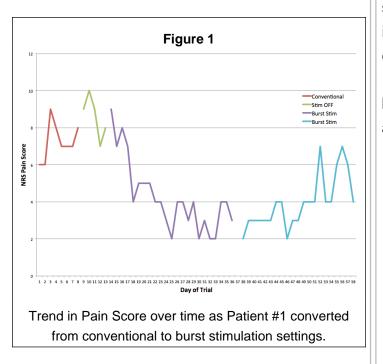


### Introduction

Occipital Nerve Stimulation (ONS) is an effective treatment for refractory Occipital neuralgia (ON). Traditionally ONS delivers low frequency stimulation with a fixed pulse width--usually 300-500 µsec--and frequency between 30-60 Hz. While new paradigms for spinal cord stimulation (SCS) including high frequency and burst stimulation have been introduced over the past several years, these stimulation techniques have not been investigated extensively in ONS.

### **Methods**

We describe the use of burst stimulation in two patients previously implanted with ONS and receiving moderately effective conventional ONS. Stimulation parameters, VAS scores, medication use, and pain diary entries were tracked over an eight-week interval. After stimulation paradigm adjustments, parameters were tracked from baseline measurements during conventional stimulation, through a washout period and two separate phases of burst stimulation.



## Results

VAS score prior to ONS implantation were 8-9. Scores fluctuated after implantation, ranging from 4 to 9. During baseline diary, VAS was 7-8. After burst stimulation activation, VAS for Patient A was consistently 3-4 (overall reduction of over 50%) and for Patient B 4-6 (just under 50%). Medication use decreased, and Patient A discontinued all opioid medications by the end of the trial period. Patient satisfaction attained at its highest point since ONS implantation at the conclusion of the eight-week trial period.

# **Conclusions**

Burst stimulation has been effective for spinal cord stimulation and there has been a "salvage" utility in implementing burst stimulation for patients with suboptimal results using convention stimulation to address back and leg pain. The significant decrease in VAS in these cases of refractory occipital neuralgia suggests that a similar benefit may be attainable in using burst stimulation in ONS. A larger prospective investigation of burst stimulation for ON and other craniocervical pain syndromes may be warranted. Furthermore, a more detailed investigation should be undertaken into the optimal waveforms to accomplish most effective pain control.

# **Learning Objectives**

- 1) Review the indications for ONS for chronic head pain syndromes
- 2) Describe the differences between conventional and burst stimulation in their application to ONS
- 3) Review the interventional treatment options for refractory occipital neuralgia and other head pain syndromes

#### References

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