Placenta percreta: Report of two cases and review of the literature

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Summary

Placenta percreta is a serious complication of pregnancy.Two cases of placenta percreta confirmed histologically were treated by supravaginal hysterectomy.

Case 1: A case of uterine rupture secondary to placenta percreta was diagnosed in a 29-year-old term primigravida during an elective abdominal delivery of a healthy fetus. Spontaneous rupture of the primigravid uterus due to placenta percreta without a history of trauma or infection is a very rare occurrence.

Case 2: A 33-year-old previously healthy G4P2 woman was admitted at 29 weeks of gestation with acute abdominal pain and hemorrhagic shock. There was a history of one induced abortion and two cesarean section deliveries. A review of risk factors, diagnostic tools and treatment possibilities are given.

Key words: Placenta percreta; Supravaginal hysterectomy.

Introduction

Placenta accreta represents a specific abnormality of placentation in which placental villi attach directly to the myometrium without intervening decidua. Further, the placental villi may invade and even penetrate the myometrium, conditions known as placenta increta and placenta percreta, respectively [1]. Placenta percreta is the most severe form of abnormal placentation. The incidence of abnormal placentation, including placenta accreta, increta and percreta has varied in different reports ranging from one in 540 deliveries to one in 93,000 deliveries [2, 3]. This represents an average incidence of one in 7,000 deliveries [4]. The highest incidence is reported from Thailand, and speculations have been made whether this is related to the high incidence of trophoblastic disease in the Far East [2-4]. It has been suggested that the rarest form, placenta percreta, represent 5-7% of all abnormal placentations [3, 5, 6].

Case 1:

A 29-year-old primigravida was admitted to our department for a planned cesarean section. She was at 39 weeks of gestation. She had had regular antenatal follow-up with no remarkable sonographic or medical findings. An important and yet unconfirmed historical fact to note was that her sister had also suffered a placental insertion anomaly in her first pregnancy. Her physical examination was normal with no abdominal distention, peritoneal irritation or findings suggestive of an impending shock. Obstetrical examination at admission included a term uterus not in active labor with intact amniotic membranes. An elective cesarean section was done with a classical uterine incision and a 2,850 baby was delivered with 1 and 5 minute Apgar scores of 9 and 10, respectively. Preoperative exploration was both definitive and diagnostic of the pathology. There was a perforation through the uterine fundus and a clinically apparent placenta percreta (Figures 1 and 2). Neither any active bleeding nor any free blood was observed in the peritoneal cavity. A supravaginal hysterectomy was performed. No postoperative complications were observed and no transfusions required. The patient was released on the fourth postoperative day with the baby.

A pathological examination at the Department of Pathology, Ege University Hospital, confirmed the surgical diagnosis as placenta percreta and noted that the trophoblastic invasion through the myometrium was as close to the serosa as 0.3 cm and that there was a uterine perforation of about 2 cm diameter within this locus. Moreover, the myometrium was extremely thin in this area. The placenta contained congestion and bleeding foci.

Case 2:

A 33-year-old previously healthy G4P2 woman was admitted at 29 weeks of gestation with acute abdominal pain and hemorrhagic shock. There was a history of one induced abortion and two cesarean section deliveries. Hypotensive blood pressure was 80/60 mmHg. Abdominal ultrasound revealed intraperitoneal fluid, and an emergency laparotomy was performed. Haemoperitoneum of 1500 ml was found as well as a fundal uterine defect of 3 x 3 cm with placental tissue penetrating through the uterine serosa. She delivered a healthy baby of 1,440 g by cesarean section. Apgar scores at 1 and 5 minutes were 5 and 8, respectively. Three units of blood were tranfused during and after surgery. A supravaginal hysterectomy was performed. The baby was followed up in the neonatal unit and discharged from the hospital with the mother. The material was confirmed as placenta percreta histopathologically.

