

REVIEW ARTICLE

THE VIRTUES OF OSTEOPATHIC MANIPULATIVE TREATMENTS IN PATIENTS WITH OPIOID USE DISORDER

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KEYWORDS

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ABSTRACT

As America continues to face the opioid epidemic, numerous people have made great strides in receiving formal treatment for their opioid use disorder (OUD). This research seeks to examine the effects of providing osteopathic manipulative treatment (OMT) along with traditional OUD pharmacological methods in providing results for patients. By using prior research on OMT techniques, we were able to uncover how effective OMT can be in reducing the time and discomfort associated with seeking opioid recovery. Osteopathic manipulative treatment, in combination with traditional pharmacology, was associated with reduction of somatic pain, higher success with medication-assisted treatment and lower costs. This research also highlights the importance of OMT in the era of COVID-19 social distancing, as well as special considerations when treating those with trauma histories associated with their disorder. We argue the benefit of OMT in combination with pharmacological methods can be successful at reducing the overall burden of prior OUDs.

INTRODUCTION

Patients who have opioid use disorder (OUD) are often labeled or misrepresented as “addicts,” a one-dimensional, negative connotation that neglects to capture the important aspects of a person’s identity and behavior.¹ A physician’s multidimensional consideration of the person not only reflects empathy but also can lead to a more accurate medical assessment of the patient, guiding the most appropriate treatment.

Osteopathic medical practice focuses on four main tenets, namely, that (1) the body is a unit, (2) the body is capable of self-regulation, (3) structure and function are reciprocally related, and (4) rational treatment is based on the basic principles of the body unit, each of which recognizes the importance of the body as a whole.² These tenets can be applied in the context of OUD, a complex, multisystem disorder in which there are changes in the structure and function of the brain and other organs due to the chronic use, misuse, and abuse of opioids.³

In any individual person, there are many factors, for example, the nature of the addictive substance and genetic predisposition, that play a role in the development of a substance abuse disorder.

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In one research study, for example, multiple genetic codes were discovered to be linked with an increased risk of having an OUD.⁴ “Addictive” rewards, which are positive experiences or sensations that reinforce the continued use of opioids, such as euphoria, “highs,” or weightlessness seen in patients with OUD, are linked with the disruption of dopamine homeostasis, leading to the dysregulation of the brain’s reward mechanisms.⁵ One of the primary goals of osteopathic manipulation is to promote the body’s natural inclination toward homeostasis. In patients with OUD with disruption in homeostatic mechanisms, both physiologically and somatically, osteopathic manipulative treatment (OMT) can be used to restore the proper balance and enhance recovery.^{3,5}

Along with losing the positive reward associated with substance use, patients with substance use disorders often experience extreme withdrawal symptoms, including vomiting, fatigue, sweats, insomnia, and delirium. We propose that there are multiple OMT techniques that can target these specific dysfunctions:

- Stomach pain, discomfort, and tenderness can be mitigated by using Chapman’s points.
- Lymphatic technique can be used to address withdrawal-related headache and congestion.
- The physician can practice osteopathic cranial manipulative medicine to help lessen the withdrawal side effects of insomnia and delirium.

For most patients with OUD, withdrawal symptoms serve as a large obstacle for overcoming their disorder. They thus continue using opioids, thereby reinforcing this negative behavior.⁶ By providing OMT that may help to ease these symptoms, physicians can foster disuse. A more comfortable recovery process increases the chances that patients will seek recovery treatment.

When using opioid medications, patients with OUD have an exaggerated reward response via dopaminergic pathways that can reinforce repeated opioid use and lead to the associated maladaptive behaviors.⁷ We theorize that a similar reward response can be elicited while receiving OMT. By stimulating dopaminergic pathways through the viscerosomatics of OMT, we predict general improvements in each patient's health, including their overall physical and mental well-being.

In addition to traditional and standard pharmacological treatment of OUD, we propose that using OMT in OUD patients can achieve significant benefits, including but not limited to (1) the reduction of subjective pain, (2) fewer titration trial doses, and (3) reduced costs.

1. The Reduction of Subjective Pain

Often withdrawal symptoms can be linked with a heightened sympathetic body response.⁸ Autonomic-centered osteopathic manipulative treatments normalize the sympathetic or parasympathetic response.

Some possible OMT treatments that have been suggested for conditions like anxiety or elevated heart rate include, but are not limited to, the following:

- Occipitoatlantal (OA) release, rib raising, trapezius muscle release
- Osteopathic cranial manipulative medicine
- Cervical/thoracic/lumbar soft tissue (ST) or myofascial release (MFR)

These treatments normalize parasympathetic and sympathetic tones and address somatic dysfunctions in the spine and can benefit an OUD patient because they help normalize negative withdrawal symptoms. In OUD patients experiencing withdrawal, sympathetic overdrive leads to elevated heart rate, blood pressure, and temperature.⁸ By implementing techniques that negate these sympathetic symptoms, patients will be less subjected to withdrawal symptoms.

