

# Breech presentation at a district level hospital in South Africa

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## Abstract

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**Introduction:** The Term Breech Trial has led to obstetricians opting for Caesarean section as the mode of delivery for this presentation, even in poor countries. Concerns related to this approach are the resultant increase in Caesarean section rates and their associated complications, particularly in under-resourced countries, which are faced with financial and human-resource expertise constraints.

**Method:** This was a retrospective chart review of women who presented at term with a singleton breech presentation at the antenatal clinic and in labour, from January 2005 to December 2007, at a district level hospital in South Africa.

**Results:** There was a total of 19 197 deliveries, of which 466 were singleton term breech deliveries, giving a rate of 2.4%. Of the 297 women who had antenatal care and had been allocated to planned Caesarean section, 271 had the planned operation. There were no neonatal deaths in the planned Caesarean section group. The emergency Caesarean section group and the group in which no decision was made on the mode of delivery were associated with higher maternal complication rates than in the group that had planned Caesarean sections. The highest neonatal complication rate was in the group that had unplanned vaginal deliveries.

**Conclusion:** In a district hospital in South Africa, the mode of delivery for breech presentations is usually a planned Caesarean section. Unplanned vaginal deliveries are associated with significant perinatal mortality.

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## Introduction

Although, at term, 3 to 4% of all pregnancies are breech presentations,<sup>1,2</sup> the mode of delivery continues to raise debate, despite the findings of the Term Breech Trial.<sup>3</sup> The authors of the Term Breech Trial performed a multinational trial and randomised 2 008 women with singleton breech presentations at term to either planned vaginal or planned Caesarean delivery, to determine the safety of the two modes of delivery with respect to maternal and perinatal mortality and morbidity rates. The hypothesis was that Caesarean section (c/s) decreases the known high perinatal morbidity and mortality rates associated with vaginal delivery without increasing the maternal morbidity associated with abdominal deliveries. The results of the Term Breech Trial led the researchers to conclude that the combined outcomes of perinatal and neonatal deaths and serious neonatal morbidity were significantly lower in planned c/s than in planned vaginal delivery (1.6% vs. 5%; relative risks [RR] 0.33). It is, however, difficult to explain the findings of reduced benefits of planned c/s in countries with high perinatal mortality rates.<sup>3</sup>

The Term Breech Trial found that with a policy of planned c/s, for every 14 c/s done, one baby will avoid death or serious morbidity,<sup>3</sup> while Hofmeyr and Hannah suggested that 27 c/s are needed to avoid one case of serious neonatal morbidity.<sup>4</sup> However, because of the findings of a reduced benefit of planned c/s in countries with high perinatal mortality

rates, Hannah et al suggested that as many as 39 additional c/s have to be performed to avoid one perinatal death or severe morbidity.<sup>3</sup> These findings also have to be judged against the potential short- and long-term risks of c/s.

The findings of The Term Breech Trial led to major changes being made in the clinical management of singleton breech presentation worldwide.<sup>3</sup> Concerns relating to the findings of the Term Breech Trial are the resultant increase in c/s rates and associated maternal complications. In addition, the increasing number of c/s rates has financial implications, particularly for resource-constrained countries, which also lack sufficient expertise and infrastructure for performing large numbers of planned abdominal deliveries. Furthermore, there has been continuing criticism of the design and methodology of the Term Breech Trial<sup>6</sup> and suggestions made that the recommendations of the trial be withdrawn. Recently, three studies involving small numbers of participants revealed that vaginal delivery for selected cases of breech presentation is as safe as c/s in respect to neonatal outcomes.<sup>7-9</sup> It therefore appears that a pragmatic view is being established in some European countries, i.e. selecting patients with singleton term breech who fulfil stringent criteria for vaginal delivery and for performing external cephalic version (ECV), if appropriate, to reduce the high number of c/s and their sequelae, while reducing perinatal morbidity and mortality rates. Utilising this pragmatic approach would

also maintain clinical skills required for performing ECVs and conducting vaginal breech deliveries.

