**Rethinking the Term Breech Trial- A story of obsolete obstetrics**

**Abstract**

It is accepted wisdom in obstetrics that vaginal breech deliveries (VBD) are rarely performed in the United States due to the publication of the Term Breech Trial (TBT) in 2000, a large-scale randomized clinical study, concluded in favor of cesarean section (CS) and followed by a world-wide restriction of VBDs. However, historical analysis of the literature on breech delivery management prior to the TBT reveals that while it was a significant milestone, it was not the cause for VBD's under-practicing. Since the 1950s, vaginal breech deliveries have been regarded as hazardous and subjected to strict oversight and various restrictions (and, sometimes, prohibited outright); as a result, fewer clinicians have the skills needed to perform the procedure. This deterioration in clinical skills served to further exacerbate concerns about CSs' efficacy and safety. When the TBT concluded that cesarean section is safer than vaginal breech delivery, it came as a relief to many physicians who got the authoritative approval they sought to act for years. That explains TBT's influence on obstetrics until today.

**Introduction**

Ask an obstetrician why one almost never sees a breech delivery in the United States these days, and she will probably tell you about the “Term Breech Trial,” or TBT. This 2000 study, performed by a Canadian team headed by Mary and Walter Hannah, set out to determine which was safer, cesarean section or vaginal breech deliveries. The study was well-funded[[1]](#footnote-1) and big, with 2,088 births in 121 medical centers in 26 countries. It was a randomized control trial, highly-ranked as evidence-based medicine. The study was stopped midway, after its interim results favored cesarean section so strongly that it was no longer deemed ethical to assign any women to vaginal breech delivery. These results were published in *the Lancet* (Hannah et al. 2000), widely discussed, and almost universally seen as decisive. Within months, its findings were endorsed by all prominent obstetrics societies[[2]](#footnote-2). The ACOG issued a statement to the effect that: “As a result of the findings of the study, planned vaginal delivery of a term singleton breech may no longer be appropriate.” (Committee on Obstetric Practice 2001, 1190).

*The Lancet* article became the most cited[[3]](#footnote-3) publication in obstetrics (although it had many critics[[4]](#footnote-4) and, in time, obstetric societies partially withdrew their endorsements of its recommendations).[[5]](#footnote-5) After all this, it became accepted wisdom that it was the Term Breech Trial that put an end to the practice of vaginal breech delivery (For example: Gray and Shanahan 2020; Cunningham et al. 2018; ACOG 2018; Dhingra and Raffi 2010; Glezerman 2012; Lawson 2012). But matters were more complicated than this accepted wisdom allows. The Term Breech Trial was an important milestone, and its immediate influence in the field was significant. Nevertheless, it was also a culmination of decades of developments, without which the 2000 study itself would probably never have been undertaken and, even if it were, probably would not have had the influence that it did.

 To explain the overwhelming and swift impact the TBT had on obstetrics practice, this study traces back the evolution of the debate over the proper management of breech delivery[[6]](#footnote-6). Analysis of this literature in its historical, technological, and clinical context[[7]](#footnote-7) reveals several mechanisms which, in practice, enabled an on-going decay in the skills and knowledge required to deliver a breech baby vaginally. These processes, which began in the mid-twentieth century, by the 1990s had advanced to the degree that there was a need for a massive study like the TBT. These same processes also account for the great and immediate impact of the TBT, including the near elimination of VBDs.

As further described in this paper, the onset of decay in VBD skills and knowledge is bound with their establishment as hazardous in the 1950s and 1960s, in parallel with introducing CSs as a new standard of care in obstetrics (See Part 1). As a result, during the 1970s, several restrictions were suggested to reduce the morbidity and mortality associated with breech presentation. Protocols developed in these years sought to *narrow* conditions that allowed a vaginal birth, *tighten their supervision*, and *prevent this presentation* by promoting External Cephalic Versions (ECV). At the same time, CSs were widely liberalized and integrated as standard clinical practice in breech presentation. By the end of the 1970s, these protocols had helped establish a clinical environment in which most obstetrics wards in North America had abandoned VBD, and the related techniques were largely forgotten over time by the following generations, becoming the provenance of relatively few “old-school” specialists (See Part 2). The “controversy” over the management of breech presentation, which the TBT was intended to settle, did not emerge until the 1980s (See Part 3) after prominent health organizations voiced concerns over the increasing prevalence of CS and its potential repercussions. Thus, a gap arose between growing doubts in the literature over CSs’ efficacy and safety and clinical reality in which VBDs were almost nonexistent in North Americas' wards. Most obstetricians refrained from performing them as they did not have the skills or the will to do so, or because they were scared of being sued should a vaginal delivery produce a "non-perfect" result. The TBT initiative was perceived as the “final chance” to resolve this growing tension in obstetrics before VBDs entirely disappeared, and Its decisive conclusions in favor of elective CS for all term breech babies came as a relief to many. They added an institutionalized "stamp-of-approval" to the already established norm of treatment in breech births, in which VBDs were disattended from.

**PART 1**

**Establishing the Hazard Notion of Breech Delivery in the 1950s–1960s**

One of the first notable landmarks in modern medical-scientific discourse on the management of breech births was the American obstetrician Ralph C. Wright’s call to perform elective CSs in all breech presentations at term (Wright, 1959).[[8]](#footnote-8) At that time, cesarean sections were still relatively rare and Wright’s[[9]](#footnote-9) recommendation was perceived as trailblazing, even radical. However, as detailed below, it reflected several prevailing processes occurring in obstetrics at that time, including implementing a more scientific and interventional approach to childbirth, prioritizing the reduction of infant mortality rates, and promoting CSs as safe, promising and popular procedures.

IMR Reduction and a New Generation in Obstetrics

Wright belonged to a new generation of obstetricians who touted a more scientific, interventional approach to childbirth. As many obstetricians shifted to working in hospitals as the fields of obstetrics and gynecology became unified in the 1930s, and as home births shifted to hospitalized births, conditions were ideal for the systematic measurement of pregnancy, fetal and childbirth metrics. The concentration of births in a single location, the ability to monitor delivery conditions, and greater access to technology all helped to advance more systematic knowledge about pregnancy and childbirth, and led to the development of modern metrics, technologies, and standards in diagnostics and obstetrics.

Concomitantly, in the field of modern obstetrics, there was increasing agreement that childbirth was a high-risk event requiring active intervention. One factor contributing to this viewpoint was the concerted effort in the 1950s to reduce infant mortality rates (IMR) among children under one-year-old, most of whom were dying of childbirth complications (NIH, 1980b).[[10]](#footnote-10) Thus, many resources were invested in improving labor outcomes by opening infant intensive care units, as well as improving maternal and fetal medicine and neonatology. Documentation of the causes of mortality and morbidity (M&M) in childbirth became one of obstetrics’ primary goals (Williams and Eastman 1956, 2) and spurred extensive research on the topic (Kauppila 1975; Thompson 1960).[[11]](#footnote-11) In this context, a more interventionist approach began to evolve, which was reflected in, inter alia, an increasing number of CSs (NIH 1980a).

