HELLENIC NEUROSURGERY

Volume 3, Supplement 1, June 2025

Abstracts to the 38th Annual Congress of the Hellenic Neurosurgical Society and Joint Meeting with the Czech Neurosurgical Society.

38th & 18th

Annual Congress of the Hellenic Neurosurgical Society & Joint Meeting with the Czech Neurosurgical Society

Annual Neurosurgery Nurses Meeting

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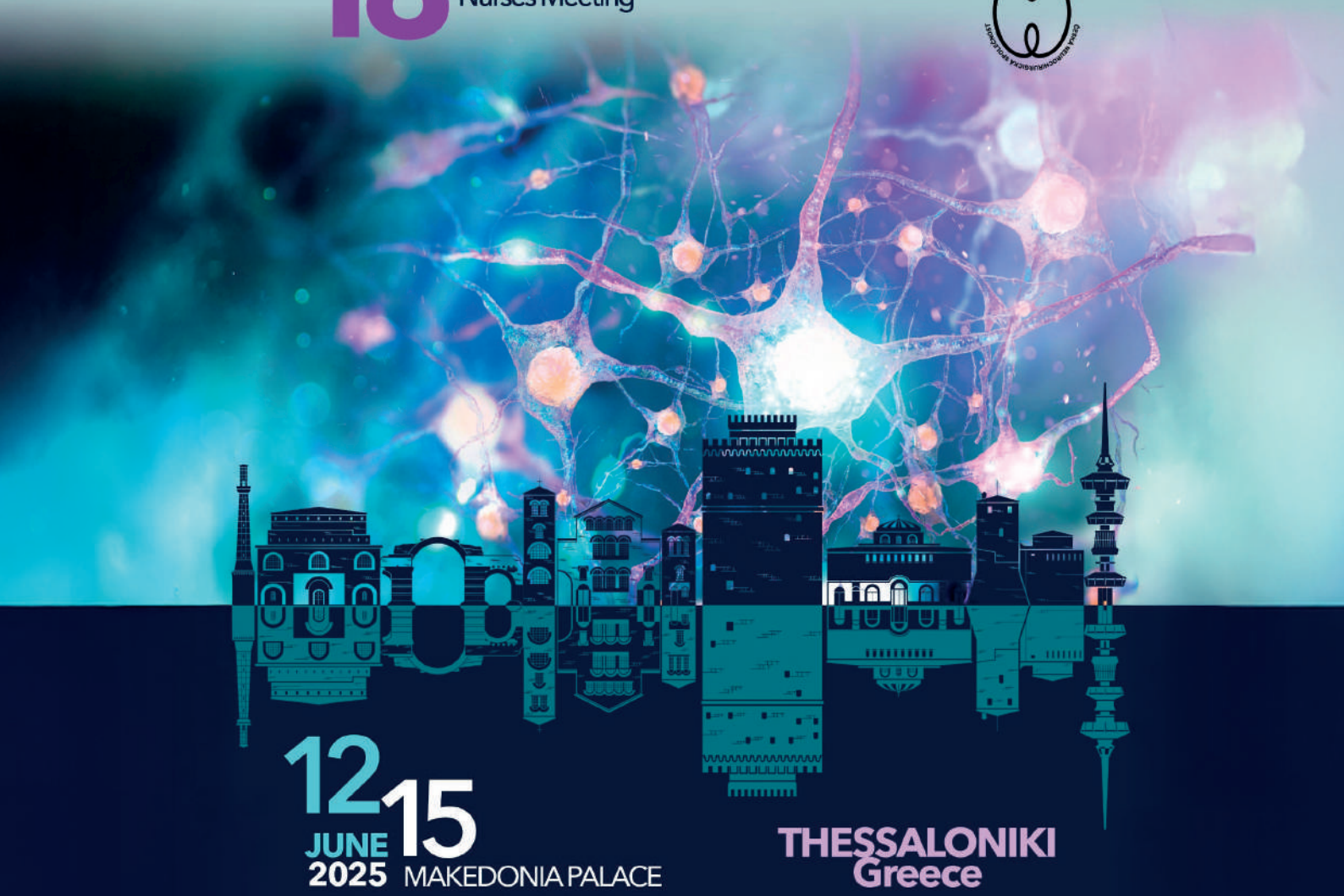

12-15 JUNE 2025 MAKEDONIA PALACE

THESSALONIKI Greece

HELLENIC NEUROSURGERY

PUBLISHED FOURTH MONTHLY /
OFFICIAL JOURNAL OF THE HELLENIC NEUROSURGICAL SOCIETY

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THE STRATEGIC VALUE OF EDUCATION AND AWARENESS IN NEUROMODULATION: A MULTI-STAKEHOLDER PERSPECTIVE

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Objective:
To evaluate the impact of comprehensive educational initiatives on increasing awareness and acceptance of neuromodulation therapies among healthcare professionals, patients, and healthcare systems.

Material and Methods:
A review of educational programs and social media campaigns implemented by the International Neuromodulation Society over a three-year period was conducted. Data was collected through surveys (n=450), including pre/post-intervention knowledge assessments among healthcare professionals and patient satisfaction metrics. Social media engagement analytics were examined across platforms to assess reach and impact.

Results:
Healthcare professional education resulted in a 37% increase in appropriate referrals for neuromodulation therapies and a 42% improvement in technical competency scores. Patient education initiatives correlated with 28% higher therapy compliance and 34% greater reported satisfaction. Insurance providers demonstrated 23% faster approval processes following targeted educational interventions. Social media campaigns reached over 2.5 million individuals, generating substantial engagement and creating peer-support communities that improved patient outcomes by 18%.

Conclusions:
Structured educational initiatives across stakeholder groups create significant value throughout the neuromodulation ecosystem. For patients, education reduces anxiety and improves outcomes; for clinicians, it enhances therapeutic decision-making; for payers, it optimizes resource allocation. Social media serves as a powerful amplifier of these educational efforts, providing accessible information and valuable support networks. A comprehensive, multi-stakeholder approach to neuromodulation education represents a high-yield investment for advancing patient care and health system efficiency.

