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# Association of Placenta Praevia with Previous Cesarean Section in Rajshahi Medical College Hospital

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**Abstract** **Original Research Article**

***Background:*** Placenta praevia is a relatively common condition and a leading cause of antepartum hemorrhage (APH). Cesarean section is a significant risk factor for placenta previa, and failure to recognize and manage this condition's complications has led to avoidable maternal deaths, particularly in developing countries like Bangladesh, where maternal and perinatal mortality remains high due to placenta praevia-related complications. ***Objective****:* This study aimed to investigate the association between placenta praevia and previous cesarean sections, identify other potential precipitating factors, and assess the maternal and newborn outcomes of cases with placenta praevia. ***Method:*** A descriptive cross-sectional study was conducted at Rajshahi Medical College Hospital from January 2021 to June 2021. Participants meeting the inclusion criteria were selected from the Gynecology and Obstetrics Department. Informed written consent was obtained from all participants, and data were collected using a standardized questionnaire. ***Results:*** The study found that placenta praevia was more prevalent in women aged 30-39 years (57%) and those with a gravidity of four (42%). Placenta praevia was five times more common in patients with >2 previous cesarean sections (67%) compared to those with <2 previous cesarean sections (33%). Statistical analysis revealed significant differences. Antepartum hemorrhage was the most common obstetric complication (70%), and perinatal mortality was 20%. ***Conclusion:*** This study underscores a strong association between cesarean section and the development of placenta praevia. To reduce the risk, primary cesarean deliveries should be minimized, and vaginal birth should be advocated for women with a history of cesarean delivery. Pregnant women with prior cesarean deliveries should be considered at increased risk for subsequent placenta praevia development, with potential adverse fetomaternal outcomes.

**Keywords:** Placenta praevia, cesarean section, antepartum hemorrhage, maternal mortality, perinatal mortality.



## INTRODUCTION

Placenta praevia, characterized by the abnormal positioning of the placenta within the uterine cavity, either partially or fully obstructing the internal cervical ostium, represents a significant obstetric concern. It ranks among the foremost causes of third-trimester vaginal bleeding and carries the potential for serious maternal and perinatal morbidity and mortality [1]. The reported incidence of placenta praevia among hospital deliveries ranges from 0.28% to 2%. Notably, this condition disproportionately affects multiparous women, with approximately 80% of cases occurring in this population [2]. Moreover, a compelling association exists between placenta praevia and previous cesarean sections, raising concerns amid the increasing global rates of cesarean deliveries [3].

The link between placenta praevia and prior cesarean sections has been extensively studied, revealing a threefold increased risk of placenta praevia in subsequent pregnancies among women with a history of at least one cesarean section. The incidence of placenta praevia further rises to 4.4 per 1000 second birth pregnancies following a previous cesarean, compared to 2.7 per 1000 second birth pregnancies after vaginal delivery [4]. Additionally, the risk of placenta praevia in the second pregnancy increases by 47% when the first live birth is delivered via cesarean section.

While the precise etiology of placenta praevia remains elusive, several predisposing factors have been identified, emphasizing the multifactorial nature of this condition. These factors encompass advancing maternal age, multiparity, uterine scarring due to prior cesarean deliveries or myomectomy, and poorly vascularized endometrial tissue in the uterine corpus. Additional factors include multiple gestations, anemia, closely spaced pregnancies, uterine tumors, endometriosis, male fetal gender, a large placenta, abnormal forms of placentation such as succenturiate lobes or diffuse placentas, abnormal fetal presentation, and congenital malformations [5].

The association between placenta praevia and prior cesarean sections assumes particular clinical significance in the context of rising cesarean section rates worldwide. Patients with a history of cesarean sections face a fourfold increased probability of developing placenta praevia (5). Furthermore, the risk of complications such as placenta accreta and the requirement for cesarean hysterectomy is significantly elevated in patients with both prior cesarean sections and placenta praevia (5). For instance, a substantial 24% of patients with placenta praevia and one previous cesarean section experience placenta accreta, with this incidence rising to 67% for patients with placenta praevia and four prior cesarean deliveries, particularly when the placenta implants anteriorly over the cesarean scar [5].

The potential maternal and neonatal morbidity and mortality associated with placenta praevia, especially in conjunction with prior cesarean sections, have elicited significant concern among healthcare practitioners. The failure to promptly recognize this condition and effectively manage its associated complications, notably massive obstetric hemorrhage, has contributed to preventable maternal fatalities [1]. Despite advances in transfusion techniques and surgical interventions, abnormal placentation remains a formidable obstetric challenge, resulting in substantial maternal and fetal morbidity and mortality.

