

# TERM BREECH TRIAL AND ITS CONSEQUENCES ON PRACTICE: A RETROSPECTIVE STUDY OF THE UNIVERSITY OF MALAYA MEDICAL CENTRE'S EXPERIENCE

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**ABSTRACT:** To see the trend in managing singleton breech pregnancy after the term breech trial. Secondly to compare the safety of different modes of delivery for term, singleton breeches by looking at the immediate neonatal outcome, based on our own experience. Breech infants were identified by examining computer-stored maternal discharge records of hospitalization for the years 1990 and 2000 respectively. Parameters studied included planned mode of delivery, actual mode of delivery, parity, previous vaginal delivery, Apgar score at five minute, birth weight, referral to special care nursery and neonatal morbidity. Of 6,496 deliveries in 1990 and 5,081 in 2000, there were 220 (3.4%) and 148 (2.9%) term breech infants respectively, of which 115 (for 1990) and 102 (for 2000) case records were available. In 1990, 62.6% of the women had trial of vaginal breech delivery but only 24.5% of the women in 2000 were allowed to do so ( $p < 0.05$ ). Caesarean section rate for singleton breeches increased from 51.3% in 1990 to 84.3% in 2000 ( $p < 0.05$ ). Mean Apgar score at five minutes was significantly lower after vaginal breech delivery ( $9.40 \pm 1.36$ ) compared to after Caesarean section ( $9.72 \pm 0.712$ ) but there was no clinical significance. There was a noticeable trend towards Caesarean section and less trial of vaginal delivery. Neonatal outcomes of babies born abdominally were statistically better than those born vaginally but there was little clinical impact. Perhaps in properly selected cases, a planned vaginal breech delivery still has a role to play. (JUMMEC 2003-2005; 8: 39-44)

**KEYWORDS:** Breech deliveries, Caesarean section, Apgar score

## Introduction

Incidence of breech presentation is inversely related to the gestational age (that is, the relative of liquor volume to fetal size) at birth (1), where it occurs in 40% of babies at 26 weeks gestation, in 20% at 30 weeks and 3% to 4% at term.

The mode of the delivery in term singleton breeches has always been a controversial issue in the obstetric literature (2-4). Assisted vaginal delivery continues to be one of the challenging problems in obstetrics because of its association with high perinatal mortality and morbidity after excluding congenital malformation. In the past, if there were no contraindications, most women with breech presentation were allowed to undergo labour and deliver vaginally (5). This allows the doctor to perfect their techniques and enhance confidence. Caesarean section was reserved only for the primigravida or the multiparous patients with

footling breech or evidence of poor progress or fetal distress. Nowadays, after the published randomized trial in the Lancet (6), Caesarean section has become the delivery route of choice for most women with a breech presentation, regardless of parity and estimated fetal size. This will definitely increase the Caesarean section rate and cost to the already tight health budget of any government.

Although the results of the trial and a few others (7-8) were supportive of elective Caesarean delivery, experience tells us that in properly selected cases and in experienced hands, assisted breech deliveries are

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reasonably safe (9-11). If all cases are delivered abdominally, soon the skills of vaginal delivery will be lost and will join the fate of the rotational forceps. This may lead to disaster when the doctor is called for an inevitable assisted breech delivery or a delay in delivery of a breech second twin (12).

This study was conducted to demonstrate the safety or hazards of assisted breech delivery by looking at the differences in the immediate neonatal outcomes such as 5-minute Apgar scores and referral to special care nursery (SCN).

## Methods

This was a retrospective cohort study. The cases were identified by searching through the computer-stored maternal discharge records of hospitalisation in the Department of Obstetrics and Gynaecology, University of Malaya Medical Centre (UMMC), using search terms such as assisted breech delivery, vaginal breech delivery and Caesarean section for breech. The search was confined from the 1st January to 31st December 1990 and 1st January to 31st December 2000. Preterm deliveries (< 37 completed weeks), infants with congenital anomalies, intrauterine fetal death and those of multiple pregnancies were excluded.

Of 6,496 deliveries in 1990 and 5,081 in 2000, there were 220 (3.4%) and 148 (2.9%) presented by the breech respectively. After excluding twins, infants with congenital anomalies, intrauterine fetal death and undetected case records, a total of 217 original case records (115 for year 1990 and 102 for year 2000) were available for analysis. The parameters included were the demographic data of the mothers, the intended mode of delivery, the actual mode of delivery (assisted vaginal delivery, elective Caesarean section and emergency Caesarean section), Apgar scores at one and five minutes, parity, previous vaginal delivery, birth weight, referral to SCN and neonatal morbidity.

Intended and actual modes of delivery were compared according to year of admission (1990 and 2000). Primary outcome measures were Apgar scores less than seven at five minutes, referral to SCN, and any neonatal morbidity. The analysis of outcome was done according to actual mode of delivery.