Discussion

The etiology of placenta percreta is unknown. It may be related to damage of the decidua basalis which allows placental invasion into the myometrium [1]. The barrier

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function of the decidua is absent and invasive trophoblasts may invade the myometrium. Several conditions are associated with abnormal placentation; placenta previa, a previous caesarean section, multiple pregnancies, a history of dilatation and curettage, a history of manual extraction of the placenta, high parity and increasing maternal age [4]. These may be known risk factors, but they are rarely the sole cause of placenta percreta. A case of placenta percreta after pelvic irradiation and ovarian failure has been reported [7]. The radiation dose received by the patient was sufficient to produce a decidual defect and predisposition for placenta percreta. This is a single report supporting the theory about decidual damage as a predisposing factor for placenta percreta. The rising cesarean section rate may cause an increased rate of placenta percreta in the years to come.

In case report 1, the patient had no history of related damage of the deciduas basalis. To the best of our knowledge, this case represents the third reported in the medical literature and the first term pregnancy to result in a live-born infant. The patient in case report 2 had a history of dilatation and curettage and two cesarean section deliveries.

The diagnosis of placenta percreta is difficult, but very important due to the possible fatal outcome. Recent reports have presented a maternal mortality rate varying from 2 to 7% [8, 9]. The most common clinical presentation of placenta percreta is postpartum hemorrhage associated with retained placenta [10]. Placenta percreta may also present itself as acute abdomen. There are several identical reports of placenta percreta mimicking acute abdomen in the second trimester, as the woman in case report 2 [11-25]. Painless hematuria may be the first clinical sign of placenta percreta, as a result of placenta penetrating the urinary bladder [26, 27]. Readily identifiable risk factors in the history are important to suggest placenta percreta in pregnant patients with gross hematuria. Ultrasound and/or MRI can establish a preoperative diagnosis. Cystoscopy did not identify any patient preoperatively. Partial cystectomy is commonly required for extensive or deep bladder invasion.

Several diagnostic modalities have been introduced over the last few years. These include transvaginal and transabdominal ultrasonography with colour Doppler imaging [9, 10, 28-30], MRI [31-34] and maternal serum creatine kinase as a biochemical marker of placenta percreta [35]. Elevated maternal serum alfa-fetoprotein levels may also suggest placenta percreta [9, 36]. It has been suggested that the single most important factor affecting outcome is the antepartum identification of abnormal placentation [9]. This represents a possibility of accurate planning of labour. It is important for the obstetrician to be aware of the different strategies of management.

Two main options have been introduced for the management of placenta percreta: (1) surgical removal of the uterus and involved tissues, and (2) conservative therapy. The latter includes, leaving the placenta in situ with packing, piecemeal blunt dissection with packing, uterine curettage with packing, closing of the uterine defect, localised excision and uterine repair, uterine packing with uterine and even hypogastric artery ligation [9, 37-40], and leaving the placenta in situ with adjuvant chemotherapy [28]. A combination of supracervical hysterectomy, methotrexate treatment, pelvic packing and bilateral hypogastric ligation has been reported [41].

Hysterectomy has been the traditional treatment for placenta percreta [2, 3, 42]. This is based on the belief that conservative treatment gives a much higher maternal mortality rate. This was supported by Fox in 1972, when he concluded that the conservatively treated patients had a four times higher mortality rate than those treated with immediate hysterectomy. Several reports in the literature support successful conservative treatment of placenta percreta [9, 10, 28, 37-40, 43-46]. Conservative management is beneficial in preserving future fertility, and may reduce the need for transfusion as suggested by O'Brien *et al.* in 1996 [9]. Patients with a condition of placenta percreta are believed to be ideal for erythropoietin use to prevent anemia and to reduce the need for transfusion prior to surgery [47].

In the two cases presented, preserving strategies were not chosen. In cases where hysterectomy is necessary, reports introduce balloon occlusion of the abdominal aorta and balloon occlusion and embolization of the internal iliac arteries to reduce intraoperative blood losses as an option [48-50]. Regardless of how the patient is treated, control and prevention of bleeding are essential.

The main complication of placenta percreta is severe bleeding. O'Brien *et al.* reported on 109 cases where 90% (98 cases) needed transfusions, of these 40% (44 cases) received ≥ 10 U of packed red blood cells. Hypovolemic shock may develop [9, 51]. Postoperative infection rate was 28% (31 cases) in this report. Other serious complications are rupture of the uterus, coagulation problems [30, 52, 53], invasion of adjacent organs [26, 27], uterine inversion secondary to attempted manual removal of the placenta, fistula formation [54] and loss of reproductive organs.

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