

## Twin pregnancies in Sub-Saharan Africa – Lagos experience

Omololu Adegbola & Olajumoke Morenike Akindele

Department of Obstetrics and Gynaecology, Lagos University Teaching Hospital, Lagos, Nigeria

**A total of 2,879 deliveries were conducted within 2 years and 92 were twin deliveries constituting 3.2% or 1 in 31 deliveries. The mean age and parity was 30.4 ± 3.9 years and 1.3 ± 1.4 respectively. Male infants constituted 54.4% of the twins with a sex ratio of 1.2 boys to 1.0 girl. Among twin deliveries, presentation of cephalic-cephalic was the commonest. Caesarean section rate was 65.2% in the overall twin pregnancies. Commonest indication for perinatal admission was prematurity. None of the twins delivered before 28 weeks gestation survived whereas survival was almost certain from 32 weeks gestation. There was generally no significance difference in the outcome of the babies with respect to chorionicity. Perinatal mortality was high compared with that of singleton with prematurity being the leading cause of death.**

**Keywords:** Incidence, perinatal and maternal outcome, twin pregnancies

### Introduction

Twin pregnancies are high risk pregnancies [1] noted for recognized risk of complications for both mother and babies when compared to singleton pregnancies [2]. There are geographic differences in the incidence of twins worldwide; the variation is mainly with respect to dizygotic twinning. The rate of twin pregnancies after spontaneous conception in Caucasians was reported as 1 in 80 deliveries [3].

Preterm birth is a notable complication of twin pregnancy, however up to 50% of twins are born at term [2]. The incidences of twin pregnancies remain high due to a number of factors including rising maternal age and parity [1,4,5] as well as in assisted reproduction [3,6,7]. It has been reported that assisted reproduction in Europe results in twin rates of 27.1% with wide variations across the countries [8].

The poor neonatal outcome for preterm births sharply declines after 34 weeks to less than 2% at term [1], among term births there is a greater risk of second twin dying from anoxia following vaginal delivery as compared with those delivered by caesarean section [9]. There was however no association between birth order and risk of perinatal death related to delivery among preterm twins [9] despite the high rate of caesarean delivery in twin pregnancies [6,9].

### Objectives

This study was undertaken to determine the incidence, epidemiological variables, perinatal and maternal outcome of twin pregnancy at the Lagos University Teaching Hospital, Lagos, Nigeria.

### Materials and methods

This was a retrospective study. The records of twin deliveries from 1st August 2005 to 31st July, 2007 at the Lagos University Teaching Hospital (LUTH), Lagos, Nigeria were analyzed. Information was obtained from the neonatal unit records, from individual case notes and delivery notes. Information obtained included characteristics of mother such as age, parity, booking status, gestational age at delivery, fetal apgar scores at birth, gender/sex, fetal weight and perinatal death record. The two cases of conjoint twins during the period of review were excluded from the study. Estimated gestational age was calculated from the first day of the last menstrual period or in cases where patients were not certain, by ultrasound scan in the first half of pregnancy. Regular obstetric ultrasound scan is done as part of pregnancy monitoring for fetal surveillance, chorionicity is also ascertained which help in counseling the parents about risk of genetic and structural anomaly as well as risk of perinatal morbidity and mortality. They are seen more frequently, every 2 weeks till 30 weeks gestation and thereafter weekly till delivery. Anemia is prevented by giving prophylactic iron and folic acid supplementation as well as malaria chemoprophylaxis. Prompt hospital admission is done if any sign of complication especially preterm labor should develop. If the leading twin present cephalic, vaginal delivery is preferred except contraindicated obstetrically. Labor is supervised by obstetrician, neonatologist and anesthetist because of high incidence of obstetric intervention. If preterm delivery is inevitable two doses of intramuscular dexamethasone twelve mg each given twelve hours apart is administered. For babies delivered preterm with respiratory distress syndrome, incubator care, oxygen supplementation and supportive care are given. Also arterial blood gases are monitored, renal function test and sepsis work are all done. Intravenous fluid is administered until oral feeds can be safely given; ten percent dextrose in water given at 60–70 mL per kilogram is usually used. What is presently lacking in this hospital is artificial surfactant as well as functioning neonatal ventilator which the hospital administrators are still looking for means of meeting these needs. For those delivered by caesarean section, table one show the various indications. The study was in accordance with ethical standard of the Lagos University Teaching Hospital. Data was analyzed using the Epi-Info 2002 software. Categorical variables were compared with  $\chi^2$  test and Fisher exact test as appropriate while continuous variables were compared using *t*-test. A *p* value of <0.05 was considered as significant.

