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Original Research Article

Long Term Review of Pattern of Placenta Previa and its Effect on Maternal and Neonatal Complications

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ABSTRACT

Background
Placenta previa (PP) is one of the major causes of obstetric hemorrhage and is potentially life threatening to the mother and the baby. When the placenta is implanted partially or completely in the lower uterine segment, it is called as placenta previa. Previa is a Latin word meaning going before. The objective of this study is to analyze the incidence, risk factors, maternal morbidity, mortality and perinatal outcome in women with placenta previa at Cheluvamba hospital, MMCRI, Mysore.
Methods
This is retrospective observational study of all cases of placenta previa managed in the Department of Obstetrics and Gynecology, Mysore Medical College & Research Institute, Mysore, for a study period of 5 years from May 1st of 2018 to April 31st 2023.
Results
During our study period of 5 years, there were about 18,205 cesarean sections of which 1.19 % were complicated with placenta previa. About 47% of women belonged to 20-30 years age group and 62.6% were multigravida. There were 30.8% and 14.7% cases with previous cesarean sections and prior abortions respectively. In our study, 66.2% of the cases had postpartum hemorrhage of which 35.9% cases were managed medically, uterine artery and internal artery ligation was done in 12.9% and 3.6% cases respectively. About 1.84% of cases were found to have Adherent placenta and 5.0% cases underwent peripartum hysterectomy when postpartum hemorrhage could not be controlled by conservative methods. ICU admissions were 6.9% and one maternal death was recorded. 81.5% babies were preterm and 69% of them needed NICU admission with perinatal mortality culminating to 14.7%.
Conclusion
Placenta previa is one of the major obstetric entities leading to adverse maternal and perinatal outcome. Early diagnosis, Institutional delivery with multidisciplinary approach, availability of emergency obstetrics services with senior obstetricians can improve maternal and neonatal

outcome in high-risk cases. Iatrogenic prematurity is a raising concern in placenta previa and its management.

Key Words: Placenta Previa, Adherent Placenta, Maternal Morbidity and Mortality.

INTRODUCTION

Antepartum hemorrhage (APH) is one of the leading causes of maternal morbidity and mortality. Placenta previa accounts for one third of all cases of APH. Placenta previa is an obstetric emergency as it is life threatening for pregnant woman as well as the neonate. Previa is a Latin word which means going before. Placenta previa defined as implantation of placenta in lower uterine segment, overlying or approaching internal cervical os and its incidence is 0.3%.[1] Types of placenta previa (a) true placenta previa- covers the internal os; (b) low lying placenta previa - lies within 2 cm of internal os.

The most important predisposing factor is previous uterine scar like previous cesearean[2], hysterotomy and previous history of curettage. Others are advanced maternal age, large placenta in multiparity, multiple pregnancy and smoking leading to encroachment of placental edge in lower segment.

The classical presentation is sudden, painless, causeless and recurrent bleeding per vagina, usually seen after 2nd trimester. Sentinel bleed is usually seen which is rarely profuse and not so fatal. Rarely it can be complicated with placenta increta, accreta or percreta.

Sonography is gold standard for the diagnosis of placenta previa. TVS is more precise than TAS in localization of placental edge.[3] 3D ultrasound is considered whenever the diagnosis is uncertain following 2D ultrasound. MRI is complementary to ultrasound for the accurate diagnosis of placenta previa and especially PAS.

Management of placenta previa depends on gestational age, clinical presentation, type of placenta previa, maternal and fetal condition.[4] Expectant management is MacAfee regimen indicated in cases with stable vitals, mild bleeding/ spotting p/v, preterm and with reassuring FHR, thereby it can prolong the pregnancy and reduce the risk of prematurity.[5] RCOG[6] 2018 recommends cesarean delivery for women with placental edge within 2 cm circumference of internal os.

The complications of placenta previa are mainly due to postpartum hemorrhage, shock and its sequelae, increased operative interventions, need for ICU admission and blood transfusions, all posing risk of maternal morbidity and mortality.[7] Fetal morbidity is mainly because of iatrogenic prematurity. The overall perinatal mortality rate is 4-8%.

