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Late Diagnosis Ended up in Small Intestine Gangrene and Near - Total Enterectomy in Late Pregnancy

Seyedeh Azam Pour Hosseini,[1] Sara Mirzaeian,[1,*] Reza Jafarzadeh Esfehani,[2] and Nayereh Ghomian[1]

[1]Department of Obstetrics and Gynecology, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
[2]School of Medicine, Sabzevar University of Medical Sciences, Sabzevar, Iran

[*]*Corresponding author*: Sara Mirzaeian, Gynecologist, Department of Obstetrics and Gynecology, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran. Tel: +98-9155098174, E-mail: mirzaeians@mums.ac.ir

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Abstract

Small intestine gangrene during pregnancy is a rare and difficult diagnosis. This condition is mainly caused by a complicated obstruction of the small bowel resulting from adhesions due to previous surgical operations such as hernia, or small intestine volvulus. Vascular causes including thrombosis, emboli, and vasculitis are common. The current report discussed a case of entire small bowel gangrene following small intestinal volvulus in a 24 - year - old multigravida in the 36th week of pregnancy, presenting with severe abdominal and back pain. During the operation, the small intestine was not recoverable, leading to a successful near - total enterectomy. The current case demonstrated the importance of a full diagnostic work - up of pregnant females present with gastrointestinal symptoms, especially when there is more than one etiology possible for patient's clinical condition.

Keywords: Abdominal Pain, Pregnancy, Small Intestine, Intestinal Volvulus

1. Introduction

Small bowel obstruction (SBO) is a common reason for admissions in surgical emergency units. This condition is mostly diagnosed in time, and is resolved by appropriate conservative therapy without any complications (1). SBO in pregnancy is a rare condition with its own complications. The incidence of SBO in pregnancy is reported to have the odds of 1:1500 - 1:66431 (2). Small intestine volvulus can cause SBO signs. The most prominent symptom in this condition is pain in the center of abdomen, where the severity is disproportionate to SBO and the pain does not usually subside by narcotics (3). However, during late stages of pregnancy, due to normal anatomical changes in the abdomen, physical examination may not be reliable enough (4). Surgical causes such as acute appendicitis, pancreatitis, or cholecystitis are common during pregnancy and should be considered as differential diagnosis of SBO (5). In addition, laboratory tests and imaging modalities such as abdominal X - ray, ultrasonography, computed tomography (CT), and magnetic resonance imaging (MRI) are available aiding options to diagnose SBO (3, 6). Managing SBO in pregnant females with no signs of peritonitis and stable conditions is similar to non - pregnant ones (6). In patients with signs of peritonitis or unstable conditions, performing a surgery and resecting the gangrened part is mandatory (6). The current report discussed a case of SBO due to intestinal volvulus in a pregnant female, resulting in fetus loss and bowel transplant due to small intestine gangrene.

2. Case Presentation

A 24 - year - old Caucasian pregnant female (gravida: 2, parity: 0, abortion: 1) in her 36th week of pregnancy presented with severe abdominal and back pain in the emergency ward of an educational hospital in Mashhad, Iran. The pain started from upper abdomen and became generalized and continuous within three days after initiation. The other symptoms were inability to gas passing and defecation as well as nausea and vomiting. Fetal movement reduced from two days before referral.

At the time of admission, the patient was conscious, ill, and refusing to move to the examination bed. On physical examination, the vital signs were as follows: systolic/diastolic blood pressure: 110/8 mmHg; axillar temperature: 37.7°C; respiratory rate: 24 bpm; and pulse rate: 120 ppm. Fetal heart rate was not detectable. There was a mid - line incision scar on the abdomen, which was due to intestinal surgery in childhood. Generalized abdominal tenderness and rebound was prominent in abdominal palpation. The bowel sounds were absent. In the trans - vaginal

examination no dilation, effacement, and amniotic leakage or bleeding was detected.

After adequate hydration, an ultrasonography was requested. The ultrasonography revealed the fetal death without placental hematoma. Mild - free fluid was detected within the abdominal cavity. Laboratory study results showed leukocytosis and mild anemia. Blood sugar, liver function tests, and urinalysis were normal.

