Management of Primary Postpartum Hemorrhage

Essay

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By

Asmaa Maher Abd EL Ghaffar

M. B. B. Ch.

Resident In The Preventive and Social Medical Center

Cairo University Hospitals

Under Supervision Of

Prof. Dr. Shamel Mustafa Hefny

Professor of Obstetrics and Gynecology

Faculty of Medicine-Cairo University

Dr. Shereen Mohamed Sobh

Lecturer of Obstetrics and Gynecology

Faculty of Medicine-Cairo University

Faculty of Medicine

Cairo University

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ABSTRACT

Early postpartum hemorrhage remains a significant cause of maternal morbidity and mortality, Postpartum hemorrhage is most commonly due to uterine atony ,The problem of placenta previa and accreta is likely to become more common, as the incidence of cesarean section continues to rise, trauma to the genital tract and coagulopathy defects. In recent years new therapeutic measures to control the bleeding have gained attention. Although, these newer therapies focus on avoiding the need for emergency hysterectomy and preservation of reproductive function.

Key Words:

Primary Postpartum Hemorrhage; Prevention; Management.

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Introduction

Postpartum hemorrhage (PPH) is the most common cause of maternal mortality and account for one quarter of all maternal deaths worldwide **[The World Health Organization (WHO), 2005].**

Traditionally, Postpartum hemorrhage has been defined as the loss of more than 600 ml of blood in a vaginal delivery and more than 1000 ml in a cesarean delivery. PPH is divided into early PPH that occurs within 24 hours after delivery and late PPH that occurs 24 hours to 6 weeks after delivery **(Boulleret C, et al 2004).**

Any bleeding that results in signs and symptoms of hemodynamic instability or any decrease in hematocrit more than 10% of the prenatal value is also considered as PPH **(Bouwmeester F W, et al 2003).**

PPH is a description of an event and not a diagnosis. The most common cause of PPH is Uterine atony, Retained placenta, Abnormal placental adhesion, Lower genital tract laceration, Uterine rupture, Uterine inversion, and Coagulopathy (**Bolte A C, et al 2005).**

Antenatal risk assessment predicts only 40% of those who will have PPH. In recent years however, some of these risk factors have become more common, including the increased mean maternal age of child birth, increasing number of women with complex medical disorders becoming pregnant, increasing number of multiple pregnancy and increasing cesarean section rates leading to subsequent placenta previa and its sequel. Necessary precautions are required for this at risk population, including transfer to centers with transfusion facilities and an intensive care unit (ICU) for delivery if such facilities are not available locally. Interestingly, studies on grand and great grand multiparous women traditionally thought to be at high risk of PPH, have shown that their risk

of PPH is not different to multiparous women **(Gowri Ramanathan, et al 2006).**

The optimal solution for the vast majority if not all deaths caused by PPH is prevention **(Lalonde A, et al 2006**).

Historically, Crede was the first to introduce the method for management of third stage of labor: watchful expectancy and, if needed, gentle manual expression of the placenta. Two other major factors in the reduction of maternal deaths emerged after the 1930s: the introduction of ergometrine and blood transfusion facilities by emergency obstetric services or 'flying squads'. The currently practiced active management of the third stage of labor involves early oxytocic therapy, cord clamping and placental delivery by gentle controlled cord traction following signs of placental separation. Evidence suggests that active management reduces the incidence and severity of PPH, postpartum anemia and the need for blood transfusion. Syntometrine found to be superior to either 5 or 10 IU of oxytocin in the reduction of PPH of more than 500 ml, however in PPH of more than 1000 ml, either is useful (**Gowri Ramanathan, et al 2006).**

The key to the management of PPH involves rapid recognition and diagnosis of the condition, restoration of circulating blood volume with a simultaneous search for the cause. Although the presentation of PPH is most often dramatic, bleeding may be slower and clinical signs of hypovolemia may develop over a longer time frame, especially if secondary to retained tissue or trauma, or if concealed in the form of hematomas. The vast majority of cases are handled without surgical intervention, with the exception of uterine rupture or genital tract trauma. Delay in initiating appropriate management in severe PPH is the major

factor resulting in adverse outcomes. As significant life-threatening bleeding can occur unpredictably, a clear and logical sequence of steps is essential in the management of PPH. There is an algorithm previously proposed using the mnemonic 'HAEMOSTASIS' that spells the actions suggested in the effective control of primary PPH (**Gowri Ramanathan, et al 2006).**

AIM OF THE WORK

To review what has been published about primary postpartum hemorrhage concerning, etiology, diagnosis, prevention and management. Special attention will be given to the recent advances in the treatment e.g. use of misoprstol, antishock garment, balloon tamponade, **B-Lynch** surgical technique and **Hayman** modifications for this technique, stepwise devascularization and arterial embolotherapy.

Primary postpartum hemorrhage

Primary postpartum hemorrhage (PPH) is defined as excessive bleeding associated with hemodynamic changes in the mother in the first 24 hrs following delivery of the baby. Fortunately, due to physiological increases in plasma volume and red cell mass during pregnancy, measured blood loss up to 1000 ml is fairly well tolerated by healthy pregnant women **(Bolte A C, et al 2005).**

Patients cope with blood loss in different ways depending on their pre-existing health e.g. anemia or pre-eclampsia. New methods for more accurate measurement of blood loss have been devised (e.g. plastic bedpans, linen-savers) **(Gowari Ramanthan, et al 2006).**

Postpartum hemorrhage and maternal mortality:

Postpartum hemorrhage occurs in approximately 4 % of vaginal deliveries, and estimates that it causes significant morbidity and 25 % of all maternal childbirth- related deaths **(Karen L, et al 2006).**

Egypt has improved but relatively high maternal mortality ratio of 84 maternal deaths per 100,000 live births although 60% of births are medically assisted and 49% are facility-based. Postpartum hemorrhage is the leading factor contributing to 27% of maternal deaths, with poor obstetric management cited as the most frequent avoidable factor, contributing to 43% of maternal deaths **(Khalil K, et al 2004)**.

