

The application of the management protocol of invasive placenta. A case report

Abstract

The incidence of adherent placenta has known a continuous ascendant incidence in the last decades. A correct management implies prenatal care and a careful planning of birth. We present the case of a 31-year-old G4P3, 37 weeks and 3 days' gravida which presented herself at the emergency room, accusing unsteady painful low-intensity uterine contractions and asking for a cardiologic consult. The anamnesis revealed that this pregnancy was not properly monitored by a specialist and her medical history included two deliveries by caesarean section, a known untreated familial hypertrophic cardiomyopathy and a 36 weeks ultrasound scan describing a single fetus with a suspected cardiac hypertrophy and a praevia, anterior inserted placenta. In this context, the suspicion of an adherent placenta was confirmed by emergency ultrasound where a mild bladder invasion was observed. Due to the possibilities offered by an emergency medical hospital complete preparation for delivery was possible during one hour. A successful cesarean hysterectomy was performed, with the extraction of the fetus from transverse presentation through vertical hysterotomy and rapid closing of the uterine incision after cutting the cord. The vezicotomy for uterine catheterization and excision of invaded submucosal area and subsequent hysterectomy were uncomplicated. Both mother and fetus presented a favorable prognosis. We present this case in the context of its complexity and the successful applied approach.

Keywords: adherent placenta, management, cesarean hysterectomy

Introduction

Recently, the term used to include all possible types of adherent placenta (accreta, increta and percreta) is *placenta accreta spectrum*. The degree of attachment is classified according to its severity and entails three variants. Placenta accreta appears in 80% of all cases of abnormal placental implantation and is the least severe type, with trophoblastic villi attaching to the superficial part of the uterine myometrium⁽¹⁾. Invasion through the myometrial muscle fibres is termed as placenta increta and accounts for 15% of all cases. Placenta percreta is the most severe form which involves penetration of the uterine serosa and sometimes, extension into adjacent organs. Thankfully, only 5% of all types of abnormal placental attachments are diagnosed as percreta⁽²⁾. With a constant increasing incidence, this condition results from a defective decidualization in the context of an anterior damage of the endometrial-myometrial junction. The relation with the increasing number of births by caesareans is clear, being certified the fact that placenta increta and percreta may occur through the partial or complete dehiscence of a uterine scar, allowing this way the extravillous trophoblast direct access to the deeper myometrium, serosa, and beyond. A medical history of previous caesarean delivery, curettage, myomectomy is associated in about 80% of adherent placenta cases⁽²⁾. The association of anterior mentioned risk factors with placenta previa increases significantly

the risk for developing abnormal adherent placenta⁽³⁾, so that from a 3% incidence after first caesarean birth and a previa placental position an impressive incidence of 40% is reached on the association of placenta previa with third caesarean birth⁽³⁾. In the absence of placenta previa, these percentages decrease considerably to 0.003% and 0.1%, respectively. Due to the advanced ultrasonography technology used in our days, placenta accreta spectrum is often diagnosed prenatally, on routine ultrasound examination. Laboratory findings, such as elevated maternal serum alpha-protein during second trimester⁽⁴⁾ or hematuria⁽⁵⁾ can facilitate diagnosis.

A proper monitoring of the pregnancies is crucial. Besides the advantage of prenatal diagnosis in terms of careful planning of management (i.e. surgical team, blood supplies, equipment) it also offers the opportunity to advise the patient on the risks and possibilities of treatment. Prenatal diagnosis of placenta accreta spectrum significantly lowers the blood loss and transfusion requirements during delivery⁽⁶⁾.

There are two ultrasonographic findings⁽⁷⁾ considered to be the most specific for an abnormal placental implantation: disruption of the bladder wall-uterine serosa and placental lacunae having sensitivity of about 90% for placenta increta and a specificity of about 99% for placenta increta^(8,9). Color flow Doppler can confirm the diagnosis by the presence of a chaotic flow and bridging vessels. Findings on sonographic examination that

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offer a presumptive diagnosis of abnormal adherent placenta are: loss of the clear zone (e.g. area behind the placenta), myometrial thinning at the placental insertion, placental bulge or exophytic mass that extends into the bladder wall. Magnetic resonance imaging is more useful than ultrasound in posterior abnormal adherent placenta, when the placental-myometrial interface cannot be properly clarified and also for to assess the depth of the placental invasion⁽¹⁰⁾.

The management of these cases is complex and crucial for a good maternal and fetal prognosis. A correct management implies prenatal care and a careful planning of birth. But how do we do when dealing with such a case in an emergency?

