
CASE STUDY

Resolution of Symptoms in a Patient Suffering from Meniere's Disease Following Specific Upper Cervical Chiropractic Care: A Case Study & Review of Literature

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ABSTRACT

Objective: To report on and discuss the effects of upper cervical chiropractic care utilized on a 45-year-old male patient suffering from tinnitus and vertigo associated with Meniere's disease.

Clinical Features: The patient is a 45-year-old male who first showed signs and symptoms of Meniere's disease 12 years ago, with an official diagnosis being made 5 years ago. The patient presented into the doctor's office with ringing and fullness in his ears, hearing loss, vertigo, and a significant decline in his posture and balance. The initial visit to the office was three years after the diagnosis was made.

Interventions & Outcomes: A case history and chiropractic examination were performed first, which determined that the patient had a subluxation at the C1 vertebrae. Chiropractic care was given to the patient following the protocol of the National Upper Cervical Chiropractic Association (NUCCA). The patient had a total of 34 and during each visit the patient was evaluated for vertebral subluxation and was adjusted a total of 22 times. At the end of care the patient claimed his quality of life improved greatly and his most serious issues, vertigo and hearing loss, had been eliminated entirely.

Conclusion: The results of this case strongly suggest that patient's suffering from symptoms of Meniere's disease may benefit from upper cervical adjustments.

Key Words: *Chiropractic, NUCCA, Meniere's, Vertigo, Tinnitus, Subluxation, Adjustment, Manipulation*

Introduction

Meniere's Disease, having only been officially defined by the American Academy of Otolaryngology-Head and Neck Surgery (AAOHNS) in 1995, remains the topic of arguments in the medical community regarding its proper treatment. However, the current definition is very specific and includes long term attacks where the subject will experience acute hearing loss, tinnitus, fullness of the ear, and intense vertigo.¹

These symptoms can present all at once, or only a couple at a time, with intermittent episodes lasting anywhere from minutes to hours with varying intensity.² The underlying cause of these symptoms is an increased volume of endolymphatic fluid within the membranous labyrinth of the inner ear.³

The membranous labyrinth of the inner ear can be broken into two divisions, the vestibular labyrinth and the cochlear

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labyrinth. The vestibular labyrinth contains the utricle and the saccule while the cochlear labyrinth contains the cochlear duct and the cochlea. Blockage of the cochlear duct is directly related to the cause of hearing loss, vertigo, and tinnitus.⁴

Tinnitus is most often perceived as a constant ringing sound within the ear, although description of tinnitus cases will vary between individuals. It affects up to one-third of all adults at some point in their lives and approximately fifteen percent of adults exhibit long-term tinnitus.⁵ This ringing sound can be heard in one or both ears, sometimes even alternating between the two.⁶ The perception of sound enters the auditory system through the outer ear via the external auditory meatus. The auditory ossicles then transfer the sound waves through the oval window into the cochlear duct. The cochlear duct contains endolymph to help transmit the sound waves to the associated nerves.⁴ A blockage of the cochlear duct will prevent the sound waves from completing their path therefore leading to hearing loss. Tinnitus is often a result of hearing loss in the affected patient. This hearing loss can cause the brain to try and adapt to its perceived loss of inner ear function by producing its own sound.⁶ Tinnitus, combined with fullness of the ear and hearing loss, are the main auditory symptoms patients will exhibit when suffering from Meniere's disease.⁷

Blockage and impairment within the inner ear can also lead to vertigo. Vestibular vertigo is the type seen in Meniere's Disease and has an annual prevalence estimated to be between 0.5 and 7.5 out of 1,000 people.² There has been a connection confirmed between cervical trauma and slowly progressing vertigo related disorders, although the relationship is still currently being debated. Vertigo is a sensation of spinning associated with dizziness that can last anywhere from thirty minutes to twenty-four hours at a time. These symptoms can be triggered via high stress, high sodium intake, caffeine, and alcohol consumption.⁸ Vertigo, when paired with symptoms such as nystagmus and nausea is normally contraindicated to chiropractic care. However, there have been cases of vertigo that responded immediately to chiropractic treatment. This leads to the argument that secondary vertigo seen in patients with Meniere's disease is within the scope of chiropractors, provided that the diagnosis of the type of vertigo is made correctly.⁹

