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Placental accretism

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ABSTRACT

The incidence of placenta accreta spectrum (PAS) is increasing and is now about 3 per 1000 deliveries, largely due to the rising caesarean section rate. Ultrasound is the preferred method for diagnosis of PAS. Ultrasound markers include multiple vascular lacunae, loss of the hypoechoic retroplacental zone, abnormalities of the uterine serosa-bladder interface, retroplacental myometrial thickness less than 1 mm, increased placental vascularity, and observation of bridging vessels linking the placenta and bladder. Patients with PAS should be managed by experienced multidisciplinary teams. Hysterectomy is the accepted management of PAS and conservative or expectant management of PAS should be considered investigational.

Keywords: Abnormal placentation; Diagnosis; Management; Placenta accreta spectrum; Ultrasound.

Introduction

The term accreta is derived from the Latin ac+crescere 'to adhere or attach to'; placental accretism means defines a spectrum of abnormalities of placental adhesion to the myometrium caused by pathological invasion of the trophoblast into the uterine wall (1).

The incidence is rising as a consequence of the increasing rate of caesarean sections, counted as the main risk factor. Accrete syndromes cause serious and potentially fatal maternal complications (postpartum haemorrhage requiring blood transfusion, disseminated intravascular coagulation, multiorgan failure), surgical, especially in cases of placenta percreta (intestinal lesions, ureteral and bladder and uterine rupture) and neonatal (complications related to iatrogenic prematurity); finally it involves serious consequences on a woman's fertility as well, since placental accretism alone is responsible for 35-38% of peri-partum hysterectomies. The improvement in ante-partum diagnosis, the delivery planning and the development of new management strategies have significantly reduced the maternal and neonatal morbidity and mortality (2).

Definition

The term 'placenta accreta' is used both to describe a specific pathological picture and as generic term

for a set of nosological entities grouped as Accrete Syndromes or PAS (Accreta Placenta Disorder); PAS are all characterised by abnormal tissue penetration trophoblastic in the myometrium beyond the basal decidua (3).

The classification of placental accretism is based on the degree of penetration of the villi into the myometrium (3) (figure no. 1):

- Placenta accreta: invasion < 50% of the myometrial thickness; villi are attached to the myometrium.
- Placenta increta: invasion > 50% of myometrial thickness, villi infiltrate the myometrium.
- Placenta percreta: invasion of the uterine serosa and possible pelvic organ involvement neighbours.

Placenta accreta is defined as total if it involves all the lobules, focal when all or part of one lobe is involved (2).

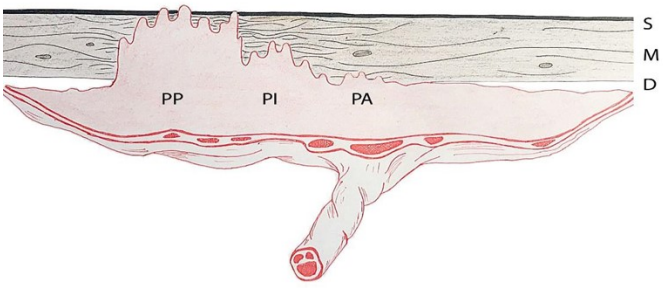

Figure no.1 Uterine wall infiltration pattern in the spectrum of placental accretism. PA= placenta accreta, PI= placenta increta, PP= placenta percreta. D= Decidua, M=Myometrium, S=Serosa.

Epidemiology

The incidence of placenta accreta has increased approximately 10-fold in the last 50 years, in association with the increase in the rate of caesarean sections; whereas in the 1950s placenta accreta was considered a rare event in obstetrics, today represents one of the main causes of maternal morbidity. The incidence of placenta accreta increased from 1 in 30,000 pregnancies in 1960 to 1 in 500 pregnancies in a study conducted between 1982 and 2002. A more recent study reports an incidence of 1 in 300 pregnancies, although missing more recent accurate data. The increased incidence of different forms of placental accretism is directly correlated with the increase in various risk factors, first and foremost the rate of caesarean sections (3).