Case Report

We present a case of a 31-year-old G4P3, 37 weeks 3 days' gravida having a history of 2 caesarean deliveries and one abortion with no post-uterine curettage complication. The patient presented herself at the emergency room, accusing unsteady painful low-intensity uterine contractions and asking for a cardiologic consult. The anamnesis revealed that this pregnancy was not properly monitored by a specialist and her medical history included also a known, untreated familial hypertrophic

cardiomyopathy. The unique ultrasound scan sheet, performed at 36 weeks described a single female fetus with a suspected cardiac hypertrophy and a praevia, anterior inserted placenta. The decision of emergency hospitalization with the suspicion of abnormal adherent placenta was immediately applied. The sampling for the usual tests, the order of the isogroup izoD blood products and the preparation of the operatory team were initiated instantaneously. Due to the possibilities offered by an emergency medical hospital complete preparation for delivery (complete blood tests, electrocardiography (ECG), cardiologic consult, pre-anesthesia consult, informed consent, making the multidisciplinary team, adequate blood products) was possible during one hour. Also, the cardiologic consult was performed, with ECG and cardiac echography based on personal on the patient's statement, this being paucisymptomatic, with no effort dyspnea, effort angina, or syncope episodes. The moderate obstructive hypertrophic cardiomyopathy with slightly modified ejection fraction was confirmed. Obstetrical echography showed a well-being female fetus, amniotic fluid in normal limits and a previa anterior placenta with multiple placental lacunae, irregular in shape with thinned underlying myometrium. Two areas of possible neovascularity disrupting the bladder line

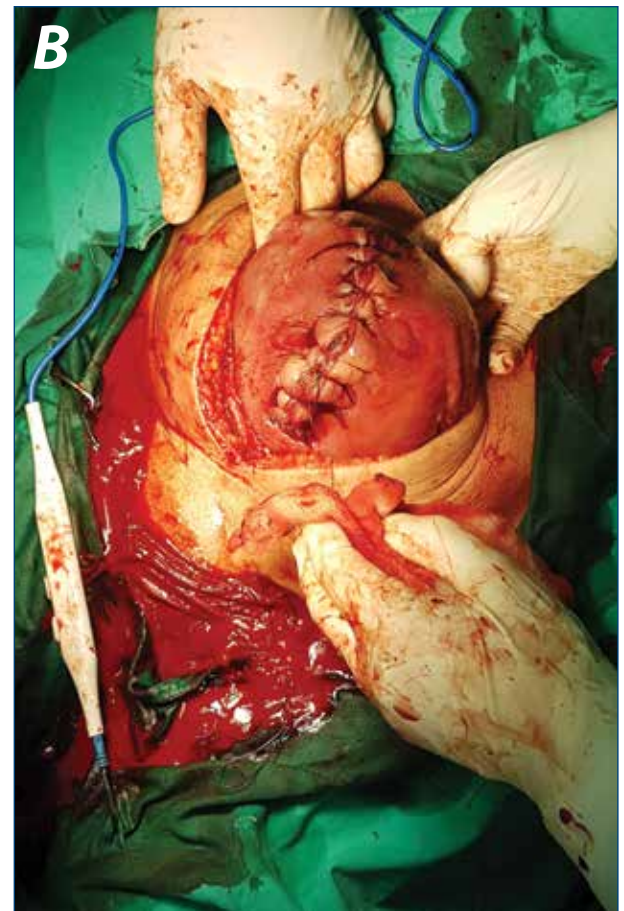
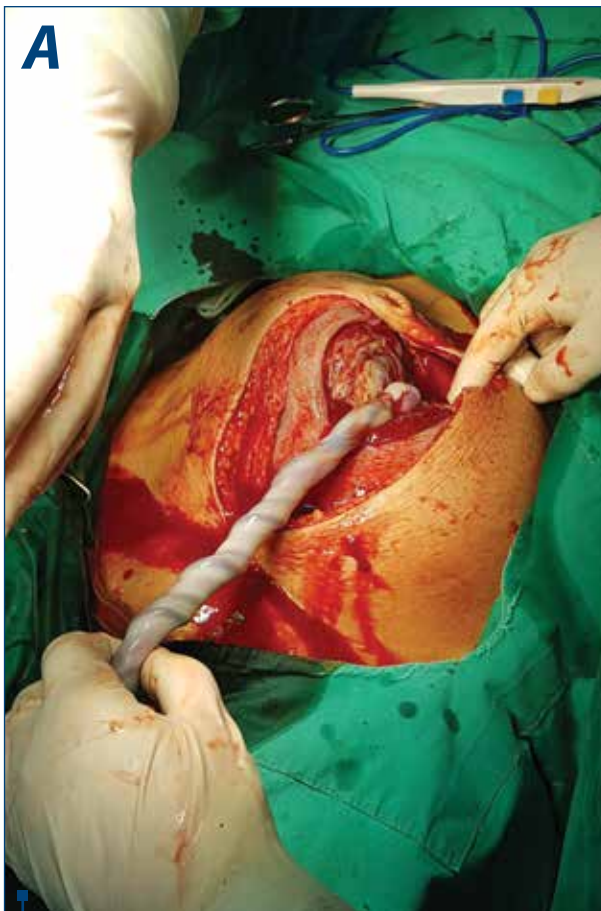


Figure 1. A and B. The placenta left untouched and closed uterine incision

were also observed. These findings, superimposed on clinical picture were considered sufficient to confirm the suspicion of adherent placenta and follow the appropriate management protocol.

