ABSTRACTS

LBORC-NUFA Poster Abstracts 2025

Every year at the American Academy of Osteopathy Convocation, the Louisa Burns Osteopathic Research Committee (LBORC) and the National Undergraduate Fellows Association (NUFA) together host a research poster presentation session for residents and medical students. The 2025 poster abstracts not included in the June *AAO Journal* are included here. To enhance the readability of this special feature, abstracts have been edited for basic style only. The content has not been modified; the information provided reflects information that was submitted by the primary author, including professional degrees and affiliations.

Resident Case Report

Neil Khanna, DO; Hugh Ettlinger, DO, FAAO, FCA; Jeremy D. Shugar, DO, MS

Tipping the scale: Enhancing Neurological Recovery in TBI through Osteopathic Principles

Background: Traumatic brain injury (TBI) is a leading cause of disability and death, with outcomes worsened by comorbidities like alcohol use disorder and schizophrenia. These conditions increase cerebrovascular fragility, elevating the risk for intracranial hemorrhage (ICH). Osteopathic Manipulative Treatment (OMT) has shown promise in safely enhancing recovery by addressing structural dysfunction and supporting physiological processes [5]. This case explores integrating OMT in managing a critically ill TBI patient with multiple risk factors.

Case: A 65-year-old male with alcohol use disorder and schizophrenia sustained left-sided subarachnoid and subdural hemorrhages following an assault. He developed a midbrain hemorrhage during hospitalization, requiring intubation and surgical intensive care unit (SICU) admission. The patient presented with somatic dysfunctions, including left temporal strain, a posterior sacral base, and thoracic outlet congestion. Five OMT sessions, incorporating cranial osteopathy and balanced ligamentous tension, were performed to support physiological recovery.

Results: Following OMT, the patient demonstrated significant neurological improvement, progressing from an ICH score of 4 (97% mortality risk) to successful downgrading from the SICU with a GCS of 15. Improvements in venous and lymphatic drainage, autonomic regulation, and respiratory mechanics were noted, aligning with osteopathic principles.

Discussion: This case highlights OMT's role as a safe adjunctive therapy in acute TBI management. Techniques targeting cranial and sacral dysfunctions supported recovery by optimizing venous outflow, reducing intracranial pressure, and balancing autonomic tone. Further research is needed to validate these findings in larger cohorts.

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Impact of Osteopathic Manipulative Treatment on Improving Function and Restoring Quality of Life After Sternoclavicular Joint Resection

Introduction/Background: The only true articulation between the upper extremity and the axial skeleton is the Sternoclavicular (SC) joint. Without it, muscles and fascia would be solely responsible for stabilization of the shoulder, leading to altered biomechanics. In this case, a 50-year-old female had osteomyelitis of the right SC joint requiring resection. The use of Osteopathic Manipulative Treatment (OMT), in conjunction with physical therapy (PT), improved function and restored quality of life.

Case: 50-year-old female with osteomyelitis of the right medial clavicle status post SC joint resection presented to clinic for osteopathic evaluation of chronic chest wall pain. Despite five months of PT, dry needling, and chiropractic treatment, she could not perform activities of daily living (ADLs) or participate in sport without pain. Her most significant somatic dysfunctions were the T3 and T4 vertebrae, anterior thoracic tender points 3–5

on the right, and myofascial restriction of the right chest wall. She received eight Osteopathic treatments over the course of a year utilizing facilitated positional release, balanced ligamentous tension, myofascial release, and muscle energy.

Results: Following treatment, she had increased thoracic spine mobility and reduced myofascial tension of the chest wall. This allowed her to perform ADLs and return to playing golf, tennis, and kayaking without pain.

Discussion: This patient's SC joint resection caused altered mechanics and increased muscular load on the shoulder girdle leading to significant dysfunction and pain. In turn, this caused her to be fearful of participating in sports that she loved. Addressing these dysfunctions with OMT significantly improved her pain and quality of life. This unique case highlights the importance of treating the SC joint when addressing thoracic and rib dysfunction using the biomechanical model.

