

Short-term Impacts of Secondary Postpartum Haemorrhage on Maternal Health

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Abstract

Background: Postpartum haemorrhage (PPH) is unpredictable and potentially catastrophic, occurring even in women considered being at low risk. PPH endures as a significant cause of maternal morbidity and mortality in low- and middle-income countries (LMICs). Objective: The purpose of the present study was to observe the short-term effects of secondary postpartum hemorrhage on maternal health. Methodology: This hospital-based cross-sectional study was conducted involving 40 purposively selected women aged 18 years and older who were diagnosed with secondary PPH and admitted more than 24 hours after childbirth or during the puerperal period. These women were interviewed using a pre-tested semi-structured questionnaire in the purposively selected Department of Obstetrics and Gynecology at Sylhet MAG Osmani Medical College Hospital in Bangladesh. Results: Secondary PPH was significantly more common in the 26-35 age group (67.5%) compared to those aged 25 years or younger (32.5%). Among the women studied, 22.5% were primipara and 77.5% were multiparas, with secondary PPH occurring significantly more frequently in multipara women. A notable proportion of patients (70%) presented with varying degrees of anemia. Retained placental fragments were identified as the primary cause of secondary PPH in 52.5% of cases, followed by endometritis and sub-involution, each accounting for 15%. More than half of the patients (57.5%) required blood transfusions based on the severity of their anemia, and 30% of those with secondary PPH had hospital stays that exceeded 5 days. Conclusion: Despite extensive collaborative efforts at all levels, implementation and adherence to recommended management practices for postpartum hemorrhage in obstetric emergencies remain insufficient.

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Introduction:

Postpartum hemorrhage (PPH) is defined as bleeding from or into the genital tract following childbirth, lasting up to the end of the puerperium, that adversely impacts the patient's condition, as indicated by an increased pulse rate and decreased blood pressure.¹ It is an obstetric emergency that affects 1.0 to 10.0% of all deliveries and caused over

80,000 maternal deaths around the world in 2015.² The prevalence of PPH varies by region, with the highest rates reported in Africa (5.1–25.7%), followed by North America (4.3-13%) and Asia (1.9-8%).^{3,4} Incidence has also been rising, increasing in Canada from 5.1-6.2% between 2003 and 2010,⁵ and in the USA from 2.9-3.2% between 2010 and 2014.6 Postpartum haemorrhage varies in intensity and duration. It may be sporadic and gradually decreases over several weeks.7 Approximately 25% of women report vaginal bleeding that persists for over 6 weeks.8 Visual estimation of blood loss is often inaccurate; therefore, clinical signs and symptoms should also be considered in the assessment of PPH.9 Secondary postpartum haemorrhage is a severe vaginal bleeding or profuse lochial discharge occurring at least 24 hours after the end of the 3rd stage of labour and within 6 weeks of delivery.¹⁰ It occurs at a rate of 1-2%, with the majority of instances occurring between 8-14 days after birth.¹¹ It can cause deadly side effects such as anaemia, shock, sepsis, disseminated intravascular coagulation (DIC), hepatic and renal failure, respiratory distress syndrome, and Sheehan's syndrome.¹² Numerous studies had documented the effectiveness and immediate maternal complications associated with pelvic arterial embolization,¹³ uterine and hypogastric artery ligation,¹⁴⁻¹⁶ and uterine compression sutures¹⁷ for managing PPH, as well as the effects of these procedures on fertility and obstetric outcomes.18 Delays in diagnosis and appropriate treatment have been noted in many cases of maternal death related to PPH.¹⁹ Therefore, rapid identification and localization of the bleeding site are essential for effective hemostatic management of patients with PPH.12

Methodology

Study Design and Population: This was a hospital-based cross-sectional study was carried out to observe the short-term impacts of secondary postpartum haemorrhage on maternal health in the Department of Obstetrics and Gynaecology of Sylhet MAG Osmani Medical College Hospital (SOMCH), Sylhet 3100, Bangladesh. The study comprised 40 patients aged ≥ 18 years, diagnosed with secondary PPH and admitted after 24 hours of childbirth or during puerperial period prior to interview. Patients having a history of bleeding disorders (Haemophilia and Thrombocytopenia), abnormal per-vaginal bleeding due to systemic conditions (Hypothyroidism, Liver cirrhosis, and Chronic renal failure), and those taking anticoagulants were excluded from the study.

Study Procedures: From January 2018 to December 2019, a pretested semi-structured questionnaire was used to conduct in-person interviews with study participants at their convenience. Upon admission, a comprehensive history was obtained from the patient, followed by a clinical examination.

Statistical Analysis: Data were entered, coded, and analyzed using IBM SPSS Version 25 (New York, USA). Descriptive statistics are presented as frequencies (percentages) for categorical data and means (±standard deviation, SD) for continuous data. Z test was employed to evaluate the significance of comparisons. A p-value of less than 0.05 at a 95% confidence interval (CI) was deemed statistically significant for all tests conducted.

