Post Partum Hemorrhage

Prepared by:
Dr Amal Barakat, MD

Post Partum Hemorrhage

- PPH accounts for 30% of all maternal deaths worldwide and 10% of maternal deaths in the U.S.

- Traditionally PPH has been defined as a blood loss >500 mL following a vaginal birth or a loss of >1000 mL after a cesarean birth.

- More recently, PPH has been considered severe if there are signs of hemodynamic compromise regardless of the estimated volume of blood loss within 24hrs following the birth process regardless of mode of delivery.

Primary Vs Secondary PPH

- Primary PPH occurs (within 24 hours of delivery)
- Secondary PPH occurs (between 24 hours and six weeks postpartum).

Causes of Primary PPH

- **There are four main causes of primary postpartum hemorrhage that account for the majority of cases. Also known as the “Four T's”:**
- Tone (uterine atony) (70-80 %)
- Tissue (retained placenta)
- Trauma (Lacerations of the perineum, vagina, cervix, uterus & uterine rupture))
- Thrombin (Pre- existing coagulopathy (inherited or acquired))

Risk factors for PPH

- **50% of PPH cases occur in women without any risk factors.**
- **There is a group of patients who are at "high risk" of hemorrhage based on their medical or obstetrical history**

- Anemia, thrombocytopenia & coagulopathy
- Distended uterus (twin-gestation, large infants, polyhydramnios)
- Prolonged labor with prolonged Oxytocin use
- Intrapartum administration of Mg Sulfate
- Instrumental delivery
- Chorioamnionitis
- Multiparty & Grand multiparty
- Previous history of PPH
- Prior uterine surgery, cesarean section
- Large uterine fibroid
- Patients with a known or suspected abnormal placentation (placenta increta, percreta, accreta) are at extreme risk for PPH.

How can postpartum hemorrhage be prevented?

- Identify women at risk of PPH.

- For those women known to have risk factors for PPH appropriate management should be provided in both the antenatal and intrapartum periods.

- All women at risk of PPH, should birth in a unit with rapid access to blood and blood products and have antenatal correction of anemia.

How can postpartum hemorrhage be prevented?

- **Antenatal correction of anemia:**

- Studies clearly demonstrate that the less anemia and more iron stores a woman has in late pregnancy, the less likely she is to suffer morbidity or need a blood transfusion, even in the setting of mild to moderate PPH.

How can postpartum hemorrhage be prevented after giving birth?

- Oxytocin prophylaxis:
- The main preventive measure for postpartum hemorrhage is the intramuscular or intravenous administration of 10 units of oxytocin immediately after birth, associated with active management of the third stage of labor.

Active management of the third stage of labor

❖Active management of the third stage of labor should be recommended to all pregnant women as this reduces the risk of PPH and the need for blood transfusion:

✓Intramuscular injection of 10 IU oxytocin, given as the anterior shoulder of the baby is delivered, or immediately after delivery of the baby.

✓Early clamping and cutting of the umbilical cord.

✓ Controlled cord traction

Controlled Cord Traction (CCT)

- Cord traction facilitates the separation of the placenta and enables its delivery.
- One method of cord traction application is known as the Brandt-Andrews maneuver, in which one hand secures the uterine fundus on the abdomen to prevent uterine inversion while the other hand exerts sustained downward gentle traction of the clamp on the umbilical cord.
- This maneuver leads to a **reduction** in the need for manual placental removal; in addition, there is a statistically significant **reduction** in the duration of the third stage of labor, blood loss, and incidence of postpartum hemorrhage.

Modified approach to active management of the third stage

- It is now recognized that a modified approach to active management of the third stage may be preferable with delayed cord clamping for between 1 and 3 minutes.
- This approach allows **autotransfusion of placental blood to the neonate** while **maintaining the benefit of a reduced risk of PPH**.
- It is of particular importance in preterm birth

Postpartum hemorrhage prevention after giving birth?

- In settings where oxytocin is unavailable or its quality cannot be guaranteed, the use of other injectable uterotonics (if appropriate ergometrine/methylergometrine 200 μg IM/IV; hypertensive disorders can be safely excluded prior to its use) or oral misoprostol (400–600 μg orally) or carbetocin 100 μg IM/IV is recommended for the prevention of PPH.

