

Improvements in anxiety and suicidal ideation in a 14-year-old female undergoing a concentrated program of Chiropractic care: A case report

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Background: A 14-year-old female presented for a concentrated course of Chiropractic care with primary concerns of poor mental health, including severe chronic anxiety and suicide ideation. A historical diagnosis of anxiety at age five and Developmental Apraxia at age six had preceded her present condition, as well as a childhood history of other non-musculoskeletal presentations, including allergies, poor sleep, and digestive issues.

Intervention: The patient commenced a weeklong course of concentrated Chiropractic care, during which she received 104 low-force, specific upper cervical adjustments. These specific chiropractic adjustments were accomplished using the Averio FNT Chiropractic Technique, a specific, sustained contact, low-force Chiropractic technique. The purpose of this course of concentrated chiropractic care was to cause a regenerative event in the patient's body by reversing vertebral subluxations and allowing for a non-surgical regeneration of the patient's damaged spinal ligaments and overall improvement of the central nervous system function. It was hypothesised that if the spine and central nervous system could be made healthier, it would likely have an impact on the patient's presentation of mental illness.

Outcomes: While objective measures indicated significant improvements in the patient's subluxation status, significant subjective changes were noted following care. The patient reported a complete reversal of suicidal ideations six weeks following the course of Chiropractic care, as well as a significant reduction in chronic severe anxiety, improved social behaviour, and improved sleep and appetite. The patient's radiographic reassessment six months later showed a complete stabilisation of the ligament damage in the cervical spine and a 121% improvement in the cervical lordosis.

Conclusion: Given the significance of neuropsychological development in the adolescent brain and the increasing awareness of the potential for Chiropractic care to support mental health, this case report provides a rationale for further research into chiropractic and mental health and the benefits of concentrated chiropractic care.

Indexing Terms: vertebral spinal subluxation; cervical spine; ligament instability; spinal ligament instability; mental illness; anxiety; Chiropractic; Chiropractic adjustment; functional neurology; regenerative event; spinal regeneration; spinal cord irritation; ligament regeneration.

Introduction

Anxiety disorders can develop for many reasons, including stress, trauma, and other mental or physical health struggles. In cases of musculoskeletal pain management, it is not uncommon to observe mental

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health concerns presenting in conjunction with the primary concern. It has often been said that the subluxation is, at its root, a response to trauma, toxins, and stress. Adolescence is a time of significant stress and changes for adolescents and their parents or caregivers.



Current statistics indicate that one in seven adolescents aged between 10 and 17 suffer from a mental health condition, and suicide is the fourth leading cause of death in 15-29-year-olds. (1) This statistic alone provides a solid impetus to understand how Chiropractic care may support adolescents undergoing mental health challenges or distress.

As chiropractic research and evidence extend beyond back and neck pain to the broader impacts of subluxation-based nervous system care on the whole person, including mental health in its many presentations, it follows that mental health becomes a new area of focus.

A limited number of previous case reports have documented the change in anxiety symptoms, secondary to another condition or concern, in adults receiving subluxation-based Chiropractic care. (2, 3, 4, 5, 6) Even fewer cases have investigated the effect of Chiropractic care on adults presenting with poor mental health as their primary concern. (7, 8, 9)

This case may be the first report that details the care journey of a child/adolescent receiving Chiropractic care for the primary complaint of poor mental health. Given the significant neuropsychological development occurring in the adolescent brain at this time of life, all avenues of care must be investigated. Given the positive outcomes listed in recent adult case reports, adolescent mental health may be a beneficiary of subluxation-based nervous system care through specific and gentle chiropractic care.

The following case report documents the Chiropractic management of an adolescent with a severe anxiety disorder and suicidal ideations and the improvements observed in her primary and secondary presenting complaints.

Case details

A 14-year-old female with a normal activity level presented to a chiropractic clinic with primary complaints of severe anxiety disorder with suicidal ideation. While she was a novice to Chiropractic care, her history of anxiety began with a diagnosis at five years of age. It was reported that her suicidal ideations began at the onset of puberty at approximately 13 years of age. Additional primary complaints included a historical diagnosis of Developmental Apraxia, which was diagnosed at six years of age.

