

Review The case for and against vaginal breech delivery

Authors Charlotte L Deans / Zoe Penn

Key content:

- Critics continue to raise doubts about the conclusions of the Term Breech Trial.
- Subsequent European population studies have also concluded that the breech neonate benefits from elective caesarean section.
- Smaller population studies demonstrate the success of vaginal delivery in selected populations.

Learning objectives:

- To be aware of criticisms of the Term Breech Trial and other literature that contradicts its findings.
- To understand the difficulties of selecting suitable women for trial of vaginal breech delivery.
- To be able to use current evidence when counselling women about their delivery options.

Ethical issues:

- How can the neonatal advantages of caesarean delivery be balanced with maternal morbidity and the potential for complications in future pregnancies?
- Should vaginal breech delivery still be considered a safe mode of delivery?

Keywords caesarean section / maternal morbidity / maternal mortality / perinatal morbidity / perinatal mortality

Please cite this article as: Deans CL, Penn Z. The case for and against vaginal breech delivery. *The Obstetrician & Gynaecologist* 2008;10:139–144.

Author details

Charlotte L Deans MRCOG
Maternal Medicine Clinical Research Fellow
Chelsea and Westminster Hospital NHS
Foundation Trust, 369 Fulham Road,
London SW10 9NH, UK

Zoe Penn MD FRCOG
Consultant Obstetrician
Chelsea and Westminster Hospital NHS
Foundation Trust, London, UK
Email: pennhughes@ntlworld.com
(corresponding author)

Introduction

The mode of delivery of the term breech is one of the few big questions in obstetrics that has been subject to the *force majeure* of the international obstetric community and to a major international randomised controlled trial with sufficient power to attempt to answer it. The 2000 Term Breech Trial (TBT)¹ demonstrated that planned caesarean section was safer: even its interim findings caused its data monitoring committee to terminate the trial prematurely because the results obtained had answered the research question before the proposed end of recruitment.

Why, then, in the wake of such seemingly convincing data, has the controversy raged on? There are continued criticisms of the Term Breech Trial and some authors have even called for the withdrawal of its recommendations. In this article we review the published data for and against vaginal breech delivery.

For vaginal breech delivery

See **Table 1**. Carefully selected populations of breech presentation at term have been reviewed to demonstrate that the results from planned vaginal breech delivery are comparable to planned caesarean section. The largest of these studies was by the PREMODA study group.² Published in 2006, this was a prospective study of just over 8000 women in maternity units in France and Belgium comparing vaginal delivery with elective caesarean section. The authors state that in France at the time of the study (2001–02), vaginal delivery of breech presentation was 'standard practice' and routinely offered to women who conformed to strict selection criteria

required by the Collège National des Gynécologues et Obstétriciens Français (CNGOF) guidelines (**Box 1**). Of the women who planned a vaginal delivery, 71% were successful and, apart from a 5-minute Apgar score <4, none of the severe adverse individual outcomes differed between the two groups. There was only one neonatal death of a nonmalformed infant and it was in the caesarean group. The authors comment on critical management differences between their population and those included in the Term Breech Trial. For example, the use of pelvimetry (82.4% in PREMODA versus 9.8% in the Term Breech Trial), fetal heart rate monitoring (100% versus 33.4%) and length of second stage >60 minutes (0.2% versus 5.0%). They acknowledge that there may be a slightly greater neonatal risk with vaginal delivery but that it is not as great as that concluded by the authors of the Term Breech Trial. Their improved outcome is attributed to their strict selection criteria and management guidelines, which aim to minimise this risk.

Other authors have also published studies showing comparable outcomes in smaller populations. Irion *et al.*³ in Switzerland compared 385 planned vaginal deliveries with 320 elective caesareans and found fewer maternal complications in the vaginal group and no difference in corrected neonatal morbidity.

