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Frequency of Perinatal Outcomes in Patients with Major Degree Placenta Previa

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ABSTRACT

Background: Major degree placenta previa, characterized by complete coverage of the cervical os by the placenta, poses significant risks to both mother and fetus. Despite improvements in obstetric practice, it remains a leading cause of prematurity, perinatal morbidity, and mortality. **Objective:** To determine the frequency of perinatal outcomes in patients with major degree placenta previa. **Study Design:** Descriptive cross-sectional study. **Duration and Place of Study:** The study was carried out from January 2025 to May 2025 at the Department of Obstetrics and Gynaecology, Ayub Teaching Hospital, Abbottabad. **Methodology:** A total of 113 women aged 20–40 years with ultrasound-confirmed major degree placenta previa were enrolled. Patients with pregnancy-induced hypertension, eclampsia, gestational diabetes, or fetal anomalies were excluded. Baseline demographic details were recorded, and perinatal outcomes were documented. **Results:** Prematurity was the most frequent outcome, affecting 72 patients (63.7%), while 41 (36.3%) delivered at term. NICU admission was required in 28 cases (24.8%). Birth asphyxia and neonatal death were observed in 20 patients each (17.7%). Intrauterine fetal death occurred in 14 cases (12.4%). Higher rates of prematurity and NICU admissions were seen in mothers >30 years, while low maternal BMI was significantly associated with intrauterine fetal death (p=0.046). **Conclusion:** Our study has concluded that major degree placenta previa is strongly associated with adverse perinatal outcomes, especially prematurity, neonatal mortality, and NICU admission.

INTRODUCTION

Major degree placenta previa is a condition where the entire internal cervical os is covered with the placenta, a scenario that holds a lot of stakes in pregnancy and child birth.[1] It is diagnosed most often in the third or in the second trimester through ultrasonography, determining accurate placement of the placenta in relation to the cervix.[2] Patients who have the condition most often present with recurrent painless bleeding from the later half of the pregnancy, from mild to fatal.[1,3] It is a high-risk condition anchored in risk factors such as advanced age in the mother, multiparity, a past cesarean birth, and surgery on the uterus predisposing for faulty implantation.[3,4] Since the birth canal is occupied with the placenta, it is not possible for a patient to deliver through the vaginal mode, and Cesarean section is thereby the only safe method of delivering a child.[1] Despite the fact that obstetric healthcare continues to enhance, major degree placenta previa continues to be a major cause of maternity morbus and unfavorable outcome for a child.[5]

Perinatal outcomes in pregnancies in which major degree placenta previa are generally undesirable due to the necessity for preterm delivery.[6] Antepartum hemorrhage, hemodynamic instability in the mother, or signs of fetal compromise often induce planned or emergency before-term cesarean section.[7] Therefore, prematurity still remains the most common unfavorable outcome, and affected neonates are subject to such complications as respiratory distress syndrome, hypoglycemia, feeding intolerance, and prolonged in-hospital accommodation.[8-10] As a less common event with customary surveillance and early intervention, intrauterine fetal demise remains a possibility, especially in cases where extreme maternal hemorrhage or acute hypoxia sustains uteroplacental circulation compromise.[7] Birth asphyxia is another life-threatening complication, especially when expedited delivery needs to happen under emergent situations and thus precludes the possibility of superior neonatal preparation.[7]

Neonatal mortality and morbidity burden in placenta previa is high, and most infants require intensive interventions in the early neonatal period.[4,5] Neonatal death is almost entirely a consequence of extreme prematurity, low birth weight, or complications from birth asphyxia.[7] Admission to neonatal intensive care units is frequent, necessitated by the need for respiratory care,

monitoring for heat, and prophylaxis against infection.[6,8] These complications highlight the need for antenatal surveillance, administration of corticosteroids for fetal pulmonary maturity in circumstances where early delivery is imminent, and availability of well-equipped neonatal intensive care units.[11] Ultimately, major degree placenta previa not only places the mothers at risk for hemorrhage and surgical morbidity but also culminates in a significant fraction of perinatal complications preventable, thus mandating comprehensive obstetric and neonatal planning in optimizing perinatal outcomes.[12]