For instance, clonidine as a central alpha-2 antagonist is often used to reduce sympathetic overdrive or facilitation in acute opioid withdrawal. By performing OA release on the patient, a technique that increases the parasympathetic tone, this would give the patient relief that parallels that of the patient taking clonidine. In addition, treatment for withdrawal symptoms like diarrhea and emesis can also be considered, which could include OA release, Chapman's reflex for stomach and esophagus, celiac ganglion MFR, and thoracic/lumbar ST or MFR.⁹

Another nonpharmacological option in patients with OUD who are experiencing discomfort is the OMT technique of "laying on

of hands." The perception of touch can elicit positive physical and emotional responses in patients with OUD, as mediated by a variety of neurotransmitters. In a study of patients with chronic pain who were treated with OMT, biomarkers such as beta endorphin increased from pre- to posttreatment.¹⁰ Beta endorphins are associated with positive affect, mood, and sense of well-being. By stimulating these same pathways, the patient may feel a familiar sense of comfort and release. This release of dopamine, along with pharmacological treatments targeting withdrawal symptoms, commonly alleviates the negative symptoms associated with withdrawal.

2. Fewer Titration Trial Doses

Many OUD patients seek and receive medication-assisted treatment (MAT), including methadone and buprenorphine, to achieve remission and recovery.¹¹ In one study, it was found that patients on MAT were able to remain addiction-free 60% of the time while on the medication as compared to those OUD patients on placebos.¹² Additionally, it was quantitatively found that OUD patients on MAT had higher treatment retention.¹²

Despite the effectiveness of MAT, finding the correct dosage for patients can be a time-consuming, elongated process, which proves painful and uncomfortable for patients as withdrawal symptoms heighten.¹² Osteopathic manipulative treatment techniques are designed to improve lymphatic flow and circulatory mechanisms. By improving lymphatic flow, patients may feel fewer severe withdrawal effects.¹³ Lymphatic techniques can help clear the body of toxins and inflammation, and when used in conjunction with MAT in patients experiencing withdrawal, they can reduce the risk of harboring infection.¹³ Additionally, lymphatic techniques can reduce the time and dosage of MAT necessary to obtain the most beneficial outcomes for OUD patients.

Both MAT and OMT are successful as monotherapies and are symbiotic in nature. Together, they can be used without interfering with the benefit of the other. Patients on MAT who must go daily to a methadone clinic or require regular follow-up with a specialized prescriber are already used to frequent, recurring appointments with healthcare providers. This is similar to what they can expect with OMT. Thus, adding additional appointments will not deter most OUD patients from continuing OMT support.

3. Reduced costs

Food, massages, concerts, shows, and the like are all activities that can boost and enhance a person's pleasure pathways. While all these activities are readily available, they can prove cost prohibitive. In contrast, OMT is an option for all patients, regardless of socioeconomic status, which can be performed in the office with no equipment and is often covered by insurance.

Additionally, OMT is widely accepted in literature as a legitimate treatment option and represents a cost-friendly alternative to activating pleasure pathway responses.

Osteopathic manipulative treatment can also be used in combination with accepted pharmacological treatments. In the Guidelines for the Chronic Use of Opioid Analgesics, a recently

adopted policy by the Federation of State Medical Boards, the recommendation for a pain treatment plan includes both pharmacologic and nonpharmacologic methods, such as OMT. In a pilot study that evaluated the effect of OMT on the brains of patients with chronic low back pain, the researchers found significant changes in circulatory pain biomarkers posttreatment with OMT.¹⁴ Osteopathic manipulative treatment adds to the primary care physician's (PCP's) tool kit and offers a noninvasive, low-cost, and low-risk option for patients.

