

FREQUENCY OF POSTPARTUM HAEMORRHAGE IN MATERNAL MORTALITY IN A TERTIARY CARE HOSPITAL

Simi Fayyaz, Nasreen Ruby Faiz, Rehana Rahim, Khawaja Fawad

Department of Obstetrics and Gynaecology,
Lady Reading Hospital Peshawar - Pakistan

ABSTRACT

Objectives: To determine the frequency of postpartum haemorrhage as a cause in maternal mortality during a period of seven years in a tertiary care hospital.

Methodology: This descriptive study was conducted in Gynae A unit of Department of Obstetrics and Gynecology, Lady Reading Hospital Peshawar. Data was collected from maternal mortality records retrospectively from 1st January 2003 to 31st December 2009. All patients who died in the hospital with a diagnosis of postpartum haemorrhage as the primary cause of death were included in the study.

Results: A total of 302 maternal deaths were recorded during the study duration. Out of these 302, 74 were due to Post-partum Haemorrhage which constituted 24.5% of maternal deaths. The mean age of the sample was 29.69 ± 7.10 . Uterine atony was the cause of death in 45.9% (n=34), rupture uterus in 32% (n=24), genital tract tears in 14.86% (n=11) and retained placenta in 6.75% (n=5) of the cases of Post-partum Haemorrhage. Subtotal abdominal hysterectomy was performed in 51.35% (n=38); repair of tears and removal of placenta in 6.75% (n=5) each; Subtotal abdominal hysterectomy with internal iliac ligation was performed in 5.4% (n=4) cases while only internal iliac ligation and B Lynch suture was applied in 1.35% (n=1) each. The remaining 20 cases expired before they could be prepared for it.

Conclusion: Postpartum Haemorrhage was found to be leading cause of maternal mortality making up to one quarter of total deaths in 7 years. Uterine atony and ruptured uterus were the major causes of Postpartum Haemorrhage. Subtotal abdominal hysterectomy was the major procedure performed.

Key words: Postpartum Hemorrhage (PPH), maternal mortality, tertiary level hospital.

INTRODUCTION

Maternal mortality is defined as death of a woman while pregnant or within 42 days of termination of pregnancy from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes. Currently it is estimated to be 529000 deaths per annum with a global ratio of 400 maternal deaths per 100,000 live births¹. Maternal mortality is fifty to two hundred times higher in developing world. Therefore it is concluded that over 90% of maternal deaths occurs in developing world. About 95% of all maternal deaths during the year 2000 had equal distribution between Asia and Sub-Saharan Africa².

Primary Post-partum Haemorrhage (PPH) is defined as blood loss of more than 500 or 1000mls following vaginal delivery or caesarean section respectively. It is classified as primary if the blood loss occurs within 24 hours of delivery³, or secondary if it occurs 6-12 weeks postpartum⁴.

According to WHO, 10.5% of all live births are complicated by obstetrical haemorrhage, which is a leading cause of maternal deaths. PPH was the most frequent cause in 14 million reported case of obstetrical haemorrhage⁵. It results in 150,000 maternal deaths annually which form a one quarter of the total maternal deaths. It is also estimated that about one third of maternal deaths occurs in developing world due to PPH^{6, 7}. In UK

Confidential Enquiry into maternal death 2000-2002 reported PPH contributing into maternal death in 28% of cases⁵. According to UK-wide triennium report 1985 to 2002, 83 deaths occurred due to obstetrical haemorrhage, 50% were due to PPH resulted into death rate for PPH of 3.1 per million maternities⁸.

It is the primary PPH which accounts for almost all cases of maternal deaths and is reported to occur in 2 to 20 % of cases though some studies report it to be 5% for the developing world⁹. PPH is a life threatening condition and an obstetrician nightmare¹⁰. Keeping in mind the impact of PPH over maternal mortality it is evident that if its incidence is reduced it is going to have marked reduction in maternal mortality. Research has shown that cost effective and simple interventions like active management of third stage of labour and use of uterotonic can markedly reduce the occurrence of PPH. In this context this study was planned to determine frequency of postpartum Hemorrhage in maternal mortality during the period of seven years in a tertiary care hospital. An audit of maternal mortality in public and private hospitals in Pakistan identifies postpartum haemorrhage as the major cause of death after childbirth¹¹.

