

DBS for Parkinsons disease: Surgical technique, summary of guidelines and local experiences in Pecs, Hungary

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Abstract

During the last 15 years deep brain stimulation (DBS) has been established as a highly-effective therapy for advanced Parkinson's disease (PD). Patient selection, stereotactic implantation, postoperative stimulator programming and patient care requires a multi-disciplinary team including movement disorders specialists in neurology and functional neurosurgery. To treat medically refractory levodopa-induced motor complications or resistant tremor the preferred target for high-frequency DBS are the subthalamic nucleus (STN) and the internal portion of globus pallidus (GPi).

According to the latest systematic Review and Evidence-Based Guideline the following statements can be done:

Given that bilateral STN DBS is at least as effective as bilateral GPi DBS in treating motor symptoms of Parkinson's disease (as measured by improvements in UPDRS-III scores), consideration can be given to the selection of either target in patients undergoing surgery to treat motor symptoms. (Level I)

When the main goal of surgery is reduction of dopaminergic medications in a patient with Parkinson's disease, then bilateral STN DBS should be performed instead of GPi DBS. (Level I)

There is insufficient evidence to make a generalizable recommendation regarding the target selection for reduction of dyskinesias. However, when the reduction of medication is not anticipated and there is a goal to reduce the severity of “on” medication dyskinesias, the GPi should be targeted. (Level I)

When considering improvements in quality of life in a patient undergoing DBS for Parkinson's disease, there is no basis to recommend bilateral DBS in 1 target over the other. (Level I)

If there is significant concern about cognitive decline, particularly in regards to processing speed and working memory in a patient undergoing DBS, then the clinician should consider using GPi DBS rather than STN DBS, while taking into consideration other goals of surgery. (Level I)

If there is significant concern about the risk of depression in a patient undergoing DBS, then the clinician should consider using pallidal rather than STN stimulation, while taking into consideration other goals of surgery. (Level I)

There is insufficient evidence to recommend bilateral DBS in 1 target over the other in order to minimize the risk of surgical adverse events.

The presentation gives practical details on surgical technique, trajectory planing, targeting, intraoperative electrophysiology and complications related to surgery.