

ORIGINAL ARTICLE

Evaluation of Risk Factors and Fetomaternal Outcomes in Cases of Placenta Previa in a Tertiary Care Hospital in Dhaka

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ABSTRACT

Background: Placenta previa is a major cause of antepartum hemorrhage and a significant contributor to maternal and neonatal morbidity and mortality, particularly in settings with high cesarean delivery rates. **Objectives:** This study aimed to evaluate the risk factors and fetomaternal outcomes among women with placenta previa in a tertiary care hospital in Dhaka. **Methods & Materials:** This cross-sectional observational study was conducted at the Department of Obstetrics and Gynecology, Shaheed Suhrawardy Medical College Hospital, Dhaka, Bangladesh, from July 2024 to June 2025. A total of 100 pregnant women with ultrasonographically confirmed placenta previa were enrolled in this study. Data on demographic and obstetric characteristics, maternal and neonatal outcomes were collected. Statistical analysis was performed using SPSS version 25.0. **Results:** Most participants were aged 31–40 years (53%). A history of ≥ 2 cesarean sections was present in 45% of the patients. Complete placenta previa was observed in 82% of cases. Preterm delivery occurred in 65%, postpartum hemorrhage in 59% and blood transfusion was required in 76%. Peripartum hysterectomy was performed in 25% of women and was significantly associated with the placenta accreta spectrum disorder ($p < 0.001$). Low birth weight was noted in 63% of neonates and NICU admission was required in 34% of them. **Conclusion:** Placenta previa is associated with substantial fetomaternal morbidity and mortality, particularly in women with a history of cesarean delivery. Early identification of high-risk cases and multidisciplinary management are essential for optimizing patient outcomes.

Keywords: Placenta previa, peripartum hysterectomy, maternal outcome, neonatal outcome.

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INTRODUCTION

Placenta previa remains a significant obstetric complication and a leading cause of antepartum hemorrhage worldwide, contributing substantially to maternal and neonatal morbidity and mortality, particularly in low- and middle-income countries [1]. It is defined as placental implantation in the lower uterine segment, partially or completely covering the internal cervical os [2]. The global incidence of placenta previa ranges from 0.3% to 0.5% of all pregnancies, with a rising trend attributed largely to increasing cesarean delivery rates [3].

Several risk factors have been consistently associated with placenta previa including advanced maternal age, multigravida, prior cesarean section and previous abortions [4,5]. Among these, previous cesarean delivery is considered the most significant, not only increasing the risk of placenta

previa but also predisposing to placenta accreta spectrum (PAS) disorders, which markedly elevate maternal morbidity and mortality [6]. The coexistence of placenta previa and PAS significantly increases the likelihood of massive hemorrhage, peripartum hysterectomy, blood transfusion and intensive care unit admission [7].

Maternal complications associated with placenta previa include recurrent antepartum bleeding, preterm delivery, postpartum hemorrhage, hypovolemic shock and maternal death [8,9]. Neonatal outcomes are similarly affected with higher rates of prematurity, low birth weight, NICU admission and respiratory morbidity and mortality [10]. The severity of outcomes is influenced by placental location, degree of placental coverage, the presence of placental invasion and timely surgical intervention [11].

In Bangladesh and other South Asian countries, placenta previa poses a substantial public health challenge due to limited resources, delayed referrals and high rates of unplanned cesarean deliveries [1]. Although several regional studies have explored fetomaternal outcomes of placenta previa, data focusing on risk factors for severe maternal outcomes, particularly peripartum hysterectomy, remain limited [12,13]. Moreover, variations in clinical presentation and management strategies across tertiary care settings necessitate institution-specific evidence.

Understanding the local epidemiology, clinical characteristics and outcomes of placenta previa is essential for improving antenatal surveillance, optimizing delivery planning and reducing preventable morbidity and mortality. Identifying predictors of severe outcomes such as peripartum hysterectomy can facilitate early risk stratification and multidisciplinary preparedness [14].