SPHENOPALATINE GANGLION (SPG) STIMULATION IN PATIENTS WITH CLUSTER HEADACHE AND ATYPICAL FACIAL PAIN: A FOLLOW-UP OF 7 YEARS

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Objective:
It is estimated that only in Europe over 600.000 patients suffer from cluster headache (CH). Atypical facial pain (FP) is also considered an underdiagnosed condition with limited treatment options. The treatment of both conditions remains problematic and new therapy options are needed. The scope of this study was to evaluate the long-term effectiveness of the SPG stimulation in treating such painful clinical entities.

Material and Methods:
Three patients were included in this study. The first one reported permanent FP; the second exhibited permanent FP with additional shock-like attacks; the third one presented the typical features of CH. We implanted in collaboration with the maxillofacial surgeons a miniaturized, rechargeable, multi-channel peripheral neurostimulation implant (Pulsante) to stimulate the SPG. The programming and activation of the device took place one month after the operation and the success of the therapy was evaluated after 7 years in the Outpatients Department.

Results:
Two patients were females and one was male with a mean age of 61 years. Perioperative adverse events: nose bleeding in one patient (due to the anesthesia tube), pain at incision site (all 3 patients, treated effectively with Ibuprofen), and sensory disturbances in two patients (resolution after 5 and 7 weeks). No revision or removal of the neurostimulator was needed (no lead migrations or breakages). All 3 patients experienced an improvement of at least 70% (all of them directly after the operation when the neurostimulator was not activated – an effect similar to the improvement of tremor in patients immediately after a DBS-operation). The pain attacks could be successfully managed in the majority of cases (almost 60%) and the attack frequency was also substantially reduced (more than 70%). All 3 patients believed that SPG stimulation is a useful treatment modality; they found the sensation of the stimulation tolerable, they would make the same decision again, and they would recommend this operation to other patients too.

Conclusions:
The SPG stimulation can be an alternative option for patients with CH and atypical FP. The patients seem to be satisfied with the clinical results (rapid pain relief, attack frequency reduction, no systemic side effects). The adverse events are mild and similar to those seen with other trans-oral procedures. Further studies need to be conducted to establish predictors for efficacy of this procedure.

BLOOD GLUCOSE LEVELS AND NEUTROPHILE TO LYMPHOCYTE RATIO (NLR) ADD VALUE IN THE DIAGNOSIS AND CLASSIFICATION OF PATIENTS WITH MILD TRAUMATIC BRAIN INJURY

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Objective:
Brain-computed tomography (CT) is the imaging modality of choice to detect intracranial trauma in patients with mild traumatic brain injury (mTBI). Recent studies have highlighted the potential of emerging, low-cost, and readily available biomarkers in predicting positive CT findings. This study aims to assess the diagnostic utility of routine laboratory biomarkers in individuals with mTBI.

Material-Methods:
A prospective study was conducted of patients aged >18 years who were admitted to the neurosurgical department with mTBI. We included all patients for whom their laboratory data at admission were available and who underwent a brain CT scan.

Results:
The cohort included 101 patients (mean age: 59 ± 23,14 years) with mTBI, and falls were the most frequent cause of TBI (73,2 %). Subdural hematoma (SDH) was the most common finding of mTBI (31,7 %), followed by brain contusion (28,7 %) and traumatic subarachnoid hemorrhage (22,7%). Patients with CT-positive mTBI had higher levels of NLR (p=0.042) and glucose (p=0.021) than patients with concussion. A subgroup analysis revealed that patients with SDH had statistically significantly higher levels of Neutrophile to Lymphocyte ratio (NLR) and glucose than patients with all other CT-positive mTBI or patients with concussion. A

ROC analysis revealed an AUC of 0,78 and 0,80 for NLR and glucose, respectively, to discriminate between patients with a subdural hematoma and patients with concussion.

Conclusions:
The study results warrant further validation through additional studies. Nonetheless, these findings indicate a potentially significant role of routine biomarkers in the emergency assessment of patients with mTBI.

EUROPHOBIA AMONGST MEDICAL STUDENTS: HYPE OR REALITY

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Objectives:
Neurophobia' is a well reported phenomenon in the literature where in medical students and junior doctors have an inherent nervousness or 'fear' of neurology and neurosurgery. We wanted to establish if less medical students choose neurology and neurosurgery as a career and identify is neurophobia is an ingrained belief or learned behaviour?

Design: Questionnaire.

Subjects: Medical students, over the age of 18.

Methods:
We developed a questionnaire to assess medical student views and beliefs in connection with a career in neurosurgery. Specifically we examined their views and beliefs in the following domains: considering a career in neurology and neurosurgery, confidence with neuro anatomy and pathology, traits associated with neurosurgeons and neurologists and finally, their perceived barriers to a neuro career.

Results:
264 medical students completed the survey. Students from fourteen different medical schools across the world responded, with the highest number of students being from Irish medical schools. Over half of participants (58%) felt that neurology is an intimidating module and/or career choice while a huge 80% felt neurosurgery was an intimidating choice. We believe our research appears to be the first to open the survey to students across the world, with no limitations placed on region.

Conclusions:
Neurophobia is not limited to any one geographical region, age group or gender. It appears to be mainly be driven by an intimidation of the complex nature of neuroanatomy and neuropathology. This negative perspective can be further enhanced when students go on to have a negative experience on clinical attachments.

SERUM LACTATE DEHYDROGENASE AS A PROGNOSTIC FACTOR FOR POOR NEUROLOGICAL OUTCOMES IN TBI PATIENTS: A 2-YEAR RETROSPECTIVE STUDY OF A SINGLE CENTER

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Introduction:
Traumatic brain injury (TBI) is a common neurosurgical emergency with estimated annual incidence of 27 to 69 million. It varies from mild to severe (GCS <9) and can affect any age group resulting in major socioeconomic burden. So, there is great interest in finding effective blood markers that can act as a diagnostic and prognostic factor. The serum lactate dehydrogenase (LDH) has been suggested as a potential prognostic marker for various diseases, including TBI. The aim of this study is to investigate the prognostic value of serum LDH predicting in-hospital mortality in TBI patients.

Methods- Material:
This is a 2-year retrospective study of our department's database. Adult patients with traumatic brain injury were included and divided in three categories based on the admission GCS (mild, moderate and severe).

