

Higher-order multiple births in Abakaliki, Southeast Nigeria

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ABSTRACT

Introduction: Higher-order multiple births have implications for perinatal and maternal morbidity and mortality. This study aimed to determine the incidence and outcomes of higher-order multiple pregnancies in a rural area in Southeast Nigeria.

Methods: The study reviewed the data on all higher-order multiple deliveries conducted in two tertiary health institutions in Abakaliki over a seven-year period from January 2000 to December 2006.

Results: Higher-order multiple births constituted 0.13 percent of the 16,968 deliveries at the two institutions. There were 21 triplet births and one quadruplet delivery. Mothers with higher-order multiple pregnancies had more antenatal admissions for preterm uterine contractions and had more preterm deliveries. The vaginal route was the preferred method of delivery. Stillbirth was recorded in 12.7 percent of the triplets, with 25.5 percent involving triplets I, II and III, who suffered birth asphyxia. The perinatal mortality rate was 276 per 1,000.

Conclusion: The Igbo women of Ebonyi State, Nigeria, have a high rate of higher-order multiple births. These are attended by increased obstetric and perinatal complications. Abdominal delivery is therefore recommended in order to reduce the rate of intrapartum stillbirth and birth asphyxia among triplets.

Keywords: Igbo, perinatal, quadruplets, special care, triplets

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INTRODUCTION

Natural higher-order multiple conceptions (i.e. pregnancies with more than two offsprings) are uncommon.⁽¹⁾ The reported incidence ranges from 0.01% to 0.07% of all pregnancies.^(1,2) Hellin's law approximates the incidences of triplet and quadruplet gestations to the

square and cube, respectively, of the incidence of twin pregnancies in a population. Such natural pregnancies are less common in developed countries, where increasing incidences are being recorded following the introduction of assisted reproductive technologies. The transfer of multiple fertilised oocytes at the blastomere stage accounts for this.⁽³⁾ *In vitro* fertilisation, gamete intrafallopian transfer and zygote intrafallopian transfer are reported to be associated with triplet gestation rates of 4.8%, 6.6% and 4.4%, respectively.⁽³⁾

The socioeconomic and emotional demands that may accompany the birth of three or more premature babies at the same time may overwhelm the mother and her family, especially where family support is lacking or inadequate. In 1980, Egwuatu⁽⁴⁾ conducted a review of triplets born to women of Igbo extraction in Enugu, Nigeria in the 1970s. However, recent information on the topic is lacking and no such review has been conducted in Abakaliki, Southeast Nigeria, which is known to have a high incidence of twin pregnancies.⁽⁵⁾ Hence, this study aimed to fill the information gap.

METHODS

This was a retrospective study of all higher-order multiple births at two tertiary health institutions in Ebonyi state, Ebonyi State University Teaching Hospital and Federal Medical Centre, Abakaliki, over a seven-year period (January 1, 2000 to December 31, 2006). Both institutions serve as referral centres for the entire population of the state as well as the neighbouring states of Abia, Enugu and Benue in Nigeria.

Information on maternal age, parity, booking status, gestational age at delivery, labour complications and foetal outcomes was extracted from the case records of the parturients with higher-order multiple pregnancies. The records were retrieved from the central record departments of the two hospitals. Records of the two singleton deliveries immediately preceding and another two immediately following the higher-order multiple birth were also reviewed and used as controls. The labour ward and special care baby unit registers were examined for total births, stillbirths, neonatal admissions and early neonatal events.

Data was analysed using the Epi Info statistical

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Table I. Age, parity and booking status of the subjects.

Characteristic	No. (%)		p-value
	Cases (n = 21)	Controls (n = 84)	
Age (yrs)			
20–24	2 (9.5)	24 (28.6)	0.885
25–29	10 (47.6)	28 (33.3)	
30–34	9 (42.9)	21 (25.0)	
≥ 35	-	11 (13.1)	
Parity			
0	1 (4.8)	12 (14.3)	0.886
1–2	4 (19.0)	28 (33.3)	
3–4	8 (38.1)	24 (28.6)	
≥ 5	8 (38.1)	20 (23.8)	
Booking Status			
Booked	18 (85.7)	64 (76.2)	
Unbooked	3 (14.3)	20 (23.8)	

software version 3.3.2 (Centers for Disease Control and Prevention, Atlanta, GA, USA). The Student's *t*-test (for continuous variables) and chi-square (for discrete variables) with Yates corrections, where applicable, were employed to test for significance. A *p*-value < 0.05 was considered to be statistically significant.

