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Surgical Interventions for the Treatment of Chiari Malformation Type I

Cover Page Footnote

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Surgical Interventions for the Treatment of Chiari Malformation Type I

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OBJECTIVE

Clinical follow-up and observations of a patient who has undergone multiple surgeries for the treatment of Chiari Malformation Type I.

MEDICAL HISTORY

A 52-year-old female, stay at home mom, was diagnosed with Chiari Malformation Type I. When the patient was 17 years old, she was diagnosed with migraines, which persisted until 2002 when the patient turned 37. At that time the patient began to experience numbness and tingling in her arms and legs, difficulty swallowing, and “drop attacks” where the patient would lose complete control of her arms and legs and would collapse to the floor without losing consciousness. After having three surgeries to treat her symptoms, the patient continues to have migraines and barometric headaches which often leave her incapacitated and bedridden.

DIFFERENTIAL DIAGNOSIS

Psychological disorders, 7th Nerve Syndrome, Migraines, Sepsis, Hydrocephalus, and Chiari Malformation Type I.

RELATED LITERATURE

Other studies have been conducted as an attempt to discover the best treatment options for Chiari Malformation Type I. Current research shows posterior fossa decompression to be the most common surgical intervention for Chiari Malformation Type I.^{1,2} However, very few of these studies have offered any insight to patients with unsuccessful posterior fossa decompressions. Related studies focus mainly on immediate surgical outcomes, such as one-year follow-ups, or the effects of physical therapy on patients experiencing symptoms.

TREATMENT

Various forms of medications, nerve block, shots of Fentanyl and Phenergan, along with Botox into the Frontalis, Galea Aponeurotica, and Occipitalis to reduce the pain caused by headaches. After unsuccessful treatment, the patient was sent to a headache clinic in which treatments such as biofeedback, craft therapy, and facet blocks were used to treat symptoms. In 2015 X-rays and MRI revealed Chiari Malformation Type I as seen in images 1 and 2.



Image 1. This image shows the destension of the cerebellar tonsils past the level of the foramen magnum

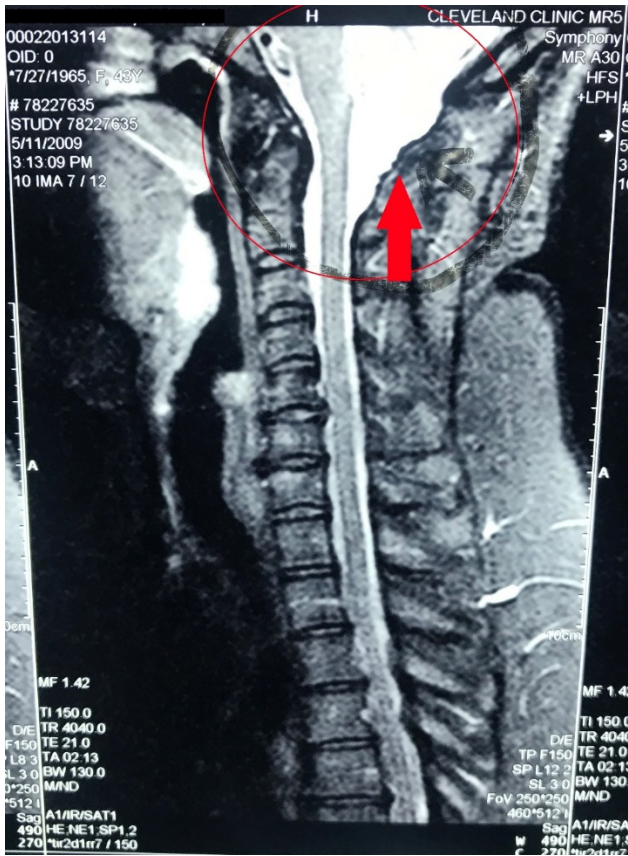


Image 2. This image shows another look at the distension of the cerebellar tonsils.

Posterior Fossa decompression with laminectomy and duraplasty soon followed, leaving the patient with the scar shown in Image 3. The patient was released prematurely and developed sepsis and a cerebral spinal fluid leak. Symptoms soon returned and the patient attempted to use hypnosis to cure her symptoms but was unsuccessful. The patient was reevaluated by doctors and it was determined that the craniectomy hole was too large, doctors determined the cause of the patient's headaches were from an irritated trigeminal nerve and the patient was scheduled for occipital nerve decompression and turbinectomy. Symptoms returned after this surgery and the patient visited a new doctor who prescribed X-rays that revealed slumping in the Cerebellum. The patient underwent her third surgery where a titanium mesh sling was inserted into the Temporal bone, superior to the Mastoid process and lateral to the Zygomatic Process. Today the patient still

receives Botox shots and is on various medications to treat her symptoms but still has debilitating headaches that render her bedridden.



Image 3. The scar left behind following the posterior fossa decompression, commonly referred to as the "zipper" by patient's with Chiari Malformation Type I.

UNIQUENESS

Chiari Malformation is a neuromuscular disease which is thought to affect nearly 1 in every 1,000 births. However, the disease has become more prevalent as the use of MRI and CT scans have progressed.

CONCLUSIONS

Patients with Chiari Malformation Type I are still searching for a treatment that can completely alleviate their symptoms. Future research should investigate the effectiveness of the following: posterior fossa decompression, cerebellar tonsillectomy, and the implantation of a cerebellar sling. This case offers multiple options for treatment if the posterior fossa decompression is unsuccessful.

REFERENCES

1. Rehman L, Akbar H, Bokhari I, Babar AK, M Hashim AS, Arain SH. Posterior fossa decompression with duraplasty in Chiari-1 malformations. *Journal Of The College Of Physicians And Surgeons--Pakistan: JCPSP*. 2015;25(4):254-258. doi:04.2015/JCPSP.254258
2. Teo KA, Yang L, Leow R, Lwin S, Kuo JS. Minimally-invasive approach to posterior fossa decompression: Initial experience in Adult Chiari Type 1 Malformation patients. *Journal Of Clinical Neuroscience: Official Journal Of The Neurosurgical Society Of Australasia*. 2018;56:90-94. doi:10.1016/j.jocn.2018.06.054

KEY WORDS: *Chiari Malformation, Posterior Fossa Decompression, Cerebral Spinal Fluid*