

P.083**Use of jugular venous pressure to optimize outcomes of vestibular schwannoma resection: a review of the literature and proof of concept**

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Background: Surgical resection of vestibular schwannoma (VS) is often curative if gross total resection is achieved, however, it is a delicate procedure with high risk to the facial nerve. With retrosigmoid approach for resection, the head is positioned to maximize lateral head rotation and neck flexion in order to optimize the surgical field. However, this may inadvertently occlude cerebral venous drainage, elevating intracranial pressure (ICP) and increasing intraoperative bleeding. **Methods:** Here, we review relevant literature regarding the effects of head rotation and neck flexion on internal jugular vein (IJV) occlusion and ICP, and highlight the notion that head rotation and flexion may occlude the ipsilateral IJV, increasing ICP. Subsequently, we propose a novel technique using continuous, real-time monitoring of jugular bulb pressure (JBP) to detect obstructions in jugular venous flow and guide optimal head positioning prior to VS resection. **Results:** As proof of concept, we present a case in which JBP monitoring was employed to optimize head positioning prior to a VS resection, which shows a significant reduction in JBP compared to traditional positioning. **Conclusions:** This innovative approach offers promise in enhancing the safety and efficacy of intracranial surgery for VS and potentially other neurosurgical procedures.

P.084**Early malignant transformation of intracranial epidermoid cysts: a case report and systematic review**

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Background: Intracranial epidermoid cysts (IEC) are benign congenital intracranial lesions that rarely undergo malignant transformation. We report a case of IEC evolving into squamous cell carcinoma (SCC) 1-year post-resection. Further, we conducted a systematic review on cases of early malignant transformations of IECs. **Methods:** MEDLINE, EMBASE, and Scopus were searched from inception until December 2023 for studies reporting malignant transformations of IECs within 2 years of diagnosis. **Results:** A 48-year-old female underwent surgical resection of a cerebello-pontine angle (CPA) IEC in May 2022. She re-presented in July 2023 with headaches, nausea, vomiting, right facial weakness, and rapid cyst progression. Repeat surgical resection revealed a high-grade SCC. Our systematic review identified 19 (10 females, 9 males) additional IEC cases undergoing malignant transformation within 2 years. The mean age at presentation was 57.6 years, most common location was CPA (n=13, 68.4%) and mean time between IEC to malignant transformation was 10.6 months. Eighteen

(94.7%) cases transformed to SCC, of which 2 had leptomeningeal carcinomatosis, and 1 transformed to glioblastoma. **Conclusions:** While malignant transformations of IECs are rare, regular postoperative follow-up is crucial for early malignancy detection and treatment initiation. Further study is warranted to evaluate factors contributing to accelerated malignant progression of IECs.

P.085**Characterizing molecular alterations in glioma growth and progression**

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Background: High grade gliomas (HGG) are incurable, aggressive brain malignancies that carry poor prognoses. Significant scientific advances have uncovered many of the features of these diseases; however, it remains unclear how mutations and transcriptional changes drive glioma growth and progression. **Methods:** We used a Nestin-Cre mouse model in combination with an extrinsic chemical mutagen (*N*-ethyl-*N*-nitrosourea, *ENU*), to model HGG. We combined our mouse model with live animal *in vivo* magnetic resonance imaging to track tumor growth over time, and sample discrete lesions during premalignant, early stage tumor, and end stage tumor phases. **Results:** We show that the somatic mutations, copy number changes, and transcriptional profiles of tumors vary depending on the stage of growth, and that the *Raf/Ras* pathway is key for tumor growth with a recurring *Braf* mutation occurring in early stage lesions. Gene set enrichment analysis (GSEA) shows that end stage tumors have increased immunogenic/inflammatory activity, and increased signaling through *Raf/Ras*. **Conclusions:** The combination of genetic and nongenetic insults results in activating mutations in early lesions, which continue to be biologically active and underlie key differences between early and end stage tumors. Overall, this work sheds light on important differences between early and late stage tumors.

P.086**The effect of after-hours surgical resection on the outcomes in patients with high grade gliomas**

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Background: The “weekend effect” is the finding that patients presenting for medical care outside of regular working hours tend to have worse outcomes. There is a paucity of literature in the neuro-oncology space exploring this effect. We investigated the extent of resection and complication rates in patients undergoing after-hours high grade glioma resection. **Methods:** A retrospective review was conducted on patients with high-grade gliomas requiring emergent surgery between January 2021 to March 2023. After-hours was defined as surgical resection on the weekend and/or evening. These patients were matched to patients undergoing resection during regular working hours. **Results:** A total of 38 patients were included in this study (19 after-hours, 19 regular hours). There was no significant difference in age, sex, tumor grade, and tumor size

between the two groups (all $p > 0.05$). There was no significant difference in the extent of resection between the groups ($p = 0.7442$). There was no significant difference in complications rates, reoperation rates, and death at 6 months (all $p > 0.05$). Estimated blood loss was significantly higher in the regular hours group ($p = 0.0278$). There was no significant difference in the total operative time ($p = 0.0643$) and length of stay ($p = 0.0601$). Conclusions: After-hours high grade glioma surgery is not associated with increased morbidity or mortality.