Another study conducted demonstrated that osteopathic manipulation along with traditional pharmaceuticals is one of the top 10 most common complementary health approaches among adults.¹⁰ Applying the osteopathic approach for the treatment of psychiatric conditions can be traced back to 1914, when the Still-Hildreth Sanatorium (SHS) was opened. The treatment protocol at SHS included OMT at least three times per week, healthy diet and exercise, group and social activities, and managing the physical environment. While there were limitations in data in an SHS chart review, the study found that many patients recovered or improved with the treatment at SHS, more so than they might have with pharmaceuticals alone.¹⁵

SPECIAL CONSIDERATIONS

Patients with trauma histories

Many patients who suffer with substance use disorders also have comorbid trauma histories and special consideration needs that must be heeded when touching patients who have experienced any kind of physical or sexual trauma in their pasts.¹⁶ In one study comparing people with OUD to those without it, the former suffered with statistically significant symptoms of posttraumatic stress disorder (PTSD), depression, and anxiety.¹⁷ A study conducted in Australia determined that one-third of people with OUD meet the criteria for PTSD.¹⁸

Before performing OMT on OUD patients, careful consideration of previous physical and emotional trauma to touch must be considered. Special attention must be paid to the high comorbidity of PTSD and OUD, possibly triggering a PTSD reaction.^{19,20} By being aware of touch as a trigger, we highlight various techniques to help ease the patient into comfort during the visit.²¹

In the OMT treatment setting, securing a trauma history results in a more comprehensive understanding of the patient. Some are open and comfortable discussing their traumatic experiences, having processed them through psychotherapy and, in turn, having developed resilience and insight; however, others continue to experience dissociative and emotional reactivity symptoms relating to their past trauma that need to be explored and addressed before they can be touched for OMT. It is important for the OMT provider to appreciate how the trauma has affected the patient and how this might impact the OMT treatment, rather than granular details pertaining to the trauma itself.

To best understand potential triggers of trauma for your patient, we reference the American Psychiatric Association guidelines for best practices in addressing trauma with sensitivity. It is important to initiate trauma evaluation compassionately by gently asking about the following parameters:²²

1. Screening for exposure to traumatic event
2. Potential triggers for trauma
3. Symptoms associated with trauma (fear, horror, etc.)
4. Detailed understanding of exposure
5. Full psychiatric evaluation screening for PTSD, suicidal ideation, and risk assessment

The first step in approaching patients with OUD and trauma history is describing in lay language exactly how and where you are going to touch them, with what pressure, and the manner in which you are going to diagnose their somatic dysfunction. It is vital to ask and receive the patient's permission before touching them. Once the somatic dysfunction is found, the next step is to again discuss with the patient exactly what technique you are going to use, where your hands are going to be, what level of pressure you plan to use, and how it should feel during the treatment. You should also invite patients to stop the treatment at any time they feel uncomfortable and let them know that if they want to retry, then a slower, more gentle approach can be employed.

Given that many patients are highly sensitive to touch and hypervigilant in situations where they feel physically vulnerable, the most appropriate OMT techniques to start with are those that are soft and gentle.²¹ So-called "soft techniques," including suboccipital release, cradling with traction, or prone traction, are beneficial for both helping with the sympathetic overdrive and other distressing symptoms related to withdrawal from opioids, as well as with PTSD-related symptoms. These techniques allow a more holistic approach to simultaneously treating hyperactive elements of both PTSD and OUD. Soft techniques, when explained and employed in a compassionate manner, have been deemed to be wholly salutary.¹⁶

Along with emphasizing soft, gentle touches, other advantageous techniques may be employed. We suggest creating a provider checklist that can be used at every office visit with any patient. By taking the time to assess patient boundaries and comfort, providers are able to better foster patient-physician connections that can help aid in the path to healing. Suggestions include the following:

1. *Communication.* Using plain language, make sure the patient knows the nature of the technique and the area of the body being worked on.
2. *Model.* Use models and safe skin areas to demonstrate pressure, temperature, and any assistive devices associated with the technique utilization. Consider having another person present in the room, such as a medical assistant, resident, or family member, upon whom the technique can be performed in order to let the patient watch and feel more comfortable.
3. *Boundaries.* Set clear expectations with your patient before any touching about areas they want you to avoid. Discuss sensitive touching areas and how they should be handled.
4. *Witness.* During the duration of the treatment, have a healthcare worker who is the same gender as the patient present in the room.

5. *Time option.* Offer multiple shorter sessions for the patient to help ease them into the process and new stimulation.
6. *Soft techniques.* Any soft tissue should be handled with pressure in accordance with the patient's comfort level.
7. *Discussion.* Throughout and on completion of the treatment, assess the patient's emotional state and treatment tolerance. Be sure to express that the patient, at any time, is able to voice areas of concern or discomfort. Open discussions with the patient to assess the mental and physical feelings that emerge from treatment.
8. *Interpersonal.* Refer patients with trauma for both medical management as well as eye movement desensitization and reprocessing, cognitive behavioral therapy, and other types of psychotherapy. Provide a list of resources for the patient to seek additional forms of treatment, support, and comfort for their OUD.

