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# A 5-year review of pattern of placenta previa in Ilorin, Nigeria

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## ABSTRACT

**Background:** Placenta previa, a major cause of obstetric hemorrhage, is potentially life-threatening to the mother and frequently results in high perinatal morbidity and mortality.

**Methodology:** This is a retrospective study of all cases of placenta previa managed at the University of Ilorin Teaching Hospital over a 5-year from January 2011 to December 2015. A pro forma template was used to harvest information from case notes of patients involved in the study.

**Results:** There were a total of 10,250 deliveries over the 5-year study and 164 cases of placenta previa were managed during this period; giving an incidence of 1.6% of the total deliveries. Of these patients, 65.9% were unbooked while 34.1% were booked. 110 (67%) were above 30 years of age and 51.2% were grand multiparous women. The majority (81.7%) of the patients belonged to the low socioeconomic class. Painless vaginal bleeding (62.2%), intrapartum hemorrhage (22.6%), and abnormal lie presentation (8.5%) were the most common mode of presentation. Vaginal delivery occurred in (29.3%) of patients while 70. 7% were delivered through cesarean section. There was a significant association between patients' age, parity, booking status, and types of placenta previa ($P < 0.05$). Similarly, there was a significant association between gestational age at delivery, mode of delivery, intraoperative blood loss, and birth weight at delivery and types of placenta previa ($P < 0.05$). Perinatal mortality was 12.2%, 15.6% of babies had severe birth asphyxia, and there was no maternal mortality.

**Conclusion:** From this study, the risk factors for placenta previa are advanced maternal age above 35 years, grand multiparity, and booking status. Early recognition, appropriate referral of these patients and availability of ultrasound facilities, blood transfusion facilities, improvement in neonatal facilities and trained personnel will go a long way in reducing the perinatal mortality from placenta previa.

**Keywords:** Ilorin, Nigeria, placenta previa, pattern

## Introduction

Placenta previa is said to occur when a placenta is wholly or partially situated in the lower uterine segment.[1-5] It is one obstetric complication that no improvements in the quality of preconception care or antenatal care can prevent[6] though the attendant maternal and perinatal morbidity and mortality may be reduced. It is one of the most important causes of massive obstetric hemorrhage[1,7-10] which is said to account for 30-40% of the direct causes of maternal deaths in many parts of Sub-Saharan Africa.[11] Placenta previa is associated with significant perinatal and maternal morbidity and mortality.[1,7,9] It is the leading cause of third trimester vaginal bleeding and a significant cause of hospitalization and caesarean section.[1,8]

The incidence of placenta previa has been variously reported to range from 0.1% to 0.5%.[5,12,13] Incidence in the developed countries is between 0.29% and 1.24%[8] while an incidence of 0.24% of total deliveries in an unselected obstetric population was reported from Ibadan, 0.02% from Lagos, and 0.96% from Benin, Nigeria.[2,14] Among grand multiparas, incidence may be as high as 1 in 20 deliveries.

The etiology of placenta previa is unknown, but predisposing factors have been found to include previous uterine surgery, (e.g., previous cesarean section, dilatation and curettage or myomectomy), previous placenta previa, grand multiparity, advanced maternal age, and multiple pregnancy.[1,3,15-18]

Pregnancies complicated by placenta previa have significantly higher rates of the second trimester bleeding, abnormal fetal presentations, congenital malformations, cesarean delivery, obstetric hemorrhage, prematurity, etc., as compared to pregnancies without placenta previa.[2,19]

Placenta previa is classified based on the relationship between the placental margin and the internal OS into Types I-IV. It could also be anterior or posterior. Types I-II A is minor placenta previa while Types II B-IV are major. This classification assists in management decisions and also has some prognostic value as morbidity and mortality increases as the grade of placenta previa increases.[8,20,21]

The diagnostic method of choice in placenta previa is the ultrasound which may be performed abdominally which is more common in this environment or using the transvaginal probe. The transvaginal probe has been found to be more accurate especially in delineating posterior placenta previa, but its use in this environment may be limited by availability and because of aversion to introduction of the vaginal probe by our women.[1]

Other means of diagnosis include tissue placentography, thermography, and radioisotope scanning but these are now outmoded because of the accuracy, safety, and non-invasiveness of the ultrasound. Magnetic resonance imaging is the most precise method of diagnosis, but it is very expensive and not readily available in Nigeria.[1,3,6]

Placenta previa remains a nagging problem for the modern obstetrician.[6] This study was therefore undertaken to determine the incidence, possible predisposing factors, mode of presentation and neonatal outcome in patients with placenta previa and to suggest ways of reducing the perinatal and maternal morbidity and mortality associated with this condition.

