BRIEFING PAPER No 12

OBSTETRICS (2)

PREGNANCY and LABOUR

The evidence for the effectiveness of
ACUPUNCTURE

Written by **Sarah Budd**
Edited and produced by the **Acupuncture Research Resource Centre**
Published by the **British Acupuncture Council**

September 2006

The Evidence Series of Briefing Papers aims to provide a review of the key papers in the literature which provide evidence of the effectiveness of acupuncture in the treatment of specific conditions. The sources of evidence will be clearly identified ranging from clinical trials, outcome studies and case studies. In particular this series of briefing papers will seek to present, discuss and critically evaluate the evidence.

ACUPUNCTURE IN PREGNANCY AND LABOUR

THE EVIDENCE FOR EFFECTIVENESS

SUMMARY

This paper presents a summary of the evidence for the effectiveness of acupuncture in the treatment of pregnancy- related conditions and other uses in obstetrics . The majority of the articles reviewed relate to induction or preparation for labour (11 studies) and analgesia in labour (16). Others cover various conditions of pregnancy such as backache or breech presentation. There is a wide variability in the type of acupuncture and methodological design making it difficult to compare studies and develop overall conclusions. Nevertheless the available sources provide some evidence that acupuncture is an effective treatment for these conditions.

INTRODUCTION

Obstetrics is defined as the science of midwifery, that is to say assistance at childbirth.
There are reports in the ancient texts of acupuncture being used to aid childbirth at least as far back as the Jin Dynasty (265-420)
In theory, acupuncture is ideally suited to obstetrics. There are restrictions on the use of drugs during pregnancy which may have harmful, teratogenic effects on the foetus. This has meant there was little to offer women for the minor ailments of pregnancy, which in some cases can be quite severe, even needing hospitalisation. Acupuncture has been used to treat a long list of conditions including morning sickness, migraine, backache and constipation. It has also been used to encourage version of the foetus in breech presentation, induction of labour, and pain relief in labour. After the birth it may be used to treat haemorrhoids, mastitis, depression and other problems associated with this period.
As "obstetrics" is not in itself a condition needing treatment, this paper relates to the disorders and complications of pregnancy. **(For pregnancy sickness, see Briefing Paper 10, Obstetrics (1).)**

Due to the wide variability and number of studies, the main features of the studies are presented in table form.

LITERATURE SEARCH

A search was made using the ARRC database, as well as further searches on AMED, MEDLINE, CINAHL AND COCHRANE databases, using the key words "pregnancy (+obstetric etc), labour, induction", plus "acupuncture".
Additional articles were obtained through cross-referencing the literature cited in individual studies and reviews. After excluding those in a foreign language, and letters and commentaries, there were 42 studies remaining, plus 10 review papers.

MALPOSITION AND BREECH PRESENTATION

Refer to table 1.
Of the seven studies reported, six used a control group, either no intervention or the standard knee-chest position. The remaining study[6], a case series, showed a 61% success rate in foetuses turning to cephalic presentation.

The controlled studies comprised two randomised trials (RCTs)[8,26] , one cross-over[31] and three with non-randomised matched groups[7,22,35] . The interventions were variously moxibustion, acupuncture, electro-acupuncture (EA) or auricular seed pressing. All showed significantly positive effects except for the EA group in one study[22]. (In this large retrospective case control the moxibustion and EA groups produced very similar results, 92% and 89% version, but their respective controls differed by 10%: 73% and 83%. Hence the moxa intervention was deemed effective but not the EA. The apparent distinction may be no more than a chance sampling effect). The small cross-over study[31] was notable in that the outcomes were changes in foetal heart rate and foetal movements rather than simply turning/not turning.

Since this report was first compiled one further study has been published by Cardini and co-workers[9]. As this trial was interrupted with fewer than half the patients recruited it has not been summarised here.

BACK AND PELVIC PAIN

Refer to table 3.
Of six studies in this category, three[13,15,51] are controlled trials, two[17,45] are single case reports and one[44] a retrospective case series report. In the controlled studies acupuncture was significantly more effective than either medication[13], physiotherapy[51] or exercises[15] . All show a positive outcome for acupuncture though there were wide variations in the nature and frequency of the treatment.

PAIN RELIEF IN LABOUR

Refer to table 4.
Nine articles refer to uncontrolled case series. Eight of these[1,21,25,30,34,48,52,53] showed success rates (i.e. adequate pain relief achieved) of 56-92%. The other[49] found only 10% success, though this was set up primarily to compare manual acupuncture (MA) and EA. Of the seven, four used only EA, one used EA plus MA, one MA plus moxibustion and one EA or MA. In this last there was 60% success with EA but 0% with MA. Hence in none of these studies was MA alone shown to be effective.

