Human Reproduction Vol.19, No.10 pp. 2401–2403, 2004
Advance Access publication August 6, 2004
DOI: 10.1093/humrep/deh421

Placenta percreta causing rupture of an unscarred uterus at the end of the first trimester of pregnancy: Case report

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Reports on placenta percreta in early pregnancy leading to a spontaneous rupture of the uterus are rare. We report a case of this potentially life-threatening complication in the 14th week of pregnancy in an otherwise healthy woman who underwent a manual extraction of the placenta during a previous delivery but who had no history of severe pathology that could have potentially resulted in uterine damage. The occurrence of severe abdominal pain and the presence of a large quantity of free fluid in the abdomen necessitated an emergency laparotomy, revealing a haemoperitoneum due to rupture of the uterus, which was followed by a hysterectomy. This case demonstrates that in patients with a history of placenta accreta and subsequent manual extraction of the placenta, a close investigation of the uterine wall and placentation should be performed in the first trimester in order to anticipate a placenta percreta.

Key words: hysterectomy/placenta percreta/spontaneous uterus rupture

Introduction

Placenta percreta is a rare complication of pregnancy and is potentially life-threatening for both the mother and the fetus. Although this complication was already known to the ancients, the first reported case in modern literature comes from Plater in 1588 (Harer, 1956). In general, placenta accreta is defined as the abnormal attachment or invasion of the whole placenta or parts of it to the underlying musculature. Histopathologically, a placenta accreta is characterized by a partial or complete absence of decidua basalis resulting in placental villi being attached to or invading the myometrium. Two varieties of this rare complication can be distinguished and are well documented in the literature: (i) placenta increta, which involves the partial invasion of the chorionic villi into the myometrium; and (ii) placenta percreta in which the chorionic villi completely penetrate the uterus (Irving and Hertig, 1937; Fox, 1972). Of these two varieties, placenta percreta is by far the most severe form because infiltration of not only the serosa but also of neighbouring organs such as the urinary bladder and the bowel can occur, potentially leading to serious complications.

A literature review of reports on placenta percreta followed by a spontaneous rupture of an unscarred uterus in early gestation indicated that the reported case can be considered as extremely rare. This case report aims to contribute to the insight and knowledge of this rare complication of pregnancy.

Case report

A 40-year-old previously healthy Caucasian G2P1 was admitted to our clinic with abdominal pain. The obstetrical history of the patient was characterized by a normal first pregnancy and a manual removal of the placenta with subsequent curettage due to a placenta accreta. Ultrasound examination showed that the patient was at week $13 + 5$ days of gestation. Previously, at 11 weeks of gestation, a normal ongoing pregnancy had been observed during a routine check-up by the attending gynecologist. During this check-up, a moderate accumulation of free fluid in the lower abdomen was observed ($7.5 \times 7 \times 4.3$ cm). A blood examination was performed to rule out the possibility that the observed free fluid was due to an infectious problem since the patient had, only days before, suffered from gastroenteritis. This showed normal values, with, amongst others, a C-reactive protein (CRP) value of 1.8 IU/l. Nevertheless, the patient presented herself that same evening in the hospital with abdominal pain. She was admitted, but all examinations showed normal results. Haemoglobin was 11.2 g/dl and thrombocytes were 335×10^9/l. Ultrasound showed that the free fluid in the abdomen had diminished at that time and no obvious abnormalities of the placenta were seen. The patient was discharged 2 days after admission in perfect health with a normally evolving pregnancy. In contrast to the first, an additional check-up 1 week later did not show accumulation of free fluid in the abdomen and showed a normally

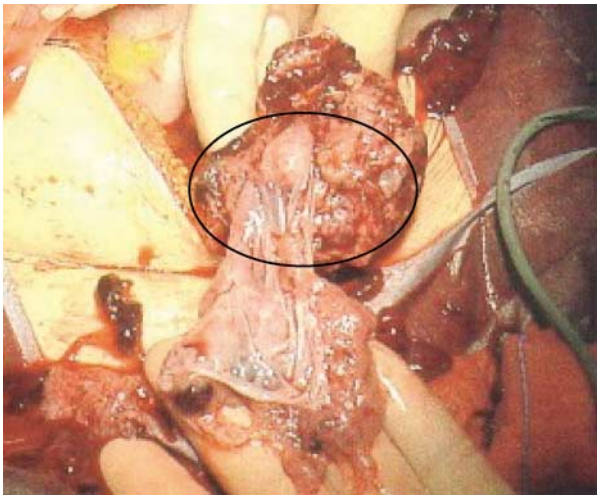

Figure 1. Overview of the abdomen as observed during the laparotomy showing the uterine defect (circled).