Data entry and analysis were done using SPSS version 8.0. For statistical analysis, the chi square test was used for binominal variables if all expected numbers exceed five, and Fisher's exact test if any expected number was five or less. For continuous variables, student t-test was used if the variables were normally distributed variables.

## Results

The study group comprised 217 women who delivered singleton term breech infants. There were 115 respondents in 1990 and 102 in 2000. More than half (129, 59.4%) of the subjects were Malays, followed by Chinese, Indian and others (Figure 1). This racial distribution is proportional to the group of population that this centre is serving. Most of the subjects were in the age group of 26 to 30. The mean ( $\pm$  sd) age was  $28.77 \pm 4.98$  years.

**Table 1.** Intended (planned) mode of delivery in study population for 1990 and 2000

Year of Admission	Trial of Vaginal Delivery	Caesarean Section (CS)	Total
1990	72 (62.6%)	43 (37.4%)	115
2000	25 (24.5%)	77 (75.5%)	102
Total	97 (44.7%)	120 (55.3%)	217

In the year 1990, 62.6% women underwent a trial of vaginal breech delivery compared to only 24.5% in the year 2000. The difference was statistically significant with the  $p$  value  $< 0.05$  ( $p = 0.0001$ ). As expected, the Caesarean sections (CS) were more frequently performed among the study population in the year 2000.

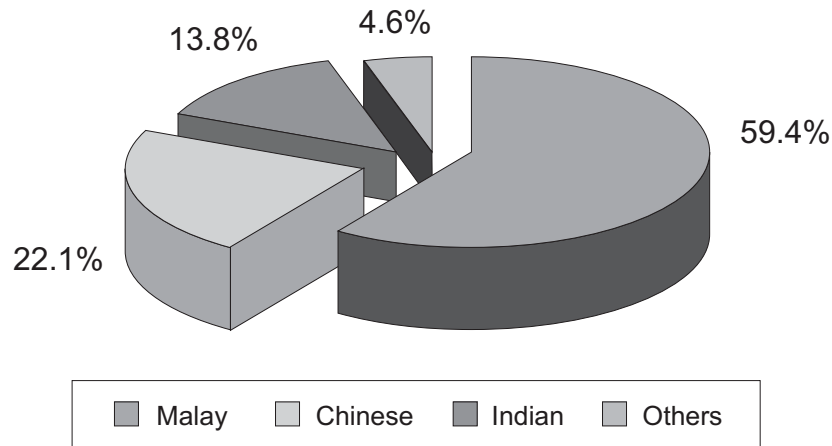
Of the total 97 women who underwent trial of vaginal delivery, 25 (25.8%) ended up having emergency Caesarean section. The success rate of vaginal breech delivery for 1990 and 2000 were 77.8% and 64.0% respectively. However, the difference was not statistically significant. The result is presented in Table 2.

**Table 2.** Success rate of vaginal breech delivery for 1990 and 2000

Year	Trial of Vaginal Delivery	Successful (%)	Unsuccessful (Emergency CS)
1990	72	56 (77.8%)	16
2000	25	16 (64.0%)	9
Total	97	72 (74.2%)	25

**Table 3.** Actual mode of delivery in study population for 1990 and 2000

Year of Admission	Vaginal Delivery	Elective CS	Emergency CS	Total
1990	56 (48.7%)	43 (37.4%)	16 (13.9%)	115
2000	16 (15.7%)	77 (75.5%)	9 (8.8%)	102
Total	72 (33.2%)	120 (40.6%)	25 (11.5%)	217



**Figure 1.** Racial distribution of the study population

A cross tabulation between the actual mode of delivery and those women who had previous vaginal delivery to see whether there is any relationship in these two variables (Table 4).

**Table 4.** Association between mode of delivery and previous vaginal delivery in the study population

Previous Delivery	Mode of Delivery				Total
	Vaginal Breech	Elective CS	Emergency CS		
Yes	44 (61.1%)	47 (39.2%)	6 (24.0%)		97 (44.7%)
No	28 (38.9%)	73 (60.8%)	19 (76.0%)		120 (55.3%)
Total	72 (100%)	120 (100%)	25 (100%)		217 (100%)

A higher percentage of women (61.1%) was noted in vaginal delivery group who had previous vaginal delivery compared to only 39% and 24% in elective and emergency Caesarean section groups respectively. The difference was statistically significant at *p* value of 0.001). This means that there was an association between previous vaginal delivery and mode of delivery.

Regarding the birth weight of the infants in this study, most of them weighed between 2.6 kg and 3.5 kg. The mean ( $\pm$  sd) birth weight in 1990 was 3.017 kg  $\pm$  0.477, while in 2000, the mean was 2.975 kg  $\pm$  0.384.

