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Review Article

Prenatal Diagnosis and Management of Placenta Accreta

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Abstract

Placenta accreta is a rare condition. Its incidence is constantly increasing due to the increasing number of caesarean sections (multiplied by four over the same period).Placenta accreta is responsible for major maternal morbidity and mortality. Targeted ultrasound, in the presence of risk factors, is relevant for this diagnosis. Patients with at least one uterine scar and a previous placenta previa represent a population at risk whose placenta should be examined during screening ultrasound with the full attention of the operator. The smallest diagnostic doubt should lead the practitioner to refer the patient for expert ultrasound examination. Current challenges include early detection of placenta accreta in the first trimester, prediction of the degree and extent of placental villi invasion, and prognosis assessment.

Keywords: Placenta accreta, Placenta previa, Placenta increta, Placenta percreta, Ultrasound.

INTRODUCTION

Placenta accreta is a group of disorders characterized by a major maternal morbidity and mortality. The development of placenta accreta is thought to be related to the abnormal invasion of chorionic villi within the myometrium during placentation, secondary to the absence of basal decidua interposition (residual endometrial layer).

The occurrence of this condition is favored by uterine scars which are responsible for an abnormal vascularization of the placenta and an unusual adherence of the placenta during delivery, due to the absence of a cleavage zone. These changes can lead to uterine atony and severe maternal hemorrhage in the immediate postpartum period. When this invasion reaches the uterine serosa or neighbouring organs, it is called placenta percreta. The most common outcome is hemostasis hysterectomy.

The incidence of placenta accreta has increased approximately 4-fold- from 0.08% to 0.3% [1] due to the higher rate of cesarean section. It is associated with significant maternal morbidity, mainly due to postpartum hemorrhage, adjacent organ damage, hysterectomy and postoperative complications [2, 3].

Before the development of high-resolution ultrasound, most diagnoses of placenta accreta were made at the time of delivery. Ultrasound diagnosis of placenta accreta is difficult because of the low prevalence of this condition and the lack of specific signs. Antenatal diagnosis is essential to allow appropriate management and limit maternal-fetal morbidity. Magnetic resonance imaging (MRI) now provides an interesting diagnostic support by complementing ultrasound data.

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Prenatal screening for placenta accreta

The aim of prenatal screening for placenta accreta is to improve the perinatal prognosis by being prepared for the occurence of an obstetric emergency in order to avoid the complications of massive hemorrhage and hysterectomy. This implies a multidisciplinary approach including obstetricians, anesthesiologists and radiologists, trained in interventional radiology. In addition, in the case of placenta percreta, the

involvement of urologists or visceral surgeons may be necessary.

The diagnosis is usually suspected by ultrasound and MRI in patients with risk factors. Classically described ultrasound criteria include the absence of a hypoechoic border between the placenta and myometrium, interruption of the hyperechoic zone at the interface of the serosa and bladder, a pseudotumoral appearance opposite the uterine serosa, and the presence of intraplacental lacunae opposite the zona accreta, which give the placenta a cookie cutter appearance.

Using these sonographic criteria, studies have found a PPV of 78% and a negative predictive value (NPV) of 93% [4]. These ultrasound signs may appear early and their sensitivity increases with gestational age. The presence of intraplacental lacunae was the most relevant predictive marker of placenta accreta, with a sensitivity of 79% and a PPV of 92% [5]. The absence of a retroplacental hypoechoic border had a sensitivity of 57% with 48% false positive.

Finally, an ultrasound appearance of bulging in the bladder is associated with the presence of placenta accreta, even in the absence of increta or percreta implantation, and is not specific for bladder invasion. Intraplacental lacunae were graded according to an established score and criteria proposed by Finberg [4]. Grade 1 lacunae had the best predictive value. No hysterectomy was performed in the absence of lacunes.

Fig-1: Ultrasound images of placenta accreta at 34 weeks of gestation with irregular intraplacental lacunae and myometrial thinning at the Souissi maternity hospital of Rabat.

Finally, MRI has been reported to be helpful in diagnosis [6-8], especially when the placenta is posterior [9]. Proposed diagnostic criteria include abnormal bulging of the inferior segment, heterogeneity of the T2 signal intensity of the placenta, and T2 intraplacental black bands [10]. MRI, performed in case of ultrasound suspicion of placenta accreta, therefore seems useful to improve the performance of Doppler ultrasound.

Fig-2: Sagittal T2 section in MRI, showing a heterogeneous low-inserted placenta with irregular hyposignal areas corresponding to with thinning of the myometrium at the Souissi maternity hospital of Rabat.

