

The Effectiveness of Osteopathic Treatment in Bowel Constipation Patients: A Clinical Perspective

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Highlights:

- (1) Our study showed reduced bowel discomfort with osteopathic techniques use.
- (2) Also, Our study showed increased lumbar flexibility with osteopathic techniques use.
- (3) The effects of those findings lasted longer than 60 days period.

ABSTRACT

Introduction: Functional chronic bowel constipation is a motility disorder of great relevance and prevalence worldwide. **Objective:** Analyze the efficiency of visceral manipulation technique in individuals with bowel constipation diagnose according to Roma III criteria. **Methods:** This is a crossover clinical study that included individuals of both genders aged between 20 and 40 years who had had bowel constipation symptoms for over one year. Individuals were randomized into two groups: the intervention (IG) and control (CG) groups. A four weeks washout period was given. Each volunteer underwent 24 individual **osteopathic** sessions, twice a week that lasted up to 30 minutes. Three intervention techniques were performed: two for the large intestine and one for the small intestine. **Results:** Thirty four patients were recruited but nine were excluded. Our sample consisted in 25 participants, 13 were allocated in the IG and 12 in the CG. No significant difference was found between groups for anthropometric, educational, marital status, proportion of smokers and alcoholics, and VAS for lumbar spine pain measures. Lumbar spine flexibility, was significant increased for the IG ($p<0.0001$). A higher proportion of patients in the IG presented reduced hard stools, effort to evacuate, incomplete evacuation feeling, anorectal obstruction sensation and manual maneuvers to facilitate evacuation after treatment ($p<0.0001$). A significant correlation was found between pain (VAS) and the Schober test ($r=-0.41$). **Conclusion:** This study was successful in showing that there seems to be a positive effect of the osteopathic treatment for chronic bowel constipation at short and long terms.

Keyword: osteopathy; constipation, lifestyle.

A EFICÁCIA DA OSTEOPATIA COMO TRATAMENTO EM PACIENTES COM CONSTIPAÇÃO INTESTINAL: UMA PERSPECTIVA CLÍNICA

RESUMO

Introdução: A constipação intestinal crônica é um distúrbio de motilidade de grande relevância e prevalência em todo o mundo. **Objetivo:** Analisar a eficiência da técnica de manipulação visceral em indivíduos com diagnóstico de constipação intestinal segundo critérios Roma III. **Métodos:** Este é um estudo crossover que incluiu indivíduos de ambos os sexos, com idade entre 20 e 40 anos, que apresentavam sintomas de constipação intestinal há mais de um ano. Os indivíduos foram randomizados em dois grupos: O grupo intervenção (GI) e grupo controle (GC). Foi concedido um período de Wash out de quatro semanas. Cada voluntário foi submetido a 24 sessões osteopáticas individuais, duas vezes por semana, com duração de até 30 minutos. Foram realizadas três técnicas de intervenção: duas para intestino grosso e uma para o intestino delgado. **Resultados:** Trinta e quatro pacientes foram recrutados, mas nove foram excluídos. Nossa amostra foi composta por 25 participantes, 13 eram alocados no GI e 12 no GC. Nenhuma diferença significativa foi encontrada entre os grupos para antropometria, escolaridade, estado civil, proporção de fumantes e alcoólatras, e EVA para medidas de dor na coluna lombar. A flexibilidade da coluna lombar apresentou aumento significativo para o GI ($p<0,0001$). Um maior proporção de pacientes do GI apresentou redução de fezes duras, esforço para evacuar, sensação de evacuação incompleta, sensação de obstrução anorretal e manobras manuais para facilitar a evacuação após o tratamento ($p<0,0001$). Foi encontrada correlação significativa entre dor (EVA) e teste de Schober ($r=-0,41$). **Conclusão:** Este estudo foi bem sucedido ao mostrar que parece haver um efeito positivo do tratamento osteopático para problemas intestinais crônicos como a constipação em curto e longo prazo.

Palavras-chave: osteopatia; constipação; estilo de vida.

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INTRODUCTION

Functional chronic bowel constipation is a motility disorder of great relevance and prevalence worldwide¹. According to the Rome III Consensus, it is defined as the presence, in the previous six months, of two or more of the following criteria: less than three bowel movements per week, effort to evacuate hard or fragmented stools, obstruction or anorectal blockage sensation and use manual maneuvers to facilitate evacuations².

