

### Combined Manual Therapy Techniques for the Treatment of Women With Infertility: A Case Series

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Current management options for infertility, including hormone therapy, intrauterine insemination, and in vitro fertilization, tend to be expensive, are not necessarily covered by insurance, and carry different levels of short-term and long-term health risks. Many of the issues that contribute to infertility can be traced to scar tissue, fascial restriction, and lymphatic congestion in the pelvic region. Manual therapy techniques exist to release fascial restrictions, to mobilize tight ligaments, and to drain congested lymphatics, all of which can be applied to the reproductive system. In this case series, 10 infertile women were treated with 1 to 6 sessions of manual therapy applied to the pelvic region. Techniques included muscle energy, lymphatic drainage, and visceral manipulation. Six of the 10 women conceived within 3 months of the last treatment session, and all 6 of those women delivered at full term.

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Women in their childbearing years who have not been able to conceive after 1 year of unprotected intercourse are considered infertile according to the Centers for Disease Control and Prevention (CDC).<sup>1</sup> The CDC reports that 6.7 million women aged 15 to 44 years have impaired fecundity, and 1.5 million married women are infertile.<sup>1</sup> Worldwide, 15% of couples are reported as infertile.<sup>2</sup> In general, 27% of cases of infertility are caused by ovulation disorders; 25%, male factors; 22%, tubal disorders; 17%, unexplained factors; 5%, endometriosis; and 4%, other factors.<sup>3,4</sup> According to *Williams Gynecology*,<sup>4</sup> women who have not previously been able to conceive are considered to have primary infertility. Those who have previously conceived, whether or not the pregnancy was successful, are considered to have secondary infertility.

Average fertile women (aged 22-40 years) who have coitus in the week prior to ovulation have a 20% chance of developing a clinical pregnancy during each ovulatory cycle. Fifty-seven percent of fertile couples will conceive in the first 3 months, 72% in 6 months, and 85% in 1 year.<sup>4</sup>

Women whose infertility is unexplained have monthly fecundity rates of 10% to 15% with hormone therapy and intrauterine insemination (IUI).<sup>3</sup> In Canada, Collins et al<sup>5</sup> found that pregnancy rates for 873 infertile couples without any treatment were 35% after 3 years and 45% after 7 years. In the Netherlands, van der Steeg et al<sup>6</sup> found that, overall, untreated infertile couples were able to achieve spontaneous pregnancy 29.5% of the time within 12 months. Katz et al<sup>7</sup> reported that the incidence of infertility increases steadily in women after the age of 30.

Current options for treatment are dependent on the cause of infertility. Treatment options include fertility drugs, IUI, and in vitro fertilization (IVF). However, these treatments come with several considerations. First, procedures such as IVF are invasive and carry risk of infection. Second, the treatments can be expensive; the median cost of IVF is \$24,373.<sup>4</sup> It is often not covered by insurance and frequently needs to be repeated.<sup>4</sup> Success rates are approximately 38%,<sup>3</sup> and the successes have a high rate of multiple births, which places increased risks on the mother and the fetuses.<sup>7</sup> Even though fewer embryos are being implanted now than a decade ago, multiple pregnancy remains the single highest risk of IVF.<sup>8</sup>

According to 2010 data on assisted reproductive tech-

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nology, women attempting to conceive by means of IVF are doing so because of tubal factors (7%), ovulatory dysfunction (7%), diminished ovarian reserve (15%), endometriosis (4%), uterine factors (1%), male factors (17%), other factors (7%), or unknown factors (12%).<sup>8</sup> In couples undergoing IVF, 11% reported multiple factors in women and 18% reported multiple factors in both men and women.<sup>8</sup> In 2010, the national percentage of IVF cycles using fresh embryos from nondonor eggs that resulted in live births ranged from 5.0% to 41.5%, depending on age group.<sup>9</sup> Of cycles that resulted in conception, 56.6% resulted in a singleton pregnancy, 24.9% resulted in a multiple fetus pregnancy, 16.4% resulted in miscarriage, 0.9% resulted in induced abortion, 0.7% resulted in stillbirth, and 0.4% resulted in an unknown outcome.<sup>10</sup> Pregnancy rates after IUI, according to Katz et al,<sup>4</sup> are 25% to 35%.

