A meta-analysis of infant outcomes after breech delivery

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Authors' objectives
To estimate the risks of neonatal morbidity and mortality associated with a trial of labour and elective Caesarean for the term breech infant.

Searching
MEDLINE and the Health Planning and Administration database were searched from January 1981 to June 1991, using the search terms 'breech', 'malpresentation' and 'external cephalic version' in conjunction with a previously developed set of obstetric terms. Periodic follow-up searches were conducted until June 1993. The reference lists of key articles and relevant text chapters were also reviewed. Only English language publications were considered.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs), prospective and retrospective cohort studies, with sufficient data to calculate risks of particular outcomes by intended mode of delivery (i.e. trial of labour or no trial of labour), were included. The selection criteria for a trial of labour had to be specified, and electronic foetal monitoring had to be used for all participants to ensure uniformity in intrapartum monitoring.

Specific interventions included in the review
Trial of labour leading to vaginal delivery or Caesarean, or no trial of labour (Caesarean).

Participants included in the review
Women delivering singleton, term breech infants vaginally or by Caesarean were included. No characteristics of the infants or women were given.

Outcomes assessed in the review
The outcomes were mortality (excluding antepartum deaths and deaths due to congenital anomalies), intracranial bleeding, brachial plexus injury, fractured clavicle, facial nerve injury, 5-minute Apgar score less than 7, and laceration.

How were decisions on the relevance of primary studies made?
Each article was reviewed independently by two authors for possible inclusion in the analysis.

Assessment of study quality
The validity of the primary studies was not formally assessed, although the authors discussed methodological problems.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the authors performed the data extraction.

Methods of synthesis
How were the studies combined?
For each study the risk of the outcome was calculated for both groups (trial of labour and no trial of labour), and thus the risk difference between the two groups (the attributable risk). The risk difference estimates were then pooled across the studies using a random-effects model.

How were differences between studies investigated?
A chi-squared test of homogeneity was used to identify outlying studies, and the analyses were performed both with and without these studies.

**Results of the review**

There were 9 studies in total (3,056 infants): 2 RCTs (310 infants), 2 prospective cohort studies (547 infants) and 5 retrospective cohort studies (2,199 infants).

No pooled risk difference for any single outcome was significantly different from 0%, indicating no difference between the trial of labour and no trial of labour groups.

When all the study types were combined, the pooled risk difference between the trial of labour and no trial of labour groups for any injury (intracranial bleeding, brachial plexus injury, clavicular fracture, facial nerve injury) was 0.89% (95% confidence interval, CI: 0.02, 1.75), and for any injury or death was 1.10% (95% CI: 0.27, 1.93).

Restricting attention to the RCTs resulted in non significant differences for both any injury and any injury or death.

When the study identified as being an outlier was excluded from the analysis, the risk difference was smaller for both the risk of any injury, and any injury or death, but was still statistically significant (0.41%, 95% CI: 0.11, 0.72; and 0.76%, 95% CI: 0.35, 1.18, respectively).

**Authors' conclusions**

The meta-analysis shows a higher risk of foetal injury and foetal injury or death in selected term breech infants allowed a trial of labour than in those electively delivered by Caesarean. However, several methodological problems were identified in the included studies and the lack of systematic evaluation of maternal, as well as foetal, outcomes makes clinical application of the results difficult. When management decisions are made, the potential increased risk of neonatal morbidity after a trial of labour should be considered along with the increased maternal risk from Caesarean delivery.

**CRD commentary**

This is a well-presented systematic review, with clear inclusion criteria and a thorough discussion of the limitations of the primary studies.

However, the search was rather limited, excluding both unpublished and non-English studies, therefore the possibility of publication bias cannot be ruled out. There was no formal validity assessment of the included studies, although the authors provide a thorough discussion of the methodological problems. More details of the characteristics of mothers and infants included in the studies would have been useful, although this may not have been available to the authors from the primary studies and the authors do describe the variation in eligibility for trial of labour across the included studies.

The results presented support the authors' cautious conclusions.

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