CASE REPORT

Acute intestinal obstruction complicating pregnancy: diagnosis and surgical management

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SUMMARY

Intestinal obstruction during pregnancy is an uncommon and serious non-obstetric surgical condition which may be associated with significant maternal and fetal mortality. Surgeons who are called upon to manage these patients are often confronted with a diagnostic and therapeutic challenge due to the rarity of the condition, overlapping symptomatology, concerns over radiological evaluation and risks involved with surgery and anaesthesia. We report a 31-year-old woman who presented with acute intestinal obstruction during the third trimester of pregnancy. Plain abdominal X-ray was diagnostic of intestinal obstruction. Conservative treatment was unsuccessful. On laparotomy, the small bowel was found to have twisted at three different sites due to adhesive bands from previous abdominal surgeries. Division of these bands released the obstruction. The child was delivered through a concomitant caesarean section. A high index of clinical suspicion coupled with timely surgical intervention increases the chances for a favourable outcome in these situations.

BACKGROUND

The diagnosis and management of acute abdominal pain in pregnancy is often a challenging task. Approximately 1 in 500 pregnancies is complicated by a non-obstetric surgical condition.¹ The most common non-obstetric abdominal surgical conditions seen in pregnancy are acute appendicitis, cholecystitis, pancreatitis and bowel obstruction.² Intestinal obstruction in pregnancy (IOP) is rare with reported incidence rates of 1 in 2500 to 1 in 16 709 deliveries.^{3 4} IOP is the second most common non-obstetric reason for surgical intervention during pregnancy. The appropriate diagnosis and management of intestinal obstruction complicating pregnancy is of paramount importance as it is associated with significant maternal (6%) and fetal (26%) mortality.⁵ Surgeons who are often called upon for their expert opinion are often confronted with a diagnostic and therapeutic challenge in providing definitive treatment in pregnant women who present with acute intestinal obstruction, owing to the rarity of the problem, overlapping symptomatology, concerns over radiological examination and risks involved with laparotomy and anaesthesia. This article highlights the importance of timely surgical intervention in the management of IOP.

CASE PRESENTATION

A 31-year-old woman (Gravida 2 para 1) was referred to our institution at 29 weeks and 4 days

of gestational age with symptoms of colicky abdominal pain and vomiting and constipation of 2 days duration. She had a history of multiple abdominal surgeries, namely lower section caesarean section (CS; 8 years ago), laparoscopic right ovarian cystectomy for endometriotic cyst (1 year ago) and laparoscopic right-sided ovarian cystectomy for a benign ovarian cystadenoma during the third month of present pregnancy. Clinical examination revealed a distended and tense abdomen with maximal tenderness in the epigastric and lumbar regions with sluggish bowel sounds. The uterus was of 30-week size and fetal heart sounds were normally heard.

INVESTIGATIONS

Ultrasonography (USG) of the abdomen revealed diffuse fluid-filled small bowel loops with reduced peristalsis and minimal interloop fluid. Plain abdominal radiograph (supine and erect) of the abdomen showed multiple dilated bowels and air–fluid levels surrounding the fetus in utero ([figure 1](#)). Blood and urine investigations were unremarkable.

DIFFERENTIAL DIAGNOSIS

A working diagnosis of intestinal obstruction complicating pregnancy was made in view of a history of multiple abdominal surgeries and on the basis of the clinical and radiological findings.

TREATMENT

A conservative approach was tried initially with nasogastric decompression, nil per oral, intravenous fluids and intravenous antispasmodics, but there was no relief of symptoms. Her symptoms worsened over the next 6 h with progressive distension and further slowing down of bowel sounds. So a decision to proceed with laparotomy was taken. The proposed line of treatment was to perform a CS to deliver the child and then explore the abdomen for cause of intestinal obstruction. A single dose of cefotaxime was given at the time of induction. The abdomen was opened by an infra-umbilical midline incision. Multiple dilated loops of small bowel involving ileum and jejunum were seen to lie twisted at three different sites due to several adhesive bands traversing from the lateral abdominal wall to the bowel and uterus ([figure 2](#)). The terminal ileum was found twisted 2 cm proximal to ileocaecal junction due to a band. All these adhesions were meticulously released. The bowel appeared dark and congested initially. However, on releasing the adhesions, the bowel regained its colour and was viable ([figure 3](#)), with observable

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Figure 1 Plain radiographs of the abdomen: (A) erect view showing maternal dilated bowel loops surrounding the fetus in utero and (B) multiple air-fluid levels and dilated bowel loops suggestive of intestinal obstruction. The fetus' head, spine and limbs are clearly seen (black arrows).

peristalsis along with palpable mesenteric pulsations. An active female child was delivered by performing CS by the obstetrician.

OUTCOME AND FOLLOW-UP

The postoperative period was uneventful. She delivered a healthy female child weighing 1560 g and with APGAR scores of 9 at 1. The mother and the child were doing well at 30 days of follow-up.

DISCUSSION

Bowel obstruction commonly occurs in the third trimester. The commonest cause of IOP and puerperium is adhesive bands from previous abdominal surgeries including previous caesarean birth. There are three time periods during pregnancy which are associated with increased likelihood of intestinal obstruction,

namely 16th to 20th week, the 36th week and, finally, in the immediate puerperium. Adhesive obstruction occurs more commonly in advanced pregnancy with 6%, 28%, 45% and 21% occurring during the first, second, third trimesters and puerperium, respectively. The other reported causes of IOP include volvulus (23%), intussusceptions (5%), hernia (3%), carcinoma (1%) and idiopathic 'ileus' (8%).⁵ The predisposing factor in cases of volvulus is often found to be adhesive bands over which the intestine twists, as seen with our patient.

