The Impact of OMT on GI and GU Systems Research

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Gastrointestinal System

[Postoperative Ileus – uncomplicated ileus that occurs after surgery and generally resolves spontaneously in 2 to 3 days.]


Paraspinal Inhibition utilized by E. Herrmann

• Paraspinal inhibition before surgery *reduced the incidence of post-op ileus by 7.3%*. It also showed that the inclusion of “ileus prevention manipulative treatment” (paraspinal inhibition) hastened the patient’s recovery from ileus once ileus had occurred. The treatment group had 317 patients and the control group had only 92 patients.

• Dr. Herrmann was an orthopedic resident at the time and once the attending physicians saw the good results from paraspinal inhibition manipulative treatment they insisted that their patients had to be a part of the treatment group.

A study sought to determine whether osteopathic manipulative treatment (OMT) improved outcomes in patients with postoperative ileus. The study, conducted in a central Florida hospital between 2003 and 2006, was a retrospective chart review of patients with postoperative ileus. Of the 331 patients who met inclusion criteria and had undergone abdominal surgery, 172 received OMT and 139 did not. Data analysis revealed that patients who received OMT had statistically significant shorter hospital stays (11.8 vs. 14.6 days; \( P = .029 \)).

Retrospective study design

OMT group N = 17
No-OMT N = 38

OMT was provided by physicians, residents and DO students and included primarily muscle energy and myofascial release

<table>
<thead>
<tr>
<th>Characteristic or Outcome</th>
<th>Mean (SD) OMT Group (n=17)</th>
<th>Mean (SD) Non-OMT Group (n=38)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y</td>
<td>60.3 (17.7)</td>
<td>62.1 (15.8)</td>
<td>.70</td>
</tr>
<tr>
<td>ASA Physical Status Class&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.5 (0.6)</td>
<td>2.7 (0.7)</td>
<td>.31</td>
</tr>
<tr>
<td>Time to Flatus, d</td>
<td>3.1 (0.6)</td>
<td>4.7 (0.4)</td>
<td>.035</td>
</tr>
<tr>
<td>Time to Clear Liquid Diet, d</td>
<td>4.6 (3.8)</td>
<td>5.6 (7.0)</td>
<td>.59</td>
</tr>
<tr>
<td>Time to Bowel Movement, d</td>
<td>4.8 (2.3)</td>
<td>5.8 (4.9)</td>
<td>.43</td>
</tr>
<tr>
<td>Postoperative Hospital LOS, d</td>
<td>6.1 (1.7)</td>
<td>11.5 (1.0)</td>
<td>.006</td>
</tr>
</tbody>
</table>

<sup>a</sup> Physical status was classified on a scale of 1 to 6, with 1 being healthy and 6 being brain dead.

Abbreviations: ASA, American Society of Anesthesiologists; LOS, length of stay; OMT, osteopathic manipulative treatment; SD, standard deviation.

In this tightly designed study, 40 adult, female Long-Evans rats weighing 225 g each were randomly assigned to 1 of 4 experimental groups in a 2 x 2 factorial design. The 4 groups were surgery and treatment (ST), surgery and no treatment (SNT), no surgery and treatment (NST), and no surgery and no treatment (NSNT).

Visceral manipulation involved 1 minute of gentle mobilization. For the first 15 seconds, a side-to-side motion was applied with the thumb and index fingers placed lateral to the descending and ascending colon, respectively. For the next 45 seconds, the index finger was moved in small, clockwise circular motions over the ascending, transverse, and descending colon, starting from the lower right quadrant of the abdomen and moving to the lower left quadrant.
Primary outcome measures included the time to production of the first fecal pellet, the number of fecal pellets counted at 6, 12, and 24 hours, gastrointestinal transit duration. After the fecal pellet count was completed at 24 hours, the rats received gavage of approximately 1 mL of a slurry of 10% charcoal and 1% arabic acid in water. The rats were then humanely killed 30 minutes later. The length of the small intestine from the pylorus to the ileocecal valve was removed, stretched, and measured using a tape measure. The distance that the slurry had traveled from the pylorus was measured to determine gastrointestinal transit over 30 minutes, which was expressed as a percentage of the total length of the small intestine.

To control for possible nonspecific effects of visceral manipulation, the rats in the SNT and NSNT groups were picked up and handled for approximately 1 minute, according to the same schedule used for the ST and NST rats.
NST = no surgery, treatment
NSNT = no surgery, no treatment
ST = surgery, treatment
SNT = surgery, no treatment

A. Visceral massage significantly increased gastrointestinal transit
B. Cumulative fecal pellet discharge was greater in the massaged groups (ST and NST). Fecal pellet discharge for a group of 10 normal rats (NORM)

**Definitions:**
- NST = no surgery, treatment
- NSNT = no surgery, no treatment
- ST = surgery, treatment
- SNT = surgery, no treatment
C. Visceral massage significantly reduced the time to first fecal pellet discharge.

