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4 The effects of shiatsu on post-term pregnancy

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Summary

Objectives: To evaluate the effects of shiatsu techniques, as taught by hospital midwives, on the progress of post-term labours and deliveries, to inform practice.

Design and setting: A pilot audit on the use of shiatsu for post-term pregnancy at St. Michael's Hospital, Bristol, from March to July 2000.

Interventions: Sixty-six women, who attended a consultant clinic hospital appointment at 40 weeks gestation, were taught the massage techniques by one midwife, who had completed the shiatsu course. Seventy-six comparison women were those who attended similar clinics when the midwife was not on duty.

Outcomes: The audit extracted outcome information from the Stork hospital database including induction, type of delivery, length of labour and analgesia used.

Results: Post-term women who used shiatsu were significantly more likely to labour spontaneously than those who did not ($p=0.038$). Of those who had used shiatsu, 17% more went into spontaneous labour compared to those who were not taught shiatsu.

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7 Introduction

8 Low risk pregnancies which continue for more than
9 42 weeks, have an increased risk of perinatal mor-
10 tality and morbidity.¹ Post-term pregnancy also car-
11 ries a higher risk of the baby being admitted to NICU
12 and is associated with an increased risk of obstetric
13 and neonatal interventions.²

14 A systematic review of trials of sweeping of
15 the membranes for inducing labour or prevent-

ing post-term pregnancy found that there was 16
a reduction in the use of more formal methods 17
of induction after sweeping the membranes, but 18
women reported more discomfort and other ad- 19
verse effects.³ A meta-analysis of 19 randomised 20
control trials comparing routine induction with ex- 21
pectant management concluded that routine in- 22
duction after 41 weeks gestation reduces perina- 23
tal mortality.¹ The NICE guidance⁴ consequently 24
recommends sweeping the membranes after 41 25
weeks followed by routine induction. Sweeping 26
the membranes, however, is an uncomfortable and 27
invasive procedure, and the guidelines conclude 28
that further studies are needed in order to de- 29
velop and standardise measures of maternal sat- 30
isfaction, attitude and response to induction of 31
labour. 32

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33 The main problems experienced during pharma- 89
34 cological induction of labour are an inability to 90
35 achieve effective labour, or the production of ex- 91
36 cessively strong uterine contractions. The latter 92
37 may cause both maternal and foetal distress and 93
38 both problems may lead to an increased risk of in- 94
39 strumental delivery and caesarean section.⁵ During 95
40 an induction, a woman is not able to have potent 96
41 pharmacological pain relief until she is in estab- 97
42 lished labour and this can also cause distress. 98

43 There is growing interest in the use of comple-
44 mentary therapies during pregnancy and labour
45 and there has been some research into the use
46 of acupuncture. Kubista et al.⁶ and Tsuei and
47 Leuzi⁷ have shown that electro-acupuncture can
48 be used to induce labour. Smith and Crowther⁸
49 reviewed trials of using acupuncture for inducing
50 labour and found that none of the trials were well-
51 designed, and recommended that good randomised
52 trials to evaluate the efficacy of acupuncture in in-
53 ducing labour were needed. Smith and colleagues
54 in Adelaide, Australia, are currently carrying out
55 such a trial with women with post-term pregnan-
56 cies, comparing acupuncture with sham acupunc-
57 ture (personal communication). Other studies have
58 used transcutaneous electrical nerve stimulation
59 (TENS) at acupuncture points to increase uter-
60 ine contractions.⁹ Several studies have shown that
61 acupressure is an effective non-pharmacological
62 method to reduce nausea and vomiting during and
63 after caesarean section.^{10,11} However, there is very
64 little published research on the effects of shiatsu
65 on labour.

66 Shiatsu is a form of massage based largely on
67 Chinese acupuncture theory and it often includes
68 the use of breathing and exercise. It is traditionally
69 done through the clothes, but may include direct
70 work on the skin. Shiatsu is characterised by the
71 use of static pressure, which can vary from fairly
72 deep physical pressure to light holding. This is ap-
73 plied mostly with the palm of the hand or thumb,
74 although fingers and knuckles and other strokes can
75 also be used.