Our clinical impression is that, in KwaZulu-Natal, most obstetricians offer women with singleton term breech presentations a planned c/s, without considering a planned vaginal delivery or an ECV. An ECV, successfully carried out in the antenatal period, is reported to decrease the frequency of term breech presentations.<sup>10-14</sup> The failure of selecting breech presentations for ECV and vaginal delivery probably applies at all levels of health care (district, regional and tertiary hospitals) in South Africa. The aim of this study was therefore to perform an audit of all women who presented with a diagnosis of breech presentation at term in the antenatal clinic of a district hospital in Durban, South Africa, to confirm our clinical impression, and then to suggest recommendations.

## Methods

The study entailed a retrospective chart review of all women for whom a diagnosis of singleton term breech presentation was made at the antenatal clinic or patients who presented in labour, at a district hospital in Durban, South Africa, over the period 1 January 2005 to 31 December 2007.

The medical charts were retrieved and data entered into a structured form. The data entered included demographic variables, detailed obstetric history, the performance of ECV, mode of delivery, indications for elective or emergency c/s and planned vaginal delivery, type of breech presentation, gestational age at delivery, duration of the mother's stay in hospital, fetal outcome, birth weight, Apgar scores, maternal complications, duration of stay in neonatal intensive care unit and adverse maternal outcomes.

There was a standard approach to the management of a singleton breech presentation at term in this district hospital. The guideline stated that ECV was to be considered and if the procedure failed a decision on a planned vaginal delivery based on set criteria, namely baby weight, type of breech, flexion of the fetal head and size of the maternal head, or a planned c/s, should be made and documented. The criteria for ECV also followed strict criteria, described elsewhere.<sup>12</sup>

## Definitions

A woman was regarded as having 'booked' if she had at least two antenatal visits. A planned c/s or a planned vaginal delivery was one for which a considered decision was made at the antenatal clinic. A scheduled c/s was one that was made in the labour ward under semi-urgent conditions when women presented in latent or false labour. The scheduled c/s were usually done on the day following admission to the labour ward while an emergency c/s was done within 30 to 40 minutes of the decision.

A subgroup analysis of the outcomes of all primigravidae was done comparing maternal and neonatal outcomes in booked and unbooked patients.

## Statistical analysis

Descriptive statistics were used and all results are presented as frequencies, mean  $\pm$  SD and percentages. The Mann-Whitney U or Student's t-test was used for quantitative comparative data, where

appropriate. Statistical analysis was performed using SPSS version 15.0 (SPSS Inc, Chicago, Illinois, USA); and a p value of  $< 0.05$  was regarded as statistically significant. There were approximately 6 000 deliveries per year in the district hospital and, given that the incidence of breech presentation ranges between 3 and 4% worldwide, approximately 500 women with breech presentation were calculated as a reasonable number to study, and to be able to make clinical recommendations.

## Results

There were a total of 19 197 deliveries during the three-year study period, of which 466 were singleton breech presentations ( $\geq 37$  weeks gestation), giving an incidence of 2.4%.

Three hundred and sixty-five (78%) of the 466 patients had antenatal care. The maternal and neonatal outcomes are shown in Figure 1. Two hundred and ninety-seven (83%) women were allocated for planned c/s; and 26 (9%) of the 297 women went into spontaneous labour prior to a planned c/s and had emergency abdominal deliveries. The remaining 271 had planned c/s.

