

Placenta previa: five year clinical outcome analysis from tertiary care centre in South India

Authors

- 1) **Rashmi Polnaya, Assistant Professor, Department of OBG, Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, Karnataka, India.**
- 2) **Ashwin M Polnaya, Associate Professor, Department of Radiodiagnosis, AJ Institute of Medical Sciences, Mangalore, Karnataka, India.**

Corresponding Author : Dr. Ashwin M Polnaya, Associate Professor, Department of Radiodiagnosis, AJ Institute of Medical Sciences, Mangalore, Karnataka, India; Email : drpolnaya79@gmail.com

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Abstract:

Aim: To study the incidence, risk factors, maternal, fetal and neonatal outcomes in placenta previa. **Methods:** This is a retrospective analysis of placenta previa cases who underwent caesarean section at Govt Lady Goschen Hospital, Mangalore from July 2013 to June 2018. Case sheets of patients were reviewed for clinical data. **Results:** The total number of placenta previa cases were 315 among 29,075 deliveries during the study period, incidence being 1.08%. Incidence was higher in multigravidae and 25-34 years age group. Previous history of caesarean deliveries, abortions and placenta previa was noted in 27.9%, 13.3% and 4.4% cases respectively. Diabetes, multiple gestation, uterine anomalies and fibroid complicating pregnancy was seen in 6.6%, 5.7%, 1% and 4.1% of the cases respectively. Major placenta previa was noted in 41.2% of the cases. Hypertension, oligohydramnios and fetal growth restriction was noted in 19.6%, 13.3% and 21.2% cases respectively. 47.2% of the cases received blood transfusion. Incidence of non-cephalic presentations was 18.6%. Maternal ICU admission, postpartum haemorrhage (PPH) and peripartum hysterectomy complicated 1.5%, 33.2% and 2.2% of the cases respectively. Low birth weight, NICU admission, preterm and neonatal deaths complicated 54.3%, 38.4%, 47.9% and 18.4% of the cases respectively. **Conclusions:** Patients with placenta previa have a higher risk of need for blood transfusion, prolonged hospital stay, maternal, fetal and neonatal complications.

Keywords: Placenta previa, low lying placenta, marginal placenta previa, antepartum haemorrhage.

Previously placenta implanted in the lower uterine segment was considered as placenta previa. Placenta previa was graded based on the relationship of inferior margin of the placenta to the internal os. Minor placenta previa were those with placental edge not covering the os whereas major previa were those covering the os partially or completely. Recommendations from American Institute of Ultrasound in Medicine (AIUM) state that only cases where placenta lies directly over the internal os should be considered as placenta previa while cases with placental margin less than 2 cm from the os beyond 16 weeks' gestation should be considered as low lying placenta².

In population based studies placenta previa is seen in 1 in 200 pregnancies^{3,4}. Rising incidence of placenta previa is noted due to rising incidence of risk factors such caesarean deliveries, diabetes in pregnancy and advanced maternal age at incident pregnancy. Other risk factors include multiple gestation, dilatation and curettage, maternal anemia, multigravidae and rarely uterine and placental anomalies. Clinical presentation includes painless, antepartum haemorrhage, iatrogenic preterm delivery. Placenta previa is diagnosed by ultrasound scan in late second and third trimesters. Complications with placenta previa include haemorrhage and maternal shock, requirement of blood transfusions, cesarean delivery, difficulty at the time of extraction of the baby due to malpresentations, prematurity

and its complications and prolonged hospital stay. With expectant management the maternal and perinatal outcome has improved.

In this study we explore the trends in the incidence of placenta previa in patients undergoing cesarean delivery, risk factors, type of placenta previa, clinical presentation and complications experienced in our hospital which is a tertiary medical college hospital in South India.

Methods

This is a retrospective observational study done at the Government Lady Goschen Hospital, Mangalore, Karnataka, India. Case records were reviewed to obtain information of antenatal women who underwent cesarean delivery for placenta previa between July 2013 and June 2018. Cesarean delivery was done for placenta previa when the lower edge of the placenta was below 20mm from the internal os or covering the os. Placenta previa with placental lower margin below 2 cm from the internal os and reaching the os were considered as 'minor' type. Those cases with placenta covering the internal os partially or completely was considered as 'major' type.

