Awake-Surgeries for Brain Tumors: Initial Experience in a Consecutive Series of 78 Patients.

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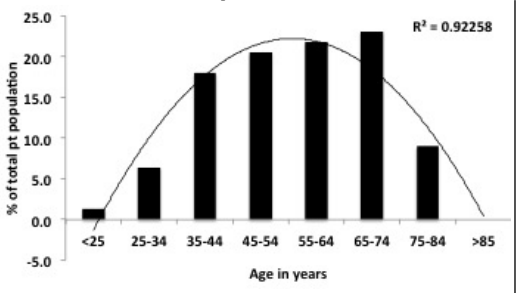
CNS 2015 ANNUAL MEETING
NEW ORLEANS LOUISIANA SEPTEMBER 26-30, 2015

Introduction: Awake-craniotomies have been shown to maximize the extent of tumor resection while minimizing potential neurological deficits. The goal of this study is to retrospectively analyze outcomes in patients undergoing awake craniotomies tumor resection at our institution.

Methods: All cases of adults undergoing awake-craniotomy from 2013- 2014 by a single surgeon were retrospectively reviewed based on an IRB approved protocol. Information regarding patient age, sex, cancer type, procedure type, location, hospital stay, extent of resection, and postoperative complications were extracted.

Results: 78 patient charts were analyzed. Resected cancer types included metastasis to the brain (41%), glioblastoma (33%), WHO grade III glioma (19%), WHO grade II (5%). The most common indication was for motor cortex and primary somatosensory area lesions followed by speech. Extent of resection was gross total for 58% patients, near total- 33%, and partial- 6%. Average hospital stay for the cohort was 1.7days. 74% of patients stayed at the hospital one day or less, 13% stayed 2-3 days, 8% stayed 4-5 days, and only 5% stayed more than 5 days. In the postop period, 65% of patients improved. 7% experiences transient deficits and only 3% experienced permanent weakness.

Age Distribution of the Patient Population



Mean=56year old, Mean=51years old, SD=14.5years

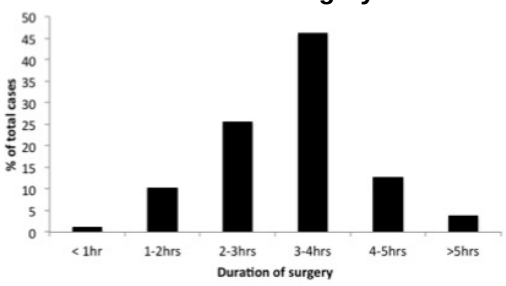
Patient Demographics

Mean patient age (range)	55.86 years old (25-83years old)
Sex	
Male	59% (46)
Female	41% (32)
Handedness	
Right	87%(68)
Left	4%(3)
Ambidextrous	1%(1)
Unspecified	8%(6)
Tumor location side	
Right	45%(35)
Left	40%(31)
Unspecified	9%(7)
Lesion location	
Frontal	56% (44)
Temporal	18% (14)
Frontoparietal	13% (10)
Parietal	8% (6)
Temporoparietal	3% (2)
Frontotemporal	1% (1)
Functional cortex indication	
Motor	58% (45)
Sensory	29% (23)
Speech	8% (6)
Motor/Sensory	4% (3)
Cancer pathology	
Metastasis	41% (32)
GBM (WHO grade IV)	33% (26)
Glioma WHO grade III	19% (15)
Glioma WHO grade II	5% (4)
Glioma WHO grade I	1%(1)
Meningioma	1% (1)

Variables characterized as percent of total patient population with number of cases in parenthesis

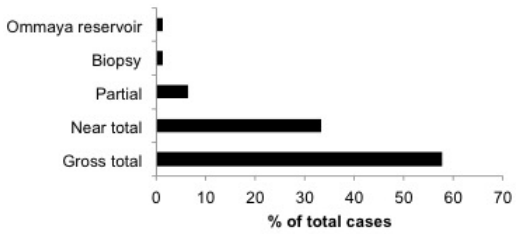
Outcomes

Duration of Surgery



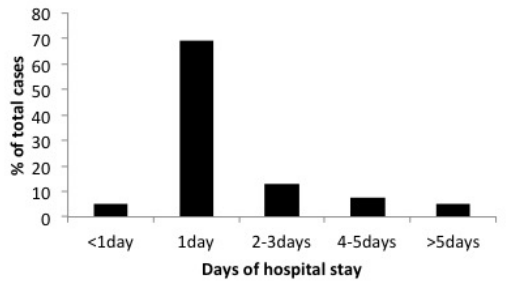
83% of the patients were in surgery for less than 4 hours.

Extent of Resection



91% of tumors were gross total resection or near total resection

Length of Hospital Stay



Average length of stay= 1.7days

Surgery Outcomes and Complications

Neurological status	
Before surgery	
Impaired	88% (69)
Intact	9% (12)
After surgery	
Improved	65% (51)
Unchanged	23% (18)
Transient weakness	6% (5)
Transient word-finding difficulty	1% (1)
Permanent weakness	3% (4)
Permanent speech deficits	0% (0)
Infection	5% (4)
Seizures	
History of seizures	37% (29)
Intraop	1% (1)
Post op, during hospitalization	3% (2)
Seizures recurrence	6% (5)

Conclusions

Our initial experience with awake-surgeries for brain tumor resection demonstrates favorable patient outcomes of short hospital stay, low postoperative complications rate, and excellent tumor resection profile.

Learning Objectives

By the conclusion of the session the participants should

1) Understand the role of awake surgeries in maximum-safe resection of brain tumor.

2) Appreciate the low peri-operative morbidity of awake resections of tumors in eloquent and non-eloquent locations.

Selected References:

Brown, T., et al. Awake craniotomy for brain tumor resection: the rule rather than the exception? J Neurosug Anesthesiol 25, 240-247 (2013).

De Benedictis, A., Moritz-Gasser, S. & Duffau, H. Awake mapping optimizes the extent of resection for low-grade gliomas in eloquent areas. Neurosurgery 66, 1074-1084; discussion 1084 (2010).