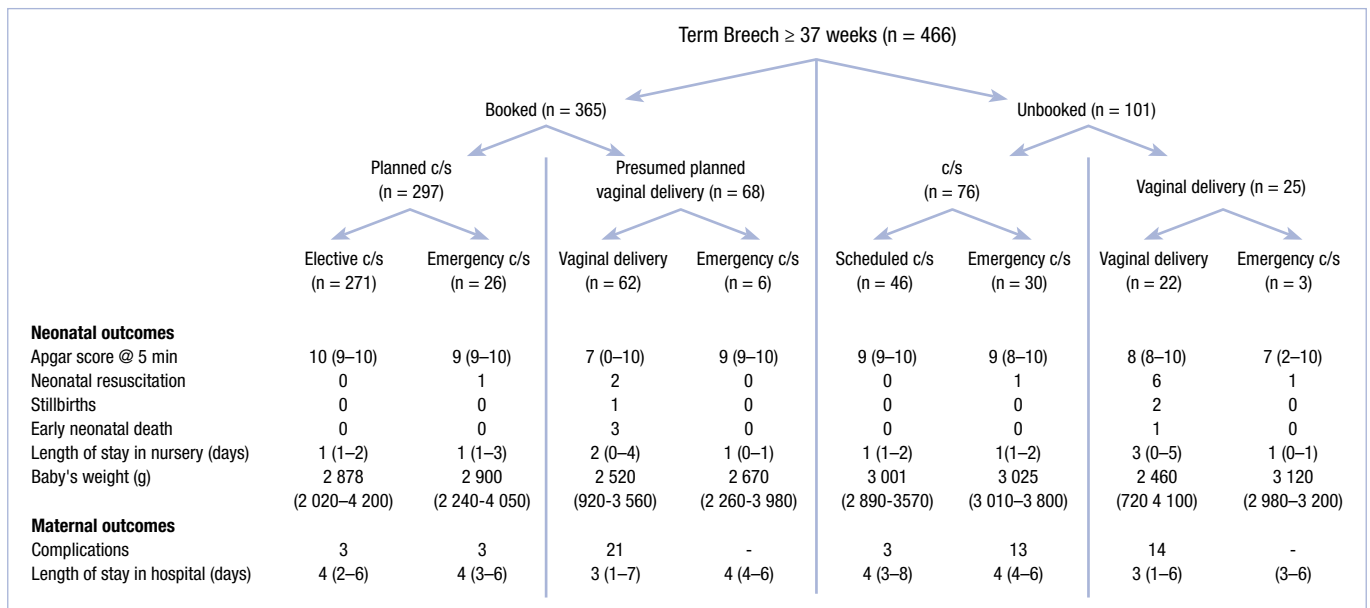
Sixty-eight (13%) of the term breech presentations had no decision made on the mode of delivery (since neither a planned c/s nor a planned delivery was documented, it was assumed that a planned vaginal delivery was intended). Six (9%) of the 68 had emergency c/s for fetal distress, slow progress and cephalo-pelvic disproportion. The remaining 62 had spontaneous vaginal deliveries.

One hundred and one (22%) of the 466 patients were 'unbooked', i.e., had no antenatal care. These patients were admitted in latent or false labour. Seventy-six (75%) of these 101 patients were allocated for a scheduled c/s; however, 30 (39%) of the 76 went into spontaneous labour prior to the scheduled c/s and had emergency c/s. The remaining 46 had scheduled c/s. Twenty-five (25%) were allocated for vaginal delivery, and 3 (12%) of the 25 had emergency c/s for fetal distress (Table I and Figure 1). The demographic data and the clinical characteristics of the 466 women with singleton term breech presentations are shown in Table I.

**Table I: Demographic data and the clinical characteristics of all patients with singleton term breech presentation (values are tabulated as mean, ranges and n (%))**

Characteristics	Term breech $\geq 37$ weeks Booked (n = 365)	Term breech $\geq 37$ weeks Unbooked (n = 101)
Age (years)	28 (14-44)	26 (18-40)
Parity	1 (0-4)	1 (0-5)
HIV status		
Positive	48 (13)	16 (16)
Negative	193 (53)	50 (50)
Unknown	124 (34)	35 (34)
Breech presentation type		
Complete	242 (66)	66 (65)
Incomplete	30 (8)	8 (8)
Footling	93 (26)	27 (27)
Gestational age (weeks)	39 (37-42)	38 (37-41)

Figure 1: Flow diagram showing maternal and neonatal outcomes of all term breech patients with and without antenatal care