MATERIALS AND METHODS

A retrospective observational study was conducted in the study period from 1st May 2018 to 31st April 2023 for a period of 5 years at Cheluvamba Hospital, MMCRI Mysore, after seeking ethical clearance from Institutional Ethical Committee. Objective of this study was to study the demographic features, obstetric risk factors, complications and management, and perinatal outcome in women presenting with placenta previa.

Inclusion Criteria

- This study included all patients diagnosed with placenta previa at admission.
- Both Emergency as well as registered cases are enrolled.

Exclusion Criteria

- The cases with gestational age below 28 weeks and other causes of antepartum hemorrhage are excluded such as Abruptio placenta, vasa previa and other local causes leading to hemorrhage.

Of all patients admitted as placenta previa, parameters studied were age, parity, gestational age, clinical presentation, thorough history of current & prior pregnancy, risk factors, need for ICU admission, number of blood transfusions, incidence of PPH and surgical interventions like uterine artery ligation or peripartum hysterectomy, duration of hospitalisation etc. Perinatal outcome in terms of NICU admission, preterm birth, stillbirth, birthweight and perinatal mortality were noted.

Statistical Analysis

The following data was tabulated and analysed using SPSS version -21 software and presented as frequency and percentage of total cases.

RESULTS

In our study, Total number of caesarean deliveries for placenta previa during our study period of 5 years was found to be 217 and its incidence falling at 1.17%. It was observed that highest number of patients were in the 20-30 year's age group which was 47% as majority of our population showed peak reproductive potential during the above said years. Our study comprised of 37.3% primigravida and 62.6% of multigravida of which 30.8% of the pregnant women had history of prior cesarean section and 10 % of those had recurrence of placenta previa in the current gestation. Incidence of prior abortions in these patients was 14.7 %.

Variables	Frequency	Percentage	P value
<20	66	30.4	>0.05 (not significant)
20-30	102	47	0.0081
>30	49	22.5	>0.05(NS)
Primigravida	81	37.3	>0.05 (NS)
Multigravida	136	62.6	0.0071
Previous Abortion	32	14.7	0.042
Previous Cesarean	67	30.8	0.0063
Placenta previa in previous pregnancy	10	4.6	0.01

Table 1: Demographic characteristics and obstetric variables among women who had undergone cesarean delivery for placenta previa

Of the total number of cases managed at our institute, 14.7% of the cases delivered by 32 weeks, 70.9% delivered by 36 weeks embarking majority and 18.4% of the cases delivered after 37 completed weeks.

Gestational age at the first episode of APH

Features	Frequency	Percentage
28-32 Weeks	23	14.7
32-36 weeks	154	70.9
>36 weeks	40	18.4

Table 2: Clinical presentation and antenatal complications in women who have undergone cesarean for placenta previa

Amongst the maternal complications, postpartum hemorrhage, need for multiple transfusions, ICU admissions, increased operative interventions were the challenges faced. There were 96 cases of PPH, 68 cases were managed medically, 28 cases were managed by uterine artery ligation, 11 cases underwent peripartum hysterectomy when conservative methods failed to control the hemorrhage. There were 4 cases of adherent placenta and all the cases had prior

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history of cesarean deliveries and underwent peripartum hysterectomy. Following cesarean delivery.

Postpartum Hemorrhage (PPH)

	Frequency	Percentage
Managed medically	68	31.3
Adherent placenta	04	1.84
Uterine artery ligation	28	12.9
	Frequency	**Percentage**
Internal artery ligation	08	3.6
Peripartum Hysterectomy	11	5.0
Maternal ICU admission	15	6.9

