



Clinical Case Report Competition

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First Place Winner

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An investigation into the effects of fascial
manipulation on dysmenorrhea

ABSTRACT

Dysmenorrhea is an issue that causes distress to a significant proportion of the population, particularly among women in their twenties and is responsible for a large percentage of work absenteeism in that age group. It is perhaps because the condition is neither fatal nor permanent that the very real consequences of suffering from it are often overlooked. It is partly for this reason that we have chosen to investigate the efficacy of massage therapy towards relieving the painful symptoms of dysmenorrhea.

The purpose of this case study was to determine if there was a correlation between postural imbalance and dysmenorrhea symptoms and the role of fascia manipulation in managing the symptoms of dysmenorrhea in a female subject with chronic leg and pelvic pain. A single case was considered with primary dysmenorrhea and the presence of pelvic pathology and congenital pes planus. The result showed a marked decrease in pain a week following each treatment and significantly fewer symptoms during menstruation. The results suggest the influence of fascial manipulation on a leg and pelvic pain and in postural correction. Further studies with a larger sample and/or a control group and more precise measurements must be conducted in an attempt to confirm this hypothesis.

INTRODUCTION

The subject is a university educated 31 year old female, whom we shall call Alice for the purpose of this report, with celiac disease and no other conditions or injuries

other than a minor eversion sprain on the right ankle five years ago. Alice has no exercise regime, eats one main meal in the evening, consuming home prepared snacks at other times and drinks a minimum of eight glasses of water a day. She comes from a family of four siblings all of whom have dysmenorrhea of variable intensity. Alice is not married, has no children, no previous pregnancies and has not been sexually active for the last two years. Her average menstrual cycle is 29 days ranging from a low of 24 days to a high of 35 (it is possible that this erratic behaviour can be explained by the subject's cycle synchronising with the therapist's as by the end of the study both were in unison.) The severity of Alice's dysmenorrhea forces her to take time off from work as she is unable to function during that time.

What was interesting about this case, on top of severe symptoms characteristic for dysmenorrhea (pain prior to and during menstruation, suprapubic cramps, breast swelling and tenderness, sacral edema and low back pain, abdominal bloating and congestion, headache, dizziness, nausea and vomiting, constipation, increased urination, sadness and irritability), she presented with a history of chronic daily pain in the left knee, hip and inguinal region since she was 17-18, with the pain intensifying with the onset of menstruation. Menarche occurred at 14 years with no pain until she was in university dealing with stress of exams. She has unmanaged congenital pes planus. Following the recommendation of her family doctor she is taking Advil (Ibuprofen) to decrease the pain during menstruation. Prior to the study sessions it was an average of eight 400mg pills on the first day of menstruation,

double the recommended dose to manage the pain; with a maximum of nine pills taken on one day.

About 3 years ago Alice was diagnosed with a cyst on the left ovary, with its successful resolution within a year, confirmed with ultrasound. The pain before and after that diagnosis has remained the same. Last September, Alice requested another ultrasound because the pains were seriously interrupting her activities of daily living (ADLs). The scan returned with confirmation of no cyst. Since September 2009 Alice has seen a chiropractor on a weekly basis, receiving adjustments to her thoracic and lumbar spine, and a massage therapist treating her lower back pains with no noticeable improvement to her symptoms. We started our treatment in December, first working with abdominal fascia and then following the anatomy trains (Myers 2009), where we found ourselves working with her pes planus on the left foot. It is then we started noting the decrease in the pain and discomfort. The suggestion was made to have an assessment done on her foot by a new chiropractor, with the possibility to have custom orthotics made. At the same, time her MD took knee and hip x-rays.

This study was designed around mainly performing myofascial techniques with results measured by postural assessments and a daily questionnaire that asked about various aspects of pain for that day (sample of the questionnaire is attached as an Appendix). Weekly sessions that implemented fascial, orthopaedic and systemic treatments to address her symptoms have been combined with appropriate stretch, strengthen and proprioceptive exercises for home care.