In contrast to the case series most of the controlled trials used MA. Four[32,37,42,43] out of ten trials found acupuncture reduced the need for conventional medication and three[33,38,39] showed a reduced pain rating (though Ramnero et al[37] achieved fewer epidurals without changing pain ratings). Three[29,41,55] found no significant differences in analgesic requirements between the acupuncture and control groups but they provided only weekly treatments from week 35 or 36 until delivery rather than intensive acupuncture during labour itself.

INDUCTION OF LABOUR

Refer to table 5.
All four case series[25,46,47,53] used EA and successfully **induced** 66-100% of women at term. Acupuncture was much less effective pre-term and for mid-term abortions[25,47]. By contrast, **inhibition** of early labour may be possible[47].

Both controlled trials produced positive results for acupuncture compared with no treatment. In one[24] all 35 women having EA started contractions within 25 minutes, and they were stronger and more frequent. In the other[36] success was measured by cervical ripening and in the time between due date and delivery. This latter is the only relatively recent induction study; the others all date from the 1970's.

DURATION OF LABOUR

Refer to table 5.
Six[23,33,38,39,41,55] out of seven controlled trials have shown acupuncture to decrease length of labour, though in two of these this was only for primiparous women. By contrast Lyrenas et al[28] found no such reduction and indeed longer gestations. In her recent review[5] Betts discusses some possible reasons for these anomalous results.
Faster cervical dilation in the first stage of labour appears to be associated with increases in both intensity and frequency of contractions[24,27].

MISCELLANEOUS CONDITIONS

Refer to table 2.
One report[10] refers to acupuncture for placental retention, with a positive outcome compared to the control group. The other[50] is not a specific study but a status report on the use and effectiveness of acupuncture analgesia for Caesarian Section in China during the 1970s and 80s.

REVIEWS

Chez and Jonas (1997) review CAM clinical studies in obstetrics including 12 papers on acupuncture and its related techniques. No commentary was available from this paper as it was included in a subsequent article on gynaecology that was unavailable.

Beal (1999) includes a few of the available research papers in her report on the application of acupuncture and acupressure to women's reproductive health care.

Allaire (2001) comments on 11 papers relating to acupuncture for induction of labour and analgesia in labour. He finds that a lack of control groups in some studies and lack of appropriate selection criteria mean the research is limited. He feels further research is needed to determine the efficacy of acupuncture to induce labour. Regarding acupuncture for analgesia in labour, he feels a randomised, prospective study using intent-to-treat analysis is needed. The existing studies are limited, with the wide variation in techniques making comparison difficult.

Gentz (2001) reviews CAM therapies for pain relief in labour and delivery, including 7 papers on acupuncture and draws similar conclusions to those above regarding standardisation of points, better controls and greater numbers.

Ewies and Olah (2002) write on the use of acupuncture in obstetrics and gynaecology and conclude that although many studies give encouraging results, definitive conclusions about its effectiveness cannot be reached, adding that most of the studies were small and non-randomised.

Young and Jewell (2002) include one RCT on acupuncture in their review of interventions for preventing and treating back and pelvic pain in pregnancy. They comment that although acupuncture was rated as giving "good" or "excellent" help more frequently than physiotherapy, this may reflect the benefit of individual compared with group therapy.

Fugh-Berman and Kronenberg (2003), in a very general review of CAM for reproductive age women, noted only for acupuncture that there was a promising study for back/pelvic pain and one for breech presentation, with two for induction showing ‘no dramatic effect’ (in fact one of these used TENS, not acupuncture). They call for

definitive randomised controlled trials – large size, blinded, placebo controlled, with standard outcome measures.

Swan and Cook (2003) review acupuncture in obstetric care and conclude that 'the available evidence is not of sufficient strength or quality to support the widespread introduction of acupuncture into obstetrics under the banner of evidence- based practice.

Huntley et al's (2004) systematic review of complementary and alternative medicine (CAM) for labour pain, included only prospective randomised controlled trials. There were two on acupuncture meeting these criteria. Both scored 3 out of a possible 5 on the Jadad scale (for assessing methodological rigour) because of lack of double blinding. Although pain ratings were not greatly improved, the results suggested receiving a physical intervention like acupuncture does have an influence on a woman's pain management during labour. Again they suggest that more research is warranted.

Betts (2006) discusses selected acupuncture studies for pelvic pain, morning sickness, breech presentation, cervical ripening and pre-birth acupuncture. She writes primarily from the perspective of an experienced user and teacher of traditional acupuncture, and a midwife, rather than from that of a medical researcher. Hence she is able to point out the possible benefits of research to the profession, as well as the dubious procedures that have been employed in some of the study protocols.