In Dublin, Alarab *et al.*⁴ published data on 641 deliveries (343 elective caesarean deliveries and 298 trials of vaginal delivery, of which 146 were successful), again 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,

Table 1
Studies supporting vaginal delivery for breech presentation

Study	Study design	Study population	Outcome measures	Summary of findings
Alarab <i>et al.</i> (2004), ⁴ Dublin, Ireland	Retrospective review	All breech presentations >37 weeks; n=641; selection for vaginal delivery was based on clear prelabour 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% versus 63%, $P < 0.001$). Significantly more infants >3.8 kg were selected for prelabour and intrapartum caesarean section than delivered vaginally. No nonanomalous perinatal deaths
Doyle <i>et al.</i> (2002–03), ²⁸ Texas, USA	Retrospective review	All singleton breech deliveries; n=150	Obstetric and perinatal outcomes	41 vaginal breech deliveries, 109 caesarean sections. Mean birthweight was significantly lower and parity significantly higher in vaginal group. No differences in neonatal outcomes
Kumari <i>et al.</i> (1997–2000), ⁵ 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 mortality and morbidity; maternal morbidity	No difference in neonatal mortality and morbidity between the two groups. Fewer maternal complications in the planned vaginal group. In the planned vaginal delivery group 70% of multiparas and 85% of grand multiparas delivered vaginally compared with 50% of nulliparas
Goffinet <i>et al.</i> (2001–02), ² Paris, France	Observational prospective study	8105 women; singleton term 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 difference in neonatal outcome measures between the delivery groups
Irion <i>et al.</i> (1984–1996), ³ Geneva, Switzerland	Observational prospective study	705 consecutive singleton term breech presentations: 385 planned vaginal deliveries and 320 elective caesarean sections	Neonatal mortality and morbidity; maternal morbidity	No difference in neonatal morbidity between groups. Fewer maternal complications in the planned vaginal delivery group

or cases of significant trauma or neurological dysfunction, in either group. In this study significantly fewer nulliparous women in the planned vaginal group achieved vaginal delivery than multiparous women. This has also been noted in a study from Abu Dhabi,⁵ in which 85% of multiparous women delivered vaginally, compared with 50% of nulliparous women.

Available data on the long-term outcome of these neonates born by vaginal breech delivery is reassuring and comes from the Term Breech Trial authors, who published a subgroup analysis in 2004.⁶ This showed that the prevalence of death or abnormal neurodevelopment at 2 years did not differ between the vaginal and caesarean groups.

Hence, the published data does come from smaller populations than the Term Breech Trial but predominantly from developed countries where prelabour screening and counselling is, undoubtedly, more robust. Using these stringent selection criteria, authors have reported improved maternal outcomes and, in most studies, comparable neonatal outcomes. In some instances, a slightly poorer immediate neonatal outcome is reported, as measured by Apgar scores, but long-term data on these cases, although limited, appears to be reassuring.

Against vaginal breech delivery

See **Table 2**. The case for planned elective caesarean section for breech presentation at term has been powerfully reviewed by Burke⁷ and is advocated in the RCOG Green-top Guideline⁸ and the American College of Obstetricians and Gynecologists (ACOG) Committee on Obstetric Practice.⁹

The Term Breech Trial is the only randomised controlled trial available to compare the safety of planned caesarean section with planned vaginal delivery for term frank and complete singleton breech presentations. Two thousand and eighty-eight women were recruited from 121 centres in 26 countries. Its conclusions, which halted the trial prematurely in 1999 (because it would have been unethical to continue), were that the combined outcome of perinatal and neonatal death and serious neonatal morbidity, excluding lethal congenital anomalies, was significantly lower in the planned caesarean section group than in the planned vaginal delivery group (1.6% versus 5.0%, relative risk [RR] 0.33) and that there were no statistically significant differences between the groups in terms of maternal mortality or serious morbidity.

Further subanalyses of the Term Breech Trial showed that, after a further series of exclusions (deliveries after prolonged labour, labours induced or augmented with oxytocin or prostaglandins,

- Normal pelvimetry
- No hyperextension of fetal head (checked with ultrasonography)
- Fetal weight estimated between 2500–3800 g (with clinical and ultrasound examinations)
- Frank breech
- Continuous electronic fetal heart rate monitoring for fetal surveillance during labour
- Informed consent from the woman

Box 1
Items recommended by the CNGOF as a basis for deciding mode of delivery²⁷

cases with an uncertain or footling presentation at delivery, or cases where there was no skilled or experienced clinician present at the birth), the combined outcomes for perinatal mortality, neonatal mortality or serious neonatal morbidity with planned caesarean section, rather than planned vaginal breech delivery, was 16/1006 (1.6%) compared with 23/704 (3.35%) (RR 0.49; CI 0.26–0.91; $P=0.02$). If the results are further subdivided into those obtained in countries with low perinatal mortality (<20/1000) and those with higher perinatal mortality (>20/1000) the results show that the benefits of planned caesarean section were even more significant in countries with lower perinatal mortality.

