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Impact of Delivery Methods and Antenatal Care on the Incidence of Secondary Postpartum Hemorrhage

Dr. Mishkat Tabassum[1*], Dr. Fahmida Sultana[2], Dr. Mohammad Ezazul Karim[3], Dr. Mousumi Saha[4], Prof. Dr. Tripti Rani Das[5]

[1]Medical Officer, Department of Medicine, National Institute of Diseases of the Chest & Hospital (NIDCH), Mohakhali, Dhaka, Bangladesh
[2]Resident Surgeon, Department of Obstetrics & Gynaecology, Sheikh Sayera Khatun Medical College Hospital, Gopalgonj, Bangladesh
[3]Medical Officer, Department of Medicine, National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR), Dhaka, Bangladesh
[4]Junior Consultant, Department of Obstetrics & Gynaecology, Cumilla Medical College Hospital, Cumilla, Bangladesh
[5]Professor, Department of Obstetrics & Gynaecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh

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***Corresponding author:** Dr. Mishkat Tabassum
Medical Officer, Department of Medicine, National Institute of Diseases of the Chest & Hospital (NIDCH), Mohakhali, Dhaka, Bangladesh

Abstract

Background: Secondary postpartum hemorrhage (PPH) defined as excessive vaginal bleeding from 24 hours after delivery up to 6 weeks postpartum, continues to be a major cause of maternal morbidity and mortality. Exploration of its causes and risk factors is essential to inform more effective prevention and management strategies, particularly in resource limited settings. This study aimed to assess the effectiveness of delivery methods, antenatal care and other related factors in determining incidence of secondary PPH. ***Methods:*** A descriptive cross sectional study was conducted in the Department of Obstetrics and Gynaecology of BSMMU, Dhaka during the period from March 2012 to August 2012. A total of 42 women with secondary PPH were included based on inclusion and exclusion criteria. The data were collected by means of structured interviews, clinical examinations and medical record reviews. Maternal age, delivery methods, timing and causes of secondary PPH were analyzed. ***Results:*** Secondary PPH was found most commonly during the second (38.1%), and third (28.57%) weeks postpartum. The leading causes were infections (52.38%), retained placental tissue (23.81%), uterine atony (16.67%), and lower genital tract injuries (7.14%). Women with inadequate antenatal care (61.9%) and who delivered vaginally (57.14%) had greater risk of secondary PPH. Cesarean deliveries contributed to 38.1% of cases. ***Conclusion:*** Infections, inadequate antenatal care and delivery methods are strongly associated with secondary PPH. Improving antenatal care, skilled care during delivery and postpartum monitoring can significantly reduce its occurrence and complications.

Keywords: Secondary postpartum hemorrhage, infections, antenatal care, delivery methods.

INTRODUCTION

Postpartum hemorrhage during the secondary phase poses a substantial threat to maternal health while creating widespread severe health problems for women seeking healthcare in resource-limited regions worldwide. Secondary PPH manifests after first 24 hours of childbirth up to 6 weeks postpartum as prolonged or abnormally heavy bleeding from the birth canal that results from multiple factors including infection and retained tissue and uterine atony and genital tract trauma [1].

Secondary PPH presents differently across the world based on the quality of antenatal care the delivery process and the available healthcare infrastructure [2, 3]. The procedure of birth through Cesarean section delivers life-saving measures yet increases the outbreak of uterine infections and subsequent PPH beyond manual vaginal deliveries [4]. Home births and Deliveries under

insufficient medical supervision produce monitoring deficiencies that make it harder to diagnose or treat PPH [5, 6].

ANC is an important component of lowering maternal complications, including secondary PPH. High risk pregnancies are identified with early management and ANC promotes institutional deliveries and reduces adverse maternal outcomes [7]. However in Bangladesh where there is limited ANC coverage and underutilization of maternal health services are two crucial barriers to ideal maternal outcomes [8].

Secondary PPH is a leading cause which is due to more than 50% of cases depending on settings [9]. Poor hygiene in the delivery or during the postnatal care can then aggravate postpartum infections, mostly endometritis [10]. Another common cause is retained placental tissue, which often results from incomplete third stage management or predisposing factors such as placenta accreta [11]. While more commonly related to the development of primary PPH, uterine atony can also result in secondary PPH in the often cases of excessively prolonged labor or over distended uteri [12].

