Postpartum Hemorrhage: Causes and Outcome

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ABSTRACT

Objective — *To find out the frequency and causes of postpartum hemorrhage (PPH) and maternal and fetal outcome in a tertiary care set up.*

Study design — *Cross sectional study.*

Place & Duration of study — *Department of Obstetrics and Gynecology, Jinnah Postgraduate Medical Centre (JPMC) Karachi, from July 2017 To June 2018.*

Methodology — *Patients with postpartum hemorrhage who either delivered at JPMC or outside (admitted through emergency with history of PPH) fulfilling the inclusion criteria were enrolled in the study after taking informed consent. Immediate appropriate management started according to the cause and information recorded on predesigned form. Patients with chronic illnesses like diabetes mellitus, chronic kidney disease, and bleeding disorders such as disseminated intravascular coagulation and those who were anemic, excluded from the study. Data analyzed by using SPSS Version 19. Quantitative variables presented as mean ± SD and qualitative variable with frequency and percentages. P value = 0.05 was considered significant.*

Results — *A total of 140 patients were managed during the study period. Mean age of the patients was 29 ± 4.8 year (from 18-45 year). Majority of women 55% (n=77) belonged to 26-30 year age group; while 20% (n=28) cases were between 31-35 year of age. 67.9% (n=95) patients had 1-2 parity while 24.3% (n-34) had more than 4 parity. Retained placenta and retained placental products (RPP) were found in 70% (n=98) patients, genital tract trauma in 32.1% (n=45), morbidly adherent placenta (MAP) in 12.8% (n=18) and 10% (n=14) uterine atony, as causes of PPH. Of the total, 139 patients received transfusion of packed cells. Total duration of hospital stay was from 1-30 7.1±5.71 days. FIve (3.5%) patients developed DIC. Four (2.8%) patients had septicemia. Renal failure and maternal mortality did not occur.*

Conclusions — *PPH is still an important obstetric emergency with retained placenta and placental products being predominant causes. PPH remains a major contributor of maternal morbidity and mortality.*

Key words — *Postpartum hemorrhage, Maternal morbidity, Maternal mortality.*

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INTRODUCTION:

Postpartum hemorrhage is a leading cause of maternal morbidity and mortality.[1,2] Postpartum hemorrhage is a blood loss of more than 500ml after vaginal delivery and 1000ml following cesarean section.[3] The overall incidence of PPH is 4-6% and is mostly reported from underdeveloped countries.[4-7] PPH cases are reported from all over the world with 0.15 million women dying per annum due to this condition.[8,9] In Pakistan the prevalence of PPH is 34% as claimed by WHO. Most of the pregnant women already has preexisting anemia in

underdeveloped countries, and pregnancy further precipitates it. In this situation excessive blood loss during third stage of labor can have severe consequences on maternal life.[4] Past history of PPH, multiple pregnancy, fetal macrosomia, primigravidity, grandmultiparity, older age and preterm birth predispose women to PPH. Labor induction, instrumental deliveries, and cesarean births, non use of oxytocics for PPH prophylaxis and intrauterine fetal deaths are other risk factors for PPH.[10-13]

PPH can lead to hypovolemic shock, disseminated intravascular coagulation, respiratory distress, severe anemia, renal failure, cardiac failure, sepsis and even maternal death. In spite of multiple strategies that evolved over the years for the prevention and management of PPH, coupled with substantial medical and surgical advancement, reproductive age women still suffer from this condition.[14,15]

Time is of utmost importance while dealing with PPH. It is also fundamental to overcome the three delays in the management of PPH, decision making, reaching the place of treatment, and early care at hospital when arrived.[9] This study was done to evaluate the etiology of PPH and feto maternal outcome at a tertiary care hospital so that better prevention and management strategies can be adopted to reduce the associated maternal morbidity and mortality.

METHODOLOGY:

This was a cross sectional study which was conducted in the Department of Obstetrics & Gynaecology Jinnah Postgraduate Medical Center Karachi, from July 2017 To June 2018. Patients were selected through non probability consecutive sampling. Sample size was calculated using computer program Open Epi Version 2, based upon the incidence/prevalence of postpartum hemorrhage (PPH) in tertiary care hospital as 9%[8] at the 95% confidence interval with 5% of margin of error,[6] a sample of 140 was obtained.

Women who developed PPH admitted either through emergency or out patients department were included in the study after obtaining informed consent. Patients with cardiac diseases, diabetes mellitus, chronic kidney diseases, and coagulation disorders such as disseminated intravascular coagulation, were excluded. Patients' age, parity, mode of delivery, booking status, vital, cause of PPH, maternal and fetal outcome were noted on a form.