CS was not a new procedure, but, having been considered “more risk than remedy” until the latter half of the 20th century (Wolf 2018, 76), had rarely been performed. From the mid-1940s, with the increased use of penicillin, improvements in blood transfusions and hospitalization quality, alongside advances in diagnostic technology (such as x-ray pelvimetry), CSs began to be performed somewhat more frequently. As more obstetricians gained surgical experience, they acquired greater skills and knowledge performing CSs, trained medical staff and improved surgical conditions (Harris and Nessim 1959). Moreover, empirical findings in the 1950s linked more liberal attitudes toward performing CSs with lower IMRs in the United States, which helped alleviate lingering doubts about the procedure. Obstetricians began to perceive CSs as “the greatest good of the entire group,” meaning the society (Editor’s note, in Harris and Nessim 1959, 358). Developments in the 1950s, including the collection of data regarding childbirth, a growing acknowledgement that childbirth was a high-risk event, the increasingly interventionist approach to childbirth, and the promotion of CS as a new, safe, and modern standard-of-care for deliveries throughout the 1950s, created an environment in which the efficacy of breech deliveries began to attract the attention of researchers in the field.

**Liberalization of CS and the Establishment of the Breech Delivery Hazard as Scientific Fact**

Breech presentation had always been considered an abnormal presentation that required knowledge of physical maneuvers and instruments (such as forceps) and was associated with high M&M rates, partly due to its prevalence among preterm deliveries (Cunningham et al. 2018). As part of the efforts to lower IMR in the United States, a wave of research was conducted in the 1950s that sought to examine empirically whether breech deliveries posed a higher risk than cephalic (normal) deliveries[[12]](#footnote-12) (Calkins 1955; Hall and Kohl 1956). Simultaneously, “to do or not to do a cesarean section [in breech]” became a central question in obstetrics (Harris and Nessim 1956, 356). Several studies conducted empirical comparisons of infant M&M in CSs and VBDs, resulted in better outcomes with CSs (Goethals 1956; Hall and Kohl 1956; Harris and Nessim 1956; Wilcox 1949).

Inspired by these studies, in 1959, Ralph C. Wright sought to establish[[13]](#footnote-13) a new approach to breech deliveries, acknowledging them as pathological events posing unpredictable intrinsic risks that lacked effective responses or treatments. Recognizing CS as the safest alternative, he advocated liberalizing CSs for breech births:

If cesarean section in breech presentation is *safer* for the baby of a 35-year-old primigravida, is it not also *safer* for the baby of a 21-year-old primigravida? If cesarean section is *safer* for the baby whose mother had a previous still-birth, is it not also *safer* for the baby of a multiparous patient with normal obstetric history? (Wright 1959, 761).[[14]](#footnote-14)

Wright’s pronouncement was the first to promote a treatment policy in which all breech presentations at term would be delivered by ECS (Wright 1959), and it garnered a great deal of attention in the obstetrics community, as many obstetricians (for example, Johnson 1970; MacArthur 1964; Varner 1962)[[15]](#footnote-15) considered Wright’s approach rather radical. CS was still viewed as risky for mothers (Wright 1959), who, it was feared, could become “obstetrical cripples” (Ed. note in Harris and Nessim 1956, 359), fated to repeat surgeries in future deliveries. Even the most ardent supporters of liberalization of CSs in breech presentations[[16]](#footnote-16) recognized that imposing a blanket policy of ECS for breech presentations was a complex mission that would require extensive resources (for example, appropriately equipped operating rooms, anesthesia, nursing staff, and more), which were rather limited at the time (Grant, discussion in MacArthur 1964; Godard, discussion in Patterson et al. 1967).

In the 1960s, as CSs continued to be liberalized, concern grew over declining expertise among obstetricians in breech maneuvers and turning obstetricians into “midwife or surgeon”, (Wulff, discussion in Patterson et al. 1967, 409), and some argued for the investment of more efforts in improving VBD results rather than comprehensive adoption of CS (Grant, discussion in Macarthur 1964). Despite criticism, in the 15 years following Wright’s call to liberalize CS, the abdominal route gained increasing popularity in breech deliveries (Smale, Guico, and Ensminger 1976; Benson, Boyce, and Vaughn 1972); in several medical centers, ECS adopted as the protocol for breech babies (Gibbs, discussion in Patterson et al. 1967).

Simultaneously, Wright’s statement expanded the scope of discourse and sparked further research into the risks associated with breech deliveries. Inspired by Wright’s work, obstetricians set out “to study the intrinsic risk of breech delivery” ( Potter, Heaton, and Douglas 1960, 158; see also Jurado and Miller 1968; and others). These deliveries, which had always been considered “on the borderline between obstetric physiology and pathology” (Williamson, discussion in Varner 1962, 880) increasingly perceived as *hazardous*, and more researchers sought empirical data to confirm for this observation (Berendes et al. 1965). In the 1970s, the “breech delivery hazard”notion transitioned from hypothesis to “scientific fact*,*”[[17]](#footnote-17)as the entire medical community unanimously acknowledged that breech deliveries *were* hazardous, and this recognition served as a baseline assumption in later studies[[18]](#footnote-18) (for example, Rovinsky, Miller, and Kaplan 1973; Lyons and Papsin 1978; and others).[[19]](#footnote-19) In this context, it was possible and even essential to promote CS in breech deliveries and limit VBD accordingly.

**PART 2**

**Management of Breech Deliveries and the Decline of VBDs in the 1960s**–**1970s**

New approaches to breech delivery adopted during the 1950s were consolidated during the 1960s and 1970s. Although infant mortality rates declined steadily,[[20]](#footnote-20) concerns over breech delivery risks, which were now considered a scientific fact, were not alleviated. Moreover, specific pathologies related to breech delivery, such as hip pathologies, brachial plexus, umbilical cord pathologies, anomalies of the uterus, and other pathologies, gained prominence in the medical-scientific discourse[[21]](#footnote-21). This growing list of pathologies prompted the need to create protocols to help obstetricians manage a breech delivery and improve labor outcomes. As CSs gained prominence in breech births, recommendation over the proper management of breech deliveries suggested several ways to restrict VBDs: by limiting the conditions that permitted VBD, tightening supervision of VBDs, and preventing breech presentation, while at the same time offering CS as a natural alternative. Thus, the 1970s witnessed a complete reversal in attitudes toward CS and VBD (Gimovsky, Petrie, and Todd 1980; Lyons and Papsin 1978), with surgeries becoming standard protocol in many hospitals, and the choice of vaginal birth becoming less and less self-evident.

