
Postpartum Hemorrhage (PPH) Causes & Management

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Summary:

Postpartum hemorrhage [PPH] is one of the major causes of maternal morbidity and mortality. Acknowledge of risk factors & active management of 3rd stage of labor will reduce PPH.

Key word : PPH ,causes , diagnosis, management.

Definition:

There is no single definition of PPH. It is defined as blood loss in excess of 500ml at the time of vaginal delivery or more than 1000 ml following cesarean section.^{1,2}

Recent studies define PPH as hematocrit changes of 10% or a need for blood transfusion.³

It defined as an episode of hypotension (a systolic or diastolic pressure decrease of 30mmHg), decreased hemoglobin concentration (3 g or more) an estimated blood loss of 1000 ml or more.⁴

Blood loss exceeding 1500ml is considered a massive postpartum hemorrhage. Postpartum hemorrhage is the most common cause of serious blood loss associated with pregnancy. Based on an estimated blood loss significantly greater than 500ml.

Incidence:

PPH occurs at 5% of deliveries.³⁻⁵ PPH accounted for 28%-35% of maternal deaths in developing countries^{2-4,6} and for 10% in the USA.⁵ Severe bleeding occurs in 1.3%.³

Classification:

Postpartum hemorrhage is classified into early, occurring in the first 24-hrs, and delayed, occurring after 24 hrs; it is observed most often between the 6th and 10th day after delivery.

Risk factors:

1. Prolonged third stage of labor
2. Preeclampsia
3. Mediolateral episiotomy
4. Multiple gestation
5. Arrest of descent
6. Soft tissue laceration
7. Augmented labor
8. Instrumental delivery

9. Multiparity

10. General anesthesia

11. Choriomnionitis

12. Protracted active phase of labor

13. Arrested of second stage of labor

All are considered risk factors of PPH.^{3,7,8}

Etiology:

The most frequent causes of early postpartum hemorrhage are uterine atony (75 %),^{4,5} laceration of the cervix or vagina, and retained placental fragment [8,9]. Other causes include uterine rupture about 33.5%,¹⁰ uterine inversion, placenta accreta, increta, percreta, poorly performed or repaired episiotomy & hematological disorders of pregnancy.

Late or delayed postpartum hemorrhage is mostly the result of retained products of conception, or unrecognized rupture of the vulva, vagina and cervix, or of abnormal penetration of the placenta into the myometrium.

Cesarean section is a vascular operation and blood loss is commonly between 500 and 1000ml and 7% of patients may bleed more than 1000 ml.¹¹

The incidence of cesarean section hemorrhage during or after the operation to be 7.9% and the most common cause during C/S were lacerationofthe uterus 10% and blood loss more than 1000 ml in 7.3%.¹¹

Pathogenesis:

The most like pathogenesis of PPH occurs as defect of uterine contraction. After delivery of the infant, the uterus contracts effecting placental separation by development of cleavage plane along the decidua basalis. The placenta completely separates within the first few uterine

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contractions. Following the separation of the placenta, large venous sinuses become patent. The bleeding from these sinuses is controlled by contractions of the uterine musculature, and by thrombosis formation within the lumen of the sinuses. The conditions that lead to poor uterine

contractility, such as an overdistended uterus, prolonged labor or prolonged oxytocin stimulation, significantly increase the chance of postpartum hemorrhage. Or it may occur as a defect of uterine integrity. Laceration of the cervix or vagina, or rupture of the uterine corpus as a result of uterine scar or an operative obstetric, operative vaginal delivery, vulvar trauma and hematoma, are causes of postpartum hemorrhage.

Diagnoses:

Postpartum hemorrhage is usually diagnosed by the onset of heavy bleeding following delivery of the infant, and a boggy uterus. The effect of blood loss is dependent on the hematocrit and the blood volume before delivery. The patient may appear pale, sweaty and may have cold, clammy skin, or she may initially appear relatively normal. If blood loss is massive, loss of consciousness may occur. Assessment of blood loss by visual inspection is inaccurate. Careful examination of blood loss by experienced medical staff following delivery should be carried out. On the basis of the signs and symptoms, blood pressure and pulse rate should be taken immediately. A fall in blood pressure and rising pulse may indicate the onset of severe hypovolemia.