Results:
274 adult TBI patients were included. 55 patients had severe, 60 patients had moderate, and 159 patients had mild TBI. 69 patients passed away during their hospitalization, most of them with severe TBI. Higher levels of LDH (>380) were noted in the moderate and severe TBI group that died, whereas slightly elevated LDH levels were noted in the mild TBI mortality group. No statistically important gender difference was shown.

Conclusion:
Elevated LDH could serve as a prognostic tool to identify adult moderate and severe TBI patients at high risk of in-hospital mortality. More extensive research should be done and the correlation of LDH with the DRR and other blood markers should be examined.

CARE-AI (CAUDA EQUINA SYNDROME RISK EVALUATION ARTIFICIAL INTELLIGENCE): A NOVEL AI MODEL FOR PREDICTING SURGICAL NECESSITY IN SUSPECTED CAUDA EQUINA SYNDROME WITHOUT MRI: PHASE 2 MULTI-CENTRE STUDY

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Objective:
Cauda equina syndrome (CES) is a neurosurgical emergency with significant clinical and medico-legal implications. Given the low reliability of clinical diagnosis, current triage pathways adopt a low threshold for emergency MRI; however, only ~10% of patients require surgery. Previous studies have not accurately predicted surgical necessity. Cauda Equina Risk Evaluation Artificial Intelligence (CARE-AI) aims to develop a novel machine learning model (MLM) to predict the need for spinal decompression prior to MRI.

Methods:
CARE-AI, a MLM, was developed using retrospective, anonymized data from 483 patients assessed for suspected CES at two UK tertiary centers, all of whom underwent emergency MRI. The model was trained on 80% of data from Centre 1 (n=383) and 90% from Centre 2 (n=100), using stratified random splits. Each case included 18 clinical features. Five-fold cross-validation and grid search optimized training. Validation and testing were per-

formed on the remaining 20% from Centre 1 and 10% from Centre 2.

Results:
~9% of patients required surgical decompression. For the positive class (surgical cases), testing on unseen data from Centre 2 yielded recall of 100%, precision of 20%, F1 score of 33%, and AUC of 0.78.

Conclusion:
CARE-AI has the potential to transform CES triage by predicting the need for surgery prior to MRI, expediting imaging for urgent cases, improving clinical outcomes, and reducing delays, medico-legal risks, and on-call workload. Now in Phase 2, CARE-AI has expanded into a national-multi-center initiative. Its vision is to support equitable access to timely neurosurgical care, particularly in low-income-countries.

UNCOVERING STRUCTURAL AND FUNCTIONAL INTERACTIONS BETWEEN THE PLIS DE PASSAGE AND THE SOMATO-COGNITIVE ACTION NETWORK

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Objective:
The somato-cognitive action network (SCAN) is composed of three principal nodes situated within Penfield's motor effector regions. The spatial arrangement of these SCAN nodes closely mirrors that of the plis de passage—small gyri that bridge the precentral and postcentral gyri. This anatomical resemblance suggests that the plis de passage might serve as the structural foundation of the SCAN network.

Material – Method:
To investigate this hypothesis, we performed microdissections on sixteen human hemispheres, identifying three distinct plis de passage exhibiting increased underlying white matter in locations corresponding to SCAN nodes. These structures were subsequently mapped into standard stereotactic space and utilized as seed regions for resting-state functional MRI (fMRI) connectivity analysis across a dataset of 9,000 scans. Additionally, intraoperative direct electrical stimulation of the central sulcus was performed to evaluate inter-effector region activity at plis de passage sites.

Results:
Microdissection findings consistently revealed three plis de passage with prominent white matter, precisely aligning with the SCAN nodes. Functional connectivity analyses confirmed their integration within the SCAN network, while intraoperative stimulation corroborated their role, eliciting inter-effector region responses at corresponding locations.

Conclusions:
These findings elucidate a direct anatomical and functional link between the plis de passage and the SCAN network. This insight enhances our understanding of SCAN organization and could refine motor cortex stimulation techniques for neurological disorders, while also informing surgical strategies for lesions and tumors in and around the motor cortex.

REVISITING THE TELOVELAR APPROACH FOR LESIONS OF THE MESIAL PART OF THE CEREBELLAR PEDUNCLES BY USING THE CEREBELLAR FUNCTIONAL NETWORKS TO GUIDE SURGICAL PRACTICE

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Objective:
Lesions of the mesial part of the cerebellar peduncles (mCP) pose a surgical challenge. They can be approached either by a retrosigmopoid or a telovelar approach. Our aim is to define the surgical

anatomy and technique of the telovelar approach using a stepwise approach while focusing on the white matter tract anatomy of the MCP, ICP and SCP. Our study aims to offer an in-depth examination of the telovelar corridor in relation to other surgical approaches, by integrating data from cadaveric studies.

Material-Method:
We performed white matter dissections of the cerebellar peduncles by using three cadaveric formalin-fixed cerebral hemispheres treated with Klinger's technique. A single formalin-fixed and color-latex-injected cadaveric head was used to study and document the steps of the telovelar corridor. Stepwise intra-operative description of the approach and illustrative cases were also included.

Results:
White matter dissections, cadaveric cranial dissections and intraoperative images are put together to provide a simplified stepwise surgical manual for the telovelar approach. Major white matter pathways that are inevitably traversed during the retrosigmoid approach, such as the lateral MCP fibers, are in lesser risk with the telovelar corridor. On the other hand, the telovelar approach risks mainly the ICP fibers and thus lessens the post-operative motor symptoms.

Conclusions:
Compared to other approaches which might transect lateral MCP white matter tracts, the telovelar approach appears to offer the safest corridor for lesions of the mesial part of the MCP.

WHITE MATTER ANATOMY OF THE MEDIAL SURFACE OF THE BRAIN: A FIBER DISSECTION STUDY

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Objective:
Few anatomical studies have focused on the white matter of the medial surface of the brain. The object of this study was to identify the subcortical white matter fiber tracts, their connectivity pattern and their cortical projections.

Material – Method: Ten formalin-fixed brain hemispheres were used for this study. Fiber dissection was performed by using the Klingler's technique, utilizing the freeze-thaw procedure to explore the white matter tracts.