P.087

Factors affecting health-related quality of life among adult meningioma patients: a systematic review

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Background: Meningiomas are common brain neoplasms that can significantly influence health-related quality of life (HRQOL), yet the factors influencing HRQOL in adult patients remain unclear. We aimed to bridge this knowledge gap by determining these key factors. **Methods:** We conducted a systematic review, searching EMBASE, MEDLINE, CINAHL, Scopus, and PsycINFO up to March 2023. We included original, peer-reviewed studies focusing on adult patients (>18 years) with current or past meningioma at any stage of treatment that measured HRQOL or its proxies in relation to tumour-, treatment-, and patient-related factors. Two independent reviewers screened abstracts and full texts, selecting studies with acceptable risk of bias for data extraction and narrative synthesis. **Results:** Of N=2942 identified studies, N=30 were included. Key factors found to influence HRQOL in adult meningioma patients include surgery, radiotherapy, neurological function, functional status, comorbidities, sleep quality, psychological impairment, age, and employment. Factors related to tumour characteristics yielded inconsistent findings. Heterogeneity and inconsistencies in HRQOL measurement across studies hindered definitive conclusions about the impact of factors on HRQOL. **Conclusions:** Our review emphasizes the need for standardized, disease-specific HRQOL assessments in meningioma patients. More consistent, large-scale, prospective research is essential to comprehensively understand and improve HRQOL, and thereby ensure tailored care for this population.

P.088

Wounded glioma syndrome: neurologic worsening in patients with subtotal resection in high-grade gliomas

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Background: For treatment of high-grade gliomas (HGGs), subtotal resection (STR) may be preferred to minimize injury to eloquent areas. We aimed to characterize neurologic deficits developed in STR patients within the first month post-operatively and to establish a potential threshold for a safe volume of residual tumor to avoid neurological worsening. **Methods:** This is a single

institution retrospective chart review, with 146 charts reviewed and 78 patients deemed eligible. Preoperative deficits and post-operative neurological deficits presenting prior to 1 month after surgery were captured. Imaging features such as tumour volume, edema, and other pertinent imaging characteristics were collected from preoperative and postoperative imaging. **Results:** Most patients that developed a postoperative deficit presented with motor deficits (55.1%), while only 1.3% of patients developed new or worsening tremor after surgery. On average, in patients with a new deficit, 26.5% of tumor was resected, and all patients had more than 19% of residual tumor. **Conclusions:** Postoperative neurologic deficits may develop after a subtotal resection when an average of 73.5% of tumor remains. The proposed threshold for tumor resection is greater than 26.5% to minimize the potential of neurologic worsening 1 month postoperatively.

P.089

Volumetric extent of resection and visual outcomes in pituitary adenoma patients presenting with visual compromise undergoing the endoscopic endonasal approach

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Background: Reporting extent of resection (EOR) in pituitary adenoma (PA) surgery via endoscopic endonasal approaches (EEA) is not standardized. The use of 3-dimensional volumetric analysis is proposed for measurement of tumor volumes and EOR. Their relationship with visual outcomes is explored. **Methods:** A retrospective analysis of PA patients presenting with visual disturbances and treated surgically via EEA by a single surgeon between 2006 and 2021. The main outcome was visual function at 12 months post-operatively. **Results:** 142 patients were included. Majority were male, with mean age of 57.1 years. Most (58.2%) presented with bitemporal hemianopsia. The mean tumor size was 11.3 cm³. The mean EOR was 84.5% (range 21.5-99.8%), with a mean post-operative tumor volume of 1.9 cm³. Visual function improved in 92.2%. Re-resection for visual deterioration was performed in 5.7% of patients, (mean time 2.4 years). No clinical, pathologic, or imaging factors were significantly associated with visual outcome. A significant association was found between EOR and re-resection (mean EOR 66.7% vs 85.6%, $p = 0.002$). **Conclusions:** For patients with PA presenting with visual deficits, treatment with EEA led to improvement in visual function in the majority of patients, without the need for gross total resection. EOR was significantly associated with the need for re-resection.

P.090

Third ventricular pituitary: case report and review of the literature

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Background: Pituitary adenoma is a rare, low grade tumour typically of the sellar region. Here we present a pituitary adenoma located in the