SYSTEMATIC / NARRATIVE REVIEW ARTICLE

Reconsideration of planned vaginal breech delivery in selected cases

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ABSTRACT

Introduction: The debate surrounding the management of term breech presentation (BP) has resulted in the presence of a multitude of guidelines, reviews, and directives. The vaginal delivery of a breech baby requires sound obstetric skills since approximately 3-4% of babies at term are breech presentations. BP is the commonest of all malpresentations. However, expertise required to deliver breech babies vaginally has virtually disappeared. There is no convincing evidence that Caesarean Section (CS) is better than assisted vaginal delivery when conducted in appropriate settings, with experienced obstetricians and strict prevailing protocols. Unfortunately, planned vaginal breech delivery (VBD) is becoming an uncommon event. This has led to fewer opportunities for obstetric residents to master the skills of vaginal birth of breech presentations.

Materials and Methods: The BP has always been a challenge for obstetricians, due to special skills required to deliver the breech safely. In addition, the immediate perinatal outcome, in terms of APGAR scores and acid-base status of the breech babies is of great concern. Thus, in 2000, in order to provide more evidence-based data, the Term Breech Trial (TBT) was published which compared the outcome of VBD with planned CS. In their 2003 Clinical Guideline, the National Institute for Health and Clinical Excellence (NICE) recommended external cephalic version (ECV) for breech presentation at 36 weeks of gestation a ns elective CS if the procedure is declined or failed.

The first edition, Green-top Guidelines by the Royal College of Obstetricians and Gynaecologists (RCOG) regarding the breech delivery was first published in 1999 and revised in 2001, 2006 (Nos. 20a and 20b) and March 2017. In 2020, the Guideline Committee meeting decided on a further revision and deferred the decision for further 3 years (2023). The aim of this Guideline is to aid decision making regarding the route of delivery and choice of various techniques used during delivery. In March 2005, the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) issued a formal statement concerning breech delivery at term.

Through their Committee on Obstetric Practice, the American College of Obstetricians and Gynecologists (ACOG) issued a Committee Opinion paper on "Mode of term singleton breech delivery" in 2006.

Results: Almost immediately, the medical community all over the world embraced the conclusions of the trial highlighting the superiority of outcomes in planned CS compared to VBD in terms of maternal, neonatal mortality and morbidity. Clinicians, in consultation with their patients, must make the final decisions regarding mode of breech delivery in the light of the updated clinical guidelines and committee opinions for a rational choice for the mode of delivery.

Conclusion: There is a place for planned VBD, the pre-requisites are: strict case selection, operator skills and vigilant intrapartum monitoring. Provision of basic skills training by utilizing birthing pelvic models and mannikins, hands-on practice of External Cephalic Version (ECV) in clinical settings, may result in larger reduction in the risk of CS.

KEYWORDS:
Term Breech Trial, External Cephalic Version, Perinatal mortality, Perinatal morbidity, Severe maternal morbidity

INTRODUCTION

Caesarean section (CS) as the sole mode of delivery for breech presentations (BP) carry additional health risks in future pregnancies, such as placenta previa, rupture uterus and morbidly adherent placentae.[1] All these morbid factors are associated with an increased risk of severe peripartum haemorrhage and emergency hysterectomies.[2] Repetitions of CS is also associated with an increased risk for injury to the bladder and bowel.[3] The risk of uterine scar rupture during vaginal birth after one CS is approximately 0.5%.[4] However, in under- resourced countries where healthcare is lacking,[5] the effect on maternal outcome is likely to be undesirable.

Breech presentation occurs in 3-4% of pregnancies at term[6]. The incidence is more in preterm deliveries. A breech presentation is defined as a fetus in a longitudinal lie with the buttocks or feet in the lower segment of the uterus. Here the approach to delivery appears debatable. Vaginal breech births were previously the norm until 1959 and thereafter,[7] it was decided upon that all breeches should be delivered via CS.[8] This concept was further strengthened by the appearance of Term Breech Trial (TBT) in 2000. It remains concerning that the scarcity of experienced clinicians to tutor junior residents in training leads to the desertion of vaginal breech deliveries.

