

Case study: Chiropractic Management of Dizziness

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Key words:

Dizziness, Chiropractic, Subluxation, Nervous system, Vestibular system.

Abstract:

The purpose of this study is to highlight the correlation between spinal subluxations and dizziness of benign origin. There are several possible causes of dizziness and underlying pathology should always be ruled out first. That said, the potential neurological disturbance from a subluxated vertebrae as a primary cause should not be overlooked. This case study reveals the benefits that a patient may experience when a subluxation is identified and corrected in a specific manner.

Introduction:

Dizziness is a complex and potentially debilitating symptom affecting up to 30% of the global population. Annually it accounts for over three million emergency department visits. (1) It can manifest across all age groups, though it is notably more prevalent among adults aged 65 and above due to an increased likelihood of underlying health conditions. The condition is two to three times more common in females. (2) The word dizziness itself is a vague and broad description of a condition, which is perceived and experienced very differently between individuals.

Dizziness is commonly characterized by feelings of unsteadiness, spinning, disorientation, or perceived movement. (3) Characteristics, intensity, duration and frequency also vary greatly among patients and may guide a practitioner to a likely cause and diagnosis. There are numerous aetiologies that can result in dizziness including vestibular, neurological, cardiovascular, and musculoskeletal disorders. Among these, the role of musculoskeletal issues, particularly those involving the cervical spine, is of particular interest to chiropractic care.

Common causes are problems or conditions that affects the ears such as Meniere's disease and labyrinthitis, eye conditions, heart issues, stress, dehydration, low blood sugar levels, chemical or hormonal imbalances, infections or neurological disorders. (4) Treating a patient with dizziness normally involves identifying and addressing its underlying cause, which can be varied and sometimes multifactorial. Given the complexity of the causes, treatments can range greatly. They include: repositioning procedures such as lifestyle changes, the Epley Maneuver, physical therapy, medication and surgery. (5)

Signs and symptoms such as confusion, difficulty speaking or understanding language, sudden severe headache or vomiting without known cause, weakness in extremities are potential red flags that should be referred out for immediate medical examination first. (6) Such possible pathological conditions are beyond the scope of this paper.

The Gonstead chiropractic system, named after its originator Dr. Clarence S. Gonstead, is a specific, detailed, and practical approach to chiropractic care that meticulously addresses biomechanical dysfunction of the spine and extremities. Examination procedures in the Gonstead method are comprehensive and the objective is to identify potential vertebral subluxations. These are biomechanical dysfunctions due to positional dyskinesia of a functional spinal unit (FSU) predominately in the spine, sacroiliac joints or temporomandibular joint (TMJ), that can create directly or indirectly neurological disturbances. (7) This can have a tremendous effect on neurological function not only at that spinal segment, but also on the entire body as altered afferent input to the central nervous system leads to abnormal somatosensory processing and therefore altered sensorimotor integration and output. (8)

The Gonstead chiropractic adjustment aims to correct these subluxations with specificity and accuracy to restore optimal spinal function and remove any associated nerve interference. The protocol may also incorporate guidance on lifestyle modifications to support overall well-being and prevent recurrence.

This case study examines a patient's journey through dizziness, managed via the Gonstead chiropractic system. It aims to investigate the effectiveness of this method in addressing dizziness, of a benign aetiology believed to be due to spinal subluxations. By doing so, this study seeks to expand the relatively limited body of research on the role of specific chiropractic techniques, like the Gonstead method, in managing common yet often mismanaged symptoms such as dizziness.

Case history:

An 81-year-old female presented with continuous dizziness and neck stiffness. The dizziness was described as a constant feeling of perceived movement and mild spinning. She reported feeling unsteady at times, but there were no tendencies of falling or fainting. Getting up or moving aggravated the symptoms. Lying down reduced the symptoms. The symptoms started suddenly two weeks prior after painting her ceiling. She had no headache, but a sensation of pressure in her head was present intermittently. No obvious spinal pain or referred neurological symptoms in extremities were present. Examination by a medical doctor and MRI of the head and cervical spine the previous week revealed no abnormalities and she was instructed to rest and give it time to pass. As this did not change her symptoms, she decided to seek a chiropractic evaluation for an opinion and alternative treatment for her ailments.

