Acupuncture for induction of labour

Smith CA, Crowther CA

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ABSTRACT

Background
This is one of a series of reviews of methods of cervical ripening and labour induction using standardised methodology. The use of complementary therapies is increasing and some women look to complementary therapies during pregnancy and childbirth to be used alongside conventional medical practice. Acupuncture involves the insertion of very fine needles into specific points of the body. The limited observational studies to date suggest acupuncture for induction of labour appears safe, has no known teratogenic effects, and may be effective. The evidence regarding the clinical effectiveness of this technique is limited.

Objectives
To determine the effects of acupuncture for third trimester cervical ripening or induction of labour.

Search Strategy
The Cochrane Pregnancy and Childbirth Group trials register (February 2003), the Cochrane Central Register of Controlled Trials (The Cochrane Library, Issue 1, 2003), PubMed (1966 to present), CISCOM (1960 to present), EMBASE (1980 to present) and bibliographies of relevant papers.

Selection Criteria
Clinical trials comparing acupuncture used for third trimester cervical ripening or labour induction with placebo/no treatment or other methods listed above it on a predefined list of labour induction methods.

Data collection and analysis
A strategy was developed to deal with the large volume and complexity of trial data relating to labour induction. This involved a two-stage method of data extraction.

Main Results
One trial of 56 women was included in the review. Data were not in a form that could be included in the meta-analysis.

Reviewers’ conclusions
There is a need for well-designed randomised controlled trials to evaluate the role of acupuncture to induce labour and for trials to assess clinically meaningful outcomes.

This review should be cited as: Smith CA, Crowther CA Acupuncture for induction of labour (Cochrane Review). In: The Cochrane Library, Issue 1, 2004. Chichester, UK: John Wiley & Sons, Ltd.

BACKGROUND

Sometimes it is necessary to bring on labour artificially because of safety concerns for the mother or baby. This review is one of a series of reviews of methods of labour induction using a standardised protocol. For more detailed information on the rationale for this methodological approach, please refer to the currently published ‘generic’ protocol (Hofmeyr 2000). The generic protocol describes how a number of standardised reviews will be combined to compare various methods of preparing the cervix of the uterus and inducing labour.

In recent years the use of alternative and complementary medicine has become popular in many Western countries (MacLennan 2002). In Europe, between 12% and 19% of the population report using acupuncture, according to consumer surveys (Fisher 1994). Some women look to alternative therapies during pregnancy and childbirth to be used alongside conventional medical practice. A recent survey described the prevalence and use of complementary therapies among 82 nurse-midwives in North Carolina (Allaire 2000). Almost 20% of nurse-midwives reported use of acupuncture during pregnancy, with 6% of respondents specifically recommending its use to ripen the cervix (the process of softening and dilating the cervix) and/or induce labour. In the same survey 27 respondents (33%) reported using herbal therapies for labour stimulation. For some women with a prolonged pregnancy, an induction of labour may be perceived to intervene in the natural process of pregnancy and may drastically change their expected plan of care during pregnancy. The reasons why pregnant women are interested in using complementary therapies to ripen the cervix and/or induce labour is an important question and needs to be answered when evaluating new options of care.

Acupuncture has been used for more than two thousand years in China and Japan. The diagnosis and treatment prescribed by traditional Chinese medicine (TCM) is influenced by the systems of medicine and philosophy of ancient China. Acupuncture involves the insertion of fine needles into the skin and underlying tissues at precise points on the body. The needle can be left alone or stimulated by turning in various ways or by electricity. Electro-acupuncture involves the use of electricity to stimulate the acupuncture point. To do this a needle is inserted and a terminal is attached to the handle, the other terminal is connected to a second needle or neutral electrode. Over time different styles of acupuncture are practiced by acupuncturists.

In parts of Europe and Asia acupuncture has been described as a method to alleviate labour pains, and ripen the cervix. More recently it has been used to stimulate the onset of labour. There is a dearth of scientific studies on the use of acupuncture to stimulate labour.

