

# Why Vaginal Breech Delivery Should Still Be Offered

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Since the publication of the Term Breech Trial,<sup>1</sup> Caesarean section (CS) has become the *de facto* standard of care for delivery of the term breech fetus; however, obstetricians still need to know how to conduct an atraumatic breech delivery in situations where vaginal delivery is unavoidable. Some women will insist on a trial of labour and vaginal delivery. For those who do not, we need to consider whether the obstetrician should discuss the option of vaginal breech delivery. If the fetus is in a breech presentation and if there are none of the classic contraindications such as macrosomia, hyperextended head, or footling presentation, should the option of vaginal delivery be discussed, or should the obstetrician tell the woman that CS is unequivocally safer for the baby and carries no additional risk for her?

If an obstetrician continues to offer vaginal breech delivery, this activity is suspect and requires justification. Since the results from the Term Breech Trial are the basis for the possible abandoning of planned vaginal breech delivery, we must examine the evidence presented in that study, restricting the analysis to the countries with a low national perinatal mortality rate.

## Evidence from the Term Breech Trial

### A. Mortality

The report from the Term Breech Trial identified 511 planned vaginal breech deliveries in countries with a low national perinatal mortality rate, of which 228 (44.7%) delivered vaginally.<sup>1</sup> There were three stillbirths in this group, numbers 1, 2, and 3 in Table 4 of the *Lancet* article.

**Key Words:** breech presentation, Caesarean section, perinatal morbidity, perinatal mortality, symphysiotomy

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Dr Mary Hannah described to me the details of these stillbirths in a telephone conversation in the summer of 2001.

The first stillbirth occurred in a primigravid woman whose labour was induced at 41 weeks and 5 days of gestation. The woman spontaneously delivered the breech to the umbilicus but then could not push the baby out. The obstetrician apparently decided not to continue with the attempt at vaginal delivery, made no attempt at traction, and decided instead to perform a CS with the baby already delivered to the umbilicus. Interestingly, in 2005, in response to a critique of the method of vaginal breech delivery<sup>2</sup> advocated in the Term Breech Trial, it was stated that the “protocol . . . called for minimal intervention after spontaneous delivery to the umbilicus, with avoidance of even gentle traction to the fetal trunk.”<sup>3</sup> A similar argument was made in a 2003 review article: “Most authors now recommend no intervention until there has been spontaneous exit of the infant to the umbilicus and minimal assistance without traction thereafter.”<sup>4</sup> No traction after delivery to the umbilicus may be a laudable approach as a general rule, but to make no attempt at traction and instead proceed immediately to CS when there is arrest of descent at this stage is controversial. In Table 4, the stillbirth is described as arising from a “difficult attempt at vaginal delivery before Caesarean section”<sup>1</sup>; this does not reflect the actual circumstances of the case.

The second stillbirth in the report involved a woman who was admitted in labour, never having had an ultrasound examination during the pregnancy. The fundal height was assessed as being of term size and a breech presentation was found on pelvic examination. The woman delivered the baby, which was a small preterm macerated stillbirth (1150 g) presenting as a breech; a second twin was born alive after the vaginal breech delivery.

The third stillbirth involved a primigravid woman at 41 weeks’ gestation. Labour began spontaneously with the fetus in a frank breech presentation. Intermittent electronic fetal monitoring was used and there were no reported fetal heart rate abnormalities during the first stage of labour. The

patient pushed for 48 minutes in the second stage of labour. At about 20 minutes before delivery, the fetal heart tones could not be heard. The attendants appear to have been uncertain whether fetal heart activity was present, and appear to have felt that the woman would deliver faster vaginally than if she were transferred for CS. No attempt was made to carry out either direct fetal heart rate monitoring or ultrasound assessment. No attempt was made to perform total breech extraction, even though the attendants were not prepared to perform an emergency CS. The attendants allowed the woman to continue pushing in the second stage of labour, with no recording of fetal heart activity and without attempting breech extraction. The baby was stillborn.