Risk factors

The main risk factor for placental accretism is Caesarean section, in fact the main site of pathological invasion of the placenta is the anterior wall of the inferior uterine segment, where it is performed hysterotomy during caesarean section. The risk of developing placentation abnormalities increases in the event of a short interval between a caesarean section and a subsequent pregnancy. A Another risk factor to be taken into account is the presence of placenta previa, as there is a strong correlation between the two forms. Placental accretism occurs in 3% of women with placenta previa, even in the absence of a positive history of caesarean section.

The risk of placenta accreta increases dramatically, in the presence of placenta previa, if the woman has had one or more previous caesarean sections:

In particular, women with placenta previa have a risk of placental accretism of 3%, 11%, 40%, 61% and 67% for the first, second, third, fourth, fifth or more caesarean sections, respectively. Any intervention altering the uterine wall increases the risk of developing placental abnormalities at a uterine

scarring such as in cases of previous myomectomy, endometrial ablation or uterine curettage. More risk factors are smoking, advanced maternal age, multiparity, in vitro fertilisation techniques, pelvic irradiation, endometrial pathologies such as Asher-mann syndrome and endometritis. Finally, it is good to remember that the presence of abnormalities such as placenta accreta or placenta previa in a pregnancy increases the risk of recurrence in subsequent ones (4).

Aetiopathogenesis

In physiological implantation, the extravillary trophoblast invades the decidua in a controlled manner up to the Nitabuch layer (spongiosa layer of the basal decidua) where the cytotrophoblast differentiates into placenta and converts the spiral arterioles of the endometrium into uteroplacental vessels. In the case of accretism this complex mechanism fails due to a partial or total absence of the basal decidua or due to damage or insufficient development of the Nitabuch layer following caesarean section, as a result of which the trophoblast does not stop invading when it should and the chorionic villi penetrate the myometrium (1). The association between placenta previa and caesarean section is also hypothesised to be related to a defect in endometrial repair at the hysterotomy scar; in the event of a subsequent pregnancy, the signal to stop invasion by the trophoblast, which then reaches and infiltrates the myometrium, would be missing at this level. Histological study of placenta accreta specimens demonstrates the absence of the basal decidua layer between trophoblast and myometrial tissue, and villous tissue anchored tenaciously to the muscle fibres of the myometrium is observed; tissue hypoxia at the uterine scar is involved in the pathophysiological process. However, this hypothesis does not explain cases of placental accretism in nulliparous women or women with a silent history of caesarean section or other uterine surgery (3, 5).

Clinical and complications

Accrete syndromes present clinically with blood loss in the first and second trimester of pregnancy, especially if they are associated with placenta previa (1); they are responsible for the increased rate of morbi- maternal-fetal mortality, especially if diagnosed only at the third stage of labour, during the secondment (6). Maternal complications are primarily the result of massive haemorrhage with perforation haemoperitoneum, with an estimated average blood loss of between 2000 and 7800 ml of blood, requiring transfusion of haematozoa and other blood components (7, 8); the morbidity rate is substantial and approximately 25-50% of patients require treatment in an intensive care unit (8, 9). The estimated maternal mortality rate is 7% (9), although more recent studies report a reduction (7, 10). Blood losses of this magnitude can lead to disseminated intravascular coagulation (DIC), haemorrhagic shock and multi-organ failure (6); there is also an increased risk of thromboembolism, pyelonephritis, pneumonia, respiratory distress syndrome and renal failure (8, 11). Surgical complications are frequent, mainly due to the increased need for peripartum hysterectomy and an increased rate of reinterventions to control haemorrhage or to repair injured pelvic structures (6), especially in the case of placenta percreta: the organ most affected is the bladder, causing haematuria, but also the ureter, in 10-15% of patients (12, 13) and the pelvic nerves. Neonatal complications are primarily a consequence of preterm birth; the average gestational age in cases of accrete syndromes is 34-37 weeks, in most cases as a consequence of a medical indication for preterm delivery (8-10, 14).