The lead researchers of TBT headed by Hannah et al 2000[9] at the University of Toronto in Canada conducted a randomized trial at 121 centers in 26 countries. In that trial, 2183 women

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at term, singleton fetuses in a frank or complete breech presentation were randomly assigned for planned CS or planned vaginal birth. Perinatal mortality, neonatal mortality or serious morbidity were significantly lower for CS group than for planned vaginal birth group. The maternal morbidity or mortality was similar in both groups. This single piece of randomized TBT in 2000, profoundly and ubiquitously changed obstetric practice globally. This effectively removed planned vaginal breech delivery (VBD) in both the Western world and South Asian countries. In the Netherlands, the CS rate for breech presentation has increased from 57% in 2000 to 81% in 2001 after the TBT. It came as no surprise that, instantaneously, obstetricians reverted enthusiastically to the conclusions of the trial. It is obvious that CS requires less skills and the obstetricians feel more protected medico-legally if he/she performs CS without taking into cognizance the increased maternal morbidity, longer hospitalization, a four-times higher risk of blood transfusion and an over ten-times higher risk for endometritis.[10]

Unfortunately, the TBT had methodological flaws and discussing its generalizability and applicability is questionable with adequately staffed and well-resourced Australian and New Zealand hospitals. Hence, unfounded conclusions drawn should no longer be considered as valid.[11] Malaysia is a rapidly developing country in Southeast Asia, with a multi-ethnic, conservative and predominantly Muslim population. The latter prefer larger families and normal vaginal deliveries if given a choice. This is an observation of us (the authors) over the past four decades.

MATERIALS AND METHODS

The Green-top Guideline (Table I), No. 20 (April 2001) RCOG recommended offering all women with an uncomplicated BP, ECV at (term 37-42 weeks) provided there were no contraindications.[12] In December 2006 Guidelines 20a and 20b were further updated,[13] outlining less rigid approach to compulsory elective CS. Furthermore, the reports highlighted about advising women of the safety factors and details of intrapartum management and delivery of the breech vaginally.

The ACOG issued a Committee Opinion paper on "Mode of term singleton breech delivery" in 2006,[14] asserting that planned VBD may be applicable under hospital specific protocol guidelines including importance on documentation, informed consent issues related to ECV and VBD. RANZCOG guideline 2005, reiterated that maternal preference and consideration in the mode of delivery. The Guideline further emphasized that the level of risk to the foetus is higher in planned VBD than in elective CS, but it does not exclude as an alternative decision. In their 2003 Clinical Guideline, NICE[15] recommended ECV for breech presentation at 36 weeks gestation and elective caesarean section if the procedure fails. The document concluded that clinicians must make the final decision in consultation with their patients for ECV and mode of delivery.

In addition, The Cochrane Review[16] (2003), one of the opinion-making institutions endorsed the recommendations soon after the publication of the TBT has now modified their recommendations and support the VBD, provided the institution is equipped with stringent measures to meet the final point made in this Guideline; maternal preference should be sought.[17] The PREsentation of MODe d' Accouchment (PREMODA) study group published in 2006 designed a prospective observational multicenter study incorporating antenatal radiological pelvimetry.[18] The role of antenatal pelvimetry is unclear, convincing evidence supporting this as a reliable screening tool has not been established, although it was employed in 82.5% of planned vaginal births in the same study. The study included over 8 000 women with breech presentation at term (four times as many as included in the TBT, which were recruited in 174 French and Belgian centers over a 12-month period. The study appraised the safety of VBD using strict criteria for selecting patients for a trial of labour. The authors did not observe differences in perinatal morbidity or mortality in breech babies delivered by CS or vaginal delivery.

Since the publication of TBT two decades ago, generations of residents in both the Western world and South Asian countries have completed training, with scarce expertise and experience in VBD. The significance of this situation is many fold, unavoidable CSs, with substantial morbidity to mothers and increased risk to the breech foetuses, who need to be delivered by vaginal route. A partial solution to this is to include simulation training to residents and availability of standby experienced obstetricians. This should be treated as an obligatory simulation courses for residents and those doing postgraduate training in Malaysia. Provision of basic training with availability of childbirth, birthing simulators and mannikins in the market can be in-cooperated and used to teach and train basic skills for delivering breech babies[19] In addition, in-house training of ECV should also be made an integral part of training and offered to all pregnant mothers with a breech who have no contraindications or a potential pathological fetal condition for this procedure. In this way, the parturient is given a fair choice to deliver a breech baby vaginally. Under these circumstances, trainees in the long run would be able to master required maneuvers for VBDs and handle unforeseen complications.

RESULTS

The BP has always been a challenge for obstetricians, due to special skills required to deliver the breech safely. In addition, the immediate perinatal outcome, in terms of APGAR scores and acid-base status of the breech babies is of great concern. In the light of the Green-top Guidelines (RCOG) on further management of BP, the NICE Guidelines recommending ECV at 36 weeks, the RANZCOG and ACOG view points must be taken into account along with consultations and informed consent of patients, management plans must be carefully designed.

