Original Article

Frequency and Clinical Outcomes of Women with Postpartum Haemorrhage at a Tertiary Care Hospital Karachi

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Abstract

Objective: To determine the frequency of Postpartum haemorrhage, aetiology, and clinical outcomes of PPH presenting at Jinnah Postgraduate Medical Centre, Karachi

Methodology: This was a 5-year cross sectional study conducted at Ward-8 Jinnah Postgraduate Medical Center, including all cases of Postpartum Hemorrhage (PPH) from January 2017 to December 2021. All patients reporting for delivery (either vaginal or cesarean) or referred diagnosed cases of postpartum hemorrhage from other places reporting to Jinnah Postgraduate Medical Center were included in the study. Patients were enrolled after written consent. Data was collected on a structured proforma from the patients, there family members which included detail history of patients cause of PPH, management given and outcome of mother and the neonate. All data collected was entered in SPSS and analyzed with SPSS version 2

Results: Patients who developed PPH were 1,128 whose primary PPH was 932 (81.8%) and secondary PPH were 205 (18.17%). Among primary PPH, patients with atony were 481 (42.6%), followed by traumatic delivery 251 (22.2%), placenta accreta spectrum 141 (12.5%), Rupture uterus 40 (3.54%) and Uterine Inversion 14 (1.24%) respectively. Secondary PPH was in 205 (18.17%) cases. Causes of secondary PPH were atony delayed involution 50, infection 80 (8.8%), Retained products of conception were 65 (8.8%) and Arteriovenous malformation were 10 (0.88%). Patients presenting coagulation disorder were 15 (1.3%) respectively. Medical and surgical management managed both primary and secondary PPH. Maternal Mortality of patients who developed PPH was 56 (4.96%). There is a significant relationship between maternal mortality and PPH observed deliveries conducted by traditional birth attendants (P value > 0.0001).

Conclusions" PPH came out to be the leading cause of maternal morbidity and mortality. The most common cause was uterine atony, which should be dealt with active management of third stage of labour. The rate of increasing cesarean section has proportionally increased the rate of PPH.

Keywords: Postpartum Hemorrhage. Surgical, Treatment

Cite this articleas:Majid E, Malik S, Huma ZE, Fatima S, Yasmin H Korejo R. Frequency and Clinical Outcomes of Women with Postpartum Haemorrhage at a Tertiary Care Hospital Karachi. J Soc Obstet Gynaecol Pak. 2022; 12(2):95-99.

Introduction

Death due to labour after giving birth, still remains the major cause of maternal mortality[1] and is the most fearful outcome a woman can expect. It is estimated that 500,000 women die per year worldwide due to this reason.[2] PPH can kill a healthy woman with normal haemoglobin resulting in 1-5% of deliveries resulting from this dreadful cause.[3] According to WHO, 25% of deaths occur due to this cause[4,5] showing the importance of this grave condition, which needs to be addressed and focused on to decrease the mortality and the near miss patients we receive in our casualties. A WHO survey carried out in Pakistan in 2011 showed 1.6% of women deal with this life threatening condition.[6] PPH is an unpredictable condition and acute

Authorship Contribution: [1,2,4]Substantial contributions to the conception or design of the work, acquisition, analysis, or interpretation of data for the work, data collection, Drafting the work or revising it critically for important intellectual content,[3]Final approval of the version to be published.

Funding Source: none
Conflict of Interest: none

Received: Jan 09, 2021
Accepted: April 26, 2022

blood loss may result in sudden death of a very young patient. It is diagnosed when there is greater than 500 ml of blood loss in normal labour or greater than 1000 ml in caesarean delivery As it is a rough estimation, most of the time it is misinterpreted resulting in hypovolemia and shock on arrival. The three delays (delay in seeking care, delay in reaching hospital, delay in receiving quality emergency obstetrics) are usually encountered especially in developing countries, resulting in high mortality due to PPH. To decrease the mortality and morbidity due to PPH these three delays should be addressed by the competent authorities.[4]

The main causes of PPH are uterine atony, retained placenta, and genital tract trauma. Abnormal placentation, placental abruption, and uterine rupture are less frequent but often responsible for severe PPH with acquired coagulopathy.

