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Original Research Article

## Maternal and perinatal outcome in placenta previa: a prospective observational study at a tertiary care hospital in Hanmakonda, Telangana, India

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### ABSTRACT

**Background:** Placenta previa is a major cause of maternal morbidity and mortality. A multi-disciplinary team approach is necessary to manage this condition. The wide spread use of ultrasonography in obstetrics in current days aided in early diagnosis of placenta previa. The present study was done to evaluate the maternal and fetal outcome in placenta previa in tertiary care centre.

**Methods:** This prospective study was conducted at Department of Obstetrics and Gynecology of Kakatiya Medical College under Government Maternity Hospital, Hanmakonda, Telangana during the period of June 2019 to September 2020.

**Results:** In present study, total number of placenta previa cases were 42 out of 7564 with an incidence of 0.55%. Majority were in the age group 20-29 years (88%). The major risk factor was previous caesarean delivery seen in 64.2% cases. The 19% cases presented with breech presentation. Majority were type 2 placenta previa (52.3%). Incidence was more among unbooked cases (66.6%). The incidence of post-partum hemorrhage was 16.6%. Hysterectomy was done in 7.14%. Perinatal mortality due to asphyxia was 2.38%, prematurity was 4.76%. Perinatal mortality rate was 1.05%.

**Conclusions:** Placenta previa has significant maternal and fetal risk. Accurate diagnosis, and timely intervention can lead to favourable outcome. Educating patients regarding the complications like post-partum hemorrhage, need for blood transfusions, and taking the neonatologist opinion will reduce the maternal and perinatal complications. Early referral, and proper health education will help in better outcome of both mother and fetus.

**Keywords:** Placenta previa, Antepartum and postpartum hemorrhage, Perinatal outcome

### INTRODUCTION

Placenta previa accounts for one third of all cases of antepartum hemorrhage. It is a major cause of maternal morbidity and mortality because of the associated massive antepartum and intrapartum hemorrhage.<sup>1</sup> Placenta previa is defined as implantation of placenta in lower uterine segment, overlying or approaching internal cervical os.<sup>2</sup> It occurs in 2.8/1000 singleton pregnancies and 3.9/1000 twin pregnancies.<sup>3</sup> Placenta previa complicates approximately 0.3 to 0.5% of pregnancies with no prior caesarean delivery.<sup>4</sup> The risk of developing placenta previa

increase progressively with increasing in number of cesarean sections with  $\geq 3$  cesarean deliveries the chance of having previa is 37%.<sup>5</sup>

However, the maternal and perinatal morbidity and mortality due to placenta previa is decreased. This is mainly due to the early diagnosis by the ultrasonography, avoidance of internal examination, presence of blood transfusion facilities, and the multidisciplinary approach by the obstetrician, anaesthetist and neonatologist. The risk of placenta previa can be reduced by avoiding primary cesarean section for non-recurrent indications. Perinatal

outcome also improved due to neonatal intensive care units and proper management.

**METHODS**

**Source of data**

Main source of data for this study are patients who came with history of painless bleeding per vagina after 28 weeks of gestation and were hospitalized at government maternity hospital, Hanmakonda and those patients detected antenatally by ultrasonography, and those cases detected during cesarean section.

**Methodology**

Study was conducted from June 2019 to September 2020 on cases diagnosed as placenta previa in government maternity hospital, Hanmakonda.

Detail information was taken regarding patient’s history, symptoms, ultrasonographic findings, other relevant clinical findings and patient’s management. Abdominal examination will be done to know the lie of the fetus and to rule out abruptio placenta.

**Inclusion criteria**

Patients who came with history of painless bleeding per vagina after 28 weeks of gestation, patients diagnosed with low lying placenta in their mid-trimester scanning and those cases who were admitted in emergency without ultrasonography and confirmation of placenta previa was done, by examining the placenta after delivery were included in the study.

**Exclusion criteria**

Patients with placenta previa associated with co morbid conditions like pre eclampsia, eclampsia, gestational diabetes mellitus and bleeding disorders were excluded from the study.

**RESULTS**

Total number of deliveries during this period were 7564. Total number of placenta previa cases were 42 out of 7564. The incidence of placenta previa among total deliveries during this period in our hospital was 0.55% (Table 1).

