External cephalic version for breech presentation before term (Review)

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ABSTRACT

Background
External cephalic version (ECV) of the breech fetus at term (after 37 weeks) has been shown to be effective in reducing the number of breech presentations and caesarean sections, but the rates of success are relatively low. This review examines studies initiating ECV prior to term (before 37 weeks' gestation).

Objectives
To assess the effectiveness of a policy of beginning ECV before term (before 37 weeks' gestation) for breech presentation on fetal presentation at birth, method of delivery, and the rate of preterm birth, perinatal morbidity, stillbirth or neonatal mortality.

Search strategy
We searched the Cochrane Pregnancy and Childbirth Group Trials Register (April 2005), the Cochrane Central Register of Controlled Trials (*The Cochrane Library*, Issue 1, 2005), MEDLINE (1965 to April 2005), EMBASE (1988 to April 2005), and Controlled Clinical Trials randomised controlled trials registry (April 2005).

Selection criteria
Randomised trials of ECV beginning before term (before 37 weeks' gestation) compared with a control group in women with breech presentation before term.

Data collection and analysis
Two review authors independently assessed eligibility and trial quality and extracted data.

Main results
Three studies are included. One study reported on ECV that was undertaken and completed before 37 weeks' gestation compared to no ECV. No difference was found in the rate of non-cephalic presentation at birth. One study reported on a policy of ECV that was initiated before term (33 weeks) and up until 40 weeks' gestation and which could be repeated up until delivery compared to no ECV. This study showed a decrease in the rate of non-cephalic presentation at birth (relative risk 0.59, 95% confidence interval 0.45 to 0.77). One study reported on ECV started at between 34 to 35 weeks' gestation compared to beginning at 37 to 38 weeks' gestation. Although findings were not statistically significant, a 9.5% decrease in the rate of non-cephalic presentation at birth and a 7% decrease in the caesarean section rate were reported when ECV was started early.

Authors' conclusions
Compared with no ECV attempt, ECV commenced before term reduces non-cephalic births. Compared with ECV at term, beginning ECV at between 34 to 35 weeks may have some benefit in terms of decreasing the rate of non-cephalic presentation, and caesarean section. Further trials are needed to confirm this finding and to rule out increased rates of preterm birth, or other adverse perinatal outcomes. A large pragmatic trial is ongoing (www.utoronto.ca/miru/eecv2).

PLAIN LANGUAGE SUMMARY

Not enough evidence to say if turning a breech baby to head first early in the last months of pregnancy reduces breech position at term

Babies born bottom first (in the breech position) may have more problems during birth than those who are born head first (in the cephalic position). During an external cephalic version (ECV) a breech baby is turned to the head down position by gently pushing on the mother's abdomen. Other research shows that ECV after 37 weeks reduces the number of babies in the breech position at full term, and the number of caesarean sections. This review of trials found that if ECV is done very early in the third trimester (32 to 34 weeks) it does not affect how the baby is lying at full term nor was there any change in the number of babies born by caesarean delivery. However, there are insufficient data to say if beginning ECV between 34 and 36 weeks compared to beginning ECV after 37 weeks would result in fewer breech babies at birth and fewer caesarean sections. Further research is underway.

BACKGROUND

About 3% to 4% of all pregnant women who reach full term will have a fetus presenting by the breech. The majority of these women would prefer a vaginal birth although most would choose caesarean section if there is a medical indication (Gamble 2000; Geary 1997; Hildingsson 2002; Turnbull 1999). For the singleton fetus in breech presentation, caesarean section has been shown to be safer for the fetus than vaginal birth (Hofmeyr 2005a). The risks associated with caesarean section are low, but caesarean section is not without maternal risk and in developed countries remains the largest contributing factor to the incidence of maternal mortality and morbidity following childbirth (Minkoff 2003). A Cochrane review of planned caesarean section versus planned vaginal delivery for breech pregnancy at term, reported that even though 45% of women in the planned vaginal delivery group were delivered by caesarean section, planned caesarean section was associated with an increase in maternal morbidity (relative risk 1.29, confidence interval 1.03 to 1.61) (Hofmeyr 2005a). Furthermore, although the overall risk is very small, recent estimates of the incidence of mortality associated with elective caesarean section were nearly tripled compared to vaginal birth (Cooper 2002; Hall 1999). In addition to the increase in immediate morbidity following caesarean section, intra-abdominal adhesions may occur after caesarean section resulting in subsequent infertility (LaSala 1987). The presence of the uterine scar puts future pregnancies at increased risk of complications such as ectopic pregnancy, placenta previa, accreta and abruption, and uterine rupture (Dashe 2002; Gilliam 2002; Lydon-Rochelle 2001; Minkoff 2003). A further deterrent to caesarean section is that the procedure requires the expertise of an obstetrician or other physician with surgical training, and limits the role for low-risk obstetrical care providers such as midwives and family practitioners. A review of strategies to reduce caesarean section rates identified external cephalic version (ECV) as the only clinical intervention with demonstrated Level 1 evidence for reducing primary caesarean section rates overall (Walker 2002).

Breech presentation may be caused by an underlying fetal or maternal abnormality, or may be an apparently chance occurrence, or related to an otherwise benign variant such as cornual placental position. In the latter instances, breech presentation places a healthy fetus and mother at increased risk of a complicated vaginal delivery or caesarean section. It is not surprising that, over the years, the possibility of manipulating the baby from the breech to the cephalic presentation has intrigued obstetric caregivers.

