

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20151494>

Research Article

## An overview of women with post-partum haemorrhage in a tertiary care centre at capital of Madhya Pradesh, India

Sandhya Gadre<sup>1\*</sup>, Shweta Patel<sup>1</sup>, Abhishek Gadre<sup>2</sup>

<sup>1</sup>Department of Obstetrics & Gynaecology, Chirayu Medical College & Hospital, Bhopal, M.P. India

<sup>2</sup>Department of Internal Medicine, Cleveland Clinic, Ohio, USA

**Received:** 02 December 2015

**Accepted:** 12 December 2015

**\*Correspondence:**

Dr. Sandhya Gadre,

E-mail: [gadre.sandhya@gmail.com](mailto:gadre.sandhya@gmail.com)

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

### ABSTRACT

**Background:** Death due to pregnancy remains an important cause of premature mortality of women worldwide. Post-Partum hemorrhage (PPH) is still most common cause of maternal morbidity and mortality. Attention needs to be paid to the prevention of PPH with organization of continuous in-service training for all the health workers to emphasize early identification of the patient's at risk, anticipation and corresponding readiness to manage PPH cum active management of third stage of labour. Our institute is a tertiary care centre receiving moribund patients with late referral affecting the outcome adversely. This area needs to be explored methodically. The main objective is to Study the pattern of referred & in-house PPH cases, To re-emphasize the importance of antenatal supervision & anticipating, identifying and managing the complications at the earliest as well as prophylactic management of PPH, enhancing the awareness in this regard. Also to find out if there are situations where early referral to the tertiary care centre could have changed the outcome

**Methods:** The study was conducted at Chirayu Medical College & Hospital, Bhopal, India. Retrospective data of all the cases of postpartum haemorrhage from November 2010 – October 2015, whether referred or in-house in the study period was recorded. (n= 37; 2.66%). Patients' antenatal delivery & PPH details, management received & maternal outcome were recorded. The data was compiled & analyzed statistically in view of the aims & objectives.

**Results:** 84 % were unbooked, 65% delivered at tertiary centre. 70% had atonic PPH, 46% PPH due to coagulopathy. 65% had severe anemia, ARF in 27%, ARDS in 19%. 65% recovered completely, 16% recovered from PPH & had some persistent morbidity, mortality 19%.

**Conclusions:** The importance of antenatal supervised care under expert's guidance cannot be overemphasized. Identifying the complications at the earliest can prevent many complications. Timely referral of the obstetric patients to a tertiary centre can save many lives.

**Keywords:** Post-partum hemorrhage, Referred, Antenatal supervision, Late referral, Coagulopathy

### INTRODUCTION

Death due to pregnancy remains an important cause of premature mortality of women worldwide, an estimated 500,000 women die from this cause every year with up to quarter of deaths occurring due to haemorrhage.<sup>1</sup> Post partum haemorrhage (PPH) may occur in 1-5% of deliveries in developed as well as in developing countries

and it is still most common cause of maternal morbidity and mortality.<sup>2</sup>

For vaginal delivery blood loss above 500 ml and in C-section blood loss more than 1500 ml is considered as PPH. Another definition of PPH is that blood loss sufficient to cause hypovolemia, a 10% drop in the haematocrit or requiring transfusion of blood products

(regardless of route of delivery).<sup>2</sup> PPH may be aggravated by pre-existing anaemia and, in such instances, the loss of a smaller volume of blood may still result in adverse clinical sequelae.

Attention needs to be paid to the prevention of PPH with organization of continuous in-service training for all the health workers to emphasize early identification of the patient's at-risk, anticipation and corresponding readiness to manage PPH cum active management of third stage of labour.

Our institute is a tertiary care centre where cases are referred from surrounding areas. Most of the times they receive late in moribund condition affecting the outcome adversely. There is a need to explore this area methodically. The main aims and objectives of the study are:

1. Study the pattern of referred & in-house PPH cases.
2. To re-emphasize the importance of;
  - a. Antenatal supervision & anticipating, identifying and managing the complications at the earliest.
  - b. Prophylactic management of PPH and enhancing the awareness in this regard.
3. Find out if there are situations where early referral to the tertiary care centre could have changed the outcome.

## METHODS

The study was conducted at Chirayu Medical College & Hospital, Bhopal, India. Retrospective data of all the cases of postpartum haemorrhage from November 2010 – October 2015, whether referred or in-house in the study period was recorded. Total no. of deliveries during this period was 1388, out of which 37 patients had PPH. Patients' demographic details, obstetric details, place of delivery, associated complications, relevant details of the delivery and PPH, management received & maternal outcome were recorded. The severity grade of PPH was already documented which was decided on the basis of visual estimation of blood loss. The data was compiled & analyzed statistically in view of the aims & objectives

### *Study period*

The study period was from November 2010 to October 2015 and n = 37.