METHODOLOGY

This descriptive study was carried out in Gynae A Unit of Department of Obstetrics and

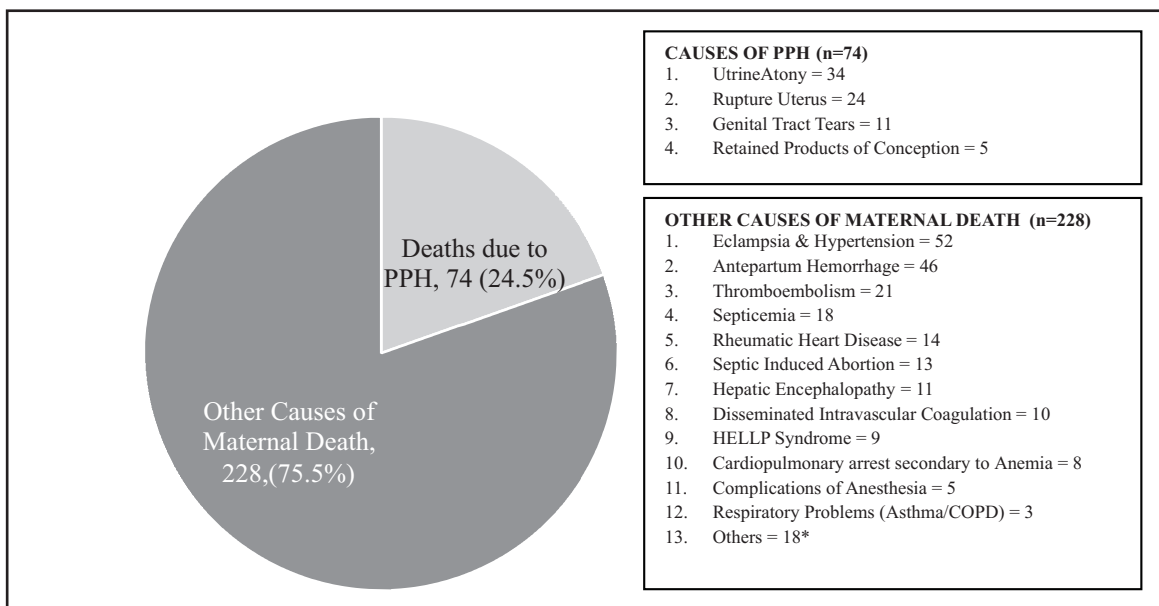
Gynaecology, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar. Data was collected from maternal mortality record from 1st of January 2003 to 31st December 2009 retrospectively. All cases diagnosed as postpartum Haemorrhage who expired in hospital whether delivered outside or inside the unit were included. Patients who presented with PPH but received dead were excluded from the study because as per the protocol of the department, patients received dead that do not receive any treatment, are not given admission number. The data was collected by designing a semi structured proforma. All the results were analyzed and tabulated by using SPSS version 11.0.

RESULTS

There were total 302 maternal deaths from 1st January 2003 to 31st December 2009. Death due to PPH was in 74 cases which make it 24.50% of all maternal deaths in seven years. The mean age of the sample was 29.69±7.10. Cause of PPH were uterine atony in 34 (45.9%) cases; rupture uterus in 24 cases (32%); genital tract tears in 11 cases (14.86%); and retained placenta in 5 cases (6.75%) (Fig 1 & Table 1). The other causes of Maternal death (n=228) are described in the figure as well.

A total of 52 (70.3%) cases were referred from rural areas and 22 (29.7%) from urban area (Table 2). Procedures performed to arrest bleeding apart from general measures, were subtotal

Figure 1: Breakdown of causes of Mortality (n=302)



*Others = 18 (Ectopic pregnancy leading to irreversible shock = 5; Hepatic rupture = 1, Hepatic tumour leading to severe intra-peritoneal bleeding = 1, Ruptured aortic aneurysm = 1, Acute leukemia = 2, Cerebral Malaria = 1; Blood transfusion reaction = 3; Acute renal shut down leading to renal failure = 4)

Table 1: Total Maternal Deaths in Seven Years with yearly number and percentage of deaths due to PPH

Year	2003	2004	2005	2006	2007	2008	2009	Total
Total Deaths	59	52	43	41	40	27	40	302
Deaths due to PPH	11	20	11	11	10	4	7	74
Percentage	18.64%	38.64%	25.58%	26.82%	25%	14.80%	17.50%	24.50%

