VOLUME - 11, ISSUE - 11, NOVEMBER - 2022 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper | Obstetrics & Gynaecology

DETERMINANTS OF OUTCOME OF MAJOR POSTPARTUM HAEMORRHAGE

Dr. C. Bhramaramba	M.S (OBG), Asst professor of OBG Dhanalakshmi Srinivasan medical college and hospital Perambalur
Dr A. Sathish Kumar	MD DM, Medical officer RIMS, Kadapa
Dr. Sarvepalli Sudhakar	MS, Asst professor of Surgery, Sri Venkateswara institute of medical sciences, Sri Padmavathi Medical College and Hospital Tirupati
Dr. Sharmista Reddy Kadi*	Civil Assistant Surgeon, Area Hospital Kandukur SPSR Nellore district *Corresponding Author

KEYWORDS :

INTRODUCTION

Postpartum haemorrhage is the most common type of obstetric haemorrhage and accounts for the majority of cases. Traditionally primary postpartum haemorrhage is defined as blood loss of 500 ml or more of blood from the genital tract within 24 hours of delivery. Postpartum haemorrhage can be minor (500-1000 ml) or major (more than 1000 ml). Major is further divided into moderate (1000-2000 ml) and severe (more than 2000 ml)[1]. Secondary PPH is defined as abnormal or excessive bleeding from the birth canal and between 24 hours and 12 weeks postnatally[1]. Uterine atony, genital tract trauma, retained placental tissue and coagulopathy are important causes of postpartum haemorrhage. Secondary PPH is caused by retained tissues, endometritis, placental site trophoblastic tumour, arterio-venous malformations.

It is estimated that worldwide 1,40,000 women die of PPH annually, i.e. one in every four minutes[2]. Postpartum haemorrhage affects about 4-6% of all deliveries. Overall postpartum haemorrhage accounts for an estimated 25% of maternal mortality worldwide.Globally incidence of severe postpartum haemorrhage is around 10.5% of live births[2]. Postpartum haemorrhage is a significant contributor to maternal morbidity and long term complications.

Association between determinants of major PPH and maternal outcome and neonatal outcome is expected to be established by the present study.

AIM:

To study the role of risk factors in determining maternal and fetal outcome in major postpartum haemorrhage

Objectives:

- To determine the risk factors and causes of major postpartum haemorrhage.
- To determine the role of mode of onset of labour, mode of delivery and obstetric procedures in major postpartum haemorrhage.
- To study the maternal and fetal outcome in major postpartum haemorrhage.

METHODOLOGY

The present hospital based observational case control study was carried out in women who had major PPH after delivery admitted in labour ward of Government Maternity Hospital affiliated to Department of Obstetrics & Gynaecology, Sri Venkateswara Medical College, Tirupati from February 2017 to October 2017 after obtaining Ethical Committee Permission(Annexure I).

Cases were selected by census method and controls selected were women who had delivered immediately after the case on the same day.

Inclusion criteria:

- Cases included in the study are women delivered in Government Maternity Hospital, Tirupati with major postpartum haemorrhage.
- Referral cases of major postpartum haemorrhage received by Government Maternity Hospital, Tirupati are included in the cases.
- Controls are women who have delivered in Government Maternity Hospital, Tirupati without postpartum haemorrhage.

Exclusion criteria:

- Pregnancies with gestational age less than 20 weeks.

Study methods:

Major postpartum haemorrhage in the present study is defined as blood loss of more than 1000 ml as estimated in postpartum woman with bleeding with either two of the following: systolic blood pressure 90 mm of Hg or pulse rate more than 100 per minute or any postpartum bleeding that requires blood transfusion irrespective of the blood loss.

Data will be collected on a standardized proforma from women admitted to the Government Maternity Hospital, Tirupati and fulfilling the above criteria set for major postpartum haemorrhage. Data will be collected after obtaining consent from the woman for participation in the study.

