









Placenta Percreta in Second Trimester Pregnancy Causing Early Spontaneous Uterine Rupture: A Case Report and Literature Review

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Abstract

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BACKGROUND: Uterine rupture following to placenta accreta spectrum disorder such as placenta percreta in second trimester pregnancy is a very rare obstetrical condition. This condition occurs primarily in the third trimester and leads to both fetal and maternal life-threatening complications.

CASE PRESENTATION: We report a 28-year-old woman in 24–25 weeks of gestation with scars from previous cesarean delivery came to emergency department due to acute abdomen following to intraperitoneal hemorrhage. From diagnostic modalities, it was found uterine rupture from the varicose veins of placenta percreta without tears in the uterus. Total hysterectomy was performed with good recovery and histopathology result showed placenta percreta.

CONCLUSION: In spite of being a rare case in second trimester of pregnancy, spontaneous rupture of uterus due to placenta percreta should be considered in the case of a patient with placenta percreta who presents with severe abdominal pain and acute intraperitoneal hemorrhage, even in the second trimester of gestation.

Introduction

Placenta accreta spectrum (PAS) is a complex obstetric complication comprising both adherent (accreta) and invasive (increta and percreta) placenta or commonly referred to as morbidly adherent placenta. The underlying pathogenesis is not well understood, but previous surgery such as cesarean section or placenta previa is well-recognized as clinical factors for patients with the highest risk to develop PAS [1]. These conditions lead to abnormally adherence and invasion of the placenta to the superficial and profound layers of the uterine wall [1], [2]. In placenta percreta, the chorionic villi completely penetrate the uterus and in extreme cases also involve the bladder and intestines. PAS is recognized as the cause of third trimester bleeding. However, spontaneous uterine rupture during pregnancy due to placenta percreta in the second

trimester is a very rare case; although its incidence has markedly increased in the past few decades and become a potentially life-threatening complication for both mothers and fetus [2], [3]. This condition highlights the importance of swift detection and appropriate management in obstetrical emergency settings as will be discussed further in this case report.

Case Presentation

A 28-year-old G2P1A0 (second gestation, one term parturient history with cesarean delivery) in 24–25 weeks of gestation presented to the obstetrics emergency room due to diffuse abdominal pain which had started approximately 5 h before admission to the hospital as a chief complaint. She felt increased

pain intensity throughout her abdomen. The complaint was not accompanied by vaginal bleeding, vaginal discharge, nausea, vomiting, loss of consciousness, and any complaints related to the urinary tract. She denied any history of trauma to the abdomen and there were no complications in her previous medical history. This is the second pregnancy and she reported having a cesarean section 24 months before this current pregnancy. She was referred to an obstetrician in a satellite hospital with suspected placenta percreta as a temporary working diagnosis, and 5 days before this complaint, an ultrasonographic assessment was performed at the fetomaternal polyclinic with suspected diffuse placenta accreta spectrum as well as suspicion of placental invasion.

From the general examination, she was compos mentis but looked very ill. Her blood pressure was palpably weak; her respiratory rate was 22 times/min; and her body temperature was 36.7°C. She had a diffuse rebound tenderness. From the pelvic examination, the cervix was consistent along with her pregnancy, the external uterine ostium was close without any vaginal bleeding. Tension pain was felt on palpation of the cervix and enlarged uterine fundus was difficult to palpate. The pouch of Douglas was protruding and painful. A rectal examination did not reveal any bleeding.

Her hemoglobin (Hb) level was 7.7 g/dL with normal thrombocyte and coagulation factors profile. Other blood examinations were also within normal limits. Emergency ultrasound revealed intrauterine pregnancy with singleton fetus; alive, 24–25 gestation weeks, accompanied by a hyperechoic complex mass throughout the abdominal field outside the uterus and a shadow of fluid appearance in the pouch of Douglas. She had undergone fetomaternal ultrasound 5 days before hospital admission and it gave an impression of pregnancy with suspicion of PAS with a Placenta Accreta Index Score (PAIS) 6 (Table 1).

Table 1: Placenta accreta index score in this patient

Parameters	Value
≥ 2 cesarean deliveries	3.5
Lacunae	
Grade 3	3.5
Grade 2	1.0
Sagittal smallest myometrial thickness	
≤1 mm	1
>1 mm but ≤3 mm	0.5
>3 mm but ≤5 mm	0.25
Anterior placenta previa	1.0
Bridging vessels	0.5

From color Doppler ultrasound, there were found hypervascularization in the subplacental and uterovesical zones, the presence of an interruption in the urinary bladder wall, and a placenta “bulge” on the left lateral uterus (Figure 1). The latest ultrasound results demonstrated that the placenta was inserted anteriorly which extended to cover the entire internal uterine ostium, no clear zone was found; there were bridging vessels; grade 3 lacunae on “gray scale” ultrasonography; myometrial wall thinning was less than

1 mm with the uterine wall; and bladder wall showed two parallel lines (Figure 2). Magnetic resonance imaging (MRI) was not performed on this patient.