continuing pregnancy. No physical complaints were reported by the patient whose gynecological condition was considered normal at that time. Approximately 10 days later, the patient again developed progressive pain in the lower abdomen and presented herself to the hospital the next morning. At admission, clinical examination showed a normal blood pressure (100/70 mmHg), temperature of 35.3°C, muscular defence, reduced bowel movement and abdominal distension. Ultrasound examination showed the reoccurrence of free fluid in the abdomen and a normally developing intra-uterine pregnancy. Although the patient's blood values showed anaemia, it was not considered as indicative for massive internal blood loss (haemoglobin 10.3 g/dl, thrombocytes 373×10^9/l). At this point, an expectant management was followed and a regular check-up of blood pressure and general clinical condition was arranged. However, within 4 h of admission, the overall condition of the patient severely deteriorated. The pain, initially located in the lower abdomen, had progressed throughout the entire abdomen. The patient had a pale appearance and was hypotensive with a blood pressure of 90/50 mmHg. An emergency laparotomy was performed. A haemoperitoneum of ~2500 ml was found as well as a fundal uterine defect of 4 × 3 cm with placental tissue penetrating through the uterine serosa (Figure 1). The fetus was found lifeless in the abdomen. Heavy bleeding was noticed from the site of rupture, which necessitated a hysterectomy. An interadnexal hysterectomy was performed. All other intraperitoneal organs were intact. The total blood loss was estimated at 3000 ml, and 4 units of blood were transfused post-operatively. Post-operative haemoglobin was 8.4 g/dl. Except for a low-grade fever during the first 36 h after surgery, the patient did well and was discharged from the hospital on the 11th post-operative day.

The pathology report showed chorionic villi invading the myometrium all the way through the serosa, consistent with the diagnosis of a placenta percreta (Figure 2). The fetus weighed 48 g and measured 9 cm from crown to rump. This was consistent with ~13 weeks of gestation.

Discussion

Literature reports show an incidence of abnormal placentation, including placenta percreta, varying between 1 in 540 and 1 in 93 000 with an average of 1 in 700 (Fox, 1972; Breen *et al.*, 1977). Placenta percreta, the rarest form of a placenta accreta, is believed to represent 5–7% of all abnormal placentations (Breen *et al.*, 1977; Morkon and Henriksen, 2001).

Although the aetiology of placenta percreta is unknown, a number of risk factors have been identified on the basis of previous case reports. These risk factors include a history of Caesarian section resulting in a scarred uterus, placenta praevia, history of manual placenta extraction, multiple pregnancies, dilatation and curettage, endometriosis, high parity and an advanced maternal age (Haider, 1990; Morkon and Henriksen, 2001). In most cases, a placenta percreta is caused

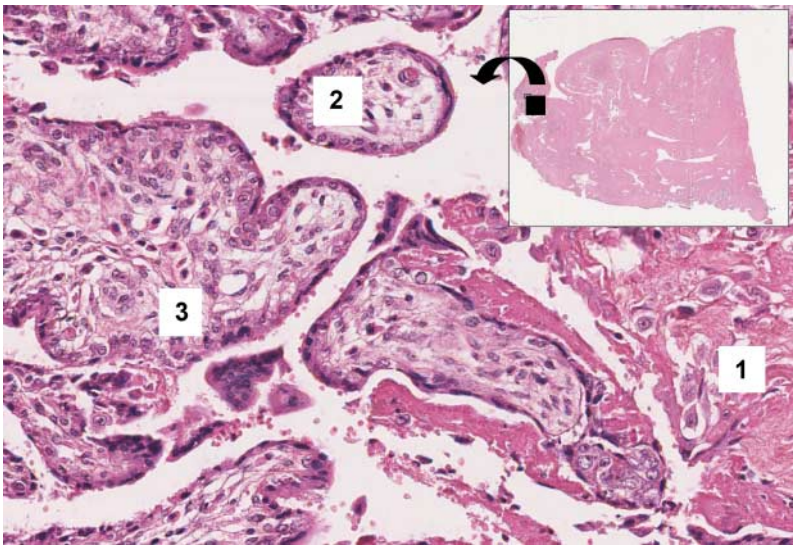

Figure 2. Histology of the placenta showing the myometrium (1) with invasions of chorionic villi (2) and trophoblast cells (3) (20× haematoxylin–eosin staining).

