Confronting the Fear: Our Experience with Breech Vaginal Delivery-A Retrospective Analysis

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ABSTRACT

Introduction: Mode of delivery for term singleton breech presentation has been a raging topic of discussion for decades and continues to be so. The ‘Term Breech Trial’ was a big blow to vaginal breech delivery leading to a torrential increase in the rate of caesarean sections the world over. We intend to compare and evaluate the maternal and perinatal outcomes of vaginal versus caesarean section breech delivery so as to analyse the safety of vaginal delivery for breech presentation.

Objectives: Analyse and compare perinatal and maternal outcomes between vaginal versus caesarean deliveries of term or near-term singleton breech presentation.

Materials and Methods: Retrospective comparison between 30 vaginal breech deliveries (Group 1) and 252 caesarean deliveries (Group 2) done for singleton breech presentation between 36 weeks to 42 weeks, either in early or advanced labour conducted between January 2015-January 2022 at various Military Hospitals.

Statistical Analysis: The association between maternal and perinatal outcomes was estimated using the Chi-square test and Fisher exact test with P < 0.05 considered statistically significant.

Results: No maternal complications were noted in Group 1 while in Group 2 surgical site infection and post-partum haemorrhage of varying degree, was noted in 14% cases and 7% cases respectively which was statistically significant. There was no significant difference noted between the groups with regard to neonatal outcomes or NICU admission.

Conclusion: Vaginal delivery for term singleton breech is a reasonable option in well-selected patients at optimally equipped centres, in the hands of an experienced Obstetrician.

Keywords: Breech delivery, maternal morbidity, perinatal morbidity, perinatal mortality.

1. INTRODUCTION

A patient with breech presenting in any stage of labour, invariably, causes angst of some kind to the concerned Obstetrical team. The route of delivery for term breech, deemed to have the safest maternal and foetal outcomes, has been a matter of debate since antiquity. The ‘Term Breech Trial’ by Hannah et al. challenged the soundness of the vaginal route for term singleton breech presentation leading, as a result, to an exponential rise in the overall rates of caesarean sections the world over [1], [2]. However, the TBT Collaborative Group, on following up the babies, found no reduction in the risk of death or neurodevelopmental delay in children at 2 years of age after a planned CS [3]. They also, noted that the maternal morbidity risk was lowest after vaginal birth and highest following CS after active labour (OR 3.33; 95% CI 1.75–6.33, P < 0.001), particularly when the second stage lasted less than 30 min (OR 0.25; 95% CI 0.11–0.57, P < 0.001) [3], [4].

Vlemmix et al. [5] stated that although the TBT results led to a decrease in overall perinatal mortality and short-term morbidity, there was a subsequent unfair increase in the rate of elective CS from 24% to 60%, thereby concluding that the prevention of one perinatal death would
require 338 caesarean deliveries to be conducted [6]. Considering the above discussions, the Society of Obstetricians and Gynaecologists of Canada (SOGC) published new guidelines in 2009 stating that “planned vaginal delivery is reasonable in selected women with a term singleton breech foetus”.

Unfortunately, CS with the breech in labour has also been noted to rise from 8.7% to 9.8%, highlighting the steady decline in the clinical skills required to conduct a successful vaginal breech delivery over the last two decades [7]. Planned CS continues to be the norm for term breech presentations at many Institutes with many young Obstetricians, astonishingly, having never witnessed or conducted even a single breech vaginal delivery during their training program. We, by means of this retrospective study, intend to reflect that vaginal breech delivery in well-selected patients when closely supervised and conducted by competent operators is reasonably safe and the dangers, often discussed, may be exaggerated.