Results:
Various fundamental tracts were highlighted thoughout this technique. Corpus callosum, cingulum, superior longitudinal fasciculus 1, uncinate fasciculus, inferior longitudinal fasciculus, anterior commissure were the most prominent subcortical tracts. Central midline white matter structures such as the fornix, the stria medullaris and the stria terminalis were also demonstrated.

Conclusions:
Medial surface of the hemispheres contains a high variety of different white matter tracts. Surgical planning along this area requires having a thorough understanding of the relevant anatomy. Knowledge of the distant areas connectivity aids in predicting postoperative neurological deficits and outcomes.

SYLVIAN FISSURE (SF) OPENING. THE ART OF THE NEUROSURGERY. ANATOMY TIPS AND TECHNIQAL DETAILS. VIDEO DEMONSTRATION

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Objective:
Sylvian Fissure opening is very important in dealing with anterior circulation aneurysm and skull base tumors. The aim of this presentation is to show the importance of the SF opening as well as the tips and difficulties during dissection.

Materials and Method:
n the past 10 years many patients in our department have been operated on, by the author, by using the SF opening as an important surgical step.

We describe the anatomy of SF, the tips and the difficulties of the SF opening, based on surgical video.

Results:
SF opening is excellent for anterior circulation aneurysms and some skull base tumors, because it opens a physical corridor to the skull base cisterns. On the other hand, it is also a very demanding technic.

Conclusions:
Bloodless SF opening is technical demanding. Years of experience and mastering in using many important tips, like sharp dissection, less use of bipolar and appropriate use of retractors, are needed for this. SF opening is a real art. Great artist is the neurosurgeon who can open the SF broad and bloodlessly.

THE ANTERIOR PETROSECTOMY (KAWASE APPROACH) AND THE RETROSIGMOID INTRADURAL SUPRAMEATAL APPROACH (RISA) FOR TUMORS OF THE PETROUS APEX

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Objective:
Tumors involving the petrous apex are considered to be an operative challenge due to their deep location and close relationship to critical neural and vascular structures. The purpose of this study is to review a single-surgeon series of tumors involving the petrous apex approached through two different approaches.

Material-Method:
Fourteen patients were treated microsurgicaly. We report on the histology, outcomes and surgery-related complications and address the indications and limits of the two approaches.

Results:
According to the location and extension of the tumor a subtemporal epidural approach with additional anterior petrosectomy (n=8), retromastoid approach with drilling of the suprameatal tubercle (n=3) and a combined presigmoid/subtemporal approach (n=3) was chosen. Histology revealed a meningioma (n=7), schwannoma (n=3), neurofibroma (n=1), cholesterol granuloma (n=1), hemangioma (n=1) and hemangiopericytoma (n=1). A total or near total tumor resection was achieved in 10 patients (78%). New permanent neurological deficits were found in 4 patients. These involved trochlear nerve and GSPN palsy, complete loss of an already impaired hearing and hemiparesis. One patient developed a transient cerebrospinal fluid leak that resolved spontaneously.

Conclusions:
Surgical strategy for petrous apex lesions should be tailored to individual patients. The key to the approaches is excellent knowledge of the relevant anatomy and adequate bone removal of the petrous apex, either from anteriorly (Kawase) or posteriorly (RISA), where necessary.

NEUROENDOSCOPIC APPROACH FOR THE TREATMENT OF PURELY INTRAVENTRICULAR CRANIOPHARYNGIOMAS: VIDEO PRESENTATION

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Objective:
Craniopharyngiomas are benign extra-axial epithelial tumors of the sellar and suprasellar regions. They are challenging lesions which often follow an aggressive clinical course, resulting in significant morbidity. Those arising from infundibulum may rarely be localized completely within the third ventricle (intraventricular craniopharyngiomas). Advances in endoscopic intraventricular techniques have enabled resection, which may offer favorable outcomes in terms of minimizing surgical morbidity and enhancing visualization of deep, difficult-to-reach lesions.

Material - Method:
We present two patients with intraventricular craniopharyngiomas treated purely endoscopically. First patient, male 60 y.o., presented in our department with a cystic intraventricular lesion. He underwent an intraventricular endoscopic procedure, with ventriculo-cysto-cisternostomy and placement of Ommaya catheter, for potential aspirations and injections. The second patient, female 40 y.o., presented with a lesion in third ventricle, accompanied by obstructive hydrocephalus which was gross totally resected along with endoscopic third ventriculostomy. Both operations were performed using a rigid endoscope, assisted by neuronavigation, avoiding surrounding critical structures.

Results:
In both patients, the lesions were successfully resected with a favorable post operative outcome. The histopathologic examination revealed craniopharyngiomas, adamantinomatous in the first patient and papillary in the second. During follow-up there was no evidence of tumor recurrence.

Conclusions:
Endoscopic resection of intraventricular craniopharyngiomas is a feasible and effective technique. The presentation of these two patients underscores the potential of endoscopy as a minimally invasive option for managing challenging intracranial tumors.

ENDOSCOPIC THIRD VENTRICULOSTOMY AND CHOROID PLEXUS CAUTERIZATION IN CHILDREN WITH HYDROCEPHALUS

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Objective:
To clarify the role of endoscopic third ventriculostomy and choroid plexus cauterization (ETV/CPC) in the treatment of children with hydrocephalus and to determine its impact on a shunt-free outcome.

Material-Methods:
We present 7 children with hydrocephalus that were treated in our institution in the past 5 years with ETV/CPC. During the procedure a burr-hole at Kocher's point was made, and a flexible endoscope was inserted in the lateral ventricle. Next, an ETV was performed, which was followed by CPC in the unilateral ventricle. Lastly, septostomy with insertion of the endoscope to the contralateral ventricle with concomitant choroid plexus cauterization was done. Those with post hemorrhagic hydrocephalus received an Ommaya reservoir prior to ETV/CPC.

Results:
The subjects' age ranged from 30 days to 3 years (median 60 days). The diagnosis was posthemorrhagic hydrocephalus in four children, one had syndromic hydrocephalus, one had choroid plexus hyperplasia and one had Dandy-Walker malformation. Those with posthemorrhagic hydrocephalus initially received an Ommaya reservoir. No intraoperative complications were recorded. On clinical and radiological follow-up ventriculomegaly persisted in 6 out of 7 patients. Those underwent a ventroperitoneal shunt placement 6 to 50 days after ETV/CPC (median 34 days) which was revised in two occasions. One child died at the final follow-up.

