

A Study on Maternal Outcome of Central Placenta Praevia among Inpatients in Dhaka Medical College and Hospital

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ABSTRACT

Background: As an important cause of obstetric haemorrhage, central placenta praevia is associated with severe maternal complications, including antepartum and postpartum haemorrhage, placenta accreta spectrum, hysterectomy, and urinary tract injury. **Aim of the study:** This study aimed to evaluate the maternal outcomes of female with central placenta praevia at a tertiary care hospital. **Methods & Materials:** This hospital-based descriptive cross-sectional study was conducted from January to June 2021 in the Department of Obstetrics and Gynaecology, Dhaka Medical College Hospital, Dhaka. A total of 30 female with central placenta praevia beyond 28 weeks' gestation were enrolled consecutively. Sociodemographic, obstetric, clinical, operative, and postoperative data were collected using a structured form. Data were analyzed using SPSS version 26.0 and summarized using frequencies, percentages, and mean $\pm$ standard deviation. **Results:** Among 30 participants, the mean age was 29.8 ± 4.7 years and mean gestational age was 35.6 ± 2.3 weeks. Previous caesarean delivery was present in 73.3%, while 80.0% presented with antepartum bleeding. Major intraoperative haemorrhage occurred in 60.0%, postpartum haemorrhage in 43.3%, and caesarean hysterectomy was required in 26.7%. Blood transfusion was needed in 90.0%, while 53.3% experienced at least one major adverse maternal outcome. Uterine preservation was achieved in 73.3%, and maternal survival was 96.7%. **Conclusion:** Central placenta praevia was associated with substantial haemorrhagic and operative maternal morbidity, including frequent blood transfusion and caesarean hysterectomy. Despite these complications, uterine preservation and maternal survival

remained high.

Keywords: Central placenta praevia; Maternal outcome; Obstetric haemorrhage; Placenta accreta spectrum; Caesarean hysterectomy.

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INTRODUCTION

Among the major causes of obstetric haemorrhage, placenta praevia remains an important contributor to maternal morbidity and mortality, particularly when the placenta completely covers the internal cervical os, traditionally described as central or complete placenta praevia. Through abnormal implantation in the lower uterine segment, placenta praevia predisposes affected female to recurrent ante partum haemorrhage, emergency caesarean delivery, massive perioperative blood loss, postpartum haemorrhage, blood transfusion, hysterectomy, and injury to adjacent pelvic organs [1-3]. Consequently, timely diagnosis, appropriate referral, adequate availability of blood products, and multidisciplinary operative preparedness are central to reducing preventable maternal complications. Globally, placenta praevia occurs in approximately 3-5 per 1,000 pregnancies, although considerable geographic variation has been reported [3,4]. In a recent meta-analysis of more than 3.5 million pregnancies in mainland China, an overall prevalence of 1.44% was reported, with substantial variation by geographic region and maternal characteristics [5]. Across epidemiological studies, increasing maternal age, multiparity, previous

abortion or uterine instrumentation, assisted reproductive techniques, and particularly previous caesarean delivery have consistently emerged as important risk factors [3,6]. With rising caesarean delivery rates worldwide, concern regarding placenta praevia and associated abnormal placentation has consequently increased. Clinically, haemorrhage represents the principal maternal threat. From a systematic review and meta-analysis, antepartum haemorrhage was estimated to occur in approximately 51.6% of pregnancies complicated by placenta praevia [7]. During delivery, implantation within the poorly contractile lower uterine segment may prevent effective haemostasis following placental separation, thereby increasing the risk of severe postpartum haemorrhage. Among female undergoing caesarean delivery for placenta praevia, severe postpartum haemorrhage has been reported in approximately one-quarter of cases in large contemporary cohorts [8]. Furthermore, anterior placentation over a previous uterine scar has been associated with greater blood loss and an increased likelihood of placenta accreta spectrum (PAS) [9]. Of particular clinical importance, coexistence of placenta praevia with PAS considerably increases maternal risk. In a systematic review, PAS occurred in

