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Placenta Praevia - To study the Risk factors and its associated Maternal and Perinatal outcome in a tertiary care hospital.

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Abstract

Background: Placenta praevia is a major cause of antepartum hemorrhage, leading to substantial feto-maternal morbidity and mortality. The present study was conducted to determine predisposing factors for placenta praevia and its associated maternal and perinatal outcome.

Aim

1) To evaluate the risk factors associated with placenta praevia.

2) To study the associated maternal and perinatal outcome.

Methodology: It is a retrospective study conducted over a period of 3years from April 2019-2022 in department of obstetrics and gynaecology at Mahadev Appa Ram pure Medical College on 100 antenatal women with placenta praevia at gestational age > 28wks.

Results: The prevalence of placenta praevia in our study was 2%. The majority of women belonged to age group of 20-30yrs. The incidence increased with increasing parity i.e., 20% in primigravidas and 80% in multi gravidas. The majority of women had Grade IV placenta praevia (45%), 2% cases had accreta and 1% had placenta increta. The most common risk factors were previous caesarean section (21%), history of prior dilatation and curettage (18%), only 1% cases had history of previous placenta praevia. The most common maternal complication was post-partum hemo rrhage

(40%), peripartum hysterectomy (7%), shock (3%), need for blood transfusion (38%) and ICU admission (9%). No maternal mortality was observed. 71 cases had pre-term birth and 29 cases were term deliveries. Majority of neonates had low birth weight, 41 neonates needed NICU admission, 24% had APGAR score <7 at 5min. Perinatal mortality rate was 9%.

Conclusion: Multi-parity, increasing maternal age, prior caesarean section, prior dilatation and curettage were significantly associated risk factors for placenta praevia. The adverse maternal outcome involved post-partum hemorrhage, need for blood transfusion, peripartum hysterectomy, shock and ICU admission and the babies born to such mothers were pre-term with low birth weight and needed NICU care and had increased morbidity and mortality.

Keywords: Placenta praevia, Maternal morbidity and mortality, perinatal morbidity and mortality

Introduction

Placenta praevia is a disorder of pregnancy which occurs due to abnormal placentation. It is defined as placenta that is implanted somewhere in the lower uterine segment, either over or very near the internal cervical Os.[1]

It is one of the major causes of Obstetric hemorrhage and accounts for 1/3rd cases of Antepartum hemorrhage. The incidence of placenta praevia is 1 case in 250 to 400 deliveries, still rising due to increasing rate of caesarean section.[1]

Although various associations have been identified with placenta praevia, there is no definite etiology. Multi parity, advanced maternal age, cigarette smoking, cocaine usage, multiple pregnancy, previous caesarean delivery, history of abortions or uterine surgical procedures are some of the risk factors contributing to the development of placenta previa. [2-6]

Placenta praevia is classified as “complete” when the placenta completely covers the internal cervical os, “partial” when the placenta partially covers the os, “marginal” when the lower edge of the placenta just reaches the Os, and “low-lying” when the placenta is in the lower segment but does not reach the internal Os. Studies have shown that placenta previa carries greater risks of surgical complications including obstetric hysterectomy and massive haemorrhage requiring blood trans fusion.[7]

Placenta accreta spectrum is a serious complication of pregnancy and is associated with massive intrapartum hemorrhage, high risks of peri-partum hysterectomy and high maternal morbidity and mortality. With the rising incidence of caesarean section combined with increasing maternal age, the number of cases of placenta praevia and its com plications, including placenta accreta is expected to increase.[8]

Maternal morbidity includes need for blood transfusion, increased operative interventions, postpartum hemorrhage, peripartum hysterectomy, shock, ICU admission and sepsis. The maternal mortality ratio is increased 3 fold for women with placenta previa. Placenta praevia and coexistent Placenta accreta spectrum contribute substantively to maternal morbidity and mortality. Perinatal morbidity includes preterm delivery, asphyxia, low birth weight, low APGAR scores, need for NICU admission and associated perinatal mortality.

The simplest, most precise and safest method of placental localization is provided by transabdominal sonography.[9]

Early diagnosis and timely intervention helps in reducing the foetomaternal morbidity and mortality by keeping an eye on need for blood transfusion, and arranging for a team of experienced ssenior obstetrician, anesthesiologist and paediatrician.[10] Management of placenta praevia depends on clinical presentation, gestational age and degree of praevia.

Methodology

Study design

Retrospective observational study

Sample size and inclusion criteria

100 cases of placenta praevia beyond 28weeks gestation who were diagnosed at or after admission and during caesarean delivery are included in the study.