OSTEOPATHIC MANIPULATIVE TREATMENTS IN THE COVID-19 ERA AND ITS AFTERMATH

In the ongoing and current pandemic, depending on the COVID-19 infection rate in any particular region, social distancing is still of high priority in certain indoor and outdoor settings. At the beginning of the pandemic, social distancing led to abrupt cessation of many people's joyful outlets for stress and coping, including concerts, dinner with friends, and even work-related activities. In addition, many healthcare office practices shifted to a telehealth model. In this time of isolation, with people staying home, working remotely, and losing their access to other means of stress relief, the substance use rates have increased significantly. Several months into the pandemic, a June 2020 study evaluated the impact of COVID-19 and substance use on more than 5,000 adults.²³ The study found that more than 13% of respondents abused a substance, such as alcohol or opioids.²³ In this same study, one in 10 subjects were found to start or increase substance use as compared to before the pandemic.²³

Osteopathic manipulative treatment can only be performed in person and requires repeated treatments. These repeated office visits galvanize the patient-doctor trust alliance. Furthermore, such office visits allow patients the chance to leave their homes and have human interaction. In one study, it was determined that patients who harbored trust in their doctors responded more positively to their advice.²⁴ This trust likely emanated from personal interactions between the doctor and patient, including frequent and longer one-on-one contact.²⁴

DISCUSSION

There are multiple OMT techniques, and each osteopathic PCP should determine a treatment plan based on their clinical judgment and an individual patient's needs. Five key models serve as the basis for osteopathic treatments: biomechanical, respiratory-circulatory, neurological, metabolic-energy, and behavioral.¹⁵ Osteopathic PCPs can select OMT treatments that address one or more of these models alone or in combination.

Our research team hopes to start a deeper investigation of many of our claims. In such studies, we hope to better compare MAT alone versus OMT in combination with MAT on traditional measures of withdrawal. By conducting more in-depth studies of the effectiveness of OMT in OUD patients, we hope to raise continued awareness of the importance of implementing OMT in daily practice with OUD patients.

CONCLUSION

An osteopathic approach in the care of OUD patients can help remediate this multidimensional condition. It enables the osteopathic PCP to provide care for the whole patient, not simply their addiction. Further research is required to determine the extent of the effects of OMT on the OUD patient. We predict that OMT combined with pharmacological treatment, as compared to pharmacological treatment alone, on the OUD patient can lead to better outcomes—for example, a decreased MAT maintenance dose, lower rate of relapse, lower admissions rates to rehabilitation programs, and improved compliance with MAT. Medication-assisted treatment has been found to be successful as monotherapy, but we suggest higher success rates when used in conjunction with OMT. Overall, OMT targets the same pathways that the abused drug might, improves circulatory effects, and is widely recognized and accepted both in literature and by the insurance industry, offering a cost-effective method that, when combined with pharmacological treatments, can provide the patient with maximal care.

Opioid use disorder is not a new problem. It is essential that doctors take into consideration the best ways to help patients overcome their OUD, especially with comorbid conditions, such as PTSD. Our research highlights the importance that OMT in combination with traditional pharmacology can have on OUD recovery. Additionally, we have set forth the essential guidelines for how to make patients feel comfortable whenever and wherever OMT is performed. Especially in the up-and-coming telemedicine era, it is essential that doctors, if able, provide a hands-on approach to help expedite the healing process of OUD patients.

REFERENCES

1. McIntosh J, McKeganey N. Addicts' narratives of recovery from drug use: constructing a non-addict identity. *Soc Sci Med.* 2000;50(10):1501-1510. doi:10.1016/S0277-9536(99)00409-8
2. Eaton JA, Bates BP, Willard FH. Osteopathic medicine. *Orthop Nurs.* 1991;10(1):51-61. doi:10.1097/00006416-199101000-00010
3. Hasin DS, O'Brien CP, Auriacombe M, et al. DSM-5 criteria for substance use disorders: recommendations and rationale. *Am J Psychiatry.* 2013;170(8):834-851. doi:10.1176/appi.ajp.2013.12060782
4. Crist RC, Reiner BC, Berrettini WH. A review of opioid addiction genetics. *Curr Opin Psychol.* 2019;27:31-35. doi:10.1016/j.copsyc.2018.07.014
5. Baron D, Blum K, Chen A, Gold M, Badgaiyan RD. Conceptualizing addiction from an osteopathic perspective: dopamine homeostasis. *J Am Osteopath Assoc.* 2018;118(2):115-118. doi:10.7556/jaoa.2018.026

