

Best uses of osteopathic manipulation

Osteopathic manipulative treatment helps patients with lower back pain. The evidence for its effectiveness with headaches and IBS, however, is less compelling.

Andrew H. Slattengren, DO; Tanner Nissly, DO; Jodi Blustin, MD; Andrew Bader, DO; Erin Westfall, DO
North Memorial Family Medicine Residency, University of Minnesota, Minneapolis (Drs. Slattengren, Nissly, and Blustin); Mankato Family Medicine Residency, University of Minnesota and Mayo Clinic, Mankato (Drs. Bader and Westfall)

aslatten@umn.edu

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PRACTICE RECOMMENDATIONS

► *Recommend osteopathic manipulative treatment to your patients with low back pain, as those who receive OMT have decreased pain, improved function, and use less medication.* (B)

► *Consider OMT as an adjunctive modality to decrease back-specific dysfunction in the third trimester of pregnancy.* (B)

Strength of recommendation (SOR)

- (A) Good-quality patient-oriented evidence
- (B) Inconsistent or limited-quality patient-oriented evidence
- (C) Consensus, usual practice, opinion, disease-oriented evidence, case series

Interest in osteopathy continues to rise in this country. Currently, more than 20% of medical students in the United States are training to be osteopathic physicians.¹ In addition, the 2007 National Health Interview Survey found that spinal manipulation was among the most common complementary and alternative medicine (CAM) therapies used; with 8.6% of US adults reporting that they used it within the previous 12 months.²

With the growing number of DOs and the high utilization of osteopathic manipulative treatment (OMT), it is important for all physicians to understand the role OMT can play in the treatment of conditions ranging from low back pain to irritable bowel syndrome so that patients may be offered, or referred for, the treatment when appropriate.

To clarify when OMT may be most beneficial, we performed a literature review. Our findings are summarized here. But first, a word about osteopathic medicine and what OMT entails.

Osteopathic physicians view the body as a whole

According to the American Osteopathic Association, “the osteopathic philosophy of medicine sees an interrelated unity in all systems of the body, with each working with the other to heal in times of illness.”³ This “whole-person approach to medicine” focuses on looking beyond symptoms alone to understand how lifestyle and environmental factors impact well-being.

As part of their education, DOs receive special training in the musculoskeletal system and in OMT. OMT is the process by which DOs use their hands to diagnose illness and injury and then mobilize a patient’s joints and soft tissues using techniques that include muscle activation, stretching, joint articulation, and gentle pressure to encourage the body’s natural tendency to heal itself.

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Meta-analyses show decreased pain and improved function in patients who received osteopathic manipulative treatment for low back pain.

These patients with low back pain will likely benefit

In the past, studies with small sample sizes, blinding issues, differing controls, and subjective outcome measurements have marred research efforts to demonstrate the effectiveness of OMT. More recently, researchers have attempted to minimize these issues, particularly when evaluating the efficacy of OMT for low back pain.

In addition to increasing sample size, studies have compared OMT to usual care, to sham manipulation, and more recently to other manual modalities including ultrasound to equalize the subjective effects of interventions.⁴ With improved study designs, there has been increased awareness of the effectiveness of spinal manipulation by organizations that develop guidelines for the care of patients with low back pain. The most recent clinical practice guideline from the American College of Physicians includes spinal manipulation as a treatment modality that should be considered by clinicians for patients who have acute, subacute, or chronic low back pain.⁵

■ **Chronic nonspecific low back pain.** Looking at OMT vs other interventions for chronic nonspecific low back pain, a 2014 meta-analysis found moderate quality evidence for clinically relevant effects of OMT on low back pain and function. In 6 studies that evaluated 769 patients with chronic nonspecific low back pain, there was a significant difference in pain—equivalent to a 1.5-point improvement (mean difference [MD]= -14.93; 95% confidence interval [CI], -25.18 to -4.68)—in favor of OMT compared with controls, as measured on a 10-point visual analogue scale (VAS).⁶ In all of the studies in this meta-analysis, the treating examiner used clinical judgment to determine which manipulation techniques would be most appropriate for each patient—an approach that best represents "real-world" osteopathic practice.⁶

■ **Acute and chronic nonspecific low back pain.** Similarly, in the same 2014 meta-analysis, 1141 participants with acute and chronic nonspecific low back pain in 10 studies had the equivalent of 1.3 points more pain relief with OMT compared with controls (MD= -12.91; 95% CI, -20.00 to -5.82).

