Subthalamic Deep Brain Stimulation for Refractory Essential Tremor

Thalamic ventral intermediate nucleus (VIM) deep brain stimulation (DBS) is an effective therapy for medication-refractory essential tremor (ET). However, 13-40% of patients with an initially robust tremor efficacy lose this benefit over time despite reprogramming attempts.

Isaacs et al.published a cohort of ET patients with VIM DBS underwent implantation of a second anterior (ventralis oralis anterior; VOA) DBS lead to permit “confined stimulation.” They sought to assess whether confined stimulation conferred additional tremor capture compared to VIM or VOA stimulation alone.

Seven patients participated in a protocol-based programming session during which a video-recorded Fahn-Tolosa-Marin Part A (FTM-A) tremor rating scale was used in the following 4 DBS states: off stimulation, VIM stimulation alone, VOA stimulation alone, and dual lead (confined) stimulation.

The average (SD) baseline FTM-A off score was 17.6 (4.0). VIM stimulation alone lowered the average FTM-A total score to 6.9 (4.0). Confined stimulation further attenuated the tremor, reducing the total score to 5.7 (2.8).

Confined thalamic DBS can provide additional symptomatic benefits in patients with unsatisfactory tremor control from VIM or VOA stimulation alone [1)].

1)
Isaacs DA, Butler J, Sukul V, Rodriguez W, Pallavaram S, Tolleson C, Fang JY, Phibbs FT, Yu H, Konrad PE, Hedera P. Confined Thalamic Deep Brain Stimulation in Refractory Essential Tremor. Stereotact Funct Neurosurg. 2018 Nov 19:1-9. doi: 10.1159/000493546. [Epub ahead of print] PubMed PMID: 30453287.