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Frequency of causes of primary postpartum haemorrhage in tertiary care hospital

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Abstract

Introduction:
Primary postpartum haemorrhage is defined as excessive bleeding from genital tract after delivery of fetus. It is divided into primary postpartum haemorrhage which is blood loss >500ml in first 24 hrs after delivery and secondary postpartum haemorrhage, which is defined as excessive loss at any time after 24 hrs to 42 days of puerperium.

Objective:
To determine the frequency of causes of primary postpartum haemorrhage in tertiary care hospital.

Methodology:
This Descriptive Study (cross sectional) was performed in Obstetrics and Gynecology unit A, Lady Reading Hospital MTI Peshawar from 1st November 2019 to 30th April 2020.Women who developed primary postpartum haemorrhage in hospital after vaginal delivery were included in the study. All patients were evaluated for different causes of primary postpartum haemorrhage i.e. uterine atony, RPOC;s, Perineal Tear. All the information was recorded.

Results:
In this study age range was 20-45 years with mean age of 30.851±2.88 years, mean gestational age 38.733±1.31 weeks. Atonic uterus was seen in 60% patients, retained products of conception 29.6% and perineal tear was 10.4%.

Conclusion:
Postpartum haemorrhage is still a leading but preventable cause of maternal morbidity and mortality in our country where health services are underutilized by pregnant women. Uterine atony and RPOC are the major causes which need to be kept in mind and managed properly.

Keywords:
Postpartum haemorrhage, Atonic uterus, Retained products of conception, perineal tear

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I. Introduction

Primary postpartum haemorrhage [PPH] is defined as excessive bleeding from genital tract after delivery of fetus. It is divided into primary postpartum haemorrhage which is blood loss >500ml in first 24 hrs after delivery and secondary postpartum haemorrhage, which is defined as excessive loss at any time after 24hrs to 42 days of puerperium.[1]Primary postpartum haemorrhage is consider minor [500-1000] major [>1000] on the basis of volume of blood loss. Major Primary postpartum haemorrhage is subdivided into moderate [1000-2000] and Severe [>2000].[2]

Primary postpartum haemorrhage is the leading cause of maternal mortality with a prevalence rate of 6 %.[3] In Pakistan prevalence rate is 34%.[4]Primary postpartum haemorrhage causes about 150,000 maternal deaths annually, 90 % of which take place within 24 hrs of delivery .[5]

Uterine atony is the commonest cause [>90%] and occurs due to failure of contraction or retraction of myometrium to occlude sinuses embedded in it.[6] Retained placental tissue or membranes is another cause of primary postpartum haemorrhage.[7] Genital tract laceration and coagulopathy are also causal factor of primary postpartum haemorrhage.[8]

It is important to identify the causes of primary postpartum haemorrhage for appropriate management and to prevent fatal consequences. Management of primary postpartum haemorrhage comprises of general measure and specific management for particular cause including medical treatment or surgical intervention.[9]

Complications of primary postpartum haemorrhage include hypovolemic shock, which can lead to acute renal failure, ARDS and Sheehan syndrome. DIC is also common complication [9, 10].Maternal mortality and morbidity rises with delay in diagnosis and intervention, thus the cornerstone of effective management is timely diagnosis and intervention.[11]

A study published in PJMHS Vol.10 2016, titled"causes of primary postpartum haemorrhage after vaginal delivery" 60% of patients were in age range of 20-25 years and with average gestational age of 39 ±1.09 weeks. Uterine atony was the commonest cause of primary postpartum haemorrhage in 33 [66 %] patients followed by retained placenta and membranes in 8 [16 %] patients, vaginal wall laceration in 3 [6 %] patients, perineal tear and extended episiotomy was observed in one case.[12]

A study on frequency of causes of primary postpartum haemorrhage in tertiary care hospital, published in annals vol.21 2015, total of 1344 patents delivered out of which 250 developed primary postpartum haemorrhage giving frequency 18.60%. Among patients who developed PPH, uterine atony was the most common cause 57.6% [n = 144], followed by genital tract tears which was 29.2% [n = 73]. The rest of the causes of primary postpartum haemorrhage were retained placenta in 10% [n = 25], uterine rupture in 3.6% [n = 9] and uterine inversion in 1.6% [n = 4].[13]

Primary postpartum haemorrhage is the leading cause of maternal mortality. This study will provide the frequency of different causes of primary postpartum haemorrhage in our local setup [patients coming to our hospital and especially to our unit] to create local evidence. This will create awareness among health personnel regarding different causes of primary postpartum haemorrhage for early diagnosis and their appropriate and timely management. This study will also be helpful in making local guidelines.

