Uterine preservation in placenta percreta complicated by unscarred uterine rupture at second trimester in a patient with repeated molar pregnancies: a case report and brief review of the literature

A. Ozdemir[1], I.E. Ertas[1], K. Gungorduk[1], C. Kaya[2], U. Solmaz[1], G. Yildirim[3]

[1] Department of Obstetrics and Gynecology, Tepecik Education and Research Hospital, Izmir
[2] Department of Obstetrics and Gynecology, Bakirkoy Dr Sadi Konuk Education and Research Hospital, Istanbul
[3] Department of Obstetrics and Gynecology, Kanuni Sultan Suleyman Education and Research Hospital, Istanbul (Turkey)

Summary

Placenta-percreta causing uterine rupture in unscarred uterus is a rare obstetric surgical emergency that can cause maternal and perinatal morbidity and mortality. A 25-year-old woman presented with abdominal pain for four days. Previously, she had undergone two suction curettages for complete hydatiform moles. Ultrasound revealed a non-viable fetus with an estimated gestational age of 21 weeks and free fluid and coagulum in the abdominal cavity. An emergency laparotomy was performed because of the acute abdomen. At exploration, the placenta had invaded the entire thickness of the myometrium and the non-viable fetus was in the abdominal cavity. The uterus was closed with a double-layer of interrupted sutures and uterine-sparing surgery was performed. The patient was discharged on postoperative day seven. The authors present a case of placenta-percreta in an unscarred uterus complicated with uterine rupture during the second-trimester that was managed successfully with uterine repair. They also review the literature briefly and discuss similar cases managed conservatively in the second-trimester.

Key words: Placenta percreta; Uterine rupture; Second trimester; Unscarred uterus; Uterine preservation.

Introduction

Placenta percreta causing uterine rupture in unscarred uterus is a rare, potentially life-threatening condition for the mother and fetus. It is defined as the abnormal attachment or invasion of the entire placenta or parts of it to the underlying myometrium [1].

Many factors predispose to placenta percreta, including a history of cesarean section, uterine surgery such as a myomectomy, curettage, or hysterotomy, abnormal placentation, and subsequent manual extraction of the placenta, endometriosis, high parity, prior pelvic radiation therapy and advanced maternal age [1-4].

Most placental insertion abnormalities are asymptomatic, so awareness is required to make an early diagnosis and ultrasonographic features of accreta must be consider in patients with risk factors. Ultrasound imaging can reveal a placenta located on the previous uterine scar, with an absence or thinning (< one mm) of the normal hypoechoicmyometrial zone [4]. Placental lacunae with turbulent blood flow on Doppler imaging, loss of the retroplacental clear space, and an irregular bladder wall have also been described with placenta percreta [4,5]. Visualization of lacunae has the greatest sensitivity for the diagnosis of placenta accreta, allowing identification in 78% to 93% of cases after 15 weeks of gestation, with a specificity of 78.6% [5]. The treatment ranges from the historical caesarean hysterectomy to management involving uterine conservation and leaving the placenta in situ with adjuvant methotrexate treatment or simply awaiting spontaneous resorption of the placenta [1,3,6,7].

The authors present a case of placenta percreta in an unscarred uterus complicated with uterine rupture in the second trimester that was managed with conservative surgery and uterine repair. They briefly review the literature and discuss similar cases in the second trimester (Table 1).

Case Report

A 25-year-old woman was referred from the emergency room complaining of abdominal pain for four days. She had severe anemia with a hemoglobin (Hb) of five g/dl. She had a history of two suction curettages for complete hydatiform moles and no living births. Her physical examination showed diffuse tenderness of the entire abdomen with rebound pain. The patient's vital signs were unstable, with tachycardia (120 beats per min) and decreasing blood pressure (80/45 mmHg). Ultrasound revealed a non-viable fetus with a biparietal diameter (BPD) of 48 mm (20 weeks and six days), an enlarged placenta, no clear border between the placental trophoblast and myometrium, and free abdominal fluid and coagulum. The clinical findings suggested abruptio placenta or uterine rupture. She was taken to the operating room immediately. At surgery, the abdominal cavity contained hemoperitoneum of about 2,000 ml, including old clots and fresh blood, and a dead fe-

Revised manuscript accepted for publication June 24, 2013

Table 1. — *The summary of placenta percreta cases in unscarred uterus complicated with uterine rupture at second trimester and managed conservatively by uterine repair.*

Reference	Age	Gestational weeks	Risk factor
Smith *et al.*[19]	24	14	Multiparity
Morken *et al.*[3]	25	21	Dilatation and curettage
Nagy *et al.*[20]	32	28	Twin pregnancy
Ansar *et al.*[21]	20	17	No
Siwatch *et al.*[22]	25	17	Miscarriage at second trimester
Present case	25	21	Two mol evacuation

male fetus, at nearly 21 weeks gestation; the uterine body had ruptured anteriorly. The placenta had invaded the entire myometrium (Figure 1). The placenta was extracted from the ruptured part of the uterus and curettage was performed to remove the rest of the placenta. The uterine defect was closed with a double layer of interrupted sutures. During the operation, she was infused with 2,000 ml colloid and crystalloid solutions, three units of red blood cells, and two units of fresh frozen plasma. The patient was discharged seven days postoperatively.

