Trigeminal Neuralgia Surgical Options Compared

BY MICHELE G. SULLIVAN

FROM THE ANNUAL MEETING OF THE CONGRESS OF NEUROLOGICAL SURGEONS

WASHINGTON – New evidence on the effectiveness of surgical options for trigeminal neuralgia points to greater safety and longer pain-free intervals when glycerol rhizotomy is used instead of balloon microcompression in patients with multiple sclerosis, as well as when the rhizotomy procedure is repeated, according to two studies reported at the meeting.

Patients who underwent repeat glycerol rhizotomy for trigeminal neuralgia were 21% less likely to have a failed procedure than were those who underwent an initial rhizotomy.

Rhizotomy vs. Microcompression

Trigeminal neuralgia occurs in about 2%-4% of patients with MS, said Dr. Grant W. Mallory, a fellow in neurological surgery at the Mayo Clinic, Rochester, Minn. Pain in these patients is more often bilateral than unilateral, and presents at a younger age than in the general population. While the majority of patients respond well to medical therapy with carbamazepine, some do require a surgical approach, he said.

Dr. Mallory and his mentor, Dr. Bruce Pollock, reviewed surgical outcomes and follow-up in 69 MS patients who underwent balloon microcompression and 68 who underwent glycerol rhizotomy during 1997-2010. The patients' mean age was 62 years. Their mean pain duration at baseline varied significantly, between 16 months in those undergoing microcompression and 55 months in those undergoing rhizotomy. Most patients had already undergone a prior procedure (87% of the microcompression patients and 48% of the rhizotomy patients).

The investigators defined an excellent outcome as being pain free and tapered off medications. A good outcome was freedom from pain with continued medication; a failed procedure was no pain relief, or pain recurrence within 1 month.

There was a nonsignificant trend for more patients to report excellent or good pain relief after rhizotomy than after microcompression (74% vs. 65%).

Overall, pain recurred in 86% of patients after a median time of 6 months; the overall median follow-up time was 13 months. Pain recurred significantly later after rhizotomy (mean of 7 months) than after balloon microcompression (5 months). This contributed to a significant difference in the percentage of patients who needed further surgical procedures: 36% with rhizotomy vs. 44% with microcompression. Patients undergoing their first procedure had a longer time to pain recurrence than did those who had a prior intervention (10 months vs. 4 months).

"Comparing our series [of MS patients] to historical controls in patients without MS, our cohort fared substantially worse with regard to initial response rate (69% vs. 90%)," Dr. Mallory said. Historical control patients also had a pain-free interval that was about twice that of patients with MS, he said.

Complications occurred significantly more often in patients treated with balloon microcompression than with rhizotomy (17% vs. 5%).

Although the study was not a randomized trial, Dr. Mallory said his mentor prefers the glycerol rhizotomy as a first-line invasive intervention in MS patients because of its low complication rate. If the patient is unable to tolerate the procedure under a local anesthetic, the surgeon may convert to a balloon microcompression under general anesthesia, Dr. Mallory said.

Benefits of Repeat Rhizotomy

Glycerol rhizotomy conferred greater benefit when it was repeated in patients with trigeminal neuralgia than when it was performed for the first time, according to a review of 547 patients conducted by Matthew Bender and his colleagues at Johns Hopkins University Medical Center, Baltimore.

Mr. Bender, a fourth-year medical student, reported that during 1998-2010, patients at the center who had undergone a prior rhizotomy were 21% less likely to have a failed procedure than were those who underwent an initial rhizotomy. These patients underwent 647 glycerol rhizotomies, including 504 first-time procedures.

The patients' mean age was 64 years, and their mean duration of trigeminal neuralgia was 7 years.

Ten patients in the repeat group and 13 in the initial group had previously undergone radiofrequency thermocoagulation. Other prior procedures included intracranial stereotactic radiosurgery (11 in the initial group and 1 in the repeat group), balloon microcompression (2 in the initial group), and microvascular decompression (19 in the initial group and 10 in the repeat group).

Rhizotomy led to at least 90% pain relief without medications for a significantly greater percentage of patients who had the procedure for a second time, compared with those who had it for the first time (74% vs. 65%). In 12% of the patients in each group there was at least 50% pain relief with minimal medications. Up to 50% pain relief with no medication change occurred in 10% of the initial group and 3% of the repeat group, whereas no pain relief occurred in 13% of the initial group and 10% of the repeat group.

