EDITORS PERSPECTIVE

The Existence and Clinical Meaningfulness of Vertebral Subluxations

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One of the more controversial issues involving chiropractic is the existence and meaning of vertebral subluxation. A few people maintain there is no evidence for subluxations and even go so far as to give the impression that "belief" in the vertebral subluxation is limited to some "fringe" group within the chiropractic profession. Nothing could be further from the truth.

In the United States alone, there is ample support that the vertebral subluxation is a very a real and verifiable entity. State laws, the US Federal Government, the Foundation for Vertebral Subluxation, the Council on Chiropractic Practice, the International Chiropractor's Association, the American Chiropractor's Association, the Federation of Straight Chiropractic Organizations, and the Association of Chiropractic Colleges ***all*** define the responsibility of chiropractors as the detection and correction of vertebral subluxation and its resultant neurological interference.

The chiropractic guideline document: *Vertebral Subluxation in Chiropractic Practice*, produced by the Council on Chiropractic Practice CCP) was reviewed by an independent research agency (ECRI) which is a Collaborating Center of the World Health Organization. Based on this review it was accepted for inclusion in the National Guideline Clearinghouse of the Agency for Health Care Policy and Research of the United States Federal Government.[1-3]

The CCP and its official published documents were accepted for inclusion in the Healthcare Standards Database and the printed version of the *Healthcare Standards: Official Directory*. Healthcare Standards is a comprehensive list of published standards, guidelines recommendations, position papers, policy statements, technology assessments, and other authoritative documents. This is the World Health Organization's official healthcare standards and guidelines archive. The existence of subluxation is in accordance with the published paradigm statement of The Association of Chiropractic Colleges, which was accepted and signed by every Chiropractic College President in North America.[4-6] This statement has been endorsed and/or adopted by every major national and international chiropractic organization in the chiropractic profession including:

- The Foundation for Vertebral Subluxation
- The Council on Chiropractic Education
- The International Chiropractor's Association
- The American Chiropractor's Association
- The World Federation of Chiropractic
- The Congress of Chiropractic State Associations
- The Association of Chiropractic Colleges
- The Foundation for Chiropractic Education & Research
- The Council on Chiropractic Practice
- The Federation of Chiropractic Licensing Boards
- National Board of Chiropractic Examiners
- The National Association of Chiropractic Attorneys

The ACC defines the purpose, principles and practice of chiropractic as the finding and reduction of vertebral subluxations, which will prevent and restore health by removing interference to the body's inherent recuperative powers. This document, among other things, states that chiropractic as a profession "focuses particular attention on the subluxation."

The assessment and management of vertebral subluxation is either taught as part of the regular curriculum of chiropractic colleges in North America or as part of their post graduate programs. All of these programs, including the general curriculum of the chiropractic colleges and the post graduate programs, are approved and Accredited by the Council on Chiropractic Education which is subject to the rules and authority of the United States Federal Government's Department of Education. These schools also hold accreditation through various local and regional accrediting bodies. The Council on Chiropractic Education, mentioned above, accredits all of the chiropractic programs in the United States and has reciprocal arrangements with accrediting bodies in Europe and Australia. According to the Policies document of the CCE[7]

> "The Council on Chiropractic Education (CCE) accepts the physiological principles of organization in living things and the manifestation of the self-regulatory mechanisms inherent in the body.
>
> CCE accepts that the nervous system is vulnerable to disturbances resulting from derangements of the neurobiomechanical system, including the vertebral column and vertebral subluxations.
>
> The educational process should be a reinforcement of the validity of the basic principles of chiropractic and an encouragement to the student to apply those principles in his or her clinical programs, with emphasis given to detection and correction of derangements of the neurobiomechanical system, including vertebral subluxation."

The American Medical Association, in its *Guides to the Evaluation of Permanent Impairment,* lists the following as acceptable means to rate impairment:[8]

- Impairment due to loss of muscle power and motor function,
- Impairment due to abnormal motion of the spine,
- Impairment due to loss of motion segment integrity,
- Impairment due to disc problems,
- Impairment due to pain or sensory deficit,
- Impairment due to segmental instability.

These are, in fact, components of the Vertebral Subluxation Complex.

The Guidelines for Evaluation and Management Services published by the Health Care Financing Administration of the United States Federal Government and the American Medical Association (May 1997) outline what an objective examination should consist of and these include commonly used neuromusculoskeletal exam procedures within chiropractic such as: postural analysis, palpation, assessment for subluxation, range of motion and assessment of muscle tone. All of these are used to assess and manage subluxation.[9]

The Federal Government of the United States specifically defines what chiropractors do as the detection and correction of subluxation under Medicare and Federal worker's compensation laws. Common to all state statutes is the adjustive process being utilized to reduce subluxations and the resultant interference to nerve transmission. No less than 38 states employ the term adjustment in licensing laws in reference to the procedures applied by chiropractors. Eighteen state statutes additionally include the concept of manipulation, 34 states contain specific references to responsibility for neurological complications of biomechanical origin (subluxation) and over half the chiropractic profession practice in these states. In addition, 11 states specifically discuss the concept of subluxation in their statutes by using the term and for those that do not specifically use the term there is an implied understanding of the concept in their statutes.

