Open Access

ISSN: 2617-0817 E-ISSN: 2789-5912

Original Article

Pregnancy Outcomes in Ultrasound-diagnosed Placenta Previa Cases with Prior Cesarean - A Tertiary Hospital Study

DOI: dx.doi.org

Rukshana Khan[1*], Natia Rahnuma[2], Nujhat Sharmin Urmi[3], Tahmina Sharmin[4], Mt Yeasmin Akhter[5], Nila Ahmed[6], Anshua Das Trisha[7]

Received: 24 Jul 2024
Accepted: 26 Dec 2024
Published: 28 Dec 2024

Published by:
Sher-E-Bangla Medical College, Barishal, Bangladesh

*Corresponding Author

ABSTRACT

Introduction: *Placenta previa, where the placenta implants near or over the cervical opening, can cause complications like maternal hemorrhage and adverse neonatal outcomes. Prior cesarean delivery significantly increases its risk, emphasizing the importance of careful antenatal monitoring and timely management. This study aimed to evaluate pregnancy outcomes in cases of ultrasound-diagnosed placenta previa with a history of cesarean delivery.* ***Methods and materials:*** *A cross-sectional, observational study was conducted from January 2020 to December 2021 in the Department of Obstetrics & Gynaecology of ABC Hospital, Dhaka, Bangladesh. A total of 47 women with ultrasound-diagnosed placenta previa with a history of cesarean delivery were enrolled purposively. Data were analyzed by using MS Office tools.* ***Results:*** *Among 47 women with ultrasound-diagnosed placenta previa and prior cesarean delivery, 89% delivered via cesarean section. Postpartum hemorrhage occurred in 31%, and placenta accreta was identified in 25%, leading to hysterectomy in 6%. Neonatal outcomes showed 43% low birth weight, with 6% neonatal mortality, primarily due to prematurity and placental insufficiency.* ***Conclusion:*** *Placenta previa in patients with a history of cesarean delivery poses significant risks to maternal and neonatal health. Early diagnosis and multidisciplinary management are essential to optimize outcomes.*

Keywords: *Placenta previa, Cesarean delivery, Maternal complications, Neonatal outcomes, Postpartum hemorrhage*

(The Planet 2024; 8(1): 169-172)

1. *Assistant Professor, Department of Obstetrics & Gynaecology, Jalalabad Ragib-Rabeya Medical College and Hospital, Sylhet, Bangladesh*
2. *Associate Professor, Department of Obstetrics & Gynaecology, Jalalabad Ragib-Rabeya Medical College and Hospital, Sylhet, Bangladesh*
3. *Assistant Professor, Department of Obstetrics & Gynaecology, Jalalabad Ragib-Rabeya Medical College and Hospital, Sylhet, Bangladesh*
4. *Registrar, Department of Obstetrics & Gynaecology, Jalalabad Ragib-Rabeya Medical College and Hospital, Sylhet, Bangladesh*
5. *Registrar, Department of Obstetrics & Gynaecology, Jalalabad Ragib-Rabeya Medical College and Hospital, Sylhet, Bangladesh*
6. *Registrar, Department of Obstetrics & Gynaecology, Jalalabad Ragib-Rabeya Medical College and Hospital, Sylhet, Bangladesh*
7. *Medical Officer, Department of Obstetrics & Gynaecology, Jalalabad Ragib-Rabeya Medical College and Hospital, Sylhet, Bangladesh*

INTRODUCTION

Placenta previa is a serious obstetric complication characterized by the abnormal implantation of the placenta in the lower uterine segment, which can partially or completely cover the internal os. It is one of the leading causes of antepartum hemorrhage and has been consistently linked with adverse pregnancy outcomes, including preterm birth, fetal growth restriction, and significant maternal morbidity and mortality [1,2]. The management of placenta previa typically requires cesarean delivery, with the timing and approach depending on the degree of placental invasion and the presence of associated complications such as placenta accreta. Cesarean delivery, however, carries an increased risk of hemorrhage, requiring careful planning and coordination between obstetricians and anesthesiologists [3,4]. Placenta accreta, a condition in which the placenta adheres abnormally to the uterine wall, often complicates pregnancies with placenta previa. This condition occurs when the placenta invades the uterine wall deeper than usual, sometimes attaching to the myometrium or even the serosa [5]. The incidence of placenta accreta has increased in recent years, largely due to the rising rate of cesarean deliveries. The risk of this condition is higher in women with a history of multiple cesarean sections, advanced maternal age, or previous uterine surgeries. Placenta accreta significantly increases the likelihood of massive hemorrhage during delivery, leading to potentially life-threatening complications for both the mother and the infant [6]. In cases where placenta previa and accreta coexist, the risk of maternal and fetal morbidity is compound. The placenta's abnormal implantation can cause massive bleeding during labor and delivery, and the cesarean delivery required for management can lead to uterine rupture or injury [7]. Furthermore, women with placenta accreta often require a hysterectomy to control the bleeding, especially when the placenta cannot be separated from the uterine wall. This surgical intervention is associated with a higher incidence of postoperative complications, such as infection and prolonged hospitalization, and has long-term implications for fertility

