AFRICAN JOURNAL OF FETOMATERNAL MEDICINE

Original Article

The Prevalence, Predisposing Factors and Pregnancy Outcome in Patients with Placenta Previa at The University of Calabar Teaching Hospital: A Six Year Review.

*[1]Okpebri KO, [1]Odusolu P, [2]Olorunfemi G, [1]Uduigwomen PA, [1]Egbe JJ, [1]Etuk S.

[1]Department of Obstetrics and Gynaecology, University of Calabar Teaching Hospital
[2]Division of Epidemiology & Biostatics, University of Witwatersrand, Johannesburg, South Africa

Abstract

Background: Placenta praevia, a serious cause of obstetric haemorrhage, is potentially life-threatening to the mother and often results in high maternal and perinatal morbidity and mortality. **Objectives**: To find out the prevalence, predisposing factors and pregnancy outcome of placenta praevia over a six-year period in the University of Calabar Teaching Hospital, Calabar, Nigeria. **Methodology**: This was a retrospective study of cases of placenta praevia managed within the University of Calabar Teaching Hospital from 1st January 2014 to 31st December 2019. Patients' data were retrieved and entered into an excel sheet and statistical analysis performed using STATA 16. **Results**: A total of 10,665 deliveries over the 6-year period and 140 cases of placenta praevia were recorded giving a prevalence of 1.31%. Type III placenta praevia was the most common found in 51(36.4%) of cases and 98(70%) were major degree placenta previa. The mean age of the patients was 30.7 ± 4.4 years and 92(65.71%) were multiparous. Scarred uterus 22(15.71%) from endometrial curettage and previous caesarean section 18(12.86%) were the most common predisposing factors. Antepartum haemorrhage was seen in over half the women that presented (95 (67.14%), 32 (22.86%) had postpartum haemorrhage and one maternal death (0.71%) was recorded. Up to 67.14% of the parturients presented at term. Fetal complications were prematurity (67.19%), birth asphyxia (18.57%), low birth weight (27.14%), still births (14, 10%) and 5 (3.5%) early neonatal deaths. **Conclusion**: Advancing maternal age, multiparity and scarred uterus were the main risk factors for placenta praevia in the study. Maternal and Perinatal survival rates were fairly high but with marked life-threatening complications.

Keywords: Pregnancy, Placenta Previa, Antepartum Haemorrhage, Risk factors, Prematurity

Corresponding Author:
Okpebri Komommo Okoi
Department of Obstetrics and Gynecology
University of Calabar teaching Hospital, Calabar.
Telephone: +2348160057207
E-mail- komokpebri@gmail.com.

Introduction

Placenta praevia may be a life-threatening obstetric condition, which occurs when the placenta is fully

or partially implanted in the lower uterine segment.[1,2] Placenta praevia has been shown to be associated with gross maternal and perinatal complications with subsequent morbidities and even mortalities and is noted to be a major indication for hospitalization and caesarean delivery in the maternity .[1,3,4]

The prevalence of placenta praevia still varies globally and even amongst different regions in the same country.[5] Studies from different parts of the world have reported differing proportions of incidence such as 0.6% in Tanzania, East Africa, 0.23% in india and 1.19% in Taiwan. [6,7] The prevalence of placenta praevia still varies globally and even amongst different regions within the same country.[5] In Nigeria, its incidence ranges from 0.1-0.5% as reported from various studies; 0.24% in Ibadan, 0.02% in Lagos and 0.9% in Benin.[1, 2, 8] The cause of placenta praevia still remains uncertain; however, some factors implicated in its occurrence include: previous history of placenta praevia, previous uterine, high parity, multiple gestation, assisted reproductive technology and maternal smoking.[1-3]

Placenta praevia has been subdivided into minor (I-IIA) and major (IIBIV) placenta praevia.[1,2,9–12] However, with the use of transvaginal ultrasound scan, the American institute of Ultrasound in Medicine (AUM) classified it as placenta praevia when it lies directly over the internal os, low-lying when it is < 20 mm from the internal os at 16 weeks and normal if 20 mm or more from the internal os. This classification is of better prognostic value and better predicts possible obstetric outcomes.[1,12,13]

Placenta praevia could be associated with pregnancy complications such as: antepartum haemorrhage, postpartum haemorrhage, preterm births with its complications, birth asphyxia, high perinatal and maternal morbidity and mortality.[2,4,11]

Despite various publications on this subject matter, no study has been carried out in the University of Calabar teaching hospital, Calabar. This retrospective study is aimed at determining the prevalence, predisposing risk factors and the pregnancy outcome of placenta praevia. It is believed that a good evaluation and understanding of these parameters in the University of Calabar Teaching Hospital will enable obstetricians in the facility to identify and properly counsel women at risk, develop standard operating protocols for better predictions, diagnosis and management thereby improving the pregnancy outcome.

