

## Audit of Singleton Breech Delivery in a Tertiary Hospital

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**ABSTRACT**

**Background:** The 2000 Term Breech Trial (TBT) demonstrated that planned caesarean section was safer for the 3-4% of pregnancies in which the fetus will be in the breech presentation at term. However, the approach to delivery has been a topic of interesting debate and heated controversy among obstetricians.

**Objectives:** The aim of this study was to find out the incidence and perinatal outcome of singleton breech delivery at the University of Abuja Teaching Hospital, Abuja, and North-Central Nigeria.

**Methodology:** This was a retrospective study of singleton breech deliveries managed at the University of Abuja Teaching Hospital between 1<sup>st</sup> January 2015 to 31<sup>st</sup> December 2019. Data on social-demographic characteristics, presentation, mode of delivery and neonatal outcome were obtained from the case notes retrieved from the Medical health information Department.

**Result:** There were 287 singleton breech deliveries out of 10416 deliveries during the study period given an incidence rate of 2.8%. Majority of the women 265 (92%) were between 21-40 years with a mean age of 30.27 +/-5.66 years. There were 144 (50.2%) unbooked patients. Majority of the women 188 (65.5%) were multipara. About 108 (37.6%) of the babies were delivered as preterm. Assisted breech deliveries was conducted in 162 (56.44%) while 125 (43.55%) were via caesarean section with a caesarean section rate of 43.55%. The commonest indication for caesarean section was Breech plus previous uterine scar in 36 (28.8%). About 28 (9.8%) babies were born with low APGAR scores and had severe birth asphyxia. Majority of the babies, 23 (8.1%) delivered through assisted breech delivery suffered severe birth asphyxia compared to 3 (1.0%) babies who were delivered via caesarean section. Significant association was noted between route of delivery and perinatal outcome.

Again, 77 (27.8) primigravidae had breech delivery in this study. About 9 (3.1%) babies delivered to these primigravidae had poor APGAR scores and suffered severe birth asphyxia. However, 8 (2.8%) babies were delivered through assisted vaginal delivery compared to 1 (0.3%) baby who was delivered through caesarean section. The test showed a significant association in perinatal outcome in primigravidae who were allowed to have assisted breech delivery with Chi-Square value of 50.551, df =2 and p-value of 0.0002 which is less than the significant level of 0.05. There were 41 perinatal deaths given a perinatal mortality rate of 143/1000. It was noted that 10 (3.5%) babies had intrauterine fetal death before delivery, while 31 (10.8%) occurred as fresh stillbirth and early neonatal death. About 26 (9.1%) of the perinatal were through assisted breech delivery and 5 (1.7%) were through caesarean section. The mean birth weight was 2.6 +/- 0.92 years. Maternal morbidities were associated with mothers who had caesarean section, this however was not significant.

**Conclusion:** Breech delivery was common and was associated with high perinatal morbidity and mortality. Route of delivery has significant association with perinatal outcome. Careful case selection and skillful delivery protocol would ensure optimal perinatal outcome that will in turn reduce caesarean section rate and reduce the morbidities associated with caesarean section.

## Keywords

Breech delivery, Obstetrics, trauma, Birth asphyxia, Prematurity.

