MANUAL THERAPY AND INFERTILITY: REVIEW OF EVIDENCE

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ABSTRACT

Background: Infertility is a disease that affects millions of reproductive-aged couples worldwide with current management options that tend to carry different long-term and short-term health hazards. Manual therapy is widely used as a regular treatment for a variety of diseases and it can be applied to all body areas. Currently different manual therapy approaches are used in treating infertility.

Main body of the abstract: The current literature supports the positive effects of manual therapy in treating female infertility associated with blocked fallopian tubes, endometriosis, hormonal disturbance, and unexplained infertility. Literature includes four approaches; (1) Clear Passage Approach (CPA), (2) Mojzisova Method, (3) Mercier therapy, and (4) osteopathy. The present narrative review discusses the potential effects of different manual therapy approaches and the available evidence supporting their value.

Conclusions: Although current available studies are limited in number with limitations in studies design, manual therapy is considered as a promising, effective, and safe option for treating infertility. Further studies with different study designs and systematic reporting of side effects are highly recommended.

Key words: Infertility, Adhesion, Manual therapy, visceral manipulation.

I. BACKGROUND

Infertility is considered through the failure to achieve a pregnancy after 12 months or more of unprotected regular sexual intercourse. [1] Primary causes include genetic disorders, hormonal disorders, reproductive system diseases, or congenital anomalies. Secondary causes include lifestyle aspects like diet, smoking, alcohol consumption, and chemical environments. [2] Conventional treatments involve drug treatments and assisted reproductive techniques, including artificial insemination and in vitro fertilization (IVF). [3] Infertility choice of treatment depends on partners’ age, the cause, and duration of infertility, and personal preferences. [4]

Manual therapy is regularly used by physical therapists, chiropractors, and osteopathic physicians in treating a variety of diseases. It is used in treating female infertility associated with blocked fallopian tubes, endometriosis, hormonal disturbance, and unexplained infertility with several studies available in the literature to support its positive effects. [5]

Understanding theories explaining the positive effects of manual therapy, in treating infertility, requires an understanding of reproductive anatomy and relations of the peritoneum, pelvic fascia, and ligaments with the arterial, venous, and lymphatic circulations. [6]

Fascia is a constantly changing, dynamic, and adaptable fluid-filled network located inside every structure of the human body and surrounds it. [7] It surrounds, protects, and supports body structures with global distribution in the body systems. [8] The endopelvic fascia contains estrogen receptors suggesting a hormonal impact on its forms and functions. [9]
The meninges are considered as fascial tissues. The spinal dura attaches cranially to the posterior surfaces of the bodies of second and third cervical vertebrae as well as the periosteum of the foramen magnum and continues with the meningeal layer of the cranial dura mater which surrounds the pituitary gland. Caudally, the spinal dura narrows at the second sacral vertebra and invests the spinal filum terminale, and attaches to the back of the coccyx. This shows the anatomical relation between the coccyx, cervical vertebrae, spinal dura, cranial dura, and the pituitary gland which is essential in explaining the effect of manual therapy on hormones.

Peritoneum is a large continuous serous membrane that lines the internal surface of the abdominal and pelvic walls and covers the majority of the abdominal viscera. It is important for maintaining a frictionless environment for the visceral organs. Parietal peritoneum covers the uterus, fallopian tubes, and ovaries. The broad ligament of the uterus is formed by a double layer fold of the peritoneum that attaches the uterus to the lateral pelvic walls. It contains fallopian tubes, ovaries, ovarian arteries, and uterine arteries.

Peritoneum’s strong defense and repair mechanisms are controlled by series of reactions that can also trigger adhesions formation after injury, infection, or inflammation.

Adhesions can be caused by surgery or chronic inflammatory conditions, such as endometriosis. According to their location and underlying pathology, adhesions can be silent or cause a cascade of complications. Following pelvic open surgery or laparoscopy, adhesions may result in loss of tissue function and may lead to female infertility. The management is controversial. Physical therapy after surgery can decrease adhesions formation. An in vivo study showed inhibition of adhesions formation after abdominal surgery by visceral mobilization in rats.

This review discusses the potential effects and evidence of different manual therapy approaches in treating female infertility. A narrative review search was done using PubMed (MEDLINE), Physiotherapy Evidence Database (PEDro), and Cochrane Library (CENTRAL) databases to find studies addressing manual therapy and infertility. Current literature includes four manual therapy approaches to manage infertility: (1) Clear Passage Approach (CPA), (2) Mojzisova Method, (3) Mercier therapy, and (4) osteopathy.

Clear Passage Approach (CPA)

CPA was developed by Belinda and Larry Wurn. CPA is a patient-centered physical therapy plan that uses a variety of manual therapy techniques with a focus on decreasing adhesions in the body. It has been demonstrated to be effective in decreasing adhesions, pain, and improving quality of life in patients with small bowel obstruction, and treating infertility.