Secondary complaints included chronic upper respiratory infections, skin rashes, food allergies (with documented allergies to peanuts, tree nuts, and dairy), constipation, and vivid dreams with poor sleep quality.

Medical history and clinical findings

The patient's mother reported that public school had been problematic for her daughter. The patient began pulling out her eyelashes in second and third grade. Before fifth grade, she had commenced school-mandated counselling. Throughout childhood, she frequently experienced upper respiratory, bronchial, ear, nose, and throat infections, requiring multiple rounds of antibiotics each year. The mother also reported that ear tubes had been used six times in early childhood to drain infections and that the patient's adenoids and tonsils had been surgically removed. The patient had a full schedule of childhood vaccinations starting at two weeks old.

The patient's mother reported no adverse symptomatology during pregnancy and described the birth as '*fast*', but no medical interventions were needed, and the patient was born in a hospital. She had trouble breastfeeding and was introduced to soy milk within the first months of life.

In addition to a thorough case history, the patient was assessed using vitals testing, digital spinal radiography, surface spinal EMG, body composition testing, iodine patch testing, nitrous oxide salivary testing, *Fukuda's*, blindspot, *King Devick's*, and *Rhomberg's*.

Vitals testing at commencement revealed low blood pressure and a high resting pulse rate. Digital radiographs were taken and, when analysed, revealed transitional cervical ligament instability of 5.0mm at C3-C4 and 3.8mm at C5-C6 in both flexion and extension. This level of ligament instability is ratable for permanent disability by the *American Medical Association* at an impairment rating of 25-28% per area(s) of ligament instability. This impairment rating and the corresponding damage in the spine give perspective into the intimate connection between the spine's health and the normal function of the central nervous system. It was also noted that the patient's anterior head carriage was also rated severe, at 37mm (whereas 0mm is the normal limit). As the lower parts of the brainstem, as well as both the right and left vagus nerves, are inside of and outside of C1, this area of the cervical spine has whole-body implications when it is abnormal. Her cervical curve was 35.5% reduced from normal limits.

Spinal EMG revealed significantly high readings across the cervical, thoracic, and lumbar spine, consistent with subluxation findings across the full spine, but focused on the cervical area.

The patient's intracellular micronutrient panel revealed low serum (i.e., fluid of the blood) vitamin A and selenium and severely high AA/EPA ratio (i.e., *arachidonic acid/eicosapentaenoic*). This lab test indicates blood-based systemic inflammation. The patient tested at an AA/EPA ratio of 68.1, whereas the highest average adult value should be 10.9. This indicated a blood-based systemic inflammation over 600% greater than normal limits. The patient was also severely deficient in omega-3, three fatty acids with a value of 4.11, whereas the lowest expected value is 8.

Management

Following the initial presentation and examination, the patient was placed on a course of concentrated Chiropractic care spanning five days. The treatments provided during this course of chiropractic care were Chiropractic adjustments, specifically *Averio FNT*, an emerging Chiropractic technique. Due to the severity of the ligament instability and the patient's high anxiety (including fear of being touched), no manual adjusting or instrument adjusting was done. Instead, low-force, sustained contact adjustments using a friction plate lens were used to determine the area of subluxation, line of drive, and poundage of force in correction. This is typical of *Averio Health Institute's* approach to such cases.

Due to the patient's high anxiety level and resistance to being under care, there were very few opportunities to do any other modalities other than Chiropractic care. Despite the patient's high anxiety and multiple interruptions to care, this patient was able to complete the 5-day course of concentrated Chiropractic care, receiving 104 low-force specific and gentle adjustments.

Aims of care in terms of subjective but impactful quality-of-life improvements was to restore normal brain function to the point where suicide would not be an 'every-other-day' discussion or exhibition.

