

## Chiropractic Research in Review

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### Chiropractic Treatment of Lateral Epicondylitis

**Objective:** The purpose of this report is to describe the chiropractic management of a case of [lateral epicondylitis](#) with active release techniques (ART).

**Clinical Features:** A 48-year-old white man presented to a chiropractic clinic with a complaint of left lateral elbow pain that began 2 years previous with insidious onset. The patient reported an inability to play 18 consecutive holes of golf due to the pain.

**Intervention and Outcome:** Treatment consisted of 5 sessions of ART (a soft tissue technique that is applied to muscles, fascia, tendons, ligaments, and nerves) applied to the left elbow soft tissue over a duration of 3 weeks. The patient reported an absence of pain and ability to consistently play 18 consecutive holes of golf up to 3 times per week at 4 and 8 weeks post-treatment.

**Conclusion:** This patient with lateral epicondylitis responded favorably to chiropractic treatment using the application of ART, as demonstrated by reduced pain and increased functional outcomes.

**Source:** Gildedt JA, et al. Chiropractic treatment of lateral epicondylitis: A case report utilizing active release techniques. *J Chiro Med*, June 2014;13(2):104-109.

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### Cost / Benefit Analysis: Different Doses of SMT for Low Back Pain

**Objective:** The purpose of this analysis is to report the incremental costs and benefits of different doses of spinal manipulative therapy (SMT) in patients with chronic low back pain (LBP).

**Methods:** We randomized 400 patients with chronic LBP to receive a dose of 0, 6, 12, or 18 sessions of SMT. Participants were scheduled for 18 visits for 6 weeks and received SMT or light massage control from a doctor of chiropractic. Societal costs in the year after study enrollment were estimated using patient reports of health care use and lost productivity. The main health outcomes were the number of pain-free days and disability-free days. Multiple regression was performed on outcomes and log-transformed cost data.

**Results:** Lost productivity accounts for most societal costs of chronic LBP. Cost of treatment and lost productivity ranged from \$3398 for 12 SMT sessions to \$3815 for 0 SMT sessions with no

statistically significant differences between groups. Baseline patient characteristics related to increase in costs were greater age ( $P = .03$ ), greater disability ( $P = .01$ ), lower quality-adjusted life year scores ( $P = .01$ ), and higher costs in the period preceding enrollment ( $P < .01$ ). Pain-free and disability-free days were greater for all SMT doses compared with control, but only SMT 12 yielded a statistically significant benefit of 22.9 pain-free days ( $P = .03$ ) and 19.8 disability-free days ( $P = .04$ ). No statistically significant group differences in quality-adjusted life years were noted.

**Conclusions:** A dose of 12 SMT sessions yielded a modest benefit in pain-free and disability-free days. Care of chronic LBP with SMT did not increase the costs of treatment plus lost productivity.

*Source:* Vavrek DA, et al. Cost analysis related to dose-response of spinal manipulative therapy for chronic low back pain: outcomes from a randomized controlled trial. *J Manip Physiol Therapeutics*, June 2014;37(5):300-311.

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### Imaging for Occult Rib and Costal Cartilage Fractures

**Objective:** The purpose of this case series is to describe the use of diagnostic ultrasound (US) in the detection of occult rib and costal cartilage fractures presenting as chest wall pain to a chiropractic clinic.

**Clinical Features:** Three patients presented with chest wall pain and tenderness. Two of the patients presented with acute chest wall injury and 1 carried a previous diagnosis of [rib fracture](#) after trivial trauma 2 months earlier.

**Intervention and Outcomes:** Diagnostic US was selected as a non-ionizing imaging tool for these patients after negative digital radiography studies. All fractures were considered isolated as there was no associated injury, such as pneumothorax. Both of the acute cases were followed up to complete healing (evidence of osseous union) using US. All patients eventually achieved pain-free status.

**Conclusion:** In these cases, US was more sensitive than radiography for diagnosing these cases of acute rib and costal cartilage fractures. Early recognition of rib injury could avoid potential complications from local manipulative therapy.

*Source:* Mattox R, et al. Sonography of occult rib and costal cartilage fractures: a case series. *J Chiro Med*, June 2014;13(2):139-143.

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### Treating Neck Pain: Thoracic Thrust Manipulation vs. Non-Thrust Mobilization

**Objective:** The purpose of this study was to compare the effects of thoracic thrust manipulation vs thoracic non-thrust mobilization in patients with bilateral chronic mechanical [neck pain](#) on pressure pain sensitivity and neck pain intensity.