There are three case series that document the role of acupuncture for the induction of labour (Tsuei 1974; Yip 1976; Tsuei 1977). Induction of labour using electro-acupuncture has been reported by Yip 1976. Labour was successfully induced in 21 of the 31 women, with pregnancy duration ranging from 38 to 42 weeks. The pattern of uterine activity was similar to that of normal labour. In a second study acupuncture with and without electrical stimulation was used to induce labour in 12 pregnant women with a gestational age from 19 to 43 weeks (Tsuei 1974). The success rate was 83% and average induction to delivery time was 13.1 hours. In the third study, 34 term and post term women and seven women with an intrauterine fetal death were induced using electro-acupuncture. Labour was successfully induced in 32 (78%) women (Tsuei 1977). The limited observational studies to date suggest acupuncture for induction of labour appears safe, has no known teratogenic effects, and may be effective. The evidence regarding the clinical effectiveness of this technique is limited.

Two non randomised trials have examined whether acupuncture could initiate contractions in women at term (Theobald 1973; Kubista 1975). In the trial by Theobald (Theobald 1973) four electrodes were applied to the skin of the abdomen to induce labour in the treatment group. Treatment was given to 27 women and compared with 102 women who were controls. In the treatment group 20 (77%) women gave birth on or up to four days before the estimated date of confinement, compared with 47 (46%) in the control group. In the second trial, electro-acupuncture was administered to 35 women, and 35 women received no electro-acupuncture. An increase in the
Intensity of labour contraction frequency was observed in 31 women in the treatment group. In the control group no increase in labour activity was observed (Kubista 1975). The mechanism underlying acupuncture to induce labour is speculative at this stage but may involve stimulation of the uterus by hormonal changes or by the nervous system. In animal studies low frequency electrical stimulation of the neuro-hypophyseal system induces the secretion of oxytocin. Parasympathetic stimulation close to term has been shown to have an influence on the uterus (Bell 1972). Stimulation of acupuncture points is known to increase the discharge of thalamic nuclei and the hypothalamic anterior pituitary system (Liao 1979). It is hypothesised that acupuncture neuronal stimulation may increase uterine contractility either by central oxytocin release or by parasympathetic stimulation of the uterus (Tempfeer 1998) without influencing locally active factors such as IL-8 and PGF2 either by central oxytocin release or by parasympathetic stimulation of the uterus (Tempfeer 1998).

Consumers generally perceive complementary medicine to be more natural than conventional medicine and have fewer concerns about side effects. There are reports in the literature of rare adverse reactions to acupuncture, for example pneumothorax, infection or cardiac injury (Yamashita 1999). The general advice for the treatment of conditions arising during pregnancy is to exercise caution particularly during the first trimester of pregnancy, and to avoid some acupuncture points which may stimulate uterine activity. Treatment during the third trimester of pregnancy is thought to carry a lower risk.

This review is one of a series of reviews of methods of labour induction using a standardised protocol. For more detailed information on the rationale for this methodological approach please refer to the currently published protocol (Hofmeyr 2000).

**OBJECTIVES**

To determine, from the best available evidence, the effectiveness and safety of acupuncture for third trimester cervical ripening and induction of labour.

**CRITERIA FOR CONSIDERING STUDIES FOR THIS REVIEW**

Types of studies
Clinical trials comparing acupuncture for cervical ripening or labour induction, with placebo/no treatment or other methods listed above it on a predefined list of methods of labour induction (see ‘Methods of the review’); the trials included some form of random allocation to either group; and they reported one or more of the prestated outcomes. The control group in a trial of acupuncture can involve sham (mock) acupuncture where the needles are inserted away from the usual location, with the depth and needle stimulation being the same. Or alternatively, minimal acupuncture which involves needles being inserted away from the usual location, with very shallow needling and very slight stimulation, or the use of the placebo needle (Streitberger 1998).

