus is suspected when a pregnant woman presents with a clinical triad of abdominal pain, distension, absolute constipation and vomiting. In cases of severe, persistent vomiting, especially if it begins after 14-16 weeks, excluding intestinal obstruction should be an essential work up in the differential diagnosis. Fever, leukocytosis and electrolyte abnormalities also increase the likelihood of an intestinal strangulation.

The diagnosis of a caecal volvulus can be made with an abdominal x-ray with 95% sensitivity with a characteristic coffee-bean deformity, which may be seen towards the left upper quadrant. As the caecum is mobile, the dilated caecal loop can appear anywhere in the abdomen<sup>3</sup>. The most common signs of a caecal volvulus on computerised axial tomography (CT) are “a whirl, coffee bean and beak sign”. The whirl sign is composed of a spiralled loop of the collapsed caecum with low attenuation fatty mesentery and engorged mesenteric vessels. The bird beak sign describes the appearance of a bowel loop that progressively tapers and converges into the torsion site. In our case report the pregnancy led the surgeons to perform an MRI to exclude a bowel obstruction.

Surgery is the treatment of choice in patients with caecal volvulus. Various surgical techniques described for caecal volvulus are cecopexy, resection with ileostomy, resection with primary anastomosis and cecostomy. Cecopexy technique has a low complication rate and recurrence rates of 0-8%. However, resection is usually favoured for all cases of caecal volvulus in which cecopexy is technically challenging. Surgical resection eliminates the possibility of recurrence with a low morbidity and mortality rate, and is always indicated if bowel necrosis is evident.

### Conclusion

Caecal volvulus is a rare entity and an important cause of bowel obstruction with a high foetal and maternal mortality. The mortality rate of 33% has been reported in the presence of gangrenous bowel. There should be an increased awareness amongst clinicians to recognise this condition as delay in diagnosis leads to potentially devastating complications. Prompt intervention is necessary to minimize maternal and foetal morbidity and mortality. Reluctance and hesitation to obtain radiological evidence due to fears about foetal risk may further contribute to the delay in diagnosis. Safer alternatives to CT scanning such as the MRI are safe in pregnancy. It helps in the diagnosis and management of acute nontraumatic abdominal pain in pregnancy. Abdominal X-rays should still be requested when there is a high index suspicion of intestinal obstruction, as the potential benefits far outweigh the risks of radiation exposure<sup>1,10</sup>.

**Conflict of interest:** None. **Disclaimer:** Nil.

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