FORBIDDEN POINTS

Although these are not research papers, it is important to mention the literature that exists on this topic.
There are some who prefer not to treat women in pregnancy with acupuncture, and this is often due to concerns over the safety aspects in relation to the so-called "forbidden points". Detailed discussion on this is beyond the remit of this briefing paper, but the reader may like to refer to articles such as those by Dale(1997), Chen(1998), Forrester(2003) or Betts (2005).

CONCLUSION

The majority of these studies show positive outcomes for acupuncture treatment of various conditions in pregnancy and labour. Despite the methodological deficiencies in many of the studies the verdict of the review papers seems over-cautious. Of the 24 controlled trials presented here (excluding the one comparing two types of acupuncture[49]) only 2 (and they were both from the same group of researchers[28,29]) did not produce positive results for acupuncture – though the size and significance of the benefit is still to be determined. There is a great difference in the choice of points, methods of stimulation and duration of treatment: further studies would be required before specific treatment protocols could be recommended.

REFERENCE LIST

1. Abouleish E and Depp R. *Acupuncture in Obstetrics.* Anesthesia and Analgesia 1975;54(1):83-88.

2. Allaire A. *Complementary and Alternative Medicine in the Labor and Delivery Suite.* Clinical Obstetrics and Gynecology 2001; 44(4):681-691

3. Beal M. *Acupuncture and Acupressure, Applications to Women's Reproductive Health Care.* Journal of Nurse-Midwifery. 1999; 44(3):217-230

4. Betts D. *The use of acupuncture as a routine pre-birth treatment*. Journal of Chinese Medicine 2005; 76: 5-8

5. Betts D. *A review of research into the application of acupuncture in pregnancy*. Journal of Chinese Medicine 2006; 80:50-55

6. Cardini F, Basevi V, Valentini A, Martellato A 1991 *Moxibustion and Breech Presentation, preliminary results.* American Journal of Chinese Medicine 1991;19:105-14

7. Cardini F and Marcolongo A. *Moxibustion for Correction of Breech Presentation: a clinical study with retrospective control.* American Journal of Chinese Medicine 1993;21:133-8

8. Cardini F and Weixin H. *Moxibustion for correction of Breech Presentation: a randomised controlled trial.* Journal of the American Medical Association 1998 ;280: 1580-4

9. Cardini F, Lombardo P, Regalia AL, Regaldo G et al. *A randomised trial of moxibustion for breech presentation.* 2005; 112(6): 743-7

10. Chauhan P, Gasser F, Chauhan A. *Clinical Investigation on the Use of Acupuncture for Treatment of Placental Retention.* American Journal of Acupuncture, 1998;26(1):19-25.

11. Chen Ke-qin. *Forbidden Points.* International Journal of Clinical Acupuncture 1998 Vol9, No1

12. Chez R and Jonas W. *Complementary and Alternative Medicine. Part 1: Clinical Studies in Obstetrics.* CME Review Article . 1997;52(11):704-708

13. da Silva JBG, Nakamura MU, Cordeiro JA, Kulay L Jr. *Acupuncture for Low Back Pain in Pregnancy- a prospective, quasi-randomised, controlled study.* Acupuncture in Medicine. 2004; 22(2):60-67.

14. Dale R. *The Contraindicated (Forbidden) Points of Acupuncture for Needling, Moxibustion and Pregnancy.* American Journal of Acupuncture, 1997;25(1):51-57.

15. Eldon H, Ladfors L, Olsen MF, Ostgaard H-C and Hagberg H *Effects of acupuncture and stabilising exercises as adjunct to standard treatment in pregnant women with pelvic girdle pain: randomised single blind controlled trial.* British Medical Journal. 2005; 330:761-765

16. Ewies A and Olah K. *The sharp end of medical practice: the use of acupuncture in obstetrics and gynaecology* British Journal of Obstetrics and Gynaecology.2002;109:1-4.

17. Forrester M. *Low back pain in Pregnancy.* Acupuncture in Medicine. 2003;21(1-2):36-41.

18. Fugh-Berman A and Kronenberg F. *Complementary and alternative medicine (CAM) in reproductive-age women: a review of randomized controlled trials.* Reproductive Toxicology 2003; 17: 137-152

19. Gentz BA. *Alternative therapies for the management of pain in labor and delivery.* Clinical Obstetrics and Gynecology 2001 ;44(4):704-32.

20. Huntley A, Thompson Coon J, Ernst E. *Complementary and alternative medicine for labor pain: a systematic review.* American Journal of Obstetrics and Gynecology 2004; 191: 36-44.

