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Original Research Article

Causes and management of post-partum hemorrhage at tertiary care center, Rajasthan, India

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ABSTRACT

Background: PPH is responsible for 25% of all maternal deaths. In India, PPH incidence in India is 2%-4% following vaginal delivery and 6% following cesarean section. PPH as the important cause of 19.9% of maternal mortality in India. The objectives of the study were to study the incidence, risk factors, cause, morbidity and mortality pattern and management of PPH.

Methods: This is a cross-sectional study conducted among 102 pregnant women selected by convenient sampling and admitted in labour room during the study period who will be deliver by vaginally or by caesarean section. The patient having PPH were divided into two groups: Group I: Patients having primary atonic PPH, Group II: Patients having traumatic PPH.

Results: Mean age of participants was 33.6 and 32.9 years, 59.3 and 51.2 have '0' parity, mean BMI 22.8 and 23.9 kg/m², 34.6% and 17.1 babies were delivered by LSCS, 11.7% and 12.2% have history of PPH in the group of atonic and traumatic respectively. In the group of atonic PPH cases, 77.2%, 15.4%, 4.3% and 3.1% cases managed by the method of 'Uterotonics + <2 blood transfusions', 'Uterotonics + >2 blood transfusions', 'Perineal Tear Repair' and 'Surgical Intervention' respectively. All the traumatic PPH cases (100.0%) were managed by 'surgical intervention'.

Conclusions: A multi-disciplinary approach include medical, mechanical, surgical and radiological is required in severe haemorrhage. Availability of blood and blood products is very crucial. Prediction and assessment of blood loss and timely identification of uterine atony are remaining the cornerstone for prompt and effective management of PPH.

Keywords: Atonic PPH, Post-partum Hemorrhage, Traumatic PPH, Uterine Atony

INTRODUCTION

PPH can be defined as fall in hematocrit >10%.¹ Primary PPH is defined as, bleeding occurring within 24 hours of birth and secondary PPH defined as bleeding in excess of normal lochia after 24 hours and up to six weeks postpartum.²⁻⁴

As per the data of World Health Organization (WHO), PPH is the most common cause of maternal mortality and morbidity worldwide and is responsible for 25% of all maternal deaths.^{5,6} According to WHO, PPH complicate the 10.5% of live births and around 13,795,000 women

suffered PPH with 13,200 maternal deaths in the year 2000.⁷ In India, PPH incidence in India is 2%-4% following vaginal delivery and 6% following cesarean section. PPH as the important cause of 19.9% of maternal mortality in India.⁸ About 75 to 90% of PPH cases are caused by uterine atony.⁹ Almost 60-70% of atonic PPH incidence can be prevented by Active management of third stage of labour. Monitoring of pulse, blood pressure, bleeding during fourth stage of labour and using bedside tool, Modified Early Obstetric Warning System (MEOWS) in all obstetric inpatient are important and crucial to prevent morbidity and mortality. So, the present study was conducted with the objective to study the

incidence, risk factors, cause, morbidity and mortality pattern and management of PPH.^{10,11}

METHODS

This is a cross-sectional study conducted among 102 pregnant women selected by convenient sampling and admitted in labour room during the study period who will be deliver by vaginally or by caesarean section done at Department of Obstetrics and Gynaecology, J.L.N. Medical College, Ajmer, Rajasthan, India during January 2018 to December 2018 after ethical permission from Institutional Ethical Committee. Study included all the patients of Singleton term pregnancy with cephalic and normal placenta, Patients who develop primary atonic PPH defined as uterine atony after delivery of placenta (<24hr) that leads to blood loss, Patients who developed traumatic PPH defined as any trauma to the genital tract, Low risk LSCS cases. Study excluded all referred cases of PPH who delivered outside study setting, All cases of secondary PPH, All cases of severe anaemia (Hb <7gm%), hypertension, jaundice, heart disease, epilepsy, bronchial asthma, renal disease, and known hypersensitivity to prostaglandins, all the cases of bleeding disorders, multiple pregnancy, polyamnios, intrauterine deaths, multigravida, twins pregnancy etc, All cases of placenta previa, previous 2 LSCS, instrumental delivery, All LSCS case who is high risk LSCS cases. The patient having PPH were divided into two groups: Group I: Patients having primary atonic PPH (162 cases), Group II: Patients having traumatic PPH (41 cases).