**Methods:** Fifty-two patients (58% were female) were randomly assigned to a thoracic spine thrust manipulation group or of thoracic non-thrust mobilization group. Pressure pain thresholds (PPTs) over C5-C6 zygapophyseal joint, second metacarpal, and tibialis anterior muscle and neck pain intensity (11-point Numerical Pain Rate Scale) were collected at baseline and 10?minutes after the intervention by an assessor blinded to group allocation. Mixed-model analyses of variance (ANOVAs) were used to examine the effects of the treatment on each outcome. The primary analysis was the group \* time interaction.

Results: No significant interactions were found with the mixed-model ANOVAs for any PPT (C5-C6:  $P > .252$ ; second metacarpal:  $P > .452$ ; tibialis anterior:  $P > .273$ ): both groups exhibited similar increases in PPT (all,  $P < .01$ ), but within-group and between-group effect sizes were small (standardized mean score difference [SMD]  $< 0.22$ ). The ANOVA found that patients receiving thoracic spine thrust manipulation experienced a greater decrease in neck pain (between-group mean difference: 1.4; 95% confidence interval, 0.8-2.1) than did those receiving thoracic spine non-thrust mobilization ( $P < .001$ ). Within-group effect sizes were large for both groups (SMD  $> 2.1$ ), and between-group effect size was also large (SMD = 1.3) in favor of the manipulative group.

Conclusions: The results of this randomized clinical trial suggest that thoracic thrust manipulation and non-thrust mobilization induce similar changes in widespread PPT in individuals with mechanical neck pain; however, the changes were clinically small. We also found that thoracic thrust manipulation was more effective than thoracic non-thrust mobilization for decreasing intensity of neck pain for patients with bilateral chronic mechanical neck pain.

Source: Salom-Moreno J, et al. Immediate changes in neck pain intensity and widespread pressure pain sensitivity in patients with bilateral chronic mechanical neck pain: a randomized controlled trial of thoracic thrust manipulation vs non-thrust mobilization. *J Manip Physiol Therapeutics*, June 2014;37(5):312-19.

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#### Anatomical Variations in a Patient With Neck Pain: Clinical Implications

Objective: The purpose of this paper is to present a case of a patient with neck pain, tinnitus, and headache in the setting of bilateral elongated styloid processes (ESP) and calcified stylohyoid ligaments (CSL), how knowledge of this anatomical variation and symptomatic presentation affected the rehabilitation management plan for this patient, and to discuss the potential relevance of ESPs and CSLs to carotid artery dissection.

Clinical Features: A 29-year-old male military helicopter mechanic presented for chiropractic care for chronic pain in the right side of his neck and upper back, tinnitus, and dizziness with a past history of right side parietal headaches and tonsillitis. Conventional radiographs showed C6 and C7 spinous process fractures, degenerative disc disease at C6/7, and an elongated right styloid process with associated calcification of the left stylohyoid ligament. Volumetric computerized tomography demonstrated calcification of the stylohyoid ligaments bilaterally.

Intervention and Outcome: Given the proximity of the calcified stylohyoid apparatus to the carotid arteries, spinal manipulation techniques were modified to minimize rotation of the neck. Rehabilitation also included soft tissue mobilization and stretching, corrective postural exercises, and acupuncture. An otolaryngologist felt that the symptoms were not consistent with Eagle syndrome and the tinnitus was associated with symmetric high frequency hearing loss, likely due to occupational noise exposure. Initially, the patient's symptoms improved but plateaued by the fifth visit.

Conclusion: Neck pain in the presence of ESPs and CSLs can be associated with Eagle syndrome, which can include ipsilateral head and neck pain,odynophagia, dysphagia, and cerebrovascular symptoms. This case, initially thought to be Eagle syndrome, highlights proper diagnostic workup for this condition and presents potential contraindications to consider with regard to cervical spine manipulation in such patients. Manual therapy precautions pertaining to cervical spine manipulation may be appropriate in cases involving ESPs and calcified stylohyoid ligaments.

*Source:* Green BN, et al. Elongated styloid processes and calcified stylohyoid ligaments in a patient with neck pain: implications for manual therapy practice. *J Chiro Med*, June 2014;13(2):128-133.

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