Conducted at tertiary hospital Basaveshwar teaching and general hospital and Sangamesh war hospital attached to Mahadev Appa Rampure medical college, Kalaburagi between April 2019- March 2022.

A detailed history, thorough clinical examination and ultrasound for placental localization, fetal wellbeing and any retroplacental haemorrhage were carried out in all the cases.

The diagnosis of placenta praevia was based on ultra sonography and confirmed at caesarean delivery. Risk factors such as age, parity, prior history of dilatation and curettage, previous caesarean section, multiple pregnancy and smoking in present pregnancy were recorded.

Maternal complications in the form of postpartum haemorrhage, need of peripartum hysterectomy, need of blood transfusion, DIC, acute renal failure and maternal death were recorded.

Perinatal morbidity and mortality were evaluated in relation to prematurity, fetal growth restriction, low birth weight, low APGAR at 5 mins, admission to Neonatal intensive care unit, still birth, intrauterine fetal demise, early neonatal death were recorded

Results

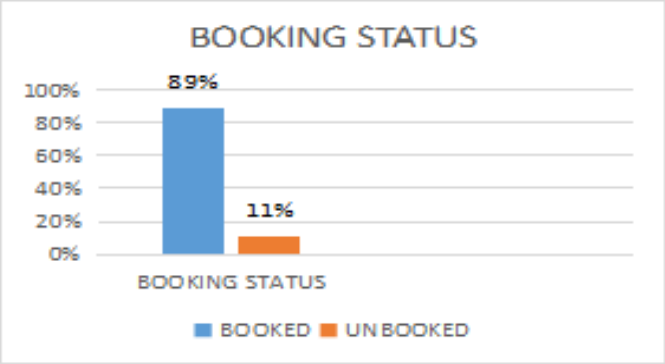
Number of obstetric admissions in the study period were 4915, among which 100 cases presented as placenta previa accounting for prevalence of 2 %.

Table 1: Socio demo graphic characteristics in placenta praevia.

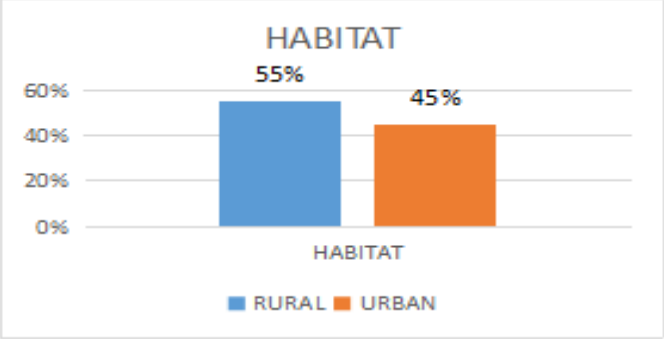
Socio-demographic status	No. of patients in percentage
Booking status	
Booked	89%
Un-booked	11%
Habitat	
Rural	55%
Urban	45%
Age	
<20 years	3%
20-30 years	74%
>30 years	23%
Gravidity	
Primigravida	20%
G2	30%
G3	30%
>=G4	20%

Table 1 showing socio-demographic profile of the women with placenta previa. 89 % cases were booked and 11% were un-booked and referred cases. 55% cases belonged to rural population and 45% cases belonged to Urban population.

Incidence of placenta previa was highest in the maternal age group 20-30 years i.e. 74% followed by 23% in the age group of >30 years. The incidence increased with increasing parity i.e., 20% in primigravidas and 80% in multigravidas and 20 % in grand multigravidas (>=4).



Graph 1



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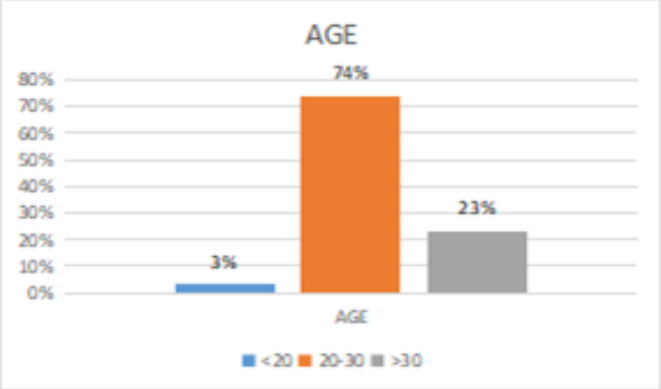

