

## TWIN BIRTHS IN SOKOTO: A 5-YEAR REVIEW

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## ABSTRACT

**Background:** Twin pregnancy is of major obstetric importance in Nigeria, not just because the highest incidence in the world occurs here but it also poses higher fetomaternal risks in our low-resource setting due to scarcity of human and material resources which translates to increased maternal/perinatal morbidity and mortality. **Objectives:** To determine the incidence, mode of delivery, and factors associated with maternal and perinatal morbidity and mortality in twins delivered at the Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria. **Methodology:** All case notes of twin deliveries from 1<sup>st</sup> January 2009 to 31<sup>st</sup> December 2013 were retrospectively reviewed. Data obtained were analysed using SPSS for windows version 20.0. **Results:** There were 15,712 deliveries of which 187 were twin births giving an incidence of 11.9 per 1,000 births. The mean maternal age was  $27.9 \pm 5.7$  years with a mean parity of  $2.9 \pm 2.8$ . The mean gestational age at delivery was  $33.1 \pm 6.6$  weeks. Majority, 135 (72.2%) were delivered vaginally while 41(21.9%) had Caesarean delivery. The remaining 11(5.9%) had combined vaginal/Caesarean deliveries. Malpresentation 11 (29.7%) was the most common indication for caesarean section. Hypertensive disorders of pregnancy 37 (20.1%) and low birth weight 97 (26.3%) were the leading maternal and fetal complications. The stillbirth rate was 57.1 per 1000 births. There was no maternal mortality. **Conclusion:** The incidence of twin pregnancy is relatively low in our centre. Vaginal delivery was the most common mode of delivery and fetal malpresentation necessitated delivery by caesarean section. The most common maternal morbidity was hypertensive disorders in pregnancy and low birth weight was the most common fetal complication. There was no maternal death. Further regular audits are recommended to monitor practice.

## INTRODUCTION

In some African cultures, twin pregnancy is perceived as a blessing and celebrated while in others, the products are regarded as aliens and thrown into the "evil forest". In Obstetric practice however, twin pregnancies are high risk pregnancies irrespective of the climate. The trend in these pregnancies have significantly changed in the last three decades, due to improvement in the management of infertility, obstetric care and socioeconomic status of women.<sup>[1]</sup> Twin gestation results from either the division of a single fertilised ovum as in monozygotic twins (identical twins) or fertilisation of two separate ova as in dizygotic twins (fraternal twins).<sup>[2]</sup> While the prevalence of monozygotic twinning has been stable, that of dizygotic twinning has witnessed increase.<sup>[3]</sup> The incidence of twin gestation varies the world over, however Nigeria is reported to have the highest incidence.<sup>[4,5,6]</sup>

The decision on timing and the best method of delivery of twins has been debated extensively.<sup>[7]</sup> Planned caesarean section has been advised where the leading twin is breech based on extrapolation from the term breech trial and the desire to avoid the rare interlocking with head entrapment that may occur if the second twin

is presenting cephalic.<sup>[8,9]</sup> However, other studies have not found any significant difference in perinatal morbidity and mortality when twins are delivered vaginally or by planned caesarean section at term or near term.<sup>[10,11]</sup>

Twin gestation has been associated with adverse pregnancy outcomes and poses socio economic challenges to the parents.<sup>[12,13]</sup> In twin pregnancies, the fetuses have an increased risk of miscarriage, congenital anomalies, anaemia, preterm birth, prematurity, birth injuries and neonatal sepsis. Some of the maternal risks are anaemia, infections, ante-partum and postpartum haemorrhages, operative deliveries, genital tract injuries and difficult puerperium.

The outcome of twin births at the Usmanu Danfodiyo University Teaching Hospital, Sokoto has not been reviewed in recent times, hence the need for this study. The objectives of this audit were to determine the incidence, mode of delivery and neonatal/maternal outcomes of twin births at the Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria.