approximately 11.1% of female with placenta praevia [10]. Among female with both previous caesarean delivery and abnormally located placenta, the probability of PAS rises progressively with the number of previous caesarean sections, reaching 63% among female with three or more previous caesareans and placenta praevia [11]. Because PAS may cause catastrophic haemorrhage, bladder or ureteric injury, massive transfusion, and caesarean hysterectomy, antenatal recognition is crucial. Recent evidence further indicates that unsuspected PAS is associated with greater blood loss and transfusion requirements than antenatally suspected disease [12]. Within South Asian healthcare settings, these risks are particularly relevant because delayed referral, maternal anaemia, limited availability of blood products, and variable access to multidisciplinary surgical care may amplify the consequences of severe obstetric haemorrhage. In a tertiary-care study, placenta praevia complicated by morbidly adherent placenta was associated with significantly greater postpartum haemorrhage, transfusion, hysterectomy, bladder injury, intensive-care admission, and maternal mortality [2]. Despite the clinical importance of the condition, contemporary hospital-based evidence

specifically describing maternal outcomes of central placenta praevia in Bangladesh remains limited. Therefore, locally generated data are needed to characterize the burden of haemorrhage, transfusion, operative complications, hysterectomy, organ injury, hospital stay, and maternal survival. Against this background, the present study aimed to evaluate maternal outcomes among female with central placenta praevia, with particular emphasis on clinical presentation, operative complications, blood transfusion requirements, postoperative morbidity, uterine preservation, and maternal survival.

METHODS & MATERIALS

Between January and June 2021, this hospital-based descriptive cross-sectional study was conducted in the Department of Obstetrics and Gynaecology, Dhaka Medical College Hospital, Dhaka, Bangladesh. Over the six-month study period, 30 pregnant female who met the predefined eligibility criteria were included. Through a consecutive sampling approach, eligible patients admitted to the department with central placenta praevia were enrolled after assessment of the inclusion and exclusion criteria. For inclusion, pregnant female beyond 28 weeks of gestation with central placenta praevia diagnosed by ultrasonography,

confirmed during caesarean section, or identified through double-setup examination were considered eligible. From participation, patients with multiple gestation, abruptio placentae, placenta succenturiata, or incomplete clinical records were excluded. Following enrolment, relevant sociodemographic, obstetric, clinical, operative, and postoperative information was collected using a structured data collection form. From medical history and hospital records, information regarding maternal age, residence, occupation, socioeconomic and educational status, gravidity, parity, previous abortion or menstrual regulation, antenatal care attendance, previous caesarean section, previous dilatation and curettage, and associated comorbidities was recorded. At admission, clinical findings including vaginal bleeding, abdominal pain, haemodynamic status, anaemia, uterine contraction, fetal presentation, and fetal heart rate were documented. During operative management, information regarding emergency or elective caesarean delivery, type of anaesthesia, major intraoperative haemorrhage, haemorrhagic shock, placenta accreta spectrum, caesarean hysterectomy, and urinary tract injury was recorded. Following surgery, maternal complications including postpartum

haemorrhage, shock, acute renal failure, disseminated intravascular coagulation, cardiac arrest, wound infection or sepsis, fistula formation, and maternal death were assessed. Additionally, blood transfusion requirements, number of blood units transfused, duration of hospital stay, uterine preservation, major adverse maternal outcome, and maternal survival were evaluated. After collection, all data were checked for completeness and consistency before statistical analysis. The data were analyzed using SPSS (V 26.0); descriptive statistics were used; categorical variables were presented as frequencies and percentages, whereas continuous variables were summarized as mean ± standard deviation. Confidentiality of patient information was maintained throughout the study.

RESULTS

Among the 30 participants, the mean age was 29.8 ± 4.7 years, with the largest proportion aged 26–30 years (36.7%). Regarding residence, 60.0% were from rural areas, while 86.7% were housewives. Half of the participants (50.0%) belonged to the middle socioeconomic group, and 36.7% had secondary-level education (Table I).

Table I
Sociodemographic and baseline characteristics of the study participants (n = 30).