In a study by Mashaly S, et al. has shown that frequency of NICU admission was 25.2% in patients with major degree placenta previa.[13] In another study by Azhar T, et al. has shown that frequency of prematurity was 64%, intrauterine fetal death 12%, birth asphyxia 18% and neonatal death was 17.4% in patients with major degree placenta previa.[14]

It is essential to conduct a study on perinatal consequences in major degree placenta previa patients in Abbottabad because the region is exposed to characteristic healthcare challenges including scarce availability of sophisticated obstetric and neonatal intensive care units. Anticipation and detection of early placenta previa are constrained by late referrals, lack of routine antenatal screening, and availability of facilities, and might further promote maternal and neonatal morbidity. Generation of local data will provide invaluable data on the burden of prematurity, intrauterine fetal demise, birth asphyxia, neonatal demise, and admission to intensive care.

METHODOLOGY

The study was conducted in the Department of Obstetrics and Gynaecology at Ayub Teaching Hospital, Abbottabad, over a period from January 2025 to May 2025. A descriptive design was employed to assess the frequency of perinatal outcomes among patients diagnosed with major degree placenta previa. Ethical approval was obtained from the institutional review board prior to commencement, ensuring compliance with all standards for research involving human participants. The sample size was calculated using WHO software, based on a 95% confidence level, a 6% margin of error, and an expected frequency of intrauterine fetal death of 12% in this patient population,[14] resulting in a total of 113 participants. Eligibility criteria included women aged 20 to 40 years with a singleton pregnancy confirmed on ultrasound, gestational age exceeding 24 weeks, parity of one or more, and a diagnosis of major degree placenta previa. The latter was defined as complete coverage of the internal cervical os confirmed by Doppler ultrasound, with diffuse lacunar flow, dilated vascular channels throughout the placenta and surrounding myometrial or cervical tissue, and high-velocity pulsatile venous-type flow in sonolucent vascular spaces. Patients with a history of pregnancy-induced hypertension, eclampsia, gestational diabetes, or fetal congenital anomalies were excluded.

Informed consent was obtained from all participants after explaining the purpose and potential benefits of the study. Baseline demographic data were recorded at enrollment. Each participant underwent a detailed clinical assessment and was closely monitored until delivery. Perinatal outcomes were documented according to predefined criteria: prematurity was considered as birth before 37 weeks of gestation; intrauterine fetal death was defined as in utero death after 24 weeks with absent fetal cardiac activity and characteristic ultrasonographic findings; birth asphyxia was identified when the neonate failed to establish breathing within 90 seconds, showed gasping or irregular chest movement exceeding 30 breaths per minute, and had an umbilical artery pH below 7.1; neonatal death was recorded as death occurring within 48 hours postpartum; and NICU admission was noted when neonates required intensive care for fetal distress. Statistical analysis was performed using IBM SPSS version 26. Quantitative variables were expressed as mean ± standard deviation, while categorical variables were reported as frequencies and percentages. Stratified analyses were conducted to examine the influence of maternal and demographic factors on perinatal outcomes. Associations were evaluated using the chi-square test, and a p-value of ≤0.05 was considered indicative of statistical significance.