Conclusion:
In the current cohort, the application of ETV/CPC in children with hydrocephalus didn't influence substantially the need for a ventriculoperitoneal shunt. Our results are in agreement with existing literature. Further research on a prospective setting is needed to better delineate the effect of ETV/CPC on children with hydrocephalus.

ENDOSCOPIC MANAGEMENT OF RATHKE'S CLEFT CYSTS: SUPPORTING SIMPLE FENESTRATION AS A PRIMARY STRATEGY

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Objective:
Rathke's cleft cysts (RCCs) arise from remnants of the embryonic Rathke pouch and may become symptomatic, presenting with headaches, visual disturbances, or endocrine dysfunction. Surgical treatment is indicated in select cases; however, the optimal approach—simple fenestration (SF) versus complete cyst wall resection (CWR)—remains a subject of debate.

Material – Method:
We conducted a retrospective review of endoscopically operated, pathologically confirmed RCCs. Data included clinical presentation, imaging, surgical technique, outcomes, complications, and recurrence.

Results:
Thirty-nine patients were included; 33 underwent SF and 6 CWR. Postoperative pituitary dysfunction occurred in 50% of CWR patients compared to 3% of SF patients (p = 0.008). All patients

had closed skull base reconstruction, with a 4% CSF leak rate (2% in SF vs. 14% in CWR, p = 0.287). Six patients (15%) experienced recurrence requiring reoperation. Recurrence was 18% after SF and 0% after CWR (p = 0.564), with no significant difference between groups.

Conclusions:
Our experience highlights variability in RCC surgical strategies. Simple fenestration with closed reconstruction offers favorable outcomes and low complication rates, making it a safe and effective first-line surgical option. Cyst wall resection may be considered selectively based on intraoperative findings or cyst behavior.\

INDICATIONS, CLINICAL OUTCOME AND COMPLICATIONS AFTER ENDOSCOPIC THIRD VENTRICULOSTOMY: A RETROSPECTIVE COHORT STUDY

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Objective:
Endoscopic third ventriculostomy (ETV) is an established method for the treatment of hydrocephalus. The aim of this study was to evaluate indications, clinical outcomes and complications of ETV in a single tertiary hospital.

Material – method:
We retrospectively identified all cases that were treated with an ETV between 2017 and 2025 in our institution. Clinical course and radiological images were reviewed. Follow-up consisted of phone interviews or outpatient clinic visits.

Results:
Thirteen patients (9 female, 4 male, median age 51 years, interquartile range [IQR] 36-62) were treated with an ETV. Indications included congenital aqueduct stenosis (n=9, 69.2%), tumor (n=3, 23.1%) and other hydrocephalus (n=1, 7.7%). Two of the tumor cases underwent an endoscopic biopsy through a different trajectory during the same procedure. One tumor case and one aqueduct stenosis case had previously been treated by ventriculoperitoneal shunting. Median length of stay was 7 days (IQR 7-10). Complications consisted of postoperative fever in 3 patients (23.1%), wound infection in one patient (7.7%) and one fatality due to postoperative bleeding. Meningitis was excluded with a lumbar puncture in all cases with postoperative fever. All patients apart from one had durable clinical improvement after the procedure.

Conclusions:
Endoscopic third ventriculostomy is a safe and effective treatment method for obstructive hydrocephalus. It can be combined with biopsy in cases of pineal region masses. Postoperative non-infectious fever may occur, and we substantiate the benign cause and course of this complication.

OPTIMIZED SELLAR RECONSTRUCTION STRATEGY FOR ENDOSCOPIC ENDONASAL APPROACHES: EXPERIENCE OF TERTIARY CENTER IN GREECE

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Objective:
The endoscopic endonasal approach (ETSS) is widely used for sellar tumor. The aim of this study is to propose a comprehensive strategy for sellar reconstruction.

Material- Method:
A retrospective review was conducted using data from our institutional database of ETSS procedures from 2019 to the present. A total of 224 procedures were performed for various sellar pathologies, including pituitary adenomas (92,6%), Rathke's cysts (4,2%), craniopharyngiomas (1,4%) and others (1,8%). Intraoperative CSF leaks were classified by severity: Grade 0 (no leak), Grade 1 (small leak without obvious diaphragmatic defect, "weeping diaphragm"), Grade 2 (moderate leak) and Grade 3 (large diaphragmatic defect). For Grade 0 human fibrinogen-thrombin patch (Tachosil®) is routinely used. For Grade 1, fat and fascia lata (allogenic or autologous), and fibrin glue were added. For Grade 2, a vascularized nasoseptal flap or free mucosal flap (via middle turbinectomy) was added. In Grade 3, lumbar drainage was employed as an additional part.

Results:
Twenty three patients needed sellar reconstruction for CSF leak prevention. These consisted of 3 cases with anticipated CSF leak due to intradural pathology (2 Craniopharyngiomas, 1 Epidermoid cyst), 2 cases of CSF leaks in prolactinomas after dopamine agonist treatment and 18 intrasellar pathologies (16 macroadenomas, 1 Rathke's cyst and 1 giant adenoma). No postoperative repair failures or pneumocephalus were noted. Four patients, who had LD inserted, developed bacterial meningitis postoperatively.

Conclusions:
Based on our experience, the algorithm for sellar reconstruction has yielded positive results. However, LD should be reconsidered due to its potential role in meningitis.

ENDOSCOPIC VERSUS MINI-OPEN DECOMPRESSION OF CARPAL CANAL

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Introduction:
Open carpal tunnel release remains a standard procedure for carpal tunnel syndrome (CTS) in the Czech Republic and across Europe. Recently, the introduction of monoportal endoscopic techniques to our practice prompted a comparative analysis against the mini-open approach.

Aim:
To compare mini-open and monoportal endoscopic carpal tunnel decompression surgery utilizing a custom patient questionnaire including Boston Carpal Tunnel Questionnaire (BCTQ).

Material & Methods:
A total 418 patients with CTS requiring surgical release were included in the study. The mini-open group comprised 254 patients operated on in 2006, while the endoscopic group consisted of 164 patients undergoing surgery between 2021 and 2023. Patients in both groups completed a custom questionnaire, including the BCTQ, preoperatively, at 3 months and at 6 months post-surgery.