The weeks when she performs the exercises return longer pain free days between the sessions, though they were only performed sporadically.

METHODOLOGY

The research undertaken was a single case study focused on determining the correlation between postural imbalance and dysmenorrhea signs and symptoms following a series of 16, 90-120 minute massage therapy treatments. For the first 3 weeks the treatments were held semi-weekly and, with improvements of symptoms, the frequency of treatments was reduced to once a week for the next 10 weeks.

Prior to commencing the study, Alice received weekly massage treatments with the primary focus on decreasing signs and symptoms of dysmenorrhea using ischemic trigger point release to the abdominal, pelvic, gluteal and thigh regions (Travell, 1999) returning no significant decrease in pain either post treatment or on the following menstrual cycle. Consideration of the presence of pes planus causing her chronic leg and knee pains led us to believe that the postural imbalance started from the feet and translated into the hip and pelvic region which then intensified with menstruation. For this reason, it was decided to focus on the myofascial aspects of Alice's condition, surmising that if primary dysmenorrhea can exacerbate existing conditions then it is reasonable to assume that the cause of the dysmenorrhea can itself be rooted within restrictions of the fascial structures, specifically that the machinations of the uterus shedding its endometrial lining was activating latent problems embedded within the fascia. To test this new hypothesis we changed tactics and commenced treatment of the body as a whole

Now we worked along the fascial lines of tension as described by Myers (2009) according to whom the myofascial connection runs the full length of the body, longitudinally, obliquely and horizontally with numerous crossings. Because the fascia is impregnated with nerve and lymphatic vessels, any restraints or adhesions along the lines affect the rest of the fascia in that line, restricting movements of the underlying tissues, affecting flow and pressure of inner vessels and organs (Keleman 1985). A combination of inter-, intra- and extramuscular techniques were employed to work the fascial lines, releasing adhesions and restrictions. Muscle energy techniques were also used (Chaitow 2006) to facilitate greater muscle and fascia stretch. Following the treatment regime as laid out by Myers, each session was focused on one part of the fascial system at a time.

Duration of the treatment varied from 90 to 120 minutes excluding the assessment and interview with Alice and review of the pain questionnaire and establishing goals. An initial assessment was conducted prior to the first treatment with reassessment prior to the fourth and eighth and after the sixteenth treatment.

Dry hands were used for application of myofascial techniques and lavender shea butter for the abdominal treatments. A standard massage table was used. Positioning varied, depending on the area treated, from prone to supine and to sideline, with proper pillow support for each position. In the prone position there was pillow support for the knees and abdomen to support the lumbar spine and to cushion the structures of the abdomen; in sideline a 3-piece Body Cushion Support

System with support for chest, pelvis and legs; and knee and occipital pillow support in supine positioning.

Though the direction of the treatment was dictated by the anatomy trains, the goals for each session were considered on the presented symptoms (constipation, headache, etc.) Longer duration treatments, especially at the early stages of the study, were required to achieve the fascial releases. Alice was advised to stay well hydrated for the duration of the study.

The long term goals were to decrease pain during the menstrual flow by improving postural balance, and in the short term to manage symptoms, reducing fascial adhesions, reducing trigger points and promote circulation to the local structures as well as bring relaxation and balance to the autonomic nervous system. Though the focus of the study was on managing the symptoms of dysmenorrhea, working directly with the perineal muscles falls outside the practice of massage therapists but still could be affected indirectly via the connections between the pelvic floor and rectus abdominus (pubococcygeus muscle) and obturator internus (levator ani) muscles, both part of the deep frontal line tract (Myers 2009).

For each session, modalities included a craniosacral assessment protocol for diaphragms; muscle energy, myofascial inter, intra-, and extramuscular, reshaping and crosshand techniques were used as well as fascial arm unwinding, ligaments release and passive range of motion and stretching. Main principles were employed by working with fascia by releasing superficial layers before deep ones and staying in the depth of the tract for each session, following the integration of all layers.