Objectively, care aimed to non-surgically reverse the four areas of severe cervical ligament instability through reversing subluxation, thereby reducing the severely abnormal inflammatory burden on the central nervous system and allowing for normal regulation of the central nervous system. (10, 11, 12) A whole food supplementation protocol was recommended before and after the weeklong program to address nutritional deficiencies and imbalances in the patient's blood work. The whole-food nutritional protocol also aimed to balance and reverse the patient's multiple nutritional deficiencies, as there are strong correlations in the literature connecting deficiencies such as omega-3 fatty acids with mental illness. (13, 14, 15, 16, 17)

Outcomes

The patient was seen for five days of concentrated Chiropractic care at the end of March 2022. The patient reported to her parents and church congregation on Easter Sunday, April 2023 (approximately four weeks following her week-long program) from the stage of the church that she no longer had any urges or inclinations to end her life. She confidently reported no further suicidal ideologies had presented since the time of care.

The patient's mother reported significant improvements in her daughter's anxiety, stating that the patient was now able to engage in more normal developmental activities, such as talking and socialising with adults and assisting in the church's daycare. The patient's mother reported significantly fewer mood swings, and the patient's sleep significantly improved. The patient's ability to be touched by others without sensory issues also improved.

All cervical ligament instability was reversed on radiograph examination in August 2022 (5 months post-treatment). The patient's anterior head carriage improved by 32.2% (from 37mm to 25.1mm - normal is 0mm). The patient's cervical curve improved by 121% (from -17.1° to -37.8°, normal limits are -42°). The patient's blood pressure and pulse rate were normalised to within normal limits. No post-testing was done on the blood markers due to the patient's financial limitations.

During the patient's follow-up visit, she presented in a completely different exterior manner. She was wearing different clothes with the presence of colour. She was smiling, standing straight, and looking at people in the eye. The patient could speak directly and freely with the Chiropractic team and doctors onsite. In contrast, before and during her weeklong program, any communication with the doctors or team was through her mother. The patient also no longer wore the black hoody she wore frequently before and during her weeklong concentrated Chiropractic program. This marked a significant improvement in interpersonal interaction, potentially indicative of lowered anxiety and improved central nervous system function.

Discussion

This case adds to the growing body of case report evidence supporting Chiropractic care's positive mental health impact. The patient received 104 specific and gentle Chiropractic adjustments focused on correcting subluxation in the spine to enhance the overall function of the central nervous system.

Following specific and gentle concentrated Chiropractic care, noticeable regeneration occurred in damaged ligaments in the patient's spine as noted on pre and post-digital analysed spinal radiology. Spinal ligament instability is typically resolved with fusion surgery, which has significantly more risks and dangers to the patient than gentle and specific concentrated Chiropractic care. This case shows that the body can regenerate normal tissue through the reversal of vertebral subluxation of the spine in a concentrated manner with Chiropractic adjustments. Further research needs to be done to determine the extent of tissue regeneration that could be accomplished through chiropractic care, creating a non-pharmaceutical and non-surgical, safe, and effective method of reversing health problems.

Concentrated care

This case highlights the opportunity within concentrated Chiropractic care for individuals who might otherwise opt out of regular Chiropractic care. If comparable results can be achieved through an intensive care plan, a care plan of weeks or months may be appealing for those sensitive to touch or struggling with attending individual Chiropractic appointments. It should be noted that the efficacy or viability of concentrated care was not a predominant focus of this case

report, and no comparison can be drawn between intensive and regular Chiropractic care plans from the findings of this case report.

Anxiety impairing schooling

The effects of Chiropractic care on mental health and function is an emerging area of research, with most studies analysing the effects in adults. The current study details the care journey of an adolescent, finding Chiropractic care to have positively impacted the patient's mental health and ability to engage within their environment.

An important consideration as to the importance of this case in the broader landscape of Chiropractic literature is the impact these preliminary findings have on younger adults and teenagers experiencing anxiety or suicidal thoughts. Additionally, individuals in this age group commonly attending school or receiving education of some kind may be disrupted by poor mental health. Anxiety and depression can impact hippocampal function and, subsequently, memory, a vital component of learning. (18) If Chiropractic care effectively supports optimal mental health, it may also inadvertently support cognitive functioning and an individual's ability to engage with education.

