Labor induction versus expectant management for postterm pregnancies: a systematic review with meta-analysis

Sanchez-Ramos L, Olivier F, Delke I, Kaunitz A M

CRD summary
This review compared routine induction of labour with expectant management for pregnant women who exceed 41 weeks' gestation. The review was fairly well conducted and reported. The authors concluded that induction of labour reduced the rate of Caesarean section; a more conservative interpretation would suggest no difference in treatment effect for beneficial or adverse outcomes.

Authors' objectives
To compare routine induction of labour with expectant management for pregnant women who exceed 41 weeks' gestation.

Searching
MEDLINE, PubMed and the Cochrane Library were searched; the keywords used were given. The reference lists of studies, reviews and textbook chapters were checked. The searches were conducted from 1966 to July 2002. There were no language restrictions. Only published, full-text articles were included.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion.

Specific interventions included in the review
Studies that compared induction of labour with expectant management were eligible for inclusion. The methods of labour induction differed between the trials.

Participants included in the review
Studies of women who were having an uncomplicated, singleton pregnancy who had reached 41 weeks' gestation were eligible for inclusion. The age of the women in the review was not reported. Four of the studies were conducted in the USA, two in China, two in the UK, two in Thailand, and one each in Canada, India, Israel, Norway, Finland and Denmark. Post-term, as defined in the various studies, ranged from 287 to 294 days.

Outcomes assessed in the review
Only studies that had clearly defined outcome measures were eligible for inclusion. The included studies assessed at least one of the following outcomes: perinatal mortality, mode of delivery (Caesarean), meconium-stained fluid, meconium aspiration syndrome, meconium below the cords, operative vaginal delivery, foetal heart rate (FHR) abnormalities during labour, Caesarean deliveries for FHR abnormalities, abnormal Apgar scores, and neonatal intensive care unit (NICU) admissions. The primary outcomes were the Caesarean delivery rate and perinatal mortality.

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, although they did allude to disagreements over inclusion decisions being resolved by consensus.

Assessment of study quality
The authors stated that each study was assessed for quality, but they did not specify details of the scale or method used to obtain the quality scores reported. Two independent reviewers assessed the quality of each study.
Data extraction
Two independent reviewers extracted the data.

Methods of synthesis
How were the studies combined?
A meta-analysis was performed. For each trial with binary outcomes, the odds ratio (OR) and 95% confidence intervals (CIs) were calculated. Pooled estimates of ORs were calculated using fixed-effect (Mantel-Haenszel) and random-effects (DerSimonian and Laird) models. Publication bias was investigated using the Egger test and by visual examination of funnel plots.

How were differences between studies investigated?
Heterogeneity was assessed formally using the Breslow-Day method and by visual inspection of L'Abbe plots. Pre-planned sensitivity analyses to assess the influence of individual trials were also performed.

Results of the review
Sixteen RCTs (n=6,588) were included.

Relative to expectant management, labour induction yielded statistically significant benefits for the following:
rate of Caesarean section (15 trials; OR 0.88, 95% CI: 0.78, 0.99),
Caesarean section for FHR abnormalities (7 trials; OR 0.77, 95% CI: 0.61, 0.96), and
meconium staining (11 trials; OR 0.75, 95% CI: 0.66, 0.84).
For the latter (meconium staining), the analysis indicated statistically significant heterogeneity. The random-effects model yielded an OR of 0.66 (95% CI: 0.49, 0.88).
There was no statistically significant benefit with labour induction over expectant management for the following:
perinatal mortality rate (13 trials; OR 0.41, 95% CI: 0.14, 1.18),
FHR abnormalities (8 trials; OR 0.86, 95% CI: 0.72, 1.02),
NICU admission rates (7 trials; OR 0.92, 95% CI: 0.78, 1.10),
meconium aspiration (5 trials; OR 0.46, 95% CI: 0.18, 1.21),
meconium below the cords (3 trials; OR 0.99, 95% CI: 0.77, 1.28), and
abnormal Apgar scores (10 trials; OR 0.82, 95% CI: 0.51, 1.32).
In these analyses, with the exception of the result for meconium staining, there was no significant heterogeneity, evidence of publication bias or evidence of any undue influence of any single trial.

Authors' conclusions
Induction of labour at 41 weeks' gestation in uncomplicated singleton pregnancies reduces the rate of Caesarean section without adversely affecting perinatal outcomes.

CRD commentary
This review addressed a straight forward question and utilised clearly defined inclusion criteria in terms of the intervention, population, study design and outcome measures. The literature search included two major electronic
sources and was not restricted by language. The authors reported performing a quality assessment, but they did not report details of their methods or explain the results (other than to state they believed all were of high quality). The details of the included trials were tabulated, but the number of events by primary trial were not reported. Other than the quality assessment, the review methodology was well reported. The meta-analysis, which was performed using standard techniques, was appropriate. Given that the beneficial effect of labour induction on the rate of Caesarean section is only just significant, the authors’ conclusions appear to overstate its benefits; a more conservative interpretation would suggest no difference in treatment effect for beneficial or adverse outcomes.

Implications of the review for practice and research
Practice: The authors suggested that labour induction at 41 weeks gestation for otherwise uncomplicated, singleton pregnancies can reduce Caesarean delivery rates without compromising perinatal outcomes.

Research: The authors did not state any implications for further research.

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