Since secondary PPH produces a significant degree of morbidity and mortality, it is important to diagnose as quickly and correctly as possible. Imaging and laboratory investigations along with clinical evaluation are key to identifying the cause and directing management strategies. This study aims to determine the effect of delivery method and antenatal care on the incidence of secondary PPH, in contributing to a better context upon which preventive and management strategies to resolve maternal health risks can be developed.

Objective

The objective of this study was to evaluate the impact of delivery methods and antenatal care on the incidence of secondary postpartum hemorrhage.

METHODOLOGY & MATERIALS

This descriptive cross- sectional study was conducted in the Department of Obstetrics and Gynaecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka from March 2012 to August 2012.

Total 42 patients with secondary postpartum hemorrhage are included in this study following the inclusion and exclusion criteria. Among them thirty five patients were admitted as a case of secondary PPH after home or institutional delivery and seven admitted patients developed secondary PPH following delivery before discharge from BSMMU during the study period.

Selection Criteria

Inclusion Criteria

1. Women diagnosed with secondary postpartum hemorrhage.
2. Women who gave informed consent to participate.
3. Patients with complete and available obstetric history.

Exclusion Criteria

1. Women who refused to give informed consent.

Data Collection:

Data was collected through structured interviews, clinical examinations, and review of medical records. Clinical findings, obstetric history, and pertinent sociodemographic information were recorded using a pre-tested questionnaire. Information was gathered about imaging and laboratory results, management specifics, and results.

Ethical Consideration:

This study was approved by the Bangladesh College of Physicians and Surgeons (BCPS) Research and Training Monitoring Department (RTMD). Every participant signed an informed consent form. Ethical guidelines for research involving human subjects and protocols that maintained patient anonymity were also part of the study. No conflicts of interest, either financial or otherwise, existed.

Statistical Analysis of Data:

Data analysis was done with SPSS version 15. Descriptive statistics including mean, standard deviation, frequency, and percentage were used to summarize the data. Chi square tests and other inferential statistics were used to evaluate the relationship between the variables. Every analysis was considered significant if the p-value was less than 0.05.

RESULTS

Table 1: Baseline characteristics (n=42)

Demographic profile		Number of patients (n)	Percentage (%)
Age (years)	< 20	2	4.76
	21 – 25	12	28
	26 – 30	16	38.1
	31 – 35	7	16.66
	36 – 40	3	7.14
	40>	2	4.76

Monthly household income	<5,000/-	12	28.57
	5,000 - 10,000/-	20	47.61
	>10,000/-	10	23.8
Parity	Primipara	13	30.95
	Multipara	29	69.05

Table I shows that majority of patients were belongs to age group of 25-30 years 16 (38.1%). According to economic status of the patients 47.61% had family income 5,000-10,000. Majority of patients were multipara.

Table 2: Distribution of respondents according to antenatal checkup (n=42)

Antenatal checkup	No. of patients (n)	Percentage (%)
Booked	16	38.1
Un-booked	26	61.9

Table 2 shows that majority of patients were un-booked cases 61.9%.

Table 3: Distribution of the respondents according to methods of delivery (n = 42)

Methods of delivery	No. of patients (n)	Percentage (%)
NVD	24	57.14
Instrumental delivery	2	4.76
Cesarean section	16	38.1

Table 3 shows that most of patients delivered by NVD 57.14% followed by 38.1% patients delivered by cesarean section and 4.76% instrumental delivery.

Table 4: Distribution of the respondents according to time of occurrence of secondary PPH (n = 42)

Time interval	No. of patients (n)	Percentage (%)
Within 1st week	7	16.66
2nd week	16	38.1
3rd week	12	28.57
4th week	4	9.52
5th week	2	4.76
6th week	1	2.38

Table 4 shows that majority of cases occurred in 2nd week 38.1% and 3rd week 28.57% patients.

