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Original Research Article

Analysis of maternal and fetal outcome of placenta previa

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ABSTRACT

Background: Placenta previa, a condition in which the placenta is inserted into the lower uterine segment, causes bleeding and is a major risk factor for obstetric haemorrhage. Early diagnosis, blood transfusion, and multidisciplinary treatment can reduce maternal mortality rates. This study aimed to investigate the clinical aspects of the course of pregnancy, risk factors, maternal and foetal outcomes of patients admitted with the clinical features of placenta previa, and maternal and perinatal complications.
Methods: This cross-sectional study included 170 patients with placenta previa admitted to the Tirunelveli Government Medical College between September 2019 and September 2021. Patient details, obstetric history, and clinical examinations were recorded during admission. They underwent USG, MRI, and foetal and maternal examinations. The cases were managed based on placenta previa, gestational age, and conditions.
Results: Type 4 placenta previa, the most common type, accounted for 40% of cases, with bleeding per vagina being the primary complaint in 46% of cases. MRI was performed in 85% of patients, and emergency caesarean section was performed in 78%. Postpartum, 36% required hysterectomy due to haemorrhage. Babies had an average weight of 2.5-3 kg, with 30-32% having low birth weight. The maternal mortality was 1.18%, with 5% intrauterine and 4% neonatal deaths. Placenta previa was more common in women aged 25-29 (38%) and associated with previous caesarean sections (40%). Foetal malpresentation was higher (28%) in cases of placenta previa, mostly breech (49%).
Conclusion: This study suggested that advancing maternal age, gravidity, parity, previous abortion, and caesarean section were increased risk factors for placenta previa.

Keywords: Placenta previa, Maternal mortality, Perinatal complications, Hysterectomy, Neonatal intensive care, Haemorrhage

INTRODUCTION

Implantation of the placenta in the lower uterine segment overlying or approaching the internal cervical region, contrary to its normal implantation in the upper part of the body of the uterus, is termed Placenta previa.1 In Placenta previa, bleeding occurs from the placental site which is situated in a lower uterine segment that stretches during the latter half of pregnancy. Obstetric haemorrhage is one of the most important causes of maternal mortality and morbidity. Placenta previa is one of the major risk factors for obstetric haemorrhage. Placenta previa contributes to more than 1/5th of the cases of antepartum haemorrhage cases. Placenta previa is also one of the most common indications for peripartum hysterectomy. The major risk factors include advanced maternal age, previous caesarean section, increasing parity, previous abortion, previous uterine surgery, and previous D and C procedures. Early diagnosis allows for timely management and reduces maternal morbidity and mortality with arrangements for blood transfusion and a multidisciplinary treatment approach by a team of experienced obstetricians, surgeons, anaesthetists, and paediatricians. Maternal mortality due to Placenta previa is reduced to a great extent by early diagnosis in high-risk patients, blood transfusion facilities and expert management with skilled anaesthetic and obstetric care.[2] This study aimed to investigate the clinical aspects of the course of pregnancy, risk factors, maternal

and foetal outcomes of patients admitted with the clinical features of placenta previa, and maternal and perinatal complications.

METHODS

Study design

This cross-sectional study was conducted on 170 patients with placenta previa admitted to the Tirunelveli Government Medical College between September 2019 and September 2021. The study was approved by the institutional ethics committee before initiation, and informed consent was obtained from all patients.

Inclusion criteria

Pregnant women with gestational age >28 weeks with placenta previa confirmed by USG and those detected during LSCS as placenta previa were selected irrespective of parity, type of placenta previa after obtaining informed consent, and willingness to undergo a follow-up examination.

Exclusion criteria

Pregnant women with gestational age ≤28 weeks, those with incomplete medical records, and patients who declined to participate or were not willing to undergo follow-up examinations.

On admission, the details of the patient, including name, age, address, booking status, presenting complaint, duration of bleeding PV, associated pain, and appreciation of foetal movements were noted. Present and past obstetric histories were recorded in detail. Personal and surgical histories were also recorded. The patient was examined clinically for nutritional status, pallor, pedal oedema, icterus, and vital signs. An abdominal examination was performed to determine the height of the uterus in weeks, foetal lie, presentation, position, uterine contractions, and foetal heart rate. IV lines were secured, blood samples were collected for basic investigation, and routine urine examinations were performed. All patients underwent USG examination via the transabdominal and transvaginal routes. MRI was performed in stable patients to determine placental location and depth of placental invasion. The cases were managed according to the type of placenta previa, gestational age, and maternal and foetal conditions on admission. All delivered babies were managed with proper care, and those requiring special care were admitted to the NICU. Foetal and maternal outcomes, risk factors, and complications were recorded in each case, and the duration of hospital stay was recorded.

Statistical analysis

Data were presented as frequency and percentage. Categorical variables were compared using the Pearson chi-square test. Significance was defined by p values less than 0.05 using a two-tailed test. Data analysis was performed using IBM-SPSS version 21.0 (IBM-SPSS Science Inc., Chicago, IL).