Previously, nine months earlier, she had attended our clinic for pain in the lumbosacral area that resolved after adjustments at sacrum (S2), left sacroiliac joint (SIJ) and L2 over the course of three weeks. She did not drink coffee or consume any forms of drugs. No history of trauma, infection or use of medication was reported. She had finished treatment for anal cancer 5 year prior with no signs of recurrence. Otherwise, her medical history was unremarkable.

Clinical findings:

Observation of the patient showed an elderly lady in general good health and appearance. She did show signs of head pressure discomfort and was trying not to move to avoid aggravating the symptoms of dizziness.

Cranial nerve screen testing was normal. Romberg's test showed general instability with tendency to sway forward to the left.

Chiropractic examination revealed:

- Instrumentation (spinal skin temperature differential): reading detected at the C7 and T9 levels
- Static palpation: Point tenderness and edema noted at C7 and T9 spinous processes
- Hypertonic right thoracic erector spinae muscle from T6-T9 and right superior trapezius muscle
- Motion palpation: Restricted flexion and extension of C7 on T1 and T9 on T10. Cervical ROM revealed slightly reduced extension and right lateral flexion.

Radiographic examination:

Full spine, weight bearing radiographic images using Gonstead acquisition protocols were taken of the patient. Please refer to x-ray images at the end of this paper.

The listings derived from the full spine radiographs were:

- Left ASIN ilium, S2 posterior, L3 PRI-M, T9 PLI-T and C7 PLI-La.
- Degenerated intervertebral discs were noted between C3 and C7

Chiropractic diagnosis:

Following full Gonstead Chiropractic history, examination and spinographic findings, the initial diagnoses made for the above cases were:

- T9 PLI-T and C7 PLI-La.

Treatment outcome:

On the first visit, both T9 and C7 were adjusted. T9 with the patient prone on the hi-lo table taking a pisiform contact on the right transverse/lamina junction. C7 taking an index finger contact on the right spinous/lamina junction with the patient seated in cervical chair. Only minor movements and cavitations were noted during these adjustments. The patient returned a week later, where she reported an increase of dizziness and neck stiffness the day after the first adjustments, before rapid improvement in symptoms over the following days. Only minor dizziness during sudden movements was now present. Gonstead examination indicated a subluxation at T9 was still present and therefore this segment was adjusted again.

The last visit was one week later where she reported feeling normal with no further signs of dizziness. T9 was adjusted with minimal force and depth on this visit, and she was instructed to contact the clinic if the symptoms returned. The primary symptoms a year later have not returned. She did report over a recent phone conversation in relation to this paper that she intermittently gets mild signs of dizziness over a short duration. She attributes this to her use of glasses, and being age appropriate. These tendencies are so mild she has not felt the need to at this point get examined by a chiropractor or her medical doctor.

Discussion:

Dizziness is a commonly reported condition and can manifest in various presentations. As chiropractors our aim is not to primarily diagnose or name a condition, but rather try to identify the true cause behind it. Although for the purpose of this case study, it is also valuable to understand when dizziness is not a benign complaint that may require a referral for medical management or co-management. The chiropractor must understand the four primary types of dizziness: vertigo, presyncope, disequilibrium, and nonspecific dizziness. (9)

1. **Vertigo:** This is often described as a sensation of the surrounding environment spinning or the individual spinning in the environment. It's typically caused by issues within the vestibular system, which includes parts of the inner ear and brain responsible for processing sensory information related to balance. Conditions such as benign paroxysmal positional vertigo (BPPV), Meniere's disease, or vestibular neuritis often result in vertigo.
2. **Presyncope:** Characterized by a feeling of lightheadedness or as if one is about to faint, presyncope is generally cardiovascular in origin. It often results from a sudden change in blood pressure, leading to transient cerebral hypoperfusion. Common causes include orthostatic hypotension, vasovagal syncope, and certain cardiovascular disorders.
3. **Disequilibrium:** This refers to a feeling of unsteadiness or imbalance, particularly pronounced when patients are standing or walking. It is often associated with visual impairment, peripheral neuropathy, musculoskeletal disorders, or issues with proprioception. Conditions such as Parkinson's disease, arthritis, or peripheral neuropathy can contribute to disequilibrium.
4. **Nonspecific Dizziness:** This term is used to classify sensations of dizziness that do not fit into the other three categories or when a clear cause cannot be identified. It may be a generalized feeling of wooziness, floating, or disorientation. Nonspecific dizziness can sometimes be linked to psychiatric disorders, such as anxiety or depression, or may be a side effect of certain medications.