The decision of perinatal hysterectomy was taken preparatory, explained and consent by the patient. After

the multidisciplinary team was prepared (obstetricians, urologists, anesthesiologists, neonatologists) and adequate blood products were available, the procedure began with the delivery of the feminine infant, 2740 gr, IA=7, through a vertical hysterotomy, distantly from the placental insertion area. As a secondary step, after



Figure 2. Neovascularization areas interfering the utero-vesical space



Figure 4. Detailed view of the placental implantation site showing deep myometrial attachment and focal increase in fibrinoid deposition



Figure 3. Pre-fixation gross aspect of the hysterectomy specimen showing an enlarged uterine cavity and placental retention due to deep myometrial attachment, with no apparent serosa involvement



Figure 5. Post-fixation gross aspect of the hysterectomy specimen, highlighting the attachment surface of the placenta to the myometrial wall



Figure 6. Histopathological aspect of the lower uterine segment with severely thinned uterine wall and congested subserosal vasculature, showing direct attachment of the placenta to the myometrium (H.E., 100x)

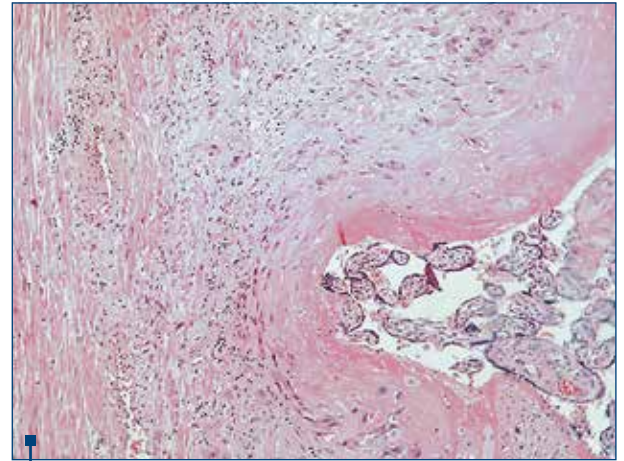


Figure 7. Histopathological aspect showing placental implantation deep in the myometrial wall, with placental villi which interdigitate directly with the uterine myometrium, without an intervening maternal decidual plate, also featuring variable fibrinoid deposition (H.E., 200x)

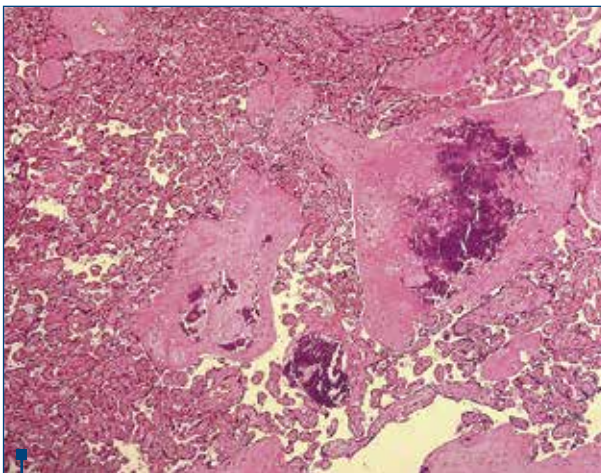


Figure 8. Small area of placental infarction with intravillous fibrin deposition and dystrophic calcifications (H.E., 100x)

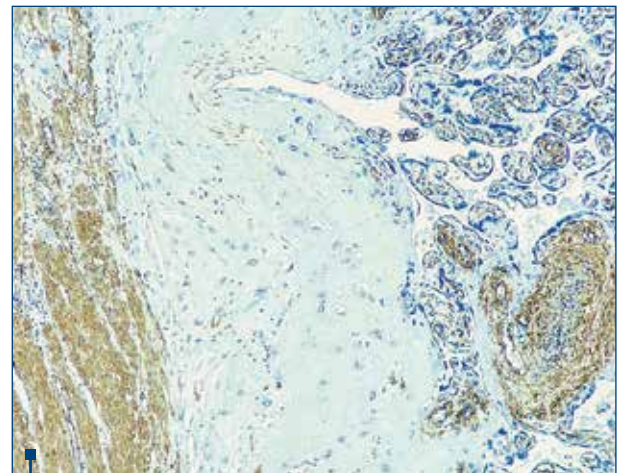


Figure 9. SMA immunostaining showing chorionic villi in the immediate vicinity of the smooth muscle fibers of the myometrium (immunohistochemistry with 3,3'-diaminobenzidine chromogen, 100x)

the cord was cut, the uterine incision was rapidly closed, leaving the placenta untouched^(1,2), (Figure 1).

