

Vagus Nerve Stimulation Therapy

By Jenna Lipka

Vagus Nerve Stimulation Therapy was developed by Cyberonics, Inc. It was FDA approved in 2005. This therapy can be used to treat epileptic patients suffering from multiple seizures. It can also be used to treat those with severe depression, which is treatment resistant.

The Vagus Nerve is one of the 10th pair of cranial nerves. It is part of the autonomic nervous system, controlling involuntary functions. The Vagus Nerve directly connects to the area of the brain that controls depression. It also connects to some areas of the brain where seizures are prone to happen. The therapy involves stimulating the Vagus nerve with electrical impulses, in turn stimulating the specific areas of the brain associated with the nerve.

The Therapy involves four components. The first is the pulse generator, which is about the size of a silver dollar. This is where the electrical impulses originate. It is battery operated using a Lithium Carbon Monofluoride Battery, which has a battery life of about 6 years. The second component is the electrode wires, which are attached directly to the Vagus Nerve. These electrodes are attached to a bipolar lead, which is attached to the generator on the other side. These components are implanted. The generator is implanted just under the skin, under the collarbone, on the left side of the chest. The electrodes are implanted in the left side of the neck on the Vagus Nerve. A tunneling tool is used to implant the bipolar lead and attach it to each component. The surgery is done on an outpatient basis. Local or general anesthesia is used. Side effects are soreness, coughing or hoarseness. The coughing or hoarseness is due to the fact that the Vagus nerve innervates the larynx and the pharynx.

The other two components are external. The third component of this system is the telemetric wand. This tool, along with a computer is used to set the frequency and time interval of the pulse generator. It is also used to gather data.



The wand sets these parameters, allowing the pulse generator to continuously send electrical signals through the lead to the electrodes. These signals stimulate the nerve, in turn stimulating the areas of the brain associated with depression and seizures. The fourth component is a special magnet, which can be held near the device, making it more active. If a seizure is coming on the patient can do this and in turn stop the seizure.

The benefits of using this therapy are that there are no painful side effects and there is a significant improvement in quality of life. In epileptic patients seizures occur half as often and are much less severe. For those suffering from depression there is an increased ability to function well with others and in the world. These patients also report more energy and alertness. The continuation rate of this therapy after 1 year is 90%.

Sources

1. <http://www.vnstherapy.com/>
2. <http://www.epilepsy.com/epilepsy/vns.html>
3. <http://www.neurologychannel.com/vagus/index.shtml>
4. <http://www.vagusnervestimulation.com/?clid=CIPWyaDswYgCFQftNAodhS-yLg>