Study of Prevalence and Risk Factors Associated with Obstetrics Haemorrhage

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Abstract

Background: Maternal death from obstetric hemorrhage is a global problem. Approximately 30 percent of direct maternal deaths worldwide are due to haemorrhage, mostly in the post – partum period. Post partum haemorrhage complicates approximately 4% of vaginal deliveries and 6% of caesarean deliveries. The purpose of this study is to determine causes of PPH, risk factors, preventable factors and to assess treatment measures adopted. *Objective:* To study the prevalence and risk factors of post partum haemorrhage. *Methods:* Antenatal patients who had risk factor for postpartum haemorrhage were followed till delivery. Study population also included puerperal women admitted with PPH. Among PPH patients, need of blood and blood component transfusion, need for conservative surgical procedures to treat PPH was studied. *Results:* The prevalence of PPH in the present study was found to be 5.9%. In the present study, anemia (p=0.0002), uterine malformation (p=0.02), Previous episode of PPH (p<0.0001), genital tract trauma (p=0.027) and Retained placenta (p=0.01), is found to be significant risk factor for PPH. Whereas Placenta praevia was not found to be a statistically significant risk factor for PPH (p= 0.62). Among the patients who had PPH, transfusion of blood and blood products were needed in 23 (65.7%) patients.

Conclusion: In the present study, the risk factors which are observed are retained placenta, anemia, uterine malformation (bicornuate uterus), retained placenta lower genital tract trauma and previous history of PPH.

Keywords: Prevalence; Risk Factors; Retained Placenta; Obstetric Haemorrhage; Anemia.

Introduction

From obstetric hemorrhage, maternal death is a global problem[1]. In early pregnancy it could be due to rupture of ectopic pregnancy, abortion, molar pregnancy. Serious haemorrhage may also occur in cases of missed abortion, when coagulopathy complicates the situation. Other causes are Abruption Placenta. Placenta praevia and Placenta accrete. In developing countries, postpartum haemorrhage accounts for a higher percentage of deaths. Approximately 30 percent of direct maternal deaths worldwide are due to haemorrhage, mostly in the post – partum period [2].

Incidence of primary PPH is about 3 to 5% Post partum haemorrhage complicates approximately 4% of vaginal deliveries and 6% of caesarean deliveries [3].

The insidious reality about having a postpartum haemorrhage is that two – thirds of the women who experience it have no identifiable clinical risk factors such as multiple births or fibroids. Even with appropriate management, approximately 3% of vaginal deliveries will result in severe post-partum haemorrhage [4].

Primary PPH is one of the most important causes of maternal death and accounts for

25 percent of all maternal deaths worldwide, especially in developing countries [5]. The risk of dying from PPH depends not only on the amount and rate of blood loss but also on the health of women, poverty, unhealthy life style, malnutrition and women's lack of control over their reproductive health.

Women already compromised by anemia or intercurrent illness are more likely to deteriorate. Post partum hypotension may lead to partial or total deterioration of anterior pituitary gland, hypotension can lead to acute renal failure. In extreme haemorrhage, sterility will result from hysterectomy performed to control intractable post partum haemorrhage.

In spite of the knowledge of the risk factors for PPH which have been stated above, it is known that the occurrence of PPH may be unpredictable [6].

The Millennium Development Goal of reducing the maternal mortality ratio by 75 percent by 2015 will remain beyond our reach unless we confront the problem of PPH in the developing world as a priority. With these aspects, the present study was undertaken to determine causes of PPH, risk factors, preventable factors and to assess treatment measures adopted.

Objectives

To study the prevalence and risk factors for Post partum haemorrhage.

Material and Methods

The present study was a cross sectional observational study conducted in department of obstetrics and gynecology. All pregnant and puerperal women who met the selection criteria admitted during the study duration were considered for the present study. Accordingly, total 584 women were enrolled in the study population. Antental patients who had risk factor for postpartum haemorrhage were followed till delivery. Study population also included puerperal women admitted with PPH. For all the subjects multiple field of information on each pregnancy including maternal demographics, past obstetric history, current medical conditions, antenatal diagnostic procedures and fetal condition, antepartum complications were recorded in the prescribed proforma.

Selection Criteria

All pregnant women with more than 28 weeks period of gestation, admitted for delivery. Puerperal women who is admitted with postpartum haemorrhage.

