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Clinical Case Report

EPIC Technique Spinal Procedure Improves Ocular Motion and Dizziness by Resolving Cranial Nerve VI Palsy

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Abstract

This case study demonstrates that craniocervical spinal alignment with the EPIC technique spinal procedure appears to have a potential positive impact on ocular function. This paper will report the case of a patient with cranial nerve VI palsy and dizziness, and the clinical improvements following treatment with the soundwave technology of the EPIC technique spinal procedure [1].

Objective: To report the case of a patient with cranial nerve VI (CN VI) palsy and the clinical changes that occurred after receiving treatment using the EPIC (Evolutionary Percussion Instrument Corrections) technique spinal procedure.

Clinical Presentation and Evaluation: A 52-year-old female presented with acute insidious onset of cranial nerve VI palsy with complaints of headache and feelings of increased head pressure. Upon eye movement exam, left eye abduction was absent which additionally caused double vision. A neurovascular physical examination using the EPIC technique protocols revealed evidence of the presence of craniocervical subluxation.

Radiographic Findings: A four-view pre-adjustment digital radiographic series of the craniocervical region was taken and analyzed utilizing the EPIC technique protocols. The patient's epigenetic structural profile (aka. epigenetic profile) was ascertained as well as the multidimensional vertebral malalignments between occiput (C0), atlas (C1), axis (C2), and angle of lower neck deviation (aka. misalignment profile).

The C1 vertebra was laterally displaced to the right in a -θZ direction, and rotationally displaced in a +θY direction. C2 was rotationally displaced in a -θY direction (aka. "spinous left") with a lower neck deviated to the left in a +θZ direction. It is important to note the opposite rotational displacement of C1 and C2 about the Y axis, referred to as counter-rotational malpositions of C1/C2 [1] also referred to as a "variable subluxation" [2].

Numerous epigenetic variations were present, the most important of which was bilateral elongated styloid processes observed down to the level of C1 transverse processes.

A single correction vector was then calculated based on both the epigenetic and misalignment profiles of data. [1].

Intervention and Outcomes: The patient was given a single soundwave impulse treatment (correction) to her craniocervical region according to the EPIC technique protocols of care using the Integrity Genesis adjusting instrument [1]. Immediately following the initial correction, the patient was re-evaluated for the presence of subluxation using the EPIC neurovascular physical exam and radiographic assessments. Findings revealed neurovascular indicators of subluxation were no longer present. A two-view post-adjustment EPIC digital radiographic series was taken to measure the biomechanical/structural changes from the treatment. Post-adjustment analysis revealed 95% reduction of C1 laterality (θZ), 22% reduction of C1 rotation (θY), 47% reduction of C2 rotation (θY), and 8% reduction in lower neck deviation (θZ). The C1 and C2 counter-rotations reduced by a combined 38%.

After the initial EPIC adjustment, the patient's atlas was adjusted three times total in nine office visits over a six-week period. Three days after the first adjustment, limited abduction was restored to the left eye, but by the fifth week of care, left eye abduction was fully restored and the patient no longer experienced double vision. Patient also reported significant reduction in headaches with much less intensity compared to symptomatology she experienced prior to initiating care.

Conclusion: This patient's functional ocular improvement following the EPIC technique spinal alignment procedure appears to indicate a potential correlation with craniocervical alignment and cranial nerve function. There are potential vascular correlations between the craniocervical junction and cranial nerve function, however the exact mechanisms of functional improvement is still unknown.

It is inherently very difficult to draw any conclusions from a single case study, and more research is needed in the area of craniocervical specific chiropractic care and the impact on cranial nerve function and fluid flow dynamics. However, due to the low risks associated with the EPIC technique spinal procedure and the positive patient outcomes demonstrated in this case, the EPIC procedure deserves further investigation for its potential utilization in cases involving cranial nerve dysfunction.