RESULTS

Of the 16,968 deliveries conducted at the two hospitals during the study period, 549 were multiple births (527 pairs of twins, 21 sets of triplets and one set of quadruplets), representing 3.2% or one in 31 of all deliveries. Higher-order multiple births (21 set of triplets and one set of quadruplets) accounted for 0.13% or one in 771 of all deliveries and 4.0% of all multiple births. The incidence of triplets was 0.12% or one in 808 of all births. No higher-order multiple birth beyond quadruplets was recorded. All the women with higher-order multiple births conceived naturally, none of whom had any form of fertility treatment.

The quadruplets were delivered to a 30-year-old booked Para 2+0 housewife through an emergency caesarean section at 32 weeks of gestation. The outcome was two female and two male neonates, and their birth weights were 1,300–1600 g. All the neonates had good APGAR scores at birth but were admitted into the Special Care Baby Unit due to prematurity and low birth weight. They were discharged home in good condition four weeks post delivery. The rest of these results refer to the triplet deliveries.

The age range of the mothers with triplets was 23–34 years, with a mean age of 28.0 ± 7.2 years. 90% of the women were aged 25–34 years, with a median age of 29 years. As shown in Table I, no statistically significant difference existed with regard to the age distribution between the study group and controls (*p* = 0.885, *df* = 3).

Table II. Comparisons of pregnancy and labour complications of the women with higher-order multiple births with the controls.

Complication	No. (%)		p-value
	Cases (n = 21)	Controls (n = 84)	
Anaemia	6 (28.6)	11 (13.1)	0.085
PIH/PE	2 (9.3)	2 (2.4)	0.124
Preterm PROM	5 (23.8)	2 (2.4)	0.002
Malaria	4 (19.0)	8 (9.5)	0.252
Urinary tract infection	2 (9.5)	6 (7.1)	0.659
Antepartum haemorrhage	2 (9.5)	3 (3.6)	0.260
Preterm contractions	21 (100.0)	3 (3.6)	< 0.05
Preterm labour	20 (95.2)	3 (3.6)	0.001
Prolonged labour	0 (0.0)	2 (2.4)	1.000
Postpartum haemorrhage	1 (4.8)	2 (2.4)	0.491
Shoulder dystocia	0 (0.0)	1 (1.2)	1.000
Genital laceration	0 (0.0)	3 (3.6)	0.371

PIH: pregnancy-induced hypertension, PE: preeclampsia; PROM: premature rupture of membranes

Similarly, although the women in the study group were of higher parity compared with the controls, no statistically significant difference was demonstrable (*p* = 0.886, *df* = 3). Their booking status also showed no significant differences.

The pregnancy and labour complications that occurred in the study group and controls are shown in Table II. Preterm premature rupture of the membrane (23.8% vs. 2.4% of controls), preterm contractions (100% vs. 3.6% of controls) and preterm labour (95.2% vs. 3.6% of controls) all achieved statistically significant differences (*p*-values 0.002, < 0.05 and 0.001, respectively). Antenatal anaemia (measured using packed cell volume at admission into the labour ward), hypertensive disorders, malaria, urinary tract infection and antepartum haemorrhage also complicated the triplet gestations more frequently, but the differences were not significant.

All but one triplet deliveries took place before term (Table III). The mean and median gestational ages at delivery were 32.6 weeks and 34 weeks, respectively. 19 mothers delivered through the vaginal route, while two had caesarean section (indications: triplet gestation at term and foetal distress). All except five neonates weighed less than 2,500 g at birth. The first of the triplets had a higher mean weight (1,850 ± 880 g) than the second triplet (1,828 ± 791 g) and the last of the set (1,377 ± 1,032 g). The mean gestational age at delivery for singletons during the same period was 39.4 weeks, with a mean birth weight of 3,220 ± 768 g. These differences in the mean gestational age and birth weight were significant (*p* = 0.00 in each case), as shown in Table III. Significant differences in the rates of mild and moderate

Table III. Gestational age at delivery, birth weight distribution and birth asphyxia of the triplets and singleton controls.