## Results

A total of 2,879 deliveries were conducted during the period, and 92 of them were twin deliveries, constituting 3.2%, or 1 in 31 deliveries. There was no history of ovulation induction or assisted reproductive technologies in any of the patients in this study. The age of patients ranged from 21 to 40 years (mean:  $30.4 \pm 3.9$  years) while the parity of mothers ranged from 0 to 5 (mean  $1.3 \pm 1.4$ ). The booking status of women showed that there were 60 (65.2%) patients who booked at our antenatal clinics, 32 (34.8%) were unbooked.

The gestational age at delivery ranged from 24–40 weeks with a mean of  $35.3 \pm 4.0$  weeks. Forty-six (50%) of deliveries occurred before term and no pregnancy exceeded 40 weeks. Estimated blood loss ranged from 100 to 2500 mL (mean  $556.5 \pm 342.8$  mL). While the blood loss for spontaneous vaginal delivery ranged from 100–700 mL (mean  $300 \pm 164.1$  mL) that following caesarean delivery ranged from 300–2500 mL (mean  $693.3 \pm 335.2$  mL). The blood loss in those who delivered by caesarean section was higher than those who delivered vaginally, this was statistically significant ( $p < 0.05$ ). Six out of the 32 (18.75%) who had spontaneous vaginal delivery had blood loss greater than 500 mL while 10 (16.7%) of 60 patients who had caesarean section had blood loss of 1000 mL and above. The caesarean section rate was 65.2%. Twelve (20%) were elective cases while 48 (80%) were done as emergencies. Table I shows the indications for caesarean section. PMTCT (Prevention of mother to child transmission of HIV), pre-eclampsia and malpresentation of the leading twin were the leading three indications for caesarean section.

A hundred (54.4%) were male infants, while 84 (45.6%) were females, giving a sex ratio of about 1.2 boys to 1.0 girl. Table II shows the gender distribution of twins at birth. The fetal presentation at birth in both twins showed that both twins being cephalic was the commonest and occurred in 34 (37%) cases. Table III shows presentation of the first and second twins. The male-male pair was commonest, Figure 1 showing distribution of sex pair at birth. Males were first twin in 51 (55.4%) cases and second twin in 49 (53.3%) cases. Females were first twin in 41 (44.6%) cases and second twin in 43 (46.7%) cases. The mean birth weight of the first twin was  $2241.6 \pm 730.5$  gm and that of the second twin was  $2248.9 \pm 745.0$  gm. This was not statistically significant ( $p > 0.05$ ). First minute apgar score of  $\geq 8$  was in 54 of the first twins and 48 of second twins. This was statistically significant ( $p < 0.05$ ). Forty-four (47.8%) of the first twin were admitted into the neonatal unit while 47 (51.1%) of second twin were admitted into the neonatal unit, this was not statistically significant ( $p < 0.05$ ). The commonest indication for admission was prematurity, other indications for admission included perinatal asphyxia, low birth weight, respiratory distress syndrome, neonatal jaundice and sepsis. Perinatal death occurred in 14.1% (13) of the first twin and 16.3% (15) of the second twin, this also was not statistically significant ( $p < 0.05$ ).

None of the twins delivered before 28 weeks gestation survived, thereafter the fetal outcome improved in a direct proportion from 28 weeks and beyond (Table IV). The fetal outcome significantly improved and their survival was almost certain from 32 weeks gestation till 40 weeks for both set of twins ( $p < 0.05$ ). Table V shows the proportion of the twins that was Dichorionic Diamniotic (DCDA), Monochorionic Diamniotic (MCDA), Monochorionic Monoamniotic (MCMA) and those whose chorionicity were unspecified in the case records. Both twins were alive at discharge in 32 (71.1%) in DCDA twins, 3 (100%) in MCDA twins, 4 (66.7%) in MCMA twins and 34

Table I. Indications for caesarean section (C/S).