Therefore, this study aimed to evaluate the risk factors and fetomaternal outcomes of placenta previa in a tertiary care hospital in Dhaka, Bangladesh. Particular emphasis was placed on factors related to fetomaternal morbidity and mortality and peripartum hysterectomy. The findings are expected to contribute context-specific evidence to guide clinical decision-making and improve obstetric care in similar settings.

OBJECTIVES

The objective of this study was to assess the fetomaternal outcome in cases of placenta previa managed in a tertiary care hospital and to identify the risk factors associated with adverse outcomes.

METHODS & MATERIALS

This hospital-based cross-sectional observational study was conducted at the Department of Obstetrics and Gynecology, Shaheed Suhrawardy Medical College Hospital, Dhaka, Bangladesh, from July 2024 to June 2025. The study population comprised pregnant women diagnosed with placenta previa who were admitted for delivery during the study period. A total of 100 participants were included in this study.

Selection Criteria

Inclusion Criteria:

- Pregnant women were ultrasonographically diagnosed with placenta previa
- Gestational age ≥28 weeks
- Singleton pregnancy

Exclusion Criteria:

- Placental abruption or other causes of antepartum hemorrhage
- Significant maternal medical disorder not associated with placenta previa
- Pregnancy complicated by the presents of major fetal anomalies

Data Collection Procedure

Data were collected prospectively using a structured, pretested data collection form. Upon admission, eligible participants were identified based on ultrasonographic confirmation of placenta previa. Sociodemographic data, obstetric history including prior cesarean deliveries and abortions and relevant medical comorbidities were recorded through patient interviews and a review of medical records. Clinical variables such as gestational age at first bleeding, number of bleeding episodes, placental location and type of placenta previa were documented. Intrapartum details including the timing and indication of cesarean section were recorded. Maternal outcomes such as postpartum hemorrhage, blood transfusion requirement, hypovolemic shock, ICU admission, peripartum hysterectomy and maternal mortality were noted. Neonatal outcomes including birth weight, Apgar score at five minutes, NICU admission and perinatal mortality were also recorded. All procedures adhered to the standard hospital protocols. Informed consent was obtained from each participant and confidentiality was maintained by anonymizing the data and restricting access to the research personnel only.

Statistical Analysis

Data were analyzed using SPSS version 25.0. Descriptive statistics were expressed as frequencies and percentages. Associations between risk factors and peripartum hysterectomy were analyzed using the chi-square test. A p-value <0.05 was considered statistically significant.

RESULTS

Table I presents the baseline demographic and obstetric profile of the participants. Most women were aged 31–40 years (53.0%), followed by 20–30 years (41.0%). A history of abortion was reported by 53.0% of cases. Previous cesarean delivery was common with 45.0% having two or more prior cesarean sections. Among comorbidities, anemia was present in 31.0% of participants, while diabetes mellitus was observed in 12.0%.

Table – I: Baseline Maternal and Obstetric Characteristics (n = 100)

Variable	Category	Frequency (n)	Percentage (%)
Age group (years)	20–30	41	41.0
	31–40	53	53.0
	>40	6	6.0
History of abortion	Yes	53	53.0
	No	47	47.0
Previous cesarean section	None	06	6.0
	1	30	30.0
	≥2	45	45.0
Comorbidities	Anemia	31	31.0
	Diabetes mellitus	12	12.0

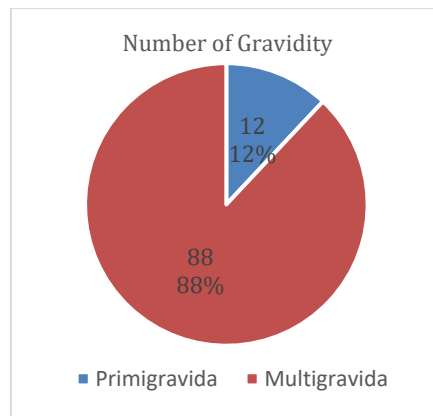


Figure – 1: Distribution of patients according to gravidity (n=100)

Figure 1 illustrates the distribution study population according to gravidity, demonstrating a predominance of multigravida.

