

■ The Chiropractic Subluxation: Implications for Manual Medicine

While I was teaching an online course that reviews the history and development of manual medicine, one of the issues discussed in the course material caught my interest: the concept of subluxation as the central defining tenet of chiropractic^{1,2}. Reading more on this topic, I came to believe that an understanding of this concept has implications for chiropractors and non-chiropractic manual medicine practitioners alike, especially where it relates to interprofessional cooperation and a manual medicine research agenda.

As reported by Terrett³, Hieronymus in 1764 was the first to characterize subluxation by the presence of lessened motion of the joints, slight changes in the position of the articulating bones, and pain. Hieronymus also noted that most displacements of vertebrae were not dislocations but rather subluxations³. The use of the term “subluxation” by D.D. Palmer as incomplete luxations with articular surfaces slightly displaced in the relative position they occupied towards each other⁴ differed from the allopathic definition of the time, but only in that the founder of chiropractic attributed vast and comprehensive disease-generating capacities to the vertebral subluxation¹. Not that he was the first to do so; around 1820, a medical physician by the name of Harrison postulated a pathophysiological connection between spinal subluxations and visceral disease. He even adjusted vertebrae by pressing on the spinous and transverse processes³. At about the same time, another physician named Brown popularized the concept of “spinal irritation.” He noted how a shared nerve supply could implicate the spine in visceral disease and nervous conditions, which led him to target the spine with non-manipulative interventions^{3,5}. However, by the time Palmer discovered chiropractic, these theories had fallen out of favor with the allopathic community.

Palmer’s original theory held that all disease was the result of inflammation that was caused by arteries, veins, nerves, muscles, bones, ligaments, joints, or any other anatomical structure displaced from its normal position⁶. This theory was later reduced (possibly to make chiropractic more distinct from osteopathy and prevent legal prosecution for practicing osteopathic medicine without a license) from any displaced anatomical part to exclusively joints of the body. Palmer especially emphasized vertebral subluxations hypothesized to pinch nerve roots in vertebral foramina, thus affecting neural impulses to the target organs⁶. Palmer later further refined his theory by stating that vertebral subluxations did not pinch nerves in the spinal foramina but rather that they altered the tension of the nerves, affecting what he called the “vibrational impulse” carried along the nerves, thereby affecting end organs^{4,6}. However, it was the second theory of nerve impingement due to subluxation that Palmer’s son B.J. Palmer adopted and promoted using the appealing “foot-on-the-hose” analogy². The younger Palmer later stated that subluxation only occurred between the atlas and either the occiput or the axis and that all other vertebrae were only malaligned². His upper cervical “hole-in-one” adjustments were the logical consequence of this shift in subluxation theory⁶.

Both Palmers were proponents of the segmental approach to subluxation, supporting the “bone-out-of-place” hypothesis^{1,6,7}. Carver was the first to promote a structural approach with multi-level subluxations in spinal distortion patterns⁷. The structural approach is still emphasized today in those schools of chiropractic thought that emphasize levelling the pelvis by adjusting the sacroiliac joints⁶. The older Palmer detected subluxations by way of static palpation looking for misalignment⁸. Gillet developed the theory of spinal fixation; its identification by way of motion palpation added yet another dimension to the concept of subluxation^{7,9}.

Currently, several theoretical models are in use within the chiropractic profession that define

the subluxation concept¹⁰. The Association of Chiropractic Colleges (ACC) provided a consensus definition^{11,12} that describes the chiropractic subluxation as "...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 American Chiropractic Association (ACA) adopted a seemingly comprehensive classification of subluxations (Table 1)⁹. This ACA classification clearly shows how over time the historically opposing segmental and structural approaches have been integrated and how an initially static view has been augmented with a dynamic approach to the concept of subluxation. Another current theoretical model is that of the vertebral subluxation complex (VSC). Originally encompassing aspects of kinesiopathology, neuropathology, myopathology, histopathology, and biochemical abnormalities, later versions of the VSC model also included connective tissue pathology, vascular abnormalities, inflammation, anatomy, and physiology leading to as many as nine different components to this model^{2,9}. Clusserath¹³ noted that there are, in fact, three distinct theoretical subluxation models in use in chiropractic today:

1. A model without reference to traditional chiropractic vitalistic concepts such as Innate and Universal Intelligence. This model defines a subluxation as a manipulable lesion to be corrected solely for the purpose of clinical improvement measurable with reliable and valid tests and measures.

2. The VSC model, which seems to be an attempt at integrating the evidence-based practice component of the first model with traditional chiropractic vitalistic theories. In this model, subluxation correction intends to affect the (five to nine) different components theoretically related within this model to the presence of a subluxation. Symptomatic improvement is hypothesized to occur secondary only to VSC correction.

