UNIT 2: OBSTETRICS
SECTION B: ABNORMAL OBSTETRICS

Educational Topic 27:
Postpartum Hemorrhage

Rationale: Postpartum hemorrhage is a major, often preventable, cause of maternal morbidity and mortality.

Intended Learning Outcomes:

A student should be able to:

- List the risk factors for postpartum hemorrhage
- Construct a differential diagnosis for immediate and delayed postpartum hemorrhage
- Develop an evaluation and management plan for the patient with postpartum hemorrhage including consideration of various resource settings

TEACHING CASE

CASE: Tracy is a 33 year-old G1 woman who underwent induction of labor for a post-dates pregnancy at 41 weeks and 3 days gestation. Prostaglandins were used to accomplish cervical ripening and an oxytocin infusion was used to induce labor. The patient had a lengthy first and second stage. Ultimately, the fetus was delivered with vacuum assistance. The baby weighed 9 pounds 3 oz at birth. The third stage of labor was uncomplicated. Thirty minutes later you are called to the recovery room because Tracy has experienced brisk vaginal bleeding that did not respond to uterine massage by her nurse.

COMPETENCY-BASED DISCUSSION & KEY TEACHING POINTS:

Competencies addressed:

- Patient Care
- Medical Knowledge
- Systems-Based Practice

1. What is the definition of postpartum hemorrhage?

- Varying definitions among sources.
- Blood loss greater than or equal to 500 ml within 24 hours after vaginal delivery or 1000 mL after Cesarean delivery.
- Decline in hematocrit of more than 10% may be used.
• Severe PPH is greater than or equal to 1000 ml within 24 hours after delivery.
• Primary postpartum hemorrhage occurs in first 24 hours, while secondary hemorrhage occurs after 24 hours and before 6-12 weeks following delivery.

**Key Teaching Point:** Postpartum hemorrhage is the leading cause of maternal death worldwide. In most cases it is preventable. At present, there is no good way to estimate blood loss quantitatively over clinical estimation.

2. **What elements of this case present risk factors for a postpartum hemorrhage?**
   - Induced labor
   - Prolonged labor
   - Operative vaginal delivery
   - Fetal macrosomia

3. **What are other risk factors for postpartum hemorrhage?**
   - Multiparity
   - Over-distended uterus (multiples, hydramnios, fetal macrosomia)
   - Augmented labor
   - Prolonged labor
   - Operative delivery
   - Previous history of postpartum hemorrhage
   - Chorioamnionitis

**Key Teaching Point:** There are many risk factors for postpartum hemorrhage; however, there are times when no risk factor for PPH can be identified.

4. **What are the causes of postpartum hemorrhage?**
   - Uterine atony
   - Retained placental tissue
   - Maternal trauma/obstetric lacerations
   - Uterine inversions
   - Maternal coagulopathy (pre-existing or acquired)

**Key Teaching Point:** The causes of postpartum hemorrhage can be remembered by the 4 T’s (Tone, Tissue, Trauma and Thrombin). Learners should be aware that uterine atony is by far the most common cause of postpartum hemorrhage.

5. **What is the management for postpartum hemorrhage?**
   - **Prevention:**
     - Active Management of the third stage of labor
       - Oxytocin (IV or IM) with delivery of anterior shoulder or delivery of the fetus
       - Gentle cord traction following delivery of fetus
       - Suprapubic support of the uterus to prevent inversion while providing cord traction

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• Diagnosis of PPH and Management
  • ABC
  • Assess tone of uterus
    • Bimanual massage
    • Employ uterotonics (oxytocin, ergonovine/methyl-ergonovine, 15-methyl prostaglandin F$_2$α, misoprostol)
    • Empty bladder, insert foley catheter for fluid monitoring
    • If uterus does not respond to these methods consider alternatives measures (intrauterine compression, surgery with compression sutures, arterial ligation, hysterectomy)
  • If uterine tone is adequate consider other etiologies
    • Retained placental fragments
      • Consider curettage
    • Maternal laceration of lower genital tract
      • Consider examination under anesthesia and repair
    • Maternal Coagulopathy
      • Consider involvement of other specialties such as hematology
      • Give appropriate factor replacement
      • Identify underlying cause
        • Infection, hemorrhage, amniotic fluid embolism

**Key Teaching Point:** Postpartum hemorrhage is a sign, not a diagnosis. It is critical to identify the underlying cause rapidly so that it can be remedied. Management of a severe postpartum hemorrhage should include members of the health care team including obstetrics, nursing, anesthesia, hematology, internal medicine, transfusion medicine and intensive care specialists. Protocols should be in place to deal with postpartum hemorrhage and simulations should be undertaken to ensure all members of the team are well versed in the management of this potentially fatal obstetrical complication.

**REFERENCES**


ACOG Practice Bulletin Number 76, Postpartum Hemorrhage, 2006; Reaffirmed 2013.
