POSTPARTUM HEMORRHAGE

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DISCLOSURES

- I have no financial relationships to disclose.

LEARNING OBJECTIVES

- Define postpartum hemorrhage.
- Discuss risk factors for postpartum hemorrhage.
- Evaluate the evidence for various postpartum hemorrhage interventions.
- Develop a treatment plan for a patient experiencing a postpartum hemorrhage.

POSTPARTUM HEMORRHAGE

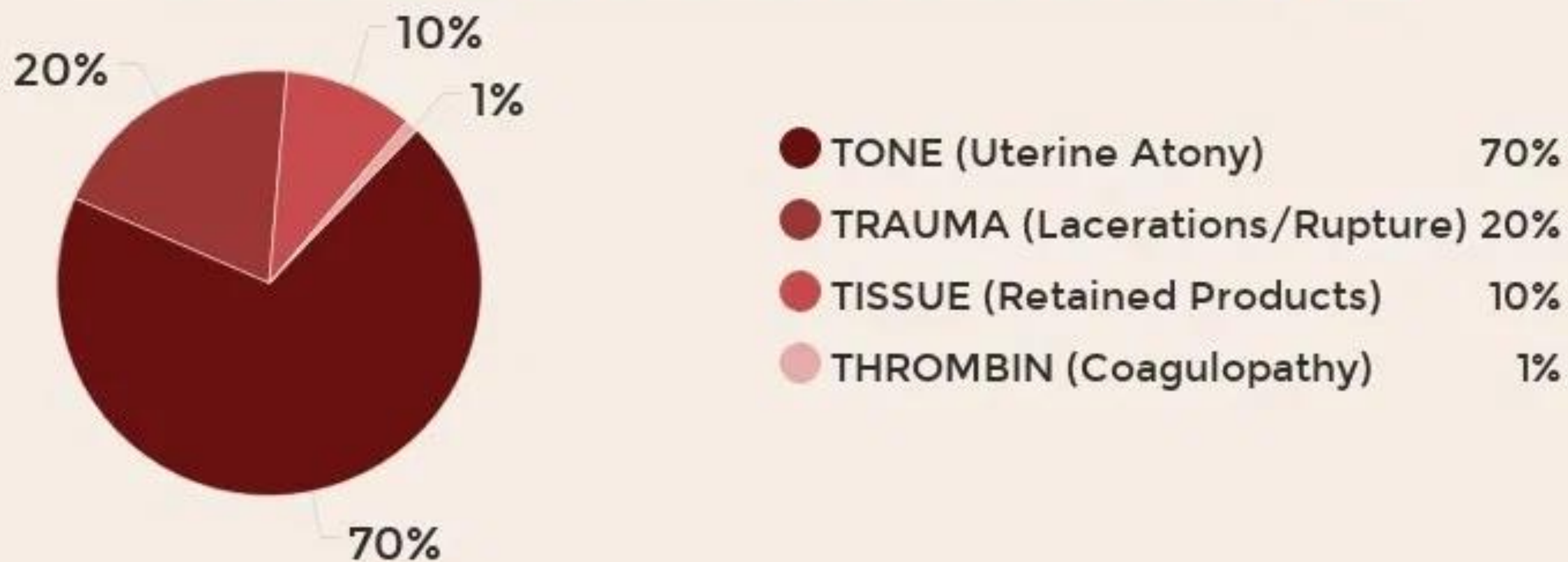
- **Definition:** cumulative **blood loss ≥1000 mL, or blood loss with evidence of hypovolemia** that occurs within 24 hours after the intrapartum and/or postpartum period regardless of mode of delivery (ACOG)
  - Blood loss >500 mL but <1000 mL
  - Blood loss >1000 mL: severe PPH

RISK FACTORS

- Nulliparity
- Grand multiparity
- Prior PPH
- Coagulopathy
- Placental abnormalities
- Anemia
- Uterine overdistention
- Fetal demise
- Chorioamnionitis
- Prolonged labor
- Augmented labor
- Chorioamnionitis
- Operative vaginal delivery
- Cesarean delivery

POSTPARTUM HEMORRHAGE (PPH)

- **PPH is the leading cause of morbidity and mortality** among pregnant patients worldwide.
  - 12% of deliveries in the US (ACOG)
  - Black women shoulder a disproportionate burden (Sabato et al)
- The **most common causes** of primary PPH include uterine atony, lacerations, placenta accreta, retained placenta, coagulopathy, and uterine inversion.



Above: Chart showing the percentage of postpartum hemorrhages responsible from each causative factor

TONE

- **Uterine atony:** inability to effectively contract
- **Causes of atony:** overdistention of the uterus (examples: multiple gestation, polyhydramnios, macrosomia), prolonged labor, precipitous labor, elevated BMI, placental disorders
- **Oxytocin**: Stimulates the upper segment of the myometrium to contract rhythmically, constricting spiral arteries and ↓ blood flow
- Fundal massage

TRAUMA

- **Uterine rupture** – TOLAC/VBAC, s/p myomectomy
  - MVA
  - Prolonged labor, obstructed labor
  - Uterine overdistention
- **Genital tract lacerations** (cervical, vulvar)
  - Instrumentation during delivery (forceps)
- **Uterine inversion**

