Mater No-fetal Outcome of Term Singleton Breech Deliveries in a Tertiary Hospital in Nigeria: An Eight Year Appraisal

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Abstract: Breech delivery is associated with increased perinatal morbidity and mortality. The optimal management remains generally contentious. This study evaluated term singleton breech delivery in other to highlight its contribution to adverse perinatal and maternal outcome in order to audit the practice and suggest changes to improve materno-foetal outcome. This was a retrospective study involving 345 term singleton breech deliveries at the University of Benin Teaching Hospital between January 2000 to December 2007. The relevant information was extracted from obstetric data sheets, labour ward and labour ward theatre records and patients’ case notes. The incidence of term singleton breech deliveries was 2.6% with a caesarean section rate of 69.9%. The leading indication was nullipara breech. Perinatal mortality rate was 118.8 per 1000 with cord prolapse as the leading cause. There is high perinatal mortality and morbidity among term breech deliveries. Caesarean section offers better perinatal outcome than assisted breech delivery though an with increased maternal morbidity.

Keywords: Breech materno-fetal outcome

INTRODUCTION

Breech presentation represents the commonest mal-presentation and has 3 to 4 fold adverse perinatal and maternal morbidity and mortality when compared to cephalic presentation (Ritchie, 1995) Generally an incidence of 3-4% at term is reported. The incidence decreases towards term (Thorpe-Beeston, 1998; Campbell and Lee, 2000). In other parts of Nigeria the reported incidence ranged 1.2 to 2.4%, with a perinatal mortality rate of 195.41-233 per 1000 (Omu and Akingba, 1982; Adetoro and Fakeye, 1990).

The breech presentation is a sign of potential handicap and its optimal management at term remains contentious. Adverse perinatal outcome has been reported mostly in vaginal delivery than in caesarean section (Thorpe-Beeston, 1998; Singh and Paterson-Brown, 2003). With strict selection criteria, elective caesarean section was found to have significantly reduced perinatal mortality and morbidity when compared with planned vaginal breech delivery (1.6 vs 5.0%) (Mukhapadhyay and Arulkumaran, 2002; Hannah, 1994). The effectiveness of External Cephalic Version (ECV) in the centres that practise it has been highlighted (Mukhapadhyay and Arulkumaran, 2002).

Vaginal breech delivery is inevitable despite its higher risk for the foetus in situations where the woman elects for vaginal delivery, or caesarean section is planned but labour and delivery occur at a site where facilities for caesarean section are not readily available and in cases of undiagnosed breech that is as high as 25-30% of breech presentation at term diagnosed in labour (Thorpe-Beeston, 1998). In this situation the Zatchni-Andros’ criteria is relevant in prognosticating a successful vaginal delivery.

Where there is a previous caesarean section scar and breech presentation, some obstetricians advocate vaginal delivery provided the scar integrity is assured and the indication for the caesarean section was non-recurrent, foetus is of average size and the pelvis is adjudged to be adequate (Ritchie, 1995). All the same, the conditions for trial of vaginal birth after caesarean birth and a conscious obstetric team must be in place. The manoeuvres involved in vaginal breech delivery may compromise the integrity of the uterine scar. This has prompted the decision by others for an elective caesarean section. The latter is the practice in this centre.

Clinical and X-ray pelvimetry have low sensitivity and predictive values in the outcome of breech delivery. X-ray pelvimetry may be of value in excluding congenital malformations and in determining the attitude of the foetal head (Hannah, 1994). Other advance imaging techniques such as Magnetic Resonance Imaging and Computed Tomography have been used for pelvimetry to improve on predictive value.
and are also important for medico-legal reasons in other
to objectively document pelvic adequacy.

Planned caesarean section has the best perinatal
outcome while the worst outcome is associated with
planned vaginal birth (Hannah et al., 2000; Fasuba
et al., 2003).