### *Statistical analysis*

Simple statistical measures like percentage & proportions and Chi-square test of significance were used in the study.

### *Inclusion criteria*

1. All the women delivering at the institution, and had PPH, whether booked with the institute for delivery or referred from outside.
2. All the women who delivered elsewhere, had PPH & then referred to our institute.

### *Exclusion Criteria*

1. All the women with PPH, who were booked at the institute for delivery, but delivered elsewhere.
2. Women with history of primary coagulation disorder.
3. Women who were receiving heparin or warfarin.

Approval obtained from Research committee of the institute.

## RESULTS

The study was carried out on patients during November 2010 – October 2015 with total 1338 deliveries out of which 37 patients were diagnosed to have PPH, with overall incidence of 2.66%. Based on characteristics like age, parity, booking status, mode of delivery and place of delivery as shown in Table 1 and Figure 1. Age of the patients was in range between 16-35 years (mean=25.84, SD± 4.6). PPH was commonly seen in age group 21-25 years (40.54%). Regarding parity, the maximum number of women in the case were primigravida and second gravida (45.94%) each. 83.78% cases were unbooked and 16.21% were booked. 51.35% patients had noninstrumental vaginal mode of delivery followed by instrumental with 5.40% whereas caesarean was 43.24%. Maximum women delivered at tertiary care center 64.86%.

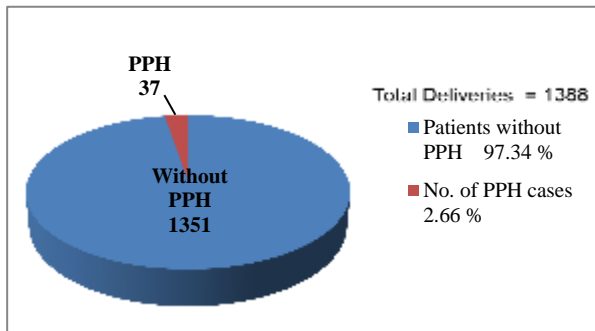
Table 2 shows the type of PPH where atonic type is maximum 70.27% followed by antenatal coagulopathy with 43.24%. Many patients had more than one causes of PPH. 45.94% women are reported with severe PPH and 32.43% with mild PPH as shown in Figure 2. It was observed that patients are associated with more than one complication. Anemia was severe among most women 64.86%. 43.24% are with coagulopathy (HELLP, DIC and hepatic failure), ARF (27.02%), ARDS and cardiac arrest (18.91%) as shown in Table 3.

As per the study, patients received more than one methods of treatments like conservative management procedures as uterine massage 97.29%, bimanual compression 81.08%, internal iliac 18.91%, ovarian and uterine artery ligation 13.51%, intrauterine packing 24.32%, intrauterine balloon tamponade 10.81% and radical procedure like total and subtotal hysterectomy was 13.51% and 2.70% whereas post vaginal delivery and post caesarean was 8.10% as seen in Table 4.

During the study, based on maternal outcome patients are categorized into complete recovery (64.86%), residual morbidity (16.21%) and death (18.91%) as shown in Figure 3.

**Table 1: Depicts the demographic and clinical profile of the women under study.**

Variable	Frequency	Percentage
<b>Age</b> (Mean=25.84, SD± 4.6)		
16-20	05	13.51
21-25	15	40.54
26-30	12	32.43
31-35	04	10.81
>35	01	02.70
<b>Parity</b>		
Primipara	17	45.94
Para 2	17	45.94
Para 3-5	03	08.10
>5	00	-
<b>Booking Status</b>		
Unbooked (Referred)	31	83.78
Booked	06	16.21
<b>Mode of delivery</b>		
<b>Vaginal</b>		
Noninstrumental -	19	51.35
Instrumental	02 -	05.40 -
a. Ventouse	(01)	(02.70)
b. Forceps	(01)	(02.70)
<b>Caesarean</b>	16	43.24
<b>Place of Delivery</b>		
Tertiary care center	24	64.86
Local hospital	12	32.43
Home	01	02.70

