Abnormal Placentation

UAB Progress in Ob/Gyn
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Educational Objectives
1. Examine normal placental development
2. Examine types of abnormal placentation:
   a. Placenta previa
   b. Vasa previa
   c. Morbidly-adherent placenta
3. Determine optimal management of abnormal placentation

Normal Placental Development
Placental Development

- Developing embryo invades the uterine lining
- Fetal-placental circulation established at 5 weeks

Placental Development

- Trophoblasts branch into villi that form the placenta
Normal Placenta by Ultrasound
Abnormal Placental Development

Placenta Previa
Placenta Previa

- Placenta that lies over or near the internal cervical os
- Types:
  - Complete
  - Partial
  - Marginal

Pathogenesis unknown
- Suboptimal endometrium in upper uterus
- Large surface area

Risks
- Hemorrhage
- Indicated preterm birth
- Cesarean delivery

Incidence
- Seen in 1-6% of midtrimester scans
  - 90% resolve
- Persists in 4/1000 births
- Less likely to resolve if:
  - Present in third trimester
  - Covers the internal os > 25mm
  - Posterior location
Risk Factors

- Prior previa
- Uterine surgery
- Multiple gestation
- Multiparity
- AMA
- Assisted reproduction

Presentation

- Painless vaginal bleeding 80-90%
  - Typically third trimester
  - Related to cervical ripening
  - Earlier bleeding increases risk for transfusion & PTD

Diagnosis

- Abdominal +/- vaginal ultrasound
  - Not a previa if > 2 cm from os
- False positives
  - Bladder full
  - Lower segment contraction
- False negatives
  - Low fetal head
Management

- Placenta < 2 cm from os in midtrimester
  - Rescan at 32 & 36 weeks
- Avoid intercourse & exercise
- Hospitalize for bleeding
  - Transfuse for hemodynamic change
  - Tocolyze to complete steroids
  - Rhogam if Rh-
Delivery Indications

• Significant bleeding > 34 weeks
• Life-threatening refractory bleeding
• Non-reassuring fetal tracing
• If uncomplicated, SMFM recommends delivery at 36-37 weeks

Sprague CV. Obstet Gynecol 2011;118:323.

Delivery

• Route = Cesarean
• Consider SVD if placenta > 10mm from os
  risk of failure to progress and bleeding
• Type & cross available

Vergani P. AJOG 2008;201:266.e1.

Postoperative Bleeding

• Hemostatic sutures
• Balloon tamponade
• Uterine compression sutures
• Subendometrial vasopressin
• Hysterectomy

Vasa Previa

- Fetal blood vessels traverse the membranes over the cervical os
- 1/2500 deliveries
- Risks:
  - Rupture of fetal vessels at ROM
  - Compression from presenting fetal part

Risk Factors

- Assisted reproduction
- History of low-lying placenta or previa
- Accessory lobe of placenta
- Multiple gestations
Diagnosis

- Vaginal ultrasound with color Doppler
- False positive - loop of cord
  - Push away presenting part
  - Shake the LUS with US probe
  - Reevaluate on subsequent scans

Management

- Fetal heart rate monitoring 32 weeks
- Third trimester steroid course
- Delivery indications:
  - Labor or ROM
  - Abnormal fetal tracing
  - Vaginal bleeding
  - If uncomplicated, deliver at 35 weeks

Morbidly-Adherent Placenta

• Spectrum of conditions involving abnormal adherence of placenta to the implantation site

Grades

1. Accreta 79%
   – Villi attached to myometrium
2. Increta 14%
   – Villi invade myometrium
3. Percreta 7%
   – Villi invade through myometrium

Wu S. AJOG 2005;192:1458.
Grades

Incidence

- Incidence
  - 0.03/1000 in 1950
  - 0.8/1000 in 1980
  - 3/1000 in 2000

- Occurs in 1 in 5 patients with a prior C/S & low anterior placenta

D’Antonio F. UOG 2013;42:509

Pathogenesis

- Unknown
  - Defective decidualization
  - Defective healing of uterine scar
  - Invasive trophoblast
Risk Factors

