

## P286

**Combined Occipital and Supraorbital Neurostimulation for Chronic Migraine Headaches: A Multicenter Retrospective Analysis of 171 Consecutive Patients**

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**Objectives:** To present the results of a retrospective analysis of 171 consecutive patients with chronic migraine treated by combined occipital nerve and supraorbital nerve stimulation (ON-SONS).

**Background:** In 1999 we introduced occipital nerve stimulation (ONS) as a novel treatment for occipital neuralgia. Others extended the methodology to migraine headaches with the results suggesting a lower response rate than that for occipital head pain. 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 ON-SONS. Thereafter, we further perfected the methodology and to date have implanted combined systems in over 300 patients. Here we report the results of a retrospective analysis of 171 consecutive patients from 5 implanting specialists across 3 different centers.

**Methods:** Between May 1, 2009 and April 18, 2012 our group implanted combined ON-SONS systems in 171 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, and overall patient satisfaction.

**Results:** 162 patients (126 female; 34 male) responded to the survey. 24 were adolescents, ages 14 to 19. All suffered from chronic migraine that had failed to respond to conservative management. The average time since permanent implant was 14 mo. 85% 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 73% (27 to 7), and the average severity of the headaches, when they occurred, improved by 59% (9 to 4). 50% saw virtually complete resolution of headaches (0-1/mo). 71% of patients decreased medication usage by over 50%, and 38% were able to completely discontinue all routine headache medications. The MIDAS score improved by 76% (avg 208 to 50). 87% felt the treatment to have been successful, and 93% would recommend it to others. 93% of patients preferred the combined ON-SONS mode, as opposed to a mode that stimulated only the ONs.

**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.