William Tedjo, DO, MS; Jeremy D. Shugar, DO, MS

Emotional Release of a Male with Somatic Symptom Disorder (SSD) via Osteopathic Manipulative Treatment (OMT)

Background: Somatic symptom disorder (SSD), involves one or more physical symptoms accompanied by significant stress, time, energy, and emotion devoted to these symptoms resulting in substantial distress and/or dysfunction.(1) SSD is diagnosed when three specific conditions are met: Physical symptoms exhibit that cause substantial distress or disruption in daily life. There are one or more persistent, excessive thoughts, feelings, or behaviors related to the somatic symptoms. Symptoms have lasted for more than 6 months.(2)

Case: A 30-year-old male referred to OMM by his PCP for "low back pain", but denied having back pain rather instead presented with "disequilibrium". Patient also endorsed esophageal spasm and to a lesser extent left sided trigeminal neuralgic pain. Patient admitted to seeing specialists as he "somaticizes a lot." Patient was reticent in discussing past history but eventually admitted to an appendectomy, previous head trauma, and prior sexual abuse. OMT included myofascial release (MFR), balanced ligamentous tension (BLT) and cranial manipulation was utilized to treat somatic dysfunctions (SD) of the whole body, but especially the head area.

Results: Patient experienced two episodes of major emotional release during cranial manipulation, where patient became tearful with whole body flailing. Afterward, patient began to improve with minimizing non-specific complaints. Treatment intervals increased. Patient became optimistic of his prognosis and experiencing emotional release to a lesser degree.

Discussion: Patient by his presentation as well as his own admission is a victim of Somatic Symptom Disorder (SSD). Patient's inability to adequately express emotion gave rise to physical manifestation in the form of somatic dysfunctions. The musculoskeletal system is the physical manifestation of feelings and emotion. OMT improved these somatic dysfunction leading to patient's emotional release.

Resident Original Research

Paige Moreno, DO; Michelle Mather, DO; Lindsey Kinney, DO; Rachelle Pichot, MA; Raul Torres, DO

Osteopathic Manipulative Treatment (OMT) as an Adjunctive Treatment in Major Depressive Disorder (MDD)

Background: Major Depressive Disorder affects 5% of adults worldwide and symptoms often manifest somatically as changes in weight or appetite, psychomotor features, energy loss, sleep disturbances, and muscle tension. Current treatment guidelines include pharmacotherapy, psychotherapy, and somatic therapies that do not include OMT, for which the literature is limited. We hypothesized that adjunctive OMT with traditional antidepressant therapy will reduce depressive symptom severity. This line of research could demonstrate a need to update current treatment guidelines for MDD.

Methods: This unblinded prospective cohort study included participants ages 18 – 65 years with an MDD diagnosis and a Patient Health Questionnaire-9 (PHQ-9) score ≥10. Participants were recruited via a database and consented under an Institutional Review Board protocol.

Symptom severity was assessed using the PHQ-9 and Somatic Symptom Scale – 8 (SSS-8) at baseline, mid-study, and post-study. Osteopathic treatment was administered once/week for 8 weeks.

Data were summarized using means, standard deviations,

maximums, and minimums. Two one-way ANOVAs compared depression and somatic scores before, during, and after treatment.

Results: Fifteen participants were included in the study and although no significant decreases were found in somatic symptoms, there was a significant decrease in depression symptoms from baseline (mean =15.43) to post-study scores (mean = 6.9; $p < 0.001$).

Conclusions: OMT may be a helpful adjunctive therapy to traditional antidepressants for overall depressive symptom reduction. Despite a small sample size, there was a statistically significant reduction in depressive symptoms as scored by the PHQ-9, indicating a classification change from moderate to mild MDD. Further research is needed to investigate patient-specific OMT effects on both depressive and somatic symptoms. Additionally, broader studies are needed to determine when OMT is clinically indicated for MDD management.

Student Case Report

Atieh Dehghani Ashkezari, OMS III, MS; Zehava Graber, OMS II; Sheldon C. Yao, DO, FAAO

Post-COVID-19 Respiratory Dysfunction and Musculoskeletal Pain: Improvement with Osteopathic Manipulative Treatment (OMT)

Introduction: Post-COVID-19 syndrome is characterized by persistent symptoms such as respiratory difficulty and musculoskeletal pain, which impair daily function. Conventional treatments focus on symptom management, but Osteopathic Manipulative Treatment (OMT) provides a unique approach by addressing somatic dysfunctions (SD) to restore structural and functional balance. This case highlights the impact of OMT in improving post-COVID-19 symptoms.

Case: A 50-year-old female presented with persistent difficulty breathing one year following a COVID-19 infection. She has a history of childhood asthma which was controlled without medications prior to the infection. Post-COVID-19, she experienced severe difficulty breathing and pain in right lower back region, refractory to three cycles of prednisone and twice-daily Advair prescribed by her pulmonologist. On physical examination, her lung sounds were clear with good air entry. She had significant somatic dysfunctions of the thoracic inlet, lower rib cage, spinal, and abdominal diaphragm restrictions. OMT techniques included myofascial release (MFR), rib raising, diaphragm doming, and balanced ligamentous tension (BLT). She had the most significant improvement after muscle energy to the 12th rib SD.

