POSTPARTUM HEMORRHAGE

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• In 2017, the American College of Obstetricians and Gynecologists revised their definition of PPH to: cumulative blood loss $\geq 1000$ mL or bleeding associated with signs/symptoms of hypovolemia within 24 hours of the birth process regardless of delivery route
Uterine bleeding is controlled by a combination of two mechanisms:

• Contraction of the myometrium, causes mechanical hemostasis

• Local decidual hemostatic factors, which cause clotting
CAUSES OF POSTPARTUM HEMORRHAGE

- **Focal or diffuse atony:**
  - Atony may or may not be associated with retained tissue
  - Placental disorders (eg, morbidly adherent placenta, placenta previa, abruptio placentae),
  - Retained products of conception
  - Uterine inversion
- **Trauma**
- **Coagulopathy:**
  - Von Willebrand disease
  - Amniotic fluid embolism
  - Placental abruption
  - Preeclampsia with severe features, or HELLP syndrome
RISK FACTORS OF POSTPARTUM HEMORRHAGE

- Retained placenta/membranes
- Failure to progress during the second stage of labor
- Morbidly adherent placenta
- Lacerations
- Instrumental delivery
- Large for gestational age newborn
- Hypertensive disorders (preeclampsia, eclampsia, HELLP)
Other risk factors

• Personal or family history of previous PPH
• Obesity
• High parity
• Precipitous labor
• Chorioamnionitis
• Leiomyoma
• Amniotic fluid embolism
• Abruptio placentae
• Sepsis
• Use of some drugs (uterine relaxants, antithrombotic drugs, antidepressants)
• **Stage 0**: Every woman in labor/giving birth

• **Stage 1**: Blood loss $>500$ mL vaginal delivery or $>1000$ mL cesarean delivery or change in vital signs (by $>15$ percent or heart rate $\geq 110$ beats/minute, blood pressure $\leq 85/45$ mmHg, $O_2$ saturation $<95$ percent)

• **Stage 2**: Continued bleeding with total blood loss $<1500$ mL

• **Stage 3**: Total blood loss $>1500$ mL or transfusion of more than two units packed red blood cells or unstable vital signs or suspicion of disseminated intravascular coagulation.
GENERAL PRINCIPLES OF MANAGEMENT

- Quantify blood loss
- Timely diagnosis and early intervention
- Teamwork
- Monitor bleeding, vital signs, and laboratory results
Treatment goals

• Restore or maintain adequate circulatory volume to prevent hypoperfusion of vital organs
• Restore or maintain adequate tissue oxygenation
• Reverse or prevent coagulopathy
• Eliminate the obstetric cause of PPH
Assessment includes:

- **Vital signs**: Evaluate blood pressure, heart rate, respiratory rate, peripheral oxygen saturation, and urine output.
- **Estimated blood loss**
- **Coagulation**: Suspicion of coagulopathy should prompt blood and blood product replacement
- **Review drugs**
Basic interventions

• Obtain assistance,
• Continue to monitor vital signs and quantify blood loss.
• If not already in an operating room, move potentially unstable and unstable patients to an operating room
• Adequate intravenous accesses
• Resuscitate with crystalloid and blood
• Provide adequate anesthesia
• Examine the lower genital tract and uterus to determine the cause of bleeding
• Insert a bladder catheter
Basic interventions

• The entire vagina from perineum to cervix should be inspected for significant lacerations. This examination should be performed specially in all patients with PPH who delivered vaginally.

• Lab test: CBC, diff. Fibrinogen concentration, prothrombin time, activated partial thromboplastin time.

• The coagulation panel should be repeated every 30 to 60 minutes to observe trends until PPH is controlled.
Allow performance of a thorough examination:

- Adequate assistance
- Exposure
- Lighting
- Instruments
- Anesthesia

Intense anal pain may be a warning sign of an enlarging vaginal or vulvar hematoma
Basic interventions

- Examine the uterine cavity for rupture or retained products of conception
- Assess for uterine inversion
- Assess for intra-abdominal hemorrhage
• Administer **tranexamic acid**:  
• An anti-fibrinolytic drug  
• Hyperfibrinolysis and fibrinogen depletion are common in the early stages of major postpartum and traumatic bleeding  
• Delay in treatment, even if short, reduces the benefit of tranexamic acid administration.

1 gr is infused over 10 to 20 minutes
• Uterine massage and compression

• **Increase oxytocin infusion:** 40 units in 1 L of normal saline intravenously at a rate sufficient to control uterine atony or 10 units intramuscularly (including directly into the myometrium)
DRUGS (Manage atony)

- Carboprost tromethamine: **250 mcg intramuscularly** at least 15 minutes apart

- Methylergonovine: **0.2 mg intramuscularly** or directly into the myometrium (never intravenously). May repeat at two- to four-hour intervals, as needed
• Misoprostol: 400 mcg sublingually
  The World Health Organization suggests a single dose of 800 mcg sublingually
• Dinoprostone (PGE2): 20 mg vaginal or rectal suppository
Manage atony

• Intrauterine balloon catheter

Technique:
1. Cleanse the cervix and vagina
2. Grasp the anterior cervical lip with ring forceps
3. Apply gentle traction so the cervical canal and uterine cavity are aligned
4. Use forceps to insert the balloon as high in the cavity as possible without using excessive force
• Verify the position of the balloon with transabdominal ultrasound
• Fill the balloon(s) with warm sterile fluid, Cessation of bleeding often occurs between 250 to 300 mL
• If necessary, a vaginal pack may be placed to keep the balloon in position
• Insertion of packing

Technique:

- The same as balloon catheter
- **NOTE:** Mark the level of the fundus to facilitate post-tamponade monitoring
- Antibiotic prophylaxis with broad spectrum antibiotics while the balloon/pack is in place
- the balloon is deflated slowly after 24 hours
Bakri® Postpartum Balloon with Rapid Instillation Components
Uterine artery ligation
Uterine artery ligation
NOTE:

- Sutures should not be placed cephalad to the fornix, as this can result in ureteral ligation
- Vaginal hematomas should not be drained unless expanding
- Arterial or heavy active vaginal bleeding should not be treated with packing