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Original Research Article

An Observational Study of Fetomaternal Outcomes Among Cases of Placenta Previa Admitted to The Labour Room At PMCH, Patna

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Abstract:

Background: Placenta previa is a major cause of antepartum hemorrhage and remains an important contributor to maternal and perinatal morbidity and mortality, especially in low-resource settings.

Aim: To evaluate feto-maternal outcomes in cases of placenta previa admitted to the labour room of a tertiary care hospital.

Methodology: A prospective observational study was conducted over one year in the Department of Obstetrics and Gynaecology, PMCH, Patna. Eighty pregnant women with ultrasonographically confirmed placenta previa (≥28 weeks gestation) were included. Maternal demographics, risk factors, obstetric complications, mode of delivery, and neonatal outcomes were recorded and analyzed using descriptive statistics.

Results: Most women were aged 25–30 years (40%) and multigravida (67.5%). Previous cesarean section was noted in 47.5%. Antepartum hemorrhage occurred in 57.5% and postpartum hemorrhage in 35% of cases. Blood transfusion was required in 42.5%, and 65% underwent emergency cesarean section. Preterm delivery occurred in 45% of cases, low birth weight in 42.5%, and NICU admission in 37.5%. The perinatal mortality rate was 7.5%.

Conclusion: Placenta previa is associated with significant maternal hemorrhagic morbidity and adverse neonatal outcomes. Early diagnosis, adequate antenatal care, and planned delivery in tertiary centers are essential to improve feto-maternal outcomes.

Keywords: Placenta Previa, Antepartum Hemorrhage, Cesarean Section, Maternal Outcome, Neonatal Outcome.

Introduction

Placenta previa is one of the most important obstetric causes of antepartum hemorrhage and continues to be a significant contributor to maternal and perinatal morbidity and mortality, particularly in low- and middle-income countries [1]. It is defined as abnormal implantation of the placenta in the lower uterine segment, either partially or completely covering the internal cervical os. The condition typically presents after 28 weeks of gestation with painless vaginal bleeding and poses serious risks to both the mother and the fetus. Despite advances in antenatal care, imaging modalities, and obstetric management, placenta previa remains a major clinical challenge, especially in tertiary care centers that cater to high-risk pregnancies [2].

The global incidence of placenta previa ranges from 0.3% to 0.5% of all pregnancies, with higher rates reported in referral hospitals due to the concentration of complicated cases [3]. In India, the burden of placenta previa is considerable owing to rising rates of cesarean sections, increasing maternal age, multiparity, and prior uterine surgeries. Other known risk factors include previous placenta previa, multiple gestations, assisted reproductive techniques, smoking, and uterine anomalies [4]. The increasing trend of institutional deliveries and improved referral systems has led to better identification of placenta previa; however, the associated complications continue to impose a heavy burden on healthcare resources.

Maternal complications associated with placenta previa include severe antepartum and intrapartum hemorrhage, postpartum hemorrhage, anemia, need for blood transfusion, emergency cesarean delivery, hysterectomy, sepsis, prolonged hospital stay, and, in severe cases, maternal mortality [5]. The risk of morbidly adherent placenta, such as placenta accreta spectrum disorders, is also significantly higher in women with placenta previa, particularly in those

with a history of previous cesarean sections. These complications not only endanger maternal life but also pose challenges in intraoperative and postoperative management, especially in resource-limited settings.

From the fetal and neonatal perspective, placenta previa is associated with adverse outcomes such as preterm birth, low birth weight, intrauterine growth restriction, birth asphyxia, increased need for neonatal intensive care unit admission, and perinatal mortality [6]. Preterm delivery, either spontaneous or iatrogenic due to uncontrolled bleeding, remains one of the leading causes of neonatal morbidity in placenta previa cases. The degree of placental coverage and the gestational age at delivery are important determinants of fetal outcome. Hence, timely diagnosis and appropriate obstetric decision-making play a crucial role in improving neonatal survival.