Controls will be selected from women who had a singleton foetus and who had no postpartum haemorrhage and did not fulfil the criteria set for cases. For every case of major PPH included in the study a control will be selected who has delivered on the same day after the case was delivered.

A detailed case history will be taken in the proforma (enclosed in appendix I) which includes details of the woman from conception till delivery. As per the literature available risk factors will be elicited from patient's history and case records for analysis in outcome of postpartum haemorrhage.

The factors determining outcome are maternal age more than 35 years, parity, maternal anemia(Hb< 9 g/dl), obesity(BMI > 35),abruptio placenta, placenta previa, multiple pregnancy, coagulation disorders, pre- eclampsia/ gestational hypertension, chronic hypertension, previous postpartum

haemorrhage, induction of labour, augmentation of labour, prolonged labour (>12 hours), delivery by caesarean section-emergency and elective, operative vaginal delivery by forceps and vacuum, pyrexia in antenatal period and labor, retained placenta, adherent placenta, perineal tear (third or fourth degree) or any trauma to the genital tract.

Treatment administered to cases of major postpartum haemorrhage will be as per the hospital protocol.

Routinely done investigations and investigations specific to the risk factor along with ultrasonography reports of antenatal period will be recorded in the proforma.

Ethical considerations:

Cases and controls included in the study were informed of the study and written consent was obtained from them. No patient was financially burdened during the study.

Analysis:

Data was entered in MS EXCEL 2013 Microsoft Corporation Publication. Results were analysed using SPSS version 20 and MED CALC 12.5.0. softwares. Data of cases and controls were compiled into cross tabulations to study the percentages of variables i.e. the risk factors leading to major PPH. Percentages were corrected to decimels for convenience. Association between risk factors and occurrence of major PPH and association of maternal and perinatal outcome with major PPH were studied by calculating odd's ratio and p value for testing the significance.

RESULTS

In the present study 102 cases of postpartum haemorrhage were identified and were compared with 102 controls.

Type of cases	Number	Percentage
Delivered in institute	89	87.3%
Referral cases	13	12.7%
Total	102	100%

In the cases, 50 cases underwent caesarean section and 52 cases delivered by normal vaginal delivery. Among the controls 15 cases underwent caesarean section and 87 delivered by normal vaginal delivery.

Frequency distribution of causes of PPH

Type of PPH	Cases	%
Atonic PPH	77	74.5%
Traumatic PPH	10	9.8%
Abnormal coagulation	4	3.9%
Atonic PPH and Traumatic PPH	9	8.8%
Traumatic and abnormal coagulation	2	2%
total	102	100%

Cause of major PPH was atonic in a major number of cases followed by traumatic PPH.

Mode of delivery in atonic and traumatic PPH

Type of PPH	Caesarean section	Vaginal delivery
Atonic PPH	46	31
Traumatic PPH	1	9

Association between variables and major PPH was assessed using odd's ratio. Anaemia, post caesarean pregnancy, hypertensive disorders and abnormal placentation and their association with major PPH was statistically significant.

Maternal outcome of major postpartum haemorrhage

Outcome factors	Cases	%
Blood transfusion	99	97.1%
Fresh frozen plasma	19	18.6%
Platelets	14	13.7%
ICU care	9	8.8%
Peripartum hysterectomy	2	2%
B lynch sutures	32	31.3%
Uterine artery ligation	5	4.9%

Blood transfusions were done in 99 cases and blood products like fresh frozen plasma was transfused in 19 cases. Platelets were transfused in 14 cases. A total of 19 cases had blood product transfusions. None of the controls had any adverse outcome.