The second stillbirth identified in this report occurred before enrolment, and in the other two stillbirths there were arguably errors in management. It is true that medical errors are part of clinical practice,<sup>5</sup> but it is hard to imagine a unit experienced in vaginal breech delivery allowing such errors to occur. Vaginal breech delivery is “a discriminating procedure” where “skill is required in multiple areas.”<sup>6</sup> It is certainly arguable whether the management described in these deaths represents the “best . . . chance [for vaginal breech delivery] to be proven a reasonable method of delivery.”<sup>1</sup>

## B. Morbidity

With respect to long-term outcome, the authors of the Term Breech Trial have provided follow-up of the babies born in participating centres that could trace more than 80% of the participating women.<sup>7</sup> At two years of life, there was no difference between the planned Caesarean group and the planned vaginal delivery group in incidence of death or neurodevelopmental delay. Of the 18 infants with serious neonatal morbidity who were followed up (4 in the planned Caesarean group, 14 in the planned vaginal delivery group), one death occurred because of complications from congenital subglottic stenosis, but the other 17 infants were normal. As the authors point out, most babies with serious neonatal morbidity who survive will subsequently develop normally. This is borne out in other studies of infants with low Apgar scores following breech delivery.<sup>8,9</sup> Other studies have shown no difference in the risk of severe handicap in babies born after elective CS and after planned vaginal delivery.<sup>10–15</sup>

## Non-Randomized Studies

In the last decade there have been 32 single centre reports<sup>16–47</sup> from countries with a low perinatal mortality rate, in which the number of intended and actual vaginal breech births is given, and where there is a description of the perinatal deaths (Table). Of 12 191 intended vaginal breech deliveries, 8252 (68%) actually delivered vaginally. There were 25 perinatal deaths, resulting in a perinatal

mortality rate of 2 per 1000 attempted vaginal deliveries and 3 per 1000 actual vaginal deliveries; there were also eight cases of cerebral palsy.<sup>16,18,35,45,46</sup> Some perinatal deaths were unrelated to labour and delivery, and others were as likely to have occurred during a normal vaginal delivery. The deaths following cord prolapse, second stage asphyxia, and stuck aftercoming parts ( $n = 13$ ) are more characteristic of vaginal breech births. How to reduce their numbers, without resorting to routine CS, will be discussed later.

It will be argued that a perinatal mortality rate of 2 or 3 per 1000 for intended vaginal breech birth is not representative of general experience, because individual centres with better outcomes are more likely to report their results. But the results are not so different in several national databases. In Sweden, between 1991 and 2001, the corrected perinatal mortality for breech deliveries at  $\geq 38$  weeks' gestation was 1 per 1000 for CS before labour and 2.8 per 1000 for vaginal delivery and CS during labour combined.<sup>48</sup> Again in Sweden, from 1987 to 1993, the infant death rate after elective CS was 1.5 per 1000 and after vaginal delivery and emergency CS combined was 2.5 per 1000.<sup>49</sup> In Norway, between 1981 and 1998, there were 25 perinatal deaths and approximately 10 000 vaginal deliveries out of approximately 27 000 singleton breech babies<sup>50</sup>; if all deaths had occurred in the vaginal delivery group, the perinatal mortality rate would be approximately 2.5 per 1000 in this group. In Denmark, from 1982 to 1992, the mortality rate associated with planned vaginal breech delivery was estimated to be between 1.4 and 2.1 per 1000.<sup>51</sup> In Finland, from 1987 to 1989, there was one death arising from 1270 planned vaginal breech births (and 1127 actual vaginal deliveries).<sup>52</sup> In the Netherlands, from 1995 to 1999, the perinatal mortality rate in the planned CS group was 1.5 per 1000, and in the planned vaginal delivery group it was 3.6 per 1000.<sup>53</sup> In France, in a large database for the years 1994 to 2000, there was one perinatal death among 1216 planned (and 787 actual) vaginal breech births.<sup>54</sup> In the three maternity hospitals in Dublin, from 1981 to 1990, 20 singleton babies died as a result of attempted vaginal breech delivery and, there were 4185 actual vaginal breech deliveries.<sup>55</sup>

It is probably fair to say that in individual centres and countries with high quality obstetric care, an attempt at vaginal breech delivery may cause death or permanent damage to three babies out of 1000. An elective CS may contribute to about one perinatal death per 1000, perhaps from persistent pulmonary hypertension. The absolute difference therefore is 2 per 1000. Certainly the claim by the authors of the Term Breech Trial report that, in countries with a low perinatal mortality rate, only seven additional Caesarean sections are needed to prevent one adverse outcome is not tenable. From the above calculations, the figure is more like 400.