The existence of subluxation and its acceptance is spelled out in explicit detail by published policy statements of chiropractic organizations as well as federal and state laws regulating the practice of chiropractic. The epidemiology of subluxation has been researched since the inception of chiropractic over 100 years ago with basic science and clinical research to further elucidate the nature of it continuing to this day.

A few individuals within the profession contend that the existence of subluxation is questionable and have chided the profession for not addressing their contention. While most acknowledge that certain individuals and groups within the profession do make such an assertion, such contentions are not taken seriously. The above review of the subluxation within the chiropractic profession, government, state law, chiropractic educational bodies and scientific literature serves as evidence of its entrenched status. Further, according to Rome there are 296 variations and synonyms of subluxation used by medical, chiropractic and other professions leading him to remark "It is suggested that with so many attempts to establish a term for such a clinical and biological finding, an entity of some significance must exist."[10]

According to Kent's paper *Models of Vertebral Subluxation* the term subluxation has a long history in the healing arts literature and it may be used differently outside of the chiropractic profession.[11] The earliest non-chiropractic English definition is attributed to Randall Holme in 1668. Holme defined subluxation as "a dislocation or putting out of joint." [11] In medical literature, subluxation often refers to an osseous disrelationship which is less than a dislocation. However, B.J. Palmer, the developer of chiropractic, hypothesized that the "vertebral subluxation" was unique from the medical use of the term "subluxation" in that it also interfered with the transmission of neurological information independent of what has come to be recognized as the action potential. Since this component has yet to be identified in a quantitative sense, practitioners currently assess the presence and correction of vertebral subluxation through parameters which measure its other components.[11] These may include some type of vertebral biomechanical abnormality, soft tissue insult of the spinal cord and/or associated structures and some form of neurological dysfunction involving the synapse separate from the transmission of neurological information referred to by Palmer.[11]

As noted, chiropractic definitions of subluxation include a neurological component. In this regard, Lantz stated "common to all concepts of subluxation are some form of kinesiological dysfunction and some form of neurological involvement."[12-14] In the position paper of The Association of Chiropractic Colleges they define subluxation as follows:

> "A subluxation is a complex of functional and/or structural and/or pathological articular changes that compromise neural integrity and may influence organ system function and general health."

The ACC goes on to state:

> "A subluxation is evaluated, diagnosed, and managed through the use of chiropractic procedures based on the best available rational and empirical evidence."

Other concepts of vertebral subluxation consider it consequent to a neurological response to physical, emotional, or environmental stress. The neurological response may precipitate or be precipitated by misalignment(s) between articulations of the spinal column or its immediate weight bearing components of the axial skeleton. The integrity of the nervous system is diminished as changes occur in morphology/oscillation/tension of the tissues occupying the neural canal and/or intervertebral foramina.

In a survey of North American Chiropractors completed by the Institute for Social Research at Ohio Northern University and published in 2003 their research found that:

- 88.1% of chiropractors stated that the term vertebral subluxation complex should be retained.
- 89.8% stated the adjustment should not be limited to musculoskeletal conditions.
- The respondents rated the subluxation as a significant contributing factor in 62.1% of visceral ailments.
- 93.6% recommend maintenance/wellness care
- 76.5% Teach a relationship between spinal subluxations and visceral health
- 88.6% stated thermography was appropriate for use in practice

The researchers concluded that any differences in practitioners' attitudes were associated with four variables:

- The chiropractic college attended
- Whether or not the chiropractor had chiropractic treatment prior to college
- The number of patients the chiropractor treats each week
- The chiropractors self rated philosophy (broad, middle or focused scope)

They further concluded:

"The profession as a whole presents a united front regarding the subluxation and adjustment."[15]

The Natural History of Vertebral Subluxation

Another claim that is occasionally heard is that the natural history of vertebral subluxation is unknown. In fact, we know a great deal about the natural history of vertebral subluxation.[16-17] This knowledge is based on a combination of basic science, clinical research, technique, objective assessment of physiological function/structural changes and quality of life issues. These parameters overlap with various models of vertebral subluxation that practitioners choose to address in clinical practice. In this regard there are two components of subluxation that are common to all models. These components are *Kinesiopathology* and *Neuropathology*.

Kinesiopathology deals with issues related to misalignment and/or abnormal motion and neuropathology deals with the neurological changes related to the abnormal motion and/or misalignment.

In discussing kinesiopathology the most significant basic science information relative to this is Wolf's Law, which states:

> As bones are subjected to stress demands in weight bearing posture, they will model or alter their shape accordingly.[18]

Wolf's Law has a less well-known corollary for soft tissue called: Davis' Law that states:

> Soft tissue will model according to imposed demands.[19]

These two Laws form the foundation of the rheology associated with subluxation and these rheological properties are essential elements in the epidemiology and natural history of vertebral subluxation, which must be considered with regards to care planning, especially in regards to those involving structural changes. Rheology is the study of the change in form and the flow of matter including elasticity, viscosity and plasticity. The longer a subluxation is allowed to set in the further along the path of immobilization degeneration the subluxation is allowed to progress.