Results: Immediately after the treatment session, the patient noted improvement in respiratory function, reporting the ability to take deeper breaths without pain for the first time in a year. At the one-week follow-up, the patient was able to wean off Advair and continued to show improvement in respiratory symptoms and pain.

Discussion: This case demonstrates the potential of OMT in managing post-COVID-19 respiratory and musculoskeletal dysfunctions. By addressing structural restrictions and optimizing lymphatic and respiratory mechanics, OMT contributed to symptom relief and functional recovery. Further research is needed to explore its broader applications in post-COVID-19 care.

Anthony Tucker, OMS II; Ian Dorsa, OMS II; Janki Patel, OMS II; Jacob Seemann, OMS II; Kayla Hicks, OMS II; Scott Leggoe, DO

OMT as an Adjunct Therapy to Clubbed Feet: A Case Study

Introduction: Congenital talipes equinovarus (CTEV), also known as clubfoot, is a congenital disorder that affects 1-2 live births per 1000. Typical treatment involves extensive casting, tenotomy, and orthotic use. However, rates of relapse are high with inconsistent treatment or lack of access, resulting in long-term deformity, functional disability, and pain.

Case: A 5-year-old male presented to the clinic with B/L foot pain L>R. He has a history of B/L clubbed feet and received a B/L Achilles tendonectomy at 4 months old in an attempt to correct the defect. Previous treatments were massage and chiropractic, in which he found mild relief of pain but no improvement of overlying symptoms. Pirani scores, the standard for measuring severity and treatment response in CTEV, were obtained before and after treatment. The patient was treated three times within five months using three OMM techniques: counterstain of the sacrum, articulatory technique of the talus, and post-isometric muscle energy technique on a posterior innominate, tibial torsion, and fibular head.

Results: Subjective patient assessment of pain and gait analysis improved across visits. Objective Pirani measurements were taken at the second and third visits, and there was a longitudinal improvement in his right foot score from 2.0 to 0.5.

Discussion: Given the prevalence of this condition and unequal access to care, OMM can serve as a potential alternative or adjunct to care for patients who cannot access conventional treatment. This case study can be the basis for future research to prove that OMM is a sufficient alternative to classic orthopedic management of CTEV. Limitations include the lack of consistent Pirani measurements across visits, and the patient was lost to follow-up.

Student Original Research

Rachel Radigan, OMS IV, MPH; Alexa Finkelstein, OMS IV, BS; Bianca Lee, DO; Elizabeth George, DO; Priya Bhushan, DO; Amber Sousa, PhD; Sheldon C. Yao, DO, FAAO

Osteopathic Manipulative Treatment (OMT) Protocol on Sleep Quality in Medical Students as Measured by the Fitbit Smart Watch: A Pilot Study

Introduction: Medical students experience poor sleep due to demanding schedules and high stress levels. Osteopathic manipulative treatment (OMT) may improve sleep disorders non-pharmacologically by addressing autonomic, lymphatic, and musculoskeletal dysfunctions. This pilot study (IRB-2025-193) evaluates OMT in improving sleep quality, measured by Fitbit watches. We hypothesize that an OMT protocol, addressing aforementioned areas of restriction, will be feasible and effective in improving sleep parameters in medical students.

Methods: Medical students (n=10) without diagnosed sleep disorders or on sleep interfering medications wore Fitbit watches for 8 nights, with baseline and post-treatment data collected for 4 nights each. Subjects received an OMT protocol (suboccipital decompression, base spread, occipitoatlantal decompression, venous sinus drainage, compression of the fourth ventricle, cervical myofascial, thoracic inlet release, bilateral rib raising, diaphragm doming, and pedal pump) provided by a Neuromusculoskeletal Medicine board-certified attending. Sham was omitted due to the pilot study design. Feasibility was evaluated by protocol adherence and data quality. Pre- to post-treatment sleep parameters were analyzed using Wilcoxon signed-rank test.

Results: Fitbits collected sleep data with minor lapses. Pre to post-treatment changes were significant for increases in total time asleep (12%, p=0.003), and for time in non-rapid eye movement (NREM) stages: N1 (23%, p=0.002), N2 (13%, p=0.018), N3 (12%, p=0.017), but not for REM sleep (10%).

Conclusions: The OMT protocol was delivered as intended with no adverse events and demonstrated a trend toward benefit in sleep quality through improved sleep parameters in a population known for poor sleep. Limitations include small sample size, short calibration period, and single treatment session. This pilot OMT protocol can further study sleep quality and its impact. ■