Keywords: EPIC, Spine, Cranial Nerve, Ocular Function, Craniocervical, Eye Health, Chiropractic, Subluxation, Sound Wave Technology and Biomechanical Alignment

History and patient presentation

A 52-year-old female presented to the clinic with acute insidious onset of horizontal binocular diplopia with complaints of headache and feelings of increased head pressure. Patient had a history of a lumbar dural puncture from an epidural that was years prior, which had self-resolved. Three years prior to coming to our clinic, patient was diagnosed with mild idiopathic hypertension being managed through medications. Five months prior to care, the left eye felt more comfortable being turned in (adducted) while watching television. Four months prior to care, the patient received a Shingles/Herpes Zoster vaccine. During that same month the patient described experiencing "ice pick" headaches that began from the temples wrapping around temporal bones bilaterally. Two months prior to care, the patient became overheated at a concert and thereafter experienced bouts of head and neck pain. A month before care, CN IV palsy started with associated dizziness, nausea, a feeling of increased head pressure, and headache. Upon initial onset of this palsy, the patient was admitted to ER for evaluation to include TIA and stroke protocols. All medical test results revealed no findings or correlations to the cause of the CN VI palsy, dizziness, or nausea, including the TIA and stroke protocols being negative. Upon discharge from the ER, the patient was prescribed medications to help reduce the headache, nausea, allergies, and feelings of head pressure.

Patient presented to EPIC Clinics with complaints of double vision associated with CN VI palsy, headaches, and feelings of increased head pressure. Extra ocular muscle function test revealed absence of left eye abduction when attempting to look left.

Neurovascular examination findings

As per the EPIC examination protocol [1], an analysis of her systemic neurologic function revealed upper right extremity strength deprivation, unilateral hypertonic left lumbar erector muscles, and a left leg length discrepancy of 1 inch. Upon left head rotation, neurological indicators normalized (arm weakness, lumbar muscle tightness, leg length discrepancy), indicating that cervical misalignment could be causing the neurologic dysfunctions. Posture analysis revealed left head tilt and left head translation, as well as an elevated left shoulder. Palpation of the suboccipital region revealed edematous inflammation in the region of the right C2 dorsal root ganglion (DRG) that was painful. Fakuda's Step Test demonstrated a positive finding for cerebellar imbalance with forward translation and 45-degree left turn. The EPIC examination protocol indicators gave evidence to the existence of a craniocervical subluxation.

Digital radiographic examination findings

Biomechanical Considerations

A radiographic study of 4 views was performed to further assess the craniocervical dysfunction. (Figure 1) Findings from the sagittal plane radiograph revealed a loss of the normal lordotic cervical curve, degeneration at multiple disc levels with associated hyperexostosis (spurring).

Additionally, radiographic findings from the frontal plane included multiple measurable biomechanical irregularities. (Figure 1) The biomechanical irregularities include.

Figure 1: Sagittal and Frontal digital radiographs.

- C1 spinal misalignments of -1.28 θZ and +4.42 θY
- C2 spinal misalignment of -7.20 θY
- Lower cervical spine deviation of +2.78 θZ

The +4.42 θY C1 misalignment and -7.20 θY C2 misalignment revealed opposite rotations, forming a cumulative counter-rotational misalignment condition of 11.62 degrees around the Y-axis. This counter-rotational malposition could produce abnormal stress to the vertebral artery vascular supply to the midbrain/cranial nerve center. In a case study involving a patient with bow hunter syndrome that was treated with an upper cervical alignment procedure, after the adjustment they found that vertebral artery flow was increased by 8.2% on the left and 22.2%

on the right as measured by vascular ultrasound [3]. Additionally, this counter-rotational malposition may compromise adequate flow of the CSF fluid between the brain and the spinal canal [4].

Epigenetic considerations

Patient's radiographic findings from the frontal plane also reveal that she has epigenetically elongated styloid processes extending down to the C2 vertebral level. (Figure 2,3) This presents an additional risk factor to compression of the internal jugular vein between the elongated styloid process and the transverse process of a θY rotationally misaligned vertebra. As stated before, counter-rotational misalignments may additionally obstruct CSF flow by narrowing neural canal space. The radiographs also revealed an asymmetrical inferior posterior arch attachment, rendering it unusable for analysis.

