INTRODUCTION: Gross total excision of high and low grade gliomas has been proven beneficial both by prolonging progression free survival and overall survival. In this context awake craniotomies for tumour resections as close as possible to eloquent brain have become more popular. Patient experience has improved dramatically with the advent of the electromagnetic navigation which does not require rigid pin fixation and allows conscious sedation throughout the procedure (AAA). Similarly new sedative medications like Desmedetomidine intravenously to achieve conscious sedation in 40 consecutive patients undergoing awake craniotomy for an eloquently located brain tumour. After the patients recovered from the operation and were discharged, they were asked to complete a questionnaire that explored the way they experienced the awake craniotomy before, during and after the procedure. Desmedetomidine use for awake craniotomies is standard practice in North America, but in this work we present the first UK experience of a series of patients. METHODS: Patients enrolled. Amongst these 19 patients, being comfortable during the operation, 6 patients felt some discomfort, and 7 patients were not able to remember and comment on their experience during the operation. From the anaesthetic point of view none of these patients required any intraoperative airway intervention. The satisfaction results are comparable to a previous survey carried out in our unit in 2011 looking at the level of satisfaction with Propofol and Remifentanil. CONCLUSIONS: The outcome of our survey looking at the use of desmedetomidine +/- remifentanil matches the previous study in our institution using remifentanil +/-propofol and appears to be as equally as tolerated by patients. The use of desmedetomidine has the added benefit of little or no respiratory depression. Larger studies are required to explore the true potential of desmedetomidine further.

SURG-24. SURGICAL RESECTION OF FOURTH VENTRICULAR EPENDYMOMAS – CASE SERIES AND TECHNICAL NUANCES

ETHAN WINKLER1, HARJUS BIRK1, JOHN YUE1, JOHN BURKE1, JENNIFER VINER1, MELIKE PEKMEZZICI1, ANE PERRY1, MANISH AGHIL1, MICHEL S. BERGER1 AND MICHAEL MCDERMOTT1, 1DEPARTMENT OF NEUROSURGICAL SURGERY, UNIVERSITY OF CALIFORNIA SAN FRANCISCO, SAN FRANCISCO, CA, USA, 2DEPARTMENT OF PATHOLOGY, UNIVERSITY OF CALIFORNIA SAN FRANCISCO, SAN FRANCISCO, CA, USA

INTRODUCTION: Ependymomas are rare neuroepithelial tumors which may arise anywhere along the ventricular system. Tumors arising in the 4th ventricle present unique challenges. Complete tumor resection favors prolonged survival, but may result in inadvertent injury of surrounding neural structures –such as cranial nerve (CN) nuclei. Here, our institutional experience with surgical resection of 4thventricular ependymomas is described. METHODS: A single institution, retrospective analysis of consecutive case series of adult surgically resected 4thventricular ependymomas with the bilateral telovelar approach. Extent of resection, outcomes and postoperative complications are statistically analyzed. RESULTS: From January 2000 to April 2016, twenty-two 4thventricular ependymomas underwent surgical resection. Gross total resection was achieved in 18 of 22 cases (82%). There were six postoperative complications, lower CN palsies (CN VII, CN IX, CN IV, CN V), and 1 CN VI palsy. No deaths or cerebellar mutism occurred. Two of 6 CN deficits resolved and the rate of permanent neurologic deficit was 18%. A CN deficit was not statistically associated with prolonged hospital stay or functional outcome. With the exception of tumor control, all patients ideally improved or remained unchanged following surgery. Postoperative complications included l wound infection (4.5%) and 4 pseudomeningoceles (18%). The rate of shunt-dependent hydrocephalus was 18%. CONCLUSIONS: Tumor adherence to the 4thventricular floor is not an absolute contraindication for complete resection. Intraoperative neuro-monitoring is essential, and the development of sustained, but not transient CN activity, and/or hemodynamically significant bradycardia should limit the extent of resection.