Types of participants
Pregnant women due for third trimester induction of labour, carrying a viable fetus.
Predefined sub-group analyses were (see list below): previous caesarean section or not; nulliparity or multiparity; membranes intact or ruptured, and cervix unfavourable, favourable or undefined. Other subgroup analyses will examine the effects of different styles of acupuncture (for example classical/traditional acupuncture versus single point therapy, or auricular acupuncture), as well as the type of control group. Only those outcomes with data will appear in the analysis tables.

Types of intervention
Acupuncture compared with placebo/no treatment or any other method above it on a predefined list of methods of labour induction.

Types of outcome measures
Clinically relevant outcomes for trials of methods of cervical ripening/labour induction have been prespecified by two authors of labour induction reviews (Justus Hofmeyr and Zarko Alfirevic). Differences were settled by discussion.

Five primary outcomes were chosen as being most representative of the clinically important measures of effectiveness and complications. Sub-group analyses will be limited to the primary outcomes:
1. Vaginal delivery not achieved within 24 hours;
2. Uterine hyperstimulation with fetal heart rate (FHR) changes;
3. Caesarean section;
4. Serious neonatal morbidity or perinatal death (e.g. seizures, birth asphyxia defined by trialists, neonatal encephalopathy, disability in childhood);
(5) serious maternal morbidity or death (e.g. uterine rupture, admission to intensive care unit, septicaemia).

Perinatal and maternal morbidity and mortality are composite outcomes. This is not an ideal solution because some components are clearly less severe than others. It is possible for one intervention to cause more deaths but less severe morbidity. However, in the context of labour induction at term this is unlikely. All these events will be rare, and a modest change in their incidence will be easier to detect if composite outcomes are presented. The incidence of individual components will be explored as secondary outcomes (see below). Secondary outcomes relate to measures of effectiveness, complications and satisfaction:

Measures of effectiveness:
(6) cervix unfavourable/unchanged after 12 to 24 hours;
(7) oxytocin augmentation.

Complications:
(8) uterine hyperstimulation without FHR changes;
(9) uterine rupture;
(10) epidural analgesia;
(11) instrumental vaginal delivery;
(12) meconium stained liquor;
(13) Apgar score less than seven at five minutes;
(14) neonatal intensive care unit admission;
(15) neonatal encephalopathy;
(16) perinatal death;
(17) disability in childhood;
(18) maternal side-effects (all);
(19) maternal nausea;
(20) maternal vomiting;
(21) maternal diarrhoea;
(22) other maternal side-effects;
(23) postpartum haemorrhage (as defined by the trial authors);
(24) serious maternal complications (e.g. intensive care unit admission, septicaemia but excluding uterine rupture);
(25) maternal death.

Measures of satisfaction:
(26) woman not satisfied;
(27) caregiver not satisfied.

Acupuncture specific outcomes:
(28) use of other induction methods;
(29) time from trial intervention to the birth of the baby;
(30) length of labour.

While all the above outcomes were sought, only those with data appear in the analysis tables. The terminology of uterine hyperstimulation is problematic (Curtis 1987). In the reviews we will use the term 'uterine hyperstimulation without FHR changes' to include uterine tachysystole (more than contractions per 10 minutes for at least 20 minutes) and uterine hypersystole/hypertonus (a contraction lasting at least two minutes) and 'uterine hyperstimulation with FHR changes' to denote uterine hyperstimulation syndrome (tachysystole or hypersystole with fetal heart rate changes such as persistent decelerations, tachycardia or decreased short term variability).

Outcomes were included in the analysis: if reasonable measures were taken to minimise observer bias; data were available for analysis according to original allocation; and loss to follow up was less than 20%.