Characteristic	No. (%)				p-value
	Triplets (n = 21)			Singletons (n = 84)	
Gestational age (yrs)					
30–32		9 (42.9)		-	
33–34		4 (19.0)		-	< 0.05*
35–36		7 (33.3)		3 (3.6)	
≥ 37		1 (4.8)		81 (96.4)	
	1st	2nd	3rd		
Birth weight (g)					
< 1,000	-	-	3 (14.3)	-	
1,000–1,499	5 (23.8)	3 (14.3)	7 (33.3)	-	
1,500–1,999	8 (38.1)	8 (38.1)	6 (28.6)	-	< 0.05*
2,000–2,499	5 (23.8)	8 (38.1)	5 (23.8)	2 (2.4)	
≥ 2,500	3 (14.3)	2 (9.5)	-	82 (97.6)	
Mean birth weight ± 2SD	1,850 ± 880	1,830 ± 790	1,380 ± 103	3,274 ± 347	
Birth asphyxia					
Mild	-	3 (14.3)	4 (19.0)	1 (1.2)	0.006*
Moderate	2 (9.5)	2 (9.5)	3 (14.3)	-	0.001*
Severe	-	-	-	1 (1.2)	0.6

* Statistically significant (Fisher's exact values)

SD: standard deviation

perinatal asphyxia among the triplets as compared with singletons ($p = 0.006$ and 0.001 , respectively) were observed (Table III). Foetal gender distribution showed that males predominated (54.0%), while a combination of two females with one male was the most common arrangement observed in 52.4% of cases. There were six like-gender triplet sets (five all males and one all females). The foetal presentation was cephalic in 57.1% of the first triplet, 42.9% of the second triplet and 33.3% of the third triplet. None of the first presenting triplets assumed the transverse or oblique lie in labour.

Out of the 55 live triplets, 52 (94.5%) were admitted into the Special Care Baby Unit for prematurity and 90.9% for low birth weight (Table IV). Other indications for admission included respiratory distress syndrome (49.1%), birth asphyxia (25.5%), presumed neonatal sepsis (18.2%) and neonatal jaundice (34.5%). Five early neonatal and four late neonatal mortalities were recorded (Table IV). The perinatal mortality rate for the triplets was 276 in 1,000 live births, which was considerably higher than the rate of 71 in 1,000 live births for the controls.

DISCUSSION

The incidence of triplet pregnancy of one in 771 deliveries (0.13%) in this study is higher than the one in 1,014 deliveries reported by Egwuatu in 1980, whose study was also conducted among the Igbos of Southeast Nigeria.⁽⁴⁾ This apparent rise in incidence may reflect the subject selection bias involving high-risk referrals from

all over the state (over 85% of the cases were booked). This incidence is, however, similar to the rate of one in 614 pregnancies previously noted among the Yorubas of Southwest Nigeria.⁽⁶⁾ The Yorubas were credited with having the highest twinning rate worldwide, and probably, triplet gestation as well.⁽⁷⁾ It has been speculated that among some communities in Igboland, the ancient practice of sacrificing multiple births in the belief that they were evil and abominable may have eliminated a lineage of multiple pregnancies among the population and lowered the subsequent incidence of such births. In this study, the incidence of higher-order multiple births is higher than that reported among the Hausas of Northern Nigeria⁽¹⁾ and among Caucasians.^(3,8) The current rise in triplet births in developed countries consequent to hi-tech infertility management was not applicable in our study population; all the pregnancies were conceived naturally. Triplet births accounted for 4.0% of all multiple deliveries in our series, an incidence higher than that recorded by Harrison⁽¹⁾ among the Hausa population. Age and parity have strong correlation with twinning, but their roles, along with other factors associated with twinning, are not clearly defined in higher-order multiple pregnancy.⁽³⁾ Although the triplet mothers in our studies were older and of higher parity than their singleton counterparts, the differences were not statistically significant. Genetic factors may be more important, and further research along this line will be worthwhile.

Triplet pregnancies in obstetrics are associated with high rates of intrapartum and postpartum complications.

Table IV. Perinatal outcomes of triplet births and indications for neonatal admission.

