



The Prevalence and the Outcome of Twin Pregnancies in a South-South Nigerian Tertiary Hospital

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Abstract

Twinning is the commonest form of multiple pregnancy, and it is associated with increased adverse perinatal and maternal outcomes. A 5-year retrospective observational study of all cases of twin gestations delivered at the University of Uyo Teaching Hospital was conducted to determine the prevalence as well as document the maternal and perinatal outcomes associated with it. There were 219 twin deliveries during the study period, accounting for 2.17% of all deliveries. Twinning accounted for 98.65% of all multiple births during the period under review. The majority (62.1%) of the women were between 20 and 29 years of age, their mean age was 28.6 years, multiparous women (69.9%), mean parity was 2.7, and booked status (58.0%). The preterm delivery rate was 32.4%, the caesarean section rate was 42.9% and the perinatal mortality rate (PNMR) was 87 per 1000 births. Maternal complications included a high operative delivery rate of 42.8%, hypertensive disorders (9.6%), anaemia (2.7%) and 4.1% of postpartum haemorrhage. The perinatal morbidity and mortality and maternal morbidity rates were high. A significant percentage of the women with these high risk pregnancies were unbooked thereby reducing the opportunity for early detection and management in our environment. There is need for community education and advocacy on early booking and regular antenatal visits and better resources in our maternity unit to improve foetomaternal outcomes of twin.

Keywords: Morbidity, Pregnancy, Multiple, Prevalence, Twins.

Introduction

Pregnancy and birth involving more than one foetus and baby are peculiar and have thrilled mankind for centuries. Twinning is the commonest form of multiple gestation; accounting for 97% of multiple pregnancies and 1% of all pregnancies and.^{1, 2} It is often associated with increased adverse perinatal and maternal

outcomes. and also poses significant management challenges for the medical health professional.^{2, 3}

The aetiology of multiple pregnancies is thought to be related to zygoty. While monozygotic twinning is a random occurrence of unknown aetiology, dizygotic twinning is believed to be a product of multiple follicle ovulation caused by increased gonadotropin levels.⁴

The frequency of twinning in pregnancy varies widely between developed and developing nations and is directly related to zygosity.^{5, 6} The incidence of twins ranges from the least common 4 per 1000 births in Japan to the most common 54 per 1000 in Southwest Nigeria.⁷ The incidence of monozygotic twins is constant worldwide at approximately four per 1000 births while that of multiple zygotic pregnancies varies in relation to maternal age, the use of assisted reproductive technology (ART), and ethnicity in several ways.⁸ An increase in maternal age and fertility treatment are believed to be responsible for the current increase in twinning rates in developed countries.⁵ It has been found that one-fourth to one-third of the increase in twin or triplet pregnancies are attributable to a contemporaneous increase in maternal age, while 30% to 50% of twin pregnancies and at least 75% of triplet pregnancies occur after infertility treatment in countries with high occurrence of multiple births.⁸ Twin pregnancy is associated with significant increase in maternal mortality and morbidity. Maternal complications documented to be associated with twin pregnancies include hyperemesis gravidarum, anaemia, hypertension, polyhydramnios as well as antepartum haemorrhage.^{3,9} There is also an increased incidence of gestational diabetes, urinary tract infection, premature rupture of foetal membranes, operative delivery and postpartum haemorrhage.^{9, 10} Peripartum problems associated with twin pregnancy and delivery include an increase in perinatal mortality often resulting from prematurity, a consequence of preterm birth, and intrauterine growth restriction.^{3, 11} The well documented higher incidence of spontaneous twin pregnancy and birth among Africans especially in Southwest, Nigeria⁷ warrants a study of twinning rates in other regions of the country. The greater perinatal morbidity and mortality associated with twins as well as the barrage of maternal complications that could accompany it, and the resultant management challenges it poses for obstetricians calls for a

periodic review of twin births in all maternity centres. It is in the light of the foregoing that this 5-year review was carried out in the obstetric unit of the University of Uyo Teaching Hospital in South-south Nigeria. The specific objectives of the study were to determine the prevalence of twin pregnancies, and document the maternal and perinatal morbidities and mortality associated with twin births in the centre. This we hope will not only help us improve our management of the condition but would add to the body of knowledge on this very important subject.

