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Case Report

Physiotherapy Section

# Osteopathic Manual Therapy along with Cranial Electric Stimulation in Primary Dysmenorrhoea

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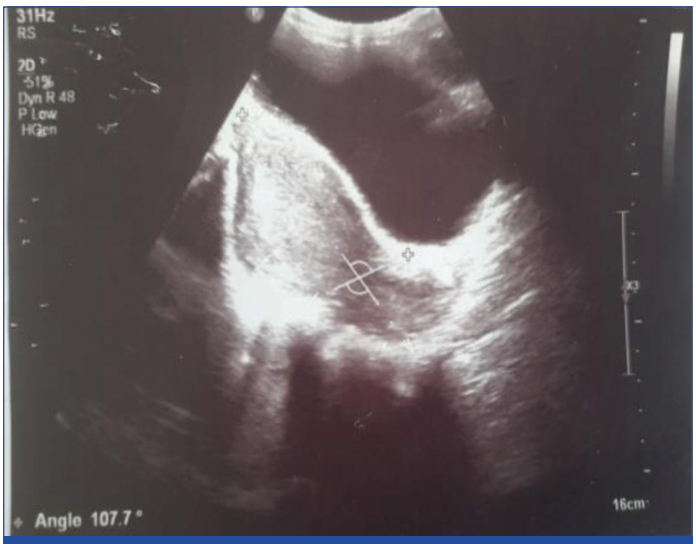
## ABSTRACT

Primary dysmenorrhoea is described as lower abdominal discomfort that occurs soon before or during menstruation but pathology is called secondary dysmenorrhoea. Gynaecological dysfunctions are routinely treated using osteopathy and other physiotherapy treatments. The case report determines pre and postuterocervical angle, pain, physical activity level and psychological state after osteopathy manual therapy and conservative management on primary dysmenorrhoea. A 22-year-old female was diagnosed with primary dysmenorrhoea and was referred to the physiotherapy Outpatient Department (OPD) for conservative management. Physiotherapy assessment included Visual Analog Scale (VAS) for pain, International Physical Activity Questionnaires (IPAQ) for physical activity and Depression, Anxiety and Stress Scale-21 items (DASS-21) for psychological assessment at baseline. She received Cranial Electric Stimulation (CES), osteopathic manual therapy, deep breathing exercise, core strengthening exercise, lower limb stretching exercises and music therapy for relaxation. She received intervention for seven days a month for four consecutive months during menstruation cycles. After four months, her pain and psychological status improved significantly, uterocervical angle increased and there was an increase in physical activity. Thus, CES with osteopathic manual therapy along with conventional therapy helps reduce pain, increase physical functions, improve psychological status and even has a positive effect on uterocervical angle.