Variables	Categories	n (%)
Age group (years)	≤20	2 (6.7)
	21–25	5 (16.7)
	26–30	11 (36.7)
	31–35	9 (30.0)
	>35	3 (10.0)
Age (years)	Mean ± SD	29.8 ± 4.7
Residence	Rural	18 (60.0)
	Urban	12 (40.0)
Occupation	Housewife	26 (86.7)
	Labourer	1 (3.3)
	Service holder	2 (6.7)
	Teacher	1 (3.3)
	Lower	13 (43.3)
Socioeconomic status	Middle	15 (50.0)
	Upper	2 (6.7)
	Illiterate	2 (6.7)
Educational status	Primary	8 (26.7)
	Secondary	11 (36.7)
	Higher secondary	7 (23.3)
	Graduate	2 (6.7)
	Diabetes mellitus	2 (6.7)
Comorbidity	Hypertension	3 (10.0)

Regarding obstetric characteristics, 66.7% of participants were gravida 2–4, and 56.7% had parity 2–4. The mean gestational age was 35.6 ± 2.3 weeks, and

46.7% presented between 34 and 36 weeks of gestation. Previous cesarean section was reported in 73.3%, including 43.3% with

two or more previous cesarean deliveries (Table II).

Table II

Obstetric characteristics and previous obstetric history of the study participants.

Variables	Categories	n (%)
Gravidity	1	3 (10.0)
	2–4	20 (66.7)
	≥5	7 (23.3)
Parity	0–1	9 (30.0)
	2–4	17 (56.7)
	≥5	4 (13.3)
Previous abortion/MR	Yes	10 (33.3)
	No	20 (66.7)
Gestational age (weeks)	Mean ± SD	35.6 ± 2.3
	<34 weeks	5 (16.7)
	34–36 weeks	14 (46.7)
	≥37 weeks	11 (36.7)
ANC attendance	Regular	17 (56.7)
	Irregular	13 (43.3)
	None	8 (26.7)
Previous caesarean section	One	9 (30.0)
	Two	8 (26.7)
	≥3	5 (16.7)
Any previous C/S	Yes	22 (73.3)
	No	8 (26.7)
Previous D&C	Yes	8 (26.7)
	No	22 (73.3)

At admission, 80.0% of the participants presented with antepartum vaginal bleeding, while abdominal pain was reported in 16.7%. Moderate anaemia was

present in 40.0%, and severe anaemia in 20.0%. Haemodynamic shock at presentation was observed in 13.3%,

whereas cephalic presentation was found in 76.7% of cases (*Table III*).

Table III

Clinical presentation and examination findings at admission.

Variables	Categories	n (%)
Antepartum vaginal bleeding	Present	24 (80.0)
	Absent	6 (20.0)
Abdominal pain	Present	5 (16.7)
	Absent	25 (83.3)
Pulse (beats/min)	Mean ± SD	92.6 ± 12.1
Systolic BP (mmHg)	Mean ± SD	108.5 ± 13.6
Diastolic BP (mmHg)	Mean ± SD	69.3 ± 9.2
Anaemia	None	3 (10.0)
	Mild	9 (30.0)
	Moderate	12 (40.0)
	Severe	6 (20.0)
Shock at admission	Yes	4 (13.3)
	No	26 (86.7)
Uterine contraction	Present	6 (20.0)
	Absent	24 (80.0)
	Cephalic	23 (76.7)
Presentation	Breech	4 (13.3)
	Transverse/oblique	3 (10.0)
	Normal	27 (90.0)
Fetal heart rate	Abnormal	2 (6.7)
	Absent	1 (3.3)

During operative management, 66.7% of the participants underwent emergency caesarean delivery, while 60.0% received general anaesthesia. Major intraoperative

haemorrhage occurred in 60.0%, and haemorrhagic shock developed in 23.3%. Caesarean hysterectomy was required in

26.7%, while urinary bladder injury occurred in 10.0% (*Table IV*).

Table IV

Operative characteristics and per-operative maternal complications.

Variables	Categories	n (%)
Caesarean delivery	Emergency	20 (66.7)
	Elective	10 (33.3)
Anaesthesia	General	18 (60.0)
	Regional/spinal	12 (40.0)
Major intraoperative haemorrhage		18 (60.0)
Haemorrhagic shock		7 (23.3)
Morbidly adherent placenta/PAS		9 (30.0)
Caesarean hysterectomy		8 (26.7)
Urinary bladder injury		3 (10.0)
Ureteric injury		1 (3.3)

Following surgery, postpartum haemorrhage was the most frequent maternal complication, occurring in 43.3% of participants, followed by shock in 23.3%

and wound infection or sepsis in 13.3%. Acute renal failure and disseminated intravascular coagulation each occurred in

6.7%, while maternal mortality was recorded in 3.3% of cases (*Table V*).

