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Original Research Article

Maternal and Foetal Outcome in Placenta Previa in Pregnancy at a Tertiary Care Centre: A Prospective Study

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Abstract:

Aims and Objectives: To assess maternal outcome in patient with placenta previa, to assess foetal outcome in patient with placenta previa and to study the distributions of common risk factors of placenta previa.

Material and Methods: This was a prospective observational study conducted in The Department of Obstetrics' and Gynaecology in the tertiary health centre in the Department of Obstetrics and Gynaecology on 50 women with diagnosed placenta previa. Fifty pregnant women with singleton pregnancy with gestational age >28 weeks with diagnosed placenta previa are included in the study.

Results: In our study-Mean age was 29.56 years and GA was 35.4 weeks. At the time of admission, 23 patients' i.e.,46 % belonged to 35-37 weeks of gestation, 20 patients i.e. 40% belonged to 31-34 weeks, 7 patients i.e. 14% belonged to 38-40 weeks. 10 patients. i.e. 20% had grade 1 placenta previa, 16 i.e. 32% patients had grade 32, 18 i..e.36% patients had grade 3, grade 4 placenta previa was seen i.e. 6 patients i.e. 12% ,Out of 16 patients with grade 2 placenta previa 6 patients i.e. 37.5% had anterior placental localization and 10 patients i.e. 62.5% had posterior location. Out of 50 study population invasion of placenta were found in 8 patients i.e. 16% ,out of which 4 patients were found to be increta and 4 Patients were found to be accreta. 42 patients i.e., 84% were found with no placental invasion.

Conclusion: The reduced maternal mortality in recent years is mainly attributable to the increased use of blood transfusion, effective antibiotic therapy and better understanding of the management of shock and renal failure.

Keywords: Placenta previa, Placenta accreta, postpartum hemorrhage.

Introduction

The placenta is usually attached to the upper part of the body of the uterus encroaching to the fundus adjacent to the anterior or posterior wall. [1] Placenta implanted somewhere in lower uterine segment either over or very near to internal os, it is called placenta previa. [2] In Latin, previa means going before hence in placenta previa placenta goes before the fetus. When bleeding occurs from or in to the genital tract, occurring from 28 weeks of pregnancy and prior to the birth of the baby is called ante-partum hemorrhage. [3]

Antepartum hemorrhage is quantified as

- Minor hemorrhage: blood loss < 50 ml.
- Major hemorrhage: blood loss 50-1000 ml.
- Massive hemorrhage: blood loss > 1000 ml.

Antepartum hemorrhage amounts for most dangerous group of disorders of pregnancy and placenta previa accounts for 35% i.e., 1/3rd of the cases of antepartum hemorrhages. This severe complication is not only dangerous to fetus but also fatal to life of mother.

In Placenta previa, internal cervical os is partially or completely covered with placenta and is the main cause of abnormal antepartum bleeding. Hemorrhage in obstetrics is almost life-threatening emergency especially in the last trimester. The prevalence of placenta previa was estimated to be 5.2 per 1000 pregnancies. [4] Hysterectomy following caesarean

section (CS) for placenta previa occurs in 5.3 per cent of cases (relative risk compared to CS without placenta previa in 33). [5] Perinatal mortality rates are three to four times higher than they are in routine pregnancies. [6] The risk of developing placenta previa increase progressively with increasing in number of cesarean sections with ≥ 3 cesarean deliveries the chance of having previa is 37%. Morbidly adherent placenta is a serious complication of pregnancy and is associated with massive intrapartum hemorrhage and high maternal morbidity and mortality. Surgery for morbidly adherent placenta is a considerable challenge, but it has been reported that maternal morbidity is reduced in women who deliver in a tertiary care hospital with a multispecialty care team. [7] Placenta previa causes significant maternal and fetal morbidity and mortality, which is linked to a high demand on health-care resources. Increased use of ultrasound for placental localization and early diagnosis, improved obstetrical and anaesthetic facilities, increased use of blood and its products to correct anemia, and advanced neonatal care facilities to improve the chances of survival of preterm infants have all contributed to a reduction in perinatal and maternal morbidity and mortality. Because placenta previa can be detected by antenatal USG even before the first episode of bleeding, the mother and newborn outcomes can be significantly improved. Once the disease has been identified, the patient should be carefully monitored, with all necessary procedures taken to treat any complications that may arise. These cases should only be handled in hospitals that offer blood transfusions, immediate operational intervention, and 24-hour NICU coverage for the babies who are frequently born prematurely. Better ANC and patient screening with a second trimester scan, a better referral system, transportation, and more hospitals with a 24-hour blood bank are all urgently needed. All of these approaches are likely to lower maternal and perinatal morbidity rates and death rates bringing them closer to developed-country levels.