6. O'Sullivan SJ, Schwaber JS. Similarities in alcohol and opioid withdrawal syndromes suggest common negative reinforcement mechanisms involving the interoceptive antiward pathway. *Neurosci Biobehav Rev.* 2021;125:355–364. doi:10.1016/j.neubiorev.2021.02.033
7. Di Chiara G. Drug addiction as dopamine-dependent associative learning disorder. *Eur J Pharmacol.* 1999;375(1–3):13–30. doi:10.1016/S0014-2999(99)00372-6
8. Spadotto V, Zorzi A, Elmaghawry M, Meggiolaro M, Pittoni GM. Heart failure due to 'stress cardiomyopathy': a severe manifestation of the opioid withdrawal syndrome. *Eur Heart J Acute Cardiovasc Care.* 2013;2(1):84–87. doi:10.1177/2048872612474923
9. Channell MK, Mason DC. *The 5-Minute Osteopathic Manipulative Medicine Consult.* 2nd ed. Wolters Kluwer; 2019.
10. Morse EF, Ross C, Clemensen S, et al. Exploring the use of complementary and integrative health modalities in urgent care for acute pain. *J Altern Complement Med.* 2020;26(6):537–540. doi:10.1089/acm.2019.045
11. Oesterle TS, Thusius NJ, Rummans TA, Gold MS. Medication-assisted treatment for opioid-use disorder. *Mayo Clin Proc.* 2019;94(10):2072–2086. doi:10.1016/j.mayocp.2019.03.029
12. Connery HS. Medication-assisted treatment of opioid use disorder. *Harv Rev Psychiatry.* 2015;23(2):63–75. doi:10.1097/HRP.0000000000000075
13. Korosec BJ. Manual lymphatic drainage therapy. *Home Health Care Management & Practice.* 2004;16(6):499–511. doi:10.1177/1084822304264618
14. Degenhardt BF, Darmani NA, Johnson JC, et al. Role of osteopathic manipulative treatment in altering pain biomarkers: a pilot study. *J Am Osteopath Assoc.* 2007;107(9):387–400.
15. Rizkalla MN, Henderson KK. Empathy and osteopathic manipulative medicine: is it all in the hands? *J Am Osteopath Assoc.* 2018;118(9):573–585. doi:10.7556/jaoa.2018.13
16. Dahlby L, Kerr T. PTSD and opioid use: implications for intervention and policy. *Subst Abuse Treat Prev Policy.* 2020;15(article 22). doi:10.1186/s13011-020-00264-8
17. Peck KR, Schumacher JA, Stasiewicz PR, Coffey SF. Adults with comorbid posttraumatic stress disorder, alcohol use disorder, and opioid use disorder: the effectiveness of modified prolonged exposure. *J Trauma Stress.* 2018;31(3):373–382. doi:10.1002/jts.22291
18. Mills KL, Teesson M, Ross J, Darke S, Shanahan M. The costs and outcomes of treatment for opioid dependence associated with posttraumatic stress disorder. *Psychiatr Serv.* 2005;56(8):940–945. doi:10.1176/appi.ps.56.8.940
19. Dunleavy K, Kubo Slowik A. Emergence of delayed posttraumatic stress disorder symptoms related to sexual trauma: patient-centered and trauma-cognizant management by physical therapists. *Phys Ther.* 2012;92(2):339–351. doi:10.2522/ptj.20100344
20. Gupta MA, Jarosz P, Gupta AK. Posttraumatic stress disorder (PTSD) and the dermatology patient. *Clin Dermatol.* 2017;35(3):260–266. doi:10.1016/j.clindermatol.2017.01.005
21. Fletcher KE, Steinbach S, Lewis F, Hendricks M, Kwan B. Hospitalized medical patients with posttraumatic stress disorder (PTSD): review of the literature and a roadmap for improved care. *J Hosp Med.* 2021;16(1):38–43. doi:10.12788/jhm.3409
22. Blaauwendraat C, Levy Berg A, Gyllensten AL. One-year follow-up of basic body awareness therapy in patients with posttraumatic stress disorder. A small intervention study of effects on movement quality, PTSD symptoms, and movement experiences. *Physiother Theory Pract.* 2017;33(7):515–526. doi:10.1080/09593985.2017.1325957
23. Czeisler MÉ, Lane RI, Petrosky E, et al. Mental health, substance use, and suicidal ideation during the COVID-19 pandemic – United States, June 24–30, 2020. *MMWR Morb Mortal Wkly Rep.* 2020;69(32):1049–1057. doi:10.15585/mmwr.mm6932a1
24. Thom DH, Kravitz RL, Bell RA, Krupat E, Azari R. Patient trust in the physician: relationship to patient requests. *Fam Pract.* 2002;19(5):476–483. doi:10.1093/fampra/19.5.476