Ethical Approval: The interviewer obtained informed consent and permission to record the interviews from participants before commencing the interviews. Participation was voluntary, and participants were informed that they have the right to withdraw at any point without participants' negative consequences. The anv confidentiality was maintained throughout the study. Ethical approval was obtained from the 'Research Ethical Committee' of Sylhet MAG Osmani Medical College, Sylhet 3100, Bangladesh. All procedures were conducted according to the guidelines of the Declarations of Helsinki.

Results

The mean age of the patients was 27.6 ± 4.7 years. The majority (42.5%) were in the 26-30 age groups, while 25.0% fell within the 31-35 age groups. Secondary PPH occurred significantly more often in the 26-35 age group (67.5%) compared to those aged ≤ 25 years (32.5%). Half of the patients (50.0%) had a primary level of education, and 37.5% were illiterate. Most of the patients were homemakers (92.5%). (Table 1)

Among the women studied, 22.5% were primipara, while 77.5% were multipara. Secondary PPH was significantly more prevalent in multipara compared to primipara. Over two-thirds of the women (77.5%) received antenatal care. The delivery took place in a hospital for 32.5% of the patients, while 67.5% delivered at home, indicating a significantly higher rate of home deliveries compared to hospital deliveries. Vaginal delivery was the mode for 75.0% of the patients, whereas 25.0% underwent a cesarean section, with vaginal deliveries occurring significantly more often than cesarean deliveries. (Table 2)

Figure I illuminates that complications during the last pregnancy were reported by 20.0% of patients, while

complications during the last delivery were reported by 65.0%. Figure II illustrates that the most common complications during pregnancy were premature rupture of membranes (PROM) at 50.0% and antepartum hemorrhage (APH) at 25.0%. Figure III indicates that the most prevalent complications during delivery were prolonged labor at 30.8% and retained placenta at 26.9%.

All patients presented with per vaginal bleeding. Additionally, 12.5% reported foul-smelling vaginal discharge, 25% experienced fever, 12.5% were in shock, and 12.5% had generalized weakness. Most cases of secondary postpartum hemorrhage (PPH) presented between 8-14 days postpartum (40%) and 15-21 days postpartum (22.5%). A significant proportion of secondary PPH patients (70%) exhibited varying degrees of anemia. Retained placental fragments were identified as the primary cause of secondary PPH (52.5%), followed by endometritis and sub-involution (each at 15%). Treatments included dilatation and curettage (42.5%), peripartum hysterectomy (10%), tear repair (10%), conservative management (20%), balloon tamponade (7.5%), uterine exploration (7.5%), and ICU referral (5%). Over half of the patients (57.5%) required blood transfusions based on anemia severity. Hospital stays exceeded 5 days for 30% of secondary PPH cases. (Table 3)

Table 1: Patient's profile (n=40)

Variables	Frequency	Percent	P Value
Age Group			
18 to 20 Years	5	12.5	
21 to 25 Years	8	20.0	0.001
26 to 30 Years	17	42.5	
31 to 35 Years	10	25.0	
Mean±SD	27.6±4.7		
Education			
Illiterate	15	37.5	
Primary	20	50.0	
Secondary	5	12.5	
Occupation			
Homemakers	37	92.5	
Service holders	2	5.0	
• Businesswoman	1	2.5	

Z-test done; p<0.05 considered as statistically significant value

Table 2: Obstetric profile of the patients (n=40)

Variables	Frequency	Percent	P value
Parity			
Primigravida	9	22.5	0.001
Multigravida	31	77.5	
Utilization antenatal			
care services			
Yes	31	77.5	
No	9	22.5	
Place of Last			
Delivery			
Home settings	27	67.5	0.001
Hospital settings	13	32.5	
Mode of Last			
Delivery			
Vaginal	30	75.0	0.001
Caesarean section	10	25.0	
7 + + 1 <0.05	1 4 4 4	11	4

Z-test done; p<0.05 considered as statistically significant value

80.0%	35.0%	
20.0%	65.0%	
Pregnancy	Delivery	
Not occured	Occurred	
Figure I: Complications occurred during last		

pregnancy and delivery (n=40)



Figure II: Types of complication during last pregnancy (n=8)



Figure III: Types of complication during last delivery (n=26)

Table 3: Short-term impacts of secondary PPH (n=40)				
Variables	Frequency	Percent		
Patient's Clinical				
Per-vaginal bleeding	40	100.0		
presentation				
Fever	10	25.0		
Foul smelling vaginal	5	12.5		
discharge				
Shock	5	12.5		
Generalized weakness	5	12.5		
*Multiple responses				
Patient's presentation of PPH at hospital				
≤7 Days	7	17.5		
8 to 14 Days	16	40.0		
15 to 21 Days	9	22.5		
22 to 28 Days	5	12.5		
29 to 35 Days	2	5.0		
36 to 42 Days	1	2.5		
Presence of Anaemia				
Yes	28	70		
No	12	30.0		
Causes of secondary PPH				
Retained bits of placenta	21	52.5		
Endometritis	6	15.0		
Sub-involution	6	15.0		
Genital tract injury	5	12.5		
DIC	2	5.0		
Caesarean scar dehiscence	1	2.5		
*Multiple responses				
Management modalities				
Dilatation and curettage	17	42.5		
Conservative	8	20.0		
Peripartum hysterectomy	4	10.0		
Repair of tear	4	10.0		
Balloon tamponade	3	7.5		
Exploration of uterus	3	7.5		
Referred to ICU	2	5.0		
*Multiple responses				
Patients needed blood transfusion				
Yes	23	57.5		
No	17	42.5		
Span of hospital stav (in days)		-=-•		
<5	28	70.0		
>5	12	30.0		
Mean±SD	4.9±2.9			