Improving the management of PPH in limited-resource settings will require continued attention to ensure the availability of low-cost accessible prevention and treatment options, in addition to focus on skilled care providers. Modified Early Obstetric Warning System (MEOWS) should be implicated in obstetric units[7]. Severe morbidities faced by women are severe anaemia, DIC, massive blood transfusion, obstetrical hysterectomy, need for ICU care, ventilation, organ failure and last but not least maternal mortality.[7]

This study was conducted to determine frequencies and clinical outcome at a tertiary care centre and to identify the weaknesses and take necessary actions to improve the outcome of patients coming in PPH. Jinnah Postgraduate Medical Center is a tertiary care Center, we collected data of five years to check our hospital's plan of treatment given to patients coming with PPH.

Methodology

This cross-sectional study was conducted in the department of Obstetrics and Gynaecology at JPMC Ward 8 from January 2017 to December 2021. It was a 5 year cross sectional study. All patients reporting for delivery (either vaginal or caesarean) or referred diagnosed cases of postpartum haemorrhage from other places reporting to Jinnah Postgraduate Medical Centre were included in the study. These patients were booked, un-booked, registered or referred. Patients were enrolled after informed written consent by themselves and, in some cases, by their relatives. The study had IRB approval from JPMC dated February 24th, 2017 (NP F.2-81/2022-GENL/117/JPMC).

All patients who were diagnosed with primary and secondary PPH booked or unbooked, referrals or inpatients, preterm or term, were included in the study.

Patients with bleeding occurring due to any cause other than PPH were excluded like trauma, polyp, cervical erosions etc.

A structured proforma was used to collect data. WHO open EPI calculator[8] was calculated using the sample size. Assumptions of 34%9 the population proportion of PPH at Pakistan, 99.9% confidence interval, were used to calculate the required sample size. Finally, the required sample size was 971.As this was a five year study so, we had 1128 patients identified as PPH so we included all of them in our study.

Demographics including age, marital status, parity, and booking status (booked, un-booked, or referred) were noted. obstetrical history, including gestational age (either term or preterm deliveries), mode of delivery (vaginal, instrumental, or caesarean), knowledge of caregiver (either doctor or traditional birth attendant), a type of PPH (primary or secondary), cause of PPH (uterine atony, tears or trauma, rupture uterus, Placenta accrete spectrum, infection, uterine inversion and Aterioveneous malformation), and coagulation disorder), Patients' clinical outcomes were noted in terms of need for massive transfusion, ICU care, ventilator support, development of DIC or acute kidney injury, eventually discharged, or mortality.

Results

Out of 45440 deliveries, 29049 (63.9%) had a normal vaginal delivery, 15100 (33.2%) had a caesarean delivery, and 1291 (2.84%) women had instrumental delivery. 1128 women were identified with Postpartum hemorrhage. The frequency of postpartum hemorrhage was 2.48%.

771 (68.35%) deliveries were conducted by doctors or midwives, whereas 357 (31.64%) deliveries were performed by traditional birth attendants. Among the deliveries performed by doctors or midwives, 362 (32.9%) of the women developing PPH were delivered in JPMC, while 409 (36.2%) were delivered elsewhere. frequency of post-partum haemorrhage occurring in JPMC is 0.79%.

The mean age of women developing PPH was 26.59±5.83 with minimum age of 16 years and maximum age of 40 years. All women were married. Out of these women 152 (13.47%) were primiparous,

637 (56.47%) were para 2-4 and 363 (32.18%) were grand multiparous.

356 (31.4%) women were booked, 645 (57.0%) were unbooked, and 127 (11.2%) women were referred. 1028 (91.13%) women were of term gestation, while 100 (8.86%) women had preterm deliveries.

Out of 1128 women identified with PPH, 923 (81.82%) had primary PPH and 205 (18.17%) had secondary PPH.