At early stages the pelvic and thoracic diaphragm observed greater imbalance but corrected itself during the manual manipulation. During the integrative, later stages, the imbalance was minimal.

Home care recommendations (stretch, strengthen, and hydrotherapy applications) were discussed at the end of each session with the emphasis on stretches of structures (fascial lines) addressed in-session (Myers 2009), and strengthening the abdominal and pelvic floor muscles (Calais-Germain 2003, Travell 1999, Osborne-Sheets 1998, Liebenson 2007) with adductors of the hip and scapulae adduction and retraction. Daily contrast showers to the back and pelvic area were recommended to improve the circulation along with timed moist heat applications to the knee and lateral leg areas to decrease the tension and manage of pain. As well, hot foot baths were recommended to reflexively relax the abdominal and pelvic organs during the acute stages of pain, usually the first day of menses. Diaphragmatic retraining was part of the program and recommended for inter- and menstrual pain management and reduction of the negative effects of hormonal imbalances associated with menstrual cycle.

It was important for the therapist to stay grounded and relaxed, which allowed for a better feel of fascia engagement and subsequent release. Certain techniques required fingertip strength and precision in finger placing to avoid the inducement of pain.

The table below outlines the major points of the treatments as per Myers (2009).

Session	Area addressed	
1 - 3	Focussed on the knees and lower legs, with emphasis on the left side. Methods employed were joint mobilisations and fascial work. It was necessary to address the severe pain present in the legs before we could comfortably commence with working with the rest of the body.	
4	Open the Superficial Front Line, differentiate Superficial and Deep Front Lines from axial body; diaphragmatic breathing retraining	<ul style="list-style-type: none"> - ankle retinaculum & crural fascia - subcostal arch & sternal fascia - sternocleidomastoid
5	Open the Superficial Back Line*, differentiate the superficial Back and Deep Back Arm Lines from axial body	<ul style="list-style-type: none"> - plantar aponeurosis - hamstring fascia - erector spinae and suboccipital muscles
6	Open the Lateral Line*, differentiate all four Arm Lines, open lateral aspects of Deep Front Line	<ul style="list-style-type: none"> - peroneal fascia - iliotibial tract - quadratus lumborum & scale myofascia
7	Balance superficial fascia of both right and left Spiral Line	<ul style="list-style-type: none"> - rhombo-serratus complex - abdominal obliques - tibialis anterior-peroneus longus sling
8	Open lower portion of Deep Front Line*, balance with Lateral Line	<ul style="list-style-type: none"> - deep posterior compartment of leg - adductor group - psoas complex attachments at lesser trochanter
9	Open trunk portion of Deep Front Line*, revisit Front Arm Lines	<ul style="list-style-type: none"> - psoas - diaphragm - deep laminae of abdominal myofascia
10	Open the Deep Back Line, relate to Deep Front Line	<ul style="list-style-type: none"> - piriformis & deep lateral rotators - pelvic floor muscles - calcanei - multifidi & transversospinalis muscles
11	Open head and neck portions of Deep Front and Deep Back	<ul style="list-style-type: none"> - sphenoid bone - temporomandibular joint

	Lines, relate to Arm Lines	- hyoid complex - cervical vertebrae, deep anterior neck muscles
12	Promote tonal balance, movement and integration in the seven lines that run through pelvis and leg; abdominal massage to promote peristalsis	
13	Promote tonal balance, movement and integration in the 11 lines that run through and around the rib cage	
14	Promote tonal balance, generous movement and balanced integration in the four lines of the arms and shoulder girdle	
15	Revisit the Deep Frontal Line to address tinnitus	
16	Due to severe headache suffered by Alice, work was mostly focussed on the occipital region of the skull, neck and shoulders fascia	

RESULTS

Progress was measured using two methods: the first was to perform a postural and muscle length assessment every fourth treatment. The second was to have Alice fill in a daily pain questionnaire (see appendix). The questionnaire was based on a subset of the Menstrual Distress Questionnaire designed by Rudolph Moos, PhD. The main difference was that on our questionnaire we extended the pain scale to six from five so as to see which side of 'average' the pain lay on (there being no middle option to choose, the subject had to decide if the pain was a three or a four).