## Deaths reported by countries with low national perinatal mortality rates

Author	Country	No. Vaginal Deliveries Intended Actual	Deaths	Circumstances	
Leiberman (1995) <sup>16</sup>	Israel	135	35	1	Unspecified, neonatal
Laros (1995) <sup>17</sup>	USA	143	53	0	
Koike (1996) <sup>18</sup>	Japan	410	298	3	Footling, cord prolapse Footling, fetal distress Cord prolapse before admission to hospital
Obwegeser (1996) <sup>19</sup>	Austria	280	223	0	
Schiff (1996) <sup>20</sup>	Israel	613	287	2	Pneumonia, died day 2 Difficult traumatic Caesarean for hyperextended head diagnosed intrapartum
van Loon (1997) <sup>21</sup>	Netherlands	217	126	0	
Krebs (1997) <sup>22</sup>	Denmark	149	63	0	
Albrechsten (1997) <sup>23</sup>	Norway	811	639	1	Epidural hematoma in baby with alloimmune thrombocytopenia
Koo (1998) <sup>24</sup>	Netherlands	234	170	1	Second stage asphyxia due to cord entanglement
Irion (1998) <sup>25</sup>	Switzerland	385	269	0	
Daniel (1998) <sup>26</sup>	Israel	283	226	0	
Krause (1998) <sup>27</sup>	Germany	740	479	1	Prelabour rupture of membranes at 38 weeks, Caesarean, 2630 g, death day 2 after convulsions with hypoglycemia, no autopsy
Dubois (1998) <sup>28</sup>	France	142	114	0	
Diro (1999) <sup>29</sup>	USA	191	135	2	Arrest of descent after delivery to the umbilicus, not resuscitable after Caesarean No prenatal care, admitted full dilatation, easy delivery, poor Apgars
Ismail (1999) <sup>30</sup>	USA	305	82	0	
Golfier (2001) <sup>31</sup>	France	414	342	2	Cord prolapse at onset of labour Second stage fetal distress, total extraction
Sanchez-Ramos (2001) <sup>32</sup>	USA	272	203	2	Neonatal pneumonia, died day 12 Neonatal sepsis, died within a week of birth
Reijners (2001) <sup>33</sup>	Netherlands	153	100	0	
Descargues (2001) <sup>34</sup>	France	146	97	0	
Herbst (2001) <sup>35</sup>	Sweden	699	603	2	Stuck head Premature rupture of membranes with cord prolapse
Brouwer (2001) <sup>36</sup>	Netherlands	448	331	1	Birth trauma
Giuliani (2002) <sup>37</sup>	Austria	481	342	0	
Kayem (2002) <sup>38</sup>	France	322	196	0	
de Leeuw (2002) <sup>39</sup>	Netherlands and Belgium	170	132	1	Prolapsed umbilical cord punctured by scalp electrode
Belfrage (2002) <sup>40</sup>	Norway	448	376	3	Planned vaginal delivery, admitted early labour, suspicious CTG, delivered by Caesarean within 1 hr Fetal asphyxia second stage Uncomplicated vaginal delivery, normal Apgars, developed severe respiratory distress with pulmonary bleeding
Lashen (2002) <sup>41</sup>	UK	490	252	0	
Hellsten (2003) <sup>42</sup>	Sweden	445	371	0	
Sibony (2003) <sup>43</sup>	France	514	407	0	
Alarab (2004) <sup>44</sup>	Ireland	298	146	0	
Uotila (2005) <sup>45</sup>	Finland	590	455	0	
Pradhan (2005) <sup>46</sup>	UK	881	416	3	First stage asphyxial signs ignored Birth trauma, difficult delivery, nuchal arms Massive abruption
Krupitz (2005) <sup>47</sup>	Austria	382	284	0	
Total		12 191	8252	25	

