Section: Obstetrics & Gynaecology

Research

POSTPARTUM HEMORRHAGE: INCIDENCE, RISK FACTORS, ETIOLOGY, MANAGEMENT AND COMPLICATIONS AT A TERTIARY CARE CENTRE, SRVS MEDICAL COLLEGE, SHIVPURI

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Abstract

Background: Postpartum Hemorrhage (PPH) is defined as a loss of >= 500-1000 ml blood from the genital tract, accompanied by signs or symptoms of hypovolemia within 24 hours after the birth process. Primary PPH can also be defined as a fall in hematocrit >10%. According to WHO PPH is responsible for 25% of all maternal deaths and is the most common cause of maternal morbidity and mortality. Postpartum hemorrhage is the leading cause of admissions to the intensive care unit and the most preventable cause of maternal mortality. postpartum hemorrhage is also an important cause of maternal mortality even in high-income countries, accounting for about 13% of maternal deaths. To study the cases of postpartum hemorrhage, their incidence, risk factors, management, and complications in a tertiary care center (SRVS Medical college). **Materials and Methods:** A retrospective study of cases of PPH was done including all those who delivered at SRVS Medical College SHIVPURI, 7 months study from 1 April 2022 to 31 October 2022 Patients diagnosed with Primary PPH (PPH within 24 hours after delivery) were included. **Result:** The incidence of primary PPH at SRVS was 5.55% in our study. Most of the cases belonging to the 19-29 yrs age group, more no. of the cases were rural population, and 56.7 % were delivered by cesarean section. Previous LSCS (22.9 %) and PIH (22.9 %) majorly contributed as risk factors for PPH. Uterine atony remains the major cause of PPH (77 %) followed by trauma, product retention, and bleeding disorder at 16.39 %, 4.91 %, and 1.63 % respectively. As a treatment, Uterine massage was given to almost all patients (93.44 %), followed by Balloon tamponade insertion was done in 34.42%, and in 16.39 % of cases, tear repair was done. With further severity, MRP was done in 4.91 %, Uterine Artery ligation in 3.27 %, B-Lynch, and Hysterectomy in 1.63 %. **Conclusion:** PPH is majorly a preventable cause of maternal mortality and morbidity globally if managed timely. Early Identification of high-risk factors and active management of labor is highly important for the prevention of PPH. As it results in young deaths a multi-disciplinary approach is required for the PPH including medical, mechanical, surgical, and radiological is required in severe hemorrhage.

INTRODUCTION

Pregnancy, and childbirth involve significant health risks, even for women with no preexisting health problems. Among all the pregnancy-specific health problems, Postpartum hemorrhage is the leading cause of admissions to the intensive care unit and the most preventable cause of maternal mortality. Postpartum hemorrhage is defined as 'any amount of bleeding from or into the genital tract following the

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birth of a baby up to the end of puerperium which adversely affects the general condition of the patient as evidenced by a rise in pulse rate and fall in blood pressure.[1]

The average blood loss following vaginal delivery, cesarean delivery, and cesarean hysterectomy is 0.5 liter, 1 liter, and 1.5 liters respectively. Postpartum Hemorrhage (PPH) is defined as a loss of >= 500-1000 ml blood from the genital tract, accompanied by signs or symptoms of hypovolemia within 24 hours after the birth process.[1,2]

According to WHO PPH is responsible for 25% of all maternal deaths and is the most common cause of maternal morbidity and mortality.[3,4] Postpartum hemorrhages are also an important cause of maternal mortality even in high-income countries, accounting for about 13% of maternal deaths.[5]

The reported incidence of PPH in India is 2% - 4% after vaginal delivery and 6% after cesarean section.[6] PPH is an obstetrician's nightmare because it is a life-threatening condition in India. PPH is one of the leading causes of death of women during childbirth and accounts for 38% of maternal death).[7]

The most common cause of PPH is uterine atony followed by trauma in the genital tract. Retained tissue and coagulation disorders constitute the other causes of PPH. PPH leads to severe complications, especially if not treated immediately, it results in death. It can lead to hypovolemia which results in shock and organ failure. Morbidity of PPH is manifested in many syndromes such as Sheehan syndrome, abdominal compartment syndrome, and Asherman syndrome.