Prenatal diagnosis and screening

The correct management of patients suffering from Accrete Syndromes involves a team multidisciplinary and adequate obstetrical planning (12); it is therefore essential to recognise early, in order to plan the most suitable mode of delivery and to reduce maternal and foetal risks (12). The diagnosis of pathological placental adhesion is based on the use of ultrasound (TA and TV), both in greyscale and echocolordoppler modes, with the possible aid of MRI (12). In some cases, the presence of placenta accreta is suspected as early as the first trimester of gestation, even at due to the increasing prevalence of this condition. Indicative ultrasound findings are (15,16):

- Implantation of the gestational sac in a low or anterior position in the uterus, at the level of the segment inferior uterine
- Gestational sac implantation at scar tissue (pregnancy on scar hysterotomy), with an increased risk of uterine rupture as well
- Irregularities visible along the placenta-myometrium interface (17)
- Presence of areas of placental anaecogenicity
- Thinning of the myometrial layer between the gestational sac and the bladder (18)

However, it must be remembered that none of these ultrasound findings are able to distinguish with certainty between cases that will result in Accrete Syndromes, but the identification of risk cases during the first trimester allows better management of patients and to recognise cases that will need close surveillance in the following quarters (17).

In the second and third trimester, the ultrasound criteria for the diagnosis of placental adhesion are as follows (15):

- Presence of multiple hypoechogenic placental lacunae with typical 'Swiss cheese' appearance, characterised by turbulent flow at colour Doppler;
- Absence of normal retro-placental hypoechogenicity;
- Irregularity or interruption of the uterine serous-bladder interface, with possible hyper- colour Doppler vascularisation;
- Thinning of the retro-placental myometrium (< 1 mm).

The study of patients with suspected placenta accreta is not easy and in addition to trans abdominal it is recommended to always perform a transvaginal ultrasound with a full bladder (200-300 ml approx.), associated with the colour Doppler mode.

The presence of vascular lacunae and interruption of the serosa-bladder interface, especially in the case of hyper vascularisation at Doppler, represent the signs with the highest positive predictive value (VVP=92%) among 15-20 weeks' gestation (19).

Vascular lacunae can be classified according to Finberg's criteria (20):

- GRADE 0 Absence of vascular lacunae
- GRADE 1 Presence of 1-3 small gaps
- GRADE 2 Presence of 4-6 larger gaps
- GRADE 3 Presence of diffuse gaps throughout the placenta

The sensitivity and specificity of ultrasound in the second and third trimester is reported to be high, approximately of 80-90 % (15,16); however, considerable variability between different studies is reported in the literature as well as considerable operator-dependent variability (17).

Magnetic resonance imaging is widely used for the diagnosis of placenta accreta, with a good accuracy (21,22) especially in cases of posterior placenta

(19). Typical features are: abnormal uterine swelling, signal heterogeneity and intra-placental dark bands in sequences T2-weighted (23). However, considering the cost, difficult availability and lack of radiologists with adequate experience in the use of MRI for the diagnosis of accretism, the routine use of this technique is not recommended (24). Instead, its use is useful when ultrasound findings are inconclusive or when additional information is required, especially in cases of placental adhesion at the level of the posterior uterine wall (25,26).

Management

The main prognostic discriminator in patients with Accrete Syndromes is prenatal diagnosis, as it allows optimal management, which in most cases involves a planned caesarean section before the onset of labour and clinical signs or complications, such as bleeding (15). Several studies confirm the lower rate of complications in cases diagnosed pre-delivery compared to cases diagnosed intra-partum (17-19). For more than half a century, after the first cases of accretism reported in 1937, the only and main treatment was hysterectomy during caesarean section, (27) with the advantage of reducing the risk of developing severe haemorrhage at a time when there was no access to haemotransfusion (26). Several conservative methods for the management of PAS disorders have been developed over the past 20 years, each with different indications, success rates and peri- and post-partum complications (27,28). Early diagnosis of cases of placenta accreta also allows management in a Centre of Excellence for this type of pathology (15); the IS-AIP (International Society for Abnormally Invasive Placenta) defines the criteria for a centre to be defined as such for the management of AIP:

