# A retrospective study of cases of postpartum hemorrhage at tertiary health care center

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## Abstract

**Introduction:** Postpartum haemorrhage is a significant contributor to maternal morbidity & mortality Obstetric hemorrhage accounts for 38% of maternal deaths, of which PPH accounts for 25%.

**Objective:** The present study was undertaken to study maternal morbidity and mortality in cases of PPH.

**Materials and Methods:** This was a retrospective study conducted in department of Obstetrics & Gynaecology, S.R.T.R.G.M.C. Ambajogai from June 2015 to march 2017 on sample size of 168 patients.

**Results:** The records were analyzed with respect to maternal age, parity, socio-demographic & etiological profile and maternal consequences in cases of PPH at our tertiary care centre. In present study incidence of PPH came out to be 29% due to inclusion of all booked and referred cases. Main cause of PPH in this study was uterine atony i.e. 69%. Second common cause was traumatic i.e. 20%. Incidence of peripartum hysterectomy done for atonic cases was 12.06% and 5.88% in cases of rupture uterus. 82.14% cases were given blood transfusion. Maternal death due to haemorrhage in our study was 5.3%.

**Conclusion:** Proper anticipation and skilled management, along with timely referral of PPH cases will lead to significant reduction in maternal morbidity & mortality, as PPH is a significant contributor to maternal mortality. Maternal deaths due to PPH are clearly declining that is due to improved socioeconomic status, high standard medical and surgical management, use of NASG and expert care delivered at our institute.

**Keywords:** Postpartum haemorrhage, Maternal morbidity and mortality, Peripartum hysterectomy, Disseminated intravascular coagulation.

## Introduction

Obstetrics is a bloody business still holds true.[1] Severe obstetric hemorrhage is the most feared obstetric emergency that can occur to any woman at childbirth. If unattended, the hemorrhage can kill even a healthy woman.[2] Among all the four stages of labor, third stage is the most crucial as the most dreaded complication i.e. postpartum hemorrhage (PPH) may occur in an otherwise uneventful delivery changing it into a formidable disaster. Every day about 1600 women die in child-birth and of these approximately 500 bleed to death.[3] Most of these are due to atonic PPH and more than 99% are in the developing world.[4] Haemorrhage is the fifth or sixth leading cause of maternal death in developed countries. It accounts for the majority of cases that result in severe maternal or "near miss" obstetric morbidity.[5-7] Hemorrhage is the leading cause of death in developing countries.

Most common type of obstetric hemorrhage is postpartum hemorrhage, mainly primary. PPH which occurs within 24hrs, primary PPH is the focus of this article. Secondary PPH is less common. Obstetric hemorrhage accounts for 38% of maternal deaths among all deaths, PPH accounts for 25% among 38% of deaths. PPH is not only commonest and major killer but also fastest killer of mother. It kills mother within 1st 24hrs of delivery. PPH is multifactorial still in 2/3rd patients there is no identifiable risk factors so PPH is unpredictable and unpreventable but death due to PPH is preventable if delay is avoided. Among all risk factors mismanagement of labour at any stage is main factor. So correct management at all stages of labour is surest prophylaxis. Intelligent anticipation, skilled supervision, prompt detection and effective institution of therapy can prevent and control PPH and prevent further disastrous consequences and maternal death.

PPH is defined as a bleeding from the genital tract in excess of 500 ml within first 24 hours after birth. Blood volume studies have shown that the normal woman loses about 500ml at the time of spontaneous vaginal delivery, more with the assisted vaginal delivery and up to 1000 ml at the time of caesarean section. Secondary PPH is defined as abnormal bleeding from the genital tract between 24 hours and 6 weeks postpartum. The common causes include uterine atony, lower genital tract lacerations, retained placenta & placental fragments, coagulation disorder and uterine inversion.

PPH is a significant contributor to maternal morbidity & mortality & one of the millennium development goals set by United Nation in 2000 is to decrease maternal mortality by three quarters by 2015 & if this is to be achieved, maternal deaths due to post partum hemorrhage must be reduced.

The aim of our study was to review the maternal records with respect to age, parity, socio-demographic

& etiological profile and maternal consequences in cases of PPH at our tertiary care centre.