Case Report

Patient History

A 45-year-old male patient presented into the office with health concerns related to his diagnosis of Meniere's disease. The patient was suffering from unpredictable episodes of fullness of the ear, tinnitus, and vertigo; all of which he took Valium to control. He had three vertigo episodes in the previous three years, while the fullness in his ear will occur and stay for a few weeks before going away. The patient will go a few months without symptoms but then they will come back. The patient had a secondary complaint of a "pinched nerve" in his neck. He had been in two car accidents ten to fifteen years prior, once where he was T-boned by another vehicle, and another where he rolled his car but he denied any injuries occurring from either accident. The patient received chiropractic care in the past for his pinched nerves. He received an MRI for his pinched nerve complaint which showed narrowing between his C6 and C7 intervertebral foramen.

Chiropractic Examination

The chiropractic examination performed in the clinic is done to determine whether or not the patient has a vertebral subluxation located at the C1 vertebra. These subluxations are found utilizing a combination of x-rays, postural analysis, leg length measurements, manual palpation and thermography. The patient presented with a short right leg of 3/8 of an inch when checked in the supine position. Postural analysis showed a right head tilt with left cervical translation. The patient had a low right shoulder measured at one and one-half degrees and a low left hip measured at two degrees. Palpatory findings showed a C1 subluxation on the right as well as C6 tension on the right. Weight distribution of the patient was 85 pounds on the right to 91 pounds on the left, giving a total difference of 6 pounds.

The patient's pelvic displacement was measured using hip calipers. The pelvis was measured in the frontal, transverse, and fixed point planes. Pelvic distortion is measured at the same time that the patient's weight distribution is taken. Hip calipers are a tool used frequently in the National Upper Cervical Association.¹⁰

Leg length inequality (LLI) is a sign of neuromuscular dysfunction and vertebral misalignment that is commonly used in chiropractic. A previous study estimated the side and magnitude of the LLI to within approximately one-eighth of an inch in fifty volunteer subjects.¹¹ Anatomic LLI under 20mm and leg length alignment asymmetry caused by supra-pelvic muscle hypertonicity may interact in a loaded posture, but not in an unloaded posture. Any leg length asymmetry due to muscle hypertonicity should be eliminated before treatment begins for an anatomical leg length inequality.¹²

Thermography, utilized in many chiropractic techniques, measures the infrared heat along the paraspinal musculature. Alterations in skin temperature patterns are believed to be associated with abnormal functions of the autonomic nervous system.¹³ Thermography has been shown to have a very high inter-examiner and intra-examiner reliability.¹⁴

Radiographic Results

X-Rays were taken of this patient using the standard for National Upper Cervical Chiropractic Association protocol. This protocol consists of lateral cervical, nasium and vertex views. The lateral cervical view (figure 1) is used to determine the angle of the atlas and was measured at 65° for this patient. The nasium view (figure 2) is used to determine head tilt and atlas laterality. This patient had a head tilt of 1.81mm to the right with right atlas laterality of 3.12°. The vertex view (figure 3) is used to determine the rotation of atlas and was measured at 1.62° in this patient.

Chiropractic Intervention

There were a total of thirty-four visits with only twenty-two of those visits resulting in an adjustment and a re-examination occurring on the twenty-fourth visit. During each visit the patient was checked for vertebral subluxation utilizing leg length inequality, thermography of the paraspinal musculature, and palpation of the upper cervical region.

Using the NUCCA protocol, the subluxation was corrected with a specific low force move. The NUCCA adjustment is not a manipulation; it is instead a procedure used to create a force or resistance at a calculated angle using the C1 transverse process as a contact. The adjustment restores proper alignment between the occiput and atlas, allowing the body to rebalance itself beneath the skull.¹⁵

All spinal corrections on the patient were done using the right transverse process of C1 as a contact located one-quarter inch below the mastoid process with inferior torque. After each visit resulting in an adjustment, post findings were evaluated using leg length, paraspinous thermography, and hip calipers to determine postural abnormalities.

Outcome

A re-examination was performed on the twenty-fourth visit where the patient stated his condition had improved 85% since the first examination. His quality of life had improved greatly and in his own words “my most serious issues, vertigo and hearing loss, have been eliminated or drastically reduced.” His secondary complaints of tinnitus and ear fullness had also improved, although they still fluctuated from time to time. Post x-rays were taken (vertex and nasium views) that showed improvements in regards to atlas rotation, atlas laterality, and head tilt (Figures 4-5). Following the re-examination it was determined that the patient continue chiropractic care on a maintenance plan, with visits occurring once or twice every four to six weeks.

