CASE REPORT

Intussusception during pregnancy after laparoscopic Roux-en-Y gastric bypass

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SUMMARY

In fertile women, the laparoscopic Roux-en-Y gastric bypass (LRYGB) is being increasingly performed. Pregnancy and LRYGB both give an increased risk of intussusception, which can lead to bowel necrosis, sepsis and preterm labour. We describe two pregnant women with a history of LRYGB who presented to the emergency department with non-specific abdominal pain. Both were diagnosed with intussusception. These cases illustrate that intussusception should be considered in pregnant women with a history of LRYGB who present with non-specific abdominal pain. Only MRI, CT scan or diagnostic laparoscopy is sufficient for diagnosis. Early diagnosis may prevent serious complications.

BACKGROUND

Laparoscopic Roux-en-Y gastric bypass (LRYGB) is an effective procedure for patients with morbid obesity (figure 1).¹ As a result of the increase in obesity, this operation is performed more frequently. Eighty per cent of the patients are women and 75% are between 18 and 49 years of age.²

Weight loss is associated with restoration of ovulatory function and improved outcomes in fertility.³

Intussusception is a rare complication after LRYGB but is also known as a complication in pregnancy.⁴

Bowel obstruction during pregnancy is associated with high maternal and perinatal mortality.⁵ In this report, we demonstrate the impact of a diagnostic delay in a pregnant woman after Roux-en-Y gastric bypass. In the second case, after a laparotomy, premature labour could not be prevented.

CASE PRESENTATION

First case

Our first patient is a 24-year-old multiparous woman who presented at the emergency department at 34+3 weeks gestation with abdominal pain. Seventeen months before pregnancy, she had undergone an LRYGB because of obesity (150 kg, body mass index (BMI) 49 kg/m²). Before pregnancy, she weighed 94 kg (BMI 30.7 kg/m²). Antenatal care was provided by a midwife.

During this pregnancy, there were three previous visits to the emergency department for upper abdominal pain. She received tramadol for known cholelithiasis; a urinary tract infection (UTI) was identified and treated.

At 34+3 weeks of gestation, she reported nausea without vomiting. The abdominal pain worsened after defaecation.

Second case

Our second patient is a 28-year-old nulliparous woman. She conceived her bichorionic twin pregnancy spontaneously. Her medical history includes a gastric bypass 9 years earlier. Before her pregnancy, she had a stable weight of 79 kg (BMI 25.7 kg/m²). At 24+1 weeks of gestation, she presented with abdominal pain and nausea.

INVESTIGATIONS

First case

We saw a restless woman with a tender upper part of the abdomen and colicky pain. Vital parameters were normal and at auscultation bowel movements were normal. There were no signs of peritonitis. The fetal condition as assessed by a cardiotocogram was normal. Ultrasound examination showed an active fetus with normal amniotic fluid. No signs of placental abruption were present. Despite previous antibiotic treatment, urine analysis showed a UTI. The patient was admitted for observation and treatment with intravenous antibiotics as a complicated UTI was suspected.

Twelve hours after admission, her clinical condition deteriorated. The abdominal pain increased, and for the first time haematemesis was present. The vital parameters remained normal. The abdomen was now rigid over the area of the uterus. At ultrasound examination, a fetal bradycardia of 80 bpm was noted.

Second case

On physical examination, the patient was found to have profound tenderness of the abdomen. Normal vital signs were noted. The fundal height was in accordance with a twin gestation at 24 weeks. Ultrasound showed a vital twin pregnancy with normal fetal growth and normal placentas. No ovarian abnormalities were present.

A surgeon was consulted. As intussusception, gastroenteritis, pancreatitis or appendicitis was suspected, MRI was performed. An intussusception was clearly visible.

TREATMENT

First case

An emergency caesarean section for fetal distress was performed. The abdominal cavity was filled with a brownish fluid due to contamination from the small intestine content. The amniotic fluid was meconium-stained; however, there were no signs of placental abruption.

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Roux-en-Y (RNY)

Figure 1 Roux-en-Y gastric bypass.

During surgery, the patient became haemodynamically unstable with a blood pressure of 62/38 mm Hg and pulse was 120 bpm, presumably as a result of septic shock. She was treated accordingly with phenylephrine and hydroxyethyl starch (voluven). Manual palpation of the upper abdominal cavity revealed a swollen segment of the intestine near the region of the stomach and the incision was extended to a median laparotomy. A retrograde intussusception involving the jejuno-jejunoscopy of the LRYGB with a small perforation was present. On manipulation, the perforation site enlarged and an inverted segment of the intestine prolapsed into the abdominal cavity. The non-vital intussuscepted part was resected (40 cm) and the bypass was recovered by an anastomosis. The antibiotics were administered for 1 week.

Second case

An emergency surgical intervention was required. A multidisciplinary team decided that a laparoscopic approach was preferable. A laparoscopy under general anaesthesia was performed after positioning the pregnant woman in a left-tilted position to prevent caval compression. Prophylactic tocolysis with indomethacin suppositories was administered. Corticosteroids were not given. At laparoscopy, dilation of the small bowel was identified with a diameter of 10 cm ([figure 2](#)).

Conversion to laparotomy of the upper abdomen was performed because of the limited intra-abdominal view and limited working space. Retrograde intussusception was present ([figure 3](#)). A large part of the bowel of 70 cm was resected, including the anastomosis, and a side-to-side anastomosis was performed.