**NST** = no surgery, treatment

**NSNT** = no surgery, no treatment

**ST** = surgery, treatment

**SNT** = surgery, no treatment
GenitoUrinary Tract Disorders
Dysmenorrhea
Pelvic Floor Pain

**Design:** Prospective case series of 12 dysmenorrheal subjects assigned to OMT – HVLA or no-OMT. Duration for each group two menstrual cycles. 8 had both OMT and no-OMT, 4 were distributed 2 in each group.

**Outcome measures** were EMG activity of lumbar spinae erector muscles and lab for creatinine kinase, lactate dehydrogenase or lactate dehydrogenase isozyme activity, or myoglobin concentration.

**Results:** OMT significantly reduced EMG activity and decreased low back pain. OMT had no effect on lab values.
### Table 1
Electromyographic (EMG) Activity Data*

<table>
<thead>
<tr>
<th>Protocol</th>
<th>EMG activity (average ± SD)</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before OMT</td>
<td>After OMT</td>
</tr>
<tr>
<td>No OMT</td>
<td>146.10 ± 65.94</td>
<td>147.70 ± 83.54</td>
</tr>
<tr>
<td>OMT</td>
<td>140.20 ± 45.25</td>
<td>103.10 ± 36.69</td>
</tr>
</tbody>
</table>

*Eight subjects were used in both the OMT and the control groups, and the other four were equally distributed between the OMT and the control group. EMG activity was recorded as a calibration of 1 mV/2 cm. Values are an integrated total EMG activity (time constant of 0.05) for the period of extension.

†P = .006

**Design:** Multi-centered randomized controlled trial with an osteopathic intervention group and an untreated (“waiting list”) control group

**Subjects:** Women aged 14 years and older with a regular menstrual cycle, diagnosed with primary dysmenorrhea.

**Intervention:** Six osteopathic treatments over a period of three menstrual cycles or no osteopathic treatment. At each treatment session, dysfunctional structures were tested and treated based on osteopathic principles.

**Outcome measures:** Primary outcome measures were average pain intensity (API) during menstruation, assessed by the Numeric Rating Scale (NRS), and days of dysmenorrheal pain (DDP) exceeding 50% of NRS maximum.

**Results:** 53 completed study (Intervention = 25; Control 28) API decreased in the intervention group from 4.6 to 1.9 and from 4.2 to 4.2 in controls. Between Group Difference of Means: 2.6 to 3.6; *p* < 0.005. DDP decreased from 2.2 to 0.2 in the intervention group and from 2.3 to 1.9 in controls, *p* = 0.002.
Schwerla et al 2014

Fig. 2 Intensity of dysmenorrheal pain before and after the treatment period.

<table>
<thead>
<tr>
<th>Table 2b</th>
<th>Within-group changes of intensity and duration of dysmenorrhoeal pain between baseline and end of treatment.</th>
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<tbody>
<tr>
<td></td>
<td>Baseline Mean ± SD</td>
</tr>
<tr>
<td>Pain intensity [NRS]</td>
<td></td>
</tr>
<tr>
<td>- osteopathic group</td>
<td>4.6 ± 1.2</td>
</tr>
<tr>
<td>- control group</td>
<td>4.3 ± 1.7</td>
</tr>
<tr>
<td>Duration of pain [days]</td>
<td></td>
</tr>
<tr>
<td>- osteopathic group</td>
<td>4.5 ± 1.8</td>
</tr>
<tr>
<td>- control group</td>
<td>4.6 ± 2.0</td>
</tr>
<tr>
<td>Duration of pain (≥5 on NRS) [days]</td>
<td></td>
</tr>
<tr>
<td>- osteopathic group</td>
<td>2.2 ± 1.4</td>
</tr>
<tr>
<td>- control group</td>
<td>2.3 ± 2.2</td>
</tr>
</tbody>
</table>

Abbrev: SD – Standard deviation; NRS – Numeric rating Scale (0 = no Pain; 10 = worst imaginable Pain); CI – Confidence Interval.
Design: Women (40) with primary dysmenorrhea. Prospective, randomized, controlled trial. 

