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Frequency, Management and Outcome of Postpartum Hemorrhage at a tertiary care Hospital.

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Abstract:

Introduction: According to WHO, world estimates of 2017, 295 000 maternal deaths were reported all over the world and maternal mortality rate ranged from UI 99 to 243 per 100 000 live births. There has been 35% reduction since year 2000. Similarly, there has been 51% reduction in maternal mortality rate in Pakistan. 94% of all maternal deaths occur in low and lower middle-income countries. The major complications that account for nearly 75% of all maternal deaths are: severe bleeding mostly Post-Partum Hemorrhage (PPH), Postpartum sepsis, pre-eclampsia and eclampsia and other.

Objective: To find out the frequency of patients presenting with PPH among all patients delivered during the study period, their management and subsequent morbidity and mortality.

Methodology: This retrospective study was conducted between January 2018 to December 2019 at the department of Obstetrics and Gynecology PUMHS Hospital Nawabshah, Benazirabad. The demography, parity, gestational age, mode of delivery and type of PPH developed as well as treatment for PPH and subsequent morbidity and mortality were all documented. Data analyzed using SPSS version 20.

Results: During study period frequency of PPH was 32.73 per 1000 deliveries, prevalence of primary PPH was 90.51%. Among the causes of PPH, Uterine atony was the leading cause 42/137 (30.65%). 56 (40.87%) patients were managed in the ICU for ventilatory & inotropic support and septic shock, management. Mortality was 7(5%).

Conclusion: Majority of patients are of primary PPH and uterine atony remains the most common cause of PPH which requires prompt and timely management as per guidelines.

Keywords: PPH, primary, secondary, frequency, management, outcome.

Introduction:

According to WHO world estimates of 2017, 295 000 maternal deaths were reported all over the world and maternal mortality rate range from uncertainty interval (UI) 99 to 243 per 100 000 live births. There has been 35% reduction since 2000. Similarly, this rate for Pakistan is reported to be UI 140 per 100 000 live births. This rate was 286 in year 2000 and there is 51% reduction in maternal mortality rate in Pakistan. 94% of all maternal deaths

occur in low and lower middle-income countries.¹ The major complications that account for nearly 75% of all maternal deaths are; severe bleeding mostly Post-Partum Hemorrhage (PPH), Postpartum sepsis, pre-eclampsia and eclampsia, other post-delivery complications and unsafe abortion.² Primary PPH is defined as a hemorrhage of 500 ml or more following vaginal delivery or 1000 ml or more following a caesarean delivery within 24 hours following birth. The maternal mortality death rates due to PPH vary widely in the developing world however, based on

hospital studies these are estimated to be 25–30%.³. Among the causes of PPH, Uterine atony by far remains the most common etiological factor resulting in PPH. Other causes of primary PPH include retained placental tissues, uterine rupture, lower genital tract trauma, uterine inversion and consumptive coagulopathy.^{4,5} Use of evidence-based guidelines and protocols are significant in the prevention and management of PPH.⁶ The aim of this study is to find out the incidence of PPH, its management and outcome in our tertiary care setting at rural Sindh, Pakistan.

Methodology:

This retrospective case series was conducted over a period of two years from January 2018 to December 2019 at the department of Obstetrics and Gynecology, PUMHS Hospital Nawabshah, Benazirabad. Inclusion criteria were all those women who developed postpartum bleeding after delivery, whether NVD or through C-section and were admitted for further management. Exclusion criteria were patients with history of bleeding disorders and those on anticoagulants like warfarin or heparin.

As this was a retrospective study, consent was not necessary, and no ethical issues were expected during this study however a formal permission was taken from Ethical review committee of institute after submitting the study protocol.

The data was collected from the record of all patients delivered during the study period taken from history charts, labour room record, operation theater record; minor procedures and major procedures registers, and from ICU records. A predesigned proforma was completed by entering the demography of patients, Parity, Gestational age, mode of delivery and type of PPH developed. Management of PPH, further treatment, complications and mortality were all documented. Data analyzed using SPSS version 21.

Results:

During the period from January 2018 to December 2019, a total of 8371 deliveries took place; out of which 137 developed PPH. The frequency of PPH was 3.27%. Average age of the patient was 28.56 years. Young patients between age group of 20-30 years were the main sufferers (n=79/137, 57.66%). Patients with Parity ≥ 4 were more affected (59/137, 43.06%). About 73% (100/137) patients were in the gestational age between 37-38 weeks. Majority (124/137, 90.51%) of patients were of primary PPH. LSCS was the frequent (44/137, 25.54%) mode of delivery followed by SVD (35/137, 25.54%) as shown in table 1. Among the causes of PPH, Uterine atony was the leading cause (42/137, 30.65%) followed by retained products of conception (RPOCs) in 18 patients out of 137 cases (13.13%) and ruptured uterus accounted for 15 patients (10.94%) as shown in table 2. Exploration as the treatment procedure was performed in 33 (24%) whereas hysterectomy following LSCS done in 15(10.94%) patients while 32 (23.35%) patients of PPH were managed by conservative measures as shown in table 3. Most patients (n=81, 58.12%) of PPH were successfully managed in ward, while 56 (40.87%) patients required ICU for ventilatory/inotropic support, management of

septic shock and appropriate fluid management; as shown in table 5.