The World Health Organization **(WHO)** has examined studies on PPH published between 1997 and 2002 to arrive at more precise definitions of PPH and estimates of its incidence, preliminary findings suggest that

excessive bleeding was reported to have occurred in 0.84% to 19.80% of deliveries **[World Health Organization; 2004 (25—26 May)].**

Predisposing Factors and Causes:

Postpartum hemorrhage is the consequence of excessive bleeding from the placental implantation site, trauma to the genital tract and adjacent structures, or both **Table (1)** uterine atony, degrees of retained placenta including placenta accreta and its variants and genital tract laceration account for most cases of postpartum hemorrhage.

Table (1): Predisposing Factors and Causes of immediate PPH.

Bleeding from placental Implantation site :

- Hypotonic myometrium – uterine atony.
- Some general anesthetics-halogenated hydrocarbon.
- Poorly perfused myometrium –hypotension.
- Hemorrhage.
- Conduction analgesia.
- Over distended uterus-large fetus twins, hydramnios.
- Prolonged labor.
- Oxytocin- induced or augmented labor.
- High parity.
- Uterine atony in previous pregnancy.
- Chorioamnionitis.
- Retained placental tissue.
- Avulsed cotyledon, succenturiate lobe.
- Abnormality adherent-accreta, increta, percreta

Trauma to the genital Tract:

- Large episiotomy, including extensions.
- Laceration of the perineum, vagina,or cervix.
- Ruptured uterus.

Coagulation Defects:

- Intensify all of the above.

(Cunningham, et al 2005)

Diagnosis of the cause of Postpartum Hemorrhage

Important points to remember with PPH:

1. A treacherous feature of PPH is the failure of the pulse and blood pressure to undergo more than moderate alteration until large amounts of blood have been lost.
2. A normotensive patient may actually become hypertensive in response to hemorrhage, at least initially.
3. An already hypertensive patient may be interpreted to be normotensive although markedly hypovolemic. Hypovolemia may not be recognized until very late.
4. Patients with severe pre-eclampsia who usually lost their pregnancy-induced hypervolemia (as they are associated with hypovolemia and hemoconcenteration) are frequently sensitive or even intolerant to what may be considered as normal blood loss. Therefore, when excessive hemorrhage is suspected in a patient with severe preeclampsia, efforts should be made immediately to identify those clinical and laboratory findings that will prompt vigorous crystalloid and blood replacement.
5. Anemic patients are very sensitive to normal, or even less than normal blood loss **(Zeeman G G, et al 2002).**

Signs and symptoms of hypovolemia:

With massive or prolonged PPH, signs and symptoms of hypovolemia start to appear and increase and get worse with hypovolemia with continuation of bleeding These include: tachycardia, tachypnea,hypotension, increasing pallor, irritability and anxiety, oliguria and reduced tissue perfusion **(Cunningham F G, et al 2005).**

Assessment of Blood Loss after Delivery:

The conventional definition of the postpartum hemorrhage is clinically based on visual estimation of blood loss of 500 ml or more visual estimation of blood loss after delivery is very subjective and has been shown to underestimate true blood loss. The use of visual estimation is a drawback in several randomized trials. The wide range of incidence of postpartum hemorrhage in different trials may be due to differences in the estimation of blood loss and in order to measure blood loss more objectively a new method of directly measuring blood loss was recently developed (**Bamigboye A A, et al 1998).**

After delivery of the baby, the amniotic fluid is allowed to drain away and amniotic flud-soaked bed linen is covered with a dry disposable "linen saver". A low profile, wedge-shaped plastic "fracture bedpan" slipped under the women s buttocks and left in lace to collect blood loss over the next hour. Blood and clots from the bedpan are decanted into a measuring cylinder and measured. Blood-soaked swabs and linen-savers are weight the known dry eight subtracted and the calculated volume added to that from the bedpan. In the WHO trials this method simplified by not weighting swabs , but simply adding heavily soaked small swabs to the blood in the measuring cylinder.

In most cases, the great majority of the blood loss is retained in the bedpan, and the method is not comfortable for the women suturing of the perineal trauma is easily achieved with bedpan in place. Blood soiling of bed linen is greatly reduced. Since the measurement is objective, the method is recommended for use in future studies of postpartum.

Because measured blood is considerably greater than that estimated, the clinical threshold for excessive measured blood loss should be set at 1000ml rather than 500 ml **(Joupilla P, 1995).**

True postpartum hemorrhage;

This is hemorrhage that occurs after delivery of the placenta. Once PPH is suspected, or diagnosed the obstetrician, should proceed to actively managed it by following a sound, preconceived and a well known plan of action without wasting any valuable time or showing any hesitancy.

Fortunately the causes of PPH are few, and all cases will involve on 5:

1. Uterine atony.
2. Retained placenta or placental parts.
3. Genital tract laceration.
4. Uterine inversion.
5. Coagulopathy.

- Sometimes, bleeding can be caused by uterine atony and trauma specially after major operative delivery.
- For the women who have hemorrhage at the time of cesarean section, the cause is immediately apparent. However, after vaginal delivery diagnosis of the causes of bleeding needs a special scheme to differentiate between various causes.

1. Atonic PPH:

- One or more predisposing factors for uterine atony is usually present

- The uterus is high up in the abdomen and is felt lax and boggy.