Subjects were told they would receive one of two kinds of SM and were randomly assigned (20 to each group) to the global pelvic manipulation (GPM) group that received SM that was illustrated and described as affecting both L5-SI and the sacroiliac joints (SIJ). This particular GPM added the vector of the operator’s caudal knee, placed on top of the subject’s upper leg flexed at the knee, which delivered a downward force during the high-velocity, low amplitude thrust accentuating the operator’s caudal arm rotating L5 on SI and separating the SIJ. The sham intervention was the placement of the subject was in the same position but without any tension or thrust and held for 2 minutes.
Figure 2  Global pelvic manipulation technique. White arrows indicate the impulses’ direction.
**Methods:** Blood was drawn from right arm before the intervention and from the left arm and 30 minutes later from the left arm. The blood was analyzed for catecholamine and serotonin levels. VAS pain was self reported before and after intervention. Pressure pain threshold (PPT) was made over each SIJ before and after intervention using a digital dynamometer.

**Results:** Showed significant ($P = 0.003$) reduction in VAS reported pain and reduction in mechano-sensitivity (PPT) in both SIJs ($P = 0.001$) both within the GPM group and in comparison to the sham-GPM group. Comparing the catecholamine levels there were no intergroup differences, but there were for the serotonin levels.

**Purpose:** Determine the relative frequency of positive musculoskeletal exam findings between patients with chronic pelvic pain (CPP) and healthy controls.

**Study Design:** We conducted a masked, prospective, cross-sectional study of abnormal pelvic, abdominal, and back examination findings in 19 women with CPP vs 20 healthy controls.

**Results:** Women with CPP had more frequent abnormal musculoskeletal findings than did control subjects asymmetric iliac crests (61% vs 25%), pubic symphysis heights (50% vs 10%), and positive posterior pelvic provocation testing (37% vs 5%; all $P < .05$). Patients with pain exhibited more tenderness at several abdominal muscle sites, had higher median total pelvic floor tenderness scores (3/24 vs 0/24; $P < .05$), and less control of the pelvic floor (unable to maintain 10 seconds of relaxation, 78% vs 20%; $P < .001$).

**Purpose:** To determine the *efficacy and safety of pelvic floor myofascial physical therapy* compared to global therapeutic massage in women with newly symptomatic interstitial cystitis/painful bladder syndrome.

**Materials and Methods:** A randomized controlled trial of 10 scheduled treatments of *myofascial physical therapy* vs global therapeutic massage was performed at 11 clinical centers in North America. We recruited women with interstitial cystitis/painful bladder syndrome with demonstrable pelvic floor tenderness on physical examination and a limitation of no more than 3 years' symptom duration. **Outcome:** Primary outcome was the *proportion of responders defined as moderately improved or markedly improved* in overall symptoms compared to baseline on a 7-point global response assessment scale.
Results: A total of 81 women randomized to the 2 treatment groups had similar symptoms at baseline. The global response assessment response rate was **26% in the global therapeutic massage group** and **59% in the myofascial physical therapy group (p = 0.0012)**. Pain, urgency and frequency ratings decreased in both groups during follow-up, and were not significantly different between the groups. Pain was the most common adverse event, occurring at similar rates in both groups. No serious adverse events were reported.

Conclusions: A significantly higher proportion of women with interstitial cystitis/painful bladder syndrome responded to treatment with myofascial physical therapy than to global therapeutic massage. Myofascial physical therapy may be a beneficial therapy in women with this syndrome.
Purpose: Determined the feasibility of conducting a randomized clinical trial designed to compare 2 methods of manual therapy (myofascial physical therapy and global therapeutic massage) in patients with urological chronic pelvic pain syndromes.

Materials and Methods: We recruited 48 subjects with chronic prostatitis/chronic pelvic pain syndrome or interstitial cystitis/painful bladder syndrome at 6 clinical centers. Eligible patients were randomized to myofascial physical therapy or global therapeutic massage and were scheduled to receive up to 10 weekly treatments of 1 hour each. Criteria to assess feasibility included adherence of therapists to prescribed therapeutic protocol as determined by records of treatment, adverse events during study treatment and rate of response to therapy as assessed by the patient global response assessment.

Results: There were 23 (49%) men and 24 (51%) women randomized during a 6-month period. Of the patients 24 (51%) were randomized to global therapeutic massage, 23 (49%) to myofascial physical therapy and 44 (94%) completed the study. Therapist adherence to the treatment protocols was excellent. The global response assessment response rate of 57% in the myofascial physical therapy group was significantly higher than the rate of 21% in the global therapeutic massage treatment group (p = 0.03).

Conclusions: We judged the feasibility of conducting a full-scale trial of physical therapy methods and the preliminary findings of a beneficial effect of myofascial physical therapy warrants further study.
A perspective on the neurobehavioral component of the etiology of chronic prostatitis (CP) and chronic pelvic pain syndrome (CPPS) is emerging. We evaluated a new approach to the treatment of CP/CPPS with the Stanford developed protocol using myofascial trigger point assessment and release therapy (MFRT) in conjunction with paradoxical relaxation therapy (PRT).