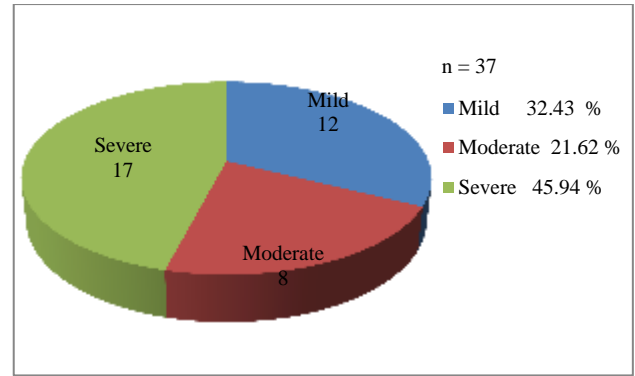


**Figure 1: PPH incidence.**

**Table 2: Type of PPH.**

Type	No. of cases N = 37	Percentage (100 %)
Atonic	26	70.27
<b>Coagulopathy :</b>		
<b>Antenatal</b>	14	43.24
<b>Postnatal</b>	01	02.70
Traumatic	11	29.72
Retained tissue	01	02.70
Secondary PPH	01	02.70

\* Many patients had more than one causes of PPH



**Figure 2: Severity of PPH.**

**Table 3: Complications associated with PPH.**

Complications	Cases n =37	Percentage (100 %)
Severe Anaemia	24	
Antenatal Anaemia	19	64.86
Anaemia secondary to PPH	05	
<b>Coagulopathy :</b>		
DIC	10	43.24
Hepatic Failure	03	
HELLP	02	
ARF	10	27.02
ARDS	07	18.91
Cardiac Arrest	07	18.91

\* Many patients had more than a single complication

**Table 4: Management given (other than medical methods).**

Intervention Done	No. of cases n = 37	Percentage (100 %)
<b>Conservative procedure</b>		
Uterine massage	36 <sup>#</sup>	97.29
Bimanual compression	30	81.08
Surgical repair	10	27.02
Intrauterine packing	09	24.32
Internal iliac ligation	07	18.91
Ovarian artery ligation	05	13.51
Uterine artery ligation	05	13.51
Intrauterine balloon tamponade	04	10.81
<b>Radical procedure</b>		
Total hysterectomy	05	13.51
Subtotal hysterectomy	01	02.70
Post vaginal delivery	03	08.10
Post caesarean	03	08.10

<sup>#</sup> Except for one, all others received massage; \*Many patients were given more than one methods of treatment. AMTSL (Active Management of Third Stage of Labour) & uterine massage was received by all the patients, as a part of routine protocol; except for the one, who had a home delivery. In addition, uterotonics were administered to all the women in the course of initial management according to individual requirement.

## DISCUSSION

Postpartum hemorrhage is a complication which is largely preventable.

Rapid recognition of patients at risk of PPH and early diagnosis is essential for successful management and favorable outcome of labour. The major factor in the adverse outcomes associated with severe haemorrhage is the delay in initiating appropriate management.

The management of obstetric haemorrhage is more challenging than haemorrhage in the non-pregnant. In pregnant women additional challenge is brought about by physiological increase in intravascular volume. Hence these women can lose a significant amount of blood before showing signs of haemorrhagic shock. The extent of intravascular volume deficit is not reflected by visual estimates of vaginal bleeding.<sup>3,4</sup>

At term, maternal blood flow to the placenta is approximately 600–700 ml/minute. As a result when blood loss starts, and is not controlled early, deterioration may be fast & can prove detrimental within few minutes.

Haemorrhagic shock results by reduction in blood volume secondary to acute red blood cell loss. If unrecognized or left untreated, cell death due hypoxic injury follows. We noticed a higher incidence of PPH among the unbooked (referred) pregnant women. The larger percentage(84%)of unbooked women who had PPH in this study further confirm the importance of quality antenatal care in early recognition of risk and control of complications associated with pregnancy. This result is consistent with that of other researchers, 91.08% and 100% .<sup>5,6</sup>

65% patients delivered at our tertiary centre, 32% had delivered at local hospitals and referred to us after they landed up in PPH.

The referrals were made to our institute when the attempt to control bleeding, did not seem to show any positive results. These women already had one or more complications like anemia, PIH, coagulopathy, ARF & ARDS. The women who reached to us before delivery were also brought with complications.

The time difference in all the three categories; which was lost before the patient could reach the tertiary centre, was not statistically significant.

Our results show that atonic was the cause in 70%, which is consistent with Pranita 79%.<sup>7</sup> Other studies reported figures of 38% and 28%.<sup>5,6</sup> Coagulopathy was found in 46% (HELLP, DIC, Hepatic failure), traumatic PPH in 30% (Many patients had more than one cause).