Maternal complications of major PPH

Shock	13	12.7%
Respiratory failure	6	5.9%
Renal failure	2	2%
DIC	1	1%
Death	6	5.9%

Prolonged hospital stay in the present study is defined as more than 10 days from the day of admission considering the hospital protocol to treat women who have undergone caesarean section for 7 days as inpatients before being discharged.

causes of death in major PPH

Cause or complication	No. of cases
Hypovolemic shock	1
Shock, respiratory failure	3
Shock, respiratory failure, renal failure	1
Shock, respiratory failure, renal failure and DIC	1

Association between major PPH and maternal outcome

Outcome factor	Odd's ratio	95% CI	p- value
ICU care	20.8289	1.1957 – 362.8491	0.0373
Peripartum hysterectomy	5.0995	0.2418 – 107.5550	0.2950
Shock	30.9218	1.8122 – 527.6271	0.0178
Renal failure	5.0995	0.2418 – 107.5550	0.2950
DIC	3.0296	0.1220 – 75.2510	0.2950
Respiratory failure	13.8083	0.7675 – 248.4312	0.0750
Hospital stay>10 days	221.5657	13.4013 – 3663.1822	0.0002
Death	13.8083	0.7675 – 248.4312	0.0750

Association between adverse maternal outcome and major PPH were studied. Shock and hospital stay more than 10 days were significant outcome measures associated with major PPH.

Perinatal outcome in major postpartum haemorrhage

Outcome factor	Cases	%	Controls	%
Baby death	6	5.9	0	0
NICU admission	14	13.7	0	0
Birth weight in kg				
<1.5	2	2	0	0
1.6-2	8	7.8	1	1
2.1-2.5	34	33.3	27	26.5
2.6-3	27	26.5	59	57.8
3.1-3.5	26	25.5	15	14.7
>3.5	5	4.9	0	0

Table 17: Association between major PPH and neonatal outcome

Outcome factor	Odd's ratio	95% CI	p-value
Baby death	13.8083	0.7675 – 248.4312	0.0750
NICU admission	33.5876	1.9751 – 571.1829	0.0151

DISCUSSION

In the present study, 102 cases of major postpartum haemorrhage were compared with 102 controls who did not have postpartum haemorrhage following delivery. The present study aimed to identify the determinants of major PPH and maternal and neonatal outcome in major postpartum haemorrhage.

The operational definition adopted in the present study to define major PPH was either two of the following : systolic blood pressure less than 90 mm of Hg or pulse rate more than 100/ minute postpartum or postpartum haemorrhage requiring blood transfusion.

102 cases of major PPH were identified during the study period. 9159 deliveries occurred during the study period i.e. from February 2017 to October 2017 in the institute. Major PPH accounts for 1.1% of all deliveries. Out of the 102 cases of major PPH identified as per the operational definition, 99 of them received blood transfusion postpartum, all 102 cases had pulse rate more than 100 per minute and 39 cases had systolic blood pressure less than 90 mm of Hg.

Primary PPH cases recorded in the study are 101 and one case of secondary PPH was noted.

The present study included both cases which delivered in the institute as well as referral cases of PPH. Among the 102 cases (via Table 5), 87.3%(n=89) of cases delivered in the institute and 12.7%(n=13) cases were referred to the institute for management of PPH.

SUMMARY

- 102 cases of major postpartum haemorrhage were identified during the study period
- The most significant risk factors causing major PPH were ante natal anemia(95.1%), caesarean section(49%) and abnormal placentation(12.8%)
- Odds of ICU admission, peripartum hysterectomy, shock, renal failure, DIC, respiratory failure, hospital stay more than 10 days and death are more with major PPH
- There is a significant risk of NICU admissions in cases of major PPH with antenatal anemia being major risk factor.

CONCLUSION

The present study suggests that majority cases of major PPH can be predicted based on the risk factors which are recognised antenatally especially anemia and hypertensive disorders of pregnancy. Regular antenatal check ups, recognition and correction of risk factors can prevent major PPH and debilitating complications of major postpartum haemorrhage. Implementation of national programmes like Weekly IFA prophylaxis programme in India can help reduce the burden of postpartum haemorrhage indirectly by reducing the prevalence of anemia. This will aid in significant reduction in maternal morbidity and mortality.

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