Table 2: Division in Urban & Rural Area (n=74)

Area	Total Number	Percentage
Rural	52	70.27%
Urban	22	29.72%

Table 3: Different Procedures Performed (n=54)

Type of Procedure	Number	Percentage
Sub Total Abdominal Hysterectomy	38	51.35%
Repair of Tears/Rupture Uterus	5	6.7%
Removal of retained Products of Conception	5	6.7%
Sub Total Abdominal Hysterectomy + Internal Iliac Ligation	4	5.4%
Internal Iliac Ligation	1	1.35%
B Lynch Suture	1	1.35%

abdominal hysterectomy in 38 (51.38%) cases, repair of tears and manual removal of placenta in 5 (6.7%) cases each. Four (5.4%) cases had subtotal abdominal hysterectomy with bilateral internal iliac ligation while bilateral iliac ligation and B Lynch suture was performed in 1 (1.35%) case each (Table 3).

Rest of the 20 cases did not proceed to definitive surgical treatment as they expired before they could be prepared for it.

DISCUSSION

Almost one third of maternal deaths occur due to PPH in developing world. Our study showed that around one fourth of maternal deaths were due to PPH. In 2004 we had highest number of deaths i.e., 38.64% in 2004 and lowest in 2008 i.e 14.80%. There is no apparent reason for this reduction but there was formation of a new gynae unit due to which there was a reduction in total admission overall.

There are several studies which shows similar figures to our study like a study conducted in a tertiary level hospital in Pakistan found haemorrhage to be commonest cause of maternal death¹². According to Pakistan Demographic

Health Survey 2006-7, PPH is the commonest cause of maternal death. WHO gives prevalence of PPH as 34% in Pakistan and cause of death in 27% with a home delivery in 65% of cases¹³. These figures are higher as compared to figures in industrialized countries where it is coated to be 2-11%^{5, 14, 15}. However, if blood loss is objectively measured the incidence may rise to 20%¹⁵. Risk of life threatening PPH is 1 per 1000 deliveries in industrialized countries while that of death is 3.1 per million maternities. Risk of dying from PPH is high in low resource countries. Figures quoted for Indonesia, Philippines and Guatemala are 43, 53 and 53 % respectively¹⁶.

The causes of PPH in our study were uterine atony, rupture uterus followed by genital tract tears and retained placenta. Uterine atony is considered as leading cause of primary PPH. Our study showed that 45.9% of PPH were due to atonic uterus. This is some what lower in comparison to other study conducted in a teaching hospital in Abbottabad, which shows it to be the cause in 70% of cases¹⁷ followed by rupture uterus and genital tract trauma. Data from our records was not clear regarding mode of delivery, where as large cohort of study found 6% incidence of

uterine atony after primary caesarean section¹⁸.

Risk factors for uterine atony are multiple gestations, retained placenta, induced or augmented labour, macrosomia, fibroids and chorioamnionitis. We failed to find such uniform data in our record as while recording the maternal death such details were neglected. There are very few studies which compare the risk factors for uterine atony during vaginal delivery. A study from Pakistan reported two strong associations with uterine atony in women achieving normal or instrumental vaginal delivery. They were gestational diabetes and prolonged second stage of labour in multipara¹⁹. Another study from Abbottabad identified grandmultiparity as a risk in 51.5% cases followed by antepartum haemorrhage and instrumental delivery¹⁷.

Rupture uterus was the next common cause of PPH in our analysis; about 32%. Genital tract tears were cause in 14.86% and retained products were cause in 6.75%. Some studies report trauma to be cause of PPH in 20% and retained products of conception in 10%²⁰. A study from civil hospital Karachi published in June 2009 showed common causes of PPH as rupture uterus (35%), uterine atony (23%) and morbid adhesion of placenta (20%)²¹. Retained placenta occurs in .5 to 3% of deliveries²² and is shown to be associated with blood loss and need for blood transfusions. A study of 36000 deliveries from Aberdeen showed incidence of PPH 21.3% of women with retained placenta compared to 3.5% in women without retained placenta in vaginal delivery²³. In contrast to that an African study incidence of retained placenta as 78.57% reason being mismanagement of third stage of labour²⁴.