RESULTS

Type 4 placenta previa is more common than other types and accounts for approximately 40% of all placenta previa cases. The most common presenting complaint was bleeding per vagina in approximately 46% of the placenta previa cases. MRI was performed in 85% of patients admitted with placenta previa. In the delivery emergency mode, caesarean section was performed in 78% of placenta previa cases. In most cases of placenta previa, approximately 62% were delivered at 36-37 completed weeks of gestation (Table 1).

Table 1: Characteristics of placenta previa patients.

		Frequency (%)
Placenta previa (type)	1	26 (15.29)
	2	41 (24.12)
	3	35 (20.59)
	4	68 (40)
Risk factors	Anaemia	3 (1.76)
	COVID positive	2 (1.18)
	GDM	7 (4.12)
	GHTN	10 (5.88)
	Heart Disease	6 (3.53)
	Imminent eclampsia	1 (0.59)
	Seizure disorder	1 (0.59)
	Severe Preeclampsia	4 (2.35)
	Thrombocytopenia	2 (1.18)
	Twins	1 (0.59)
Presenting complaint	Abdominal pain	26 (15.29)
	Absent fetal movements	2 (1.18)
	Bleeding per vagina	79 (46.47)
	Draining per vagina	1 (0.59)
	Safe confinement	62 (36.47)
Abnormal placental implantation	Accreta	11 (6.47)
	Increta	3 (1.76)
	Percreta	12 (7.06)
MRI	Yes	146 (85.88)
	No	24 (14.12)
Mode of delivery	Elective LSCS	29 (17.06)
	Emergency LSCS	134 (78.82)
	LN	6 (3.53)
Gestational age at delivery	<30	5 (2.94)
	30-31	4 (2.35)
	32-33	8 (4.71)
	34-35	19 (11.18)
	36-37	107 (62.94)
	>38	27 (15.88)

Of the 80 cases of placenta previa that developed postpartum haemorrhage, hysterectomy was performed in 29 cases which accounted for 36% of PPH in patients with placenta previa. 51% of the babies were born with an average birth weight of 2.5 3 kg whereas approximately 30-32% born were with low birth weight. There was no significant association between baby sex and placenta previa.

Table 2: Complications and management of patients and fetal characteristics.

		Frequency (%)
Postpartum complication	PPH	80 (47)
	DIC	3 (1.76)
	Hypovolemic shock	3 (1.76)
	Sepsis	1 (0.59)
	Death	2 (1.18)
Management of PPH	Foley tamponade alone	20 (2)
	Bilateral uterine artery ligation	17 (21)
	Bilateral uterine artery ligation with Foley tamponade	11 (13.7)
	B lynch suturing	2 (2.5)
	Bilateral internal iliac artery ligation	1 (1.25)
	Hysterectomy	29 (36.2)
Birth weight	<1	6 (3.53)
	1-1.5	7 (4.12)
	1.5-2	11 (6.47)
	2-2.5	33 (19.41)
	2.5-3	87 (51.18)
	>3	26 (15.29)
Sex of baby	Male	81 (47.65)
	Female	89 (52.35)
NICU admission	Yes	22 (12.94)
	No	140 (82.35)
Fetal anomalies	Yes	5 (2.94)
	No	157 (92.35)
Post OP duration of hospital stay	<7	1 (0.59)
	7-14	154 (90.59)
	>14	13 (7.65)
Maternal outcome	Alive	168 (98.82)
	Death	2 (1.18)
Fetal outcome	Alive	154 (90.59)
	Intrauterine death	9 (5.29)
	Neonatal death	7 (4.12)

Table 3: Comparison of mother characteristics between groups.

		Cases	Control	P value
Age	<20	6 (3.53%)	20 (10%)	0.001
	20-24	45 (26.47%)	115 (57.5%)	
	25-29	65 (38.24%)	49 (24.5%)	
	30-34	40 (23.53%)	13 (6.5%)	
	>35	14 (8.24%)	3 (1.5%)	
In the elderly age group	<35	156 (91.76%)	197 (98.5%)	0.002
	>35	14 (8.24%)	3 (1.5%)	
Obstetric code	1	51 (30%)	93 (46.5%)	0.008
	2	73 (42.94%)	70 (35%)	
	3	32 (18.82%)	29 (14.5%)	
	>4	14 (8.24%)	8 (4%)	
Primigravida and multigravida	Primigravida	51 (30%)	93 (46.5%)	0.001
	Multigravida	119 (70%)	107 (53.5%)	

Continued.

		Cases	Control	P value
Previous LSCS	Yes	68 (40%)	35 (17.5%)	<0.001
	No	102 (60%)	165 (82.5%)	
Abortion H/O	Yes	29 (17.06%)	20 (10%)	0.04
	No	141 (82.94%)	180 (90%)	
Foetal presentation	Malpresentation	49 (28.82%)	15 (7.5%)	6.49
	Vertex	121 (71.18%)	185 (92.5%)	

Approximately 13% of babies born to mothers with placenta previa are admitted to the neonatal intensive care unit. Placenta previa is associated with 3% of foetal anomalies. Maternal mortality was only 1.18% of the total placenta previa cases. Intrauterine death was seen in 5%, and neonatal death was seen in 4% of babies born to mothers with placenta previa (Table 2).