Subsequent to the publication of the Term Breech Trial, there have been a number of published accounts of the effect of planned elective caesarean section for term breech presentation on whole populations. A review of the Dutch perinatal database showed that the rate of planned elective caesarean section for term breech changed from 49% in the 33 months prior to the publication of the Term Breech Trial to 80% in the 25 months afterwards.¹⁰ The analysis included more than 33 000 infants. This change led to a halving of the perinatal mortality rates and rates of low Apgar scores, as well as the rates of birth trauma, which fell by three-quarters. The authors suggest that this equates to more than 60 Dutch children who are alive today who might not have been prior to the Term Breech Trial. Published rates of neonatal mortality are even lower in data from California, where the planned caesarean section rates were even higher, at 95%, in a population of more than 100 000 term breeches.¹¹ They found that the risk of neonatal mortality in planned caesarean section compared with vaginal breech delivery was substantially decreased (odds ratio [OR] 9.2). In this study even the highly selected 5% of multiparae who delivered vaginally had higher rates of neonatal trauma and asphyxia but not neonatal death. These findings are replicated in other population-based studies from Denmark and Sweden including some 50 000 women.^{12,13} In 2005, the Swedish Collaborative Breech Group published findings of a national cohort study¹² of more than 22 000 breech deliveries. They found that perinatal or infant mortality at planned vaginal breech delivery was significantly higher than at planned caesarean section (OR 3.5). The

Table 2
Studies supporting caesarean section for breech presentation

Study	Study design	Study population	Outcome measures	Summary of findings
Hannah <i>et al.</i> ⁷ (Term Breech Trial, 2000)	Randomised controlled trial	2083 women in 26 countries	Perinatal and neonatal mortality or serious neonatal morbidity; maternal mortality or serious maternal morbidity	Perinatal and neonatal mortality or serious neonatal morbidity were significantly lower for the planned caesarean section group than for the planned vaginal birth group (17/1039 [1.6%] versus 52/1039 [5.0%]; relative risk [RR] 0.33 [95% CI 0.19–0.56]; $P < 0.0001$). There were no differences between groups in terms of maternal mortality or serious maternal morbidity (41/1041 [3.9%] versus 33/1042 [3.2%]; RR 1.24 [95% CI 0.79–1.95]; $P=0.35$)
Rietberg <i>et al.</i> ¹⁰ Dutch perinatal database, infants born between 1998–2002	Retrospective observational study of infants born in the 33 months prior to publication of the Term Breech Trial, compared to those born in the 25 months thereafter	35 453 term breech infants	Incidence of emergency and planned caesarean section; vaginal breech delivery; perinatal death; 5-minute Apgar score; birth trauma	Increase in caesarean rate from 50% to 80%. Decrease in perinatal mortality rate from 0.35% to 0.18%. Decrease in 5-minute Apgar <7 from 2.4% to 1.1%. Decrease in birth trauma
Krebs <i>et al.</i> ¹⁵ Danish medical birth register, deliveries between 1982–1995	Retrospective, population-based cohort study	15 441 primigravidae delivering a singleton breech at term	Maternal postnatal complications	Elective versus emergency caesarean section was associated with lower rates of puerperal fever and pelvic infection (RR 0.81; CI 0.70–0.92), haemorrhage and anaemia (RR 0.91; CI 0.84–0.97). Elective caesarean section associated with higher rate of puerperal fever and pelvic infection compared with vaginal delivery (RR 1.20; CI 1.11–1.25)
Gilbert <i>et al.</i> ¹¹ California, USA, deliveries between 1991–99	Retrospective, population-based cohort study	Term deliveries: 100 730 breech, 3 271 092 cephalic presentations	Neonatal mortality and morbidity; nulliparous compared to multiparous women	Vaginal breech delivery compared to prelabour caesarean section, 1) in nulliparous women was associated with increased neonatal mortality (odds ratio [OR] 9.2; CI 3.3–25.6) and morbidity (asphyxia: OR 5.7, CI 4.5–7.3; brachial plexus injury: OR 33.9, CI 15.2–76.1; birth trauma: OR 5.8, CI 4.7–7.1) 2) in multiparous women, neonatal mortality was not different. Morbidities remained increased (asphyxia: OR 3.9, CI 3.0–5.1; brachial plexus injury: OR 22.4, CI 9.9–50.5; birth trauma: OR 4.2, CI 3.4–5.3)
Herbst <i>et al.</i> ¹² Sweden, deliveries between 1991–2001	Study A: retrospective national cohort study Study B: case controlled study	A: 22 549 breech and 875 249 cephalic presentations B: 164 breech deliveries with perinatal or 1-year infant death and controls	Perinatal and infant mortality	Study A: in nonmalformed babies, the total mortality rate was 0.46% in breech and 0.28% in cephalic. Infant mortality was higher in vaginal birth than in delivery by prelabour caesarean section (OR 2.5, CI 1.2–5.3) Study B: in nonmalformed babies, the OR for perinatal or infant death was 3.7 (CI 1.6–9.2) at planned vaginal delivery, compared with planned caesarean section (excluding undiagnosed breeches)

