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Original Research Article

## Study of maternal and fetal outcome in various types of placenta previa

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### ABSTRACT

**Background:** Placenta previa is one of the life-threatening complications in obstetrics which affects maternal and neonatal outcome. Now-a-days its incidence is increasing due to previous operative procedures. The objective of the present study was to study out maternal and fetal outcome in various types of placenta previa.

**Methods:** A prospective study was conducted in our tertiary care hospital on 78 patients in order to know the cause and outcome of placenta previa.

**Results:** Early termination was carried out in major PP group due to APH. 13 out of 17 patients presenting with APH had major degree of PP. Abnormal lie and presentation are commonly seen in cases of PP however cephalic constituted 83.3% cases of fetal presentations in present study followed by breech 10.2%, oblique 3.9%, face 1.3% and transverse 1.3%. In this study, 92.2% neonates were born alive while neonatal death and intrauterine death (IUD) was observed in 5.2% and 2.6% neonates respectively.

**Conclusions:** Combined efforts for prevention of risk factors for PP, timely diagnosis and planned institutional deliveries can only reduce the morbidity and mortality associated with PP.

**Keywords:** Placenta previa, Placenta accreta, Postpartum haemorrhage

### INTRODUCTION

Placenta previa (PP) is a condition in which placenta is implanted partially or completely in lower uterine segment. This obstetric complication occurs in the second and third trimesters of pregnancy and is associated with significant maternal and perinatal morbidity and mortality. It is one of the major causes of APH which complicates two to five percent of pregnancies. Incidence of PP is approximately 4-5 per 1000 deliveries.<sup>1</sup>

Its association with significantly high maternal morbidity and sometimes mortality is primarily due to haemorrhage, uterine perforation, infection and the associated surgical complications.<sup>2</sup> The perinatal mortality rate in PP is 4-5 times higher than normal pregnancies. In recent years, ultrasound scanning has led to more accurate localization of placenta. The classification of placenta previa is based

on ultrasound findings. It is classified as major when the placenta completely or partially covers the internal OS and when it just reaches the internal OS or remains within 2 cms away from internal OS, it is labelled as minor one.<sup>3</sup> Placenta accreta refers to abnormal adherence of the placenta to the uterus with subsequent failure to separate after delivery of the fetus. The incidence of placenta accreta is 1 in 550 deliveries.<sup>4</sup> Chances of postpartum haemorrhage in cases of PP are high as lower uterine segment fails to contract resulting in bleeding from sinuses of placental bed. Use of uterotonics, suturing of bleeding sinuses, stepwise devascularization, internal iliac artery ligation, balloon catheter and failing all hysterectomy are used to control bleeding.<sup>5,6</sup> The objectives of the present study were:

- To study the incidence of placenta previa.
- To study maternal and fetal outcome in placenta previa.

- To find out average gestational age at the time of delivery in cases of placenta previa.
- To study the incidence of various complications in mother and baby.
- Mode of delivery in different types of placenta previa.

## METHODS

This prospective study was carried out in the department of Obstetrics and Gynecology of Dr. PDMMC, Amravati from 1st January 2016 to 30 July 2017 for a period of one and half year.

The patients with gestational age beyond 28 weeks and diagnosed with PP on USG or intraoperative findings were included in the study. Gestational age less than 28wks, normally situated placenta on sonography and presence of coagulopathy were the exclusion criteria.

Out of 3,500 deliveries in our hospital during the study period, 78 patients fulfilling the inclusion criteria were enrolled in the study after taking their consent. On admission, thorough history taking, and collection of sociodemographic data was done.

Detailed examination was carried out in the form of general examination and per abdominal examination for gestational age, presentation, cardiac activity and uterine tone.

Local examination of external genitalia for severity of bleeding and per speculum examination for inspecting cervix or vagina for local causes was done if patients came with complaint of bleeding per vaginum. Investigations including routine antenatal profile and USG to confirm type of placenta previa, gestational age, presentation and fetal wellbeing were carried out. Colour Doppler was advised in few cases with previous LSCS with anterior placenta previa or where accreta was suspected.

Management of patients of PP was decided primarily upon the gestational age at the time of admission, type of placenta previa, severity of bleeding (if present) and maternal and fetal health.

Patients with minor degree of PP were managed conservatively who were far from term, hemodynamically stable and fetal wellbeing was assured and were allowed to go in labour spontaneously. LSCS was performed in these patients for obstetric indications or antepartum haemorrhage only.