**Broadening the Indications for CS: Limiting VBD**

One indication that CS had become established as the treatment standard in breech deliveries was the expansion of indications for CS. While in the 1950s physicians tended to refer cases with “high priority baby,” “elderly primigravida,” or “poor obstetrics history” for ECSs (Wright 1959), by the 1970s, with research increasingly apprising physicians about the growing list of pathologies and risk factors associated with breech births, more indications were added for CS including primigravida (Hester, discussion in Brenner, Bruce, and Hendricks 1974), fetopelvic disproportion (Fianu 1976; Rovinsky, Miller, and Kaplan 1973), fetal distress, uterine dysfunction, previous myomectomy, placenta previa, floating station, involuntary infertility, pelvic contracture, abruptio placentae, tumor previa (Collea et al. 1978), prematurity (Goldenberg and Nelson 1977), diabetes mellitus (Collea et al. 1978; Rovinsky, Miller, and Kaplan 1973) and more. The expanding list of indications for CS in effect limited the conditions that permitted VBD, and surgeries soon superseded vaginal births. At the same time, because of the prevalent assumption that "once cesarean, always cesarean"”[[22]](#footnote-22), nearly a quarter of cases referred for CS in breech presentation in the 1970s were repeat surgeries (Rovinsky, Miller, and Kaplan 1973)

In addition to expanding the list of indications for CS, the use of scoring systems developed in the 1960s and 1970s as tools for breech management decisions helped establish CS as the clinical standard. These indices aimed to reduce errors in obstetricians’ subjective judgment and provide a simple, immediate, and empirically-based numerical indicator for deciding whether to refer a breech presentation to CS or VBD (Bird and McElin 1975; Confino et al. 1985; Rovinsky, Miller, and Kaplan 1973), without needlessly wasting time on debating each case, which could ultimately cost lives (Zatuchni and Andros 1967). The *Zatuchni and Andros* Scoring System (Fig. 1), developed in 1965, weighed various risk factors in breech deliveries, such as parity, age of gestation, fetal weight and presentation on a numerical scale of 0–9 (Zatuchni and Andros 1965, 1967). According to this scale, pregnancies were categorized according to their risk level; *low-score deliveries* (0–3) were considered high risk and were automatically referred to ECS, and *high-score deliveries* (4–9) were considered low risk and could be performed as VBDs. Likewise, the Feto-Pelvic Breech Index presented by Swedish doctor Hans Ohlsén (1975) categorized cases as *Normal* (score 0–4) and *Complicated* (score 5–9) deliveries, which would then be referred to elective surgery, depending on fetal and pelvic measurements.[[23]](#footnote-23)



FIGURE 1. The Zatuchni and Andros Scoring System for management of breech delivery, 1965, 1967

 The use of generalized categories of high risk/complicated versus low risk/normal births in the indices established a numerical cut-off that helped quantify clinical recommendations, while also institutionalizing CS as the clinical standard for *all* high-risk births rather than a singular response for specific birth conditions. The view that CS was safer than VBD brought the index creators and subsequent authors to further expand the list of indications for CS,[[24]](#footnote-24) to restrict the cut-off for VBD (O’Leary, discussion in Bird and McElin, 1975), and to even explicitly recommended significantly increasing the rate of CS.[[25]](#footnote-25)

Despite the indices’ limited ability to faithfully reflect birth conditions )O’Leary, discussion in Bird and McElin 1975) or improve outcomes (Smale et al. 1976), and despite the opposition from obstetricians who relied primarily on their own professional judgement (Brenner, Bruce, and Hendricks 1974; Confino et al. 1985;), scoring systems were widely adopted as a clinical standard across the United States (Bird and McElin 1975). The implementation of scoring systems soon increased CS rates, particularly the rate of elective surgeries (Westin 1977),[[26]](#footnote-26) sometimes up to three times more than the original recommendations (O’Leary, discussion in Bird and McElin, 1975).

The expansion of indications and conditions for CS contributed to the growing perception of VBD as a complex procedure that should be limited to “optimal” conditions, as is evident in commentary by the editor of *Obstetrics and Gynecology*:[[27]](#footnote-27)

 I believe that the danger to the infant who is in a breech position is so great that one should search thoroughly for reasons for electing vaginal delivery instead of searching for reasons performing a cesarean section. If all factors surrounding a patient with a term breech presentation are favorable, we usually *permit* [emphasis added] vaginal delivery. If, however, the slightest deviation from a normal pregnancy or labor exists, we quickly switch to cesarean section. (Ed. note, in Tank et al. 1971).

Preventing breech deliveries**: advocating ECVs**

Another method introduced to address risk in breech delivery was the attempt to prevent breech presentation at term by external cephalic version (ECV)[[28]](#footnote-28) of the fetus in the later stages of pregnancy. Although ECV maneuvers were not new, and even merited mention in Hippocrates’ writings (Paul 2017), the practice was not endorsed by modern obstetrics. The combination of complex skills that verged on artistry (Macarthur 1964; Ranney 1973; Ylikorkala and Hartikainen‐Sorri 1977)), together with the high risk to the fetus (Bradley-Watson 1975) and low success rates,[[29]](#footnote-29) led many hospitals to prohibit ECV on their wards (Bradley-Watson 1975; Flanagan et al. 1987) and exclude it from obstetrical training programs (Paalman, discussion in Ranney 1973).

However, as concerns over breech deliveries grew, more recommendations were made to encourage a policy of ECV for all breech presentations (Bradley-Watson 1975; Hibbard and Schumann 1973; Ranney 1973; Ylikorkala and Hartikainen-Sorri 1977; and others). This trend escalated when new versions of techniques, originating in Germany, were introduced, involving the use of tocolytic drugs to ease contractions, simplifying the procedure, and enabling its performance in the later weeks of pregnancy (after week 37), when fewer fetuses would return to breech position before term (Salin and Müller-Holve 1975). Together with the precise, immediate and detailed diagnostics made possible by ultrasound technology and fetal heart monitoring, ECV was viewed as simpler, safer, and more efficient (VanDorsten, Schifrin, and Wallace 1981; Westin 1977; Ylikorkala and Hartikainen-Sorri 1977) and was integrated into breech management protocols (Hofmeyr 1983; VanDorsten, Schifrin, and Wallace 1981). However, while ECV never became a leading alternative in breech births, the expansion and institutionalization of ECV contributed to reducing VBD occurrence in the clinical setting.

**Reframing VBD: Too Challenging for the “Average” Obstetrician**

In the late 1950s, along with growing recognition that CS could be a viable substitute for VBD, obstetricians began to view the physical and instrumental techniques (such as the use of forceps) used in breech deliveries as outdated and potentially dangerous, and came to believe that they “should surely be forgotten today in favor of section…” ( Ed. note, in Harris and Nessim 1959, 358). The generation of obstetricians who still took pride in their ability to manage difficult vaginal births and avoid cesarean sections came to be perceived as “old-school” (ibid). As the pathological discourse on breech births expanded, this outlook took on another dimension. With more and more studies highlighting the challenges inherent in acquiring and mastering critical skills for successful delivery, due to both the relative rarity and intricacy of breech births, the possibility of physicians acquiring the requisite expertise to perform VBDs increasingly came to be considered unlikely (Wulff, discussion in Patterson et al. 1967, 409). The fact that from the moment vaginal delivery began, in a sense, it was a “point of no return” (Varner 1962, 876), as it was almost impossible to choose an alternative procedure, exacerbated the problem (ibid). As CS became the clinical standard for breech deliveries and young obstetricians observed and participated in fewer and fewer VBDs (Miller, discussion in Collea et al. 1978), it became more apparent that VBDs were too Challenging for the “average doctor” (Brenner, Bruce, and Hendricks 1974, 711) and could only be performed by a few veterans with the necessary expertise (Ed. note, in Tank et al. 1971).