**Table 1: Incidence of placenta previa.**

Placenta previa	Percentage (%)
Total number of births	7625
Total number of cases of placenta previa	42
Incidence of placenta previa	0.55

In the present study, the incidence of placenta previa was highest in the age group of 20-29 years i.e., 88% (37 cases), followed by women more than 30 years age group and less than 19 years age group i.e., 7.14% and 4.76% respectively (Table 2).

**Table 2: Correlation of maternal age and placenta previa.**

Age (years)	No. of cases	Percentage (%)
<19	2	4.76
20-29	37	88
>30	3	7.14

In present study 71.5% (30 cases) of placenta previa were multigravida. 28.5% (12 cases) were primi (Table 3).

**Table 3: Correlation of parity and placenta previa.**

Present study	No. of cases	Percentage (%)
Primi	12	28.5
Multi para	30	71.5

In present study, out of 42 cases, risk of placenta previa occurring in pregnancy following a cesarean delivery was 64.2% (27 cases), following abortions was 16.6% (7 cases). No twin gestation with placenta previa was documented during this study period. Placenta previa cases without any significant risk factors were 19% (8 cases) (Table 4).

**Table 4: Risk factors of placenta previa.**

Risk factors	No. of cases	Percentage (%)
Cesarean section	27	64.2
Abortions	7	16.6
Twins	0	0
None	8	19

In present study, placenta previa cases with breech presentation were 19.04% (8 cases) and with vertex presentation was 80.95% (34 cases) (Table 5).

**Table 5: Correlation between presentation of fetus and placenta previa.**

Presentation	No. of cases	Percentage (%)
Vertex	34	80.95
Breech	8	19.04

**Table 6: Types of placenta previa.**

Types of placenta previa	No. of cases	Percentage (%)
Type 1	10	23.8
Type 2	22	52.3
Type 3	2	4.76
Type 4	8	19.04

In present study, out of 42 cases, majority of placenta previa cases were of type 2 i.e., 52.3% (22 cases). The 23.8% (10 cases) were type 1, 4.76% (2 cases) were type 3 and 19.04% (8 cases) were type 4 (Table 6).

In the present study, out of 42 cases, 28 were unbooked and 14 were booked cases. Incidence of placenta previa is more among un booked cases i.e., 66.6% (Table 7).

**Table 7: Distribution of booked and un booked status among placenta previa cases.**

Status	No. of cases	Percentage (%)
<b>Booked</b>	14	33.34
<b>Unbooked</b>	28	66.66

In present study, out of 42 cases, expectant line of management was carried out in 11.9% (5 cases) and it was successful in prolonging pregnancy. Active management was done in 88.09% (37 cases) (Table 8).

**Table 8: Management protocol.**

Management	No. of cases	Percentage (%)
<b>Active</b>	37	88.09
<b>Expectant</b>	5	11.9

In present study, cesarean section rate was 90.4% (38 cases). Out of 38 cases, 10 cases underwent elective cesarean section and 28 cases underwent emergency cesarean section. 9.52% (4 cases) delivered vaginally (Table 9).

**Table 9: Mode of delivery.**

Route of delivery	No. of cases	Percentage (%)
<b>Vaginal delivery</b>	4	9.52
<b>Elective LSCS</b>	10	23.80
<b>Emergency LSCS</b>	28	66.66

**Table 10: Intra and post operative complications.**

Complications	No. of cases	Percentage (%)
<b>Shock/hypotension</b>	1	2.38
<b>Post-partum hemorrhage</b>	7	16.6
<b>Blood transfusion</b>	26	61.9
<b>Cesarean hysterectomy</b>	3	7.14
<b>Adherent placenta</b>	1	2.38

In the present study, out of 42 cases, 61.9% (26 cases) of patients received blood transfusion and 2.38% (1 case) of patients had hypotension/shock. No patient had febrile morbidity and sepsis in post operative period. The incidence of post-partum hemorrhage was 16.6%.

Hysterectomy was done in 7.14% (3 cases). Adherent placenta was seen in 2.38% (1 case) (Table 10).

Out of 42 cases, low APGAR score was noted in 38.09% (16 cases) and APGAR score >8 was noted in 61.91% (26 cases) (Table 11).

**Table 11: APGAR scores in placenta previa.**

Apgar score	No. of cases	Percentage (%)
<b>&lt;7</b>	16	38.09
<b>&gt;8</b>	26	61.91

**Table 12: Causes of perinatal mortality in placenta previa in present study.**

Causes	No. of cases	Percentage (%)
<b>Asphyxia</b>	1	2.38
<b>Prematurity</b>	2	4.76
<b>RDS</b>	1	2.38
<b>Total</b>	4	9.52

In the present study, out of 42 cases, neonates of 12 cases (28.57%) were admitted in NICU. Perinatal mortality due to asphyxia was 2.38% (1 case), prematurity was 4.76% (2 cases), RDS was 2.38%. Perinatal mortality rate in present study is 1.05% (Table 12).