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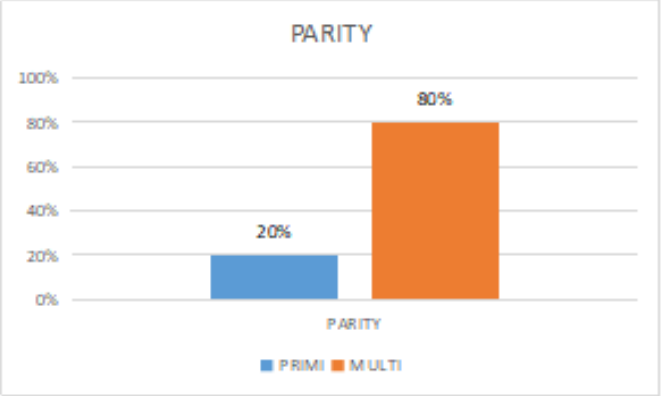
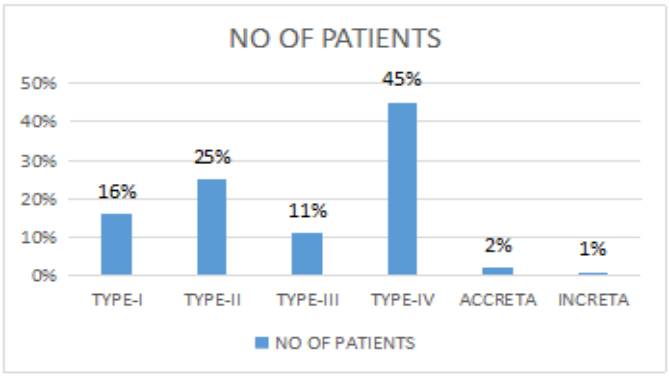


Graph 4

Table 2: Distribution of cases according to Type of placenta praevia

Type of placenta previa	Percentage
Type I	16%
Type II	25%
Type III	11%
Type IV	45%
Placenta accreta	2%
Placenta increta	1%

In the study, majority of cases belonged to Type IV placenta praevia (45%), Type II (25%), Type I in 16% cases and 11% had Type III placenta praevia. 3% cases belonged to placenta accreta spectrum.



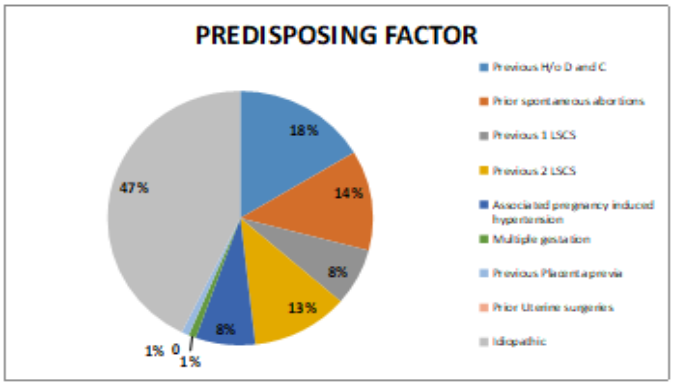
Graph 4

Table 3: Distribution of cases according to predisposing factors

Predisposing factors	No. of cases in Percentage
Previous H/o D and C	18%
Prior spontaneous abortion	14%
Previous 1 LSCS	8%
Previous>/= 2 LSCS	13%
Hypertensive disorders of pregnancy	8%
Previous H/o placenta previa	1%
Multiple gestation	1%
Prior operations on uterine cavity	0
No known cause (Idiopathic)	47%

In the present study, 18% cases had prior history of dilatation and curettage,14% had prior spontaneous abortions, 8% had history of previous 1 LSCS, 13% had history of previous >/= 2LSCS, 8% cases had associated pregnancy induced hyper tension.

1% of cases were associated with multiple gestation and 1% had prior history of placenta. 47% cases were idiopathic.

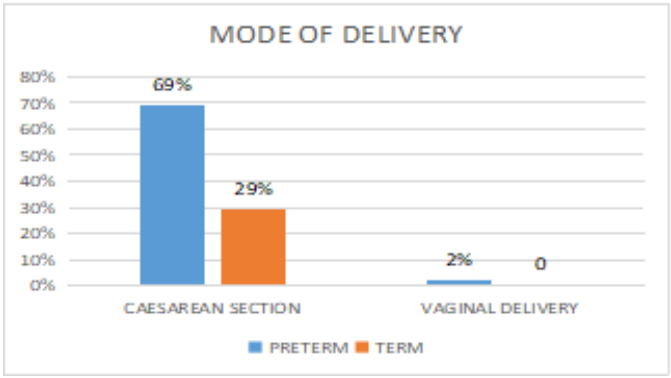


Graph 6

Table 4: Distribution of cases according to mode of delivery

Mode of delivery	Vaginal delivery		Caesarean section	
	Preterm	Term	Preterm	Term
No of cases	2	0	69	29
Percentage	2%	0	69%	29%

Out of 100 cases of placenta praevia, 2 cases underwent vaginal delivery and 98 cases under went caesarean section of which 2 cases had classical caesarean section and rest underwent lower segment caesarean section. Peri partum hysterectomy was done in 7 cases.