Figure 1. — Placenta percreta invading the full thickness of the myometrium, with rupture of the anterior body of the uterus, and a non-viable fetus at 21 weeks of gestation.

Discussion

The incidence of abnormal placentation ranges from one in 540 to one in 93,000 and averages one in 700 [7]. Placenta percreta, which is the rarest form of placenta accreta, comprises five to seven percent of abnormal placentation [3, 7, 8]. In most cases, placenta percreta is diagnosed in the third trimester of pregnancy because of a massive postpartum hemorrhage in an attempt to remove the placenta or during subsequent curettage. Spontaneous uterine rupture has been reported in all trimesters and most of the patients have a history of cesarean delivery or medical induction of labor [7-10].

Beuker *et al.* [11] reported a relationship between suction curettage and subsequent placenta accreta. They observed myometrium in the products of conception in 44% of termination tissues and 35% of miscarriage tissues, and frequent endomyometrial injury with vacuum termination or dilatation and curettage after miscarriage, although the relationship with subsequent placenta accreta was unclear. The present patient had no history of caesarean delivery or other major risk factors for placenta percreta, but she had undergone two suction curettages for hydatiform moles.

The treatment of placenta percreta varies. The treatment options include surgical removal of the uterus or conservative therapy. Generally, the main treatment is emergency hysterectomy in most of the cases with scarred [4, 7-10] and unscarred uterus [1, 2, 12-15] at all trimesters. Arulkumaran *et al.* [16] first described the conservative method in 1986. This involves leaving the placenta in situ with packing, uterine curettage with packing, closing the uterine defect, localized excision and uterine repair, uterine packing with uterine or hypogastric artery ligation, and leaving the placenta in situ with adjuvant chemotherapy [3, 16, 17]. In another study, [17] surgical methods for uterine conservation were successful in 50 of 68 cases with anterior placenta percreta; of the 42 successful cases that were followed over a three-year period, ten subsequently became pregnant and underwent uneventful caesarean sections. This paradigm shift in treatment has been facilitated by the development of methods for controlling blood loss during surgery, such as embolization, ligation, and balloon occlusion of the arterial supply, as well as the increased availability and safety of blood transfusions, either from autologous or donor sources, and modern intensive care [1, 3, 17].

The choice between hysterectomy and conservative therapy also depends on the severity of the placenta percreta and any additional complications. Reported complications of placenta percreta include severe potentially life-threatening bleeding, and the invasion of neighboring organs, such as the urinary bladder, by the placental villi [18]. In another study that used conservative methods, [6] when placental retention was allowed, the hysterectomy rate decreased from 84% to 15%.The placenta percreta cases in unscarred uterus complicated with uterine rupture at second trimester and managed conservatively by uterine repair are summarized in Table 1 [3, 19-22]. The present case shows that uterine conservation is feasible when hemostasis is obtained by suturing and the patient wishes to remain fertile. With the increasing number of cesarean deliveries, the authors believe that the management of these life-threatening cases will be more important in the future.

Conclusion

Spontaneous rupture is usually seen with vaginal birth after cesarean or uterine anomalies in early pregnancy. The

authors believe that if a patient has risk factors for placenta accreta, a close investigation of the uterine wall and placentation should be performed in the first trimester to anticipate placenta percreta. The patient has to be informed about the treatment options and their possible consequences, such as the risks of sepsis and delayed hemorrhage that might occur when the uterus is conserved and the placenta is left in situ. Uterine conservation also requires a multidisciplinary team, including the obstetrician, intervention radiologist, anesthetist, urologist, and general surgeon in some cases. If a hysterectomy is performed during the operation, excess bleeding must be prevented by leaving the placenta in situ during the surgery. The classical incision can increase the exposure when abnormal bleeding occurs. Postpartum counseling about the risk of rerupture with subsequent pregnancies is important and it must be kept in mind that this condition is not always associated with prior uterine scar and disorders of placentation. the authors also suggest that all curettages be performed with great care to prevent uterine perforation or myometrial damage.

References

[1] Esmans A., Gerris J., Corthout E., Verdonk P., Declercq S.: "Placenta percreta causing rupture of an unscarred uterus at the end of the first trimester of pregnancy: case report". *Hum. Reprod.*, 2004, *19*, 2401.

[2] Norwitz E.R., Stern H.M., Grier H, Lee-Parritz A.: "Placenta percreta and uterine rupture associated with prior whole body radiation therapy". *Obstet. Gynecol.*, 2001, *98*, 929.