**Tightening Supervision** over VBDs

During the 1960s, and even more so in the 1970s, with more and more experts coming to believe that the majority of doctors could not adequately perform VBDs “Consultant is required [by experienced, senior physicians] in all cases of breech presentation and consultant should be present and assist at the time of delivery” (Varner 1962, 881; see also Rovinsky, Miller, and Kaplan 1973). Monitoring of childbirth also increased, and the recommendation proliferated that VBD be performed only as a “trial of labor,”[[30]](#footnote-30) which entailed close supervision of a delivery so any deviation from the normal course could be immediately referred to CS, which was considered the safest and most prudent method (Benson, Boyce, and Vaughn 1972; Brenner, Bruce, and Hendricks 1974; Ed. note in Tank et al. 1971; Gerret, discussion in Varner 1962; Hester, discussion in Brenner et al. 1974; Wolter, LaHaye, and Gibbs 1964; and more).

Demands to tighten supervision in breech deliveries led to a problematic clinical situation, as most births were customarily not carried out by experts at all, but rather by residents with little experience, who constituted the majority of manpower on the wards.[[31]](#footnote-31) As a result, many cases for which VBD may have been appropriate were nonetheless referred to CS (Kauppila 1975). The demand for supervision also contributed to minimizing VBDs in the clinical setting, and the lack of VBD expertise led to a new class of risk factors in breech births arising from insufficient experience, such as "poor assistance, inadequate anaesthesia, and faulty delivery technique” (Johnson 1970, 865). Thus, disastrous outcomes exacerbated young doctors’ existing fears of vaginal deliveries, especially since CS was considered to be the safest and simplest option.

**The Medico-Legal Atmosphere**

One factor that undoubtedly intensified inexperienced doctors’ fears and reticence to perform VBDs was the increasing involvement of legal stakeholders and insurance companies in treatment decisions (McNulty discussion in Hibbard 1973; Walker, discussion in Hibbard 1973). The high-risk nature of breech deliveries, the unpredictability of vaginal deliveries, and the numerous studies that supported CS liberalization led medico-legal entities to prefer CS, which they had come to view as the conservative, predictable, and safe option. One manifestation of this preference was the demand that women designated for VBD sign consent forms that detailed the risks inherent in the procedure and noted that surgery was a preferable option (McCall, discussion in Collea et al. 1978). This requirement limited physicians’ autonomy in deciding on treatment and made them feel that they were “being painted into a corner by plaintiffs’ bar insofar as breech presentation is concerned” (ibid, 194). Medical institutions’ and doctors’ fear of malpractice lawsuits and insurance indemnification pressured them into adhering to protocols and scoring systems (Confino et al. 1985) and into over-reliance on diagnostic technologies (Campbell 1976),[[32]](#footnote-32) which increased referrals to CSs. Accordingly, as medico-legal concerns gained more prominence in clinical decisions, even obstetricians inclined to deliver breech babies by VBD became more reluctant about opting for VBD.

By the late 1970s, breech deliveries were in a very different situation than they had been two decades earlier. Some 60–90% of breech presentations were delivered by CS in the United States and Canada (Gimovsky et al. 1983; Green et al. 1982; NIH 1980a), which reflected a significant increase in just a few years.[[33]](#footnote-33) As well, there was a general increase in CS rates in many western countries, especially in North America, which reflected even wider developments in the 1970s, such as an increase in the number of doctors, the introduction of health insurance, and improved early detection of childbirth risk factors (NIH 1980a, 1980b). However, breech deliveries were considered extreme cases and unequivocal indications for CS (ibid).

As detailed in this Part, increased CS rates for breech presentation were accompanied by a vigorous medical-scientific debate, which consolidated the pathological approach towards breech deliveries and offered CS as an appropriate, safer, and simpler alternative. Thus, demands escalated to limit the conditions for VBD, tighten the supervision of obstetric and delivery, and prevent breech presentation by endorsing and improving external version. In the VBDs were rarely performed in the clinical setting and required patients’ signatures on consent forms, generating fears of malpractice lawsuits among doctors. As discussed in the next Part, one of the main repercussions of this situation was that by the late 1970s, VBD expertise was no longer imparted to new generations of obstetricians. Young doctors, who had been trained to perform CSs in breech presentations, were afraid to perform VBDs due to their questionable efficacy and safety and their uncontrolled nature. When the “aura” around CS began to fade in the early 1980s, this became a critical issue in the discourse on breech management.

**PART 3**

**1980s**–**1990s: Birth of a Controversy and its Resolution**

Over the past 25 years, you have done a magnificent job of convincing those in practice, the legal profession and the public that the correct way to deliver a breech presentation is by cesarean section. I submit to you that it will take another 25 years to turn that mind set around … It is not possible to change the attitudes of the general population as fast as academicians can produce papers with new concepts (James Caillouette, Discussion in Flanagan et al. 1987, 1501).

Although CS was primarily adopted as the protocol for breech deliveries during the 1970s, some still criticized the procedure (for example, Jacobs, discussion in Brenner, Bruce, and Hendricks 1974). Though, Criticism peaked only at the end-1970s, after several major health organizations generated public concern over CS, raising questions over the health, ethical and financial implications of rising CS rates worldwide. As Caillouette notes (ibid.), these questions permeated the debate on breech management and caused a growing disparity between the doubts expressed in the literature on CS efficacy and safety and the clinical reality that had already been established in obstetric wards. The current section chronicles how this disparity led to the heated controversy around breech deliveries, which demanded a decisive, scientific, and qualitative resolution of the question: was CS or VBD the safer procedure?

***Criticism***

In the late-1970s, soaring CS rates in the United States and throughout the western world sparked public concern which needed to be addressed (NIH 1980a). In 1977, as part of a consensus development process, the NIH (and later, the WHO, SOCG, and others) established interdisciplinary research teams to assess CS rates and examine their contribution to reducing maternal and infant M&M, as well as the financial, social, psychological, and legal implications of these trends. (NIH 1980a, 8).[[34]](#footnote-34) The report, presented in 1980 to both professional stakeholders and the public at large, recommended extensive measures to reduce CS rates, which the report’s authors deemed excessive.[[35]](#footnote-35) Similar recommendations were presented in several WHO publications (WHO 1985a; WHO 1985b; (Phaff 1986); Chalmers 1992), the most prominent of which called for reducing CS rates to 10–15% worldwide (WHO 1985b). Breech deliveries, which were a leading indication for CS (NIH 1980a, 1980b), were discussed in these reports and, for the first time, reservations regarding performing CSs in breech deliveries were expressed.[[36]](#footnote-36) Various reports recommended reinstating VBD as the clinical default and avoiding surgery “unless it can be shown to be justified” (Hannah, Baskett, and Chance 1986, 1350)[[37]](#footnote-37) and simultaneously urged the advancement of research on external cephalic version as a preventative procedure.

