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Original Research Article

Feto-maternal outcome of placenta previa with or without placenta accreta spectrum in tertiary hospital Dhaka

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ABSTRACT

Background: Placenta previa, with or without placenta accreta spectrum (PAS), is linked to significant maternal and fetal morbidity and mortality, primarily due to complications like cesarean delivery, severe antepartum/postpartum hemorrhage and preterm birth. The combined military hospital (CMH) Dhaka, with its advanced facilities and sufficient case volume, provides an ideal environment for this research. The main objective was to evaluate the feto-maternal outcomes of placenta previa with or without PAS and develop a management framework to improve these outcomes.

Methods: This retrospective study was conducted in the Department of Obstetrics and Gynecology at CMH Dhaka. The study population consisted of 99 pregnant women with placenta previa and PAS admitted between January 2023 and June 2024. Data were collected through a questionnaire, ultrasound reports, operative findings and histological reports.

Results: The mean age of participants was 29.59 years. Women with a previous cesarean section had a higher risk of placenta previa (71.71%). Planned cesarean sections were performed at 34-36 weeks of gestation in 70.7% of cases. Emergency LSCS was required in 9 cases due to antepartum hemorrhage (APH), while 88 were elective cesarean sections and 2 were incidental findings during elective LSCS. Intraoperative complications included bladder injury (47 cases) and peripartum hysterectomy (61.61%). Among the newborns, 25 (25.25%) had a birth weight of 1-2 kg and 77 (77.77%) were preterm, with 5 (5.05%) being very low birth weight. APGAR scores <6 at one minute were observed in 14 babies, while 85 babies had scores >6.

Conclusions: Placenta previa with or without PAS is strongly associated with serious maternal and fetal complications. Our study aims to formulate management guidelines to improve outcomes for both mother and baby.

Keywords: APGAR score, Hysterectomy, Placenta previa, PAS

INTRODUCTION

Placenta previa is a condition characterized by abnormal placental implantation in the lower uterine segment, partially or completely covering the internal os placenta accreta spectrum (PAS) refers to a severe obstetric condition involving abnormal placental invasion, including penetration of the myometrium or extending beyond it into the uterine serosa and adjacent organs, which can lead to significant maternal morbidity and mortality. The incidence of placenta previa is reported to

be 4 to 5 per 1000 births, though this varies worldwide. A key risk factor for PAS is a previous cesarean section. Similarly, the risk of developing PAS in subsequent pregnancies increases with the number of previous cesarean deliveries.¹ Placenta previa is classified into three types based on the position of the placenta and cervix: complete placenta previa, marginal previa and partial placenta previa. The incidence of placenta previa is reported to be higher in Asia (1.2%) and lower in Europe (0.36%), North America (0.29%) and sub-Saharan Africa (0.27%).² Women with a history of one or more cesarean

deliveries are at higher risk for subsequent placenta previa. Poor vascularization and tissue oxygenation at the site of the previous scar contribute to the failure of re-epithelialization and decidualization in the area, increasing the risk of placenta previa in future pregnancies.

The dreaded complications of placenta previa include massive hemorrhage, which may require large blood transfusions, surgical interventions such as internal iliac artery ligation and hysterectomy and, in the worst cases, can lead to anemia, septicemia and maternal death.³⁻⁶

METHODS

This retrospective study included 99 pregnant patients with placenta previa, with or without Placenta Accreta Spectrum (PAS), who were admitted to the Department of Obstetrics and Gynecology at CMH Dhaka from January 2023 to June 2024. Data were collected from ultrasound reports, perioperative findings, histological reports and admission and discharge registers, which were recorded on a prescribed data collection sheet. In approximately 70% of cases, placenta previa was suspected at 18-20 weeks of gestation through ultrasound. The diagnosis of placenta previa, with or without PAS, was confirmed during the third trimester by ultrasonographic placenta mapping at 32 weeks of pregnancy and was further confirmed by intraoperative findings and histopathological reports, particularly if peripartum hysterectomy or partial myometrial resection was performed. All collected data were entered into SPSS version 25 for statistical analysis.

RESULTS

The study included 99 pregnant women (2.33%) diagnosed with placenta previa. Among them, 48 patients (12 with increta and 36 with percreta) had Placenta Accreta Spectrum (PAS), while 51 patients had no bladder or myometrial invasion. During the study period, a total of 4,234 deliveries were conducted, with 99 cases of placenta previa. Of these, 1,733 deliveries (40.9%) were vaginal and 2,501 deliveries (59%) were cesarean sections. Thus, 99 (2.33%) of the 4,234 patients had placenta previa (Figure 1).

