Expectant management versus labor induction for suspected fetal macrosomia: a systematic review

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Authors' objectives
To summarise the effects of expectant management and labor induction on the mode of delivery and perinatal outcomes in patients with suspected foetal macrosomia.

Searching
MEDLINE, EMBASE, Current Contents and databases on SilverPlatter were searched from 1966 to June 2002 without any language restrictions. Abstracts from scientific meetings from 1981 were handsearched for unpublished studies or abstracts. The references from identified studies and reviews were checked, and the authors were contacted for missed trials and additional data. Details of the keywords used were given.

Study selection
Study designs of evaluations included in the review
Observational studies and randomised controlled trials (RCTs) were eligible for inclusion.

Specific interventions included in the review
Studies that compared expectant management with labor induction were eligible for inclusion.

Participants included in the review
Studies of patients with suspected foetal macrosomia were eligible for inclusion. The included studies defined macrosomia as an estimated foetal weight of at least 4,000 g (most studies), 4,000 g or 90th percentile, at least 4,500 g, or at least 3,600 g. In all but one study macrosomia was the indication for labor induction. The studies were conducted in Europe and the USA between 1984 and 2000.

Outcomes assessed in the review
Studies that reported the rates of Caesarean section, spontaneous and operative vaginal deliveries, shoulder dystocia, and abnormal Apgar scores were eligible for inclusion. An abnormal Apgar score was defined as less than seven at 5 minutes.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
Validity was not formally assessed, but potential bias in the observational studies was discussed in the text of the review.

Data extraction
Two reviewers independently extracted the data into data extraction forms and resolved any discrepancies through discussion with a third reviewer. The data extracted included country, sample size, type of study, definition of macrosomia, and indication for induction and outcomes.

Methods of synthesis
How were the studies combined?
Separate meta-analyses were used to combine the RCTs and the observational studies. Pooled odds ratios (ORs) and
95% confidence intervals (CIs) were calculated for each outcome using fixed-effect models; random-effects models were used where significant statistical heterogeneity (P<0.10) was found. Publication bias was assessed using the Egger test and by examining funnel plots.

How were differences between studies investigated?
Statistical heterogeneity was assessed using the Breslow-Day test and by examining L'Abbe plots. Sensitivity analyses were conducted by omitting each study in turn from estimates of pooled ORs for Caesarean delivery rates. A meta-regression was used to explore the influence of study characteristics (study location and year of study) on treatment effect.

**Results of the review**

Two RCTs (313 patients) and 9 observational studies (3,438 patients) were included.

There was no evidence of publication bias from either the Egger test or the funnel plots.

Significant statistical heterogeneity was only detected for spontaneous vaginal delivery.

**Caesarean delivery.**

The RCTs found no significant difference in the rates of Caesarean delivery between expectant management (23.7%) and induced labour (20.9%); the OR was 1.17 (95% CI: 0.69, 2.01). The observational studies found that Caesarean delivery rates were significantly reduced with expectant management (8.4%) in comparison with induced labour (16.6%); the OR was 0.39 (95% CI: 0.30, 0.50). The results were unchanged after omitting each study in turn. Study location and year of study did not influence the results.

**Spontaneous delivery.**

One RCT found no significant difference in the rates of spontaneous delivery between expectant management (65.5%) and induced labour (67.9%); the OR was 0.90 (95% CI: 0.54, 1.48). The observational studies (8 studies) found that spontaneous delivery rates were significantly increased with expectant management (82.8%) in comparison with induced labour (72.8%); the OR was 2.07 (95% CI: 1.34, 3.19). Significant statistical heterogeneity was detected (P<0.001).

**Operative vaginal delivery.**

One RCT (273 patients) found no significant difference in the rates of operative vaginal delivery between expectant management (65.5%) and induced labour (67.9%); the OR was 1.02 (95% CI: 0.50, 2.08). The observational studies (8 studies) also found no significant difference between expectant management and induced labour for rates of operative vaginal delivery (8.9% versus 10.3%); the OR was 0.89 (95% CI: 0.68, 1.17).

**Shoulder dystocia.**

The RCTs found no significant difference in rates of shoulder dystocia between expectant management (5.6%) and induced labour (5.9%); the OR was 0.93 (95% CI: 0.35, 2.46). The observational studies (5 studies) also found no significant difference between expectant management and induced labour for rates of shoulder dystocia (6% versus 7.1%); the OR was 0.81 (95% CI: 0.50, 1.31).

**Apgar score less than seven at 5 minutes.**

Neither of the RCTs assessed Apgar scores. The observational studies (4 studies) found no significant difference in the rates of low Apgar scores between expectant management (1.8%) and induced labour (1.7%); the OR was 0.65 (95% CI: 0.30, 1.42).

**Authors' conclusions**
The rates of Caesarean delivery in observational studies were found to increase after labour induction for suspected foetal macrosomia. This increase in Caesarean delivery rates was not found in RCTs with limited statistical power.

CRD commentary
The review question was clear in terms of the study design, intervention, participants and outcome. Several relevant sources were searched, the search terms were stated, no language restrictions were applied, and attempts were made to locate unpublished studies. Two reviewers extracted the data, which reduces potential errors and bias. However, since the methods used to select the studies were not described, the adequacy of the methods used cannot be evaluated. Study validity was not formally assessed, although the bias inherent in observational studies was discussed in the text of the review.

The characteristics of the studies were summarised and RCTs and observational studies were, appropriately, combined in separate meta-analyses. Statistical heterogeneity was assessed and a sensitivity analysis was conducted for one outcome to assess the influence of each study. Where significant heterogeneity was found (spontaneous vaginal delivery), potential reasons were not explored. Possible reasons for discrepant results between the RCTs and observational studies were considered in the review discussion. The evidence presented appears to support the authors' conclusions.

Implications of the review for practice and research
The authors did not state any implications for further research and practice.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.