ECV before term came into routine obstetric practice on the basis of the self-evident immediate effectiveness of the procedure as well as reassuring results from several non-randomised studies, and in spite of the negative results of the only controlled trial reported prior to 1980 (Brosset 1956). The popularity of ECV before term waned after the mid-1970s, partly because of reports of a substantial perinatal mortality associated with the procedure (Bradley-Watson 1975), and the increasing perception of caesarean section as a safer option than ECV or breech delivery.

Prior to the mid-1970s, ECV was usually attempted before term because of the belief that the procedure would seldom be successful at term. Subsequent studies showed that with the use of tocolysis, ECV could be achieved in a substantial proportion of women with breech presentation at term. ECV at term differs in many fundamental ways from that performed before term. These include the fact that the fetus is mature and may be delivered more readily in the event of complications, and that spontaneous version without ECV attempt, or reversion after successful ECV, are less common at term. A Cochrane review of ECV at term (beginning at 37 weeks) reported an increased likelihood that the fetus will be cephalic at delivery, and reduced caesarean sections (Hofmeyr 2005b). Thus ECV has been recommended for all women with a breech fetus at term, where there is no contraindication. However the procedure is often unsuccessful, particularly in North American and European settings, (Hofmeyr 2005b; Hutton 1999) and a recent study has compared outcomes when ECV was begun earlier (34 to 35 weeks' gestation) compared to at term (37 to 38 weeks' gestation) (Hutton 2003).

Readers are referred to previous reviews of the topic (Hofmeyr 1989; Hofmeyr 1991; Hofmeyr 1992; Hofmeyr 1993). See also related reviews: 'External cephalic version for breech presentation at term' (Hofmeyr 1996a); 'Interventions to help external cephalic version for breech presentation at term' (Hofmeyr 2004); and 'and

'Cephalic version by postural management for breech presentation' (Hofmeyr 2000).

The protocol for this review was modified in April 2005 to include comparisons of ECV commenced before term but continued if necessary up to term.

OBJECTIVES

To assess the effectiveness of a policy of beginning external cephalic version before term for breech presentation on the presentation at and method of delivery, preterm birth, and perinatal morbidity, stillbirth and neonatal mortality, using the best available evidence.

CRITERIA FOR CONSIDERING STUDIES FOR THIS REVIEW

Types of studies

Randomised clinical trials with random allocation to a treatment and control group, comparing the effects of external cephalic version (ECV) before term or commenced before term on clinically meaningful outcomes, with a control group (no ECV attempt or ECV at term).

Types of participants

Women with a live singleton fetus in breech presentation before term.

Types of intervention

External cephalic version attempt before term (37 weeks' gestation) or commenced before term, compared with a no ECV attempt or ECV at term. The comparisons fall into the following three categories:
(1) ECV was done before term, and compared to no ECV.
(2) a policy of initiating ECV before or at term compared to no ECV.
(3) a policy of beginning ECV before term compared to a policy of beginning ECV after 37 weeks.

Types of outcome measures

Outcomes were included if they were determined to be clinically meaningful, and if reasonable measures were taken to minimise observer bias, and missing data was insufficient to materially influence conclusions, and data were available for analysis according to original allocation, irrespective of protocol violations; data available in format suitable for analysis.

Primary outcomes

- Rate of non-cephalic presentation at birth
- Method of delivery

Secondary outcomes

- Preterm birth
- Perinatal outcomes including serious morbidity and stillbirth or neonatal mortality

A predefined subgroup analysis of outcomes for nulliparous and multiparous women, type of breech (frank breech, where the fetus has hips flexed and legs extended making the ECV more difficult versus non-frank), use of tocolytics and gestational age at randomisation was planned. The study samples however are too small to make this analysis meaningful at this stage.

SEARCH METHODS FOR IDENTIFICATION OF STUDIES

See: methods used in reviews.

We searched the Cochrane Pregnancy and Childbirth Group Trials Register by contacting the Trials Search Co-ordinator (April 2005).

The Cochrane Pregnancy and Childbirth Group's Trials Register is maintained by the Trials Search Co-ordinator and contains trials identified from:
(1) quarterly searches of the Cochrane Central Register of Controlled Trials (CENTRAL);
(2) monthly searches of MEDLINE;
(3) handsearches of 30 journals and the proceedings of major conferences;
(4) weekly current awareness search of a further 37 journals.

Details of the search strategies for CENTRAL and MEDLINE, the list of handsearched journals and conference proceedings, and the list of journals reviewed via the current awareness service can be found in the 'Search strategies for identification of studies' section within the editorial information about the Cochrane Pregnancy and Childbirth Group.

Trials identified through the searching activities described above are given a code (or codes) depending on the topic. The codes are linked to review topics. The Trials Search Co-ordinator searches the register for each review using these codes rather than keywords.

In addition, we conducted a systematic literature search which included electronic databases: The Cochrane Central Register of Controlled Trials (*The Cochrane Library,* Issue 1, 2005), MEDLINE (1965 to April 2005), EMBASE (1988 to April 2005) and Controlled Clinical Trials randomised controlled trials registry (April 2005), using the search terms: 'external cephalic version or ECV'. A manual search of the references of all retrieved articles was performed. We sought unpublished trials and abstracts submitted to major international congresses and contacted expert informants.