Discussion

In Bangladesh, nearly a fourth of the population lives below the poverty line and households' out-of-pocket expenses account for more than two-thirds of the overall healthcare expenditures. As a result, maternal health remains a critical social, health, and economic priority for the country.²⁰

In this study, patient ages ranged from 18 to 35 years, with a mean age of 27.6 ± 4.7 years. This finding aligns with results from the study in Manipur, India where patients mean age was 27 ± 6.0 years with secondary PPH.²¹ Similarly; another study reported an age range of 18 to 38 years, with a mean age of 25 ± 4.8 years.²² Secondary PPH was significantly more common among patients aged 26 to 35 years (67.5%) compared to those aged 25 years or younger (32.5%). The majority of secondary PPH cases occurred in the 30–40 age group (46.7%), followed by the 20–29 age group (35.5%) also observed in the study.²³

In the study, 22.5% of women were primipara, while 77.5% were multipara, with secondary postpartum hemorrhage (PPH) occurring significantly more often in multipara women; and this finding aligns with the study where 76% of cases in multipara and 24% in primipara.²⁴ Similarly, in another study also found 42.4% primipara and 57.6% multipara in their secondary PPH cases,²² while a higher prevalence of secondary PPH among multipara (62.2%) compared to primipara (37.8%) was observed.²³ The delivery took place in a hospital for 32.5% of the patients, while 67.5% delivered at home, indicating a significantly higher rate of home deliveries compared to hospital deliveries. 72% of patients with secondary PPH were referrals, initially managed outside the hospital before presentation.²⁴ Vaginal delivery was the mode for 75.0% of the patients, whereas 25.0% underwent a cesarean section, with vaginal deliveries occurring significantly more often than cesarean deliveries. This result aligns with findings where 68% of secondary PPH cases followed vaginal delivery, while 32% occurred after cesarean section. However, it cannot be concluded that vaginal delivery increases the risk of secondary PPH, as the overall rate of vaginal deliveries is higher than that of cesarean deliveries.24

All patients presented with per vaginal bleeding. Additionally, 12.5% reported foul-smelling vaginal discharge, 25% had fever, 12.5% were in shock, and 12.5% experienced generalized weakness. In comparison, 28% of patients presented with fever and 8.0% were in shock.²⁴ Similarly, it was reported that per vaginal bleeding with shock in 11.11% of cases and fever in 32.32% of secondary PPH cases at presentation.25 Most cases of secondary postpartum hemorrhage (PPH) presented between 8 to 14 days postpartum (40%) and 15 to 21 days postpartum (22.5%). The majority of cases presented in the second week after delivery (33.3%), followed by the third week (28.9%) and the fourth week (17.9%).²³ A significant proportion of secondary PPH patients (70%) exhibited varying degrees of anemia. It was also observed that anaemia was present in 97.6% of secondary postpartum haemorrhage.²⁵ Retained placental fragments were identified as the primary cause of secondary PPH (52.5%), followed by endometritis and sub-involution (each at 15%). Retained products of conception were the primary cause of secondary PPH in 72% of cases, followed by endometritis in 20%. It was also identified that 34% of postpartum hemorrhage was due to retained placental fragments, 27% was due to uterine wound dehiscence, 24% was caused by retained clots, and 15% was attributed to endometritis.22 Treatments included dilatation and curettage (42.5%), peripartum hysterectomy (10.0%), tear repair (10.0%), conservative management (20.0%), balloon tamponade (7.5%), uterine exploration (7.5%), and ICU referral (5.0%). Over half of the patients (57.5%) required blood transfusions based on anemia severity. Hospital stays exceeded 5 days for 30% of secondary PPH cases. This result aligns with Nessa et al²² who reported that 73% of patients had a hospital stay of 5 days, while 27.0% stayed for more than 5 days.

Conclusion

The study revealed that secondary postpartum hemorrhage (PPH) is more commonly associated with women over the age of 25, multiparity, and home or vaginal deliveries. The average length of hospital stay was prolonged, which can impose significant physical, psychological, and financial burdens on the patient and her family. Early recognition and appropriate management are essential to prevent maternal morbidity related to secondary PPH. Active management of the third stage of labor is important in preventing this condition. Following the management of secondary PPH, patients should be advised to attend regular follow-up appointments to mitigate potential long-term adverse effects.

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Contributions to authors: Conceptualization, methods and literaturereviews:

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