Intrapartum events assessed include presentation at delivery, onset of labor, type of analgesia, length of the first stage of labor (latent labor > 20 hours in nulliparous patients and >14 hours in parous women, dilatation of <1.2 cm per hour in primigravida and <1.5 cm per hour in multiparous women), the length of the second stage of labor (>2 hours in women without an epidural an >3 hours in women with an epidural), use of oxytocin for induction or augmentation, chorioamnionitis (persistent temperature > 38^{0}C along with uterine tenderness / irritability), gestational age at delivery, intrauterine fetal demise, genital tract lacerations and neonatal birth weight, mode of birth and immediate postpartum events.

PPH was defined by the criteria i.e. bleeding in excess of 500 ml from genital tract during vaginal delivery and 1000 ml during caesarean at the time of delivery, or the need for red cell transfusion because of maternal anemia or haemodynamic instability. Post partum blood loss in the hospital was based on measurement from a basin, plus a visual estimate of blood on linens and used swabs.

Among PPH patients, amount of blood and blood component transfusion, need for conservative surgical procedure such as B-Lynch suture, bilateral U.A. ligation, bilateral internal iliac artery ligation, Uterine artery embolisation was studied.

Statistical Analysis

Descriptive statistics such as mean, SD and percentage was used. Association risk factors of PPH were assessed by using chi-square test. A p-value less than 0.05 were considered as significant.

Results

Out of 584 patients studied, 35 patients developed PPH in our study. Therefore, the prevalence of PPH in the present study was found to be 5.9%.

The mean age of both groups was similar i.e. in PPH group, it was 24.9 yrs & in Non-PPH group, it was 25.8 yrs. The difference between the two groups was not statically significant (p = 0.2)

Mean Gestational Period in PPH group & Non-PPH group was approximately 35 weeks & 36 weeks respectively. The difference between the two groups was not statistically significant (p value = 0.1)

Mean Birth Weight Distribution in Study Population in PPH group & Non-PPH group was 2456.0 gms and 2394 gms respectively, which was no statistical significant difference (p value=0.64) (Table 1).

In our study population parity distribution was 54.3% in primi & 45.7% in multi in PPH group and 60.3% in primi & 39.7% in multi in Non-PPH group. The difference was not statistically significant (p value = 0.48) (Table 2).

In PPH group, major risk factor in our study was anemia in 22.9% cases. Other Risk Factors were Genital tract trauma (14.3%), severe PIH seen in 8.6%, Previous episode of PPH (8.6%). Multiple pregnancy, placenta Previa, Polyhydramnios, Uterine malformation, Intrauterine death, Retained placenta were seen in 5.7% cases each. In Non PPH group major risk factor was severe PIH seen in 10.6% cases followed by multiple pregnancy seen in 9.3% cases. Less common other risk factors in Non-PPH group such as anaemia (6.0%), Preterm rupture of membrane (5.5%), Genital tract trauma (5.3%), placenta Previa (4.0%), eclampsia (3.8%), abruption (3.7%) and polyhydramnios in 3.5% cases. Uterine malformation was seen 1.1% of cases in Non-PPH group. The difference was not statistically significant for most of the risk factors except for anemia, previous episode of PPH, Genital tract trauma, Retained placenta and uterine malformation with p value of 0.0002, <0.0001, 0.027, 0.01 and 0.02 respectively (Table 3).

Among the patients who had PPH, transfusion of blood and blood products were needed in 23 (65.7%) patients (Table 4).

Mode of Delivery in both the groups were almost similar. Main mode of delivery in both groups were vaginal (60% & 66.1%) followed by Emergency LSCS done in 34.3% & 27.9% each groups. Elective LSCS was done in 5.7% & 8.0% in each group. There was no significant difference between the two groups (p = 0.67) (Table 5).

Table 1: Basic characteristics

Variables	PPH	Non-PPH	t-value	p-value
Age	24.9 ± 3.9	25.8 ± 4.1	1.26	0.2
Gestational period (weeks)	35.4 ± 3.1	36.1 ± 2.4	1.64	0.1
Birth weight (gms)	2456.0 ±723.2	2394.0 ±753.5	0.47	0.64

Table 2: Distribution of subjects by parity

Parity	PPH group	Non-PPH group	χ^2 value	p-value
Primi	19 (54.3)	331 (60.3)	0.49	0.48
Multi	16 (45.7)	218 (39.7)		