Clinical examination is often challenging in these patients. The gravid uterus poses limitations to proper physical examination of the various abdominal quadrants. The stretched anterior abdominal wall is less sensitive to parietal irritation and may downplay signs of acute abdomen. The commonly reported symptoms of IOP include abdominal pain (98%), vomiting (82%) and constipation (30%). Abdominal tenderness is found in 71% and abnormal peristalsis in 55% of the patients.

The next tricky task is selecting an appropriate radiological tool for evaluating these patients. USG may be helpful in demonstrating dilated bowel loops, status of peristalsis, interloop fluid and detecting signs of bowel ischaemia. In our case, USG showed dilated and fluid-filled loops but we could not arrive at a definite diagnosis. We, therefore, felt that plain abdominal radiographs may provide necessary information as there was a high clinical suspicion of intestinal obstruction. Plain abdominal radiographs have been reported to be positive for intestinal obstruction in 82% of pregnant women. The fetal exposure to radiation from a single plain X-ray abdomen is around 100 millirads (mrad) while that from a CT scan of the abdomen (including lumbar spine) is around 3.5 rads.⁶ It has been observed that exposures up to 0.05 Gy are not associated with increase in fetal anomalies or pregnancy loss.⁷ Chiedozi *et al*,⁸ in a series of 10 cases of IOP, reported that the plain abdominal X-ray was diagnostic in all their cases. Thus, abdominal X-ray in IOP may be an acceptable and cost-effective radiological modality in the appropriate setting. Thus, most of the diagnostic imaging studies utilising ionising radiation do not expose the

Figure 2 Operative photographs: (A) twisted bowel loops due to an adhesive band; (B) constricted portion of the bowel after release of the band and (C) band formed by omental adhesions to the uterine surface being released.

Figure 3 The bowel appears viable after detorsion and adhesiolysis.

fetus to a radiation dose high enough to result in developmental defects and may, therefore, be offered to pregnant women when the benefits outweigh the risks.

The management of IOP is similar to non-pregnant states. In the absence of signs of peritonitis, a conservative approach

should be tried initially, which includes nasogastric aspiration, and supplementation of intravenous fluids. Surgical intervention is indicated when conservative therapy fails and when there are signs of impending bowel strangulation or symptoms of fetal distress. The safety of anaesthesia in pregnancy for obstetric as well as non-obstetric surgical conditions has been well established.⁹ General anaesthesia is not associated with increased risk in obstetric patients. At present, there is no evidence to show that the currently used anaesthetic agents can produce teratogenic effects in humans when using standard concentrations at any gestational age. A pregnant woman should, therefore, never be denied indicated surgery, regardless of trimester.¹⁰ If IOP occurs during the third trimester, a concomitant CS can be performed.¹¹ Laparotomy is usually performed through a midline incision to allow adequate exposure and complete exploration of the abdomen with minimal handling of uterus. Segmental bowel resection with or without anastomosis may be necessary in the presence of gangrenous bowel.

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Competing interests None.

Patient consent Obtained.

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Learning points

- ▶ Intestinal obstruction during pregnancy is an uncommon and serious non-obstetric surgical condition, commonly occurring during the third trimester and is often due to adhesive bands from previous abdominal surgeries including previous caesarean birth.
- ▶ A high index of clinical suspicion is necessary for the diagnosis of bowel obstruction in pregnancy especially in women with a history of abdominal or pelvic surgery.
- ▶ Diagnostic imaging studies utilising ionising radiation may be offered to pregnant women when the benefits outweigh the risks since ionising radiation exposures up to 0.05 Gy is usually safe in pregnancy.
- ▶ The principle of management of bowel obstruction is the same in the pregnant and non-pregnant states with an initial trial of conservative treatment.
- ▶ Surgical therapy is indicated in cases of failed conservative therapy and increases the chances for a favourable outcome for the mother and child.

REFERENCES

- 1 Griffen WO, Diltz PV, Roddick JW. *Nonobstetric surgery during pregnancy. Current problems in surgery*. Chicago: Yearbook, 1969:1–56.
- 2 Coleman MT, Triano VA, Rund DA. Nonobstetric emergencies in pregnancy: trauma and surgical conditions. *Am J Obstet Gynecol* 1997;177:497–502.
- 3 Sharp HT. The acute abdomen during pregnancy. *Clin Obstet Gynecol* 2002;45:405–13.
- 4 Hayanga AJ, Bass-Wilkins K, Bulkley GB. Current management of small-bowel obstruction. *Adv Surg* 2005;39:1–33.
- 5 Perdue PW, Johnson HW Jr, Stafford PW. Intestinal obstruction complicating pregnancy. *Am J Surg* 1992;164:384–8.
- 6 American College of Obstetricians and Gynecologists. *Guidelines for diagnostic imaging during pregnancy*. ACOG Committee Opinion 158. Washington, DC: ACOG, 1995.
- 7 Kanal E, Barkovich AJ, Bell C, et al. ACR blue ribbon panel on MR safety. ACR guidance document for safe MR practices: 2007. *Am J Roentgenol* 2007;188:1447–74.
- 8 Chiedozi LC, Ajabor LN, Iweze FI. Small intestinal obstruction in pregnancy and puerperium. *Saudi J Gastroenterol* 1999;5:134–9.
- 9 Kuczkowski KM. Nonobstetric surgery during pregnancy: what are the risks of anesthesia? *Obstet Gynecol Surv* 2004;59:52–6.
- 10 Committee Opinion No. 474. American college of obstetricians and gynecologists. Nonobstetric surgery during pregnancy. *Obstet Gynecol* 2011;117:420–1.
- 11 Allen J, Helling T, Langenfeld M. Intraabdominal surgery during pregnancy. *Am J Surg* 1989;158:567–9.

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