RESULTS

The mean maternal age was 29.58±6.09 years, with a gestational age at delivery of 33.64±4.71 weeks, indicating predominantly preterm deliveries. The average parity was 2.52±1.23, and the mean BMI was 25.13±3.39 kg/m^2. Regarding socioeconomic distribution, 54 patients (47.8%) belonged to the poor category, 45 (39.8%) to the middle class, and 14 (12.4%) to the rich category. The residential distribution showed 52 patients (46.0%) from rural areas and 61 (54.0%) from urban areas (as shown in Table-I)

Table I

Patient Demographics

Demographics	Mean ± SD
Age (years)	29.58±6.09
Gestational Age (weeks)	33.64±4.71
Parity	2.52±1.23
BMI (Kg/m^2)	25.13±3.39
Socioeconomic Status	
Poor n (%)	54 (47.8%)
Middle n (%)	45 (39.8%)
Rich n (%)	14 (12.4%)
Residential Status	
Rural n (%)	52 (46.0%)
Urban n (%)	61 (54.0%)

The frequency analysis of perinatal outcomes demonstrated that prematurity was the most common complication, affecting 72 patients (63.7%), while 41 patients (36.3%) delivered at term. NICU admission was required for 28 patients (24.8%), with 85 patients (75.2%) not requiring intensive care. Both birth asphyxia and neonatal death occurred in 20 patients each (17.7%), with 93 patients (82.3%) unaffected by these complications in both categories. Intrauterine fetal death was observed in 14 patients (12.4%), while 99 patients (87.6%) had viable pregnancies (as shown in Table-II)

Table II

Frequency of Perinatal Outcomes in Patients with Major Degree Placenta Previa

Perinatal Outcomes	Frequency	% age
Prematurity		
Yes	72	63.70%
No	41	36.30%

Total	113	100%
Intrauterine Fetal Death		
Yes	14	12.40%
No	99	87.60%
Total	113	100%
Birth Asphyxia		
Yes	20	17.70%
No	93	82.30%
Total	113	100%
Neonatal Death		
Yes	20	17.70%
No	93	82.30%
Total	113	100%
NICU Admission		
Yes	28	24.80%
No	85	75.20%
Total	113	100%

For prematurity, maternal age >30 years showed a higher rate (70.6%) compared to ≤30 years (58.1%), though this difference was not statistically significant (p=0.168). Parity showed minimal impact, with ≤3 pregnancies resulting in 63.2% prematurity versus 65.4% in >3 pregnancies (p=0.840). BMI >25 kg/m^2 was associated with higher prematurity rates (72.2%) compared to BMI ≤25 (55.9%), approaching significance (p=0.072). Socioeconomic status demonstrated variation, with the rich category showing the highest prematurity rate (78.6%), followed by poor (70.4%) and middle class (51.1%) (p=0.065). Residential status showed virtually identical rates between rural (63.5%) and urban (63.9%) populations (p=0.958). Regarding intrauterine fetal death, age groups showed similar rates with ≤30 years at 11.3% and >30 years at 13.7% (p=0.696). Parity ≤3 had a higher rate (13.8%) compared to >3 (7.7%) (p=0.516). BMI ≤25 kg/m^2 was significantly associated with higher intrauterine fetal death rates (18.6%) compared to BMI >25 (5.6%) (p=0.046). Socioeconomic analysis revealed poor status with 14.8%, middle class with 13.3%, and notably, no cases among the rich category (0.0%) (p=0.375). Rural areas showed 11.5% compared to urban areas at 13.1% (p=0.800). Birth asphyxia rates were higher in mothers >30 years (23.5%) compared to ≤30 years (12.9%) (p=0.141). Higher parity (>3) showed increased rates (23.1%) versus lower parity (16.1%) (p=0.413). BMI >25 kg/m^2 demonstrated higher birth asphyxia rates (20.4%) compared to BMI ≤25 (15.3%) (p=0.477). Socioeconomic distribution showed rich patients with the highest rate (21.4%), followed by middle class (20.0%) and poor (14.8%) (p=0.734). Rural and urban populations had comparable rates at 17.3% and 18.0% respectively (p=0.920). Neonatal death patterns showed younger mothers (≤30 years) with higher rates (19.4%) compared to older mothers (15.7%) (p=0.611). Lower parity (≤3) had slightly higher rates (18.4%) versus higher parity (15.4%) (p=0.782). BMI showed minimal difference with ≤25 at 16.9% and >25 at 18.5% (p=0.827). Socioeconomic analysis revealed poor status with the highest neonatal death rate (22.2%), followed by rich (14.3%) and middle class (13.3%) (p=0.485). Rural areas demonstrated higher rates (19.2%) compared to urban areas (16.4%) (p=0.694). NICU admission rates were significantly higher in mothers >30 years (33.3%) compared to ≤30 years (17.7%) (p=0.056). Higher parity (>3) showed increased admission rates (30.8%) versus lower parity (23.0%) (p=0.420). BMI >25 kg/m^2 was associated with higher admission rates (29.6%) compared to BMI ≤25 (20.3%) (p=0.253). Socioeconomic status showed rich patients with the highest rate (28.6%), followed by middle class (26.7%) and poor (22.2%) (p=0.826). Rural areas had slightly higher admission rates (26.9%) compared to urban areas (23.0%) (p=0.626). Statistical significance was determined using Fischer's Exact Test where indicated (as shown in Table-III)