Table 3: Risk factors in study population

Parameters	PPH group	Non-PPH group	χ^2 value	p-value
Anemia				
Yes	8 (22.9)	33 (6.0)	14.3	0.0002
No	27 (77.1)	516 (94.0)		
Multiple pregnancy				
Yes	2 (5.7)	51 (9.3)	0.51	0.47
No	33 (94.3)	498 (90.7)		
Placenta praevia				
Yes	2 (5.7)	22 (4.0)	0.24	0.62
No	33 (94.3)	527 (96.0)		
Severe PIH				
Yes	3 (8.6)	58 (10.6)	0.14	0.71
No	32 (91.4)	491 (89.4)		
Placental Abruption				
Yes	1 (2.9)	17 (3.1)	0.006	0.94
No	34 (97.1)	532 (96.9)		
Eclampsia				
Yes	1 (2.9)	21 (3.8)	0.085	0.77
No	34 (97.1)	528 (96.2)		
Hellp syndrome				
Yes	1 (2.9)	11 (2.0)	0.12	0.73
No	34 (97.1)	538 (98.0)		

Polyhydramnios				
Yes	2 (5.7)	19 (3.5)	0.48	0.49
No	33 (94.3)	530 (96.5)		
Uterine malformation				
Yes	2 (5.7)	6 (1.1)	5.20	0.02
No	33 (94.3)	543 (98.9)		
Intrauterine death				
Yes	2 (5.7)	27 (4.9)	0.044	0.83
No	33 (94.3)	522 (95.1)		
Preterm rupture of membrane				
Yes	0	30 (5.5)	2.02	0.16
No	35 (100)	519 (94.5)		
Previous episode of PPH				
Yes	3 (8.6)	0	31.48	<0.0001
No	32 (91.4)	549 (100)		
Genital tract trauma				
Yes	5 (14.3)	29 (5.3)	4.86	0.027
No	30 (85.7)	520 (94.7)		
Retained placenta				
Yes	2 (5.7)	5 (0.9)	6.41	0.01
No	33 (94.3)	544 (99.1)		

Table 4: Blood and blood product transfusion required in PPH patients

Blood transfusion	Number of patients	Percentage
Yes	23	65.7
No	12	34.3
Total	35	100

Among the patients who had PPH, transfusion of blood and blood products were needed in 23 (65.7%) patients.

Table 5: Mode of delivery in study population

Mode of delivery	PPH group	Non-PPH group	χ^2 value	p-value
Vaginal	21 (60%)	352 (64.1%)		
Elective LSCS	2 (5.7%)	44 (8.0%)	0.79	0.67
Emg LSCS	12 (34.3%)	153 (27.9%)		

Discussion

The study was undertaken with the objective to identify the risk factors of post partum haemorrhage and complications associated with PPH.

Among 584 patients enrolled in the study, 35 patients developed PPH. Therefore, the prevalence of PPH in the present study was 5.9%. According to the Cochrane database 2003 [2], post partum haemorrhage complicates approximately 4% of vaginal deliveries and 6% of caesarean deliveries. The demographic data showed no difference between the two groups. Both groups were matched for age, gestational age and birth weight. Among PPH and non PPH group, the mean age was 24.9 and 25.8 years respectively (p value = 0.2), gestational age (in weeks) was 35.4 and 36.1 respectively (p value = 0.1), mean

birth weight was 2456.0 and 2394.0 gm respectively (p-value= 0.64).

Multiparity have been associated with PPH according to previous studies done by Xiong Q, Zhang GY et al [7], whereas in present study among PPH patients, 16 out of 35 cases (45.7%) were mutiparous and among non PPH patients 218 cases out of 549 patients (39.7%) were multiparous, which was not statistically significant (p value = 0.48).

Considering anemia as a known risk factor for PPH, the prevalence of anemia in the present study was noted. 8 out of 35 patients (22.9%) in PPH group and 33 out of 549 patients (6.0%) in non PPH group were found to be anemic. In present study, anemia is found to be highly significant risk factor for PPH (p value= 0.0002). Jaleel R et al [8] did logistic regression model study at Dow Medical College and Lyari General Hospital, Pakistan found that anaemia is an

independent risk factor for PPH. They concluded that moderate to severe anaemia is an important risk factor.

In the present study, 5 out of 35 (14.3%) and 29 out of 549 (5.3%) patients had genital tract trauma which is statistically significant with 'p' value = 0.027. In study conducted by Combs CA et al [9], genital tract trauma was found to be a known risk factor for excessive blood loss at vaginal delivery, especially following forceps delivery.