Management of placenta accreta

In the case of suspected placenta accreta prior to delivery, two types of management are possible: cesarean section hysterectomy and conservative treatment.

In the absence of a subsequent desire for pregnancy, a hysterectomy performed at the time of cesarean section is appropriate if risk factors and imaging are highly suggestive of the diagnosis. The uterine incision is preferentially made distant from the placental site. In the absence of massive hemorrhage, a conservative delivery attempt is made with 5 IU of oxytocin and moderate cord traction to confirm the diagnosis. If this does not succeed, a hysterectomy is performed.

Caesarean section-hysterectomy without attempted artificial delivery is currently recommended for strong prenatal suspicion for placenta accreta by the American College of Obstetrics and Gynecology (ACOG) [11]. Management strategies for cesarean section-hysterectomy include preoperative embolization and preoperative intravascular ballooning.

Conservative treatment may be proposed in the management of placenta accreta, either with abandonment of the placenta in the uterine cavity, in which case the management strategy is as follows:

After extraction of the newborn, a prudent delivery attempt of the placenta is made, in case of failure, the cord is cut flush with the placental insertion and the uterine cavity is closed. If the placenta is discovered during delivery, uterine revision should not be forced. The adherent placenta is left in place partially or totally, if the hemodynamic state is stable and if there are no clinical or biological signs of infection.

Follow-up of these patients is then weekly, until complete resumption of the placenta. It includes a clinical examination, a pelvic ultrasound and a biological check-up to look for an early infection (vaginal swab and C-reactive protein). Uterine vacuity is obtained spontaneously in 75% of cases after a median delay of 13.5 weeks (4-60 weeks). Hysteroscopic resection and/or curettage may be indicated [12].

An alternative approach to conservative treatment may be proposed, suggesting resection of the entire placental bed after reclining the bladder. Prevention of hemorrhage is achieved by suturing the uterine arteries. After resection of the placenta and the adjoining uterine wall, the uterine margins are trimmed and sutured with U-stitches. Any bleeding is controlled with compressive uterine sutures, rather than B-Lynch sutures [13, 14].

Methotrexate, uterine artery embolization, and sulprostone are the three adjuvant treatments described in cases involving conservative treatment. Placental resumption in the described cases is variable, ranging from placental expulsion on day 7 to gradual resumption over a period of 6 months [15-19]. Arterial embolization is not a trivial procedure and complications have been described, in particular uterine necrosis, lumbar plexus ischemia, hemoperitoneum from epigastric artery dissection, and lower extremity ischemia of embolic origin [12, 21-24].

In many cases, the diagnosis is made at delivery when there is no cleavage plane between the uterus and placenta. Conservative treatment may be attempted if delivery was performed conservatively and the patient's hemodynamics is stable. In other cases, the management procedure is the same as for severe delivery hemorrhage, with the difference that uterotonics used alone are less effective than in the case of uterine atony, for example.

Uterine artery embolization or hypogastric artery ligation can be used [20, 25]. Other techniques described include hemostatic uterine ligation [26, 27] and intrauterine ballooning to provide hemostatic compression, argon laser coagulation, and even aortic compression [28, 29-30]. Numerous techniques for uterine compression using B-Lynch or modified B-Lynch sutures according to Hayman have been proposed but have not been evaluated specifically for this indication [13, 31]. Finally, the failure of these measures will impose hemostasis hysterectomy without delay.

Fig-3: Peroperative image objectifying a placenta percreta in a 28 year old patient at 34 weeks of pregnancy, G3P3 with two deliveries by cesarean section

CONCLUSION

Antenatal diagnosis of placenta accreta allows multidisciplinary management in a maternity hospital where there is an adapted technical platform.

Targeted ultrasound, in the presence of risk factors, is relevant for this diagnosis. Due to the increase in the number of caesarean sections, the question of targeted screening arises. Patients with at least one uterine scar and a previous placenta previa represent a population at risk whose placenta should be examined during screening ultrasound with the full attention of the operator. The smallest diagnostic doubt should lead the practitioner to refer the patient for expert ultrasound examination.

The classic recommendations for placenta accreta are to avoid forced delivery and to perform a hysterectomy. However, a more conservative approach that leaves the placenta in place may be proposed in specific cases where there is a desire to preserve fertility. However, this strategy must be used with caution and in an appropriate infrastructure because of the possible risk of severe maternal morbidity associated with this type of management.

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