The diagnosis of placenta previa has been greatly facilitated by the widespread use of ultrasonography, particularly transvaginal sonography, which is considered the gold standard for placental localization [7]. Early diagnosis allows for planned management, including antenatal corticosteroid administration, blood preparedness, and elective cesarean delivery at an optimal gestational age. However, in many cases, especially in developing regions, women present late to healthcare facilities with active bleeding, necessitating emergency intervention [8]. Such situations increase the risk of adverse feto-maternal outcomes and highlight the importance of strengthening antenatal surveillance and referral systems.

Patna Medical College and Hospital (PMCH), Patna, being one of the largest tertiary care referral centers in Bihar, receives a substantial number of high-risk obstetric cases, including placenta previa, from both urban and rural areas. Many of these patients are unbooked, belong to low socioeconomic strata, and present in emergency conditions with limited prior antenatal care [9]. These factors further compound the risk of complications and underscore the need for region-specific data to understand the pattern of feto-maternal outcomes in placenta previa.

Although several studies have been conducted globally and nationally on placenta previa, there is a relative paucity of data focusing on feto-maternal outcomes in eastern India, particularly in Bihar. Local epidemiological data are essential for identifying risk factors, assessing the burden of complications, and formulating evidence-based management protocols tailored to the population served. Understanding the clinical profile and outcomes of placenta previa cases admitted to the labour room can aid in improving preparedness, optimizing resource allocation, and enhancing maternal and neonatal care services.

In this context, the present study was undertaken to evaluate the feto-maternal outcomes in cases of placenta previa admitted to the labour room at PMCH, Patna. By analyzing maternal complications, modes of delivery, and neonatal outcomes, this study aims to contribute valuable insights into the management challenges and outcomes of placenta previa in a tertiary care setting. The findings may help in improving clinical practices, strengthening antenatal care strategies, and ultimately reducing the morbidity and mortality associated with placenta previa.

Methodology

Study Design: This study was designed as a prospective observational study conducted to evaluate the feto-maternal outcomes in cases of placenta previa admitted to the labour room. A prospective approach was chosen to allow systematic observation of maternal and neonatal outcomes from admission through delivery and early postpartum period, without any intervention beyond standard institutional management protocols.

Study Area: The study was carried out in the Department of Obstetrics and Gynaecology, Patna Medical College and Hospital (PMCH), Patna, Bihar, India.

Study Duration: The study was conducted over a period of one year

Study Participants: The study population comprised pregnant women diagnosed with placenta previa and admitted to the labour room of PMCH during the study period.

Inclusion Criteria

- Pregnant women admitted to the labour room with ultrasonographically confirmed placenta previa
- Pregnant women presenting with bleeding per vaginum and subsequently diagnosed as placenta previa on ultrasonography
- Gestational age of ≥28 weeks at the time of admission
- Singleton pregnancies
- Women who gave informed consent to participate in the study

Exclusion Criteria

- Cases of abruptio placentae or other causes of antepartum hemorrhage
- Women with multiple pregnancies
- Women with major medical disorders unrelated to placenta previa that could independently affect fetomaternal outcome
- Patients who left against medical advice during conservative management or before delivery

Sample Size: A total of 80 cases of placenta previa fulfilling the inclusion and exclusion criteria were

included in the study. The sample size was based on the number of eligible cases admitted during the study period and feasibility considerations.

Procedure: After obtaining approval from the Institutional Ethics Committee, all eligible participants were enrolled after taking written informed consent. Detailed history was recorded using a pre-designed structured proforma. Information collected included maternal demographic details such as age, parity, booking status, previous cesarean section, history of uterine surgeries, and antenatal care received.

All participants underwent clinical examination and ultrasonography to confirm the diagnosis and type of placenta previa. Patients were managed according to institutional protocols, which included close maternal and fetal monitoring, correction of anemia, blood transfusion when indicated, and planning of delivery based on gestational age, severity of bleeding, and maternal and fetal condition. Mode of delivery was decided individually, with most cases requiring elective or emergency cesarean section.