This study was designed to evaluate breech
presentation at term and its management at the
University of Benin Teaching Hospital Benin City
Nigeria and to highlight its contribution to adverse
maternal and foetal outcome. This will serve as an audit
of our practice and suggest changes where necessary to
improve materno-fetal outcome.

METHODOLOGY

This was a retrospective study conducted at the
department of obstetrics and gynaecology University of
Benin Teaching Hospital (UBTH), Benin City, Nigeria,
involving deliveries between January 2000 and
December 2007. The booked patients were those who
received antenatal care and delivered in UBTH while
unbooked did not receive antenatal care in this centre.
This study definition of term pregnancy was 37
completed weeks and above.

The sources of information were obstetric data
sheets, labour ward and labour ward theatre records and
patients case notes. The records of all singleton breech
deliveries at term within the reviewed period were
retrieved. Information on the maternal age, parity,
booking status and mode of delivery were extracted.
The outcome measures were caesarean section rate,
maternal genital traumas, estimated blood loss, blood
transfusion, long hospital stay and maternal mortality.
Others are perinatal mortality, birth weight, Apgar
score at 5 min and arrest of after coming head.

Clinical palpation and ultrasound scan were used
for diagnosis of breech presentation. Vaginal
examination to confirm breech presentation and exclude
cord presentation and footling breech was done for each
parturient. Caesarean section was offered to footling
breech and viable foetus, cord presentation or prolapse
and viable foetus, placenta praevia, fetal macrosomia,
failure to progress in labour, nullipara breech and
previous caesarean section.

Ethical approval was given by the Hospital Ethics
Committee.

Statistical analysis was done using EPI INFO and
INSTAT statistical packages. Chi-square and Fishers
Exact testing was done where applicable. Test of
significance was based on 95% confidence interval
(p<0.05).

RESULTS

There were 345 term singleton breech deliveries
among 13,416 deliveries during the period under review
(Table 1). Two hundred and thirty nine of the mothers

who had term singleton breech delivery were booked
while 106 were unbooked.

The age of the mothers ranged between 19 and 44
years with a mean of 29.7 ± 1.9 years (Fig. 1).
The modal age was 25-29 years, constituting 34.8%
of the mothers. There were three teenage mothers with
term singleton breech deliveries.

The parity of the mothers ranged between 0 and 8.
One hundred and twenty eight (37.1%) of them were
nulliparous (Table 2).

There was no identifiable risk factor to breech
presentation in 86.4% of the cases. Coexisting uterine
fibroids (4.9%) and placenta praevia (4.6%) featured
most among the identifiable risk factors (Fig. 2).

Two hundred and forty-one of the term singleton
breech deliveries were via caesarean section giving a
caesarean section rate of 69.9%.

The leading indications were nulliparity (31.1%),
footling breech (20.0%), previous caesarean section
(15.8%) and failure to progress in labour (13.7%).

The birth weight of the babies ranged between 1.95
to 5.2 kg with the modal birth weight of 3.0-3.5 kg
(38.0%). Two hundred and ninety eight babies (86.4%)
were in the birth weight range of 2.5-3.99 kg while 22


<table>
<thead>
<tr>
<th>Year</th>
<th>Total number of mothers</th>
<th>Number with breech presentation n %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1482</td>
<td>27 (1.8)</td>
</tr>
<tr>
<td>2001</td>
<td>1496</td>
<td>31 (2.1)</td>
</tr>
<tr>
<td>2002</td>
<td>1511</td>
<td>32 (2.1)</td>
</tr>
<tr>
<td>2003</td>
<td>1642</td>
<td>52 (3.2)</td>
</tr>
<tr>
<td>2004</td>
<td>1573</td>
<td>47 (3.0)</td>
</tr>
<tr>
<td>2005</td>
<td>1609</td>
<td>53 (3.3)</td>
</tr>
<tr>
<td>2006</td>
<td>1868</td>
<td>57 (3.1)</td>
</tr>
<tr>
<td>2007</td>
<td>2235</td>
<td>46 (2.1)</td>
</tr>
<tr>
<td>Total</td>
<td>13,416</td>
<td>345 (2.6)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parity</th>
<th>Number of mothers</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>128</td>
<td>37.1</td>
</tr>
<tr>
<td>1</td>
<td>87</td>
<td>25.2</td>
</tr>
<tr>
<td>2</td>
<td>59</td>
<td>17.1</td>
</tr>
<tr>
<td>3</td>
<td>34</td>
<td>9.9</td>
</tr>
<tr>
<td>4</td>
<td>22</td>
<td>6.4</td>
</tr>
<tr>
<td>≥5</td>
<td>15</td>
<td>4.3</td>
</tr>
<tr>
<td>Total</td>
<td>345</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Fig. 1: Simple Bar chart showing age distribution of mothers with term singleton breech delivery

