

Combined Thalamic and Pallidal Deep Brain Stimulation in Patients with Secondary Hemidystonia. Two Targets are better than one.

Soha Abdu Alomar MD; Andres M. Lozano MD; Alfonso Fasano MD; yu yan poon
[Institution]

Click To
Add Logo

Introduction

Secondary dystonia is often poorly responsive to medications. The optimal target for the treatment of secondary dystonia with deep brain stimulation (DBS) is not established. A number of thalamic nuclei as well as the globus pallidus and the subthalamus have been tried. With the rationale that two targets may be better than one, we implanted patients with secondary dystonia with both thalamic and pallidal DBS electrodes.

Methods

We reviewed 9 consecutive patients with secondary hemidystonia who underwent both thalamic and pallidal DBS either simultaneously or staged between 1997 and 2014. We tested the efficacy and safety of stimulating at either one or two targets or both targets simultaneously.

Results

In this series, the most common etiology of dystonia was stroke (4 patients), followed by perinatal injury (2 patients). Eight patients had a simultaneous thalamic and pallidal stimulation. One patient had a thalamic stimulation as a salvage procedure after loss of benefit of pallidal stimulation. At the last follow up; five patients showed increased benefit with activation of both pallidal and thalamic electrodes compared to with stimulation at a single target. In one of these patients thalamic DBS improved proximal leg dystonia, while stimulation of the ventral contacts in the GPi improved distal dystonia and dorsal contacts improved proximal dystonia. None of the above patients experienced any surgical related complications, except for the patient who had a staged procedure. A fractured pallidal electrode was discovered intra-operatively at the time of thalamic electrode insertion.

Learning Objectives

combined targeting for deep brain stimulation in cases with secondary hemidystonia may be superior to single targeting

References

Conclusions

Simultaneous unilateral thalamic and pallidal deep brain stimulation is a reasonable and safe therapeutic option, which could increase the beneficial effect of deep brain stimulation and expand the programming options in the challenging cases of secondary hemidystonia.