## Materials and Methods

This is a retrospective study of all cases of placenta previa managed at the University of Ilorin Teaching Hospital over a 5-year between January 2011 and December 2015. The hospital is located in the Ilorin metropolis which is the capital of Kwara State in North Central, Nigeria and serves as a major referral center for all areas in Kwara State and parts of the five neighboring states of Kogi, Ekiti, Osun, Oyo, and Niger.

The patients' identification data were retrieved from the labor ward and discharge record books and theater's operation register. Their case notes were retrieved from the Medical Records department and analyzed for incidence, age, parity, socioeconomic status, mode of delivery, predisposing factors, and outcome of pregnancy. Informed consent was obtained from each patient and protection of personal data and confidentiality were prioritized. Institutional review board approval was obtained, and the study has been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Statistical analysis was done using a commercial statistical package (SPSS/PC version 16.0, SPSS Inc., Chicago, Ill, USA). Frequency tables and cross-tabulations were generated to show the association between the sociodemographic/reproductive variables, gestational age at delivery, intraoperative blood loss, perinatal outcome, and placenta previa. A $P < 0.05$ was considered as statistically significant.

## Results

There were 10,250 deliveries during the study. Totally, 164 patients had placenta previa giving an incidence of 1.6% of total deliveries. Most of the cases (81.7%) were of low socioeconomic status and were unbooked (65.9%). Table 1 shows the sociodemographic characteristics of patients managed for placenta previa. The age range 35-39 years was most affected (34.1%) followed by the 30-34 years age range (26.8%). 66 (40.2%) of cases were in women 35 years or more while 9.8% of patients were below 24 years. It was more common among multiparous women with an occurrence of 51.2% in grand multipara and 35.4% in women who are para 2-4.

Table 2 shows the association between socio-demographic/reproductive variables and placenta previa. Of the 164 women who had placenta previa only 35, 16, 10, 8, and 12 had previous surgical scar, previous uterine evacuation, previous myomectomy scar, previous retained placenta, and previous placenta previa, respectively. There was a significant association between patients' age, parity, booking status, and types of placenta previa, whereas previous surgical scar, previous uterine evacuation, previous myomectomy scar, previous retained placenta, and previous placenta previa did not.

**Table 1:** Socio-demographic characteristics of patients managed for placenta praevia *n*=164

| Age | *n* (%) |
|---|---|
| 20-24 | 16 (9.8) |
| 25-29 | 38 (23.2) |
| 30-34 | 44 (26.8) |
| 35-39 | 56 (34.1) |
| ≥40 | 10 (6.1) |
| Parity | |
| 1 | 22 (13.4) |
| 2-4 | 58 (35.4) |
| ≥5 | 84 (51.2) |
| Booking status | |
| Booked | 56 (34.1) |
| Unbooked | 108 (65.9) |
| Social class | |
| Low class | 134 (81.7) |
| Medium-high class | 30 (18.3) |