## Introduction

Breech delivery has always been a topical issue in obstetrics because of its attendant high maternal and perinatal morbidity and mortality. These are due to combination of factors such as trauma, birth asphyxia and prematurity. Breech presentation is said to occur when the fetal pelvis or lower extremities engage the maternal pelvis [1]. The Term Breech Trial showed higher perinatal mortality with vaginal breech delivery compared to planned Caesarean section [2]. Again considering that the follow up study after 2 years on the Term Breech Trial babies did not show any difference in the incidence of cerebral palsy or neurodevelopmental delay in the babies that had planned vaginal breech delivery and planned caesarean section, other authorities have recommended that the decision regarding the mode of delivery should depend on the experience of the health care provider” and that “planned vaginal delivery of a term singleton breech fetus may be reasonable under hospital-specific protocol guidelines [3-6]. Other range of intervention have been instituted in order to reduce the high perinatal morbidity and mortality and eventually improve the quality of life of the infant later in life. These include; External cephalic version. This led to the recommendation by Royal College of Obstetricians and Gynecologists in 2001, that all women with an uncomplicated breech presentation at term be offered an ECV [7]. The recent use of ultrasound guidance in ECV appears to have improved its results [8]. However, the success of vaginal breech delivery is largely dependent on careful case selection, meticulous labour monitoring and requisite skills in the act of taking vaginal breech deliveries. Where facilities are not adequate for meticulous monitoring following ECV and during labour outcome may be poor hence most units in the low resource settings offer assisted vaginal deliveries for appropriate and well selected cases and caesarean section for cases in which vaginal deliveries is envisaged to pose danger [9]. The breech scoring system of Zatuchni and Andros also provide useful guides for assessment of likely outcome of vaginal breech delivery [10].

Low antenatal clinic visits, home deliveries by personnel with no requisite skill, late presentation and inadequate facilities for intrapartum management of parturients with breech presentation are some of the challenges that have contributed to the poor outcome of vaginal breech deliveries.

## Materials and Methods

This was a 5-year retrospective review of 287 cases of singleton breech deliveries that took place in the University of Abuja Teaching Hospital, Abuja from 1 January 2015 to 31 December, 2019.

Gwagwalada is one of the six area councils in Abuja within which is located the University of Abuja Teaching Hospital, a 520 bed tertiary level of healthcare. The hospital serves the Federal Capital Territory, Abuja and neighbouring parts of Nassarawa, Taraba, Kogi, Benue, Niger, Plateau, and Adamawa States. The Department of Obstetrics and Gynaecology of the hospital has 36

obstetric beds including 14 delivery beds at the labour ward and undertakes an average of 2,500 deliveries annually.

Data of patients who had singleton breech delivery within the years of review were collected from the case notes that were retrieved from the Medical Records Department. Additional information were obtained from the labour ward and Obstetric theatre registers. The data extracted from the case notes included socio-demographic factors, parity, presentation, diagnosis of the caesarean deliveries, mode of delivery and neonatal outcome and associated fetomaternal morbidities. The data extracted was analysed using SPSS for windows version 20. Statistical comparison was done using Chi-square ( $X^2$ ).

## Result

During the 5-year period, 287 breech deliveries were conducted out of a total 10416 deliveries given an incidence of 2.8% (1 in 36 deliveries). Analysis was on the 287 case notes retrieved.

**Table 1:** Socio-demographic Characteristics of Patients.

Item	Frequency (F)	Percent (%)
<b>Age (years)</b>		
≤20	12	4.2
21-25	43	15.0
26-30	103	35.9
31-35	77	26.8
36-40	42	14.6
41 and above	10	3.5
<b>Booking status</b>		
Booked	143	49.8
Unbooked	144	50.2
<b>Parity</b>		
Primigravida	77	26.8
Multipara	188	65.5
Grand multipara	22	7.7
<b>Ega</b>		
≤36+6	108	37.6
37-38+6	97	33.8
39-41+6	73	22.0
42 and above	9	6.6

Majority of the parturient 265 (92%) were between ages 21-40 with a mean age of  $30.27 \pm 5.66$  years. About 143 (49.8%) were booked while 144 (50.2%) were unbooked. Majority of the women 188 (65.5 %) were multigravida while 77 (26.8%) were primigravida. 108 (37.6%) of the babies were born as preterm, 170 (59.2%) were term babies while 9 (3.1%) were post term.