Understanding these four categories of dizziness provides a framework to evaluate, diagnose, and manage patients presenting with this common, yet multifaceted symptom. It also aids in determining the potential cause of the dizziness, which will ultimately guide the choice of treatment strategy. (10)

Neurologically, the vertebral subluxation complex theory suggests that spinal misalignment or structural dyskinesia of a functional spinal unit (FSU) can lead to direct or indirect aberrant neurological function. When this occurs, various symptoms may develop, including dizziness.

a biomechanical injury and inflammatory responses to the FSU, as seen in subluxations, given proximity to nerve roots, dorsal root ganglion (DRG), spinal cord and associated neurons, is very likely to affect these delicate tissues. These are all located inside the dural sheath and are extremely sensitive to pressure from biomechanical dysfunction, chemical irritants or ischemic impacts. (11) This is especially true in the intervertebral foramen (IVF) where dorsal and ventral roots, DRG, spinal arteries and veins, the dural sheath and CSF pass through. In addition, associated disc protrusions, disc herniations and degeneration combined with arthritic changes to the facet joints can lead to further narrowing of the IVF and probable nerve root compression. (12)

The central nervous system (CNS), including the brain and spinal cord, is the primary system for coordinating all body activities. As such, any subluxations may disrupt or distort the messages traveling along these neural pathways, potentially leading to a range of symptoms.

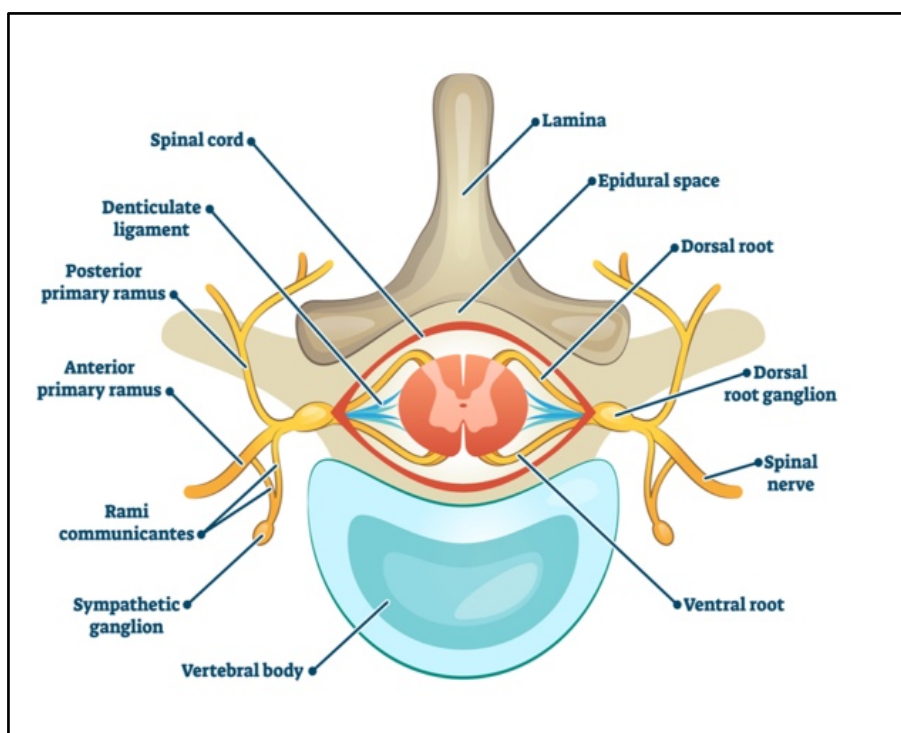


Image Ref: <https://saikumarspace.quora.com/Human-nervous-system-consists-of-two-types-Which-is-CNS-PNS-CNS-consists-of-brain-and-spinal-cord-The-nerve-root-w>

In this case study, even subluxations outside the cervical area could have created neurological disturbances affecting the vestibular nuclei located in the brainstem or its connections, leading to sensations of unsteadiness.

