

Placenta accreta spectrum

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INTRODUCTION

- *Placenta accreta spectrum (PAS) is a general term used to describe **abnormal trophoblast invasion into the myometrium**, and sometimes to or beyond the **serosa***
- *It is **clinically important** because the placenta does not spontaneously separate at delivery and attempts at manual removal result in hemorrhage, which can **be life-threatening and usually necessitates hysterectomy**.*

DEFINITIONS

- *PAS (formerly called morbidly adherent placenta or abnormally invasive placenta) is a broad term that includes three subtypes:*
- *Placenta accreta (or creta) – Anchoring placental villi attach to the myometrium (rather than decidua).*
- *Placenta increta – Anchoring placental villi penetrate into the myometrium.*
- *Placenta percreta – Anchoring placental villi penetrate through the myometrium to the uterine serosa or adjacent organs*

The International Federation of Gynecology and Obstetrics (FIGO)

Placenta Accreta Spectrum Disorders:

- ***Grade 1 – abnormally adherent placenta: placenta adherent or creta***
- ***Grade 2 – abnormally invasive placenta: increta***
- ***Grade 3 – abnormally invasive placenta: percreta***
- ***subtype 3a – limited to the uterine serosa***
- ***subtype 3b – urinary bladder invasion***
- ***subtype 3c – invasion of other pelvic tissue/organs***

PREVALENCE

- ***Placenta accreta – 63 percent***
- ***Placenta increta – 15 percent***
- ***Placenta percreta – 22 percent***

PATHOGENESIS

- The pathogenesis of PAS **is not known** with certainty
- The most common theory is that defective decidualization (thin, poorly formed, partial, absent, or dysfunctional decidua) in an area of scarring caused by **previous uterine surgery involving** the endometrial-myometrial interface allows the anchoring villi of the placenta to attach directly to or invade the myometrium
- emerging data support **the concept of PAS as being entirely due to defects in the decidua and/or uterus**
- a history of previous cesarean delivery
- curettage
- Myomectomy
- bicornuate uterus
- adenomyosis
- submucous fibroids,
- may be associated with **microscopic endometrial defects** that interfere with normal biological endometrial functions and thereby allow abnormal placental attachment

Risk factors

- **placenta previa** after a prior cesarean delivery(**Second cesarean birth, 11 percent**)
- increased with an **increasing number of cesarean deliveries (Second cesarean birth, 0.2 percent)**
- **history of uterine surgery :**
- Cesarean scar pregnancy
- myomectomy entering the uterine cavity
- hysteroscopic removal of intrauterine adhesions
- cornual resection of ectopic pregnancy
- dilation and curettage,
- endometrial ablation
- maternal age greater than 35 years
- multiparity
- history of pelvic irradiation
- manual removal of the placenta
- postpartum endometritis
- infertility and/or infertility procedures (eg, especially transfer of cryopreserved embryos)
- possibly multiple gestations
- PROCEDURAL TECHNIQUE
- Hypomenearea

Clinical presentation

- *The **first clinical manifestation** of PAS is usually profuse, life-threatening hemorrhage that occurs at the time of attempted manual placental separation*
- *it also may present as **antenatal bleeding** in the setting of placenta previa*
- *Possible laboratory findings*
- *Elevated maternal serum alpha-fetoprotein (MSAFP) unexplained -----
(elevations in second-trimester MSAFP concentration (>2 or 2.5 multiples of the median))*
- *pregnancy-associated plasma protein A, free beta-human chorionic gonadotropin) have also been associated with PAS and are also not useful clinically because of their **very low positive predictive value***
- *Hematuria*

Consequences

- *major hemorrhage*
- *disseminated intravascular coagulopathy*
- *adult respiratory distress syndrome*
- *renal failure*
- *unplanned surgery*
- *Death*
- *potential complications from transfusion.*
- *Peripartum hysterectomy*
- *Increased maternal morbidity with more invasive placentation*
- *Neonatal morbidity*

PRENATAL SCREENING AND DIAGNOSIS

Prenatal screening and diagnosis are important so :

- **counseled** with patient
- **appropriate site**
- **plan for delivery**
- **Preoperative preparation** including availability of surgical and radiological expertise, blood components for transfusion, and appropriate equipment
- **improves outcome.**
- significantly **less blood loss**
- **fewer red cell transfusions** (mean difference 1.5 units)