To prevent the occurrence of PPH, active management of the third stage of delivery should be applied to all women. Active management of the third stage of labor can decrease blood loss by 40-68%.[8,9] The next step is to ensure that the uterus is well contracted, if not; contraction can be achieved by bimanual compression. If the uterus is well contracted, the lower genital tract should be examined if there is any laceration or incision that must be repaired. Initial therapy is followed by pharmacological treatment which includes medications that cause uterine contraction and correct coagulation abnormalities.

Thus a multi-disciplinary approach is needed for the management of PPH. After the uterine massage and manual exploration of the uterus if PPH is not controlled Medical pharmacological management includes the use of uterotonic drugs like Oxytocin, Methylergometrine, Misoprostol, Prostaglandin F2α, and carbetocin. Antifibrinolytic therapy can be added. Mechanical methods like Uterine balloon tamponade techniques have recently shown promising results. Surgical intervention like uterine compression suture, B-lynch, and other modifications e.g. chi-square, Hayman, Pereira, and Cervico isthmic sutures]. Bilateral uterine artery ligation, Bilateral ovarian Artery ligation, internal iliac artery ligation, and hysterectomy should be considered. Pelvic arterial embolization done by intervention radiology can be done. The need for blood and blood products and hemostatics drugs should be assessed.

Aims & Objectives

The objective of this study was to determine the incidence, risk factors, management, and complications of postpartum hemorrhage (PPH) at SRVS Medical College SHIVPURI, 7 months study from 1 April 2022 to 31 October 2022 and to compare patients in terms of mode of delivery (vaginal and cesarean section). The results of this study will help clinicians to identify patients at risk and improve the management of these patients to avoid complications.

MATERIALS AND METHODS

Study Design and Sample Selection

This study was a cross-sectional retrospective study. It included all patients who delivered at SRVS Medical College SHIVPURI, 7 months study from 1 April 2022 to 31 October 2022 Patients diagnosed with Primary PPH (PPH within 24 hours after delivery) were included.

Data Collection

Data were collected manually from the delivery register in the labor ward.

Data Analysis

Data entered in SPSS software version 16.0. Cross-tabulation was used to get the frequencies and percentages based on the mode of delivery for demographical data, risk factors, causes, management, and complications.

RESULTS

During the study period, the total number of deliveries was 1098; 475 (43.26%) were vaginal and 623(56.7%) were Caesarean. The incidence of primary PPH at SRVS was 5.55% (61/1098); among vaginal deliveries was 5.2% (25/475) and among Caesarean deliveries was 5.7% (36/623). Such a high incidence rate of cesarean section is because SRVS medical college is a referral center for all the high-risk cases from the peripheries.

Table 1: Socio-Demographic Parameter

Parameters	Frequency	Percentage
Age		
19-29	571	52%
30-40	362	32.96%
>40	165	15%

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Parity		
Primigravida	463	42.16%
Multigravida	635	57.83%
Residence		
Rural	704	64.11%
Urban	394	35.88%
Mode of Delivery		Percentage
Vaginal	475	43.26%
LSCS	623	56.7%

In our study, max number of patients belonged to the 19-29 years age group. Most of them were multigravida and from rural backgrounds. Most of the patients are delivered by Cesarean section.

Table 2: Representation of frequency of risk factors and causes in the studied population based on the mode of delivery

	Total cases of PPH n=61 (%)	**Vaginal delivery cases with PPH n=25 (%)**	**Cesarean delivery cases with PPH n=36 (%)**
History of cesarean delivery	14 (22.9%)	3 (12%)	11(30.5%)
Blood disorders/Coagulation disorders	1 (1.63%)	1 (4%)	0
Prolonged labor	5(8.1%)	4(16%)	1(2.7%)
PIH / Preeclampsia	14(22.9%)	5(20%)	9(25%)
Large for gestational age and Polyhydramnios	5(8.1%)	2(8%)	3(8.33%)
APH	7(11.47%)	2(8%)	5(13.8%)
Anemia	10(16.39)	7(28%)	3(8.3%)
Thrombocytopenia	5(8.1%)	4(16%)	1(2.7%)
Septicemia	1(1.63%)	0	1(2.7%)

Risk factors: History of Caesarean section & PIH was found in 22.9% of the studied sample followed by Anemia, APH, and prolonged labor being the other major causes contributing to PPH.

