Dynamic Chiropractic

What Works Best for Neck Pain: Manipulation, Exercise or Both?

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As clinicians, we have all observed many neck pain patients respond well to chiropractic care. Pressing questions for the chiropractic profession include: How effective are chiropractic adjustments for neck pain? Does the addition of exercise improve the benefits of adjustments for neck pain? What is the evidence?

Providers involved in managing spinal problems should be guided by the best available scientific evidence in order to minimize ineffective, excessively costly or even harmful procedures. In addition, adherence to recommendations from clinical practice guidelines and systematic reviews on the management of low back or neck pain is associated with improved clinical outcomes and decreased costs.[1] This year, two important reviews have been published in the journal *Manual Therapy*. The conclusions of these papers are helpful and enlightening for clinicians attempting to provide the most effective care possible for their neck pain patients.

Manipulation or Mobilization for Neck Pain: A Cochrane Review

The first of these valuable reviews is "Manipulation or Mobilization for Neck Pain: A Cochrane Review" by Anita Gross, et al.[2] This paper, a systematic review of the literature through July 2009, assessed if manipulation (SM) or mobilization (MO) as single-modal treatments improve pain, function/disability, patient satisfaction, quality of life, and global perceived effect in adults with neck pain with or without cervicogenic headache or radicular findings. Importantly, this review intentionally excluded studies that investigated multidisciplinary or combined therapies for neck pain, thus excluding any studies that included manipulation or mobilization in conjunction with exercise prescription or medications.

Of 68 randomized, controlled trials (RCTs) and 114 publications, 27 RCTs comprising 1,805 total subjects were selected. The selected studies represented 32 publications for manipulation or mobilization performed as a single-modal application for neck pain. One-third (33 percent) of the 27 trials were found to have a low risk of bias. The review authors noted that a significant limitation of all the studies reviewed was the small sample size of the experimental and control groups. All included trials were small, with less than 70 subjects on average per intervention arm.

For acute neck disorders (not including whiplash-associated disorders), the review authors noted a striking lack of high-quality evidence. For chronic, nonspecific neck pain, trials reviewed were sparse and inconclusive. In addition, there was a dearth of evidence for mobilization or manipulation for whiplash-associated disorders.

The review identified 16 trials of manipulation of the cervical region as the sole intervention, concluding the following:

- There is moderate-quality evidence (two trials, 369 total subjects) that cervical spinal manipulation produces similar changes in pain, function and patient satisfaction compared to mobilization for subacute or chronic neck pain at short- and intermediate-term follow-up. However, the benefits are not maintained over the long term.
- There is low-quality evidence (three trials, 130 total subjects) that cervical spinal manipulation alone versus a control may provide immediate- and short-term pain relief after one to four visits in subjects with acute or chronic neck pain.
- There is low-quality evidence (one trial, 25 subjects) that nine or 12 sessions of SM are superior to three sessions for pain relief and neck-related disability for chronic cervicogenic headache at immediate post-treatment follow-up. Larger dose-finding trials are needed to establish the optimal dose.
- There is very low quality evidence at short-term follow-up that one spinal manipulation technique is superior to another for pain reduction for subacute neck pain.
- Spinal manipulation is equivalent to certain medications (NSAIDs and amitriptyline, based on two trials, 69 total subjects), acupuncture (two trials, 81 total subjects), certain soft-tissue treatments (one trial, 53 subjects) or certain combined treatments for subacute and chronic neck pain and improved function.
- Spinal manipulation may be superior to TENS (one trial, 64 subjects) for individuals with chronic cervicogenic headache.
- Adverse events reported from RCTs were benign, transient side effects. The risk of a serious, irreversible complication (e.g., stroke) from cervical manipulations has been reported to vary considerably, from one adverse event in 3,020 to one in 1 million manipulations.

