Spontaneous Uterine Rupture due to Placenta Percreta in Second Trimester of Pregnancy: A Case Report

Gebeliğin Ikinci Trimesterinde Plasenta Perkreta Nedenli Spontan Uterus Rüptürü: Olgu Sunumu

Alper Biler, Atalay Ekin, Cenk Gezer, Nesin Apaydın, Ulaş Solmaz, Mehmet Ozeren

Department of Obstetrics and Gynecology, Tepeçik Training and Research Hospital, İzmir, Turkey

Short title: Uterine rupture due to placenta percreta

ABSTRACT

Spontaneous uterine rupture due to placenta percreta in the second trimester is extremely rare and difficult to manage. A 26-year-old pregnant woman at 27 gestational weeks with a history of two previous cesarean sections admitted to our center because of abdominal pain and vaginal bleeding. Ultrasound examination revealed placenta previa with moderate amount of intraperitoneal fluid. The border between myometrium and placenta was not differentiated. Paracentesis under ultrasound guidance showed bloody fluid. On emergency laparotomy, there was 1500 ml of blood in the peritoneal cavity and placenta was protruding through a bleeding full thickness uterine defect. Hemorrhage was controlled by transfusion of blood products and conservative surgery. The patient was discharged on the 3rd day after surgery without complications. Placenta percreta induced spontaneous uterine rupture should be taken into consideration in pregnant women who have abdominal pain and intraperitoneal fluid.

Key Words: Abdominal pain, placenta percreta, spontaneous uterine rupture

INTRODUCTION

Placental invasion anomalies are life threatening complications of pregnancy, which occur when placenta does not separate from the uterine wall completely following delivery (1). The prevalence is known to be approximately 1/500 to 1/2500 pregnancies (2). Because of the worldwide increasing cesarean section rates, frequency of abnormal placentation have raised in recent years. Other predisposing factors for abnormal placentation are placenta previa, advanced maternal age and history of uterine surgery. The grade of abnormally invasive placenta is defined according to depth of invasion. Placenta percreta is the most severe form, in which placental villi penetrate through the uterine serosa and sometimes into neighboring organs such as cervix, bladder or bowel (3). Uterine rupture is one of the catastrophic complications of placenta percreta which may lead shock, peripartum hysterectomy, cystotomy, intensive care unit admission, infection and prolonged hospitalization. Uterine rupture due to placenta percreta mainly occurs during the third trimester at the time of labor-type uterine contractility. Based on our review of medical literature, there are only a few isolated case reports in the second trimester.

Here, we presented an unusual case of massive intraperitoneal hemorrhage in the second trimester of pregnancy owing to uterine rupture secondary to placenta percreta.

CASE REPORT

A 26-year old (gravidia 5, parity 2, abortus 2) woman was referred to our center at 27 weeks gestation for vaginal bleeding and abdominal pain. The symptoms were started approximately 3-4 hours before admission. On her obstetric history, she had two cesarean sections 9 and 7 years ago. The patient had no relevant medical history and antenatal course of the present pregnancy was uneventful. On physical examination, mild abdominal tenderness was detected in the umbilical region, but guarding and rigidity was not observed. Vaginal examination showed a normally grown fetus with positive heart activity and placenta previa lying just anterior to the presenting part. Her blood pressure was 110/80 mmHg, heart rate was 90/minute and body temperature was 36.5°C. There were no uterine contractions and the fetal heart tones were regular at 120–140/min. Laboratory analysis showed a hemoglobin level of 10 g/dL, a hematocrit level of 30.6%, a white blood cell count of 15200/mm³ and a platelet level of 271,000/mm³. Serum creatinine, urea, aminotranspherases and coagulation profile were within normal limits. Ultrasound examination revealed a normally grown fetus with positive heart activity and placenta previa lying just anterior to the presenting part. The border between myometrium and placenta was not differentiated in lower segment. There was moderate amount of free fluid in the peritoneal cavity.

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Address for Correspondence / Yazaşma Adresi: Atalay Ekin, MD, Department of Obstetrics and Gynecology, Tepeçik Training and Research Hospital, İzmir, Turkey E-mail: atalayekein@hotmail.com


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A paracentesis under ultrasound guidance was performed in the right upper quadrant and yielded heavily blood stained fluid, suggestive of a possible intraperitoneal active bleeding. A general surgeon could not have made a clear diagnosis. An urgent laparotomy was performed by median incision due to suspected uterine rupture. Following drainage of approximately 1500 ml of free blood from the peritoneal cavity, placental tissue was seen protruding from a 1.5 cm full-thickness defect on the anterior wall of the uterus (Figure 1).

