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Case Report

Sigmoid volvulus complicating pregnancy: a case report

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ABSTRACT

Sigmoid volvulus in pregnancy is a rare, but devastating pathology owing to its adverse effects on the mother as well as the foetus. It can lead to maternal mortality in 5-50% cases and foetal mortality in up to 30% cases. A high index of suspicion is necessary and timely surgical intervention is the key to improving fetomaternal outcomes. We present a case of a 32-year-old pregnant woman who presented with sigmoid volvulus at 28 weeks of gestation. The patient was taken up for an emergency laparotomy, where the sigmoid colon was found to be extremely dilated and twisted. Bowel resection and primary anastomosis was done. An anastomotic leak occurred postoperatively, due to which re-exploration and colostomy was done. The patient had a spontaneous abortion after the surgery. She was discharged after five days with a functional stoma and elective colostomy closure was done after six weeks.

Keywords: Sigmoid volvulus, Pregnancy, Complication, Stoma Delhi

INTRODUCTION

Sigmoid volvulus is one of many causes of intestinal obstruction in pregnancy, but is in general rare. Its incidence is variable, ranging from 1 in 1500 to 1 in around 60,000 pregnancies.¹ Other causes of bowel obstruction in pregnancy include adhesions, hernia, malignancies and intussusceptions.² Sigmoid volvulus in pregnancy results in high fetomaternal morbidity and mortality because patients often present late and diagnosing it accurately is tough because many of the symptoms mimic those of normal physiological changes during pregnancy.² Maternal complications include perforation, peritonitis, and sepsis. Fetal complications include preterm delivery, intrauterine death, and neonatal sepsis. A high index of suspicion and use of modern imaging modalities are essential for improving the outcomes for both mother and fetus.³ A multidisciplinary approach is critical for the management of the patient. Against this background, we present a case of sigmoid volvulus in pregnancy in the second trimester.

CASE REPORT

A 32-year-old pregnant female at 28 weeks of gestation presented to the obstetric emergency ward with complains of abdominal pain associated with abdominal distention and vomiting over the last two days and a history of obstipation for the past five days. There was no history of fever, abdominal trauma, vaginal discharge or decreased fetal movements. There was no past history of tuberculosis, diabetes mellitus, hypertension or any other chronic illness. This was her second pregnancy and the first one was delivered normally. She was on iron and folate supplements for her ongoing pregnancy.

On examination the patient was hemodynamically stable, conscious, alert, mildly pale, dehydrated and had a temperature record of 97.7-degree Fahrenheit. Her blood pressure was 110/72 mm Hg, pulse rate was 134 beats/min, saturation was 98% on room air. On inspection, the abdomen was symmetrically distended and all the quadrants were moving well with respiration. The

abdomen was tense and tenderness was elicited on palpation. The symphysis-fundal height was corresponding to 26 weeks. A hyper tympanic note was observed on percussion. Digital rectal examination showed ballooning of rectum with no fecal staining. Other systems were unremarkable.

Her leucocyte count was $9.17 \times 10^9/l$ and all other blood investigations were within normal limits. Abdominal ultrasonography was suggestive of a gravid uterus with a 26-week single live fetus. The abdomen was highly gaseous with sluggish peristalsis noted in the bowel loops (Figure 1). She was kept nil orally and was resuscitated with intravenous fluids. Decompression of the colon using a soft flatus tube was unsuccessful.

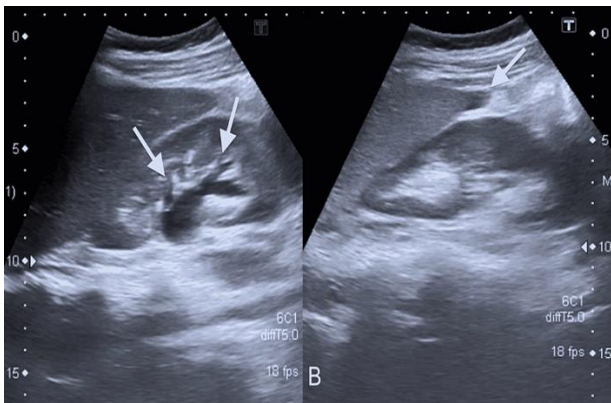


Figure 1: Ultrasound showing dilated bowel loops.

A consent for an emergency laparotomy was obtained and the patient was prepared for surgery. The abdomen was opened through a midline incision. A gravid uterus was seen. The sigmoid colon was extremely dilated and twisted (Figure 2).



Figure 2: Intraoperative image of the extremely dilated and twisted sigmoid colon.

It was untwisted, cautiously put back in place and decompressed using enterotomy (Figures 3 and 4). The colon was warmed, reassessed and was found to be viable. Resection and anastomosis of sigmoid colon was done with a linear cutting gastrointestinal stapler (Figure 5). The

patient stood the procedure well. Images of the patient's abdomen before and after the surgery are shown below for comparison (Figures 6 and 7).