Manual Therapy and Exercise for Neck Pain: A Systematic Review

The second of the *Manual Therapy* literature reviews is Jordan Miller, et al.'s "Manual Therapy and Exercise for Neck Pain: A Systematic Review."[3] This Cervical Overview Group systematic review update assessed if manual therapy including manipulation (SM or mobilization) combined with exercise improves pain, function/disability, quality of life, global perceived effect, and patient satisfaction for adults with neck pain with or without cervicogenic headache or radiculopathy. Seventeen RCTs met the criteria for this review; major findings are summarized as follows:

- Manipulation or mobilization and exercise produce a greater long-term improvement in pain and global perceived effect when compared to no treatment for chronic neck pain, subacute/chronic neck pain with cervicogenic headache, and chronic neck pain with or without radicular findings.
- Manual therapy (SM or MO) and exercise produce greater short-term pain relief than exercise alone, but produce no long-term difference across multiple outcomes for neck pain of chronic and mixed duration with or without cervicogenic headache.
- The combination of manual therapy and exercise produces greater improvements in pain, function, quality of life and patient satisfaction when compared to SM or MO alone for chronic neck pain.
- SM or MO and exercise are favored over traditional care for reducing pain at short-term follow-up for acute whiplash-associated disorders, but may be no different at long-term follow-up for neck pain of chronic or mixed duration.
- The combination of manual therapy and exercise seems to produce greater short-term pain reduction than exercise alone and longer-term changes across multiple outcomes in comparison to manual therapy alone.
- There was insufficient evidence available to draw any conclusions for neck disorder with radicular findings.
- Adverse events: Side effects were reported in 18 percent (3/17) of trials. All side effects were

benign and transient including cervical pain, thoracic pain, headache, radicular symptoms and dizziness.
- The rate of rare but serious adverse events (strokes or serious neurological deficits) could not be established from this review.

Summary and Clinical Application of the Findings

The conclusions reached in these two systematic reviews indicate that the effects of cervical spinal manipulation and mobilization have similar short- and intermediate-term benefits, but not long-term effects. Furthermore, the combination of SM or MO and exercise provides more short-term pain relief than exercise alone and more long-term benefits across multiple outcome measures than SM or MO alone.

This corresponds with the conclusions drawn in the Council on Clinical Guidelines and Practice Parameters (CCGPP) chapter on managing low back pain,[4] which states: "Use of exercise in conjunction with manipulation is likely to speed and improve outcomes as well as minimize episodic recurrence." This conclusion is consistent with the findings of several other studies which suggest the benefit of the combination is greater than either exercise or spinal manipulation alone. And as was noted by the Task Force on Neck Pain and Its Associated Disorders, the best evidence synthesis suggests manual therapy (SM and/or MO) and exercise are more effective than other strategies for patients with neck pain.[5]

The results of the *Manual Therapy* studies offer clinicians a clear direction as to what course of care provides the best clinical outcomes for our patients. In addition, the conclusions note that SM or MO and exercise are preferred over traditional medical care for reducing pain at short-term follow-up for acute whiplash disorders. The findings also indicate that more visits (9-12) of SM are likely to be superior to less visits (three) for pain relief and disability for chronic cervicogenic headaches at post-treatment follow-up.

This suggests, along with another 2010 study by Haas, et al.,[6] and a related commentary,[7] that 16 visits of spinal manipulation may provide better benefit for chronic cervicogenic headache than eight visits; and that either eight or 16 visits of manipulation provide a better response than eight or 16 visits of light massage. The Haas, et al., study, along with two previous preliminary publications,[8-9] indicate that there may be a dose-response effect for spinal manipulation; that is, more visits may result in a better outcome than less visits. However, larger studies are needed to clarify this more definitively.

The finding that the beneficial outcomes derived from manipulation or mobilization for neck pain are greatly enhanced and substantially longer lasting when used in conjunction with exercise training offers chiropractors some reassurance and confidence in terms of how to provide effective patient management for neck problems. In addition, the conclusion that adverse events associated with manipulation and identified in individuals participating in the trials reviewed are benign and transient is reassuring.

Note that no participant in any of the studies discussed suffered a severe adverse event. This reinforces the notion that the risk-benefit ratio favors utilization of manipulation or mobilization. The findings of these two high-quality systematic reviews2-3 provide chiropractors with overview of the

recent evidence to assist them in developing effective treatment protocols for their neck pain patients. Manipulation or mobilization combined with exercise appears to be the most effective, conservative means of managing patients with neck pain and its associated disorders.

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OCTOBER 2010