Indications	Frequency	%
PMTCT	12	20.0
PIH/pre-eclampsia	11	18.3
Malpresentation of leading twin	10	16.7
One previous C/S	6	10.0
Failure to progress	5	8.3
Eclampsia	4	6.7
Others	3	5.0
PROM	2	3.3
Retained 2nd twin	2	3.3
Placenta praevia	1	1.7
Two previous C/S	1	1.7
Thyrototoxicosis	1	1.7
Malpresentation and intrauterine death of the 2nd twin	1	1.7
Malpresentation + PIH	1	1.7
Total	60	100

CS, caesarean section; PIH, pregnancy induced hypertension; PMTCT, prevention of mother to child transmission of HIV; PROM, prelabor rupture of membranes. Others, cord prolapse, intrauterine death of one twin.

Table II. Gender distribution of twins at birth.

Gender	Total number ((%)
Males	100 (54.4)
Females	84 (45.6)
Total	184 (100.0%)

Sex ratio 1.2:1.

Table III. Presentations of the first and second twins.

Presentation	Number ((%)
Cephalic: Cephalic	34 (37)
Cephalic: Breech	29 (32)
Breech: Breech	16 (17)
Breech: Cephalic	12 (13)
Transverse: Transverse	1 (1)
Total	92 (100)

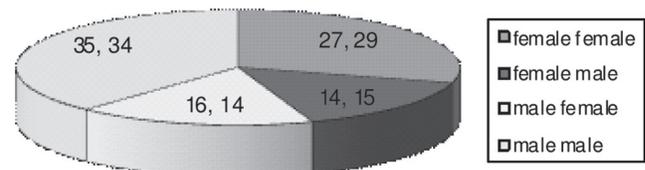


Figure 1. Distribution of sex pair/combination of twins at birth.

(89.5%) of twins whose chorionicity was not specified. There were less MCMA pregnancies having both twins alive and this was statistically significant ( $p = 0.0233$ ). There was however no statistically significant difference among these four groups with respect to both twins being dead or only one alive irrespective of whether the life twin was the first or second twin ( $p > 0.05$ ). There was also no statistically significant difference in the mode of delivery whether caesarean or vaginal delivery in the DCDA, MCDA, MCMA and those whose chorionicity was not specified ( $p > 0.05$ ).

Perinatal mortality rate was 304.3 per 1000 deliveries while that of singleton deliveries for the study period was 25.8 per 1000 deliveries even after control for gestational age. This was

Table IV. Gestational age (G.A) in weeks and fetal outcome.

Gestational age in weeks	Frequency	%	Outcome twin 1		Outcome twin 2	
			Alive	Dead	Alive	Dead
24	1	1.1	0	1	0	1
25	1	1.1	0	1	0	1
26	1	1.1	0	1	0	1
27	1	1.1	0	1	0	1
28	3	3.3	1	2	1	2
29	1	1.1	1	0	1	0
30	6	6.5	5	1	3	3
31	5	5.4	2	3	4	1
32	3	3.3	3	0	3	0
33	2	2.2	2	0	2	0
34	5	5.4	5	0	4	1
35	7	7.6	7	0	7	0
36	10	10.9	9	1	9	1
37	14	15.2	13	1	13	1
38	12	13	12	0	12	0
39	14	15.2	14	0	13	1
40	6	6.5	5	1	5	1
Total	92	100	79	13	77	15
			Mean GA	Mean GA	Mean GA	Mean GA
			36.1 ± 3.0 (range 28–40)	30.3 ± 4.8 (range 24–40)	36.1 ± 2.9 (range 28–40)	31.0 ± 5.1 (range 24–40)
			$\chi^2 = 14.3115$		$\chi^2 = 12.5365$	
			$p = 0.0002$		$p = 0.0004$	

Table V. Chorionicity of twins.

Chorionicity	Frequency	%
Dichorionic diamniotic	45	48.9
Monochorionic diamniotic	3	3.3
Monochorionic monoamniotic	6	6.5
Unspecified	38	41.3
Total	92	100

about twelve times that of singleton perinatal mortality rate. The commonest cause of death was prematurity which occurred in 21 cases (75%), birth asphyxia in 4 cases (14.3%) while sepsis accounted for 3 cases (10.7%). There were no maternal deaths.

## Discussion

The incidence of twin pregnancies in this study was 3.2% or 1 in 31 deliveries which is higher than rate of 2.3% earlier reported [4]. It is also higher than 1 in 80 reported in Caucasians [3]. This support the fact that there are differences in incidences of twinning worldwide. There was no history of ovulation induction or assisted reproductive technologies in any of the patients in this study. This is very peculiar as assisted reproduction has been known to increase the incidence of multiple pregnancies [3,6,7]. The mean gestational age at delivery was 35.25 ± 4.0 weeks in this study. Preterm birth occurred in 50% of deliveries in this study, this however is not unusual [2].