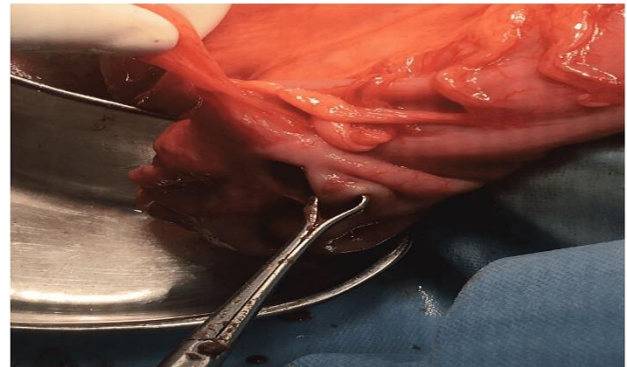


Figure 3: Decompression of the sigmoid colon by enterotomy.



Figure 4: Decompressed and derotated sigmoid colon.



Figure 5: Resection and anastomosis of the colon using a linear cutting gastrointestinal stapler.

The patient was shifted to high dependency unit (HDU) in the post operative period. Spontaneous onset of labour occurred and the patient aborted on post-operative day 2. Unfortunately, an anastomotic leak occurred on post-operative day 5 which was managed with re-exploration and sigmoid colostomy. The patient was given intravenous

antibiotics. She was doing well and was thus discharged after 5 days with a functional stoma. She was seen at the outpatient clinic after 6 weeks. A distal loopogram (barium enema) was done and was found to be normal following which colostomy closure was planned. She was reevaluated 6 weeks after the colostomy closure and was found to be stable.



Figure 6: Preoperative image of the patient's abdomen.

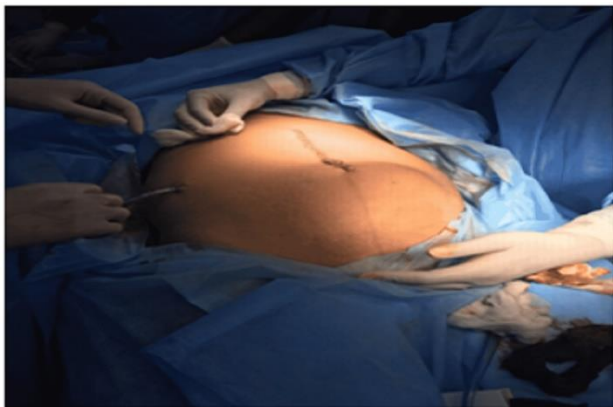


Figure 7: Postoperative image of the patient's abdomen.

DISCUSSION

Sigmoid volvulus (SV) in pregnancy is an uncommon and potentially devastating condition. The known risk factors are redundant sigmoid colon, a diet with high fibre content and chronic constipation.^{2,4}

In pregnancy, the etiology is multifactorial. Increased progesterone levels can lead to significant bowel hypo motility and constipation.⁵ Pregnancy also acts as an independent risk factor for the occurrence of SV because the gravid uterus causes displacement, compression and partial obstruction of the sigmoid colon.³ Thus, the incidence of SV increases as the pregnancy progresses, owing to the enlarging uterus.

SV poses a diagnostic challenge for the clinician in pregnancy. Most patients will present with vomiting and

constipation, which may be considered normal in a pregnant woman, leading to delays in diagnosis. Patients described in various case reports, as well as our index case reported to the emergency with similar symptoms. All of them were dehydrated and sick looking. Their presenting symptoms were abdominal pain, obstipation and a variable number of episodes of vomiting.^{2,4,6-8}

The gravid uterus limits proper per abdominal examination. The stretched anterior abdominal wall is less sensitive to parietal irritation which may mask signs of an acute abdomen.⁹ A distended abdomen is the most common presenting sign in pregnant patients. Patients described by Tesniere et al and Lodhia et al had a symmetrically distended abdomen, similar to our index case.^{4,7} Al Maksoud et al, Serafeimidis et al and Nascimento et al described patients with asymmetrically distended abdomens.^{2,6,8}

Non pregnant individuals with sigmoid volvulus are usually diagnosed on the basis of an abdominal X-ray. A plain abdominal X-ray radiograph shows a dilated sigmoid colon and multiple small or large intestinal air-fluid levels, or a characteristic “coffee bean or “horse shoe” sign. In pregnant patients, we are concerned about the teratogenicity of X-rays. The radiation dose delivered to the fetus by a plain abdominal X-ray is between 0.1-0.3 rads. The highest chances of teratogenesis are when the radiation exposure occurs between 10 to 17 weeks of gestation.^{4,10} However, since a single X-ray will cause very little exposure, the health and life of the mother take priority over concerns for the fetus. Judicious use of radiation helps in achieving an early diagnosis and optimizes the outcome for both the mother and the fetus.^{2,7,8}

Ultrasonography is another modality which can diagnose sigmoid volvulus as it can confirm the dilatation of the sigmoid colon and identify the transition point. It will also talk about the viability of the fetus in the same sitting. Typical findings of sigmoid volvulus in an X-ray abdomen or in a scanogram, are the absence of rectal gas and the inverted U-shaped distended sigmoid.^{11,12} In our index case we were able to appreciate the highly gaseous bowel and sluggish peristalsis on ultrasonography, which combined with high clinical suspicion pointed towards the diagnosis of SV.