Table I: A summary of guideline and directive recommendations on breech delivery

Royal College of Obstetricians & Gynaecologists (Better to write country name) [10-12]	**Green-top Guideline No. 20 (2001)** • Recommended offering all women with uncomplicated breech presentation an external cephalic version (ECV) at term (37-42 weeks), provided there were no contraindications. If not performed or unsuccessful, elective caesarean section at term should be offered. • It is still important that clinicians and hospitals are prepared vaginal breech delivery. • Recommended that any woman delivering a breech presentation vaginally should be cared for by an attendant with suitable experience. **Green-top Guideline Nos. 20a and 20b (2006)** • More information on benefits, risks and the role of ECV • A less rigid approach to elective caesarean section • More information on short and long-term benefits and risks of modes of planned delivery and on advising women of them. Safety factors and details of intrapartum management of breech presentation and delivery • Training, counselling and documentation highlighted
American College of Obstetricians & Gynaecologists [14]	• Planned vaginal breech delivery may be reasonable under hospital specific protocol guidelines • Documented, informed consent, clearly outlining the increased short-term serious risk to the infant, is a prerequisite
Royal Australian & New Zealand College of Obstetricians & Gynaecologists [17]	• States that the risk is higher in planned vaginal breech delivery than in elective caesarean section but does not exclude it as an option. • Maternal preferences should be considered
National Institute for Health and Clinical Excellence (NICE) (Better to write country name)[15]	• Recommended ECV for breech presentation at 36 weeks of gestation and elective caesarean section if the procedure declined or fails

Source: The Risk Management Planned vaginal breech delivery: should this be the mode of Choice. The Obstetrician & Gynaecoloist 2007; 9: 171-176

Table II: Studies supporting vaginal delivery for breech presentation

Study	Study design	Study population	Outcome measures	Summary of findings
Alarab et al (2004) [23] Dublin, Ireland	Retrospective Review	All breech presentations > 37 weeks; n=641; selection for vaginal delivery was based on clear pre-labour and intrapartum criteria	Obstetric and perinatal outcomes	298 had a trial of vaginal delivery, 49% delivered vaginally. Fewer nulliparous women achieved vaginal delivery than multiparous (37% vs 63%, P<0.001). Significantly more infants >3.8 kg were selected for prelabour and intrapartum caes-arean section than vaginally. No non-anomalous perinatal deaths
Doyle et al (2002-03) [24], Texas, USA	Retrospective review	All single breech deliveries; n=150	Obstetric and perinatal outcomes	41 vaginal breech deliveries. 109 caesa-rean sections. Mean birthweight was signi-ficantly lower and parity significantly higher in vaginal group. No differences in neonatal outcomes
Kumari et al (1997-2000) [25] Abu Dhabi	Retrospective population based cohort study	Women with breech presentation at term; 128 women for whom a vaginal delivery was planned compared with 122 women who had an elective caesarean section	Neonatal morbidity and mortality, Maternal morbidity	No difference betwe-en neonatal mortality and morbidity betwe-en the two groups. Fewer maternal com- plications. In the plan ned vaginal delivery group 70% of multi-parous and 85% of grand multiparas delivered vaginally compared with 50% of nulliparous
Goffinet et al (200102)[18], Paris, France	Observational prospective study	8105 women; singleton breech presentations in 138 French and 36 Belgian units	Fetal and neonatal mortality; severe neonatal morbidity	Of the 2526 women with planned vaginal deliveries , 71% delivered vaginally. No significant differe-nce in neonatal out-come measures between the delivery groups
Irion et al (1984-1996) [26], Geneva, Switzerland	Observational prospective study	705 consecutive singleton breech presentations:385 planned vaginal and 320 elective caesarean sections	Neonatal mortality and morbidity; maternal morbidity	No difference in neonatal morbidity between groups. Fewer maternal com-plications in the planned vaginal delivery group

Source: Review The case for and against vaginal breech delivery. The Obstetrician & Gynaecologist, 2008; 10:139-144

DISCUSSION

There is a continued disapproval of the TBT from all over the world. The allegations are: Poor antepartum and intrapartum fetal monitoring; the inclusion criteria were not followed to and a large group of women were recruited in labour.[20-22] Table II alludes to the results from planned VBD comparing with planned CS. The PREMODA study- group[18] published in 2006, this was a prospective study in 2001-02, recruiting just over 8000 women in maternity units in France and Belgium (138 French and 36 Belgian respectively) comparing vaginal delivery with elective caesarean section, whereby 71% achieved successful VBD with no significant differences in neonatal outcome measures between the delivery groups. This was primarily due to their strict selection criteria, antenatal radiological pelvimetry and their stringent management guidelines.