Table III

Association of Perinatal Outcomes with Demographic Factors

Demographic Factors		Prematurity		p-value
		Yes n(%)	No n(%)	
Age (years)	≤30	36 (58.1%)	26 (41.9%)	0.168
	>30	36 (70.6%)	15 (29.4%)	
Parity	≤3	55 (63.2%)	32 (36.8%)	0.840
	>3	17 (65.4%)	9 (34.6%)	
BMI (Kg/m^2)	≤25	33 (55.9%)	26 (44.1%)	0.072
	>25	39 (72.2%)	15 (27.8%)	
Socioeconomic Status	Poor	38 (70.4%)	16 (29.6%)	0.065*
	Middle	23 (51.1%)	22 (48.9%)	
	Rich	11 (78.6%)	3 (21.4%)	
Residential Status	Rural	33 (63.5%)	19 (36.5%)	0.958
	Urban	39 (63.9%)	22 (36.1%)	
Intrauterine Fetal Death				
		Yes n(%)	No n(%)	
Age (years)	≤30	7 (11.3%)	55 (88.7%)	0.696
	>30	7 (13.7%)	44 (86.3%)	
Parity	≤3	12 (13.8%)	75 (86.2%)	0.516*
	>3	2 (7.7%)	24 (92.3%)	
BMI (Kg/m^2)	≤25	11 (18.6%)	48 (81.4%)	0.046*
	>25	3 (5.6%)	51 (94.4%)	
Socioeconomic Status	Poor	8 (14.8%)	46 (85.2%)	0.375*
	Middle	6 (13.3%)	39 (86.7%)	
	Rich	0 (0.0%)	14 (100.0%)	
Residential Status	Rural	6 (11.5%)	46 (88.5%)	0.800
	Urban	8 (13.1%)	53 (86.9%)	
Birth Asphyxia				
		Yes n(%)	No n(%)	
Age (years)	≤30	8 (12.9%)	54 (87.1%)	0.141

