OBJECTIVE: To evaluate the safety and efficacy of subthalamic nucleus deep brain stimulation (STN DBS) in PD patients who previously had a unilateral pallidotomy.

BACKGROUND: STN DBS has gradually replaced ablative surgery of the globus pallidus internus (pallidotomy) as a surgical treatment of choice in patients with PD and troublesome levodopa-induced motor complications. OBJECTIVE: To evaluate the safety and efficacy of subthalamic nucleus deep brain stimulation (STN DBS) in patients who previously had a pallidotomy.

METHODS: We identified 10 patients, 9 male, at the Baylor College of Medicine Parkinson’s Disease Center who underwent STN DBS after prior unilateral pallidotomy. Demographics, efficacy as determined by "off" UPDRS part II scores, and adverse events (AE) were analyzed. We then compared these to an age and sex matched group of 25 DBS patients that had no prior pallidotomy. RESULTS: The age at the time of their pallidotomy was 53.3±11.2 years. After their initial pallidotomy, the mean UPDRS motor "off" scores improved from 31.3±12.2 to 19.1±11.4, and the UPDRS dyskinesia score improved from 1.7±1.5 to 0.4±0.5. In contrast, the "off" UPDRS motor scores in the control group of 25 DBS patients improved by 40.2%, from 57.7±14.8 to 34.9±12.8, and the UPDRS dyskinesia score improved from 1.8±1.0 to 0.8±0.7. The mean age of the 10 patients at the time of pallidotomy was 51.6±10.8 years. After the initial pallidotomy, their mean UPDRS motor off scores improved from 51.3±14.3 to 34.9±12.8 (p<0.05), and the UPDRS dyskinesia score improved from 1.8±1.0 to 0.8±0.7 (p<0.05). The mean age of the final STN DBS implantation (8 bilateral and 2 unilateral to their pallidotomy side) was 54.9±12.3 years (range: 41-73 years). Five of these patients, both hemispheres were operated on simultaneously and four were staged. The "off" UPDRS motor scores in eight patients were recorded in an "on" state that in the post-pallidotomy group. AEs thought to be related to the STN DBS following pallidotomy included worse dysarthria (3), and worse balance (2). Patients with more advanced PD had less improvement in "off" motor UPDRS score compared to those with less advanced PD (p<0.05). We report our experience with 10 patients who had previously undergone pallidotomy compared to those who had not had pallidotomy. Discussion: Overall, the small corpus of literature on the efficacy and safety of post-pallidotomy STN DBS may result in less robust motor improvement. First, there is an obvious referral bias: most patients who were not satisfied after their pallidotomy, either for objective or subjective reasons. This may represent a more aggressive disease process or more atypical progression of PD in this group. Second, STN DBS was effective than STN stimulation alone. Third, there is a single case of a levodopa non-responsive PD patient who failed to improve with a single case of a levodopa non-responsive PD patient who failed to improve despite a previous pallidotomy. Fourth, we present a relatively small number of patients and the results could be different with a larger sample. Ten patients are included in this study; 3 additional patients had either unexpected poor performance or severe dysarthria (3) and worse balance (2). 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