### Physiologic Factors in Infertility

Many of the issues that cause a woman to have difficulty with conception can be traced to scar tissue, fascial restriction, and congested lymphatics.<sup>11,12</sup> Manual medicine has been used to manage these specific problems, but, to my knowledge, it has not been used to manage functional infertility. Part of the basic foundation of osteopathic medicine is that manual mobilization has an impact at the cellular level:

The cells, which make up our body, have an internal environment also. The fluid matrix of it must be free of "pollution." Waste products of tissue metabolism must be constantly carried away by the veins and lymphatics. The health and life of cells and therefore the whole body depend on it.<sup>13</sup>

To understand the concept of manual therapy as a treatment for patients with infertility, one must consider the reproductive environment at the cellular level and the reproductive anatomy at the tissue level. The arterial, venous, and lymphatic circulations are interrelated. The arteries transport the blood to the cells, then the venous system returns 90% of what was transported back to the heart.<sup>12</sup> The lymphatic system will pick up particles too large to transport across the venous capillary membranes and interstitial fluid. Once interstitial fluid enters the lymph capillaries, it is called lymph.<sup>11</sup> The lymphatic system transports the remainder of this fluid (10% of the original fluid transported by the arteries) to lymph nodes for filtering before returning the lymph back to the venous system.

The abdomen and pelvis contain approximately 250 lymph nodes. The lymphatic vessels of the uterus, uterine tubes, and ovaries drain to the external and internal iliac nodes, obturator nodes, para-aortic nodes, and superficial inguinal nodes.<sup>12</sup>

The suspensory ligaments of the urogenital system are important in the mobility and function of the pelvic

organs. The uterosacral ligaments attach the bladder to the uterus. The uterosacral ligaments help to suspend the uterus posteriorly. The urogenital system is also supported by ovarian ligaments, suspensory ligaments, and tubo-ovarian ligaments. Just as the ligaments are important in the structure and function of a joint, they are equally important in the mobility and function of the pelvic organs.<sup>14</sup>

The symptoms of dysfunction in the reproductive system can manifest within the body as dysfunction of the reproductive organs, pelvic asymmetry, sacral dysfunction, bloating, or pain.<sup>14,15</sup> Symptoms related to lymphatic congestion in the pelvic region with hormonal bias are dysmenorrhea, premenstrual syndrome, ovarian cysts, emotional instability, and depression.<sup>16(p795)</sup> Release of fascial and ligamentous restrictions can decrease pressure on blood vessels, thereby optimizing the vascular phase and improving the efficacy of the lymphatic system.<sup>16(p797)</sup> This improved efficacy, in turn, aids in restoring optimal blood flow to the organs, normalizing the ability for hormone production.<sup>15</sup>

Decongestion of the lymphatic system can help remove waste from the organs and thus help normalize their function.<sup>11</sup> Mobilizing fluid and cellular waste from the pelvic cavity should also allow hormones to arrive more efficiently at the target tissues.<sup>11</sup> Within the reproductive system, this decongestion could theoretically lead to normalized hormone levels, normalized menstrual cycles, and pregnancy. To my knowledge, visceral manipulation, muscle energy, craniosacral therapy, and lymphatic drainage have not been investigated as options for the treatment of infertility; however, the treatment effects of these therapies on other parts of the body could be extrapolated to the pelvis and reproductive system. In the present prospective case series report, I describe the outcomes of 10 infertile women who were treated with manual therapy to the pelvic region.

### Report of Cases

#### *Patient Histories and Review of Systems*

Ten infertile women who sequentially presented to a clinic were treated with a standard manual therapy protocol. The women were considered infertile according to the CDC's definition (ie, unable to conceive after 1 year of unprotected intercourse), were not undergoing any other therapies, and had partners who had been tested and found to have normal sperm counts. None of the women had undergone reversal of tubal ligation. There were no known reproductive abnormalities. Any infertility testing was done independently by the women's personal physicians. Of the 10 women treated, 7 had previously been pregnant. Of those 7 who had previously become pregnant, 5 had miscarriages. Five of the women had undergone unsuccessful infertility treatments in the past. At the time of treatment, none of the women were undergoing treat-

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ment with hormones, IUI, or IVF. When asked about their past medical history, 5 women listed low back pain, 1 listed irregular periods, 1 listed ovarian tumors, and 1 listed stage IV endometriosis. Two women listed no issues in their medical histories. Regarding surgical history, 1 woman had undergone a dilation and curettage, and 1 woman had undergone a cesarean section. A breakdown of the women's past medical and surgical histories is presented in *Table 1*.