On a similar note (Table II), other authors have published studies showing comparable outcomes in smaller populations. In Dublin Alarab et al[23] published data on 641 deliveries (343 elective cesarean section deliveries and 298 trials of vaginal deliveries, of which 146 were successful), using strict selection criteria for allowing a trial of vaginal delivery. They reported only 2 neonates born vaginally with Apgar scores of 7 at 5 minutes (both were neurologically normal at 6 weeks) and no non-anomalous perinatal deaths. Doyle et al (2002-03),[24] from Texas, USA in a retrospective review of 150 singleton breech deliveries (41 were vaginal breech deliveries, 109 were caesarean sections) did not find any difference in neonatal outcomes. Kumari et al (1997-2000)[25] in Abu Dhabi, found no difference neonatal mortality or morbidity between multiparous (85%) and nulliparous (50%) women who delivered breeches vaginally. Goffinet et al[18] published in 2006 the PREMODA study which was a prospective observational multicenter study evaluating the safety of vaginal breech birth by strict criteria.

Irion et al in 1984-1996,[26] Geneva, Switzerland, in an observational prospective study-design of 705 consecutive singleton breech presentations compared 385 planned vaginal deliveries and 320 elective caesarean sections. There was no difference in corrected neonatal morbidity between groups. There were fewer maternal complications in the planned vaginal delivery group.

Additionally, data obtained, on the long-term sequelae of the neonates born by vaginal breech delivery was rebutted by the original authors of TBT, published a subgroup analysis in 2004.[27] This showed that the prevalence of death or abnormal neurodevelopment at 2 years did not differ between the vaginal and caesarean groups.

However, in contrast to these studies, several others[28-31] conducted retrospective studies not in favour of vaginal breech deliveries. For instance, a review of the Dutch perinatal database showed the rate of planned elective CS for term breech changed from 49% in the 33 months before the publication of TBT to 80% in 25 months thereafter.[28] This change led to a halving of the perinatal mortality rates, low APGAR scores and rates of birth trauma that declined three-quarters.[30] Neonatal mortality was even lower in data from California where planned CS rates were even higher at 95%, in a population of 100,000 term breeches.[29] In another population-based study, the Swedish Collaborative Breech Group[30] published findings of a national cohort study[31] of more than 22,000 breech deliveries. They found that perinatal or infant mortality of planned vaginal breech delivery was significantly higher than planned CSs.

In addition, the TBT had been subject to an economic evaluation.[32] The costs were lower in the planned elective CS group than the vaginal delivery group ($7165 verse $8042 (Canadian dollars). The high costs of vaginally delivered group were due to the hospital and physician costs as well as higher costs of epidural anaesthesia, the costs of neonatal intensive care for women and babies allocated to vaginal breech delivery.

Another inference of an "elective section caesarean for all" policy is the negative impact on training, thus reducing the number of doctors with the skills and experience required to deliver a breech vaginally and safely.

CONCLUSION

Although the multicenter TBT found an increased rate of perinatal mortality and serious immediate perinatal morbidity, however the long-term outcome of these neonates born by vaginal breech delivery is reassuring. Long term assessment (2 years) of composite morbidity/mortality showed no difference in outcome between infants delivered by planned CS or by VBD.[9]

There is a place for planned VBD. However, the prerequisites include: more robust and stringent selection criteria of cases, management guidelines, close intrapartum monitoring, family consent and availability of expertise in vaginal breech delivery. These requisites can be difficult to achieve in many clinical settings. If the amenities are adequate and the parturient is fully informed of the risks and benefits, this option should be offered. On the other hand, if the criteria cannot be met, it would be prudent to refer the parturient to a center that can meet them.

The concept of specialized centers (supra institutional centers) where safe planned VBD is offered has not evolved yet in Malaysia. On the other hand, simulation training with pelvic models and videos, in strictly selected cases trial of ECV, provision of standby teams of experienced physicians can be explored for safe planned VBD. Otherwise, obstetrical skills, expertise and experience vanishes thus resulting in the abandonment of vaginal breech deliveries altogether.

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