Materials and Methods

This was a retrospective observational study of all cases of twin pregnancies delivered at the University of Uyo Teaching Hospital spanning a five-year period which started from 1st January 2011 through 31st December 2015. The sources of data were the labour ward admissions register, the obstetrics theatre records, and the Special and sick babies` unit admissions records. The records of all deliveries that took place during the period were reviewed and the hospital numbers of all patients documented either as multiple or twin births were collected. The case records of those with twin deliveries were retrieved from the medical records department for in-depth study. Complementary information was obtained from the babies` case notes in the neonatal unit. These case notes were analyzed. Information abstracted included maternal age and parity, booking status, gestational age at birth, mode of delivery, gender distribution, birth weight, and perinatal and maternal outcome. The data obtained were entered into a proforma designed for the study and results presented in frequency tables and percentages.

Results

During the study period, there were ten thousand and one hundred and two (10,102) deliveries at an average of about 2000 deliveries per year; with the years, 2012 and 2014 having the highest (21.43%) and lowest (18.62%) respectively. There were 222 multiple births, accounting for 2.2% of

deliveries. There were 219 twin deliveries, accounting for 2.17% of total deliveries and 98.65% of multiple births (**Table 1**).

The socio-demographic characteristics of women who had twin deliveries during the 5-year period showed that the majority of the women were between 20 and 29 years(62.1%), followed by those from 30 to 39 years(37.1%). The mean age was 28.6years. One hundred and fifty-three (69.9%) had between 2 and 4 previous deliveries, while 25.1% were primiparous women. The mean parity was 2.7. Most (58.0%) of the women were booked. (**Table 2**)

The majority of women with twin pregnancies were delivered at term (67.6%) while the preterm delivery rate was 32.4%. There were no post term births. (**Table 3**).

One hundred and seventeen (53.4%) women had spontaneous vaginal delivery while the Caesarean section rate associated with twin delivery was

42.9%. The Assisted vaginal breech delivery and instrumental deliveries rates were 2.3% and 1.4% respectively. (**Table 4**)

There were 208 male twin births and 230 female twin births giving a male : female ratio of 1:1.1. There were more male first twin and female second twin,(**Table 5**) A significant proportion of the babies were of low birth weight(36.1%), while 32.4% and 3.0% were premature and had birth asphyxia respectively. There were 38 stillbirths and no early neonatal deaths. The perinatal mortality rate (PNMR) was 87 per 1000 total births. (**Table 6**)

Maternal morbidities associated with twin pregnancies and deliveries in this study included a high caesarean delivery rate of 42.8%, preterm labour, 26.5% while medical complications were mainly hypertensive disorders and anaemia at 9.6% and 2.7% respectively. Nine women (4.1%) had postpartum haemorrhage.(**Table 7**)

Table 1: Yearly distribution of Deliveries in the University of Uyo Teaching Hospital from 1st January 2011 to 31st December, 2015

S/N	Year	Singleton	Multiple		Total	Percentage (%)
			Twins	Triplets		
1.	2011	1942	31	1	1974	19.54
2.	2012	2121	43	1	2165	21.43
3.	2013	1987	56	0	2043	20.22
4.	2014	1831	50	0	1881	18.62
5.	2015	1999	39	1	2039	20.18
Total		9880	219	3	10,102	100
Percentages (%)		97.8	2.17	0.03	100	

Total number of Multiple birth = 222

Twins= 98.65% of multiples; Twin birth rate = 21.7/1000 deliveries

Table 2: Characteristics of women who delivered twin in UUTH, 2011-2015

Variable	Number	Percentage (%)
Age distribution (Years)		
<20	3	1.4
20 – 29	136	62.1
30 – 39	79	36.1
=/>40	1	0.5
Parity		
1	55	25.1
2 – 4	153	69.9
>/=5	11	5.02