Table V

Postoperative maternal complications among the study participants.

Maternal complications	n (%)
Postpartum haemorrhage	13 (43.3)
Shock	7 (23.3)
Acute renal failure	2 (6.7)
Disseminated intravascular coagulation	2 (6.7)
Cardiac arrest	1 (3.3)
Wound infection/sepsis	4 (13.3)
Vesicovaginal fistula	1 (3.3)
Ureterovaginal fistula	0 (0.0)
Maternal death	1 (3.3)

Regarding overall maternal outcome, blood transfusion was required in 90.0% of participants, with 46.7% receiving 4–6 units of blood. The mean hospital stay was

7.8 ± 3.2 days, while 36.7% remained hospitalized for more than seven days. Uterine preservation was achieved in 73.3%, whereas 53.3% experienced at least

one major adverse maternal outcome, and overall maternal survival was 96.7% (*Table VI*).

Table VI

Blood transfusion requirement, hospital stay, and overall maternal outcome.

Variables	Categories	n (%)
Blood transfusion	Required	27 (90.0)
	Not required	3 (10.0)
Blood units among all participants	None	3 (10.0)
	1–3 units	9 (30.0)
	4–6 units	14 (46.7)
	>6 units	4 (13.3)
Units transfused among recipients	Mean ± SD	4.3 ± 2.2
	Mean ± SD	7.8 ± 3.2
Hospital stays (days)	≤7 days	19 (63.3)
	>7 days	11 (36.7)
Uterus preserved	Yes	22 (73.3)
	No	8 (26.7)
Major adverse maternal outcome	Yes	16 (53.3)
	No	14 (46.7)
Maternal survival	Survived	29 (96.7)
	Died	1 (3.3)

DISCUSSION

In this cross-sectional study of central placenta praevia, substantial maternal morbidity was observed despite a survival rate. Among the 30 participants, the mean maternal age was 29.8 ± 4.7 years, 66.7% were gravida 2–4, and 56.7% had parity 2–4. Compared with reports identifying advanced age and multiparity as important correlates of placenta praevia, the relatively young age in this cohort probably reflects

earlier childbearing in South Asian populations [7,13]. In a Tanzanian cohort, placenta praevia was associated with multiparity and previous caesarean delivery, while a Saudi series similarly identified higher parity and previous caesarean delivery as dominant risk characteristics [13,14]. Particularly notable was the 73.3% prevalence of previous caesarean section, including 43.3% with two or more previous caesareans.

Consistent with this finding, prior caesarean delivery has repeatedly been linked with major placenta praevia, placenta accreta spectrum, PAS, and worse operative outcomes [10,11,15–17]. In the prospective PACCRETA study, PAS ranged from 5% with one prior caesarean and posterior low-lying placenta to 63% with three or more previous caesareans and placenta praevia [11]. Likewise, a Saudi analysis showed that previous caesarean