Complications:

The most common complications of postpartum hemorrhage are hypovolemic shock, anemia and transfusion reaction.¹²⁻¹⁴ Failure to recognize postpartum hemorrhage or poor treatment of hypovolemic shock may lead to maternal death.

The possibilities of transfusion complications are transfusion reaction, contamination with the hepatitis virus or other agents. Sheehan's syndrome development of hypopituitarism due to pituitary necrosis is secondary to rapid postpartum hemorrhage, which is manifested by failure of lactation.

Asherman's syndrome occurs after aggressive uterine curettage in an attempt to control bleeding. It is characterized by extensive adhesions of the uterine cavity. This syndrome is associated with failure of menstruation, chronic pelvic pain, and infertility.¹⁴

Hysterectomy may be done mainly due to uterine hypotony.

Management:

The active management of the third stage of labor includes the use of oxytocin; early cord clamping and active delivery of the placenta will prevent PPH.¹⁵

Conservative / medical management:

Once the fetus has been delivered, the uterine fundus should be palpated to determine its height and consistency. The fundus is easily palpable at the level of the umbilicus or just below it. The uterus should be firm and no vaginal bleeding is noticed. If the uterus is boggy or soft, then gentle abdominal massage of the uterine fundus may be necessary to make the uterus firm. If vaginal bleeding is not stopped and/or there are no signs of placental separation, then manual removal of the placenta is mandatory. The placenta membranes should be carefully inspected after every delivery; if part of the placenta or its membranes is missing, then uterine curettage is indicated. After delivery of the placenta, the uterine fundus should be palpated frequently. If it is boggy and does not respond to vigorous abdominal massage, pharmacological treatment should be instituted. The most common pharmacological agent is oxytocin and methergine. Initial treatment with oxytocin, causing the uterus to contract, is common therapy. Some institutions have protocols that call for routine administration of an oxytocic agent, which reduces the risk of postpartum hemorrhage by 40%.³ The dose can be increased depending on the clinical situation. If the bleeding continues despite oxytocin, a bimanual uterine compression is needed. A blood sample for complete blood count, type and crossmatch of at least two units of blood should be sent to the blood bank. Blood transfusion may be commenced in the presence of falling blood pressure, rapid pulse, heavy vaginal bleeding and low hematocrit. If vaginal bleeding persists in a firm and contracted uterus, laceration of the cervix and vagina should be suspected, especially after operative vaginal delivery.

Laceration of the cervix and vagina should be repaired under proper anesthesia and good light. Uterine exploration is required if postpartum hemorrhage continues to ascertain whether there are retained placental fragments or trauma to the uterus as a result of uterine perforation or rupture.

Retained placental fragments are managed by uterine curettage while uterine perforation or rupture by laparotomy, which is mandatory to effect uterine repair and control bleeding.

Occasionally, hysterectomy is the only choice of treatment. Prostaglandin should be administered if uterine bleeding persists due to uterine atony and despite mechanical manipulation of the uterus and failure of the oxytocin.¹⁶ Prostaglandin may be administered by IM or intramyometrial routes before proceeding to a surgical approach; it is effective in 88% of patients.^{3,4}

External abdominal aortic compression has been used as a temporary measure in the management of severe postpartum hemorrhage.^{5,17} Oral misoprostol has been used as an oxytocic agent.² Hemabate sterile solution is effective in 87.7% of PPH cases.¹⁸

Surgical management:

The indication for surgical management of postpartum hemorrhage is failure of the medical treatment. Uterine, ovarian and hypogastric artery ligation are surgical

methods used to control postpartum hemorrhage; they are effective in about 50% of cases.^{5,19,20} Hysterectomy may be necessary in 40% of cases, secondary to uterine atony 42%, placenta accreta 25% and uterine rupture 21% to save the mother's life.²¹ Selective pelvic artery embolization can be extremely helpful in controlling bleeding with minimal complications. Only skilled arteriographers can perform it. It is also used if hysterectomy is contraindicated or bleeding persists after hysterectomy.

The risk of blood transfusion should be one of the factors considered when determining the safest route of delivery.

Over the past few years that there has been a general tendency towards reduced use of blood transfusion in obstetric practice, the reasons being: fears for both the patient and the clinician about the risk, especially after the discovery of the HIV and hepatitis B& C, the realization that blood transfusion is unnecessary in many cases previously treated in this manner and the issues of the cost.

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