1. A centre that can provide a multidisciplinary team with a significant degree of expertise in the management of AIP cases, which can ensure early diagnosis during pregnancy and an adequate pre-operative planning. This team should be on call 24 hours a day and 7 days a week. 7, so as to ensure assistance even in emergency situations. This team should include at least these figures:
-Radiologist
-Ostetrician with expertise in maternal-fetal medicine
-Anesthetist experienced in obstetrics
-Gynaecological surgeon experienced in complex pelvic surgery
-Urologist
-Neonatologist
-Interventional radiologist

2. A centre where there is the possibility of finding a general surgeon and a surgeon if necessary vascular
3. Rapid access to intensive care units
4. Rapid access to pathology and neonatal intensive care units
5. Access to blood bags and the possibility of performing massive haemotransfusions

There is no evidence in the literature to justify the early hospitalisation of patients with prenatal diagnosis of placenta accreta (29); the IS-AIP recommendations are therefore to schedule a outpatient management in cases of asymptomatic women with the possibility of rapid access to a III centre level. In contrast, symptomatic women (blood loss, uterine contractile activity or other complications obstetricians) should be managed at hospital level according to local protocol (29).

In women prenatally diagnosed with PAI, it is also indicated to monitor the haemoglobin level to reduce the morbidity-mortality rate in case of haemorrhage; if Hb values found in pregnancy are < 11 g/dl before by 28 weeks of gestation or < 10.5 g/dl

after 28 weeks, iron supplementation (oral or intravenous) on the basis of the haematological picture and when indicated, should be taken in consideration to reduce the risk of complications and to optimise haemoglobin values before the surgery (26.30).

Another key aspect in the management of placenta accreta cases is the timing of delivery; Scheduling an elective caesarean section at an early gestational age reduces the risk of complications that an emergency delivery would entail. However, the increased risk of neonatal complications related to preterm birth should be considered and adequately managed (29). The American College of Obstetrician and Gynecologist (30) recommends the customisation of the time of delivery.

- Women with no history of preterm delivery, symptoms or obstetrical complications (no blood loss, uterine contractile activity or PROM) delivery can be scheduled between 36-37 weeks of gestation, reducing the rate of neonatal morbidity (29).
- In women with a history of previous preterm delivery, multiple episodes of metrorrhagia or a single episode of massive metrorrhagia or PROM, a planned elective caesarean section at 34+0 weeks of gestation makes it possible to reduce the risk of an emergency caesarean section, reducing the rate of maternal complications after administration of corticosteroids to induce pulmonary maturity (29).

Preoperative and prophylactic catheterisation of the pelvic vessels is often used to reduce blood loss (29): balloon catheters are inflated in the iliac arteries to occlude blood flow and reduce the bleeding, facilitating placental removal or subsequent hysterectomy (1) after fetal extraction.

However, this procedure is not recommended in all cases (29,30), either due to a lack of adequate data in literature, as well as the significant rate of complications associated with such procedures such as thromboembolism of the common and left iliac arteries (31-33). Other interventions such as preoperative cystoscopy or use routinely used ureteral stents are not recommended, but should be used in selected cases (e.g. in the case of placenta percreta) (29).

The management of AIP cases is divided into two possible approaches: surgical treatment with hysterectomy during caesarean section or conservative treatment, for women wishing to preserve fertility, with caesarean section and subsequent retention of the placenta in situ without a hysterectomy. E' fundamental, in both cases, to keep the placenta attached to the uterine wall, as any attempt of manual secondment would lead to severe and potentially fatal haemorrhage.

Non-conservative treatment

For more than half a century, following the description of the first case of accretism in 1937 (27), the only possible management of cases of placental abnormalities was hysterectomy during caesarean section, with the purpose of reducing the risk of severe haemorrhage in times when haemotransfusions were not possible (26).

In recent decades, several conservative methods have been proposed for the management of PAS, each of them which with different possible advantages as well as complications, peri- or postpartum (27,28). Even today about 89% of cases with prenatal diagnosis of placenta accreta result in an elective or emergency hysterectomy in course of caesarean section (35), but it has not yet been de-

fined which management is optimal due to lack of of randomised clinical trials (28).

Planned caesarean section with retention of the placenta in situ is the treatment of choice in most cases of PAS. The timing of delivery must be individualised and based on the assessment of maternal and foetal risks and benefits and at present there is no consensus on this (26).