OUTCOME AND FOLLOW-UP

First case

The boy was born with Apgar scores of 1/6/9 after 1, 5 and 10 min, respectively. Arterial and venous cord blood samples were taken: pH levels of 6.76 and 6.83 with base excess levels of -23.9 and -23.5 mmol/L, respectively. These results can be explained by the septic shock of the mother just before birth. The newborn was admitted to the neonatal high care facility but

Figure 2 Dilation of the small bowel.

recovered remarkably well. Almost immediately after starting continuous positive airway pressure, a low-flow nasal cannula was sufficient for the infant. Antibiotics were given. No signs of hypoxic ischaemic encephalopathy were present.

Histological examination of the placenta showed intrauterine stress due to the presence of erythroblasts, but there were no signs of infarction, abruption or chorioamnionitis.

The postoperative period was complicated by a superficial wound infection; after 2 weeks, she was discharged with her son. Three months after delivery, both were in good condition.

Second case

The postoperative period was first complicated by pneumonia that was treated by cefuroxime and later by a profound wound infection of the abdominal wall. Seven days after the laparotomy, the patient reported contractions and vaginal discharge. At vaginal examination, full dilation was noted. Within 1 h at 25+1 weeks of gestation, she delivered two girls of 610 and 600 g, respectively, vaginally with Apgar scores 8/9 and 9/9 after 1 and 5 min. Both girls were admitted to the neonatal intensive care unit. One baby died after 10 days due to complications of laparotomy because of necrotising enterocolitis.

The second baby developed major neonatal complications consisting of an infant respiratory distress syndrome (IRDS) grade 3–4, treated with surfactant and high-frequency oscillation ventilation and sepsis with positive cultures for *Escherichia coli*. She was discharged after 11 weeks and is at present performing well.

The mother was treated with antibiotics and left the hospital 10 days after delivery, 17 days after the operation. At 6 months after the operation, she was in relatively good condition. The secondary healing process of the wound infection was almost complete.

Figure 3 Retrograde intussusception.

DISCUSSION

These cases illustrate that the differential diagnosis of non-specific abdominal pain in pregnant women with a history of LRYGB should include intestinal obstruction, such as an intussusception. Of course, less rare diagnoses should be considered, like UTI, appendicitis, diverticulitis, internal herniation and cholecystitis/cholelithiasis.

After LRYGB, 0.1–0.3% of the patients will get an intussusception.⁶ Intussusception in pregnancy is rare, it accounts for 5% of all intestinal obstructions during pregnancy.⁵ Intestinal obstruction is associated with high maternal and perinatal mortality of 6% and 26%, respectively.⁵ To date, three case reports have been published of intussusception during pregnancy after LRYGB.^{3 4 7} The published cases differ substantially because all the women delivered vaginally at term without a prior emergent situation existing. In our first case, delay in the diagnosis led to an acute situation with fetal asphyxia as a result. In our second case, the diagnosis was made but early preterm birth with perinatal death, probably as a result of maternal intra-abdominal inflammation, could not be prevented.

The aetiology for telescoping of the intestine and developing intussusception after gastric bypass is not clear. Previous literature has hypothesised an iatrogenic lead point created by the suture or staple line at the entero-entero anastomosis, thereby allowing hyper-peristalsis of the excluded segment to telescope the biliopancreatic limb into the common limb. A postoperative adhesion could do the same. Others have suggested 'Roux stasis syndrome' as another possible aetiology in this patient population. Hocking and colleagues described a possible physiological aetiology related to dysmotility of the Roux limb in 1991. Hocking theorised that disorderly peristaltic activity in the Roux limb could create adjacent areas of high and low pressure, thus allowing for an intussusception. This explanation fits in with the cases presented here as no intraluminal, intramural or extraluminal cause could be found which may have led to the retrograde jejunojejunal intussusception.⁸

The intussusception causes an obstruction with decreased mesenteric blood flow, which can lead to inflammation, irreversible intestinal ischaemia and sepsis.

Intussusception is diagnosed by history, clinical presentation and radiological investigation. The non-specific symptoms such as abdominal pain, nausea and vomiting can be ascribed falsely to pregnancy-related symptoms.

In pregnant women, the first step of radiological investigation to exclude common causes of acute abdominal pain will often be ultrasonography by a radiologist and MRI. In order to assess the imaging properly, it is important to inform the radiologist about the anatomical situation after LRYGB. If there is still a suspicion of intussusception, a CT scan is the best modality to

demonstrate intussusception.⁶ Radiation exposure to fetus and mother should be considered carefully, balanced against the condition of the mother. Diagnostic laparoscopy is feasible when the pneumoperitoneum can be created. It should be performed if the situation is acute or the CT scan reveals no obstruction but clinical symptoms fit the diagnosis, taking into account that early intervention can prevent necrosis. Treatment options depend on the gestational age, fetal condition and vitality of the bowel segment involved. For this specific patient group, the expertise of a bariatric surgeon is required.

Learning points

- ▶ All obstetric, surgical, radiological and emergency professionals should be aware of the late complications of Roux-en-Y gastric bypass (RYGB) in pregnant women.
- ▶ In pregnant women with a history of a laparoscopic RYGB presenting with non-specific abdominal pain, the differential diagnosis should include intussusception.
- ▶ MRI, CT scan or diagnostic laparoscopy, if feasible, can aid in diagnosing this serious condition.
- ▶ Early diagnosis can possibly avoid serious complications such as preterm birth and bowel necrosis.

Competing interests None.

Patient consent Obtained.

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