Obstetric Hemorrhage

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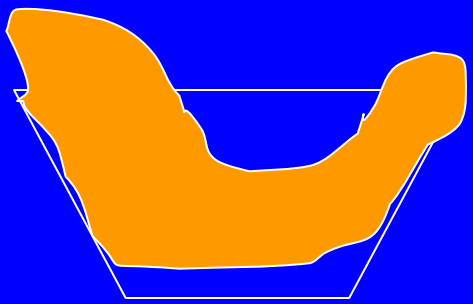
Lecture Organization

- **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 placentas at the margin of the internal os**
- **Low lying- near the internal os**

Types of Placenta Previa



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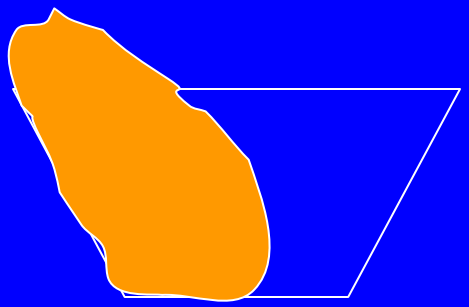

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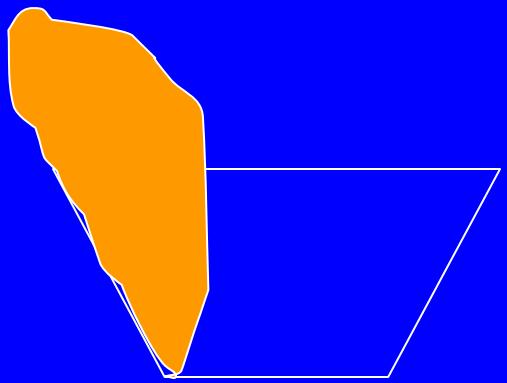
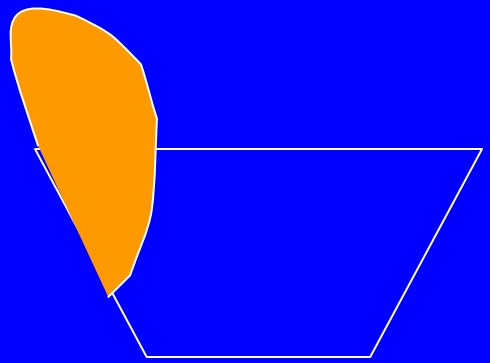


Marginal



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

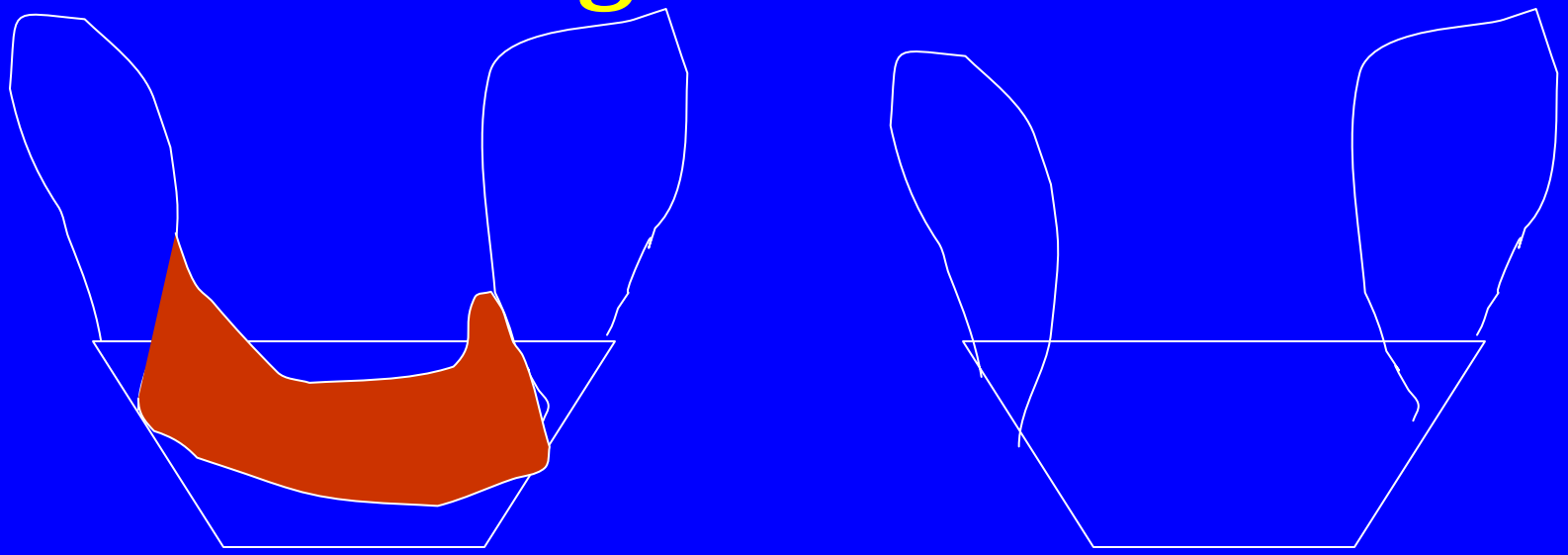
Clinical Findings- Previa (1)