The questionnaire asked Alice to respond to six different aspects of pain experienced during the menstrual cycle and a daily basis. The six aspects are:

- muscle stiffness
- headache
- backache
- fatigue
- cramps
- general aches/pains

The questionnaire also reflects seven other areas: concentration, behavioural changes, autonomic reactions, water retention, negative effects, arousal and control, however we are not going to go into details other than stating that treatments helped decrease the symptoms and increased the wellbeing.

The physical assessments revealed little to no change in Alice's posture or muscle length despite the many treatments to her fascia. However, the daily questionnaire chart that she reliably filled in showed a noticeable downward trend in total pain reported over the course of four months.

The graph in Figure 1 covers four months. The major tick marks on the x-axis represent the days when a session was held. The y-axis measures the sum of all reported pain values for that day. A downward trend in pain can be discerned across the chart, made more obvious by comparing the average total pain for all four months in Figure 2.

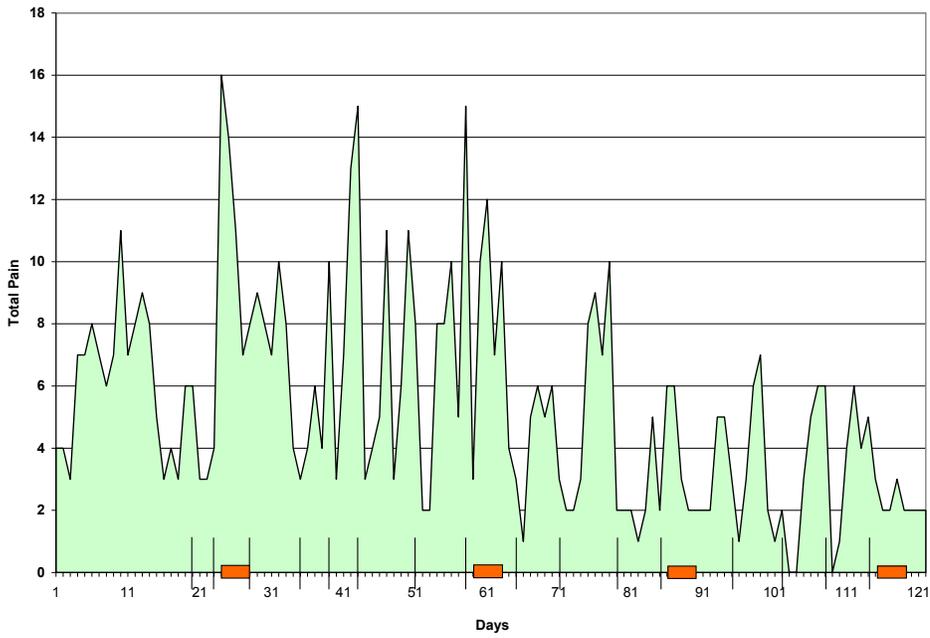


Figure 1 Average daily pain over four months. Blocks on x-axis represent menstruation days.