### Evaluation and Intervention

Women were evaluated for pelvic symmetry at the anterior superior iliac spine and posterior superior iliac spine, osseous restrictions at the sacroiliac joints by means of sacral mobility, visceral fascial restrictions, myofascial trigger points around the entire pelvis, and lymphatic congestion of the uterus and inguinal, iliac, and para-aortic nodes. Manual therapy techniques were chosen according to the specific findings of somatic dysfunction. The techniques were performed according to the protocols described by Chikly,<sup>11</sup> Barral,<sup>15</sup> Upledger and Vredevoogd,<sup>17</sup> and D'Ambrogio and Roth.<sup>18</sup>

To attempt increased specificity with evaluation, the mobility of the viscera was recorded as normal, minimally restricted, moderately restricted, or severely restricted. Viscera that were minimally restricted had less than 25% of motion limited, viscera that were moderately restricted had 25% to 75% of motion restricted, and viscera that were severely restricted had greater than 75% of mobility restricted.

I evaluated and treated each woman according to the following protocol:

- assessed the pelvis for asymmetry and corrected asymmetry with muscle energy techniques, if needed
- assessed sacral mobility and corrected dysfunction with craniosacral techniques,<sup>17</sup> if needed
- assessed for trigger points around and within the pelvis and treated trigger points with positional release techniques,<sup>18</sup> if needed
- assessed lymph drainage of the pelvis and pelvic organs and applied manual lymph drainage techniques,<sup>11</sup> if needed
- assessed mobility and motility of pelvic viscera and used fascial techniques to release restrictions,<sup>14</sup> if needed
- reassessed symmetry and all mobilities
- repeated treatments twice per week until evaluation revealed unrestricted mobility, symmetry in the pelvis, and normal lymph flow

The patients were followed up for 3 months after treatments concluded. Women who became pregnant within 3 months were followed up after delivery.

### Outcomes

On examination, 7 women were found to have sacral restrictions ranging from mild to severe. Seven women also had restriction in uterine mobility, which ranged from mild to severe. When the lymphatic flow was assessed in the uterus and the pelvis, 1 woman was found to have uterine lymphatic congestion, 1 had mild pelvic lymphatic congestion, 1 had moderate pelvic lymphatic congestion, and 2 had severe pelvic lymphatic congestion. One woman received 1 treatment session, 3 received 2 sessions, 4 received 4 sessions, and 2 received 6 sessions.

**Table 1.**  
Past Medical and Surgical Histories of Infertile Women Who Received Manual Therapy

Patient No.	Past Medical History	Past Surgical History	Time Attempting Conception	Type of Infertility	Maternal Age, y
1	Unremarkable	None	1 y	Primary	30
2	Low back pain	Cesarean section	1 y	Secondary	34
3	Right ovarian tumor, low back pain, miscarriage	Dilation and curettage, laparoscopy (right ovarian tumor removed)	2 y	Secondary	41
4	Irregular cycle, miscarriage	Electrophysiology study ablation, breast augmentation	6 y	Secondary	28
5	Miscarriage	None	3 y	Secondary	36
6	Endometriosis	Pelvic laparoscopy	2 y 9 mo	Primary	33
7	Miscarriage	None	1 y	Secondary	34
8	Miscarriage	None	7 y	Secondary	39
9	Unremarkable	None	1 y	Secondary	36
10	Low back pain	None	3 y	Primary	41