Patients with major degree were managed conservatively till 37 wks if maternal and fetal health status was good and elective LSCS was planned at 37 weeks. Expectant management in these patients was terminated prematurely if bleeding episodes were recurrent or profuse, if patient

went in labour and also in cases where maternal and fetal health status was compromised.

Patients who were given trial of labour were monitored meticulously and progress was charted on a partograph so that deviations from normal labour were detected earlier and action was taken accordingly. Deliberate steps were taken during labour or LSCS to avoid PPH such as liberal use of uterotonics and uterine massage. Uterine devascularisation and obstetric hysterectomy were restricted to patients with uncontrolled PPH.

Maternal outcome was evaluated by using different parameters like duration of hospital stay, need of blood transfusion, period of gestation at the time of delivery, route of delivery (vaginal or LSCS), need of extra surgical maneuvers to prevent or stop bleeding and need for ICU admissions.

For neonates, gestational age at the time of delivery, Apgar score (1 and 5min), birth weight, need for resuscitation and NICU admission, still birth rate, neonatal death rate and presence of congenital anomalies were evaluated.

## RESULTS

Out of 78 patients registered in the study, 44 (56.4%) had minor degree of PP while 34 (43.6%) had major degree. Majority of patients (91%) were in the age group 21-30 years. The mean age in present study was  $26 \pm 3.3$  SD. According to the gravidity, it was observed that 38.5% were primigravida and 61.5% were multigravida. 53.9% patients were delivered after 37 weeks of gestation, 37.2% between 34–37 weeks and 8.9% before 34 weeks of gestation.

Mean gestational age at the time of delivery was found to be  $36.9 \pm 2.7$  SD in present study. 83.3% cases had cephalic presentation at the time of delivery.

In present study cited in Table No.1 (Distribution of patients according to Prior operative procedure) out of 39 patients 28.3% patients had previous LSCS operation, 30.7% had previous abortion while 25.6% patients had previous LSCS with abortion both. 10.3% and 5.1% patients had undergone infertility treatment and previous two LSCS operations respectively.

**Table 1: Distribution of patients according to prior operative procedure.**

Prior operative procedure	Number (n=39)	Percentage
Previous 1 LSCS	11	28.3
Previous Abortions	12	30.7
Previous LSCS with abortions	10	25.6
Infertility treatment	4	10.3
Previous 2 LSCS	2	5.1

In Table No. 2 (Distribution of patients according to Mode of Delivery) and Table No.3 (Distribution of patients who underwent LSCS depending upon major and minor degree of PP) the rate of vaginal delivery was 21.8% while 78.2% underwent LSCS, out of which 29.5% were elective and 48.7% were emergency caesarean section.

**Table 2: Distribution of patients according to mode of delivery.**

Mode of Delivery		Number	Percentage
LSCS	Elective	23	29.5
	Emergency	38	48.7
Vaginal		17	21.8
Total		78	100

Out of 34 cases of major degree of PP undergoing LSCS, 35.3% were operated electively and 64.7% underwent emergency LSCS and in 27 cases of minor degree of PP, 40.7% were operated electively and 59.3% were operated in emergency.

Out of 23 patients of PPH, bleeding was controlled in 34.8% patients with uterotonics only and while 17.4% required uterine bed suturing in addition to uterotonics. Vessel ligation (uterine artery and internal iliac artery) was done in 8 patients and in 3 patients' obstetric hysterectomy was conducted as other methods to control PPH failed.

**Table 3: Distribution of patients who underwent LSCS depending upon major and minor degree of PP.**

LSCS	Major degree (n=34)	Minor degree (n=27)	Total
Elective	12 (35.3%)	11 (40.7%)	23
Emergency	22 (64.7%)	16 (59.3%)	38
Total	34	27	61

In Table No. 4 (Distribution of patients requiring various modalities of treatment for PPH) It was observed that 15 (19.2%) out of 78 patients required blood transfusion of which 13 patients had major PP.

Various neonatal parameters were also studied.

**Table 4: Distribution of patients requiring various modalities of treatment for PPH.**

Treatment of PPH	Number	Percentage
Uterotonics	8	34.8
Uterotonics with uterine bed suturing	4	17.4
Vessel ligation	8	34.8
Obstetric hysterectomy	3	13.0
Total	23	100

**Table 5: Evaluation of maternal outcome on the basis of major and minor degree of PP.**

	Minor (n=44) (%)	Major (n=34) (%)
Gravida		
Primigravida	16 (36.4)	14 (41.2%)
Multigravida	28 (63.6)	20 (58.8%)
Previous operative procedures	19 (43.2)	20 (58.8%)
Malpresentations	6 (13.6)	7 (20.6%)
APH	4 (9.1)	13 (38.2%)
Blood transfusion	3 (6.8)	12 (35.2%)
Surgical intervention for PPH	8 (18.2)	15 (44.1%)

In the study of Table No.6 (Evaluation of fetal outcome on the basis of major and minor degree of PP) 92.2% neonates were born alive while neonatal death and intrauterine death (IUD) was observed in 5.2% and 2.6% neonates respectively.

**Table 6: Evaluation of fetal outcome on the basis of major and minor degree of PP.**

Factors	Minor (n=45)	Major (n=34)
Gestational age		
<34 weeks	3 (6.7%)	5 (14.7%)
34-37 weeks	15 (33.3%)	14 (41.2%)
>37 weeks	27 (60%)	15 (44.1%)
Birth weight		
<2.5 kgs	9 (20.0%)	11 (32.4%)
2.5-3 kgs	28 (62.2%)	15 (44.1%)
3.1-3.5 kgs	7 (15.6%)	7 (20.6%)
>3.5 kgs	1 (2.2%)	1 (2.9%)
NICU admission	7 (15.9%)	12 (35.3%)
Outcome		
Alive	44 (97.7%)	29 (85.3%)
IUD	0	2 (5.8%)
NND	1 (2.3%)	3 (8.9%)

72.1% neonates weighed between 2.5- 3.5 kg, 2.6% neonates weighed >3.5 kg while 25.3% neonates were low birth weight weighing less than 2.5 kg. Mean of birth weight was 2.6 ± 0.6 SD. Majority of the neonates had Apgar score of 8-10 at 1 minute and 5 minutes. 4 out of 5 neonates in the low Apgar (4-7) category were from major degree of PP. Mean of Apgar at 5 minutes is 9 ± 1.5 SD.

Out of 79 neonates 2 were IUD. Among 77 live births, 11.7% neonates required ventilator support while 7.8% required bag-mask ventilation and nasal oxygen support respectively. 72.7% neonates breathed spontaneously. 7 out of 9 patients requiring ventilator support were from major PP group. It was observed that 20(25.3%) neonates required NICU admission of which 11 were from major PP and 9 from minor PP group.

## DISCUSSION

Placenta Previa (PP) is one of the dreaded complications in obstetrics due to its effect on maternal and fetal outcome. A hospital based observational study was conducted with 78 patients to assess maternal and fetal outcome and complications associated with PP. Incidence of PP in present study was 2.22%, as out of 3,500 deliveries in present study period 78 patients were diagnosed with PP who presented with painless bleeding or were diagnosed ultrasonographically or intraoperatively. Sheiner E. et al and Crane JM et al in their studies have reported the incidence of PP ranging from 0.33 to 0.38% of deliveries.<sup>7,8</sup> The most common types of PP in present study were Type I (28.2%) and Type IIa (28.2%) followed by Type III (21.8%), Type IIp (14.1%), and Type IV (7.8%). It was observed in present study that 38.5% were primigravida and 61.5% patients were multigravida. Increasing parity is considered as one of the risk factors of PP. Fan D et al in a systematic review and meta-analysis summarized pooled risk estimates stating that in the survey year multiparous patients were significantly associated with PP and APH.<sup>9</sup> Maximum (53.9%) patients in present study delivered after 37 weeks of gestation. Early termination was carried out in major PP group due to APH. 13 out of 17 patients presenting with APH had major degree of PP. Abnormal lie and presentation are commonly seen in cases of PP however cephalic constituted 83.3% cases of fetal presentations in present study followed by breech 10.2%, oblique 3.9%, face 1.3% and transverse 1.3%.

In the present study, 28.3% patients had previous LSCS operation, 30.7% were previous abortions while 25.6% patients had previous LSCS with abortions. Incidence of PP is more in patients with prior operative procedure. Ojha N in a retrospective study on obstetric factors and pregnancy outcome in placenta previa found 43 (61%) women were multipara, 16 patients had history of cesarean section (two cases had previous two cesarean section) and 20 cases had abortions in previous pregnancy.<sup>10</sup> Sheiner E et al and Ananth CV et al reported that previous history of abortions (both spontaneous and induced) have been significantly associated with up to three times risk of PP.<sup>7,11</sup>

The rate of vaginal delivery in present study was 21.8% while 78.2% underwent LSCS, out of which 29.5% were elective and 48.7% were emergency caesarean section. LSCS was preferred mode of delivery even in minor PP group (27 out of 34) due to associated APH and other obstetric complications like previous LSCS, non-reassuring NST and meconium stained liquor. Ojha N reported that of the total LSCS performed 40 (57%) cases were emergency operations. 29 (41%) cases presented with bleeding per vagina. Sekiguchi A et al conducted a retrospective study on 162 women who were diagnosed to have PP and studied the need for emergency caesarean delivery for torrential vaginal bleeding in incomplete and complete PP.<sup>10,12</sup>

It was observed that 15 (19.2%) patients required blood transfusion out of which 13 patients had major PP. Ojha N in a retrospective study reported one third (31.4%) of the patients had blood loss 500ml. There were four cases with blood loss  $\geq 1000$ ml. Among them two had loss of more than two liters.<sup>10</sup> Ten patients required blood transfusion. One patient required cesarean hysterectomy. In present study, out of 23 patients of PPH, bleeding was controlled in 8 (34.8%) patients with uterotonics only and while 4 (17.4%) required uterine bed suturing in addition to uterotonics. Vessel ligation (uterine artery and internal iliac artery) was done in 8 (34.8%) and in 3 (13.0%) patients' obstetric hysterectomy was conducted as other methods to control PPH failed. All patients requiring internal iliac ligation in present study had major degree of PP illustrating the significance of these uterine devascularization procedures in this group in order to salvage the uterus. Sheiner E et al in a study on obstetric risk factors and pregnancy outcome found pregnancies complicated by PP had significantly higher rate of postpartum hemorrhage, malpresentations and abruptio placenta.<sup>7</sup> During present study period, there was no maternal mortality due to PP emphasizing on the fact that early referral or transfer of patients before surgery to a tertiary care facility is important, especially if health care providers are practicing at small hospitals with insufficient blood bank supply or inadequate availability of subspecialty personnel. Due to the complexity of the surgery and decision making, the involvement of an experienced obstetrician at an early stage is desirable.

In this study, 92.2% neonates were born alive while neonatal death and intrauterine death (IUD) was observed in 5.2% and 2.6% neonates respectively. Hebbar SS et al in a retrospective study reported 3 intrauterine deaths and one early neonatal death in the series.<sup>13</sup> The perinatal mortality was 45/1000 live births. Ananth CV et al from USA reported only 1% perinatal deaths in their study indicating better access to obstetric units in their country.<sup>14</sup>

25.3% neonates weighed less than 2.5 kg while 54.5% and 17.6% neonates weighed between 2.5-3.0 kg and 3.1-3.5 kg respectively. 2.6% neonates weighed  $>3.5$  kg. Hebbar SS et al in a retrospective study reported mean birth weight to be lower than 2.5 kg.<sup>13</sup> Ojha N. in a retrospective study on obstetric factors and pregnancy outcome in placenta previa reported that 45.7% of the babies were preterm and 27% were low birth weight babies.<sup>10</sup>

It was observed in present study that 11.7% neonates required ventilator support while 7.8% neonates each required bag-mask ventilation and nasal oxygen support respectively. 72.7% neonates breathed spontaneously. 7 out of 9 neonates requiring ventilator support were from major PP group. 25.9% neonates required NICU admission of which 11 were from major PP and 9 from minor PP group.

## CONCLUSION

The detection of PP should encourage a careful evaluation, good antenatal care including more frequent antenatal check-ups, correction of anaemia during antenatal period, anticipating the complications and educating the patients regarding them and taking the help of senior obstetrician and paediatrician will definitely reduce the maternal and perinatal complications associated with it. Although a planned delivery is the goal in patients with PP, a contingency plan for emergency delivery should be developed for each patient, which may include following an institutional protocol for maternal hemorrhage management.

It is important to state here that as we concentrate on optimal management of PP, efforts should also be made to reduce the rates of operative deliveries because there is greater likelihood of PP in scarred uterus in subsequent pregnancies. The family planning services should be further improved, and patients should be educated to attain a decline in the number of women of high parity.

To conclude, combined efforts for prevention of risk factors for PP, timely diagnosis and planned institutional deliveries can only reduce the morbidity and mortality associated with PP.

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