The present study was conducted to assess maternal outcome in patient with placenta previa, to assess foetal outcome in patient with placenta previa and to study the distributions of common risk factors of placenta previa.

Materials and methods:

This is a prospective observational study conducted in The Department of Obstetrics and Gynaecology in a tertiary health centre in the Department of Obstetrics and Gynaecology on 50 women with diagnosed placenta previa between December 2019 to December 2021.50 Pregnant women with singleton pregnancy with gestational age >28 weeks with diagnosed placenta previa are included in the study. The ethical committee of Medical College and Hospital approved the study.

Participants were explained about the study and a written informed consent was taken before beginning the study. A detailed history taking had been be done including the presenting complaints, menstrual, obstetric, past, personal and family history of the participants. General physical examination along with systemic examination was performed. This was followed by detailed obstetric examination. Necessary investigations including blood investigations, bleeding profile was conducted and Trans abdominal sonography was conducted for placental localization, Obstetric Doppler and MRI will be done in suspected cases of placental invasion.

Maternal outcome was assessed by noting:

1. Maternal Mode of Delivery –LSCS-Indication of LSCS-
2. Post-partum haemorrhage
3. Amount of blood loss
4. Amount of blood transfusion required
5. Shock
6. DIC
7. Acute kidney injury
8. Septicaemia
9. ICU admission
10. On table if obstetric hysterectomy required.
11. Maternal mortality.

Neonatal outcome was assessed by noting

1. Cried immediately after birth: Yes/No
2. NICU admission
3. Need for intubation
4. Apgar score: 1min: 5min:
5. Perinatal mortality

Observation and Result

In our study, mean age was 29.56 year and GA was 35.4 weeks. At the time of admission 23 patients i.e.46 % belong to 35-37 weeks of gestation, 20 patients i.e. 40% belong to 31-34 weeks, 7 patients i.e. 14% belong to 38-40 weeks.

Table 1: **Gestational age (weeks) distribution of study population**

Gestational age(weeks)	Frequency	Percentage
31-34	20	40
35-37	23	46
38-40	7	14

Incidence of placenta previa was the highest in the maternal age group 21-25 years i.e., 44%.

Table 2: Age distribution of the study population:

Years	Frequency	Percentage
21-25	22	44.0
26-30	7	14.0
31-35	12	24.0
36-40	9	18.0
Total	50	100.0

Gravida score two was in 18 patients i.e. 36%, Gravida score three was found in 15 patients i.e. 30%, Gravida score one and five was 7 i.e. 14% each in study population.

Table 3: Gravida distribution of the study population

	Frequency	Percentage
1	7	14.0
2	18	36.0
3	15	30.0
4	3	6.0
5	7	14.0
Total	50	100.0

In our study 29 patients i.e. 58% had history of previous LSCS, 7 patients i.e. 14% were index pregnancy, 14 patients i.e.28% had previous vaginal delivery,

Table 4: Obstetric event in previous pregnancy in study population:

	Frequency	Percentage
Index pregnancy	7	14
LSCS	29	58
Vaginal	14	28
Total	50	100.0

Table 5: Chief complaints during admission in study population:

	Frequency	Percentage
No complaint	8	16.0
Pain in abdomen	9	18.0
Pv bleeding	5	10.0
Pv bleeding decrease fetal movements	4	8.0
Pv leak	4	8.0
Pv spotting	17	34.0
Pv spotting pain abdomen	3	6.0
Total	50	100.0

In present study, 17 patients i.e. 34% patients had PV spotting, 9 patients i.e. 18% patients had pain in abdomen and 5 patients i.e. 10% patients had PV bleeding.