We did not apply any language restrictions.

METHODS OF THE REVIEW

We evaluated trials under consideration for methodological quality and appropriateness for inclusion according to the prestated selection criteria, without consideration of their results. Individual outcome data were included in the analysis if they met the prestated criteria in 'Types of outcome measures'. We processed included trial data as described in Alderson 2004. We assessed the validity of each included trial according to the criteria outlined in the Cochrane Reviewers' Handbook (Alderson 2004). We assessed trials with a grade allocated to each trial on the basis of allocation concealment: A (adequate), B (unclear) or C (inadequate). Studies were also reviewed to ensure that any losses to follow up were reported and appropriately accounted or adjusted for. Tests of heterogeneity were planned to assess any differences between trials and to explore any possible causes of heterogeneity including use of subgroup analyses for main outcomes by parity and type of breech (frank/non-frank) and tocolytic use. In these studies blinding of group allocation is not possible, and the primary outcomes of type of presentation at birth and mode of delivery are not open to interpretation.

We extracted data from the sources and entered, checked for accuracy and analysed the data using the Review Manager software (RevMan 2003). For dichotomous data, relative risks and 95% confidence intervals were calculated, and in the absence of heterogeneity, results were pooled using a fixed-effect model. Continuous data were pooled using weighted mean differences and 95% confidence intervals.

DESCRIPTION OF STUDIES

Three studies were included in the review. *See* table of 'Characteristics of included studies'.

Comparison one
Mensink 1980 included women in early third trimester (as early as 32 weeks' gestation) in a randomised controlled trial undertaken in Gronigen, The Netherlands. Allocation was undertaken using randomised sealed envelopes, stratified by parity. Breech was verified by ultrasound. Women with a singleton breech presentation before term (from 32 weeks) were included. Women with any contraindication to external version were excluded. External cephalic version was attempted by an assistant in training without tocolysis (n = 50) compared with no ECV attempt (n = 52). If the ECV failed, a further attempt was made by an obstetrician one week later. Outcomes included: non-cephalic births; caesarean section; one minute Apgar score less than seven; umbilical vein pH less than 7.2; neurological deficit in newborn; and perinatal mortality. The authors ascribe the low success rate to the gentleness with which external cephalic version was attempted.

Comparison two
Van Veelen 1989 enrolled 180 healthy white Dutch women in Rotterdam, The Netherlands with uncomplicated pregnancy of 33 to 40 weeks' gestation and a live singleton breech fetus attending antenatal clinic of Ikazia Hospital, Rotterdam, The Netherlands. Random allocation of women used sealed envelopes, and was stratified by parity. Repeated ECV was performed between 33 and 40 weeks' gestation with no tocolysis, analgesia or anaesthesia compared to no ECV. The outcomes included: presentation at delivery; mode of delivery; neonatal outcome.

Comparison three
Hutton 2003 is an international multicentre randomised controlled trial (n = 233). All nulliparous women with any breech presentation and multiparous women with a frank breech presentation were eligible for the trial if they had a live singleton fetus and a gestational age of between 34 weeks, 0 days and 36 weeks 0 days. Women were excluded if they had a parity greater than four, if they planned to move to a non-trial centre, or if there was any contraindication to labour or vaginal birth (such as placenta previa, or previous classical caesarean section), to ECV (such as fetal heart rate abnormalities, abruptio placenta, fetal anomalies, uterine anomalies, oligohydramnios, rupture of membranes, over distended uterus) or to early ECV (such as fetus engaged in the pelvis, an increased risk of preterm labour, increased risk of abruptio placenta). ECV was begun between 34 weeks 0 days and 36 weeks 0 days in the early group (n = 117); and between 37 weeks 0 days and 38 weeks 0 days in the delayed group (n = 116). Tocolysis was recommended to be used either routinely or selectively in both groups; analgesia was permitted. The primary outcome was presentation at delivery; other outcomes included: caesarean section; serious fetal complication; preterm birth less than 37 weeks; women's views about ECV. The study was funded by Canadian Institutes of Health Research.

METHODOLOGICAL QUALITY

See table of 'Characteristics of included studies', particularly the 'Methods' and 'Notes' sections.

Hutton 2003 used a centralised telephone randomisation service. Mensink 1980 and Van Veelen 1989 used randomised, sealed envelopes. All studies stratified for parity at randomisation. There were no losses to follow up in Mensink 1980 or Van Veelen 1989. Hutton 2003 reported one loss to follow up in the Early ECV group following randomisation but prior to any ECV procedure being done. All used an intention-to-treat approach to analyses. Blinding is not feasible for the intervention under study. Blinding was not used in the collection of the outcome data in any of the studies, but the outcomes of interest are objective measures, and this will minimise concerns of reporting bias.

RESULTS

Comparison one: External cephalic version (ECV) before term compared to no ECV: one trial involving 102 women (Mensink 1980**)**

Primary outcomes
The rate of non-cephalic presentation at birth in the ECV group was 40% and in the no ECV group was 39% (relative risk (RR) 1.04, 95% confidence interval (CI) 0.64 to 1.69). The rate of caesarean section was 14% in the ECV group and 8% in the no ECV group (RR 1.82, 95% CI 0.57 to 5.84).

Other outcomes
There was no difference in any of the other outcomes as follows.

- The rate of one minute Apgar scores less than seven (RR 0.62, 95% CI 0.25 to 1.59).
- The rate of stillbirth or neonatal mortality less than seven days (RR 0.35, 95% CI 0.04 to 3.22).