Table II describes pregnancy-related clinical variables. First bleeding episodes occurred most frequently between 34–36

weeks of gestation (55.0%). Recurrent antenatal bleeding (≥ 2 episodes) was reported in 40.0% of cases. Placental localization was slightly more posterior (55.0%) than anterior (45.0%). Complete placenta previa constituted the majority (82.0%). Most deliveries were conducted by elective cesarean section (84.0%).

Table – II: Clinical and Pregnancy-Related Characteristics of Placenta Previa Cases

Variable	Category	Frequency (%)	Percentage (%)
Gestational age at first bleeding	<34 weeks	18	18.0
	34–36 weeks	55	55.0
	≥ 37 weeks	27	27.0
Antenatal bleeding episodes	None	21	21.0
	One episode	39	39.0
	≥ 2 episodes	40	40.0
Placental position	Anterior	45	45.0
	Posterior	55	55.0
Type of placenta previa	Low-lying	18	18.0
	Complete	82	82.0
Types of C/S	Elective	84	84.0
	Emergency	16	16.0

Table III summarizes maternal outcomes. Preterm delivery occurred in 65.0% of cases. Postpartum hemorrhage was reported in 59.0% and 25.0% required peripartum

hysterectomy. Blood transfusion was required in 76.0% of women. ICU admission was recorded in 9.0%, while maternal mortality occurred in one case (1.0%).

Table – III: Maternal Outcomes Associated with Placenta Previa

Outcome	Frequency (n)	Percentage (%)
Preterm Delivery	65	65.0
Postpartum hemorrhage	59	59.0
Peripartum hysterectomy	25	25.0
Hypovolumic shock	10	10.0
Placenta Accreta Spectrum Disorder	12	6.0
Blood transfusion required	76	76.0
ICU admission	09	9.0
Maternal mortality	01	1.0

Table IV outlines neonatal outcomes. Low birth weight (<2.5 kg) was observed in 63.0% of neonates. NICU admission was

required in 34.0%, while intrauterine growth restriction occurred in 3.0%. No perinatal mortality was recorded.

Table – IV: Neonatal Outcomes

Outcome	Frequency (%)	Percentage (%)
Birth weight <2.5 kg	63	63.0
Birth weight ≥ 2.5 kg	37	37.0
IUGR	03	3.0
NICU admission	34	34.0
Perinatal mortality	0	0.0

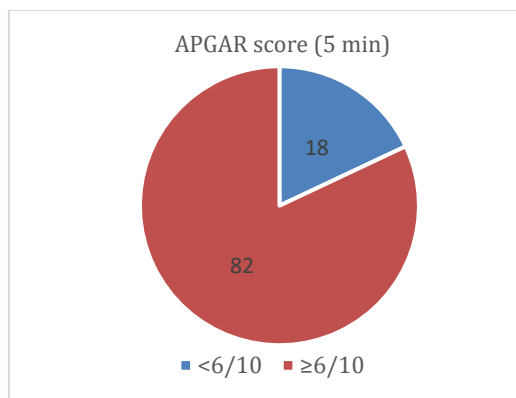


Figure – 2: Distribution of neonates according to Apgar Score at 5 min.

Figure 2 presents the distribution of Apgar scores at five minutes among neonates born to mothers with placenta previa.

Table V compares women who underwent peripartum hysterectomy with those who did not. Placenta accreta

spectrum disorder showed a strong association ($p < 0.001$). A history of two or more previous cesarean sections and complete placenta previa were not significantly associated with peripartum hysterectomy.

Table – V: Risk Factors Associated with Peripartum Hysterectomy in Placenta Previa

Risk Factors	Hysterectomy (n=25)	No Hysterectomy (n=75)	Total (n=100)	P-value
	n (%)	n (%)	n (%)	
Previous Cesarean Section ≥ 2	15 (60.0)	30 (40.0)	45 (45.0)	0.083
Placenta Accreta Spectrum Disorder	8 (32.0)	4 (5.3)	12 (12.0)	<0.001
Complete Placenta Previa	22 (88.0)	60 (80.0)	82 (82.0)	0.369

DISCUSSION

The present study provides a comprehensive evaluation of risk factors and fetomaternal outcomes among women diagnosed with placenta previa in a tertiary care hospital in Dhaka. The findings underscore the substantial maternal and neonatal morbidity and mortality associated with this condition, particularly in women with a history of prior cesarean delivery, Placenta Accreta Spectrum Disorder and complete placenta previa.