## Materials and Methods

After obtaining Institutional Ethical Committee approval this retrospective study was conducted in the department of Obstetrics & Gynaecology, SRTR GMC Ambajogai from June 2015 to March 2017on sample size of 168 patients. All the patients included in our study were admitted primarily in our department and those referred from primary and community health centre of adjoining areas of Ambajogai, dist. Beed with primary diagnosis of postpartum hemorrhage.

Records were analyzed with respect to maternal age, parity, socio-demographical & etiological profile and various complications occurring sequele to postpartum hemorrhage and maternal death. Estimation and diagnosis of PPH was based on visual estimation of blood loss >500 ml and we couldn't rely on general condition, tachycardia and fall in blood pressure or signs and symptoms of hemorrhagic shock for diagnosis of PPH.

## Results

In our study total 168 patients had PPH all including booked and referred cases, so incidence was 29%. Highest number of cases i.e. 68 out of 168 were in 21-25 years age group. Incidence of PPH in relation to parity was primipara 41.66% and multipara (Tabla 1).

**Table 1: Distribution according to parity and age**

| | | Number | % |
|---|---|---|---|
| **Parity** | Primipara | 70 | 41.66 |
| | Multipara (>=4) | 42 | 25 |
| Age (yrs) | <20 | 42 | 25 |
| | 21-25 | 68 | 40.47 |
| | 26-30 | 52 | 30.95 |
| | >30 | 6 | 3.5 |

In our study 40% cases were unbooked belonging to rural area and low socioeconomic status. In 2/3 rd patients i.e. 65% of PPH cases there was no identifiable risk factor (Table 2).

**Table 2: Presence of high risk factors**

| High risk factors | Number | Percentage |
|---|---|---|
| No any factor | 109 | 65 |
| Anemia | 34 | 20 |
| Preeclampsia/ eclampsia | 12 | 7.14 |
| Twins/ polyhydramnios | 2 | 1.19 |
| Prolonged labour/ obstructed labour | 11 | 6.54 |

Main cause of PPH in this study was uterine atony i.e. 69% and 2nd common cause was traumatic 20% cases. Secondary PPH is less common than primary PPH i.e. about 1% of deliveries (Table 3).

**Table 3: Distributiontion according to etiology of PPH**

| Etiology | Number | Percentage % |
|---|---|---|
| a) atonic | 116 | 69 |
| b) traumatic | 34 | 20 |
| Cervicovaginal tear | 28 | 82.35 |
| Vulval hematoma | 01 | 2.9 |
| Pelvic hematoma | 02 | 5.8 |
| Rupture of uterus | 03 | 8.8 |
| c) coagulation defect | 15 | 8.9 |
| d) mixed | 03 | 2 |

Table 4 shows management done in cases of PPH to save patients' life. Incidence of peripartum hysterectomy done for atonic cases was 12.06% and 5.88% for rupture uterus.

**Table 4: Management done in cases of PPH**

| PPH | Number | Percentage % |
|---|---|---|
| **Atonic PPH** | 119 | |
| Medical management | 33 | 27.73 |
| conservative | | |
| Bimanual uterus compression | 10 | 8.62 |
| Balloon tamponade | 06 | 5.17 |
| Dr. Palanitkar's vacuum hemostatic device | 10 | 8.62 |
| Compression suture | 15 | 12.93 |
| Vessel ligation- b/l uterine, ovarian and internal iliac | 26 | 22.41 |
| NASG application | 5 | 4.31 |
| C) obstetric hysterectomy | 14 | 12.06 |
| **Traumatic PPH** | 34 | |
| Repair | 30 | 88.23 |
| Drainage of hematoma | 01 | 2.94 |
| Repair of rupture uterus | 01 | 2.94 |
| Hysterectomy | 02 | 5.88 |
| **Coagulation defects** | 15 | |
| Transfusion of PCV/FFP/platelet | 15 | 100 |
| Obstetric hysterectomy | 8 | 53 |

Table 5 shows maternal morbidity and mortality associated with PPH. Development of acute severe anemia due to PPH in our study was found to be 45%. Hypovolumic shock and DIC was found in 20% and 3.5% of cases with PPH. Intensive care was required in 10.5% of cases. IN 82.14% cases blood and blood products transfusion given. 5.3% cases had maternal death due to haemorrhage.