76 Midwives may already be using similar massage
77 techniques as part of their routine care, and shi-
78atsu gives more 'focus' to these practices. There
79 is no evidence of any harmful side effects but
80 much reported practitioner evidence of effective-
81ness. The response of the mother to shiatsu can
82 be immediately and directly monitored by her posi-
83 tive or negative reactions to the techniques. Shiatsu
84 lends itself well to maternity care, since certain
85 specific shiatsu techniques can be taught to non-
86 practitioners, such as midwives and birth partners,
87 for use in particular situations.^{12,13} A 6-day course
88 for midwives has been developed by one of the

authors (S.Y.), a shiatsu practitioner specialising
in maternity applications, which has enabled mid-
wives to use certain shiatsu tools in their work.¹³
This course was run by S.Y. at St. Michael's Hospi-
tal, Bristol, and several midwives started to use shi-
atsu with post-term women. This aim of this study
was to evaluate the effects of shiatsu techniques,
as taught by hospital midwives, on the progress of
post-term labours and deliveries, to inform future
midwifery practice.

99 Methods

100 Following the introduction of shiatsu techniques
101 into practice, an audit was carried out on the use
102 of shiatsu for post-term pregnancy. All consultants
103 had given permission for the techniques to be used
104 on their patients and shiatsu was approved as an ac-
105 ceptable complementary therapy to be used within
106 the United Bristol Healthcare Trust. Women, who
107 attended a consultant clinic appointment at the
108 hospital at 40 weeks gestation, were taught the
109 massage techniques by one midwife who had com-
110 pleted the course. Comparison women (who were
111 not taught the techniques) were those who at-
112 tended similar clinics when the midwife was not on
113 duty.

114 The shiatsu points taught to women were Gall
115 Bladder 21 (GB-21) (in the hollow on top of the
116 shoulder), Large Intestine 4 (LI-4) (between thumb
117 and forefinger on the back of the hand) and Spleen
118 6 (SP-6) (3 thumb widths above the tip of the ankle-
119 bone), as shown in Fig. 1. Each point has a slightly
120 different effect, so all points were shown and held
121 with thumb pressure as deep as the woman found
122 to be comfortable until a reaction was felt. If a re-
123 action was felt on the point, then the woman was
124 encouraged to work the point as deeply and firmly
125 and for as long and often as was comfortable. If a
126 woman experienced no reaction from a point, then
127 she would probably not use that particular point. If
128 her partner was present, they were also shown how
129 to work the point with pressure.

130 The women were also taught simple breath-
131 ing techniques and exercises on all fours (rocking,
132 squats, cat arches). Each session took no more than
133 15 min and the women were then encouraged to use
134 the shiatsu points at home as often as it felt com-
135 fortable using firm pressure.

136 The audit extracted outcome information from
137 the Stork hospital database, including pharmaco-
138 logical induction, length of labour, drugs used,
139 foetal distress, type of delivery and birth weight
140 of baby, for women attending the antenatal clinic