21. Hyodo M and Osamu G. *Use of Acupuncture Anesthesia for Normal Delivery*. Americal Journal of Chinese Medicine. 1977;5(1):63-69.

22. Kanakura Y, Kometani K, Nagata T, Niwa K, Kamatsuki H, Shinzato Y, Tokunaga Y. *Moxibustion Treatment of Breech Presentation.* American Journal of Chinese Medicine. 2001;.29(1):37-45.

23. Kubista E, Kucera H. *Acupuncture as a Method of Preparation in Obstetrics.* American Journal of Chinese Medicine 1974;2(3):283-287.

24. Kubista E, Kucera H, Muller-Tyl E. *Initiating Contractions of the Gravid Uterus Through Electro-acupuncture*. American Journal of Chinese Medicine. 1975;3(4):343-346.

25. Ledergerber C. *Electroacupuncture in Obstetrics.* Acupuncture and Electro-Therapeutics Research 1976;2:105-118.

26. Li Qinghua, Wang Lin. *Clinical Observation on Correcting Malposition of Fetus by Electro-Acupuncture.* Journal of Traditional Chinese Medicine. 1996;16(4): 260-262.

27. Lin Pei-chong. *Acupuncture to Accelerate Labou.r.* International Journal of Clinical Acupuncture. 1998 ;9(4):459-462.

28. Lyrenas S Lyrenas S, Lutsch H, Hetta J, Lindberg B. *Acupuncture before delivery: effect on Labour.* Gynecologic and Obstetric Investigation 1987;24:217-224

29. Lyrenas S, Lutsch H, Hetta J, et al**.** *Acupuncture before delivery: effect on Pain Perception and the Need for Analgesics.* Gynecologic and Obstetric Investigation. 1990; 29 (2): 118-124.

30. Martoudis S and Christofides K. *Electroacupuncture for Pain Relief in Labour.* Acupuncture in Medicine 1990;8(2):51-53.

31. Neri I, Fazzio M, Menghini S, Volpe A, Facchinetti F. *Non-Stress Test Changes During Acupuncture Plus Moxibustion on BL67 Point in Breech Presentation.* Journal of the Society of Gynecological Investigation 2002;9(3) :158-162

32. Nesheim B Kinge R, Berg B, Alfredsson B, Allgot E, Hove G, Johnsen W, Jorsett I, Skei S, Solberg S. *Acupuncture During Labour Can Reduce The Use of Meperidine: A Controlled Clinical Study.* The Clinical Journal of Pain 2003;19(3): 187-191

33. Pei Deen and Huang Yuelan. *Use of Acupuncture Analgesia During Childbirth.* Journal of Traditional Chinese Medicine. 1985;5(4): 253-255

34. Perera W. *Acupuncture in Childbirth.* British Journal of Acupuncture 1979;2(1):12-14

35. Qin G and Tan H. *413 cases of abnormal fetal position corrected by auricular plaster therapy.* Journal of Traditional Chinese Medicine. 1989;9:235-237.

36. Rabl M , Ahner R, Bitschnau M, Zeisler H, Husslein P et al. *Acupuncture for cervical ripening and induction of labour at term-a randomised controlled trial.* Wiener klinische wochenschrift (The Middle European Journal of Medicine.) 2001 113(23-24):942-946

37. Ramnero A, Hanson U, Kihlgren M. *Acupuncture treatment during labour- a randomised controlled trial.* British Journal of Obstetrics and Gynaecology 2002 ;109(6):637-44

38. Skelton I.F and Flowerdew MW. *Acupuncture and labour- A summary of results.* Midwives Chronicle and Nursing Notes. 1988; May:134-137.

39. Skilnand E, Fossen D and Heiberg E. *Acupuncture in the management of pain in labour.* Acta Obstet Gynecol Scand 2002;81:943-948.

40. Swan P and Cook T. *Acupuncture in Obstetric Care*. Journal of the Association of Chartered Physiotherapists in Women's Health. 2003;92:63-68.

41. Tempfer C, Reisler H, Heinzl H, Hefler L, Husslain P, Kainz C. Influence of acupuncture on maternal serum levels of interleukin-8, prostaglandin F2alpha, and beta-endorphin: a matched pair study. Obstetrics and Gynecology 1998;92(2):245-8

42. Ternov N, Nilsson M, Lofberg L, Algotsson L, Akeson J *Acupuncture for pain relief during childbirth.* Acupuncture and Electrotherapeutics Research 1998a; 23**:**19-26

43. Ternov N, Buchhave P, Svensson G, Akeson J,*Acupuncture During Childbirth Reduces Use of Conventional Analgesia Without Major Adverse Effects: A Retrospective Study*. American Journal of Acupuncture 1998b; 26 (4):233-239

44. Ternov N, Grennert L, Aberg A, Algotsson L, Akeson J *Acupuncture for Lower Back and Pelvic Pain in Late Pregn*ancy*: a Retrospective Report on 167 Consecutive Cases.* Pain Medicine 2001;2(3):204-207.