Mechanism

Studies have identified a link between anxiety disorders and increased sympathetic nervous system (SNS) activity due to activating the stress response. Cortisol levels are elevated in response to increased SNS activity, which, if they remain elevated for a prolonged period, can impair many aspects of health, including immune function. (19)

Studies have shown that childhood maltreatment (i.e., mental, physical, and or emotional abuse) will increase the child's risk factor for mental illness. (20) The reason for this correlation is presumed to be a negative effect on the central nervous system. Furthermore, studies show that neurological dysfunction in mental illness is rarely the only symptomatic change the person will experience and that there is a correlation between depression, anxiety, post-traumatic stress disorder, schizophrenia, autism, epilepsy, cardiovascular disorders, and heart failure. (21) It is possible to hypothesise that this correlation is because the neurological pathways that become dysfunctional in the central nervous system to cause mental illness are also areas where there are nerves that have some participation in the function of the heart.

Further studies claim that the '*body and mind can be separated in medical textbooks, but not in the waiting room*', suggesting that there is always a physical, i.e., neurological dysfunction present in mental illness. (22) From a Chiropractic perspective, neurological dysfunction will always present in the functional vertebral subluxation of the spine, as we saw in this case with the multiple ligament tears in the cervical spine. Furthermore, some studies seek to reverse mental illness through the neurogenesis of specific areas of brain function; this is done, however, outside of the Chiropractic profession and without addressing spinal subluxation. (23)

When specific and gentle Chiropractic care is given to the damaged spine to reverse subluxation, research has shown that this treatment method profoundly affects the brain. (24, 25, 26, 27, 28, 29) There are limited but increasing studies that show a connection between improving cervical lordosis towards normal and improving conditions such as reduced pain, reversal of chronic headaches, and improvement of autonomic function (i.e., subconscious neurological function between the brain and the organs) in paediatric and adult populations. (30, 31)

Further studies confirm that there is a functional neurological connection, even causation, between dysfunctional brains and mental illness. (31) It is likely that specific and gentle Chiropractic care to the spine, specifically in the cervical region, is an overlooked and viable methodology in the reversal and improvement of mental illness.

Clinically significant improvements in anxiety levels and reductions in dysautonomia, as measured by HRV and thermography studies, have been observed in adults following chiropractic care. (32)

Note: There is significant evidence that the prefrontal cortex is a primary area of the brain that regulates normal emotional well-being, decision-making, and social and cognitive behaviours. Likely, the area of the brain is always dysfunctional and/or damaged in cases of mental illness. Groundbreaking Chiropractic literature shows that a single specific adjustment to reverse subluxation has a marked effect on improving pre-frontal cortex function. (33, 34, 35, 36, 37, 38, 39)

This case also shows the clear correlation between anxiety, suicide, and apraxia with a dysfunctional brain and how very gentle and specific concentrated Chiropractic care can be the key to unlocking the regenerative potential of a damaged brain.

Future direction

Chiropractic and mental health are essential areas for further research. Due to the strain this type of patient puts on the whole office team, large-scale research on this type of troubled patient would be very challenging; however, it is of great importance.

The relationship between mental health and dysfunctional brains with cervical ligament instability is also important to better understand. This patient had severe ligament tears in the middle of the cervical spine, and there was a marked change in social presentation, symptomatology, and neurological function when the tears were non-surgically reversed in this patient's cervical spine.

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Cite: Kotlerman S, Martin A, Pierce D, Postlethwaite R, McIvor C. Improvements in anxiety and suicidal ideation in a 14-year-old female undergoing a concentrated program of Chiropractic care. Asia-Pac Chiropr J. 2024;5.1. apcj.net/Papers-Issue-5-1/#Kotlermananxiety