TISSUE

- **Retained products**
  - Placental tissue
- **Adherent placenta**
  - Placenta accreta/percreta/increta

THROMBIN

- **Thrombocytopenia** (ITP)
- **Inherited coagulopathies**
- Use of **anticoagulants**
- **Disseminated intravascular coagulopathy**
  - Sepsis, placental abruption, amniotic fluid embolism, HELLP syndrome, fetal demise

IDENTIFICATION

- Most healthy females can tolerate up to 1000 ml of blood loss
- **Tachycardia** usually the first symptom
  - Hypotension, nausea, chest pain, dyspnea, oliguria
  - Pallor, MS changes
- **Estimation of blood loss**
  - Visual estimation
  - Quantification with calibrated drapes

Video: Quantifying blood loss https://youtu.be/F_ac-aCbEn0

TREATMENT

- Treat the underlying etiology
  - **Tone**
    - Soft boggy uterus: uterine massage, pharmacologic txs
  - **Trauma**
    - Identify location/issue; suture, hematoma incision and drainage, replace uterus if inverted
  - **Tissue**
    - Inspection of uterus, manual removal of placenta, curettage
  - **Thrombin**
    - Check coag panel, replace clotting factors, platelets, FFP

TREATMENT

- As soon as a PPH is suspected, the **rapid response team** should be notified.
- **Uterine massage** should continue (unless oxytocin has been administered [WHO]).
- If not already in place, **two large-bore IV catheters** should be inserted
  - Isotonic crystalloids are preferred fluids to help maintain urine output >30 mL/hour.
- **High-flow oxygen** (10-15 L/min via face mask) should be administered.

TREATMENT

- Controlled cord traction:
  - grasp the cord with one hand and **gently apply traction** while simultaneously applying **suprapubic (NOT fundal) pressure** with the other hand (aka the "Brandt maneuver").

TREATMENT

- **Utero-vaginal packing**
- **Balloon tamponade** if the patient is hemodynamically stable.
- Pharmacologic tx includes:
  - Oxytocin, methylergonovine, carboprost tromethamine, and tranexamic acid.

TREATMENT

- **Oxytocin:** 10 units IM for prevention; expected response in 3 -5 minutes.
  - Treatment: 20 to 40 IU in 1 liter normal saline, infuse 500 mL over 10 minutes then 250 mL per hour
  - If given intravenously, use 40 units in 1 liter of NS or LR

TREATMENT

- **Tranexamic acid TXA:** 1 gram intravenously every 24 hours.
  - Inhibits breakdown of fibrin and fibrinogen
  - should be given within three hours of delivery
- **Methylergonovine:** 200 mcg IM; can repeat every 2-4 hrs.
  - Can be injected directly into the myometrium as well.
  - Do not administer methylergonovine intravenously.
- If no response in 3 – 5 minutes/no improvement is seen, add **carboprost tromethamine** 250 mcg IM every 15 minutes for a maximum of 8 doses.
  - Carboprost should never be given intravenously; avoid in asthmatic patients

TREATMENT

- **Blood products:** 2 units of packed red blood cells with plasma and platelets.
  - Most institutions use a 1:1:1 ratio of RBCs:FFP:platelets.
- If DIC is suspected, cryoprecipitate should be administered.
- Surgical options include arterial embolization, laparotomy, and hysterectomy.

SEVERE POSTPARTUM HEMORRHAGE (ALSO)

- **>1000 mL of blood loss**
  - All of the above, plus anesthesia and surgery consults
- **>1500 ml of blood loss**
  - Massive transfusion protocol:
    - Uterine packing/tamponade
    - Vessel embolization/ligation/compression sutures
    - Recombinant factor VIIa
    - Vasopressors for BP support
    - Consider intensive care, hysterectomy

PREVENTION

- **Active management of the third stage of labor** (WHO/ACOG)
- **Oxytocin** (10 IU, IV/IM) is the recommended uterotonic after delivery of the anterior shoulder
- **Controlled cord traction (Brandt-Andrews maneuver);** Firm traction is applied to the umbilical cord with one hand while the other hand applies suprapubic counterpressure. (WHO, Lancet study)
- **Delayed cord clamping** (1-5 minutes unless contraindications exist)
- **Postpartum vigilance:** Immediately assess uterine tone to ensure a contracted uterus; continue to check q 15 mins x 2 hours.

QUESTION 1

Which of the following could qualify as a postpartum hemorrhage?

a. Blood loss of 950 ml in a vaginal delivery

b. Blood loss of 950 ml in a cesarean delivery

c. Blood loss of 650 ml with a drop in BP and increase in HR

d. Blood loss of 500 ml with nausea and vomiting

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QUESTION 2

Which of the following is the most common cause of postpartum hemorrhage?

a. Uterine atony

b. Cervical laceration

c. Placenta accreta

d. DIC

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QUESTION 3

Which of the following is the most appropriate evidence-based intervention to help prevent postpartum hemorrhage?

a. Immediate cord clamping

b. Delayed cord clamping

c. Use of oxytocin in the third stage of labor

d. Cesarean delivery whenever possible

QUESTION 3

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POSTPARTUM HEMORRHAGE

- Final thoughts
  - **Prevention**
  - **Early diagnosis and intervention**
  - **Team-based approach to treatment**
  - **https://safehealthcareforeverywoman.org/**

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