45. Thomas C and Napolitano P. *Use of Acupuncture for managing chronic pelvic pain in pregnancy, a case report.* Journal of Reproductive Medicine. 2000;45(11):944-6.

46. Tsuei J, Lai F, Lai Y. *Induction of Labor by Acupuncture and Electrical Stimulation.* Obstetrics and Gynecology. 1974;43(3): 337-342.

47. Tsuei J, Lai Y and Sharma S. *The Influence of Acupuncture Stimulation During Pregnancy: The induction and inhibition of labor.* Obstetrics and Gynecology 1977; 50(4): 479-480.

48. Umeh B. *Sacral Acupuncture for pain relief in labour: initial clinical experience in Nigerian women.* Acupuncture Electrotherapeutics Research. 1986;11:147-151.

49. Wallis L , Shinder S, Palahniuk R, Spivey H. *An Evaluation of Acupuncture Analgesia in Obstetrics.* Anaesthesiology 1974;41(6):596-601

50. Wang DW and Jin YH. *Present status of Cesarean Section under Acupuncture Anesthesia in China.* Fukushima Journal of Medical Science.1989;35(2):45-52.

51. Wedenberg K, Moen B and Norling A. *A prospective randomised study comparing acupuncture with physiotherapy for low-back and pelvic pain in pregnancy.* Acta Obstet Gynecol Scand. 2000;79(5):331-5

52. Yanai N, Shalev E, Yagudin E, Zuckerman H. *The Use of Electroacupuncture During Labour.* American Journal of acupuncture 1987;15(4):311-312

53. Yip S, Pang J and Sung M *Induction of Labor by Acupuncture Electro- Stimulation*

American Journal of Chinese Medicine 1976;4(3):257-265

54. Young G and Jewell D. *Interventions for preventing and treating pelvic and back pain in pregnancy. (Cochrane Review)* The Cochrane Library, issue 2, 2002. Oxford.

55. Zeisler H, Tempfer C, Mayerhofer K, Barrada M, Husslein P. *Influence of acupuncture on duration of labor.* Gynecologic and Obstetric Investigation 1998;46(1):22-5

Tables of acupuncture studies in obstetrics

1. BREECH PRESENTATION

STUDY	TRIAL DESIGN	N0.	ACUPUNCTURE TREATMENT	CONTROL	TREATMENT AMOUNT	RESULTS
Cardini 1991 *[6]*	Case Series	33	Moxibustion to Bl67	None	30 minutes daily for 15 days	61% success rate
Qin and Tan 1989 *[35]*	Case series with matched control group	413	Ear seeds to 7 auricular points. 3 groups at different gestations	Knee-chest position for 40 patients	Seeds stimulated pre-prandially for 4 days. Repeat once more if ineffective	Significant difference in version at all 3 gestations compared with control
Cardini 1993 *[7]*	Clinical study with retrospective control matched for parity and gestational age.	23	Moxibustion to Bl67	Routine care with no intervention	Daily for minimum 5 days	Significantly higher version rate in study group compared to control.
Li and Wang 1996 *[26]*	Randomised controlled.	111	Electro-acupuncture or moxibustion to Bl67.	No treatment	Daily until correction for up to 6 days	81% in electro- group 75% in moxibustion and 16% control($p<0.005$ between electro and control)
Cardini 1998 *[8]*	Randomised, controlled.	260	Moxibustion to Bl67	Routine care with no intervention	Daily for 7 days plus 7 days if still breech	75.% cephalic at 35 weeks v 48% of controls ($p<.001$) 75% cephalic at birth v 62%, but 24 in control group had External Cephalic Version

Kanakura et al. 2001 *[22]*	Matched retrospective control groups – one for each of 2 interventions	765	Moxibustion or electro-stimulation to Bl67, Sp6, Kid1.	No intervention.	Daily for 30 minutes until correction or until deemed non-responsive	92% moxibustion group turned to cephalic, 73% in controls (*p<0.0001*). In electro group, 89% vs 83%
Neri et al 2002 *[31]*	Single- blind cross-over design. Sham acupuncture followed by true, 1-2 days later	12	Acupuncture and moxibustion bilaterally to Bl67.	Minimal (sham) acupuncture	20 minutes per session, twice per week, up to 5 sessions if required	Reduction in foetal heart rate and increase in foetal movements with true acupuncture. No significant changes in control

Numbers in brackets below the author details are the reference list numbers, for ease of matching the text summaries to the table entries.