Table 3: Causes of Postpartum Hemorrhage

Causes	**No. of cases = n (%)**
Uterine atony	47(77%)
Lacerations (Trauma)	10(16.39%)
Product retention	3(4.91%)
Bleeding disorder	1(1.63%)

The most common cause of postpartum hemorrhage in our study was uterine atony. About 77% of cases were caused by uterine atony and 16.39% of cases were caused by Trauma (lacerations and cervical tears).

Table 4: Representation of frequency of management and complications in the studied population based on the mode of delivery.

Management	**Total cases of PPH n=61(%)**	**Vaginal delivery cases with n=25 (%)**	**Cesarean delivery cases with PPH n=36 (%)**
Uterine massage +uterotonics	57(93.44%)	23(92%)	34(94.44%)
blood transfusion	21(34.42%)	13(52%)	8(22.22%)
Balloon tamponade	21(34.42%)	12(48%)	10(24.99%)
Cervical & vaginal exploration & tear repair	10(16.39%)	10(40%)	0
MRP (Manual removal of the placenta)	3(4.91%)	3(12%)	0
B-Lynch Suture	1(1.63%)	0	1(2.77%)
Uterine Artery Ligation	2(3.27%)	0	2(5.55%)
Internal Iliac Artery Ligation	0	0	0
Hysterectomy	1(1.63%)	0	1(2.77%)

The management approach which followed at SRVS was an administration of uterotonics and uterine massage for almost all patients. Balloon tamponade insertion was done in 34.42% patients who are cases of atonic PPH and not responding to uterotonics and uterine massage. & in 16.39 % of cases, tear repair was done. With further severity, MRP was done in 4.91 %, Uterine Artery ligation in 3.27 %, B-Lynch, and Hysterectomy in 1.63% %. Among of all 34.42 % of cases required blood transfusion. With the failure of all the management 1.63 % required a cesarean hysterectomy.

Table 5:

Complications			
ICU admission	10(16.39%)	6(24%)	4(11.11%)
Hysterectomy	1 (1.63%)	0	1(2.77%)
Mortality	1(1.63%)	1(4%)	0

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16.39 % of the cases required ICU admission followed by 1.63 % of cases that underwent hysterectomy and 1.63 % of cases were so critical landing up into the mortality

Comparing the risk factors in our study and Solwayo Ngwenya

Risk Factors	Our Study	Solwayo Ngwenya
History of Caesarean delivery	22.9%	12.3%
Prolonged labor	8.1%	17.5%
PIH / Preeclampsia	22.9%	33.3%
Large for gestational age and Polyhydramnios	8.1%	15.8%
APH (Abruptio and placenaprevia)	11.47%	8.8%
Others (Anemia + Septicemia + Bleeding disorder + Thrombocytopenia)	27.7%	12.3%