The overall median time to treatment failure was similar between the first-time and repeat treatment groups (27 months vs. 19 months, respectively).

"These outcomes challenge the consensus that repeat glycerol rhizotomy has decreased pain relief and durability," Mr. Bender said. "Not only can this be used as our first-line percutaneous procedure, it can be repeated before resorting to salvage modalities."

Neither Dr. Mallory nor Mr. Bender had any financial declarations. ■

Neuromodulation Implants Relieve Craniofacial Pain

BY MICHELE G. SULLIVAN

FROM THE ANNUAL MEETING OF THE CONGRESS OF NEUROLOGICAL SURGEONS

WASHINGTON – Peripheral neuromodulation effectively managed a variety of craniofacial and headache pain syndromes, with 82% of patients reporting significant pain relief up to 65 months after the surgery in a retrospective study.

While percutaneous neuromodulation surgery is by no means a primary therapy for facial pain or headache, "it is something to keep in mind for patients with intractable pain," Dr. Antonios Mammis said at the meeting.

Dr. Mammis, a resident at the Neurological Institute of New Jersey in Newark, presented a review of 99 patients who underwent occipital or trigeminal branch stimulation for a variety of craniofacial pain syndromes. The study won the group's Ronald Tasker Award for Research in Pain Management. He conducted the study while he was a resident at Long Island Jewish Medical Center, New Hyde Park, N.Y.

The review encompassed procedures done by a single neurosurgeon from 2004 to 2011. During the review, Dr. Mammis reclassified each patient's symptoms according to the International Classification of Headache Disorders, Second Edition. Of the 99 patients, 74 were female. The mean age at surgery was 43 years (range, 11-68 years).

Chiari malformation type 1 was the most common classification (28 patients). This was not a surprise, since the neurosurgeon worked at a Chiari referral center.

Other pain classifications included migraine with or without aura (24), chronic posttraumatic headache attributed to mild head injury (11), occipital neuralgia (8), postcraniotomy headache (7), chronic cluster headache (5), headache secondary to ischemic stroke (5), other terminal branch neuralgias (5), cervicogenic headache (4), hemicrania continua (1), and acromegaly (1).

VITALS

Major Finding: Up to 65 months after receiving an implanted neuromodulator, 82% of patients with craniofacial pain syndromes still reported significant pain relief.

Data Source: Retrospective study of 99 surgeries performed from 2004 to 2011.

Disclosures: Dr. Mammis had no financial disclosures.

All patients underwent a 4- to 7-day treatment trial, with a bilateral lead placement performed under local anesthesia with intravenous sedation. The surgeon used surface anatomy and fluoroscopy to determine lead placement. During the trial, patients kept a headache diary noting frequency, duration, and severity.

After the trial period, 79 patients (80%) reported significant pain relief, which was defined as at least a 50% decrease in pain as rated on a visual analog scale. These patients went on to have a permanent neuromodulator implanted. Of these, 56 received only occipital leads, 12 received only trigeminal leads, and 11 had leads implanted on both nerve branches.

Most of the headache syndromes responded equally well to the neurostimulators. At the last follow-up, which ranged from 1 to 65 months, 65 (82%) reported continued use of the stimulator and continued to report significant pain improvement.

At that time, stimulators were still being used in 15 of 18 Chiari malformation patients, 19 of 21 migraine patients, 7 of 7 occipital neuralgia patients, 6 of 7 postcraniotomy patients, 4 of 4 cluster headache patients, 1 of 3 ischemic stroke patients, 1 of 4 terminal branch neuralgia patients, 3 of 3 cervicogenic headache patients, and the one patient with hemicrania continua. The single acromegaly patient received a stimulator, but did not have long-term pain relief.

Complications arose in 10 patients. Four of these were lead migrations that required revision, which is "a problem that is very easily corrected," Dr. Mammis said. Six patients acquired an infection; three were wound erosions and three were surgical site infections without erosion. "All of these leads were explanted and revised," he said. There were no infections after revision.

Nearly a quarter of the patients (22%) asked for a cosmetic revision. "This was primarily done because they could see or feel the lead," Dr. Mammis said. "These were not infected leads, and there were no infections after these revisions." ■