by a combination of factors and it is unlikely that its occurrence can be attributed to one single risk factor. Of the above-mentioned risk factors, a history of a classical Caesarian section leaving scar tissue in the uterine wall is most often reported in association with the development of a subsequent placenta percreta (Clark *et al.*, 1985; Wax *et al.*, 2000). In contrast to the many reports in which a placenta precreta was diagnosed in patients with a history of Caesarian section (Woolcott *et al.*, 1987; Haider, 1990; Smith and Mueller, 1996; Endres and Barnhart, 2000; Höpker *et al.*, 2002), our patient had no previous Caesarian section and had a normal vaginal delivery some years before. Due to retention of the placenta during the patients' first parturition, a manual extraction was performed which may have altered the risk for developing a placenta percreta. In addition, a less significant risk factor may have been the previous curettage and age of the patient (40 years of age).

Two types of management of a placenta percreta have been proposed: (i) surgical removal of the uterus and of the surrounding tissues; and (ii) conservative therapy. The latter involves (i) leaving the placenta *in situ* with packing; (ii) uterine curettage with packing; (iii) closing the uterine defect; (iv) localized excision and uterine repair; (v) uterine packing with uterine and even hypogastric artery ligation; and (vi) leaving the placenta *in situ* with adjuvant chemotherapy (Morkon and Henriksen, 2001). Hysterectomy has been the traditional treatment for placenta percreta given the report by Fox (1972) that conservative treatment caused a four times higher mortality rate than treatment with an immediate hysterectomy. The choice between hysterectomy or conservative therapy is dependent on the severity of the placenta percreta and the type of additional complications. Reported complications of placenta percreta include severe bleeding that can be life-threatening, and invasion of neighbouring organs by the placental villi such as the urinary bladder (Abbas *et al.*, 2000). One of the most severe complications is a spontaneous rupture of the uterus with a haemoperitoneum, as was observed in our patient during laparotomy. This type of complication has been reported in a number of cases which all necessitated a hysterectomy (Smith and Mueller, 1996; Imseis *et al.*, 1998; Endres and Barnhart, 2000; LeMaire *et al.*, 2001).

Cases of spontaneous uterine rupture in early gestation are very rare. In most cases, placenta percreta is diagnosed in the third trimester of pregnancy because of massive postpartum haemorrhage in an attempt to remove the placenta or during subsequent curettage. Reports of spontaneous uterine rupture as a result of a placenta percreta during early pregnancy have been made in weeks 10–21 of gestation (Woolcott *et al.*, 1987; Smith and Mueller, 1996; Zeeman *et al.*, 1999; Endres and Barnhart, 2000; LeMaire *et al.*, 2001; Morkon and Henriksen, 2001; Norwitz, 2001). Of these case reports on secondary uterine rupture caused by placenta percreta, only the cases of Morkon and Henriksen (2001) and LeMaire *et al.* (2001) involved healthy patients with a non-scarred uterus.

In the present case, the placenta percreta was diagnosed at week 14 of gestation when a spontaneous rupture of the uterus occurred. Diagnosis of the placenta percreta at an earlier stage of gestation (week 11) was not possible due to the inconsistent presence of the free fluid in the abdomen; the slightly aberrant blood values which were not indicative for massive blood loss; the fact that the patient's obstetric history did not include a Caesarian section or other pathology resulting in a scarred uterus, considered as the main risk factors; and most importantly the early stage of gestation at which the pathology occurred. At such an early stage of pregnancy (week 11), a routine ultrasound generally does not include a detailed examination of both localization and implantation of the placenta because it is not important at that stage and technically not obvious. Theoretically, it can be assumed that even at this early stage, a detailed ultrasound examination of the uterine wall could reveal abnormal placentation. The main lesson to be learnt from this case is that in patients with a history of placenta accreta and subsequent manual extraction of the placenta, a close investigation of the uterine wall and placentation should be performed in the first trimester in order to anticipate a placenta percreta.

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Submitted on January 20, 2004; resubmitted on May 13, 2004; accepted on June 24, 2004