

*Case Report*

# Uterus preservation after placenta percreta and uterine rupture: A case report

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**Placenta percreta and uterine rupture are associated with possible massive intraperitoneal bleeding, which can be fatal if not recognised. We describe a case of a 40-year-old multigravida with a history of two instances of placenta percreta and three instances of uterine rupture, previous artificial abortion, and uterine curettage. The patient's uterus had been preserved after undergoing an emergency uterus repair operation and a scheduled caesarean within 5 years. This case report aimed to contribute to the knowledge of the early diagnosis of placenta percreta and highlights the advantages of uterus preservation, including psychological reasons and the ability to bear children in the future. In summary, it is clear that the steadily increasing rate of deliveries may result in an increased number of abnormal placentation cases. Abnormal placentation is one of the most important risk factors of severe obstetric complications, including perinatal massive haemorrhage. Therefore, prenatal diagnosis and identification of abnormal placentation are vital in order to plan appropriately the date, place, and mode of delivery, as well as to ensure the availability of highly qualified specialists in the field of obstetrics and anaesthesia and ensure availability of a sufficient amount of blood products and blood substitutes.**

**Key words:** Placenta percreta, uterine rupture, pregnancy.

## INTRODUCTION

Adherent placenta disorders are potentially fatal for pregnant women. Branching villi of the placenta are important for nutrient exchange between the mother and fetus. If villi from the fetal component (chorionic placenta) attach abnormally to the myometrium instead of the endometrium (decidua), pathologies known as placenta accreta, placenta increta, or placenta percreta can result. This review focuses on placenta percreta, which is more severe than the other conditions. In placenta percreta, chorionic villi breach the uterine serosa and adhere to the

surrounding organs. This paper describes the case of a woman with an intact uterus after a history of two instances of placenta percreta and three instances of uterine rupture. Techniques for optimal management of placenta percreta remain controversial due to a lack of studies on treatment and long-term outcomes of this condition (Clausen et al., 2014). This review aimed to synthesize available diagnostic and treatment methods for placenta percreta. It highlights the importance of early detection in avoiding complications. Informed consent

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was obtained from the patient for publication of this report

## CASE REPORT

### First hospitalisation

The patient was a 35-year-old woman. She was initially admitted to the hospital because she required labour induction in September, 2008. Her last menstruation period was in March, 2008. She had vaginal bleeding twice, and she had taken dydrogesterone during early pregnancy. The foetal ultrasonogram showed foetal heart structural abnormalities, a supraventricular septum defect, an atrial septal defect, and an endocardial pad defect at 25 weeks of gestation. She denied a history of diabetes, hypertension, allergies, or any other remarkable family history. She had four pregnancies: premature birth, 1; drug abortion, 1; artificial abortion, 1; and full-term baby, 1. An intrauterine injection of Rivanol (100 mg) was administered to induce labour at 0930, and contractions began at 0000 on the next day. Her water broke naturally at 0300, and a male baby (weight: 975 g, length: 36 cm) with no abnormal appearance was born at 0323. The placenta was not delivered spontaneously within 10 min, and vaginal bleeding continued. Artificial stripping of the placenta was difficult because the placenta was attached closely to the uterine wall; thus, vaginal bleeding continued. The mother became pale and lost consciousness at 0445. Her heart rate was 104 beats/min, and her blood pressure was 75-80/35-45 mmHg. The ultrasonogram obtained in the emergency ward showed free fluid in the abdominal cavity. Results of the haemogram showed that the haemoglobin level, haematocrit level, and platelet (PLT) count were 7.2 g/dL, 23.1%, and 110 000/ $\mu$ L, respectively. The other coagulation test results were also abnormal. After her vital signs stabilised, two intravenous lines were set, packed red blood cells were reserved for transfusion, and she was transferred to the operating room.

An emergency laparotomy was performed with simultaneous on going resuscitation. Intraoperative findings showed about 2500 ml of blood in the abdominal cavity and between the intestinal loops. The uterus was torn at the bottom left corner, the diameter of the rupture was about 2 cm, placental tissue was implanted in the uterine muscle near the serosal surface, part of the placental tissue was exposed, and active bleeding was present at the rupture site. Intraoperatively, the placenta was peeled, the uterus was repaired, and B-Lynch suturing was performed because of poor uterine contraction. Additionally, 12 units of packed red blood cells, 4 units of fresh frozen plasma, 400 ml of normal frozen plasma, and 1 treatment volume of PLTs were transfused. She was transferred to the intensive care unit (ICU) postoperatively. She received antibiotics and anticoagulation therapy.