Methodology

This was a retrospective study of all cases of placenta praevia managed at the University of Calabar Teaching Hospital over a 6–year period from 1st January 2014 to 31st December 2019. The University of Calabar Teaching Hospital is a tertiary health facility located in Calabar municipality, Cross River state in South South Nigeria and serves as the major referral centre in the State.

All the necessary information of the patients managed as cases of placenta praevia were obtained from case notes, theatre, labour ward and the neonatal intensive care unit records of the hospital. The information obtained were entered into an excel sheet, which was imported to STATA 16 for analysis. Descriptive analysis was carried out using frequency and proportion for the categorical data while the mean or median with standard deviation or interquartile range were obtained and tabulated for parametric and non-parametric continuous variables respectively. Cross-tabulations were generated to show the relationship between the sociodemographic and reproductive variables, perinatal outcome and type of placenta praevia. Pearson's Chi square was used to test for statistical significance and the statistically significant level was set at $P < 0.05$.

Results

There was a total of 10,665 deliveries over the 6-year study period and 140 cases of placenta giving a prevalence of 1.31%. Figure 1 shows that Type III placenta praevia was the commonest found in 51(36.4%) of cases while Type I was the least with 11(7.9%). There were 98(70%) major degree and 42(30%) minor degree placenta previa. (Figure 2).

Major placenta praevia constituted up to 70% and minor placenta praevia 30% with type III occurring the most in over one third of parturients, followed by type IIA and the least common type I. (fig. 1 and 2). The mean age was 30.7 (SD 4.4) and

the peak age prevalence was 25-29 years 53 (37.86%). The majority of the cases were booked 98(70%) and the median parity for placenta praevia was 3 (IQR: 1-4). See Table 1.

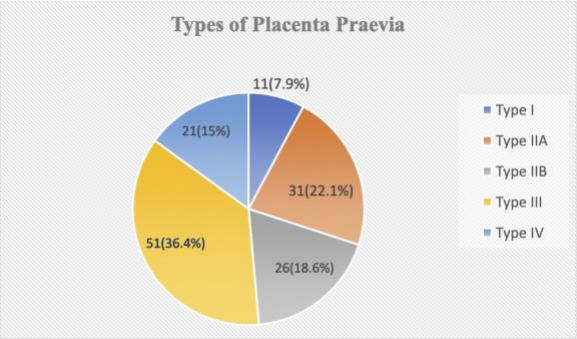

Figure 1. Pie chart showing the prevalence of placenta praevia types.

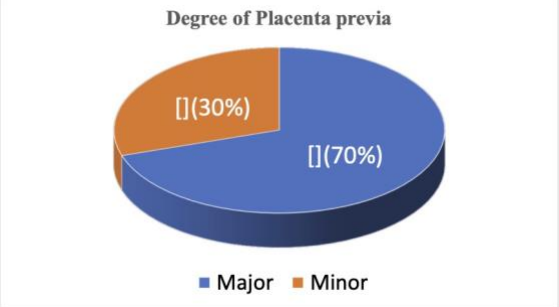

Fig.2 Prevalence of the degree of placenta praevia in UCTH

Table I. Sociodemographic and reproductive characteristics (N=140)

VARIABLE	No. (Frequency %)
Age group	
< 25	7 (5.00)
25-29	53 (37.86)
30-34	48 (34.29)
≥35	32(22.86)
Age (mean ±SD) years	30.7 (± 4.4)
Booking status	
Booked	98 (70.00)
Unbooked	42 (30.00)
Parity	
1	32(22.86)
2-4	92(65.71)
≥5	16 (11.43)
Parity (median, IQR)	3 (1 – 4)
SD- Standard deviation	IQR- Interquartile range

Table II. Predisposing risk factors of placenta praevia

Risk factor	Frequency (%), N= 140
None	68 (48.67)
Previous caesarean section	18 (12.86)
Fibroid	10(7.14)
Grandmultiparity	16(11.42)
Myomectomy	2(1.43)
Endometrial curettage	22(15.71)
Multiple gestation	4(2.86)

Table II shows the most common risk factor was previous endometrial curettage which accounted for 22(15.71%) of cases followed closely by previous caesarean section 18(12.8%) and grandmultiparity 16(11.42%). Almost half of the women 68(48.57%) had no recognizable risk factor.

