# Surgery for Cluster Headache: Last Ditch Therapy?

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LAS VEGAS — The medical literature on surgery for cluster headaches is scant, but some patients and their neurologists are willing to chance surgery when all other treatment options have been exhausted, Todd D. Rozen, M.D., said at a symposium sponsored by the American Headache Society.

Even without the reassurance of controlled studies, several surgical techniques seem to have value despite their side effects, said Dr. Rozen of the Michigan Head-Pain and Neurological Institute, Ann Arbor.

For patients with cluster headache to be considered for surgery, they must have exhausted all medical options, or they must have a medical history that precludes the use of typical abortive and preventive medications.

The patients should be psychologically stable and be judged to have a low proclivity for addiction. Some patients may require opiates for a short period of time after surgery; also, low proclivity for addiction goes with a stable psychology. The surgery is invasive and may have long-term sequelae, so it's best done in patients who are emotionally stable.

A surgical procedure is rarely considered for patients with episodic cluster headaches because they have remission periods sometimes lasting years. These patients should not be subjected to a procedure that could cause long term side-effects possibly worse than the cluster itself, for example, anesthesia dolorosa.

And it's critical that the headaches be confined entirely to one side of the patient's head. If the patient has ever had an episode on the contralateral side, there will be a high risk of recurrence on the side opposite the site of surgery.

Most surgical approaches have targeted the sensory trigeminal nerve and the cranial parasympathetic system to turn off cluster headaches and their associated autonomic symptoms.

Interrupting the parasympathetic autonomic pathway by sectioning the superficial petrosal nerve, the nervus intermedius, or the sphenopalatine ganglion appears effective in obliterating the autonomic symptoms of cluster headache, such as lacrimation, conjunctival injection, and nasal congestion.

**The surgery for cluster headache is invasive and may have long-term sequelae, so its use should be limited to patients who are emotionally stable.**

Unfortunately, this surgical approach is far less effective in lessening the pain associated with cluster headaches, resulting in inconsistent pain relief and high recurrence rates.

A number of procedures have been developed that target the sensory trigeminal nerve.

These include alcohol injection into the supraorbital and infraorbital nerves; alcohol injection into the Gasser's ganglion; avulsion of the infraorbital, supraorbital, and supratrochlear nerves; retrogasserian glycerol injection; radiofrequency trigeminal gangliorhyzolysis; and trigeminal root section.

Of these, thermocoagulation using radiofrequency energy appears to be the most effective, Dr. Rozen said.

Reviewing a number of small studies on this technique, he said that 50% of patients appear to do very well, 20% have fair-to-good results, and the procedure fails to provide relief in 30%.

The side effects can be severe, however. These include moderate or severe facial dysesthesia, corneal sensory loss, and anesthesia dolorosa ("painful numbness"). Rare but devastating side effects include intracranial hemorrhage, stroke, infection, and motor weakness.

A new and promising surgical approach from Italy involves implanting stimulating electrodes under stereotactic control into the posterior inferior hypothalamus, the possible "cluster generator."

In a report involving seven patients with chronic intractable cluster, five patients have been pain free with no side effects and have needed no additional medication. The pain apparently disappears as soon as the stimulation is turned on, and returns as soon as it is turned off (Neurol. Sci. 2003;24[suppl. 2]:s143-5). ■