Postoperative diagnoses included placenta percreta, haemorrhagic shock, and uterine rupture. Results of the postoperative placental pathologic examination showed specimens of the uterine wall muscle tissue in the placenta. The patient was discharged from the hospital in good condition 9 days after admission.

### Second hospitalisation

The patient was 39 years old, and she was admitted to the hospital a second time because of infertility in December, 2011. Her menstrual volume decreased by 1/3 after labour induction without a change in her menstrual cycle. She had no pregnancy without contraception for 1 year. Ultrasonography showed a left ovarian cyst measuring 28×15 mm, and it was considered a wrapped effusion. Hysteroscopy showed that the uterine cavity was normal, and both tubal openings could be seen. Using B-ultrasound guidance, we found that the muscle wall was the thinnest (0.15 cm) on the left side of the bottom of the uterus. A diagnosis of secondary infertility was made.

Laparoscopic pelvic adhesiolysis, uterine repair, and hysteroscopy were performed 5 days later. Intraoperative findings showed that the left fallopian tube was distorted, and the left ovum and posterior lobe of the ipsilateral broad ligament had wrapped adhesions. Additionally, the ampulla adhered closely to the left posterior wall near the left corner of the uterus, part of the intestine adhered closely to the left posterior wall of the uterus, and the left ovary was wrapped in the adhesive band. Laparoscopically, Meilan fluid was visible, the left oviduct was not smooth, and a significant amount of liquid overflowed from the left corner of the bottom of the uterus. Hysteroscopy showed a fissure in the left corner of the uterus, a previous uterine rupture, and an old laceration with figure-of-8 suture stitching. The postoperative diagnoses included secondary infertility and uterine rupture (the old injury to the uterine muscle wall). She was discharged from the hospital in good condition 3 days later.

### Third hospitalisation

The patient was 40 years old, and she was admitted to the hospital a third time in July, 2013 because of her pregnancy with her second child. Her last menstrual period was in November, 2012. Her pregnancy was uneventful. The ultrasonogram showed that the foetus' gestational age was 35 weeks and 4 days, the placenta was positioned posteriorly toward the bottom of the uterus, demarcation was unclear between the part of the placenta on the left side of the bottom of the uterus and myometrium, and the local area was about 40 mm, which was not obvious. The magnetic resonance imaging (MRI)

scan showed that the thin myometrium was about 2 mm at the left corner of the bottom of the uterus. Diagnoses on admission were intrauterine pregnancy (35 weeks and 4 days), left occiput anterior (LOA), scarring of the uterus, placenta percreta, and a poor pregnancy history. The uterus had become extremely weak because of a history of uterine rupture (two times).

At 37 weeks, she was scheduled for an elective caesarean section with intestinal adhesion adhesiolysis and uterine repair. A male baby (weight: 3140 g, Apgar score: 10, 10) was born. The placenta was removed without difficulty. Intraoperative findings showed that the left fundus of the uterus was completely ruptured (diameter, about 3 cm), the tissue surrounding the Meager area was about 7×7 cm, intestine was adhered around the uterus, double attachment could not be observed, oedema and congestion were present, and extensive surrounding tissue adhered to the uterus. Uterine repair was performed after the adhesions were separated. Total operative blood loss was 200 ml.

Postoperative diagnoses were gravida 3, parity 2, intrauterine pregnancy (37 weeks and 1 day), LOA, scarring of the uterus, placenta percreta, uterine rupture, a poor pregnancy history, and pelvic adhesions. Results of the postoperative pathologic examination showed implanted placenta tissue consistent with placenta percreta. The patient and her baby were discharged from the hospital in good condition 4 days later. Her postoperative recovery was good, and she was followed up for 6 years. The patient remained healthy with regular menstruation.

## DISCUSSION

Morbidly adherent placentation (MAP), which includes placenta accreta, increta, and percreta, is a serious complication of pregnancy associated with perinatal massive haemorrhage, intensive care unit (ICU) admission, and caesarean hysterectomy (Vahanian et al., 2015). MAP occurs in approximately 1 in 500 to 1,000 pregnancies (Vahanian et al., 2015). This rate has increased up to 10-fold in the past 20 years, and it is largely attributed to increasing rates of caesarean deliveries (Eshkoli et al., 2013). The reported incidence in the United States increased from 0.08% in 1985 to 0.3% in 2005 (Rao et al., 2012). The domestic incidence of MAP increased by 10 times within nearly 30 years, with the increasing rates of abortion, hysteroscopic operation, and caesarean section (Lian and Wang, 2013). The present patient had placenta percreta, which is more severe than the other classifications. In placenta percreta, chorionic villi breach the uterine serosa and adhere to the surrounding organs (Solheim et al., 2011). The steadily increasing rate of placenta previa and caesarean section may result in an increased number of patients with abnormal placentation (Solheim et al., 2011). Additional

risk factors for MAP include uterine operation, caesarean delivery, advanced maternal age ( $\geq 35$  years), multiparity, and a history of endometrial ablation (Belfort, 2010).

