Obstetric Hemorrhage

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Lecture Organization

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

• 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 is 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 clinical 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 ideal, 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 on 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 = approximately 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 usually related 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 Placentae

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

- Hypertension - Half of fatal fetal 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 Placentae - 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 Placentae - 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 Placentae – 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% >500 ml
  – C/section - 1000 ml
  – Elective C-hys - 1500 ml
  – Emergent C-hys - 3000 ml
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 referred to as “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 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 (3)

- 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)
Uterine Atony Treatment

- 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 be 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

- 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