

POSTPARTUM HAEMORRHAGE; A PREVENTABLE COMPLICATION OF LABOUR

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ABSTRACT... Objective: To determine the frequency, risk factors and existing practice for the management of massive primary postpartum hemorrhage (PPH). **Study design:** Retrospective cross-sectional study. **Setting:** Department of Obstetrics & Gynaecology at Kuwait Teaching Hospital, Peshawar. **Materials and methods:** this study was performed from June 2008 to June 2010. Women who developed massive primary PPH after admission or were admitted with it, were included in the study. Medical record files of these women were reviewed for maternal mortality and morbidities which included mode of delivery, possible cause of postpartum hemorrhage, supportive medical and surgical intervention. Data was entered in the pre-structured proforma. Estimates of blood loss were made on history, visual parameters and patient's condition. All the data was analyzed by using statistical computer software SPSS 6. **Results:** During the study period total number of obstetrical admissions were 2944. Forty nine out of 2769 (1.76%) deliveries, developed massive primary PPH. The highest frequency of massive primary PPH was observed in grand multiparous patients. Uterine atony was the most common cause of the complication. Birth attendants other than doctor and delivery outside the study unit were significantly associated with the adverse outcome in these patients. Seventy five percent patients, (36/49) who had massive PPH, delivered vaginally. High dependency unit (HDU) was required in 12% (6/49) of women. Only one caesarian hysterectomy was done. There was one maternal mortality. Blood transfusions were required in 82% (40/49) of the patients. **Conclusions:** Postpartum hemorrhage can be a preventable condition if early identification and timely management of this complication and its risk factors is observed. Uterine atony is the leading cause of immediate PPH. The main risk factors for PPH due to uterine atony are high parity, a large fetus, multiple fetuses, hydramnios, or past history of PPH. Determining the frequency, risk factors and management of primary postpartum hemorrhage will help design stepwise protocols for prevention and management of primary PPH in our setup.

Key words: Postpartum hemorrhage, complication of labour, risk factors.

INTRODUCTION

Excessive bleeding after child birth, the leading cause of maternal deaths worldwide, has received international attention among medical and research communities for decades. All women who carry a pregnancy beyond 20 weeks' gestation are at risk for postpartum hemorrhage (PPH) and its sequelae¹.

The direct pregnancy-related maternal mortality rate in the United States is approximately 7-10 women per 100,000 live births and approximately 8% of these deaths are caused by PPH. A figure of 12% of vaginal deliveries was recorded in one Australian tertiary referral hospital².

In the developing world, several countries have maternal mortality rates in excess of 1000 women per 100,000 live births. PPH accounts for 59 % of maternal deaths in Burkina Faso, 53 % in the Philippines and 43 % in

Indonesia³. In Pakistan, PPH accounts for nearly 21-31% of maternal deaths⁴.

The definition of PPH is somewhat arbitrary and problematic. Postpartum hemorrhage is defined as blood loss of more than 500 ml following vaginal delivery or more than 1000 ml following cesarean delivery. A loss of these amounts within 24 hours of delivery is termed early or primary PPH. Significant clinical deterioration usually does not occur until there is a blood loss of >1000-1500ml⁵.

Postpartum hemorrhage also causes considerable suffering for women and their families and creates major demands on health systems¹. Massive primary PPH can result in maternal complications like hypovolemic shock, disseminated intravascular coagulation, hepatic dysfunction, adult respiratory distress syndrome and

renal failure. Immediate PPH can be caused by uterine atony, retained placenta, inverted or ruptured uterus, or cervical, vaginal, or perineal lacerations. Uterine atony is the leading cause of immediate PPH⁶. The main risk factors for PPH due to uterine atony are high parity, a large fetus, multiple fetuses, hydramnios, or past history of PPH⁷. As a way of remembering the cause of PPH, several resources have suggested using the 4T's as a mnemonic: Tone, Tissue, Trauma and Thrombosis¹. Emergency caesarian section increases the risk nine times¹ & elective caesarian section four times specially if > 3 repeat procedures are done². Different etiologies may have common risk factors, and this is especially true of uterine atony and trauma of the lower genital tract. usually has a single cause, but more than one cause is also possible, most likely following a prolonged labor that ultimately ends in an operative vaginal birth.

