

Neurosurgeons Treating Tourette's Syndrome and OCD with Deep Brain Stimulation

Neurosurgeons with the University of Miami Health System and Miller School of Medicine are now using deep brain stimulation to treat Tourette's syndrome – also known as Tourette's disorder – and obsessive-compulsive disorder. The revolutionary FDA-approved surgical technique, long established as an effective treatment for Parkinson's disease and essential tremor, uses electrical stimulation to improve symptoms of these neurological and psychiatric disorders.

Tourette's syndrome is characterized by repetitive movements and sounds that are difficult to control. Obsessive-compulsive disorder (OCD) is a disorder characterized by excessive thoughts, fears or worries that an individual tries to manage through ritualized activities. Deep brain stimulation (DBS) stimulates the brain, interrupting the abnormal brain circuitry causing these disorders.



Dr. Jonathan Jagid, right, in surgery.

“DBS is like a pacemaker for the brain,” said neurosurgeon Jonathan R. Jagid, M.D., professor of clinical neurological surgery and director of functional and epilepsy neurosurgery and the neurotrauma division.

“With movement or psychiatric disorders, the brain circuitry is out of whack, much like arrhythmia affects the normal heart rate,” said Dr. Jagid. “That arrhythmia produces obsessive thoughts or repetitive behaviors. Using deep brain stimulation, we can apply electrical current to reset the brain, much like a pacemaker resets the heart’s rhythm.”

In DBS surgery, a small neurostimulator is placed under the skin near the collarbone. Leads as thin as angel hair pasta are connected to the device and implanted into various parts of the brain, depending on the condition being treated. The patient receives local anesthesia to block any pain but is awake during DBS as stimulation effects are checked and

adjusted as needed in the operating room.

As Dr. Jagid performs the procedure, he works alongside a multidisciplinary team. Specialists including a neurologist and psychiatrist listen to the brain's electrical signal and perform psychiatric assessments to determine the best placement of the electrodes. Doctors further fine-tune the device over time during patients' clinic visits.

"We're actually forcing a change to the brain's underlying electrical system, and it's amazing what you can do with it," said Ihtsham Ul Haq, M.D., professor of neurology and chief of the Division of Movement Disorders. "We're still figuring out all the potential uses for DBS."

The procedure is primarily performed on adults. Children with severe conditions may also be candidates for DBS as long as the skull has completed its growth, usually after the age of 11. DBS is an option only after traditional treatments, such as cognitive behavioral therapy and medication, have failed and the patient has a poor quality of life. The multidisciplinary UHealth team carefully considers each candidate for DBS to decide whether the procedure would be beneficial.

Candidates for DBS are evaluated through the University of Miami Tourette Association Center of Excellence, directed by Barbara Coffey, M.D., M.S., professor and chair of the Department of Psychiatry and Behavioral Sciences, and Jill Ehrenreich-May, Ph.D., professor of psychology, who work with Drs. Jagid and Haq.

"We have the most comprehensive deep brain stimulation program

in South Florida, and our team has had many years of experience with this procedure,” said Dr. Jagid. “We have one of the lowest complication rates in the country.

“DBS is not a cure for these conditions, but patients improve consistently and are able to go back to school or back to work and do many things they were not able to before DBS.”

Content Type Article