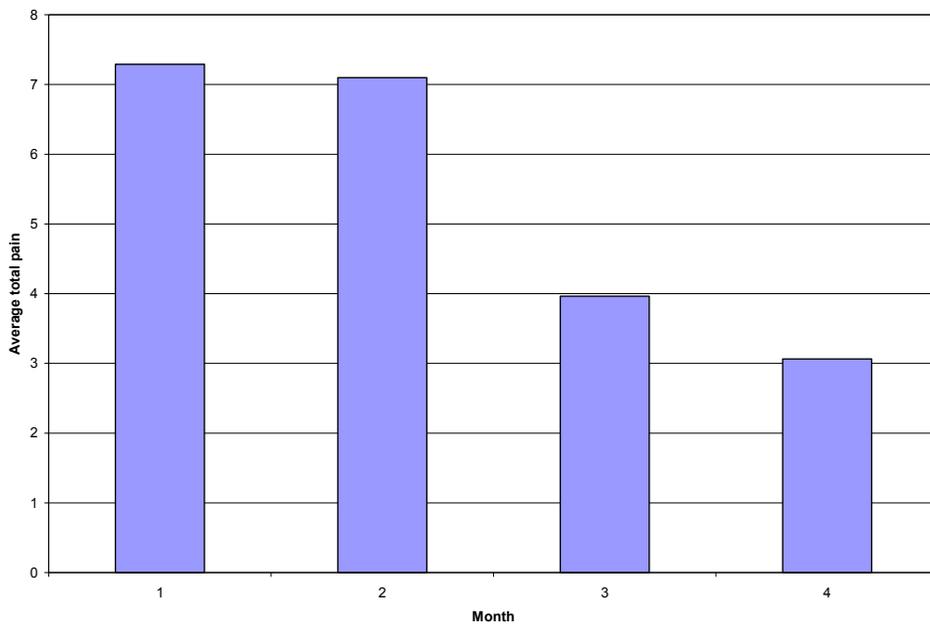


Figure 2 Average total pain for each month

Future research and testing should be done using goniometric measurements and gait assessment as well as the picture reference to monitor the progress of the treatments.

DISCUSSION

Dysmenorrhea affects up to 50% of women at some point in their lives with about 10% of these incapacitated for days at a time and is the number one cause of time taken off from school and work among women of menstruating age. In the U.S. alone, it is estimated that 140 million work hours are lost each year due to this condition (Tabers 2001). Not only does dysmenorrhea subject its sufferers to discomfort and pain that may range from minor to agonising but it also greatly affects the quality of their lives and impedes their ability to work and engage in social activities. Because in many cases the condition is mitigated by pregnancy and the birthing process, the rate of suffering is most likely much higher than it has ever been due to the trend within industrialised countries of having babies at a later age – if at all.

Common methods of dealing with the pain of menstrual cramps usually involve taking NSAIDs such as ibuprofen and acetaminophen. Taking oral contraceptives is also a popular way of reducing the intensity of cramping (French 2005). Both of these systems work quite well but of course may induce side effects characteristic to each method. Applying heat to the abdomen is also a favoured

method that many find soothing. Acupuncture may produce some promising results (Witt 2008) but treatments are required every month, adding up to significant cost.

This study was based on the hypothesis that the primary dysmenorrhea of a single subject originated from problems within the myofascia. This theory seems to have borne out, however it is based solely on the testimony of one person. All results were tabulated from data supplied by this one subject and the margin for error is very large. Part of the problem is that we are dealing not only with the ability of Alice to remember and properly document her daily pain but must also factor in the very real condition that pain is subjective, not just from person to person but from day to day as well.

Nevertheless, the results are encouraging enough to warrant further investigation on this subject. Through a series of weekly massage therapy sessions we were able to greatly reduce the amount of menstrual pain experienced and therefore improve the ability of the subject to work and to engage in other activities. This drastically enhanced her well being and removed possible barriers to her professional development, bringing about a positive change in her psychological health.

The advantage of treating menstrual pains with massage in the fashion of this study is that it produces lasting results as evidenced by the decreasing pain each month in figure 2. After the cost of the initial treatments, the beneficial effects should theoretically stay with the subject with perhaps a few treatments interspersed throughout the year and also the continuation of the home care exercises. Further examination would need to be performed to verify this.

CONCLUSION

The results of this study show that working with the body's fascia provides relief from the symptoms of dysmenorrhea, reducing the severity of cramps and associated pains by a significant amount and allowing the improved quality of life for subjects.

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APPENDIX

Please see the included file *Dysmenorrhea Appendix.pdf*

Key Words: massage therapy, hydrotherapy, menstruation, cramps, pelvic pain