In Pakistan 76.7% of deliveries take place at home³. Medical audits of maternal mortality have revealed that > 80% are preventable and they depend strongly on quality of care. The primary intervention shown to reduce the incidence of PPH is active management of the third stage of labour (AMTSL)². Preventive measures include reducing the incidence of prolonged labour (through the use of partogram and timely intervention) minimizing trauma associated with instrumental delivery and possibly detecting and treating anaemia during pregnancy.

Death from PPH is frequently unpredictable and rapid. Moreover some of the women experiencing PPH have no risk factors. Immediate resuscitation with attempts to treat the cause, forms the cornerstone of management of PPH. Timely recognition and intervention are fundamental in preventing serious maternal morbidity and mortality from massive PPH. A combination of conservative therapies is adequate and successful in most cases. However, when the hemorrhagic process continues and when either clotting abnormalities or hemodynamic instability develops, the next step must be an invasive intervention⁴.

MATERIALS AND METHODS

This cross-sectional retrospective study was conducted

at Kuwait Teaching Hospital, Peshawar. Review of record of all deliveries with massive PPH (blood loss ≥ 1000 ml) between Jun 2008-Jun 2010 was carried out.

Inclusion Criteria

All the patients who developed or were admitted with massive primary PPH were included in the study. Subjective estimates of blood loss were made on history, visual parameters (size of clots, soaked clothes and blood in suction bottle) and patient's condition (signs of shock).

Exclusion Criteria

1. Those who developed PPH but had less severe bleeding and those with secondary PPH, were not included in the study.
2. Patients with Incomplete record were also excluded from study.

OPERATIONAL DEFINITIONS

1. POSTPARTUM HEMORRHAGE; Although formal definition of primary PPH is blood loss of 500 ml or more within 24 hour after delivery and, we only considered blood loss of 1000ml or more because of its greater clinical significance⁵.
2. ANTEPARTUM HEMORRHAGE; Bleeding from or with in vaginal tract after 20th of gestation⁸.
3. PROLONG THIRD STAGE OF LABOUR; The third stage of labour is diagnose as prolong if not completed with in 30minues of the birth of baby with active physiological management or 60minutes cesarean section⁸.
4. GRAND MULTIPARA; Refers to a (grand multiparous) woman who has given birth five or more times⁹.

After the record review of all patients, who fulfilled the inclusion criteria, and retrieved all the data regarding maternal morbidity, mortality mode of delivery, possible cause of PPH. Demographic characteristics were recorded. All patients record were analyzed for age, parity, socioeconomic status, distance from hospital and transport facility. Details of risk factors including grand

multiparity, polyhydramnios, multiple pregnancy, induction/ augmentation of labour, prolonged labour, choreoamnionitis, previous history of PPH, caesarean section, precipitate labour and instrumental delivery. The use of uterotonics for PPH prophylaxis was also taken in to account. Assessment of general health including anaemia, blood pressure, abdominopelvic examination and laboratory investigations was documented. Details of onset of labour spontaneous or induced were recorded. Deliveries conducted by traditional birth attendants (TBAs), lady health workers and doctors were evaluated. Distance of place of confinement from our hospital, transport facility and time taken to reach to health facility were determined. Causative factors for PPH were evaluated. Management included resuscitation, uterine.

Massage, uterine exploration, use of oxytocic agents, prostaglandins, minor surgical procedures and major surgical interventions were determined. Number of transfusions given were also recorded Data was entered in objectively structured Performa. Chi-square test and P-values were retrieved wherever needed and applicable. SPSS 16 version was used for statistical analysis.

RESULTS

During the study period, massive PPH was reported in 1.76% (49/2769) cases. About 73% (36/49) of patients were delivered in the unit. Sixty six percent (24/36) of them had some other complication like antepartum hemorrhage (APH), severe pre-eclampsia, obstructed labour etc at the time of delivery. The risk factors were grandmultiparity 35(71%), pre-eclampsia 2 (8.33%), APH 3(12.5%), prolong first stage of labour 5(20.83%), twin delivery 2(8.33%), instrumental delivery 5(20.83%), caesarian section 7(29%). No avoidable risk factors were detected in 10 (20%) patients. About 13(26.5% patients) were already delivered at the time of admission, 6 were home deliveries, 5 delivered in private maternity homes, majority by lady health workers (LHVs) dais or nurses. Twenty two of patients (45%) were referred from other health facility, one third with PPH and two third with some other complication. In nearly 60% of these patients, there was delay of more than three hours since the time of delivery. Most of the delays were on the part of the birth

attendant, transport problem or non-availability of males. About 60 % of these patients had already received oxytocin or ergometrine or had had vaginal packing. Only one patient came in shock with bleeding already stopped.