SEARCH STRATEGY FOR IDENTIFICATION OF STUDIES

See: Cochrane Pregnancy and Childbirth Group search strategy

We searched the Cochrane Pregnancy and Childbirth Group trials register (February 2003).
The Cochrane Pregnancy and Childbirth Group's trials register is maintained by the Trials Search Co-ordinator and contains trials identified from:
1. quarterly searches of the Cochrane Central Register of Controlled Trials (CENTRAL);
2. monthly searches of MEDLINE;
3. handsearches of 30 journals and the proceedings of major conferences;
4. weekly current awareness search of a further 37 journals.

Details of the search strategies for CENTRAL and MEDLINE, the list of handsearched journals and conference proceedings, and the list of journals reviewed via the current awareness service can be found in the 'Search strategies for identification of studies' section within the editorial information about the Cochrane Pregnancy and Childbirth Group.

Trials identified through the searching activities described above are given a code (or codes) depending on the topic. The codes are linked to review topics. The Trials Search Co-ordinator searches the register for each review using these codes rather than keywords.

The initial search was performed simultaneously for all reviews of methods of inducing labour, as outlined in the generic protocol for these reviews (Hofmeyr 2000).

In addition, we searched the Cochrane Central Register of Controlled Trials (The Cochrane Library, Issue 1, 2003, PubMed (1966 to present), CISCOM (1960 to present) and EMBASE (1980 to present). The search was completed in February 2003, using the search terms acupuncture, electro acupuncture, TENS, induction of labour.

The reference lists of trial reports and reviews were searched by hand.

### METHODS OF THE REVIEW

A strategy has been developed to deal with the large volume and complexity of trial data relating to labour induction. Many methods have been studied, in many different categories of women undergoing labour induction. Most trials are intervention-driven, comparing two or more methods in various categories of women. Clinicians and parents need the data arranged by category of woman, to be able to choose which method is best for a particular clinical scenario. To extract these data from several hundred trial reports in a single step would be very difficult. We have therefore developed a two-stage method of data extraction. The initial data extraction was done in a series of primary reviews arranged by methods of induction of labour, following a standardised methodology. The data was then be extracted from the primary reviews into a series of secondary reviews, arranged by category of woman.

To avoid duplication of data in the primary reviews, the labour induction methods have been listed in a specific order, from one to 25. Each primary review includes comparisons between one of the methods (from two to 25) with only those methods above it on the list. Thus, the review of intravenous oxytocin (4) will include only comparisons with intracervical prostaglandins (3), vaginal prostaglandins (2) or placebo (1). Methods identified in the future will be added to the end of the list. The current list is as follows:

1. placebo/no treatment;
2. vaginal prostaglandins;
3. intracervical prostaglandins;
4. intravenous oxytocin;
5. amniotomy;
6. intravenous oxytocin with amniotomy;
7. vaginal misoprostol;
8. oral misoprostol;
9. mechanical methods including extra-amniotic Foley catheter;
10. membrane sweeping;
11. extra-amniotic prostaglandins;
12. intravenous prostaglandins;
13. oral prostaglandins;
14. mifepristone;
15. estrogens;
16. corticosteroids;
17. relaxin;
18. hyaluronidase;
19. castor oil, bath, and/or enema;
20. acupuncture;
21. breast stimulation;
The primary reviews will be analysed by the following subgroups:
(1) previous caesarean section or not;
(2) nulliparity or multiparity;
(3) membranes intact or ruptured;
(4) cervix favourable, unfavourable or undefined.

The secondary reviews will include all methods of labour induction for each of the categories of women for which subgroup analysis has been done in the primary reviews, and will include only five primary outcome measures.
There will thus be six secondary reviews, of methods of labour induction in the following groups of women:
(1) nulliparous, intact membranes (unfavourable cervix, favourable cervix, cervix not defined);
(2) nulliparous, ruptured membranes (unfavourable cervix, favourable cervix, cervix not defined);
(3) multiparous, intact membranes (unfavourable cervix, favourable cervix, cervix not defined);
(4) multiparous, ruptured membranes (unfavourable cervix, favourable cervix, cervix not defined);
(5) previous caesarean section, intact membranes (unfavourable cervix, favourable cervix, cervix not defined);
(6) previous caesarean section, ruptured membranes (unfavourable cervix, favourable cervix, cervix not defined).