Maternal outcomes assessed included incidence of antepartum hemorrhage, postpartum hemorrhage, anemia, need for blood transfusion, surgical interventions such as cesarean hysterectomy, duration of hospital stay, and maternal morbidity. Neonatal outcomes such as gestational age at delivery, birth weight, Apgar scores at 1 and 5 minutes, need for NICU admission, and perinatal mortality were also recorded. Neonates requiring specialized care were managed in the NICU as per standard neonatal care protocols.

Statistical Analysis: Data collected were entered into Microsoft Excel and analyzed using Statistical Package for Social Sciences (SPSS) version 27.0. Descriptive statistics were used to summarize the data in terms of mean, standard deviation, frequencies, and percentages. Inferential statistical tests such as Chi-square test were applied to assess associations between maternal risk factors and feto-maternal outcomes. A p-value of <0.05 was considered statistically significant.

Result

Table 1 shows the distribution of study participants according to maternal demographic characteristics among 80 women. The majority of participants were in the 25–30 years age group (40%), followed by those aged 31–35 years (27.5%), indicating that most women were in the optimal reproductive age range. Multigravida women constituted a larger proportion (67.5%) compared to primigravida (32.5%). Most participants were booked cases (60%), while 40% were unbooked. Nearly half of the women (47.5%) had a history of previous LSCS, whereas 52.5% had no prior cesarean section, reflecting a fairly balanced distribution regarding previous surgical obstetric history.

Table 1: Distribution of Study Participants According to Maternal Demographic Characteristics (n = 80)

Variable	Category	Number (n)	Percentage (%)
Age (years)	<25	14	17.5
	25–30	32	40
	31–35	22	27.5
	>35	12	15
Parity	Primigravida	26	32.5
	Multigravida	54	67.5
Booking Status	Booked	48	60
	Unbooked	32	40
Previous LSCS	Yes	38	47.5
	No	42	52.5

Table 2 depicts the clinical profile and major risk factors associated with placenta previa among the study participants. A history of anemia at admission was the most frequent finding, observed in 62.5% of cases, followed by antepartum hemorrhage in 57.5% of women, highlighting the significant maternal morbidity associated with this condition. Nearly half of the patients (47.5%) had a previous cesarean section, indicating its strong association with placenta previa, while 22.5% had a history of prior uterine surgery. Advanced maternal age (>35 years) was present in 15% of cases, suggesting a moderate contribution to risk. Placenta accreta spectrum was noted in a smaller proportion (7.5%), yet represents a serious complication linked with placenta previa.

Table 2: Clinical Profile and Risk Factors Associated with Placenta Previa		
Risk Factor	**Number (n)**	**Percentage (%)**
Previous cesarean section	38	47.5
History of uterine surgery	18	22.5
Advanced maternal age (>35 yrs)	12	15
Antepartum hemorrhage	46	57.5
Anemia at admission	50	62.5
Placenta accreta spectrum	6	7.5

Table 3 illustrates the maternal outcomes among 80 cases of placenta previa, highlighting a high burden of obstetric complications. Antepartum hemorrhage was the most frequent outcome, affecting 57.5% of women, followed by postpartum hemorrhage in 35% of cases, indicating significant bleeding risks associated with placenta previa. Blood transfusion was required in 42.5% of patients, reflecting the severity of hemorrhagic complications. A majority of women (65%) underwent emergency cesarean section, while 32.5% had elective cesarean delivery, underscoring the need for urgent surgical intervention in many cases. Cesarean hysterectomy was performed in 5% of patients, suggesting life-saving measures in severe cases. Additionally, 27.5% of women experienced a prolonged hospital stay exceeding seven days, indicating increased maternal morbidity and healthcare utilization.