Due to gradual increase in patient's agitation and generalized abdominal tenderness, leukocytosis, and signs of peritonitis, urgent surgical consultation was ordered. The surgeon decided to perform a laparotomy based on clinical and para - clinical findings. Midline laparotomy revealed edematous gangrened intestinal loops and 300 mL foul odors, turbid fluid was drained (Figure 1). The uterus was normal and sectioned by Kerr incision. A female fetus with Apgar zero and clear amniotic fluid was removed. After administration of 1 g cefazolin intravenously, the abdomen was explored and a small bowel mesenteric volvulus was detected. Since the entire bowel did not show any recovery after the devolvulation, 330 cm of the small intestine was removed. A duodenostomy was performed at the proximal part and the distal part was closed and left inside the abdomen. Since the cecum was viable, it remained in the abdomen. Metronidazole and meropenem (500 mg per 8 hours and 1 g per 6 hours, respectively) were started postoperatively. The patient was admitted in intensive care unit (ICU) and total parenteral nutrition was started after the surgery. The patient was nominated for total small bowel transplantation in a well - equipped transplant center. Small bowel transplant was successfully performed after four months of total parenteral nutrition. Until now, the patient is alive and symptom free for about three months after transplantation.

Written informed contest was obtained from the patient for publication of the current case report.

3. Discussion

Abdominal pain may have various etiologies in pregnant females depending on different trimesters of gestation. Etiology of abdominal pain can be obstetric causes such as pre - eclampsia, placenta abruption, and chorioamnionitis or gynecologic causes such as ovarian cysts torsion, or rupture and septic abortion (5). There are also important surgical causes such as acute appendicitis, cholecystitis, and SBOs (5). Clinical manifestations of SBOs are abdominal pain, cramps, nausea, vomiting, and inability to pass gas or stool, which were all present in the current study patient (2). Pregnancy can delay diagnosis of the etiologies of abdominal pain due to physiological and anatomical changes during pregnancy (4). The risks of SBO and also misdiagnosis increase by the increase of gestational age and uterine size (2). Stretched anterior abdominal wall reduces the sensitivity of parietal peritoneal irritation and makes the diagnosis more complicated (7). While nausea and vomiting are common symptoms during the first trimester, as in the current study patient, presence of nausea and vomiting after the first trimester accompanied with signs of peritonitis are less likely to be benign and due to gestation (2). These nonspecific clinical findings demonstrate the need of laboratory and imaging modalities to establish appropriate diagnosis in pregnant patients.

Patients with complications of SBO including ischemia, necrosis, or perforation are usually ill. Progressive lactic acidosis as well as leukocytosis may be prominent in laboratory evaluations (8). Complete blood count, serum electrolytes and creatinine are mandatory laboratory tests in such patients. While these tests are not specific enough to diagnose SBO, however, they are useful to determine the severity of hypovolemia and other possible causes of abdominal pain (9). Imaging studies alongside laboratory tests help clinicians to establish more accurate diagnosis. Imaging techniques used to diagnose SBO are not the same in the pregnant and non-pregnant patients due to ionizing radiation. Plain radiographies can be the fastest technique in the emergency situations (6). CT and MRI are two other imaging modalities used both in pregnant and non - pregnant patients (6, 7). Kalu et al., diagnosed the obstruction by plain X - ray and sonographic studies (4). Rauff et al., used CT to diagnose SBO in their patient. They stated that gadolinium used for MRI studies has an uncertain safety in pregnancy (7). Daimon et al., believed that MRI provided large field of view images and was prior to CT scan due to its ionizing radiation. MRI provides better soft tissue contrast and other sites responsible for abdominal pain such as bile and pancreatic ducts and genitourinary tract without administration of contrast agent (6). In the current case, due to rapid deterioration of clinical condition, there was not enough time to perform imaging studies such as CT or MRI and only abnormal ultrasonography was performed, which did not provide any clues for obstruction. Ultrasound scan may reveal fluid filled bowel loops, but is less sensitive (6).