	>30	12 (23.5%)	39 (76.5%)	
Parity	≤3	14 (16.1%)	73 (83.9%)	0.413
	>3	6 (23.1%)	20 (76.9%)	
BMI (Kg/m^2)	≤25	9 (15.3%)	50 (84.7%)	0.477
	>25	11 (20.4%)	43 (79.6%)	
	Poor	8 (14.8%)	46 (85.2%)	
Socioeconomic Status	Middle	9 (20.0%)	36 (80.0%)	0.734
	Rich	3 (21.4%)	11 (78.6%)	
Residential Status	Rural	9 (17.3%)	43 (82.7%)	0.920
	Urban	11 (18.0%)	50 (82.0%)	
Neonatal Death				
		Yes n(%)	No n(%)	
Age (years)	≤30	12 (19.4%)	50 (80.6%)	0.611
	>30	8 (15.7%)	43 (84.3%)	
Parity	≤3	16 (18.4%)	71 (81.6%)	0.782
	>3	4 (15.4%)	22 (84.6%)	
BMI (Kg/m^2)	≤25	10 (16.9%)	49 (83.1%)	0.827
	>25	10 (18.5%)	44 (81.5%)	
	Poor	12 (22.2%)	42 (77.8%)	
Socioeconomic Status	Middle	6 (13.3%)	39 (86.7%)	0.485*
	Rich	2 (14.3%)	12 (85.7%)	
Residential Status	Rural	10 (19.2%)	42 (80.8%)	0.694
	Urban	10 (16.4%)	51 (83.6%)	
NICU Admission				
		Yes n(%)	No n(%)	
Age (years)	≤30	11 (17.7%)	51 (82.3%)	0.056
	>30	17 (33.3%)	34 (66.7%)	
Parity	≤3	20 (23.0%)	67 (77.0%)	0.420
	>3	8 (30.8%)	18 (69.2%)	
BMI (Kg/m^2)	≤25	12 (20.3%)	47 (79.7%)	0.253
	>25	16 (29.6%)	38 (70.4%)	
	Poor	12 (22.2%)	42 (77.8%)	
Socioeconomic Status	Middle	12 (26.7%)	33 (73.3%)	0.826*
	Rich	4 (28.6%)	10 (71.4%)	
Residential Status	Rural	14 (26.9%)	38 (73.1%)	0.626
	Urban	14 (23.0%)	47 (77.0%)	

***Fischer Exact Test**

DISCUSSION

The findings demonstrate that placenta previa significantly impacts pregnancy outcomes, with prematurity being the predominant complication affecting nearly two-thirds of cases. The high prematurity rate of 63.7% can be attributed to the pathophysiology of placenta previa, where abnormal placental implantation over the cervical os frequently necessitates early delivery due to antepartum hemorrhage, maternal hemodynamic instability, or elective cesarean section to prevent catastrophic bleeding. The relatively early mean gestational age at delivery of 33.64±4.71 weeks supports this mechanism, as obstetricians often balance the risks of continued pregnancy against fetal lung maturity. The 24.8% NICU admission rate directly correlates with the high prematurity incidence, as preterm infants commonly require intensive care for respiratory distress syndrome, feeding difficulties, and thermoregulatory support. The 17.7% rates of both birth asphyxia and neonatal death likely stem from the combination of prematurity-related complications and potential intrapartum hypoxia secondary to placental abruption or massive hemorrhage during delivery. The 12.4% intrauterine fetal death rate reflects the inherent risks of abnormal placental positioning, which can compromise uteroplacental blood flow and lead to chronic fetal hypoxia, particularly when placental tissue covers the cervical os completely.

The demographic analysis revealed several physiologically plausible associations. The trend toward higher prematurity rates in mothers over 30 years may reflect age-related vascular changes and increased likelihood of pregnancy complications that precipitate early delivery. The significant association between lower BMI and increased intrauterine fetal death suggests that maternal nutritional status and body composition may influence placental function and fetal growth in the context of abnormal implantation. The observed socioeconomic patterns likely reflect disparities in prenatal care access, nutritional status, and early recognition of warning signs, with poor socioeconomic status potentially leading to delayed diagnosis and suboptimal management of placenta previa complications. The demographic profile of our study population closely aligns with findings from similar investigations across South Asian populations. The mean maternal age of 29.58±6.09 years is remarkably consistent with reports from Hafeez M, et al. (29.63 years) [15] and Raees M, et al. (29.98 years) [16] while being slightly lower than Mashaly S, et al. (31.1 years).[13] This consistency across different populations suggests that the third decade of life represents a critical period for placenta previa development [17] likely due to increased parity and previous uterine interventions during these reproductive years. The socioeconomic distribution in our cohort, with 47.8% from poor backgrounds, mirrors the pattern observed by Lad SU, et al., who reported 66.15% from low socioeconomic status [18] and Anuradha K, et al., who found 84% unbooked cases [19] reflecting the higher prevalence of placenta previa complications in resource-limited settings where prenatal care access may be suboptimal.[20]

Our prematurity rate of 63.7% lies within the range cited in recent literature, being appreciably lower than Azhar T, et al. (64%) [14] but higher than Hafeez M, et al.