authors further estimate that 400 caesarean sections would need to be performed to prevent the death of one baby. The Danish Medical Birth Registry¹³ reviewed 15 441 primiparous women who delivered a singleton infant as a breech between 1982–95 and found that 48.6% delivered by elective caesarean section, 15.3% vaginally and 36.1% by emergency caesarean section. Their findings of reduced rates of intrapartum and neonatal death in infants further corroborate the contention that prelabour planned caesarean section is the safest option for the neonate.

There have been four large retrospective population based datasets, published since the publication of the Term Breech Trial, comprising more than 170 000 breech deliveries. All have concluded that elective caesarean section is safer for term breech babies and that it leads to lower rates of neonatal morbidity and mortality.

A further systematic review of three trials with 2396 participants (Hofmeyr and Hannah, 2003)¹⁴ showed that caesarean delivery occurred in 1060/1169 (91%) of those allocated to caesarean

section and 550/1227 (45%) of those allocated to vaginal delivery. Perinatal or neonatal death (excluding fatal anomalies) or short-term neonatal morbidity was reduced with a policy of planned caesarean section (RR 0.33; 95% CI 0.19–0.56).

The Term Breech Trial has also been subject to an economic evaluation,¹⁵ which has demonstrated that the costs were lower in the group allocated to planned caesarean section than in the group allocated to vaginal delivery (\$7165 versus \$8042 [Canadian \$]). These costs are primarily related to the hospital and physician costs for vaginal breech delivery, as well as the higher cost of epidural anaesthesia and the costs of neonatal intermediate and intensive care for women and babies allocated to vaginal breech delivery.

Discussion

There has been continued criticism of the Term Breech Trial from around the world. These criticisms have included allegations that:

- the standard of care was not consistent, including poor antepartum and intrapartum fetal assessment

- the inclusion criteria were not adhered to
- a large number of women were recruited in labour.^{16–18}

Many of these criticisms are based upon a fundamental misunderstanding of the principles of randomised controlled trials or have been effectively rebutted by a series of secondary analyses by the original authors of the Term Breech Trial.¹⁹ Claims have been made that many women who delivered vaginally were not attended by an obstetrician, whereas only one woman delivered by planned elective caesarean section was not attended by an obstetrician. No matter that the women were delivered by practitioners who considered themselves to be, and were certified by their head of institution as being, competent and experienced at vaginal breech delivery. The multicentre randomised controlled trial is designed to produce generalisable results that are useful to *all* practitioners, rather than results from one practitioner or a small group of practitioners or a single group or grade of practitioners, which tell us more about their skills than the inherent risks of delivery.

