Placenta Accreta (or worse!)

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Placenta Accreta, Increta, Percreta

• Goals:
  • Review the basic pathophysiology
  • Review the diagnosis
  • Review potential complications
  • Review management
  • Discuss concept of Centers of Excellence
Placental Implantation

- In most instances the placenta separates spontaneously during the first few minutes after delivery of the fetus.

- Infrequently, the placenta is morbidly adherent to the implantation site, with scant or absent decidua.

- The physiological line of cleavage through the spongy layer is lacking and one or more cotyledons are firmly bound two the defective decidua basalis or even to the myometrium.

- The consequence of the partial or total absence of the decidua basalis and imperfect development of the fibrinoid layer (Nitabuch layer) placental accreta develops.
Placental Implantation

- Morbidly adherent placenta
  - accreta
  - increta
  - percreta
- Incidence is increasing secondary to increased rates of patients with previous cesarean section
Morbidly Adherent Placenta
Etiological Factors

- Placenta previa in approximately 1/3 of cases or more
- Previous delivery via cesarean section.
- Previous uterine curettage.
- Gravida 6 or more.
Prenatal Diagnosis

• Criteria to consider referral for imaging of suspected accrete
  • Clinical risk factors
    • prior cesarean delivery (especially multiple cesarean sections
    • placenta previa
    • history of endometrial ablation
    • previous uterine surgery
    • first or second-trimester bleeding with other risk factors for placenta accreta
  • Sonographic risk factors
    • abnormal placental appearance
    • abnormal uterine shape
    • abnormal vascularity of myometrial wall
    • current or previous cesarean scar ectopic
Prenatal Diagnosis

- When the diagnosis is made it is usually made by ultrasound in the second or third trimester.

- Sonographic findings suggestive are
  - loss of normal hypoechoic retroplacental zone
  - multiple vascular lacunae (irregular vascular spaces) within the placenta “swiss cheese” appearance
  - blood vessels or placental tissue bridging the uterine-placental margin, myometrial-bladder interface, or crossing uterine serosa
  - retroplacental myometrial thickness < 1 mm
  - numerous coherent vessels visualized with 3-D color/power Doppler in a basal view.

- If sonographic findings are inconclusive or a placenta percreta is suspected, MRI may be useful.
Ultrasound Findings Suggesting Morbidly Adherent Placenta

- First trimester
  - Gestational sac that is located in the lower uterine segment
  - Multiple irregular vascular spaces noted within the placental bed
  - Implantation of gestational sac imbedded into cesarean delivery sac ("cesarean scar ectopic")

- Second trimester
  - Multiple vascular lacunae within placenta
Ultrasound Findings Suggesting Morbidly Adherent Placenta

- Third trimester
  - Loss of normal hypoechoic retroplacental zone
  - Presence of multiple vascular lacunae within placenta (Swiss-cheese appearance)
  - Abnormalities of uterine serosa-bladder interface (interruption of line, thickening of line, irregularity of line, and increased vascularity)
  - Extension of villi into myometrium, series, or bladder
  - Retro-placental myometrial thickness of < 1 mm
  - Turbulent blood flow through lacunae on Doppler ultrasonography
  - Increased subplacental vascularity
  - Vessels bridging form placenta to uterine margin
  - Gaps in myometrial blood flow
Prenatal Care

- All patient's with suspected placenta accreta should be counseled regarding potential sequela
  - hemorrhage
  - blood transfusion
  - cesarean hysterectomy
  - maternal ICU admission
- Maternal-fetal medicine consultation is desirable
Prenatal Care

- Management of patient's with placenta previa-acceta includes
  - Correction of iron deficiency anemia
  - Antenatal corticosteroids between 23 and 34 weeks gestation if at increased risk of delivery within 7 days
  - Anti-D immune globulin if vaginal bleeding occurs in the Rh(D)-negative patient
Prenatal Care

- Autologous blood donation is generally not useful or practical.
- Antenatal testing not routinely performed unless other obstetrical factors (e.g. oligohydramnios, IUGR).
- Serial sonographic assessment of the placenta is not generally useful once the diagnosis is made.
Preparation for Delivery

- Critical to develop a plan preoperatively in patients with a high likelihood of placenta accreta

- Goal is to provide informed consent and plan interventions that will reduce the risk of massive hemorrhage and limit substantial morbidity and potential mortality

- Cesarean hysterectomy is usually performed as the placenta cannot be removed and if left in situ subinvolution often results in postpartum hemorrhage
Preparation for Delivery

- Discuss potential complications and interventions: severe hemorrhage, blood transfusion, injury to or partial resection of bladder and bowel, injury to ureter, hysterectomy to control bleeding, potential loss of fertility

- Management by multidisciplinary team and delivery in a tertiary care facility to improve outcomes and lower complication rates
Multidisciplinary Team

- Maternal-fetal medicine
- Gynecologic oncology
- Urology
- Anesthesiology
- Neonatology
- Interventional radiology
- Blood bank
- Nursing
Multidisciplinary Team

- Surgeon must have extensive experience with wide dissection of the parametrium and exploration of the retroperitoneum.