Group I

After delivery of placenta, uterus was palpated per abdominally and if the uterus was atonic and the blood loss was more than normal, bimanual uterine massage was done and first line medical intervention begin immediately. Volume replacement by crystalloids and blood transfusion has been done in each case as per requirement. As per protocol standard policy was adopted for these supportive measures.

Group II

Those patients who have any trauma to the genital tract with vaginal bleeding despite a well contracted uterus were considered to have traumatic PPH.

Collected data was entered in the excel data sheet and data analysis was done with the help of Epi. Info.7.2 software.

RESULTS

Table 1 shows that maximum number of patients among 203 selected patients belonged in 30- 40 years age group i.e. 67.3% in Atonic PPH and 68.3% in Traumatic PPH ($p>0.05$). Highest number of participants 59.3% and

51.2% have '0' parity followed by 26.5% and 29.3% have parity '1' in the group of atonic and traumatic respectively ($p>0.05$). Almost 54.9% and 68.3% participants were resided in rural area in the group of atonic and traumatic respectively ($p>0.05$). Highest number of participants 63.6% and 58.5% were belonged to the group of BMI group of 18.5 to 24.9 atonic and traumatic respectively ($p>0.05$). Vaginal delivery was noted in 65.4% and 82.9% in the group of atonic and traumatic respectively ($p<0.05$). History of severe PPH was observed in 11.7% and 12.2% in the group of atonic and traumatic respectively ($p>0.05$). More than 3.5kg' observed in 93.2% and 92.7% in the group of atonic and traumatic respectively ($p>0.05$).

Table 1: Socio-clinical parameters of study participants (N=203).

Parameters	Atonic (n=162)	Traumatic (n=41)	P value*
Age			
20-30	49 (30.2)	11 (26.8)	>0.05
30-40	109 (67.3)	28 (68.3)	
>40	4 (2.5)	2 (4.9)	
Mean±SD	33.6±7.4	32.9±5.8	
Parity			
0	96 (59.3)	21 (51.2)	>0.05
1	43 (26.5)	12 (29.3)	
2	16 (9.9)	5 (12.2)	
≥3	7 (4.3)	3 (7.3)	
Residence			
Rural	89 (54.9)	28 (68.3)	>0.05
Urban	73 (45.1)	13 (31.7)	
BMI (kg/m²)			
<18.5	9 (5.6)	1 (2.4)	>0.05
18.5 – 24.9	103 (63.6)	24 (58.5)	
25-29.9	30 (18.5)	10 (24.4)	
≥30	20 (12.3)	6 (14.6)	
Mean±SD	22.8±3.4	23.9±3.8	
Mode of Delivery			
Vaginal	106 (65.4)	34 (82.9)	<0.05
LSCS	56 (34.6)	7 (17.1)	
History of severe PPH			
Present	19 (11.7)	5 (12.2)	>0.05
Absent	143 (88.3)	36 (87.8)	
Hb level (in g/dL)			
≤ 9.0	16 (9.9)	4 (9.8)	>0.05
≥ 9.1	146 (90.1)	37 (90.2)	
Birth Weight (in kg)			
Normal (2.5 to 3.5)	11 (6.8)	3 (7.3)	>0.05
Higher (>3.5)	151 (93.2)	38 (92.7)	

* - Chi-square Test

Table 2 shows that all the traumatic PPH cases (100.0%) were managed by 'surgical intervention'. In the group of atonic PPH cases, 77.2%, 15.4%, 4.3% and 3.1% cases