**Table 5: Maternal morbidities and mortality associated with PPH**

| Morbidity | No of patients | Percentage |
|---|---|---|
| Severe anemia | 76 | 45 |
| Hypovolemic shock | 34 | 20 |
| DIC | 06 | 3.5 |
| Need of blood transfusion | 138 | 82.14 |
| Need of ICU ventilation | 18 | 10.5 |
| **Maternal death** | | |
| Atonic PPH | 04 | 2.3 |
| Traumatic PPH | 01 | 0.59 |
| Mixed | 0 | 0 |
| Coagulation defects | 04 | 2.3 |

## Discussion

Since in our study the inclusion criteria of PPH were all our and referred cases, therefore the incidence came out to be 29%, which is quite high as compared to the reported incidence which varies widely from 2-10%.[8] A systematic re-view reported the highest rates of PPH in Africa (27.5%), and the lowest in Oceania (7.2%), with an overall rate globally of 10.8%.[9] The rate in both Europe and North America was around 13%.[9] Highest number of cases i.e.68 out of 168 were in 21–25 years age group (Table 1), while other studies mention most cases being over 35 years.[10] The reason for this difference perhaps lies in the younger age of marriage in our country in general associated with the relative increased gravidity and parity at younger ages. Multiparity, particularly grand multi-parity has been specified as a factor predisposing to increase frequency of PPH.[11,12] In our study we found bimodal distribution of incidence of PPH in relation to parity i.e. primipara 41.66% and grand multipara 25%. Reason being different predisposing actors in primigravida like teenage pregnancy, preeclampsia, eclampsia, abruption, anemia, dysfunctional labour, uterine overactivity while high parity is the reason in multipara.

In our study, 40% of the patients were unbooked belonging to the rural areas with lower socio-economic status reflecting the lack of proper antenatal care, illiteracy and ignorance among such population, as is also mentioned in other studies.[13,14] In 2/3$^{rd}$ patients i.e. 65% of PPH there is no identifiable risk factor but PPH is not major in this group. We found major PPH in maximum patients with one or more risk factors like anemia, preeclampsia, eclampsia, antepartum hemorrhage and twins. The main cause of PPH in this study was uterine atony with a frequency of 69%. (Table 2). In a study con-ducted by Ashraf et al, uterine atony was found in 34% of cases.[11] In international studies uterine atony was the most common cause of PPH, ranging from 50% to 76% of cases[15,16] The second most common cause of primary PPH is traumatic (20%). International studies also mention a frequency ranging from 9% to 20% of cases of traumatic lesions as the cause of PPH.[17,15] The least common cause of PPH was coagulopathy (8.9%) which was in concordance with the study reported by Anderson et al.[18] Secondary PPH is much less common than primary PPH, occurring in about 1% of deliveries.[4] In our study the incidence of secondary PPH was 2.98% which is comparable to Kanpur study of Singh, Pandey of 2.4%.[19] The incidence of peripartum hysterectomy done for atonic cases was 12.06% in our study (Table 4). In our study in cases of rupture uterus, 5.88% of the patients underwent hysterectomy, as compared to the reports by McMohan and Miller, in which 10-20% of such women required hysterectomy for hemostasis.[20,21]

The development of acute severe anemia due to PPH in our study was found to be 45% which also indirectly contributed to maternal mortality, as compared to 41.14% in a study by Singh and Pandey in Kanpur[19] and 90.1% in a study conducted by Ayub et al.[22] It must be noted that the study conducted by Ayub et al takes into account all the cases with anemia whereas we took cases with only severe anemia, and thus the difference in our observations. Disseminated intravascular coagulation (DIC) was found in 6% cases of PPH in the study by Ayub et al.[22] Hypovolemic shock and DIC was present in 20% and 3.5% of our patients with PPH. The admission of obstetric patients to critical care facilities is low (published intensive care units admission rates are 0.29% to 1.5% of deliveries in industrialized countries).[23,24] Intensive care was required in 10.5% of our patients comparable to Kanpur study of Singh, Pandey of 9.72%.[19] The incidence was very much higher in our study because the majority of patients who were referred to our institution, had one or more complications, which required life saving support. Blood transfusion is recognized as one of the eight essential components of comprehensive emergency obstetric care (cEmOC), which has shown to reduce rates of maternal mortality.[25,26] It was found that 82.14% of cases required blood transfusions. In sub-Saharan Africa, it is estimated that 26% of maternal hemorrhagic deaths are a direct consequence of the lack of blood transfusion services, and globally up to 150,000 pregnancy-related deaths could be avoided each year if women had access to safe blood.[27,28]