Booking status

Booked	167	76.3
Unbooked	52	23.7
Total	219	100

Table 3: Gestational Age at birth (weeks)

Gestational age	Frequency	Percentage
< 37(Preterm)	71	32.4
37 – 42(Term)	148	67.6
>42(Post-term)	0	0
Total	219	100

Table 4: Methods utilised in delivery of twins in UUTH, 2011-2015

Method	Frequency	Percentage (%)
Normal Vaginal Delivery (SVD)	117	53.4
Caesarean section	94	42.9
Instrumental (Vacuum)	3	1.4
Assisted breech delivery	5	2.3
Total	219	100

Table 5: Sex Distribution of Twins in UUTH, 2011-2015

Variables	Frequency		Total	Percentage (%)
	Twin 1	Twin 2		
Males	111	97	208	47.5
Females	108	122	230	52.5

Approximate Male: Female Ratio 1:1.1 with Female preponderance

Table 6: Perinatal Risks and complications † (n=438)

Variable	Frequency	Percentage (%)
Stillbirth	38	8.7
Low birth-weight	158	36.1
Prematurity	142	32.4
Birth Asphyxia	13	3.0

†Some babies had multiple complications

Table 7: Maternal Morbidities § (n=219)

Variable	Frequency	Percentage (%)
Anaemia	6	2.7
Hypertension/PE	21	9.6
Preterm labour	58	26.5
Postpartum Haemorrhage	9	4.1
Caesarean section	94	42.9

§Few mothers had multiple morbidities

Discussion

The prevalence of multiple births during the study period was 2.2% with twin pregnancies accounting for 98.6% of these deliveries, the twinning rate in this study was 21.7/1000 births. The prevalence rate of twin gestation in this study is higher than the 1.6% reported in Port-Harcourt, Nigeria,¹² but lower than documented prevalence rates of 2.2%, 2.6% and 2.8% in Enugu and Bida, both in Nigeria and an Ethiopian provincial hospital respectively.¹³⁻¹⁵ The prevalence from this study is much higher than ones reported from developed parts of the world like Asia and Australia, Europe and the United States of America with spontaneous twin rates of 0.6% and 1-2% respectively.¹⁶ The relatively wide variation in magnitude of twin delivery could be due to the ethnic differences in Africa. While it is widely recognized that the prevalence of twinning is rising globally due to the increased use of assisted reproductive technology (ART), the rate remains highest in Africa as it is influenced by racial and probably dietary factors with highest rates reported from south-west Nigeria.^{17,18}

Most (58.0%) of the women were booked, a value less than was demonstrated in an earlier review in the same centre where 79.3% of mothers with twin pregnancy registered for antenatal care.¹⁹ This is in contrast to findings from a rural mission tertiary hospital in the Niger delta, Nigeria where 65.7% of women with twin pregnancies were unbooked.²⁰ Our study was carried out in a tertiary facility located in an urban area and this may be responsible for the high booking rates documented. This Rural-urban differences in the utilization of antenatal care services, with a higher proportion of urban women utilizing these services than rural women had also been found both in the National health surveys and a Southeast, Nigerian study.^{21, 22} While the booking rate is above the National average for antenatal care of 51%,²¹ it can still be said to be low for a high risk pregnancy that twin pregnancies have been adjudged to be and the needed closer monitoring for early detection of complications.