This concern is further amplified by the escalating global rates of cesarean deliveries, a trend mirrored in many countries, including our own. Placenta praevia stemming from previous cesarean sections introduces a plethora of complications, including retained placenta, postpartum hemorrhage (PPH), and shock. Consequently, it is imperative that pregnant women with a history of cesarean deliveries are recognized as being at heightened risk for the subsequent development of placenta praevia, underscoring the necessity for early detection and appropriate management [6].

**Objectives**

**General Objectives:**

- To evaluate the association of placenta praevia in previous cesarean section.

**Specific Objectives:**

- To find out the possible factors which my precipitate placenta praevia.
- To evaluate the relation of placenta praevia with previous caesaman section.
- To find out the maternal & newborn outcome of the patients with placenta praevia.

## MATERIALS AND METHODS

This study adopted a descriptive cross-sectional design to examine the characteristics of placenta praevia cases. The research was conducted at the Department of Obstetrics & Gynaecology, Rajshahi Medical College & Hospital (RMCH), spanning a duration of six months from January 2021 to June 2021. The study encompassed pregnant individuals with pregnancies lasting more than 28 weeks, and data collection continued until one week after delivery.

**Inclusion Criteria**

- Diagnosis of placenta praevia.
- Gestational age exceeding 28 weeks.

**Exclusion Criteria**

- Antepartum bleeding attributed to other causes such as abruptio placenta.
- Severe pre-eclamptic toxaemia, eclampsia, cardiac disease, diabetes mellitus, chronic hypertension, or renal disease.
- Coagulopathy as indicated by abnormalities in bleeding time, clotting time, or platelet count.
- Conditions such as vasa praevia or local cervical lesions (polyps, carcinoma), or circumvallate placenta.

**Procedure of Data Collection**

The process of data collection involved the following steps:

- Interviewing the patients and their attendants to gather relevant medical history and clinical information.
- Conducting a comprehensive clinical examination to assess the patients' conditions.
- Reviewing investigation reports, which may include laboratory test results and imaging studies.

**Data Analysis**

Data analysis was carried out using Statistical Package for the Social Sciences (SPSS) version 20.0 for Windows. Categorical variables were expressed as proportions (percentages), while numerical data were presented as means (standard deviation) and ranges. Various tables were constructed to organize and present the research findings.

**Ethical Considerations**

In adherence to the Helsinki Declaration for Medical Research Involving Human Subjects from 1964,

the study adhered to ethical principles. Study participants were verbally informed about the study's design, its objectives, and their right to withdraw from the study at any point, for any reason, without consequence. Only individuals who provided informed consent to participate in the study were included as study subjects, ensuring ethical conduct throughout the research process.

## RESULTS

The study demonstrates a strong association between placenta praevia and previous cesarean sections. It also highlights the significant maternal and perinatal morbidity associated with placenta praevia, especially in cases with multiple previous cesarean sections. These results emphasize the importance of careful management and monitoring of pregnant women with a history of cesarean sections to reduce the risks associated with placenta praevia. The study found that the majority of patients with placenta praevia fell within the 30-39 age group (57%).

**Table 1: Distribution of age of the patients**

| Age Group | Number of Patients | Percentage |
|---|---|---|
| 30-39 years | 57 | 57% |
| 20-29 years | 20 | 20% |
| Above 40 years | 13 | 13% |
| Below 20 years | 10 | 10% |

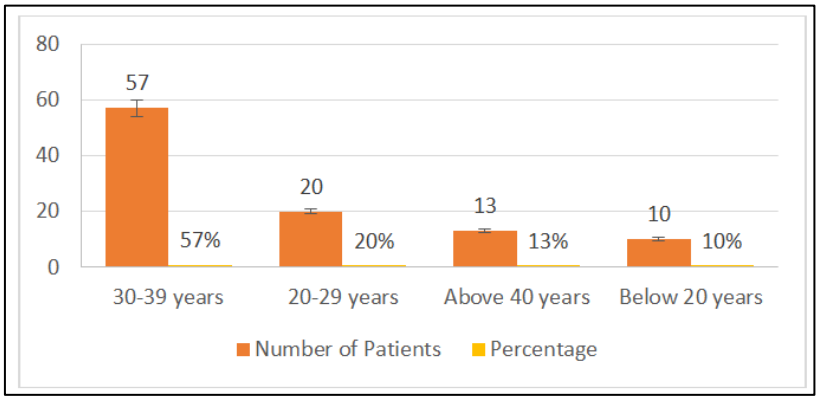


**Figure 1: Age Group Distribution of Study Participants**

The majority of patients (57%) in the study were in the age group of 30-39 years, followed by 20% in the age group of 20-29 years. A smaller percentage (13%) were above 40 years, and 10% were below 20 years. This suggests that placenta praevia affects a wide range of age groups, but it is more common in women aged 30-39 years.