Table 3: Postoperative complications

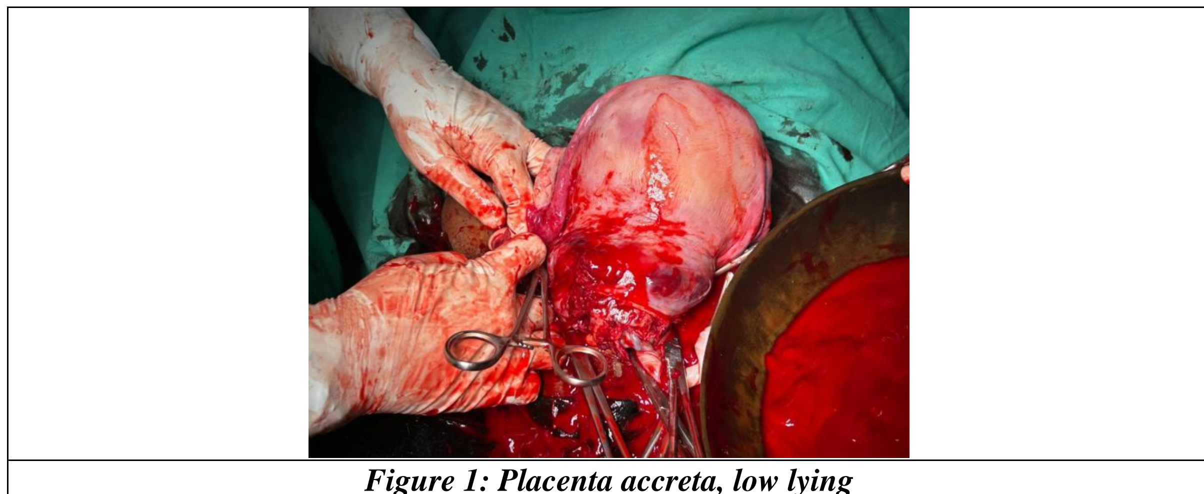

Figure 1: Placenta accreta, low lying

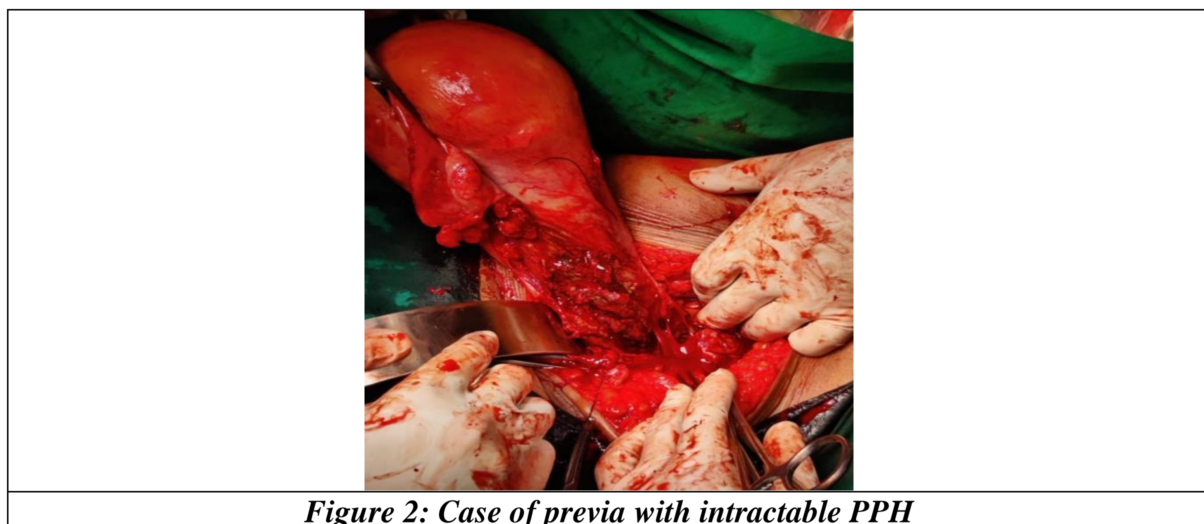

Figure 2: Case of previa with intractable PPH

Majority of cases (69.1%) required NICU admissions due to prematurity and 14.7 % babies succumbed to death due to extreme preterm complications.

	Frequency	Percentage
NICU admission	150	69.1
Preterm	177	81.5
Perinatal deaths	32	14.7

Table 4: Neonatal outcome

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DISCUSSION

The incidence of placenta previa in India according to various studies published recently ranges from 1.8 to 2 percent[8,9] whereas in other Asian countries is 1.24% in China[10] and 0.7% in Iran[4]. In our study the incidence was found to be 1.19% which is comparable with these studies. Incidence of placenta previa was highest in the age range of 20-30years which was around 47% comparable to study done by Shivananjaiah et al.[5] Second gravida and above had a higher incidence of caesarean done for placenta previa in this study which is comparable with other studies done in south India.[8,9]

Risk factors such as previous miscarriage, previous cesarean delivery and previous history of placenta previa accounted for 14.7%, 30.8%% and 4.6% of the total cases. Comparing our study and others is as follows:

Study	Previous Abortion	Previous Cesarean	Prior History of Previa
Our study	14.7%	30.8%	4.6%
Ezechi OC et al[11]	41%	61.5%	41%
Gargari SS et al[4]	35.8%	42.9%	1.8%

Risk factors such as previous miscarriage, previous cesarean delivery, previous placenta previa, multiple gestation, uterine anomalies and fibroids are associated with placenta previa and accordingly pregnant women with these risk factors need close monitoring and evaluation for placenta previa as the gestation advances. Our study showed presence risk factors such as previous abortions/ cesarean sections were independent risk factors for development of placenta previa ($P < 0.05$)

Expectant management in placenta previa cases advocated by MacAfee and Johnson improves the neonatal outcome while keeping maternal morbidity at the minimum. Cases undergoing expectant management are hospitalized as patients visiting our hospital have difficulty in access to emergency transport and are not able to rest at home. Best practice recommendation by RCOG advises hospital or home. Management based on patient needs and social situation[1].

Our institute being the tertiary care center receives referrals from five districts around Mysore. Each case was meticulously dealt by skilled senior obstetrician with multidisciplinary approach, round the clock blood bank availability followed up by Intensive care unit (ICU) follow up as cases were taken up for emergency or elective LSCS based on the clinical presentation.

In our study, most of the patients required (90%) required blood transfusion. which is comparable as in Rangaswamy study[12] and Sharma T study.[13] Total of 7 patients required massive transfusion of blood and blood products. All cases were managed postoperatively in High dependency unit (HDU) complex out of which 6.9% (15 cases) with significant morbidity was managed in Intensive care unit (ICU). Out of 217 cases that were managed, one maternal death occurred due to the sequalae of major PPH i.e, Disseminated Intravascular Coagulation/ Multiple organ dysfunction syndrome.

In our study, postpartum hemorrhage was noted in 66.2% of cases and was managed with medical measures and uterine artery ligation was done as a prophylactic preventive measure in 12.9% (28) of the pregnant women. All cases were monitored postopeartively in HDU of which 6.9(15) women required ICU admission. These patients required massive blood transfusions and had undergone increased operative intervention intraopeartively. Adherent placenta was recorded in 1.8% (04) of cases. Internal artery ligation was performed in 8 cases, majorly among the primi uterus group where utmost efforts were intended towards preserving the uterus for further fertility while controlling the hemorrhage. About 5.06% (11) cases had intractable PPH which were proceeded with peripartum hysterectomy when all conservative

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methods failed.In various studies 11.9% - 40.2% of cases required blood transfusion[4,9,14,15] 5.1% of cases required uterine artery ligation[5], 1.3%-30.9%cases required peripartum hysterectomy[4,15-17], 14%-16% required ICU admission[9,16], 22% -46% cases experienced PPH[9,15,18] 6.6% - 36.8% of cases had adherent Placenta[9,15,17]. Wide variation in incidence of PPH, adherent placenta, requirement of blood transfusion and ICU admission is because of variation in the incidence of placenta previa, age at incident pregnancy, multiparity and previous history of multiple caesareans which influence the risk of complications and outcome. PPH and need for blood transfusion were significantly high in placenta previa patients (P <0.05)

NICU admission, preterm birth and perinatal deaths observed were 69.1%, 81.5%, 14.7% cases respectively in our study. Majority of the neonates required resuscitation and NICU care. Iatrogenic preterm birth, low birth weight leading to respiratory distress and shock were attributed as the significant causes for neonatal morbidity and mortality Other published studies noted low birth weight in 23.1% - 54.3%% cases[14,15,17,18], NICU admission in 12.5% - 37% cases[9,15-17], preterm birth in 46% -52% of the cases[15,19] and perinatal mortality in 2% - 12% of the cases[9,15,17-19] due to extreme prematurity. Iatrogenic prematurity is the profound consequence of placenta previa and its management.

CONCLUSION

Placenta previa is one of the most dreaded obstetrics emergencies. Multiparity, previous caesarean section, and previous abortion are independent risk factors of placenta previa leading to fatal maternal and neonatal complications. Early diagnosis, careful evaluation and timely delivery along with multidisciplinary approach remains the cornerstone in the management of placenta previa that can maternal morbidity and mortality. Iatrogenic prematurity is the inherent cause for neonatal complications in the current era.

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