ISSN: 2617-0817 E-ISSN: 2789-5912

[8,9]. Perinatal mortality rates are notably higher in pregnancies complicated by placenta previa, with the fetus at risk of preterm birth, low birth weight, and hypoxia due to placental insufficiency. The presence of placenta accreta further exacerbates these risks, leading to an increased likelihood of stillbirth or neonatal death. Studies have demonstrated that the combination of placenta previa and accreta contributes significantly to perinatal mortality, particularly in the context of delayed diagnosis and insufficient management strategies [10]. Timely and accurate diagnosis is critical, and ultrasonographic evaluation plays a pivotal role in identifying these conditions before delivery. Magnetic resonance imaging (MRI) is also utilized in certain cases to assess the extent of placental invasion and plan for the most appropriate intervention [11]. Recent advances in obstetric care have focused on improving outcomes for women with placenta previa and placenta accreta. Early prenatal screening, including ultrasound and MRI, allows for identifying high-risk pregnancies, enabling clinicians to develop individualized management plans that minimize complications. Multidisciplinary teams, including obstetricians, radiologists, anesthesiologists, and neonatologists, are essential for optimizing care and ensuring the best possible outcomes for both the mother and the infant. Despite these advancements, placenta previa with concomitant placenta accreta remains a significant challenge in obstetric practice, requiring careful monitoring and intervention to reduce maternal and fetal risks [12]. While placenta previa and placenta accreta are well-documented conditions, their coexistence presents unique challenges. Advances in diagnostic techniques and surgical management have improved survival rates, but careful monitoring and timely intervention remain crucial in preventing maternal and perinatal mortality.

METHODS & MATERIALS

This study was a cross-sectional, observational study conducted from January 2020 to December 2021 in the Department of Obstetrics & Gynaecology at ABC Hospital, Dhaka, Bangladesh. All participants provided informed consent before inclusion. A total of 47 women were purposively enrolled based on predefined inclusion criteria: (1) ultrasound-diagnosed placenta previa, (2) history of at least one prior cesarean section, and (3) willingness to participate. Exclusion criteria included: (1) multiple pregnancies, (2) other placental pathologies, (3) contraindications for cesarean delivery, and (4) significant comorbidities like severe preeclampsia or uncontrolled diabetes. These criteria helped ensure a homogenous group at risk for placenta accreta, which is common in women with a history of cesarean section. Demographic data, including age, parity, gestational age, and cesarean history, were recorded. Clinical data covered placenta previa type (complete, partial, low-lying), surgical history, presence of placental accreta, complications, and mode of delivery. Ultrasound findings were reviewed to assess placental coverage and associated conditions. Key outcome measures included maternal complications (postpartum hemorrhage, hysterectomy, uterine rupture), neonatal outcomes (birth weight, Apgar scores, perinatal mortality), and delivery mode (planned vs. emergency cesarean). The role of antenatal diagnosis in planning delivery was also analyzed. Follow-up was conducted until delivery, with data collection throughout the pregnancy. Data were analyzed using Microsoft Excel, with descriptive statistics calculated for demographic and clinical variables.

