Original Article

A Prospective Study on Placenta Previa in Third Trimester and its Associated Risk Factors and Fetomaternal Outcome

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Abstract

Background: The objective is to study the risk factors predisposing to placenta previa and to study the Fetal and Maternal outcomes associated with Placenta previa. **Material and Methods:** A prospective observational study conducted between Jan 2023 and Jan 2024 at a tertiary care hospital in South India among 60 pregnant women diagnosed with placenta previa (PP) on Transabdominal Ultrasound done at 32 weeks. Detailed history was collected from the patients. The fetal and maternal outcomes of the pregnancy were studied. Statistical analysis was done to identify any associations between existing maternal and fetal factors with the incidence of Placenta Previa and to identify the association of Placenta previa with adverse outcomes in the mother and fetus. **Results:** A total of 60 patients were enrolled in the study. The mean age of the study population was 28.61(±4.05) years. 55% of the study population were multigravidas while 45% were primi gravidas. 75% of the study population belonged to the lower or upper lower socio-economic status. 13.34 % of the study population had Anemia, 10% Gestational Diabetes, 8.34% Gestational Hypertension. 55% of the study population were primi gravidas. Among women who had a previous delivery 46.66% had normal vaginal delivery while 63.33% had Caesarean section. Only 20% of the women with placenta previa had vaginal delivery while 80% had caesarean sections. 6.65% caesarean sections resulted in Hysterectomies. 21.65% babies were Low birth weight while 8.34 were LGA. 23.33% babies had an APGAR of <7 and 28.33% of babies were admitted to the Neonatal ICU. **Conclusion:** Placenta previa is found to be associated with multigravidas, lower socio-economic status, and previous caesarean section. Low Birth weight, low APGAR and NICU admissions were higher in women with placenta previa.

Keywords: placenta previa, risk factors, complications, incidence, outcome.

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Introduction

Placenta previa is the term used when the placenta implants fully or partly in lower uterine segment (Faiz and Ananth 2003). Placenta previa is responsible for around one-third of antepartum haemorrhage (Alouini et al. 2020). Painless haemorrhage is the most common symptom of placenta previa, and it often does not show up until the last few weeks of the second trimester or later (Jauniaux et al. 2019). Placenta previa bleeding is characterised by its abrupt onset, painlessness, apparent cause lessness, and recurrence. Because haemorrhagic shock, surgical procedures, and sepsis are more common, it is linked to higher rates of maternal morbidity and death. Preterm delivery and its associated consequences such as low birth weight, birth asphyxia and newborn sepsis increase the risk of perinatal death and morbidity. Placenta previa affects around 1 in 300 births (Balayla and Bondarenko 2013). The risk of placenta previa rises with maternal age. In severe cases, it is 1 in 1500 for women who are 19 years of age or younger and 1 in 100 for those who are over 35 (Farquhar et al. 2017). Previa is linked to multiparity. Placenta previa is more likely to occur after a previous caesarean birth (Zhou et al. 2017). The incidence rises to 4.1% with three or more previous caesarean sections from 1.9% with two(Cheng and Lee 2015).

Transabdominal sonography offers placental localization in the easiest, most accurate, and safest manner. There is an increased risk of maternal morbidity and death due to an increased incidence of postpartum haemorrhage, an increased incidence of operational procedures and an increased incidence of antepartum haemorrhage which may cause maternal shock and its aftermath. Between 0.3 and 1.5% of pregnancies are complicated with placenta previa which may cause serious morbidity or even lead to maternal death. It is also linked to poor neonatal outcome such as low birth weight, premature delivery, and perinatal mortality. Placenta previa increases the probability of risk of perinatal mortality.

The incidence of placenta previa has dramatically increased during the last several decades due to growing trend of caesarean sections. Even with expectant care of placenta previa, preterm birth remains a leading cause of perinatal mortality. Placenta

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previa is also complicated by invasive placentation such as placenta accreta, increta and percreta increases the risk of mortality.