Each time a primary review is updated with new data, those secondary reviews which include data which have changed, will also be updated.

The trials included in the primary reviews will be extracted from an initial set of trials covering all interventions used in induction of labour (see above for details of search strategy). The data extraction process was conducted centrally. This was co-ordinated from the Clinical Effectiveness Support Unit (CESU) at the Royal College of Obstetricians and Gynaecologists, UK, in co-operation with the Pregnancy and Childbirth Group of the Cochrane Collaboration. This process allowed the data extraction process to be standardised across all the reviews.

The trials were initially reviewed on eligibility criteria, using a standardised form and the basic selection criteria specified above. Following this, data were extracted to a standardised data extraction form which was piloted for consistency and completeness. The pilot process involved the researchers at the CESU and previous reviewers in the area of induction of labour.

Information is extracted regarding the methodological quality of trials on a number of levels. This process is completed without consideration of trial results. Assessment of selection bias examines the process involved in the generation of the random sequence and the method of allocation concealment separately. These are then judged as adequate or inadequate using the criteria described in Table 01 for the purpose of the reviews.

Performance bias was examined with regards to whom was blinded in the trials i.e. patient, caregiver, outcome assessor or analyst. In many trials the caregiver, assessor and analyst were the same party. Details of the feasibility and appropriateness of blinding at all levels were sought.

Individual outcome data are included in the analysis if they meet the pre-specified criteria in ‘Types of outcome measures’. Included trial data were processed as described in the Cochrane Reviewers’ Handbook (Clarke 1999).

Data extracted from the trials were analysed on an intention to treat basis (when this was not done in the original report, re-analysis was performed if possible). Where data were missing, clarification was sought from the original authors. If the attrition was such that it might significantly affect the results, these data were excluded from the analysis. This decision rests with the reviewers of primary reviews and was clearly documented. Once missing data become available, they will be included in the analyses.

Data were extracted from all eligible trials to examine how issues of quality influence effect size in a sensitivity analysis. In trials where reporting was poor, methodological issues were reported as unclear or clarification sought. C Smith and C Crowther extracted the data for this update.

Once the data were extracted, they were distributed to individual reviewers for entry onto the Review Manager computer software (RevMan 1999), checked for accuracy, and analysed as above using the RevMan software. For dichotomous data, relative risks and 95% confidence intervals are calculated, and in the absence of heterogeneity, results are pooled using a fixed effects model.
The predefined criteria for sensitivity analysis include all aspects of quality assessment as mentioned above, including aspects of selection, performance and attrition bias.
Primary analysis is limited to the prespecified outcomes and subgroup analyses. In the event of differences in unspecified outcomes or subgroups being found, these are analysed post hoc, but clearly identified as such to avoid drawing unjustified conclusions.
DESCRIPTION OF STUDIES

Five trials were identified in the search. One trial was included (Rabl 2001), and four trials were excluded (Dorr 1990; Dunn 1989; Romer 2000; Tremeau 1992).

Included studies
One randomised trial of 56 women was included in this review. The trial compared acupuncture and no acupuncture in a single blind randomised controlled trial and was undertaken in Austria (Rabl 2001).

The authors of the trial examined the efficacy of acupuncture on cervical ripening for induction of labour and the need for a postdate induction among 56 women. The trial outcomes were: change in cervical length over time, the time from the first fibronectin test to birth, the time from estimated date of confinement to delivery, the number of postdate inductions, duration of first and second stage of labour and the overall duration of labour, the need for oxytocin augmentation and the mode of birth. Women allocated to the treatment group received one single session of acupuncture on the estimated date of confinement with two acupuncture points stimulated bilaterally and retained for 20 minutes.