The data compilation and analysis were done using SPSS (Statistical Packages of Social Sciences) version 19.0. Quantitative variables including age, blood transfused, and lab investigation were presented as mean ±S.D. Qualitative variables i.e. mode of delivery, antenatal care, delivery conducted by, outcome of delivery, etc were presented with frequency and percentages. Pearson Chi-square test was applied for a qualitative variables, and Student t-test / ANOVA was applied for quantitative variables for comparison within groups. P-value <0.05 was considered significant.

RESULTS:

A total of 140 patients were enrolled in the study. The mean age of patients was 29±4.8 years with range from 18 to 45 years. Age was divided into groups and it was observed that age of 17.9% (n=25) were up to 25 years, 55% (n=77) were of 26-30 years, 20% (n=28) were 31-35 years and 7.1% (n=10) were aged more than 35 years. Total of 67.9% (n=95) patients had 1-2 parity, 7.9% (n=11) had 3-4 parity and 24.3% (n=34) had more than 4 parity. 76.4% (n=107) patients had spontaneous vertex delivery, 12.9% (n=18) had emergency cesarean section (CS) and 10.7% (n=15) had elective cesarean section. There were 57.1% (n=80) cases that had previously spontaneous vertex delivery, 19.3% (n=27) had cesarean section and 3.6% (n=5) had SVD + CS. Booked cases were found as 24.3% (n=34) while 75.7% (n=106) were non-booked. Delivery of 57.1% (n=80) cases was conducted at hospital, 28.6% (n=40) at home and 14.3% (n=20) at maternity home. Out of all delivered cases, 91.4% (n=128) had alive birth, 2.9% (n=4) had fresh still birth (FSB), 4.3% (n=6) had intrauterine death (IUD), 0.7% (n=1) had macerated still birth (MSB) and 0.7% (n=1) had anomalous baby. The detailed frequency distribution of patients' characteristics is presented in Table-I.

Mean systolic and diastolic BP was 102±12 mmHg and 65±8.6 mmHg respectively. Mean patient's pulse and temperature was found as 93±10.9 and 98.4±2.26 respectively. Mean patient's respiratory rate and urinary output was found as 18 ± 1.5 and 370 ± 222 respectively. Out of all cases, 12.8% (n=18) had MAP, 32.1% (n=45) had genital tract trauma, 70% (n=98) had RPOCs, 10% (n=14) had uterine atony. All the detailed distribution of postpartum hemorrhage causes was mentioned in Table-II.

A total of 99.3% (n=139) patients received packed cells and 34.3% (n=48) fresh frozen plasma (FFP) transfusions. Mean number of blood transfusion was found as 4.3±3.06. Duration of hospital stay was from 1-30 (mean 7.1±5.71) days. Out of 140 cases 5 (3.5%) developed disseminated intravascular coagulation

Table I: Characteristics of the Patients (n=140)		
Characteristics	**Frequency (n)**	**(%)**
Age in Years		
Up to 25	25	17.9
26-30	77	55.0
31-35	28	20.0
>35	10	7.1
Range , Mean ± S.D	18-45 years,	29 ± 4.8
Parity		
1-2	95	67.9
3-4	11	7.9
> 4	34	24.3
Mode of Delivery		
SVD	107	76.4
Em. CS	18	12.9
El. CS	15	10.7
Previous Mode of Delivery		
No previous	28	20.0
SVD	80	57.1
CS	27	19.3
SVD+CS	5	3.6
Patients' Booking Status		
No	106	75.7
Yes	34	24.3
Delivery Conducted By		
Dai	40	28.6
Nurse	1	0.7
Doctor	99	70.7
Delivery Conducted At		
Home	40	28.6
Hospital	80	57.1
Maternity home	20	14.3
Outcome		
Alive	128	91.4
FSB	4	2.9
MSB	1	0.7
IUD	6	4.3
Anomalous Baby	1	0.7

(DIC), which was managed. Four (2.8%) patients had sepsis which was treated accordingly. Patients neither developed renal failure nor any maternal death occurred. Descriptive statistics of maternal outcome are mentioned in Table-III.

Mean hemoglobin, TLC and platelet were found as 8.15±2.04, 16.4±16.53 and 277±748.9 respectively. Mean RBS, Urea and creatinine were found as 97±32.6/mg, 32±18.1/mg and 0.6±0.29/mg respectively.

We found the significant association of cervical tears with the previous mode of delivery (p=0.049), booked patients (p=0.045) and place of delivery conducted (p=0.005). The factors found insignificant with cervical tear were age group (p=0.889), parity (p=0.162), mode of delivery (p=0.121), person who conducted delivery (p=0.381) and outcome (p=0.075).