THE ACOG recommends performing an elective caesarean section with hysterectomy at a gestational age between 34 and 35 completed weeks (34) to reduce the risk of bleeding and thus of an intervention in urgency; since most PAS cases are associated with placenta previa, the risk of haemorrhage is still major (35).

In cases where the patient is stable and asymptomatic (no bleeding, PROM or uterine contractile activity) a caesarean section can be performed between 36-37 weeks of gestation, with reduction of neonatal complications related to preterm birth. During surgery one should not attempting manual placental abruption to reduce the risk of haemorrhage; abdominal incision should therefore be sufficient to allow access to the uterine body above the margin placental superior (26); the use of pre- or intra-operative ultrasound allows the identification of accurate placental margin, facilitating the choice of surgical incision site (36).

The incision vertical laparotomy performed along the midline is recommended by most authors in the cases of prenatal diagnosis with planned hysterectomy (36-40); however, there is no evidence of benefits from the rutinary use of this surgical technique and the choice should be based on the location and degree of placental invasion, maternal habitus, gestational age and surgeon's preference (34).

È of fundamental importance to avoid incising the placenta, even if this means making an incision at the level of the uterine fundus or upper uterine segment. The prophylactic infusion of oxytocin immediately after birth increases the contraction of the uterus, inducing, under physiological conditions, the detachment of the placenta, which does not occur in cases of placenta accreta. However, in cases where the placenta is only partially invasive, the administration of uterotonics such as oxytocin can induce a partial detachment of the placenta, increasing blood loss and causing the need for emergency surgery; the prophylactic administration of oxytocin in cases of PAS is therefore not indicated, unless it is used for therapeutic purposes in cases of postpartum haemorrhage (34).

Total hysterectomy is recommended to reduce the potential risk of developing cervical neoplasia, due to the need for screening periodic and to reduce the rate of other associated problems, such as vaginal bleeding (26,41).

The use to a partial or subtotal hysterectomy on the one hand can reduce blood loss, the use of haemotransfusions, peri-operative complications and surgical time, on the other hand it cannot be performed in cases of cervical involvement and does not reduce the risk of genito-urinary lesions. The use of this technique is indicated in cases where the placentation abnormality is focal and involves < 50% of the anterior surface of the uterus (34).

Other surgical techniques

In some cases it is possible, after fetal extraction, to leave the placenta in situ, suturing the incision hysterotomy and schedule a 'late' hysterectomy (1); the rationale for this approach is to allow partial resorption of the placenta especially in cases of percretism, where the involvement of adjacent pelvic structures may lead to technical difficulties in

performing a hysterectomy at caesarean section (26). Late hysterectomy is scheduled 3-12 weeks after the delivery (36) and requires good patient compliance to perform close follow-up and resources necessary for an emergency intervention should always be available. This approach is associated the risk of developing coagulopathy, haemorrhage and sepsis in the postnatal period, but is associated with a lower rate of surgical complications in more complex cases, with blood loss similar to hysterectomy peri-partum (26). Delayed hysterectomy is therefore not recommended and the only treatment options should be immediate hysterectomy or conservative treatment (34).

Conservative treatment

The conservative treatment of Accrete Syndromes includes several techniques that avoid the resort to hysterectomy, with the possibility of maintaining the woman's fertility intact and avoiding the morbidity and complications related to the surgery (27,28). There is no consensus regarding the type of surgery of choice and the success rate of the subsequent pregnancy; overall, the pregnancy rate is between 86-89% and the woman should be informed of the risk of recurrence of placentation by 22-29% (26). Conservative methods include manual secondment, which consists of forcing the placenta to detach from the uterine wall; this approach should be avoided in cases of diagnosis prenatal diagnosis of PAS. In the case of clinical signs suspicious of PAS, unusual or unexpected difficulty in detaching the placenta after delivery, especially in the presence of risk factors, manual secondment does not should ever be performed because of the risk of haemorrhage (26).