Excluded studies
The study by Dunn 1989, which included 20 women with postdate pregnancies, was excluded from the review because no clinically relevant outcomes were reported from this trial. This trial demonstrated that contractions can be induced in postdate pregnant women using transcutaneous electrical stimulation at peripheral acupuncture points (Dunn 1989). However, the trial was not designed to assess whether women proceeded to labour and no clinically relevant outcomes were reported in the study.

The trial by Dorr 1990 undertaken in Czechoslovakia recruited 16 women with a pregnancy between 39 to 43 weeks. The trial was excluded because the trial was a clinical controlled trial. One group received acupuncture after the discharge of amniotic fluid (up to four hours); the second group received acupuncture stimulation six or more hours after the discharge of amniotic fluid.

The trial by Tremeau 1992, which recruited 98 women, was excluded from the review because this trial is primarily an assessment of acupuncture's role with ripening the cervix. The primary outcomes of change in Bishops score from trial entry to 48 hours after the final treatment (nine days) was not clinically relevant to this systematic review.

The trial by Romer 2000 recruited 878 primiparous women to receive acupuncture, placebo acupuncture or no acupuncture from 36 weeks gestation. Women were recruited at a university hospital in Germany. The primary outcomes reported change in Bishops score from trial entry, length of cervix and duration of labour and were not relevant to this systematic review.

METHODOLOGICAL QUALITY

For the Rabl 2001 trial the allocation sequence was computer generated from a central randomisation service. The care providers were blind to the woman's study group. Participants, the statistician, and personnel who undertook the cervical assessment were not blind to the woman's study group allocation.

There were 11 (20%) post randomisation exclusions and losses to follow up. There was an imbalance in the postrandomisation exclusions (five in the treatment group and eight in the control group). The trial author was unable to provide outcome data on the 11 women who had been excluded from analyses. There was no description of the sample size calculation or if a calculation was performed. No information on side effects from acupuncture were reported.

RESULTS

This Review included one trial of 56 women.

Eleven (20%) women were postrandomisation exclusions and proceeded to have an induction of labour. In the acupuncture group, labour was induced on one woman because of fetal heart abnormalities and two inductions were performed due to prelabour rupture of membranes. In the control group, two women requested an elective induction of labour, three women received an induction of labour because of prelabour rupture of membranes, and in three women labour was induced due to abnormal fetal heart rate patterns. Because data were not available about the
DISCUSSION

This review included one trial of 56 women; however no data could be included in the analysis. Methodological shortcomings included failure to blind outcome assessments and 20% loss to follow up. Given the observational data that acupuncture can induce uterine activity, assist with cervical ripening and the knowledge that some women seek acupuncture treatment alongside conventional obstetrics, there is a need for well designed trials in this area. Trials should report on relevant clinical outcomes. There are many styles and techniques of acupuncture including traditional Chinese acupuncture, auricular acupuncture and electroacupuncture and acupuncture can vary in the selection of acupuncture points and the needling techniques used (duration of needling, number of points used, depth of needling, type of stimulation and point selection). It is important that any future clinical trials of acupuncture for induction of labour report the basis for the acupuncture treatment and needling as described in the STRICTA guideline (MacPherson 2001).

A randomised controlled trial assessing the role of manual acupuncture to induce labour in women with postdate pregnancies is being undertaken by the University of South Australia and the University of Adelaide (see Smith 2000).

REVIEWER’S CONCLUSIONS

Implications for practice
Acupuncture for induction of labour has not been fully evaluated for safety and effectiveness.

Implications for research
Observational data suggest acupuncture may stimulate the onset of labour. There is a need for well designed randomised controlled trials to assess whether acupuncture can stimulate labour. There is a need to include clinically relevant outcomes in future trials. Clinically relevant outcomes in these trial should include those described in this review and consideration be given to:

- the use of other methods of induction such as prostaglandins, oxytocin and artificial rupture of membranes;
- whether vaginal birth is achieved over a longer time period than that expected when using pharmacological agents;
- whether there are any adverse effects arising from acupuncture
- the cost effectiveness of the intervention.

