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Deep brain stimulation of the subthalamic nucleus for the treatment of Parkinson's disease.

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High-frequency deep brain stimulation (DBS) of the subthalamic nucleus (STN-HFS) is the preferred surgical treatment for advanced Parkinson's disease. In the 15 years since its introduction into clinical practice, many studies have reported on its benefits, drawbacks, and insufficiencies. Despite limited evidence-based data, STN-HFS has been shown to be surgically safe, and improvements in dopaminergic drug-sensitive symptoms and reductions in subsequent drug dose and dyskinesias are well documented. However, the procedure is associated with adverse effects, mainly neurocognitive, and with side-effects created by spread of stimulation to surrounding structures, depending on the precise location of electrodes. Quality of life improves substantially, inducing sudden global changes in patients' lives, often requiring societal readaptation. STN-HFS is a powerful method that is currently unchallenged in the management of Parkinson's disease, but its long-term effects must be thoroughly assessed. Further improvements, through basic research and methodological innovations, should make it applicable to earlier stages of the disease and increase its availability to patients in developing countries.