The relationship between increasing maternal age, parity and increased incidence of multiple pregnancies is documented and this is usually thought to be secondary to physiological hormonal changes such as increased follicle stimulating hormone (FSH) secretion.^{16,17,23} In our study however, the modal age range of 20 to 29 years and mean age was 28.6 years is at variance with accepted knowledge but is similar to findings from some studies,^{14, 24} This differences in findings may be a product of differences in study designs as ours was hospital-based and may not reflect the true picture of the general population. The majority of the mothers in this study were multipara with a mean parity of 2.7, a pattern of relationship found in most studies.^{14,20,25}

The caesarean section rate associated with twin delivery in this study was high at 42.9%, a rate close to 48.0% and 53.5% reported from Enugu and Bida, Nigeria respectively.^{13,14} The caesarean section rate of twin pregnancies is reported to be twice that of singletons, rate believed to be a reflection of the high risk nature of these pregnancies with their attendant increased maternal and perinatal morbidity and mortality, and it is observed irrespective of the population based sample studied.²⁶ The high caesarean section rate indicated for twin delivery here may be a reflection of the increased number of referred patients who would only achieve delivery through the abdominal route as 42.0% of the patients in this were unbooked and presented as referred emergencies. Also, vaginal birth of twins at term is well recognised as a high-risk area associated with increased rates of perinatal death and a depressed Apgar score, primarily because of intrapartum asphyxia of the second twin.²⁷ There was a low instrumental vaginal delivery rate of 1.4% compared to 4% of twin deliveries reported in Delta state, Nigeria.²⁰

The twin pregnancy preterm delivery rate of 32.4% found in our study is similar to 35.4% found in an earlier study in our centre,¹⁹ is comparable to 30.8% in Port Harcourt,¹² but less than the preterm birth rates of 41.0% reported

from Enugu.¹³ The commonest complication of twin gestation is preterm delivery which is also the main contributor to the high perinatal morbidity and mortality found in multiple pregnancies with 50% of twin pregnancies delivering before 37 weeks and 10% delivering before 32 weeks of gestation.^{28,29}

Hypertensive disorders of pregnancy were found in 9.6% of the women, while this is higher than that seen in singleton pregnancies; this is lower than that shown in a previous study in our centre and Umuhia, Nigeria.^{19,30} Twin pregnancies has been documented to be associated with a 2 to 3-fold increased risk of hypertensive diseases when compared to singleton gestation. This is thought to be related to hyperplacental as well as the association of rising maternal age with multiple gestation and chronic illnesses predisposing to hypertension in pregnancy.^{26,31} Other maternal complications found in this study included post-partum haemorrhage (4.1%) and anaemia (2.7%). The exaggerated physiological changes, over distension of uterus and interventions in pregnancy and delivery of twin pregnancies predispose to anaemia and post-partum haemorrhage; and these had been corroborated by other studies with similar findings.^{13,19,26,31}

The perinatal mortality rate in this study was 87/1000 births, which is close to 80/1000 and 88.5/1000 births seen in Jos and Bida, Nigeria respectively, but it is however lower than the 100/1000 and 207/1000 found in previous studies in Nigeria.^{14,19,32,33} The still birth rate was 8.7% while the rate of birth asphyxia was strikingly very low at 3.0%. It was also noted, albeit interestingly that no early neonatal death was recorded among the twin-births. This may be a reflection of the very low rate of neonatal asphyxia found in this study. The Perinatal mortality is said to be five times higher in twins compared to singletons unrelated to mode of delivery.²⁷ The rates of other perinatal complications such as low birth weight and prematurity were 36.1% and 32.4% respectively. The association of low birth weight with twin

pregnancy is well documented, occurring in almost half of twin gestations and may be associated with preterm delivery, foetal growth restriction, foetal malformations, placentation and infection.²³

In conclusion, the perinatal morbidity and mortality as well as maternal morbidity rates associated with twin pregnancies were high. A significant percentage of the women with these high risk pregnancies were unbooked thereby reducing the opportunity for early detection and management in our environment. This has important economic and social implications and increases the burden on our stretched healthcare delivery system. We therefore recommend increased community education and advocacy on the increased risk associated with twin gestation, the need for early booking and regular and more frequent antenatal visits which we believe could assist timely identification of complications and allow necessary interventions to prevent same and improve foetomaternal outcomes. There is also the need for an improvement of the resources in our maternity unit to cope with these challenges.

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