- Surgeon must have experience in bladder resection, and/or isolation, partial resection, and/or reimplantation of the ureters.

- If an appropriate multidisciplinary team and support services are not available at the site of planned delivery, the patient should be transferred to the appropriate tertiary facility.
Preparation for Delivery

• Delivery should be scheduled for optimal availability of necessary personnel and facilities.

• Planned delivery is associated with less intraoperative blood loss than emergency delivery.

• General anesthesia or a continuous epidural technique appears to be safe for scheduled delivery.

• At least 2 large bore IV catheters.

• Pneumatic compression devices should be placed as surgery, major hemorrhage and blood transfusion increase the risk of venous thrombosis.
Preparation for Delivery

• Adequate red blood cells, fresh frozen plasma, cryoprecipitate and platelets should be available.

• Median EBL of 2.5 to 7.8 L.

• Magnitude of blood loss difficult to predict preoperatively.
Preparations for Delivery

- Retrospective study of 66 patient's with placenta acceta 95% received transfusion
  - 0-46 RBC
  - 0-48 random-donor platelet units
  - 0-6 plasma units
  - 0-30 cryoprecipitate units
  - Mean RBC use was $10 \pm 9$ units; median 6.5 units
- A massive hemorrhage protocol is useful for laboratory evaluation and transfusion
Preparation for Delivery

- In addition to cross-matched blood and blood products the following can be considered:
  - Cell saver technology and perfusionist if available.
  - Acute normovolemic hemodilution (experience is very limited in obstetrical patients).
  - Directed donation and autologous donation.
  - Use of recombinant VIIa for control of obstetrical hemorrhage may be of value (under investigation and use specifically for bleeding from placenta accreta has not been widely reported).
Preparation for Delivery

- Delivery in an OR with capability for fluoroscopy is of benefit if procedures by interventional radiology is necessary.
- A 3-way Foley catheter and ureteral stents should be available in case they are needed to assess integrity of the urinary tract.
- An ICU bed should be available for postoperative care if needed.
Preparation for Delivery

• Balloon catheterization and arterial embolization have been employed in patients with suspected accreta and have been shown to be helpful in controlling hemorrhage postpartum but not universally accepted reduction in morbidity

• Catheter related complications can occur (thrombotic and embolic)

• Use is controversial and prediction of which patients will benefit is not possible
Delivery

- Timing of delivery is controversial
- Studies report favorable outcomes at 34 to 35 weeks gestation
- Antenatal steroid administration
- A definitive decision regarding conservative management or cesarean hysterectomy should be made preoperatively
Delivery

- Decreased blood loss associated with cesarean section with the placenta left undisturbed in situ when the prenatal diagnosis of placenta accreta is reasonably certain based on imaging studies, particularly in women with placental implantation at the site of prior uterine surgery.

- When the placenta accreta has been disturbed at delivery and is hemorrhaging, conservative measures are rarely effective and delay may endanger the patient with massive hemorrhage, hypoperfusion of all organs, hypothermia, coagulopathy, and metabolic acidosis.
Conservative Management of Placenta Accreta

- Can be considered when the patient is extremely interested in preserving her fertility
- The patient requires extensive counseling regarding the risk of hemorrhage, infection, the need for intraoperative or postoperative lifesaving hysterectomy and suboptimal outcomes in future pregnancies
Conservative Management of Placenta Accreta

- Placenta is left in situ after delivery of the fetus and the umbilical cord is ligated near the placental insertion site.

- The hysterotomy is closed in a standard fashion.

- Uterotonic drugs, compression sutures, balloon tamponade, uterine artery embolization, and/or uterine artery ligation are used as needed to control postpartum hemorrhage.

- Adjutative therapy with methotrexate has been tried; no convincing evidence that it improves outcomes and carries significant drug related toxicities.
Conservative Management of Placenta Accreta

- Prolonged course and significant risk have been associated with uterine conservation with the placenta left in situ:
  - Severe vaginal bleeding: 53%
  - Sepsis 6%
  - Secondary hysterectomy 19% (6-31%)
  - Death 0.3% (0-4%)
  - Subsequent pregnancy 67% (15-73)
Conservative Management of Placenta Accreta

- Uterine conservation with placental resection
  - Focal accreta
    - Clearly delineated, focal area of morbidly adherent placenta and an accessible border of healthy myometrium. Management involves oversewing the bleeding sites or removing a small wedge of uterine tissue
  - Fundal or posterior placenta previa
    - Bleeding after removal of the placenta accreta in these locations is more readily controlled medically and with interventional radiology than with conservative surgery.
Surgical Management

• How we do it
Intra-operative management strategies

- Place
- Paraphrenalia (Instruments)
- Personnel
- Positioning
- Prep
- Products (Blood)
- Pharmacy
- PLAN
- (prayer)
Place