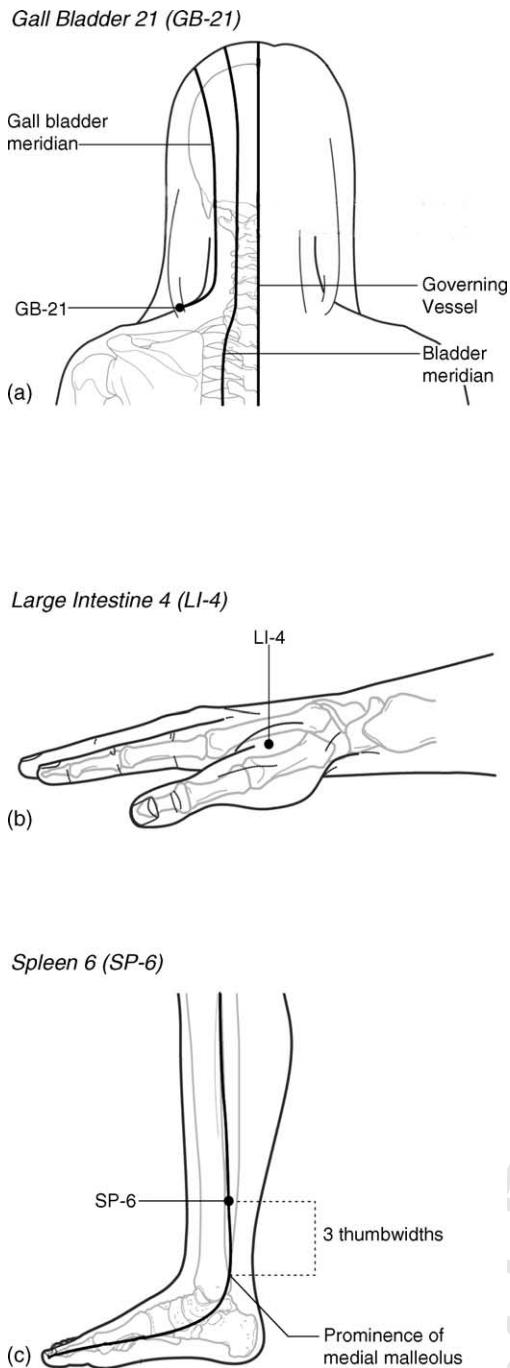


Figure 1 Shiatsu points used for induction of labour (reproduced from Yates¹³).

for post-maturity from March to July 2000. All the women who had been taught the shiatsu techniques were given an audit questionnaire to complete soon after delivery to document their use of shiatsu and thirty women consented to the use of this information by returning their questionnaires.

Data were analysed using chi-square tests for categorical variables (induced labour, vaginal or Caesarean delivery, primiparous or multiparous

mother) to compare those who had been taught shiatsu with those who had not, or *t*-tests for continuous variables, including maternal age, length of labour, gestation of baby and baby weight. Significance levels of 0.05 were taken to indicate that a finding had not occurred by chance.

Results

The characteristics of the women and babies in the two groups are shown in Tables 1 and 2. There were 66 women who delivered 34 (52%) boys and 32 girls in the shiatsu group and 76 women with 42 (55%) boys and 34 girls in the comparison group. There were no statistically significant differences between the groups for parity, maternal age, gestation at delivery, type of drugs used in labour, number of caesarean deliveries, or birth weight. There were, however, significant differences in the number of labours which were induced in the two groups and also in the length of the labours. Post-term women who used shiatsu were significantly more likely to labour spontaneously than those who did not (chi-square test, $p=0.038$). Of those who had used shiatsu, 17% more went into spontaneous labour compared to those who were not taught shiatsu. If those who had emergency caesarean sections (15) are excluded from the analysis, the difference between the groups is even greater with 68% (41) of spontaneous labours in the shiatsu group and 46% (31) in the comparison group (22% difference, chi-square test, $p=0.012$).

The shiatsu group had longer labours than the comparison group (an average of 1.4h longer), but had similar use of analgesia to cope with their longer labours. Since some of the labour lengths were very short for those who had emergency caesarean sections, if these deliveries are excluded from the analysis, the difference in the length of labour is not significantly different between the two groups (chi-square test, $p=0.19$).

Of 30 women in the shiatsu group who completed an audit questionnaire, 87% (26) used the shiatsu points, 80% (24) found the points helpful before and during their labour and 76% (23) used the breathing and relaxation exercises, which they had been taught. Most women (63%, 19) used all three shiatsu points that they had been shown and 63% (19) of those who did went into labour spontaneously.

Discussion

The relatively small size of the study and the fact that women were not randomly allocated to the shi-

Table 1 Characteristics of the women, drugs used during labour and type of delivery for the shiatsu and comparison group.

	Shiatsu group (66)	Comparison group (76)	Chi-square, and <i>p</i> -value
Primiparous	39 (59.1%)	37 (48.7%)	1.54, 0.22
Entonox	48 (75.0%)	61 (80.3%)	0.56, 0.46
Pethidine	18 (27.7%)	16 (21.1%)	0.84, 0.36
Epidural	24 (36.9%)	21 (28.0%)	1.27, 0.26
Foetal distress	24 (36.4%)	36 (47.4%)	1.75, 0.19
Caesarean delivery	6 (9.1%)	9 (11.8%)	0.28, 0.60
Induced labour	25 (37.9%)	42 (55.3%)	4.28, 0.04*

Table 2 Characteristics of the women, labour length and baby weight for shiatsu and comparison group.

	Shiatsu group	Comparison group	<i>t</i> -test <i>p</i> -value	95% confidence intervals
Mothers age	30.17 years	30.0 3 years	0.88	−1.76, 2.04
Gestation	40.79 weeks	40.67 weeks	0.49	−0.22, 0.45
Labour length	6.63 h	5.27 h	0.03*	0.13, 2.59
Baby weight	3.68 kg	3.62 kg	0.44	−0.99, 2.27

200 atsu or control groups means that the findings can
 201 only be used as an indication of the generalisability
 202 of shiatsu in this context, but the results are inter-
 203 esting and the use of these techniques in midwives'
 204 daily practice can be justified.