Comparison two: ECV commencing before term compared to no ECV: one trial involving 179 women (Van Veelen 1989**)**

Primary outcomes
The ECV group had 44% non-cephalic presentation at birth compared to 74% in the no ECV group (RR 0.59, 95% CI 0.45 to 0.77). The rate of caesarean section delivery was 11% in the ECV group compared to 14% in the no ECV group (RR 0.62, 95% CI 0.27 to 1.43).

Other outcomes
There was no difference in any of the other outcomes.

- The rate of five minute Apgar scores less than seven (RR 3.03, 95% CI 0.13 to 73.48).
- The rate of stillbirth or neonatal mortality less than seven days (RR 0.34, 95% CI 0.01 to 8.16).

Comparison three: ECV commencing before term compared to ECV commencing after term (37 weeks' gestation): one trial involving 233 women (Hutton 2003**)**

Primary outcomes
There rate of non-cephalic presentation was 57% when ECV was started early compared to 66% when ECV was started after 37 weeks' gestation (RR 0.86, 95% CI 0.70 to 1.05). The rate of caesarean section delivery was 65% in the early ECV group and 72% when ECV was started after 37 weeks' gestation (RR 0.90, 95% CI 0.76 to 1.08).

Other outcomes
The rate of five minute Apgar scores less than seven (RR 0.49, 95% CI 0.05 to 5.34).
The rate of stillbirth or neonatal mortality less than seven days (RR 0.33, 95% CI 0.01 to 8.10).
The rate of preterm birth less than 37 weeks (RR 1.47, 95% CI 0.54 to 4.00).
One or more serious fetal complication (RR 0.88, 95% CI 0.33 to 2.37).

DISCUSSION

We have good evidence to support external cephalic version (ECV) beginning at term, that is after 37 weeks' gestation. A Cochrane review of ECV concludes that ECV is a useful manoeuvre to decrease both the rate of non-cephalic presentation and caesarean section when it is begun after 37 weeks' gestation (Hofmeyr 2005b), and the major obstetrical societies recommend that ECV be offered to low-risk women with singleton breech pregnancies. Of the studies of ECV at term, those undertaken in European or American centres report a low rate of success with ECV and a remarkably higher rate of non-cephalic presentation at birth compared to the African trials. It is possible that there is a difference in the population characteristics. In a cohort study Hofmeyr reported higher rates of success with the ECV procedure in a group of African women compared to Caucasian women (Hofmeyr 1986).

The studies of ECV before term are less straightforward. Two controlled trials which had been included in the previous review have been excluded for concerns of methodological soundness (Brosset 1956; Kasule 1985). Neither of these trials used random assignment to treatment groups. The Brosset study states that "cases were divided into two groups" while in the Kasule trial women were "allocated to a version or non-version group depending on the day they attended antenatal clinic". The Mensink 1980 trial which compared ECV prior to term with no ECV, undertook the procedure at an early stage in pregnancy (32 weeks' gestation), when the rates of spontaneous version remain high. Despite the findings from this early study of ECV before term which clearly showed no difference between the ECV and no ECV group, the more recent trials suggest that there may be benefit to beginning ECV prior to, but near term, particularly amongst those populations where success rates at term are low. The Van Veelen 1989 study beginning ECV as early as 33 weeks (but up to 40 weeks, with a mean of gestational age at ECV of 35 weeks) compared with no ECV showed a 30% decrease in the rate on non-cephalic presentation. This trial showed no difference in the rate of caesarean section, however, it was undertaken prior to publication of findings from the Term Breech Trial (Hannah 2000), and a policy of vaginal breech delivery is evident. The study was too small to meaningfully rule out differences in Apgar scores less than seven at five minutes or in stillbirth or neonatal mortality less than seven days. In the Van Veelen 1989 study, the mean time of beginning ECV was 35 weeks' gestation, and it is unclear if the benefit that was found could be attributed to beginning the procedure earlier in pregnancy, or because some of the procedures were not initiated until after term. The Hutton 2003 trial compared beginning ECV

early at between 34 and 36 weeks' gestation with ECV beginning at between 37 and 38 weeks' gestation. This study showed a decrease of 9.5% in the rate of non-cephalic presentation at birth, and a 7% decrease in the caesarean section rate. Although these findings are clinically important, neither of these findings was statistically significant, and the sample size (n = 232) was too small to rule out any risk of preterm birth or fetal problems. An adequately sized trial is required to determine if there is benefit to beginning ECV earlier than term. One trial is in progress: The Early ECV2 Trial, Canada (www.utoronto.ca/miru/eecv2).

AUTHORS' CONCLUSIONS

Implications for practice

The current evidence, although promising, is not adequate to support a policy of beginning external cephalic version (ECV) before term. Until the results of further research into the timing of ECV, the procedure should be offered after 37 weeks' gestation to women with singleton breech pregnancies and no contraindications.

Implications for research

Further trials are required to determine if there is benefit to beginning ECV earlier than 37 weeks' gestation. Such trials should be large enough to effectively answer the question, and to be able to report on neonatal morbidity and mortality, including rates of preterm birth.

POTENTIAL CONFLICT OF INTEREST

E Hutton is an author of one of the included trials and is the author of an ongoing study, which will be reviewed for inclusion in a future update.