- The combinations of ergometrine plus oxytocin or misoprostol plus oxytocin may be more effective uterotonic drug strategies for the prevention of PPH ≥500 ml compared with the current standard, oxytocin.

- This comes at the expense of a higher risk of adverse effects (vomiting and hypertension with ergometrine and fever with misoprostol).

Prolonged third stage of labor

- The third stage of labor is diagnosed as prolonged if not completed within 30 min of the birth of the baby with active management and 60 min with physiological management.
- Postpartum hemorrhage is related to a prolonged third stage of labor of more than 30 min.
- Active management of the third stage of labor can reduce the risk of severe postpartum hemorrhage and the need for blood transfusion.

Remember

- Once the placenta is delivered, it should be thoroughly inspected on the outside and by inverting it to check for missing pieces, because retained products of conception are a known risk factor for postpartum hemorrhage.

- After the placenta is delivered, the vaginal canal should be inspected for any lacerations, and if lacerations are detected, they should be repaired immediately.

Management of PPH

- Assessment of ongoing blood loss is an essential aspect of post-partum care.
- Clinical signs of shock or tachycardia should prompt a thorough assessment of the mother including an accurate appraisal of blood loss, both concealed and revealed.
- The successful management of PPH requires a multidisciplinary team approach.

Resuscitation

- **The cornerstone of resuscitation is restoration of blood volume and oxygen-carrying capacity**.
- **Remember**: **The successful management of PPH requires a multidisciplinary team approach**.
- Immediately call for help
- ABC approach
- Assessment of airway and breathing initially with administration of high flow oxygen is recommended.
- Wide-bore intravenous access should be established with blood sent for full blood count, coagulation profile and cross-match.
- Insert urinary catheter.

Resuscitation

- Rapid infusion with fluids (Crystalloids:Normal Saline or Ringer Lactatet, ideally warmed), should be begun once intravenous access is achieved.
- The use of group specific or group O Rh(D)-negative blood should be considered early to restore oxygen carrying capacity.
- It is critical that facilities providing obstetric care have a “massive transfusion protocol” with which all staff are familiar.
- Additional measures such as keeping the woman warm and positioned flat are also important.

Monitoring and Investigations

- Recording of clinical observations at regular intervals:

  Pulse rate, blood pressure, oxygen saturation and urinary output.

- Repeating hematological investigations as indicated.

- Invasive hemodynamic monitoring may be necessary depending upon the clinical situation.

- Most equipment needed to manage an acute PPH event should be available and located on the cart.

Blood Product Guide

- **Early replacement of clotting factors and platelets is essential in the management of severe PPH.**

- **<u>All blood products should be available:</u>**
- Packed Red Blood Cells (PRBC)
- Fresh Frozen Plasma (FFP)
- Pooled donors Platelets (PLT)
- Cryoprecipitate

Massive Blood Transfusion Protocol

- **For ongoing, heavy bleeding the Massive Blood Transfusion protocol can be activated, the order is called BLOOD Orders for Massive Blood Transfusion (Adult).**

- With this order the blood bank will continue to send blood starting with O neg 2 units PRBC and 2 FFPs followed by every 30 min 4 packed red blood cells, 4 Fresh frozen plasma (FFP) and 1 platelets.

- This 4:4:1 (PRBC:FFP:PLT) ratio is the current preferred ratio of transfusion.

- For low fibrinogen (A normal value for fibrinogen is between 200 and 400 mg/dL) use cryoprecipitate.

Complications of massive blood transfusion

- **Complications of massive blood transfusion include:**
- The lethal triad of acidosis, hypothermia, and coagulopathy associated with MassiveTransfusion is associated with a high mortality rate.
- Hypothermia.
- Dilutional coagulopathy.
- Hypocalcaemia, hypomagnesaemia, citrate toxicity.
- Metabolic acidosis.
- Hyperkalaemia and hypokalaemia.
- Immune haemolysis
- Air embolism.