![Figure 1. Intraoperative view of uterine rupture caused by placenta percreta (arrow)](image)

Blood was oozing from the defect. A male fetus with Apgar scores of 6 and 9 at 1 and 5 min, respectively, weighing 1370 g was delivered by vertical fundal incision. The placenta was found to be densely adherent to the anterior uterine wall. The patient became hemodynamically stable and thus, it was decided to continue conservative management. The placenta was removed completely by piecemeal excision as close as possible to the uterine lining. Interrupted figure of eight sutures were placed in the placental bed. The defect in the uterus closed rapidly and hemorrhage was controlled. Both uterine arteries were ligated. All other abdominal organs were observed as normal. During the operation, intravenous 40 IU of oxytocin in 500 mL Ringer lactate and 600 μg of rectal misoprostol were administered. Intraoperative hemoglobin level dropped down to 7.9 g/dL. A total of 3 U erythrocyte suspension and 2 U of fresh frozen plasma were transfused. After the surgery, the hemoglobin level was 9.4 g/dL. The patient remained stable postoperatively and was discharged from hospital on the third postoperative day.

**DISCUSSION**

Placenta percreta is the severest form of placental invasion anomalies with an average incidence of 1 in 7000 pregnancies (4). Although there are many hints for identifying placental invasion during routine ultrasound examination, most of the cases were missed before delivery and presented as an emergency. Several predisposing factors for placenta percreta have been reported, including placenta previa, submucous myoma, endometriosis, Asherman’s syndrome, previous cesarean section, uterine curettage, multiparity and increased maternal age (5). The incidence of placenta percreta is increased with increasing number of cesarean sections (6).

Association of previous cesarean section and placenta previa was found to be the most significant risk factors for placenta percreta as in the presented case.

Spontaneous uterine rupture due to placenta percreta is a rare complication that can be life threatening for both mother and fetus. Hemorrhage and disseminated intravascular coagulation is the main cause of death in such cases. However, the clinical spectrum of disease ranges from mild abdominal pain to hemoperitoneum and shock. In their review of the literature, Jang et al. observed that the affected site of uterine rupture is uterine fundus during first trimester, but the site commonly affected is lower uterine segment in late gestation (7). In our patient, lower uterine segment was ruptured due to thinning of myometrium by placental trophoblastic tissue.

Intraabdominal bleeding due to placenta percreta can mimic many conditions. Other diseases involved in differential diagnosis include hepatic or splenic rupture, ovarian torsion or cyst rupture, acute appendicitis and heterotopic pregnancy.

Antenatal diagnosis is possible with use of ultrasonography, color Doppler and magnetic resonance imaging. The differential diagnosis constitutes a particular challenge for clinician as massive blood loss can be life threatening to patient. In the current case, as she was at high risk for placental invasion, antenatal diagnosis of placenta percreta was suspected. In this case, the patient had a history of cesarean scar delivery and a placenta previa, which enables us to make accurate preoperative diagnosis.

A few isolated cases of placenta percreta with early uterine rupture that presented as an acute as obstetric emergency were also reported in previous studies (8-11). [first author named] et al. presented a case of placenta percreta in which placental tissue was protruding through a bleeding previous cesarean scar at 12 weeks gestation. They performed hysterectomy due to torrential bleeding after a failed attempt to evacuate uterus (8). [second author named] et al. described a patient who died due to hemodynamic shock with coagulopathy in the 18th week of gestation after fertility treatment (9). [third author named] et al. presented a pregnancy complicated by massive intra-abdominal bleeding due to placenta percreta at gestational week 14. They performed a pregnancy preserving surgery and delivered the fetus via cesarean operation followed by the hysterectomy in the 35th week of gestation (10). [fourth author named] et al. reported that placenta percreta might cause uterine rupture in second trimester without any associated high risk factors (11).

Optimal treatment for placenta percreta that is obviously without risk has not been defined clearly so far. Clinical management of uterine rupture due to placenta percreta may vary from conservative surgery to hysterectomy. The conservative options include leaving the placenta in situ, localized resection of the placental implantation site, over sewing of the placental vascular bed, uterine compression sutures, uterine artery embolization under general anesthesia and hysterectomy after mifepristone administration. Success rate in arresting hemorrhage with those techniques is limited and seems to be the appropriate therapy for women who wish to continue their fertility. In addition, secondary hysterectomy is required in up to 31% of cases with placenta percreta who managed conservatively (12).

Hysterectomy is considered to be the gold standard approach in a hemodynamically unstable patient with massive intraperitoneal bleeding (12). In our case, due to the desire for future fertility, we managed this patient urgently by conservative treatment. The patient was in a stable condition without complications after this operation.

In conclusion, placenta percreta induced spontaneous uterine rupture is difficult to diagnose in second trimester of pregnancy. The possibility of uterine rupture should always be kept in mind when a patient with a suspicion of adherent placenta admitted with signs of abdominal pain and free fluid in the peritoneal cavity. A state of alertness for prenatal diagnosis of cases at risk and prompt surgical management is essential to reduce perinatal mortality and morbidity.

**Conflict of interest**

No conflict of interest was declared by the authors.

**REFERENCES**