Table 1: Distribution of term singleton breech presentation by years

Table 2: Parity distribution of mothers with term singleton breech delivery
Fig. 2: Pie chart showing risk factors for breech presentation

Table 3: Apgar score at 5 minutes by mode of delivery

<table>
<thead>
<tr>
<th>Mode of delivery</th>
<th>A/S &lt;7</th>
<th>A/S&gt;7</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assisted Breech Delivery (ABD)</td>
<td>32</td>
<td>72</td>
<td>12.2%</td>
</tr>
<tr>
<td>Emergency caesarean section</td>
<td>37</td>
<td>122</td>
<td>15.9</td>
</tr>
<tr>
<td>Elective caesarean section</td>
<td>3</td>
<td>79</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
<td>273</td>
<td></td>
</tr>
</tbody>
</table>

ABD vs EMCS: P = 0.1981, OR = 1.465, CI = 0.8406-2.55 Not significant; ABD vs ELCS: P < 0.0001, OR = 11.704, CI = 3.434-39.88 Extremely significant; EMCS vs ELCS: P < 0.0001, OR = 7.986, CI = 2.380-26.794 Extremely significant; ABD vs C/S: P = 0.004, OR = 2.233, CI = 1.305-3.822 Very significant

Table 4: Clinical causes of perinatal death by mode of delivery table

<table>
<thead>
<tr>
<th>Clinical cause</th>
<th>Vaginal</th>
<th>EMCS</th>
<th>ELCS</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>22</td>
</tr>
<tr>
<td>Cord prolapsed</td>
<td>8</td>
<td>7</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Difficulty delivery of after coming head</td>
<td>5</td>
<td>2</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>Congenital anomaly</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>APH (p/praevia,p/ abrasion)</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Prolonged obstructed</td>
<td>-</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Labour/ruptured uterus</td>
<td>19</td>
<td>17</td>
<td>0</td>
<td>41</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>19</td>
<td>0</td>
<td>41</td>
</tr>
</tbody>
</table>

Table 5: Maternal outcome of term singleton breech deliveries by mode of delivery

<table>
<thead>
<tr>
<th>Morbidity</th>
<th>No of Vag.Del.</th>
<th>No by C/S</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-partum haemorrhage</td>
<td>2</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Perineal tear</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Prolonged hospital stay (&gt;2 and &gt;7 days)</td>
<td>34</td>
<td>65</td>
<td>99</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>0</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Puerperal sepsis</td>
<td>-</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>41/104</td>
<td>110/241</td>
<td>151</td>
</tr>
<tr>
<td></td>
<td>39.4%</td>
<td>45.6%</td>
<td></td>
</tr>
</tbody>
</table>

(6.4%) of the babies weighed 4.0 kg or greater. The birth weight of babies delivered vaginally ranged between 2.1 and 4.25 kg with majority (67.3%) within birth weight range of 2.5 to 3.5 kg.

Fourteen of the seventeen babies with birth weight 4 kg or greater delivered by caesarean section were alive but 5 of them suffered mild birth asphyxia and the remaining 3 were fresh stillbirths. Two of the 5 such babies delivered by Assisted Breech Delivery (ABD) were fresh stillbirths two others had favourable outcome and one was macerated stillbirth about 5 times higher risk of fresh stillbirths (OR = 4.67, 95% CI = 0.46-47.66, p = 0.2281).