The subsequent publication of four large European population studies all showing an improved neonatal outcome after elective caesarean support the Term Breech Trial findings, so these criticisms may have been justified but cannot detract from the overall conclusions of the study.

So what about the increased number of caesarean sections we are to perform and the future implications for mother and baby? Recent data from the 1997–1999 Confidential Enquiry into Maternal and Child Health²⁰ confirm the relative safety of elective caesarean section: one maternal death in 78 000 elective caesarean sections was reported. A previous analysis by Hall²¹ described rates of death per million maternities of 20.6 following vaginal delivery, compared with 58.5 after elective caesarean section and 182.0 following emergency caesarean section. The Danish study¹³ of over 15 000 primiparous women with breech presentation at term described rates of maternal mortality and morbidity as well as long-term follow-up data on urinary and anal problems, fecundity and obstetric complications in subsequent pregnancies. The majority of maternal deaths in this series were unrelated to pregnancy and the incidence of haemorrhage and anaemia did not differ in the two groups. Emergency caesarean section increased the risk of pelvic infection and puerperal fever. In the long term, vaginal delivery increased the risk of urinary incontinence between 3–6 times but the rate of continence procedures was equal in all groups. Elective caesarean section was not associated with subsequent ectopic pregnancy, miscarriage or placental complications. Uterine rupture occurred in 1 in 1000 women who had had a previous

caesarean section, which is lower than in other studies. The authors, therefore, concluded that elective caesarean section has a low risk of maternal complications. The study by McAuliffe²² ($n=1600$) comparing elective caesarean section to planned vaginal delivery replicated these findings and found that the rates of stress and depression were similar.

If we can accept that the overall safety of elective caesarean section is not in question, perhaps subsequent repeat caesarean section, with its known associations with placenta praevia and accreta, should be weighed in the balance. Haemorrhage associated with placenta praevia and accreta can be catastrophic, with serious maternal and neonatal complications.²³ In their review of the Dutch perinatal database, Reitberg *et al.*¹⁰ showed that 175 caesarean sections would be needed to avoid one fetal death associated with vaginal breech delivery. They assumed that 50% of the women who had had a caesarean section would attempt a vaginal birth after caesarean section (VBAC) and calculated that, for every 12 babies saved by elective caesarean section in the index pregnancy, one would die from uterine scar rupture in a subsequent pregnancy. Voerhoven *et al.*²⁴ calculated that the increasing caesarean section rate in the Netherlands had already resulted in 4 potentially avoidable maternal deaths, that in the future a further 9 perinatal deaths will occur as a result of uterine scar rupture and that 140 women will experience life threatening complications related to the initial uterine surgery.

Coughlan *et al.*²⁵ reported that in a retrospective cohort of 194 women who had undergone elective caesarean section for breech presentation, one in 10 had a chance of having a repeat section in the next pregnancy but of those who were suitable for a VBAC, 84% were successful. The success rate of VBAC was greater in those women who had had a previous breech presentation than in women who had had a caesarean section with a cephalic presentation in their first pregnancy.

Perhaps the obstetric community needs to wait for the longer term follow-up of women and their babies enrolled in the Term Breech Trial and observe the ‘downstream’ effects on whole populations of the wholesale movement to planned caesarean section for this indication before this issue can be regarded as settled. The excellent birth registry data from Sweden, Denmark and the Netherlands may yet demonstrate the significant increase in placenta praevia and accreta and the consequently raised perinatal and maternal mortality and morbidity that it is claimed will ensue.

Another implication of an ‘elective caesarean for all’ policy is the negative impact on training, further reducing the number of practitioners with the skills and experience necessary to deliver a breech vaginally, safely. Even with such a policy, however,

undiagnosed breeches will still occur, some women will choose a vaginal birth and even some of those with a caesarean date booked will arrive on the labour ward in established labour. Draycott *et al.*²⁶ demonstrated that obstetric emergency training can improve neonatal outcome in a cephalic term population, so regular training programmes would need to be introduced, otherwise vaginal breech delivery may become an ancient art.