The occurrence of placenta percreta will significantly affect the outcome of pregnancy, causing postpartum haemorrhaging, uterine perforation, and other serious complications; additionally, it can even endanger the lives of pregnant women and their foetuses.

Uterine rupture in pregnancy is rare, and it can often be life threatening and catastrophic. It is very difficult to manage placenta percreta and uterine rupture during vaginal delivery; thus, invasive treatment is needed to control for the occurrence of serious complications after various rescue measures are ineffective. Severe complications of placenta percreta are significantly higher with vaginal delivery than with caesarean section. Pregnancy with placenta percreta is associated with a high risk of uterine rupture.

Placenta percreta is rare, but three instances of uterine rupture with delivery of normal newborn infants, as seen in our patient, are very rare. The first instance of placenta percreta with uterine rupture was not a prenatal diagnosis, so the patient had more complications and was transferred to the ICU. The second instance of placenta percreta was diagnosed before pregnancy; thus, prenatal preparation was adequate to prevent intraoperative bleeding and to ensure a good postoperative recovery and preservation of the uterus.

Traditionally, placenta percreta is treated by removing the uterus, as it is effective for reducing maternal mortality and stopping bleeding rapidly and completely. Decisive hysterectomy should be performed in patients with serious intraoperative bleeding, shock, a coagulation dysfunction or blood shortage, a large area of placenta percreta, a thin uterine wall, and poor uterine contractions. Kohn et al. (2016) reported the case of a pregnant woman in whom hysterectomy was performed because of placenta percreta and incomplete uterine rupture after endometrial ablation was performed at 18 weeks of pregnancy. However, removal of the uterus would cause the patient to lose fertility, resulting in physical and psychological damage, and some patients cannot accept this outcome. Thus, conservative treatment should be considered if the patient's condition is relatively stable. However, this depends on an accurate prenatal diagnosis, adequate pre-operative preparation, and a skilled surgical operation.

The key to conservative treatment is effective haemostasis. If the area of placenta percreta is small, local resection and suturing may be appropriate during caesarean section (for example, wedge resection or excision and a partial figure-of-8 suture or ring suture). Ligation of the uterine muscle can facilitate haemostasis. The B-Lynch suture can also be used, and the uterus can be sutured at the anterior and posterior walls. In clinical practice, surgeons can combine several surgical procedures to stop bleeding. For pregnant women at high

risk for uterine rupture, such as scarring of the uterus and placenta percreta, it is necessary to provide detailed and prudent prenatal counselling, evaluate the relationship of the uterine muscle and placenta with ultrasonography regularly, and recommend caesarean section as soon as possible. If uterine rupture is suspected, a timely caesarean section to terminate the pregnancy may be necessary, or laparotomy can be performed to make a clear diagnosis in an attempt to keep the uterus.

The treatment for placenta percreta should be selected according to the patient's condition, blood loss, and rate of blood loss, taking into consideration the type and location of the placenta percreta, surgeon's skills, rescue capacity of the medical institution, and the patient's reproductive requirements. A comprehensive analysis must be conducted to make the right decision.

A prenatal diagnosis and identification of abnormal placentation are vital for the following reasons: 1) to plan the date, place, and mode of delivery; 2) to ensure the availability of highly qualified specialists in the field of obstetrics and anaesthesia, and 3) to ensure the availability of a sufficient amount of blood and blood substitutes. If the MRI scan or ultrasonogram findings are suggestive of placenta percreta pre-operatively or prenatally, sufficient preparations should be made, including adequate blood preparation, a detailed, reasonable surgical program, and treatment methods to control bleeding and avoid unnecessary hysterectomy (Palacios-Jaraquemada, 2013).

## Conclusion

Patients with placenta percreta may not have any symptoms, and placenta percreta may not affect intrauterine foetal development; however, if it is found during delivery, it is more difficult to manage, especially in cases of natural childbirth. Therefore, an early diagnosis is particularly important. Additionally, an early diagnosis of uterine rupture can save a patient's life. An adequate prenatal assessment, accurate diagnosis, and timely treatment are essential to reduce maternal and child mortality and complications.

## CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

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