Such reports actually had little effect on CS rates, which continued to climb throughout the 1980s and 1990s (Kosecoff et al. 1987; Myers and Gleicher 1987), but they did lay the foundation for a new medical-scientific debate that aimed to critically examine the efficacy, safety, and cost to taxpayers of CS, and to promote a policy of vaginal birth after cesarean (VBAC) (For example: Lavin et al. 1982; Anderson and Lomas 1984; Porreco 1985; Notzon 1990; Porreco 1985; and more). Concomitantly, a myriad of publications discussed the exploration and promotion of external version to minimize the risks that had been associated with VBD in previous decades, and now with CS as well (for example: Green 1982; Hanss 1990; Hofmeyr et al. 1986; Westgren et al. 1985; and more), an approach that was partially adopted at hospitals across the United States and elsewhere (Amon, Sibai, and Anderson 1988).

This new, more critical attitude permeated the medical-scientific discourse on breech delivery management, was gradually changing. Opinions about the abdominal route grew more critical and disjointed, and a growing body of professional literature expressed doubts regarding the previous decade’s prevailing assumptions and conclusions. Many authors prefaced their papers with expressions of deep concern over high CS rates in breech deliveries (for example, Collea et al. 1978, Collea, Chein, and Quilligan 1980;Gimovsky, Petrie, and Todd 1980; Gimovsky et al. 1983; Russel 1982; VanDorsten et al. 1981; and more). Some speculated on the reliability of claims that attributed a significant M&M reduction in breech deliveries to CS (Anderman et al. 1984; Fleming 1980; Green et al. 1983; Myer and Gleicher 1987). Others advised investigating the negative effects of surgery on mothers (Collea et al. 1798, Collea, Chein, and Quilligan 1980; Russel, discussion in Bowes et al. 1979). Meanwhile, a cautious recommendation was made that vaginal deliveries should be performed according to protocols' limitations and be monitored technologically (Bowes et al. 1979; Collea et al. 1978, Collea, Chein, and Quilligan 1980; Gimovsky et al. 1983). Some even called to reduce CS in breech cases to 20%, as had been the rate prior to the 1970s (Green et al. 1982; Myer and Gleicher 1978;). Although leading authorities in the field of obstetrics still considered CS the most efficient and safe option in breech deliveries (for example, Ed. note, Collea, Chein, and Quilligan 1981), it was clear in the professional literature that this view was no longer unanimous.

***The Controversy***

Notwithstanding the criticism of the use of CS in breech deliveries in the professional literature during the 1980s and 1990s, it proved difficult to change the clinical practices established at most obstetrical wards in North America over the previous decades and reinstate VBD as the clinical default for breech deliveries. Obstetricians who tried to return to the vaginal route encountered pressure from their colleagues (…) or restrictions from insurance companies and lawyers, whose influence intensified during these years (Amon, Sibai, and Anderson 1988;[[38]](#footnote-38) Eller and VanDorsten 1995; Penkin, Cheng, and Hannah 1996; Zlatnik 1993).[[39]](#footnote-39) Physicians were vulnerable to negligence claims with any VBD that had “anything less than a perfect result” (Maloy, discussion in Collea, Chein, and Quilligan 1980). When obstetricians had to make immediate and fateful decisions, medico-legal considerations ultimately prevailed, thus favoring CS (Amon, Sibai, and Anderson 1988). Obstetricians were subject to additional pressures from the mothers themselves, who, often upon their family doctors’ advice, demanded the popular, safe, and innovative surgery (Flanagan 1987; Hale, discussion in Flanagan 1987; Miller, discussion in Collea et al. 1978), and preferred the risk of maternal morbidity over any risks to their child (Penn, Steer, and Grant 1996). However, apparently the most significant factor preventing VBD from returning to common practice was the collective lack of knowledge and expertise in performing VBDs (Bingham, Hird, and Lilford 1987; Gimovsky et al. 1983; Mahomed 1988; Russel 1982; and more). The rarity of breech presentation was compounded by fear over performing vaginal births and residents’ limited exposure to VBD[[40]](#footnote-40) (Eller and VanDorsten 1995; Penkin, Cheng, and Hannah 1996). Indeed, young doctors were increasingly reticent to attempt vaginal deliveries, even if they had been trained, as Frederick P. Zuspan testifies:

 I can unequivocally state that I have asked the many residents I have trained, whom I felt knew how to do vaginal breech delivery in an adequate and safe manner, what they would do in private practice. One hundred percent said that they would do a cesarean section and would only do a vaginal delivery if the baby was presenting when they got to the delivery room (Zuspan, discussion in Eller and VanDorsten 1995. p.397).

As the gap between the academic literature and clinical practice deepened, so did the discord among physicians. On the one hand, they were not unequivocally certain about the benefits of CS, but on the other hand, they regularly performed the procedure in their routine practices.[[41]](#footnote-41) As a result, during the 1980s and 1990s, more and more physicians began referring to breech management as a “controversy (Amon, Sibai, and Anderson 1988; Gimovsky et al. 1983),” “dilemma" (Confino et al. 1985; Myer and Gleicher 1987), or even “conundrum” (Eller and VanDorsten 1995; Hannah and Hannah 1996a). The dissonance was evident in obstetricians’ inability to settle the question of what was the appropriate procedure in breech deliveries, an issue which was infused with a sense of urgency due to concerns that the generation of physicians still familiar with VBD techniques would disappear, and, with them, crucial knowledge and expertise (Grave, discussion in Flanagan et al. 1987).

***The Call for an RCT***

The pressure to settle the question of breech management spurred several initiatives in the 1990s to systematically examine the professional literature, in accordance with the evidence-based medicine (EBM) standard established in those years in the United States and Canada, in order to draw a decisive conclusion from the various published studies, most of which did not meet EBM standards themselves[[42]](#footnote-42) (in Canada, Cheng and Hannah 1993;[[43]](#footnote-43) in the United States, Gifford et al. 1995; Grant et al. 1996). Nevertheless, in 1993, Cheng and Hannah found a reasonable basis to conclude that the literature demonstrated significantly lower infant mortality in CS than in VBD but higher maternal mortality in CS, although the differences in maternal mortality were less pronounced. Hence, the authors advocated a return to a policy of ECS for all breech presentations, at least until the issue was conclusively settled via a comprehensive RCT. Their first conclusion was received with harsh criticism[[44]](#footnote-44) and did not help settle the controversy. However, their call for an RCT enjoyed near unanimous approval, as RCT viewed as the ultimate tool for deciding the controversy (Grave, discussion in Flanagan et al. 198) that could provide state-of-the-art guidelines and effective protection from malpractice lawsuits, which were rampant in breech cases (Penkin, Cheng, and Hannah 1996).

