

# The impact of tumor location on the occurrence on intraoperative seizures during awake craniotomy

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## Introduction

Seizures are a common presenting symptom of patients with brain tumors. Intraoperative seizures during awake craniotomy (AC) may result in failure to adequately monitor the patient. This study assessed the association between tumor location and the occurrence of intraoperative seizure during AC and their impact on patient outcome.

## Methods

Data was prospectively collected of 122 consecutive patients who underwent AC for the removal of a brain tumor between 2010-2011. Demographic and clinical data such as age, Karnofsky Performance Score (KPS), history of seizures, intraoperative seizure occurrence, location of tumor, and extent of tumor resection were analyzed. Surgical outcome included inpatient death, postoperative complications, and length of stay.

## Results

Nine of 15 (60%) patients who had tumors within the SMA had a history of seizures and 11 (73%) of them experienced an intraoperative seizure. 30 (43%) of the 69 patients who had non-SMA frontal lobe tumor had a history of seizures and 14 (20%) experienced an intraoperative seizure. 29 (55%) of the 53 patients with tumors located in non-frontal regions had a history of seizures and 4 (7.5%) experienced an intraoperative seizure ( $p < 0.0001$  for intraoperative seizures for tumors in the SMA vs. non-SMA frontal lobe and non-frontal regions). (Figure 1,2). There were no significant differences between the three groups according to gender, dominant hemisphere, KPS, extent of tumor resection, history of seizures, surgical outcome and length of hospital stay.

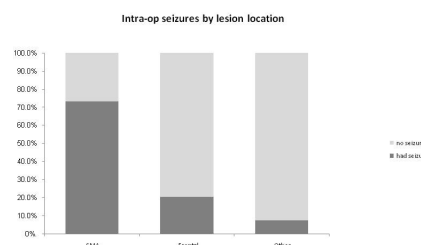
## Conclusions

Patients with tumors located in the SMA had a significantly higher rate of intraoperative seizures during AC compared to patients with non-SMA frontal tumors and patients with tumors located in other regions of the brain. However, the occurrence of intraoperative seizures did not affect post-operative outcome.

## Learning Objectives

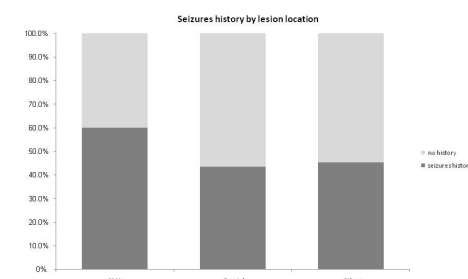
By the conclusion of this session, patients with tumors located in the SMA had a significantly higher rate of intraoperative seizures during AC compared to patients with tumors located in other regions of the brain. This observation calls for careful consideration and treatment during AC of patients with SMA associated tumors.

Figure 1



Bar graph showing the proportion of intraoperative (Intra-op) seizures during awake craniotomy classified by tumor location, ( $p < 0.001$  for SMA vs. frontal and other;  $p < 0.0001$  for SMA vs. frontal;  $p = 0.05$  for frontal vs. other).

Figure 2



Bar graph showing seizure history classified by tumor location, ( $p = 0.444$  for SMA vs. frontal & other;  $p = 0.238$  for SMA vs. Frontal;  $p = 0.972$  for Frontal vs. Other).