



Arif Dalvi, MD, MBA

About Dr. Dalvi

Arif Dalvi, MD leads the Comprehensive Movement Disorders Program at the Palm Beach Neuroscience Institute. He performs the mapping of the electrodes during the surgery and the follow-up programming done after the surgery. Dr. Dalvi is board-certified in neurology and has conducted research for more than 16 years on the surgical and pharmaceutical treatments of Parkinson's disease (PD). He is a member of the International Parkinson Study Group and is on the advisory board of the International Essential Tremor Foundation. He has been awarded the Doctor of Excellence Award by the Dystonia Medical Research Foundation. Dr. Dalvi formerly served as the Director of the Neurology Residency Program at the University of Chicago, Pritzker School of Medicine.

He is fellowship-trained in Parkinson's disease from Columbia University in New York. He has worked on clinical trials for many of the recently FDA-approved drugs for Parkinson's disease as well as on the study of genetic factors in PD. Dr. Dalvi has also published widely on Parkinson's disease in a number of peer-reviewed journals including the Journal of Neurosurgery, Annals of Neurology, and Movement Disorders. He also has published chapters on Parkinson's disease, Alzheimer's disease, Parkinson-plus syndrome, tremor disorders, normal pressure hydrocephalus and dystonia in various medical textbooks.



Comprehensive Movement Disorders Program

Treating the Parkinson's Patient

There are **50,000 – 60,000 new cases of Parkinson's disease (PD) diagnosed each year** in the United States, affecting about one million Americans. Many of those diagnosed are being treated with some form of levodopa therapy. Levodopa helps at least three-quarters of Parkinsonian cases, however, not all symptoms respond equally to the drug. After five to ten years, the medication therapy loses its efficacy and **as many as 50% of patients on levodopa experience motor fluctuations and dyskinesia.**

Deep Brain Stimulation

When medication therapy is no longer effective and the patient's quality of life begins to decline, deep brain stimulation (DBS) surgery should be considered. DBS is the surgical procedure used to treat disabling neurological symptoms of PD such as tremor, rigidity, stiffness, slowed movement and walking problems. It can also be used to treat essential tremor and dystonia.

How DBS Works

One or more electric leads are implanted in the part of the brain that controls movement, including the globus pallidus or subthalamic nucleus. A battery-operated pulse generator – similar to a heart pacemaker – is surgically implanted under the patient's collarbone. This device delivers electrical stimulation – via the leads – to targeted areas of the brain, disrupting the abnormal nerve signals that cause PD motor symptoms.

The DBS surgery is a three-part process. First, the device is placed under the skin of the chest. Next, an MRI is used to map the brain. The accuracy of pinpointing where to place electrodes on the brain is improved by using a brain mapping technique called microelectrode recording. The third part involves connecting the device to the brain electrodes. Patients typically return home 2-3 days after surgery, although some may require a brief period of inpatient rehabilitation.

Benefits of DBS

- DBS therapy with medication can provide additional “on” time without dyskinesia and thus improve medication response
- Reduction in medication-induced dyskinesia, motor fluctuations, gait disturbance and balance problems
- Medication “on” time typically increases and medication use can decrease by as much as 50% leading to fewer drug-related side effects
- The procedure is reversible and does not destroy brain tissue unlike older techniques such as pallidotomy

Indications for DBS

For Parkinson's disease: Bilateral stimulation of the subthalamic nucleus (STN) or the globus pallidus (GP) using DBS therapy is indicated for adjunctive therapy in reducing some of the symptoms of advanced, levodopa-responsive Parkinson's disease that are not adequately controlled with medication.

For Tremor: Unilateral thalamic stimulation using DBS therapy for tremor is indicated for the suppression of tremor in the upper extremity. It is intended for use in patients who are diagnosed with essential tremor not adequately controlled by medications and where the tremor constitutes a significant functional disability.

For Dystonia: Unilateral or bilateral stimulation of the internal GP or the STN using DBS therapy is indicated as an aid in the management of chronic, intractable (drug refractory) primary dystonia, including generalized and segmental dystonia, hemidystonia and cervical dystonia (torticollis), for individuals 7 years of age and older.

Who is a Candidate for DBS?

Patients who meet the following clinical criteria may be a candidate for DBS:

- Patient is experiencing troubling motor symptoms not controlled by medication; “on” time characterized by disabling dyskinesias; or “off” time characterized by disabling tremor, rigidity or akinesia; or unpredictable “on/off” motor fluctuations; or medication-resistant tremor
- Clear diagnosis of idiopathic PD; a patient with atypical Parkinsonism does not respond to DBS
- Well preserved cognitive function; patients with significant cognitive dysfunction have a less robust response
- Clear evidence of motor improvement with Sinemet; with good motor functions in the best “on” medication state; a patient who is severely disabled even in the best “on” state is not a candidate
- Lack of significant medical comorbidity
- Under the age of 70

Non-clinical criteria

A patient who meets the clinical criteria must also meet the following non-clinical criteria:

- Has realistic expectations about the results of the surgery
- Is able to remain calm and cooperative during awake neurosurgery
- Is willing and able to be seen for follow-up visits, approximately once a month for a few months after surgery

According to the American Academy of Neurology, “10% to 20% of people with Parkinson's disease may be eligible for surgical treatments.”



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