Then, a cesarean section with hysterectomy was performed, with the intraoperative finding of an acute abdomen due to uterine rupture following placenta percreta FIGO stage 5 rupture in the left uterus. Active bleeding was approximately 2 L and bleeding during surgery was 6 L. The baby was born alive, weighing 645 g with New Ballard Score (NBS) according to 24–25 weeks of gestation, but only lasted for 6 h later. Histopathology findings stated that the patient comprised placenta percreta with proliferative syncytiotrophoblast penetrated the serosa. After surgery, the mother was admitted to the Intensive Care Unit (ICU) and then transferred to the Maternal High Care Unit (MHCU) for 2 days. She showed some clinical improvements, and then, she was transferred to a regular ward afterward. She was discharged on the 6th post-operative day in the regular ward. The mother also had an iatrogenic bladder trauma due to her cesarean hysterectomy.

In the following days, the patient returned to the obstetrics and gynecology polyclinic. From the patient’s perspective, a hysterectomy cesarean section was the best option at that time, despite all the consequences, currently, the patient’s complaint is that she has a problem in regulating the urge to urinate as a consequence of a long duration of three-way Foley catheter insertion.

Discussion

Placenta accreta spectrum (PAS) such as placenta percreta in second trimester pregnancy is a very rare obstetrical condition, although its incidence has markedly increased in the past 40 years along with the increase of cesarean delivery from 10% to 30% as clinical factors [2], [3]. The diagnosis of PAS is made before the onset of symptoms in the third trimester, typically in the second trimester around 18–20 weeks. The diagnosis of a placental abnormality (placenta accreta, increta, or percreta) before delivery or at the onset of acute bleeding may not be possible for some clinical reasons, in the absence of risk factors (i.e., placenta previa and previous cesarean). Blood tests can be used to make the diagnosis of PAS. However, recent findings of unexplained elevations in maternal serum alpha-fetoprotein (msAFP) in the second trimester (>2.0–2.5 multiples of the median) and elevations in creatinine kinase have recently been reported to be associated with such abnormal placentation along with ultrasound findings but are not useful on its own. Imaging modalities commonly utilized include two-dimensional (2D) transabdominal

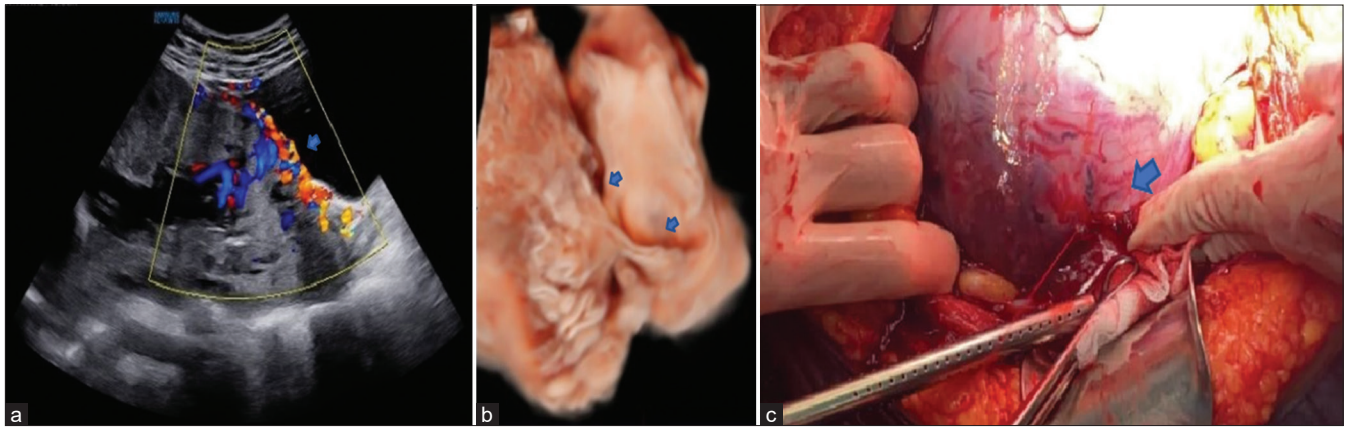


Figure 1: Hypervascularity in subplacental and uterovesical zones on “color Doppler” ultrasound (a); The presence of interruption in the urinary bladder wall (b); The diagnosis of placenta percreta with uterine rupture was being made as working diagnosis during surgery (c)

and transvaginal ultrasound or “gray scale” ultrasound, color Doppler ultrasound, three-dimensional (3D) control Doppler, and MRI. Whereas utilization of any of these imaging modalities has possessed their benefits, Resnick *et al.* highlight transabdominal and transvaginal US as the most sensitive (90.7%) and the most specific (96.7%) modalities to assess placenta position and implantation [3], [4]. The precision of first trimester sonographic findings of PAS remains unclear, but second trimester or additional third trimester sonographic findings which include anechoic areas, an irregular placental-myometrial interface, loss of placental homogeneity that is replaced by intraplacental sonolucent spaces (i.e., placental lacunae) to the involved myometrium, and hypervascularity of the bladder wall such as in this case shows some benefits to create early working diagnosis before the onset of patients complaints [3], [4], [5], [6], [7].