- 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 doe 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)

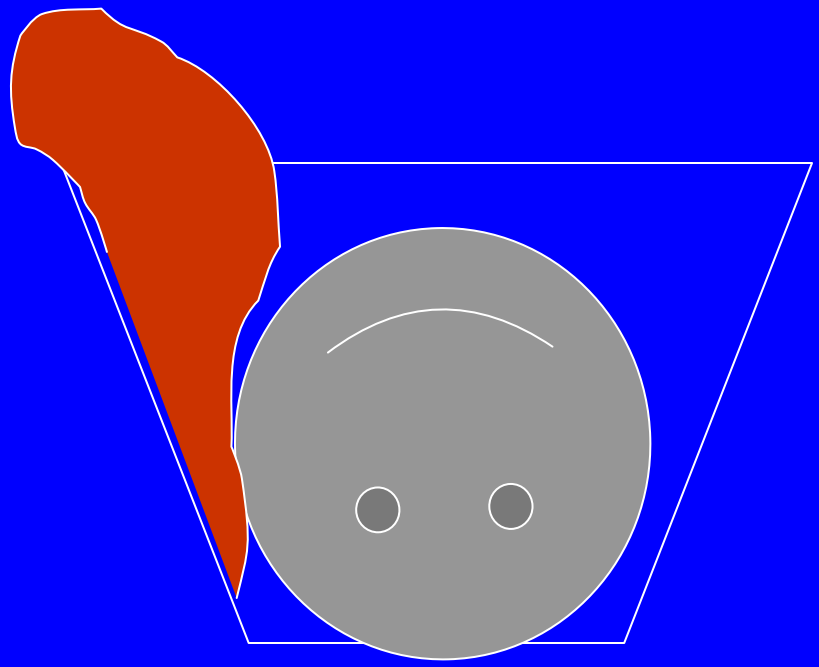
- Evaluation for possibility of accreta needs to be considered
- Consideration for RHIG in rh negative patients with bleeding
- Episodic AFS testing with bleeding events
- Vigilance regarding fetal growth
- Follow up ultrasound if indicated

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 <u>through</u> 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