SURG-25. STABILITY OF SHUNT PROGRAMMABLE VALVE SETTINGS WITH SIMULTANEOUS USE OF THE OPTUNE TRANSDUCTER ARRAY

ANDREW BIRK1, JENNIFER VINER1, JENNIE TAYLOR1 AND MICHAEL MCDERMOTT1, 1DEPARTMENT OF NEUROSURGICAL SURGERY, UNIVERSITY OF CALIFORNIA SAN FRANCISCO, SAN FRANCISCO, CA, USA

The Optune transducer array is an FDA-approved noninvasive regional therapy that aims to inhibit growth of glioblastoma multiforme (GBM) cells via utilization of alternating electric fields. Some patients with GBM may develop hydrocephalus and benefit from subsequent shunt placement, but the conventional approach must be paid in patients in whom programmable shunt valves are utilized given the potential effect of the magnetic fields on valve settings. We present the first case report illustrating the stability of programmable shunt valve settings in a neurosurgical patient undergoing therapy with the Optune device. In this case study, shunt valve settings were stable over a period of five days despite concurrent Optune therapy. This is reassuring for patients with GBM that require simultaneous treatment with both the Optune device and a programmable shunt system.

SURG-27. STEREOTACTIC LASER ABLATION (SLA) AS TREATMENT FOR BRAIN METASTASES THAT RECUR AFTER STEREOTACTIC RADIOSURGERY: A MULTI-INSTITUTIONAL EXPERIENCE

CLARK CHEN1, ALI AMAAN2, ROBERT RENNETT2, KATE CARROLL3, MAYUR SHARMA4, JILL BARNHOLZ-SLOAN1, CHARLOTTE MYERS4, GENE BARNTS4, KRIS SMITH4, ALIREZA MOHAMMADEY4 AND ANDREW SLOAN4, 1UNIVERSITY OF CALIFORNIA SAN DIEGO, DEPARTMENT OF NEUROSURGERY, LA JOLLA, CA, USA, 2UCSD, LA JOLLA, CA, 3UNIVERSITY OF CALIFORNIA SCHOOL OF MEDICINE, SAN FRANCISCO, CA, 4THE ROSE ELA BARKHARDT BRAIN TUMOR AND NEURO-ONCOLOGY CENTER, CLEVELAND, OH, USA, 5UNIVERSITY HOSPITAL, CLEVELAND, OH, USA

BACKGROUND: Therapeutic options for brain metastases (BM) that recur after stereotactic radiosurgery (SRS) remain limited. OBJECTIVE: Here we provide the collective experience of four institutions treating BMs that recurred after SRS with stereotactic laser ablation (SLA). RESULTS: Twenty-six BMs (in 23 patients) that recurred after SRS were treated with SLA (two patients underwent two SLAs for independent lesions, and a third underwent two serial SLAs for independent BMs). Histology of the BM treated included: breast (n=8), lung (n=6), melanoma (n=5), colon (n=2), ovarian (n=2), bladder (n=1), esophageal (n=1), and sarcoma (n=1). With a median follow-up of 145 days (range 64 to 794 days), nine of the SLA treated-BMs progressed (35%). In 104% of the cases progression occurred in BMs where <80% ablation was achieved, while no disease progression was observed in BMs where >80% ablation was achieved. Five BMs were treated with SLA followed one month later by adjuvant SRS (5 Gy x 5 regimen). No disease progression was observed in these patients despite ablation efficiency of <80%, suggesting that adjuvant hypo-fractionated SRS enhances the efficacy of SLA. Of the 23 SLA-treated patients, three patients suffered transient hemiparesis (12%), one patient developed hydrocephalus requiring temporary ventricular drainage (4%), and one patient who underwent SLA of a 16.9cc lesion suffered neurologic deficit requiring an emergent hemicraniectomy (4%). While there is significant heterogeneity in corticosteroid treatment post-SLA, most patients underwent a two-week taper. CONCLUSION: SLA is an effective treatment option for BMs that fail SRS. Ablation of >80% of BMs is associated with decreased risk of disease progression. The efficacy of SLA in this setting may be augmented by hypo-fractionated SRS.