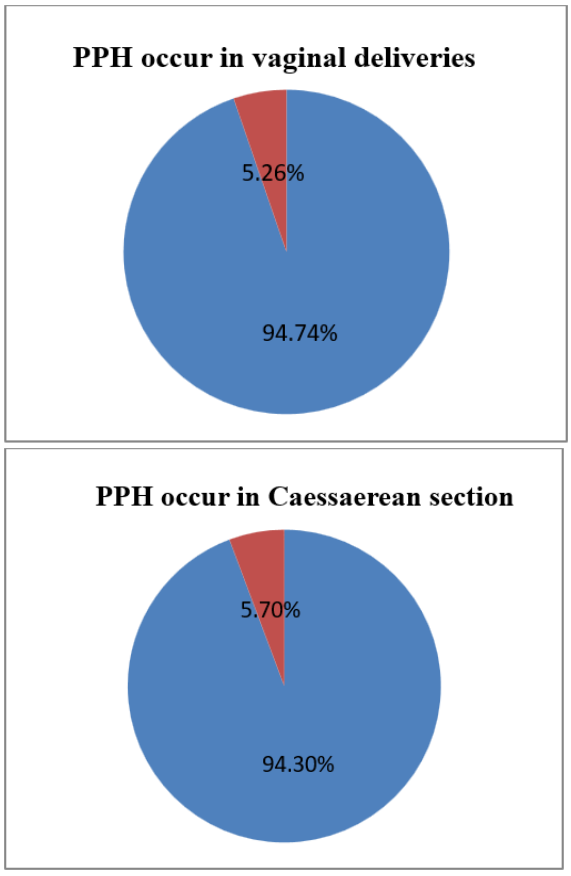

Figure 1: PPH in Normal Vaginal Deliveries and Cesarean Sections

DISCUSSION

PPH contributes as a major cause of both maternal mortality and morbidity, not in developing countries but also in developed countries; as it is a very frequent and inexplicable complication of delivery. It badly leads to devastating results for many young families.

In the present study, the maximum cases belong to the 19-29 yrs age group, which is similar to the study done by Thawal et al,[10] where the max cases belong to age group 25-28 age group followed by 19-24 yrs age group and it is likewise to study done by Bhavana et al,[11] where most of the cases were between 20-30 yrs age group; comparing to Lill Trine Nyflot,[12] study, where the max cases belong to 30-35 yrs age group.

Likewise, a study was done by Thawal et al (60%) and Bazirete 0 (76.7%).[13] our study also shows maximum cases of 57.83% were multigravida whereas in the study conducted by Lill trine Nyfolt and Gora K et al,[12,14] maximum cases found were primi 58.5% and 59.3% respectively.

In our study, 64.11% of cases belong to a rural population similar to the study conducted by Gora K et al,[12] showing 68.3% of cases as rural while the study of Bhavana G et al,[11] showed 69% of cases from the urban population.

Unlike study of Gora et al, Nyflot,[12] and Solwayo Ngwenya.[15]

Our stud showed most of the cases delivered by Cesarean section as our's is a tertiary care center and referral center for high-risk cases from the peripheries.

In our study, Anemia contributes 16.39% as a risk factor; likewise, Anemia contributes 15% in the study done by Thawal et al.

Previous LSCS and PIH are the two major risk factors at 22.9%. In the study conducted by Von Schmidt auf Altenstadt et al,[16] Preeclampsia was the most common risk factor. While according to Kramer et al Previous LSS was the major independent risk factor for PPH.

In our study, uterine atony remains the major cause of PPH (77%) followed by trauma, product retention, and bleeding disorder at 16.39%, 4.91%, and 1.63% respectively. Likewise Tasneem F et al,[17] found Uterine atony in 81%.

In our study, Uterine massage was given to almost all patients (93.44%), followed by 22.95% of cases requiring intrauterine packing, and in 16.39% of cases, tear repair was done. With further severity, MRP was done n 4.91%, Uterine Artery ligation in 3.27% B-Lynch, and Hysterectomy in 1.63%. Among of all 34.42% of cases required blood transfusion. It is similar to the studies done by Thawal et al,[10] Tasneem F et al,[17] and Bhavana G et al.[11]

Even after all the precautions and possible treatment, 1.63% of cases landed to mortality tragically.

CONCLUSION

The incidence of PPH in our setting was low most likely due to the departmental policy of active management of the third stage of labor in addition to appropriate anticipation and management of patients who are at risk of developing PPH. A number of

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drugs and various surgical techniques are used for the prevention and control of PPH as prevention is always better than cure. The previous history of cesarean section and PIH were the most common risk factor for PPH at our hospital. Post-partum hemorrhage occurs unpredictably and is an equal opportunistic killer.

Hence, the identification of high-risk factors, prediction, and assessment of blood loss, and active management of PPH are very important for the prevention of morbidity and mortality. The availability of blood and blood product should always be there. For the prevention and treatment of PPH in low-resource settings, community-based emergency care should be promoted. Community workers should know about early identification of hemorrhage and effective management by Uterine Massage, Misoprostol, Oxytocin, Bimanual Uterine, and Aortic Compression, and the use of Non – pneumatic anti-shock garments.

It is recommended that to prevent the patient with life-threatening complications and death provision of quality maternal health care services should be there and management protocol should be followed strictly in these health care services.

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