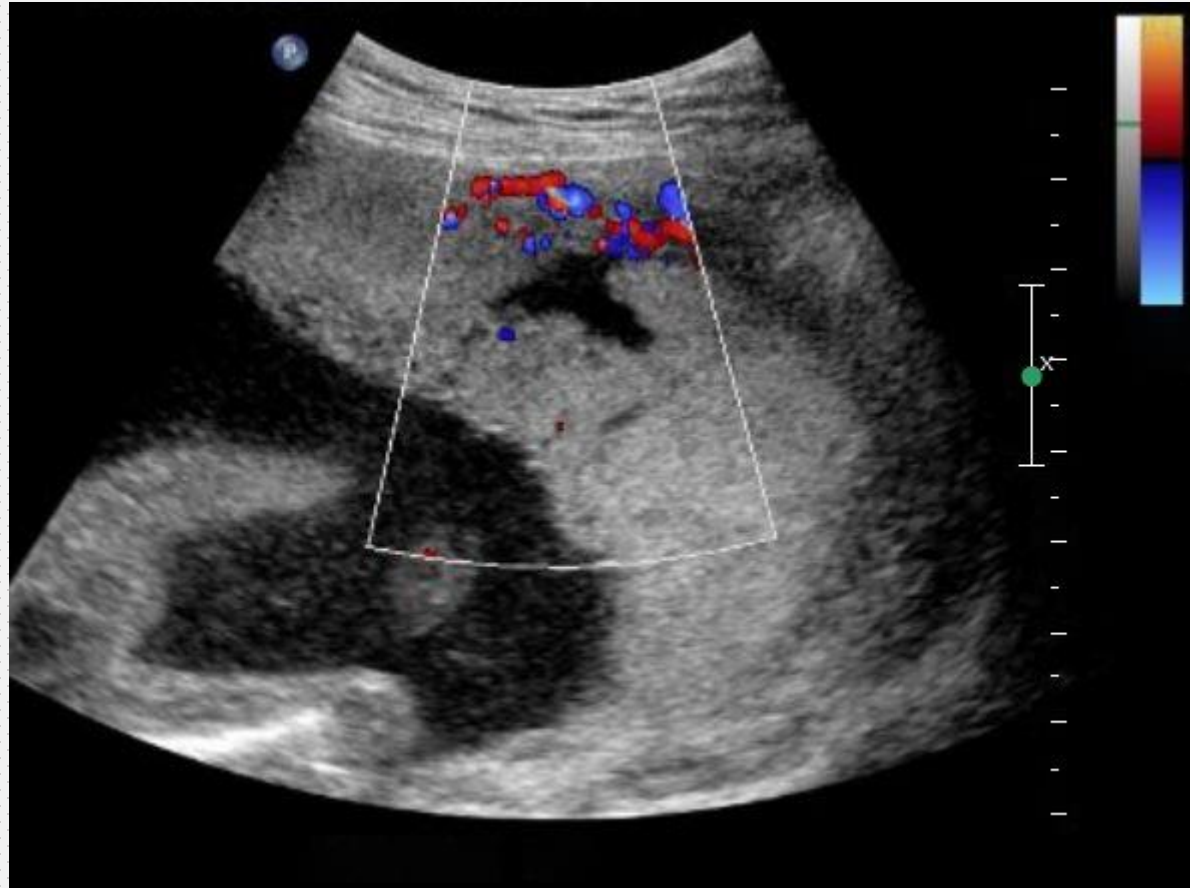
Candidates and procedure for screening

- *should have thorough transabdominal and transvaginal sonographic evaluation of the interface between the placenta and myometrium between approximately 18 and 24 weeks of gestation:*
- *Women with a placenta previa*
- *low anterior placenta*
- *prior uterine surgery*

Ultrasound findings

- **Multiple placental lacunae**
 - Multiple large, irregular intraplacental sonolucent spaces (ie, placental lacunae) in the center of a lobule or cotyledon adjacent to the involved myometrium replace normal placental homogeneity that give the placenta a "**moth-eaten**" appearance
 - **Disruption of the bladder line**
 - **Loss of the clear zone** – The normal hypoechoic area behind the placenta
 - **Myometrial thinning**: The retroplacental myometrium can be thin due to either a prior hysterotomy scar or placental invasion
 - **Abnormal vascularity** – Vessels that extend from the placenta through the myometrium either into the bladder or through the serosa elsewhere are a clear sign of placenta percreta.
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- **Placental bulge** – A portion of the uterus attached to the abnormally adherent placenta can balloon into the bladder due to weakness of the underlying thin myometrium.
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- **Exophytic mass**

Single venous lake in a normal placenta



Multiple, irregular placental lacunae in placenta accreta



- **Color Doppler** — *Color Doppler is useful for confirming the diagnosis of PAS when used in conjunction with the other ultrasound findings described above. Specific findings on color Doppler ultrasonography that suggest this diagnosis include :*

- ***Turbulent lacunar blood flow***

- ***Bridging vessels***

Bridging vessels are placental vessels that extend through the myometrium and beyond the serosa into the bladder (or other organs). They should not be mistaken for bladder varices, which are enlarged maternal bladder veins and often seen in normal pregnancy

- ***Diffuse or focal intraparenchymal flow***

- ***Hypervascularity of serosa-bladder interface***

- ***Prominent subplacental venous complex***

Magnetic resonance imaging (MRI)

- *MRI may be more useful than ultrasound in three clinical scenarios:*
 - (1) evaluation of a **possible posterior PAS** because the bladder cannot be used to help clarify the placental-myometrial interface;*
 - (2) assessment of the **depth of myometrial** and parametrial involvement and, if the placenta is anterior, bladder involvement; and*
 - (3) evaluation of the myometrium and placenta **at the most lateral portion of hysterotomy** as this area is not well visualized by transvaginal of the ultrasound, which images the central portion of the myometrium and placenta*