3. A subluxation model where the existence of the subluxation is accepted as a non-falsifiable premise. In this model, reduction of the subluxation is not necessarily coupled to symptomatic improvement but rather to removal of nerve interference due to said subluxation.

The subluxation concept is the central defining concept of chiropractic. At the same time, it is also the source of continuous debate and at times vehement philosophical disagreement within the profession¹. The ACC consensus definition has been criticized as insufficiently specific with regards to the exact nature of the changes that are associated with the presence of a subluxation^{1,8,10}. Keating⁸ noted how the *a priori* assumption of the existence of the subluxation in the ACC definition is a form of dogma. He also noted that the implication that scientifically validated methods exist to detect the subluxation is an example of pseudo-science. Owens¹⁰ noted how consensus models, due to the very nature of the consensus process, are so broad in scope that they are generally fairly useless for research purposes. Nelson¹ discounted the VSC model as a sound theoretical model because it does not explain specific clinical phenomena and observations, makes no specific predictions, and, above all, cannot be falsified¹. Owens¹⁰ discussed the need for testable operational definitions of the subluxation and VSC concept. Clusserath¹³ criticized such VSC research constructs as likely overly complicated and confusing and incompatible with vitalistic chiropractic theory. On the other end of the spectrum in this debate, Carter¹⁴ proposed discarding the subluxation concept altogether and redirecting the emphasis within chiropractic clinical practice and research to evidence-based practice.

So how does all this historical information on a chiropractic concept affect the non-chiropractic manual medicine practitioner? Many of us may not share the traditional chiropractic theoretical position on the causative or contributory role of spinal and extremity joint dysfunction in the etiology of disease. However, we do share with the chiropractic profession the need to define and understand the etiology and clinical manifestations of the joint that may benefit from manipulative intervention. The manual medicine community at-large can most certainly benefit from (and should appreciate) the work done by the chiropractic profession on theoretical constructs with regards to such a "manipulable lesion." The discussion above also shows that there is a group of chiropractors, which defines the subluxation solely as a manipulable lesion to be corrected for symptom improvement. This view of the subluxation is so similar to that of other evidence-based manual medicine practitioners that it seems to offer an opportunity for closer interprofessional cooperation in the research, clinical, and academic settings. It is equally obvious that chiropractors adhering to the more traditional non-falsifiable vitalistic subluxation concept espouse a view sufficiently different to make such cooperation quite unlikely. But perhaps the greatest lesson to be learned here is a caveat. Nobody benefits if we spend too much time on constructing theoretical models with poor operational definitions and hidden elements of dogmatic thinking. Maybe it is time to critically

evaluate the diagnostic value of clinically unquantifiable manual medicine concepts such as endfeel. Maybe it is time to question clinical but unproven constructs such as the capsular pattern and its diagnostic and therapeutic implications. Maybe it is time to clearly and quantifiably define what we consider a positive finding on our tests of segmental motion and stability. Or maybe it is time to discard the unproven emphasis we place on these poorly operationalized segmental tests. Instead, we could focus our efforts on establishing clinical decision rules for manipulative interventions using tests with a clear operational definition while at the same time establishing outcomes with reliable, valid, and responsive outcome tools that can be used by any practitioner unrelated to their level of experience. Maybe it is time to demystify manual medicine as an approach only for the duly initiated and let it truly enter the era of evidence-based medicine?

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Table 1: American Chiropractic Association classification of subluxation (modified from Gatterman⁹)

<p>STATIC INTERSEGMENTAL SUBLUXATIONS</p> <ol style="list-style-type: none"> 1. Flexion malposition 2. Extension malposition 3. Lateral flexion malposition 4. Rotation malposition 5. Anterolisthesis (spondylolisthesis) 6. Retrolisthesis 7. Lateral listhesis 8. Altered interosseus spacing (decreased or increased) 9. Osseous foraminal encroachments
<p>DYNAMIC INTERSEGMENTAL SUBLUXATIONS</p> <ol style="list-style-type: none"> 1. Hypomobility (fixation subluxation) 2. Hypermobility (loosened vertebral motion segment) 3. Aberrant motion
<p>SECTIONAL SUBLUXATION</p> <ol style="list-style-type: none"> 1. Scoliosis and/or alterations of curves secondary to muscular imbalance 2. Scoliosis and/or alterations of curves secondary to structural asymmetries 3. Decompensation of adaptational curves 4. Abnormalities of motion
<p>PARAVERTEBRAL SUBLUXATIONS</p> <ol style="list-style-type: none"> 1. Costovertebral and costotransverse disrelationships 2. Sacroiliac subluxations

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