

Deep Brain Stimulation for the Treatment of Parkinson's Disease

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Parkinson's disease is a disorder of the brain characterized by shaking (tremor) and difficulty with walking, movement, and coordination. The disease is associated with damage to a part of the brain that is involved with movement (the basal ganglia).

Approximately one million Americans are afflicted with Parkinson's and 60,000 more are diagnosed each year. Approximately 40% of patients are under the age of 60.

The basal ganglia play a complex and integral role in the control of movement:

- Selecting and maintaining purposeful motor activity while suppressing unwanted or useless movement.
- Helping monitor and coordinate slow, sustained contractions related to posture and support.
- Inhibiting muscle tone throughout the body.

It is obvious that Parkinson's Disease effects the basal ganglia by looking at the similarities between the symptoms and the role of the ganglia.

Traditional treatments for Parkinson's Disease include medication and surgery to remove or destroy parts of the brain, both of which can have serious drawbacks.

A new treatment has received limited approval by the FDA and is being practiced throughout the world.

Deep Brain Stimulation involves 4 components: An implantable pulse generator, lead (electrode array),

extension, and controller (for the patient to use to enable and disable the device).

The device works by electrically stimulating regions of the brain that are effected by the illness. A neurologist determines the best position for the leads to be placed into the patient via holistic medicine (displays of characteristic symptoms) and medical imaging.

There are two surgeries, one to implant the lead the other to implant the pulse generator.

After the surgery the patients doctor programs the pulse generators intensity, rate and pulse width. The physician can program each electrode individually. The programming is painless and can be done during an office visit.

Studies show that more than 90% of patients that receive this procedure undergo a marked improvement.

The procedure is very costly. There are currently a few companies and many researchers testing and innovating this product.

Experts believe this technology could someday prove beneficial to other conditions such as OCD, epilepsy, multiple sclerosis, depression.

Jaggi JL, Umemura A, Hurtig HI, Siderowf AD, Colcher A, Stern MB, Baltuch GH, "Bilateral stimulation of the subthalamic nucleus in Parkinson's disease: surgical efficacy and prediction of outcome." Stereotact Funct Neurosurg. 2004;82(2-3):104-14. Epub 2004 Apr 26.

"Parkinson's Disease,"
<http://parkinson.untogether.org/>