SURG-28. COMBINATION OF INTRAOPERATIVE MRI WITH ELECTROPHYSIOLOGICAL MONITORING FOR ENHANCED BRAIN TUMOR RESECTION

RYAN PLANCHARD1, DESMOND BROWN1, DANIEL SHEPHERD1 AND IAN P. PARNEY1, MAYO CLINIC, ROCHESTER, MN, USA

Intraoperative MRI (iMRI) has been shown to increase both extent of resection and survival for low and high grade gliomas. However, differences in postoperative neurological deficits following surgery. Much of the work has been done with high-grade gliomas as these are usually contrast-enhancing. Coupling iMRI with intraoperative electrophysiological mapping (EPM) provides a potential opportunity to further reduce neurological injury. In this study, 21 patients undergoing craniotomy and tumor resection with iMRI by a single surgeon were followed to determine outcomes. Among these, 124 also underwent electrophysiological mapping of motor (65 of 203), speech (3 of 203) or both (56 of 203). There were no significant differences in age, gender or comorbidities among the participants. Patients undergoing combined motor and speech mapping were less likely to obtain a gross total resection (18% versus 32% of patients undergoing motor mapping only and 42% who received surgery without intraoperative mapping). However, when controlled for tumor location and multifocality, all statistical significance disappeared. Similarly, postoperative deficits were more common among patient undergoing combined speech and motor electrophysiological mapping. However, when the preoperative deficits were factored, no significant differences were found in outcome as determined by delta KPS score. This is despite carrying out surgery in disparate eloquent areas. There were no statistically significant differences in 30-day mortality or permanent neurological deficits. This preliminary data suggests that EPM in combination with iMRI is a safe adjunct that does not lead toward any deleterious outcomes for patients and provides yet another tool to guide the surgeon during resection. This data has not demonstrated a clear benefit on extent of resection or postoperative deficits. More work needs to be done to determine the utility of EPM in combination with iMRI to help guide the extent of resection.

SURG-29. PERSONALIZING THE DECISION GROSS TOTAL RESECTION (GTR) IN NEURO-ONCOLOGY

CLARK CHEN1, ALI ALATARR2, ALEX SCHUPPER2, MICHAEL BRANDL3, JENNIFER PDVAL4, BRIAN HIRSHMAN5 AND BOB CARTER1, 1UNIVERSITY OF...
NOW ENROLLING
Phase 2b study of IGV-001 in patients with newly diagnosed glioblastoma (NCT04485949)

**OBJECTIVES**

- **Primary Objective**: Progression-free survival
- **Secondary Objective**: Overall survival
- **Safety Objective**: Safety and tolerability

**Key Inclusion Criteria**

Patients who take part in the trial must:

- Have newly diagnosed glioblastoma
- Be 18 to 70 years of age
- Have a KPS score ≥70 (unable to work but able to care for themselves overall)

**Key Exclusion Criteria**

Patients are not allowed to participate in the trial if they have:

- A tumor that is on both sides of the brain
- Had previous surgery or anticancer treatment for glioblastoma
- Glioblastoma that came back
- Another cancer† while having glioblastoma or within the last 3 years that is not cured
- A weakened immune system (example: HIV, HBV, HCV) or an autoimmune disorder (example: Crohn's disease)
- Heart disease or history of heart issues

*Additional criteria apply. Please refer to protocol 14379-201 for full inclusion and exclusion criteria. †Patients can participate if they had some skin cancers, superficial bladder cancer (cancer that was only on the surface of the lining of the bladder), or carcinoma in situ (cancer that had not spread) of the cervix or breast that had been cured.

HIV, human immunodeficiency virus; HBV, hepatitis B virus; HCV, hepatitis C virus; IGF-1R, insulin-like growth factor 1 receptor; KPS, Karnofsky Performance Scale; RT, radiotherapy; SOC, standard of care; TMZ, temozolomide.

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