In planning new trials clinical treatment protocols should be based on a comprehensive review of the clinical literature.

ACKNOWLEDGEMENTS

I acknowledge the French to English translation by Peter Smith and the German to English translation by Richard Oates-Whitehead.

POTENTIAL CONFLICT OF INTEREST

Caroline Smith is a principal investigator and Caroline Crowther is an associate investigator of a randomised controlled trial assessing the effects of acupuncture to stimulate labour.

TABLES

Characteristics of included studies

<table>
<thead>
<tr>
<th>Study Methods</th>
<th>Rabl 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single blind randomised controlled trial. The trial used a central randomisation service, with computer generated sequence of random numbers. Women were randomised to acupuncture.</td>
<td></td>
</tr>
</tbody>
</table>
Fifty-six women were randomised to the trial in Austria. Inclusion criteria were EDC confirmed by ultrasound, uncomplicated pregnancy, singleton pregnancy with cephalic presentation. Exclusion criteria were cervical dilatation greater than 3 cm, premature rupture of membranes, previous caesarean section, maternal complications, e.g. pre-eclampsia, fetal growth retardation. Women were randomised at term.

All women were examined at term and at two day intervals thereafter. Fetal heart rate was monitored, the cervical length was measured by ultrasound, cervical mucus was obtained for fetal fibronectin test and the cervical status was assessed for the Bishops score. Women received acupuncture at term and at two day intervals thereafter. Acupuncture points - large intestine 4, and spleen 6 were bilaterally inserted. De qi needling sensation was achieved. Needles were left in for 20 minutes. If the woman was undelivered 10 days after her EDC labour was induced.

The change in cervical length over time, time from the first fibronectin test to delivery, time period from EDC to time of delivery, number of postdate indications, length of first and second stage of labour, need for oxytocin augmentation and mode of delivery.

Eleven (20%) women were excluded and follow up data were not available on these women.

EDC: estimated date of confinement

**Characteristics of excluded studies**

<table>
<thead>
<tr>
<th>Study</th>
<th>Reason for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dorr 1990</td>
<td>The evidence regarding the clinical effectiveness of this technique is limited. This controlled clinical trial undertaken in Czechoslovakia consisted of women between 39 to 43 weeks with a cervical score greater than five (with no regular uterine contractions). Sixteen women received acupuncture. In one group electrical acupuncture commenced after the discharge of amniotic fluid (up to four hours); in the other group stimulation began six or more hours after the discharge of amniotic fluid. Spontaneous vaginal delivery was achieved in 13 women. This comparison between electrical acupuncture stimulation or placebo acupuncture assessed the onset of uterine contractions in 20 postdate pregnant women. There was evidence of strong contractions in the treatment group. There were no clinical outcome data, in particular the trial did not report on whether women proceeded to spontaneous labour.</td>
</tr>
<tr>
<td>Dunn 1989</td>
<td>This trial compared acupuncture with placebo acupuncture and no treatment. Primiparous women were recruited from 36 weeks' gestation and the trial intervention was administered weekly until delivery. The trial reported women receiving acupuncture caused morphologic change at the cervix, and women experienced shorter length of labour. The trial was excluded because it did not report on primary outcomes relevant to cervical ripening and induction of labour.</td>
</tr>
<tr>
<td>Romer 2000</td>
<td>This trial compared acupuncture with placebo acupuncture or a no acupuncture control group. Women were recruited to the trial at 37 to 38 weeks' gestation with a Bishops score of less than four. Three treatments were administered and a cervical score assessed at the end of the trial. This trial did not report on the primary clinical outcomes assessed in this review.</td>
</tr>
<tr>
<td>Tremeau 1992</td>
<td></td>
</tr>
</tbody>
</table>

**Characteristics of ongoing studies**

<table>
<thead>
<tr>
<th>Study</th>
<th>Trial name or title</th>
</tr>
</thead>
</table>

Women with a postdate pregnancy. Women were included if they had a singleton pregnancy and cephalic presentation. Women were excluded if there were any contra-indications to a vaginal delivery, or if there were any signs of active labour, or women with spontaneous rupture of membranes. 404 women will be randomised to the trial.