700 (62.05%) women had PPH after normal vaginal delivery, 338 (29.96%) had PPH during or after caesarean delivery, while 90 (7.97%) had PPH in instrumental delivery. Women who had primary or secondary PPH from different modes of delivery are shown in Table I.

Out of 1128 patients identified with PPH, 481 (42.5%) had uterine atony – 431 women with uterine atony had primary PPH whereas 50 women had secondary PPH, 65 (5.7%) had retained products of conception (presented with secondary PPH), 251 (22.2%) had either perineal, cervical or vaginal laceration or trauma (presented with primary PPH), 14 (1.2%) had uterine inversion, 40 (3.5%) were identified with ruptured uterus, 141 (16.1%) had placenta accreta spectrum, 80 (7.09%) presented with endometritis (presented with secondary PPH), 10(0.88%) presented with AV malformation, 15 (1.3%) had coagulation disorder confirmed by deranged laboratory investigations (deranged INR, bleeding time, clotting time). Identification of various aetiologies in different modes of deliveries is shown in Table II

Out of 1128 women with PPH, 481 women developed uterine atony – 431 reported with primary PPH and 50 reported with secondary PPH. Out of 481 cases, medical management via uterotonics was successful in 290 cases, balloon tamponade was done in 96 women, vaginal packing was successful in 20 patients whereas obstetrical hysterectomy was done in 75 patients. Perineal, cervical and vaginal lacerations were repaired in 251 cases. Out of 141 women who developed PPH because of placenta accreta spectrum – 100 had obstetrical hysterectomy, 22 had balloon tamponade and 19 had compression sutures. Out of 40 cases with ruptured uterus 30 had repair of ruptured uterus and 10 had obstetrical hysterectomy. Out of 14 cases with uterine inversion, all had successful manual replacement of the uterus. Sixteen cases with coagulation disorder were treated with blood transfusion and replacement of coagulation factors. 65 women who reported with PPH had secondary PPH due to retained products of conception and were managed by evacuation of uterine cavity. 80 cases presented with endometritis that were treated with evacuation of uterine cavity and IV antibiotics. 10 cases reported with Arteriovenous malformation eventually had obstetrical hysterectomy.

451 cases out of 1128 (39.98%) had massive transfusions, 734 (65.07%) had ICU admissions, 86 (7.62%) patients required ventilatory support, 57 (5%) patients developed acute kidney injury, 23(2%) patients developed DIC. 56 (4.96%) had mortality due to postpartum haemorrhage.

There is a significant relation seen between mortality and deliveries handled by traditional birth attendants (p-value <0.001). This is most likely because of delay in identification, delayed referrals and transportation delay leading to arrival at the hospital premises in an already moribund and compromised state.

Table II: Frequencies of various etiologies of PPH in different modes of deliveries

Causes of PPH	Mode of delivery			Total	P Value
Uterine atony	450	21	10	481	< 0.000
Traumatic	90	0	161	251	< 0.000
Placenta accrete spectrum	0	171	0	171	< 0.000
Ruptured uterus	3	17	20	40	< 0.000
Uterine inversion	3	0	11	14	< 0.000
Coagulation defect	1	3	12	16	< 0.000
Retained products of conception	50	4	11	65	< 0.000
Infection (Endometritis)	20	10	50	80	< 0.000
AV malformation	2	7	1	10	< 0.000
Total	619	233	276	1128	

Table I: Frequencies of Primary and Secondary PPH with Different Modes of Deliveries

Type of PPH	Mode of delivery			Total
	Normal vaginal delivery	C-section	Instrumental	
Primary	688	220	15	923
Secondary	12	118	75	205
Total	700	338	90	1128

Discussion

PPH still the predominant cause of maternal mortality causing 140,000 deaths each year worldwide, i.e., 1 woman dying in every 4 min. Making it 5th common cause of maternal mortality.[2,3,10] The serious consequences resulting from massive haemorrhage and the inability to overcome it after all the knowledge and expertise makes obstetrician blameworthy and answerable. [3,10]