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As part of the pre-publication editorial process, this review has been commented on by two peers (an editor and a referee who is external to the editorial team), one or more members of the Pregnancy and Childbirth Group's international panel of consumers and the Group's Statistical Adviser.

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External sources of support

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TABLES

Characteristics of included studies

Study	Hutton 2003
Methods	An international multicentre randomised controlled trial with randomisation stratified by parity using a centralised telephone randomisation system. Breech verified within 4 days of randomisation, and confirmed prior to ECV attempt.
Participants	All nulliparous women with any breech presentation and multiparous women with a frank breech presentation were eligible for the trial if they had a live singleton fetus and a gestational age of between 34 weeks, 0 days and 36 weeks 0 days. Women were excluded if they had a parity > 4, if they planned to move to a non-trial centre, or if there was any contraindication to labour or vaginal birth (such as placenta previa, or previous classical caesarean section), to ECV (such as fetal heart rate abnormalities, abruptio placenta, fetal anomalies, uterine anomalies, oligohydramnios, rupture of membranes, over distended uterus) or to early ECV (such as fetus engaged in the pelvis, an increased risk of preterm labour, increased risk of abruptio placenta).
Interventions	ECV was begun between 34 weeks 0 days and 36 weeks 0 days in the early group (n = 117); and between 37 weeks 0 days and 38 weeks 0 days in the delayed group (n = 116). Tocolysis recommended either routinely or selectively in both groups; analgesia permitted.
Outcomes	Primary: presentation at delivery. Other: caesarean section rate; serious fetal complication; preterm birth < 37 weeks; women's view's about ECV.
Notes	n = 233. Funded by Canadian Institutes of Health Research; coordinated through the Maternal Infant and Reproductive Health Research Unit (MIRU) at the University of Toronto, Canada.

Allocation concealment	A – Adequate

Study	**Mensink 1980**
Methods	Allocation at 32 weeks' gestation by randomised sealed envelopes, stratified by parity. Breech verified by ultrasound.
Participants	Singleton breech presentation before term (from 32 weeks). Exclusion criteria: contraindication to external version.
Interventions	External cephalic version attempt without tocolysis (n = 50) compared with no ECV attempt (n = 52). ECV was attempted by an assistant in training. If failed, a further attempt was made by an obstetrician 1 week later.
Outcomes	Non-cephalic births; caesarean section; 1 minute Apgar score < 7; Umbilical vein pH < 7.2; neurological deficit in newborn; perinatal mortality. The perinatal death was due to placental abruption.
Notes	Groningen, The Netherlands. The authors ascribe the low success rate to the gentleness with which external cephalic version was attempted.
Allocation concealment	B – Unclear

Study	**Van Veelen 1989**
Methods	Random allocation of women using sealed envelopes, stratified by parity.
Participants	Healthy white Dutch women with uncomplicated pregnancy of 33-40 weeks' gestation and a live singleton breech fetus attending antenatal clinic of Ikazia Hospital, Rotterdam, The Netherlands.
Interventions	Repeated ECV performed between 33 and 40 weeks gestation with no tocolysis, analgesia or anaesthesia compared to no ECV.
Outcomes	Presentation at delivery; mode of delivery; neonatal outcome.
Notes	n = 180. Rotterdam, The Netherlands.
Allocation concealment	A – Adequate

ECV: external cephalic version

Characteristics of excluded studies

Study	**Reason for exclusion**
Brosset 1956	Method to group allocation is described as "dividing the cases up into two groups". It is highly unlikely that randomisation was used and there is risk of enrolment bias. This study is of historical interest in that it is an early example of a controlled trial.
Kasule 1985	Method to group allocation is described as being dependant on the day that women attended at antenatal clinic (on Monday and Wednesday ECV was performed, whereas on Tuesday and Thursday it was not), and there is significant risk of enrolment bias. It is also unclear in this study how the breech pregnancies were confirmed. In addition, 25% of the study population were grandmultiparous women who are at increased risk of unstable lie, and are at an increased risk of encountering complications.

Characteristics of ongoing studies

Study	**Belizan 1989**
Trial name or title	Early external cephalic version in antenatal care. A randomized trial.

Characteristics of ongoing studies (*Continued*)

Participants	Women with breech presentation at 31 weeks' pregnancy.
Interventions	External cephalic version (ECV) for breech presentation versus no ECV.
Outcomes	Caesarean section; length of postpartum stay.
Starting date	June 1989
Contact information	Belizan JM. Centro Rosarino de Estudios Perinatales, Bv OroNo 500, 2000 Rosario, Argentina. Tel +54 41 63745
Notes	

Study	**Hutton 2004**
Trial name or title	The Early External Cephalic Version 2 Trial.
Participants	Women with live singleton breech at 33-35 weeks' gestation.
Interventions	ECV beginning at between 34 weeks 0 days and 35 weeks 6 days compared to ECV beginning at or after 37 weeks 0 days gestation.
Outcomes	Primary: caesarean section. Secondary: preterm labour.
Starting date	Recruitment (n = 1460): December 2004.
Contact information	eileen.hutton@ubc.ca; www.utoronto.ca/MIRU/eecv2
Notes	Study funded by the Canadian Institutes of Health Research ISRCTN -56498577