RESULTS

A total of 47 women with ultrasound-diagnosed placenta previa and a history of cesarean delivery were enrolled in the study. The demographic and clinical characteristics of the participants are summarized in Table 1. Ultrasound was the primary diagnostic tool for diagnosing placenta previa, with 100% sensitivity in detecting the condition. The role of early antenatal diagnosis in planning delivery is reflected in Figure 1, which shows that most women (70%) were diagnosed with placenta previa by the third trimester, allowing for timely planning of cesarean section and minimizing complications. The mean age of the participants was 32.5 ± 5.3 years, with the majority of women being multiparous (65%) and having a history of two or more cesarean deliveries (68%). The gestational age at the time of diagnosis of placenta previa ranged from 20 to 34 weeks, with the majority (70%) diagnosed in the third trimester. Among the 47 participants, 42 (89%) delivered by cesarean section, while 5 (11%) experienced spontaneous labor with cesarean intervention. Table 2 outlines the maternal complications observed in the study. Postpartum hemorrhage occurred in 15 (31%) women, with 5 (11%) requiring blood transfusion. Uterine rupture was not observed, but hysterectomy was required in 3 (6%) cases due to massive hemorrhage associated with placenta accreta. The incidence of placenta accreta was found in 12 (25%) women, as indicated by ultrasound and confirmed in the perioperative period. Neonatal outcomes are shown in Table 3. The average birth weight was 2,350 ± 400 grams, with 20 (43%) of the neonates being classified as low birth weight (<2,500 grams). Neonatal mortality was observed in 3 (6%) cases, all associated with prematurity and placental insufficiency. Apgar scores at 1 and 5 minutes were lower in neonates born to mothers with placenta accreta compared to those with simple placenta previa ($p < 0.05$).

Table – I: Demographic and Clinical Characteristics of the Participants

Variable	%	Mean ± SD
Age (years)		32.5 ± 5.3
Parity		
1	16 (34%)	
≥2	31 (66%)	
Previous Cesarean Sections		
1	15 (32%)	
≥2	32 (68%)	
GA (weeks)		30.2 ± 4.6
Type of Placenta Previa		
Complete	28 (59%)	
Partial	14 (30%)	
Low-lying	5 (11%)	

GA: Gestational Age

ISSN: 2617-0817 E-ISSN: 2789-5912

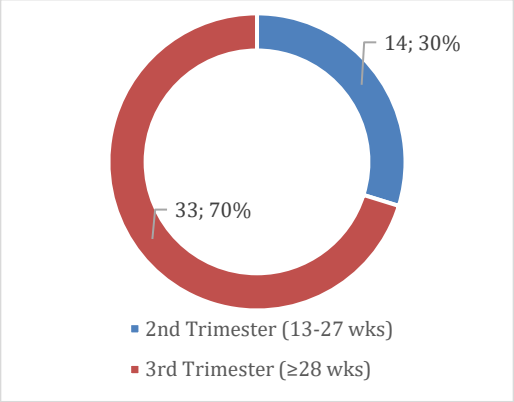

Figure – 1: Timing of Diagnosis of Placenta Previa

Table – II: Maternal Outcomes

Maternal Outcome	Frequency (%)
Mode of Delivery	
Cesarean Section	42 (89%)
SLCI	5 (11%)
Other Outcomes	
Postpartum Hemorrhage	15 (31%)
Blood Transfusion	5 (11%)
Hysterectomy	3 (6%)
Placenta Accreta	12 (25%)

SLCI: Spontaneous Labor with Cesarean Intervention

Table – III: Neonatal Outcomes

Neonatal Outcome	%	Mean ± SD
Birth Weight (gm)		2,350 ± 400
LBW (<2,500g)	20 (43%)	
Apgar Score (1 min)		6.3 ± 2.1
Apgar Score (5 min)		8.1 ± 1.5
Neonatal Mortality	3 (6%)	

