

## Japanese Acupuncture - Current Research

### *Japanese Traditional Medicine Text (9) – Obstetrics*

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#### 1. Introduction

A search of MEDLINE for research literature on clinical acupuncture and moxibustion in obstetrics overseas using the terms ‘obstetrics’ and ‘acupuncture’ obtained 195 results. Some research into acupuncture anesthesia in obstetric surgery was carried out in the 1970s, then from the 1980s a few studies examined analgesia for contractions and delivery, correction of fetal breech presentation and analgesia for caesarian section. There are also papers on treatment of morning sickness and dysmenorrhea. Much clinical research has examined acupuncture and moxibustion associated with assisted reproductive technology (ART), typically in vitro fertilization, with papers addressing improvement of uterine blood flow, alleviation of pain associated with ovum collection, as well as improvement of pregnancy rates. While infertility and breech position are addressed in detail below, three quarters of the 195 papers were published after 2000, suggesting acupuncture and moxibustion have attracted much attention in obstetrics over the last 10 years. Focusing on randomized controlled trials (RCTs), the results include 39 papers on obstetrics (12 on contractions and delivery, 6 on ART, 6 on morning sickness and hyperemesis, and 5 on peripelvic pain, 4 on breech presentation, 2 on mastitis, and 4 on other topics including failure of lactation, caesarian section, climacterium, and premenstrual tension). Most of the papers are from Europe, which accounted for 60% of the total, including 11 papers from Sweden. A meta-analysis<sup>1)</sup> of contractions suggests that acupuncture may be useful for alleviating labor pain, however, the sample is small, therefore further research is required.

Clinical obstetrical research in Japan includes a paper by Kakizaki et al. in 1973 on labor induction,

alleviation of pain at delivery, as well as acupuncture anesthesia for caesarean section, and subsequent case reports but no RCTs, so it is difficult to say that there are any papers with a high evidence level at the moment. Among that research is a comparative study by Yasuda et al. on alleviation of pain at delivery using acupuncture anesthesia claiming that electro-needling at Zusanli and Sanyinjiao achieved pain alleviation in all 18 primipara and 83% of the para (12)<sup>2)</sup>. While it has drawbacks, including the fact that the effects of acupuncture anesthesia vary among individuals and that movement is limited for the pregnant women, it does demonstrate alleviation of anxiety in pregnant women owing to alleviation of pain, shortening of the course of labor, and some reduction in the amount of bleeding. It is also safe and simple, making it a method of alleviating pain at delivery with no complications. Additionally, Tsujiuchi has published a comparative study on acupuncture and moxibustion for breech presentation<sup>3)</sup>.

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Mizumoto et al. reviewed 10 papers on low back pain and pelvic pain in pregnant women in a meta-analysis of the safety of acupuncture and its analgesic effects, finding in all papers significant decreases in low back pain and pelvic pain during pregnancy compared to the control group, and finding no adverse event in either mother or newborn.

The topic will now turn to obstetric acupuncture and moxibustion for infertility and breech presentation.

#### 2. Acupuncture and moxibustion for infertility - Overseas

Overseas researchers have published a number of studies into the question of whether acupuncture improves the rate of pregnancy by ART, including an RCT by Paulus (2002), as well as studies by Smith (2006), Dieterle (2006) and Westergaard (2006). As

of 2010, the results of 3 meta-analyses had been published. According to Manheimer et al. (2008), 7 RCTs showed that the odds ratio of clinical gestation in women who received acupuncture was 1.65, the rate of ongoing pregnancy (more than 12 weeks) in 5 of them was 1.87, and the live birth rate in 4 was 1.91, thereby finding significant improvement in the groups receiving acupuncture and moxibustion in each of the RCTs<sup>5</sup>). Further, Cheong et al. (2008) found in 13 well-designed studies that the live birth rate odds ratio for women who received acupuncture on the day of embryo transfer was 1.89, suggesting it is effective<sup>6</sup>). However, El-Toukhy et al. (2008) found that in 5 studies in which acupuncture was performed around the time of ovum collection the clinical gestation risk rate was 1.06; the clinical gestation risk rate was 1.23 in 8 studies in which acupuncture was performed around the time of embryo transfer; and the live birth risk rate was 1.34 in 5 of the 8 studies, thereby finding no significant difference attributable to acupuncture and moxibustion in any of the studies<sup>7</sup>). Thus, while researchers have found that acupuncture is beneficial, some studies found no effectiveness, so further research is required.

#### Acupuncture's mechanisms of effect

The following are some possible mechanisms of effect in acupuncture for the female reproductive system.