Bowel constipation causes are immobility, insufficient water intake, decreased consciousness, abnormal colonic contractility and medicines adverse effects².

Symptoms such as distension and abdominal fullness feeling, continuous or stabbing pain, cramps, psychological discomfort and pain or trunk segments discomfort results in reduced quality of life for individuals with constipation^{3,4}.

Studies suggest that chronic bowel constipation treatment protocols are costly, sometimes invasive and not always effective, especially at long term⁵. The most useful and “up ahead” treatment is lifestyle habits changing such as water and dietary fiber intake, however, some individuals may require the use of laxatives, biofeedback, enema or even surgery^{5,6,7}.

This condition is responsible for 2.5 million visits to physician’s office per year, at the expense of several million dollars. Bowel constipation individuals using laxatives stands for 92 thousand hospitalizations annually in the United States^{8,9,10}. In addition, bowel constipation itself can be an early symptom of a serious illness such as colorectal cancer, which is the fifth most frequent cancer among men and the fourth among the women^{11,12,13}. In a systematic review, the authors concluded that the osteopathic approach is a complementary treatment for bowel constipation individuals, as it has shown to improve symptoms. The aim of the present study was to analyze the efficiency of a visceral manipulation technique in individuals with bowel constipation diagnose according to Roma III criteria and analyze its effectiveness in lumbar spine mobility.

METHODS

This was a controlled and randomized clinical study from a single Centre facility with convenience sample recruitment. The research was carried out on the premises of the university polyclinic of Unasp. The study was approved by the ethics committee. All the volunteers signed the Informed Consent Term in accordance with the National Health Council rules. We met the 446/2012 ethics resolution criteria for human beings testing in clinical research.

Our inclusion criteria were individuals aged between 20 and 40 years, all genders, bowel constipation symptoms for over one year, two or more Roma III findings. Exclusion criteria were individuals who presented lumbar spine pathological signs, recent surgeries such as arthrodesis, inflammation exacerbations, tumor, appendicitis, pregnant women, bloody feces and bowel occlusion.

The volunteers were randomized into two groups through a simple random draw: numbers were written on paper sheets according to patient’s medical record number and were drawn. The sequence established was the first drawn being the intervention group (IG). After the end of the treatment, there was a washout period of four weeks and then groups were shifted. Patients in the intervention group received the control group treatment and vice-versa.

Rome III criteria

The Rome III Criteria is an important diagnostic assessment tool for functional gastrointestinal disorders, a reliable and easy-to-apply criterion.

According to the Rome III diagnostic criteria, the individual must present evacuation effort during at least 25% of defecations; lumpy or hard stools at least 25% of bowel movements; incomplete evacuation feeling at least 25% of defecations, obstruction/anorectal blockage sensation at least 25% of defecations; perform manual maneuvers to facilitate evacuations at least 25% of defecations (*eg.* digital assist evacuation or pelvic floor support); present less than three bowel movements per week¹⁴.

Lower back mobility

To assess lower back mobility, the Schober test was performed. The individual remained erect in orthostatism, while the examiner draws a mark 10 cm above of the individual's posterior superior iliac spine. Right after, we asked our participant to perform a maximum trunk flexion; at that time another mark was drawn. The distance between those two points were registered with a measuring tape. An altered measure is considered when the line deviation is less than 5 cm but it is within normal range if it exceeds 15 cm¹⁵.

Interventions

Each volunteer underwent 24 individual osteopathic sessions that lasted up to 30 minutes twice a week. Three intervention techniques were performed. Two for the large intestine and one for the small intestine. Small intestine technique comprises lying back in the supine position with the flexed knees.

The technique was performed with the ulnar edge of both hands in the suprapubic region, enveloping the entire small intestine. During inspiration, a traction movement was applied heading the cranial direction. During expiration, a movement headed the caudal direction. Series of ten repetitions were performed.

Techniques for the large intestine were performed throughout one minute. First, the technique for the cecum region was performed. The volunteer remained in the supine position while the examiner positioned itself on the volunteer's left side. The external edge of the cecum was then overlapped with the examiner's thumbs and then a pressure was applied towards a stretcher. From top to bottom, to the sigmoid colon technique. The volunteer remained in the supine position with the flexed knees. The examiner was positioned on the volunteer's right side, with the fingertips superimposed on the outer edge of the sigmoid colon, between the iliac fossae; then traction was applied heading the cranial and medial direction¹⁶.