Biomechanically, the spine functions as a coherent unit with interdependence between its various components. For example, a lumbar or thoracic subluxation may cause compensatory changes higher up in the spine. (13) This can affect balance and proprioception and its associated complex responses in the brain, potentially leading to sensations of dizziness.

Spinal subluxations can contribute to the sensation of dizziness through multiple intricate neurophysiological pathways.

One crucial concept is that the vertebral column houses the spinal cord, a significant component of the central nervous system (CNS). This communication highway facilitates the transfer of sensory and motor information between the brain and the rest of the body. Any interference in this communication, such as that potentially caused by spinal subluxations, can lead to a range of symptoms, including dizziness. (14)

Direct or indirect mechanical pressure or chemical irritation on the spinal nerves or the spinal cord due to subluxations can cause neurological disturbances. This interference can disrupt the normal transmission of nerve impulses to the vestibular centers in the brain responsible for maintaining balance and spatial orientation. (15) Altered or distorted information received by these centers can result in a sensation of dizziness.

Proprioception, the body's sense of position and movement in space, is also a crucial player. Particularly in the cervical spine, proprioceptive information significantly contributes to our sense of balance. Spinal subluxations can disrupt accurate proprioceptive input to the brain, creating a sensory mismatch with other systems maintaining balance, like the vestibular system and vision, leading to dizziness. (16)

Vertebrobasilar insufficiency, a condition characterized by reduced blood flow through the vertebral arteries due to mechanical compression, often associated with cervical subluxations or as compensations for subluxations in other spinal regions, can also cause dizziness. The vertebral arteries supply the posterior brain, including the cerebellum and brainstem – crucial areas for maintaining balance. (17)

Likely most relevant for this case study and many cases of dizziness caused by spinal subluxations is the Vestibular system.

Our sense of balance and spatial orientation is controlled by an intricate sensory system known as the vestibular system, which resides in a part of the inner ear called the vestibular labyrinth. The vestibular system is composed of the following elements (18):

- Semicircular Canals: These are three tubes that are oriented nearly perpendicular to each other. Each canal is sensitive to a unique type of movement - upward and downward nodding, side-to-side shaking, or tilting to the right or left. The fluid-filled canals respond to these specific movements, as the fluid shifts within them accordingly.
- Otolith Organs: These consist of two structures capable of detecting linear movement, gravitational pull, and tilting actions. Comprising the utricle and saccule, the otolith organs are composed of calcium carbonate crystals. While the utricle is sensitive to horizontal motion, the saccule picks up on vertical movement.

The information from these vestibular organs is conveyed to the brainstem nuclei via the vestibular nerve. This information is then dispatched to other components of the central nervous system, including the cerebellum and cerebral cortex, where it is utilized to coordinate movement. The proper functioning of the system requires both vestibular organs, located on either side of the head, to transmit balanced signals to the brain. For the human body to maintain balance the vestibular system functions by sensing the orientation of our bodies relative to gravity. In addition, it also provides sensory input regarding equilibrium and body movement. The cerebellum can utilize this information together with sensory input from

eyes as well as proprioceptive input from the musculoskeletal to coordinate balance. If the cerebellum detects insufficient balance it will communicate with appropriate muscle groups to restore balance. (19)