A total of 72 (20.9%) neonates had Apgar score of less than 7 at 5 min, a birth asphyxia rate of 20.9%. Thirty two (30.8%) of these followed assisted breech delivery while 37 (23.3%) were delivered by emergency caesarean section and 3(3.7%) by elective caesarean section (Table 3). There was about 50% increased risk of birth asphyxia among neonates delivered by assisted breech delivery compared with those delivered by EMCS though this was not statistically significant (p = 0.1981, OR = 1.465, CI = 0.8406-2.555) Neonates delivered by ELCS have 8-12 times reduced risk of birth asphyxia when compared with those delivered by EMCS (p<0.0001, OR = 7.986, CI = 2.380-26.794) and ABD (p<0.0001, OR = 11.704, CI = 3.434-39.884) These were extremely statistically significant. In general, neonates delivered by ABD were more than twice more likely to suffer birth asphyxia than those delivered by caesarean section (p = 0.004, OR = 2.233, CI = 1.305-3.822) and this was statistically very significant.

Difficult delivery 14 (38.9%) and cord prolapse 7 (19.4%) were the leading clinical causes of low Apgar score. Nineteen of these were recorded in booked mothers while 17 were recorded in unbooked mothers. Seventy seven among the 93 (32.0%) of the live neonates admitted into the Special Care Baby Unit (SCBU) were delivered via caesarean operation (p<0.01, OR = 2.6, CI = 1.4-4.7). This was about twice increased risk relative to vaginally delivered neonates which was very statistically significant. Two early neonatal deaths occurred each among babies delivered by assisted breech delivery and caesarean section respectively (p = 0.2873, OR = 2.8, CI = 0.39-20.31) There was thrice the risk of early neonatal death among vaginally delivered babies though not statistically significant.

There were 41 perinatal deaths among 345 term singleton breech deliveries with a perinatal mortality rate of 118.8 per 1000. Amongst 9857 term singleton cephalic deliveries that took place within the reviewed period, there were 268 perinatal deaths, a perinatal mortality rate of 27.2 per 1000. This was about 5 times higher among term singleton breech deliveries (2 = 95.333, p<0.0001, OR = 4.8, 95% CI = 3.4-6.8). This is extremely significant.

The leading clinical cause of perinatal death was cord prolapse (36.1%) (Table 4). 20 (48.8%) of these were fresh stillbirths while 17 (41.5%) were macerated stillbirths and 4 (9.7%) suffered early neonatal death. There were 9 stillbirths among the booked mothers a stillbirth rate of 37.7 per 1000 while 12 of the macerated stillbirths and 16 of the fresh stillbirths were recorded in unbooked mothers a stillbirth rate of 264.2 per 1000 (p<0.0001, OR = 9.2, CI = 4.1-20.3). This is 9 times higher among the unbooked mothers and extremely significant. Delivery of the macerated stillbirths was mostly influenced by maternal...
conditions. Fresh stillbirths were mostly as a result of intrapartum events and mode of delivery.

The rate of maternal morbidity comprising postpartum haemorrhage, blood transfusion, puerperal sepsis, prolonged hospital stay and perineal tear was 45.6% and 39.4% following caesarean birth and vaginal breech deliveries, respectively (OR = 1.3, Cl = 0.8-2.1, \( p = 0.2905 \)) (Table 5). OR = 1.3, Cl = 0.8-2.1, \( p = 0.2905 \).

There was 30% increased risk among mothers delivered surgically but this is not statistically significant.

There was no recorded maternal death within the reviewed period.