delivery increased the odds of PAS 4.38-fold, caesarean hysterectomy 20.46-fold, and urinary tract injury 12.36-fold [17]. Similarly, the study by Jing et al. identified complete placenta praevia and placental attachment to a previous uterine incision as independent predictors of PAS, with an odds ratio of 8.18 for incision-site attachment [1]. At admission, antepartum bleeding occurred in 80.0%, exceeding the pooled prevalence of 51.6% reported in a meta-analysis [7]. Similarly, bleeding-related complications have been prominent in African and Asian studies [2,13]. This higher proportion may reflect restriction to central placenta praevia, together with referral of symptomatic cases to a tertiary hospital. Moreover, moderate or severe anaemia affected 60.0%, and 13.3% presented in shock. Such anaemia is important because it reduces physiological reserve during haemorrhage; in the cohort reported by Gibbins et al., pre-delivery anaemia was associated with greater haemorrhagic morbidity [18]. More recently, evidence also identifies anaemia, caesarean birth, and placenta praevia as important determinants of postpartum haemorrhage [19]. During delivery, 66.7% underwent emergency caesarean section, while major intraoperative haemorrhage occurred in 60.0% and haemorrhagic shock in 23.3%. These values exceed the 18.6% haemorrhagic morbidity reported among placenta praevia cases without accreta by Gibbins et al., but approximate the 66.4% peripartum haemorrhage reported among PAS patients with coexisting placenta praevia by Han et al. [18, 20]. In another Chinese cohort, severe postpartum haemorrhage occurred in 18.9% of female with placenta praevia or low-lying placenta [21]. Across studies, differences probably arise from variation in previa severity, PAS prevalence, emergency presentation, haemorrhage definitions, and referral patterns. Importantly, PAS was identified in 30.0% of participants. This finding is comparable to the 30.5% antenatal PAS rate reported among major placenta praevia cases in Saudi Arabia and somewhat lower than the 36.8% rate of morbidly adherent placenta reported in Pakistan [2,14]. Across systematic reviews, coexistence of placenta praevia markedly increases PAS-associated haemorrhage, transfusion, hysterectomy, and urinary tract injury [15,10]. Accordingly, the present caesarean hysterectomy rate of 26.7% and bladder injury rate of 10.0% appear clinically coherent. Although higher than the 9.7% hysterectomy rate reported by AlQasem et al., these outcomes are below the pooled hysterectomy estimate of 52.2% among PAS cases, probably because of differences in PAS depth and case selection [14,15]. Following delivery, postpartum haemorrhage occurred in 43.3%, while 90.0% required transfusion and recipients received a mean of 4.3 ± 2.2

units. Comparable evidence from Pakistan showed greater PPH, transfusion, hysterectomy, bladder injury, and ICU admission when placenta praevia coexisted with morbidly adherent placenta [2]. In Italy, antenatal recognition of PAS reduced transfusion rates from 79.7% to 65.6%, while meta-analytic evidence indicates that prenatal diagnosis reduces blood loss and the number of transfused red-cell units [22, 23]. Similarly, contemporary evidence on unsuspected PAS supports antenatal recognition and planned multidisciplinary delivery [12]. Despite severe morbidity, maternal survival was 96.7%, with one death (3.3%). This proportion resembles the 3% reported among cases of morbidly adherent placenta in Pakistan, but exceeds the 0.3% mortality reported in a Saudi cohort and the 0.25% mortality among PAS cases in a US national analysis [2, 14, 16]. Because only 30 females were studied, one death markedly increases the percentage; nevertheless, the finding underscores the life-threatening potential of central placenta praevia. Clinically, these results support correction of antenatal anaemia, targeted PAS imaging in female with previous caesareans, planned tertiary-centre delivery, immediate access to massive transfusion, and coordinated obstetric, anaesthetic, urological, and critical-care support.

LIMITATIONS

Because this was a single-centre study with a small sample size of 30 participants and a cross-sectional design, the findings may have limited generalizability. In addition, the study did not include a comparison group or multivariable analysis to identify independent predictors of adverse maternal outcomes. Reliance on hospital-based records may also have introduced incomplete documentation or information bias.

CONCLUSION

Overall, central placenta praevia was associated with substantial maternal morbidity, particularly antepartum haemorrhage, anaemia, major intraoperative bleeding, postpartum haemorrhage, haemorrhagic shock, and a high requirement for blood transfusion. In addition, previous caesarean delivery and placenta accreta spectrum were common, contributing to considerable rates of caesarean hysterectomy and urinary tract injury. Despite these serious complications, uterine preservation was achieved in most patients, and maternal survival remained high. Collectively, the findings demonstrate that central placenta praevia remains a high-risk obstetric condition with significant haemorrhagic and operative consequences for maternal health.

RECOMMENDATIONS

Early diagnosis, regular antenatal surveillance, correction of anaemia, assessment for placenta accreta spectrum, and planned delivery in a well-equipped tertiary centre with adequate blood bank and multidisciplinary support are recommended to reduce maternal morbidity and mortality.

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CONFLICT OF INTEREST

None declared

ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee.

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