ECV: external cephalic version

ANALYSES

Comparison 01. External cephalic version (ECV) before term versus no ECV

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Non-cephalic births	1	102	Relative Risk (Fixed) 95% CI	1.04 [0.64, 1.69]
02 Caesarean section	1	102	Relative Risk (Fixed) 95% CI	1.82 [0.57, 5.84]
03 Apgar score < 7 at 1 minute	1	102	Relative Risk (Fixed) 95% CI	0.62 [0.25, 1.59]
04 Perinatal mortality	1	102	Relative Risk (Fixed) 95% CI	0.35 [0.04, 3.22]

Comparison 02. External cephalic version (ECV) commenced before term versus no ECV

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Non-cephalic births	1	179	Relative Risk (Fixed) 95% CI	0.59 [0.45, 0.77]
02 Caesarean section	1	179	Relative Risk (Fixed) 95% CI	0.62 [0.27, 1.43]
03 Apgar score < 7 at 5 minutes	1	179	Relative Risk (Fixed) 95% CI	3.03 [0.13, 73.48]
04 Stillbirth and neonatal mortality < 7 days	1	179	Relative Risk (Fixed) 95% CI	0.34 [0.01, 8.16]

Comparison 03. External cephalic version (ECV) commenced before term versus ECV at term

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Non-cephalic births	1	232	Relative Risk (Fixed) 95% CI	0.86 [0.70, 1.05]
02 Caesarean section	1	232	Relative Risk (Fixed) 95% CI	0.90 [0.76, 1.08]
03 Apgar score < 7 at 5 minutes	1	230	Relative Risk (Fixed) 95% CI	0.49 [0.05, 5.34]
04 Stillbirth or neonatal mortality < 7 days	1	232	Relative Risk (Fixed) 95% CI	0.33 [0.01, 8.10]
05 Preterm birth < 37 weeks	1	232	Odds Ratio (Fixed) 95% CI	1.47 [0.54, 4.00]
06 One or more serious fetal complications following randomisation	1	232	Odds Ratio (Fixed) 95% CI	0.88 [0.33, 2.37]

INDEX TERMS

Medical Subject Headings (MeSH)

*Breech Presentation; Randomized Controlled Trials; Version, Fetal [*methods]

MeSH check words

Female; Humans; Pregnancy

COVER SHEET

Title External cephalic version for breech presentation before term

Authors Hutton EK, Hofmeyr GJ

Contribution of author(s) GJ Hofmeyr prepared the initial review of this topic. E Hutton has revised and will maintain the review.

Issue protocol first published 1996/1

Review first published 1996/1

Date of most recent amendment 16 November 2005

Date of most recent SUBSTANTIVE amendment 18 October 2005

What's New April 2005
The protocol for the review 'External cephalic version for breech presentation before term' has been updated in order to distinguish between those studies that attempt external cephalic version (ECV) only before term and those that include ECV before term and at term. This distinction has not been made previously. The following comparisons are now included in the review:
(1) ECV before term compared to no ECV;
(2) ECV commenced before term and continued up until delivery compared to no ECV;
(3) ECV commenced before term and continued up until delivery compared with beginning ECV after 37 weeks' gestation.
We conducted a new search in April 2005, as a result of which we identified one new trial (Hutton 2003) and one new ongoing study (Hutton 2004). As a result of the changes to the protocol, the Brosset 1956 and Kasule 1985 trials have now been exluded and Van Veelen 1989 has been included.

Date new studies sought but none found	Information not supplied by author
Date new studies found but not yet included/excluded	Information not supplied by author
Date new studies found and included/excluded	27 April 2005
Date authors' conclusions section amended	27 April 2005
Contact address	Eileen Hutton Assistant Professor Department of Family Practice University of British Columbia Division of Midwifery B-54 - 2194 Health Sciences Mall Vancouver British Columbia V6T 1Z3 CANADA E-mail: eileen.hutton@ubc.ca Tel: +1 604 8227016 Fax: +1 604 8228030
DOI	10.1002/14651858.CD000084.pub2
Cochrane Library number	CD000084
Editorial group	Cochrane Pregnancy and Childbirth Group
Editorial group code	HM-PREG

GRAPHS AND OTHER TABLES

Analysis 01.01. Comparison 01 External cephalic version (ECV) before term versus no ECV, Outcome 01 Non-cephalic births

Review: External cephalic version for breech presentation before term

Comparison: 01 External cephalic version (ECV) before term versus no ECV

Outcome: 01 Non-cephalic births

Study	ECV n/N	No ECV n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
Mensink 1980	20/50	20/52		100.0	1.04 [0.64, 1.69]
Total (95% CI)	50	52		100.0	1.04 [0.64, 1.69]
Total events: 20 (ECV), 20 (No ECV)					
Test for heterogeneity: not applicable					
Test for overall effect z=0.16 p=0.9					

Analysis 01.02. Comparison 01 External cephalic version (ECV) before term versus no ECV, Outcome 02 Caesarean section

Review: External cephalic version for breech presentation before term

Comparison: 01 External cephalic version (ECV) before term versus no ECV

Outcome: 02 Caesarean section

Study	ECV n/N	No ECV n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
Mensink 1980	7/50	4/52		100.0	1.82 [0.57, 5.84]
Total (95% CI)	50	52		100.0	1.82 [0.57, 5.84]
Total events: 7 (ECV), 4 (No ECV)					
Test for heterogeneity: not applicable					
Test for overall effect z=1.01 p=0.3					