Table 5: Distribution of causes among the patients with Secondary PPH (n = 42)

Causes of secondary PPH	No. of patients (n)	Percentage (%)
Uterine atony	7	16.67
Infection	22	52.38
Retained placental tissue	10	23.81
Injury in lower genital tract	3	7.14

Table 5 shows causes among patients with secondary PPH are infection in 22 (52.38%) patients, retained placental tissue in 10 (23.81%) cases, uterine atony in 7 (16.67%) cases and injury in lower genital tract in 3 (7.14%) cases.

DISCUSSION

Postpartum hemorrhage (PPH) is a major maternal health condition with high morbidity and mortality especially at low resource settings. In our study, infections (52.38%), retained placental tissue (23.81%), uterine atony (16.67%), and lower genital tract injuries (7.14%) were the most commonly diagnosed reasons for secondary PPH. The findings are consistent with previous studies of multifactorial etiology of secondary PPH.

Similarly, Hoveyda and MacKenzie reported similar secondary PPH prevalence secondary to infection and endometritis being the most common infective cause [13]. The Royal College of Obstetricians and Gynaecologists (RCOG) guidelines for PPH management emphasize that effective postpartum care and early administration of antibiotics can significantly reduce the risk of infection-related secondary PPH [14].

Our findings also support the association between delivery methods and secondary PPH, with cesarean sections playing a role in contributing to 38.1%

of cases. Bateman *et al.,* found that women undergoing cesarean sections are at an increased risk for PPH because of factors including surgical manipulation and scarring of the uterus [15], very similar to what has been reported in this study. The risks of these are well documented, and require skilled surgical techniques and appropriate postoperative monitoring to limit them [16].

Antenatal care (ANC) plays a vital role in reducing the incidence of secondary PPH. In our study, 61.9% of cases took place in unbooked women, indicating the importance of poor ANC. Similar to Walker *et al.,* lack of ANC is associated with poor maternal outcomes, including PPH [17]. According to WHO guidelines for managing postpartum haemorrhage, thorough ANC helps early identifications of high-risk mothers [18].

In our study, the second leading cause of secondary PPH was retained placental tissue, as found by Magann et al. [19] to be a high contributor to postpartum hemorrhage after vaginal delivery. Third stage labor must be properly managed to minimize risk. In addition to advanced intervention techniques, the efficacy of selective arterial remobilization in the treatment of life threatening PPH secondary to retained placental fragments was demonstrated by Pelage *et al.,* [20].

The secondary cases in our study (due to PPH) amounted to 16.67% due to uterine atony. Similar to Combs *et al.,* uterine atony was identified as a critical factor in PPH, and thus the importance of uterotonics to manage this condition was also noted [21]. Administration of prostaglandins as recommended by Gülmezoglu *et al.,* is shown to prevent uterine atony and decrease the overall incidence of PPH [22].

In our study we also call attention to secondary PPH due to lower genital tract injuries as a somewhat rare but important cause. Accordingly, Dongol *et al.,* reported similar prevalence, especially in the context of instrumental deliveries [23].

Secondary PPH remains a highly morbid condition despite advances in obstetric practice, particularly in low resource settings where access to timely health care is limited. Simple and inexpensive measurements of blood loss in postpartum women are essential for early diagnosis and management and have been highlighted by Quaiyum *et al.,* [24]. Improving access to emergency obstetric care in locations with higher rates of secondary PPH can dramatically reduce the burden of the condition.

CONCLUSION

The main causes of secondary PPH found in this study are infections, retained placental tissue, uterine atony, and lower genital tract injuries, with infections being the most common. Women with inadequate antenatal care and among those delivering vaginally were more prone to develop secondary PPH. To reduce the incidence and complications of secondary PPH, it is essential to strengthen antenatal care, ensure skilled delivery practices, and maintain postpartum monitoring.

LIMITATIONS AND RECOMMENDATIONS

Limitations of the study include the small sample size and single center design which may limit generalizability of findings. These findings are validated by future studies with larger and multicenter cohorts. Therefore, efforts should be concentrated at raising awareness of the importance of antenatal care, evidence based post partum care protocol implementation and improved access to emergency obstetric services in resource limited settings.

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Conflicts of Interest: There are no conflicts of interest.

Ethical Approval: The study was approved by the Institutional Ethics Committee.

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