POSTPARTUM HEMORRHAGE EVALUATION

FLAME LECTURE: 130

CHIANG 1.6.18

LEARNING OBJECTIVES

- Identify the risk factors for postpartum hemorrhage
- Construct a differential diagnosis for immediate and delayed postpartum hemorrhage
- Develop an evaluation plan for the patient with postpartum hemorrhage, including consideration of various resource settings
- Prerequisites:
  - NONE
- See also – for closely related topics
  - FLAME LECTURE 131A: PPH – Management
  - FLAME LECTURE 131B: PPH – Massive Transfusion Protocol

EPIDEMIOLOGY

- Postpartum hemorrhage (PPH) is the LEADING cause of maternal mortality world-wide
  - In the US, it is the leading cause of severe maternal morbidity
- Secondary sequelae from hemorrhage can occur as well including:
  - Adult respiratory distress syndrome (ARDS)
  - Shock
  - Disseminated intravascular coagulation (DIC)
  - Acute renal failure
  - Loss of fertility
  - Pituitary necrosis (Sheehan syndrome)

DEFINITION

- ACOG now defines PPH as ≥1000mL EBL or signs/symptoms of hypovolemia
  - Previous definitions: >500mL EBL after vaginal delivery, >1000 EBL after C/S, or decline in hematocrit of 10%
  - Regardless of the definition, >500mL blood loss should alert team to start hemorrhage prevention and vigilance
- Clinical symptoms typically manifest after significant blood loss (>1.5L), thus recognizing PP bleeding prior to patient presenting with tachycardia or hypotension are clinically important
  - Hemoglobin/hematocrit is not a reliable marker in postpartum setting

ETIOLOGY OVERVIEW

- Primary PPH: < 24 hours since delivery
  - Uterine atony
  - Retained placenta (especially placenta accreta)
  - Defects in coagulation
  - Uterine inversion
  - Trauma (vaginal/cervical lacerations, genital tract hematomas)
- Secondary PPH: 24 hours to 12 weeks postpartum
  - Subinvolution of placental site
  - Retained products of conception
  - Infection
  - Inherited coagulation defects (ex. vWF)

ETIOLOGY – THE 4 T's

ETIOLOGY	PRIMARY PROBLEM	RISK FACTORS & SIGNS
TONE *(Abnormalities of uterine contraction)*	Uterine atony	Prolonged use of oxytocin, high parity, chorioamnionitis, general anesthesia
	Uterine over-distension	Multiple gestation, polyhydramnios, macrosomia
	Uterine fibroids	Multiple uterine fibroids
	Uterine Inversion	Excessive umbilical cord traction, short umbilical cord, fundal implantation of the placenta
TRAUMA *(To the genital tract)*	Episiotomy	
	Cervical, vaginal, and perineal lacerations	Operative vaginal delivery, precipitous delivery
	Uterine rupture	Prior c/s or uterine surgery, fetal bradycardia
TISSUE *(Adherant placenta)*	Retained placenta	Succenturiate placenta, preterm delivery
	Placenta accreta	Prior c/s or uterine surgery
THROMBIN *(Abnormalities of coagulation)*	Pre-eclampsia / HELLP / TTP-HUS	Abnormal bleeding, petechiae, fetal death, placenta abruption, fever, sepsis
	Inherited clotting factor deficiency (vWF, hemophilia)	
	Severe infection	
	Amniotic fluid embolism	

PREVENTION

- The key to preventing morbidity is *prevention* and *readiness*
- Following every vaginal or cesarean delivery, active management prevention measures include:
  - Oxytocin administration following delivery (10 units IV or IM)
    - No formal guidance regarding timing (after delivery of anterior shoulder, after infant delivery, or after placental delivery)
    - Oxytocin + methergine or misoprostol NOT more effective when used prophylactically
  - Uterine massage
  - Umbilical cord traction

READINESS

- Risk assessment starts upon admission
  - Risk assessment tools can potentially identify 60-85% of patients who will have a PPH
  - An example…

HIGH RISK

- Previa
- Accreta
- Increta
- Percreta
- Hct < 30
- Bleeding at admission
- Known coagulation defect
- Hx of PPH
- Abnormal vital signs

MEDIUM RISK

- Prior c/s or uterine surgery
- > 4 prior deliveries
- Multiple gestation
- Chorioamnionitis
- Mag use
- Prolonged oxytocin

LOW RISK

- Singleton pregnancy
- < 4 prior deliveries
- Unscarred uterus
- No hx of PPH

IMPORTANT LINKS & REFERENCES

1. ACOG Practice Bulletin 183: *Postpartum Hemorrhage* 2017
2. California Maternal Quality Care Collaborative (CMQCC): Obstetric Hemorrhage Version 2.0 Task Force *Planning for and Responding to Obstetric Hemorrhage*. 2015
3. Callahan T, Caughey A. (2013). Postpartum Care and Complications. In *Blueprints obstetrics & gynecology* (6th ed., pp. 162-165). Philadelphia: Wolters Kluwer Health/Lippincott William & Wilkins.
4. Toy EC, Baker B, Ross PJ, Jennings JC. (2009). Postpartum Hemorrhage. In *Case Files Obstetrics and Gynecology* (4th ed., pp. 66-68). McGraw-Hill Publishing.
5. UpToDate:
   - Overview of postpartum hemorrhage.
   - Management of postpartum hemorrhage at vaginal delivery.
   - Management of postpartum hemorrhage at cesarean delivery.