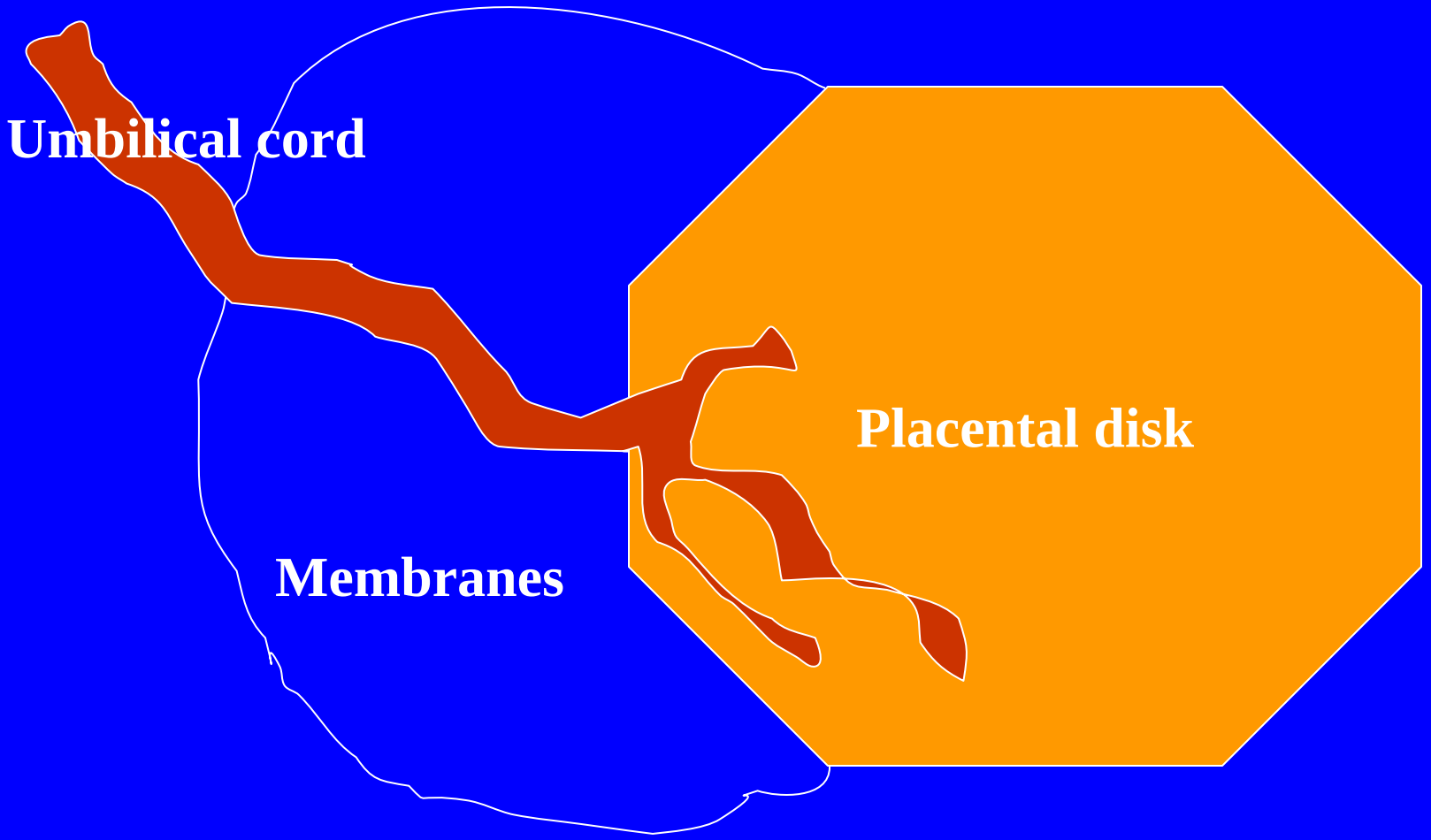
Clinical Course- Accreta(2)

- **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



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)