## DISCUSSION

The present study was done to evaluate the maternal and fetal outcome in placenta previa in tertiary care centre. This prospective study was conducted at department of obstetrics and gynaecology of Kakatiya medical college under government maternity hospital, Hanmakonda during the period of June 2019 to September 2020.

In present study, total number of placenta previa cases were 42 out of 7564 cases. The incidence of placenta previa during the study period was 0.55%. This correlates with studies of Rao et al from Maternity hospital, Chennai and Rani et al who reported the incidence of placenta previa as 0.52% and 0.57% respectively.<sup>6,7</sup> The incidence of placenta previa varies with various facilities available at the hospital.

The risk of placenta previa increases with advancing maternal age. In the present study, the incidence of placenta previa was highest in the age group of 20-29 years i.e., 88% which is similar to the study done by Manohar Rangaswamy et al and Rajeshwari et al where the incidence of placenta previa in age group of 20-29 years was 91.9% and 79.9% respectively.<sup>8,9</sup>

Studies show that the risk of placenta previa increases with increasing parity. Multiparous women, especially with closely spaced pregnancies are at higher risk of developing placenta previa. In present study, 71.5% were multipara which is similar to studies done by Rani et al 69%, Rajeshwari et al 75.4%, Maiti et al 76.7%.<sup>7,9,10</sup> Recurrence

rate following placenta previa is around 4-8% but in the present study there was no history of previous placenta previa.

In the present study, the risk of placenta previa following a cesarean delivery was 64.2%. In study done by Sidhiq 42.6% patients had a history of prior caesarean section and Rajeshwari et al reported that 40% patients had previous history of LSCS. In study done by Yadava et al a total 92.04% of patients were delivered by caesarean section.<sup>12</sup> The high incidence of previous history of cesarean section obtained in the present study may be due to the reason that our hospital is a tertiary referral center.<sup>9,11</sup>

Placenta previa patients who had history of previous cesarean section should be considered at high risk for developing placenta accrete. Colour flow doppler is useful in aiding diagnosis. MRI is done when ultrasonography is inconclusive. The risk of placenta previa attributed by cesarean section rate can be reduced by decreasing the primary caesarean sections.

In the present study the incidence of twin gestation was 0% and, in the study, done by McShane et al the incidence of twin gestation was 0.60%. The variation may be due to small sample size.<sup>13</sup>

Dilatation and Curettage is more likely to cause damage to the uterus which may cause placenta previa in subsequent pregnancies. Multiple D and C, abortions may be associated with greater scarring and greater risk of placenta previa. Johnson et al showed that risk of placenta previa is increased with increasing number of sharp curettage abortions.<sup>14</sup> In the present study, the incidence of prior spontaneous or induced abortions followed by check curettage was 16.6%. In the study done by Taylor et al the incidence of spontaneous and induced abortions was 36% and 29% respectively. The variation may be due difference in patient condition and management of termination of pregnancies.<sup>15</sup>

Localization of placenta influences the fetal position in the uterus. In placenta previa, placenta takes up the space where the fetal head should be which leads to malpresentations. Placenta in the lower uterine segment obstructs the engagement of fetal head which may lead to transverse or breech presentation. In the present study the incidence of breech presentation was 19.04%. Rani et al reported 20% incidence of malpresentation and in the study done by McShane et al and Rao et al the incidence of malpresentation was 27% and 23.3% respectively.<sup>6,7,13</sup>

In present study, majority of placenta previa cases were of type 2 i.e., 52.3% (22 cases). Sorakayalapeta et al reported that 68% of cases were of type 2 placenta previa.<sup>16</sup> In study done by Rangaswamy et al most common type was type 1 placenta previa in 37.2% cases followed by type 2 in 30.6%. The variation may be due to geographical factors and associated risk factors.<sup>8</sup>

In the present study, out of 42 cases, 28 were un-booked and 14 were booked cases. Incidence of placenta previa in present study was more among un-booked cases i.e., 66.6%. In study done by Rajeshwari et al, un booked cases were 84.3%.<sup>9</sup> The variation may be due to lack of public awareness regarding regular antenatal checkups, risk of placenta previa and its associated adverse maternal and perinatal outcome.