71% of all patients were between 25-40 years of age. There was only one maternal death. She was admitted in critical condition, cause being cervical tears. She had already developed disseminated intravascular coagulation and died of cardiopulmonary failure during resuscitation. The mean blood loss was 2200ml .The most common mode of delivery was vaginal 32 (65%). While uterine atony was the most common cause of PPH 27 (55%). Blood transfusion was started at 1500ml blood loss (82%). Forceps delivery with episiotomy and vacuum delivery with episiotomy each occurred in 6 (12.24%). Seven (14.28%) had retained placenta. Post-PPH anemia was present in 65% of the patients.

Only 21% of the patients were booked while 46% of patients had no antenatal checkups. Thirty five (71%) patients were grandmultiparous, seven (14%) patients had previous c/section, 4(8%) had twin delivery, and 2(4%) patients had previous history of obstructed labour. Unskilled birth attendance was the underlying cause in 12 (16%) patients while mismanagement of the labour was the cause in 22 (29.33%) patients. About 65% of patient were admitted with PPH came late to the hospital 43(88%) patients required blood transfusion.

Those developing PPH in our unit were managed with great vigilance. The diagnosis of PPH was established by observing the amount of bleeding and the patient's clinical condition. The amount of blood lost and the patient's level of consciousness and vital signs were continuously assessed. In addition to initiating aggressive measures to restore and maintain the circulating blood volume, careful evaluation was done to determine the cause of the haemorrhage. Management of the cause was followed by management of the complication. One or two severe morbidities were observed in the form of disseminated intravascular coagulation who received treatment in HDU in the form of fresh frozen plasma etc. Only one patient ended up in caesarian hysterectomy.

Considering all the cases in the study it was observed that 43(84%) had one or the other underlying risk factors for massive PPH, which if anticipated in time can help reducing mortality and morbidity to greater extent.

DISCUSSION

Incidence of massive primary PPH in our study is 1.76% which compares well with a local study in Peshawar in 2007². But is much lower than a Dutch study which quote an incidence of severe PPH as 4.2%³. The percentage of PPH among all obstetrical cases in India is 3.2%³ in a population based cohort study which is also higher than our study. Subjective assessment of blood loss may be the reason for lower incidence which usually underestimates the blood loss. Grand multiparity, hypertension, APH, prolonged active labour, twin delivery, instrumental delivery and cesarean sections were significant risk factors in our study which compares well with other studies¹⁰. Uterine atony was the most common cause of PPH as in other studies. In an Irish study, 76% of massive PPH were due to uterine atony¹⁰. Grandmultiparity and obstructed labour were the main risk factors for uterine atony playing their role in 50% of cases, that is partially correlating with the study conducted at Karachi in 2000 showing prolonged labour to be the major risk factor for uterine atony¹¹ (Table no. I & II).

Table-I. Risk factors for massive primary PPH (n=49)

Risk factors	No. of patients	%age
Age (24-40)	35	71%
Parity	35	71%
Delivery outside the study unit	13	26.5%
Delay > = 3hours	32	65%
Unqualified birth - attendant	12	16%

The most unfortunate thing in the whole scenario is the fact that even with the recognition and sometimes even with the proper management of risk factors, PPH cannot be prevented in some of the cases. So the only way of reducing this complication is to have hospital delivery or the presence of qualified birth attendant. However a population based cohort study from Bangladesh¹² found

Table-II. Causes of massive PPH (n=49)