II. Material And Method

This description cross-sectional study was conducted inObstetrics and Gynecology unit A, Lady Reading Hospital MTI Peshawar.from 1st November 2019 to 30th April 2020.Sample size of 135 was calculated as using the WHO software with Confidence level= 95%, Proportion of uterine atony is 66%[12] and Absolute precision= 8%. Consecutive sampling (Non probability) was used for the study

All patient aging 20-45years have a singleton pregnancy with gestation 37-42 weeks, those who developed primary postpartum haemorrhage in hospital after vaginal delivery and Patient referred with primary postpartum haemorrhage within 24 hours of vaginal delivery were included in the study while.Patients with known bleeding disorder, patient undergoing caesarean section patient with multiple pregnancy and patient with placenta previa or placenta accreta or abruptio placenta were excluded from the study.

The study was conducted after approval from hospital ethical and research committee. All women meeting the inclusion criteria and presenting with primary postpartum haemorrhage were consulted to participate in the study. The purpose and benefits of the study was explained to all woman and their relatives. They were assured that the study was done purely for research and data publication and if agreed upon, a written informed consent was obtained. Blood loss was measured by using small kidney tray (500 ml). All patients were evaluated for different causes of primary postpartum haemorrhage i.e. uterine atony (Loss of tone in uterine musculature), RPOC;s (Retained products of conception), Perineal Tear (Laceration of skin and soft tissue structure which in women separates vagina from anus). All the information was recorded in a predesigned proforma. Exclusion criteria was followed strictly to control confounder and bias in study results.

Data was analyzed using SPSS version 16.0. Mean ± standard deviation was calculated for age and gestational age. Frequency and percentage (%) was calculated for parity, type of patient and causes of postpartum haemorrhage. Frequency of causes was stratified according to age, gestational age, parity and type of patient. Post stratification chi-square list was applied. P-value ≤0.05 was taken as significant. All the results were presented in the form of table and charts/graphs.

III. Results:

In this study age range was 20-45 years with mean age of 30.851±2.88 years, mean gestational age 38.733±1.31 weeks as shown in Table-I. Frequency and %age of patients according to parity and type of patients are shown in Table-II and III respectively.Atonic uterus was seen in 60% patients,retained products of conception 29.6% and perineal tear was 10.4% as shown in Table-IV, V and VI respectively.Stratification of atonic uterus, retained products of conception and perineal tear with respect to age, gestational age, parity and type of patient are shown in Table-VII, VIII, IX, X, XI, XII, XIII, XIV, XV, XVI, XVII and XVIII respectively.

Table- I: Mean±SD of patients according to Age and Gestational Age (n=135)

Demographics	Mean±SD
Age(years)	30.851±2.88
Gestational Age (weeks)	38.733±1.31

Table- II: Frequency and %age of patients according to Parity.(n=135)

Parity	Frequency	%age
0-3	118	87.4%
>3	17	12.6%
Total	135	100%

Table- III: Frequency and %age of patients according to Types of Patients.(n=135)

Types of Patients	Frequency	%age
Inpatients	74	54.8%
Referral	61	45.2%
Total	135	100%

Table- IV: Frequency and %age of patients according to Atonic Uterus.(n=135)

Atonic Uterus	Frequency	%age
Yes	81	60%
No	54	40%
Total	135	100%

Table- V: Frequency and %age of patients according to Retained products of conception.(n=135)

Retained products of conception	Frequency	%age
Yes	40	29.6%
No	95	70.4%
Total	135	100%

Table- VI: Frequency and %age of patients according to Perineal Tear.(n=135)

Perineal Tear	Frequency	%age
Yes	14	10.4%
No	121	89.6%
Total	135	100%

Table-VII: Stratification of Atonic Uterus with respect to Age.

