The Dramatic Impact of Brain Stimulation on Parkinson's Disease

Each year, an estimated 60,000 Americans get the devastating news that they have Parkinson's disease. Parkinson's disease (PD) is a progressive neurodegenerative disorder. Symptoms usually develop slowly, and can include tremor, bradykinesia (slowness of movement), limb rigidity, and gait and balance problems.

Parkinson's disease can rob a person of the ability to do everyday tasks that many of us take for granted. There's no cure, but treatments ranging from medication to surgical therapies can help.

One surgical treatment that has had an overwhelmingly positive impact on many PD patients is deep brain stimulation, or DBS.

DBS is commonly referred to as a "brain pacemaker." Two small wires, called leads, are placed deep within the brain to disrupt abnormal signals causing symptoms of the disease. A battery is implanted in the chest and the device can be adjusted to improve symptoms over time.

Dr. Kavya Moravineni, a movement disorder specialist with at OSF HealthCare Illinois Neurological Institute (INI), explains how DBS impacts the brain of a PD patient.

"The whole circuitry is abnormal in some way, and that causes your symptoms in Parkinson's disease," she says. "DBS is really affecting that circuit. So the electricity that is passed on from the lead into the circuit will stop abnormal signaling and help improve symptoms."

Dr. Andres Maldonado is a neurosurgeon at OSF INI. He specializes in functional neurosurgery, including DBS. According to Dr. Maldonado, patients often see their symptoms greatly diminish, or even disappear, immediately after surgery. He says the difference is dramatic and often surprising to both the patient and their families.

"You can observe that in the patient after surgery. Many patients have no symptoms whatsoever, or their symptoms have improved significantly to the point of being invisible."

A recent study on DBS in Parkinson's patients found these results can (and often do) last longer than 15 years after implant. In fact, researchers found that patients continued to demonstrate significant improvement in motor symptoms during that time, greatly impacting their quality of life.

Drs. Maldonado and Moravineni agree; watching Parkinson's patients thrive after their treatment is extremely gratifying for them and their colleagues.

"Patients who were not able to do their daily life activities, now they're able to do it. Patients who were not able to walk because of significant balance issues, significant rigidity, now, they're able to walk. Patients who were not able to ride a bike, now they're riding bikes. They're able to drive. They're able to do things in their garden," Dr. Maldonado says. "They say, 'My quality of life has significantly improved. My life has changed. I have it back.'"

"After DBS they don't have to take as much medication," adds Dr. Moravineni. "They don't have to have a lot of fluctuations that can happen with the medications, and the symptoms by themselves, because of DBS, improve as well. So definitely a significant impact on their quality of life."

The success of treatments like DBS is more important than ever. The Parkinson's Foundation estimates nearly one million people in the U.S. are living with Parkinson's disease, more than those diagnosed with multiple sclerosis, muscular dystrophy and Lou Gehrig's disease combined. This is expected to rise to 1.2 million by 2030.

Dr. Maldonado and team use the latest robotic technology for DBS, which offers great precision during surgeries. Learn more about DBS and other Parkinson's disease treatment options at OSF HealthCare Illinois Neurological Institute.