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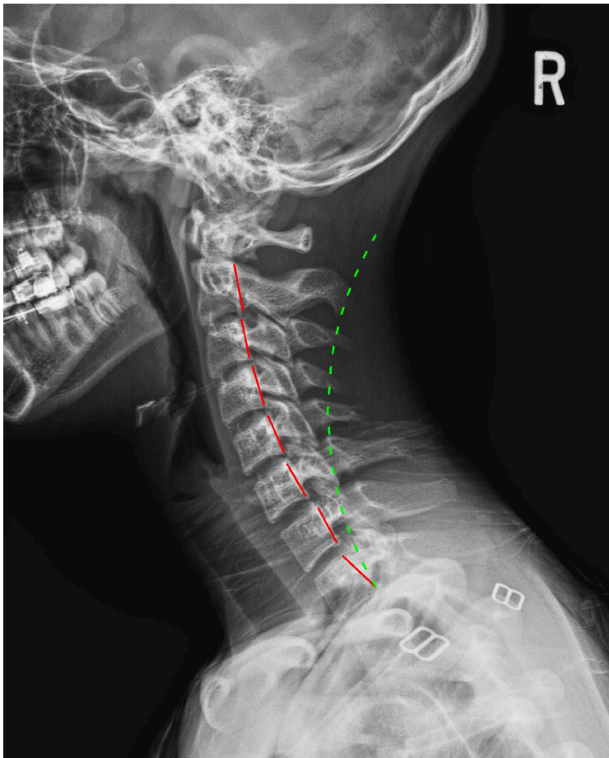
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Next - images

Images

Figs: Pre- and post-concentrated care

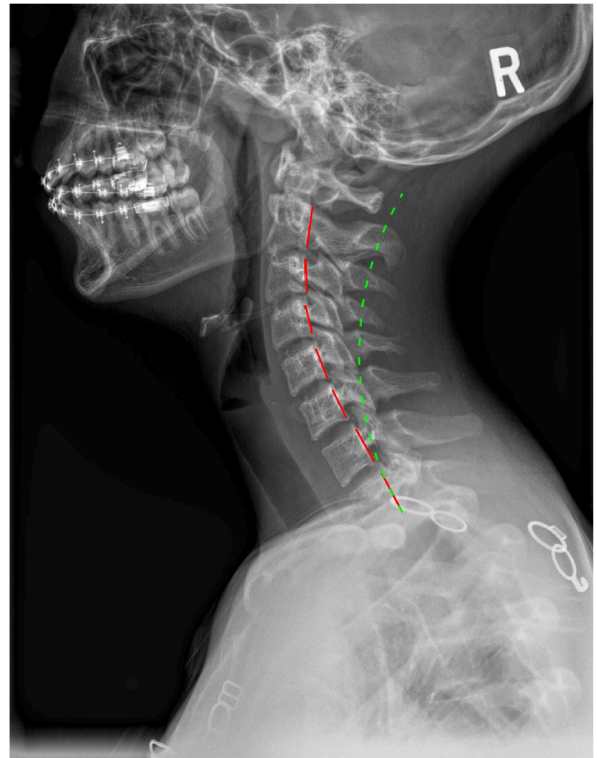
1: Side View of Your Neck on 12/23/2021



Front

Back

2: Side View of Your Neck on 8/3/2022

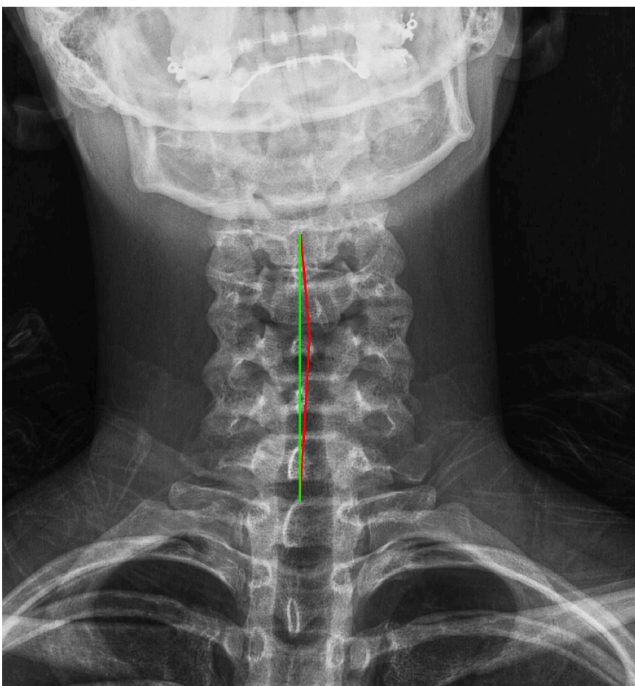


Front

Back

This colored curved line represents the estimated normal, healthy position for your neck.
This dotted line represents where your neck is currently positioned.

