Pallidothalamic tractotomy

Pallidothalamic tractotomy for cervical dystonia.

A limited number of studies have reported the effect of ablation of the pallidothalamic tracts for Parkinson's disease.

Horisawa et al. evaluated the safety and efficacy of unilateral pallidothalamic tractotomy for akinetic-rigid Parkinson's disease.

Fourteen akinetic-rigid Parkinson's disease patients, who were enrolled in this prospective open-label study, underwent unilateral pallidothalamic tractotomy. The Movement Disorder Society-Unified Parkinson's Disease Rating Scale (MDS-UPDRS) Part III and Part IV (dyskinesia and dystonia) scores and levodopa equivalent daily dose (LEDD) were evaluated at baseline and at 3 and 12 months postoperatively.

Of the 14 patients enrolled in the study, 4 were lost to follow-up and 10 were analyzed. The total MDS-UPDRS Part III score significantly improved from 45 ± 4.6 at baseline to 32.9 ± 4.8 at 12 months postoperatively ($p = 0.005$). Contralateral side rigidity and bradykinesia significantly improved from 4.4 ± 0.5 and 10.4 ± 1.5 at baseline to 1.7 ± 0.4 ($p = 0.005$) and 5.2 ± 1.4 ($p = 0.011$) at 12 months, respectively. While posture significantly improved with a 20% reduction in scores ($p = 0.038$), no significant improvement was found in gait ($p = 0.066$). Dyskinesia and dystonia were improved with a 79.2% ($p = 0.0012$) and 91.7% ($p = 0.041$) reduction in scores, respectively. No significant change was found in the LEDD. Hypophonia was noted in 2 patients, eyelid apraxia was noted in 1 patient, and a reduced response to levodopa, which resulted in an increase in the daily dose of levodopa, was noted in 3 patients. No serious permanent neurological deficits were observed.

Unilateral pallidothalamic tractotomy improved contralateral side rigidity and bradykinesia, dyskinesia, and dystonia in patients with akinetic-rigid Parkinson's disease.Clinical trial registration no.: UMIN000031138 (umin.ac.jp) [1].

1)
Horisawa S, Fukui A, Yamahata H, Tanaka Y, Kuwano A, Momosaki O, Iijima M, Nanke M, Kawamata T, Taira T. Unilateral pallidothalamic tractotomy for akinetic-rigid Parkinson's disease: a prospective open-label study. J Neurosurg. 2021 Jan 15:1-7. doi: 10.3171/2020.7.JNS201547. Epub ahead of print. PMID: 33450738.