**Authors' objectives**
To compare a dinoprostone (10 mg) controlled-release vaginal insert with other forms of vaginal or cervical prostaglandin for cervical ripening.

**Searching**
The authors reviewed the Cochrane Pregnancy and Childbirth Database. They also searched MEDLINE and EMBASE from 1980 to 2000 using the following terms: 'cervical ripening', 'labor induction', 'dinoprostone', 'misoprostol', 'prostaglandins' and 'uterine hyperstimulation'. Additional published and unpublished studies were identified by contacting the authors of all relevant studies, and by searching the bibliographies. Studies reported in any language were considered.

**Study selection**

**Study designs of evaluations included in the review**
Randomised controlled studies (RCTs) that reported on one or more of the primary outcomes were eligible for inclusion.

**Specific interventions included in the review**
A 10 mg dinoprostone (PGE2 or Propress) slow-release vaginal insert was compared with alternative prostaglandin preparations. The alternative preparations were reported to be PGE2 (0.5 to 2.5 mg) cervical or vaginal gel, vaginal misoprostol (25 to 50 mg), cervical dinoprostone (0.5 mg), or PGE2 (3 mg) vaginal tablets.

**Participants included in the review**
Women requiring cervical ripening for labour induction with singleton gestations after 37 weeks.

**Outcomes assessed in the review**
The primary outcomes assessed were: delivery by 24 hours post-insertion; the rate of uterine hyperstimulation (hypertonus) with foetal heart change; and the rate of Caesarean delivery. The secondary outcomes assessed were the mean time to delivery, and delivery by 12 hours.

**How were decisions on the relevance of primary studies made?**
Two reviewers, not blinded to the source of the data, independently selected the studies for inclusion.

**Assessment of study quality**
The studies were assessed using the following criteria:

- the method of generating the allocation sequence, where methods such as random number table, lot drawing, coin tossing, card shuffling or dice throwing were considered adequate, and methods based on case number, date of birth, admission date, or alternation were considered inadequate;

- the security of concealment, where methods such as central randomisation, coded drug boxes, or sequentially numbered opaque sealed envelopes were considered adequate, and an open allocation sequence was inadequate;

- the blinding of the patient and therapist to the intervention;

- the completeness of follow-up; and

- the use of intention-to-treat analysis.
Two reviewers, not blinded to the source of the data, independently performed the validity assessment.

**Data extraction**
Data were extracted independently by two reviewers and crosschecked for accuracy.

Data were extracted for the categories of: study identification, type of study and the process of concealment, participants (e.g. Bishop score, weeks of pregnancy), interventions with dosage regimen, and main outcomes.

**Methods of synthesis**

- **How were the studies combined?**
  A meta-analysis was used to combine the studies. The odds ratios (ORs) were generated using the Mantel-Haenszel fixed-effect method (see Other Publications of Related Interest). The studies were grouped according to the outcome variable examined: 3 studies examined delivery within 24 hours, 4 studies examined delivery within 12 hours, 5 studies examined uterine hypertonus with foetal heart rate change, and all 9 studies examined the Caesarean delivery rate.
  
  Funnel plots, where the sample size was examined against the common ORs, were used to investigate publication bias.

- **How were differences between studies investigated?**
  Statistical heterogeneity was assessed using chi-squared tests. The authors conducted one sensitivity analysis where participants treated with misoprostol (2 studies) were excluded from the analysis.

**Results of the review**

Nine RCTs with 865 participants were included in the review. One study was only reported as an abstract.

The generation of the randomisation sequence was adequate in 5 trials, and the security of sequence concealment was adequate in 4 trials. None of the studies were double-blind.

- **Primary outcomes.**
  The common OR for delivery within 24 hours was 0.80 (95% confidence interval, CI: 0.56, 1.15), showing no significant difference between the PGE2 vaginal insert and other interventions.
  
  The common OR for uterine hypertonus with change in foetal heart rate was 1.19 (95% CI: 0.58, 2.54).
  
  The Caesarean delivery rate was also similar between groups with an OR of 0.78 (95% CI: 0.56, 1.08).

  No significant heterogeneity was observed within these groups (p=0.4, p=0.25, and p=0.43 for delivery within 24 hours, uterine hypertonus, and Caesarean delivery rate, respectively).

- **Secondary outcomes.**
  The mean time to delivery was longer with the vaginal insert, with a weighted mean difference of 298 minutes (95% CI: 261, 335). However, there was a high degree of heterogeneity between all the studies (p<0.001).

  Delivery within 12 hours appeared less common with the vaginal insert (OR 0.60, 95% CI: 0.40, 0.91). However, there was statistical heterogeneity between the studies (p=0.07).

  The sensitivity analysis excluding the 2 misoprostol studies provided an OR of 1.4 (95% CI: 0.45, 4.35).

**Authors’ conclusions**

In terms of the primary outcomes examined, no clinically significant differences were identified between the vaginal insert and the alternatives used for cervical ripening at term.
CRD commentary
The review question and inclusion criteria were well defined. There was evidence of a substantial effort to search for all the relevant literature. In the methods section, the authors stated that they used a funnel plot to examine publication bias. However, they did not discuss the results of this analysis in the review.

The validity of the studies was appraised, but the results of this appraisal do not appear to have been considered in the meta-analyses. The reviewers reported that five of the nine trials did not adequately describe the process of allocation concealment. These types of trials have been associated with distorted treatment effects, thus introducing bias. It might have been a good idea to conduct sensitivity analyses on the better quality studies where possible. Sufficient details of the individual studies were presented, although information on the age of the participants would have been useful. The processes of study inclusion, validity assessment, and data extraction were performed independently by two reviewers.

The studies appear to have been appropriately summarised using forest plots. While there was no statistical heterogeneity between the studies for the primary outcome variables, the plots showed that there were some differences. It would have been helpful to have seen the results using a random-effects model. The authors appropriately discussed sources of clinical heterogeneity.

The authors’ conclusions appeared to follow from the results.

Implications of the review for practice and research
Practice: The authors state that there are no clinically significant differences between the vaginal insert and alternatives used for cervical ripening at term.

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

Bibliographic details

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Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
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Record Status
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.