This approach involves:

- Assessment starts with obtaining medical, gynecological, and surgical history, then manual assessment and palpation are used to detect areas of impaired mobility.
- Myofascial release is performed working from superficial to deep.
- The Wurn Technique is used to treat adhesions within and between visceral organs.
- Visceral manipulation is then used to restore visceral organs’ motility.

The time and force applied to each structure vary according to patient tolerance. The frequency and duration of treatment sessions vary from a 1-hour session/week to intensive sessions of 2 to 4 hours of daily treatment. The standard treatment regimen is 20 hours.

The hypothesized mechanism of CPA: CPA team hypothesizes that releasing adhesions around ovary tissue increases blood and lymphatic flow. It also stimulates the ovary triggering a cascade of neuroendocrine reactions that controls hormones. The vasodilatation and ability of the tissues to function normally promote fertility. However, when infertility is related to hormonal regulation, the therapy affects the hypothalamic-pituitary-gonadal axis by targeting structures with restricted mobility in communication between the brain and the reproductive system.
CPA for blocked fallopian tubes: CPA has success rates equivalent or superior to surgical interventions considering tubal patency and consequent pregnancy. The outcome is not affected by the location of the occlusion or the presence of hydrosalpinx. [5] Indirect manipulation of the fallopian tubes is performed through manipulating adjacent soft tissue structures such as broad ligament and peritoneum targeting restrictions and adhesions. [22]

CPA for endometriosi: pregnancy rates following CPA are equivalent to surgical interventions with a 42.8% pregnancy rate. [5] CPA also has long-term positive effects regarding dyspareunia, sexual dysfunction, and dysmenorrhea associated with endometriosis. [24]

CPA for hormonal disturbance: CPA has positive effects reversing infertility and regulating hormones in women suffering from premature ovarian failure (POF), polycystic ovarian syndrome (PCO), and elevated (follicle-stimulating hormone) FSH. Pregnancy rates are 20%, 53.6%, and 49.2%, respectively [5]

CPA and IVF: Applying CPA before IVF results in 1.5 higher pregnancy rate than applying IVF alone. [5] CPA positive effects are hypothesized to be related to providing better surroundings for implantation through decreasing uterine wall adhesions and uterine hyper-tonicity. As well as facilitating transfer to site of implantation through decreasing tensions and adhesions affecting the cervix and its attachments. [23]

CPA Evidence: Several studies were performed with positive outcomes, no reported complications, and no side effects to the treatment. However, they were mostly retrospective studies with several limitations that include dependence on the patient’s report of medical history and lack of data concerning male factors. [5] [20] [24] It is highly recommended to perform additional randomized controlled studies to obtain more solid evidence and determine factors affecting outcome.

Mojzisova Method
It was developed by Ludmila Mojzisova in the Czech Republic. The therapy is based on the reflexive interaction relations between the spine and the internal pelvic organs. Therapy has positive effects on pelvic pain, dyspareunia, dysmenorrhea, spine, and infertility. It is assumed that this therapy can be used for male infertility but without any research evidence to support that hypothesis. [25]

Therapy consists of two parts: A home exercise program performed by the patient, and manual therapy treatment applied by a trained physical therapist. Home exercises are explained to the women to be performed twice daily. Exercises include stretching exercises and strengthening exercises. Manual therapy is applied in the first half of the menstrual cycle, once a month, for one hour by a trained physical therapist. It includes mobilization of ribs, lumbar spine, and sacroiliac joints as well as coccygeal treatment, and internal rectal work. The patient receives 6 sessions and treatment lasts for 6 months. [26]

Risk arises when therapy is applied by poorly trained therapist. This leads to decreased efficacy of the treatment and may cause serious health complications if manipulation techniques are conducted in a wrong manner. [25]

Mojzisova Method Evidence: Limited studies are available with significant positive results. A woman’s age is an important factor affecting treatment outcomes. Success rates are 44.6% in women younger than 25 years, 22.6 % in women between 31 – 35 years, and 33.3 % in women between 36-40 years. [26]It is highly recommended to perform additional studies to examine further the suggestive predictors and effects of the Mojzisova method.

Mercier therapy
It was developed by Dr. Jennifer Mercier. It is a deep visceral manipulation of the reproductive organs. It aims at relieving restrictionsamong pelvic organs and surrounding structures and restoring blood flow to enhance natural and most optimal function of the reproductive organs. Therapy can be applied alone as a treatment for infertility or as a preparation for IUI or IVF. Therapy is applied for one hour/ session. Protocol includes six hours of therapy completed within a 1-6 weeks period. [27]

Evidence of Mercier therapy: There is a lack of studies supporting the positive outcomes of Mercier therapy. A study published in 2013 showed an 83% success rate regarding pregnancy rate without determining pathologies associated with infertility in participants. [28] Further research is needed to determine the exact effects of therapy and factors affecting the outcome.
Osteopathy
It was developed by Andrew Taylor Still in the mid-1800s. The World Health Organization (WHO) considers osteopathy as an alternative and complementary medicine using various manual techniques to diagnose and treat different disorders aiming to enhance physiological function and/or support homeostasis. [29]

Osteopathy uses a whole body approach with different manual therapy techniques applied to many body regions, sometimes distant from the symptomatic area. [30] Osteopaths consider that efficient fluid circulations and efficient movement in all body tissues and structures contribute to health, optimum homeostasis, and physiologic function. Restrictions in these elements contribute to disturbed physiology and altered organs functioning. Osteopaths treat the person as a whole rather than treating only the disease. This improves the outcomes on more levels than application of simple disease-oriented therapy alone.[31]

Osteopathic principles:
The human body is a dynamic functional unit.