2. MISCELLANEOUS CONDITIONS

STUDY	CONDITION	TRIAL DESIGN	NO.	ACUPUNCTURE TREATMENT	CONTROL	TREATMENT AMOUNT	RESULTS
Wang & Jin 1989 *[50]*	Caesarian section - acupuncture anaesthesia	Retrospective case series	a) 24271 (1975-80) b) 16649 (1981-87)	Refer to paper for details	None	Refer to paper for details	a) 92% success (i.e. sufficient analgesia achieved) b) 99% success Refer to paper for further details
Chauhan 1998 *[10]*	Placental Retention	Retrospective comparison over 2 years	75 (30 - acup 45 – control)	Acupuncture bilaterally to Bl67 and/or Ren3	Manual removal of placenta	Acupuncture until delivery of placenta, up to 20 minutes, then considered non response.	83% in acupuncture group delivered placenta in 20 minutes. Complication rate 20% in acupuncture group and 58% in manual removal group.

3. BACK AND PELVIC PAIN IN PREGNANCY

STUDY	TRIAL DESIGN	NO.	ACUPUNCTURE TREATMENT	CONTROL	TREATMENT AMOUNT	RESULTS
Thomas & Napolitano 2000 ***Pelvic*** *[45]*	Case report	1	Auricular to Shenmen, Sympathetic, Abdomen 2 and Lumbar vertebrae.	None	Needles retained for 8 hours, 5 times in 1st week, then twice weekly until delivery	Discharged from hospital after 4th treatment and much less narcotic analgesia needed
Ternov et al 2001 ***Both*** *[44]*	Retrospective case series	167	Various points, for 45 minutes, stimulated at 15 minute intervals	None	Variable	Good or excellent analgesia in 72% of patients
Forrester 2003 ***Back*** *[17]*	Case Report	1	Various points at each treatment	None	7 treatments over 9 week period	Pain rated 20-55 pre-acup. and 5-10 after (by VAS)
Wedenberg et al. 2000 ***Both*** *[51]*	Randomised controlled.	60	Acupuncture to ear points followed by various body points when needed	Physiotherapy	3 times weekly for 2 weeks, then twice a week, total of 10 treatments in 1 month	VAS values better after acup than physio in morning ($p<.02$) and evening ($p<.01$). Disability rating index significantly better in acup group only
da Silva et al 2004 ***Back*** *[13]*	Prospective, quasi-randomised, controlled	61 (27 acup 34 control)	Various points based on TCM and individualised	Standard treatment with Paracetamol and Hyoscine	Mostly once weekly, twice if severe, over 8 weeks.	Pain reduction 4.8 points in acupuncture group vs –0.3 control ($p<0.0001$)
Eldon et al 2005 ***Pelvic*** *[15]*	RCT, single blind Acup or exercise as adjuncts to standard therapy	386 (125 acu 130 exer 131 std)	a) local points (segmental & extra-segmental) – by ahshi & pain diagnosis b) general pain-relieving points (unspecified)	1) Std therapy (information, advice, pelvic belt, home exercises) 2) Standard plus stabilising exercises	Twice a week for 6 weeks	Acup group had largest improvement in pain intensity – both self- & independently assessed. (Most outcomes statistically significant)

4. PAIN RELIEF IN LABOUR

STUDY	TRIAL DESIGN	N0.	ACUPUNCTURE TREATMENT	CONTROL	TREATMENT AMOUNT	RESULTS
Abouleish & Depp 1975 *[1]*	Case series	12	Electro-acupuncture to various points, usually 8 for each patient.	None	Continuous	66% experienced relief of pain, but comment made on impracticality.
Ledergerber 1976 *[25]*	Case series	20	Manual or electro-acupuncture to St44, St36, Sp6 and others	None	[Not clear in paper]	9 cases with electro-acup successful, 6 not. None in manual group successful.
Hyodo and Osamu 1977 *[21]*	Observational study	32	Electro-acupuncture to St36, LI4 and Sp6	None	Continuous from early labour until 3rd stage of labour	Definite subjective and objective relief of pain in 60% of primiparas and 90% of multiparas after acupuncture.
Perera 1979 *[34]*	Case series	60	Acupuncture to Du20, LI4, St44, Bl67 all on left side only. Electro to Neima (ex) and Sp6 only	None	Continuous	92% effective. Induction to delivery interval also shortened.
Umeh. 1986 *[48]*	Case series	30	Sacral acupuncture to Bl32 with manual stimulation and moxibustion	None	[Not stated in paper]	63% had adequate pain relief on VAS, with 31% of these reporting no pain at all in average 8 hours of labour.
Yanai et al. 1987 *[52]*	Observational study	16	Electro-acupuncture to LI4 and ear Shenmen	None	At start of active stage of labour	56% mild to good pain relief by patient assessment. Midwives assessed it as 94% and physicians 87%.