Analysis 01.03. Comparison 01 External cephalic version (ECV) before term versus no ECV, Outcome 03 Apgar score < 7 at 1 minute

Review: External cephalic version for breech presentation before term

Comparison: 01 External cephalic version (ECV) before term versus no ECV

Outcome: 03 Apgar score < 7 at 1 minute

Study	ECV n/N	No ECV n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
Mensink 1980	6/50	10/52		100.0	0.62 [0.25, 1.59]
Total (95% CI)	50	52		100.0	0.62 [0.25, 1.59]
Total events: 6 (ECV), 10 (No ECV)					
Test for heterogeneity: not applicable					
Test for overall effect z=0.99 p=0.3					

Analysis 01.04. Comparison 01 External cephalic version (ECV) before term versus no ECV, Outcome 04 Perinatal mortality

Review: External cephalic version for breech presentation before term

Comparison: 01 External cephalic version (ECV) before term versus no ECV

Outcome: 04 Perinatal mortality

Study	ECV n/N	No ECV n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
Mensink 1980	1/50	3/52		100.0	0.35 [0.04, 3.22]
Total (95% CI)	50	52		100.0	0.35 [0.04, 3.22]
Total events: 1 (ECV), 3 (No ECV)					
Test for heterogeneity: not applicable					
Test for overall effect z=0.93 p=0.4					

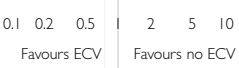
Analysis 02.01. Comparison 02 External cephalic version (ECV) commenced before term versus no ECV, Outcome 01 Non-cephalic births

Review: External cephalic version for breech presentation before term

Comparison: 02 External cephalic version (ECV) commenced before term versus no ECV

Outcome: 01 Non-cephalic births

Study	ECV n/N	No ECV n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
Van Veelen 1989	39/89	67/90		100.0	0.59 [0.45, 0.77]
Total (95% CI)	89	90		100.0	0.59 [0.45, 0.77]
Total events: 39 (ECV), 67 (No ECV)					
Test for heterogeneity: not applicable					
Test for overall effect z=3.93 p=0.00009					



Analysis 02.02. Comparison 02 External cephalic version (ECV) commenced before term versus no ECV, Outcome 02 Caesarean section

Review: External cephalic version for breech presentation before term

Comparison: 02 External cephalic version (ECV) commenced before term versus no ECV

Outcome: 02 Caesarean section

Study	ECV n/N	No ECV n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
Van Veelen 1989	8/89	13/90		100.0	0.62 [0.27, 1.43]
Total (95% CI)	89	90		100.0	0.62 [0.27, 1.43]
Total events: 8 (ECV), 13 (No ECV)					
Test for heterogeneity: not applicable					
Test for overall effect z=1.12 p=0.3					

Analysis 02.03. Comparison 02 External cephalic version (ECV) commenced before term versus no ECV, Outcome 03 Apgar score < 7 at 5 minutes

Review: External cephalic version for breech presentation before term

Comparison: 02 External cephalic version (ECV) commenced before term versus no ECV

Outcome: 03 Apgar score < 7 at 5 minutes

Study	ECV n/N	No ECV n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
Van Veelen 1989	1/89	0/90		100.0	3.03 [0.13, 73.48]
Total (95% CI)	89	90		100.0	3.03 [0.13, 73.48]
Total events: 1 (ECV), 0 (No ECV)					
Test for heterogeneity: not applicable					
Test for overall effect z=0.68 p=0.5					

Analysis 02.04. Comparison 02 External cephalic version (ECV) commenced before term versus no ECV, Outcome 04 Stillbirth and neonatal mortality < 7 days

Review: External cephalic version for breech presentation before term

Comparison: 02 External cephalic version (ECV) commenced before term versus no ECV

Outcome: 04 Stillbirth and neonatal mortality < 7 days

Study	ECV n/N	No ECV n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
Van Veelen 1989	0/89	1/90		100.0	0.34 [0.01, 8.16]
Total (95% CI)	89	90		100.0	0.34 [0.01, 8.16]
Total events: 0 (ECV), 1 (No ECV)					
Test for heterogeneity: not applicable					
Test for overall effect z=0.67 p=0.5					

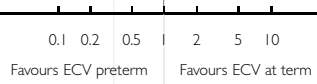
Analysis 03.01. Comparison 03 External cephalic version (ECV) commenced before term versus ECV at term, Outcome 01 Non-cephalic births

Review: External cephalic version for breech presentation before term

Comparison: 03 External cephalic version (ECV) commenced before term versus ECV at term

Outcome: 01 Non-cephalic births

Study	ECV started preterm n/N	ECV at term n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
Hutton 2003	66/116	77/116		100.0	0.86 [0.70, 1.05]
Total (95% CI)	116	116		100.0	0.86 [0.70, 1.05]
Total events: 66 (ECV started preterm), 77 (ECV at term)					
Test for heterogeneity: not applicable					
Test for overall effect z=1.48 p=0.1					