In our series (n=37), all except one had a hospital delivery, and received AMTSL (Active management of

the third stage of labor) & uterine massage, in addition other uterotonics were given as per patient's requirement. Even when they received AMTSL, they had PPH because of the antenatal complications like PIH, severe anemia, coagulopathy.

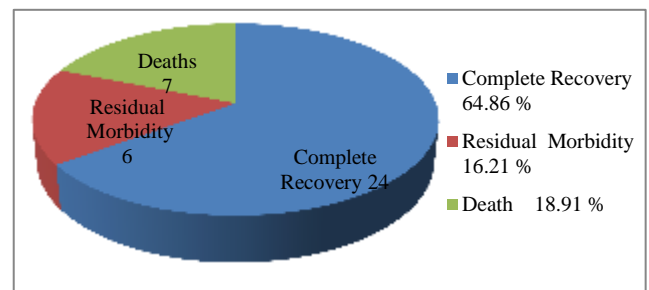
Tranexamic acid has also been used in one study for control of PPH in the study subjects.<sup>8</sup>

Coagulopathies were managed with blood & blood components. Conservative procedures like bimanual compression, internal iliac, ovarian, uterine artery ligation, intrauterine packing, and intrauterine balloon tamponade were performed for majority of patients. Hysterectomy was performed in 16%, which is lesser than that of Carlos<sup>9</sup> 23.8% and greater than other studies 6.25% and 1.04%.<sup>7,5</sup>

We can categorize our patients in three categories on the basis of maternal outcome:

- A. *Complete recovery*; Recovered from PPH & general recovery.
- B. *Recovered from PPH*; some other morbidity persisting.
- C. *Death*

When different variables in these categories were compared, many statistically significant differences were observed. The “unbooked” status, severity of PPH, presence of coagulopathy, antenatal anemia, ARF & ARDS. ‘A’ was the ones who recovered completely, formed 65% of the whole. All booked women fell in this category. This re-emphasizes the importance of supervised antenatal care. Even this group had subjects with coagulopathy, who could be saved as shown in Table 5 and Figure 3. Although there was no statistically significant difference in the place of delivery as far as outcome is concerned. The patients in ‘B’ & ‘C’ although delivered at hospital (local, tertiary) were brought very late, in moribund condition, affecting the outcome adversely.



Out of total 37 women with PPH, 65 % recovered completely without any morbidity. 16 % recovered from PPH, but had some other residual morbidity, 19 % died.

**Figure 3: Maternal outcome.**

When ICU management was taken into consideration, category ‘A’ did not require ICU stay, ‘B’ had a mean

stay of 5.33 days; SD ±2.16025, for 'C' mean was 4.12 days, SD± 4.2088. For ventilator, inotrope & dialysis requirement, the difference was statistically significant (Chi-square 16.9414, 11.3652 and 24.1947; p = <0.05). Although 16.21% ('B') recovered from PPH and were alive but had some or the other morbidity like acute renal failure, acute respiratory distress syndrome and

cerebrovascular accidents. From these, 66% who delivered at tertiary centre had some antenatal complications. 34% were referred in critical condition after they landed up in PPH. If these patients would have received proper antenatal supervised care, the results would have been much better.

**Table 5: Variables in relation to different maternal outcomes.**

Variable	Category 'A' Completely recovered n= 24 (100%)	Category 'B' Persistent morbidity n = 6 (100%)	Category 'C' Death n= 7 (100%)	Chi-Square & P value
Booked	06	0	0	21.1551
Unbooked	18 (P)	6 (P)	7 (P)	< 0.05
<b>Time Lapse<sup>#</sup></b>				
No	16	04	04	
Yes	09	02	03	
<b>Mean</b>	1.48 hours	4.33 hours	3.14 hours	0.1279, >0.05
<b>S.D</b>	SD ±2.75 (P)	SD ±9.66 (P)	SD ±3.98 (P)	
<b>Place of Delivery</b>				
Tertiary centre	16 (66.66 %)	4 (66.66 %)*	4 (57.14%)*	0.936
Local Hospital	7 (29.16 %)** (P)	2 (33.33%)** (P)	3 ( 42.85 %)** (P)	>0.05
Home	1 (4.16 %)** (P)	0	0	
<b>Type of PPH<sup>#</sup></b>				
Atonic (26)	19	4	3	0.176885, > 0.05
Traumatic(10)	7	0	3	3.1674,> 0.05
Tissue (01)	0	0	1	
Coagulopathy(17)	7	4	6	8.2155,< 0.05
<i>## Many of the patients had combined causes.</i>				
<b>Severity of PPH</b>				13.3044, < 0.05
Mild	11 (45.83%)	1 (16.66 %)	Nil	
Moderate	5 (20.83 %)	3 (50%)	Nil	
Severe	8 (33.33%)	2 ( 33.33 %)	7 (100%)	
<b>Complications ***</b>				
Antenatal Anemia	9 (P)	3 (P)	7 (P)	8.4792, < 0.05
PIH	9 (P)	2 (P)	0	3.6925, > 0.05
Coagulopathy	6 (P)	4 (P)	5 (P)	6.8741, < 0.05
APH	2	0	0	1.1452, > 0.05
Prolonged Labour	2 (P)	0	0	1.1452, > 0.05
Macrosomia	1	0	0	0.5567, > 0.05
ARF	1 (P)	3 (P)	6 (P)	20.1893, < 0.05

