Systematic review of adverse outcomes of external cephalic version and persisting breech presentation at term
Nassar N, Roberts C L, Barratt A, Bell J C, Olive E C, Peat B

CRD summary
This review investigated the frequency of adverse maternal and foetal outcomes associated with external cephalic version in comparison with persisting breech presentation at term. The authors concluded that adverse outcomes are rare though, owing to poor reporting and methodological limitations, there was insufficient evidence to properly quantify adverse maternal and foetal outcomes. The authors' conclusions are appropriate.

Authors' objectives
To assess the frequency of adverse maternal and foetal outcomes associated with external cephalic version (ECV) in comparison with persisting breech presentation at term.

Searching
MEDLINE, EMBASE, the Cochrane Database of Systematic Reviews, ACP Journal Club, DARE and the Cochrane CENTRAL Register were searched up to September 2003; the search terms were reported. No language restrictions were applied. The references of selected articles were also screened.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs), cohort and case-control studies were eligible for inclusion.

Specific interventions included in the review
Studies of women who had an ECV compared with women who were eligible for but did not have an ECV were included. Studies that used analgesia to facilitate ECV or did not use foetal monitoring before and after the procedure were excluded.

Participants included in the review
Pregnant women with a breech presentation, who received the intervention from 36 weeks' gestation, were eligible for inclusion. Women in the control groups had to have no contraindications for ECV. Three studies were conducted in Africa; the remaining studies were conducted in Europe, the USA and other countries worldwide.

Outcomes assessed in the review
The main outcomes of interest were adverse maternal and foetal events attributable to ECV (e.g. pre-labour rupture of membranes, antepartum haemorrhage, cord prolapse, nuchal cord and antepartum foetal death). These were defined as events that occurred within 24 hours of the procedure. Maternal and foetal side-effects of ECV (e.g. maternal pain and changes in foetal heart rate), as well as ECV success and reversion, were also of interest.

How were decisions on the relevance of primary studies made?
The titles and abstracts of articles were reviewed for relevant studies, with hard copies were obtained for further scrutiny as and when appropriate. The authors did not state how many reviewers were involved in this process.

Assessment of study quality
The authors stated that they assessed validity, but did not report what criteria they used.

Two authors independently assessed study quality, and any disagreements were resolved by consensus.
Data extraction
Two authors independently extracted the data, and any disagreements were resolved by consensus. Adverse outcomes and the frequency of side-effects were extracted. Pooled rates and 95% confidence intervals (CIs) were calculated for effectiveness data, and relative risks (RRs) for maternal and foetal adverse outcomes.

Methods of synthesis
How were the studies combined?
Where appropriate data were available, the studies were pooled in a meta-analysis using a fixed-effect model to estimate ECV effectiveness and adverse outcomes. The results of the studies were also described in a narrative.

How were differences between studies investigated?
Where data were available, the studies were stratified by parity (primiparous and multiparous) and study location (African and non-African populations). Heterogeneity was investigated using Cochran’s Q statistic (P>0.1 was defined as statistically significant).

Results of the review
Eleven studies (n=2,503) were included: five RCTs (n=433), five prospective cohort studies (n=1,139), two of which used historical controls, and one retrospective cohort study (n=762). Two RCTs also included ongoing cohort studies (n=169).

Adverse maternal outcomes: these were rarely reported and it was unclear whether the included studies investigated the event rates in the control group as well as the intervention group. There were two cases of antepartum haemorrhage or vaginal bleeding in 618 women following ECV. There were no cases of uterine rupture, pre-labour rupture of membranes and placental abruption, though these were only investigated in single studies. There was an increase in the number of women with onset of labour within 24 hours compared with the control group (1 study); the RR was 2.38 (95% CI: 0.63, 8.95), though this was not statistically significant.

Adverse foetal outcomes: there was increased risk of a nuchal cord in the ECV group compared with the control (2 studies); the RR was 2.05 (95% CI: 0.87, 4.84), though this was not statistically significant. There were no cases of cord prolapse although this was investigated in only one study. There were no cases of foetal death within 24 hours in the three studies that assessed this outcome in the intervention and control groups. There was no difference between the intervention and control groups in rate of perinatal deaths (3 studies; RR 0.95, 95% CI: 0.13, 6.68). The authors stated that there was no evidence of heterogeneity for any outcome that was pooled (P>0.1).

Side-effects of ECV: the most frequently reported maternal side-effects of ECV were mild or moderate discomfort during the procedure (35% of women; 3 studies). Increased foetal heart rate was reported in 10% of cases (1 study) leading to delivery in 1.1%, and transient foetal bradycardia in 6.7% of cases (8 studies). Other infrequent side-effects were also reported.

ECV success: the overall success rate for ECV was 68% (95% CI: 65, 70) compared with spontaneous version from breech to cephalic presentation of 14% (95% CI: 12, 16) in the control group. ECV was significantly more successful among multiparae (78%) than primiparae women (48%) and in African (89%) compared with non-African women (62%; P<0.001).

Authors’ conclusions
Adverse outcomes related to ECV and persisting breech presentation are rare though, owing to poor reporting and methodological limitations in most studies, there was insufficient evidence to properly quantify adverse maternal and foetal outcomes.

CRD commentary
The review addressed a clear research question using defined inclusion criteria and several relevant databases were
searched without language restrictions. Appropriate procedures were used to reduce error and bias in the data extraction, though it was unclear whether these were also applied to the study selection process. Although the authors stated that the studies were quality assessed, this was not reported. However, the authors did highlight the poor reporting of the adverse event data, and it is appropriate that they highlighted the need for improved collection of adverse event data on ECV. The authors’ conclusions are appropriate.

**Implications of the review for practice and research**

Practice: The authors stated that the data on adverse outcomes provide useful information for counselling in the management of breech presentation.

Research: The authors stated that improved reporting and collection of safety data on ECV and persisting breech presentation are required.

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