Results:
Demographic parity existed between groups, although the mini-open group exhibited a female predominance of 3.5:1 compared the 1.3:1 in the endoscopic group. The endoscopic group showed significantly better outcomes in symptom severity and functional status scales at 3 and 6 months post-surgery. A higher number of patients in the endoscopic group were able to return to work earlier than in mini-open group after 1 month post surgery. There

were no serious complications in either group.

Conclusions:
Endoscopic carpal tunnel release yielded significantly better improvements in CTS symptoms as assessed by the BCTQ. The results also indicate higher patient satisfaction and benefit of faster rehabilitation and return to work.

IT'S TIME TO CHANGE THE STRATEGY OF THE SPINE SURGERIES

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Objective:
The cauterization and strong criticism of the many and pointless surgeries performed on the spine.

Material and methods:

581 pts with different problems of the spine 394 male and 187 female 33-84 y/old. The majority of those where with degenerative changes 350. Cervical area problem in 168, thoracic 83, lumbar 330. 150 had a previous surgery. 479 pts had surgical treatment. 120 had fusion and 209 simple decompression. 102 pts had conservative treatment.

Results:
3 pts were deteriorated neurologically post-operative. 3 pts had post-operative CSF leaking. 140 pts with previous operation with implants fusion were re-operated in order to remove the implants (6 months-6 years p/op.). 100 of our fusion operation it was necessary for reoperation in order to remove the implants. 8 patients had post-operative infection. 80 pts had 2nd surgery in adjusted segment. 390 pts declared satisfy from the surgical treatment. 102 pts with conservative treatment declared satisfy.

Conclusions:
Not all the spine problems need surgical treatment. There is no instability of the spine. The spine is mobile organ in the human body by nature. It should be stay in this condition. It is forbidden to immobilize it. We ought to stop using the terminology 'stabilization' (fusion). Where it is so necessary (fractures, tumors), it should be replaced by the phrase 'temporary immobilization'.

RECOVERY OF PATIENTS OPERATED ON FOR CERVICAL DISC HERNIATION –SMOKING AS A RISK FACTOR

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Objective:
Numerous studies show the connection between smoking and degenerative spine diseases. In our study, we were interested in smoking as a risk factor in the recovery of the operated patients from cervical disk herniation.

Methods and materials:
There were 93 patients in our study, 26 (27.96%) males and 67 (72.04%) females. All were operated due to cervical radiculopathy caused by one (59 patients, 63.45%), two (25 patients, 26.88%), or three cervical herniations (8 patients, 9.67%). Moreover, 52 patients were smokers (55.91%), and 41 (44.09%) were non-smokers. Neurological examination and interview, including VAS scale, were performed in each patient pre- and postoperatively. Recovery of cervicobrachial syndrome, motoric recovery and sensitivity alteration was observed ambulatory in a period of six months after the operation. Complete recovery was defined as an improvement of more than 50%, and complete failure of operation was improvement of less than 50% in all 3 categories above.

Results:
Completed recovery occurred in 15 (28.85%) smokers and 27 (65.85%) nonsmokers. There were significantly more recovered patients after the operation in nonsmokers than in the smoker group (p=0.00037). Complete failure with the operation was found in 8 smokers (15.38%) and 2 (4.88%) nonsmokers, while there was no significant difference (p=0.104399).

Conclusion:
Despite a relatively modest number of patients in our study, we were able to determine smoking as a risk factor in the recovery of operated patients due to cervical disc herniation.

LONG-TERM SURGICAL OUTCOMES OF CERVICAL MYELOPATHY: A SINGLE-CENTER, TEN-YEAR RETROSPECTIVE REVIEW

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Background:
Cervical myelopathy is a progressive degenerative condition that significantly impacts patients' functional status and quality of life. Surgical intervention is often required to halt disease progression and improve neurological outcomes. This study presents a 10-year retrospective analysis of patients who underwent surgery for cervical myelopathy at a single institution, evaluating clinical and radiological outcomes.

Methods:
A total of 406 patients who underwent surgical treatment for cervical myelopathy between 2015 and 2025 were included in this study. Clinical evaluation focused on myelopathy progression, functional status in daily activities, and neurological outcomes. Radiological findings, including spinal cord decompression and alignment changes, were assessed through pre- and postoperative imaging. Functional outcomes were measured using validated scoring systems such as the modified Japanese Orthopaedic Association (mJOA) score. Statistical analyses were performed to identify predictors of surgical success.

Results:
The cohort demonstrated significant improvement in functional outcomes postoperatively, with a notable percentage of patients showing stabilization or improvement in myelopathy symptoms. The mJOA scores increased post-surgery, reflecting better daily activity performance. Radiological findings confirmed adequate decompression in the majority of cases, with correlations observed between imaging parameters and clinical outcomes. A subset of patients experienced residual or progressive symptoms, highlighting the complexity of disease management.

Conclusions:
This 10-year retrospective study reinforces the role of surgical intervention in halting cervical myelopathy progression and improving functional outcomes. The correlation between radiological and clinical findings provides valuable insights into prognostic factors for surgical success. Furthermore, as previous studies have demonstrated, structured postoperative rehabilitation programs played a crucial role in optimizing recovery, enhancing functional gains, and improving long-term outcomes in our patients. Further studies with longer follow-up are needed to refine patient selection and optimize treatment strategies.

COMPARING THE PREDICTIVE VALUE OF MRI-DERIVED VERTEBRAL AND ENDPLATE BONE QUALITY SCORES FOR CAGE SUBSIDENCE FOLLOWING ANTERIOR CERVICAL DISCECTOMY AND FUSION

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Objective:
Cage subsidence following anterior cervical discectomy and fusion (ACDF) is linked with poor bone quality. MRI-derived bone quality scores have been shown to provide valuable insights into postoperative complication risk. This study compares the predictive value of different MRI-derived bone quality measures for cage subsidence following ACDF.