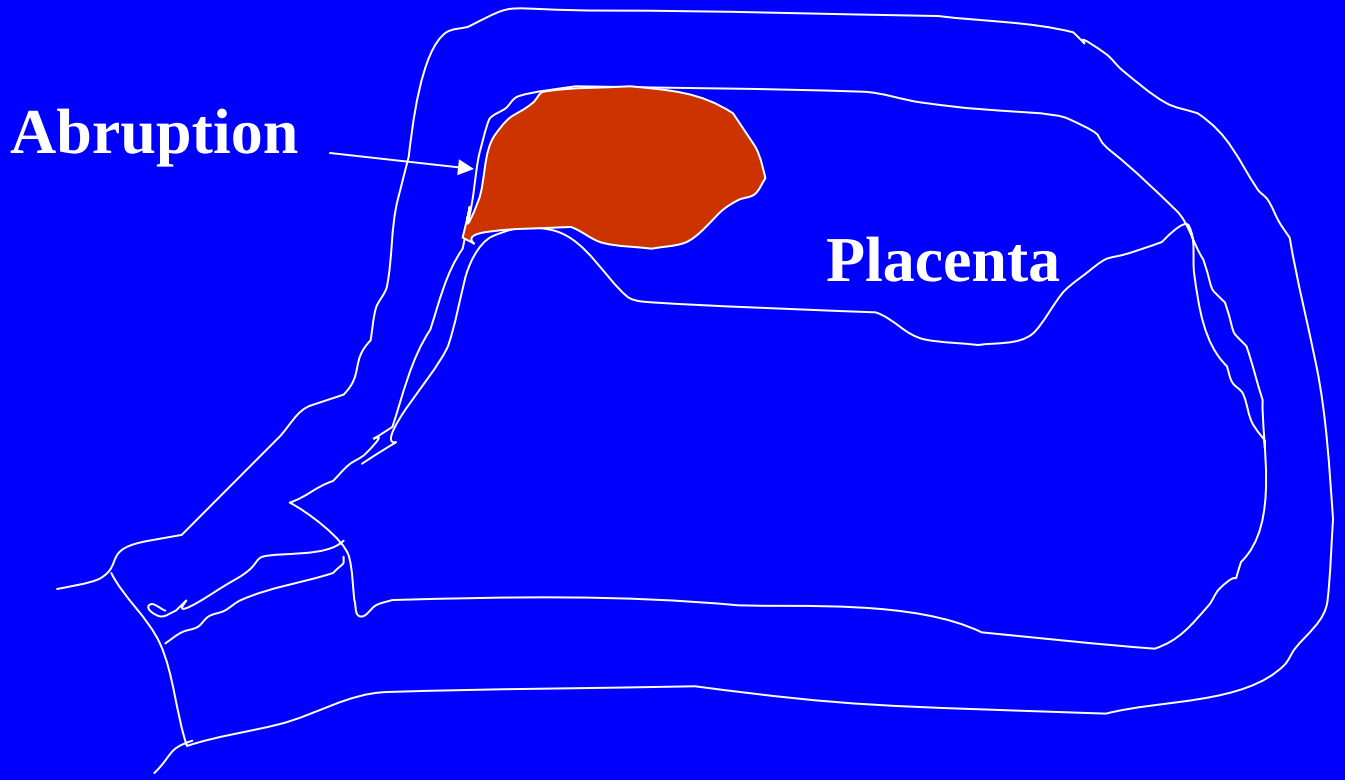
Abruptio Placenta- Recurrence

- 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- Other Complications

- Shock- now thought to be in proportion to blood loss
- Labor- 1/5 initially present with diagnosis of “labor”- abruption may no 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

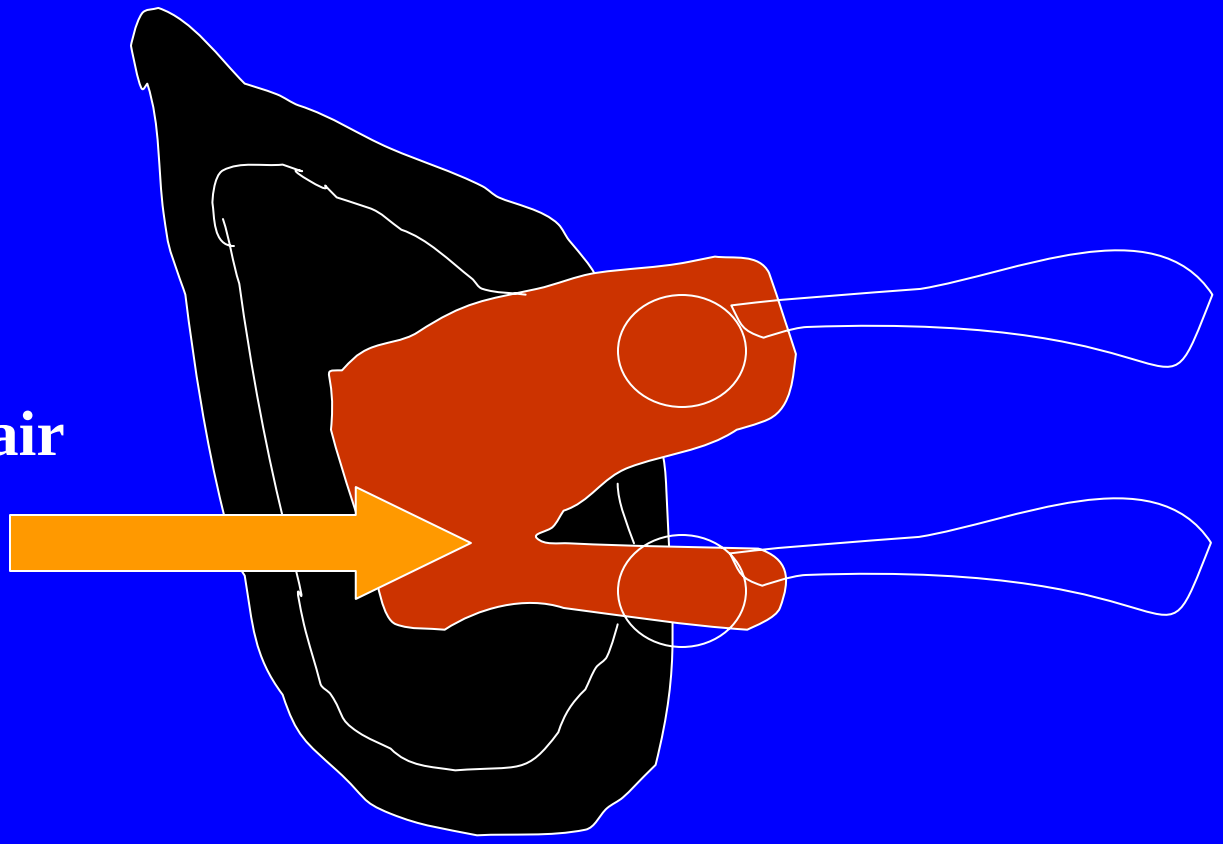
Postpartum Hemorrhage- Genital Tract Laceration