- L+D OR vs. Main OR
Instrumentation
Instrumentation
Personnel
Personnel

• **Anesthesia**
  - Attending anesthesiologist
  - Nurse anesthetist

• **OR**
  - Circulator(s)
  - Scrub nurse/tech

• **Obstetrics**
  - Attending
  - Resident/Assist
  - OB RN

• **Urology**

• **Gynecology/Gyn Onc**
  - Attending
  - Resident/assist

• **Pediatrics**
  - Attending
  - Resident/Fellow
  - Nurse
Positioning

• Considerations
  • Access/exposure
  • Uterine blood flow (pre-delivery)
  • Retractor placement
  • Patient safety/comfort
Prep

- Abdomen: Chloraprep
- Perineum: Betasept
- Vagina: Betasept lavage (no sponges)
Products

• 2-4 units PRBC crossed and in room at start of case
• Maintain 2-4 units ahead in bank
• Low threshold for massive transfusion protocol
• Consider 1:1:1 transfusion ratio beyond 4-6 units
• Cell Saver(?)
Pharmacy

- Limit drugs with concentration in breast milk
- Antibiotic prophylaxis
- Antibiotic redose
- Calcium replacement
Plan

• Pt consented, 2 large IVs in place
  • A-line and CVC typically on as-needed basis
Plan

- Pt in room, transferred to table, left tilt position
Plan

• Anesthesia
  • General vs Epidural to general
Plan

- Pt prepped and urology service
  - Places open ended catheters in ureters
  - Surveys bladder mucosa
Plan

- Obstetricians
  - Vertical incision to above umbilicus
  - Identify placental location
Plan

- Obstetricians
  - Fundal uterine incision
  - Deliver infant
  - Collect cord blood
  - Save segment of cord
  - Internalize remaining cord
  - Close uterine incision
Plan

- **GYN team**
  - Survey field
  - Place retractor (Bookwalter)
  - Elevate uterus
  - Isolate and divide round ligaments
  - Isolate and divide utero-ovarians
Plan

- GYN team
  - Mobilize bladder flap
  - Identify and ligate uterines
  - Proceed across cardinals
Prayer
Unsuspected Placenta Perceta
Management of Unexpected Placenta Percreta (discovered at time of laparotomy)

- Delay uterine incision if anatomy appears abnormal
  - Distorted or ballooned lower uterine segment
  - Blood vessels on uterine serosa
  - Invasion into bladder or surrounding tissue
- Assess location and extent of placental invasion visually and by ultrasound
- Evaluate for presence of active bleeding
- Inquire about available resources: blood/blood products, surgical assistance and equipment.
Management of Unexpected Placenta Percreta (discovered at time of laparotomy)

• If the patient is stable and the facility is not currently prepared:
  
  • Cover the uterus with warm laparotomy packs and await assistance and supplies before proceeding with operative intervention

  or

  • Close fascial incision, place staples in skin, and consider transfer to tertiary facility with experience in management of percreta

• If the patient is actively bleeding, apply local pressure to bleeding areas (other than areas where placental tissue is at risk), then prepare for hysterotomy for delivery followed by surgical or conservative management of placenta percreta.
Criteria for Consideration of Delivery in Accreta Center of Excellence

- Suspicions for placenta accreta on sonogram
- Placenta previa with abnormal ultrasound appearance
- Placenta previa with \( \geq 3 \) prior cesarean deliveries
- History of classical cesarean delivery and anterior placentation
- History of endometrial ablation or pelvic irradiation
- Inability to adequately evaluate or exclude findings suspicious for placenta accreta in women with risk factors for placenta accreta
- Any other reason for suspicion for placenta accreta
Suggested Criteria for Accreta Center of Excellence

- Multidisciplinary team
  - Experienced maternal-fetal medicine physician or obstetrician
  - Imaging experts (ultrasound)
  - Pelvic surgeon (ie, gynecologic oncology or urogynecology)
  - Anesthesiologist (ie obstetric or cardiac anesthesia)
  - Urologist
  - Trauma or general surgeon
  - Interventional radiologist
  - Neonatologist
Suggested Criteria for Accreta Center of Excellence

- Intensive care unit and facilities
  - Interventional radiology
  - Surgical or medical intensive care specialist
    - 24-hour availability of intensive care specialist
  - Neonatal intensive care unit
    - Gestational age appropriate for neonate
- Blood services
  - Massive transfusion capabilities
  - Cell saver and perfusionists
  - Experience and access to alternative blood products
  - Guidance of transfusion medicine specialist or blood bank pathologist
Centers of Excellence

American Journal of Obstetrics and Gynecology May 2015, patient safety series:

“Clearly planned coordinated delivery and care is win-win-win, for the referring provider, the patient, and the teams poised to be centers of excellence in care of women with placenta accreta.”

“The importance of maintaining a high level of suspicion and of early referral for antenatal imaging whenever accrete is suspected cannot be overstated.”

“The combined efforts of an experienced, coordinated team; a well-resourced blood bank; and the support of numerous nurses, technologist, and support staff are truly lifesaving when it comes to placenta accreta.”
Additional questions