Since placenta previa is associated with multiple maternal and perinatal complications, assessment of the factors associated with placenta previa and its complications is necessary to improve the outcomes by incorporating the assessment of these factors and early management in clinical practice.

Materials and Methods

This is a prospective observational study conducted at Government R.S.R.M. Lying-In Hospital, Stanley Medical College, Chennai, Tamil Nadu for a period of 1 year from January 2023 to January 2024. Ethical approval for the study was obtained from the institutional ethics committee of Stanley Medical College, Chennai. Written informed consent was obtained from all study participants. 50 antenatal women >28 weeks of gestation, regardless of their parity who have been diagnosed as placenta previa was taken for the study. All antenatal patients with Placenta Previa had their detailed history taken and the diagnosis of Placenta Previa was confirmed by TAS. All women with multiple gestations, other medical and surgical complications were excluded from the study. The pregnant women who met the inclusion criteria were studied and the data were analysed. Detailed medical history, physical examination and details of abdominal USG and transvaginal USG (if indicated) were also collected. The fetal and maternal outcome of the pregnancy was also noted. The collected data was entered in Microsoft Excel spreadsheet. Descriptive statistical analysis of the collected data was then for performed to identify associations with various risk factors.

Results

A total of 60 patients who fit the inclusion criteria were enrolled in the study. The mean age of the study population was 28.61±4.05 years. 45% of the patients were primi gravidas whereas 55% were multi garvidas. 13.34% of the patients belonged to the lower socio- economic status, 61.66 patients belonged to the upper lower socioeconomic status while the rest of the 25% of the patients belonged to lower middle and upper middle socioeconomic status. 13.34% of the patients had associated anaemia, 10% had GDM and 8.34% patients had GHTN. 23.33% patients had delivered vaginally in their previous pregnancy while 31.66% had delivered by caesarean section in the previous pregnancy. 6.66% patients had abortions in the previous pregnancy. 2% of the patients had type I placenta previa. 38.32% patients had type II placenta previa, 26.66% patients had type III placenta previa and 15% patients had type IV placenta previa. 20% of patients delivered vaginally while 80% of the patients delivered by caesarean section. 6.65% patients had severe haemorrhage that resulted in a hysterectomy. 20% of the patients delivered preterm <37 weeks. None of our study population delivered before 32 weeks. 21.65% patients had SGA babies while 8.34% patients had LGA babies. 23.33% patients had an APGAR of <7 while 76.67% patients had an APGAR of >7. 28.33% babies required Neonatal ICU admissions.

Table 1: Description of the study participants with placenta previa (N = 60)

Variable	Frequency	Percentage
Age(years)		
<20 years	2	3.33
21-25 years	14	23.33
26-30 years	24	40
30-35 years	20	33.33
Mean Age	28.61±4.05	
Gestational age at Delivery (weeks)		
32-34 weeks	9	15
34-36 weeks	3	5
36-38 weeks	37	61.66
38-40 weeks	11	18.34
Parity		
0	26	43.33
1	26	43.33
2	7	11.67
3	1	1.67
Socio Economic Status		
Lower<5	8	13.34
Upper Lower5-10	37	61.66
Lower middle 11-15	11	18.34
Upper middle 16-0	4	6.66

Statistically significant increase in the likelihood of placenta previa incidence in multipara as opposed to

Discussion

Because placenta previa is linked to poor maternal and neonatal outcomes, it is one of the most feared obstetrical problems. It has been shown that being older and having more children increases the chance of placenta previa. In age distribution, 2 patients are in <20 years, and 14 patients are in 21-25 years, and 24 patients are in 26-30 years, and the remaining 20 patients are in 30-35 years. Nearly one-fourth of the women in this research were older than thirty, and seventy-nine percent of them were multiparas. These findings are consistent with the research conducted by Wu S et al. and Ojha N et al.the mean age