Active management of third stage of labour (AMTSL) is now recommended by International Confederation of Midwives and International federation of Gynaecologists and Obstetricians. Most of the deaths occurs between 1st to 4th hours of delivery due to events in third stage of labour²⁵. Lot of work is being prove that AMTSL is cost effective and simple method to reduce PPH. There is now enough data that recommends routine use of AMTSL.

Management of PPH includes resuscitation and treatment of shock along with definitive treatment of the cause. Our gynae unit practice recommended protocol for obstetrical haemorrhage which was carried out in all patients. Emergency obstetrical Hysterectomy (EOH) is well known procedure in controlling PPH. This procedure was carried out in 38 cases (58.35%) while in 4 cases (5.4%) bilateral internal iliac ligation was done along with hysterectomy. It is performed where uterine atony do not respond to conservative

measures or when rupture uterus is non repairable. Emergency obstetrical hysterectomy is a life saving procedure but is associated with high morbidity, loss of fertility and psychological issues. Our statistics of 58.35% are comparable to other research work which showed incidence of 61.2 %²⁶. Internal Iliac ligation is a procedure role of which is underestimated in treating PPH. Its occlusion results in reducing blood flow not only to uterus but to cervix and vagina as well. It can prevent and facilitate hysterectomy e.g., in trauma by clearing the field²⁷.

Repair of rupture/tears and removal of placenta were done in 5 cases (6.7%) each. Genital tract tears, commonly cervical and vaginal can bleed profusely and are recognized cause of significant PPH. It is empirical to explore the genital tract under good light and proper analgesia in case of PPH. Timely detection and stitching of tear and injuries can save morbidity and mortality. Similar recommendations of rapid recognition of causes and simultaneous resuscitation are given by other authors¹⁷. B Lynch suture was applied in one case. There are series of cases reporting its success as it act as manual compression but failure can occur due to technical reasons²⁸.

There was a significant difference between urban and rural location of the patients. About 70% were from rural area as compared to 30% from urban. This may be due to the fact that access to emergency services in rural area is far difficult. According to Pakistan Demographic Health Survey 2006-7, 39% of births take place without assistance of a skilled medical provide. Traditional birth attendants assist 52%, friends and relatives 7% and Lady health workers assist 1% of deliveries. Birth in urban area are twice (60%) likely to be assisted by a skilled health provider then in rural area (30%). These figures reflects the need to increase awareness among care needers and care givers about safe delivery. Government and many organizations are working to train as much as possible staff so that they can provide help to the door steps of needy and deprived people. These efforts need to be maintained and monitored for their role if we want to reduce maternal mortality in Pakistan.

Active management of third stage of labour should be practiced as a routine in all cases. It should not only be done in hospital but should be taught to all Traditional Birth Attendants and Lady Health Workers and Community Nurses.

CONCLUSION

Postpartum hemorrhage is the leading cause of maternal mortality in the past seven years as observed in the Lady Reading Hospital

Gynaecology unit. Uterine atony and rupture uterus were the commonest causes while subtotal abdominal hysterectomy was the most frequently performed surgical intervention.

RECOMMENDATIONS

The use of uterotonics like Misoprostol is now well established in prevention of PPH. Therefore its use should be encouraged under a protocol.

During the analysis, it was noted that maternal mortality records are deficient regarding some important information. Therefore maternal death should be recorded with all the details. Every effort should be made to get the necessary information. A standard Performa in this regard would be vital.