Birth weight by mode of delivery is shown in Figure 2. Most of the infants who weighed between 2.6-3.5 kg were delivered abdominally. In the less than 2.5 kg, more babies were born vaginally. There were only two infants whose birth weight was more than four kg and

both were delivered by emergency Caesarean section due to spontaneous rupture of membrane in one case and the other one was due to meconium stained liquor. Infants delivered by Caesarean section (elective and emergency) were slightly heavier than those in vaginal group. The mean ( $\pm$  sd) birth weight for Caesarean group was 3.054 kg  $\pm$  0.395 and for vaginal breech group was 2.927 kg  $\pm$  0.47. However, the difference between these two groups was not statistically significant (*p* = 0.178).

Table 5 shows the immediate neonatal outcomes, which were Apgar scores at five minutes and referral to special care nursery (SCN) according to mode of delivery.

For both outcomes, vaginal delivery had higher rates of adverse outcomes in comparison with Caesarean group.

Out of 217 respondents, only six (2.8%) infants got Apgar scores of less than seven at five minutes. All of them were born in 1990 with four infants delivered by assisted vaginal breech delivery. The vaginal breech group (*n*=72) had a lower mean Apgar scores at five minutes with 9.40  $\pm$  1.36 compared to those in the Caesarean group (9.72  $\pm$  0.712). Although the difference was significant statistically (*p* = 0.0001), but in clinical practice the scores were quite similar. Another interesting observation was the fact that of the 25 babies intended for vaginal delivery but failed and delivered abdominally, none recorded Apgar score less than seven at five minutes or admission to the SCN.

For both years, a total of 14 infants were referred to SCN for further evaluation and close monitoring.

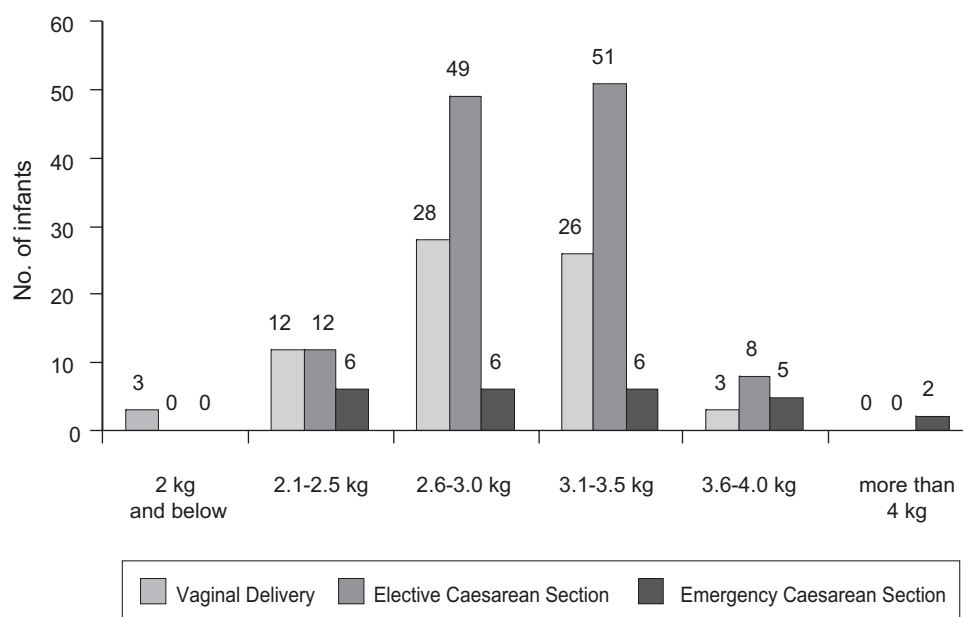


Figure 2. Birth weight by mode of delivery

Table 5. Immediate neonatal outcome according to mode of delivery

Immediate Neonatal Outcome	1990			2000		
	Vaginal Delivery (%)	Elective Caesarean Section (%)	Emergency Caesarean Section (%)	Vaginal Delivery (%)	Elective Caesarean Section (%)	Emergency Caesarean Section (%)
Apgar score (5 min)						
< 7	4 (7.1)	2 (4.7)	–	–	–	–
≥ 7	52 (92.9)	41 (95.3)	16 (100)	16 (100)	77 (100)	9 (100)
Referral to SCN						
Yes	7 (12.5)	5 (11.6)	–	–	2 (2.6)	–
No	49 (87.5)	38 (88.4)	16 (100)	16 (100)	759 (7.4)	9 (100)

Seven of them were delivered vaginally and another seven by Caesarean section (Table 5). Two infants were transferred due to low birth weight, two because of chorioamnionitis in mothers and one due to suspected herpes zoster infection contracted from the mother. Another 11 infants did not have obvious reasons for referral stated in their mothers' case notes. However, there was no death of any of the infants.

## Discussion

A change with a tendency towards Caesarean section in the delivery for term breech presentation between years 1990 and 2000 was noted. This finding was consistent with a study conducted by staff of National

Hospital, University of Oslo (13) where the Caesarean section rate increased from 8.1% in 1972-75 periods to 32.6% in 1976-79. The same tendency has been observed in many countries, often with an even higher Caesarean section rate.

Caesarean section is not free of its share of morbidity and mortality (14-15). The risks are more in the developing countries and even higher in any remote hospital. We all know that in these settings, juniors and overworked staff usually perform the operative procedure. Of course, Caesarean section is indicated if labour is protracted, breech baby is high, there is poor cervical dilatation or when there is insufficient descent of the breech in spite of adequate uterine contractions and cervical dilatation. Of course, in the

presence of additional risk factors such as diabetes mellitus, intrauterine growth retardation and pathological CTG, an elective Caesarean section should be appropriately considered as a safer option (15-17).

Many obstetricians consider previous vaginal parity as an important factor for selection of parturient to deliver vaginally (4-5). In a large retrospective study of more than 10,000 singleton breech deliveries of normal infants in 86 hospitals, the benefit of Caesarean section was significantly greater for primiparae than multiparae (18). Nevertheless, two studies of 159 and 580 singleton breech deliveries did not find any significant difference in neonatal mortality (13), or pH in the umbilical cord vein between primiparae and multiparae (19).

The selection of parturients for vaginal breech delivery or Caesarean section is also governed by the estimated fetal birth weight. This was evident as more infants with the birth weight of 2.5 kg or less were delivered by assisted breech delivery. Nevertheless, estimation of birth weight by clinical palpation of the gravid uterus or by ultrasound had been shown to be inaccurate (20). Therefore, correct assessment on the progress of labour and timely intervention in deciding on continuation or stopping any trial of vaginal breech delivery cannot be overlooked (16).

In this study and in some others (9-11), the immediate neonatal outcomes (Apgar score) between those infants delivered by vaginal breech delivery and by Caesarean section were statistically significant but with little impact clinically. Only a small number of breeches recorded low Apgar score at five minutes and four out of six were delivered vaginally. This was not the finding of others that found otherwise (8,13). However, it has been shown that in properly selected cases, slightly more than 70% of cases can be delivered vaginally with very little morbidity (21).

Interestingly, those cases that went into labour spontaneously but failed in their trial of vaginal delivery and had Caesarean section, all recorded good Apgar score. If induction and augmentation of breech is not a practice and early recourse to Caesarean if progress is poor, a fail trial is still safe for the baby.

Whether external cephalic version was offered to each of these parturient was not the main objective of this study. Ideally, external cephalic version should be offered or attempted in selected cases as this was shown to reduce the non cephalic presentation at term (22). In the era of increasing litigation, proper and comprehensive counselling is a must and the wishes of the mothers must be respected. The attending doctor or midwife must be well versed in breech delivery and

this ability can then be applied to delivery of the breech second twin without having to resort to unnecessary Caesarean section which usually will delay delivery (23), and be potentially harmful to the baby (12) and the mother. Avoiding unnecessary Caesarean delivery also helps to reduce the potential iatrogenic induced cases of respiratory morbidity in newborns of elective Caesarean cases, which would normally be planned at 38 weeks gestation (24-25).

Sometimes we are so much into patients' rights and allow them to make the decision after a thorough counselling. There is also a move nowadays towards an elective Caesarean for a normally presented fetus at term for those who are too push to push and some obstetricians are condoning this (26). Many a time, we have discussed cases of delayed Caesarean for poor progress with non-assuring CTG running into hours, all for the sake of reducing the Caesarean rates, with bad outcome on the fetuses. Why don't we give those who had vaginal delivery before with an appropriate fetal size and wish to deliver their child vaginally, their rights to choose? Anyway, we still monitor closely all delivering mothers and make appropriate intervention if necessary. Only then can we talk about how to reduce our relatively high Caesarean rate.

There were some limitations in this study and they were as follows:

1. small sample size ( $n=217$ ),
2. this study was meant to analyze all the cases of breech in 1990 and 2000. However, due to missing records the results do not totally represent the whole number of breech deliveries in these years, and
3. since this was a retrospective study, some information like external version offering were not clearly stated or some were not completed.

## Conclusion

In conclusion, there was a trend towards Caesarean section in delivering singleton term breech with fewer women allowed to undergo trial of labour in 2000 compared to those in 1990. A low five minute Apgar score occurred at a slightly higher rate after vaginal breech delivery than after Caesarean section but without much clinical implication. External cephalic version should be offered to all suitable cases. Individualization of cases should be the appropriate approach and those with previous vaginal parity with no obvious contraindication, should be given the options to deliver vaginally if they wish. Further study to examine the latest trend in the past three or four years will show the true impact of The Term Breech Trial in our practice.

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