Abdominal computed tomography (CT) and magnetic resonance imaging (MRI) usually show a whirled sigmoid mesentery in addition to dilated sigmoid loops and small or large intestinal air-fluid levels. Both CT and MRI have high diagnostic values for SV. But the radiation dose of even a single CT scan is very high, which is why it is generally avoided in pregnant patients. MRI is a non-ionizing radiation modality, therefore considered safe in pregnancy.¹³ Tesniere et al established the diagnosis on the basis of a CT scan while Serafeimidis et al performed an MRI which revealed a massive dilatation of the sigmoid colon.^{4,6}

A multidisciplinary approach is followed for the management of SV which involves a surgeon, an obstetrician and a paediatrician. Initial resuscitation is done with intravenous fluids and nasogastric decompression. Any electrolyte imbalance needs to be corrected.

Surgical intervention is generally necessary at presentation which can be open or endoscopic. The gravid uterus generally obstructs endoscopic vision and therefore this route of management is not preferred. Peritoneal lavage, bowel resection and stoma formation are done in most cases, as was done in the cases described by Al Maksoud et al, Tesniere et al and Lodhia et al.^{2,4,7} Some surgeons prefer a primary anastomosis, but it carries the risk of leakage due to bowel oedema. A primary anastomosis was done in our index case, which ended up leaking on post op day 5, and hence the patient was re-explored followed by a peritoneal lavage and a colostomy. However, early diagnosis would make resection and primary anastomosis a safer approach, with the distinct advantage of a reduced hospital stay and avoidance of further surgery.⁸

Interestingly, in the case described by Serafeimidis et al, the part of colon that got twisted, was just unwound and put back in place, without any resection. It was decompressed using a soft rectal tube. Since no resection was required, the post-op period was uneventful for both the mother and the fetus. Early presentation (within 2 days of symptom onset) likely played a role in the successful avoidance of resection in this patient.⁶

Sigmoid volvulus in pregnancy can lead to maternal mortality in up to 5% of the cases if the bowel is viable, and in over 50% cases if perforation has occurred. Most maternal deaths occur when there is delay in diagnosis. Fetal mortality occurs in approximately 30% cases, which can be a result of reduction of placental blood flow due to hypovolemia resulting from loss to third space, or could be an outcome of increased intra-abdominal pressure due to sigmoid dilatation.^{6,14,15} Other maternal complications include peritonitis, and sepsis while fetal complications include preterm delivery, intrauterine fetal death and neonatal sepsis.⁶ The case reported by Ribeiro Nascimento et al. had a catastrophic course of events. The patient presented with signs of septic shock and respiratory distress with an intrauterine fetal demise. She was taken up for emergency laparotomy where bowel resection as well as caesarean section was performed owing to poor Bishop score of the cervix and therefore a less likelihood of a normal vaginal delivery. However, the patient had an atonic uterus which led to post-partum hemorrhage and concomitant caesarean hysterectomy. The patient was stabilized post-operatively and was discharged after 15 days.⁸

Our index case as well as the patient reported by Lodhia et al had a spontaneous abortion after surgery.⁷ However, the patient reported by Al Maksoud et al. had a lower segment

caesarean section performed in view of fetal distress and delivered a fetus weighing 750 grams, who was discharged after 10 weeks of NICU stay.² All these cases presented at similar periods of gestation. The case reported by Tesniere et al, however, presented at 34 weeks of gestation and hence the salvageability of the foetus was much higher. Thus, we can say that the period of gestation at presentation also has a role to play in the survival of the fetus.⁴ The patient described by Serafeimidis et al also delivered a healthy baby 9 weeks after the treatment of SV, following a normal labour.⁶

CONCLUSION

In conclusion, SV during pregnancy is a rare non-obstetric complication with high mortality rates. A high index of clinical suspicion and timely surgical intervention are the keys to a favourable outcome. The diagnosis of SV should be considered while examining severe abdominal pain in a pregnant woman with a history of severe constipation or obstipation. Surgically, it can be managed by resection and primary anastomosis but with the risk of anastomotic leakage postoperatively. Therefore, resection of bowel followed by a colostomy is preferred by some surgeons. However, if diagnosed early, resection and primary anastomosis becomes a safer approach, as it avoids further surgery and reduces hospital stay).

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