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PREVALENCE AND RISK FACTORS OF SEVERE POSTPARTUM HEMORRHAGE IN CESAREAN SECTION DELIVERIES IN A TERTIARY CARE HOSPITAL, MUZAFFARABAD

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Abstract

Background: In developed countries, the rate of severe postpartum hemorrhage is increasing, which is a major concern for public health due to its impact on maternal health.

Study objective: This study aimed to determine the frequency of severe postpartum hemorrhage and the contributing factors.

Methods: A retrospective cohort study was conducted to explore the common risk factors associated with postpartum bleeding following cesarean deliveries in a tertiary care hospital. This study was conducted from January 2021 to July 2021 in the Department of Gynecology, Tertiary Care Hospital, in Muzaffarabad.

Results: The average age of the mothers in the study was 29.4 years. Out of 2400 cases, 66.7 percent were elective cesarean sections, while 33.3 percent were emergency surgeries. Diabetes 7.5 percent, HTN (hypertension) 12.5 percent, emergency C-sections 33.3 percent, and prolonged surgery duration were the contributing risk factors. Surgical procedures that last more than an hour are the leading causes of severe postpartum hemorrhage. There is a significant association between risk factors like hypertension and severe postpartum hemorrhage.

Conclusion: It was concluded that risk factors like hypertension, prolonged surgeries, and diabetes are leading risk factors for the incidence of severe postpartum hemorrhage.

Keywords: Cesarean sections, PPH, Elective and Emergency C-sections

Introduction

The primary reason behind maternal deaths and severe health conditions in mothers is postpartum hemorrhage. Globally, it contributes to 27 % of maternal mortality. The prevalence of postpartum hemorrhage varies from 8% in advanced countries and up to 32% in North Africa(1). The prevalence of postpartum hemorrhage is at nine percent with severe prevalence accounting for 1.2 percent (2). About 14 million women suffered from postpartum hemorrhage the whole year. It results in roughly 70 thousand maternal deaths worldwide. For those who do survive, immediate surgical procedures are frequently required to manage the bleeding, which can result in potential long-term reproductive challenges (3).

Fatal cases of severe postpartum hemorrhage generally occur within the initial 24 hours following childbirth. Therefore, the prevention and treatment of severe postpartum hemorrhage are essential in preventing the majority of deaths associated with severe postpartum hemorrhage. The transition from controlled bleeding to uncontrolled bleeding can occur rapidly and go unnoticed (4). Various standards use different criteria to define severe postpartum hemorrhage, such as surpassing thresholds like 1000 milliliters, 1500 milliliters, 2000 ml, 30 percent to 40 percent of blood volume, or more than 4 units of blood transfused (5). Currently, the accepted definitions of postpartum hemorrhage mainly focus on the volume of blood lost within the initial twenty-four hours after giving birth (4,6). Mother’s body temperature, overall health, comorbidities, rate of bleeding, and quantity of blood lost show the severity of PPH (7).

While sudden postpartum hemorrhage can happen without caution, several studies have focused on informing healthcare professionals by pinpointing particular high-risk factors linked to postpartum hemorrhage (8). Primary determinants comprised a previous history of severe postpartum hemorrhage, use of anticoagulant medications, anemia, severe preeclampsia, presence of uterine fibroids, multiple pregnancies, and the use of assisted reproductive technologies. (9).

Obstetrics uses various tools to evaluate the danger of PPH in women. Kawakita and colleagues' research found that tools AWHONN, NYBO, and CMQCC show moderate accuracy in predicting high-risk women who may face severe postpartum hemorrhage following a cesarean delivery (10).

A study conducted at Sir Ganga Ram Hospital demonstrated that the occurrence of primary postpartum hemorrhage stood at 0.74%. Among these cases, 76.2% were classified as mild, 21.8% as moderate, and only 2% as severe. (11).

Material and Methods

An approval letter was acquired for this analysis conducted retrospectively. Informed consent was not required given the retrospective nature of the study. This study was conducted from January 2021 to July 2021. The analysis focused on the perinatology database within the Department of Gynecology at Muzaffarabad's Tertiary Care Hospital, covering females who gave birth after twenty-eight weeks of pregnancy. The research database was sourced from medical records, containing details on mothers' health pre- and at the time of pregnancy, wide data on delivery, during and after birth any complications, and newborn information. The research participants were split into two categories: group: A known as the Case Group consisting of females who encountered SPPH after having a Cesarean Section, and Group: B as the Control Group of females who did not experience SPPH post-Cesarean Section. Women between 18 to 45 years old were part of this study. Those who had C-sections from January 2021 to July 2021 were included in the study. Women who did not have proper medical records and were also suffering from comorbidities like diabetes and hypertension were excluded from the study. The sample size needed for this study was determined using the WHO sample size calculator while maintaining parameters like a 95% CI, 10% anticipated population, and

5% absolute precision. A total of 192 SPPH cases were diagnosed with SPPH and 2,208 out of 2400 were of the control group who did not have SPPH. Multiple logistic regression was applied to identify the factors contributing to SPPH.