In this study, placenta previa was most commonly observed among women aged 31–40 years, reflecting the association between advancing maternal age and abnormal placentation. Similar age distributions have been reported by Shah et al. and Wasim et al., who noted increased prevalence of placenta previa among older multiparous women [1,5]. The high proportion of multigravida and previous abortions observed further supports established evidence linking repeated endometrial disruption with abnormal placental implantation [4,15].

A notable finding was the high prevalence of previous cesarean section, with nearly half of the participants having undergone two or more prior cesarean deliveries. This aligns with growing evidence that uterine scarring is a major contributor to placenta previa and its severe complications [16]. Jauniaux et al. and Zhou et al. have demonstrated a strong dose–response relationship between the number of prior cesarean sections and the risk of placenta previa and placenta accreta spectrum disorders [6,17]. The predominance of complete placenta previa in this cohort further emphasizes the role of uterine scarring in severe placental malposition.

Antepartum bleeding remains a hallmark clinical feature of placenta previa and in this study, most women experienced their first bleeding episode between 34 and 36 weeks of gestation, with a substantial proportion reporting recurrent bleeding. Comparable findings have been documented by Im

et al. and Long et al., who reported increased maternal morbidity and mortality with recurrent antenatal hemorrhage [18,19]. Repeated bleeding episodes often necessitate early delivery, contributing to the high rate of preterm birth observed in this study.

Maternal outcomes revealed a high burden of complications including postpartum hemorrhage, blood transfusion requirement and peripartum hysterectomy. The rate of postpartum hemorrhage in this study is consistent with meta-analytic data reported by Fan et al., who identified placenta previa as a major risk factor for severe obstetric hemorrhage [8]. The need for blood transfusion in more than three-quarters of patients reflects both the severity of hemorrhage and the challenges of managing placenta previa in resource-limited settings.

Peripartum hysterectomy was required in one-quarter of cases, a rate comparable to findings from tertiary centers managing high-risk obstetric populations [20]. The strong association between hysterectomy and placenta accreta spectrum disorder observed in this study is well supported by existing literature. Jauniaux et al. and Zhao et al. have consistently demonstrated that PAS is the strongest predictor of hysterectomy and maternal morbidity and mortality in placenta previa cases [6,7]. Additionally, the association between multiple prior cesarean sections and hysterectomy highlights the cumulative risk posed by repeat uterine surgery.

Neonatal outcomes in this study were characterized by high rates of low birth weight and NICU admission, though no perinatal mortality was recorded. The predominance of prematurity-related complications is consistent with prior studies indicating that neonatal morbidity and mortality in placenta previa are largely mediated by gestational age at delivery in addition to placental location [11,12]. The absence of

perinatal mortality may reflect timely obstetric intervention and the availability of neonatal intensive care services. Overall, the findings of this study reinforce the substantial fetomaternal risks associated with placenta previa, particularly in women with prior cesarean deliveries and PAS disorders. Early identification of high-risk cases, meticulous antenatal surveillance and multidisciplinary delivery planning remain essential strategies for reducing adverse outcomes in such settings.

LIMITATIONS & RECOMMENDATIONS

The single-center design and limited sample size may restrict the generalizability of the findings. Larger multicenter studies are required to validate these findings. Therefore, promoting judicious use of primary cesarean delivery, careful counselling of women with previous cesarean sections regarding associated risks and strengthening antenatal screening for early detection of placenta previa with placenta accreta spectrum disorder are essential preventive strategies.

CONCLUSION

Placenta previa is associated with considerable fetomaternal morbidity and mortality, particularly in women with a history of cesarean deliveries and placenta accreta spectrum disorders. High rates of hemorrhage, blood transfusion, preterm delivery and peripartum hysterectomy highlight the need for early risk stratification, vigilant antenatal care and planned delivery in tertiary facilities to improve the patient outcomes.

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Conflicts of interest: There are no conflicts of interest.

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