2. Methodology

This was a retrospective analysis of all breech deliveries, emergency or planned, conducted during an eight-year period from January 2015 till January 2022 at various Military Hospitals where the authors had worked. Ethical clearance was sought from the Institutional Ethical Board before initiating the study and retrieving the data. The data retrieved from the labour room and operation theatre registry included 51 cases of breech delivered vaginally and 378 cases delivered by caesarean route. However, Inclusion criteria included singleton breech from 36–42 weeks period of gestation (POG) and excluded cases of multiple gestations, POG less than 36 weeks, and foetuses with congenital anomalies. After applying the above criteria, there were a total of 30 cases of vaginal breech delivery and 252 cases of breech caesarean delivery were finally analysed and compared for maternal as well as perinatal morbidity and mortality. Maternal parameters noted in both the groups were age, the POG at termination, any antenatal co-morbidities, cervical dilatation at presentation, duration of labour, genital trauma, and other post-partum complications like post-partum hemorrhage and total hospital stay. The fetal parameters noted were estimated fetal weight, actual weight after delivery, type of breech, perinatal morbidity, perinatal mortality, NICU admission, and follow-up wherever it was possible.

There was a strict protocol laid down for allowing vaginal delivery. It was allowed when 1. Patients gave written consent for breech vaginal delivery; 2. The type of breech was frank or complete 3. The fetal neck was not hypertended; 4. The patient either presented in labour or labour was progressing well clinically indicating no fetal-pelvic disproportion; 5. The estimated fetal weight was ≤3500 g. Women who were taken up for planned CS at our centres were 1. Those who did not give written consent for breech vaginal delivery; 2. Any breech other than complete or frank; 3. Suspicion of foetal neck hypertension; 4. Previous CS; 5. Multiple medical co-morbidities; 6. Estimated foetal weight ≥3500 gm 6. Other obstetrical indications such as placenta praevia/ accreta/abruption, and cord prolapse.

We practised continuous electronic foetal monitoring (EFM) throughout the intrapartum period. Oxytocin and controlled amniotomy were used to stimulate uterine activity only in the absence of good contractions, or else spontaneous labour was allowed. Partogram was maintained for all patients, and it was closely monitored by an Obstetrician. The OT and Paediatric teams were always kept informed of any breech in labour. In case of any abnormality on EFM or in the event of even the slightest doubt of protracted labour such as no cervical dilatation for more than 2 hours despite the adequate uterine activity, passive second stage more than 90 minutes, active second stage more than 60 minutes, the patient was taken up for emergency CS. Epidural anaesthesia or ECV was not offered to any patient as it was not in the Institutional protocol. Induction of Breech presentations is also not in the protocol, but it was done on request for one second gravida patient with cholestasis of pregnancy. All deliveries were conducted by the Obstetrician and babies were attended to by the Paediatrician at birth.

3. Statistics

Statistical analysis was performed by the SPSS program for Windows, version 28.0 (SPSS, Chicago, Illinois). Continuous variables are presented as mean ± SD, and categorical variables are presented as absolute numbers and percentages. Data were checked for normality before statistical analysis. Normally distributed continuous variables were compared using the unpaired t-test, whereas the Mann-Whitney U test was used for those variables that were not normally distributed. Categorical variables were analysed using either the chi-square test or Fisher’s exact test. For all statistical tests, p-value less than 0.05 was taken to indicate a significant difference.

4. Results

Of the total 8,312 deliveries over a period of 8 years at various Military Zonal Hospitals, averaging a delivery rate of 800–1,500 per year, there were a total of 429/8,312 (5.2%) breech deliveries including cases at less than 36 weeks of multiple gestation and also, gross congenital anomalies. However, this number trickled down to 282/8312 (3.4%) which included 30/8,312 (11%) vaginal breech deliveries (Group 1) and 252 (89%) caesarean deliveries (Group 2), both emergency as well as planned, after application of exclusion criteria.