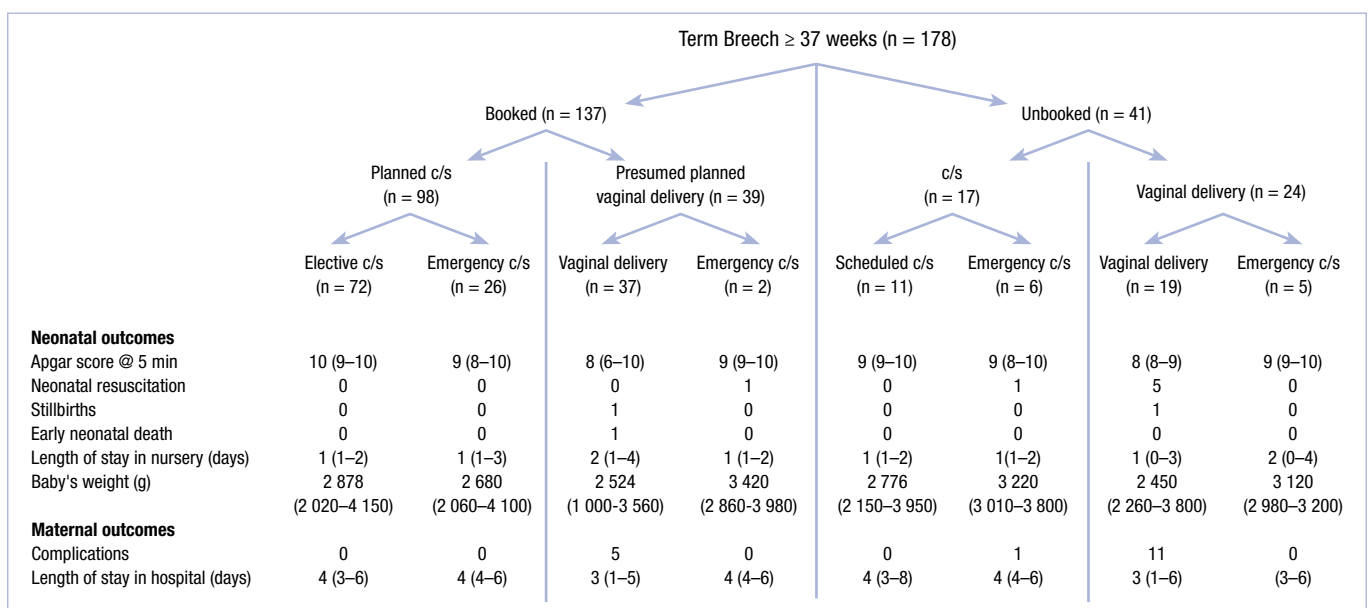
Outcomes of primigravidae with breech presentations

The demographic data and clinical characteristics of all primigravidae are shown in Table II. One hundred and seventy-eight of the 466 women with singleton term breech presentations were primigravidae and all who were booked and had made a decision for planned c/s ended up with either emergency c/s (n = 26) or elective c/s (n = 72). Thirty-nine of the booked primigravidae had made no decision on their mode of delivery, two had emergency c/s, and the rest had spontaneous vaginal deliveries. There was one neonatal death in the spontaneous vaginal delivery group due to a traumatic birth. All the patients admitted in advanced labour had spontaneous deliveries conducted by midwives. The maternal and neonatal outcomes of all primigravidae are shown in Figure 2.

Table II: Demographic data and the clinical characteristics of nulliparous patients with singleton term breech presentation (values are tabulated as mean, ranges and n (%))

Characteristics	Term breech ≥ 37 weeks Booked (n = 137)	Term breech ≥ 37 weeks Unbooked (n = 41)
Age (years)	21 (14–37)	20 (15–38)
HIV status		
Positive	11 (8)	4 (10)
Negative	79 (58)	22 (54)
Unknown	47 (34)	15 (36)
Breech presentation type		
Complete	72 (53)	13 (32)
Incomplete	22 (16)	8 (20)
Footling	43 (31)	20 (48)
Gestational age (weeks)	39 (37–40)	37 (37–40)

Figure 2: Flow diagram showing neonatal and maternal outcomes in primiparous term breech patients with and without antenatal care



## Neonatal outcomes

There were three stillbirths among the vaginal deliveries. One occurred in the presumed planned vaginal delivery group and two occurred in the unbooked vaginal delivery group. The causes of the stillbirths were intrauterine death. Four early neonatal deaths occurred in the vaginal delivery group; three occurred in the presumed planned vaginal delivery group and one occurred in the unbooked vaginal delivery group. The causes of early neonatal deaths were not documented.