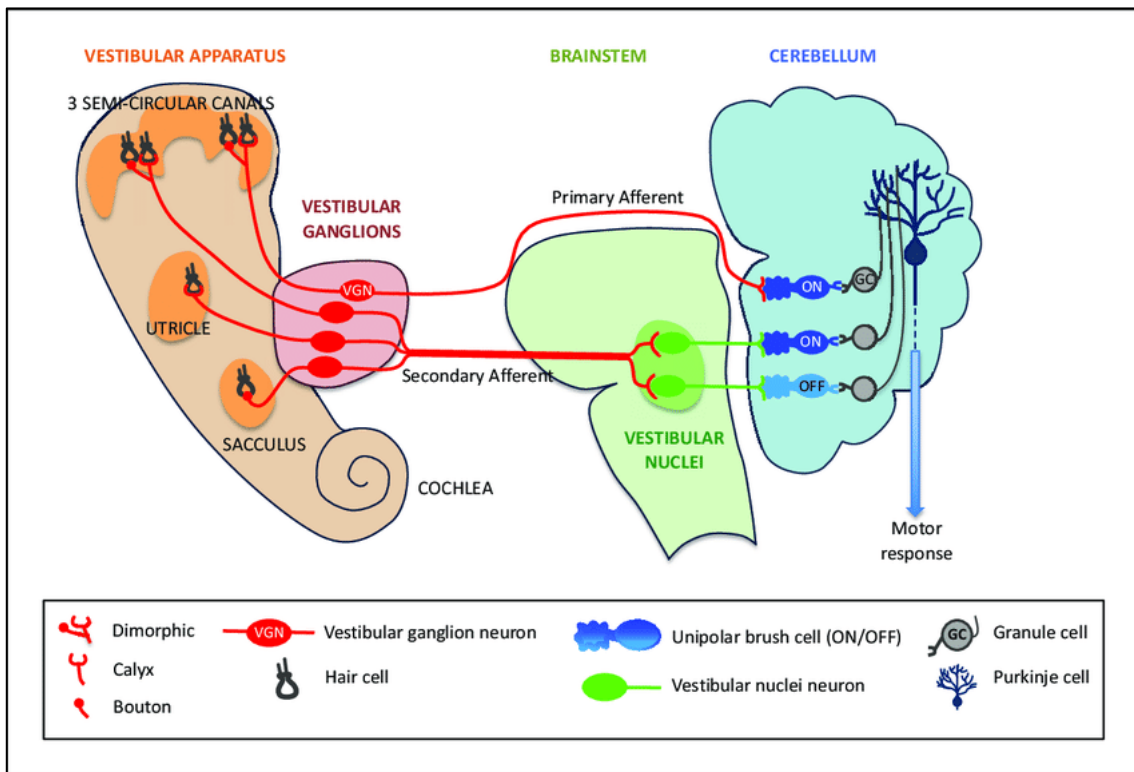


Image Ref: https://www.researchgate.net/figure/Primary-and-secondary-afferents-from-the-vestibular-system-to-the-cerebellum-Neurons_fig1_332483580

The patient in this case study underwent a detailed evaluation under the Gonstead chiropractic system, which identified specific subluxations. After receiving precise Gonstead chiropractic adjustments aimed at correcting these subluxations, the patient reported a significant reduction and eventually full remission of her dizziness.

This highlights the importance of holistic care in chiropractic practice and suggests that subluxations in areas even outside the cervical spine can also contribute to symptoms of dizziness. Such findings expand our understanding of the interplay between spinal integrity and patient health, emphasizing the potential of Gonstead chiropractic in managing dizziness.

In summary, spinal subluxations can induce dizziness through direct and indirect neurological pathways and by altering cerebral blood flow. This intricate neurophysiology underscores the potential role of chiropractic interventions in managing dizziness.

Conclusion:

This case study focuses on a patient who presented with dizziness of benign origin and responded favorably to the Gonstead chiropractic analysis and adjustments. This is despite the absence of any upper cervical subluxation or dysfunction, which is the area of the spine one might first suspect a subluxation to be present for this condition.

The positive outcome observed highlights the potential influence of spinal subluxations and the associated neural interferences triggering this symptom, underscoring the intricate neurological and biomechanical interconnections within the human body.

Dr. Gonstead and many other Gonstead practitioners with him have noted the common correlation between upper cervical subluxations and dizziness. Some cases have also demonstrated involvement of the TMJ. (20) They have also reported that subluxations below the cervical spine, even to the level of the pelvic region, could result in such symptoms.