- (1) Effects on the endocrine system: Acupuncture can be expected to affect the menstrual cycle, ovulation and gestation by regulating the discharge of neurotransmitters and stimulating GnRH excretion.
- (2) Improvement of uterine blood flow: Stener-Victorin found that electro-needling improved vascular resistance in uterine arteries between in-vitro fertilization and embryo transfer. This effect is thought to be attributable to the suppression of sympathetic nerve activity.

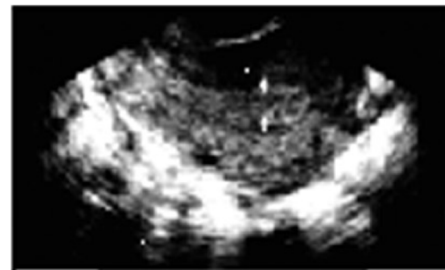
- (3) Stress alleviation: While it has been reported that stress has an impact on infertility, acupuncture can be expected to ease stress by stimulating the production of endogenous opioids.

Before acupuncture and moxibustion



3-layer structure 5 mm

Three months after acupuncture and moxibustion



1-layer structure 9 mm

Six months after acupuncture and moxibustion



3-layer structure 8 mm

Figure 1: Typical transvaginal ultrasound images of a case of endometrial improvement

Before acupuncture and moxibustion endometrial thickness is thin (5 mm), making embryo transfer impossible, however, 6 months after acupuncture and moxibustion, the endometrium has grown to a 3-layer structure and 8 mm, which meets the criteria for embryo transfer thereby allowing embryo transfer.

### 3. Acupuncture for infertility - Japan

Although no RCTs have yet been published in Japan, Shimizu et al. published a comparative study on the “effects of acupuncture on the menstrual cycle and glycometabolism in women with ovulatory disorder”<sup>8)</sup>. The following are some of the effects of acupuncture and moxibustion for infertility we have published.

#### (a) Acupuncture and moxibustion combined with freeze-thaw embryo transfer in 57 patients with endometrial misshaping and replication study (51<sup>st</sup> & 52<sup>nd</sup> Congresses of the Japan Society of Acupuncture and Moxibustion).

Acupuncture and moxibustion were performed for a defined period on 57 patients with intractable infertility, after failing to achieve gestation with at least 3 attempts at ART, and the endometrium failing to meet the defined criteria for formation thereby precluding freeze-thaw embryo transfer despite at least two attempts at endometrial preparation with hormone replacement therapy. Patients' patterns (証) were determined by pulse location and quality diagnosis (脉位脉状診), abdominal examination (腹診), and interview, and the casual or essential treatment (本治法) were performed in addition to local or symptomatic treatment (標治法) at Guanyuan, Zhongji, Dahe, Xuehai, Sanyinjiao, Shenshu, Ciliao and symptom-based selection of other acupuncture points. An electro-moxa device was used on the abdomen and indirect moxibustion was performed at the low to mid back and legs (low back: Shenshu, baliaoxue, legs: Sanyinjiao, Yongquan, Shimian, etc.). Endometrial preparation with a repeated cycle of hormone replacement was performed after acupuncture and moxibustion, resulting in endometrial condition improving to the defined criteria (3-layer structure of at least 6 mm) in 31 (54.4%) of the 57 patients (see Figure 1).

After endometrial improvement, gestation was achieved in 14 (45.1%) of the 31 patients who received freeze-thaw embryo transfer. Furthermore, repeating ART cycles achieved high rates of endometrial condition improvement (2<sup>nd</sup> cycle: 75%, 3<sup>rd</sup> cycle: 60%) and gestation (2<sup>nd</sup> cycle: 44.4%, 3<sup>rd</sup> cycle: 66.7%). These results suggest acupuncture and moxibustion are effective in improving endometrial condition and contribute to an increase in gestation rates.