The extent of immobilization degeneration and the patient's individual ability to reverse it may be a determining factor in the frequency of the initial care plan and its duration. This will also affect long term care whether from a palliative or wellness perspective once a substantial correction has been made.

The other significant basic science issue related to frequency and duration of care has to do with neuroplasticity. This has to do with the nervous system's propensity to undergo "plastic" changes and learn to habituate a response and is a fundamental aspect of the nature of self-regulating repair processes that use the plasticity of the nervous system as its conduit. In order to overcome plastic neurological changes that have set in secondary to subluxation the nervous system will need to "rewire" in order to create new plastic changes for the better. This may necessitate frequent adjustments and other inputs into the CNS over a long duration in order to make these changes.

This neuroplasticity and the accompanying rheological changes discussed above secondary to subluxation are what need to be overcome in order for the patient to have a reduction in vertebral subluxation.

The natural history of spinal degeneration secondary to pathoanatomical aberrations is well entrenched, not only in the chiropractic literature, but also within the broad domains of biomechanics and spinal pathology.

Conclusion

This brief review is clearly not meant as a comprehensive undertaking relative to the epidemiology and nature of vertebral subluxation. Further, the forgoing is not meant to suggest that the scientific questions regarding vertebral subluxation are settled – they are not. We are in desperate need of studies that explore the clinical meaningfulness of subluxation. And the onus is on those chiropractors and

groups who purport to practice and promote a subluxation focused method that need to urgently step up to the plate and support the funding of such studies. While some might attempt to relegate subluxation to history or to suggest that there is no evidence to support its clinical management these individuals or organizations do so in direct contradiction of science and policy.

Unfortunately those individuals and organizations are at times a controlling individual or faction within the profession. Until and unless the rank and file practitioner begins to take a stand and push back against the efforts by these rogues within the profession their policies will become entrenched – indeed in many cases they already are.

References

1. Council on Chiropractic Practice Clinical Practice Guideline (Number 1) Vertebral Subluxation in Chiropractic Practice: Abbreviated Version Council on Chiropractic Practice JVSR Vol 2 # 3.
2. Council on Chiropractic Practice Clinical Guideline Number One: Vertebral Subluxation in Chiropractic Practice. Council on Chiropractic Practice, Chandler, AZ 1995
3. Council on Chiropractic Practice Clinical Guideline Number One: Vertebral Subluxation in Chiropractic Practice. Council on Chiropractic Practice, Chandler, AZ Update and Revision. 2003.
4. The Chiropractic Paradigm. The Association of Chiropractic Colleges 2001 *The Journal of Chiropractic Education,* Fall 2001, Volume 15, Number 2, pages 51-52
5. Phillips, R.B. The Chiropractic Paradigm. *Today's Chiropractic.* November/December 1996.
6. McCoy, M. The ACC Paradigm - Something We Can All Agree Upon? *JVSR* April 3, 2003, p 1-4
7. Policies of the Council on Chiropractic Education. January 2001. The Council on Chiropractic Education. Scottsdale, Arizona.
8. Guides to the Evaluation of Permanent Impairment 4th Edition. American Medical Association
9. Guidelines for Evaluation and Management Services. Health Care Financing Administration & The American Medical Association. May 1997.
10. Rome PL. Usage of chiropractic terminology in the literature: 296 ways to say "subluxation": complex issues of the vertebral subluxation. *Chiropractic Technique* 1996; 8(2):49
11. Kent C., Models of Vertebral Subluxation. *Journal of Vertebral Subluxation Research*. Vol 1. No. 1 August 1996.
12. Gatterman, M I, ed. Foundations of Chiropractic Subluxation. St.Louis, MO: Mosby, 1995.
13. Lantz CA. The vertebral subluxation complex part 1: an introduction to the model and the kinesiological component. *Chiropractic Research Journal* 1989; 1(3):23.
14. Lantz CA. The vertebral subluxation complex part 2: The Neuropathological and Myopathological Components. *Chiropractic Research Journal* 1990; 1(4).
15. McDonald et al. How Chiropractors Think and Practice. The Survey of North American Chiropractors. Institute for Social Research. Ohio Northern University. 2003.
16. Harrison, D. A Normal Spinal Position: Its Time to Accept the Evidence. *Journal of Manipulative and Physiological Therapeutics* Volume 23. Number 9. November/December 2000
17. Harrison D.E., Calliet R., Harrison, D.D., Troyanovich, S.J., Harrison, S.O., Review of the Biomechanics of the Central Nervous System. Parts I, II, and III. *JMPT* Vol 22. No's. 4, 5 and 6.
18. Wolff J; Maquet P, Furlong R, trans. The Law of Bone Remodelling. Berlin, Germany: Springer-Verlag; 1986.
19. Functional Progressions for Sport Rehabilitation by Steven R. Tippett, MS,PT,SCS,ATC, and Michael L. Voight, MED,PT,SCS,OCS,ATC. Published by Human Kinetics, Champlain, IL. Copyright 1995.