## Maternal complications

There were more complications in the unbooked patients compared to the booked patients (30 vs 27). Wound infections occurred in 15 patients; 4 in the elective c/s group and 11 in the emergency c/s group. Eleven of the wound infections occurred in unbooked patients. There were also seven cases of postpartum haemorrhage, five of which occurred in the emergency c/s group.

## Discussion

This audit of singleton term breech presentations confirms our impressions that the majority of women with such fetal presentations are offered, and elect to have, a planned c/s. This is in keeping with the recommendations arising from the Term Breech Trial,<sup>3</sup> which found that perinatal morbidity and mortality were significantly higher in the vaginal delivery group (5%) compared to the elective c/s group (1.6%). A review of the Dutch perinatal database also showed that the rate of planned elective c/s 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, and that this change led to a halving of the perinatal mortality rates.<sup>7</sup>

In our audit of 365 patients who had antenatal care at a district hospital, 3 (5%) of the 62 women who delivered vaginally had early neonatal deaths, while there were no neonatal deaths in the planned c/s group (Figure 1). The three neonatal deaths occurred in those women for whom a record of the mode of delivery was not documented. These cases were admitted in advanced spontaneous labour and, for all practical purposes, no firm decisions had been made on the mode of delivery in labour. In one of the unbooked cases, a patient in advanced labour had a traumatic vaginal delivery and the baby died in the neonatal period.

The findings of our study are probably transferable to district hospitals in other parts of the country, and raise awareness of the fact that most women with breech presentations are not offered ECV, but rather a planned c/s. Health care professionals providing care for pregnant mothers in district hospitals in South Africa are generally medical officers with varying degrees of clinical experience, community service doctors and general practitioners. There are no specialist obstetricians and, furthermore, these hospitals are unlikely to be staffed by obstetric trainees. It is therefore not surprising that such medical personnel do not select women who are suitable for vaginal delivery or for ECV because they may not have been taught the necessary skills required for these tasks. Such skills are usually taught to registrars in training. Furthermore, it is likely that such doctors fear performing ECVs and breech vaginal deliveries, and probably believe that in their hands a planned c/s is safer for the baby and mother in their environment. Most district hospitals

in South Africa are in rural settings. Emergency ambulance services in such areas are inadequate and rural hospitals lack experienced medical staff particularly at night and the weekends. In addition, a rapid turnover of medical staff probably leads to standard clinical protocols not being followed. Transferring such patients to hospitals that conduct vaginal deliveries for breech presentations is therefore fraught with social and transport problems. Similarly, advocating a policy of "c/s for all breech presentations" can be argued to impact negatively in under-resourced settings because this would increase the rate of c/s and the prerequisite resources, both human and physical, may not be available for increased c/s rates. In addition, it may further reduce the number of medical doctors with the skills and experience necessary to deliver a breech safely.

Are there other options for the woman with a breech presentation besides a planned c/s or planned vaginal delivery? External cephalic version was attempted in only two (0.5%) of the 365 booked singleton breech patients diagnosed at the antenatal clinic in this audit. The NICE clinical guidelines (2003) recommend ECV at 36 weeks gestation<sup>15</sup> and a Cochrane review reports that it appears to be a safe and effective way to reduce planned c/s.<sup>16</sup> A review of ECV by Green and Wilkinshaw (2002)<sup>16</sup> outlines the relative and absolute contraindications, and reports success rates of 50 to 80%. Furthermore, the use of tocolytic agents has been reported to improve success rates, with few side effects or risks.<sup>17</sup> Overall it seems that the risks (fetal bradycardia, vaginal bleeding and placental abruption) associated with ECV are minimal and that the success rates do lead to a reduction in c/s rates for breech presentations. Guidelines of The Royal College of Obstetricians and Gynaecologists therefore recommend that the procedure be offered to pregnant women with uncomplicated breech presentations at 37 weeks or more<sup>18</sup> and that more information on the benefits, risks and the role of ECV be given to women.<sup>19</sup>

Training in the methods and procedures of ECV and criteria for selecting patients for planned vaginal delivery should be instituted in both undergraduate and postgraduate curricula. There is evidence that obstetric emergency training can improve neonatal outcomes in a cephalic term population.<sup>20</sup> Therefore regular training by simulations on mannequins and video demonstrations, backed up by observation and practise of vaginal delivery of breech presentation under the close supervision of experienced medical staff, will prevent breech vaginal delivery from becoming a dying art. It is also essential in view of the fact that there will always be some patients who request vaginal delivery, situations in which antenatal care is inappropriate and patients who present in spontaneous labour prior to planned c/s. In under-resourced settings, as illustrated by this survey, a fair number of patients are unbooked and present in labour with breech presentations in advanced labour and there may be no personnel with the necessary experience to conduct a vaginal delivery if indicated.