PRENATAL CARE

- All patients with suspected PAS based on clinical risk factors and suggestive ultrasound findings should be counseled about the diagnosis and potential sequelae (eg, hemorrhage, blood transfusion, cesarean hysterectomy, maternal intensive care unit admission).
- Consultation with a maternal-fetal medicine specialist
- patients should deliver at a facility where they can receive level III maternal care .
- Removal of a cesarean scar pregnancy in the first trimester is likely to reduce maternal risk, although proof of efficacy is lacking

PRENATAL CARE

- For patients with placenta previa-accreta, prenatal care follows typical guidelines for management:
- Correction of iron deficiency anemia, if present. (See "Anemia in pregnancy", section on 'Treatment of iron deficiency'.)
- Antenatal betamethasone between 23 and 34 weeks of gestation for pregnancies at increased risk of delivery within seven days (eg, antepartum bleeding).
- Anti-D immune globulin if vaginal bleeding occurs and the patient is RhD-negative.
- Avoidance of pelvic examination and rigorous physical activity. Many clinicians recommend avoidance of sexual activity, although any benefit is unproven.
- Consideration of hospitalization in the third trimester in the setting of vaginal bleeding, contractions, or residence at a remote distance from a center of excellence for PAS.
Asymptomatic women can be followed as outpatients if they are appropriately counseled and can get to the hospital rapidly if symptoms develop

Components of preoperative planning

- Informed consent
- *severe hemorrhage*
- *blood transfusion*
- *injury to or partial resection of bladder and bowel*
- *hysterectomy to control bleeding*
- *risk of postoperative vesicovaginal fistula)*
- Multidisciplinary care team:
- Anesthesiologists
- neonatologists
- interventional radiologists
- pathologists,
- and blood bank and nursing personnel.

Components of preoperative planning (continued)

- **Scheduled delivery**
- **Cesarean hysterectomy**
- **Intravenous access** – At least two large bore (14 gauge) intravenous catheters should be placed peripherally
- **Thromboembolism prophylaxis** – Pneumatic compression devices should be placed, given that surgery, major hemorrhage, and blood transfusion all increase the risk of postpartum venous thrombosis
- **Blood products:** We ensure availability of comprehensive blood product replacement. The blood bank should be notified, and **adequate red blood cells, fresh frozen plasma, cryoprecipitate, and platelets** should be available at delivery.

Drugs:

- *Tranexamic acid*
- *'Recombinant factor VIIa'*

Bladder – *A three-way Foley catheter and ureteral stents*

Anesthesia

Positioning: *It is also important to be able to assess bleeding through the vagina that may occur intraoperatively*

Postoperative care

- *The Society for Maternal-Fetal Medicine recommends delivery between **34 and 37 weeks of gestation** for stable women with placenta accrete*
- *They suggested delivery at around 34+0 weeks in women with a **previous preterm birth, multiple episodes of minor bleeding, or a single episode of substantial bleeding***

Procedure

- **Cesarean hysterectomy:**

- **vertical midline skin incision** or a Cherney incision
- **transverse incision** (eg, Pfannenstiel) in cases with a low likelihood of intraoperative complications (eg, posterior placenta not extending to the serosa)
- **intraoperative ultrasound examination**

We make a **vertical hysterotomy** at least two fingerbreadths above the placental edge

- uterine incision is **rapidly closed** to decrease blood loss
- **Prophylactic oxytocin is not routinely administered**
- However, if the placenta has been mostly or completely removed or bleeding is already heavy, then **uterotonic drugs** should be given

CONSERVATIVE MANAGEMENT OF PLACENTA ACCRETA

- *Patients who very much want to preserve fertility.*
- *When hysterectomy is thought to have an unacceptably high risk of hemorrhage or injury to other organs, which may be mitigated by leaving the placenta in situ.*
- *When placental resection is thought to be possible because of focal accreta or a fundal or posterior placenta.*

*Management involves **oversewing** the bleeding sites or removing a small wedge of uterine tissue containing the focally adherent placenta (**placental-myometrial en bloc excision and repair**)*

UNEXPECTED PLACENTA ACCRETA

- Placental tissue invading the lower uterine segment, serosa, or bladder.
- Increased and tortuous vascularity along the serosa of the lower uterine segment. Vessels may run cranio-caudally in the peritoneum.
- A bluish/purple and markedly distended lower uterine segment bulging toward the pelvic sidewalls

- **At vaginal delivery** — Rarely, a focal or complete placenta accreta is first recognized at the time of manual removal of a retained placenta after vaginal delivery. In these cases, there is no plane of cleavage between the myometrium and either the entire placenta or focal areas of the placenta.
- Life-threatening hemorrhage may occur.
- These patients should receive fluids and transfusion, as appropriate, while being prepared for laparotomy and surgical management (hysterectomy or focal resection)

THANK YOU FOR YOUR ATTENTION