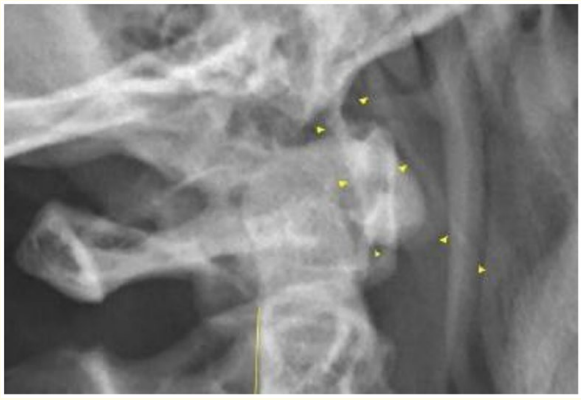

Figure 2: Styloid process elongation seen on the sagittal radiograph.

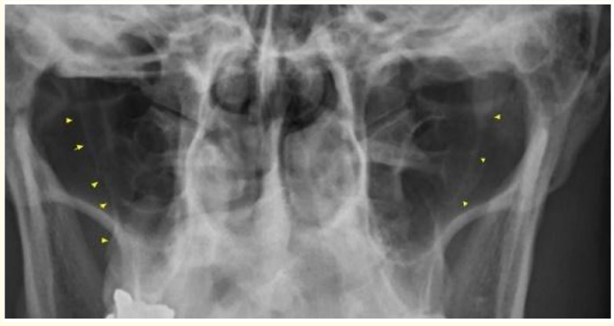

Figure 3: Styloid process elongation seen on the frontal radiograph.

If the counter-rotational malposition of the C1 and C2 vertebrae compresses the internal jugular vein compression and disrupts the CSF fluid flow, that could create abnormal fluid pressure and flow in and around the brain tissue (called cranial hydrodynamics). Considering the rotational θY malposition of C1, it could be possible to compress the anterior root of the transverse process into the posteromedial internal jugular vein unilaterally, further compromising proper hydrodynamics to one side of the brain [5].

An MRI was conducted upon the patient's admission to the ER. The radiology report noted "ventricles and sulci are normal in size" and "no acute intracranial abnormality". Though there may have not been a pathological finding on the MRI scan, below you can see there are notable differences in the size of the sulci of the brain and ventricles (Figure 4).

This may be contributed to abnormal fluid dynamics in and out of the skull [4].

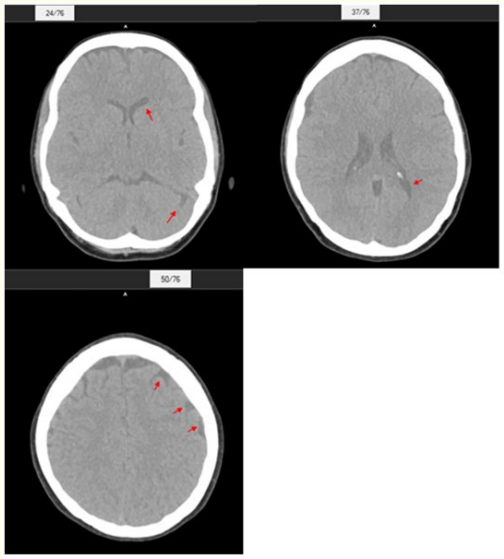

Figure 4: Series of sequential imaging slices showing asymmetrical brain fluid accumulation.

Treatment

The EPIC (Evolutionary Percussive Instrument Corrections) technique spinal procedure was used to detect and correct the craniocervical subluxations. The treatment course of care begins with delivering a specific measurable sound impulse utilizing the

patented, FDA-registered 3-axis percussion adjusting instrument called the Integrity Genesis [6]. Following the initial correction, another series of digital radiographs were immediately taken and measured for consideration of biomechanical alterations from the correction.

Spinal alignment correction

The craniocervical subluxation was treated using a sound impulse instrument called the Integrity Genesis [6].

The patient was placed in a side-lying position with customized pre-set joint influences to encourage the multidirectional biomechanical misalignments to respond to the treatment. Coordinates obtained from measuring the epigenetic and misalignment profiles on the EPIC digital radiographic were then calibrated into the adjusting instrument. The instrument stylus was positioned just off the surface of the skin, targeting to the C1 vertebral transverse process (Figure 5).

Figure 5: Instrument targeting C1.