So, with the future of increasing caesareans and VBACs uncertain, can a policy of careful antenatal selection be safe and reliable enough to predict those women most likely to achieve a vaginal birth? The antepartum identification of the large-for-dates fetus, as well as the accurate diagnosis of congenital abnormality, remain problematic, even in developed countries. Any practitioner claiming that vaginal breech delivery is safe in carefully selected individuals will have to contend with the fact that there will be a number of incorrectly allocated individuals delivered vaginally because of the limitations of current antepartum surveillance. Although the PREMODA study attributed some of their improved outcomes to the use of antenatal pelvimetry, convincing evidence supporting this as a reliable screening test has not been published.

So what is left for the thoughtful obstetrician, keen to defend the safety of vaginal breech delivery? Only the consideration of the long-term or 'downstream' effects of planned caesarean section. Although we know that short-term maternal mortality and morbidity is not increased by a policy of planned caesarean section for breech presentation at term, we can now speculate about the long-term effects of repeated caesarean section or the effects of VBAC on maternal health and on other neonates born after the index pregnancy. It is possible that obstetricians need to synthesise these data thoughtfully to produce advice more tailored to a woman's individual circumstances. The woman who is only planning one or two births may opt for one or two caesarean sections, if that is her wish, with reasonable confidence that this will be acceptably safe for her and her index pregnancy, as well as the pregnancy that follows. If, on the other hand, the woman and her partner wish to have more than two children, the threshold for advising caesarean section in the index pregnancy or VBAC in subsequent pregnancies would change.

Finally, pregnancy, labour and delivery remain not just medical matters but matters of great cultural and psychological significance; it is inevitable, and even desirable, that this be taken into account. It is also likely that the psychological and cultural feelings of the obstetric community come into play when this question is considered; this has led to the unexpectedly long, slow and hard-fought death of the planned vaginal breech delivery in most developed countries in the world.