As far as morbidity is concerned, 5 patients developed renal failure and two of them died, similarly 5 patients developed DIC and three of them died and two out of nine patients died due to sepsis. Overall mortality was 5% as shown in table 1.

Table No.1: Showing different variable

AGE (MEAN 28.56) IN YEARS	
20-30 Years	79 (57.66%)
31-40 Years	54 (39.41%)
> 40 Years	04 (2.91%)
PARITY	
Primipara	13 (9.48%)
1-2	35 (25.54%)
2-3	15 (10.94%)
3-4	15 (10.94%)
> 4	59 (43.06%)
GESTATIONAL AGE	
37-38 Weeks	100 (72.99%)
38-39 Weeks	18 (13.13%)
39-40 Weeks	14 (10.21%)
> 40 Weeks	05 (03.64%)
MODE OF DELIVERY	
LSCS	44 (32.11%)
SVD	35 (25.54%)
Laparotomy	25 (18.24%)
VBAC	22 (16.05%)
Instrumental Delivery	11 (16.05%)
TYPE OF PPH	
Primary PPH	124 (90.51%)
Secondary PPH	13 (09.48%)
MORBIDITY & MORTALITY (n=137)	
Renal Failure	5 (03.64%)
DIC	5 (03.64%)
Sepsis	9 (06.56%)
Mortality	7 (05.10%)

Table No.2: Causes of PPH

Source	Cause	n (%)
Uterus & Appendages	Uterine Atony	42(30.65)
	Uterine atony and broad ligament hematoma	10(07.29)
Tissue	RPOCs	18(13.13)
	Sepsis	4(02.91)
Trauma	Ruptured Uterus	15(10.94)
	Cervical tear	8(05.83)
	Perineal tear	7(05.10)
	Infralevator hematoma	4(02.91)
	Cervical tear and broad ligament hematoma	3(02.18)
	Ruptures uterus and bladder rupture	3(02.18)
Placental abnormality	Placenta Increta	7(05.10)
	Placenta percreta	7(05.10)
	Retained placenta	6(04.37)
	Placenta accreta	3(02.18)
Total		137

Table No.3: Treatment protocol/Procedure

Procedure	n (%)
Exploration	33 (24.03)
LSCS followed by Hysterectomy	15 (10.94)
Laparotomy followed by hysterectomy	15 (10.94)
SVD followed by hysterectomy	8 (05.83)
Cervical tear repair	8 (05.83)
Perineal tear repair	7 (05.10)
Laparotomy followed by packing-tamponade and scar repair	5 (03.64)
Laparotomy followed by B Lynch sutures	5 (03.64)
SVD followed by uterine packing -tamponade	5 (03.64)
Infralevator hematoma drainage	4 (02.91)
Conservative measures	32 (23.35)
Total	137

Table No. 4: Management (n=137)

Place of Management	Reason	n (%)
ICU Management 56 (40.87%)	For managing Hypovolemia	36
	Need ventilator support	5
	Needs inotropic support	6
	Septic shock management	9
Ward Management 81 (59.12%)	Sufficiently stable	81(59.12)

Discussion:

Pakistan and other south Asian countries are among those countries who have shown a great decline in maternal mortality rates but these are still short of the global SDG target of less than 70 maternal deaths per 100,000 live births, to be achieved by 2030.¹ Hemorrhage accounts for nearly 30% of maternal deaths hence we have to enhance efforts to prevent morbidity and mortality due to hemorrhage and other preventable causes.

The frequency of PPH in this study was 3.27% which is comparable (3.14%) to the frequency reported by Fouzia Gul et.al.⁷ Similarly, another study from Pakistan conducted at Lahore General hospital Lahore, by Gulfreen Waheed et.al⁸ showed the overall rate of PPH as 2.46%. However, quite higher prevalence is also reported in national literature. Humaira Naz et.al⁹ have shown the frequency of PPH as 7.1% and in another study by Gani N¹⁰ conducted at Khyber agency has prevalence of PPH as high as 21.3%.

Studies from other developing countries have shown a low incidence of PPH like; a study from Kathmandu by Dongol AS¹¹, reported the prevalence of PPH as 1.6%. Similarly, another study from Zimbabwe by Solwayo Ngwenya¹² also reported an incidence of primary PPH as 1.6%. Another study from Nigeria by Olowokere et al.¹³ reported the prevalence of PPH at different levels of healthcare as 1.6, 3.9 and 3.4% in the tertiary, secondary and primary health care institutions respectively.