**Table 2:** Describes route of delivery and perinatal outcome.

Item	Frequency	Percent
<b>Delivery method</b>		
Caesarean section	125	43.6
Assisted breech delivery	162	56.4
<b>Birth Weight</b>		
3.9	273	95.1
≥4.0	14	4.9

*Mean Weight: 2.60 ± 0.92*

Caesarean section was the mode of delivery for 125 (43.55%) parturient while 162 (56.44%) had assisted breech delivery given a caesarean section rate of 43.55% for the study period. Macrosomia was noted in 14 (4.9%) of the babies. The mean birth weight was  $2.60 \pm 0.92$  kg.

**Table 3:** Indication for Caesarean section.

Indication for caesarean section	No.	Percentage
Breech + previous Scar	36	28.8
Breech + other Obstetrics indication	31	24.8
Breech in a Primigravida	18	14.4
Breech + cord prolapse	15	12
Breech + PROM	12	9.6
Breech + macrosomia	7	5.6
Breech + post term	6	4.8
Total	125	100%

The commonest indication for caesarean section was breech plus previous uterine scar in 36 (28.8%) of the women. Other indications include Breech plus other obstetrics indication in 31 (24.8%), breech in primigravida in 18 (14.4%), breech plus cord prolapse in 15 (12%), breech plus PROM in 12 (9.6%), breech plus macrosomia in 7 (5.6%) and breech plus post term in 6 (4.8%).

**Table 4:** Distribution of APGAR Score by Route of Delivery.

Delivery Method	APGAR Score			Total
	Still Birth	Asphyxia (Apgar Score 0-5)	No Asphyxia (Apgar Score $\geq 6$ )	
Caesarean Section	3	5	117	125
Assisted Vaginal Delivery	38	23	101	162
Total	41	28	218	287

$\chi^2:38.494$ ,  $DF: 2$ ,  $P$ -value: 0.001

Majority of the babies 218 (76%) had good APGAR scores and were not asphyxiated. However, 28 (9.8%) babies were born with low APGAR scores and had severe birth asphyxia. Interestingly, majority of the babies 23 (8.1%) delivered through assisted breech delivery suffered severe birth asphyxia compared to 3 (1.0%) babies who were delivered via caesarean section.

The result indicates that there is a significant association between Apgar score and route of delivery with a Chi-square of 38.494 and a P-value of 0.001, which is less than the alpha level (0.05). This implies a significant connectivity between the variables (delivery route and Apgar score).

There were 41 perinatal deaths given a perinatal mortality rate of 143/1000. About a quarter, 10 (3.5%) occurred as intrauterine fetal death before delivery while 31 (10.8%) occurred as fresh stillbirth and early neonatal death. Majority of these babies who suffered IUID 26 (9.1%) were through assisted breech delivery and 5 (1.7%) were through caesarean section. Maternal morbidities were associated with mothers who had caesarean section, this however was not significant.

**Table 5:** Association of Delivery Route and APGAR Score of Respondents with Primigravida.

Delivery Method	APGAR Score			Total
	Still Birth	Asphyxia (Apgar Score 0-5)	No Asphyxia (Apgar Score $\geq 6$ )	
Caesarean Section	0	1	47	48
Assisted breech delivery	15	8	6	29
Total	15	9	53	77

$\chi^2:50.551$ ,  $DF:2$ ,  $P$ -value: 0.0002

77 (27.8%) primigravidae had assisted breech delivery in this study. About 9 (3.1%) babies delivered to these primigravidae had poor APGAR scores and suffered severe birth asphyxia. Interestingly, 8 (2.8%) babies had assisted breech delivery compared to 1 (0.3%) baby who was delivered through caesarean section. The test showed a significant association in perinatal outcome in primigravidae who are allowed to have assisted breech delivery with Chi-Square value of 50.551,  $df=2$  and p-value of 0.0002 which is less than the significant level of 0.05.