- 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



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 ($MgSO_4$ + 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

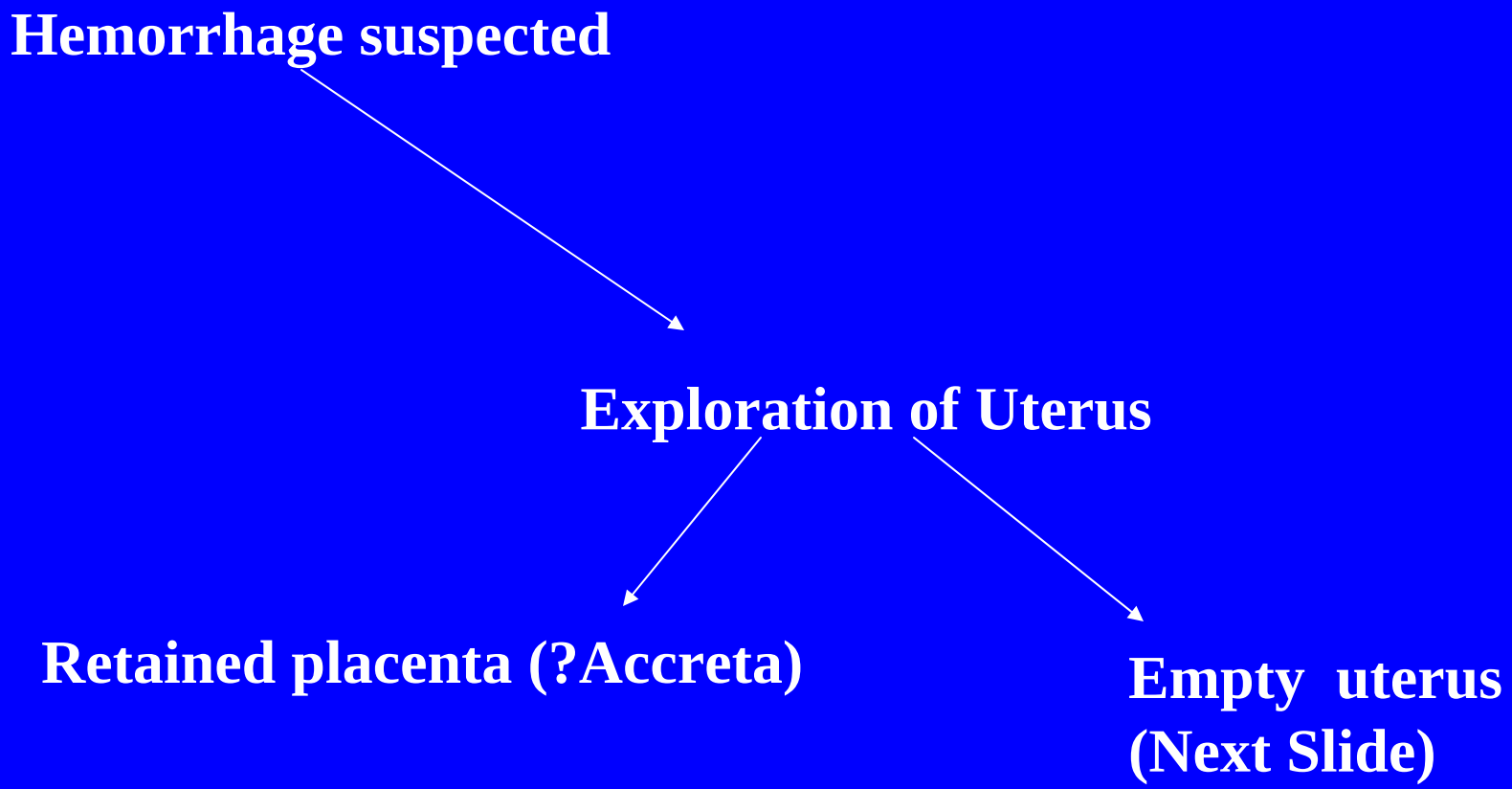
Uterine Inversion(2)