A study from UK by Briley A et al¹⁴ reported the incidences of PPH according to blood loss like; ≥ 500 , ≥ 1500 and ≥ 2500 ml as 33.7%, 3.9% and 0.8%. Another study published in BJOG by I Al-Zirqi¹⁵ from Norway has shown a prevalence of 1.1% in severe obstetric hemorrhage. Whereas in another study¹⁶ the frequency has been shown as 2.5%. In study from Japan¹⁷ the incidence of PPH was 8.7%, and of severe PPH (1,500 ml blood loss or more) was 2.1%. It is apparent from these studies that the prevalence/ frequency/ incidence of PPH in Pakistan is from 2.14 to 7.1% except in one study conducted in remote area of Khyber agency where it was 21.3%. overall, it remains around 3% in most of the studies. whereas in studies from other developing countries it is about 1.6% and from some developed countries it is between 0.8 to 2.14% except in one study from Japan where it is 8.7%. In this study of two years, the frequency of PPH observed although not as high as compared to other studies in Pakistan but it is quite substantial when compared to other studies around the globe.

In present study, majority of patients; 79/137 (57.66%) who developed PPH were in age group 20-30 years. Similarly, in study by Nasreen Fatima¹⁸, majority of women 77(55%) were in between 26-30 years of age. Likewise, in another study from Nigeria¹³ most of the patients 30 (38.5%) were between 26-30 years of age. In our study nearly 73% (100/137) patients had gestational age between 37-38 weeks. Similarly, in study by Humaira Naz et.al⁹ 60% (30/50) cases in were in gestational age of 36-40 weeks. Likewise, in study by Ngwenya¹¹ mean gestational age was 38.6 weeks gestation. In our study 43.06% (59/137) patients had Parity ≥ 4 . Similar findings were recorded in study by Fouzia Gul⁷ where 47.7% were between para 5-8.

In our study, majority of patients were of primary PPH 124/137 (90.51%). Similarly, in study by Fouzia Gul et.al⁷ Primary PPH was seen in 1408/1453 (96.9%) cases.

In our study cesarian section was the frequent mode of delivery in 32.11% (44/137) patients followed by SVD 25.54% (35/137). Similarly, in study by Fouzia Gul et al⁷ caesarean section (n=993; 68.34%) was the commonest mode of delivery associated with PPH. In study by Al-Zirqi¹⁵ half of women had c-section. Likewise, in study by Lumaan Shaikh et.al¹⁹ emergency cesarean section (CS) was the most common mode of delivery (13/26, 50%) followed by spontaneous vaginal delivery with episiotomy.

In current study uterine atony 30.65% (42/137) was the leading cause of PPH followed by retained products of conception RPOCs and uterine rupture. A study from Norway by Al-Zirqi¹⁵ reported that uterine atony was the major cause for severe hemorrhage in 30% women. In study by Bibi S⁴, the most important cause of PPH was uterine atony in 96 (70.5%). Similarly, in study by Gulfreen Waheed⁸ Uterine atony in C section cases and trauma in vaginal delivery were the leading causes. In another study by Gul Fouzia⁷ the most common cause of PPH was atonic uterus followed by genital tract trauma and uterine rupture. Likewise, in studies conducted by Ngwenya¹² and Shaikh et.al¹⁹, the Uterine atony was the commonest cause of massive PPH.

Like most studies, Khan JA et al²⁰ has also reported uterine atony as the most common cause of PPH.

In this study 40% patients were managed in ICU. This finding is in agreement with a study of Sharma B et al²¹ who reported this as 35%. Similarly, in study by Al-Zirqi¹⁵ it was observed that a significant number of patients, particularly those with severe hemorrhage required ICU. As regards Morbidity, 5 patients developed renal failure, another 5 patients developed DIC and 9 patients suffered severe sepsis. Morbidities observed during this study were almost identical to those reported by other studies^{7,9,15,18} however reported frequency shows some variation. Mortality in our study was 5%, Shamshad Bibi⁴ has reported 6 deaths among 136 cases of PPH. In another similar study by Ngwenya¹² mortality was 5.4%. however, in another study by study by Gul Fouzia⁷, mortality was 2.41%. Khan JA et al²⁰ recommend that morbidity and mortality can be decreased by taking timely appropriate measures like; uterotonic drugs, uterine massage, uterine compression techniques and intrauterine balloon tamponade as conservative measures, failing which, surgical management should be considered like; vessel ligation, uterine compression sutures and hysterectomy. While Dahlke JD, et al²² has referred 4 different guidelines, recommended for the active management of patients with PPH which include oxytocin in 3rd stage of labour; a massive transfusion protocol to manage PPH resuscitation, uterine packing and balloon tamponade as non-surgical treatment and hysterectomy when all other measures fail to control PPH.

Conclusion:

The frequency of PPH is declining leading to reduction in maternal mortality rate. Uterine atony remains the most common cause of PPH. Prompt and timely implementation of measures recommended by different guidelines are vital to minimize the maternal morbidity and mortality due to PPH.

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