## Discussion

Varied incidences of breech delivery have been reported depending on the study population. In this study, incidence of 2.8% was noted. This is comparable to 2.3% and 3% that were reported from Kano [11] and Akwa-Ibom [12] respectively but lower than 3.4% reported from Owerri [13] and higher than 1.6% [14] and 1.7% [15] reported from Bida and Sokoto respectively. This difference may have been because different population were studied. In addition, the rate of patronage of health facilities in this various region differs. The Caesarean section rate among women with breech presentation from this study was 43.6%. This is higher than 33.8%, 39.5%, 39.2% and 33.8% reported in Owerri [13], Bida [14], and Abakaliki [16] respectively but less than 62% reported in Kano [11]. This difference may be due to difference in sample size and expertise in conducting assisted breech deliveries. The commonest indication for Caesarean section was Breech plus previous scar which occurred in 36 (28.8%) of parturient. Other indications include breech plus other obstetrics indication in 31 (24.8%), breech in a primigravida in 18 (14.4%), breech plus cord prolapse in 15 (12%) of parturient. This was different from the study at Bida [14] where fetopelvic disproportion was the commonest indication for Caesarean section and this was because only patients who had emergency Caesarean section were considered in that study.

The incidence of low Apgar score at 5 minutes (defined as a score less than or equal to 5) showed that 218 (76%) babies were delivered with good APGAR scores while 28 (9.8%) babies were delivered with poor APGAR scores and 41 (14.3%) suffered perinatal death. Majority of these asphyxiated babies 23 (82.1%) were delivered via assisted breech delivery compared to 5 (17.9%) babies who were delivered through caesarean section. This finding showed that there is a significant association between APGAR score and route of delivery with a Pearson's chi-square of 38.494 and a p-value of 0.001 which is less than the alpha level (0.005). A similar finding was noted in Kano [11], Bida [14], Orlu [17], and Nnewi [18].

The test between Primigravida and perinatal outcome also showed significant association. 77 (27.8%) primigravidae had breech delivery in this study and it was noted that 9 (3.1%) babies delivered to these primigravidae had poor APGAR scores and suffered severe birth asphyxia. However, majority of the babies 8 (2.8%) who had this severe birth asphyxia were delivered through assisted vaginal delivery compared to 1 (0.3%) baby who was delivered through caesarean section. The test showed a significant association in perinatal outcome in primigravidae who are allowed to have assisted breech delivery with Chi-Square value of 50.551,  $df=2$  and  $p$ -value of 0.0002 which is less than the significant level of 0.05. This finding has been widely reported by other researchers [19,23,26].

The above test associations further strengthen the argument that the importance of appropriate case selection and meticulous/skillful delivery technique should never be underestimated.

The perinatal mortality rate of 143/1000 births as found in this study is less than that reported from Bida [14]. This may be due to difference in case selection and skills of conducting breech deliveries. Also, availability of functional neonatal facilities and services both in manpower and physical infrastructures within special care baby units may have played an important role in this regard.

There were cases of maternal morbidities especially in parturient who had caesarean section. These included wound breakdown/surgical site infection, puerperal infection, prolonged hospital stay, worsened reproductive career due to caesarean section scar.

In conclusion, beyond route of delivery, associations between antenatal risk factors such as booking status, timely breech detection, fetal weight estimation, external cephalic version intervention, pelvic assessment, home delivery and lack of skills in the conduct of assisted breech deliveries that have been noted to have adverse effects on perinatal outcomes must be included in the ongoing debate on breech deliveries. Policy decisions and protocols that will ensure optimal outcome must be formulated and adhered to by all institutions. Prognosis in terms of perinatal outcome are worse with vaginal breech delivery and more so, when primigravidae with breech presentation are allowed to go through labour. In the interim, careful case selection and meticulous/skillful conduct of assisted breech delivery are key to optimal outcome. Also, more efforts are needed to train young obstetricians with relevant skills for successful conduct of assisted breech delivery in order to reduce the relative perinatal morbidity and mortality associated with vaginal breech deliveries and also reduce the increase rate of caesarean section.

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