

# JMPT Abstracts for Nov/Dec 2004

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Editorial Staff

Defining the effect of cervical manipulation on vertebral artery integrity: establishment of an animal model.

*Gregory N. Kawchuk, DC, PhD; Shari Wynd, DC; Todd Anderson, MD*

**Background:** Cervical spine manipulation is most often performed to affect relief of musculoskeletal complaints of the head and neck. Performed typically without complication, this modality is thought to be a potential cause of cerebrovascular injury, although a cause-effect relation has yet to be established. To explore this relation, an experimental platform is needed that is accessible and biologically responsive.

**Objective:** To establish an animal model capable of accommodating (1) direct study of its vertebral arteries and (2) creation of controlled interventions simulating arterial injury.

**Study Design:** Descriptive.

**Methods:** Under fluoroscopic guidance, an ultrasonic catheter was inserted into the left vertebral artery of 3 anesthetized dogs. The ultrasonic probe was then drawn proximally through the artery at a specific rate, and cross-sectional images of the vessel were collected. These images were then reconstructed to provide a variety of 2- and 3-dimensional representations of the vessel. This procedure was repeated after the overinflation and/or displacement of an angiographic balloon within the vertebral artery itself.

**Results:** The resulting ultrasonic images were able to delineate the structural layers that constitute the vertebral artery. Analysis of 2- and 3-dimensional reconstructions before and after angiographic intervention revealed the creation of discrete vascular injuries (aneurysm or dissection).

**Conclusions:** For the first time, an animal model has been established that permits direct interrogation of the internal structures of the vertebral artery. This model can also be manipulated to create "preexisting" vascular injuries that are thought to be possible prerequisites for cerebrovascular injury associated with manipulation. As a result, an experimental platform has been established that is capable of providing investigators of all backgrounds with the ability to quantify biologic and mechanical outcomes of cervical manipulation.

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Dose response for chiropractic care of chronic cervicogenic headache and associated neck pain: a randomized pilot study.

*Mitchell Haas, DC; Elyse Group, PhD; Mikel Aickin, PhD; Alisa Fairweather, MPH; Bonnie Ganger; Michael Attwood; Cathy Cummins, DC; Laura Baffes, DC*

**Objective:** To acquire information for designing a large clinical trial and determining its feasibility

and to make preliminary estimates of the relationship between headache outcomes and the number of visits to a chiropractor.

Design: Randomized, controlled trial.

Setting: Private practice in a college outpatient clinic and in the community.

Subjects: Twenty-four adults with chronic cervicogenic headache.

Methods: Patients were randomly allocated to 1, 3, or 4 visits per week for 3 weeks. All patients received high-velocity low-amplitude spinal manipulation. Doctors of Chiropractic could apply up to 2 physical modalities at each visit from among heat and soft-tissue therapy. They could also recommend modification of daily activities and rehabilitative exercises. Outcomes included 100-point Modified Von Korff pain and disability scales, and headaches in last 4 weeks.

Results: Only 1 participant was insufficiently compliant with treatment (3 of 12 visits), and 1 patient was lost to follow-up. There was substantial benefit in pain relief for 9 and 12 treatments compared with 3 visits. At 4 weeks, the advantage was 13.8 ( $P = .135$ ) for 3 visits per week and 18.7 ( $P = .041$ ) for 4 visits per week. At the 12-week follow-up, the advantage was 19.4 ( $P = .035$ ) for 3 visits per week and 18.1 ( $P = .048$ ) for 4 visits per week.

Conclusion: A large clinical trial on the relationship between pain relief and the number of chiropractic treatments is feasible. Findings give preliminary support for the benefit of larger doses, 9 to 12 treatments, of chiropractic care for the treatment of cervicogenic headache.

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Radiographic anomalies that may alter chiropractic intervention strategies found in a New Zealand population.

*Randy W. Beck, DC, PhD; Kelly R. Holt, BSc; Marina A. Fox, BSc; Kristin L. Hurtgen-Grace, DC*

Objective: To provide occurrence rates for anomalies discovered on radiographs in patients seeking chiropractic care.