[3] Morken H.H., Henriksen H.: "Placenta percreta—two cases and review of the literature". *Eur. J. Obstet. Gynecol. Reprod. Biol.*, 2001, *100*, 112-5.

[4] Chen C.H., Wang P.H., Lin J.Y., Chiu Y.H., Wu H.M., Liu W.M.: "Uterine rupture secondary to placenta percreta in a near-term pregnant woman with a history of hysterotomy". *J. Obstet. Gynaecol. Res.*, 2011, *37*, 71-4.

[5] Yang J.I., Lim Y.K., Kim H.S., Chang K.H., Lee J.P., Ryu H.S.: "Sonographic findings of placental lacunae and the prediction of adherent placenta in women with placenta previatotalis and prior cesarean section". *Ultrasound Obstet. Gynecol.*, 2006, *28*, 178.

[6] Tong S.Y., Tay K.H., Kwek Y.C.: "Conservative management of placenta accreta: review of three cases". *Singapore Med. J.*, 2008, *49*, e156.

[7] Breen J.L., Neubecker R, Gregori C.A., Franklin J.E. Jr.: "Placenta accreta, increta and percreta, a survey of 40 cases". *Obstet. Gynecol.*, 1977, *49*, 43.

[8] Eden R.D., Parker R.T., Gall S.A.: "Rupture of the pregnant uterus: a 53-year review". *Obstet. Gynecol.*, 1986, *68*, 671.

[9] Endres L.K., Barnhart K.: "Spontaneous second trimester uterine rupture after classical cesarean". *Obstet. Gynecol.*, 2000, *96*, 806.

[10] Jang D.G., Lee G.S., Yoon J.H., Lee S.J.: "Placenta percreta-induced uterine rupture diagnosed by laparoscopy in the first trimester". *Int. J. Med. Sci.*, 2011, *8*, 424.

[11] Beuker J.M., Erwich J.J., Khong T.Y.: "Is endomyometrial injury during termination of pregnancy or curettage following miscarriage the precursor to placenta accreta?" *J. Clin. Pathol*., 2005, *58*, 273.

[12] Kinoshita T., Ogawa K., Yasumizu T., Kato J.: "Spontaneous rupture of the uterus due to placenta percreta at 25-weeks' gestation: a case report". *J. Obstet. Gynaecol. Res*., 1996, *22*, 125.

[13] Imseis H.M., Murtha A.P., Alexander K.A., Barnett B.D.: "Spontaneous rupture of a primigravid uterus secondary to placenta percreta. A case report". *J. Reprod. Med.*, 1998, *43*, 233.

[14] LeMaire W.J., Louisy C, Dalessandri K, Muschenheim F.: "Placenta percreta with spontaneous rupture of an unscarred uterus in the second trimester". *Obstet. Gynecol.*, 2001, *98*, 927.

[15] Norwitz E.R., Stern H.M., Grier H, Lee-Parritz A.: "Placenta percreta and uterine rupture associated with prior whole body radiation therapy". *Obstet. Gynecol.*, 2001, *98*, 929.

[16] Arulkumaran S., Ng C.S., Ingemarsson I, Ratnam S.S.: "Medical treatment of placenta accreta with methotrexate". *Acta Obstet. Gynecol. Scand.*, 1986, *65*, 285.

[17] Palacios Jaraquemada J.M., Pesaresi M., Nassif J.C., Hermosid S.: "Anterior placenta percreta: surgical approach, hemostasis and uterine repair". *Acta Obstet. Gynecol. Scand.*, 2004, *83*, 738.

[18] Abbas F, Talati J, Wasti S, Akram S, Ghaffar S, Qureshi R. ''Placenta percreta with bladder invasion as a cause of life-threatening hemorrhage". J Urol. 2000, 164, 1270-4. Review.

[19] Smith L., Mueller P.: "Abdominal pain and hemoperitoneum in the gravid patient: a case report of placenta percreta". *Am. J. Emerg. Med.*, 1996, *14*, 45.

[20] Nagy P.S.: "Spontaneous rupture of the uterus caused by placenta percreta at 28 weeks of twin pregnancy". *Eur. J. Obstet. Gynecol. Reprod. Biol.*, 2003, *111*, 207.

[21] Ansar A., Rauf N., Bano K., Liaquat N.: "Spontaneous rupture of primigravid uterus due to morbidly adherent placenta". *J. Coll. Physicians Surg. Pak.*, 2009, *19*, 732.

[22] Siwatch S., Chopra S., Suri V., Gupta N.: "Placenta percreta: rare presentation of haemorrhage in the second trimester". *BMJ Case Rep.*, 2013, doi: 10.1136/bcr-2012-007782.

Address reprint requests to:
I.E. ERTAS, M.D.
Department of Gynecologic Oncology,
Tepecik Education and Research Hospital,
Gaziler Street, 35120, Izmir (Turkey)
e-mail: drertas@gmail.com