Age (years)	Atonic Uterus		p-value
	Yes	No	
20-30	46(66.7%)	23(33.3%)	0.106
31-45	35(53%)	31(47%)	
Total	81(60%)	54(40%)	

Table-VIII: Stratification of Atonic Uterus with respect to Gestational age.

Gestational age (weeks)	Atonic Uterus		p-value
	Yes	No	
37-39	64(57.1%)	48(42.9%)	0.135
40-42	17(73.9%)	6(26.1%)	
Total	81(7.4%)	54(40%)	

Table-IX: Stratification of Atonic Uterus with respect to Parity.

Parity	Atonic Uterus		p-value
	Yes	No	
0-3	72(61%)	46(39%)	0.525
>3	9(52.9%)	8(47.1%)	
Total	81(7.4%)	54(40%)	

Table-X: Stratification of Atonic Uterus with respect to Types of Patients.

Types of Patients	Atonic Uterus		p-value
	Yes	No	
Inpatients	53(71.6%)	21(28.4%)	0.002
Referral	28(45.9%)	33(54.1%)	
Total	81(7.4%)	54(40%)	

Table-XI: Stratification of Retained products of conception with respect to Age Group.

Age (years)	Retained products of conception		p-value
	Yes	No	
20-30	17(24.6%)	52(75.4%)	0.194
31-45	23(34.8%)	43(65.2%)	
Total	40(29.6%)	95(70.4%)	

Table-XII: Stratification of Retained products of conception with respect to gestational age.

Gestational age (weeks)	Retained products of conception		p-value
	Yes	No	
37-39	36(32.1%)	76(67.9%)	0.158
40-42	4(17.4%)	19(82.6%)	
Total	40(29.6%)	95(70.4%)	

Table-XIII: Stratification of Retained products of conception with respect to Parity.

Parity	Retained products of conception		p-value
	Yes	No	
0-3	34(28.8%)	84(71.2%)	0.584
>3	6(35.3%)	11(64.7%)	
Total	40(29.6%)	95(70.4%)	

Table-XVI: Stratification of Retained products of conception with respect to Types of Patients.

Types of Patients	Retained products of conception		p-value
	Yes	No	
Inpatients	34(28.8%)	58(78.4%)	0.025
Referral	24(39.3%)	37(60.7%)	
Total	40(29.6%)	95(70.4%)	

Table-XV: Stratification of Perineal Tear with respect to Age.

Age (years)	Perineal Tear		p-value
	Yes	No	
20-30	6(8.7%)	63(91.3%)	0.514
31-45	8(12.1%)	58(87.9%)	
Total	14(10.4%)	121(89.6%)	

Table-XVI: Stratification of Perineal Tear with respect to gestational age.

Gestational age (weeks)	Perineal Tear		p-value
	Yes	No	
37-39	12(10.7%)	100(89.3%)	0.772
40-42	2(8.7%)	21(91.3%)	
Total	14(10.4%)	121(89.6%)	

Table-XVII: Stratification of Perineal Tear with respect to Parity.

Parity	Perineal Tear		p-value
	Yes	No	
0-3	12(10.2%)	106(89.8%)	0.840
>3	2(11.8%)	15(88.2%)	
Total	14(10.4%)	121(89.6%)	

Table-XVIII: Stratification of Perineal Tear with respect to Types of Patients.

Types of Patients	Perineal Tear		p-value
	Yes	No	
Inpatients	5(6.8%)	69(93.2%)	0.129
Referral	9(14.8%)	52(85.2%)	
Total	14(10.4%)	121(89.6%)	

IV. Discussion:

Post-Partum hemorrhage may occur in 1-5% of deliveries in developed as well as in developing countries and it is still most common cause of maternal morbidity and mortality. It is axiomatic that Post-partum hemorrhage occurs unpredictably and no patient is immune from it, it simply states that it is an equal opportunity killer. Blood loss of 500 ml following a delivery is generally considered as physiologically normal and anything above this limit is known as Post-partum hemorrhage. For vaginal delivery blood loss of above 500 ml and in C-section blood loss of above 1500 ml. Another definition of PPH is that blood loss sufficient to cause hypovolemia, a 10% drop in the hematocrit or requiring transfusion of blood products (regardless of route of delivery).