of the patients in this group was 28.61±4.05 years. According to Abu Heija's 1999 research, the frequency of instances of placenta previa rises as mothers age. According to Zhang (1993), the chance of placenta previa occurring is 2.3 times higher in 35 years than in 20 years. According to Ananth CV 1999, the danger increases nine times over a 40-year period.
Our research revealed a significant rise in the probability of placenta previa with increasing gravidity. Zhang (1999) noted the same outcomes. Our research indicated that the likelihood of placenta previa rises as parity increases. Our current research demonstrates a nullipara, which is consistent with the previous study.
Most of the patients in our present research (61.66%) had gestational ages more than 34 weeks at delivery, and the average gestational age at delivery (37.1 weeks) is comparable to the findings of Frederiksen MC (1999).

Table 2: Table showing association of Placenta Previa with various maternal risk factors.

Variable	Frequency	Percentage
Maternal High-Risk Factors		
Anaemia	8	13.34
GDM	6	10
GHTN	5	8.34
Previous Delivery Details		
Vaginal Delivery	14	23.33
LSCS	19	31.66
Abortions		
Yes	4	6.66
No	56	93.33
Types of Placenta Previa		
I	12	2
II Anterior	10	16.66
II Posterior	13	21.66
III	16	26.66
IV	9	15

Numerous experts have noted that a history of abortions raises the chance of placenta previa. Ananth CV (1997) gives a relative risk of 1.7 for induced abortion and 1.6 for spontaneous abortion, whereas Parazzini (1999) cites a relative risk of 1.8. Even though it has been shown that a prior history of abortion increases the prevalence of placenta previa, only 6.66% of the study population in this particular research had undergone an abortion.

Table 3: Obstetric Outcomes of the study participants (N = 60)

Variable	Frequency	Percentage
Mode of Delivery		
Vaginal delivery	12	20
LSCS	26	43.33
Repeat LSCS	18	3
LSCS+ Sub Total Hystrectomy	3	5%
LSCS+Hystrectomy Weight	1	1.66
Birth Weight		
<1.5 Kg	1	1.66
1.5-1.99 Kg	2	3.33
2-2.4 Kg	10	16.66
2.5-2.99 Kg	32	53.33
3-3.49 Kg	10	16.66
APGAR Score		
<7	14	23.33
>7	46	76.67
NICU Admissions		
Yes	17	28.33
No	43	71.67

According to Parazzini's 1994 study, the likelihood of placenta previa during a pregnancy after a caesarian procedure is 1-4% (Gabee) with a relative risk of 1.2 for one prior caesarian section and 2.1 for two. According to Zhang et al. (1993), women with a history of uterine scarring were 1.8 times more likely than those without one to have placenta previa during a future pregnancy. Just 31.6% of the participants in our research had ever undergone LSCS.
Our research indicates a 70% incidence of major previa, while Sipson et al. (1962–1974) reported 73% and 27% incidence of minor and major previa, respectively. This might be explained by the fact that, being a tertiary care facility, our hospital delivers numerous small instances of placenta previa without any complications.
In our research, caesarean sections were used to deliver 82% of placenta previa cases. According to Mahesh Kumar (2002), a caesarean section is necessary for 86% of major degrees and 57% of minor degrees.
The incidence of prematurity in the study population was 20% which is higher than the incidence of prematurity in the general

population which is 12%. The incidence of SGA was 21.65%. This was higher when compared to the incidence of SGA in India which is about 12. 23.33% of babies had an APGAR of <7 which resulted in higher Neonatal ICU admission (28.33%) in our study population.

Conclusion

Placenta previa is associated with independent risk factors including as multiparity, past caesarean section, abortions, and advancing maternal age. A rise in the frequency of complex pregnancies with placenta previa is likely due in part to an increase in the prevalence of these risk factors. Perinatal and maternal outcomes are negatively impacted by placenta previa, which continues to be a risk factor for several maternal problems. The identification of placenta previa ought to prompt a thorough assessment and prompt delivery to mitigate the related difficulties for both the mother and the fetus.

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Conflicts of interest

There are no conflicts of interest.

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