- 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)

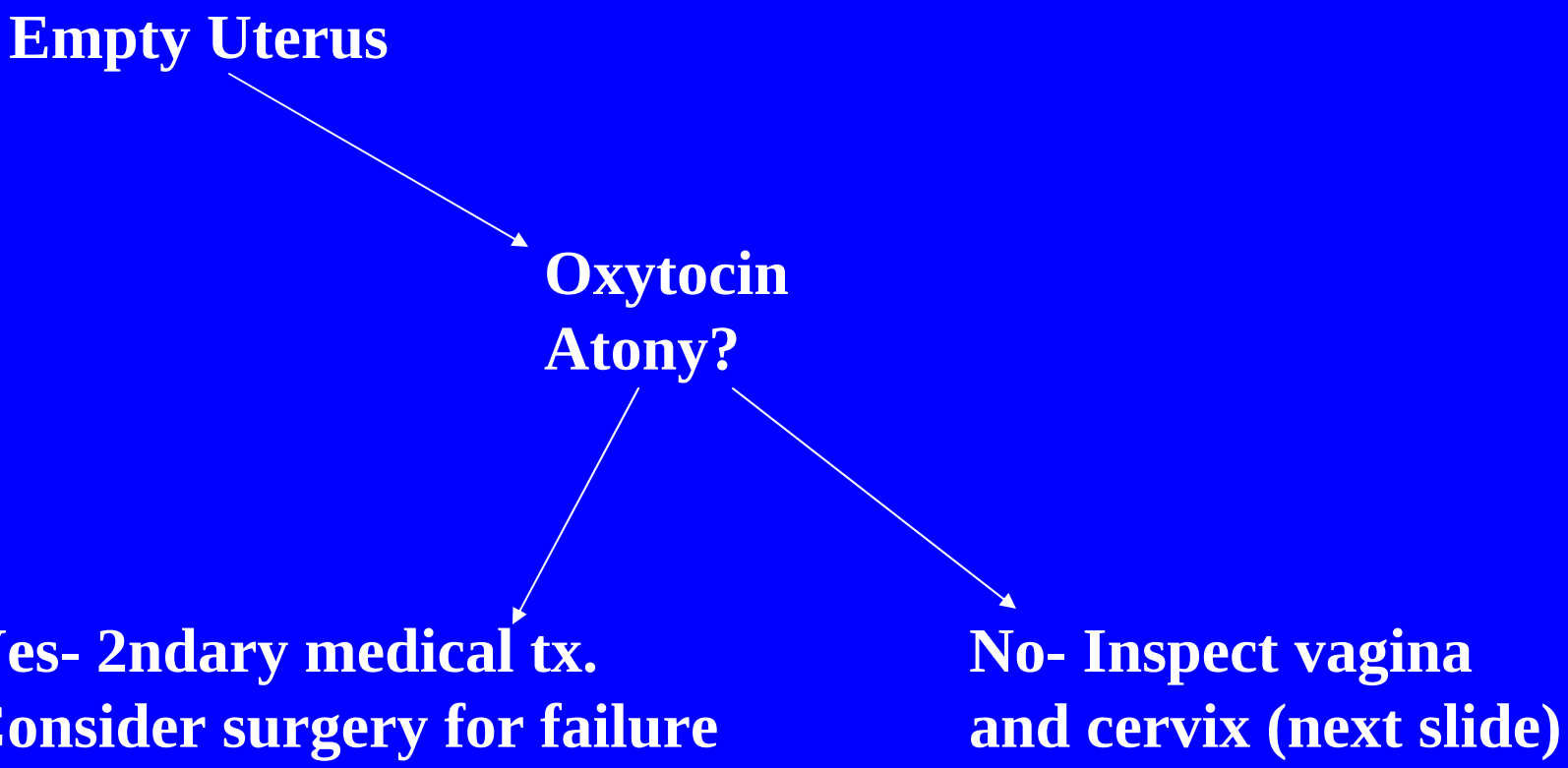
Postpartum Hemorrhage-Unified Approach

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

Postpartum Hemorrhage



Postpartum Hemorrhage(2)



Postpartum Hemorrhage(3)