Statistical analyses

Data are presented as mean and standard deviation or proportion. Data normality was analyzed using the Kolmogorov-Smirnov test. Anthropometric data between groups were compared using the unpaired t test. The effectiveness of the treatment – with interaction between effect and time – was evaluated using Anova. Correlations were performed using the Pearson test. A $p < 0.05$ was considered the level of statistical significance.

RESULTS

Initially, 34 patients were evaluated, but nine were excluded, 5 because they did not have time to participate, two because they believed they would not get better, one because he had undergone surgery recently and one because he was undergoing other treatments. Therefore, the final sample was composed of 25 participants, 13 in the intervention and 12 in the control groups. No significant difference was found between groups for anthropometric variables, educational status, marital status, smokers and alcoholics proportions, as well as scores on the visual analogue scale for lumbar spine pain (Table 1)

Variables	Control Group N=13	intervention group N=12	P
Age (years)	52.7±10.7	49.9±11.6	0.9
Sex M/F	F/20	F19/M1	
Weight (Kg)	70.9±14.3	70.3±13.6	0.9
Height (M)	1.5±0.0	1.6±0.0	0.6
BMI (kg/cm2)	28.1±6.3	27.5±5.7	0.9
Education (years)	5.8±1.0	6.9±0.9	0.8
Marital status			
Single (%)	30	30	0.65
Married (%)	35	30	0.85
Divorced (%)	25	25	0.74
Widower	10	15	0.84
Alcoholism (%)	15	0	0.68
Smoking (%)	25	15	0.78
Back Pain (VAS)	8.8±1.12¥	9.0±1.2	0,08

Table 1 – Sample characteristics before intervention.

We found a significant increase in lumbar spine flexibility in the IG ($p < 0.0001$); additionally, this difference remained statistically significant until the post-intervention and post-washout period ($p = 0.002$) (Figure 1). Figure 2 shows between groups flexibility comparisons that were similar at baseline, higher flexibility for the intervention group in the washout period and similar again after the post washout period when the control group received the study's protocol treatment.

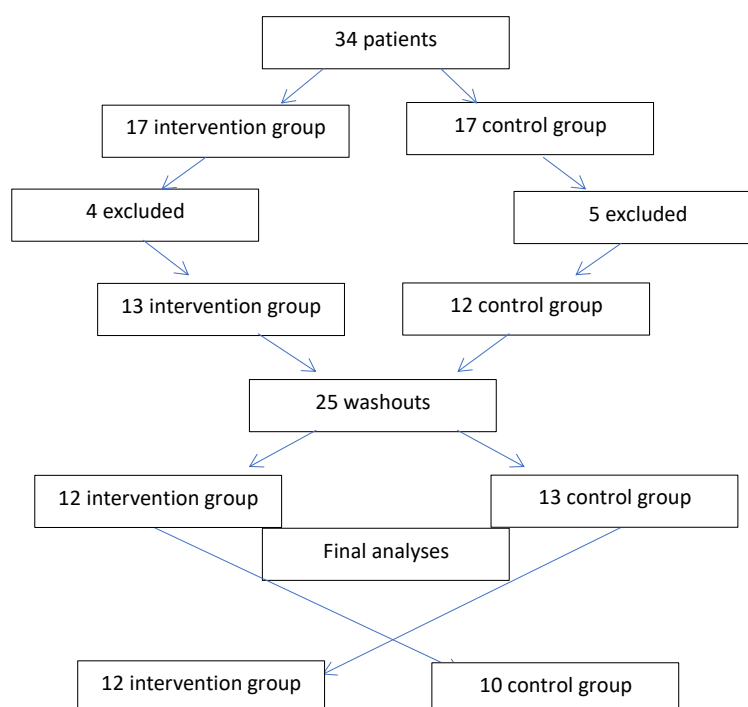


Figure 1- Patient randomization.

