The Safety and Efficacy of Image-Guided Trans-sulcal Radial Corridors For Hematoma Evacuation: A Multicenter Study

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Background

Subcortical injury resulting from surgical management of Intraparenchymal hemorrhage (IPH) can be devastating. The present study evaluates safety and efficacy of a novel DTI-guided, exoscopic-assisted, radial transulcal approach to these lesions.

Methods

Minimally invasive Subcortical Parafascicular Access for Clot Evacuation (MiSPACE) is a standardized process designed for evacuating IPH. It incorporates 5 core competencies of image interpretation/trajectory planning, dynamic navigation, atraumatic access, Extracorporeal optics, and automated atraumatic resection. Demographic, clinical, and radiological data of patients operated on over a 2-year period were collected and analyzed retrospectively. Ten neurosurgeons from 10 centers were trained through a CME accredited course to uniformly practice this technique.

Results

Thirty-five patients were identified (20M, 15F) with a mean age 57.5 years (range: 19-85). Mean GCS at presentation was 10.6 (SD= 3.16). Thalamus/basal ganglion, left temporal, frontoparietal regions were involved in 51, 11, and 11% of patients, respectively. Hypertensive hemorrhage was presumptive diagnosis in 19 patients. Three had underlying AVMs. Mean hematoma volume and depth were 45.1cc (range: 7.5-170) and 2.06 cm (range: 0-7.5 cm), respectively. Mean time from ictus to surgery was 41.7 hours (median: 24). All cases were done in the operating room. Neuronavigation was used in 100% of cases. Degree of hematoma evacuation was: ≥ 90, 75-89, and 50-74% in 74, 20, and 5.7% of patients, respectively. Mean GCS at discharge was 13.6 (SD=1.98). Improvement in GCS was statistically significant (P<0.0001). There were no mortalities.

Conclusion

The minimally invasive subcortical parafascicular approach described is safe and effective for managing IPH when used in a standardized fashion. This approach represents a potentially important advancement for this patient population in whom surgical treatment options have been very limited.
Disclosure