**Keywords:** Anxiety, Menstrual cycle, Physical therapy, Psychological, Uterus manipulation

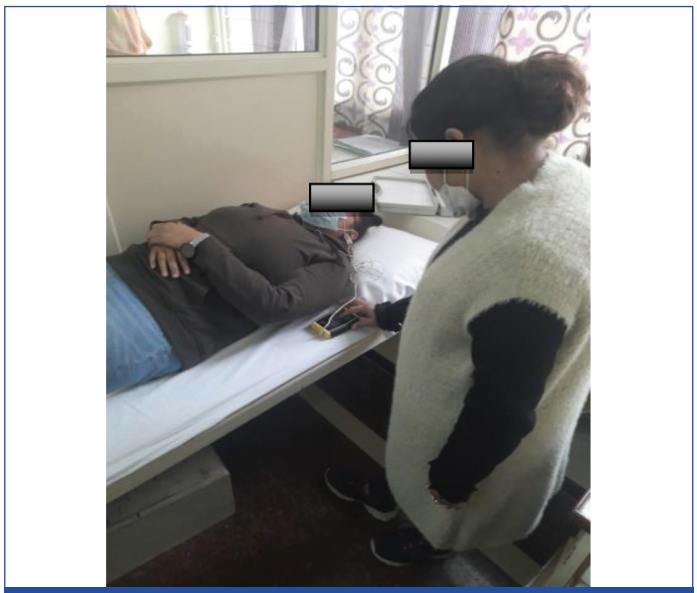
## CASE REPORT

A 22-year-old female had cramps, lower stomach discomfort, lower back pain, and very painful menstruation during her menstrual cycles. The college-going girl staying in a hostel did not get any relief with medicine and was admitted to the hospital several times due to the severity of pain. Finally, she had a visit in Obstetrics and Gynaecology Department and was advised for ultrasonography, which revealed that her anterior uterocervical angle was smaller than normal [Table/Fig-1]. She was finally diagnosed with primary dysmenorrhoea. Then she was referred to physiotherapy OPD for conservative management. In the Physiotherapy OPD, her overall assessment was done. Patient Body Mass Index (BMI) was 27.6 kg/m$^2$. Her health and pain related quality of life was measured using the VAS, DASS-21 [1] and IPAQ [2]. Baseline scores were pain of 9.1 cm (on 10 cm) VAS i.e. extreme pain; severe stress (14), extremely severe anxiety (10) and moderate depression (8) on DASS-21 questionnaire; decreased physical activity 300 Metabolic Equivalents (MET) (low) on IPAQ score; and decrease in uterocervical angle of 107.7°.




**[Table/Fig-1]:** Diagnostic ultrasound measurements- uterocervical angle (pretreatment). [The longitudinal and transverse of the uterine body and cervix is measured in mid sagittal plane by following recognition points like internal cervical OS, external cervical OS, cervical canal, cervical vaginal interface, uterine body. Uterocervical angle is an angle between the lines drown from internal to the external OS and line drawn along the longitudinal axis of the uterine body parallel to the uterus passing through internal cervical OS.]

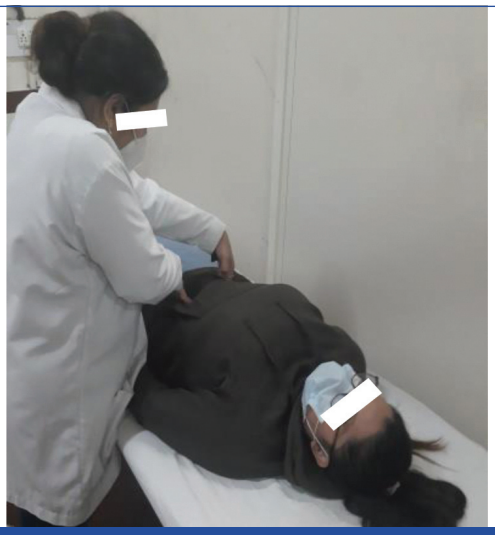
In this case, primary dysmenorrhoea was treated with osteopathic therapy (uterus manipulation), CES with hamstring and quadriceps stretching, quadratus lumborum stretching, core strengthening exercise, deep breathing, and music therapy. Patient position for CES was supine lying, with the therapist standing at the end of the couch [Table/Fig-2]. Easy-to-use clip electrodes that were attached to the ear lobes, occipital region, mastoid processes, or temples were used to provide the current for 20 minutes at current densities of 1 mA, 5 A/cm$^2$, and auto-adjustable (1-5 ms) pulse duration [3].



**[Table/Fig-2]:** Cranial stimulation.

She was then treated by osteopathy (uterus manipulation) treatment for 10 minutes. Barral's recommendations for testing and therapy in visceral osteopathy were followed. The patient was supine on her back with her legs bent. In order to examine the area posterior to the uterus fundus, the therapist places one hand immediately above the symphysis on the side opposite to the rectus abdominis attachment point [4].

The uterus was translated when both hands were placed on its sides. Ovaries and the uterine broad ligament were stretched-out by the therapist in the supine posture. The therapist envisioned the extension of the ovary while placing one hand on an anterior superior iliac spine symphysis line that was slightly medial to the margin of the psoas. To get this ligament to relay, the therapist slowly slipped her palm backward into the deep. During the expiration phase and the inspiration phase, the posterior-superior and anterior-inferior regions of the tubo-ovarian motility was assessed [Table/Fig-3]. The treatment consists of following unimpaired movement at the endpoint for a few cycles and then following impaired movement to a different endpoint. Along with the visceral manipulation, self-static stretching of the quadriceps, hamstrings, and quadratus lumborum was carried out three times with a 15-second hold [3]. One set of 10 repetitions of the cat and camel exercise and a plank exercise with a 30-second hold was used to strengthen the core [5].