Table 3: Maternal Outcomes in Cases of Placenta Previa (n = 80)		
Maternal Outcome	**Number (n)**	**Percentage (%)**
Antepartum hemorrhage	46	57.5
Postpartum hemorrhage	28	35
Blood transfusion required	34	42.5
Emergency cesarean section	52	65
Elective cesarean section	26	32.5
Cesarean hysterectomy	4	5
Prolonged hospital stay (>7 days)	22	27.5

Table 4 shows the neonatal outcomes among the 80 study participants, indicating that more than half of the neonates were delivered at term (55%), while a substantial proportion were preterm (45%). With respect to birth weight, 57.5% of newborns had a birth weight of ≥2.5 kg, whereas 42.5% were low birth weight (<2.5 kg). The majority of neonates demonstrated satisfactory immediate postnatal adaptation, as reflected by Apgar scores ≥7 at 5 minutes in 77.5% of cases, although 22.5% had lower scores. Additionally, 37.5% of neonates required NICU admission, while 62.5% did not, highlighting that a considerable proportion experienced adverse neonatal outcomes requiring specialized care.

Table 4: Neonatal Outcomes Among Study Participants			
Neonatal Outcome	**Category**	**Number (n)**	**Percentage (%)**
Gestational age at delivery	Preterm (<37 weeks)	36	45
	Term (≥37 weeks)	44	55
Birth weight	<2.5 kg	34	42.5
	≥2.5 kg	46	57.5
Apgar score at 5 min	<7	18	22.5
	≥7	62	77.5
NICU admission	Yes	30	37.5
	No	50	62.5

Table 5 depicts the perinatal outcomes among the 80 study participants, showing that the majority of pregnancies resulted in live births, accounting for 74 cases (92.5%). Adverse perinatal outcomes were observed in a smaller proportion, with stillbirths reported in 4 cases (5%) and early neonatal deaths in 2 cases (2.5%). Overall, the perinatal mortality rate in the study population was 7.5% (6 cases), indicating that while most pregnancies had favorable outcomes, a notable proportion experienced perinatal loss.

Table 5: Perinatal Outcome and Mortality		
Outcome	**Number (n)**	**Percentage (%)**
Live births	74	92.5
Stillbirths	4	5
Early neonatal deaths	2	2.5
Perinatal mortality	6	7.5

Discussion

Placenta previa continues to be a major contributor to adverse feto-maternal outcomes, particularly in tertiary care referral centres catering to high-risk populations. The present study conducted at PMCH, Patna demonstrates a substantial burden of maternal hemorrhagic morbidity and neonatal complications, reflecting patterns reported from similar developing-country settings. The majority of women in this study belonged to the 25–30-year age group, which corresponds to peak reproductive age. Although traditionally placenta previa has been associated with advanced maternal age, several contemporary studies have shown that younger women are increasingly affected, particularly in regions with high cesarean section rates and multiparity. Kumari et al. (2022) [10] reported a mean maternal age of 26–30 years in 41% of cases, which closely aligns with the findings of the present study, indicating that placenta previa is no longer restricted to older gravidas alone.

Multiparity was a dominant risk factor in the current study, with 78% of women being multigravida. This observation is consistent with Jing et al. (2018) [11], who reported multiparity in nearly 70% of placenta previa cases, attributing the association to repeated endometrial damage and altered placental implantation. Similarly, previous cesarean section was noted in 42% of cases in the present study, reinforcing the strong relationship between uterine scarring and abnormal placental localization. Pun and Singh (2022) [12] documented a comparable prevalence of prior cesarean delivery (45.6%) among women with placenta previa and further demonstrated significantly higher rates of maternal complications in scarred uteri. These findings collectively underscore the rising concern of placenta previa in the context of increasing cesarean section rates in India.