Unlike the complications of diagnosis, management of SBO in pregnant and non - pregnant females is mostly the same. In the absence of peritonitis, strangulation or unstable hemodynamics, conservative management is preferred (6). However, not all the patients respond to conservative treatment. As an example, patients in the study by Rauff et al., did not respond to conservative therapy after 72 hours and they decided to perform laparotomy (7). In the third trimester of pregnancy, cesarean section (CS) may be necessary in order to achieve adequate intestinal expo-

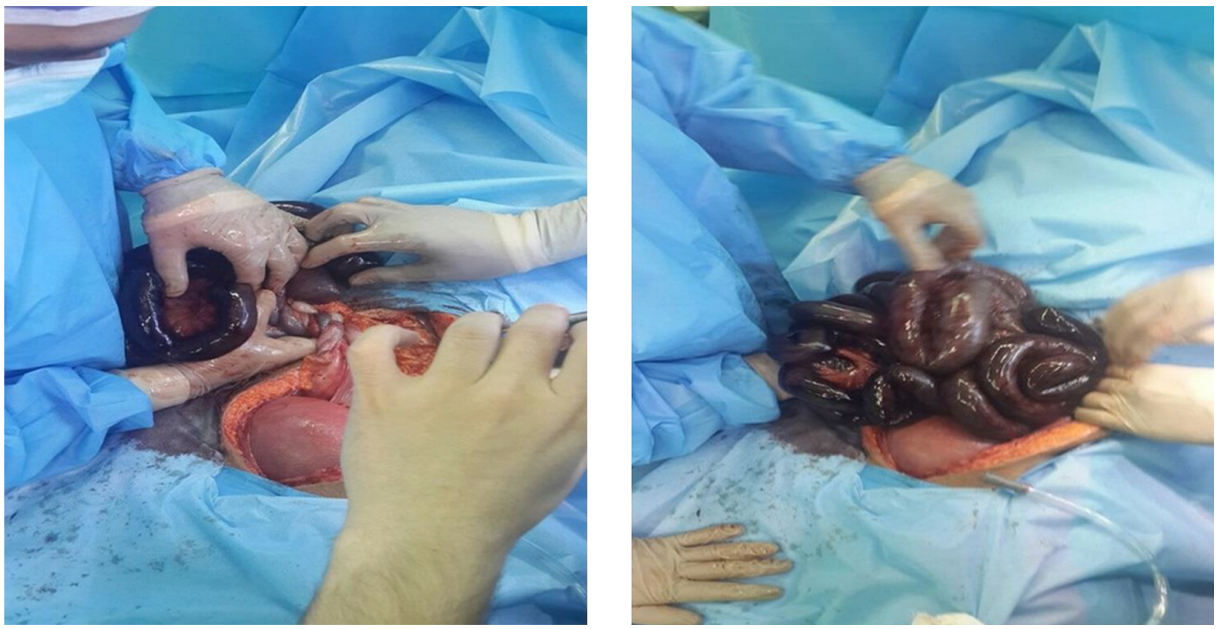

Figure 1. During the surgery, gangrened small intestine as well as small bowel volvulus was observed.

sure to resolve the etiology of obstruction. The etiology of intestinal gangrene in the current study patient was small bowel volvulus. The volvulus may be resulted from congenital anomalies, malignancies, or previous bowel surgeries that resulted in disruption of the anatomy of intestine (1). Also, the current study patient had a history of unknown abdominal surgery and this might be the leading cause of volvulus. Patients in the studies by Zachariah et al., and Kalu et al., were also involved in adhesive bands from previous surgeries and ended up in laparotomy (1, 4).

The experience of the current study case demonstrated that delayed diagnosis may lead to small intestine transplant and fetal death, which is a rare condition. Fetal mortality is reported in 20% - 26% of gestational SBOs and partial intestinal resection may be unavoidable (1). Zachariah et al., resected 20 cm of small intestine and performed ileo - colonic anastomosis after an emergency CS due to fetal distress and hypoxia (1). Vassiliou et al., performed side - to - side jejunojejunostomy after resting the necrotized small intestine and performed CS three weeks later (10). Stukan et al., performed a CS due to fetal distress and during surgical exploration they removed 15 cm of gangrened intestine (2). While the diagnosis of SBO was delayed in the current study patient, small intestine was gangrened and removed and the patient successfully tolerated small bowel transplant.

3.1. Conclusion

Presence of gastrointestinal symptoms such as, nausea and vomiting in later trimesters of pregnancy requires full laboratory and imaging work ups. All symptoms in patients should not be related only to a specific cause such as fetal loss in the current study case. Although small intestinal gangrene is rare during pregnancy, suspicious signs and symptoms of SBO should be considered as an alarming sign and should seek immediate management.

Acknowledgments

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Footnote

Conflict of interest: Authors declared no conflict of interest.

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