Strong interrelation exists between structure and function.

Treatment should be rationally based on these principles. [32]

The classic five-model concept of patient functioning, assessment, and care: The Educational Council on Osteopathic Principles (ECOP) developed this concept in relation to patient assessment and care. This concept helps to design a complete management plan. Each model provides a unique way to diagnose and treat the patient. Typically, models are combined for each patient with modifications according to individual patient’s diagnosis and assessment findings. [33] The five-model concept is recognized by the WHO as a unique osteopathic input to global health care. [29]

The biomechanical-structural model: It focuses on efficient posture and function of the musculoskeletal system. Dysfunction is manifested by inefficient posture, somatic dysfunction, instability, and/or restrictions of joint mobility. Osteopathic care focuses on restoring normal movement and function of musculoskeletal system in the whole body. [34] Clinicians mainly focus on this model of care. [35]

The respiratory-circulatory model: It focuses on efficient arterial supply, venous and lymphatic drainage as well as effective respiration. [33] Dysfunction is manifested by poor gas exchange, edema, or vascular impairment. Osteopathic care focuses on removing mechanical impairments to circulation and/or respiration, relieving congestion, and improving lymphatic and venous drainage. [34]

The metabolic-nutritional model: It focuses on efficient metabolic processes at cellular level, effective energy expenditure, efficient endocrine regulation and immunity control. Dysfunction is manifested by ineffective metabolic processes, fatigue, energy loss, toxic waste buildup, poor wound healing, inflammation, and impairment of endocrine functions. Osteopathic care focuses on alleviating inflammation, restoring effective metabolic functions, restoring endocrine control and promote healing. [34]

The neurological model: It focuses on efficient central and peripheral neural functions and integration as well as autonomic nervous system balance. Dysfunction is manifested by imbalance of autonomic functions, abnormal sensation, malfunction of central and peripheral nervous system, or pain syndromes. Osteopathic care focuses on alleviating pain, restoring normal sensation, and regaining balance and control of neurological processes. [33]

The behavioral-psychosocial model: It focuses on healthy lifestyle choices; efficient emotional, mental, and spiritual functions, and good social support system. Dysfunction is manifested by impaired function related to poor lifestyle choices, drug abuse, and inability to cope with environmental challenges or stress. Osteopathic care is directed towards management of the person as a whole with a personalized patient care plan considering social, psychological, behavioral, cultural, and spiritual aspects. Promoting self-responsibility of healthy lifestyle choices. [34]

Fertility and osteopathy
Osteopathy have positive outcomes treating infertility but it is difficult to assess the exact impact as fertility is related to many physiological, and neuroendocrine reactions, as well as, mechanical factors. The adhesions, uterine tensions and poor mechanics of the cervix negatively impact fertility. Osteopathic manipulation and release of pelvic adhesions restore normal mobility and mechanics of the cervix, vagina, and the uterus itself. Addressing the autonomic nervous system impacts pelvic circulation. Improving circulation, restoring organs mobility, decreasing pain, reducing neural irritation, and treating congestion facilitate implantation and pregnancy. [31]

Evidence of osteopathy for infertility: A systematic review found that the effect of osteopathy on infertility is assessed in four heterogeneous studies. Osteopathic treatment applied in those studies showed diversity concerning models and techniques used in assessment and treatment. Osteopathy has a potential role to reverse infertility with weak evidence to support that role. [36] It is highly recommended to conduct more studies with different study designs and better descriptions of the intervention to gain more solid evidence and determine factors contributing to the outcome.

II. CONCLUSIONS

Manual therapy represents a promising conservative treatment for infertile women. Current literature includes four approaches; (1) Clear Passage Approach (CPA), (2) Mojzisova Method, (3) Mercier therapy, and (4) osteopathy. CPA is a patient-centered physical therapy plan that uses a combination of manual therapy techniques. Mojzisova Method is based on the reflex relations between the spine and the pelvic organs, and consists of manual therapy and a home exercise program. Mercier therapy uses a deep pelvic organ visceral manipulative technique. Osteopathy is a complementary and alternative medicine using different manual therapy techniques. The diversity of manual therapy approaches reflect different scopes which provide promising management options for infertility. It is highly recommended to perform additional research with different study designs to obtain solid evidence and determine factors contributing to positive outcomes.

List of abbreviations


REFERENCES


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