**Table 2.**  
**Profile and Physical Findings of Infertile Women Who Received Manual Therapy**

Patient No.	Osseous Issues	Visceral Fascia	Lymphatics	No. of Treatments	Conceived <sup>a</sup>	Delivered Full Term
1	Moderate sacral restriction	Normal mobility	Normal	2	Yes	Yes
2	Moderate sacral restriction	Mild decreased uterine mobility	Mild pelvic congestion	4	Yes	Yes
3	Moderate sacral restriction	Mild decreased uterine mobility	Normal	4	No	NA
4	Moderate sacral restriction	Severe decreased uterine mobility	Severe pelvic congestion	4	No	NA
5	Mild sacral restriction	Severe decreased uterine mobility	Severe pelvic congestion	4	No	NA
6	Severe sacral restriction	Severe decreased uterine mobility	Uterus congestion	6	No	NA
7	Normal	Normal mobility	Moderate pelvic congestion	2	Yes	Yes
8	Normal	Mild decreased uterine mobility	Moderate pelvic congestion	2	Yes	Yes
9	Normal	Mild decreased uterine mobility	Normal	1	Yes	Yes
10	Severe sacral restriction	Severe decreased uterine mobility	Normal	6	Yes	Yes

<sup>a</sup> Conceived within 3 months of last manual therapy session.

**Abbreviation:** NA, not applicable.

Six of the 10 women conceived, had singleton pregnancies, and delivered at full term. Examination findings, number of treatment sessions, and patient outcomes are presented in *Table 2*.

### Comment

Although research exists for acupuncture as a treatment for women with infertility,<sup>19-23</sup> little research has been published on the use of manual therapy techniques applied to the pelvis as a therapeutic treatment option for infertility. A literature search yielded a single published study<sup>24</sup> on physical therapy as a treatment for infertility. In the study, treatment techniques were not disclosed.

In the present case series' population, 6 of 10 previously infertile women were able to conceive within 3 months after receiving various manual therapy techniques to the pelvis. This fertility rate of 60% within a 3-month period is the same as that of fertile couples.<sup>4</sup> These findings suggest that manual therapy applied to the pelvis could be a viable treatment option for infertile women and should be investigated further.

Of note, the manual therapy protocol used in the present case series was limited to external treatments. Other mobilizations not used in the treatment of these women may also be of benefit. For example, internal mobilization of the cervix could allow for better movement of the sperm through the uterus during and after coitus. Arterial mobilizations described by osteopathic physicians Barral and Croibier<sup>25</sup> may also help increase vascularization of the reproductive organs.

One limitation of the assessment used in the present case series is the quantification of the mobility of the organs. No publication could be found referencing a manner to measure visceral mobility. However, Stone<sup>26</sup> states that testing of visceral mobility involves trying to replicate "normal" movement and trying to assess whether the motion appears to be restricted or altered. This assessment allows for a before-and-after comparison of the tissues. She also states the following:

Altered physical properties arising from inflammation and other pathological processes will affect palpable visceral characteristics such as stretch, deformation and com-

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pressibility. In this way, osteopaths can distinguish to some degree whether a tissue is normal or not normal.<sup>26</sup>

Further research would be beneficial in assessing range of motion of organs to obtain normative data.

Another limitation of this study, as with any case series report, is the low number of women treated. It is difficult to say with a high level of certainty that the manual therapy techniques were what contributed to the improved fertility. Studies with larger groups, including control participants, would help to discern the exact statistical significance of manual techniques in the management of infertility.

In the present study, the number of treatments for each woman ranged from 1 to 6. This low number of treatments suggests that manual medicine would be an inexpensive treatment option for infertility. In addition, manual mobilization techniques do not contain the risks associated with traditional infertility treatments such as multiple births.

Just as manual therapy is used as a first course of treatment for patients considering back surgery,<sup>27</sup> manual therapy could potentially be used as a first course of treatment for infertile patients considering hormone therapy, IUI, or IVF treatments. The ethics committee for the American Society for Reproductive Medicine states, "For those treatments with very poor success rates, clinicians must be vigilant in their presentation of risks, benefits, and alternatives."<sup>28</sup> If manual medicine is shown to be an effective yet inexpensive means to increase fertility rates in the infertile population, then it could be considered as a primary treatment option for infertile women, rather than as an alternative treatment option.

### Conclusion

For 6 of the 10 women in the present case series report, fertility rates improved after manual therapy was applied to the pelvic area. Further research is needed to assess the efficacy of manual therapy as a treatment option for infertile women. For future studies, researchers should use a larger study population, include a control group, and assess the efficacy of the individual manual techniques.

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