Placenta previa cases were more common in the age group of 25 to 29 years which was about 38%, and least common in women aged less than 20 years which was about 3.5%. The incidence of placenta previa was significantly higher in women aged > 35 years than in those aged < 35 years. Placenta previa was less in primigravida patients which were 30% when compared to a control group which was 46%. The risk of placenta previa increased with increasing gravidity and was statistically significant.

Previous Caesarean sections had an increased risk of placenta previa, and the risk increased with increasing caesarean section rates. 40% of placenta previa cases are associated with a previous caesarean section. The incidence of placenta previa increased in women with a history of abortions, and the difference was statistically significant. The risk of foetal malpresentation was higher in the placenta previa group than in the control group. 28% of placenta previa cases were associated with foetal malpresentation, mostly breech presentation which was observed in 49 patients with placenta previa (Table 3).

DISCUSSION

In our study, 97% of cases were admitted, indicating public awareness and good antenatal care provided to high-risk antenatal mothers. The incidence of placenta previa was the highest in the age group of 25-29 years which is (65%). The incidence of placenta previa among pregnant patients was 1.1% correlates with the studies of Khirasaria and Nayak - 0.23% of cases.[3]

In our study, NICU admission in cases of placenta previa was 13% which is slightly lower than that reported by Khirasaria and Nayak (23%).[3] In our study, women above 30 years of age had a higher incidence of placenta previa than those younger than 30 years. This correlates with Williams and Mittendorf's (1993) study, which showed that advanced maternal age is strongly related to placenta previa. Women who were 30 years of age or older were more than twice as likely to have pregnancies complicated by placenta previa.[4]

The risk of placenta previa increases with prior caesarean sections (40%) which correlates with the studies of Clark et al, which showed the increasing risk of placenta previa in case of previous caesarean section.[5] The risk of placenta previa increases with previous abortions as studied by Mayekar which showed that 18% of them are those with a previous abortion history, out of which 8% had done D and C.[6]

In our study, the risk of placenta previa was twice as high in those with a history of previous abortion (p=0.04). 18% of patients with placenta previa had a history of abortion, of which 10% had undergone dilatation and curettage procedures. The incidence of placenta previa increases with the increasing number of caesarean sections. The risk of placenta previa is the highest during pregnancy immediately after caesarean section. 40% of placenta previa cases are associated with previous LSCS, and the risk is higher than that in those without LSCS. The risk of recurrent placenta previa was 5.8%. The recurrence rate observed in Rasmussen et al, studies was 2.3%, which was lower compared to the present study.[7]

The present study shows that placenta previa is associated with anomalous babies in 2% of cases which is very low compared to that reported by Brenner et al, 6%.[8] Placenta is seen in only one case of multiple pregnancies in our study which is contrary to the observation made in other studies where multiple pregnancies owing to the larger surface area of the placenta will increase the risk of placenta previa. Type IV Placenta previa is more common accounting for about 40% of the total cases. Expectant management in 66% of placenta previa patients to prolong pregnancy up to foetal lung maturity greatly reduced perinatal morbidity and mortality.

The risk of preterm delivery in placenta previa in our study is 36% which is like the studies done by Brenner et al. and Crane et al, was 40% and 46.5% respectively.[8,9] Zlatnik et al, studied that placenta previa were more likely to be diagnosed with postpartum haemorrhage (59%) and to receive a blood transfusion (11.8%).[10]

In our study, 78% of patients received a blood transfusion, 47% developed postpartum haemorrhage, and 1.7% underwent disseminated intravascular coagulation and hypovolemic shock. Maternal death occurred in 2 cases of placenta previa which accounted for 1.18% of the total cases. 51% of the babies born with an average birth weight of 2.5 to 3 kg whereas around 30-32% born are low birth

weight babies. Intrauterine death is seen in 5% of babies, and neonatal death is seen in 4% of babies born to mothers with placenta previa.

CONCLUSION

Placenta previa accounts for 1.1% of all deliveries and is associated with significant maternal morbidity and mortality rates; hence, accurate diagnosis and proper and timely management are necessary. The current study suggested that advancing maternal age, gravidity, parity, previous abortion, and caesarean section were increased risk factors for placenta previa. Efforts should also be made to promote birth spacing, limitation of family size, antenatal registration of all patients, use of routine USG in all pregnant patients, early identification, and referral of high-risk mothers to tertiary care centres, as this will help to reduce the adverse outcomes of both the mother and foetus. Regional anaesthesia can be safely administered in cases of placenta previa. Anticipation of complications, such as PPH, and conservative management may have serious consequences. Since the incidence of preterm and low-weight babies is high in cases of placenta previa delivery, it must be conducted in a tertiary care centre with a neonatal intensive care unit.

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