**DISCUSSION**

The incidence of term singleton breech delivery in this study was 2.6%. This is similar to reports from other studies in Nigeria (Adeleye, 1985) and comparable to 3–4% incidence reported from elsewhere (Sibong et al., 2003). Though the risk factors were not clear in vast majority of parturients in this study as in another report (Mukhapadhyay and Arulkumaran, 2002), nulliparity remains a leading identifiable factor corroborating previous work (Omu and Akingba, 1982; Hofmeyr and Kulier, 2002).

The study suggests that planned caesarean section has the best perinatal outcome. There was no perinatal death in all the deliveries by elective caesarean section while there was a 3 fold increased risk of perinatal death with assisted breech delivery compared to caesarean delivery. The foetus presenting by the breech is at an increased risk of perinatal and neonatal morbidity and mortality principally due to higher incidence of trauma, asphyxia and occasional foetal congenital anomalies (Fasuba et al., 2003). The route and mode of delivery has been implicated in many instances informing advocacy for routine caesarean section in such cases (Adeleye, 1985; Adetoro and Fakeye, 1990).

In an attempt to find the optimal management options for breech presentation at term previous randomized trials (Gimovsky et al., 1983) found a worse maternal outcome and a better perinatal outcome in planned Caesarean Section compared to planned vaginal breech delivery. However recent term breech trial provided unequivocal evidence that women with breech presentation at term who plan caesarean section will have babies less likely to die or have serious outcome in the neonatal period than those who plan vaginal delivery. The results showed a 1 and a 2.4% increased risk of perinatal death and neonatal morbidity respectively in planned vaginal births.

The high perinatal mortality and morbidity in this study as earlier reported, (Johanson, 1999; Fasuba et al., 2003) can obviously be ameliorated by planned abdominal delivery or at the worst timely emergency caesarean delivery (Collea et al., 1980). Cord prolapse was the leading cause of adverse perinatal outcome in this study. The study also revealed a greater need for immediate neonatal intensive care unit admission among the neonates delivered via Caesarean Section than their vaginal counterparts. The caesarean section rate was high as reported in other studies (Thorpe-Beeston, 1998). This was at increased risk of maternal morbidity in caesarean section group compared to vaginally delivered patients (Fasuba et al., 2003).

The main limitation of this study is that it only reflects the practice of a centre, however regular self auditing is proffered to allow an obstetrics unit to determine the breech delivery practice most suitable to them. The number in this study is small and lacks randomization. Our centre is largely a referral centre hence most of the findings in this study may not be the true reflection of what obtains in this environment. Nevertheless, planned caesarean section for all singleton breech at term may not be the best option in Nigeria as a good number of our women lack antenatal care and only present in hospital when home, church or traditional birth attendants trial fails. Again aversion to operative delivery is high and it is ignorantly considered reproductive failure in this environment. Quality antenatal care, timely presentation, early diagnosis and specialist care will reduce the increased maternal and perinatal morbidity and mortality associated with breech delivery as planned delivery of breech reduces adverse perinatal outcome and rate of emergency caesarean section (Fasuba et al., 2003). ECV to reduce the number of non-cephalic delivery and its attendant adverse outcome has been advocated but it is yet to gain wide popularity and to be introduced in this centre. Clinical pelvimetry can be difficult especially in terms of its transverse dimension therefore the need for radiological pelvic measurement and verification of the good flexion of the foetal head (Adeleye, 1985).

It is of fundamental importance and good clinical practice to discuss the route of delivery of term singleton breech as it allows elective caesarean section in cases of pelvic inadequacy or anomalies or in case of other co-existing obstetric problems. Here again proper counselling is recommended especially to well motivated mothers who will not defect only to return late in labour with its attendant complications. For those highly averse to caesarean delivery this study reveals that conscious effort and patience is needed to allow them present early enough even in unplanned labour for better supervision and timely intervention to reduced the adverse outcome especially abdominal delivery of diagnosed breech intrauterine foetal deaths.

**CONCLUSION**

There is high perinatal mortality and morbidity among term singleton breech deliveries. Caesarean
section offers better perinatal outcome than vaginal breech delivery though at increased maternal morbidity.

REFERENCES