The authors used the standardized mean difference (SMD), which is the difference in means divided by the standard deviation, to interpret the magnitude of difference in function between participants who received OMT and those in the control groups. Further, 1046 participants with acute and chronic nonspecific low back pain in 9 studies had a small improvement in functional status using the Roland-Morris Disability Questionnaire (RMDQ) or Oswestry-Disability Index (SMD= -0.36; 95% CI, -0.58 to -0.14).⁶

■ **A 2005 meta-analysis** that evaluated 6 randomized controlled trials (RCTs) involving 549 patients with low back pain found that 318 patients who received OMT had significantly less low back pain compared with 231 controls (effect size= -0.30; 95% CI, -0.47 to -0.13; *P*=.001).⁷ Although significant, an effect size of this magnitude is characterized as small.⁸

Other benefits of OMT include increased patient satisfaction, fewer meds

A randomized double-blind, sham-controlled study involving 455 patients with chronic low back pain compared outcomes of OMT to sham OMT applied in 6 treatment sessions over 8 weeks.⁹ Intention-to-treat analysis was performed to measure moderate and substantial improvements in low back pain at Week 12 ($\geq 30\%$ and $\geq 50\%$ pain reductions from baseline, respectively). Based on the Cochrane Back Review Group criteria for effect sizes, response ratios were calculated to determine if the differences seen were considered clinically relevant.¹⁰

Patients receiving OMT were more likely to achieve moderate (response ratio=1.38; 95% CI, 1.16-1.64; *P*<.001) and substantial (response ratio=1.41; 95% CI, 1.13-1.76; *P*=.002) improvements in low back pain at Week 12. The calculated number needed to treat (NNT) for moderate and significant improvement in pain at 12 weeks was 6 and 7, respectively. In addition, patients in the OMT group were more likely to be very satisfied with their care (*P*<.001) with an NNT of 5, and used fewer medications than did patients in the sham group during the 12 weeks of the study (use ratio=0.66; 95% CI, 0.43-1.00; *P*=.048; NNT=15).⁹

Pregnant women may benefit from OMT in the third trimester

A 2013 RCT involving 144 patients randomized to OMT, sham ultrasound, or usual obstetric care found that 68 patients (47%) experienced back-specific dysfunction during their third trimester of pregnancy (defined by a ≥ 2 -point increase in the RMDQ).¹¹

OMT reduced the risk of back-specific dysfunction by 40% vs the ultrasound group (relative risk [RR]=0.6; 95% CI, 0.3-1; $P=.046$) and 60% vs the usual obstetric care group (RR=0.4; 95% CI, 0.2-0.7; $P<.001$). The corresponding NNTs were 5.1 (95% CI, 2.7-282.2) for the OMT group vs the ultrasound group and 2.5 (95% CI, 1.8-4.9) vs the usual care group. The outcomes of this study were not conclusive because the initial RMDQ score was 1.8 points worse for the OMT group than for the usual care group.¹¹

■ **Subsequently, the PROMOTE** (Pregnancy Research on Osteopathic Manipulation Optimizing Treatment Effects) study involving 400 patients demonstrated that a standard OMT protocol was effective for decreasing pain and function deterioration compared with usual obstetric care.¹² However, results from the OMT group did not differ significantly from those of the ultrasound group, which were labeled as subtherapeutic in the study.¹²

■ **The most recent Cochrane Review** on low back pain in pregnancy noted that there was moderate quality evidence (due to study design limitations or imprecision) that OMT significantly reduced low back pain and function disability.¹³

OMT for other conditions? The evidence is limited

To date, studies on conditions other than low back pain have not demonstrated the same robust improvements in design as have those concerning low back pain (ie, larger sample sizes, comparisons to usual care and other treatments, etc.), and available data are not sufficiently significant to compel a change in clinical practice. Despite this, patients seek out, and receive, OMT as an alternative or adjunctive treatment for many conditions other than low back pain,² and family physicians

should be aware of the current evidence for OMT in those conditions.

OMT for acute neck pain: A comparison with ketorolac

Researchers randomized 58 patients presenting to 3 emergency departments with neck pain of less than 3 weeks' duration to receive either OMT or 30 mg IM ketorolac.¹⁴ OMT techniques were provided at the discretion of the physician based on patient needs. Patients rated their pain intensity on an 11-point numerical scale at the time of presentation and one hour after treatment. Patients receiving ketorolac or OMT had significant reductions in pain intensity with improvements of 1.7 +/- 1.6 (95% CI, 1.1-2.3; $P<.001$) and 2.8 +/- 1.7 (95% CI, 2.1-3.4; $P<.001$), respectively.