Acupuncture versus control acupuncture. The first treatment was administered two days before a planned induction. A second treatment was administered the next day if labour had not begun.
Outcomes: Reduced need for methods of induction of labour, spontaneous onset of labour, time from the start of acupuncture treatment to the delivery of the baby.

Starting date: 5/98

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ADDITIONAL TABLES

Table 01 Methodological quality of trials

<table>
<thead>
<tr>
<th>Methodological item</th>
<th>Adequate</th>
<th>Inadequate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation of random sequence</td>
<td>Computer generated sequence, random number tables, lot drawing, coin tossing, shuffling cards, throwing dice.</td>
<td>Case number, date of birth, date of admission, alternation.</td>
</tr>
<tr>
<td>Concealment of allocation</td>
<td>Central randomisation, coded drug boxes, sequentially sealed opaque envelopes.</td>
<td>Open allocation sequence, any procedure based on inadequate generation.</td>
</tr>
</tbody>
</table>

REFERENCES

References to studies included in this review

Rabl 2001 {published data only}

References to studies excluded from this review

Dorr 1990

Dunn 1989

Romer 2000

Tremeau 1992

References to studies awaiting assessment

Romer
References to ongoing studies

**Smith 2000**
Caroline Smith School of Health Sciences, The University of South Australia, AUSTRALIA email caroline.smith@unisa.edu.au. The influence of acupuncture stimulation on the induction of labour: a randomised controlled trial.. Ongoing study. 5/98.

Smith CA. The influence of acupuncture stimulation on the induction of labour: a randomised controlled trial. Department of Obstetrics and Gynaecology, the University of Adelaide, AUSTRALIA

Additional references

**Allaire 2000**

**Bell 1972**

**Boer 1980**

**Clarke 1999**

**Curtis 1987**

**Fisher 1994**

**Hofmeyr 2000**

**Kubista 1975**

**Liao 1979**

**MacLennan 2002**

**MacPherson 2001**

**RevMan 1999**
Streitberger 1998

Tempfeer 1998

Theobald 1973

Tsuei 1974

Tsuei 1977

Yamashita 1999

Yip 1976

References to other published versions of this review
CDSR 2001

This review has no graphs.

COVER SHEET

<table>
<thead>
<tr>
<th>Title</th>
<th>Acupuncture for induction of labour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reviewer(s)</td>
<td>Smith CA, Crowther CA</td>
</tr>
<tr>
<td>Contribution of reviewer(s)</td>
<td>Caroline Smith conceptualised and took the lead in writing the protocol and review, performed initial searches of databases for trials, was involved in selecting trials for inclusion, performed data extraction and quality assessment of the included trials, was responsible for statistical analysis and interpretation of the data. Caroline Crowther was involved with selecting trials for inclusion, performed data extraction and quality assessment of the included trials, interpretation of the data and commented on drafts of the protocol and review.</td>
</tr>
<tr>
<td>Issue protocol first published</td>
<td>2000/2</td>
</tr>
</tbody>
</table>
There is insufficient evidence describing the efficacy of acupuncture to induce labour.

Induction of labour (getting labour started artificially) is common when the pregnancy is posing a greater risk to the pregnant woman or her unborn child. Acupuncture is the insertion of fine needles into specific energy points of the body has been used to help induce labour and reduce labour pains. The review included one trial; the evidence regarding the clinical effectiveness of this technique is limited. More research is needed.
Index Terms

Medical Subject Headings (MeSH) Acupuncture ; Clinical Trials ; Labor, Induced [methods]; Pregnancy Trimester, Third
Mesh check words: Female Human Pregnancy

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