Obstetric Hemorrhage

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• Antepartum hemorrhage
  – Placenta previa
  – Vasa previa
  – Abruptio placenta

• Postpartum bleeding
  – Uterine atony
  – Laceration
  – Uterine inversion
  – Other
Placenta Previa Definition

- Total- internal os covered by placenta
- Partial- internal os partially covered by placenta
- Marginal- the edge of placenta at the margin of the internal os
- Low lying- near the internal os
Types of Placenta Previa

- Complete
- Partial
- Marginal
- Low Lying
Placenta Previa - Factoids

• Incidence at approximately 0.3-0.5%
• Occurs as consequence of zygote implantation
• Risk increased with:
  – Advanced maternal age
  – Prior C/S (at least 1.5 times higher)
  – Defective decidualization
  – Smoking (risk doubled)
Placenta Previa- Accreta

- Placenta previa is associated with increased risk of placenta accreta (discussed subsequently)
- Risk of accreta is 5% with unscarred uterus
- Previous C-section and previa portends a 25% risk of accreta
Clinical Findings - Previa (1)

- Most common symptom is painless bleeding
- Some degree of placental separation is inevitable with previa = bleeding
- Bleeding increases with labor, direct trauma, or digital examination
Clinical Findings- Previa (2)

- Initial bleeding is usually not catastrophic
- Uterine bleeding may persist postpartum because of overdistention of the poorly contractile lower uterine segment
- Coagulopathy is uncommon with previa unless due to massive bleeding
Overdistended Lower Uterine Segment- Previa
Placenta Previa- Diagnosis

- DO NOT DIAGNOSE via vaginal exam! (Exception- ”double setup”)
- Ultrasound is the easiest, most reliable way to diagnose (95-98+% accuracy)
- False positive- ultrasound with distended bladder
- Transvaginal or transperineal often superior to transabdominal methods
Placenta Previa- Placental Migration

- Placental location may “change” during pregnancy
- 25% of placentas implant as “low lying” before 20 weeks of pregnancy
- Of those 25%, up to 98% are not classified as placenta previa at term
- Complete or partial previas do not appear to resolve as often (if at all)
Placenta Previa- Placental Migration (2)

• Clinically important bleeding is not likely before 24-26 weeks gestation
• The clinically important diagnosis of placenta previa is therefore a late second or early third trimester diagnosis
• Migration is a misnomer- the placental attachment does not change, the relative growth of the lower segment does
Management - Placenta Previa

• The clinically relevance of the diagnosis is in the late second and/or third trimester
• Bedrest probably indicated
• Antenatal testing probably indicated
• Recent data suggests, if environment idea, home care is acceptable
Management - Placenta Previa

(2)

• Evaluation for possibility of accreta needs to be considered
• Consideration for RHIG in rh negative patients with bleeding
• Episodic AFS testing with bleeding events
• Vigilance regarding fetal growth
• Follow up ultrasound if indicated
Management - Placenta Previa (3)

• Delivery should depend upon type of previa
  – Complete previa = c/section
  – Low lying = (probable attempted vaginal delivery
  – Marginal/partial = (it depends!)

Consider “double setup” for uncertain cases
Tamponade Of Previa By Presenting Part
Placenta Accreta

- Placenta accreta
  - Accreta = adherent to endometrial cavity
  - Increta = placental tissue invades myometrium
  - Percreta = placental tissue grows through uterine wall

Accreta caused by faulty development of NITABUCH’S LAYER
Placenta Accreta

- Incidence = approx 1/2500
- Related to abnormal decidual formation
- 1/3 coexisted with placenta previa
- 1/4 with previous curettage
- Grandmultiparity can be risk factor
- If diagnosed microscopically, 1/2 women with C/S have some evidence of abnormal implantation
Clinical Course- Accreta

- Association with elevated MSAFP
- Antepartum bleeding related usually to coexistent placenta previa
- Main problem is at delivery- with adherent placenta
  - Association with inversion
  - Bleeding of placental bed
  - Increta/percreta consequences
Clinical Course- Accreta(2)