(64.86%).[15] The mean gestational age at delivery of 33.64±4.71 weeks in our series conforms with the distribution of gestational age described by Raees M, et al., in which 48% of patients delivered between 33-36 weeks.[16] This uniformity among studies establishes the fact that major degree placenta previa requires early-term delivery in most cases owing to the inherent risk of disastrous hemorrhage, in which case timings are determined predominantly by the balance between fetal lung maturity and a safe period for the mother. The NICU admission rate of 24.8% in our study was considerably lower than several regional studies, including Lad SU, et al. (57.46%) [18]Anuradha K, et al. (39.4%) [19] and Raees M, et al. (36%).[16] This variation may reflect differences in NICU admission criteria, availability of neonatal intensive care facilities, and institutional protocols for managing preterm infants. The lower admission rate in our study could also indicate better maternal stabilization and more optimal timing of delivery, resulting in less severely compromised neonates.

Our perinatal mortality rates showed interesting patterns when compared to the literature. The intrauterine fetal death rate of 12.4% was lower than Azhar T, et al. (17.4%) [14] but higher than Manognya A, et al. (7.14%).[21] The neonatal death rate of 17.7% was comparable to Lad SU, et al. (17.53%) [18] but higher than Raees M, et al. (16%) [16] and Manognya A, et al. (7.14%).[21] These differences may be attributed to variations in obstetric management protocols, availability of blood banking services, and the severity of placenta previa cases included in different studies. The birth asphyxia rate of 17.7% in our cohort was substantially higher than most comparative studies, with only Manognya A, et al. reporting a notably lower rate of 2.38%.[21] This disparity suggests potential differences in intrapartum management, cesarean section timing, or the severity of maternal hemorrhage during delivery. The higher asphyxia rate in our study may reflect challenges in optimal timing of delivery or resource limitations affecting immediate neonatal resuscitation capabilities.

The demographic associations revealed in our study provide important insights that both align with and diverge from established patterns. The trend toward higher prematurity rates in older mothers (>30 years: 70.6% vs ≤30 years: 58.1%) is consistent with the known association between advanced maternal age and pregnancy complications. However, the lack of statistical significance (p=0.168) contrasts with the more definitive associations reported in some studies, possibly due to our sample size or the relatively narrow age range of our population. The significant association between lower BMI and increased intrauterine fetal death (BMI ≤25: 18.6% vs >25: 5.6%, p=0.046) represents a novel finding not extensively reported in the literature, suggesting that maternal nutritional status may play a crucial role in fetal outcomes when placental implantation is already compromised. The socioeconomic patterns observed in our study, while not reaching statistical significance for most outcomes, demonstrate clinically meaningful trends that align with global health disparities. The higher rates of adverse outcomes in lower socioeconomic groups likely reflect multifactorial influences including delayed prenatal care, nutritional deficiencies, and limited access to tertiary care facilities with advanced obstetric and neonatal support services. These findings underscore the importance of addressing social determinants of health in managing high-risk obstetric conditions like major degree placenta previa.

This study has certain limitations. Being a single-center study, the findings may not be generalizable to wider populations. The relatively small sample size may have limited the statistical power to detect associations between some demographic variables and perinatal outcomes. Additionally, variations in institutional protocols and availability of resources may have influenced the outcomes observed. Future multicenter studies with larger sample sizes are recommended to validate and extend these findings.

CONCLUSION

Our study has concluded that major degree placenta previa is significantly associated with adverse perinatal outcomes, most notably prematurity, birth asphyxia, and increased perinatal mortality. These findings emphasize the need for early identification, careful antenatal monitoring, and timely intervention to reduce complications and improve neonatal outcomes.

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