External cephalic version-related risks: a meta-analysis

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CRD summary

The authors concluded that external cephalic version appeared to be a safe procedure for breech pregnancies and complications were not associated with foetal position post-intervention. Overall, given concerns about the quality of the included studies and the analyses reported, the findings of the review may not be reliable and should be interpreted with caution.

Authors' objectives

To assess the risk of complications associated with external cephalic version for breech pregnancies and, in particular, to assess whether the risk is associated with the outcome post-intervention.

Searching

The Cochrane Library, MEDLINE and EMBASE were searched up to March 2007. Search terms were reported. Reference lists of relevant reviews and included studies were also screened for additional studies. No language restrictions were applied.

Study selection

Studies reporting the success rate and complication rate of external cephalic version in healthy pregnant women, with a breech presentation singleton pregnancy of over 36 weeks, were eligible for inclusion in the review. Eligible studies had to confirm good foetal condition using cardiotocography. Foetal abnormalities or pathologies identified through ultrasound examination were excluded. Studies reporting insufficient or unclear data were also excluded.

Few study, intervention and patient characteristics were reported. Included studies reported various complications including stillbirth, placental abruption, cord prolapse, abnormal cardiotocography post-intervention, vaginal bleeding, foeto-maternal transfusion and ruptured membranes. Placental abruption and foetal death were regarded as serious intervention-related complications if they occurred within 24 hours of the intervention.

Two reviewers screened the titles and abstracts of retrieved references. Full manuscripts were obtained for all potentially relevant studies. Full paper copies of the studies were independently screened for inclusion by two reviewers.

Assessment of study quality

Two reviewers assessed study quality according to study design (cohort, randomised controlled study, case-control or other), consecutive patient recruitment, prospective data collection, inclusion/exclusion criteria, tocolytic usage, and number of clinicians performing the procedures.

Data extraction

Outcome data relating to success, foetal deaths, maternal complications, foetal complications and foetal position post-intervention were extracted and used to construct 2x2 tables for the calculation of odds ratios with 95% confidence intervals.

Two reviewers extracted study data and discrepancies were resolved through consensus or the involvement of a third reviewer if necessary.

Methods of synthesis

Studies were grouped overall, regardless of the type of complication, and also by specific complication. Pooled odd ratios with 95% confidence intervals were calculated. Statistical homogeneity assessed using the I^2 statistic. Studies with an I^2 of less than 50% were considered to be homogeneous. Where significant statistical heterogeneity was evident, studies were pooled using a random-effects model, where no significant heterogeneity was detected a fixed-effect

model was used. Further analyses were carried out to assess the relationship between different complications and the outcome of external cephalic version, and to assess the effects of study quality.

Results of the review

Eighty-four studies (12,955 cephalic version procedures), including 57 cohort studies, 15 randomised controlled trials and 10 case-control studies, were included in the review. Forty-seven studies collected outcome data prospectively, 45 studies recruited participants consecutively and 70 studies used tocolytics.

The success rate for external cephalic version ranged from 16 to 100% (pooled success rate 58%, 95% confidence interval (CI): 56 to 57; I^2=94%). The pooled complication rate was 6.1% (95% CI: 4.7 to 7.8; I^2=92%). Subgroup analyses for all complications failed to show any significant effects of study quality. Pooled odds ratios for each individual complication type were also reported, but only analyses related to the outcome of external cephalic version have been reported in this abstract.

Vaginal bleeding was significantly less likely after a successful external cephalic version as compared with an unsuccessful attempt (odds ratio 0.33, 95% CI: 0.14 to 0.82; four studies; I^2=0%). There were no statistically significant differences between a successful and an unsuccessful outcome of external cephalic version, in terms of the odds of stillbirth (eight studies), placental abruption (six studies), cord prolapse (three studies), abnormal cardiotocography post-intervention (foetal bradycardia, 10 studies; foetal tachycardia, two studies), foeto-maternal transfusion (two studies) or ruptured membranes (three studies). No significant heterogeneity was evident for any of the pooled analyses, with the exception of foetal bradycardia (I^2=70%) and foetal tachycardia (I^2=53%).

Authors' conclusions

External cephalic version appeared to be a safe procedure and complications were not associated with foetal position post-intervention.

CRD commentary

This review assessed a clearly defined review question. Relevant studies may have been missed as no specific attempts were made to locate unpublished studies, leading to the risk of publication bias. Steps were taken to minimise the risk of reviewer error and bias through the verification of each step in the review process by a second reviewer. Study quality was assessed but findings for individual studies were not reported, so it was not possible to assess the reliability of the findings. Limited subgroup analyses were performed according to undefined quality criteria, but failed to show any statistically significant findings. Given that a large number of the studies appeared to collect data retrospectively, and were cohort or case-control studies, the data was likely to be subject to significant risk of bias. Only 18% of the studies used a randomised controlled design. Also, there was no description of the characteristics of individual studies (population, study design, intervention). Statistical heterogeneity was assessed appropriately, but without a description of the study characteristics it is difficult to determine whether the pooled studies are clinically similar and whether the pooled effects are reliable. The authors also quote a cut-off I^2 value of 50% as showing statistical significance, but considered one group of pooled studies to be homogeneous despite an I^2 of 53%. It was also difficult to assess whether control groups were used in the studies and, if so, what types of control were used. This made the interpretation of the data difficult. Outcome data were analysed according to whether the intervention failed or was successful. The authors reported that the intervention was a 'safe procedure' but they did not appear to compare complication rates with any other control procedure. The data presented only appeared to show that when complications occur they are unrelated to foetal position. Overall, given concerns about the quality of the included studies and the analyses reported, the findings of the review may not be reliable and should be interpreted with caution.

Implications of the review for practice and research

Practice: The authors stated that all eligible women should be offered an external cephalic version, with foetal assessment being carried out before and after the procedure. However, external cephalic version should only be carried out in settings where caesarean delivery services are readily available.

Research: The authors stated that future studies of external cephalic version should report the incidence of complications and the foetal position post-intervention.

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