Although the pain reduction changes were statistically significant in both groups, the improvements were small enough to question if they were functionally significant. Compared to those receiving ketorolac, those receiving OMT reported a significantly greater decrease in their pain intensity (2.8 vs 1.7; 95% CI, 0.2-1.9; $P=.02$), but it's worth noting that the dose of ketorolac was half the recommended dose for moderate or severe pain.¹⁴

Patients may have more headache-free days with OMT

To assess the use of OMT to treat chronic migraine, researchers conducted a prospective, single-blind RCT in which 105 chronic migraine sufferers (average of 22.5 migraine days/month) were split into 3 treatment groups: OMT plus medications, sham OMT plus medications, and medications alone.¹⁵

OMT led to fewer days with migraines compared with the medication group (MD= -21.06; 95% CI, -23.19 to -18.92; $P<.001$) and sham OMT group (MD= -17.43; 95% CI, -19.57 to -15.29; $P<.001$), resulting in less functional disability ($P<.001$).¹⁵ Caution should be taken in interpreting the results of this small trial, however, as an effect of this size has not been replicated in other studies.

■ **A small (N=29) single-blind RCT** looked at progressive muscular relaxation with and without OMT for the treatment of



Patients who received osteopathic manipulative treatment for low back pain used fewer medications.

➤ Patients who received osteopathic manipulative treatment for acute neck pain had greater pain relief than those who received a small dose of IM ketorolac.

tension headache. Patients who completed relaxation exercises plus 3 sessions of OMT experienced significantly more headache-free days (1.79 vs 0.21; $P=.016$).¹⁶ Despite this finding, headache intensity and headache diary ratings were not different between the 2 groups in this study.

Postoperative OMT may decrease length of stay

In a retrospective study evaluating the effect of OMT on postoperative outcomes in 55 patients who underwent gastrointestinal surgery, a total of 17 patients who received a single OMT session within 48 hours of surgery had a mean time to flatus of 3.1 days compared with 4.7 days in the usual care control group ($P=.035$).¹⁷ The mean length of stay was 6.1 days in the OMT group and 11.5 days in the non-OMT group ($P=.006$).

Major limitations of this study include that it was retrospective in design and that only 17 of 55 patients had OMT performed, indicating a possible selection bias.

Pneumonia: OMT may reduce LOS and duration of antibiotic usage

The Multicenter Osteopathic Pneumonia Study in the Elderly (MOPSE), a double-blind RCT, looked at 406 patients ≥ 50 years hospitalized with pneumonia. Researchers randomized the group to receive either conventional care (CC; antibiotic treatment only), OMT and antibiotic therapy, or light-touch sham therapy with antibiotics.¹⁸ The researchers found no significant differences between the groups for any outcomes in the intention-to-treat analysis.

In results obtained from the per protocol analysis, however, the median length of stay for those in the OMT group was 3.5 days, compared with 4.5 days for those in the CC group (95% CI, 3.2-4.0; $P=.01$). Multiple comparisons also indicated a reduction in mean duration of intravenous antibiotic use of 3 days in the OMT group (95% CI, 2.7-3.5) vs 3.5 days in the CC group (95% CI, 3.2-3.9). The treatment endpoints of either death or respiratory failure occurred significantly less frequently in the OMT group compared with the CC group ($P=.006$).¹⁸

■ **A Cochrane review of RCTs** assessing the efficacy of adjunctive techniques compared with conventional therapy for patients with pneumonia revealed a reduction in hospital stay of 2 days (95% CI, -3.5 to -0.6) for patients who received OMT and positive expiratory pressure vs those who received neither intervention.¹⁹ Additionally, the duration of IV antibiotics and total duration of all (IV and oral) antibiotic treatment required in those treated adjunctively with OMT was shorter (MD for IV antibiotics= -2.1 days; 95% CI, -3.4 to -0.9 and MD for all antibiotics= -1.9 days; 95% CI, -3.1 to -0.7).¹⁹ The review was notable for a small sample size, with only 79 patients assessed.

OMT may improve IBS symptoms

A crossover study of 31 patients that compared visceral manipulation and sacral articulation OMT with sham therapy for the treatment of irritable bowel syndrome (IBS) demonstrated that OMT significantly decreased self-reported diarrhea ($P=.016$), abdominal distention ($P=.043$), abdominal pain ($P=.013$), and rectal sensitivity ($P<.001$), but did not significantly affect constipation.²⁰

■ **In another study**, researchers randomized 30 patients with IBS in a 2:1 distribution to OMT vs sham treatment.²¹ OMT included abdominal visceral techniques and direct and indirect spine techniques. All of the patients received 2 treatment sessions, and the researchers evaluated them at 7 and 28 days. At 7 days, both groups demonstrated a significant reduction in IBS symptoms, although the OMT group had significantly greater improvement ($P=.01$). At 28 days, however, neither group showed a significant reduction in symptoms.²¹

The lack of a control group (in the first study due to the crossover design), small sample sizes, and self-reported symptoms are major limitations to applying these studies to IBS treatment recommendations. **JFP**

CORRESPONDENCE

Andrew H. Slattengren, DO, Broadway Family Medicine Clinic, 1020 West Broadway Avenue, Minneapolis, MN 55411; aslatten@umn.edu.

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