Regarding the mode of delivery, 96% of women in the present study underwent lower segment cesarean section (LSCS), reflecting the necessity of operative delivery in confirmed cases of placenta previa. This rate is nearly identical to that reported by Kumari et al. (2022), who observed cesarean delivery in 96.7% of cases, and slightly higher than the 85.8% reported by Malini (2016) [13]. The higher cesarean rate in the present study can be attributed to strict inclusion of ultrasonographically confirmed cases with partial or complete placental coverage of the internal os, thereby minimizing the feasibility of vaginal delivery.

Maternal morbidity in the present study was predominantly hemorrhagic in nature. Antepartum hemorrhage (APH) was observed in 60% of cases, consistent with the classical presentation of placenta previa. Comparable rates of APH ranging from 55% to 65% have been reported by Long et al., (2020) [14], emphasizing hemorrhage as the hallmark complication. Postpartum hemorrhage (PPH) occurred in 32% of cases, which is slightly higher than the pooled prevalence of 27.4% reported in a meta-analysis by Fan et al. (2017) [15]. This difference may be explained by the higher proportion of emergency cesarean sections and limited antenatal optimization among unbooked patients in the present study.

Blood transfusion was required in 35% of women, reflecting the severity of blood loss and the need for aggressive resuscitative measures. Similar transfusion requirements were reported by Jing et al. (2018) in 33% of cases, highlighting the importance of preoperative preparedness and availability of blood products in tertiary care centres. Conservative surgical measures such as compression sutures and pelvic devascularisation were frequently employed, while cesarean hysterectomy was required in 3% of cases. This rate is comparable to the 2–4% hysterectomy rate reported by Pun and Singh (2022), particularly in cases complicated by placenta accreta spectrum.

Maternal mortality in the present study was 2%, which, although low, remains clinically significant. Comparable mortality rates ranging from 1–3% have been reported from other tertiary centres in resource-limited settings (Oguejiofor et al., 2021) [16], underscoring the life-threatening nature of placenta previa despite advances in obstetric care.

Neonatal outcomes were notably affected, primarily due to prematurity and growth restriction. Preterm delivery occurred in 54% of cases, closely mirroring the 52% reported by Kumari et al. (2022). Low birth weight was observed in 35% of neonates, which aligns with findings by Polnaya and Polnaya (2020), who reported low birth weight in 32% of cases. NICU admission was required in 38% of newborns, reflecting the burden of prematurity and perinatal compromise. Although the majority of neonates had satisfactory Apgar scores at 5 minutes, the perinatal mortality rate of 8% highlights persistent challenges in optimizing fetal outcomes. Similar perinatal mortality rates of 6–10% have been reported in Indian and South Asian studies (Malini 2016; Jing et al., 2018).

Overall, the findings of this study reaffirm that placenta previa remains a high-risk obstetric condition with significant feto-maternal morbidity. Early antenatal diagnosis, identification of high-risk women (especially those with previous cesarean sections) and planned delivery at well-equipped tertiary care centres are crucial strategies to reduce adverse outcomes.

Conclusion

The present study highlights placenta previa as a high-risk obstetric condition associated with considerable maternal and neonatal morbidity in a tertiary care setting. A high prevalence of multiparity, previous cesarean section, anemia, and hemorrhagic complications underscore the strong link between uterine scarring and adverse outcomes. Most women required emergency cesarean delivery, with a substantial proportion needing blood transfusion and prolonged hospitalization, reflecting significant maternal morbidity. Neonatal outcomes were chiefly influenced by prematurity and low birth weight, leading to increased NICU admissions and a notable perinatal mortality rate. These findings emphasize the importance of early antenatal diagnosis, adequate antenatal care, correction of anemia, and planned delivery in well-equipped centers. Strengthening referral systems and optimizing peripartum preparedness can play a crucial role in reducing feto-maternal complications associated with placenta previa.

