Objectives:
Perform a focused physical exam in patients postpartum.
Identify and treat the most common maternal complications that occur in the puerperium.
3rd Stage of Labor: Delivery of placenta & membranes.

- Sudden diminution of uterine size with decrease in area of placental implantation site.
- Hematoma forms during separation.
- Placenta descends, drags membranes and is extruded.
- If hematoma is contained within the inverted sac, then Schultze mechanism.
- If blood escapes simultaneous with placenta, then Duncan mechanism.
The Puerperium

- 600cc/minute of blood had been in the intervillous space.
- Spiral arteries avulsed during placental delivery.
- Hemostasis achieved by persistent myometrial contraction.
- Hemostasis next achieved by clotting and obliteration of vascular lumens.
- This process prevents postpartum hemorrhage.
Postpartum Hemorrhage
Postpartum Hemorrhage

- Affects 3-5% of deliveries, depending on definition.
- Traditional definition: >500cc after 3rd stage.
- 5% of mothers may lose > 1,000cc.
- Pregnant women have 30% increase in blood volume (~1500-2000cc).
- Medium length of 3rd stage of labor: 6 minutes
- 3% may take > 30 minutes.
Manual delivery of the placenta if prolonged 3rd stage or avulsed umbilical cord. Ideally placenta and membranes can be removed and teased out together.

Fundal massage with or without oxytocin usually prevents hemorrhage.
Hypotonicity of the uterus is the most common cause of obstetric hemorrhage.

 Causes: Overdistended uterus, e.g. multiple gestation, macrosomia, polyhydramnios.

 Prolonged labor.

 Tumultuous/precipitous labor.

 Induction/augmentation e.g. oxytocin or prostaglandins.

 Multiparity.

 History of previous uterine atony.

 Chorioamnionitis.
Likely not retained products of conception (POC). Always inspect placenta. Perform manual exploration of the uterus (MEU) if needed.

Perform uterine massage with bimanual compression.

Rx: Oxytocin (Pitocin) i.v. or can give 20 U i.m.

Rx: Ergotomine (methylergonovine aka Methergine 0.2mg i.m. Precaution: can cause hypertension
Methergine (methylergonovine maleate) tablet and injection

Detailed View: Safety Labeling Changes Approved By FDA Center for Drug Evaluation and Research (CDER) - June 20, 2012

Summary View

WARNINGS
Warning on not breast-feeding during Methergine treatment and for at least 12 hours after the last dose of Methergine
Warning on an increased risk of developing myocardial ischemia and infarction in patients with coronary artery disease or risk factors for coronary artery disease
Warning of the accidental administration of Methergine injection to newborn infants

PRECAUTIONS: Nursing Mothers
Addition of a warning on not breast-feeding during Methergine treatment and for at least 12 hours after the last dose of Methergine.
Rx: Prostaglandin F2alpha (carboprost: Hemabate) 250mg i.m. Can repeat q 15-90 minutes. Side effects: diarrhea, hypertension, nausea/emesis, fever, flushing, pulmonary airway obstruction.

Rx Prostaglandin E2 rectal suppositories. Has worse side effect profile. Hasn’t been compared to Hemabate.

Prostaglandin E1 analog (misoprostol or Cytotec) 800-1,000mcg rectally.
If EBL, don’t forget to call for help: 2nd obstetrician, anesthesia, blood bank.

Intrauterine balloon or uterine packing. Can pack with lap sponges. Bakri balloon now available and can be placed for up to 24 hours.
Uterine artery ligation and internal iliac artery ligation have had mixed results with high failure rates. May delay a necessary hysterectomy.

Uterine compression sutures described by B-Lynch et al in 1997 using a 2 chromic suture. Rate of complications (uterine ischemic necrosis) is unknown but likely low.
Increased incidence due to the ever-increasing cesarean rate. Risk increased more if placenta previa.

Can sometimes be diagnosed antenatal by sono or MRI. Antenatal dx can allow for controlled delivery: blood products, additional surgeons, pre-operative ureteral stents, e.g.

Management: attempted delivery may cause hemorrhage or uterine inversion.

Hysterectomy may be safest.

Placenta can be left in utero; up to 80% of patients can preserve fertility.
Incidence ~ 1: 3,000 deliveries.

Cause: usually excessive traction on umbilical cord during 3rd stage of labor especially if implanted at uterine fundus. More common with placenta accreta but not necessarily.

Management: Call for Help.

If placenta separated, then push fundus up

If placenta still attached, patient needs additional IVs. Inhalation agents e.g. Halothane can relax the uterus. Magnesium and beta-mimetic agents (Terbutaline) can also be used to relax the uterus.

Surgical management rarely needed to restore uterus due to persistent constriction ring.
PUERPERAL INFECTION
Most puerperal infections are related to the uterus. Cesarean increases the risk >25 times vs. vaginal delivery. If vaginal delivery, endometritis risk <1%. Chorioamnionitis increases risk to 13%. Prophylactic antibiotics have decreased this risk substantially in the past generation. Bacteria: can be Gram + cocci e.g. Group A, B or D strep or Staph. Can be Gram negative e.g. E. coli, Klebsiella. Rarely Gardnerella, mycoplasma, GC. Usually polymicrobial.
Cultures unnecessary since only 5% of blood cultures will be positive.

Can dismiss when afebrile 24 hours. Home antibiotic Rx not usually needed.

Rx: Clindamycin 900 with Gentamicin. Can add Ampicillin if suspected enterococcus or sepsis syndrome.

90% will respond within 72 hours
If not responding to antibiotics within 72 hours, then consider CT or MRI to rule out pelvic abscess or hematoma or Septic Pelvic Thrombophlebitis (SPT).

SPT usually responds to antibiotics. Infection can spread into pelvic plexus of veins including ovarian veins. Can appear clinically well except persistent fever. No longer treated with Heparin.
Postpartum Wound Infections

- Now occur in <2% of cesareans.
- Risk factors: endometritis, diabetes, obesity, corticosteroid use, anemia, hypertension.
- Typically appear POD #4 with fever, erythema, drainage from incision.
- Wound dehiscence is disruption of the fascia.
- Requires closure in the OR.
- Typically appears POD #5 with serosanguinous drainage.
Occur in <1% of deliveries but up to 3% of 4th degree episiotomies/lacerations.

Sx of dehiscence: pain (65%), purulence (65%), fever (45%).

Treatment: remove suture and debridement if necessary. Rx antibiotics if cellulitis. Closure within 1 week is acceptable.

Necrotizing fasciitis is typically caused by Group A Strep and appears 3-5 days post partum. Treatment: antibiotics and debridement.