The majority 135(95%) of the babies presented cephalic. Over half of them were females (52%). Over half of them were females (52%) and up to 70% had normal birth weight and the APGAR score in the fifth minute was normal in four fifth of cases. (Table III). Figure 3 shows the fetomaternal complications. Antepartum haemorrhage (APH) complicated 95(67.86%) of the cases, postpartum haemorrhage

Table III. Pregnancy outcome of Placenta praevia

Variable	Frequency (%), N= 140
Birth weight (Mean, SD) kg	2.86 ± 0.65
LBW <2.5 kg	38(27.14)
Normal 2.5-4kg	99(70.72)
Macrosomia >4kg	3(2.14)
Fetal presentation/lie	
Cephalic	135(9
Transverse	2(1.42)
Breech	3(2.14)
Sex of baby	
Female	71 (50.71)
Male	65 (46.43)
Male/female	3(2.14)
Male/male twin	1(0.71)
Apgar in the 1st min (median, IQR)	7 (4 – 8)
< 7	61 (43.57)
≥ 7	79 (56.43)
Apgar in the 5th min. (median, IQR)	8 (7 - 9)
< 7	26(18.57)
≥ 7	114(81.43)

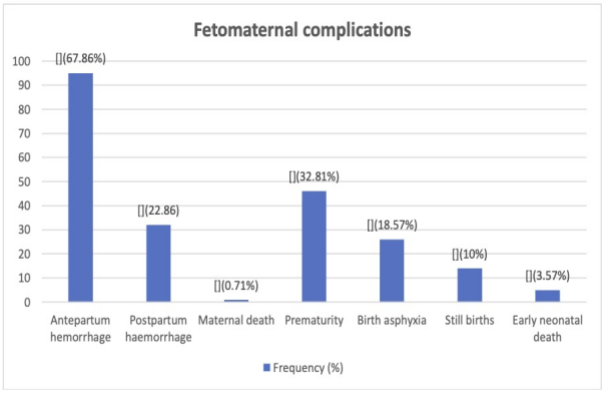

Figure 3: Fetomaternal complications of Placenta Praevia

Table IV. Relationship between sociodemographic parameters, risk factors and the degree of placenta praevia.

Variables	Degree of placenta praevia		X^2	p-valve
	Minor	Major		
Age				
<25	1(2.38) 6(6.12)	8.25[c]	**0.041***	
25-29	13(30.95)	40(40.82)		
30-34	12(28.57)	36(36.73)		
≥35	16(36.1)	16(16.3)		
Parity				
1	11(26.19)	21(21.43)	2.4[c]	0.30
2-4	24(57.14)	68(69.39)		
≥57	(16.69) 9(9.18)			
Booking status				
Booked	29(69.05)	69(70.4)	0.03[c]	0.87
Unbooked	13(30.95)	29(29.59)		
Risk factors				
Fibroid				
Yes	5(11.9) 5(5.10)	2.05[c]	0.15	
No	37(88.10)	93(94.9)		
Previous C-section				
Yes	36(85.7)	86(87.8)	0.109[c]	0.74
No	6(14.3) 12(12.2)			
Grandmultiparity				
Yes	6(14.29)	9(9.18)	0.80	0.37
No	36(85.7)	89(90.8)		
Myomectomy				
Yes	1(2.4)	1(1.02)	0.38f	0.54
		97(98.98)		
No	41(97.6)			
Endometrial curettage				
Yes	7(16.7)	15(15.3)	0.04c	0.84
		83(84.7)		
No	35(83.3)			
Multiple gestation				
Yes	1(2.4)	3(3.06)	0.05f	0.825
No	137(97.84)	95(96.94)		

[f] Fischer's exact [c] Chi square *statistically significant

in 32(22.86%) of cases and one maternal death (0.7%). Prematurity was the most common perinatal complication occurring in 46(32.81%) of the babies delivered followed by birth asphyxia 26(18.5%) and still births 14(10%) (Fresh still birth constituted 80% and macerated 20%) while early neonatal death was 5(3.5%).

There was a statistically significant difference between the maternal age and degree of placenta praevia (p-value=0.041) as shown in Table IV. Table V. showed that there was a statistically significant difference between the degree of placenta praevia and the APGAR score in the fifth minute of life (P-value=0.006) and the fresh still births with (p-value=0.018).

Table IV. Relationship between sociodemographic parameters, risk factors and the degree of placenta praevia.

Variables	Minor Praevia	Major Praevia	X^2	P-value
Gestational age				
<34	1(2.38)	6(6.12)	1.57[c]	0.46
34-36	10(23.81)	29(29.59)		
≥37	31(47.81)	63(64.29)		
APGAR[1]				
<7	14(33.33)	47(47.96)	2.56[c]	0.11
≥7	28(66.67)	51(52.04)		
APGAR[5]				
<7	2(4.80)	24(24.50)	7.57[c]	0.006*
≥7	40(95.20)	74(75.50)		
Birth weight-kg				
LBW(<2.5kg)	11(26.19)	27(27.50)	1.39[f]	0.50
Normal (2.5-4)	31(73.81)	68(69.39)		
Macrosomia (>4)	0(0.00)	3(3.06)		
Fresh still birth				
Yes	0(0.00)	12(12.24)	5.63[f]	0.018*
No	42(100.00)	86(87.76)		
Macerated birth				
Yes	0(0.00)	2(2.04)	0.87[f]	0.35
No	42(100.00)	96(97.96)		
Neonatal death				
Yes	1(2.38)	4(4.04)	0.25[f]	0.25
No	41(97.62)	94(95.92)		