- In our study, 10 patients i.e. 20% had grade I placenta previa, 16 i.e. 32% patients had grade II, 18 i. e.36% patients had grade III and grade IV placenta previa was seen in 6 patients i.e. 12%. Out of 16 patients with grade 2 placenta previa, 6 patients i.e. 37.5% had anterior placental localization and 10 patients i.e. 62.5% had posterior location
- Out of 50 study population, invasion of placenta was found in 8 patients i.e. 16% out of which 4 patients were found to be increta and 4 Patients were found to be accreta. 42 patients i.e. 84% were found with no placental invasion.
- In our study, 33 i.e. 66 % patients of study population, NST was reactive on admission
- In our study, 10 patients i.e. 20% underwent vaginal delivery whereas 40 patients i.e. 80% required LSCS. Post-partum haemorrhage was seen in 46% patients i.e. 23 out of 50 study populations.
- Blood transfusion -1 PCV was given in 25(50%) patients, 2 PCVs were given in 19 (38%) patients, 3 PCVs were given in 3 patients (6%) and 4 PCVs were given in 3 patients (6%).
- The adverse outcomes of these pregnancies were as follows; Obstetric hysterectomy was done in10 patients i.e.20% in study population; 9 patients i.e. 18% were found to be in shock; Septicaemia in 1 i.e. 2%; DIC found in study population in 2 i.e. 4% and AKI found in 3 i.e. 6% of study population. In our study 27 patients

required ICU admission. In present study no maternal deaths occurred.

- In our study, 34 babies cried immediately after birth and did not require resuscitation. 36 babies i.e. 72% were under 37 weeks of gestation, 14 babies i.e. 28% were more than 37 completed weeks. 20 babies i.e. (40%) required NICU admissions in study population and 14 (out of 20) i.e. 28% babies required intubation.
- 16 i.e. 32% babies had 7 Apgar score, 20 i.e. 40 % babies had Apgar score 8, 14 i.e.
- 28% had 9 Apgar score at 1 min.
- 14 babies i.e. 28% had 7 Apgar score, 16 i.e. 32 % babies had Apgar score 8, 29 i.e.
- 40 had 9 APGAR at 5 MIN.
- Neonatal mortality seen in babies of 2 patients i.e.4%.

Discussion

In placenta previa, the placenta is positioned above or very close to the internal cervical os (P). Placenta previa (PP) causes significant maternal and foetal morbidity and mortality, as well as substantial demands on health-care resources. The number of cases of PP and its complications are growing as the rate of caesarean section rises in tandem with maternal age. In our study majority of patients were in the age group 21-25 years. The most common gestational age in our study group is 35-37 weeks followed by 31-34 weeks. Those presented with bleeding/spotting as chief complaint belong to 35-37weeks. Study done by Khasbhoggi T [8] showed maximum number of patients i.e. 52 cases (54.2%) with first episodes of bleeding in 35-38 weeks group followed by 30-34 weeks.

In placenta previa, close follow-up and regular ANC check-up helps in early detection and better maternal and fetal outcome in patients. Our study tried to find registered status of ANC patients with placenta previa, it was found to be 27 patients i.e. 54% were registered at hospital and rest were unregistered or lost to follow up.

In our study, 18 patients i.e. 36% were Gravida 2 followed by 15 patients i.e. 30% were Gravida 3. 7 patients i.e. 14% had index pregnancy rest 43 patients i.e. 86% were multigravida. Increasing number of pregnancies has been shown to be an important risk factor for placenta previa. In retrospective study conducted by Ojha [9] showed 61% of patients with placenta previa were multigravida. The frequency of placenta previa was 40% among multiple pregnancies in comparison to singleton pregnancies according to Ananth CV et al [6].

29 patients i.e. 58% had previous Caesarean sections and 14 patients i.e. 28% had previous vaginal delivery. Thus showing higher incidence of placenta previa in previous history of caesarean section. According to W.W.K. To & W Leug [10] study, the incidence of placenta previa was significantly increased in those with a previous caesarean section (1.31%) compared with those with an unscarred uterus (0.75%). Robert CL et al. [11] reported that prior caesarean section was an important risk factor for placenta previa. Other studies including Moradan et al [12] have also been consistent with our study. In our study, 10 patients i.e. 20% had grade 1 placenta previa. While grade 2 placenta previa were 16 i.e. 32% out of which 6 patients had anterior placenta and 10 patients had posterior placenta. 18 patients had grade 3 placenta previa i.e. 36% and grade 4 was observed in 6 patients i.e.12%. Grade 1 placenta previa underwent vaginal delivery while rest underwent LSCS. In the present study, 40 patients (80%) underwent LSCS, which is higher than vaginal delivery, which was seen in 10 patients (20%). In Bhatt et al [13] study 63.6% had undergone LSCS. In the study of Nayama M [14] the caesarean delivery was the mode of choice (89.1%) of women. He didn't record any maternal death. In our study there was also zero maternal mortality.