There are mainly three conservative methods described in the literature, either alone or in combination:

1. Waiting approach (placenta in situ)
2. One-step conservative surgery (removal of the area of accretism)
3. Triple P procedure

Placenta in situ

This method consists of leaving the placenta in situ and waiting for subsequent spontaneous resorption; the rationale for this approach is the possibility of reducing the maternal mortality rate associated with both peri-partum hysterectomy than manual secondment. Once the hysterotomy has been performed, far from the placental insertion, and the delivery is carried out, a hysteroraffia is performed without secondment of the placenta and without administration of oxytocin. Following delivery the progressive reduced blood flow induces secondary necrosis of the villi with progressive detachment of the placenta from the uterine walls, which is completed about 20 weeks after delivery. This treatment allows reduce blood loss and the use of haemotransfusion compared to invasive surgical treatment, with a good success rate (34); the failure rate is low with the need for subsequent hysterectomy for occurrence of postpartum haemorrhage or infection in 15% of cases (42,43).

A large French study multicentre showed a 6% risk of maternal complications such as sepsis, septic shock, necrosis or uterine rupture, fistulae, injury to adjacent organs, EPA, IRA or embolic phenomena (TVP TEP) (27); there are still few data concerning the use of conservative treatment in cases of placenta percreta with a higher failure and complication rates (26).

This procedure requires a long and close follow-up that consists of weekly visits during the first two months and, in the absence of complications, monthly visits until complete reabsorption of the placenta. Follow-up should include a clinical evalu-

ation (bleeding, body temperature and pelvic pain), ultrasound and laboratory tests with serum Beta HCG and monitoring of phlogosis indices.

Several techniques have been associated to increase the success rate and reduce the risk of complications as adjuvants to conservative treatment to accelerate the process, e.g. the administration of Methotrexate. At present, the combination with this drug is not recommended as it is associated with the risk of developing serious complications such as severe pancytopenia that can even lead to death maternal (34,44). Uterine artery embolisation has been used to prevent haemorrhage secondary and reduce the rate of hysterectomy following conservative treatment; there is no consensus prophylactic use of this technique as it increases the risk of developing uterine necrosis (47), with little benefit. Uterine artery embolisation, on the other hand, is a valuable therapeutic method in cases of occurrence of secondary haemorrhage to avoid hysterectomy.

Triple-P procedure

This procedure consists of removing the placental tissue and the underlying myometrium with the help of interventional radiology to reduce the possibility of bleeding and complications. Are necessary three steps:

1. Insertion of an inflatable balloon catheter into the anterior branch of the hypogastric arteries bilaterally, by interventional radiology. Perioperative ultrasound localisation of the upper margin of the placenta. Hysterotomy just above the superior margin of the placenta and performance of childbirth.
2. Exteriorization of the uterus to examine the degree of accretism and temporarily occlude the hypogastric arteries via inflatable balloon catheter to reduce uterine vascularity but also bladder, vaginal and thus reduce the risk of bleeding.
3. Removal of the placenta and the underlying myometrium to which it adheres. It is necessary to leave a approximately 2 cm margin of myometrium in contact with the bladder to allow repair of the uterine wall. In the case of a placenta percreted in the bladder, it is preferable to leave 2-4 cm of the placental tissue invading the bladder. Haemostatic agents are used to reduce the bleeding and the myometrium is closed. After the operation the inflated catheters are left in place for a further two hours after which they are deflated, but only after 24 hours are removed if no complications occur.

Follow-up consists of B-hCG dosage after surgery and at 6 weeks, together with an evaluation ultrasound. In cases where the placenta is left in situ (placenta percreta invading the bladder) the complete resorption of placental tissue occurs in 92% of cases at 6 weeks after delivery with regular involution of the uterus (45).

One-step procedure

This procedure consists of resection of the placenta accreta and the underlying myometrium followed by a reconstruction of the uterine breach (46). In this technique, excellent control is essential haemostatic through the ligation of vesico-uterine and utero-vaginal vessels and the isolation and dissection of neo-vessels formed by the placental infiltration process. This method is mainly used in countries with low and medium socio-economic development, where interventional radiology is not accessible.