A solenoid-striking adjusting mechanism in the instrument's head was then activated to create an acoustic wave of 61.5dB at 2.5 kHz traveling at a speed of 345.8 m/s that was administered non-invasively to the C1 vertebra [6]. This unique mechanism is used to instantaneously correct the craniocervical misalignment syndrome (aka. Craniocervical subluxation).

Post adjustment neurovascular examination findings

Immediately following the EPIC procedure, the patient was examined for the presence of craniocervical subluxations. The palpatory edematous swelling of the C2 dorsal root ganglion region was resolved and no longer painful to the touch. Her lower back muscle imbalance had normalized, and her supine leg length discrepancy was balanced.

Post adjustment digital radiographic findings

The digital radiographic examination was repeated immediately after the first correction using the same exact standards as the pre radiographic examination. The findings were as such:

- C1 spinal misalignments of -1.28 θZ decreased to -0.06 θZ, and +4.42 θY decreased to +3.43 θY.
- C2 spinal misalignment of -7.20 θY decreased to -3.84 θY.
- Lower neck deviation of +2.78 θZ decreased to +2.56 θZ.

This equated to a 96% reduction of C1 lateral displacement, a 22% reduction of C1 rotational malposition, and a 47% reduction of C2 rotational malposition. This equated to a resultant 38% cumulative reduction of the C1/C2 counter-rotational misalignment condition (Figure 6).

Pre-adjustment frontal x-ray Post-adjustment frontal x-ray

Figure 6: Comparison of pre and post adjustment radiographic findings.

Outcomes

The patient's treatment was chronicled in the table below (Figure 7). After 3 days of holding the first correction, "holding" meaning all neurovascular indicators were negative for the presence of subluxation, a bilateral eye movement test revealed

there was a slight improvement in left eye abduction. The small increase in function did not yet improve the double vision at this point, however the patient reported that the headaches were much better than before the adjustment.

Time since fist adjustment	Visit number	Primary complaint	Intervention
0	1	Left eye loss of abduction, diplopia, pain referring from neck into head and behind eyes	UC-Adjustment
1 Day	2	Loss of abduction, diplopia	UC-Exam/Holding
2 Days	3	Loss of abduction, diplopia	UC-Adjustment
5 Days	4	Loss of abduction, diplopia	UC-Exam/Holding
1 Week	5	Mid back pain	UC-Exam/Holding
5 Weeks	6	Head and neck pain	UC-Adjustment
5 Weeks 1 Day	7	Right neck stiffness	UC-Exam/Holding
5 Weeks 2 Days	8	None	UC-Exam/Holding
5 Weeks 3 Days	9	Ear pressure	UC-Adjustment
5 Weeks 4 Days	10	Mild neck discomfort	UC-Exam/Holding

Figure 7: Timeline demonstrating visits requiring craniocervical (UC) adjustment or if none needed.

Patient held her initial correction for 2 days. The patient's second correction held for at least 5 days after which time the patient returned to her out-of-state home for 4 weeks. When the patient returned for care in week 5, neurovascular indicators revealed the craniocervical subluxation has recently recurred, yet the left eye abduction was fully functional, and the symptoms related to diplopia were resolved (Figure 8). During this visit, the patient's craniocervical junction was adjusted. The patient held this correction for 2 days following which the patient complained of ear pressure and presented with neurovascular indicators of craniocervical subluxation and was adjusted. She maintained that correction until her final appointment the following day when she returned home out-of-state.

Figure 8: Left ocular abduction change following EPIC treatment.

The patient received a total of 4 craniocervical adjustments over a 5 week and 3 day period of time. During that time, her ocular function completely normalized, headaches improved, and diplopia resolved.

Potential etiology

Reduced arterial flow.

There is a potential correlation of upper neck alignment affecting ocular functions. Lateral eye movement is performed by the lateral rectus muscle which is controlled by the abducens nerve (CN VI) (Figure 9).

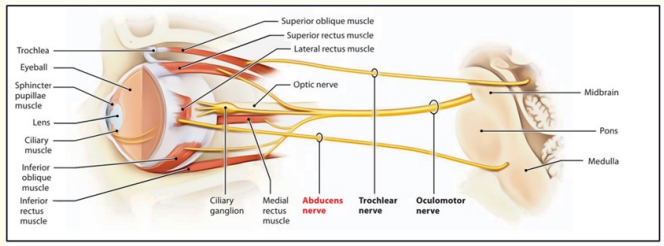

Figure 9: Lateral rectus muscle innervated by the abducens nerve.