Total deliveries during this period were 29,075. Data on characteristics such as age, parity, socioeconomic status, gestational age at admission, previous cesarean deliveries, placenta previa and abortions, multiple gestation, diabetes in pregnancy, uterine anomalies, fibroid complicating pregnancy, duration of stay in the hospital, clinical presentation, gestational age at first episode of vaginal bleeding, type of placenta previa at caesarean, malpresentations, hypertension complicating pregnancy, oligohydramnios, fetal growth restriction, birth weight, placenta accreta, caesarean hysterectomy, ICU admissions, NICU admission, perinatal mortality were collected. Calculations were made using percentage and mean.

Results

Total number of cases of cesarean delivery for placenta previa in Govt Lady Goschen hospital between July 2013 and June 2018 were 315. The incidence calculated was 10.8 per 1000 deliveries. Total caesarean deliveries and caesarean delivery for placenta previa is shown in table 1. The percentage increase of cesarean delivery over 5 years was 7.2% whereas there was no significant increase in the cesarean for placenta previa.

Year	Total deliveries	Total cesarean deliveries (%)	Cesarean delivery for placenta previa (%)
2013-2014	5775	2361 (40.8)	58 (2.4)
2014-2015	6116	2419 (39.5)	57(2.3)
2015-2016	5911	2606 (44.1)	63(2.4)
2016-2017	5596	2600 (46.4)	67(2.5)
2017-2018	5677	2738 (48.2)	70(2.5)
Total	29075	12724 (43.7)	315(2.4)

Table 2 shows frequency of different demographic and obstetric variables and risk factors in women who had undergone cesarean delivery for placenta previa. Percentage risk of placenta previa was found to be higher in women between 25 and 34 years of age, among multigravidae as compared to primigravidae. 13.3% of the cases had previous abortions while 27.9% of the cases had previous cesarean delivery and 4.4 % of the cases had placenta previa in their previous pregnancy. Diabetes complicating pregnancy, multiple gestation, uterine anomalies and fibroid complicating pregnancy was seen in 6.6%, 5.7%, 1% and 4.1% of the cases respectively.

Table 2: Demographic characteristics and obstetric variables among women who had undergone cesarean delivery for placenta previa

Variables	Frequency	Percentage
Age (years)		
<20	9	2.8
20-24	45	14.2
25-29	132	41.9
30-34	88	27.9
35-39	35	11.1
40 and above	6	1.9
Parity		
Primi	108	34.2
G2	142	45
G3	42	13.3
G4 and above	23	7.3
Previous abortion	42	13.3
Previous caesarean	88	27.9
Diabetes complicating pregnancy	21	6.6
Multiple gestation	18	5.7
Uterine anomaly	3	1
Fibroid complicating pregnancy	13	4.1
Placenta previa in previous pregnancy	14	4.4

Table 3: Clinical presentation and antenatal complications in women who had undergone caesarean for placenta previa

Features	Frequency	Percentage
Gestational age at first episode of APH		
<30weeks	12	3.8
30-34 weeks	114	36.1
35-37 weeks	76	24.1
>37 weeks	48	15.2
No APH	65	20.6
Type of placenta previa		
Minor	185	58.7
Major	130	41.2
Abnormal lie and malpresentation		
Breech	45	14.2
Transverse lie	14	4.4
Hypertension complicating pregnancy	62	19.6
Gestational age at caesarian section		
<30 weeks	11	3.4
30-33 weeks +6 days	22	6.9
34-36 weeks+6days	118	37.4
37 weeks and above	164	52
Oligohydramnios	42	13.3
Fetal growth restriction	67	21.2

