

Intraoperative Seizures and Cortical Mapping With Awake Craniotomy for Perirolandic Glioma Resections

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Introduction

The perirolandic motor area has been reported to have a higher incidence of intraoperative seizures (IOS) during awake craniotomies than any other cortical region. This study evaluates the role of intraoperative seizures on neurological outcome and extent of tumor resection (EOR) in the perirolandic region, as well as analyzes the efficacy of cortical mapping in this region.

Methods

Thirty-nine patients who underwent an awake craniotomy for a perirolandic glioma by a singlesurgeon were retrospectively evaluated for the incidence of IOS and a univariate analysis of preoperative risks, perioperative complications, and EOR between patients with no intraoperative seizure (nIOS) and patients with IOS was conducted. To study neurological outcome in awake craniotomies after perirolandic tumor resection with cortical mapping, a comparative univariate analysis on 28 of the patients who had positive cortical mapping and 11 patients that had negative mapping was conducted.

Results

We found an incidence of IOS at 12.8% during cortical mapping for awake craniotomies in the perirolandic area, none of which caused an aborted case. Intraoperative seizure patients had a significantly smaller EOR (59.1%) compared to nIOS patients (87.9%) (p=0.043). The length of hospitalization in the IOS patients was also longer (12.4 \pm 2.0 days) compared to the nIOS patients (3.7 ± 0.4 days) (p=0.011). Positive cortical mapping had more postoperative seizures (35.7%) compared to negative mapping (0%) (p=0.022). New postoperative motor deficits were also more common in positive mapping patients (60.7%) versus negative mapping patients (18.2%) (p=0.017).

Conclusions

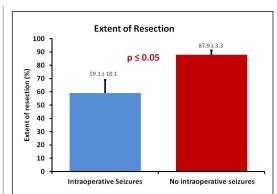
Intraoperative seizures in awake craniotomies for perirolandic gliomas can limit the extent of tumor resection and cause significant increases in the length of hospitalizations. Craniotomies that limit cortical exposure for perirolandic gliomas in conjunction with negative mapping of eloquent motor regions, allow for aggressive tumor resection with low postoperative motor deficits and seizures.

Learning Objectives

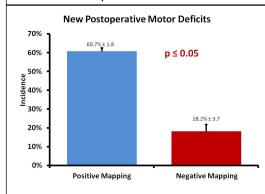
- 1) To identify the risks and complications associated with awake cranitiomies for perirolandic region lesions
- 2) To understand the role of cortical mapping with neurological outcome in perirolandic gliomas
- 3) To understand the effects of intraoperative seizures and cortical mapping on extent of resection

References

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Extent of resection for perirolandic gliomas in intraoperative seizure and non-intraoperative seizure patients. The intraoperative seizure group shows significantly smaller volumetric tumor resection compared to patients who had no intraoperative seizures.



The percent of patients that had new postoperative motor deficits during an awake craniotomy following positive and negative cortical mapping for perirolandic gliomas. During cases with positive cortical mapping, new postoperative motor deficits were found in 60.7% percent of the patients compared to 18.2% of negative mapping patients.