**Table 2:** Socio-demographic reproductive variables and placenta praevia

| Variables | Placenta praevia | | | | | |
|---|---|---|---|---|---|---|
| | *n* (%) | | $\chi^2$ | OR | 95% CI | *P* value |
| | I-IIA | IIB-IV | | | | |
| Age (years) | | | | | | |
| <35 | 74 (75.5) | 24 (24.5) | 26.9 | 5.8 | 2.8-12.2 | 0.0000002 |
| ≥35 | 23 (34.8) | 43 (65.2) | | | | |
| Parity | | | | | | |
| 1-4 | 72 (80.9) | 17 (19.1) | 38.1 | 8.5 | 3.9-18.5 | <0.001 |
| ≥5 | 25 (33.3) | 50 (66.7) | | | | |
| Booking status | | | | | | |
| Booked | 54 (78.3) | 15 (21.7) | 18.0 | 4.4 | 2.1-9.3 | 0.00002 |
| Un-booked | 43 (45.3) | 52 (54.7) | | | | |
| Social class | | | | | | |
| Low | 62 (54.4) | 52 (45.6) | 3.5 | 0.5 | 0.2-1.1 | 0.061 |
| Medium/high | 35 (70.0) | 15 (30.0) | | | | |
| Previous surgical scar *n*=35 | | | | | | |
| Yes | 8 (25.0) | 24 (75.0) | 2.3 | 0.2 | 0.01-2.9 | 0.190* |
| No | 2 (66.7) | 1 (33.3) | | | | |
| Previous uterine *n*=16 | | | | | | |
| Evacuation | | | | | | |
| Yes | 3 (23.1) | 10 (76.9) | 2.2 | 0.2 | 0.0-3.5 | 0.214* |
| No | 2 (66.7) | 1 (33.3) | | | | |
| Previous myomectomy *n*=10 | | | | | | |
| Yes | 2 (25.0) | 6 (75.0) | 0.5 | 0.3 | 0.0-20.8 | 1.000* |
| No | 1 (50.0) | 1 (50.0) | | | | |
| Previous retained *n*=8 placenta | | | | | | |
| Yes | 2 (33.3) | 4 (66.7) | 0.2 | 0.5 | 0.01-34.1 | 1.000* |
| No | 1 (50.0) | 1 (50.0) | | | | |
| Previous placenta praevia *n*=12 | | | | | | |
| Yes | 3 (30.0) | 7 (70.0) | 0.3 | 0.4 | 0.01-23.3 | 1.000* |
| No | 1 (50.0) | 1 (50.0) | | | | |

*Fisher exact; OR: Odds ratio

Table 3 shows the relationship between gestational age at delivery, perinatal outcome, and intraoperative blood loss and types placenta previa. More than half (64.6%) of deliveries occurred after 34-week gestation. Less than one-third (29.3%) were delivered vaginally. More than one-third (46.3%) had intraoperative blood loss in excess of 1000 ml. 57 (34.8%) and 52 (31.7%) of babies had first minute Apgar score above 7 and birth weight <2.5 kg, respectively. There was a significant association between gestational age at delivery, mode of delivery, intraoperative blood loss, and birth weight at delivery and types of placenta previa whereas Apgar score at the first minute did not.

## Discussion

The incidence of placenta previa in this study was 1.6% of total deliveries. This is much higher than the reported incidence from some other centers in Nigeria[2,14] and it is lower than the incidence of 2.6% quoted in a specialist hospital in Lagos.[9] Some studies quote an incidence of 1 in 200 deliveries at term.[8] The higher incidence in this center compared to some other centers in the country may be explained by the fact that this center is the only tertiary care center in the environs and most of the complicated cases managed here were referred from the surrounding public and private hospitals in the area including basic health centers and maternity homes.

The identifiable predisposing factors in this study were grand multiparity and advanced maternal age above 35 years which was found to be statistically significant. Others were previous cesarean section, previous placenta previa or retained placenta, and previous myomectomy or uterine dilatation and curettage with no significant association with types of placenta previa. This is in keeping with the findings from other similar studies.[1,2,5,8,9] Another identifiable

**Table 3:** Gestational age at delivery, perianal outcome intraoperative blood loss and placenta praevia

| Variables | Placenta praevia | | | | | |
|---|---|---|---|---|---|---|
| | *n* (%) | | $\chi^2$ | OR | 95% CI | *P* value |
| | I-IIA | IIB-IV | | | | |
| Gestational age at delivery | | | | | | |
| <34 weeks | 16 (27.6) | 42 (72.4) | 36.9 | 0.1 | 0.1-0.3 | <0.001 |
| ≥34 weeks | 81 (76.4) | 25 (23.6) | | | | |
| Mode of delivery | | | | | | |
| Vaginal | 42 (87.5) | 6 (12.5) | 22.6 | 7.8 | 2.9-22.1 | 0.000002 |
| *Caesarean section | 55 (47.4) | 61 (53.6) | | | | |
| Intra-operative blood loss *n*=116 | | | | | | |
| <1000 ml | 40 (80.0) | 10 (20.0) | 34.9 | 11.2 | 4.4-29.3 | <0.001 |
| ≥1000 ml | 20 (30.3) | 46 (69.7) | | | | |
| Apgar score at 1st min | | | | | | |
| <7 | 58 (54.2) | 49 (45.8) | 3.1 | 0.6 | 0.3-1.1 | 0.078 |
| ≥7 | 39 (68.4) | 18 (31.6) | | | | |
| Birth weight (kg) | | | | | | |
| <2.5 | 17 (32.7) | 35 (67.3) | 22.1 | 0.2 | 0.1-0.4 | 0.000003 |
| ≥2.5 | 80 (71.4) | 32 (28.6) | | | | |

*Elective and emergency

predisposing factor is cigarette smoking. This is, however, not common in our environment which is a predominantly Muslim community where it is a taboo for women to smoke and so even if some of the patients smoke, they are unlikely to volunteer that history.