The mean age of patients was 26.44 ± 3.946 years, being 28.37 ± 2.71 years in Group 1 and 26.21 ± 4.011 years in Group 2 which was statistically significant indicating the older age and hence, higher order gravidity of the Group 1 participants (Table 1). Of the total 282 patients of breech delivery, 184 (65%) were primigravidae, 70 (25%) second gravidae and 27 (10%) were third gravidae. Group 1 had 16/30 (53%) second gravidae with one previous vaginal delivery, 9/30 (30%) third gravidae of which five had had two vaginal deliveries, three had had one vaginal delivery.
TABLE I: COMPARISON OF MATERNAL AGE, POG IN WEEKS, AND BABY WEIGHT BETWEEN THE TWO GROUPS

<table>
<thead>
<tr>
<th>Group 2</th>
<th>Group 1</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>26.21 ± 4.01 1</td>
<td>21–34</td>
</tr>
<tr>
<td><strong>POG (weeks)</strong></td>
<td>37.99 ± 0.80</td>
<td>36.29–39</td>
</tr>
<tr>
<td><strong>Baby weight (kg)</strong></td>
<td>3.22 ± 0.31</td>
<td>2.9–3.9</td>
</tr>
</tbody>
</table>

Fig. 1. Frequency of gravid status amongst Group 1.

TABLE II: COMPARISON OF TYPE OF BREECH PRESENTATION BETWEEN THE TWO GROUPS

<table>
<thead>
<tr>
<th>Breach type</th>
<th>Group 2</th>
<th>Group 1</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete</td>
<td>126</td>
<td>50%</td>
<td>22</td>
</tr>
<tr>
<td>Frank</td>
<td>108</td>
<td>43%</td>
<td>8</td>
</tr>
<tr>
<td>Footling</td>
<td>18</td>
<td>7%</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>252</td>
<td>100%</td>
<td>30</td>
</tr>
</tbody>
</table>

Fig. 2. Distribution of stage of labour amongst group 1.

and one abortion while one had a history of a successful breech vaginal delivery and one (3%) fourth gravida with two vaginal births and one abortion. Only 4/30 (13%) were primigravidae, all of whom were booked and 3 of them were in advanced labour at presentation (Fig. 1).

The mean period of gestation was 37.47 ± 0.859 weeks and 37.99 ± 0.806 weeks in Group 1 and 2, respectively, which was statistically significant with a p-value 0.002 (Table I). One patient in Group 1 presented at 36 weeks 3 days POG in labour. Of the total 282 patients, the most common type of breech noted was complete 148/282 (52%) with frequency of 22/30 (73%) in Group 1 and 126/252 (50%) in Group 2, followed by frank 118/282 (42%) with frequency of 8/30 (27%) in Group 1 and 108/252 (43%) in Group 2 and footling was the rarest with frequency of 18/282 (6%), all delivered by CS and none vaginally (Table II).

Among Group 1, four (13.33%) had subclinical hypothyroidism on medications, two (6.66%) had gestational diabetes mellitus (GDM) controlled on diet while one (3.33%) had GDM controlled on Metformin. In Group 2, GDM was the most common medical pathology noted in 90/252 (36%), hypertensive disorder in 54/252 (21%), subclinical hypothyroidism and obesity each was noted in 36/252 (14%) alone or in combination with each other and also, one patient had had bariatric surgery for morbid obesity previously.

All the patients who had persistent breech after 36 weeks, as per Institutional policy, were counselled regarding the risks and consequences of breech vaginal delivery, including the possibility of head entrapment and higher perinatal morbidity and mortality. Amongst the 30 patients of breech vaginal delivery, one (3%) had presented in latent labour with dilatation up to 4 cm while 14 (46%) had come in early labour (4–5 cm) and advanced labour (6 cm and more) each while only one (3%) second gravida was induced for intra-hepatic cholestasis of pregnancy (Fig. 2). A total of 8 (26%) deliveries were unplanned, of which 2/8 (25%) were booked while 6/8 (75%) were not booked. The mean cervical dilatation at presentation for Group 1 was 5.5 ± 1.503 cm [5 (4–7)] and for Group 2 was 2.58 ± 0.761 cm [2 (2–3)]. The duration of active labour as noted in only Group 1 was 137.33 ± 63.96 mins [140(88.75 – 176.25)] with the second stage lasting for less than 60 mins in 29/30 (97%) while only the one primigravida (3%) had it last for 90 minutes.