Maternal death due to postpartum haemorrhage accounts for 25% of all maternal deaths internationally and 60% in some developing countries. The prevalence of PPH in Pakistan is 34% as quoted by WHO.[14]The frequency of PPH in our study was 18.60%. This is lower than WHO but higher than other hospital studies like Yousaf et al (2010)[15] show frequency of 9.1%. Other developing countries like those in Africa, have frequency of primary postpartum haemorrhage of 41% which is higher than ours while developed countries have lower frequency of PPH 2 – 11%.[16] In our study majority of the patients who developed PPH were unbooked which means they have not utilized the antenatal health services and they were not assessed to be at risk of developing PPH during labor. The low PPH rate in booked patients indicate that with emphasis on proper information concerning pregnancy and delivery care, and skilled monitoring of labour and delivery we can reduce incidence of primary PPH.[17]Our study shows the contributing factors of PPH are uterine atony, lower genital tract laceration and retained placental tissues. In my study, Atonic uterus was seen in 60% patients, retained products of conception 29.6% and perineal tear was 10.4%. In another study the uterine atony was the most common cause of PPH having frequency about 57.6%.[18]Another study showed uterine atony is responsible for up to 80% of primary PPH.18 which is more than our study. In Abbottabad a study showed uterine atony incidence 58% which is similar to our study.[19] Active management of third stage of labour with Oxytocin reduces incidence of PPH by 40%.[20] In deliveries at home or at basic health units Misoprostol 800 micrograms per rectally can be used in place of injectable oxytocic drugs for prophylaxis of PPH as its economic and can be stored at room temperature.[21] The patients who have risks of developing PPH should be referred for delivery to health care units with skilled medical personal and blood bank facilities.[22]Perineal tear during delivery was found in 10.4% of cases in our study. In another study frequency of genital laceration was 36.3% which is higher than our study.[23]Yet another study showed PPH due to laceration of the vulva, perineum, vagina, cervix or uterus (rupture) constituted 11.84% of cases.[24] This result is comparable to our study. This emphasizes the need of proper supervision and training of post graduate trainee doctors for conducting instrumental deliveries. There should be drills on mannequins and skilled doctors at senior registrar level should conduct instrumental deliveries themselves or let the junior doctors do it under direct supervision. Retained placenta or placental

tissue was second major cause of PPH (29.6%) in our study. There is wide range of incidence of retained placental tissue in different local studies from 6% to 37%. [25-27]In the international literature it is quoted 5 to 10%.[28] This difference merely indicates a referral bias, as all cases were those referred after home deliveries or from private clinics and no case of retained placenta occurred in hospital deliveries. But there is a need to educate the health care providers regarding complete delivery of the placenta after it gets spontaneously separated from uterus as early pulling or manual separation leads to retained placental tissue. Uterine rupture contributed 3.6% of the PPH cases in our study, among these mostly the uterine ruptured occurred in patients with previous caesarean who did not come to the hospital for fear of having repeat caesarean and went to local dai or less experienced doctor. Another study from Karachi showed frequency of uterine rupture 47.1%[29] which is very high compared to our study but that number was in six years. Primary PPH is a life threatening obstetrical emergency and contributes to high maternal morbidity and mortality rate of Pakistan. Our study showed that the frequency of primary PPH in our health care system is higher than recorded globally. Lack of risk assessment during antenatal care and delivery by untrained personal is the major causes of this high rate of PPH.

V. Conclusion:

Postpartum haemorrhage is still a leading but preventable cause of maternal morbidity and mortality in our country where health services are underutilized by pregnant women. Uterine atony and RPOC are the major causes which need to be kept in mind and managed properly.

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