\*\*\* Many of the patients had more than one complications. (P) – Preventable, \*Referred late, with complications, \*\* Referred after delivery, with PPH, <sup>#</sup> Time Lapse: Time lost after occurrence of PPH to reach to the tertiary centre.

The 'C' category was brought with coagulopathy, ARF, ARDS. Out of total 7 subjects, 57% delivered at our centre and 43% at local hospital, referred after PPH. Mortality was 19% in our study which did not match with the results of other studies 13.3% according to study conducted by Krishna and 8.92% by Neetu. The contributing factor can be attributed to the presence of antenatal complications, moribund condition at admission with late referral of these women.

There were many variables which are labeled as (P) = preventable factors in Table 5. If these could have been

prevented, the outcome could have improved to a greater extent.

### CONCLUSIONS

The importance of antenatal supervised care under expert's guidance cannot be over emphasized. Identifying the complications at the earliest can prevent many complications. Timely referral of the obstetric patients to a tertiary centre can save many lives.

### ACKNOWLEDGEMENTS

Our sincere thanks to Dr. V. Bhavsar & Dr. A. Athawale for their guidance & support.

*Funding: No funding sources*

*Conflict of interest: None declared*

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

## REFERENCES

1. Knight M, Callaghan W, Berg C, Alexander S, Bouvier-Colle M-H, Ford J et al. Trends in postpartum hemorrhage in high resource countries: a review and recommendations from the International Postpartum Hemorrhage Collaborative Group. *BMC Pregnancy Childbirth.* 2009,9(1):55.
2. Weisbrod AB, Sheppard FR, Chernofsky MR, Blankenship CL, Gage F, Wind G et al. Emergent management of postpartum hemorrhage for the general and acute care surgeon. *World J Emerg Surg.* 2009,4:43.
3. Kloster B, Gorlin J. Obstetric Hemorrhage. *Blood bulletin.* 15th St. NW, Washington: Publication Committee Chair; 2012: 1-2.
4. Rock JA, Thomson JD. *Te Linde's operative gynecology.* 8<sup>th</sup> ed. Philadelphia:Lippincott-Raven, 1997.245-61.
5. Singh N, Pandey K, Sharma B, Mehta G, Chandanan A. A Study of Referral Cases of Post Partum Hemorrhage- Still An Obstetrical Tragedy which is Largely Preventable. *Paripex - Indian journal of research .* 2014;3(6):149-52.
6. Edhi MM, Aslam HM, Naqvi Z, Hashmi H. Post partum hemorrhage: causes and management. *BMC Research Notes.* 2013;6:236.
7. Solanke P, Patil S, Patil P. Study of Postpartum Hemorrhage in Tertiary Care Centre. *International Journal of Scientific and Research Publications.* 2014 ;4(10):1-3.
8. Krishna HM, Chava M, Jasmine N, Shetty N. Patients with postpartum hemorrhage admitted in intensive care unit: Patient condition, interventions, and outcome. *J Anaesthesiol Clin Pharmacol.* 2011; 27(2):192-4 .
9. Montufar-Rueda C, Rodriguez L, Jarquin JD, Barboza A, Carolina Bustillo CM, Martin F. Severe Postpartum Hemorrhage from Uterine Atony: A Multicentric Study. *Journal of Pregnancy.* 2013;Article ID 525914:6 pages.

**Cite this article as:** Gadre S, Patel S, Gadre A. An overview of women with post partum haemorrhage in a tertiary care centre at capital of Madhya Pradesh, India. *Int J Reprod Contracept Obstet Gynecol* 2016;5:23-8.