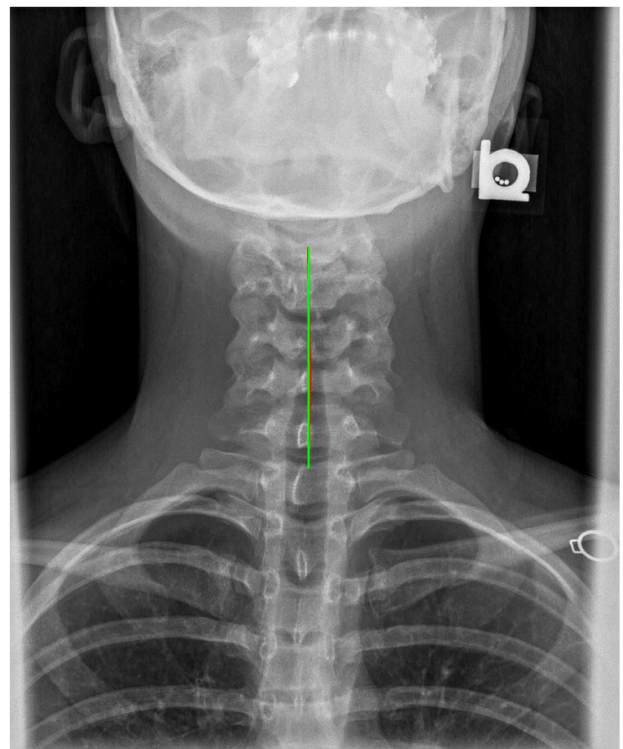
1: Front View of Your Neck on 12/23/2021



Right

Left

2: Front View of Your Neck on 8/3/2022

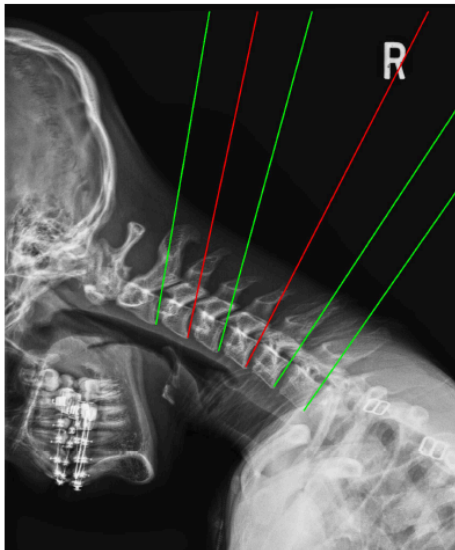


Right

Left

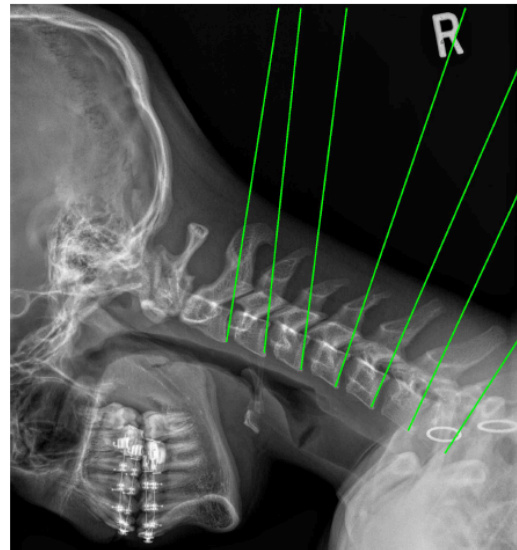
A This colored line represents the normal, healthy position for your neck.
This colored line represents where your neck is currently positioned.