Results

A total of 2400 participants were registered in the research study. The average maternal age in the study was 29.4 years, with a standard deviation of 5.8 years. The women had an average of 2.1 previous pregnancies (parity), with a standard deviation of 1.3. Elective cesarean sections were performed in 66.7% (1600) of the cases, while 33.3% (800) were emergency procedures. Additionally, 12.5% (300) of the participants had pre-existing hypertension, and 7.5% (180) had pre-existing diabetes. (Table 1)

Demographics and Clinical Characteristics of Study Population

Variable	Mean± SD or n (%)
Maternal Age in years	29.4±5.8
Parity	2.1±1.3
Elective C-sections	1600 (66.7%)
Emergency C-sections	800 (33.3%)
Pre-existing Hypertension	300 (12.5%)
Pre-existing Diabetes	180 (7.5%)

In a study of 2400 cesarean sections, 192 cases experienced severe postpartum hemorrhage (SPPH), indicating a prevalence of 8%. This data emphasizes the frequency of SPPH in cesarean deliveries within the cohort (Table 2)

Prevalence of Severe Postpartum Hemorrhage

Outcome	N (%)
Total C-sections	2400
SPPH Cases	192 (8%)

The logistic regression analysis revealed several significant risk factors for severe postpartum hemorrhage (SPPH). Emergency deliveries through cesarean section had a higher chance of Severe Postpartum Hemorrhage (SPPH) compared to planned procedures. Procedures lasting more than 60 minutes increased the risk significantly, showing an OR of 3.1 (CI: 2.2-4.4) ($p<0.001$). Additionally, pre-existing hypertension elevated the risk, with an OR of 1.8 (CI: 1.2-2.7) ($p=0.003$). Multiparity (>3) did not show a significant association with Severe Postpartum Hemorrhage (SPPH) with a p-value of 0.05. (Table 3)

Logistic Regression Analysis of Risk Factors for SPPH

Risk Factor	Odds Ratio (OR)	95% Confidence Interval (CI)	P-value
Emergency C-section	2.5	18-3.4	<0.001
Prolonged Surgery (>60 min)	3.1	2.2-4.4	<0.001
Pre-existing Hypertension	1.8	1.2-2.7	0.003
Pre-existing Diabetes	1.5	1.0-2.3	0.045
Multiparity (≥3)	1.2	0.9-1.6	0.15

Discussion

This study identified the occurrence rate of SPPH to be 8%, falling within the range of 0.3% to 5.1% as previously established. (9,12–14) as compared to Chin-Ning Lie et al (7), where the prevalence of SPPH was 1.56%. Another study which was done in Ethiopia, revealed that the overall incidence of SPPH is 3.6% after Cesarean section (15) The incidence rates of severe postpartum hemorrhage

(SPPH) display significant variance concerning both timeframes and geographic locations. SPPH emerges as a substantial peril to maternal well-being. Recent research has highlighted that individuals with SPPH faced significantly heightened risks compared to those without, with one hundred sixteen, eighty-seven, and 5.3 times higher risk of suffering from kidney diseases, total hysterectomy, and septicemia (sepsis) respectively. Furthermore, there was a notable uptick in ICU admissions for PPH cases during labor-related hospital stays (14).

The interpretation of SPPH can differ based on various guidelines. The volume of blood determines the prevailing definition of SPPH lost postpartum. The WHO suggests using visual assessment to measure blood loss as the standard method. Nevertheless, visual approximations tend to underrate blood loss quantities by thirty-three percent to fifty percent compared to spectrophotometry. (16,17). During the research, the study found that 66.7% (1600) of cases involved elective cesarean sections, while 33.3% (800) were classified as emergency procedures. Among the participants, 12.5% (300) had pre-existing hypertension, and 7.5% (180) had pre-existing diabetes. The likelihood of experiencing SPPH is 2.5 times higher in women undergoing emergency C-sections compared to those who have elective ones.. According to X. Zhong et al (18), indicates that pregnant women with hypertension faced varying degrees of postpartum, with an incidence rate of 29.93%. Analysis showed that patients with severe conditions, significant proteinuria, fetal body mass ≥ 4000g, uterine atony, and abnormal HDL-C levels were at a higher risk of postpartum hemorrhage. Moreover, the study noted that pre-existing conditions were linked to a 1.8 odds ratio (CI: 1.2-2.7), further increasing the risk of SPPH, according to Lucas et al study (19), postpartum hemorrhage is also linked with gestational diabetes.

Conclusion

Emergency C-sections, prolonged surgical durations, and pre-existing conditions such as diabetes and hypertension are significant risk factors for severe postpartum hemorrhage. These findings can help clinicians identify high-risk patients and implement targeted preventive measures to reduce the incidence of severe postpartum hemorrhage.

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