

Intracranial air

The introduction of intracranial [air](#) (ICA) during [deep brain stimulation](#) (DBS) surgery is thought to have a negative influence on targeting and clinical [outcomes](#).

Objective: To investigate ICA volumes following surgery and other patient-specific factors as potential variables influencing translocation of the DBS electrode and proximal lead bowing.

Methods: High-resolution postoperative computed tomography scans (≤ 1.0 mm resolution in all directions) within 24 h following DBS surgery and 4-6 weeks of follow-up were acquired. A total of 50 DBS leads in 33 patients were available for analysis. DBS leads included Abbott/St. Jude Medical InfinityTM, Boston Scientific VerciseTM, and Medtronic 3389TM.

Results: Both ICA volume and anatomical target were significantly associated with measures of DBS electrode translocation. ICA volume and DBS lead model were found to be significant predictors of proximal lead bowing. Measures of proximal lead bowing and translocation along the electrode trajectory for the Medtronic 3389TM DBS lead were significantly larger than measures for the Abbott/St. Jude Medical InfinityTM and Boston Scientific VerciseTM DBS leads.

Conclusion: The association between ICA volume and translocation of the DBS electrode is small in magnitude and not clinically relevant for DBS cases within a normal range of postoperative subdural air volumes. Differences in proximal lead bowing observed between DBS leads may reflect hardware engineering subtleties in the construction of DBS lead models ¹⁾.

¹⁾

Niederer J, Patriat R, Rosenberg O, et al. Factors Influencing Electrode Position and Bending of the Proximal Lead in Deep Brain Stimulation for Movement Disorders [published online ahead of print, 2020 Jun 2]. Stereotact Funct Neurosurg. 2020;1-13. doi:10.1159/000507029

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