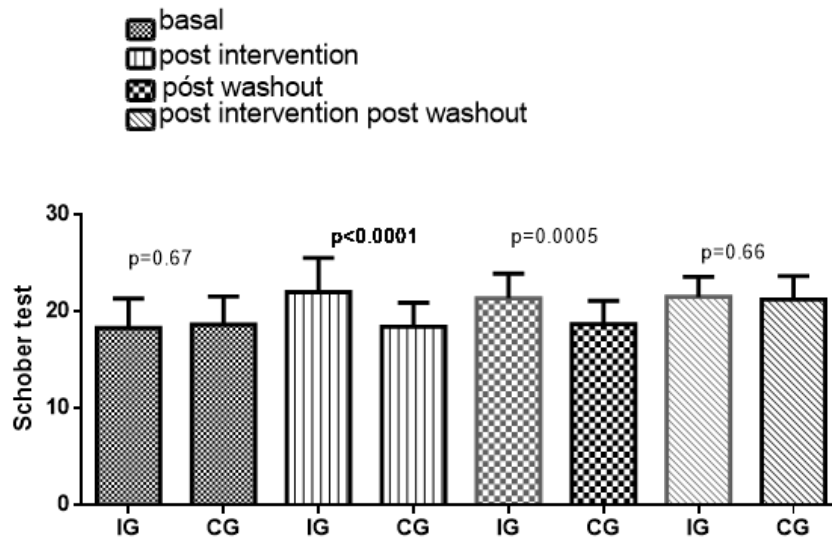


Figure 2. – Schober test lumbar spine flexibility measured before, immediately after and after the washout period.

A significant and inverse correlation was found between pain measured by the visual analogue scale and the Schober test.

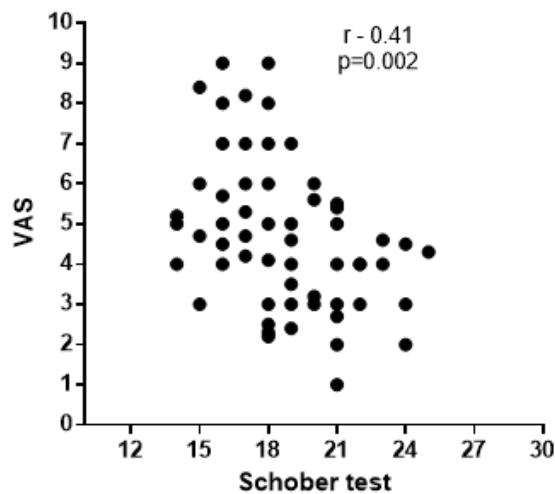


Figure 3 – Correlation between back pain assessed by the visual analogic scale and the Schober test.

The proportion of patients of the intervention group with hard stools, evacuation effort, incomplete evacuation feeling, anorectal obstruction sensation and need to perform manual maneuvers to facilitate evacuation reduced significantly after treatment, while no changes was seen for the control group. After the washout period, both groups remained as before this period. After treatment at the post washout period, there was a reduction in the proportion of patients with hard stools, evacuation effort, incomplete evacuation feeling, anorectal obstruction sensation and need to perform manual maneuvers to facilitate evacuation for the new “crossed over” intervention group. At the end of the washout period, the proportion of patients with hard stools, evacuation effort, incomplete evacuation feeling, anorectal obstruction sensation and need to perform manual maneuvers to facilitate evacuation was similar for both groups (Table 2).

Base line	Intervention Group			Control group		
	Before	After	p	Before	After	p
Hard stools (%)	61.52	30.76	<0.0001	69.21	76.9	0.34
Effort to evacuate (%)	84.59	46.14	<0.0001	84.59	84.59	0.99
Feeling of incomplete evacuation (%)	76.9	46.14	<0.0001	76.9	84.59	0.21
Sensation of anorectal obstruction (%)	76.9	53.83	<0.0001	81.59	69.21	0.19
Manual maneuvers to facilitate evacuation (%)	46.14	15.38	<0.0001	38.45	46.14	0.31
before and after Post washout						
Hard stools (%)	61.52	61.52	0.99	76.9	76.9	0.99
Effort to evacuate (%)	84.59	69.21	0.019	84.59	84.59	0.100
Feeling of incomplete evacuation (%)	76.9	69.21	0.34	84.59	76.9	0.21
Sensation of anorectal obstruction (%)	76.9	69.52	0.27	69.21	69.21	0.99
Manual maneuvers to facilitate evacuation (%)	46.14	53.83	0.39	46.14	53.83	0.39
Post treatment after washout						
Hard stools (%)	61.52	53,83	0.31	76.9	53.83	0.0011
Effort to evacuate (%)	69.21	61,52	0.29	84.59	61.52	0.0004
Feeling of incomplete evacuation (%)	69.21	61,52	0.30	76.9	61.52	0.032
Sensation of anorectal obstruction (%)	61.52	61,52	0,99	69.21	38.45	0.0001
Manual maneuvers to facilitate evacuation (%)	53.83	46,14	0.39	53.83	46.14	0,039

Table 2 – Rome III criteria for both groups before and after intervention.