## MATERIALS AND METHODS

This was a 5-year retrospective descriptive study of twin births managed at the Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria, from 1<sup>st</sup> January, 2010 to 31<sup>st</sup> December, 2014. Case folders of all patients that had twin births were manually retrieved from the health records department. Information was also obtained from the Labour ward delivery records and the maternity theatre records. Data relating to age, booking status, parity, gestational age at delivery, mode of delivery and maternal and foetal outcomes were extracted and analysed using the SPSS for windows version 20.0. Ethical approval for the study was from the Hospital research and Ethics Committee.

## RESULTS

Fifteen thousand, seven hundred and twelve deliveries were conducted in the five years under review with 187 being twin deliveries. This gave an incidence of 11.9 per

1000 deliveries or 1.2%. However, 184 case notes were available for analysis giving a retrieval rate of 98.4%.

The mean age of the mothers was  $27.9 \pm 5.7$  years and majority 113 (61.4%) were within the ages of 25 – 34 years. The mean parity was  $2.9 \pm 2$ , median parity was 3 and majority 132 (71.7%) were booked. Maternal age, parity and educational status were not significantly associated with the route of delivery ( $p = 0.43$ ,  $p = 0.96$  and  $p = 0.37$  respectively). (Table 1)

Of the booked mothers, majority 117 (88.6%) booked for antenatal care in the 2<sup>nd</sup> trimester of pregnancy. Majority, 134 (72.8%) of the deliveries occurred before the 37<sup>th</sup> completed week of gestation and the mean gestational age at delivery was  $33.1 \pm 6.6$  weeks. However, booking status, gestational age at booking and gestational age at delivery were not significantly associated with the route of delivery ( $p = 0.3$ ,  $p = 0.9$  and  $p = 0.2$  respectively). (Table 1)

**Table 1: Relationship between maternal characteristics and route of delivery.**

Characteristics	Vaginal delivery n=147	Caesarean delivery n=37	Total n=184	P value
<b>Age (Years)</b>				
15-24	37	10	47	$\chi^2 = 71.645$ $p = 0.390$ $df = 3$
25-34	91	22	113	
35-44	18	4	22	
>44	1	1	2	
<b>Parity</b>				
0	33	14	47	$\chi^2 = 231.971$ $p = 0.824$ $df = 2$
1-4	75	17	92	
>4	39	6	45	
<b>Educational status</b>				
No formal Education	56	16	72	$\chi^2 = 67.337$ $p = 0.975$ $df = 3$
Primary	20	3	23	
Secondary	39	10	49	
Tertiary	32	8	40	
<b>Booking Status</b>				
Booked	106	26	132	$\chi^2 = 23.835$ $p = 0.309$ $df = 1$
Unbooked	41	11	52	
<b>GA at Booking</b>				
1 <sup>st</sup> trimester	1	4	5	$\chi^2 = 644.248$ $p = 0.93$ $df = 2$
2 <sup>nd</sup> trimester	100	17	117	
3 <sup>rd</sup> trimester	5	5	10	
<b>GA at delivery</b>				
Preterm (< 37 weeks)	107	27	134	$\chi^2 = 564.060$ $p = 0.254$ $df = 2$
Term (37 – 41 weeks)	30	10	40	
Post term (> 41 weeks)	10	0	10	

(GA= Gestational age)

The twins presented Cephalic/Cephalic in 89 (48.3%), Cephalic/Breech in 46 (25.0%) and Cephalic/Transverse in 20 (10.8%). Breech/Breech presentation was seen in 18 (9.9%), Breech/Cephalic in 6 (3.3%) and Breech/Transverse in 2 (1.1%). Other presentations seen were Transverse/Breech and Transverse/Transverse in 2 (1.1%) and 1 (0.5%) respectively.

In labour, the leading twin presented cephalic in 155 (74.5%) of the twin pregnancies while breech presentation of the leading twin was seen in 26 (23.9%). The presentation of the leading twin in labour was significantly associated with the route of delivery ( $p = 0.0$ ). (Table 2)

Many, 100 (54.3%) of the leading twin were females and few, 87 (47.2%) were of normal birth weight.

Monochorionic monoamniotic twinning was noted in 3 (1.6%) twins only.