Expectant management as advocated by Macafee and Johnson in an attempt to improve fetal outcome without increasing maternal hazards. The aim of expectant management is to prolong pregnancy for fetal maturity without compromising the maternal health and is carried up to 37 weeks of gestation. In present study, 11.9% cases were kept on expectant management. In study done by Sarojini et al 26.4% of women were managed by Macafee and Johnson protocol.<sup>17</sup> The variation may be due to more number of un booked cases in present study.

In present study, cesarean section rate was 90.4% (38 cases) which correlates with the study done by Maiti et al where the cesarean section rate was 93.4% and in study done by Rani et al 64% cases were delivered by cesarean section.<sup>7,10</sup> In present study, there has been a profound increase in cesarean section rate and improvement in perinatal and maternal outcome has been attributed to this.

According to Zlatnik et al patients with placenta previa were more likely to be complicated with postpartum haemorrhage and to receive a blood transfusion.<sup>18</sup> Suk-Joo Choi et al study concluded that women with placenta previa, history of abortion as well as prior cesarean section and total previa are strong antepartum risk factors for peripartum hysterectomy.<sup>19</sup> In the present study, 61.9% (26 cases) of patients received blood transfusion and 2.38% (1 case) of patients had hypotension/shock. No patient had febrile morbidity and sepsis in post operative period. The incidence of post-partum hemorrhage was 16.6%. Adherent placenta was seen in 2.38% (1 case). Rajeshwari et al reported Shock/hypotension in 3.7% cases, sepsis in 0.007%, PPH in 27.6% and adherent placenta in 1.9%.<sup>9</sup> No febrile morbidity was seen. The wide variation in incidence may be due to geographical differences, prior cesarean section, multiparity and other significant factors.

In the present study, 3 cases underwent cesarean hysterectomy and was done for uterine atony, after all conservative measures to arrest bleeding failed and all the 3 cases had total hysterectomy.

In present study, APGAR score >8 was noted in 61.9%. Low APGAR score noted in present study was 38.09% is comparable to that noted in study by Brenner et al 38%.<sup>20</sup> There was progressive decrease in neonatal morbidity and mortality in the form of good APGAR scores and less admission to NICU as gestational age advanced, by early diagnosis and pre plan mode of delivery. This was also

supported by study done by Fiaz et al.<sup>21</sup> Increased use of cesarean section as mode of delivery in placenta previa cases has reduced the maternal and perinatal mortality. Early diagnosis of placenta previa helps in appropriate interventions and prevent associated maternal and perinatal complications.

Neonates born to women with placenta previa were at high risk of prematurity, intra uterine growth restriction and respiratory distress syndrome. Asphyxia may be due to early separation of placenta, compression of placenta and cord. In the present study, 28.57% neonates were admitted in NICU. Perinatal mortality due to asphyxia was 2.38%, prematurity was 4.76%, RDS was 2.38%.

In present study, perinatal mortality rate was 1.05%. Crane et al reported 2.3% of perinatal mortality rate.<sup>22</sup> Variation may be due to difference in the antepartum care, intrapartum care and availability of neonatologist.

## CONCLUSION

Placenta previa has significant maternal and fetal risk. Accurate diagnosis, expectant management as required and timely delivery can lead to favourable outcome. The present study suggested that advancing maternal age, gravidity, parity, previous history of abortions and cesarean sections as increased risk factors for placenta previa. Managing a case of placenta previa during pregnancy poses a great challenge to every obstetrician in present day due to its increased risk of maternal and perinatal complication. Anticipation of clinical complications like PPH and conservative management may avoid serious consequences.

Decreasing the rate of primary cesarean section must be done to prevent placenta previa in scarred uterus. Institutional delivery in a tertiary care center with multidisciplinary approach, i.e., involvement of senior obstetrician, anesthetist, and neonatologist should be done. Family planning services should be improved to decrease the number of women of high parity. Early diagnosis by ultrasound and planned delivery should be the goal. Delivery must be conducted in a tertiary care centre with good neonatal setup. Patient who had no antenatal checkups, un booked cases, who admitted to hospital as an emergency admission had higher incidence of maternal and perinatal morbidity and mortality. Awareness should be brought in the rural public about the adverse effects of placenta previa. Early referral, improved transportation and proper health education will help in better outcome of both mother and fetus.

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