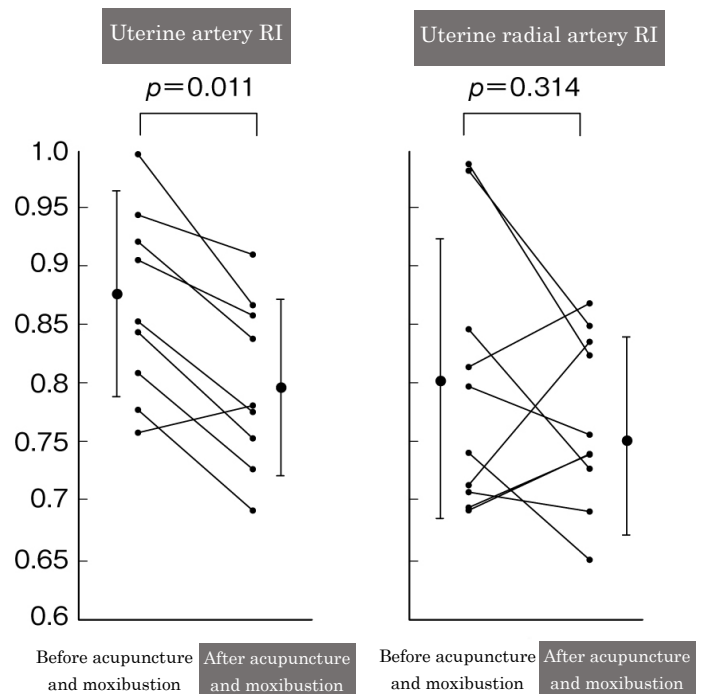


Figure 2: Change in uterine and uterine radial artery RI before and after Zhongliao needling

Transvaginal color Doppler was used to measure vascular resistance on the 3<sup>rd</sup>-7<sup>th</sup> day of menses and acupuncture was performed once a week for an average between 7 and 15 times (mean: 9.4). Measurements were repeated on the 3<sup>rd</sup>-7<sup>th</sup> day of the second menses after acupuncture commenced. Uterine artery RI decreased in 8 out of nine cases, while the mean also decreased significantly from 0.87 to 0.80 ( $p=0.011$ ). Uterine radial artery RI decreased in at least half, demonstrating a downward trend in the mean from 0.81 to 0.77, however, this was not statistically significant.

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**(b) Impact of needling Zhongliao on uterine arterial circulation in infertile patients** (51<sup>st</sup> Annual Meeting of the Japan Society for Reproductive Medicine)

Faced with the need to attempt new therapies for cases in which our usual therapies have not resulted in gestation, we turned our attention to the bladder, another organ within the pelvis along with the uterus and ovaries. Because needling Zhongliao is effective in urology for lower urinary tract symptoms such as overactive bladder and prostate enlargement, nocturnal enuresis, as well as chronic pelvic pain syndrome with venal stasis in the pelvis<sup>9</sup>, we trialed Zhongliao needling, with the promise of its effectiveness on the pelvic organs, for infertility patients.

Our method of needling Zhongliao involved retaining stainless disposable needles (0.3 mm in diameter, 60 mm long) at about 60 mm depth, then manual stimulation at left and right for a total of 10 minutes, with the patient in prone position. After performing acupuncture at Zhongliao only for a defined period on 9 infertility patients, measurements of vascular resistance using color Doppler showed a significant decrease in the uterine artery resistance index (RI) from 0.87 to 0.80, and a decrease in the RI for the uterine radial arteries in at least half, although the decrease from 0.81 to 0.77 was not statistically significant (Figure 2). Furthermore, gestation was achieved in 4 of the 8 patients who received freeze-thaw embryo transfer after acupuncture.

4. Acupuncture and moxibustion for breech presentation - Overseas

In the 1980s, after Yoshiro Hayashida performed moxa needling at Sanyinjiao and moxibustion at Zhiyin to treat breech presentation and showed its great benefits, various overseas researchers conducted RCTs of acupuncture and moxibustion for breech presentation. Searching MEDLINE using the terms “acupuncture” and “breech” results in 10 RCTs

and 1 meta-analysis. In 1998, Cardini conducted an RCT in China on the “effects of moxibustion for correction of breech presentation” with 130 primipara in the 33<sup>rd</sup> week of pregnancy and a control group of 130. The method involved the pregnant women themselves applying stick moxa at Zhiyin, resulting in cephalic version in 75.4% of the treatment group and 47.4% in the control group, which was a significantly high rate of version in the treatment group. However, the study was criticized for a lack of randomization and placebo. In 2004, Neri published the results of an RCT with 226 pregnant women showing breech presentation in the 33<sup>th</sup> to 35<sup>th</sup> week of pregnancy, achieving significant results with needle retention and stick moxibustion. More recently, in November 2009, Guittier et al. published an RCT with 212 pregnant women showing breech presentation in the 34<sup>th</sup> to 36<sup>th</sup> week of pregnancy. Their method involved performing moxibustion at Zhiyin and the patients themselves applying moxa at home, which achieved no significant result. The numerous studies to date show the rate of version is low if initial consultation is in the 34<sup>th</sup> week or later.

In September 2009, Vas et al. published a meta-analysis of 6 studies up to June 2007<sup>10</sup>. It covered 1,087 pregnant women showing breech presentation and compared groups in which moxibustion was performed and control groups in which treatment other than moxibustion was performed. The results showed that while the rate of version was 72.5% for groups in which moxibustion was performed, the rate was 53.2% in control groups (relative risk: 1.36, confidence interval: 1.17-1.58). Vas et al. concluded that moxibustion performed at Zhiyin (BL67) was effective.