The abducens nuclei is primarily blood supplied by the vertebral artery vascular distribution pathway. (Figure 10) The vertebral artery passes through the transverse foramen of the cervical vertebra and takes 4 90-degree turns when passing through the craniocervical junction of the upper spine. It is feasible that malalignment (subluxation) of the craniocervical junction could alter the vertebral artery provision to the abducens nuclei as well as other cranial nerve nuclei.

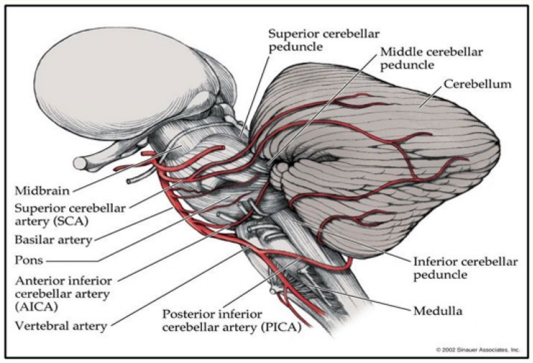

Figure 10: Vertebral artery distribution pathway to cranial nerve center.

The presence of torsion of the vertebral artery due to the counter-rotationally misaligned upper cervical spine is evident in this patient's scans. (Figure 11, Figure 12) This would imply the potential for altering and potentially diminishing the vascular flows through the vertebral arteries to the abducens nuclei.

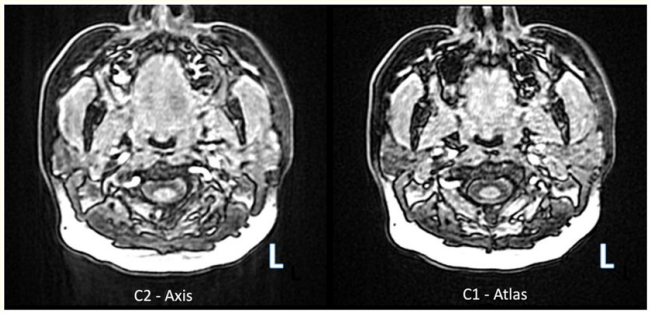

Figure 11: Visible torsion of the vertebral artery ascending through C2 and C1.

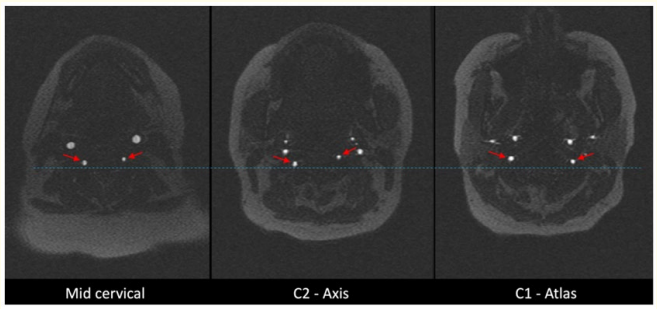

Figure 12: Altered position of vertebral artery at various cervical vertebral segments.

The presence of the counter-rotationally subluxation Occiput-C1-C2 relationship appears to be creating a torsion of the vertebral artery, which can diminish blood flow to the abducens nuclei. The hypoxic environment of reduced blood flow to the nuclei could diminish the abducen's neurocapacity for transmitting proper signals to the lateral rectus muscle that it controls, thus reducing abduction ability.

Reduced venous drainage

As the Internal Jugular Vein (IJV) is the primary drainage vessel for the cranium, it is important to recognize that its descending pathway as it leaves the skull is just anterior to the atlas (C1) vertebrae. Additionally, this patient had styloid process elongation down to the level of C2, which forms a non-compressible structure in front of the IJV at the C1 level (Figure 13).