Methods:
Patients undergoing single-level ACDF between October 2012 and September 2022 at the Royal Sussex County Hospital with at least 6 months of radiographic follow-up were retrospectively evaluated. T1 preoperative MRI scans measured vertebral bone quality (VBQ), upper endplate bone quality (UEBQ), and lower endplate bone quality (LEBQ) scores. Postoperative and follow-up X-rays were used to identify cage subsidence. Analysis was performed using SPSS version 30.

Results:
56 patients met the eligibility criteria (26 subsidence, 30 no subsidence). 40 had PEEK cages and 16 had titanium cages, no significant differences in subsidence were observed between them (P = 0.385). Patients with subsidence had significantly higher VBQ (P < 0.001), LEBQ (P < 0.001), and UEBQ (P = 0.007). VBQ scores (OR: 19.696) showed a stronger correlation with subsidence than LEBQ (OR: 5.542) and UEBQ (OR: 2.952). VBQ demonstrated superior diagnostic accuracy (AUC: 0.821, sensitivity: 84.6%, specificity: 80%) compared to LEBQ (AUC: 0.773, sensitivity: 88.5%, specificity: 63.2%) and UEBQ (AUC: 0.718, sensitivity: 61.5%, specificity: 80%).

Conclusion:
Higher VBQ scores were significantly associated with cage subsidence, underscoring their value as an indirect marker of bone quality and a reliable predictor of postoperative outcomes. VBQ may guide surgical planning for improved patient management.

SPINE SURGICAL CHALLENGES IN EHLERS-DANLOS SYNDROME : A CASE REPORT

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Objective:
Ehlers-Danlos Syndrome (EDS) is a connective tissue disorder characterized by joint hypermobility, tissue fragility, and disc degeneration. Surgical management of EDS presents distinct challenges due to the complex nature of the disorder. This case report aims to discuss the management of a patient with EDS who is suffering from debilitating low back pain, while addressing the complexities associated with surgical intervention, the importance of multidisciplinary care, and strategies to mitigate complications.

Material- Method:
A 52-year-old female patient with a genetic diagnosis of EDS, Type III (hypermobility type), was evaluated for surgical management of a lumbar disc herniation at the L4-L5 level.

Results:
The patient presented with a six-month history of sciatica, which, despite pharmacological management, had progressively worsened, leading to the need for surgical intervention. Her medical history included a previous lumbar disc herniation at the L5-S1 level, for which she underwent a posterior lumbar interbody fusion (PLIF) and placement of an interspinous device at the L4-L5 level approximately 10 years ago. A lumbar spine MRI revealed a new disc herniation at the adjacent L4-L5 level. The patient underwent a microdiscectomy at this level. Postoperatively, the patient showed notable improvement in pain, although a subcutaneous wound collection developed, which was managed conservatively.

Conclusions:
The patient's outcome highlights the challenges involved in surgical management for individuals with Ehlers-Danlos Syndrome. The risk of adjacent segment disease (ASD) is higher in these patients due to underlying abnormalities in connective tissue. Additionally, wound healing tends to be slower and more prone to complications.

THE IMPORTANCE OF CONTROLLED NECK POSITIONING FOR THE CERVICAL MYELOPATHICPATIENT: A PRELIMINARY INTRAOPERATIVENEUROPHYSIOLOGICAL STUDY

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Introduction:
Intraoperative neurophysiological monitoring (IONM) is used to mitigate the risk of spinal cord injury during cervical spine surgery. Data on its predictive value for long-term outcomes remain limited. This study evaluates IONM events in cervical myelopathy surgery, identifies procedural stages prone to neurophysiological changes, and examines the clinical significance of signal alterations.

Methods:
We retrospectively analysed 142 patients who underwent decompressive cervical surgery for myelopathy at Royal Sussex County Hospital (2022-2024). Of these, 11 patients exhibited IONM events during surgery. Transcranial motor evoked potentials (TcMEPs) and somatosensory evoked potentials (SSEPs) were recorded pre- and post-neck positioning and throughout the procedure. The causes of IONM events, corrective interventions, and impact on signal recovery were documented. Functional outcomes at 3, 6, and 12-months postoperatively were assessed.

Results:
The most frequent cause of IONM events was neck extension (8/11), with all but one case resolving upon modifying the extent of extension. Additional signal changes were observed during C4-C5 discectomy (1), bone-drilling (1), and spine-exposure (1). Patients with positioning-related events had uniformly favourable outcomes at 12-months.

Conclusion:
IONM events in cervical myelopathy surgery most commonly occur during neck extension. Most events resolved with prompt repositioning. This preliminary data emphasises the importance of obtaining baselines once the patient is transferred to the surgical table and importantly when the neck is extended prior to incision. Our preliminary data suggest that most events happen during neck extension rather than intraoperatively. None of the myelopathic patients exhibited any events between the transfer to the surgical table.

CISTERNAL LAVAGE THERAPY AS A TREATMENT OPTION FOR DELAYED CEREBRAL ISCHEMIA IN ANEURYSMAL SUBARACHNOID HEMORRHAGE

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Introduction:
Delayed cerebral ischemia (DCI) is a major cause of poor outcomes in aneurysmal subarachnoid hemorrhage (aSAH). Cisternal and ventricular blood load is implicated in secondary brain injury. This study evaluates the effect of cisternal lavage, an innovative blood clearance therapy, on these factors and its role in reducing DCI incidence.

Methods:
We analyzed 799 aSAH patients treated from October 2005 to October 2019, excluding those with early mortality. Initial brain edema was assessed using the SEBES score, and DCI development and six-month neurological outcomes were evaluated. The cohort was divided into two periods: before (n=609) and after (n=190) cisternal lavage introduction in 2015, with 61 high-risk patients receiving lavage. Multivariable regression models assessed the impact of blood load and brain edema on outcomes, with a subgroup analysis on cisternal lavage.

Results:
Increased blood load in the cisterns and ventricles, especially a cast fourth ventricle, was strongly associated with poor outcomes in the BEFORE cohort (41.45% vs. 30.77% unfavorable outcomes in the AFTER cohort; HR: 1.59, p=0.01). Brain edema (SEBES ≥1) increased DCI risk by 2-3 times (OR: 1.90–2.80), and DCI was a major predictor of poor outcomes (OR: 10.3, p<0.001). Cisternal lavage reduced the impact of blood load on outcomes and decreased DCI risk (OR: 0.23, p<0.001), also reducing brain edema's role in DCI.