References

- Hannah ME, Hannah WJ, Hewson SA, Hodnett ED, Saigal S, Willan AR. Planned caesarean section versus planned vaginal birth for breech presentation at term: a randomised multicentre trial. *Lancet* 2000;**356**:1375–83. doi:10.1016/S0140-6736(00)02840-3
- Goffinet F, Carayol M, Foidart JM, Alexander S, Uzan S, Subtil D, *et al.*: PREMODA Study Group. Is planned vaginal delivery for breech presentation at term still an option? Results of an observational prospective survey in France and Belgium. *Am J Obstet Gynecol* 2006;**194**:1002–11. doi:10.1016/j.ajog.2005.10.817
- Irion O, Hirsbrunner Almagbaly P, Morabia A. Planned vaginal delivery versus elective caesarean section: a study of 705 singleton term breech presentations. *Br J Obstet Gynaecol* 1998;**105**:710–7. doi:10.1111/j.1471-0528.1998.tb10200.x
- Alarab M, Regan C, O'Connell M, Keane DP, O'Herlihy C, Foley ME. Singleton vaginal breech delivery at term: still a safe option. *Obstet Gynecol* 2004;**103**:407–12.
- Kumari AS, Grundsell H. Mode of delivery for breech presentation in grandmultiparous women. *Int J Gynaecol Obstet* 2004;**85**:234–9. doi:10.1016/j.ijgo.2003.11.017
- Whyte H, Hannah ME, Saigal S, Hannah WJ, Hewson S, Amankwah K, *et al.* Outcomes of children at 2 years after planned caesarean birth versus planned vaginal birth for breech presentation at term: the International Randomized Term Breech Trial. *Am J Obstet Gynecol* 2004;**191**:864–71. doi:10.1016/j.ajog.2004.06.056
- Burke G. The end of vaginal breech delivery. *BJOG* 2006;**113**:969–72. doi:10.1111/j.1471-0528.2006.00997.x
- Royal College of Obstetricians and Gynaecologists. *The Management of Breech Presentation. Green-top Guideline No. 20b*. London: RCOG; 2006 [www.rcog.org.uk/index.asp?PageID=1812].
- ACOG Committee on Obstetric Practice. ACOG Committee Opinion No. 340. Mode of term singleton breech delivery. *Obstet Gynecol* 2006;**108**:235–7.
- Rietberg CC, Eflerink-Stinkens PM, Visser GH. The effect of the Term Breech Trial on medical intervention behaviour and neonatal outcome in The Netherlands: an analysis of 35 453 term breech infants. *BJOG* 2005;**112**:205–9. doi:10.1111/j.1471-0528.2004.00317.x
- Gilbert W, Hicks SM, Boe NM, Danielsen B. Vaginal versus caesarean delivery for breech presentation in California: a population-based study. *Obstet Gynecol* 2003;**102**:911–17. doi:10.1016/S0029-7844(03)00809-3
- Collaborative Breech Study Group. Term breech delivery in Sweden: mortality relative to fetal presentation and planned mode of delivery. *Acta Obstet Gynecol Scand* 2005;**84**:593–601. doi:10.1111/j.0001-6349.2005.00852.x
- Krebs L, Langhoff-Roos J. Elective cesarean delivery for term breech. *Obstet Gynecol* 2003;**101**:690–6. doi:10.1016/S0029-7844(02)03073-9
- Hofmeyr GJ, Hannah ME. Planned caesarean section for term breech delivery. *Cochrane Database Syst Rev* 2003;**(3)**:CD000166.
- Palencia R, Gafni A, Hannah ME, Ross S, Willan AR, Hewson S, *et al.* The costs of planned caesarean versus planned vaginal birth in the Term Breech Trial. *CMAJ* 2006;**174**:1109–13. doi:10.1503/cmaj.050796
- Keirse MJ. Evidence-based childbirth only for breech babies? *Birth* 2002;**29**:55–9. doi:10.1046/j.1523-536X.2002.00157.x
- Glezerman M. Five years to the term breech trial: the rise and fall of a randomized controlled trial. *Am J Obstet Gynecol* 2006;**194**:20–5. doi:10.1016/j.ajog.2005.08.039
- Premru-Srsen T. Term breech trial. *Lancet* 2001;**357**:225–6. doi:10.1016/S0140-6736(05)71319-2
- Hannah ME, Hannah WJ, Hodnett ED, Chalmers B, Kung R, Willan A, *et al.* Outcomes at 3 months after planned caesarean vs planned vaginal delivery for breech presentation at term: the international randomized Term Breech Trial. *JAMA* 2002;**287**:1822–31. doi:10.1001/jama.287.14.1822
- Lewis G, Drife J. *Why Mothers Die 1997–1999. The Confidential Enquiries into Maternal Deaths in the UK*. London: RCOG Press; 2001.
- Hall MH, Bewley S. Maternal mortality and mode of delivery. *Lancet* 1999;**354**:776. doi:10.1016/S0140-6736(05)76016-5
- McAuliffe FM, Donnelly V, O'Connor B, Collins C, Keane D, Daly S, *et al.* Comparison of morbidity in planned caesarean vs. planned vaginal birth at term: 12 month follow up. *Am J Obstet Gynecol* 2004;**191** (Suppl 189):S67. doi:10.1016/j.ajog.2004.10.580
- Gillam M, Rosenberg D, Davis F. The likelihood of placenta praevia with greater number of caesarean deliveries and higher parity. *Obstet Gynecol* 2002;**99**:976–80. doi:10.1016/S0029-7844(02)02002-1
- Verhoeven AT, de Leeuw JP, Bruinse HW. Breech presentation at term: elective caesarean section is the wrong choice as a standard treatment because of too high risks for the mother and her future children. [Article in Dutch.] *Ned Tijdschr Geneesk* 2005;**149**:2207–10.
- Coughlan C, Kearney R, Turner MJ. What are the implications for the next delivery in primigravidae who have an elective caesarean section for breech presentation? *BJOG* 2002;**109**:624–6. doi:10.1111/j.1471-0528.2002.01365.x
- Draycott T, Sibanda T, Owen L, Akande V, Winter C, Reading S, Whitelaw A. Does training in obstetric emergencies improve neonatal outcome? *BJOG* 2006;**113**:177–82. doi:10.1111/j.1471-0528.2006.00800.x
- Collège National des Gynécologues et Obstétriciens Français [www.cngof.asso.fr].
- Doyle NM, Riggs JW, Ramin SM, Sosa MA, Gilstrap LC 3rd. Outcomes of term vaginal breech delivery. *Am J Perinatol* 2005;**22**:325–8.