• Attempted manual removal is often unsuccessful
• Conservative management suggested (albeit with *high* M/M)
• May require radical surgery if invasion is extrauterine
Vasa Previa

- Associated with velamentous insertion of the umbilical cord (1% of deliveries)
- Bleeding occurs with rupture of the amniotic membranes (the umbilical vessels are only supported by amnion)
- Bleeding is FETAL (not maternal as with placenta previa)
- Fetal death may occur with trivial symptoms
Vasa Previa

Umbilical cord

Membranes

Placental disk
Abruptio Placenta

• Placental abruption occurs when all or part of the placenta separates from the underlying uterine attachment
• Incidence- approx 1/100 - 1/200 deliveries
• Common cause of intrauterine fetal demise
Abruptio Placenta- Associating Factors

- Hypertension- 1/2 of fetally fatal abruptions were associated with HTN
- PPROM- abruptio may be a manifestation of rapid decompression of uterus or from subacute villitis
- Smoking (and/or ethanol consumption) linked to abruptio
Abruptio Placenta- Associating Factors (2)

- Cocaine abuse- 2-15% rate of abruption in patients using cocaine
- Uterine leiomyoma- risk increased if fibroid is behind implantation site
- Trauma- relatively minor trauma can predispose (association with bleeding, contractions, or abnormal FHT)
Abruptio Placenta- Recurrence

- Recurrence rate may be as high as 1 in 8 pregnancies
- Antenatal testing is indicated (albeit predictive value may be poor- numerous examples of normal testing with subsequent serious or fatal event
Abruptio Placenta- Concealed Hemorrhage

- Bleeding from abruption may be all intrauterine- vaginally detected bleeding may be much less than with placenta previa
- DIC occurs as a consequence of hypofibrinogenemia- in chronic abruption, this process may be indolent
Occult Hemorrhage in Abruption

Abruption

Placenta
Abruption- Other Complications

- Shock- now thought to be in proportion to blood loss
- Labor- 1/5 initially present with diagnosis of “labor”- abruption may not be immediately apparent
- Ultrasound may not diagnose abruption in up to 14 of cases
Abruption- Other Complications (2)

- Renal failure- may be pre-renal, due to underlying process (preeclampsia) or due to DIC
- Uteroplacental apoplexy (Couvelaire uterus)- widespread extravasation of blood into the myometrium and serosa
Abruption- Management

• Management is influenced by gestational age and degree of abruption
• Indicators for delivery-
  – Fetal intolerance
  – DIC
  – Labor
Abruption Management (2)

- Vaginal delivery is acceptable (and generally preferred with DIC)
- Tocolysis:
  - Betasympathomimetics contraindicated in hemodynamically compromised
  - Magnesium possibly indicated in special circumstances
  - Nsaid’s contraindicated
Postpartum Hemorrhage

- Traditional definition = > 500 ml blood loss
- Normally seen blood losses:
  - Vaginal delivery- 50% > 500ml
  - C/section- 1000ml
  - Elective C-hys- 1500ml
  - Emergent C-hys- 3000ml
Postpartum Hemorrhage(2)

- Pregnancy is normally a state of hypervolemia and increased RBC mass
- Blood volume normally increased by 30-60% (1-2 L)
- Pregnant patients are therefore able to tolerate some degree of blood loss
- *Estimated* blood loss is usually about 1/2 of actual loss!
Postpartum Hemorrhage(3)

• Early postpartum hemorrhage is within 1st 24 hours (also may be just called “postpartum hemorrhage”)

• Late postpartum hemorrhage (not addressed in this talk) is less common and occurs after the 1st 24 hours postpartum
Postpartum Hemorrhage-Causes

- Genital tract laceration
- Coagulopathy
- Uterine
  - Uterine atony
  - Uterine inversion
  - Uterine rupture
  - Retained POC
Postpartum Hemorrhage-Genital Tract Laceration