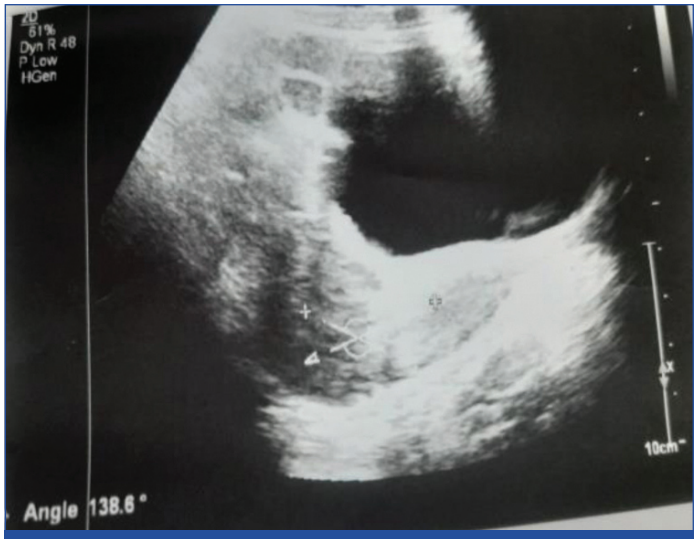


**[Table/Fig-3]:** Osteopathy (uterus manipulation): Palpation of uterus.

The patient underwent a deep breathing exercise while seated, inhaling slowly and deeply through their nose for five seconds while keeping their shoulders relaxed, holding their breath for four seconds, then passively expelling for 10 minutes [6]. Additionally, the treatment included music therapy, in which the patient spent 30 minutes in a comfortable supine posture while wearing headphones and listening to the classically relaxing *Yaman raag* in the early evening [7]. This protocol was followed for six days for four consecutive menstrual cycles. The last follow-up at four months were 2.2 for VAS, (8) for stress, (4) for anxiety and (4) for depression in DASS-21 scale and 1500 MET in IPAQ. Baseline measurement and postmeasurement was performed before and after treatment; diagnostic ultrasound measurements with physiotherapy treatment indicate substantial change in uterocervical angle from 107.7° to 138.6° [Table/Fig-4].

## DISCUSSION

As very few studies have compared the effect of osteopathic manual therapy on primary dysmenorrhoea and no study has been done on CES in primary dysmenorrhoea, this study provides the new advancement that combines the effect of osteopathic manual therapy and craniosacral stimulation in treating primary dysmenorrhoea. After the treatment, patient showed positive impact




**[Table/Fig-4]:** Diagnostic ultrasound measurements- uterocervical angle (Post-treatment).

on pain, psychology and physical activities. Pain reduced to 2.2 from 9.1 on VAS along with this, stress mild (8), anxiety normal (4) and depression normal (4) also showed improvement from severe to normal scores on DASS-21. The results also indicate that the treatment has a positive impact on physical activity on IPAQ score i.e., 1500 MET.

The majority of primary dysmenorrhoea cases occur during adolescence, 6 to 24 months following menarche, and have a definite, cyclical pattern [8]. They are often severe on the first day of menstruation and can last upto 72 hours. A 70-90% of affected girls are under 24-year-old and 2-29% of them report having significant pain. Women view primary dysmenorrhoea as embarrassing and taboo, and many also see the pain as a natural side-effect of menstruation. Increased uterine prostaglandin F2 and prostaglandin E2 levels during endometrial sloughing are the pathophysiology of primary dysmenorrhoea.