Spontaneous uterine rupture during pregnancy due to placenta percreta is a rare and potentially life-threatening complication for both mother and fetus. In placenta percreta, the chorionic villi completely penetrate the uterus and in extreme cases also involve the bladder and intestines. Although the previous works of literature reported the prevalence of this case to be around 0.8–5.3 per 10,000 births, the incidence is increasing gradually over the past few decades which

may be related to the trend of increasing maternal age, increasing number of transmyometrial surgical interventions before conception, as well as higher rates of labor induction or augmentation with prostaglandins or oxytocin. Complication such as maternal bleeding can get worse and leads to the need for urgent blood transfusions, hysterectomy, bladder injury, maternal death and fetal prematurity, lower APGAR scores, and fetal death. Poorer outcome may be resulted from the delayed identification of uterine rupture and management due to the unexpected and rare cases encountered [3], [4].

When the patients are experiencing acute intraperitoneal bleeding, it will be very important to immediately perform surgery. Although total or subtotal hysterectomy would be an alternative in the management of this case, the conservative management may be considered in certain cases [2]. Over the past two decades, the spectrum of conservative management of PAS has evolved to non-conservative treatment with varying success rate. In a recent systematic review and meta-analysis of the outcomes of PAS diagnosed before delivery, 208 of 232 (89.7%) cases underwent elective or emergency cesarean section [8]. Vascular control is a fundamental step in the surgical management of PAS and it requires proper knowledge of the vascular supply in the lower pelvis and from the genital tract.

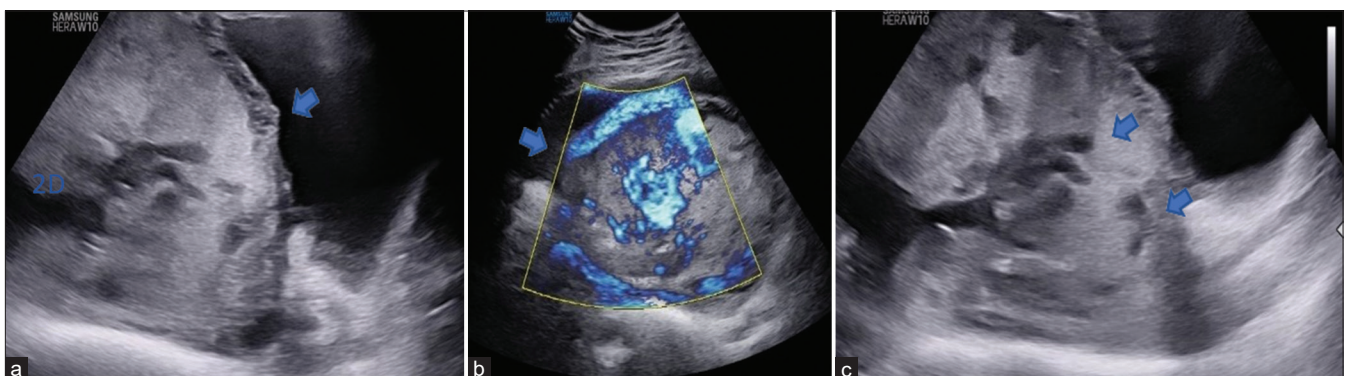


Figure 2: Urinary bladder interruption with the “gray scale” ultrasound perspective (a); The “bulge” of placenta on the left lateral uterus (b); Grade 3 lacunae in “gray scale” ultrasound (c)

Sometimes, a spectrum of high difficult level of PAS is characterized by the presence of vascular anastomosis between the bladder, uterus, and vagina involving the superior, medial, and inferior vaginal and inferior vesical arteries. Prenatal ultrasound assessment of bladder-uterovaginal anastomoses on PAS is worth doing to manage this case and to prevent iatrogenic trauma [9].

Conclusion

This clinical report demonstrates that despite being a rare case in the second trimester of pregnancy, spontaneous rupture of the uterus due to placenta percreta should be considered in the case of a patient with placenta percreta who presents with severe abdominal pain and acute intraperitoneal bleeding, even in the second trimester of gestation. Early diagnosis and appropriate treatment hold critical roles in this setting to prevent the likelihood of fetomaternal clinical deterioration, morbidity, and mortality.

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