### Consequences of Routine CS for the Woman

A policy of routine elective CS for all term singleton breech presentations has its own problems for the mother. Even if one concedes that such a policy might be as safe for the mother as selected vaginal breech delivery,<sup>56</sup> a CS unquestionably increases the mother's risk in subsequent pregnancies. Recent data from the Netherlands indicate that for every infant saved as a result of delivery by CS, one woman will experience a ruptured uterus in a subsequent pregnancy.<sup>57</sup> Estimates from the Netherlands indicate that there have been 8500 more elective Caesarean sections performed there for term breech in the four years since the publication of the Term Breech Trial. This increase is thought to have prevented 19 babies from dying, but also to have resulted in four avoidable maternal deaths. As well, it is estimated that nine perinatal deaths will occur in the future as a result of the uterine scar, and that 140 women will experience potentially life-threatening complications.<sup>58</sup> If 400 extra Caesarean sections are performed to prevent one bad perinatal outcome, there will ultimately be maternal consequences.

### Can Vaginal Breech Birth Be Made Safer?

The argument is not that we should be resigned to the fact that vaginal breech delivery results in perinatal mortality; rather, the argument is that the risks to the baby of a properly conducted vaginal breech delivery are very close to that of a planned CS, and that routine CS is more dangerous for the mother. However, the rate of perinatal mortality associated with vaginal breech delivery can be reduced even further, without resorting to routine CS.

There are three aspects of vaginal breech delivery that make it more dangerous to the fetus than a normal cephalic delivery.

The first is the risk of cord prolapse before labour or during labour. If a woman is found to have a breech presentation near term, an ultrasound examination (preferably vaginal) can determine if there is a cord presentation. This examination can be repeated every few days until labour begins. If a cord presentation is seen at any time, this calls for performing CS before the onset of labour. Such an approach will reduce the chances of the woman arriving in labour with the cord already prolapsed. If she does arrive in labour and pelvic examination does not clearly rule out a cord presentation, a vaginal ultrasound can again identify a vulnerable cord.

The second risk is that of cord compression occurring during descent of the breech and pushing in the second stage. This is the part of labour that demands both continuous electronic fetal monitoring and the continuous presence of the obstetrician. During pushing in the second stage, an

anaesthesiologist should be at hand and all preparations made for immediate CS in the delivery room. If there are signs of severe cord compression and vaginal delivery is not imminent, the baby can be delivered in minutes, before severe asphyxia has occurred.

The third risk is that of trapped aftercoming arms or head. If a proper assessment is made before the second stage, this should rule out the presence of hydrocephalus, locked twins, and hyperextended head. Pushing should be avoided before complete cervical dilatation. If the head gets stuck despite a proper initial assessment and satisfactory progress of the first and second stages of labour it means that there is cephalopelvic disproportion, but almost certainly of a mild degree. This is the point at which a quickly performed symphysiotomy will be life-saving for the fetus.<sup>59</sup> Whenever a woman is pushing during a breech delivery, there should be a urethral catheter in place, the area of the mons and symphysis should be infiltrated with local anaesthetic, and the obstetrician should be ready with a scalpel to perform a symphysiotomy if the aftercoming head is trapped. In a recent report of 699 planned vaginal breech births, one baby was reported to have died after cord prolapse, another died when the aftercoming head was trapped, and three others developed cerebral palsy when the aftercoming head was trapped.<sup>35</sup> It can be argued that if the practitioners involved had been psychologically and physically prepared to perform a symphysiotomy, these outcomes might have been avoided. Although the procedure has its own associated maternal morbidities, performing one or two emergency symphysiotomies to prevent a bad fetal outcome is certainly less morbid for mothers than performing 400 elective Caesarean sections to prevent one bad fetal outcome.

### CONCLUSION

Performing vaginal breech delivery is still a reasonable choice. The risk to the baby of a properly planned and conducted vaginal breech delivery is very low, and the risk can be reduced even further by using vaginal ultrasound to rule out cord presentation, by paying assiduous attention to the fetal condition in the second stage of labour, and by willingness to proceed to symphysiotomy immediately should any difficulties arise from delivery of the aftercoming arms or head. Certainly, the option of vaginal breech delivery should be made available to women where appropriate; it should not be dismissed out of hand. It is not enough to present to the woman the short-term benefits of CS for the newborn. If the concept of informed consent means anything, we must make clear the great number of Caesarean sections needed to prevent a bad outcome, the absence of any long-term benefits for the baby,<sup>7</sup> and the higher long-term risks for the mother and her baby.

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