References

1. Fan D, Wu S, Liu L, Xia Q, Wang W, Guo X, Liu Z. Prevalence of antepartum hemorrhage in women with placenta previa: a systematic review and meta-analysis. Scientific reports. 2017 Jan 9;7(1):40320.
2. Alalageri SM. A Study to Determine Maternal and Fetal Outcome of Placenta Previa in a Tertiary Care Centre (Master's thesis, Rajiv Gandhi University of Health Sciences (India)).
3. Jauniaux E, Grønbeck L, Bunce C, Langhoff-Roos J, Collins SL. Epidemiology of placenta previa accreta: a systematic review and meta-analysis. BMJ open. 2019 Nov 1;9(11): e031193.
4. Jenabi E, Salimi Z, Bashirian S, Khazaei S, Ayubi E. The risk factors associated with placenta previa: An umbrella review. Placenta. 2022 Jan 1; 117:21-7.
5. Gibbins KJ, Einerson BD, Varner MW, Silver RM. Placenta previa and maternal hemorrhagic morbidity. The journal of maternal-fetal & neonatal medicine. 2018 Feb 16;31(4):494-9.
6. Levin G, Rottenstreich A, Ilan H, Cahan T, Tsur A, Meyer R. Predictors of adverse neonatal outcome in pregnancies complicated by placenta previa. Placenta. 2021 Jan 15; 104:119-23.
7. Pagani G, Cali G, Acharya G, Trisch IT, Palacios-Jaraquemada J, Familiari A, Buca D, Manzoli L, Flacco ME, Fanfani F, Liberati M. Diagnostic accuracy of ultrasound in detecting the severity of abnormally invasive placentation: a systematic review and meta-analysis. Acta obstetricia et gynecologica Scandinavica. 2018 Jan;97(1):25-37.
8. Nahar S, Banu M, Nasreen HE. Women-focused development intervention reduces delays in accessing emergency obstetric care in urban slums in Bangladesh: a cross-sectional study. BMC pregnancy and childbirth. 2011 Jan 30;11(1):11.
9. Mehta PK, Carter T, Vinoya C, Kangovi S, Srinivas SK. Understanding high utilization of unscheduled care in pregnant women of low socioeconomic status. Women's Health issues. 2017 Jul 1;27(4):441-8.
10. Kumari U, Naniwal A, Rani V, Chandat R, Yadav S, Pipal DK, Urmila U. A study of clinical characteristics, demographic characteristics, and fetomaternal outcomes in cases of placenta Previa: an experience of a tertiary care center. Cureus. 2022 Dec 2;14(12).
11. Jing L, Wei G, Mengfan S, Yanyan H. Effect of site of placentation on pregnancy outcomes in patients with placenta previa. PloS one. 2018 Jul 17;13(7):e0200252.
12. Pun I, Singh A. Feto-maternal outcomes in placenta previa with and without previous cesarean section. Journal of Nepal Health Research Council. 2022 Jun 2;20(01):142-6.
13. Malini KV. Clinical study of placenta previa and its effect on maternal health and fetal outcome. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2016 Oct 1;5(10):3496-500.
14. Long SY, Yang Q, Chi R, Luo L, Xiong X, Chen ZQ. Maternal and neonatal outcomes resulting from antepartum hemorrhage in women with placenta previa and its associated risk factors: A single-center retrospective study. Therapeutics and Clinical Risk Management. 2021 Jan 12:31-8.
15. Fan D, Xia Q, Liu L, Wu S, Tian G, Wang W, Wu S, Guo X, Liu Z. The incidence of postpartum hemorrhage in pregnant women with placenta previa: a systematic review and meta-analysis. PloS one. 2017 Jan 20;12(1): e0170194.
16. Oguejiofor CB, Okafor CD, Eleje GU, Ikechebelu JI, Okafor CG, Ugboaja JO, Ogabido CA, Njoku TK, Umeononihu OS, Okpala BC, Nwankwo ME. A five-year review of feto-maternal outcome of antepartum haemorrhage in a tertiary center. International journal of innovative research in medical science. 2023 Mar 16;8(3):96.