**Table 2. Relationship between the characteristics of the leading twin and route of delivery**

Characteristics	Vaginal delivery n=147	Caesarean delivery n=37	Total n=184	Statistics
<b>Presentation</b>				
Cephalic	135	20	155	$\chi^2 = 787.807$
Breech	12	14	26	$p = 0.000$
Transverse	0	3	3	$df = 2$
<b>Amnionicity</b>				
Monoamniotic	3	0	3	$\chi^2 = 9.546$
Diamniotic	144	37	181	$p = 1.000$
				$df = 1$
<b>1<sup>st</sup> minute APGAR</b>				
< 7	38	14	52	$\chi^2 = 243.239$
≥ 7	109	23	132	$p = 0.58$
				$df = 1$
<b>Sex</b>				
Female	82	18	100	$\chi^2 = 22.537$
Male	65	19	84	$p = 0.488$
				$df = 1$
<b>BWT (Kilogramme)</b>				
< 2.5	77	20	97	$\chi^2 = 681.059$
2.5 – 3.5	65	16	81	$p = 0.921$
≥ 3.5	5	1	6	$df = 1$
<b>BWT- Birth weight</b>				

The leading twin, was delivered vaginally in 147 (79.9%) of the deliveries despite its presentation, and the second twin was delivered vaginally in 135 (73.4%). Caesarean section was performed to deliver 37 (20.1%) of the leading and 49 (26.6%) of the second twin. Therefore, vaginal delivery of both twins occurred in majority, 135 (73.4%), while 37 (20.1%) had Caesarean delivery. The remaining 12 (6.5%) had combined vaginal/Caesarean delivery.

Malpresentation 11 (29.7%) was the most common indication for caesarean section followed by preeclampsia 8 (21.6%). (Table 4). The mean birth weights for the leading and second twin were  $2.4 \pm 0.56\text{kg}$  and  $2.4 \pm 0.67$  ( $t = 1.42$ ,  $p = 0.165$  CI: 0.025 – 0.153) respectively.

**Table 4: Indications for caesarean section in the leading twin.**

Indication	Frequency (%)
Malpresentation	11 (29.7)
Severe preeclampsia/eclampsia	10 (27.0)
Poor progress of labour	7 (19.0)
Prematurity	5 (13.5)
Previous caesarean section	2 (5.4)
Placenta praevia	1 (2.7)
Cord prolapse	1 (2.7)
Total	37 (100)

Hypertensive disorders of pregnancy 37 (20.1%) was the most common maternal complication, while low birth weight 97 (26.3%) was the most common foetal complication. There were 21 (5.7%) stillbirths giving a stillbirth rate of 57.1 per 1000 births. There was no maternal death. (Tables 5 and 6).

**Table 5. Maternal complications.**

Complications	Frequency (%)
Preeclampsia	19 (10.4)
PIH	12 (6.6)
PROM	9 (4.9)
Eclampsia	6 (3.2)
Anaemia in pregnancy	6 (3.2)
Postpartum haemorrhage	2 (1.1)
Others	15 (8.1)
No complication	115 (62.5)

PIH - Pregnancy induced hypertension, PROM – Premature rupture of membranes

**Table 6. Foetal complications**

Outcome	Frequency (%)
Low birth weight	97 (26.3)
Birth Asphyxia	43 (11.7)
Still births	21 (5.7)
Retained 2 <sup>nd</sup> twin	5 (1.4)
Others	6 (1.6)
No complication	196 (53.3)
Total	368 (100)

## DISCUSSION

The incidence of twinning in this review was 11.9 per 1000 deliveries or 1.2%. This is lower than the 23.5, 23.3 (2.3%) and 32.5 per 1000 deliveries reported from Kano, Abuja and Benin respectively.<sup>[12, 14 and 15]</sup> It is also lower than the 53 per 1000 deliveries reported among the Yorubas' and 25.3 – 27.6 per 1000 births among Igbos' in the South-west and South-east of Nigeria respectively.<sup>[16 – 19]</sup> The incidence is however closer to the 14.9 and 14.4 per 1000 reported from Azare and Maiduguri, both in the North-east of Nigeria.<sup>[8,20]</sup> This wide disparity may be due to this

study being a retrospective hospital-based study which is fraught with bias, especially as record keeping in developing countries is still suboptimal. Also, Kano and Abuja are cosmopolitan cities compared to Sokoto while Benin city is in the southern part of Nigeria where the highest incidence of twin birth is reported.<sup>[12]</sup> Furthermore, the consumption of a species of yam (*Dioscorea rotundata*) which contains an ovulation induction agent by the Yorubas in South-west Nigeria may explain the much higher incidence of twinning found in those regions.<sup>[21]</sup>