LBW: Low Birth Weight

DISCUSSION

In this study, 47 women with ultrasound-diagnosed placenta previa and a history of cesarean delivery were evaluated. The findings suggest that early detection of placenta previa, predominantly in the third trimester (70%), allowed for appropriate management and timely cesarean section planning. This is in line with other studies that emphasize the role of early antenatal diagnosis in reducing complications and improving maternal and neonatal outcomes [13,14]. The mean age of the participants was 32.5 years, and most women (65%) were multiparous with two or more cesarean sections. This is consistent with previous studies, which have highlighted that a history of cesarean delivery is a significant risk factor for developing placenta previa in subsequent pregnancies [15,16]. The association between multiple cesarean deliveries and the increased risk of abnormal placentation, including placenta previa and placenta accreta, has been well documented in the literature [17]. Regarding delivery outcomes, 89% of participants in this study delivered by cesarean section, which is comparable to other studies on placenta previa, where cesarean section remains the preferred mode of delivery due to the associated risks of vaginal birth, including severe bleeding and uterine rupture [18,19]. In 11% of the cases, spontaneous labor was followed by cesarean intervention, which underscores the necessity of cesarean delivery in placenta previa, even when spontaneous labor occurs, due to the potential for uncontrolled hemorrhage [20]. The maternal complications observed in this cohort were consistent with existing literature. Postpartum hemorrhage occurred in 31% of women, which is within the range reported in other studies on placenta previa, where hemorrhage is one of the most common and serious complications [21,22]. The need for blood transfusion in 11% of cases highlights the severity of the hemorrhage in some women with placenta previa, particularly those with placenta accreta. Placenta accreta was identified in 25% of participants, which is notably higher than the general population rate of approximately 3-5%. This elevated incidence is consistent with other studies, which have found that a history of cesarean delivery significantly increases the risk of placenta accreta [23,24]. The requirement for hysterectomy in 6% of cases due to massive hemorrhage associated with placenta accreta further supports the need for careful monitoring and planning in this high-risk group. The neonatal outcomes observed in this study were also impacted by the complications associated with placenta previa. The average birth weight of 2,350 grams was lower than expected, with 43% of neonates classified as low birth weight, which is consistent with findings from other studies that have shown lower birth weights and increased rates of prematurity in pregnancies complicated by placenta previa and placental insufficiency [25,26]. Neonatal mortality in this cohort was 6%, all of which were related to prematurity and placental insufficiency. This rate is consistent with other studies, which report higher neonatal mortality in cases of placenta previa with associated placental pathologies [27]. Additionally, the Apgar scores at 1 and 5 minutes were significantly lower in neonates born to mothers with placenta accreta compared to those with simple placenta previa, reflecting the compromised neonatal health in these pregnancies. Other studies have also reported poorer neonatal outcomes in cases of placenta accreta, with increased risks of neonatal asphyxia and other complications due to impaired placental function [18,28].

Limitation of the study:

This study has several limitations. It was conducted at a single tertiary hospital, limiting generalizability. The sample size was small, and the study design was cross-sectional, which does not allow for establishing causal relationships. Additionally, we did not assess long-term maternal or neonatal outcomes beyond the immediate postnatal period.

CONCLUSION & RECOMMENDATION

This study reinforces the importance of early diagnosis and careful management of pregnancies complicated by placenta previa and a history of cesarean delivery. The high incidence of placenta accreta and associated complications, including postpartum hemorrhage and hysterectomy, highlights the need for close monitoring and planning for potential

ISSN: 2617-0817 E-ISSN: 2789-5912

complications in these high-risk pregnancies. The findings also emphasize the importance of timely cesarean delivery to mitigate maternal and neonatal risks, particularly in the presence of abnormal placental attachment.

Funding: No funding sources.
Conflict of interest: None declared.