Discussion

The purpose of this study was to monitor and document the relationship between upper cervical care and the patient’s progress from symptoms of Meniere’s disease, mainly tinnitus and vertigo. The case study showed improvements for both of these symptoms through the use of corrective care for atlas misalignment to alleviate the neurological compromise associated with it.

NUCCA focuses primarily on the detection and removal of vertebral subluxation, with a focus on atlas, to maximize human health potential.¹⁶ These subluxations interfere with normal physiology and nerve transmission between the brain and the body. This causes interruptions between the sensory to motor pathway, although the bodily effect of such interference is still poorly understood. A dysafferentation model developed by Kent helps to specify what dysfunctions occur with vertebral subluxation. According to Kent, a neurological dysfunction in the body associated with a vertebral subluxation is capable of taking other forms. A functional spinal unit is richly endowed with nociceptive and mechanoreceptive structures. Without proper biomechanical function, an alteration in normal nociception and mechanoreception will occur.¹⁷

Using spinal adjustments, these nociceptive and mechanoreceptive problems can be corrected. A study done by Pickar on the neurophysiological effects of spinal manipulation showed that spinal manipulation evokes changes in the neuromusculoskeletal system. The experimental evidence showed that the impulse of a spinal manipulation impacts the proprioceptive primary afferent neurons from the paraspinous

tissues. In addition to this, spinal manipulation can affect a person’s ability to process pain via nociceptive dysfunction.¹⁸

Proprioception is a very important part of the sensorimotor system and is responsible for providing the central nervous system with afferent information used for neuromuscular control. Proprioception also contributes to dynamic joint stability.¹⁹ Evidence has shown that proprioception remains dysfunctional in patients suffering from low back pain, even after a reduction of symptoms has occurred. The idea can then be proposed that despite a lack of symptoms, biomechanical dysfunction can still be present which in turn would lead to decreased proprioceptive function.

The dentate ligament-cord distortion hypothesis, developed by Grostic, gives a closer look as to how an atlas subluxation can cause neurological dysfunction.²⁰ The hypothesis states that vertebral misalignment creates hyper-stimulation of proprioceptive nerve endings in and adjacent to the articulation. The Dentate Ligament-Cord Distortion hypothesis utilizes the unique anatomy of the cervical spine to show how misalignment of C1 and C2 can produce neurological insult directly via mechanical irritation of the spinal cord, and indirectly via vascular compromise of the spinal cord. The hypothesis also states that misalignment of upper cervical vertebrae, due to their unique attachment to the spinal cord, can stress and deform the cord. This stress, in addition to the direct mechanical irritation, may produce venous occlusion with blood stasis resulting in anoxia in that particular area of the cord.

A case series performed by Burcon involved the treatment of ten subjects with Meniere’s disease using upper cervical protocol.²¹ All ten subjects showed evidence of upper cervical subluxation upon the neurological examination. This subluxation was confirmed with x-rays as a posterior and inferior listing. Although there is a possibility of spontaneous remission or a placebo type effect in the patient’s improvement, the long term clinically documented neurophysiological improvements after the initial adjustments strongly suggest otherwise. Additionally, these ten patients all presented consecutively with a posterior and inferior atlas listing with laterality on the opposite side of ear involvement.

Another article done by Burcon involved upper cervical protocol and the results of 139 patients that were medically diagnosed with Meniere’s disease.²² Following one or two specific cervical adjustments, 136 of the 139 patients had balanced legs and an absence or dramatic reduction of symptoms, primarily vertigo. Much like the previously mentioned case series by Burcon, 130 out of 139 of the patients presented with a posterior and inferior atlas subluxation with laterality on the opposite side of the involved ear. The underlying cause of the patient’s symptoms seemed to be a prior cervical trauma, as all 139 patients had suffered a cervical trauma at some point, most being from automobile accidents.

A chiropractic case study outlined subluxation-based chiropractic care of a seventeen year-old female who had been experiencing a loss of balance, difficulty with speech, and postural problems following the removal of a cerebellar tumor. Following five months of care and twenty-six total adjustments using the NUCCA protocol the patient’s balance improved

from 6/10 to 9/10 and her speech improved 90%.²³ This study is another example of the positive effects that chiropractic care can have on a patient suffering from loss of balance, a symptom commonly associated with vertigo.