Graph 7

Table 5: Distribution of cases based on intra-operative method used to control bleeding

Method used	Percentage of cases
Haemostatic sutures at placental bed	17%
Uterine artery ligation	12%
Internal iliac artery ligation	3%
B lynch sutures	4%
Bimanual compression	1%
Bakri balloon insertion	2%
Peripartum hysterectomy	7%
AMTSL only	60%
AMTSL, Inj Methergine 0.2mg i. m	6%
AMTSL, Inj Methergine 0.2mg i. m+Inj Carboprost 250mcg i. m	7%

In 98 cases who underwent caesarean delivery, the Intraoperative method used to control bleeding, in 60% cases, only active management of 3rd stage of labour (AMTSL) was done, in 6 % of cases along with AMTSL, inj methergin 0.2mg im was given, in 7% cases along with AMTSL, Inj carboprost 250mcg along with inj methergin was given to control bleeding. In 17% cases hemostatic figure of 8 suture were taken on placental bed, in 1 patient bleeding was controlled with bimanual compression, 4 cases needed additional B lynch sutures, 12 cases needed additional Bilateral

uterine artery ligation and 3 cases needed additional internal iliac artery ligation. Bakri balloon insertion was done in 2 cases after uterine artery ligation. Inspite of all the above methods, 7cases needed peripartum hysterectomy to control bleeding.

Table 6: Distribution of cases according to Maternal outcome

Maternal outcome	No. of cases in Percentage
Early:	
Haemorrhagic shock	3%
Postpartum haemorrhage	40%
Manual removal of placenta	16%
Bladder injury	2%
Acute kidney injury	3%
Peripartum hysterectomy	7%
ICU Admissions	9%
Blood transfusion	38%
Maternal mortality	0
Late:	
Wound infection	8%
Sepsis	0
Length of hospital stay >8 days	34%
NO COMPLICATION	57%

In the present study, 40% cases had postpartum hemorrhage,16% cases needed manual removal of placenta, 7% cases needed peripartum hyster ectomy,3% of cases had hemorrhagic shock, 9% cases needed ICU admission, 2% had bladder injury and 3% went into Acute Kidney injury. In the present study, the increased maternal morbidity was due to multiple blood trans fusions (38%), Prolonged hospital stay (34%) and wound infection in 8% cases. Majority i.e., 57% cases had no complication. There were no maternal mortality in the study.

As shown in table 7 below, there were 71% premature newborns signifying major contribution of placenta previa in newborn prematurity. Majority of the neonates were low birth weight (56%), 16% extremely low birth weight. In the study, 41 neonates needed NICU admission, 24 had APGAR score <7 at 5min, 3 cases had stillbirth, 4 cases were intrauterine fetal demise, and 2 cases had early neonatal death. Total Perinatal deaths were 9%.

Table 7: Distribution of cases according to perinatal outcome

Neonatal outcome	No of cases in percentage
Gestational age (Maturity)	
28-31+6	30%
32-33+6	15%
34-36+6	26%
>=37	29%
Birth weight	
<1.5kg	16%
1.5-2.4kg	56%
2.5-3.5kg	27%
>3.5kg	2%
APGAR score (< 7 in 5 min)	24%
NICU Admission	41%
Still birth	3%
IUD	4%
Early neonatal death	2%

Discussion

This study investigated the association between different predisposing factors and adverse maternal and perinatal outcomes with placenta praevia. The prevalence of placenta previa in our study was 2%.