In our 5-year study the frequency of PPH was 2.48% which is comparable to the study in Asia (1.9%),[11] and India is 2-4% in vaginal delivery and 6% in caesarean section.[12] However PPH occurring in deliveries carried out at JPMC was 0.79%. Frequency of PPH occurring in JPMC is far less as compared to the total frequency of PPH received by our centre. This is because patients delivering at JPMC receive active management of the third stage of labour and in case a patient develops PPH, it is immediately diagnosed and managed accordingly. Our findings are comparable to other studies in Pakistan as seen in study at AKUH (0.64%).[3] Overall the frequency of PPH is reported higher as compared to other setups because JPMC is the largest tertiary care public sector hospital receiving high risk cases and referrals from the metropolis as well as adjacent areas of interior Sind and Baluchistan.

Demographic data shows that 356 patients were booked while 772 cases were un- booked. This shows the low literacy rate, lack of antenatal care and non serious attitude in our country.[13,14]

The most common cause responsible for primary PPH in our study was uterine atony 481 (42.6%). These findings were consistent with studies conducted worldwide.[15,16]

In an Irish study, 76% of total PPH had uterine atony[17], this was quite higher than our study. A similar study at AKUH had 96% of PPH [3] with atonic uterus. As atony remains a major cause, active management of labour remains the easiest way of preventing this major aetiology. We treated patients with uterine atony with uterotonics 10 IU IV oxytocin along with oxytocin infusion, 1 gm tranexamic acid, and 1000 micrograms misoprostol in our setting. Patients who failed to respond to uterotonics were managed by vaginal packing, B-LYNCH or balloon tamponade as second line of management. Obstetrical hysterectomy is the last resort in the management of PPH. Unfortunately because of unavailability of services and expertise for procedures like uterine artery embolization or internal iliac artery ligation, hysterectomy is the only available option left when second line management options fails or if the woman is reported in a moribound condition.

In our hospital, vaginal packing was used in 20 (1.77%) patients. Uterine packing is now replaced by balloon tamponade, which is a more practical approach as proven in other studies.

The second major cause was traumatic delivery 251 (22.2%). These findings are comparable to other studies.[18] This was treated with repair of perineal, vaginal or cervical tears along with evacuation to remove any retained products of conception.

Following uterine atony and traumatic delivery was Placenta Accreta Spectrum 141(12.5%). As mentioned earlier, as we receive a lot of patients referred with placenta accrete spectrum; our percentages were higher than other studies.[3,16] Some studies show (0.91%) of patients with placenta accrete spectrum.[19,20] There was a close association between previous scar and Placenta accrete spectrum with a P Value less than 0.000.

Ruptured Uterus was responsible for 40 (3.5%) cases. This condition was treated with uterine repair, and in a few cases where repair was not possible or a patient was admitted in an already compromised state with a moribund condition, obstetrical hysterectomy was performed.

After uterotonics, mechanical treatment is the treatment of choice. Balloon tamponade has proven and brought a drastic decrease in the surgical interventions. Balloon tamponade being an easy procedure, does not require any expertise.[21] Compression suture are very effective as conservative surgical procedure. In our study, 1.68% of PPH patients were treated with it. This decrease in use of compression sutures may be due to a concomitant increase in use of balloon tamponade, as both have nearly the same mode of action. The first one is compressing the uterus and balloon tamponade is increasing the distention, ultimately maintaining the tone of the uterus.

In our study, 4.96% of women had mortality due to PPH. Mortality was higher in women delivered at other settings either by doctor or by traditional birth attendant, and referred for management of PPH to JPMC. There is a significant association between maternal mortality and deliveries carried out by traditional birth attendants. This is probably because of

the delay in identifying PPH and realizing that the patient now needs medical help. This is followed by transport delays and delays in seeking medical care. This is a sad reality that was previously highlighted by Jokhio AH et. al. stating that more than 80% of maternal mortality occurs at home and 89% of deliveries are attended only by a traditional birth attendant.[21]

Conclusion

The conclusion made by the study was to reduce the 3 delays of PPH active management of third stage of labour and careful decision of cesarean section can reduce the overall rate of PPH.

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