A firm decision on the mode of delivery was not documented in this retrospective study in 68 patients with breech presentations at 37 to 40 weeks. Sixty-two unbooked patients presented in spontaneous labour and delivered vaginally, suggesting that they probably fulfilled the criteria for vaginal delivery. Although there was no perinatal mortality and morbidity in this subgroup of women, it must be emphasised that they were admitted in advanced labour and delivered spontaneously. Clearly, complications to mother and baby are much more likely to occur

in such circumstances, especially if the breech delivery is attended by inexperienced personnel.

The maternal complications rates in this audit were low but, as expected, they were higher in those who had emergency c/s or who were unbooked. Given the low immediate maternal and neonatal complication rates associated with planned c/s – what do we advise women, particularly in view of the evidence from the PREMODA Trial (2006), namely that in women with breech presentations who fulfil the stringent criteria (including antenatal X-ray pelvimetry, intense fetal monitoring and delivery by experienced personnel), perinatal outcomes are similar to those achieved with planned c/s?<sup>21</sup> It would seem that in the absence of robust data on the long-term outcomes of having a c/s on both the mother and the baby, such as uterine rupture and placental abnormalities, and the fact that the babies born to mothers in the Term Breech Trial who have been followed up for two years show similar neurological development, whether delivered by c/s or vaginal delivery, a less rigid approach to planned c/s is appropriate in well-resourced countries.<sup>4</sup> Obstetricians are therefore encouraged to provide full information on both the immediate and long-term outcomes of elective and emergency c/s and the risks of ECV. This approach also embraces a view that advice can be tailored to a woman's individual needs. If she plans on having one or two children, then the woman may opt for one or two c/s with reasonable confidence that this will be acceptably safe. If, however, the woman and her partner wish to have a larger family, then the threshold for c/s might change the advice offered.<sup>22</sup> Furthermore, if the woman is a primigravidae the chances of her having a c/s if she has a breech presentation is so high that she may opt for c/s.

Would a pragmatic approach to the mode of breech presentation be suitable for under-resourced countries? Given the transport problems in rural settings, the rapid turnover of medical staff, the difficulties in establishing who may be suitable for vaginal delivery (the difficulty of performing and interpreting antenatal X-ray pelvimetry and estimating baby weights even by sonography), it may be more appropriate to strongly consider ECV and, if this fails, a planned c/s in district hospitals should be performed. It should be noted, however, that if an ECV is to be performed, c/s facilities should be available to attend to the small risk of complications associated with this procedure.

In facilities with the staff experienced in vaginal delivery of breech presentations and the necessary equipment for X-ray/CT pelvimetry and continuous fetal heart rate monitoring, then the less rigid system of the international guidelines should probably be followed. This may lead to a two-tiered system, but continued mandatory training of registrars in ECV and breech deliveries under supervision and using techniques such as mannequins, videos and fire drills must become the norm.

## Conclusion

In this audit of women with term breech presentations in a district hospital in Durban, South Africa, most primigravidae were offered planned c/s. However in a large proportion no plans as to the mode of delivery were made in the antenatal period. Thus women with term breech presentations who presented in advanced labour and delivered vaginally had high mortality rates.

## Recommendations

It is strongly recommended that women with term breech presentations be offered external cephalic version at the 37<sup>th</sup> week of pregnancy and if this fails a decision be made for either vaginal delivery or planned c/s. Strict criteria should be used for allowing vaginal delivery and this should include an assessment of the weight of the baby, the type of breech, and the size of the baby. These criteria are present in the maternity care guidelines for district hospitals published by the Department of Health.<sup>23</sup>

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