A retrospective analysis conducted by Elster monitored sixty patients suffering from chronic vertigo that went under upper cervical chiropractic care.²⁴ The protocol for each patient was created utilizing the International Upper Cervical Chiropractic Association (IUCCA) guidelines. Each patient was seen in a private practice in an uncontrolled, non-randomized environment over an eight-year period. Out of all sixty patients, one hundred percent of them had improved symptomatology or were symptom free following the chiropractic care. Associated symptoms of these patients included vertigo, loss of balance, nausea, and vomiting.

Conclusion

This case report outlines the subluxation based chiropractic care of a 45-year-old male suffering from Meniere's disease following five months of care and twenty-four visits. The patient reported an 85% improvement of his condition with his primary complaints being completely eliminated or significantly reduced while his secondary complaints greatly improved.

This is one case in which significant improvements in symptoms of Meniere's disease were made utilizing upper cervical chiropractic care. Further research needs to be made in respect to the effects vertebral subluxation has on the neurological input involved with hearing. The relationship between vertebral subluxation and the complex process the body uses for proprioception and balance should also continue to be investigated.

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Figures

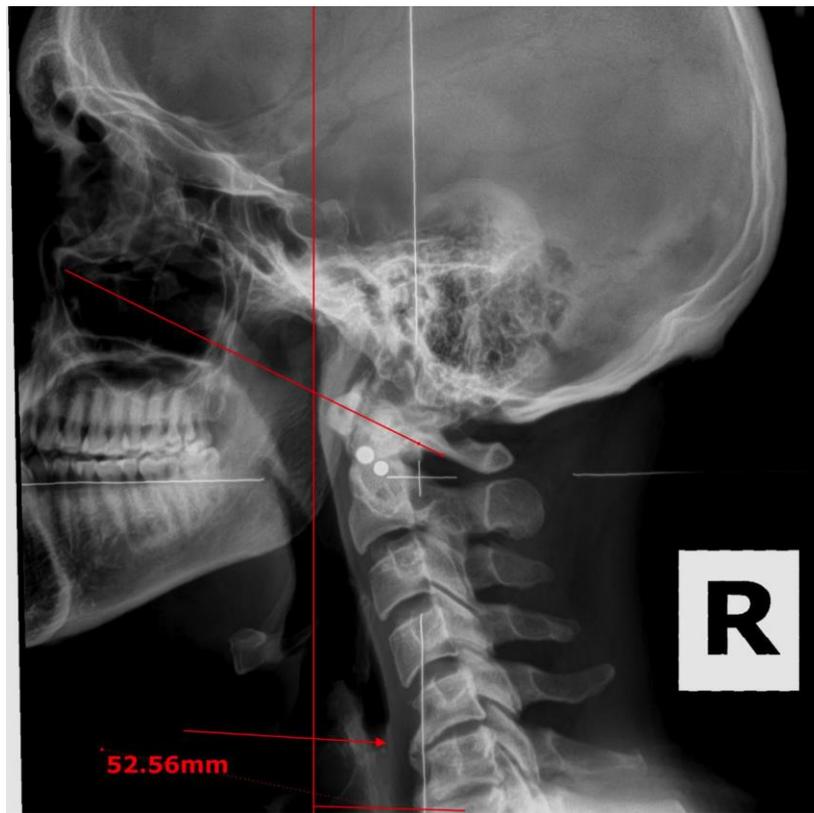


Figure 1. Pre Lateral Cervical View

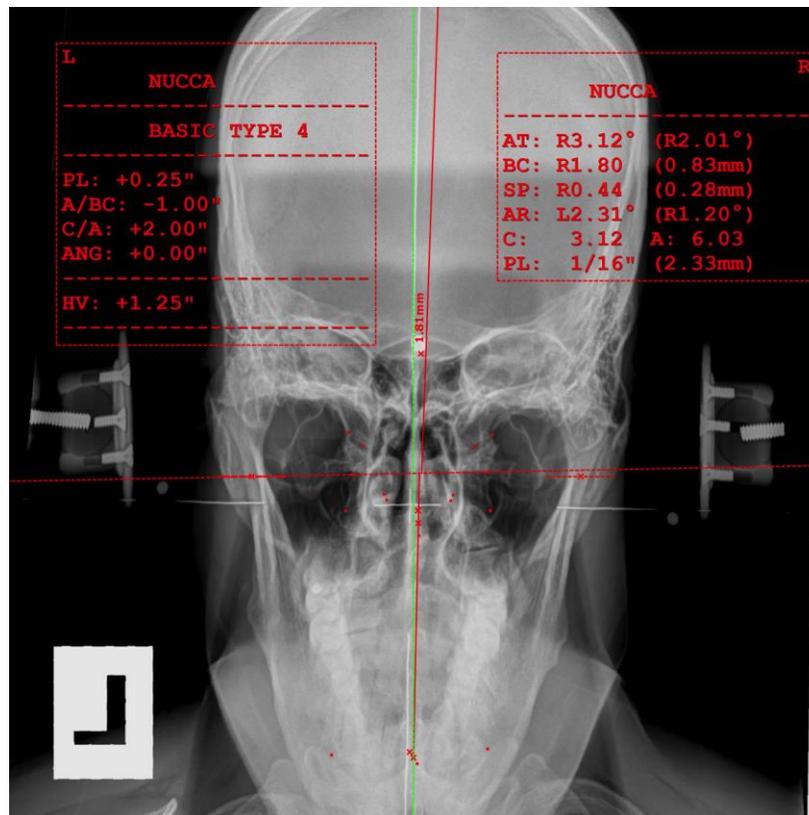


Figure 2. Pre Nasium View

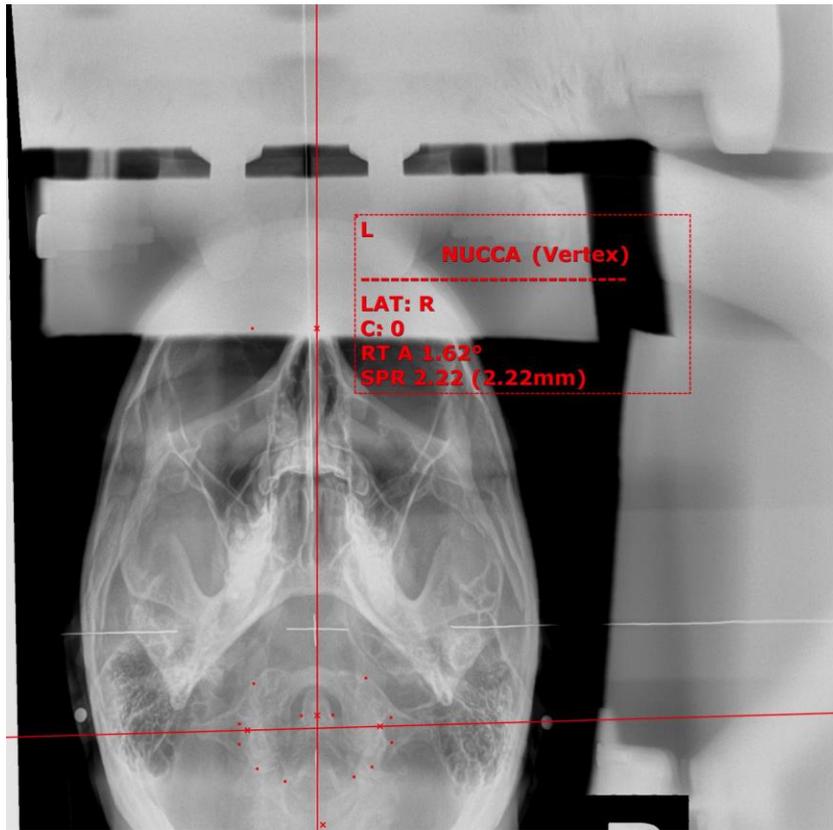


Figure 3. Pre Vertex View

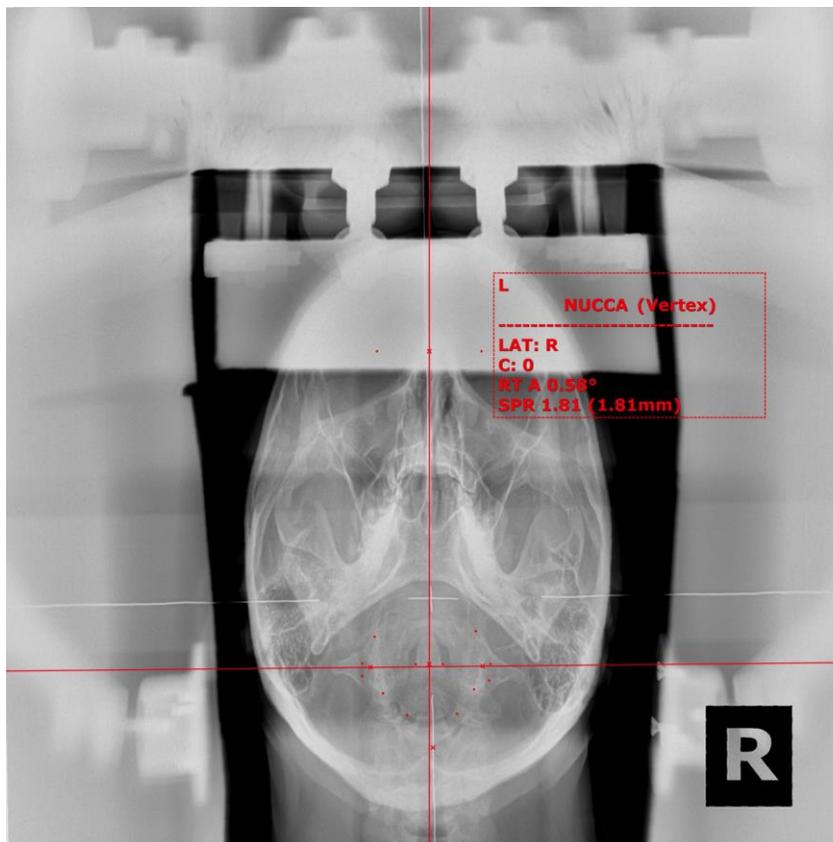


Figure 4. Post Vertex View

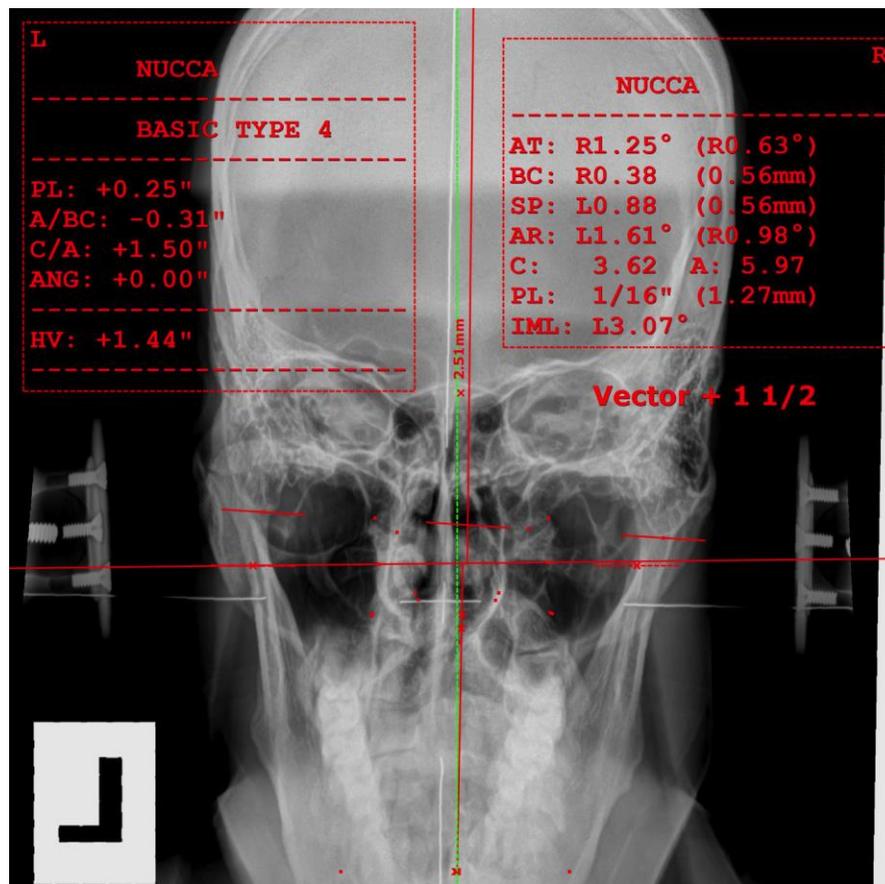


Figure 5. Post Nasium View