The vaginal tears were associated with different characteristics. We found the significant association of vaginal tears with the age group (p=0.022), parity (p=0.004), mode of delivery (p=0.029), previous mode of delivery (p<0.001), and place of delivery conducted (p=0.01) while others were found insignificant such as booked patients (p=0.44), person who conducted delivery (p=0.445), outcome (p=0.6) and indication (p=0.125).

DISCUSSION:

Maternal death is one of far reaching health issues among reproductive age women especially in developing countries.[4] About 17- 40% of maternal mortality and 40% of maternal morbidity are assigned to PPH.[16] Literature review showed that almost 20,000 women died in Pakistan as a result of causes attributed to pregnancy and child birth problems.[17] In Pakistan the frequency of PPH is quoted to be 34% which is quite high as compared with advanced countries where it is reported as 2-11%.[4] Anemia, malnourishment, illiteracy, lack of awareness, and health facilities are prime factors that contribute to high incidence of PPH in developing countries. Same was observed in our study.

Results of this study revealed that 75% (n=105) patients were between 26 -35 years of age and 17.9% (n=25) were up to 25 years which is in accordance with another study in which majority of the patients (n=30 -75%) were in the age group of 18 - 23 years and 15% (n=6) between 24 - 26 years of age.[9] In a study conducted by Girault A the median age of the patients was about 30 years.[18] This reveals that most the women who developed PPH were from younger age group. Parity is another important factor in the development of PPH. In the present study 67.9% (n=95) patients had 1-2. Similar findings were observed by Vijayasree M where 90%

Table II: Descriptive Statistics of Causes (n=140)		
	Number	**Percent**
MAP (Placenta acreta, increta, percreta)	18	12.8
Genital tract trauma (Cervical/Vaginal tear)	45	32.1
Retained Products of Contraceptive (RPOCs - Yes)	98	70.0
Uterine atony	14	10.0

Table III: Descriptive Statistics of Maternal Outcome (n=140)		
	Number	**Result**
DIC	5	3.5
Sepsis	4	2.8
Renal Failure	Nil	Nil
Maternal Death	Nil	Nil
Blood transfusion range, mean±S.D	2-14	4.3±3.06
PVC	139	99.3
FFP	48	34.3

of nulliparous women were at the risk for atonic postpartum hemorrhage.[9] our data showed that women of both low and high parity were prone to develop PPH. Previous studies have shown that nulliparous women were at high risk of developing PPH in comparison to multiparous women. In nulliparous women prolonged first and second stage, abnormal third stage of labor, high birth weight, retained placenta, and genital tract trauma are the predisposing factors.

Multiparous women have deficiencies of various nutrients such as iron, calcium and vitamins which can lead to uterine atony, contributing towards development of PPH. It is reported that there is slight probability of uterine atony during second, third and fourth child birth with regards to PPH.[4] In our study 76.4% (n=107) women had PPH following vaginal delivery while 24% (n=34) had following cesarean section. Similar findings were observed in the another study where in patients who underwent cesarean section had less PPH as compared to vaginal delivery.[19,20]

In index study 75% (n=106) of the women were un-booked. They neither received antenatal care nor treated for problems during antenatal period such as anemia and malnourishment. Of the total, 91.4% (n=128) patients delivered alive and healthy babies. Retained placenta and retained products of conceptions were major causes of PPH in the present study and accounted for 70% (n=98) of the cases. This is in contrast to the another study which showed that uterine atony is a major cause of PPH in 75% of the cases.[8] Active management of third stage of labor and use of uterotonic agents for the prevention of uterine atony help is decreasing frequency of PPH and may be prevented.

Our study results showed that 5(3.5%) patients who developed DIC, 4 (2.8%) had septicemia, duration of hospital was from 1-30 (mean 7.1±5.71) days and 139 (99.3%) had packed cell transfusion while fresh frozen plasma transfused to 48 (34.3%) patients which is better than shown in another study[14] as DIC in 8(10.5%), DIC and acute renal failure in one (1.3%), postoperatively fever in 5 (6.6%) and maternal death (due to amniotic fluid embolism in 1 (1.3%) case.

CONCLUSIONS:

PPH was more common in young women with low parity. Retained placenta and products of conception were the major causes of PPH in this study. Reasonably good fetal and maternal outcome observed during the index study.

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Received for publication: 11-05-2019

Accepted after revision: 30-06-2019

Author's Contributions:

Nasreen Fatima: Conception, design, manuscript writing and final approval

Kaneez Kubra: Data collection.

Conflict of Interest:

The authors declare that they have no conflict of interest.

Source of Funding:

None

How to cite this article:

Fatima N, Kubra K. Postpartum hemorrhage: Causes and outcome. J Surg Pakistan. 2019;24(1):28-33. Doi:10.21699/jsp.24.1.7.