

## **ELECTRICAL STIMULATION IS AN IMPORTANT ADVANCE IN THE TREATMENT OF HEADACHE: YES**

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The medical treatment of patients with chronic primary headache syndromes (chronic migraine, chronic tension-type headache, chronic cluster headache, hemicrania continua) is challenging as serious side effects frequently complicate the course of medical treatment and some patients may be even medically intractable. Chronic headaches that do not or no longer respond to prophylaxis are commonly encountered at tertiary level headache centres. Although much work has been accomplished, the definition of RCM is still a continuous work in progress. When a definitive lack of responsiveness to conservative treatments is ascertained and medication overuse headache is excluded, neuromodulation options can be considered in selected cases. One of the most dreadful headache syndromes is cluster headache, with pain attacks so excruciating, this headache has been coined "suicide headache". These attacks last no longer than 2 hours but may occur several times per day. It is mandatory to find an efficient therapy for these patients but some patients are unresponsive to all treatments. In these patients, i.e. when the intolerance or lack of responsiveness to conservative treatments is ascertained, surgical options are considered. The options has previously ranged from application of glycerol or local anaesthetics into the cisterna trigeminalis of the Gasserian ganglion; radiofrequency rhizotomy of the Gasserian ganglion or of the trigeminal nerve; microvascular decompression; resection or blockade of the N. petrosus superficialis or of the ganglion sphenopalatinum and to a whole range of other ablative or destructive methods. Case reports of the complete inefficacy of surgical treatment, at least in cluster headache and related syndromes exists. It follows, that surgical procedures should be considered with great caution because no reliable long term observational data are available and because they can induce a secondary chronic pain condition as trigeminal neuralgia and/or anaesthesia dolorosa. Technical progress has recently introduced the opportunity to use neurostimulation rather than ablative or destructive methods and it may be applied to virtually any neural structure, including spinal cord, deep brain structures, motor cortex and peripheral nerves. Modern neurostimulating approaches such as stimulation of the greater occipital nerve, hypothalamic deep brain stimulation but also stimulation of the sphenopalatine ganglion certainly supersede destructive procedures. These stimulation methods are exquisite and potentially life-saving treatment options in otherwise intractable patients, but certainly need to be better characterized and further long-term data are certainly needed.