Despite concurrence that an RCT was essential, and the willingness to adjust policy based on the results (Penkin, Cheng, and Hannah 1996), conducting such a study actually proved not so easy. Already in 1978, an attempt at an RCT had been made in Iowa to determine best practices for preterm breech presentation but was halted in 1983 due to staff changes at the hospital and medico-legal considerations, which limited the number of eligible participants (Zlatnik 1993). This led the FIGO Committee on Perinatal Health to the conclusion in 1993 that random trials on breech delivery could no longer be held in industrialized countries (FIGO 1994). A similar effort in the 1990s by the NICHD was also terminated in its early stages despite a consensus on its necessity, simply because many of the stakeholders did not believe such a study could be successfully carried out and objected to participating in a study doomed to failure (Eller and VanDorsten 1995).

Ironically, the loss of expertise in VBD was not only a major motivator for conducting an RCT; it was also one of the biggest obstacles to doing so. After three decades of CS as the standard care for breech presentations and the relative success of ECV in eliminating such presentations, and due to the relative rarity of breech births, there simply were not enough obstetricians skilled in vaginal breech birthing techniques to participate in this kind of study (Eller and VanDorsten 1995; Penkin, Cheng, and Hannah 1996; Taylor and Hannah 1994). This dearth of potential participants was compounded by concerns from the medico-legal perspective (Zuspan, discussion in Eller and VanDorsten 1995), ethical issues, safety issues, and fear of women’s refusal to participate, as well as the tendency to approve of the existing practice (Eller and VanDorsten 1995; Penkin, Cheng, and Hannah 1996).

In view of the many challenges, in 1996, the committee behind the American RCT decided not to go forward with the study (Eller and VanDorsten 1995). The decision, presented at the 57th Annual Meeting of the South Atlantic Association of Obstetricians and Gynecologists in 1995, roused sharp criticism from the audience, especially from veteran obstetricians such as Dr, Frederick P. Zuspan, who accused the participating institutions’ principal investigators of evasion of responsibility leading to the study’s cancellation. (Zuspan, discussion in Eller and VanDorsten 1995, 396). At the meeting, obstetricians were also criticized for citing lack of expertise as an excuse for their clear preference for CS, which was easier for them (O’Sullivan, discussion in Eller and VanDorsten 1995).

In contrast to what happened in the United States, a different path was chosen by members of the Canadian RCT initiative to examine breech management of term breech babies. The Canadian team sought to conduct a massive, international trial with a sufficiently large sample size, larger than that available in any individual country, to adequately research the issue. To that end, Mary and Wolter Hannah, the principal investigators, recruited medical centers across the United States and Europe to participate in the collaborative enterprise (Hannah and Hannah 1996a, 1996b). In recruiting participants, they cited the obstacles to the American study and presented them as precisely the reason it was crucial to conduct an RCT as a last resort before VBD expertise and the ability to settle the controversy was lost. “Time is running out…as those who are skilled and experienced in the technique of vaginal breech delivery are leaving clinical obstetric practice (Hannah and Hannah 1996a, 1393).”

The Canadian team’s call was heeded. The TBT team recruited an unprecedented number of 121 health centers in 26 countries for the study conducted in 1999–2000. Obstetric centers eagerly awaited the results, which could serve as a crucial tool in their defence against malpractice claims. For professional associations, the study presented an opportunity to implement evidence-based quality guidelines rather than rely on policy devised on the basis of the poor and partial findings available to them (ACOG 2000).

Considering the process that preceded the TBT, one that included collective neglect of vaginal birth deliveries and a dissipation of the skills and knowledge needed to perform them, it becomes clearer why this study was so influential. With the publication of TBT's interim findings in 2000 (Hannah et al. 2000), the medical community finally reached a decisive conclusion regarding breech births by deeming VBD and establishing elective CS as a superior option. This conclusion came as a relief to many physicians seeking authoritative approval for their existing practice and perhaps feared the opposite conclusion, one that would force them to practice VBD without adequately skilled staff. That explains why leading obstetrics organizations across North America and worldwide eagerly embraced and assimilated the policy suggested in the study (For example, ACOG 2001; RCOG April 2001; RANZCOG 2001 and more). It also explains why TBT remains influential in clinical decisions regarding breech management to this day, despite criticism of the study's conclusions and the softening of Its rigorous recommendations by obstetrics associations.

 **Discussion- A story of obsolete obstetrics**

Historical accounts tend to highlight formative events and technological success stories while neglecting the mechanisms that cause the decline of the dead ends[[45]](#footnote-45). In the breech delivery story, this picture is clearly insufficient. As described in this paper, the TBT findings, rather than being the cause of widespread and far-reaching changes in clinical practice, as they are often taken to be, were in effect the result of changes that had already taken place in clinical practice and the resulting in the collective decline[[46]](#footnote-46) of VBD skills, which can be traced back to decades earlier.

This process originated in the 1950s, with growing efforts to reduce IMR in the United States and the identification of breech presentations as high-risk events. The recognition of these views as scientific fact, along with improvements in CS and diagnostic technologies made CS a worthy, innovative, and simple alternative to VBD. CS enjoyed a heyday in the 1960s and 1970s, when it became standard breech delivery procedure on most obstetrics wards. Meanwhile, VBD techniques came to be perceived as outdated and even dangerous, and the view was that they should be retired from clinical practice.

Concurrently, the professional literature sought to establish reliable management protocols for breech presentations, and recommendations from a growing accumulation of research in the 1960s and 1970s left less and less room for vaginal deliveries. Some advocated for increased *limitation* of conditions in which VBD was permissible. Others called to *increase* *supervision* of breech deliveries, which entailed trial of labor delivery and supervision by specialists skilled in VBD techniques, whose numbers were dwindling. At the same time, ECV was proposed to *prevent* breech presentation, especially once controversial ECV procedures became safer and more efficient. Fear of breech delivery risks, together with the mechanisms leading to the progressive rarity of VBD in the clinical setting, led a new generation of obstetricians, unfamiliar with VBD techniques, to prefer CS, which they could perform skilfully and safely. This approach was supported by legal stakeholders, who entered the controversy in the 1970s, and later by mothers themselves, who demanded the right to have the popular, safe, and innovative CS procedure[[47]](#footnote-47).

All these factors combined can be viewed as a collective dissattention to VBDs, meaning an "attentional avoidance" (Zerubavel 2015, 61) of VBDs by the obstetrics field, a process that comprises the creation of taboos around vaginal breech delivery and restriction of its maneuvers as being outdated, dangerous, and too challenging to perform. In this reality, VBDs were rarely performed, and most doctors feared or avoided them, were barred from performing them, or did not know how to.