Martoudis & Christofides 1990 *[30]*	Observational study	168	Electro-acupuncture to LI4 and ear Shenmen bilaterally for 20 or 30 minutes	None	Dependent on duration of labour	Slight to very good benefit in 88% of cases, "failure rate" 12%.
Yip et al, 1976 – see section 5 – women treated with acupuncture needed less analgesia than usual *[53]*						
Wallis et al 1974 *[49]*	Comparison between manual and electro-acupuncture	21	Points according to TCM diagnosis	Electro versus manual acupuncture	According to patient request for analgesia	19 out of 21 reported inadequate analgesia
Pei and Huang 1985 *[33]*	Randomised controlled	200 (100 acup 100 control)	Electro-acupuncture to either Bl32 or special local point or combined Bl32, Sp14 and St30 .	No intervention	Continuous	94-97% in treatment group had adequate analgesia vs 0% in control group, and acupuncture group had shorter course of labour.
Skelton and Flowerdew 1988 *[38]*	Non-randomised, controlled	170	Electro-acupuncture to Sp6, St36 and Neima (ex).	Conventional analgesia.	Continuous until delivery. Entonox also available.	Only multiparous patients had less pain. Significantly shorter first stage for primigravids than control.
Lyrenas et al. 1990 *[29]*	Contemporan-eous matched control group.	32	Acupuncture to St 36, GB34,Sp6 and Bl62 bilaterally	No intervention	Once weekly until delivery from 36 weeks and for 30 mins each time	No lessening of labour pain, nor reduction in analgesic requirements, with acupuncture
Ternov et al 1998a. *[42]*	Contemporan-eous matched control group.	180 (90 in each group)	Individualised to a variety of points	No intervention.	Variable but mostly continuous throughout labour.	Standard analgesia needed for 40% in acupuncture group vs 87% controls ($p<0.0001$)

Ternov et al. 1998b. *[43]*	Retrospective comparison of 12 months records: before and after acupuncture introduced.	3317 (1708 no acup 1609 with acup)	Individualized and including tangential needling.	No intervention.	Variable but mostly continuous throughout labour.	After introduction of acupuncture, significant reduction in use of nitrous oxide, IM Meperidine, local Bupivicaine and sterile water (p<0.01)
Ramnero et al 2002 *[37]*	Randomised controlled	90	Individualised acupuncture to various points.	No intervention	Needles left in situ for one to three hours	Acupuncture group: significantly fewer epidurals & more relaxed. No difference in pain or labour outcomes.
Skilnand et al 2002 *[39]*	Controlled, single-blind, randomised study	210	Individualised acupuncture to various points	Minimal sham acupuncture	Variable but mostly continuous with needles taped down	True acupuncture reduced labour pain scores by c.20% more than sham and decreased time to delivery by over an hour.
Nesheim et al. 2003 *[32]*	Controlled: part randomised, part matched group. Non-blinded.	290 (106 acup 184 controls)	Individualised choice of acupuncture points with deqi .	No intervention (92 randomised 92 matched from register)	Most needles in situ 10 to 20 mins, some less, and some retained	Meperidine needed by 11% acupuncture group, 37% control group 1 (p=0.0001)and 29% control group 2
Tempfer et al, 1998 – see section 5 – no significant difference in use of analgesics *[41]*						
Zeisler et al, 1998 – see section 5 – no significant difference in use of analgesics *[55]*						