**Materials and Methods:** A total of 138 men with CP/CPPS refractory to traditional therapy were treated for at least 1 month with the MFRT/PRT protocol by a team comprising a urologist, physiotherapist and psychologist. Symptoms were assessed with a pelvic pain symptom survey (PPSS) and National Institutes of Health-CP Symptom Index. Patients reported perceptions of overall effects of therapy were documented on a global response assessment questionnaire.

Results: Global response assessments of moderately improved or markedly improved, considered clinical successes, were reported by 72% of patients. More than half of patients treated with the MFRT/PRT protocol had a 25% or greater decrease in pain and urinary symptom scores, as assessed by the PPSS. In those at the 50% or greater improvement level median scores decreased 69% and 80% for pain and urinary symptoms, respectively. The 2 scores decreased significantly by a median of 8 points when the 25% or greater improvement was first observed, that is after a median of 5 therapy sessions. PPSS and National Institutes of Health-CP Symptom Index showed similar levels of improvement after MFRT/PRT protocol therapy.

Conclusions:
This case study analysis indicates that MFRT combined with PRT represents an effective therapeutic approach for the management of CP/CPPS, providing pain and urinary symptom relief superior to that of traditional therapy.
Urinary Tract Infections
Effect of craniosacral therapy on lower urinary tract signs and symptoms in multiple sclerosis

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ABSTRACT

To examine whether craniosacral therapy improves lower urinary tract symptoms of multiple sclerosis (MS) patients. A prospective cohort study. Out-patient clinic of multiple sclerosis center in a referral medical center. Hands on craniosacral therapy (CST). Change in lower urinary tract symptoms, post voiding residual volume and quality of life. Patients from our multiple sclerosis clinic were assessed before and after craniosacral therapy. Evaluation included neurological examination, disability status determination, ultrasonographic post voiding residual volume estimation and questionnaires regarding lower urinary tract symptoms and quality of life. Twenty eight patients met eligibility criteria and were included in this study. Comparison of post voiding residual volume, lower urinary tract symptoms and quality of life before and after craniosacral therapy revealed a significant improvement (0.001 > p > 0.0001). CST was found to be an effective means for treating lower urinary tract symptoms and improving quality of life in MS patients.

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### Table 1

Demographic and clinical characteristics of the study group \((n = 28)\).

<table>
<thead>
<tr>
<th></th>
<th>Before CST (mean ± SD)</th>
<th>After CST (mean ± SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total patients included: 28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females (%): 24 (86)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males (%): 4 (14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean age ± SD: 51.5 ± 12.6 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean disease duration ± SD: 9.1 ± 7.1 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean EDSS(^a) ± SD: 4.7 ± 1.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PVR(^b)</strong></td>
<td>150.9 ± 125.7 ml</td>
<td>66.1 ± 89.5 ml(^c)</td>
</tr>
<tr>
<td>Urinary Frequency</td>
<td>5.1 ± 0.9</td>
<td>3.1 ± 1.0(^d)</td>
</tr>
<tr>
<td>Urinary Urgency(^e)</td>
<td>5.4 ± 1.1</td>
<td>3.4 ± 1.4(^d)</td>
</tr>
<tr>
<td>QoL</td>
<td>5.7 ± 1.0</td>
<td>3.6 ± 1.6(^d)</td>
</tr>
</tbody>
</table>

\(^a\) EDSS: Expanded Disability Status Scale.

\(^b\) PVR: post voiding residual volume.

\(^c\) \(p < 0.01\).

\(^d\) \(p < 0.001\).

\(^e\) See text for explanation of urinary frequency / urgency assessment.

**Children ages 4 to 11** who were referred to a pediatric urology clinic who had voiding dysfunction (VD) for at least 6 months. Standard treatment included medical therapy, behavioral training, lifestyle changes, and hour long appointments. **Treatment group received standard therapy and 4 hour-long weekly MPT-OA treatments**, which were individualized on the basis of findings on structural examination. Therapy consisted of **gentle mobilization of joints and muscles along the spine, pelvis, lower extremities, visceral organs, and cranium**.

In total, 21 participants (14 girls, 7 boys) completed the study. The **treatment group had improvement in a significantly larger proportion of outcome measures** (*P*=.008). However, the change in subgroup analysis for daytime incontinence and vesicoureteral reflux were not statistically significant but had a positive trend (*P*=.065; *P*=.114).

Improvement or resolution of vesicoureteral reflux was more prominent in the treatment group. **Correction of pelvic asymmetry** and **lower extremity motion restrictions improved dysfunctional voiding** (*P*<.002).