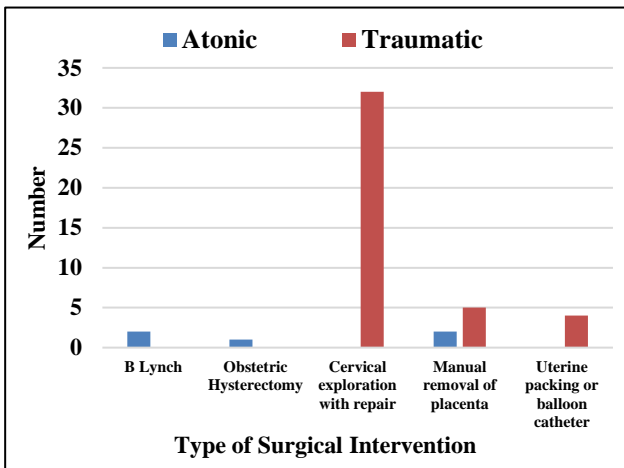
managed by the method of 'Uterotonics + <2blood transfusions', 'Uterotonics + >2blood transfusions', 'Perineal Tear Repair' and 'Surgical Intervention' respectively ($p < 0.05$).

Table 2: Management of PPH (N=203).

Type of Intervention	Atonic (n=162)	Traumatic (n=41)	P value*
Uterotonics + <2blood transfusions	125 (77.2)	00 (0.0)	<0.05
Uterotonics + >2blood transfusions	25 (15.4)	00 (0.0)	
Perineal Tear Repair	7 (4.3)	00 (0.0)	
Surgical Intervention	5 (3.1)	41 (100.0)	

* - Chi-square Test

Figure 1 shows that 40.0%, 40.0% and 1.0% cases were surgically managed by the methods B Lynch, Manual removal of placenta and Obstetric Hysterectomy respectively. Almost 78.0%, 12.2% and 9.8% cases were surgically managed by the methods Cervical exploration with repair, Manual removal of placenta and Uterine packing or balloon catheter (tamponade) ($p < 0.05$).



Chi-square Test, p value = 0.001, Significant

Figure 1: Surgical intervention in PPH (N=46).

DISCUSSION

Study found 79.8% cases of atonic PPH and 20.2% cases of traumatic PPH. These findings are correlate with the study done by Tasneem F et al, Sheikh L et al, Sheikh L et al.¹²⁻¹⁴ Highest number of participants 67.3% and 68.3% were belonged to the age group of '30-40 years' in atonic and traumatic respectively. This finding is comparable with the study done by Mehrabadi A et al, Ngwenya S et al.^{15,16} Highest number of participants 59.3% and 51.2% have '0' parity followed by 26.5% and 29.3% have parity '1' in the group of atonic and traumatic respectively. Present study finding is correlate with the study done by Sadiq GU et al, and Tsu VD et

al.^{17,18} Mean BMI was 22.8 ± 3.4 kg/ht² and 23.9 ± 3.8 kg/ht² in the group of atonic and traumatic PPH respectively. This finding is comparable with the study done by Paglia MJ et al, and Butwick AJ et al.^{19,20} Vaginal delivery was noted in 65.4% and 82.9% in the group of atonic and traumatic respectively and LSCS was noted in 34.6% and 17.1% the group of atonic and traumatic respectively. This finding is correlate with the study done by Loverro G et al, and Holm C et al.^{21,22} PPH treatment includes four elements, communication, resuscitation, monitoring investigation and arresting the bleeding which must be taken simultaneously. Main therapeutic goals of management of massive haemorrhage is to maintain haemoglobin >8 gm/dl, platelet count >75 x 10⁹/l, prothrombin <1.5 x mean control, activated prothrombin time <1.5 x mean control, fibrinogen >1.0 gm/l.^{11,23}

CONCLUSION

PPH is the leading cause of maternal mortality and morbidity in globally. Identification of high-risk factors and active management of labour is very crucial for the prevention of PPH. A multi-disciplinary approach include medical, mechanical, surgical and radiological is required in severe haemorrhage. Availability of blood and blood products is very crucial. Prediction and assessment of blood loss and timely identification of uterine atony are remaining the cornerstone for prompt and effective management of PPH.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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