Abstract Title: Outcomes of Awake Craniotomy in the Pediatrics Population: A Single Institutional Experience

Category 1: Pediatric
Category 2: Stereotactic and Functional

Abstract: Introduction: Awake craniotomy in the adult population has been established as a crucial surgical technique to achieve maximal safe resection for tumors and epileptogenic foci in eloquent brain areas. However, this technique is not common in the pediatrics population. Herein, the authors present their institutional experience, the largest to date.

Methods:
A retrospective study of a prospectively-maintained database of pediatrics patients who have undergone awake craniotomy between 2004 to 2019. The average of clinical and brain MRI follow-ups were 2.6 and 2.9 years, respectively.

Results:
Eleven patients (55% girls) with a total of 13 awake craniotomies were identified. The cases were comprised of tumors (54%), mixture of tumors and peri-lesional epileptogenic tissue (23%) while the rest were pure epilepsy (23%). The average age at the time of surgery was 15.6 years (11 – 19 years). The average of surgical time (skin-to-skin) and total anesthesia time were 3h46min and 5h28min, respectively. Twelve cases (92%) achieved safe resection with maximal tumor removal or better seizures control with full strength and normal speech on follow up while one case was complicated with unexpected sagittal sinus bleed that required conversion to general anesthesia. The median of ICU and hospital stay were one and two days, respectively. Ten patients had presurgical neuropsychological testing, 6 patients had formal postoperative neuropsychological assessments. There was no evidence of decline or loss of skills post-surgically in any patient long-term and all patients demonstrated stable performance across all measures.

Conclusion:
This is the largest case series of awake craniotomy in the pediatric age group to date. This surgical technique is safe, feasible and well-tolerated in carefully selected patients. Excellent outcomes can be achieved with appropriate planning and expertise. Details of our current technique will be discussed included: pre-operative neuropsychological evaluation/screening for awake candidacy; intraoperative anesthesia and surgical considerations; and intraoperative neuropsychological testing/recording via dedicated iOS application.

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Has the work presented in this abstract or substantially similar work been presented or published previously?
No NA
Has the work in this abstract or substantially similar work being submitted for presentation at another meeting?:

NA

Is your work pending FDA approval?:

No

Are you an Advanced Practice Provider and would like your abstract considered for oral presentation in the Advanced Practice Providers Plenary Session?

Yes

Are you a Medical Student or Resident and would like your abstract considered for oral presentation in the Young Neurosurgeons Research Forum?

Yes