Source: Authors, 2023.

DISCUSSION

The main objective of this study was to analyze the effectiveness of osteopathic maneuvers as a crossover treatment for bowel constipation. Among the main results we showed an increased lumbar flexibility and reduced bowel discomfort within techniques accomplishments; those effects lasted longer than 60 days period.

A crossover study is a longitudinal study in which individuals receive a sequence of different treatments (or exposures). Methodologically, its design is very robust and is especially important in human health research¹⁷. Crossover studies comprise two major advantages over non-crossover studies. The first major advantage is that the covariates or confounding factors are scattered since the samples are their own controls. The second advantage is that samples are self-controlled, this leads to a paired statistical analysis that is more precise and accurate¹⁸.

Lumbar spine flexibility increased with the osteopathic techniques accomplishment. A study with 10 participants showed an increase of 9.8% in lumbar segment range of motion of the participants after the osteopathic adjustment¹⁹. These individuals with bowel constipation have increased lower back pain due to reduced mobility. Osteopathic manipulation is able to increase this mobility and possibly reduce pain. One study showed that the primary problem is not reduced lumbar mobility²⁰, but the constipated bowel state is the cause of low lumbar mobility, with the reduced state of constipation, it is possible that lumbar mobility will increase. In another study, the authors concluded

that the application of an osteopathic abdominal manual intervention is well tolerated and improves pain sensitivity in areas related to bowel innervation, as well as lumbar flexion²¹.

Bowel constipation is a multifactorial condition, but mechanisms involved are still poorly understood, which makes the therapeutic approach difficult as up to this date^{4,5,22}. It is believed that it can be a result from structural mechanical, metabolic or functional changes that affect colon or colorectal performance^{19,23}.

In this study, it was found that osteopathic manipulation was effective to reduce symptoms proportion such as evacuation effort, incomplete evacuation feeling, anorectal obstruction sensation and need to perform manual maneuvers to ease evacuation. Bowel constipation is subdivided into primary and secondary set of causes. Primary bowel constipation is a functional disorder attributed to inadequate dietary habits, physical inactivity, low socioeconomic status and psychological changing behavior^{24, 25}. Secondary bowel constipation is related to endocrine and neurological disorders or overuse of constipating substances. It also may be associated with a paradoxical contraction or involuntary spasm of the anal sphincter leading to a defecatory behavior that occurs in two-thirds of patients with bowel constipation¹⁵. Additionally, it can still be iatrogenic due to prolonged overuse of laxatives and drugs such as non-steroidal anti-inflammatory (NSAIDs), steroids, opioids, psychotropics, anticonvulsants, anticholinergics, dopaminergics, diuretics, calcium channel blockers, iron salts and calcium and aluminum based antacids²⁶.

Some studies have shown that osteopathy can be effective in bowel constipation treatment. Belvaux et al. 2017²⁷ studied twenty-one bowel constipated females and concluded that osteopathic manipulative treatment showed potential benefit for treating functional constipation in this population. Another study assessed the osteopathic manipulative treatment effect in six patients with chronic bowel constipation. Authors showed that their individuals reported improved overall constipation severity, symptoms and quality of life²⁸. Another study with 13 children with cerebral palsy and chronic bowel constipation showed that osteopathic methods itself was as effective as osteopathic methods in addition to standard medical care²⁹. Despite those studies were designed to be cross-sectional they were established with excellent methodological procedures.

Osteopathic treatment to the abdominal viscera, particularly the large and sigmoid colon, has been advocated for the treatment of chronic bowel constipation and aims to improve bowel function influencing smooth muscle tone and improving visceral mobility and motility^{30,31}.

This study has an important application as for Osteopathic Manipulative Treatment: it can bring short- and long-term benefits to patients with bowel constipation as it can contribute to the diseases prevention – such as colorectal cancer which is the fifth most frequent cancer among men and the fourth among the women.

Nevertheless, our study had one limitation: our sample was recruited from single-center facility making our study a convenience recruitment design. However, this limitation does not invalidate our findings. Additionally, larger studies with similar interventions must be carried to reassure this methods and to be put into clinical practice.

CONCLUSION

This study was successful in showing that there seems to be a positive effect of osteopathic methods in the treatment of chronic bowel constipation. It was also possible to confirm that the low back pain referred by these individuals is related to bowel constipation and that it can be improved with osteopathic techniques.

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