5. Acupuncture and moxibustion for breech presentation - Japan

*Sakago no Shinkyu Chiryō (Acupuncture and Moxibustion for Breech Presentation)*, written and edited by Shuichi Katai<sup>11</sup>, reports 14 of the Japanese publications on acupuncture and moxibustion for

breech presentation since World War II in Japan, however, not one of them was a randomized study. Of the total 1,663 cases covered, correction was achieved in 1,382. So, while the rate of correction was 83.1% across all type of the cases, the rate of correction in each type varied between 11.7 and 92.3%. Of the total 210 cases in which treatment started during weeks 32 to 35, when it becomes more difficult for the fetus to change position naturally, correction was achieved in 136 (64.76%). In regard to treatment methods, while many of the publications used Zhiyin and Sanyinjiao, they varied in terms of their methods, types and frequencies. Other than 4 cases of nausea and blistering or pigmentation caused by moxa, no serious symptoms were observed that could be attributed to acupuncture and moxibustion stimulation in the 1,363 cases that did mention adverse events.

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The first to use moxibustion at Zhiyin for breech presentation during pregnancy rather than at delivery was the obstetrician and gynecologist Ishino Nobuyasu. It is said that “Ishino published his findings in 1950 that moxibustion at Sanyinjiao to treat breech presentation was effective in 16 out of 20 patients. ... This paper appears to be the first in the history of acupuncture and moxibustion to use acupuncture and moxibustion to treat breech presentation, which is defined according to Western medical concepts.”

The author says that while in terms of its level of evidence, it is not equivalent to an RCT or meta-analysis, if you take EBM as the starting point, rather than insisting that the evidence must be as high level as an RCT, it makes the practice of EBM possible if it finds benefit for patients, even if it had been, for example, a case control study. The author therefore suggests that acupuncture and moxibustion for breech position is an effective, safe, and comfortable treatment that should be widely used.

## 6. Issues in clinical obstetric research

From an ethical perspective, making comparisons with no-treatment groups in a clinical acupuncture and moxibustion scenario is difficult and sham needling has not yet been clearly defined, which suggests that further good-quality studies, not just RCTs, must be undertaken. The issue for the future is how to go on disseminating truly useful clinical research from Japan.

## Reference

- 1) Smith CA: Complementary and alternative therapies for pain management in labour. *Cochrane Database Syst Rev* Oct 18; (4), Australia, 2006
- 2) Kenta Akira: Experiences of Pain Relief during Delivery using Acupuncture Anesthesia. *Obstetrics and gynecology treatment* 91(2) 227-230, 2005
- 3) Keiko Tsujiuchi: Treatment for Women's Conditions: Acupuncture for Breech Presentation. *Modern Acupuncture Studies* 9(1): 65-70, 2009
- 4) Ayako Mizumoto, Minami Kazunari, Satoko Nakagomi et al. Acupuncture for Low Back and Pelvic Pain during pregnancy: A Literature Study. *Journal of the Oriental School of Therapeutics* 33: 198-202, 2010
- 5) Manheimer E, Zhang G, Udoff L, et al.: Effects of acupuncture on rates of pregnancy and live birth among women undergoing *in vitro* fertilization: systematic review and meta — analysis. *BMJ* 336(7643): 545-549, 2008
- 6) Cheong YC, Hung Yu Ng E, Ledger WL: Acupuncture and assisted conception. *Cochrane Database Syst Rev* Oct 8; (4): CD006920, 2008
- 7) El - Toukhy T, Sunkara SK, Khairy M, et al.: A systematic review and meta — analysis of acupuncture in *in vitro* fertilisation. *BJOG* 115(10): 1203-1213, 2008

- 8) Yoji Shimizu, Kuniaki Niwa, Kazami Nakazawa et al.: Effect of Acupuncture for Irregular Menstrual Cycle and Glucose Metabolism in Women with Anovulation. The Japanese Society of Balneology, Climatology and Physical Medicine 73(3)292-211, 2010
- 9) Hisasi H, Kamoi K, Naya Y, et al.: Effect of acupuncture for chronic pelvic pain syndrome with intrapelvic venous congestion: preliminary result. Int J Urol 11: 607– 612, 2004
- 10) Vas J, Aranda JM, Nishishinya B, et al.: Correction of nonvertex presentation with moxibustion: a systematic review and metaanalysis. Am j Obstet Gynecol 201(3): 241– 259, 2009
- 11) Shuichi Katai (editor): Acupuncture Treatment of Breech Presentation: Studying in Illustrations and Photographs. Ishiyaku Publishers, Tokyo, 2009