In the present study, 3 out of 35 (8.6%) and 58 out of 549 (10.6%) patients had severe PIH which is not statistically significant found with 'p' value = 0.71. Norris CT et al [10] found that the risk factors for severe PPH can be categorized into injury of soft tissue and retained placenta. Duncan A [11] did study and found that the major causes of postpartum haemorrhage are retained placental fragments and lower genital tract lacerations.

In our study, 2 out of 35 patients in PPH group (5.7%) and 6 out of 549 patients in non PPH group (1.1%) had uterine malformation. Both patients in PPH group had bicornuate uterus. The difference is statistically significant with 'p' value = 0.02. PPH in those patients was because of uterine atonicity and may be because of increased surface area also. Probably because uterine malformation is not a common condition, it could not be effectively tackled by prophylactic measures.

In the present study, history of previous PPH was present in 3 patients of PPH group and none of the patients in the non PPH group had history of previous PPH. The difference was statistically highly significant found with 'p' value <0.0001. So prior PPH is an important predictor of PPH and only a study ascertaining history of previous PPH by an objective method would accurately determine the impact. Combs et al[9] in their study found that previous PPH was one of the strongest predictors of recurrent PPH. In a multivariate analysis, previous PPH had an odds ratio of 3.5 for recurrent PPH (defined as a hematocrit decrease of >10 points between admission and post delivery or the need for blood transfusion).

In the present study, among patients with retained placenta, 2 patients were in PPH group and 5 were in Non PPH group. We found statistically significant association with 'p' value = 0.01. In previous study done by Claudio G. Sosa et al [12] in 2009, retained placenta is found to be significant risk factor associated with PPH. Bais et al [13] did study at Academic Medical Centre; Amsterdam found that in severe PPH, retained placenta is an important risk factor.

In the present study, among the PPH patients, 21 (60%) patients were delivered vaginally, 2 (5.7%) underwent elective LSCS and 12 (34.3%) underwent emergency LSCS. This was comparable with the non PPH group (64.1%, 8.0%, 27.9% having vaginal delivery, elective LSCS, emergency LSCS respectively), which is found to be no statistically significant (p=0.67). This could be, lack of association could be explained by less number of cases and multiple confounding factors. In previous studies done by Combs et al [9], the mode of delivery was found to influence the risk of PPH, caesarean delivery more commonly associated with PPH.

In the present study, among 24 patients with placenta praevia, 2 patients in PPH group and 22 were in Non PPH group. Placenta praevia was not found to be a statistically significant risk factor for PPH (p value = 0.62). The lack of association of PPH with placenta praevia could be explained, because in the present study majority of the patients had minor degree of placenta praevia. Where as in previous studies done by Paul Koindo et al [14], the majority of patients (75%) had major placenta praevia and even 50% of cases of type 2 placenta praevia were placenta accreta.

Other factors which have been hypothesized to be associated with increased risk of PPH, like multiple pregnancy, Placenta praevia , severe PIH, placental abruption, polyhydramnios, eclampsia, intrauterine death, Preterm rupture of membrane, were not significantly associated with PPH in the present study. The lack of association with these factors could be explained by our ongoing prophylactic measures to prevent PPH and small number of subjects in the study.

In the present study most common contributing factor to PPH was Anemia, Uterine malformation, genital tract trauma, previous history of PPH and retained placenta with a statistically significant.

Among the patients who had PPH, transfusion of blood and blood products were needed in 23 (65.7%) patients. PCV transfusion was required in 23, FFP in 12, platelet in 3 and cryoprecipitate in 7 patients.

Among PPH patients who required blood transfusion, one or more of the following risk factors like anaemia, placenta praevia, genital tract trauma, previous history of PPH, severe PIH, abruption placentae, retained placenta and HELLP syndrome were found.

One of the major limitation of our study is the small sample size. As some of the well known risk factor for PPH was sparsely distributed among the study population, we were unable to analyze the statistical

association and comment upon these risk factors. Another limitation identified was the presence of multiple risk factors, which posed problems for eliminating the confounding factors and correctly identifying the risk factors contributing to PPH.

Conclusion

In the present study, the risk factors encountered are anaemia, uterine malformation (bicornuate uterus), retained placenta, lower genital tract trauma, previous history of primary partum haemorrhage. Majority of the risk factors identified were associated with obstetric management and interventions, and are thus preventable. The non-preventable risk factors such as maternal age, cultural background and medical diseases could be deal with by extra care during labour management. In order to know the correlation between the risk factors and the occurrence of PPH, further studies with larger sample size need to be taken in to consideration.

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