The clinical characteristics of the groups are shown in table 1. The mean age of individuals with placenta previa (PP) was 29.59 years. Table shows the previous obstetric history. Women with a previous cesarean section are at a higher risk for placenta previa (71.71%). Patients with a history of vaginal delivery had 14.14%, while those with a history of abortion had 5.05% and primigravida patients accounted for 9.09%. The last three categories were free from PAS (placenta accreta spectrum). Table highlights that nearly 70.7% of planned cesarean sections were performed at 34-36 weeks of gestation. In 20.2% of cases, LSCS was performed at 32-34 weeks of gestation due to associated medical disorders or fetal distress. Additionally, 9.09% of women underwent emergency LSCS at 28-32

weeks of gestation due to antepartum hemorrhage (APH) (Table 1).

Table 2 shows that ultrasound (placental mapping) was performed at 32 weeks of gestation for the diagnosis of placenta previa. Among the cases, 46.45% were diagnosed with central placenta previa with bladder invasion, while 51.5% were diagnosed with central placenta previa without bladder invasion. Additionally, two cases of placenta previa were identified as incidental findings during the operation (Table 2).

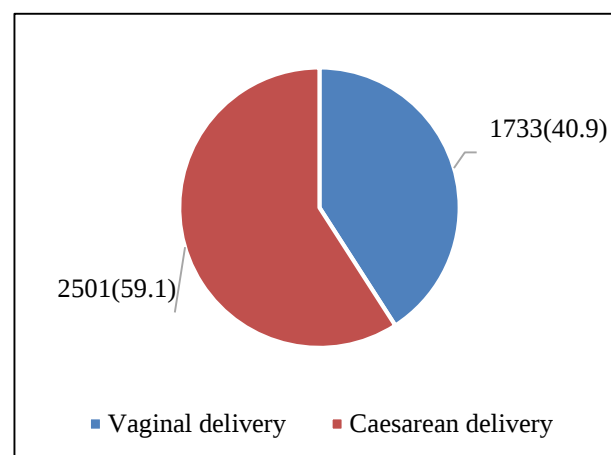


Figure 1: Distribution of patients according to modes of delivery.

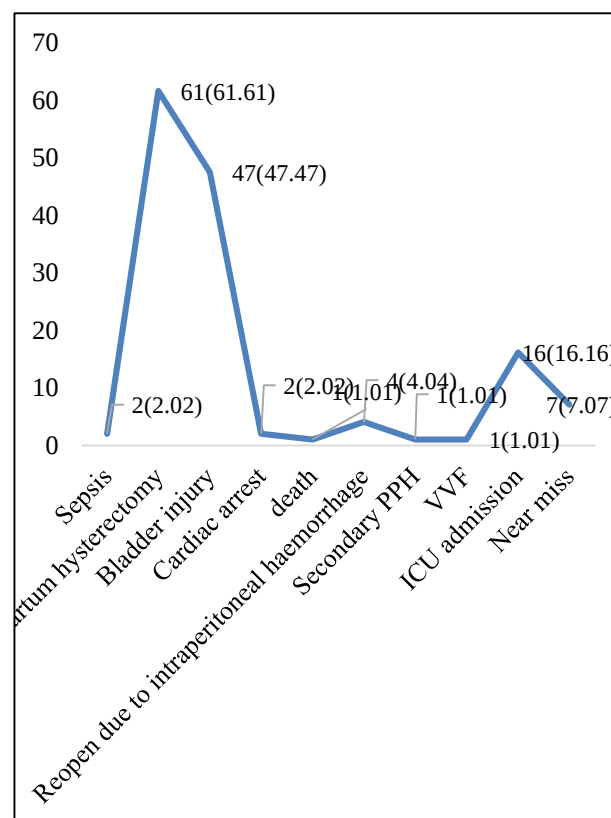


Figure 2: Maternal intraoperative & post-operative complications.

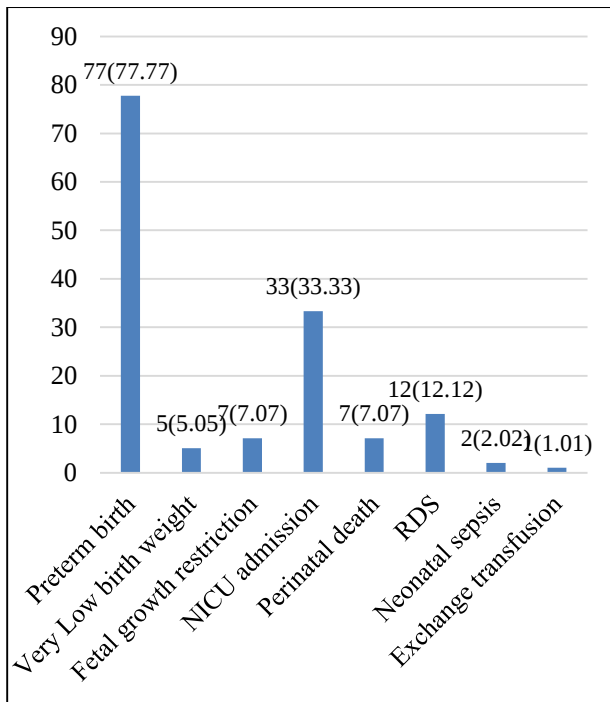


Figure 3: Neonatal outcomes of respondents.