Due to the fact that on the ultrasonography, there were observed neovascularization areas interfering the utero-vesical space, the urology team performed a cystotomy, inspecting this way the degree of bladder involvement, making a prophylactic bilateral ureteral catheterization and the dissection of the bladder from the anterior uterine wall (Figure 2). In this condition, subsequent classic hysterectomy was performed without adverse events. The excised structures were sent for histopathological examination. The patient was hemodynamically stable throughout the intervention and required only one blood product unit, the surgery resulting in the

decrease in hemoglobin by two units. Both mother and fetus presented a favorable prognosis.

Upon gross examination (Figures 3, 4, and 5), the hysterectomy specimen revealed an enlarged uterine corpus with a longitudinal incision scar on the anterior wall and distended uterine cavity due to placental retention. Placental attachment appeared on anterior uterine wall, low-lying, with infiltration and thinning of the myometrium, but no apparent invasion of the uterine serosa. Multiple areas of hemorrhage and placental infarction were also noted.

Histopathologic examination (Figures 6-10) revealed extensive placental infiltration of the myometrium up to the subserosal tissue, with no invasion of the

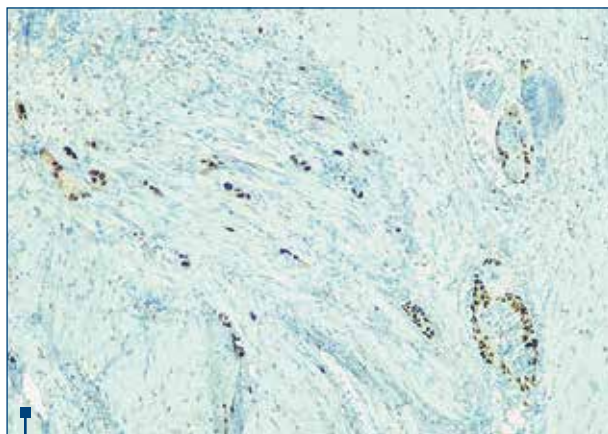


Figure 10. GATA3 immunostaining showing small fragments of diffusely infiltrating trophoblast between the smooth muscle fibers of the myometrium (immunohistochemistry with 3,3'-diaminobenzidine chromogen, 100x)

perimetrium. Several sections from the lower uterine segment revealed smooth muscle cells in the near proximity of anchoring villi, with only fibrin or intermediate trophoblast as interposing elements. Upon thorough microscopic examination, the complete absence of intervening decidua between the trophoblast and smooth muscle within the basal plate correlated with the depth of attachment to the myometrial wall confirmed the preoperatively suspected diagnosis of placenta increta. Other histopathological modifications included multiple small intraplacental hematomas and multiple villous infarcts with perivillous fibrin deposits. Immunostaining with smooth muscle

antibody (SMA) and the transcription factors GATA-binding protein 3 (GATA3) confirmed the interrelation between smooth muscle fibers and chorionic villi at the implantation site.

Discussion

We present this case in the context of its complexity and the successful applied approach. Considering the pre-existing hypertrophic cardiomyopathy, even a less significant loss of blood impact more importantly heart function. Usually, in the presence of a placenta accreta spectrum, the delivery is scheduled, preferably between 34 and 35 weeks of gestation after the administration of antenatal corticosteroids according to standard guidelines, avoiding that way the possible complications (i.e. preterm labor, preterm premature rupture of membranes, antepartum bleeding)⁽¹¹⁾. We consider that all women who give birth through cesarean should be advised about the risk of developing an abnormal adherent placenta in the next pregnancy and the impressive increase in the incidence of this pathology in proportion to the number of previous cesarean⁽¹²⁾. Also, a proper monitoring of these cases is imperative, especially that thorough transabdominal and transvaginal sonographic evaluation, prenatal diagnosis at 18-24 weeks of gestation has an accuracy close to 90%^(13,14).

Conclusions

Even if there are multiple ways of management described, a standardized one not existing, we consider that a well-planned intervention is the key for a successful outcome of adherent placenta. ■

Conflict of interests: The authors declare no conflict of interests.

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