In our study, majority of the cases were in 20-30yrs age group (74%) followed by 23% cases in more than 30yrs

age group which is similar to study done by Seema Dwivedi et al.[11] in which mmajority of the pregnant women were in between 20-30 years of age (51.1%) and in Kumari S et al.[12]study the incidence of placenta previa was highest in the age group of 20-30 years i.e., 71.42%, followed in descending order by women in the 30–35-year age group. It was observed that increasing age has a strong relationship with placenta praevia. As age of the women increases, collagen gradually replaces muscle in walls of myometrial arteries, which results in defective vascularisation of the decidua. These under-vascularized areas have been suggested to participate in the progress of placenta praevia. In the study,20% patients were primigravida and 80% patients were multigravida out of which 20% were grand multipara which is similar to other studies done by Seema Dwivedi et al.[11] in which 90% cases were multigravidas and 77.14% cases were multigravida in the study conducted by Kumari S et al. Advanced maternal age and multiparity are considered as risk factors for placenta previa and maternal haemorrhage in many studies.[14,15]

In the present study, Type IV complete placenta praevia (45%) was the most common type which is similar to studies done by Seema dwevedi et al[11]in which most common type was Type IV (35.37%), in Sarojini et al.[13] Study Type IV accounted for 23.6% cases and in the study done by Kumari S et al.[12], it was 71.42%.

Majority cases presented with one or multiple risk factors for placenta previa. 14% cases had history of prior spontaneous abortion, 18% cases had history of prior dilatation and curettage, 8% cases had history of previous 1 LSCS, 13% cases had history of previous 2/more LSCS, 8% patient had association of hyper tensive disorders of pregnancy, 1% cases of patients had history of previous placenta previa and association with twinning and 47% cases had no predisposing factor for placenta previa. The predisposing factors were com parable to studies done by Seema Dwivedi et al.[11] And Kumari S et al.[12]

Out of the 100cases, (2%) women had preterm vaginal delivery, Majority (98%) were delivered by LSCS. Results are comparable to a study conducted by Seema Dwivedi et al.[11]

Maternal outcome

Maternal outcome in the present study is comparable to studies done by Kumari Set al[12] and Seema Dwivedi et al[11] and is shown in the following table.

Maternal outcome	Kumari S et al	Seema Dwivedi et al.	Present study
Hemostatic suturing	2.85%	-	17%
Uterine artery ligation	5.71%	-	12%
Internal iliac artery ligation	-	-	3%
Hemorrhagic shock	-	25.6%	3%
Post-patum haemorrhage	11.42%	29.8%	40%
Manual removal of placenta	0	2.23%	16%
Peripartum Hysterectomy	2.85%	9.16%	7%
Bladder injury	-	4.96%	2%
Acute Kidney injury	2.85%	4.58%	3%
Multiple blood trans fusions	51.42%	68.3%	38%
ICU admission	-	14.9%	9%

Length of hospital stay>8days	-	22.5%	34%
Maternal mortality	2.85%	3.44%	0

Perinatal outcome

Prematurity has been observed in 71% (<37 weeks) of the newborn. In present study there was 9% perinatal mortality which is comparable to Kumari S et al.[12]study with 19.9 % perinatal mortality. Majority of the newborn had birth weight between 1.5-2.5kg (56%) in present study which is comparable to Kumari S et al.[12](48.5%)

Neonatal morbidity in our study was also significant. 71% of our patients were delivered before 37 weeks and 41% of newborns were admitted to the neonatal intensive care unit. We also observed a low 5-minute APGAR score in 24% new-borns. Morbidity was more marked before 34 weeks.

A population based retrospective cohort study among singleton 544, 734 mother-infant pair showed that the association between low birth weight and placenta praevia is chiefly due to preterm delivery and to lesser extend to fetal growth restriction.[16]

There was a progressive decrease in neonatal morbidity in the form of improving APGAR scores and fewer admissions to the neonatal intensive care unit as gestation advanced was observed in the study. This is also supported by the studies done by Rosenberg T et al and Fiaz AS et al.[17,18]

Therefore, waiting until 37 weeks if patient is not bleeding could decrease neonatal morbidity in our population. However, the obstetrician must weigh the risks of neonatal prematurity against the benefits of a planned delivery.

Conclusion

Placenta praevia is a major cause of maternal and perinatal morbidity and mortality which could be prevented by early registration, regular antenatal care, early detection of high-risk cases, and early referral to higher Centre. Multi-parity, increasing maternal age, prior caesarean section, prior dilatation and curettage were significantly associated risk factors for placenta praevia.

The adverse maternal outcome involved post-partum hemorrhage, need for blood transfusion, peri-partum hysterectomy, shock and ICU admission and the babies born to such mothers were pre-term with low birth weight and needed NICU care and had increased morbidity and mortality.

Throughout antenatal period obstetrician needs to be more vigilant in such cases as there is rise in incidence of Placenta accreta spectrum and implement the use of diagnostic procedures such as USG doppler and MRI for early diagnosis, timely intervention and to anticipate and prevent the intra-operative complications. Neo natal care should be improved to decrease neonatal morbidity and mortality arising mainly due to pre-term deliveries with placenta praevia.

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