Management of PPH

- **Remember:** Uterine atony is the most common cause of primary PPH

- **After primary resuscitation .. the following interventions have all been used to stop the bleeding:**

✓**Mechanical Measures**

✓**Pharmacological Measures**

✓**Surgical Measures**

Management of PPH

- **Mechanical Measures:**

➢External uterine massage and bimanual compression are generally used as first-line treatments.

- (emptying the bladder may assist in this process).

Management of PPH

- The priority is to stop the bleeding before the patient develops coagulation problems and organ damage from under-perfusion.

- Conservative approaches should be tried first, rapidly moving to more invasive procedures if these do not work.

Management of PPH

- **Pharmacological Measures:**
- Oxytocin (Syntocinon) 5 units by slow intravenous injection.
- Intravenous oxytocin infusion as per local protocol (40 units oxytocin in 500 mL normal saline over four hours).
- Ergometrine 0.25 mg by slow intravenous or intramuscular injection, repeated if necessary 5 minutely up to a maximum of 1.0 mg; in the absence of contraindications (Hypertension, Cardiac disease).

Management of PPH

- **Pharmacological Measures:**
- Prostaglandin and its analogues are the most potent of the uterotonics but also have the most serious adverse effect profile which includes severe hypertension and bronchospasm:

✓PG E1 (Misoprostol) (Cytotec) (400 to 1000mcg) (Buccal, SL, Rectally)

✓15-methyl-PGF2α (carboprost; Prostinfenem) which may be administered in Intra-muscular injection of 0.25mg, in repeated doses as required or 0.5 mg Intramyometrial.

✓PG E2 (Sulprostone)

Management of PPH

- **Pharmacological Measures:**
- **Tranexamic acid (1 gm / IV)** When used as a treatment for postpartum haemorrhage, tranexamic acid should be given as soon as possible after bleeding onset.
- Tranexamic acid is given for all PPH regardless of cause.
- Tranexamic acid to be given within 3 hours postpartum 1 gram total (100mg/ml IV to be given over 10 min)
- Repeat if ongoing PPH in 30 min or rebleed within 24 hours.
- ***Contraindications:***

✓ Known h/o thrombophilia on anticoagulation prophylaxis.

✓Active thromboembolic disease such as DVT, pulmonary embolism and cerebral thrombosis.

Management of PPH

- **<u>Surgical Measures:</u>**
- Balloon tamponade: Foley catheter, Bakri balloon, Rusch balloon or Sengstaken-Blackmore esophageal catheter.
- Newer intrauterine devices using low pressure vacuum (JADA suction system)
- Hemostatic brace suturing (uterine compression sutures such as the B-Lynch suture).
- Bilateral ligation of uterine arteries.
- Bilateral ligation of internal iliac arteries
- Selective arterial embolization

(If the patient is hemodynamically stable, (2-4hrs lag time))

Management of PPH

- **Surgical Measures:**

- **Hysterectomy**
- Surgical interventions should be initiated sooner rather than later, especially hysterectomy in cases of:
- Uterine rupture,
- Placenta accreta
- Uncontrolled massive hemorrhage.

Primary vs Secondary PPH

- Primary PPH occurs (within 24 hours of delivery).
- Secondary PPH occurs (between 24 hours and six weeks postpartum).

Causes of secondary PPH

- Secondary PPH is usually associated with endometritis (with or without retained products of conception).

How should secondary PPH be managed?

- General assessment
- Vital Signs
- ABC Approach
- IV Cannulas & IV fluid
- CBC, Coagulation profile, Cross match, Prepare 4 units of blood
- Ultrasound (to check for the presence of retained products)
- Conventional treatment usually includes antibiotic therapy and, uterotonics in some cases.
- In situations of excessive or continued bleeding surgical intervention, particularly the evacuation of retained products, should be considered.

- **References:**

- **Prevention and Management of Postpartum Haemorrhage (Green-top Guideline No. 52).**
- The **NICE guideline** on intrapartum care. © **NICE** 2023.
- **WHO recommendations for the prevention and treatment of postpartum haemorrhage.**
- **FIGO recommendations on the management of postpartum hemorrhage 2022.**