Majority (60.9%) of the mothers were between the ages of 25-34. This is similar to 60.6% from Beijing<sup>[22]</sup> and 68.3%<sup>[15]</sup> from Abuja. Most multiparous women are found within this age group. Twin pregnancy is associated with advanced maternal age and multiparity which are independent risk factors for twinning. The increased incidence with age has been attributed to rising follicle stimulating hormone levels.

Majority (75.4%) of the mothers in this study were booked. This was not surprising and is similar to findings from tertiary hospitals where most parturient are usually booked.<sup>[23,24]</sup> Most of the mothers booked their pregnancy in the 2<sup>nd</sup> trimester while only few women booked in the 1<sup>st</sup> trimester.

The majority, 147 (79.9%) were delivered vaginally while 37 (20.1%) were by caesarean section. The choice of the route of delivery of twins is determined by factors such as gestational age, presentation of the leading twin and other associated maternal conditions. Malpresentation (26.8%) was the most common indication for caesarean section for twin pregnancy from this study. This is similar to 27.3% by Akaba *et al.*<sup>[15]</sup> but less than 31.5% by Nwankwo *et al.*<sup>[7]</sup> In some developed climes, the practice of planned caesarean section for delivery of twins is advocated to reduce perinatal morbidity and mortality. However, this may not be feasible in developing countries like ours because of the aversion to “unnatural childbirth” and socio-economic challenges. Moreover, studies have shown that neonatal outcome in twin pregnancies, with leading twin cephalic or breech, was not significantly different in carefully selected cases when delivered vaginally.<sup>[25,26]</sup>

Hypertensive disorders in pregnancy 37 (20.1%) was the most common maternal complication in this audit. This rate is lower than 53.8%<sup>[22]</sup> and 43.5%<sup>[14]</sup> but higher than 9.3%<sup>[15]</sup> and 8.8%<sup>[27]</sup> reported by other researchers. This is not surprising as hypertensive disorders of pregnancy is a common complication of pregnancy in the North-western part of Nigeria<sup>[14]</sup> and preeclampsia/eclampsia in particular, tops the first five causes of maternal mortality in Sokoto.<sup>[28]</sup>

Low birth weight 97 (26.3%) was the most common foetal complication followed closely by birth asphyxia.

The mean birth weights for the leading and second twin were  $2.4 \pm 0.56$ kg and  $2.4 \pm 0.67$ . This is higher than the report from Ibadan<sup>[16]</sup> but comparable to that from Abuja.<sup>[15]</sup> There was no statistically significant difference between the mean birth weights of the leading and second twin and other studies had similar findings.<sup>[15,23]</sup> There were 21 stillbirths giving a stillbirth rate of 57.1 per 1000 births. This is lower than the rates reported at Abuja<sup>[15]</sup> and Uyo<sup>2</sup> but higher than the national stillbirth rate of 42 per 1000 births.<sup>[29]</sup> This is not surprising since the second twin is prone to increased morbidity and mortality.

The rate of retained second twin in this study, 1.4%, is lower than 16.3%, 12.0% and 7.9% reported from Enugu, Abuja and Ife respectively.<sup>[13,15,30]</sup> This could be due to the majority of the women being booked and having received adequate counselling on birth preparedness and complication readiness. This rate could be lowered still if all twin deliveries are conducted in maternity theatres as is practiced in the developed countries.

The main limitation of the study was its retrospective nature in a developing country where record keeping and documentation is still sub-optimal.

## CONCLUSION

The incidence of twin pregnancy in this review is low, majority were delivered vaginally and the most common indication for caesarean section was malpresentation of the leading twin. The most common maternal complication was hypertensive disorders of pregnancy while low birth weight was the most common fetal complication. It is commendable that there was no maternal mortality reported from this audit. Further audits are recommended at regular intervals to monitor practice.

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