When criticism was levelled against the overuse of CS and doubts were raised regarding their contribution to reducing M&M in the 1980s, it was already difficult to reverse clinical standards. The “controversy” that TBT was designed to resolve in fact originated in the 1980s and 1990s, as disparities grew between doubts about CS in the professional literature and their increasing ubiquity in the clinical setting. In the spirit of the times, with rising EBM, many agreed that the persistent controversy could be decisively resolved only with a gold-standard, state-of-the-art EBM guideline RCT. However, by this point, concerns over VBD, together with diminished expertise in VBD techniques, were so overwhelming that they threatened the prospect of conducting such a study, and, thus, a U.S. study aimed at settling the controversy ultimately failed to even materialize. However, the Canadian RCT initiative that became the TBT succeeded in overcoming these challenges and recruited obstetrics wards around the world, thereby managing to document a sufficient number of breech births to sustain the study. In light of the clinical practices already in place in obstetrics wards during the study, it is reasonable to conclude that the TBT conclusions, which clearly favored CS, provided the final stamp of approval which enabled physicians, policymakers and legal stakeholders to continue operating as they already had been for years.

**Conclusion: The "executioner," not the "judge"**

What, then, ultimately decided the fate of vaginal breech deliveries to obsolesce? Was it the TBT? Or was it the steady increase in CSs in general in the United States and Canada since the 1970s? While both the TBT and increases in CSs doubtless contributed to the virtual abandonment of VBD, a closer examination of the medical-scientific discourse on breech management indicates that it would be more accurate to claim that the VBDs were not “doomed” in 2000. instead, the TBT served as a significant landmark, as It accelerated the progressive process in which VBD had been collectively disattended and forgotten by obstetrics, unfolded over five decades, starting the 1950s. The TBT was mere VBDs' "executioner," hardly their "judge."