**Table 2: Relation of Placenta Praevia with Number of Previous Cesarean Sections (n=30)**

| Gravidity | Number of Patients | Percentage |
|---|---|---|
| Four | 12 | 42% |
| Three | 10 | 35% |
| Two | 8 | 23% |

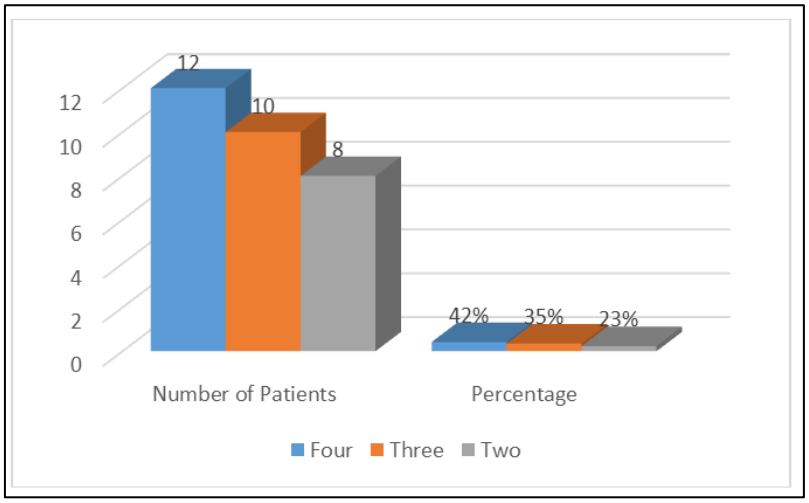


**Figure 2: Relation of gravidity among study cases**

Gravidity refers to the number of pregnancies a woman has had. In this study, most patients were in their fourth pregnancy (42%), followed by third pregnancies (35%), and second pregnancies (23%). This indicates that women with higher gravidity are more susceptible to placenta praevia.

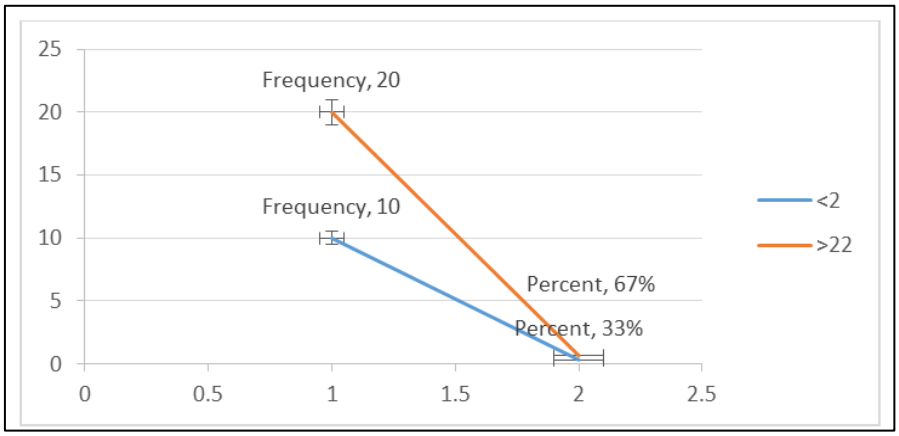


**Figure 3: Showing placenta praevia were more common in patients with ≥22 previous caesarean (67%) than patients with <2 previous caesarean (33%)**

The study found that placenta praevia was more common in patients with more than two previous cesarean sections (67%) compared to those with fewer than two previous cesarean sections (33%). This suggests a positive association between previous cesarean sections and the development of placenta praevia.

**Table 3: Maternal outcome of study cases (n=30)**

| Variables | Frequency | Percent |
|---|---|---|
| APH | 21 | 70% |
| Premature labour | 15 | 50% |
| PPH | 12 | 40% |
| Morbid adhesion of placenta | 05 | 16.67% |
| Need of hysterectomy | 11 | 36.67% |
| Wound infection | 03 | 10% |
| ARF | 01 | 03.33% |
| Mortality | 02 | 06,67% |

Maternal outcomes were assessed in this study. The most common maternal outcome was antepartum hemorrhage (APH) at 70%, followed by premature labor (50%), postpartum hemorrhage (40%), and morbid adhesion of the placenta (16.67%). Hysterectomy was required in 36.67% of cases. These findings emphasize the significant maternal health risks associated with placenta praevia.