Similar research was done by Chadwick K and Morgan A to determine how different pain-reduction techniques affected women with primary dysmenorrhoea [9]. Soft tissue, Muscular Energy Techniques (MET), and High Velocity Low Amplitude (HVLA) techniques were among the techniques used. Not everyone received the same techniques or combinations of approaches. Then, visceral methods that directly affected the bladder, uterus, ovaries, diaphragm, and big intestine were used. In order to reduce muscle hypertonia and promote organ movement, stretching, articulation, and positional release techniques were used to and around these organs. The methods employed were comparable to those in Barral methodology. The impact of visceral manipulation in primary dysmenorrhoea was emphasised in this study.

Another study was carried out to see the effect of osteopathic manipulative treatment on primary dysmenorrhoea [10]. The osteopathy manual therapy protocol included myofascial release, craniosacral manipulation, High Velocity Low Amplitude (HVLA) techniques, balanced ligamentous tension, muscle energy, strain-counter strain and soft tissue techniques. Patients in osteopathy manual therapy group had significant improvement in every outcome, including the average menstrual pain, physical and mental component on SF-12 scale than compared to light touch group. A similar case report was conducted to see effect of osteopathic manipulative treatment on psychosocial management of dysmenorrhoea [11]. The study came to the conclusion that somatic dysfunction and psychological aspects should be taken into account while treating dysmenorrhoea, and doctors who administer osteopathy manual therapy for the condition should look for and treat any relevant sacral and pelvic somatic dysfunction.

A recently studied ultrasonographic parameter is the uterocervical angle, which is located between the cervical canal and the uterine frontal wall. It has been claimed in the literature that uterocervical angle and ultrasonographically determined cervical length can both reveal the cervix's clinical function [12]. According to a recent study by Dziadosz M et al., a big uterocervical angle makes it easier and more direct for uterine contents to be moved to the cervix [13]. Zebitay AG et al., discovered a significant correlation between primary dysmenorrhoea in virgin adolescent girls, uterine cervical volume and cervical length [14].

The resistance from the uterine cavity is increased by a narrower uterocervical angle [Table/Fig-1]. As a result, measuring the uterocervical angle is critical since it is associated with the severity of primary dysmenorrhoea [12]. CES is a non invasive electrotherapy treatment that has been demonstrated to considerably reduce anxiety, sadness, and sleeplessness. CES reduces delta activity, which aids in tiredness reduction while increasing alpha activity. This further increases relaxation and lowers beta activity, resulting reduction in negative mental processes [4].

Uterus manipulation management improves the mechanical, circulatory and neurological responses. It improves venous and lymphatic circulation and helps the body decongest. It is also important in the reduction of hypertonicity and spasms. Women with primary dysmenorrhoea may benefit from a three-cycle course of five osteopathic treatments, according to previous research [6].

Spinal segments connected to the uterus may have become more sensitive, leading to an increase in afferent impulses and visceral hyperalgesia. Serotonin and norepinephrine receptors in the spinal cord may have been affected by the manipulation of the muscular, visceral, and joint tissues, which share sensory and motor pathways. This may have decreased the nociceptive convergence between the D10-L2 and S2-S4 spinal segments. Since, the lumbopelvic joints, ligaments, and muscles affected by primary dysmenorrhoea have chronic inflammation that contributes to both peripheral and central sensitisation, it is reasonable to suppose that manipulating these tissues may result in some functional changes in the central nervous system. According to certain studies, descending inhibitory mechanisms may be employed to reduce inflammation-induced hyperalgesia [10]. Furthermore studies are required to come in this conclusion.

Deep breathing exercises lower pain severity while also increasing blood oxygenation and lung ventilation [6]. Music therapy is useful in the treatment of depression, anxiety, mood swings and labour pain. Premenstrual Syndrome (PMS) symptoms can be alleviated by listening to classical music [7]. The robust musculature of the core is built to withstand regular stresses as well as the stress of the menstrual cycle on the body.

## CONCLUSION(S)

The successful outcome of the index patient reveals significantly substantial improvements in pain, psychological state and increase physical activity along with an increase in the uterocervical angle after the application of osteopathy manual therapy, cranial electrical stimulation and conservative physiotherapy treatment. Hence, it can be concluded that osteopathic manipulation is efficacious in pain alleviation in primary dysmenorrhoea.

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