In our study, 10 patients i.e. 20% required obstetric hysterectomy, out which 8 patients had adherent placenta. All 8 patients had previous history of LSCS. 2 patients had undergone hysterectomy due to postpartum haemorrhage. Rest 40 cases we could avoid hysterectomy. The frequency of hysterectomy in people with history of prior caesarean was significantly higher. Similarly, a study by Kashani E et al [15] reported that within 5 years, out of 82 placenta previa cases the prevalence of hysterectomy due to placenta previa was significantly higher in women with history of caesarean section (24%) than other ones (5%).

Average blood loss in present study was (1192 ml). In Hong JY et al [16] study and retrospective analysis study of Ova et al average blood loss in cases of major placenta previa has been reported in the range of 1500 – 1600 ml. Blood loss in our study was lower reflecting an improvement in maternal outcomes.

In our study, 23 cases i.e. 46% had postpartum haemorrhage. Majority of them were managed conservatively but 2 cases required hysterectomy. 25 patients i.e. 50% required 1 PCV.

27 cases of our study required ICU admission post operatively out of which 9 patients were in hypovolemic shock and were managed conservatively.

In our study, post-operative complications like septicaemia (1 i.e. 2%), AKI (3 i.e. 6%), DIC (2 i.e. 4%) and shock (9 i.e. 18%) were observed. Regarding maternal complications, there is increased rate of postpartum haemorrhage, multiple unit blood and blood product transfusions, ICU admissions, acute kidney injury which are attributable to placenta previa. This fact is substantiated by a retrospective cohort study by Crane JM et al. [17] which had 308 cases of placenta previa. Maternal complications

included postpartum bleeding (RR- 1.86), hysterectomy (RR-33.26), blood transfusion (RR-10.05), and septicemia (RR5.55). To decrease maternal morbidity, we must acquire a more appropriate and prompt approach in the management of placenta previa with good antibiotic coverage and better aseptic precaution.

In our study, 36 i.e. 72% patients babies were preterm out of which 21 babies belonged to 31-34 weeks of gestation and 15 babies belonged to 35-36 weeks of gestation. Thus showing higher rates of preterm delivery in placenta previa. Zlantik et al. [18] conducted retrospective cohort study which showed placenta previa as a high-risk factor for preterm deliveries.

Our study showed that babies of 20 patients required NICU admissions out of which 14 babies required intubation. Respiratory distress syndrome was seen in 12 babies i.e. 24%. In McShane et al. [19] study the overall incidence of respiratory distress syndrome was 22%; this was a major cause of neonatal mortality and morbidity. Neonatal respiratory distress syndrome occurred in 6% of cases in study conducted by Ghazli M et al. [20]. We also observed a low 1-minute Apgar score in 16 i.e. (32%). However, the 5-minute Apgar score was improved. Morbidity was more marked before 34 weeks. Mean birth weight of our study population is 2.4kg. A population based retrospective cohort study by Ananth CV et al [21] observed that among association between low birth weight and placenta previa is chiefly due to preterm delivery. 2 babies i.e. 4% neonatal mortality were noted in our study.

The use of moderate transvaginal ultrasound and magnetic resonance imaging (MRI) can, however, overcome the limits of abdominal ultrasonography. The main limitation of our retrospective study is how to accurately assess the effect of other risk factors like scarred uterus after myomectomy, D&C, smoking on the outcome. To do so, we would require adequate sample size; this is limited in our study. The quality and accuracy of the results depend primarily on the quality of the recorded data; however, we were unable to verify the accuracy of the data which might result in data bias.

Finally, it is recommended that research is to be conducted in bigger cities with multiple hospitals. Data is to be collected so as to have more volume of subjects in study to obtain conclusive results of risk factors and better maternal and fetal outcome.

Conclusion:

Despite current advancements in the field of obstetrics and neonatal care, placenta previa remains a major cause of maternal and perinatal morbidity and mortality in low-resource nations. Placenta previa is caused by a combination of events including multiparty, past caesarean surgery, and prior abortions etc. Requirement for hysterectomy were higher among mothers who previously had a caesarean section. The early detection of placenta previa should prompt a thorough evaluation and referral to a tertiary health care facility, which will help to reduce the associated maternal and perinatal complications. Adequate and timely blood transfusion, effective antibiotic therapy, and timely decision of obstetric hysterectomy, as well as a better understanding of the management of shock and renal failure will help to reduce maternal mortality.

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