The average baby weight at delivery was 2.99 ± 0.162 kg and 3.22 ± 0.313 kg for Group 1 and Group 2 respectively which was significant with a p-value < 0.001 (Table I). Although all patients were given an episiotomy for vaginal delivery, no maternal complications were noted in Group 1 while in Group 2 surgical site infection and post-partum hemorrhage of varying degree, was noted in 36/252 (14%) cases and 18/252 (7%) cases respectively (Fig. 3). All 18 cases of PPH were found in those with pregnancy-induced hypertensive disorders while 75% of SSI were found in those with obesity and diabetes (Table III). On Analysing the peri-natal outcome it was seen that Group 1 had 7/30 (23%) neonates with only mild distress requiring observation in NICU for less than 24 hours while 1/30 (3%) required observation for more than 24 hours with no significant morbidity noted in any of the breech vaginal delivery babies as compared to the Group 2 where in 54/252 (21%) neonates had to be observed in NICU for mild respiratory distress attributable to transient tachypnoea of newborn for a period of 24–72 hours (Fig. 4). Most of the

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Perinatal outcomes in breech vaginal delivery versus caesarean delivery

Fig. 3. Frequency of maternal complications in Group 2.

**TABLE III: ASSOCIATION OF OPERATIVE COMPLICATIONS WITH MATERNAL CO-MORBIDITIES**

<table>
<thead>
<tr>
<th>Co-morbidities</th>
<th>Maternal PPH</th>
<th>Maternal SSI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
<td>Frequency</td>
</tr>
<tr>
<td>DM</td>
<td>0</td>
<td>0%</td>
<td>54</td>
</tr>
<tr>
<td>Hypothyroidism</td>
<td>0</td>
<td>0%</td>
<td>36</td>
</tr>
<tr>
<td>Obesity</td>
<td>0</td>
<td>0%</td>
<td>54</td>
</tr>
<tr>
<td>PIH</td>
<td>18</td>
<td>100%</td>
<td>0</td>
</tr>
</tbody>
</table>

Fig. 4. Comparison of perinatal outcome between the two groups.

Patients in Group 1, 13/30 (43%) were discharged on day two, 8/30 (27%) on day three, 8/30 (27%) on day four, and only one required a little longer observation for 7 days in view of foetal distress.

5. Discussion

The number of term breech vaginal deliveries being conducted over the last two decades has been pushed to the sideline, as a result of consistent endorsement of planned CS more so after Hannah et al.’s TBT [1], [2]. This trend, unfortunately, continues in many places despite the TBT follow-up studies showing similar maternal and foetal outcomes for both vaginal and caesarean delivery groups hence, demonstrating that planned CS does not, necessarily, reduce perinatal morbidity or neuro-developmental delay in children [8]. Our study also demonstrated that of the total 282 term singleton breech presentations 252 (89%) were caesarean deliveries vs. a meagre 30 (11%) vaginal deliveries, of which 29 (97%) had presented in either latent or active labour while only one (3%) was induced for cholestasis on maternal request. This corroborates with Basnet’s findings of 434/528 (82.2%) caesarean deliveries vs. 94/528 (17.8%) vaginal deliveries at their Institute [9]. Basnet et al. had 78.6% unplanned deliveries vs. 21.4% planned deliveries compared to our study where only 8 (26%) were unplanned while the remaining 21 (70%) were willing and planned for vaginal trial only if they went into spontaneous labour by 42 weeks while only one (3%) was induced.

