

Key Points

1. Some Chiari patients suffer from continued occipital headaches even after an apparently successful surgery
2. Thought to be due to scars or nerve damage from the surgery
3. Occipital Nerve Stimulation involves implanting a generator and leads to electrically stimulate a nerve
4. Has been used to treat other types of chronic headaches
5. Group tried ONS with 18 Chiari patients
6. First underwent a trial and if it provided at least 50% relief, then was implanted
7. Trial worked for 13 of 18
8. After some time, device was removed from 2 patients for lack of effectiveness
9. Other 11 reported continued relief up to 2 years later
10. Surgical complications include leads moving, eroding, and infection

Definitions

occipital - having to do with the back of the head

occipital nerve - nerve that starts in the upper spine and innervates part of the scalp

occipital nerve stimulation (ONS) - technique used to treat chronic headaches by electrically stimulating the occipital nerve

refractory - difficult to treat

cerebellar tonsils - portion of the cerebellum located at the bottom, so named because of their shape

cerebellum - part of the brain located at the bottom of the skull, near the opening to the spinal area; important for muscle control, movement, and balance

cerebrospinal fluid (CSF) - clear liquid in the brain and spinal cord,

Neurostimulator Helps With Persistent Headaches Post Surgery

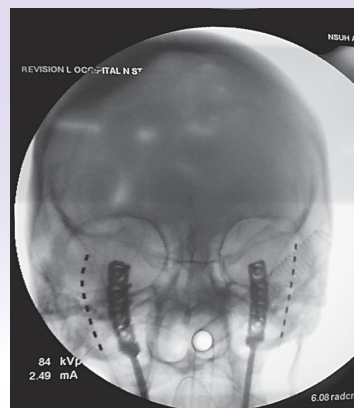
June 30th, 2011 -- In addition to headaches being the most common Chiari related symptom in adults, some patients continue to suffer from occipital headaches even after an apparently successful surgery. For these patients, other Chiari related symptoms may go away, but the headaches continue. Because in other aspects their surgery seems successful, it is thought that these types of persistent headaches are due to either adhesions or damage to the occipital nerve from the surgery itself.

Unfortunately, often for this subset of Chiari patients the headaches are refractory, meaning they are difficult to treat. However, The Chiari Institute (TCI) has recently published a paper showing some success in using Occipital Nerve Stimulation in providing relief for this type of continued post-surgical headache.

ONS uses a generator to electrically stimulate a nerve. The generator, wires, and electrical leads are all implanted surgically. ONS has been used for some time now, with mixed results, to treat different types of headaches, such as migraines. There have also been a couple of case studies published in the literature involving ONS for Chiari related headaches. One of these case studies described a dramatic improvement for the lucky patient, with their headache related pain dropping from a 9 out of 10 on a pain scale to just a 1 out of 10.

The TCI group tried ONS on a group of 18 Chiari patients who exhibited persistent headaches after surgery, primarily in the occipital or sub-occipital area of the head. There were 16 women and 2 men, with an average age of 34. Before permanently implanting the neurostimulator device, the patients underwent a trial to see if the stimulation would provide any relief. For the trial, the leads were placed using only a needle and the generator was kept external. If a patient experienced at least 50% pain relief on a simple pain scale, the devices were implanted fully during a surgical procedure (Fig 1 below).

Figure 1: Occipital Nerve Stimulation Leads in a Patient With Cervical Fusion



Out of the group of 18, the trial was successful in providing relief for 13 of the patients (Table 1). During follow-up after the devices were implanted, two of the patients in that group reported it was no longer providing relief and the devices were removed. The other 11 continued to report at least 50% relief for an average 2 years.

The authors report that because some of the patients had had multiple surgeries, including cervical fusions, they sometimes had to adapt their techniques for implanting the devices accordingly. In addition, the complication rate was fairly high, with leads moving out position, one infection, and erosion of the lead tips (Table 2).

Despite the fact that in the end only 61% of the group got sustained relief from the devices, and that complications are not uncommon, for those suffering from persistent occipital headaches after Chiari surgery, ONS may be worth a look.

Table 1: ONS Outcomes for 18 Chiari Patients with Refractory Headaches

Outcome	Number
Ongoing Relief of at least 50%	11
Trial failed	5
Device removed after implant	2

acts as a shock absorber

Chiari malformation I - condition where the cerebellar tonsils are displaced out of the skull area into the spinal area, causing compression of brain tissue and disruption of CSF flow

decompression surgery - general term used for any of several surgical techniques employed to create more space around a Chiari malformation and to relieve compression

syringomyelia - condition where a fluid filled cyst forms in the spinal cord

Table 2: Surgical Complications for ONS Implant

Complication	Number
Lead migration	2
Infection	1
Lead tip erosion	1
Discomfort at generator site	1

Source

[Occipital neuromodulation for refractory headache in the Chiari malformation population.](#) Vadivelu S, Bolognese P, Milhorat TH, Mogilner AY. Prog Neurol Surg. 2011;24:118-25.

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