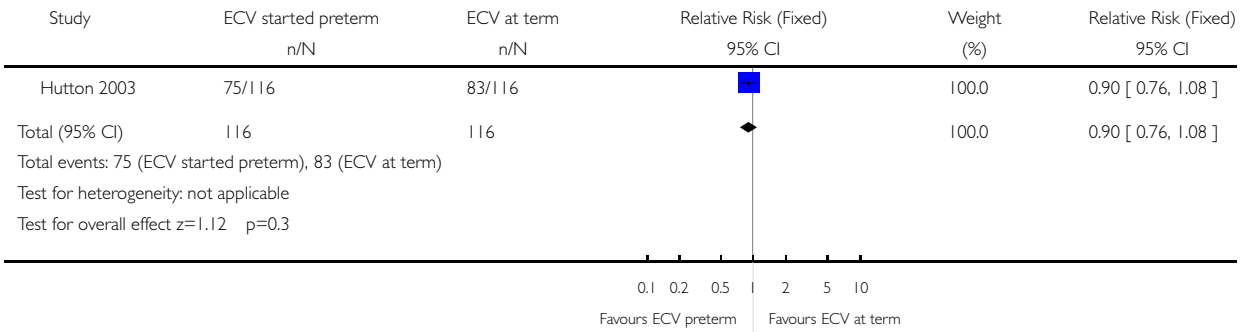


Analysis 03.02. Comparison 03 External cephalic version (ECV) commenced before term versus ECV at term, Outcome 02 Caesarean section

Review: External cephalic version for breech presentation before term

Comparison: 03 External cephalic version (ECV) commenced before term versus ECV at term

Outcome: 02 Caesarean section

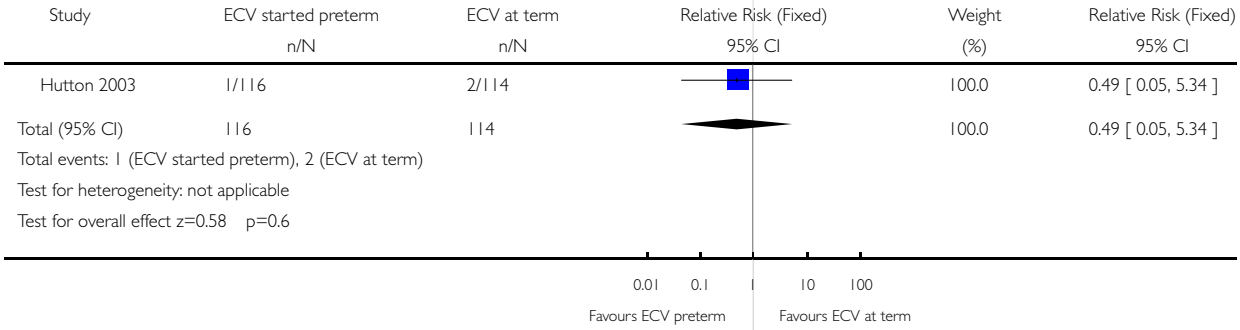


Analysis 03.03. Comparison 03 External cephalic version (ECV) commenced before term versus ECV at term, Outcome 03 Apgar score < 7 at 5 minutes

Review: External cephalic version for breech presentation before term

Comparison: 03 External cephalic version (ECV) commenced before term versus ECV at term

Outcome: 03 Apgar score < 7 at 5 minutes



Analysis 03.04. Comparison 03 External cephalic version (ECV) commenced before term versus ECV at term, Outcome 04 Stillbirth or neonatal mortality < 7 days

Review: External cephalic version for breech presentation before term

Comparison: 03 External cephalic version (ECV) commenced before term versus ECV at term

Outcome: 04 Stillbirth or neonatal mortality < 7 days

Study	ECV started preterm n/N	ECV at term n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
Hutton 2003	0/116	1/116		100.0	0.33 [0.01, 8.10]
Total (95% CI)	116	116		100.0	0.33 [0.01, 8.10]
Total events: 0 (ECV started preterm), 1 (ECV at term)					
Test for heterogeneity: not applicable					
Test for overall effect z=0.67 p=0.5					

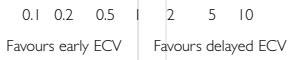
Analysis 03.05. Comparison 03 External cephalic version (ECV) commenced before term versus ECV at term, Outcome 05 Preterm birth < 37 weeks

Review: External cephalic version for breech presentation before term

Comparison: 03 External cephalic version (ECV) commenced before term versus ECV at term

Outcome: 05 Preterm birth < 37 weeks

Study	Early ECV n/N	Delayed ECV n/N	Odds Ratio (Fixed) 95% CI	Weight (%)	Odds Ratio (Fixed) 95% CI
Hutton 2003	10/116	7/116		100.0	1.47 [0.54, 4.00]
Total (95% CI)	116	116		100.0	1.47 [0.54, 4.00]
Total events: 10 (Early ECV), 7 (Delayed ECV)					
Test for heterogeneity: not applicable					
Test for overall effect z=0.75 p=0.5					



Analysis 03.06. Comparison 03 External cephalic version (ECV) commenced before term versus ECV at term, Outcome 06 One or more serious fetal complications following randomisation

Review: External cephalic version for breech presentation before term

Comparison: 03 External cephalic version (ECV) commenced before term versus ECV at term

Outcome: 06 One or more serious fetal complications following randomisation

Study	Early ECV n/N	Delayed ECV n/N	Odds Ratio (Fixed) 95% CI	Weight (%)	Odds Ratio (Fixed) 95% CI
Hutton 2003	8/116	9/116		100.0	0.88 [0.33, 2.37]
Total (95% CI)	116	116		100.0	0.88 [0.33, 2.37]
Total events: 8 (Early ECV), 9 (Delayed ECV)					
Test for heterogeneity: not applicable					
Test for overall effect z=0.25 p=0.8