Discussion

Placenta praevia is a leading cause of antepartum and postpartum haemorrhage with attendant maternal and fetal risks. This study revealed a prevalence of 1.31%. This was within the global range of 0.30 – 2.00%14 and lower than that reported in studies in Nnewi (1.65%)[17] and Lagos (2.60%) in Nigeria.[1,16] The low prevalence may be attributed to the availability of other specialist hospitals in the area thereby reducing the number of referred cases. Also, some cases of minor placenta praevia may go undiagnosed and asymptomatic especially amongst unbooked women with subsequent vaginal births and so not captured in the studyThe peak age prevalence was among the age group 25-29 and 30 - 34 years which confirmed the findings from a meta-analysis that showed increasing risk with advancing age[14] but was however in variance with other studies done in Nigeria and Tanzania.[5,17]

There was also a significant difference between maternal age and degree of placenta praevia (p-value=0.041) This could be due to the fact that with increased age, the uteroplacental blood supply may be compromised due to atherosclerotic changes leading to hyperplacentosis with the placenta encroaching the lower uterine segment.[14] Major placenta praevia had the highest frequency compared to minor with a ratio of 2.3:1 with Type III being the most common (36.4%). This was in keeping with studies done in Ilorin and Nnewi.[1,17] This may be attributed to the fact that most women with major praevia are symptomatic and may require emergency interventions hence their presentation to the health facility while those with minor praevia may go undiagnosed especially if unbooked and may achieve vaginal delivery with minimal complication.

From this study, previous uterine scarring from either endometrial curettage (22, 15.71%), or previous caesarean section (18%, 12.86%) were the most prevalent risk factors and was in keeping with the study done by Anzaku et al[18]. and could be due to the fact that trauma to the endometrium and scaring leads to low placental implantation and prevention of placental migration to the upper segment.[14,15,18,19] The median gestational age at presentation was 37 weeks (IQR: 36 – 38) which was higher than that recorded in other studies.[17,19] More than 90% presented after 34 weeks, in keeping with studies Sokoto and Umuahia.[16,21] However in this study, there was no statistically significant difference between the gestational age at presentation and the degree of placenta praevia which was not in sync with a previous study (p-value= 0.46).[1] Prematurity was implicated in one third of all the cases seen. This was comparable with findings by Nkwo et al (31%)[21] but lower than that found in India 61.19%.[15] The mean birth weight was 2.86 ± 0.65 SD.

Most of the babies (70%) had normal birth weight (2.5-4kg), this was similar to other studies in Nigeria and Thailand.[17,21] Most of the babies were delivered in cephalic presentation (96.4%) while minority were breech presentation and transverse lie. The reverse was documented by Filipov E. et al. where cephalic presentation did not coexist with placenta praevia.[27] The median APGAR score in the first and fifth minutes of life were 7(IQR: 4-8) and 8 (IQR: 7-9) respectively. Less than one fifth (18%) had birth asphyxia which was higher than the study in South Eastern region 21 and a statistically significant four-fold increase rate in unbooked parturients was observed in another study in comparison with those that were booked.[23] Majority of the babies survived (86%), one tenth (10%) were still births.

There was a significant difference between the fresh still births and the degree of placenta praevia (p-value= 0.018). This could be attributed to late presentation with severe haemorrhage and subsequent exsanguination of the fetus leading to intrauterine asphyxia and subsequent death. The perinatal mortality ratio from this study was 135.7 per 1,000 live births which was similar to the Egyptian study (135 per 1000 live births)28, lower than Jos (187 per 1,000)18, but was far greater than several other studies locally and globally.[6,15,16]

Conclusion

Advancing maternal age, scarred uterus either from endometrial curettage or previous caesarean section increases a woman's risk of placenta praevia. Although the perinatal survival rates were high, complications like prematurity and birth asphyxia may be encountered. However, with prompt emergency obstetric care in well-equipped hospitals with a skilled multidisciplinary team, the perinatal and outcome can drastically improve.

Recommendations

Women should be counselled on and offered contraception in order to reduce surgical management of abortions and grandmultiparity that could predispose the women to placenta praevia.

There is need for the hospital to set up protocols and SOPs that will help reduce caesarean section rates as previously scarred uterus increases a woman's risk of placenta praevia. Ultrasound scan should be done routinely for all pregnant women who have had previous uterine surgeries (caesarean section, curettage or myomectomy) in the mid-trimester in order to exclude placenta praevia.

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