- Uterine surgery
- Placenta previa
- Advanced maternal age
- Multiparity
- Uterine anomalies/fibroids

Placenta Accreta %

<table>
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<th>Cesarean delivery</th>
<th>Placenta previa</th>
<th>No previa</th>
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<td>First</td>
<td>3.3</td>
<td>0.2</td>
</tr>
<tr>
<td>Second</td>
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<td>0.3</td>
</tr>
<tr>
<td>Third</td>
<td>40</td>
<td>0.6</td>
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<tr>
<td>Fourth</td>
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<tr>
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<td>67</td>
<td>2.3</td>
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<tr>
<td>≥ Sixth</td>
<td>67</td>
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Risks

- Hemorrhage
- Transfusion 90-95%
  - ≥ 10u PRBC’s in 40%
- Indicated preterm delivery
- Hysterectomy
Complications

• Damage to surrounding organs
• Reoperation for bleeding
• Transfusion reactions
• Postoperative complications
  – PTE
  – Infection
  – Organ failure
• Death 6%

Diagnosis

• Ultrasound or MRI
• Both modalities ~90% accurate
• Routine MRI not indicated
  – Not shown to improve outcomes
  – Helpful for:
    • Inconclusive US
    • Establishing depth of invasion for percreta

US Findings

• Loss of hypoechoic retroplacental area
US Findings

• Placental vascular lakes

• Large retroplacental/intraplacental vessels

• Loss of white “bladder line”
US Findings

• Placenta bulges into bladder

Diagnosis

• Serum screen lab analytes may be elevated
  – MSAFP
  – hCG
• Hematuria
  – May be seen with percreta

Management

• Suspicion for accreta based on risk factors
• Make appropriate referrals
• Goal = antepartum diagnosis
  – Improves outcomes
    • Hemorrhage
    • Blood transfusions
Management

- Hospitalize for bleeding episodes
- Antepartum hematocrit > 30%
  - Iron supplementation and prn transfusion
- Delivery hospital
  - Appropriate surgical facilities & personnel
  - Blood bank capable of large-volume transfusion

Delivery Timing

- Increased risk with emergency delivery
  - Blood loss & surgical complications
- SMFM recommends late preterm delivery at 34-35 weeks
  - Decision analysis showed optimal maternal & neonatal outcomes at 34 weeks

Consults

- Anesthesia
- Blood bank
- Surgical assistance
  - Gyn Oncology
  - General or vascular surgery
  - Urology

Spong CY. Obstet Gynecol 2011;118:323.
Anesthesia Concerns

• Large-bore IV’s
• High-flow infusion & suction devices
• Hemodynamic monitoring
• SCD’s
• GETA vs. epidural

Surgical Considerations

• Average blood loss 2-5L
• Operative time 2-3 hours
• Vertical midline skin incision preferred
• Leave placenta in situ
• Ureteral stents & preop pelvic artery occlusion controversial

Surgical Considerations

• Standard therapy = hysterectomy
• Rapid clamping & transection
• Avoid disruption of uterine serosa
• If suspected bladder involvement, intentional cystotomy may help
Surgical Considerations

- Frequent assessment of volume status & labs
- Crystalloid & blood product transfusion
- For large volume blood loss, ratio of RBC:PLT:FFP = 1:1:1
- Cell-saver autotransfusion recommended

Persistent Hemorrhage

- Hypogastric artery ligation
- X-ray-guided pelvic artery embolization
- Pelvic pressure packing
- Correction of coagulopathy

Conservative Therapy

- Leave placenta in situ & give systemic methotrexate/arterial embolization
- Generally not recommended
- Risks:
  - Delayed hemorrhage & hysterectomy
  - Septic shock
  - Death
  - Suboptimal future pregnancies

ACOG Committee Opinion, 2012.
Focal Accreta

- Treatment
  - Remove placental fragments
  - Deep myometrial sutures
  - Balloon tamponade

Conclusions

- Primary risk from abnormal placentation is significant hemorrhage
- Antepartum diagnosis or suspicion is imperative
  - Allows surgical preparation
  - Reduces maternal/fetal morbidity & mortality
- Regarding accreta, no diagnostic technique completely assures its presence or absence

Questions?