Causes	No. of patients	%age of patients
Uterine atony	27	55%
Vaginal lacerations	06	12%
Cervical tear	07	14%
Ruptured uterus	01	2%
Broad ligament hematoma	01	2%
Injury during c/section	01	2%
Uterine inversion	-	-
Retained placenta	05	10%
Coagulation defects	01	2%

that those women who had an antenatal visit were four times more likely to deliver with midwives than women who had no antenatal visit. A study in 2006, demonstrates the importance of improving hospital system¹³ with availability of standard and accessible emergency obstetrical services, regular training of health staff and above all, implementation of updated protocols that must be enforced to be followed by health staff through regular audit system. MOMA study also stresses on the role of skilled birth attendants to reduce maternal deaths¹⁴. A recent study in Nigeria in 2006¹⁴ showed that the availability of well trained health staff and operative facilities along with optimum blood transfusions and anaesthetic services are key to the better out come. On the basis of data convened from a review of published literature, incidence is lower in developed country settings where most women deliver in a hospital and where active management of third stage of labour is the norm, compared to developing areas where large proportion of women deliver at home.

Postpartum hemorrhage remained a major killer of women world wide. Standard uterotonic treatments used to control postpartum bleeding do not always work and are not always available. Misoprostol's potential as a treatment option for PPH is increasingly known but its use remains adhoc and available evidence doesn't support the safety or efficacy of one particular regimen.

A crucial component in the treatment of PPH, resulting from atonic uterus, is the administration of injectable uterotonics. The most commonly used agents in hospital based settings and oxytocins and/or ergometrine. We followed the same regimen in our cases. Prophylactic oxytocics should be routinely used in the third stage of labour as they decrease the risk of PPH by 60%¹⁵. Majority of the patients referred from other facilities didn't receive prophylactic uterotonics. Additional medical and surgical interventions beyond the administration of conventional uterotonics, have been investigated as alternative and adjuvant therapy options for postpartum bleeding. (Table-III).

Table-III. Treatment modalities given to the patients (n=49)

Treatment modality	No. of patients	%age
Oxytocin / Ergometrine	44	90%
Uterine massage	44	90%
Prostaglandins (PG F2 Alpha etc)	23	47%
Evacuation of uterus	26	53%
Repair of tears and uterus	01	24.48%
Cesarean hysterectomy	01	2%

Only one caesarian hysterectomy was performed. There was one maternal death among study participants (2%) which is quite a small figure than that reported in other studies (Karachi: 20%¹⁶ Nigeria 20%¹⁷). With the exception of arterial embolization, relatively newer, simpler and potentially safer techniques need to be employed for the management of massive PPH at our institution.

Massive PPH is a life threatening obstetric emergency. In order to prevent the complication associated with this condition, an organized and step-wise management protocol should be immediately initiated.

CONCLUSIONS

Postpartum haemorrhage is the most common type of obstetric haemorrhage. Postpartum hemorrhage can be a preventable condition if early identification and timely management of this complication and its risk factors is

observed. Uterine atony is the leading cause of immediate PPH. The main risk factors for PPH due to uterine atony are high parity, a large fetus, multiple fetuses, hydramnios, or past history of PPH. Determining the frequency, risk factors and management of primary postpartum hemorrhage will help design stepwise protocols for prevention and management of primary PPH in our setup. While ensuring a stricter adherence to the formulated protocols and guidelines in order to further ameliorate patient outcomes in emergency obstetrical practice. More audits are important to recognize and rectify any deficiencies in obstetric practice. Dissemination of the same is pivotal to enable an open discourse on the improvement of existing obstetrical strategies to make it more preventable and manageable condition.

RECOMMENDATIONS

1. Good antenatal care, improvement of general health & anemia.
2. Assessment of risks, placental problems and relevant counseling.
3. Proper evaluation for cephalopelvic & fetopelvic disproportions, Avoidance of inductions, augmentations of labour & instrumental deliveries in setups where quality of care is suboptimal.
4. Patients with previous scars in uterus, history of PPH should be managed in tertiary care hospitals.
5. Adequate assessment of failure of progress and timely referral.
6. Active management of 3rd stage of labour should be practiced.
7. Delay in decisions making, transportation and delay in initiation of life saving measures should be avoided. Optimum blood transfusion services must be available.
8. Senior obstetrician should be called for massive PPH cases.
9. The use of uterine temponade & compression sutures should be practiced where needed.
10. Decision of hysterectomy should be critically analyzed in younger females. High paritus can be safely benefited by hysterectomy.

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