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Ele 382
Vagus Nerve Stimulation

Vagus Nerve Stimulation, discovered as early as 1938, has served as an aid to those with problems with brain chemistry. The procedure has been used most commonly for Epilepsy. It has also been used and proven effective in many patients with depression.

Cybertronics Inc. has developed an implant device, which has been approved by the FDA, to serve those with commonplace brain seizures. These seizures can incapacitate a person, and could be very dangerous to experience when such a person is in a situation where concentration is needed, such as driving a car or public speaking.

The device consists of a pulse generator and programmable wand, which control the frequency and intensity of the pulses, which are sent to the Vagus nerve. These pulses increase the threshold voltage needed in order to cause a brain seizure. If the threshold voltage cannot be reached, the patient will never experience the seizure. This helps the patient live their life on their terms.

The signals generated by the pulse generator that prevent seizure can also become a distraction. In certain cases, patients have experience severe pain as well as nausea, headaches, and coughing fits. Therefore an external magnet has been created by Cybertronics which can stop the pulses from occurring if they become to much of a burden on the patient. In cases of patients with brain seizure premonitions, the patient can activate the device, in order to create a pulse at the precise time needed.

The surgery to implant the device is a fairly simple process. The surgeon makes one incision across the left chest to implant the impulse generator, and another incision across the neck, to implant the lead in wiring. The electrical signal travels from the pulse generator, down the wiring to the effected Vagal nerve.

Other changes can be made to the device to make the treatment more tolerable for the patient. The frequency and amplitude of the signal can be adjusted until the patient feels the least discomfort possible. The on-off times between pulses can also be adjusted to match the patient's unique symptoms. Overall, the device has been a great asset to those with brain seizure problems. The device typically costs about \$20,000 along with the costs of surgery. The patient must be monitored by a trained technician to ensure that the signal are functioning properly.

Sources:

● <http://health.allrefer.com/health/epilepsy-brain-structures.html>

● <http://www.emedicine.com/neuro/topic559.htm>

● <http://www.epilepsy.com/epilepsy/vns.html>

<http://www.epilepsyfoundation.org/answerplace/Medical/treatment/vns/vnscost.cfm>