REFERENCES

1. *Mufti NA. Application of Advanced MRI to Fetal Medicine and Surgery. University of London, University College London (United Kingdom); 2023.*
2. *Jauniaux E, Bhide A. Prenatal ultrasound diagnosis and outcome of placenta previa accreta after cesarean delivery: a systematic review and meta-analysis. American journal of obstetrics and gynecology. 2017 Jul 1;217(1):27-36.*
3. *Belfort MA, Publications Committee, Society for Maternal-Fetal Medicine. Placenta accreta. American journal of obstetrics and gynecology. 2010 Nov 1;203(5):430-9.*
4. *Petersen, Sindre Hoff. "Complications in pregnancies after assisted reproduction." (2023).*
5. *O'Brien JM, Barton JR, Donaldson ES. The management of placenta percreta: conservative and operative strategies. American journal of obstetrics and gynecology. 1996 Dec 1;175(6):1632-8.*
6. *Tikkanen M. Placental abruption: epidemiology, risk factors and consequences. Acta obstetricia et gynecologica Scandinavica. 2011 Feb;90(2):140-9.*
7. *Silver RM. Abnormal placentation: placenta previa, vasa previa, and placenta accreta. Obstetrics & Gynecology. 2015 Sep 1;126(3):654-68.*
8. *Clark, Steven L., et al. "Maternal mortality in the United States: predictability and the impact of protocols on fatal postcesarean pulmonary embolism and hypertension-related intracranial hemorrhage." American journal of obstetrics and gynecology 211.1 (2014): 32-e1.*
9. *Han X, Guo Z, Yang X, Yang H, Ma J. Association of placenta previa with severe maternal morbidity among patients with placenta accreta spectrum disorder. JAMA network open. 2022 Aug 1;5(8):e2228002-.*
10. *Gizzo S, Noventa M, Vitagliano A, Quaranta M, Di Giovanni V, Borgato S, Saccardi C, D'Antona D. Sonographic assessment of placental location: a mere notional description or an important key to improve both pregnancy and perinatal obstetrical care? A large cohort study. International Journal of Clinical and Experimental Medicine. 2015 Aug 15;8(8):13056.*
11. *Knezevich M, Koehler SM, Wagner A. The evolution of fetal surgery. Journal of fetal surgery. 2017 Aug 10;1(1):6-23.*
12. *Marmor, Meir, et al. "Management of pelvic ring injury patients with hemodynamic instability." Frontiers in Surgery 7 (2020): 588845.*
13. *Phelan, Jeffrey P. "Medical–Legal Considerations in Critical Care Obstetrics." Critical Care Obstetrics (2024): 1137-1159.*
14. *Severi, Filiberto M., et al. "Placenta previa." Management and Therapy of Late Pregnancy Complications: Third Trimester and Puerperium (2017): 179-190.*
15. *Agarwal, M., et al. "Maternal-fetal medicine." Obstet Gynecol 182.346 (2000): 50.*
16. *Jing, Shuang, et al. "The risk of placenta previa and cesarean section associated with a thin endometrial thickness: a retrospective study of 5251 singleton births during frozen embryo transfer in China." Archives of Gynecology and Obstetrics 300 (2019): 1227-1237.*
17. *Jauniaux E, Kingdom JC, Silver RM. A comparison of recent guidelines in the diagnosis and management of placenta accreta spectrum disorders. Best Practice & Research Clinical Obstetrics & Gynaecology. 2021 Apr 1;72:102-16.*
18. *Caughey, Aaron B., et al. "Guidelines for intraoperative care in cesarean delivery: Enhanced Recovery After Surgery Society." (2021).*
19. *Li P, Liu X, Li X, Wei X, Liao J. Clinical outcomes and anesthetic management of pregnancies with placenta previa and suspicion for placenta accreta undergoing intraoperative abdominal aortic balloon occlusion during cesarean section. BMC anesthesiology. 2020 Dec;20:1-9.*
20. *Fadel, Ebtesam Mamdouh, et al. "Impact of Parity on Early Cesarean Scar Healing." The Egyptian Journal of Hospital Medicine 71.2 (2018): 2530-2534.*
21. *Shivtej, N. To Compare the Effect of Single Dose and Double Dose Antenatal Steroids on Short-Term Fetal Outcome Among Preterm Deliveries Admitted in Raja Rajeswari Medical College. Diss. Rajiv Gandhi University of Health Sciences (India), 2019.*
22. *Gonen, Noa, et al. "Placental histopathology and pregnancy outcomes in "early" vs."late" placental abruption." Reproductive Sciences 28 (2021): 351-360.*
23. *Jauniaux, Eric, John C. Kingdom, and Robert M. Silver. "A comparison of recent guidelines in the diagnosis and management of placenta accreta spectrum disorders." Best Practice & Research Clinical Obstetrics & Gynaecology 72 (2021): 102-116.*
24. *Liu X, Wang Y, Wu Y, Zeng J, Yuan X, Tong C, Qi H. What we know about placenta accreta spectrum (PAS). European Journal of Obstetrics & Gynecology and Reproductive Biology. 2021 Apr 1;259:81-9.*
25. *Jauniaux, Eric, et al. "Epidemiology of placenta previa accreta: a systematic review and meta-analysis." BMJ open 9.11 (2019): e031193.*
26. *Gritti, Micaela Andrea, et al. "Bacterias anaerobias aisladas en muestras clínicas de un hospital de adultos de Chaco, Argentina." (2024).*
27. *Moeini, Roksana, et al. "Maternal and neonatal outcomes of abnormal placentation: a case-control study." The Journal of Maternal-Fetal & Neonatal Medicine 34.19 (2021): 3097-3103.*
28. *Jovandaric, Miljana Z. Asphyxia in Neonates. CRC Press, 2024.*