Methods: One thousand four random patient files dated between 1997 and 2001 were obtained from the records of the outpatient clinic at the New Zealand College of Chiropractic. In cases in which radiographs were taken, the radiographic reports were analyzed by the authors for the presence of a number of anomalies.

Results: Eight hundred forty-seven full-spine radiographs were included in the study. Anomalies were found in 68% of patients who had radiographs taken. The 5 most frequently occurring anomalies, in descending order, were degenerative joint disease (23.8%), posterior ponticle (13.6%), soft-tissue abnormalities (13.5%), transitional segments (9.8%), and spondylolisthesis (7.8%). Other noteworthy occurrences because of their generalized status as absolute contraindications to adjustment were fracture (6.6%), malignant tumor (0.8%-3.1%), abdominal aortic aneurysm (0.8%) and atlantoaxial instability (0.6%).

Conclusion: A large percentage of patients presenting for chiropractic care have anomalies present on spinal radiographs. Further research and analysis is necessary to investigate the risk-benefit ratio of spinal radiographs for chiropractic patients.

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Incorporating nerve-gliding techniques in the conservative treatment of cubital tunnel syndrome.

*Michel W. Coppieters, PhD; Katrien E. Bartholomeeusen, PT; Karel H. Stappaerts, PhD*

**Objective:** To discuss the diagnosis and treatment of a patient with cubital tunnel syndrome and to illustrate novel treatment modalities for the ulnar nerve and its surrounding structures and target tissues. The rationale for the addition of nerve-gliding techniques will be highlighted.

**Clinical Features:** Two months after onset, a 17-year-old female nursing student who had a traumatic onset of cubital tunnel syndrome still experienced pain around the elbow and paresthesia in the ulnar nerve distribution. Electrodiagnostic tests were negative. Segmental cervicothoracic motion dysfunctions were present, which were regarded as contributing factors hindering natural recovery.

**Intervention and Outcomes:** After 6 sessions consisting of nerve-gliding techniques and segmental joint manipulation, and a home exercise program consisting of nerve gliding and light free-weight exercises, a substantial improvement was recorded on both the impairment and functional level (pain scales, clinical tests, and Northwick Park Questionnaire). Symptoms did not recur within a 10-month follow-up period, and pain and disability had completely resolved.

**Conclusions:** Movement-based management may be beneficial in the conservative management of cubital tunnel syndrome. As this intervention is in contrast with the traditional recommendation of immobilization, comparing the effects of both interventions in a systematic way is an essential next step to determine the optimal treatment of patients with cubital tunnel syndrome.

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Patient with metastatic adenocarcinoma imitating lumbar herniated nucleus pulposus.

*Richard E. Erhard, DC, PT; Brian Patrick Egloff, MPT, MS*

**Objective:** To highlight the utility of Cyriax's selective tissue-tensioning principles, specifically the "Sign of the Buttock," in identifying mechanical behavior of pain of pathologies not amenable to conservative treatment.

**Clinical Features:** A 41-year-old man was referred to the University of Pittsburgh Medical Center Spine Specialty Center with a diagnosis of L5-S1 herniated nucleus pulposus that was recalcitrant to treatment. The onset of symptoms had been 5 months before the patient's appointment at the Spine Center and 6 months after an apparent precipitating trauma. The patient had been followed up by his primary care physician, referred to urology, neurosurgery, and physical medicine and rehabilitation before being referred to the Spine Specialty Center.

**Intervention and Outcome:** Clinical examination using Cyriax's Sign of the Buttock implicates the hip joint, while it helps to rule out the lumbar spine. Review of previous imaging studies failed to rule out hip pathology. Pelvis and hip magnetic resonance imaging led to suspicion of lytic lesions, and a diagnosis of metastatic adenocarcinoma was made via biopsy.

**Conclusion:** We have found Cyriax's Sign of the Buttock to have diagnostic value in this case. When positive, this test may help identify serious extracapsular hip or pelvic pathology.