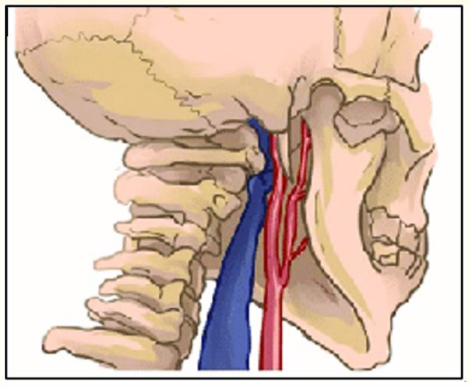

Figure 13: Potential IJV compression.

In that this patient's craniocervical alignment included a C1 rotational component of +4.42 θY, this could have caused the transverse process of the atlas vertebra to press toward or into the IJV. The epigenetic styloid process elongation would have created a "bony wall" in front of the IJV exacerbating any potential compression of the IJV by the rotationally subluxated atlas.

If IJV compression was occurring unilaterally, it could theoretically cause a unilateral (one-sided) "backlog" of fluid in the brain hemispheres. In that (Figure 4) shows the patient's brain scans demonstrated unilateral accumulation of fluid in the brain on the same side as the reduced left lateral abduction, this could present evidence to the IJV compression possibility. It is feasible that another potential etiology of the unilateral fluid accumulation from the craniocervical subluxation could have created some type of edematous compression on the abducens nerve, thereby reducing the function of that nerve and associated ocular muscle performance.

Limitations

It is inherently very difficult to draw any global conclusions from a single case study and more research is certainly needed in the area of craniocervical alignment procedures and their potential impact on cranial nerve function and cranial hydrodynamics. As this

case was evaluated and managed for only approximately 6 weeks, studies over a longer period of time may provide stronger evidence of sustained resolution of dysfunction and symptomatology.

Conclusion

This case appears to demonstrate that improving the craniocervical junction alignment using the EPIC technique spinal procedure may have a possible positive impact on ocular function. This case also appears to correlate that a craniocervical subluxation may have a potential negative impact on cranial hydrodynamics and/or cranial nerve function.

Due to the low risks associated with the Evolutionary Percussive Instrument Corrections (EPIC) technique [6] and the potential positive patient outcomes demonstrated in this case, the EPIC procedure deserves further investigation for its potential utilization in cases involving cranial nerve dysfunction.

Due to the small sample size of this paper, additional confirmation with a much larger sample size and possibly controls is needed to come to any definitive conclusions.

Acknowledgements

Kelcey Wiginton, DC co-managed this case with the author of the article. Russell Goff, DC assisted in the original data collection of this case writeup and initiated portions of the first draft of this submission.

Conflict of Interest

Stan Pierce is an inventor on the patent of the Integrity Genesis instrument and instructs the EPIC technique in several chiropractic doctorate programs. The EPIC procedure and patented adjusting technology are in commercial use as EPIC Clinics®.

Bibliography

1. Pierce S. "Scientific Rationale, Clinical Protocols, and Positive Patient Outcomes of the EPIC Technique Spinal Procedure". *Orthopedics and Rheumatology Open Access Journal* 17.4 (2021): 555969.

2. Palmer BJ. "Up from Below the Bottom, Chiropractic Fountain Head, Davenport, Iowa" (1950).

3. Rectenwald RJ., *et al*. "Vascular Ultrasound Measurements After Atlas Orthogonal Chiropractic Care in a Patient with Bow Hunter Syndrome". *Journal of Chiropractic Medicine* 17.4 (2018): 231-236.

4. Rosa., *et al*. "Craniocervical Junction Syndrome: Anatomy of the Craniocervical and Atlantoaxial Junctions and the Effect of Misalignment on Cerebrospinal Fluid Flow". *Hydrocephalus-Water on the Brain* (2018): 27-40.

5. MV Jayaraman., *et al*. "Incidence of Extrinsic Compression of the Internal Jugular Vein in Unselected Patients Undergoing CT Angiography". *American Journal of Neuroradiology* 33.7 (2012): 1247-1250.

6. S Pierce., *et al*. "EPIC Spinal Procedure with Sound Wave Technology Induces Biomechanical Alignment Putatively Influencing Pain Response". *American Journal of Biomedical Science and Research* 19.6 (2023): 002642.