**Table 4: Requirement of unit of blood transfusion among study cases (n=30)**

| Unit of blood | Number of patients | Percent |
|---|---|---|
| 1-3 | 06 | 20% |
| 4-6 | 17 | 56.67% |
| >6 | 07 | 23.33% |

Blood transfusion was necessary in many cases. The majority of patients (56.67%) needed 4-6 units of blood transfusion, while 23.33% required more than 6 units. This highlights the significant blood loss associated with placenta praevia.

**Table 5: Perinatal outcome of study cases (n=30)**

| Variables | Frequency | Percent |
|---|---|---|
| LBW | 20 | 66.67% |
| Prematurity | 14 | 46.67% |
| Birth asphyxia | 03 | 10% |
| IUGR | 05 | 16.67% |
| Congenital anomaly | 01 | 04.76% |
| Perinatal mortality | 06 | 20% |

Perinatal outcomes were also assessed. Low birth weight (LBW) was the most common outcome (66.67%), followed by prematurity (46.67%). Perinatal mortality was observed in 20% of cases. These findings underscore the risks to fetal health associated with placenta praevia.

## DISCUSSION

The results of this study reveal several noteworthy aspects concerning placenta praevia. First, the study confirmed that advanced maternal age is a significant risk factor for placenta praevia, with the majority of patients falling into the 30-39 years age group. This observation aligns with previous research;

**Advanced Maternal Age and Gravidity**

Consistent with prior research by Cieminski *et al*., this study demonstrated that advanced maternal age is significantly associated with an increased risk of placenta praevia [1]. Placenta praevia was notably more prevalent in women aged 30-39 years, further supporting the idea that older maternal age is a risk factor for this condition. Additionally, the study found that placenta praevia is more common in multiparous women, with the majority being in their fourth gravidity, in line with previous studies indicating that higher parity is linked to an increased risk of placenta praevia [7].

**Association with Previous Cesarean Sections**

The study's results align with existing literature on the association between placenta praevia and previous cesarean sections. Placenta praevia was significantly more common in patients with a history of previous cesarean sections, echoing findings from studies by Parvin, Zebunnessa *et al*. [8]. The risk of placenta praevia increased with an increasing number of previous cesarean sections, emphasizing the importance of minimizing unnecessary cesarean deliveries and promoting vaginal births after cesarean (VBAC) to reduce the risk of placenta praevia [9]. These findings underscore the critical role of careful consideration in choosing the mode of delivery for pregnant women with a history of cesarean sections.

**Obstetric Variables and Maternal Complications**

Antepartum hemorrhage (APH) was the most common obstetric variable observed in the study, consistent with findings by Zamani *et al*., [10]. APH is a well-recognized complication of placenta praevia and is a cause of substantial maternal morbidity and fetal distress. The study also revealed a range of maternal complications associated with placenta praevia, including postpartum hemorrhage (PPH), morbid placental adhesion, and the need for hysterectomy. These complications highlight the critical nature of early diagnosis and appropriate management of placenta praevia to reduce the risk of adverse outcomes for both mother and baby [11].

**Blood Transfusion and Maternal Mortality**

Notably, a high percentage of patients in this study required blood transfusions, with a substantial portion needing more than six units of blood. This contrasts with findings from a study by Crane et al., possibly indicating that many patients in the current study were already anemic upon admission. Maternal mortality in the study was reported at 6.67%, with two deaths recorded. One death was attributed to delayed hospital admission, emphasizing the importance of timely intervention. The other death resulted from the development of acute renal failure postoperatively, underscoring the significance of postoperative care and monitoring for complications [12].

**Perinatal Outcomes**

The study reported a high incidence of low birth weight (LBW) and prematurity among neonates born to mothers with placenta praevia. These findings are in line with observations made by Onwere, Chidimma *et al*., [13]. Perinatal mortality in this study was reported at 20%, which differs from the higher rate reported by Zamani *et al*., [10]. The lower perinatal mortality rate observed in the current study may be attributed to better neonatal intensive care facilities at the institution, highlighting the importance of access to high-quality neonatal care in managing the consequences of placenta praevia.

In study, Placenta praevia is a catastrophic event with increased maternal and perinatal mortality and accounts for one third of all cases of APH. If is relatively a common condition and maternal and foetal outcome improve with better obstetrical management. Majority of the patients in our study were 30-39 years (57%), 20% cases were found 20-29 years, 13% were above 40 years, 10% were below 20 years. Most of the patients had fourth gravida (42%) followed by third gravida (35%), second gravida (23%). showed placenta praevia were more common in patients with previous c-section (67%) than patients with <2 previous caesarean (33%).