205 This study was carried out before the NICE⁴ guid-
 206 ance on sweeping the membranes was introduced
 207 and a comparison of sweeping the membranes with
 208 shiatsu would also have been useful, but this pro-
 209 cedure was not routinely documented on the Stork
 210 database at the time.

211 The trial run by Smith, which is evaluating the
 212 efficacy of acupuncture in inducing labour, has not
 213 yet been reported, so it is not yet possible to com-
 214 pare the effects of acupuncture with this audit of
 215 shiatsu techniques.

216 Midwives can be taught the most relevant shi-
 217 atsu points and meridians for pregnancy, birth and
 218 labour by a skilled practitioner, without needing
 219 to complete the full shiatsu practitioner training.
 220 They can use shiatsu combined with existing mid-
 221 wifery skills of touch, gentle pressure and massage
 222 in a more focused way in their daily practice.¹³ This
 223 study has shown that they can also teach some of
 224 the techniques to mothers and their partners to use
 225 during pregnancy and labour.

226 Since current best practice, as reflected in the
 227 NICE guidelines, can only recommend invasive or
 228 uncomfortable procedures (sweeping the mem-
 229 branes or pharmacological induction) for inducing
 230 labour, this seems to be an appropriate time to
 231 investigate the use of less invasive techniques to
 232 enable women to labour spontaneously with well-
 233 designed randomised trials.

This preliminary study raises the hypothesis that
 the use of specific shiatsu techniques on post-term
 women by midwives reduces the number of labours
 that need to be induced pharmacologically.

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 care Trust for funding the initial 6-day course for
 the midwives at St. Michael's Hospital. Permission
 has been granted by Elsevier to reproduce Fig. 1
 from Yates.¹³

References

1. Crowley P. Interventions for preventing or improving the outcome of delivery at or beyond term (Cochrane review). *The Cochrane library*, vol. 2. Oxford: Update Software; 2004.
2. Luckas M, Buckett W, Alfirevic Z. Comparison of outcomes in uncomplicated term and post-term pregnancy following spontaneous labour. *J Perinatal Med* 1998;**26/6**: 475–9.
3. Boulvain M, Stan C, Irion O. Membrane sweeping for induction of labour (Cochrane review). *The Cochrane library*, vol. 2. Oxford: Update Software; 2004.
4. NICE. *National guideline on the induction of labour*; 2001.
5. Hofmeyr GJ, Alfirevic Z, Kelly T, et al. Methods for cervical ripening and labour induction in late pregnancy: generic protocol (protocol for a Cochrane review). *The Cochrane library*, vol. 2. Oxford: Update Software; 2004.
6. Kubista E, et al. Initiating contractions of the gravid uterus through electro acupuncture. *Am J Chin Med* 1975;**3**: 343.

- 264 7. Tsuei J, Leuizi Y. The influence of acupuncture stimulation
265 during pregnancy. *Obstetr Gynaecol* 1977;**50**:479–88. 273
- 266 8. Smith CA, Crowther CA. Acupuncture for induction of labour
267 (Cochrane review). *The Cochrane library*, vol. 2. Oxford:
268 Update Software; 2005. 274
- 269 9. Dunn PA, Roger D, Halford K. Transcutaneous electrical
270 stimulation at acupuncture points in the induction of uter-
271 ine contractions. *Obstetr Gynaecol* 1989;**73**:286–90. 275
- 272 10. Harmon D, Ryan M, Kelly A, Bowman M. Acupressure
and prevention of nausea and vomiting during and after
spinal anaesthesia for caesarean section. *Br J Anaesth* 2000;**84**(4):463–7. 276
11. Stein DJ, Birnbach DJ, Danzer BI, et al. Acupuncture versus
intravenous metoclopramide to prevent nausea and vomit-
ing during spinal anaesthesia for caesarean section. *Anesth*
Analg 1997;**84**(2):342–5. 277
12. Yates S. Supporting women with shiatsu: another tool
for keeping birth normal. *MIDIRS Midwifery Digest*
1998;**8**(4):422–4. 278
13. Yates S. *Shiatsu for midwives*. Edinburgh: Elsevier; 2003. 279
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