5. INDUCTION / DURATION OF LABOUR

STUDY	CONDITION	TRIAL DESIGN	NO.	ACUPUNCTURE TREATMENT	CONTROL	TREATMENT AMOUNT	RESULTS
Tsuei and Lai 1974 *[46]*	Induction of labour	Observational study	12 (4 still-births, 1 missed abortion, 7 post-dates)	Acupuncture to LI 4 and Sp 6 bilaterally with electro-stimulation for 10 participants	None	Continuous throughout labour	Uterine contractions initiated in 10 out of 12 cases (83% success rate). Average induction to delivery time was 13.1 hours.
Lederger-ber 1976 *[25]*	Induction of labour	Case series	17 (12 at term, 5 pre-term)	Electro-stimulation and electro-acupuncture to Ren3 and Sp15.	None	Induction: stimulation every 3 mins for 15 secs, followed by needling if unsuccessful.	100% success in 12 patients at term; of 5 pre-term patients, 3 were successful.
Yip et al 1976 *[53]*	Induction of labour	Case series	31	Electro-Stimulation to Sp6 and LI4 at 5 cycles per second.	None	Continuously throughout first stage of labour	21/31 were successful; majority needed less analgesia than is usual.
Tsuei et al 1977 *[47]*	Induction and inhibition of labour	Observational study	60 (41 induction at term, 7 mid-term abortion, 12 inhibition of premature labour)	For inhibition of labour: electro-acupuncture to Sp 4. Induction: electro-acupuncture to LI4 & Sp 6. For mid-term as above plus GB34 & Ren1 on 2nd day.	None	For induction, max 8 hours, repeated next day if no response. If response, treat until delivery. For inhibition: twice daily for 1st 3 days then twice weekly up to 20 times.	For induction 78% success at term. 0% for mid-term abortion. For inhibition, success rate 92% .

Lin 1998 *[27]*	To accelerate labours with abnormal progress.	Case series	62	LI4(reinforced) and Sp 6(reduced)	None	For 30 minutes	Average speed of cervical dilation increased after acupuncture (*P*=<0.001). Intensity and frequency of contractions also improved (*P*=<0.05*)*
Perera, 1979 – see section 4 – induction to delivery interval shortened [34]							
Kubista & Kucera 1974 *[23]*	Preparation for labour from 37 weeks gestation in primiparae.	Contemporan-eous matched control group	120 (60 acup, 60 control)	St 36, Kid 8, GB34 and Bl62 . No manual manipulation or electric stimulation; even technique; deqi.	No intervention	At weekly intervals before due date, 3 to 4 times, for 20-25 minutes.	Subjective length of labour shorter in acup group (*P*<0.02) and active phase of labour shorter in acup group (*P*<0.1)
Kubista et al. 1975 *[24]*	Induction of labour with intact membranes	Contemporan-eous matched control group	70 (35 acup, 35 control)	Electro-acupuncture to Kid 8, St36, Ren 6, "Bachmann 25" point.	No intervention	For an average of 2 hours	All in treatment group experienced contractions within 25 minutes. 31 had statistically significant increase in contraction frequency and intensity (*P*<0.01). No significant change in controls.
Lyrenas et al. 1987 *[28]*	Length of pregnancy and duration of labour	Controlled, not randomised-acupuncture group self-selected.	204 (56 acup, 112 control plus 36 in two reference groups)	St36, Sp6, GB34 and Bl62. Manual needling; even technique; deqi.	Control group: no intervention Ref grp 1: lumbar puncture and interview Ref grp 2: no intervention.	Once weekly from week 36 until delivery.	Acupuncture group appeared to have longer gestations and duration of labour was not shortened (second stage was longer). More use of oxytocin in acupuncture group.

Tempfer et al. 1998 *[41]*	Duration of labour; levels of maternal serum factors involved in cervical maturation	Matched pairs – women giving birth in same time period, matched for age and parity	80 (40 acup, 40 control)	Du20, He7, P6 : bilateral, manual needling with deqi	No acupuncture	Once weekly for 4 weeks, starting week 35	Total labour: 136 mins less in acup group (p<.001). First stage (3cm up to full dilation): 139 mins less (p<.001). Second stage: 2 mins longer No signif diffs in interleukin-8, prostaglandin F2α, β-endorphin. No differences in analgesic use or maternal birth injuries
Zeisler et al 1998 *[55]*	Duration of labour. First parity only.	Contempor-aneous matched control group	57 acup 63 control	Du20, He 7, P6: bilateral, manual needling with deqi	No acupuncture	Once weekly for 4 weeks, starting week 36	Median duration of first stage of labour was 196 mins in acup group v 321 in control. No difference in second stage.
Rabl et al. 2001 *[36]*	Cervical ripening and induction of labour at term	Randomised controlled	45 (25 acup, 20 control)	LI4 and Sp6, "neutral" needle technique, deqi obtained.	No intervention	For 20 minutes	Acupuncture helped cervical ripening (*P*=0.04) and shortened time interval between due date and actual time of delivery (5.0 vs 7.9 days) (*P*=0.03)
Pei and Huang, 1985 – see section 4 - shorter course of labour in acupuncture group *[33]*							
Skelton & Flowerdew 1988 – see section 4 – significantly shorter first stage for primigravids in acupuncture group *[38]*							
Skilnand, 2002 – see section 4 – time to delivery reduced by more than 1 hour in acupuncture group *[39]*							