

# ATI Neurostimulation System

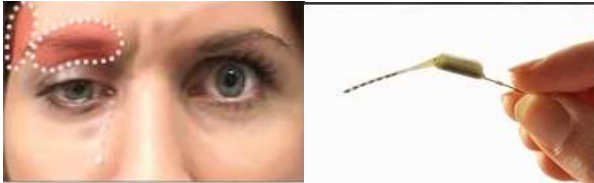
## Electronic Aspirin

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**Abstract—The ATI Neurostimulation System, commonly known as electronic aspirin, aims to prevent severe headaches and facial pain for victims of cluster headaches or migraines not sufficiently treated with prescription medications and treatments.**

### I. INTRODUCTION

THE ATI Neurostimulation System is a fairly recent development in the biomedical field, designed for patients suffering from migraines and headaches, in particular victims of cluster headaches. Cluster headaches affects about 0.2% of the population and patients say that the pain of a cluster headache is debilitating—arguably the worst pain they have ever experienced. These headaches are associated with severe orbital and temporal pain that is usually paired with nasal congestion, local swelling, watery eyes, and droopy eyelids (shown below). These headaches can last for 15 minutes to 3 hours, and patients can undergo multiple headaches a day for several months, followed by a long period of pain-free days. Treatments for this condition are very limited, including only oral steroids, oxygen tanks, and ablation, which is why the ATI Neurostimulation System is rapidly gaining interest from patients of chronic headaches/facial pain.



Figures: Effects of cluster headaches (left) and device (right)

### II. METHODS

The ATI Neurostimulation System consists of two separate devices, the neurostimulator and the handheld remote controller, and requires invasive surgery. The neurostimulator, shown below, is roughly the size of an almond. It has two ends, with one a slender probe. The probe is essentially attached to the SPG (Sphenopalatine Ganglion) bundle of nerve fibers and the device implanted in the upper mandible (within the gum, usually just below the eye socket) on the side of the head where the patient suffers most from pain. The patient is then given a small hand-held controller where, upon first experiencing the beginning signs of a headache can place the remote directly to their head to stimulate the device. This stimulation will send electrical impulses through the device to the SPG bundle, and ultimately prevent the nerves from releasing the neurotransmitters causing the pain (PSC). Patients also have the option of having the device removed once condition improves.

### III. RESULTS

No definitive results have been recorded as of yet; the device is relatively new (just being introduced by ATI within this past year) and is still within its clinical trials phase. Preliminary results, however, have determined that about 75% of the patients with this implant have recorded improvement in their ability to function normally within their daily lives. 68% of patients claimed the severity of their headaches lessened greatly, and 31% recorded a decrease in the quantity of headaches they experience weekly. (PSC)

### IV. DISCUSSION

Although cluster headaches only affect a small portion of the population, the effects the condition has extends to many more. Some sufferers of this condition are not able to take the commonly prescribed oral medications, sometimes due to certain allergies or other health implications, and want a more conspicuous treatment than an oxygen tank. Additionally, SPG ablation is ultimately a last resort and has serious health risks including partial facial paralysis. The cluster headache condition, if not able to be managed properly, renders not only the patient helpless but can put a strain on the people around them. Some have pain so severe that they are unable to keep a steady job or even work at all, which ultimately has economic/financial repercussions both for their family and the community.

Researchers hope to provide these patients with a minimally invasive device that can prevent their pain altogether and allow the patient to resume their normal daily life. The Neurostimulator System would allow patients to do just that, without taking on huge health risks and/or very expensive procedures or equipment. Due to its recent development, no cases of malfunctioning have been reported, but manufacturers are hopeful that the device will be sustainable for the duration of time the patient has it implanted. Future research aims to make the device available to those who suffer from migraines and facial pain due to other health conditions as well.

### REFERENCES

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