The caesarean section rate in this study was 65.2%, this also is not unusual as high caesarean delivery has been noted in twins [6,9]. This could be attributed to the fact that operative intervention is more likely in multiple pregnancies because of increased

obstetric problems. In this study, the rate was particularly high because prevention of mother to child transmission of Human Immunodeficiency Virus (HIV) was the commonest indication for caesarean delivery as the Lagos University Teaching Hospital is a major referral centre for such. The average blood loss of 556.5 ± 342.8 mL is not surprising because postpartum hemorrhage is a known complication of multiple gestations.

The fact that none of the twins delivered prior to 28 weeks gestation survived gives cause for concern. If the hospital administrators can make available endotracheal surfactant, neonatal ventilator as well as provision of well equipped and neonatal intensive care unit as well as more personalized care given by well motivated health care providers, the outcome of the babies would definitely improve. Also, the high survival of babies delivered from 32 weeks may suggest that perhaps lung maturation and surfactant production occur earlier or more rapidly in twin gestation as opposed to preterm singleton of same gestational age. There was no statistically significant difference in the outcome of babies with respect to chorionicity except for the fact that less Monochorionic Monoamniotic pregnancies have both twins alive. This however may have been confounded by the fact that in 38 pregnancies (41.3%) the chorionicity was not specified.

There was no statistically significant difference in the perinatal death rate between the first and second twin in this study. This is similar to an earlier study that there was no association between birth order and risk of perinatal death related to delivery [9].

Twin pregnancy is a high risk pregnancy with increased risk for a number of complications, hence the need for continued appraisal which would be useful in counseling parents on the risk of perinatal morbidity and mortality especially in relation to their risk of structural and genetic abnormalities and ensuring care providers conform to universal best practices in their management.

## Conclusion

Twinning is higher in Lagos, Nigeria compared to Caucasian figures; there were no statistically significant differences in the weights and perinatal outcome between the first and second twins. CS, caesarean section; PIH, pregnancy induced hypertension; PMTCT, prevention of mother to child transmission of HIV; PROM, prelabor rupture of membranes. Others, cord prolapse, intrauterine death of one twin.

**Declaration of Interest:** There are no conflicts of interest.

## References

- Hegeman MA, Bekedam DJ, Bloemenkamp KW, Kwee A, Papatsonis DN, van der Post JA, Lim AC, et al. Pessaries in multiple pregnancy as a prevention of preterm birth: the ProTwin Trial. *BMC Pregnancy Childbirth* 2009;9:44–48.
- Dodd JM, Crowther CA, Haslam RR, Robinson JS. Timing of birth for women with a twin pregnancy at term: a randomised controlled trial. *BMC Pregnancy Childbirth* 2010;10:68–73.
- Weghofer A, Klein K, Stammer-Safar M, Worda C, Barad DH, Husslein P, Gleicher N. Can prematurity risk in twin pregnancies after *in vitro* fertilization be predicted? A retrospective study. *Reprod Biol Endocrinol* 2009;7:136–140.
- Aisien AO, Olarewaju RS, Imade GE. Twins in Jos Nigeria: a seven-year retrospective study. *Med Sci Monit* 2000;6:945–950.
- Satija M, Sharma S, Soni RK, Sachar RK, Singh GP. Twinning and its correlates: community-based study in a rural area of India. *Hum Biol* 2008;80:611–621.
- Baxi A, Kaushal M. Outcome of twin pregnancies conceived after assisted reproductive techniques. *J Hum Reprod Sci* 2008;1:25–28.

7. Pope RJ, Weintraub AY, Sheiner E. Vaginal delivery of vertex-nonvertex twins: a fading skill? *Arch Gynecol Obstet* 2010;282:117–120.
8. Andersen AN, Goossens V, Ferraretti AP, Bhattacharya S, Felberbaum R, de Mouzon J, Nygren KG; European IVF-monitoring (EIM) Consortium; European Society of Human Reproduction and Embryology (ESHRE). Assisted reproductive technology in Europe, 2004: results generated from European registers by ESHRE. *Hum Reprod* 2008;23:756–771.
9. Smith GC, Fleming KM, White IR. Birth order of twins and risk of perinatal death related to delivery in England, Northern Ireland, and Wales, 1994–2003: retrospective cohort study. *BMJ* 2007;334:576–578.