Table 3 shows that the placenta was positioned anteriorly in 69.69% of cases, while the posterior position was observed in 30.30%. Nine women had been previously diagnosed with this condition through ultrasound (Table 3).

Table 4 illustrates the operative procedures. Emergency LSCS was performed in 9 cases due to antepartum hemorrhage (APH), while 88 cases were elective cesarean sections and 2 were incidental findings during elective LSCS. A transverse incision was made in the upper segment in every case to avoid cutting the placenta. In 38% of cases, multiple compression sutures were applied at the cervico-isthmus area, on the placental bed and on the anterior-posterior walls of the uterus to preserve the uterus. Peripartum total hysterectomy was performed in 61 cases

and in 47 of these, bladder repair was also carried out (Table 4).

Almost all patients received blood transfusions during and after the operation. One to five units of blood were transfused to 66 women, five to ten units (PRBC+FFP) were transfused to 21 women and more than ten units were transfused to 12 women. The average intraoperative blood loss was approximately 1.5 litres (Table 5).

Intraoperative complications included bladder injury in 47 cases and peripartum hysterectomy in 61.61% of cases. During the operation, two patients experienced cardiac arrest due to massive blood loss and one patient died after a second cardiac arrest within one hour of the first event. Postoperative ICU admission occurred in 16 cases, with 7 patients classified as near-miss. Primary postpartum hemorrhage (PPH) was observed in 4 cases, while secondary PPH was recorded in 1 patient. A vesicovaginal fistula (VVF) was reported on the third postoperative day, which was corrected through a prolonged period of catheterization (Figure 2).

Twenty-five babies were born with a birth weight of 1-2 kg (25.25%), 44 babies had a birth weight between 2 and 2.5 kg and 30 babies were born with a birth weight greater than 2.5 kg (Table 6).

Fourteen babies had an APGAR score of <6 at one minute, while 85 babies had an APGAR score of >6 at one minute. Four babies had an APGAR score of <6 at five minutes and 95 babies had an APGAR score of >6 at five minutes (Table 7).

Seventy-seven babies (77.77%) were delivered preterm, of which 5 (5.05%) had very low birth weight. Thirty-three babies (33.33%) were admitted to the NICU and 7 of them died perinatally. Respiratory distress syndrome (RDS) developed in 12 babies and neonatal sepsis occurred in 2 cases. Additionally, 7 babies were born with growth restriction (Figure 3).

Table 1: Distribution of patients by baseline variables.

Age group (in years)	Frequency	%
20-25	9	9.09
26-30	50	50.50
31-35	30	30.30
36-40	10	10.10
Placenta previa (mode of delivery and pregnancy outcome)		
Vaginal delivery	14	14.14
Caesarean section	71	71.71
Abortion	5	5.05
Primi	9	9.09
Deliveries by gestational age (weeks)		
28-32	9	9.09
32-34	20	20.2
34-36	48	48.5
>36	22	22.22

Table 2: Ultrasound findings of the respondents.

USG findings	Frequency	%
Central placenta previa with bladder invasion	46	46.45
Central placenta previa without bladder invasion	51	51.5

Table 3: Ultrasonographic position of placenta.

Position of placenta	Frequency	%
Position of placenta -anterior	69	69.69
Position of placenta -posterior	30	30.30

Table 4: Surgical interventions and procedures.

Indices	Frequency	%
Lucs with compression suture	38	38.38
Peripartum hysterectomy	61	61.6
Peripartum hysterectomy with bladder repair	47	47.47

Table 5: Number of units of blood transfused to respondents.

No of units of blood	Frequency	%
1-5 units	66	66.66
5-10 bags (PRBC+FFP)	21	21.21
>10(PRBC+FFP)	12	12.12

Table 6: Birth weight distribution of newborns.

Birth weight (in kg)	Frequency	%
1-2kg	25	25.25
2-2.5kg	44	44.44
>2.5kg	30	30.30

Table 7: APGAR score of newborns.