Maternal mortality due to haemorrhage was observed in 24-68% of women by different authors.[29-33] In our study maternal mortality due to hemorrhage was 5.3%. This huge difference in the percentage mortality reflects the high standard of medical and surgical facilities available and the expert care delivered at our institute.

In our institute there is changing trend of cause of maternal mortality from PPH to preeclampsia and eclampsia and their complications.

## Conclusion

Haemorrhage continues to be the leading cause of maternal mortality worldwide, accounting for 34% of maternal deaths in Africa, 31% in Asia, 21% in Latin America, and 13% in developed countries.[34] If effective measures are taken to ensure provision of antenatal care to all pregnant ladies, safe hospital deliveries and timely referral of high risk pregnancies, complications are expected to reduce.

Preventable maternal deaths indicate gross violation of the basic human right of survival and highlight gross failure of health services on almost all fronts particularly in terms of choice of strategic interventions and their extent of coverage in population. Proper anticipation and skilled management, along with timely referral of PPH cases will lead to significant reduction in maternal morbidity & mortality, as PPH is a significant contributor to maternal mortality. So much so, that the 5th millennium development goal aims at reducing the maternal mortality by primarily reducing the number of cases of PPH. Every pregnancy should culminate in healthy mother and healthy baby and for that we need to ensure that all women have access to high quality essential and emergency obstetric service at first referral unit (FRU) level to reduce maternal mortality.

The frequency and impact of severe hemorrhage can be effectively reduced by reducing avoidable risk factors, especially those related to obstetric interventions as increased CS rate and induction and augmentation of labour with injudicious use of uterotonics. Other risk factors not amenable to change such as age, ethnic origin, and preexisting medical diseases or bleeding disorders can be minimized by extra vigilance and planned conjoined management. Most common cause of PPH is atonic PPH. PPH is multifactorial still in 2/3rd patients no identifiable risk factor is found. Maternal deaths due to PPH are clearly declining that is due to improved socioeconomic status, high standard medical and surgical management, use of NASG and expert care delivered at our institute.

Finally, surest prophylaxis of PPH is correct management of all stages of labour.