Parameter	No. (%)
Stillbirth	8 (12.7)
Early neonatal death	5 (7.9)
Late neonatal death	4 (6.3)
Indications for admission	
Prematurity	52 (94.5)
Low birth weight	50 (90.9)
Respiratory distress syndrome	27 (49.1)
Neonatal jaundice	19 (34.5)
Birth asphyxia	14 (25.5)
Presumed neonatal sepsis	10 (18.2)

Maternal anaemia, malaria, urinary tract infection were some of the complications that necessitated more antenatal admissions among the triplet mothers than the controls in our study. Preterm premature rupture of the membranes and pregnancy-induced hypertension were other antenatal complications encountered, and all these have been well documented in earlier studies.⁽⁹⁻¹²⁾ Postpartum haemorrhage, which complicates 13%–35% of triplet deliveries and is precipitated by uterine over distension,⁽⁹⁻¹¹⁾ occurred in only one of our patients. The unit's policy of active management of the third stage with high-dose oxytocin infusion in the immediate postpartum period may have accounted for this complication.

Preterm labour was responsible for preterm delivery in the parturients, the majority before the 33rd week. The mean gestational age at delivery of 32 weeks and five days in this study is similar to that of studies conducted in American Caucasians.⁽¹²⁻¹⁴⁾ The optimal gestational age at birth is reported to be 34–35 weeks, at a weight of 1,900–2,200 g.⁽⁵⁾ Prematurity and low birth weight are major factors responsible for the high perinatal morbidity and mortality among triplets.^(13,8,15) Birth weight correlated with gestational age at delivery as well as with survival rate in our study. Foetuses that were delivered beyond the 34th week had a mean birth weight of $2,260 \pm 490$ g, and they all survived. Similarly, a 100% survival rate attended births at 33–34 weeks, with a mean birth weight of $1,780 \pm 170$ g. All perinatal deaths occurred in foetuses that were delivered before the 32nd completed week. Babies so delivered had a mean birth weight of $1,430 \pm 680$ g and a survival rate of 66.7%. Many prophylactic measures, including cervical cerclage⁽¹⁶⁻¹⁸⁾ and tocolysis,⁽¹⁹⁾ have previously been advocated to avert preterm delivery and improve neonatal outcome, but they were later found to be not associated with significant changes in perinatal morbidity and mortality rates.^(16,19) However, induction of foetal pulmonary maturity with steroids before 34 weeks, coupled with bed rest,^(9,13,19,20) has been shown to

decrease the occurrence of preterm delivery, intrauterine growth restriction⁽¹⁰⁾ as well as perinatal mortality in a Zimbabwean study.⁽²⁰⁾ Our unit encourages bed rest at home from the early third trimester of pregnancy.

Contrary to routine caesarean deliveries of higher-order multiple pregnancies practised in the US,^(12,21) by far the more common mode of delivery of triplets in this study was vaginal. Triplet vaginal births are, however, associated with higher perinatal morbidity and mortality mainly due to cord prolapse, foetal collision, reduced placental perfusion and haemorrhage from separating placentae.^(4,22) Only two cases of caesarean section were noted in this study, and it was therefore not possible to make a valid comparison between the routes of delivery with regard to perinatal mortality. In his earlier review of Igbo triplet births, Egwuatu documented a greater prevalence of vertex presentations (55.6%) among first triplets and observed that such presentations were associated with fewer perinatal deaths following vaginal delivery compared to other presentations.⁽⁴⁾ It is likely that the predominance of vertex presentations among first triplets in the present study has largely influenced the choice of vaginal route for delivery.

There were 55 live births, 14 of which suffered from varying degrees of asphyxia. Asphyxia and stillbirths were the most common among third triplets. The high incidence of birth asphyxia in this study following vaginal delivery may make a case for elective caesarean section even though this may not prevent all cases of asphyxia associated with triplet pregnancy. The increased incidence of malpresentations requiring manipulation, the risk of birth trauma and compromised blood supply from the separating placentae put the third triplet at higher risk of perinatal morbidity and mortality compared with the first and second triplets.⁽⁹⁾ The third triplet also had a lower mean birth weight, which correlated with poorer perinatal outcome. The calculated perinatal mortality rates were 276 in 1,000 for triplets and 71 in 1,000 for the singleton controls. These rates are consistent with values from previous studies.^(13,9) With improvements in both antenatal management and neonatal services, this rate may decrease.⁽¹¹⁾

The Igbos of Southeast Nigeria have a relatively high triplet delivery rate. Such higher-order multiple pregnancies have raised the rates of perinatal and maternal morbidity and mortality. The high incidence of birth asphyxia following vaginal delivery of triplets supports the prevailing view that elective caesarean section should be the ideal mode of delivery in centres where resources for safe caesarean sections are available.

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