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Combined Occipital and Supraorbital Neurostimulation for Chronic Migraine Headaches in Adolescents (Ages 14-19): A Retrospective Analysis of 23 Consecutive Patients

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Objectives: To present the results of a retrospective survey of adolescent patients with severe, intractable chronic migraine treated with combined occipital-supraorbital neurostimulation (ON-SONS).

Background: In 1999 we introduced occipital nerve stimulation as a novel treatment for occipital neuralgia. Hypothesizing that the addition of supraorbital stimulation may improve the results for chronic migraine, we developed the associated procedure and in 2009 reported positive results in a series of patients treated by combined occipital nerve-supraorbital nerve stimulation. Thereafter, we further perfected the treatment methodology, and to date have implanted the combined system in over 300 patients, including a growing series of adolescents.

Methods: Between December 14, 2009 and May 3, 2012 our group implanted combined ON-SON stimulation systems in 23 adolescent patients. Following a review of the medical record, each patient received a survey request. Included were scores for the Migraine Disability Assessment (MIDAS) and a set of clinical parameters, including headache frequency and severity, medication usage, overall patient satisfaction, and patient preference for either the combined or single modality therapy (ON-SONS vs. ONS).

Results: All 23 patients (14 female; 9 male) responded to the survey. Their ages ranged from 14-19 (mean 16). All suffered from chronic migraine that had failed to respond to conservative management. The average time since permanent implant was 12 mo. 87% of patients reported over 50% improvement in HA frequency (HA days/mo) and/or severity (VAS 0-10). The average HA days/mo decreased by 79% (29 to 6), and the average severity of the headaches, when they occurred, improved by 80% (9 to 2). 76% saw virtually complete resolution of headaches (0-1/mo). 86% of patients decreased medication usage by over 50%, and 57% were able to completely discontinue all routine headache medications. The MIDAS score improved by 68% (avg 243 to 77). 87% overall felt the treatment to have been successful and all would recommend it to others. All patients could have their stimulators programmed to stimulate only the ONs or the combined ON-SONs. Almost all (95%) used both frontal and occipital stimulation modes exclusively.

Conclusions: Combined ON-SONS provides effective therapy for some patients with intractable chronic migraine headaches. The degree of responsiveness reported here was markedly improved over that reported by most studies evaluating ONS alone, including the large multicenter (Medtronic, St. Jude) study groups. The data strongly supports the addition of SONS to ONS (alone) when evaluating these patients for PNS therapy.