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Chiropractic high-velocity low-amplitude spinal manipulation in the treatment of a case of postsurgical chronic cauda equina syndrome.

*Anthony J. Lisi, DC; Mukesh K. Bhardwaj, DC*

**Objective:** To present an evidence-based case report on the use of chiropractic high-velocity low-

amplitude spinal manipulation in the treatment a postsurgical, chronic cauda equina syndrome patient.

**Clinical Features:** A 35-year-old woman presented with complaints of midback pain, low back pain, buttock pain, saddle anesthesia, and bladder and bowel incontinence, all of 6 months duration. The patient was 6 months post emergency surgery for acute cauda equina syndrome due to lumbar disc herniation. She had been released from neurosurgical care with the current symptoms considered to be residual and nonprogressive.

**Intervention and Outcome:** The patient was treated with high-velocity low-amplitude spinal manipulation and ancillary myofascial release. After 4 treatments, the patient reported full resolution of midback, low back, and buttock pain. The patient was seen another 4 times with no improvement in her neurologic symptoms. No adverse effects were noted.

**Conclusion:** This appears to be the first published case of chiropractic high-velocity low-amplitude spinal manipulation being used for a patient with chronic cauda equina syndrome. It seems that this type of spinal manipulation was safe and effective for reducing back pain and had no effect on neurologic deficits in this case.

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#### ONLINE EXCLUSIVE

Management of a chronic lumbar disk herniation with chiropractic biophysics methods after failed chiropractic manipulative intervention.

*G. Phillip Paulk, DC; Deed E. Harrison, DC*

**Objective:** To discuss the use of chiropractic biophysics methods in the treatment and rehabilitation of a patient with a chronic disk herniation at the L5-S1 disk, retrolisthesis of L5, and a reduced lumbar lordosis.

**Clinical Features:** A 23-year-old woman suffered from chronic unremitting symptoms of lower back pain and left-leg pain. She was treated five years prior, without relief. Diagnosis at that time was low-back pain and lumbar subluxation. Approximately 3 years later, she was evaluated by an orthopedic surgeon. Magnetic resonance imaging showed a moderate posterior disk protrusion at L5-S1 with degeneration.

**Intervention and Outcome:** Chiropractic treatment of this patient consisted of mirror-image chiropractic adjustments, 3-point bending lumbar extension traction, and postural exercises. The patient responded well with a complete resolution of her symptoms and a restoration of her lumbar lordosis.

**Conclusion:** This article suggests that successful management of chronic low-back pain symptoms may require a close analysis of a patient's postural deviations and sagittal plane curves. This study suggests that it is possible to restore lumbar lordosis in some cases and this may have an unforeseen benefit to the patient. Further study is warranted into the treatment of chronic low back pain with chiropractic biophysics methods.

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#### ONLINE EXCLUSIVE

Rotator cuff impingement.

*Mario Pribicevic, M.Chiropractic, MSc(candidate); Henry Pollard, GradDipChiro, GradDipAppSc, MSportSc, PhD*

**Objective:** To present a case of shoulder impingement syndrome managed with a conservative multimodal treatment approach.

**Clinical Features:** A patient had anterior shoulder pain and a diffuse ache in the right upper arm, with tenderness in the shoulder region on palpation. Shoulder range of motion was limited with pain and catching, coupled with limited and painful cervical motion. After physical and orthopedic examination, a clinical diagnosis of shoulder impingement syndrome was made.

**Interventions and Outcome:** The patient underwent a multimodal treatment protocol including soft tissue therapy, phonophoresis, diversified manipulation; and rotator cuff and shoulder girdle muscle exercises. Outcomes included pain measurement; range of motion of the shoulder, and return to normal daily, work, and sporting activities. At the end of the treatment protocol the patient was symptom free with all outcome measures normal. The patient was followed up at 4 and 12 weeks and continued to be symptom free with full range of motion and complete return to normal daily and pre-treatment activities.

**Conclusion:** This case report shows the potential benefit of a multimodal chiropractic protocol in resolving symptoms associated with shoulder impingement syndrome.

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