APGAR score	Frequency	%
1 minute (<6)	14	14.14
1 minute (>6)	85	85.85
5 minutes (<6)	4	4.04
5 minutes (>6)	95	95.95

DISCUSSION

Placenta previa, with or without PAS, is associated with adverse maternal and neonatal outcomes. In our study, 99 women with major degree placenta previa, with or without PAS, were included, of which 46 women had PAS. During the study period, a total of 4,234 deliveries were conducted and 99 of these were cases of placenta previa. The prevalence of placenta previa in our study was 2.33%, which is comparable to the worldwide prevalence reported to range from 0.2% to 4.84%.⁷ In most middle and high-income countries, the increased rate of cesarean sections has led to an increase in the prevalence of placenta previa and PAS. The risk of placenta previa is 50% higher following a single cesarean delivery. In our study, 71

women out of 99 had a previous cesarean delivery. Placenta previa is suspected and diagnosed in approximately 5% of pregnancies between 15 and 16 weeks and nearly 90% of placenta previa cases resolve to a normal position by term.^{8,9} Color Doppler is helpful in conjunction with ultrasonography to confirm PAS.

Doppler markers for PAS include diffuse or focal placental lacunar flow, vascular lakes with turbulent flow and hypervascularity of the serosa-bladder interface.¹⁰ The position of the placenta and PAS is a key determinant of adverse pregnancy outcomes. Our study found that 46.45% of patients with PAS and 69.64% of patients with placenta previa had an anterior placenta. Anterior placement of placenta previa is an independent risk factor

for increased chances of hemorrhage and cesarean hysterectomy. The main risk associated with PAS is severe obstetric hemorrhage, which leads to secondary complications such as coagulopathy, multisystem organ failure and death. Severe hemorrhage, cesarean hysterectomy and preterm birth are the primary morbidities in placenta previa cases compared to normally sited placenta. In the study, we compared these morbidity outcomes in placenta previa and PAS, which showed that patients with PAS had more severe maternal morbidity in terms of obstetric hemorrhage and massive blood transfusion (33.33%), cesarean hysterectomy (61.2%), ICU admission (16.16%) and bladder injury (47.47%).

Similar morbidity has been reported in studies worldwide.¹¹⁻¹³ Two patients had cardiac arrest due to massive blood loss and one patient died. The maternal mortality rate was 1.01% and 7 patients were classified as near-miss. Maternal mortality has been reported to range from 0.9% to 2.85% in previous studies.^{4,6}

To reduce maternal and fetal complications, surgery should be performed in a tertiary center, with delivery planned at 36-37 weeks of gestation, ensuring the availability of blood products and a multidisciplinary team. More studies agree that preterm delivery is more common in women with complete placenta previa.^{14,15} However, hysterectomy following a planned cesarean section at 34-35 weeks, with placental abandonment in situ, is the recommended procedure for PAS by ACOG.¹⁶ In our study, 77 (77.77%) babies were delivered preterm and 5 (5.05%) were very low birth weight. Of the babies, 25 (25.25%) had a birth weight between 1-2 kg, 44 had a birth weight between 2-2.5 kg and 30.30% weighed more than 2.5 kg.

Sorakayalapeta et al reported a lower occurrence of 20.6%, while Kumari et al reported a higher occurrence of babies weighing less than 2.5 kilograms, likely because 68.57% of their deliveries occurred before 37 completed weeks of gestation.^{6,17} Thirty-three (33.33%) babies were admitted to the NICU, with similar findings reported by Sarojini et al, who had 39.7%.⁶ Fourteen babies had an APGAR score of <6 at one minute and 4 babies had an APGAR score of <6 at five minutes. An APGAR score of <7 at five minutes was observed in 8.57% of cases, which is similar to the 10% reported by Kumari and Kollmann.^{5,6} Respiratory distress syndrome (RDS) developed in 12 babies, neonatal sepsis occurred in 2 cases and 7 (7.07%) babies died perinatally. Many studies have reported higher perinatal death rates, ranging from 11.2% to 20%.^{4,6}

In our study, we did not utilize certain procedures, such as intraoperative internal iliac artery or postoperative uterine artery embolization or internal iliac artery or abdominal balloon occlusion. Despite some limitations in our study, we aimed to explore the association of placenta previa, with or without PAS and its impact on maternal and neonatal outcomes.

CONCLUSION

Women with placenta accreta spectrum, with or without placenta previa, may experience serious maternal and fetal morbidity and mortality due to complications such as the need for cesarean delivery, severe antepartum/postpartum hemorrhage and preterm birth. Prenatal diagnosis and leaving the placenta in situ may help reduce maternal morbidity. Early identification of risk factors and strategic management can improve both maternal and fetal outcomes. This study aims to develop a management framework for placenta previa with or without PAS to improve feto-maternal outcomes.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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