• May be cervix, vaginal sidewall, rectal (example= hemorrhoid), or episiotomy
• Genital tract needs thorough inspection after any delivery
  – Cervix needs to be seen
  – Vagina needs to be inspected
Repairing Lacerations

- Be sure to suture above internal apex of laceration
- Forceps may be used as vaginal retractors
- Cervical lacerations > 2.0 cm in length need to be repaired. The cervix is grasped with ringed forceps and retracted to allow repair (starting at or above apex)
Cervical Laceration

Begin repair at apex
Puerperal Hematomas

• Incidence = 1/300 to 1/1500 deliveries
• Episiotomy is most commonly associated risk factor
• Considerable bleeding may occur with dissection-dissection above pelvic diaphragm
• Drainage usually indicated (source often not evident?)
Uterine Rupture

• 1-2% of previous lower segment C/S TOL patients (more with classical C/S)
• Other causes include:
  – Instrumented deliveries/versions/operative
  – Curettage
  – Macrosomia
  – Prolonged labor
  – Oxytocin
Uterine Rupture (2)

- **Rupture** = separation of whole scar with rupture of membranes and bleeding
- **Dehiscence** = partial separation of previous uterine scar that is usually associated with less bleeding
- Dehiscence may be occult
Uterine Rupture (2)

- Uterine rupture may be associated with antepartum or postpartum events
- Repair may require simple closure or hysterectomy
- Consider uterine rupture in patient with firm uterus (no atony), negative laceration survey and continued bleeding
Hemostatic Disorders

- Thrombocytopenia and DIC may predispose to continued vaginal bleeding after delivery
- Occasionally, a patient with von Willebrand’s disease (or other inherited disorder) will be diagnosed at or after delivery
- Bleeding from hemostatic disorder is usually not brisk, but it is persistent
- Amniotic fluid embolism may present with DIC
Uterine Atony

- Most common cause of postpartum hemorrhage
- Should be default diagnosis in patients with postpartum bleeding (albeit always exclude other causes)
- Can be suspected by uterine palpation exam
Uterine Atony(2)

• A prolonged third stage of labor (>30 min.) is associated with postpartum hemorrhage

• Other associations with postpartum hemorrhage include:
  – Enlarged uterus (macrosomia or twins)
  – Prolonged labor or oxytocin (tachyphylaxis)
  – High parity
  – Maneuvers that hasten placental removal
Uterine Atony Presentation

• Bleeding may be indolent and not easily recognized

• Postpartum patients may not exhibit dramatic hemodynamic changes until blood loss is pronounced

• Patients with pregnancy induced hypertension may fare poorly (MgSO4 + volume contraction)
Treatment: Uterine Atony

• Make sure uterus is evacuated (manual exploration)
• Rule out other causes
• Resuscitation
• Uterine contractile agents
  – Oxytocin
  – Ergonovine
  – Prostaglandin
Uterine Inversion

• May occur spontaneously, as a consequence of placental removal, or in association with connective tissue disorder (Marfan’s, Ehlers-Danlos)
• Risk of inversion increased with higher parity
• May occur with accreta
Uterine Inversion(2)

- Treatment is to reduce inversion before contraction of uterus
- If accreta-associated, DO NOT REMOVE THE PLACENTA (BLEEDING)
- May require uterine relaxants (TNG, halothane)
- Rarely, surgical reduction necessary (with constriction band)
Postpartum Hemorrhage- Unified Approach

- Always examine systematically
- Uterine atony most common, but other causes may get overlooked
- Get help!
- Remember the hemodynamic implications of the bleeding
Postpartum Hemorrhage

Hemorrhage suspected

Exploration of Uterus

Retained placenta (?)Accreta

Empty uterus (Next Slide)
Postpartum Hemorrhage (2)

Empty Uterus

Oxytocin

Atony?

Yes - Secondary medical tx.
Consider surgery for failure

No - Inspect vagina and cervix (next slide)
Postpartum Hemorrhage (3)

Laceration

Yes = Repair

No = other clues?

Consider DIC, AFE, Factor disorder, uterine rupture