1: Lateral Cervical Flexion 12/23/2021



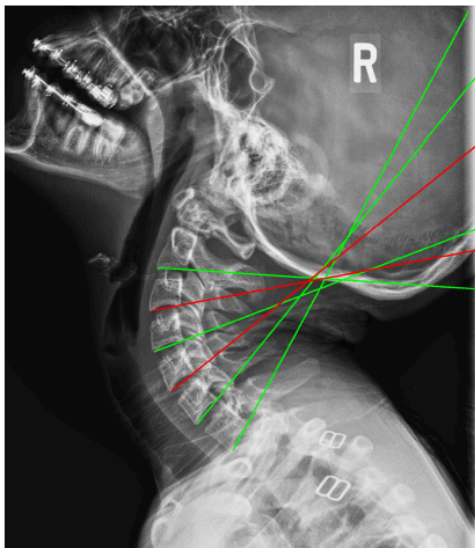
Anterior Posterior

2: Lateral Cervical Flexion 8/3/2022



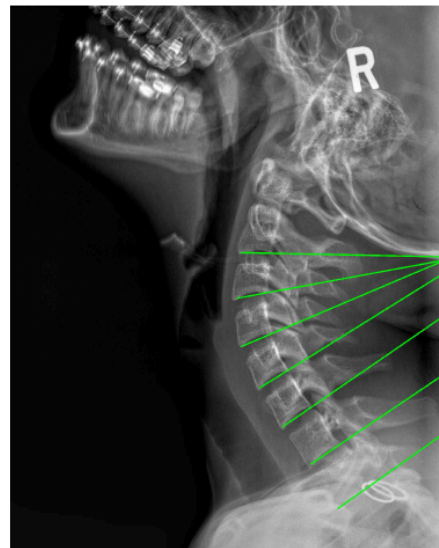
Anterior Posterior

1: Lateral Cervical Extension 12/23/2021



Anterior Posterior

2: Lateral Cervical Extension 8/3/2022



Anterior Posterior

The green line represents vertebrae motion below the ratable threshold for alteration of motion segment integrity.

The red line represents vertebral motion above the ratable threshold indicating alteration of motion segment integrity.



Declarations

This Case Report is a part of the [ASRF Case Report Project](#), a project designed to gather client studies from chiropractors and transform them into much-needed case reports, focused on the effects of chiropractic care on clinical presentations highly relevant to chiropractic, such as stress, immunity and adaptability.

This valuable project is made possible by the generous fundraising and contributions of ASRF supporters.

Patient consent was documented and is held by the lead Authors and the Journal.

All data with appropriate clinical commentary were provided by authors Kotlerman, Martin, and Carter.

ASRF definition of subluxation

'A vertebral subluxation is a diminished state of being, comprising a state of reduced coherence, altered biomechanical function, altered neurological function and altered adaptability.'

About the author

Dr. Kotlerman started her clinical career as a diagnostic nutritional therapist specialising in mental imbalance and nutritional deficiencies. She graduated from *Life West Chiropractic College* with *Emerald clinical honors* and received the *Carl Dieter Philosophy Scholarship*.

Since then, Dr. Kotlerman has specialised in concentrated chiropractic care at [Averio Health Institute](#) in Mount Vernon, WA, where she has been the Clinical Director since 2021. This emerging chiropractic technique uses a friction plate to objectify the area of vertebral subluxation followed by sustained contact, low-force, and specific adjustment to the primary chiropractic subluxation of the spine. Case evidence and observational research over thousands of patients have shown improvement in the spine curve, surrounding spinal tissues, and overall health outcomes via this approach to concentrated chiropractic care.

Dr. Kotlerman is a published author with two books. Her clinical results book, *'Exceptional Health: You Can Have It!'* and her personal memoir, *'Seeing Magic'*. She has published ten international case studies in collaboration with the *Australian Spinal Research Foundation* and the *Asia-Pacific Chiropractic Journal*.

Also by these authors

Kotlerman S, Martin A, Carter M, Postlethwaite R, Mclvor C. Improvement in sleep, mental health, heavy metal toxicity and adaptability concomitant with Chiropractic care in a 47-year-old female cancer-patient undergoing chemotherapy: A Case Report. *Asia-Pac Chiropr J.* 2024;4.4. apcj.net/Papers-Issue-4-4/#AverioChemotherapy

Kotlerman S, Martin A, Postlethwaite R, Mclvor C. Chiropractic Management of an 18-year old female with lupus: A Case Report. *Asia-Pac Chiropr J.* 2021;2.3. URL apcj.net/paper-issue-2-5/#AverioLupus

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