The clinical presentation and antenatal complications are shown in table 3. The gestational age at which maximum number of cases experienced first episode of antepartum haemorrhage (APH) was between 30 and 34 weeks i.e., 36.1%. 20.6% did not have APH. Major placenta previa was noted in 41.2% of the cases. Breech presentation was seen in 14.2% of the cases and transverse lie in 4.4%. Hypertension complicating pregnancy was noted in 19.6% of

the cases. The gestational age at which the cases were sectioned most commonly was at term i.e., 52%. 10.3% of the cases were sectioned before 34 weeks gestation. Oligohydramnios was noted in 13.3% of the cases and fetal growth restriction (FGR) in 21.2%. Mean duration of gestation by which pregnancy was prolonged in preterm pregnancies with expectant management was 4.2 weeks. Mean hospital stay until delivery in women undergoing expectant management was 3.2 weeks. 40% of the women required hospital stay for >2weeks.

Table 4 shows intra-operative and post-operative and neonatal complications. 47.2% of the cases required at least one-unit blood transfusion and 3.8% required more than two transfusions. Uterine artery ligation was done in 18.4% of the cases. Postpartum haemorrhage was noted in 33.2% cases and 2.2% required peripartum hysterectomy. Placenta accreta complicated 1.9% cases. Forceps was used for floating head extraction in 16.8% cases. 1.5% of the cases required ICU admission. Low birth weight was noted in 54.3% cases. 38.4% of the babies required NICU admission. 47.9% of the babies were preterm. 18.4% neonatal deaths were noted.

Table 4: Intra operative and postoperative complications		
Complications	Frequency	Percentage
Blood transfusion (packed RBCs)		
1 unit	113	35.8
2 units	24	7.6
3 or more	12	3.8
Uterine artery ligation (prophylactic + therapeutic)	58	18.4
PPH		
Managed medically	38	12
Conservative surgery	60	19
Peripartum hysterectomy	7	2.2
Adherent placenta	6	1.9
Forceps for delivery of floating head	53	16.8
Maternal ICU admissions	5	1.5
Birth weight (Kg)		
<1.5	27	8.5
1.5-1.9	36	11.4
2- 2.4	108	34.2
2.5-2.9	114	36.1
3-3.4	24	7.6
3.5 and above	6	1.9
NICU admission	121	38.4
Preterm	151	47.9
Perinatal deaths	58	18.4

Discussion

The incidence of placenta previa in India according to various studies published recently ranges from 1.8 to 2 percent^{5,6} whereas in other Asian countries is 1.24% in China⁷ and 0.7% in Iran⁸. In our study the incidence was found to be 1.08% which is comparable with these studies. In a 13-year study conducted in Saudi Arabia, rising trend in cesarean delivery as well as in placenta previa cases was noted⁹. In our study, the percentage increase of cesarean delivery over 5 years was 7.2% whereas there was no significant percentage increase in the cesarean for placenta previa.

Incidence of placenta previa was highest in the age range of 20-30years in other studies done in south India whereas in this study it was 25-34years. Gravida 2 and above had a higher incidence of cesarean done for placenta previa in this study which is comparable with other studies done in south India^{5,6}.

Risk factors such as previous miscarriage, previous cesarean delivery and previous history of placenta previa accounted for 13.3%, 27.9% and 4.4% of the total cases in our study which is much lower compared to 41%, 61.5%

and 41% respectively in a study by Ezechi OC et al¹⁰ and 35.8%, 42.9% and 1.8% respectively in a study by Gargari SS et al⁸. Diabetes complicating pregnancy, multiple gestation, uterine anomalies and fibroid complicating pregnancy was seen in 6.6%, 5.7%, 1% and 4.1% of the cases respectively in this study. In a study by Ojha N in Nepal uterine anomaly was associated in 1.4% of the cases¹¹. In a comparative study by Ezechi OC et al multiple gestation was noted in 15.4% of the placenta previa cases vs 5.8% of controls¹⁰. In a comparative study by Baumfeld Y et al Gestational diabetes was more common in cases i.e., 8% vs 5.5% in controls¹². Risk factors such as previous miscarriage, previous caesarean delivery, previous placenta previa, diabetes complicating pregnancy, 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.

Major placenta previa was noted in 41.2% of the cases in our study. In comparison other studies found major placenta previa in 35.7%-71.8% of cases^{6,10,11}. In our study 79.4% of the cases experienced APH and the gestational age at which maximum number of cases experienced first episode of APH was between 30 and 34 weeks i.e., 36.1%. In various studies the APH complicated 43.6%-68.4%^{13,14,16}. In 52% of the cases section was done at term in our study which was comparable with other studies^{11,12,15}. Mean duration of gestation by which pregnancy was prolonged in preterm pregnancies with expectant management was 4.2 weeks in our study. Expectant management in placenta previa cases advocated by Macafee and Johnson improves the neonatal outcome while keeping maternal morbidity at the minimum. In our setup we advise hospitalization in placenta previa cases undergoing expectant management as most of the patients visiting this 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 situation¹.

In our study non-cephalic presentation at the time of cesarean was noted in 18.6% cases which was comparable with the incidence noted in a case-control study by Gargari et al where non cephalic presentation at delivery was more common among placenta previa cases (13.2% vs 7.1%)⁸. Oligohydramnios was noted in 13.3% of the cases and fetal growth restriction in 21.2% in our study whereas other studies noted oligohydramnios in 2.7% cases¹² and FGR in 3.4% - 13.2% cases^{12,15}.

In our study blood transfusion, uterine artery ligation, peripartum hysterectomy and ICU admission was required in 47.2%, 18.4%, 2.2% and 1.5% of the cases respectively. Postpartum haemorrhage and adherent placenta was noted in 33.2% and 1.9% of our cases respectively. In various studies 11.9% - 40.2% of cases required blood transfusion^{6,8,10,11,15}, 5.1% of cases required uterine artery ligation⁶, 1.3%- 30.9% cases required peripartum hysterectomy^{8,11,13-15}, 14%-16% required ICU admission^{6,14}, 22% - 46% cases experienced PPH^{6,11,15,16}, 6.6% - 36.8% of cases had adherent placenta^{6,14,15}. 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.

Low birth weight, NICU admission, preterm birth and perinatal deaths complicated 54.3%, 38.4%, 47.9%, 18.4% of the cases in our study. Other published studies noted low birth weight in 23.1% - 54.3% cases^{10,11,14-16}, NICU admission in 12.5% - 37% cases^{6,13-15}, preterm birth in 46% - 52% of the cases^{11,12,15} and perinatal mortality in 2% - 12% of the cases^{6,11,12,14-16}. Variations in sociodemographic factors and accessible advanced tertiary care facilities are responsible for the variation in the perinatal outcome in these studies.

Limitations: This was a retrospective study of patients who had undergone caesarean delivery in view of placenta previa and low lying placenta (placental lower edge <2cm from the internal os). Hence cases with placenta implanted in the lower segment with its lower edge 2 cm or more away from the os is not included in this study. Also cases which underwent vaginal delivery with minor placenta previa without APH or with trivial antepartum bleeding have not been included in this study. As this hospital had no facilities for ICU care, cases which required ICU care were referred to other hospitals with ICU facilities and therefore there was loss of follow-up regarding outcome and mortality. Moreover, the assessment of blood loss during APH, intraoperatively and postoperatively was not documented in all cases and haemoglobin/hematocrit before the onset of APH was not available in many cases referred to this hospital with APH, hence amount of blood loss has not been included in the study.

Conclusion

Patients with placenta previa have a higher risk of need for blood transfusion, prolonged hospital stay, maternal, fetal and neonatal complications. Rising trend in cesarean deliveries and in turn increasing risk of placenta previa and its complications necessitates appropriate counseling of patients with placenta previa about complications, taking early necessary precautions to reduce blood loss, hospitalization, prematurity and associated adverse outcomes and the risk with future pregnancies. Expectant management improves perinatal outcome by prolonging pregnancy under supervision and timely intervention. Further comparative prospective studies involving larger study population is necessary to identify other risk factors, prediction and management to improve maternal and fetal outcome.

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