

## Introduction

Dystonia is a syndrome of sustained involuntary muscle contraction, frequently causing twisting or repetitive movements or abnormal postures.(1) Secondary dystonia comprise the syndromes that have dystonic symptoms due to brain injury associated with neonatal encephalopathy syndromes, trauma, vascular injury, infections, demyelinations, or other hereditary disorders associated with neurodegeneration.(2)

## Aim of the study:

Comparison of the functional outcomes of different available neuroablative and neuromodulating techniques directed to treat secondary dystonia.

## Methods

This is a prospective comparative study addressing the functional outcomes of different available neurosurgical techniques for treatment of secondary dystonia.

Fifty patients suffering from intractable handicapping dystonia which may be of focal, segmental or generalized distribution, despite optimal oral medication and physical therapy were included in this study.

Patients were divided into two groups:

**Group A:** who were subjected to neuroablative techniques and included 30 patients: 20 patients had combined anterior and posterior lumbar rhizotomies (CAPR), and 10 patients had bilateral GPi pallidotomies.

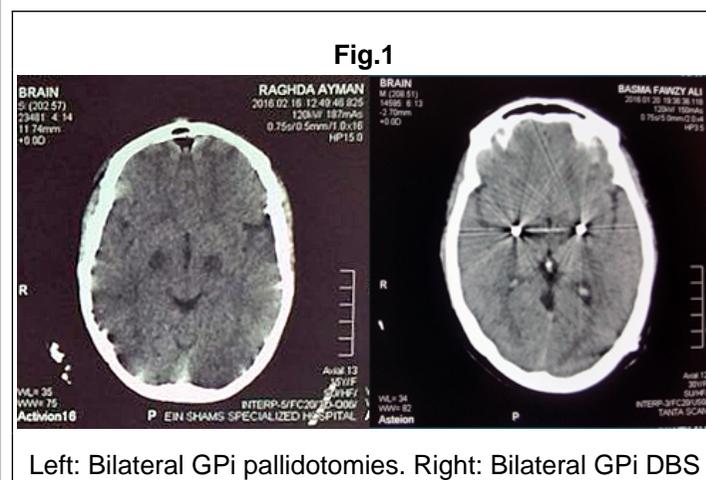
**Group B:** included 20 patients who were subjected to neuromodulation techniques: 14 patients had deep brain stimulation (DBS) and 6 had intrathecal Baclofen (ITB) infusion.

All patients were assessed clinically by a multidisciplinary team including a neurosurgeon, a neurologist, a physiotherapist, and an orthopedic surgeon.

## Results

Fifty patients were enrolled in this study, 28 males and 22 females. The mean age was 21.3 years. All patients were shown up in all follow up evaluation visits up to 12 months post-operatively, and were evaluated by the multidisciplinary team for outcome measurements.

**In group A:** Twenty patients were subjected to **CAPR:** there were significant reduction of hypertonia and dystonia scoring. Ten patients had bilateral GPi pallidotomies, there were significant reduction of dystonia (**Fig. 1-Left**).

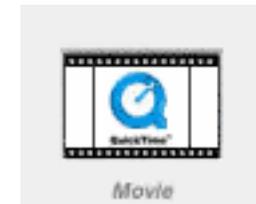


Both neuroablative and neuromodulation techniques had shown improvement regarding muscle tone and involuntary movements, with no significant statistical difference in both groups.

**In group B:** Fourteen patients had bilateral GPi DBS, there were significant change in dystonia scoring at the 12th month post-operative follow up visit (**Fig.1-Right**)

Six patients had intrathecal Baclofen infusion, there were significant change in hypertonia and dystonia scoring.

By comparing the change in dystonia scoring in both groups; there were no significant difference between both groups.



7y boy, CP quadriplegic dystonic, pre & post CAPR

## Conclusions

Both neuroablative and neuromodulating techniques have the beneficial impact on secondary dystonias especially with stationary neurological pathologies with no significant statistical difference between both techniques.

While the neuromodulation techniques had the advantages of being adjustable, titratable, and reversible.

## Learning Objectives

Neuroablative surgical techniques have a similar effect to neuromodulation techniques in treatment of secondary dystonias

## References

1. Petr Kanovsky , Raymond L. Rosales , and Kailash P. Bhatia: Dystonia: The Syndrome, Its Term, Concept and Their Evolution. In P. Kanovsky et al. (eds.), Dystonia and Dystonic Syndromes, © Springer-Verlag Wien. 2015:3-5.
2. Jankovic J. Botulinum toxin in clinical practice. J NeurolNeurosurg Psychiatry 2004;75:951-7.