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## References

1. Williams obstetrics 23rd edition, chapter 35, page 757.
2. Chong YS, Su LL, Arulkumaran S. Current strategies for the prevention of postpartum haemorrhage in the third stage of labour. *Curr Opin Obstet Gynecol.* 2004;16:143-150.
3. Confidential Enquiry into Maternal and Child Health. Why mothers die? 2000-2002. London: RCOG Press, 2004.
4. Munro Kerr's Operative Obstetrics 11th edition, chapter 18: pages 225-235. Elsevier publications.
5. Drife JO. Maternal 'near miss' reports? *BMJ.* 1993;307:1087-1088.
6. Baskett T, Sternadel J. Maternal intensive care and near – miss mortality in obstetrics. *Br J Obstet Gynaecol.* 1998;105:981-984.
7. Baskett TF, O' Connell CM. Severe obstetrics maternal morbidity: 15nyear population-based study. *J Obstet Gynaecol.* 2005;25:7-9.
8. Didly GA, Paine AR, George NC, Velasco C. Estimated blood loss; can teaching significantly improve visual estimation? *Obstet Gynaecol*. 2004;104:601-606.
9. Calvert, C; Thomas, SL; Ronsmans, C; Wagner, KS; Adler, AJ; Filippi, V (2012). Identifying regional variation in the prevalence of postpartum haemorrhage: a systematic review and meta-analysis. *PloS one.* 7 (7): e41114. PMID 22844432.
10. Bouwmeester FW, Bolte AC, Van Geijn HP. Pharmacological and surgical management for primary postpartum hemorrhage. Curr Pharma Des 2005;11:759–73.
11. Ashraf T. Postportum Hemorrhage: an experience at Sandeman Civil Hospital, Quetta. *J Coll Physicians Surg Pak*. 1997;8:68–71.
12. Munim S, Rahbar M, Rizvi M, Mushtaq N.The effect of grand multiparity on pregnancy related complications: the Agha Khan University experience. *J Pak Med Assoc.* 2000;50:54–8.
13. Subtil D, Somme A, Ardiet E, Deret-Mosser S. Postportum hemorrhage: frequency, consequences in terms of health status, and risk factors before delivery. *J Gynecol Obstet Biol Reprod.* 2004;33(Suppl 4):9–16.
14. Wasim T, Majrooh A, Siddiq S. Maternal Mortality- One year review at Lahore General Hospital. *Pak Postgrad Med J.* 2001;12:113–8.
15. Sabrina D, Craigo MD, Peter S, Kapernick MD. Postpartum hemorrhage and abnormal puerperium. Current Obstetrics and Gynecology logic diagram.6th ed. London: Appleton and Lange; 1987.p 574–82.
16. Japaraj RP, Raman S. Segstaken- Blakemore tube to control massive postpartum hemorrhage. *Med J Malaysia.* 2003;58:604–7.
17. Rizvi F, Mackey R, Barrett T, Mckenna P, Geary M. Successful reduction of massive postpartum hemorrhage by use of guidelines and staff education. *BJOG.* 2004;111:495–8.
18. Anderson JM, Etches D (March 2007). "Prevention and management of postpartum hemorrhage". *American Family Physician.* 75 (6): 875–82.
19. Neetu Singh, Kiran Pandey- A study of referral cases of postpartum hemorrhage. Indian journal of research-Paripex; volume 3; issue 6; page 149.
20. McMohan MJ, Luther ER, Bowes WA Jr, et al: Comparison of a trial of labour with an elective second caesarian section. *N Engl J Med*. 335:689, 1996.
21. Miller DA, Goodwin TM Gherman RB, et al: Intrapartum rupture of the unscarred uterus. *Obstet Gynecol*. 89:671,1997.

22. Humaira Naz, Iram Sarwar, Anisa Fawad, Aziz Un Nisa: Maternal Morbidity And Mortality Due To Primary Pph– Experience At Ayub Teaching Hospital Abbottabad. *J Ayub Med Coll Abbottabad.* 2008;20(2):59-64
23. Royston E, Abouzahr C: Measuring maternal mortality. *BJOG.* 1992;99(7):540-543.
24. Mabie WC, Sibai BM: Treatment in an obstetric intensive unit. *Am J Obstet Gynecol.*1990;162(1):1-4.
25. United Nations Children's Fund (UNICEF), World Health Organization (WHO), |United Nations Population Fund (UNFPA), authors Guidelines for Monitoring the Availability and Use of Obstetric Services. New York: UNICEF; 1997. [Accessed June 14,2011].
26. Obaid TA. No woman should die giving life. *Lancet.* 2007;370:1287-1288.
27. Bates I, Chapotera GK, McKew S, van den Broek N. Maternal mortality in sub-Saharan Africa: the contribution of ineffective blood transfusion services. *BJOG.* 2008;115:1331–1339.
28. World Health Organization (WHO) Essential Health Technologies, authors. Blood Transfusion Safety. Geneva: WHO; [Accessed June 14, 2011]. |
29. Anderson JM, Etches D (March 2007). "Prevention and management of postpartum hemorrhage". *American Family Physician* 75(6):875–82.
30. Purandare N, Singh A, Upahdya S, et al. Maternal mortality at a referral centre: a five year study. *J obstetric Gynaecology India.* 2007;57(3):248-50.
31. Kulkarni SR, Huligol A. Maternal Mortality -10 year study. *J Obstetric Gynaecol India.* 2001;51(2):73-76
32. Jayaram VK. Review of Maternal Mortality. *J Obstetric Gynaecol India.* 2001;51(2):80-82.
33. Mukherj J. Maternal Mortality due to haemorrhage with Emphasis on post partum Haemorrhage. *J Obstetric Gynaecol India*. 2001;51(5)
34. Khan KS, Wojdyla D, Say L, et al. WHO analysis of causes of maternal death: a systematic review. *Lancet.* 2006;367:1066–1074.

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