In the current study showed among obstetric variables, APH was most common which was 70%. Regarding maternal complications in this study showed that PPH was 40%, morbid adhesion of placenta was 16.67%, need of hysterectomy was 36.67%. Among perinatal outcome, LEIW (66.67%) and prematurity (46.67%). This study showed perinatal mortality was 20%. The findings emphasize the need to minimize unnecessary cesarean sections and promote vaginal birth after cesarean (VBAC) to reduce the risk of placenta praevia. Additionally, improved antenatal care and access to healthcare facilities are crucial to addressing the challenges posed by placenta praevia, particularly in developing countries like Bangladesh.

## CONCLUSION

This study underscores the heightened risk of placenta praevia associated with previous cesarean section deliveries, particularly with increasing numbers of cesareans. Timely diagnosis and management are crucial to minimize maternal morbidity and mortality. Addressing access to antenatal care and promoting vaginal births after cesareans can help mitigate these risks and improve outcomes.

## RECOMMENDATIONS

This prospective observational hospital-based study was carried only on 30 cases due to time limit and financial constraint. The study subjects were selected only who were admitted in the department of obstetrics and Gynaecology in RMCH and found maternal and

perinatal mortality were 6.67% and 20% respectively due to placenta praevia. So the observed result of this study might not reflect the expected real outcome. Therefore, further prospective studies with a large sample should be carried out for comprehensive evaluation of placenta praevia on maternal and perinatal outcome.

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## REFERENCES

1. Barrett, J. M., Boehm, F. H., & Killam, A. P. (1981). Induced abortion: a risk factor for placenta previa. *American Journal of Obstetrics and Gynecology*, *141*(7), 769-772.
2. Cieminski, A., & Długołecki, F. (2005). Relationship between placenta previa and maternal age, parity and prior caesarean deliveries. *Ginekologia polska*, *76*(4), 284-289.
3. Silver, R. M., Landon, M. B., Rouse, D. J., Leveno, K. J., Spong, C. Y., Thom, E. A., ... & National Institute of Child Health and Human Development Maternal–Fetal Medicine Units Network. (2006). Maternal morbidity associated with multiple repeat cesarean deliveries. *Obstetrics & Gynecology*, *107*(6), 1226-1232.
4. Hemminki, E., & Meriläinenb, J. (1996). Long-term effects of cesarean sections: ectopic pregnancies and placental problems. *American journal of obstetrics and gynecology*, *174*(5), 1569-1574.
5. Ananth, C. V., Smulian, J. C., & Vintzileos, A. M. (1997). The association of placenta previa with history of cesarean delivery and abortion: a metaanalysis. *American journal of obstetrics and gynecology*, *177*(5), 1071-1078.
6. Fitzpatrick, K. E., Sellers, S., Spark, P., Kurinczuk, J. J., Brocklehurst, P., & Knight, M. (2012). Incidence and risk factors for placenta accreta/increta/percreta in the UK: a national case-control study. *PloS one*, *7*(12), e52893.
7. Sheiner, E., Shoham-Vardi, I., Hallak, M., Hershkowitz, R., Katz, M., & Mazor, M. (2001). Placenta previa: obstetric risk factors and pregnancy outcome. *Journal of Maternal-Fetal Medicine*, *10*(6), 414-419.
8. Parvin, Z., Das, S., Naher, L., Sarkar, S. K., & Fatema, K. (2017). Relation of placenta praevia with previous lower segment caesarean section (lucs) in our clinical practice. *Faridpur Medical College Journal*, *12*(2), 75-77.
9. American College of Obstetricians and Gynecologists. (1999). Vaginal birth after previous cesarean delivery. *ACOG Practice Patterns Bulletin*, *5*, 1-8.
10. Zamani, N. (1998). Diagnosis, management and outcome of placenta previa. *Mother Child*, *36*(1), 60-6.
11. Allahdin, S., Voigt, S., & Htwe, T. T. (2011). Management of placenta praevia and accreta. *Journal of Obstetrics and Gynaecology*, *31*(1), 1-6.
12. Crane, J. M., Van den Hof, M. C., Dodds, L., Armson, B. A., & Liston, R. (2000). Maternal complications with placenta previa. *American journal of perinatology*, *17*(02), 101-106.
13. Onwere, C., Gurol-Urganci, I., Cromwell, D. A., Mahmood, T. A., Templeton, A., & van der Meulen, J. H. (2011). Maternal morbidity associated with placenta praevia among women who had elective caesarean section. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *159*(1), 62-66.