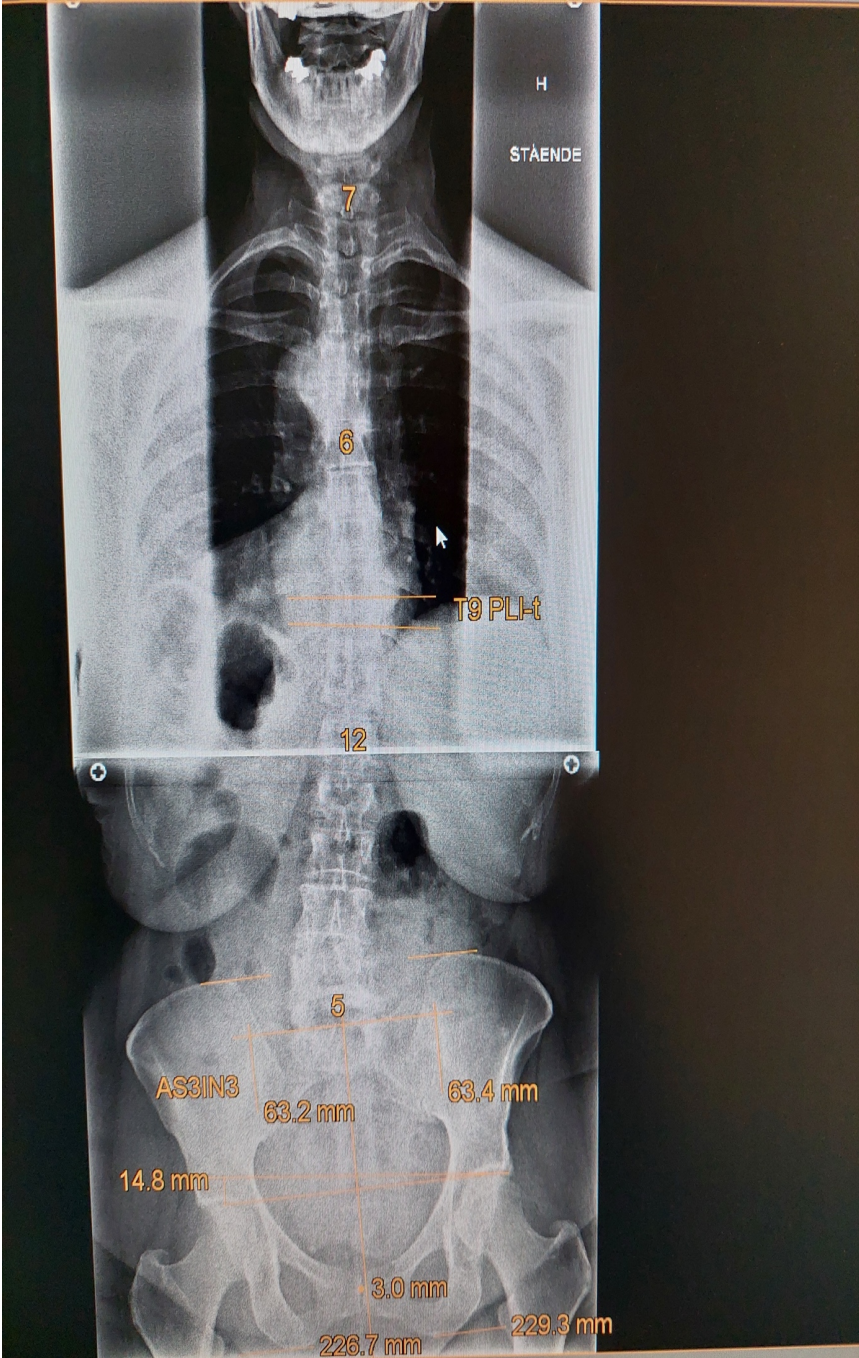
Hence going back to the philosophy of the founding father of chiropractic D.D. Palmer: he made it clear to accept the subluxation where you find it! Dr. Gonstead was also very clear to point this out, and also how important it was to leave it alone once the signs of subluxations were reduced or absent.

When underlying pathology is ruled out, chiropractic examination for potential nerve interference arising from a spinal subluxation should be considered in cases of dizziness. When we study the anatomy, biomechanics and neurology of the spine, it makes logical sense that nerve interference from a subluxation has the capacity to create signs and symptoms of dizziness.

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Patient A-P X-Ray:



Patient Lateral X-Ray:

