

OBSTETRICS

Changes in vaginal breech delivery rates in a single large metropolitan area

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OBJECTIVE: Vaginal breech delivery rates have been accepted widely to be in decline and the Term Breech Trial (TBT) has recommended delivery of a breech-presenting infant by elective cesarean section delivery. Our aim was to examine the rate of vaginal delivery of term breech pregnancies in the 8 years before and after the publication of the TBT.

STUDY DESIGN: We retrospectively examined vaginal delivery rates of breech presentations over a 16-year period in 3 large tertiary maternity hospitals that serve a single large metropolitan population. All 3 hospitals are of similar size and serve a population with similar risk profile. We also examined rates of perinatal mortality in the 3 hospitals over the study period.

RESULTS: During the 16-year study period, there were 344,259 deliveries among the 3 hospitals; 11,913 of which were breech deliveries. There were 5655 breech deliveries in the 8 years before the publication

of the TBT, with a cesarean delivery rate of 76.9%. There were 6258 breech deliveries in the 8 years since publication of the TBT, and the cesarean delivery rate increased to 89.7% ($P < .0001$). During the 8 years since publication, the rate of vaginal delivery in nulliparous women decreased from 15.3-7.2% ($P < .0001$). The vaginal breech delivery rate in multiparous women decreased from 32.6-14.8% ($P < .0001$). The rates of corrected perinatal mortality showed a significant decrease in the last 4 years of the study.

CONCLUSION: Our study demonstrates that the results and recommendations of the TBT have contributed to decreasing vaginal breech delivery rates, which were already in decline before its publication.

Key words: breech, cesarean section delivery, multiparous, nulliparous, vaginal delivery

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Breech presentation occurs in 3-4% of all pregnancies¹ and is associated with an increased risk of neonatal morbidity and death compared with the overall obstetric population.² In recent years, there has been much attention and intense research focus on the optimal mode of delivery for breech-presenting fetuses. The Term Breech Trial (TBT) that was published in October 2000 concluded that a breech-presenting cohort had fewer adverse outcomes among those who were delivered by planned ce-

sarean section delivery than by planned vaginal delivery.³ Clinicians attitudes towards delivery of a breech-presenting fetus have been influenced heavily by published data; as vaginal breech delivery becomes less prevalent, more and more birth attendants have become deskilled and inexperienced at breech delivery.

Decisions regarding breech delivery are multifactorial with a large number of both short- and long-term potential complications to mother and fetus that must be considered. The TBT concluded that there is a significant decrease in perinatal deaths and serious early neonatal morbidity by cesarean delivery of a breech-presenting fetus. There appears to be no long-term benefit to the infant, however, whether it is delivered by either the cesarean or the vaginal route. Studies show that planned cesarean delivery is not without risk for mother and baby in current and future pregnancies⁴⁻⁶ and that, given a choice, >90% of patients would prefer a vaginal delivery.⁷⁻⁹ Patients with a previous cesarean delivery are also at increased risk for malpresentation in their second pregnancy when

compared with those who had a vaginal delivery in their first pregnancy.¹⁰

Although the TBT has caused much controversy since its publication, it has commanded attention from the obstetric community and undoubtedly has had a widespread impact on clinicians' attitudes towards breech delivery since its appearance.^{11,12} Hence, our aim was to examine the rate of vaginal and cesarean delivery of term breech pregnancies in both nulliparous and multiparous patients in the 8 years before and after publication of the TBT in an effort to assess the impact of the trial on everyday clinical practice across 3 large obstetric units in a single metropolitan area. We also sought to assess the impact of this change in attitude towards breech delivery on the perinatal mortality rates of the institutions that were involved in the study.

MATERIALS AND METHODS

A retrospective cohort study was performed to identify and analyze all cases of vaginal breech delivery in Dublin, Ireland, during the 16-year time period from 1993-2008 inclusively. Obstetric

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care in the Dublin population is served primarily by 3 large tertiary maternity hospitals: the Coombe Women and Infant's University Hospital, The National Maternity Hospital, and The Rotunda Hospital. All 3 hospitals had previously, and continue to have, similar attitudes and policies towards breech presentation. Currently, any patient with a breech presentation at 37–38 weeks' gestation is counseled and offered external cephalic version or delivery by elective cesarean section at 39 weeks' gestation. A patient with persistent breech after failed external cephalic version is again counseled and offered cesarean delivery; a small number, however, will elect to proceed to a trial of vaginal breech delivery. Patients who elect to deliver a breech pregnancy vaginally have a discussion with a senior member of the medical staff and have all potential risks of vaginal delivery explained. Absolute contraindications to vaginal breech delivery are also sought at this evaluation.

The 3 hospitals each currently deliver approximately 9000 pregnancies annually, and all of the hospitals have published an annual clinical report since the mid 20th century. A single investigator hand-searched each annual report from 1993–2008 from each hospital to examine the annual rates of vaginal breech delivery. Parturients were divided into 2 groups (nulliparous and multiparous), and the rates of vaginal breech delivery were examined for both groups. Details that were collected included annual birth numbers, rates of cesarean delivery, and rates of vaginal breech delivery in each hospital. All 3 hospitals serve a similar patient population, with a similar risk factor profile, and have comparable perinatal mortality rates. The 3 institutions have a unique geographic layout, in that they are 3 busy units located <2 miles from each other and serve a single large metropolitan population of 1.5 million people. Comparisons of vaginal breech delivery rates for each group (nulliparous and multiparous) over the 16-year period (8 years before and 8 years after publication of the TBT) were made, and the results were analyzed.

Overall rates of perinatal mortality for all 3 institutions during the study period

were also examined in an effort to determine whether changing attitudes toward breech delivery have had an impact on overall hospital neonatal outcome data.

Statistical analysis was performed with the χ^2 test to compare the 2 time periods. Odds ratios (ORs) and 95% confidence intervals (CIs) were also calculated. The SPSS software package (version 15.0; SPSS, Chicago, IL) was used; a probability value of $< .05$ considered significant.

RESULTS

There were 344,259 deliveries during the study period (1993–2008) among the 3 institutions. There were 122,977 deliveries in the National Maternity Hospital, 104,519 in the Rotunda Hospital, and 116,763 in the Coombe Women and Infant's University Hospital. Over the 16-year study period, there were 11,913 breech deliveries among the hospitals that resulted in a 3.5% rate of breech presentation (11,913/344,259 deliveries), which is in broad agreement with international rates of breech presentation.¹

During the 8-year period before the publication of the TBT, there were 5655 breech deliveries in the Dublin maternity hospitals. Of these, 55% deliveries (3110/5655) occurred in nulliparous women, and 45% deliveries (2545/5655) occurred in multiparous women. The rate of delivery by cesarean section was 76.9% (4348/5655), with a vaginal breech delivery rate of 23.1% (1307/5655). The vaginal breech delivery rate in the period from 1993–2000 was found to be 15.3% in nulliparous women (477/3110) and 32.6% in multiparous women (830/2545).

There have been 6258 breech deliveries in the 8 years since publication of the TBT (2000–2008). Over the 8-year period, the cesarean delivery rate of breech presentations has increased to 89.7% (5614/6258) among the 3 institutions. Consequently, the rate of vaginal breech delivery in the Dublin maternity hospitals has decreased to 10.3% (644/6258). The vaginal breech delivery rate in the period from 2001–2008 was found to be 7.2% in nulliparous women (270/3736) and 14.8% in multiparous women (374/2522).

When vaginal breech delivery rates for both time periods were compared, there was a statistically significant decrease in the number of vaginal deliveries after the publication of the TBT (1307/5655 vs 644/6258; $P < .0001$; OR, 2.6; 95% CI, 2.4–2.9). Comparison of mode of delivery of nulliparous women in the 8 years before and after the publication of the TBT showed a significant reduction in rates of vaginal delivery (477/3110 vs 270/3736; $P < .0001$; OR, 2.3; 95% CI, 1.9–2.7). In multiparous women, the rate of vaginal breech delivery before TBT publication was 32.61% (830/2545); however, in the 8 years since the appearance of the trial, the rate has fallen to 14.8% (374/2522; $P < .0001$; OR, 2.8; 95% CI, 2.4–3.1). Table 1 shows the rates of vaginal breech delivery among nulliparous and multiparous women in the 8-year period before the TBT and the 8-year period since the publication.

The declining rate of vaginal breech delivery during the study period can be seen in the Figure. It can be observed from these data that a decline in the rate of vaginal breech delivery was already apparent in the 8 years preceding the publication of the TBT; this decline in vaginal delivery is particularly apparent after the first 4 years of the study. When mean vaginal breech delivery rates was compared for each 4-year epoch that was examined in the study, a statistically significant decrease in vaginal delivery rate was found among each time period. During the years 1993–1996, the mean vaginal breech delivery rate was $29.9\% \pm 1.6\%$, which was significantly higher than the rate in the subsequent 4 years from 1997–2000 ($18.3\% \pm 1.7\%$; $P < .0001$; 95% CI, 8.6–14.4). When the vaginal breech delivery rate for the years from 1997–2000 was compared with the rate from 2001–2004, a similar trend was noted ($18.3\% \pm 1.7\%$ vs $12.0\% \pm 3.1\%$; $P = .012$; 95% CI, –10.82 to –1.98). Finally, a comparison of the two 4-year epochs after the publication of the TBT showed a decrease in vaginal breech delivery rates that approached significance, with a mean vaginal delivery rate in the years 2001–2004 of $12.0\% \pm 3.1\%$ compared with a rate of $8.3\% \pm 0.33\%$ in the

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