The most common mode of presentation was painless vaginal bleeding which occurred in 62.2% of patients. Some patients had recurrent episodes of bleeding and others had a single episode. 22% of patients presented with intrapartum hemorrhage and 6.7% were incidental findings at ultrasound. This is similar to findings from other studies.[1,5,9]

In this study, booking status has significant association with the types of placenta previa, and the proportion of major to minor type of placenta previa found in this study was approximately 1:1.4. The reason for this is unknown but may be because the majority of the patients were unbooked and only presented to this center when severe bleeding occurred. However, profuse bleeding is unpredictable irrespective of the type of placenta previa.

The majority of the patients were delivered abdominally and through emergency cesarean section. This is not surprising as bleeding from placenta previa can be very unpredictable, and emergency cesarean section may be the last resort in patients initially managed using the Macafee regimen if substantial bleeding recurs irrespective of the type of placenta previa.

Vaginal delivery was achieved in 29.3% of patients which constitutes about 50% of the patients with minor placenta previa. The remaining patients with minor placenta previa were delivered abdominally because of significant antepartum hemorrhage. The success rate of vaginal delivery in this group supports vaginal delivery in patients with minor placenta previa unless otherwise indicated. This will help to reduce the cesarean section rate and its complications. It should, however, be remembered that minor placenta previa may also cause profuse hemorrhage.

This study revealed a significant association between gestational age at delivery, mode of delivery, intraoperative blood loss and birth weight at delivery and types of placenta previa. This is inconsonance with findings from similar study in Tokyo, Japan.[22] On the contrary, Tuzovic *et al*. reported no difference in the frequency of preterm delivery between the types of placenta previa.[23] Daskalakis *et al*. also reported no differences in gestational age at delivery between different placenta previa types.[24] The difference may be attributed to the limited sample size from the earlier studies. Furthermore, there was no significant association between Apgar score at first minute and types of placenta previa. This is in keeping with findings in Tokyo, Japan.[22]

The perinatal mortality of 12.2% found in this study was mainly due to prematurity which occurred in 35.4% of patients managed. On the contrary, this is lower than 63.1% found in other similar studies as against 2.5% of the general population.[25-27]

Maternal complications of placenta previa include intra- and post-partum hemorrhage, post-operative anemia, morbidly adherent placenta, as well as other complications. Placenta previa, especially in patients with previous cesarean section, has been found to be strongly associated with morbidly

adherent placenta[28,29] hence the importance of making a preoperative diagnosis to decide the need to carry out further lifesaving procedures especially in cases with uncontrollable hemorrhage.

Routine hospitalization of patients with placenta previa is controversial as benefits from this practice have been questioned.[12,23,30-32] Hospitalization in this center is based on symptomatology and logistics (motivation of the patient, nearness to the hospital and availability of means of reaching the hospital). However, all patients diagnosed with placenta previa, especially the major type are required to have 3 pints of blood cross-matched ready, and those that are not hospitalized are counseled along with their spouses on the need to report to the hospital as soon as they experience bleeding per vagina or contractions, otherwise they are admitted at term for elective delivery.

More than one-third (46.3%) of patients had primary post-partum hemorrhage during cesarean delivery. This underscores the need for adequate preparedness by grouping and cross matching at least 3 pints of blood for all patients with placenta previa. It is also important to build up the hemoglobin concentration of all pregnant women during the antenatal period use of routine hematinics. This will make such women cope better with blood loss at delivery.

## Conclusion and Recommendations

Reduction in the high fetomaternal morbidity and mortality associated with this potentially devastating obstetric complication will require a multi-faceted approach. Health education of pregnant women, improvement in reproductive health and family planning services, provision of adequate antenatal care services, utilization of these services and routine ultrasound scan especially in patients at risk will help to detect cases early so that a management plan can be outlined. The availability of adequate and efficient blood banking services and improvement in neonatal facilities will go a long way in reducing the maternal and fetal morbidity and mortality associated with this condition.

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