REFERENCES

1. World Health Organization. Attending to 136 million births, every year: make every mother and child count: the world report 2005. Geneva: WHO; 2005.
2. World Health Organization. Maternal mortality in 2000: estimates developed by WHO, UNICEF, and UNFPA. Geneva: WHO; 2004.
3. Gilbert L, Porter W, Brown VA. Postpartum haemorrhage: a continuing problem. *Br J Obstet Gynaecol* 1987;94:67-71.
4. American College of Obstetricians and Gynecologists. ACOG Practice Bulletin: Clinical Management Guidelines for Obstetrician-Gynecologists Number 76, October 2006: postpartum hemorrhage. *Obstet Gynecol* 2006;108:1039-47.
5. World Health Organization. Mother-baby package. Geneva: WHO; 1998.
6. World Health Organization. Attending to 136 million births, every year: make every mother and child count: the world Report 2005. Geneva: WHO; 2005.
7. Khan KS, Wojdyla D, Say L, Gulmezoglu AM, Van Look PF. WHO analysis of the causes of maternal death: a systematic review. *Lancet* 2006;367:1066-74.
8. Royal College of Obstetricians and Gynaecologists. Why mother die 2000-2002: confidential enquiry into maternal and child health. London: RCOG Press; 2004.
9. Anonymous. The management of postpartum haemorrhage. *Drug Ther Bull* 1992;30:89-92.
10. Haq G, Tayyab S. Control of postpartum and postabortal hemorrhage with uterine packing. *J Pak Med Assoc* 2005;55:369-71 .
11. Jaferey SN. Maternal mortality in Pakistan compilation of available data. *J Pak Med Assoc* 2002;52:539-44.
12. Begum S, Aziz-un- Nisa, Begum I. Analysis of maternal mortality in a tertiary care hospital to determine causes and preventable factors. *J Ayub Med Coll Abbotabad* 2003;15:49-52.
13. National Institute of Population Studies (NIPS), and Macro International Inc. Pakistan demographic health survey 2006-7. Islamabad: National Institute of Population Studies and Macro International Inc; 2008.
14. Brant HA. Precise estimation of postpartum haemorrhage: difficulties and importance. *Br Med J* 1967;1:398-400.
15. Newton M, Mosey LM, Egli GE. Blood loss during and immediately after delivery. *Obstet Gynecol* 1961;17:9-18.
16. Abou Zahr C. Antepartum and postpartum haemorrhage. In: Murray CJL, Lopez AD, editors. Health dimensions of sex and reproduction. Boston: Havard University Press; 1998. p. 172-81.
17. Bibi S, Danish S, Fawad A, Jamil M. An audit of primary postpartum haemorrhage. *J Ayub Med Coll Abbottabad* 2008;19:102-6.
18. Rouse DJ, Leindecker S, Landon M, Bloom SL, Varner MW, Moawad AH, et al. The MFMU Cesarean Registry: uterine atony after primary cesarean delivery. *Am J Obstet Gynecol* 2005;139:1056-60.
19. Feerasta SH, Motei A, Motiwala S, Zuberi NF. Uterine atony in a tertiary care hospital in Pakistan: a risk factor analysis. *J Pak Med Assoc* 2000;50:132-6.
20. Anderson J, Etches D, Smith D. Postpartum haemorrhage. In: Damos JR, Esinger SH, editors. Advanced Life Support in Obstetrics (ALSO) provider course manual. Kansas: American Academy of Family Physicians; 2000. p. 1-15.
21. Shah N, Khan NH. Emergency obstetrical hysterectomy: a review of 69 cases. *Rawal Med J* 2009;34:75-8.
22. Week AD, Mirembe FM. The retained placenta, new insights into an old problem. *Eur J Obstet Gynaecol Reprod Biol* 2002;102:109-10.
23. Hall MH, Halliwell R, Carr-Hill R. Concomitant and repeated happenings of complications of the third stage of labour. *Br J Obstet Gynaecol* 1985;92:732-8.

24. Ajinifuja KO, Adepiti CA, Ogunniyi SO. Post partum haemorrhage in a teaching hospital in Nigeria: a 5-year experience. *Afr Health Sci* 2010;10:71-4.
25. Kane TT, El-Kady AA, Saleh S, Hage M, Stanback J, Potter L. Maternal mortality in Giza, Egypt: magnitude, causes and prevention. *Stud Fam Plann* 1992;23:45-57.
26. Rossi A, Cristine MD, Lee, Richard H, Chmait, Rameen. Emergency postpartum hysterectomy for uncontrollable postpartum bleeding: a systemic review. *Obstet Gynaecol* 2010;115:3:637-44.
27. Cruishank SH. Managment of postpartum and Pelvic haemorrhage. *Clin Obstet Gynaecol* 1986;2:213-9.
28. B-Lynch C. Partial ischemic necrosis of uterus following a uterine brace compression suture. *Br J Obstet Gynaecol* 2005;112:126-7.

Address for Correspondence:**Dr. Simi Fayyaz**

Assistant Professor,

Department of Obstetrics and Gynaecology,

Lady Reading Hospital Peshawar – Pakistan

E-mail: drsimifayyaz@hotmail.com