Comparing triple-P and One-Step procedures, there is no significant difference in the amount of blood loss and in the rate of transfusions; however, the

rate of haemorrhage and hysterectomy in the post-partum are lower with the triple-P technique (28). These data need to be confirmed by further clinical studies.

Intra-partum diagnosis

Placental accretism may only be diagnosed at the time of delivery as difficult secondment, postpartum vaginal bleeding or development of endometritis, while the diagnosis during caesarean section, performed for a reason other than accretism, is easier because the area of placental invasion is directly visible. In these cases, the choice of treatment depends on patient's haemodynamic conditions. In the case of haemodynamic instability, we proceed with the protocol of post-partum haemorrhage, often involving urgent hysterectomy as the final act. In the case of spontaneous delivery with difficult secondment and haemodynamically stable patient, if a form of placental accretism is suspected, a pharmacological approach can be attempted with the administration of 600 mg of Mifepristone followed by 200 mcg of Misoprostol at intervals regular intervals of 3 hours up to a maximum of 5 administrations (47).

Future fertility and pregnancy outcomes in women undergoing conservative treatment for placenta accreta.

The positive outcome of conservative treatment does not seem to compromise fertility status subsequent obstetrical outcome, but data on this are still limited (48); the risk of recurrence of PAS is however high (30%) (48). It is assumed that conservative treatment during caesarean section can worsen the uterine environment by the creation of new scars on the uterine wall, the development of synechiae, clinical/subclinical endometritis and reduced vascularisation due to embolisation and vessel ligation procedures; the development of such complications, if left untreated, can be the cause of blastocyst implantation failure and miscarriages. It cannot be excluded that additional treatments to conservative hysterotomy to reduce bleeding, such as ligation of the uterine vessels and embolisation of the anterior branch of the hypogastric artery, increase the risk of recurrence of placental accretism due to impaired vascularity of the uterus. A another factor to consider is that some women (around 36.5%), aware of the recurrence of risk of recidivism, they do not wish a subsequent pregnancy because of the risk of having to face a further complication, often on the advice of one's gynaecologist (48). In the case of subsequent pregnancies carried at term, no neonatal adverse events were recorded and the estimated foetal weight was corrected for gestational age; in 19% of cases there is a risk of developing post-partum haemorrhage (48).

These data, albeit limited, show us how pregnancy is possible after therapy conservative, with a 30% risk of PAS recurrence (48).

Pathological anatomy

In the case of accretism, secondment may not be complete with retention of cotyledons that on macroscopic histological examination appear as missing decidual areas; retention of accreted placental material together with abnormalities of uterine contractility may lead to even profuse haemorrhages that are hazardous to the health of the patients (49). The best evidence of accretory phenomena is obtained when fragments of myometrium remain attached to the placental disc, but this is a rare occurrence, so accretory phenomena cannot be ruled out with certainty on placental samples.

The diagnosis of accretism is much easier when the entire uterus is available, following hysterectomy performed as a life-saving operation. The surgical

specimen from a demolitive caesarean section shows morphological features that are already evident on macroscopic examination and the diagnosis is often known before admission to the Pathological Anatomy (figure no. 2). In the case of planned hysterectomies, a more accurate study of the implantation site is possible as the placenta is left in situ.