Conducting caesareans for all-term breech presentations is not just an unreasonable option but has also, led to a steady decline in the skills requisite for breech vaginal delivery. Most Organizations, Institutes, and healthcare workers opt for a surgical route for all term breech presentations, irrespective of the gravid status, and even in the presence of favourable factors which may be guided by fear of adverse perinatal outcomes and the medico-legal hassles that follow subsequently. A meta-analysis by Behran and Haileamlak [10] demonstrated that although the relative risk (RR) of perinatal morbidity and mortality in the vaginal group was higher, the absolute risk (AR) was not higher as per some previous studies. Also, the AR in breech vaginal delivery was <1% which was comparable to cephalic vaginal deliveries of babies who had shoulder dystocia, birth weight >3.5 kg or instrumental delivery [11]. Our analysis also showed that while no perinatal mortality was noted, Group 1 had 8/30 (26%) babies with respiratory distress requiring NICU admission while 54/252 (21%) babies in Group 2 required NICU admission for respiratory distress. Of the only 113/282 (40%) babies who could be followed up, none were found to be having any neurological or developmental delays. Several recent population-based studies suggest that the higher overall risk seen in breech babies may be due to antenatal or underlying disorders associated with the breech presentation irrespective of the mode of delivery [12], [13]. Re-iterating this fact was a study conducted by Bjellmo et al. [14] which showed that singleton children born at term without congenital malformations had a higher risk for stillbirth and neonatal mortality if they were born in breech presentation regardless of the route of delivery (0.9 per 1000 delivered vaginally and 0.8 per 1000 by CS) compared with those born by vaginal cephalic delivery (0.3 per 1000). He also witnessed a higher proportion of SGA amongst breech presentations than cephalic suggesting that foetuses with antenatally acquired risk factors for adverse outcomes are more likely to present in breech presentation.

A study in the Netherlands, which is a high-resource nation, concluded that the incidence of severe maternal morbidity after an elective CS was 6.4/1,000 compared with 3.9/1,000 seen during an attempted vaginal delivery (OR 1.7; 95% CI 1.4–2.0), with an increased risk for SMM in the next pregnancy also (OR 3.0; 95% CI 2.7–3.3) [15]. This was also stated by a WHO study that the odds of maternal mortality and severe morbidity in those who delivered by elective CS were 3.4 and 2.3-fold higher than...
vaginal delivery just as reflected in our study where 54/252 (21%) women had SSI 36/252 (14%) and PPH 18/252 (7%) of varying degree Group 2 while no maternal complication was noted in Group 1, except the need for an episiotomy in all cases [16].

The big question that remains unsolved is whether every term singleton breech baby be delivered by caesarean section as some have strongly recommended. Although, the Society of Obstetricians and Gynaecologists of Canada (SOGC) did publish new guidelines in 2009 stating that “planned vaginal delivery is reasonable in selected women with a term singleton breech foetus”, planned CS continues to be the norm for a term breech irrespective of the woman’s gravidity [17]. The alarming rise in CS rate may be responsible for the increase in immediate and long-term maternal as well as foetal complications including scar rupture, placenta previa, and placenta accrete syndromes [18]. For multiple reasons, this does not seem logical or practicable and more so for facilities with limited resources or infrastructure. Secondly, as repeatedly raised by previous authors, unless vaginal breech delivery is practised, the transfer of the necessary skill to young doctors and midwives who are likely to encounter unavoidable vaginal breech delivery will not occur efficiently. Thirdly, it is not uncommon to encounter labouring women in breech presentation, for whom a c/s may not be an available option [19], [20].

Our analysis concluded that there were no significant neonatal issues at birth and no long-standing neurological problems in the babies who could be followed up. This was because most of our breech vaginal delivery patients were carrying average size babies, presented in spontaneous labour, were closely monitored, and progressed well. Planning vaginal delivery in suitable patients will not only prevent surgical and anaesthetic complications including scar rupture, placenta previa, and placenta accrete syndromes [21], [22].

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6. Conclusion

Attempting vaginal delivery in well-selected and informed patients of breech presentation is a reasonable option at Centres equipped with optimal infrastructure to handle obstetrical emergencies. Conducting caesarean delivery in all cases of term breech presentation is not only unreasonable but may not even reduce the rate of perinatal morbidity or improve long-term neurological follow-up while increasing the risk of maternal complications at the same time.

Conflict of Interest

Authors declare that they do not have any conflict of interest.

REFERENCES