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2. Such as the British Royal College of Obstetricians and Gynaecologists (RCOG April 2001), Cochrane Collaboration (Hofmeyr, Hannah, and Lawrie 2001, the Royal Australian and New Zealand College of Obstetricians Gynaecologists (RANZCOG 2001) (with a few reservations), and others. [↑](#footnote-ref-2)
3. TBT has over 1,300 publications citing it, according to data retrieved from the academic search engine *Scopus*. [↑](#footnote-ref-3)
4. Over ten response letters were published in The Lancet in the following months after it was published, criticizing its methodology and recommendations. These followed by articles and editorial with the same attitude in the next years (For example, Dhingra and Raffi 2010; Glezerman 2012). Moderation of the TBT's conclusions was published in 2003 by the original research team (Whyte, Hannah, and Saigal 2003). [↑](#footnote-ref-4)
5. Moderation of TBT's recommendations are evident in the ACOG Committee on Obstetric Practice no. 38 (2006); SOGC clinical practice guideline no. 226 (Kotaska et al. 2009); RCOG (2006) and more. [↑](#footnote-ref-5)
6. The corpus of articles on the management of breech delivery, constitutes the medical scientific debate over breech management, retrieved from the "Scopus" academic search engine during July- August 2019 and contains the most cited studies on breech delivery by other studies from this corpus. Further discussion on the primary computational methods conducted for mapping discourses is yet to be published. [↑](#footnote-ref-6)
7. Several reviews, particularly since the1990s, have already examined the professional literature on breech delivery management (Cheng and Hannah, 1994; Gifford et al. 1995; Grant et al. 1996), comparing study findings over the years. While these reviews illuminate well the controversy exists upon the proper management, which the TBT sought to resolve; they failed to explain this oversized influence the TBT had on breech deliveries. To answer this question, it is not enough to compare various study findings in the breech management debate. [↑](#footnote-ref-7)
8. Wright’s paper was one of the 100 most-cited papers on breech births, and one of the first to initiate the discourse on management of breech deliveries. [↑](#footnote-ref-8)
9. The Danish obstetrician Dyre Trolle issued a similar but less known call in 1961 (Trolle 1961).. [↑](#footnote-ref-9)
10. During this time, the IMR became the indicator by which the quality of healthcare systems in many countries was measured (Brosco 1999). Indeed, it continues to serve as a measure for the quality of health care to this day. The OECD, for example, publishes comparative statistics on infant mortality since the 1960s (Health Status – Infant Mortality Rates Data, n.d.) [↑](#footnote-ref-10)
11. In the United States, for example. *National Infant Mortality Survey* (NIMS) and the 1964-66 National Natality Survey (NNS) (MacMahon et al., 1972); a similar initiative took place in England (Butler and Bonham, 1963). [↑](#footnote-ref-11)
12. Due to the rarity of breech presentations, the task was challenging and demanded collaborations between multiple institutions. A 1956 paper by Hall and Kohl describes a collaboration between seven U.S. institutions to overcome the rarity of breech presentation and gather a large enough sample for statistical comparison. This is one of the reasons that extensive documentation of breech deliveries started in only at this time and not earlier. [↑](#footnote-ref-12)
13. Wright, in fact, does not contribute any new findings but rather relies on three contemporaneous obstetric studies by Goethels (1959), Hall and Kohl (1956), and Harris and Nessim (1956). [↑](#footnote-ref-13)
14. Emphasis in original. [↑](#footnote-ref-14)
15. Wright’s paper even became the subject of international attention beyond the borders of North America, and was cited by obstetricians in India (Kapur 1968), the United Kingdom (Donnai and Nicholas 1975) , Sweden (Ohlsén 1975), Holland (Schutte et al. 1985), and elsewhere. [↑](#footnote-ref-15)
16. Eastman, for example, a leading supporter of CS in the 1950s and 1960s, expressed reservations regarding Wright’s proposal (Eastman, Ed. note, in Wright 1960) [↑](#footnote-ref-16)
17. For a discussion of the term “scientific fact,” see Fleck (2012 [1981]) or Latour (1987) [↑](#footnote-ref-17)
18. This assumption became so obvious that some even joked about it. For example: “Every obstetrician, nurse, obstetrician’s wife, and most patients know that breech birth is cause for concern…Breach delivery is always formidable…” (Bowes et al. 1979, 965) [↑](#footnote-ref-18)
19. Another sign of its assimilation into the medical-scientific discourse as scientific fact, which is not discussed in the present paper, was the categorization of the keyword “breech presentation” under “labor complications” in the EMTREE medical index starting in 1974 and in the MeSH index from 1985. Prior to that, it had been categorized under “labor obstetrics.” (MeSH - NCBI n.d.) [↑](#footnote-ref-19)
20. According to data from the OECD, average infant mortality rates in member nations declined from an average of 46% in 1960 to an average of 36% in the early 1970s. The rate has continued to decline steadily and stands today in the United states at about 5.8% (source: author’s analysis of official OECD data “Health Status - Infant Mortality Rates - OECD Data” n.d.). [↑](#footnote-ref-20)
21. An examination of the number of publications on "Breech deliveries" by year shows that publications published in 1960-1973 (stood on the average of 29 publications per year) rose by more than 300% and stood in 1974-1990 on the average of 88 publications per year). This sharp incline is dramatic even compared to the gradual incline in the literature on childbirth (Source: Author's analysis of publications retrieved from Scopus' search engine on the term "Breech delivery", compared with publications with the term "Labour, Obstetrics"). [↑](#footnote-ref-21)
22. This statement originated in Edward Cragin’s book *Conservatism in Obstetrics* (1916) (Foster 2017) and in the 1970s became one of the most ubiquitous attitudes in obstetrics (Lavin et al. 1982). [↑](#footnote-ref-22)
23. Another lesser known index was the Mark and Roberts Scoring Index (Mark and Roberts 1968) [↑](#footnote-ref-23)
24. For example, in addition to the basic criteria for Ohlsén’s Feto-pelvic Index (1975), elective surgery was recommended in cases of "premature rupture of the membranes, uterine inertia, uterine myomata, delayed fertility, or increased maternal age" (Ed. note, in Ohlsén 1976, 20). [↑](#footnote-ref-24)
25. In data collected by Zatuchni and Andros (1965), only 6% of breech births were delivered surgically, while they recommended surgery in 20% of cases. Similarly, Ohlsén (1975) reported a rate of 15% of surgical births with breech presentations, but recommended increasing rates to 43%. [↑](#footnote-ref-25)
26. The promotion of elective surgeries, which were considered safer, was possible thanks to the introduction and standardization of new diagnostic technologies (Flanagan 1987), in part due to numerical indices. Thus, for example, one of the conditions for applying the Feto-pelvic Breech Index (and less so the Zatuchni and Andros Index) was x-ray pelvimetry to measure pelvic shape and structure. As ultrasound compatibility with breech presentation improved, this technology, which demonstrated greater accuracy and had better safety than x-rays, became the preferred method in birth management protocol proposed by the indices (Westin 1977). [↑](#footnote-ref-26)
27. See also, for example, Cox (1986); Goldenberg and Nelson (1984); Todd and Steer (1963); and others. [↑](#footnote-ref-27)
28. A procedure in which the baby is turned in its mother's womb before birth by creating external pressure on the uterus until it reaches a head presentation. [↑](#footnote-ref-28)
29. In the absence of drugs to ease contractions, which were only developed in the 1970s, versions were carried out around weeks 35–36 of pregnancy, after which many fetuses returned to breech position before term. [↑](#footnote-ref-29)
30. “Trial of labor” is considered to mean "Allowing a woman to be in labor... long enough to determine if vaginal birth may be anticipated" (MeSH term definition). [↑](#footnote-ref-30)
31. This was especially true in light of the fact that vaginal births are spontaneous events that often happen during the night, when few specialists are present on the wards. [↑](#footnote-ref-31)
32. The link between over-diagnosing and the increase in CS is discussed in the NIH report on CS (NIH 1980a, 329–31) [↑](#footnote-ref-32)
33. CS rates increased, albeit more moderately, in European countries (Russel 1982; Fleming 1983; Notzon 1990; Bistoletti et al. 1981), and in countries such as South Africa with more basic systems of health care as well (Coeverden de Groot 1979). [↑](#footnote-ref-33)
34. From 1977–1985, the Office of Medical Applications of Research, a branch of the NIH, held several consensus development process conferences with the goal of ensuring that medical and technological research and development, which were largely financed by the public, were properly implemented (Jacoby 1985). The conferences addressed specific questions about controversial technologies that were of special interest to the public, and they aimed to establish a consensus among medical, legal, social, and public stakeholders (ibid). [↑](#footnote-ref-34)
35. These measures included the use of consent forms explaining the risks of CS, parent education programs at hospitals, and research collaborations to estimate CS rates (NIH 1980a). [↑](#footnote-ref-35)
36. The general consensus regarding the risks of breech deliveries led the NIH to comply with the recommendation to allow VBD, but only in the absence of risks indications, such as maternal pelvic structure, fetal weight, non-frank breech, hyperextended head, etc. (NIH 1980a). [↑](#footnote-ref-36)
37. This recommendation is particularly prominent in a report on CS in Canada by a Canadian research team for the National Consensus Conference. The initiative was established as a collaboration between Canadian, American and British stakeholders, and was funded by the Society of Obstetricians and Gynaecologists of Canada and the Association of Professors of Gynecology and Obstetrics (Hannah, Baskett, and Chance 1986). Professor Walter Hannah headed the research team, and later took part in the TBT study. [↑](#footnote-ref-37)
38. In a 1986 survey in the United States, 63% of respondents reported that medico-legal considerations influenced their decision to deliver with CS. [↑](#footnote-ref-38)
39. It seems that in private practices, medico-legal considerations carried particular weight, especially due to the greater emphasis on the mothers’ will, as well as the relatively greater affluence of women who opted for private health care, which facilitated their access to legal counsel (Maloy, discussion in Collea, Chein, and Quilligan 1980). [↑](#footnote-ref-39)
40. A survey in the 1990s in the United States found that 55% of principal investigators believed their residents were not receiving sufficient training in VBD techniques (Eller and VanDorsten 1995). In Canada, the number was even higher (69%) (Penkin, Cheng, and Hannah 1996). [↑](#footnote-ref-40)
41. A 1986 survey showed that although nearly half of respondents (48%) doubted the efficacy and safety of CS in breech deliveries at term, some 83% of them performed it routinely (regarding premature infants, the agreement on CS was higher) (Amon, Sibai, and Anderson 1988). [↑](#footnote-ref-41)
42. Most comparisons were retrospective and suffered biases (for example: failure to distinguish emergency and elective CS, primigravida or multigravida, etc.) In fact, only two random comparisons on breech deliveries at term for frank (Collea et al. 1978; Collea, Chein, and Quilligan 1980)) and non-frank (Gimovsky et al. 1983) presentation had been published, but both were limited by small sample size. [↑](#footnote-ref-42)
43. Cheng and Hannah's 1993 review was part of a well-funded Canadian initiative that aimed to examine the feasibility of an RCT about breech deliveries, which later became the TBT. [↑](#footnote-ref-43)
44. This was actually mainly due to the fact that the only two randomized studies in their review concluded that vaginal births were safe. (Pollard, Bernstein, and Cherouny 1994) [↑](#footnote-ref-44)
45. Similar claims are widely discussed, among else, in the literature on "Whig history," sparked in the 1930s by Butterfield (1931), and in the literature on "path dependence" (Mahoney 2000). [↑](#footnote-ref-45)
46. While the story of the collective decline of VBD skills as told in this paper stands on its own, it is part of a broader endeavor to study the processes and mechanisms by which medical practices are collectively forgotten. [↑](#footnote-ref-46)
47. For more details on the public movement toward CSs in the 20th century, see Wolf (2018). [↑](#footnote-ref-47)