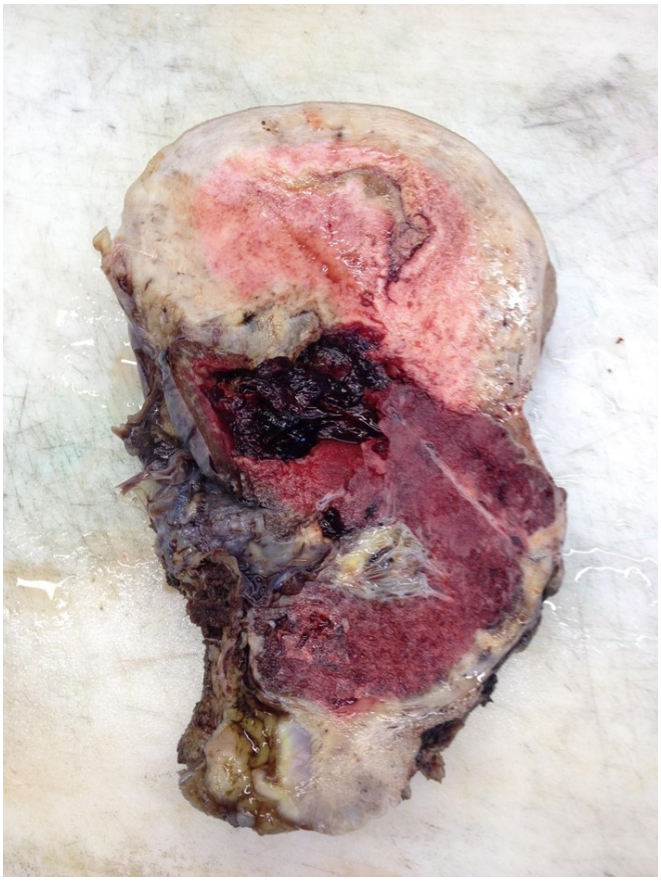

Figure No. 2 Surgical specimen of demolitive hysterectomy for placenta increta and marginal previa. A deep invasion is observed with the residual myometrium reduced to a thin rime.

Macroscopic examination

The serosal surface of the uterus is often congested and haemorrhagic and may show nodular protrusions representing a thinned myometrium overlying the placental tissue. Since caesarean section is performed prior to hysterectomy, an anterior incision is usually evident, sometimes with suture sometimes without. Examination of the uterine cavity shows a placenta attached to the myometrium, which often appears considerably thinned or even absent, with only the peritoneum present, which in the case of placenta percreta appears perforated.

Microscopic examination

On microscopic examination, the presence of villous tissue is observed in the context of the myometrium without interposed decidua. It is important to note that the lack of decidua is diagnostic for this entity (Figure 3).

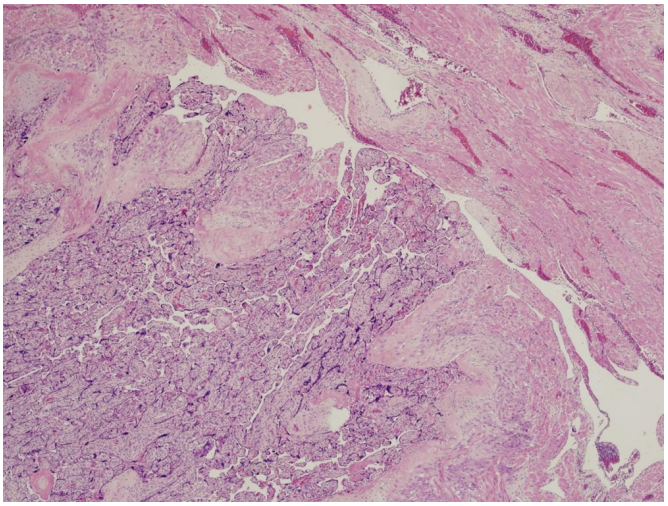

Figure No. 3 Demolition hysterectomy for placenta accreta, the interruption of the fibrinous stria of Nitabuch with villi in direct contact with the muscle fibres of the myometrium is observed (staining with Haematoxylin/Eosin, 100X)

There are several pathological findings associated with placenta accreta. Firstly, the physiological modification of the maternal vessels may be focally deficient. This may be related to the abnormal invasiveness of the extravillary trophoblast or the general lack of decidual vessels at the implantation site. An alteration commonly associated with cases of accretism is the insufficient formation of placental septa, which, if present, appear to consist of bundles of smooth muscle tissue, exuberant trophoblast and fibrinoid, rather than decidua. This leads to flow alterations in the intervillous space, which can be appreciated on antepartum imaging.

Sometimes the histological finding is minimal and is represented by a thinning of the decidua that only focally reaches complete disruption. In these cases the decidua appears populated by dysmorphic or multinucleated elements (so-called intermediate depleted trophoblast) and often shows poorly or incompletely modified decidual vessels. These alterations, although not representing actual accretion, have been associated with delayed or incomplete secondment and the term 'adhesive placenta' has been proposed (50).

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