Conclusion:
Cisternal lavage reduces DCI by clearing hemorrhagic blood. Brain edema is an indicator of hemorrhage severity, not a direct cause of DCI, as its effect is mitigated by intracranial blood clearance.

POROUS POLYETHYLENE CRANIOPLASTY IN HIGH-RISK PATIENTS FOR SURGICAL SITE INFECTION: A SINGLE-CENTER PROSPECTIVE OBSERVATIONAL STUDY

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Objective:
Surgical site infection (SSI) is a common complication of cranioplasty. Porous polyethylene is considered a low-risk material for SSI, but convincing evidence is lacking. The aim of our study was to assess the incidence of SSI after porous polyethylene cranioplasty in high-risk patients.

Material - Method
Patients who underwent personalized porous polyethylene cranioplasty between 2014 and 2023 were prospectively evaluated. Only patients with an increased risk of SSI were included in the study.

Results:
A total of 30 cranioplasties were performed, of which 25 were after decompressive craniectomy and five after limited-size craniotomy. Risk factors for infection included 18 previous SSIs, 16 previous repeated revision surgeries, four intraoperatively opened frontal sinuses, and two instances of radiotherapy. No SSI was detected in any patient. Two patients required revision due to postoperative epidural hematoma.

Conclusions:
Personalized porous polyethylene cranioplasty is associated with an extremely low incidence of SSI, even in high-risk patients.

This study was supported by the grant of Ministry of Health of the Czech Republic – Conceptual Development of Research Organization (Faculty Hospital in Pilsen – FNPl, 00669806).

ENDOVASCULAR TREATMENT IN THE FLOW DIVERTER ERA. A RETROSPECTIVE, COMPARATIVE, STUDY ON UNRUPTURED ANEURYSM TREATMENT

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Objective:
Treatment options for certain unruptured aneurysms remains to date debatable. Our study showcases the effect of the introduction of FD stents in the treatment of unruptured aneurysms.

Methods:
We collected the data of our institution from 2008-2024. After excluding patients without follow-up we ended up with 228 patients, harbouring 272 aneurysms of the ICA and ACOM arteries that underwent 252 operations. 76% were female and the mean age was 52,8 years. Mean follow-up was 22,6 months. 94% of the aneurysms were measured as wide neck. We divided our patients to 5 groups: coiling, balloon assisted coiling, stenting, stent-coiling and clipping and calculated their occlusion as well as complication rate after follow-up.

Results:
In the coiling group 48% patients were Modified Raymond-Roy

I class after follow-up. For patients in the balloon-assisted coiling group this percentage was 83% and in the FD stent-coiling group 93%. The group of patients that received FD stenting only, showed a complete occlusion, at follow-up, in 83.5% of the cases. Finally, clipping showed a complete occlusion in 94% of patients. 10% of patients that received endovascular treatment had procedure related complications, mostly from the puncture site. There was no significant difference between embolisation techniques. The complication rate of the patients that underwent clipping was 4,5%.

Conclusions:
The use of FD stents especially with the concurrent use of coils, proved to be highly effective with a low risk of complications. However, balloon-assisted coiling has proven equally effective to FD stenting and can still be implemented in the treatment of these patients.

CLINICAL OUTCOMES OF MICROSURGICAL CLIPPING OF INTRACRANIAL ANEURYSMS AT A NEUROSURGICAL CENTER IN GREECE: A SINGLE-CENTER RETROSPECTIVE STUDY

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Background:
We present our experience with microsurgical clipping of both ruptured and unruptured intracranial aneurysms. Various treatment strategies are available for the safe management of intracranial aneurysms, incorporating modalities such as indocyanine green video angiography and intraoperative neuromonitoring. The aim of this study is to report data on functional outcomes and morbidity immediately following aneurysm clipping.

Methods:
We retrospectively evaluated data from patients who underwent microsurgical clipping at a neurosurgical center in Nikaia, Greece, between January 2022 and January 2025.

Results:
A total of 51 patients (22 males, 29 females) with a mean age of 55 years underwent aneurysm clipping. In total, 56 aneurysms (39 ruptured, 17 unruptured) were clipped, with 76.3% of ruptured aneurysms treated within the first 72 hours. All aneurysms were located in the anterior circulation: 22 in the anterior communicating artery (Acom), 19 in the middle cerebral artery (MCA), 10 in the posterior communicating (Pcom), 3 in the distal anterior cerebral artery (ACA), and 2 at the internal carotid artery (ICA) bifurcation. The immediate occlusion rate was 98.2%, with no cases requiring reoperation for residual aneurysm or rebleeding. Two patients developed infections [1 (1.96%) wound infection, 1 (1.96%) external ventricular drain (EVD)-related infection]. Postoperative imaging revealed microischemic changes in 10 patients, of which 6 were attributed to vasospasm without permanent clinical symptoms. The remaining 4 cases were associated with intraoperative manipulation, with only 2 leading to neurological deficits. Three patients experienced temporary third nerve palsy, and three had facial nerve palsy (two temporary, one permanent). Only one patient developed chronic posthemorrhagic hydrocephalus requiring a ventriculoperitoneal (VP) shunt. At discharge, the modified Rankin Scale (mRS) scores were as follows: mRS 0: 3.9%, mRS 1: 39.2%, mRS 2: 27.5%, mRS 3: 11.8%, mRS 4: 5.9%, mRS 5: 3.9%, mRS 6 (death): 7.8%. Among the four patients who died, two presented with WFNS grade IV and two with WFNS grade V. Conversely, four patients with WFNS grade IV had favorable functional outcomes (two with mRS 1, two with mRS 2).

Conclusions:
Despite the limitations of our small case series, our results suggest that microsurgical clipping remains a robust and safe option for aneurysm treatment, demonstrating a high exclusion rate and low morbidity.

NEUROENDOSCOPIC BIOPSY OF INTRAVENTRICULAR AND SKULL BASE LESIONS: RESULTS FROM A SINGLE CENTER

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Objective:
The aim of this study is to investigate the feasibility, safety and efficacy of neuroendoscopic biopsy in patients with intraventricular and skull base tumors with or without associated hydrocephalus.

Material-Method:
The medical records during the period 2020-2024 were retrospectively reviewed. Demographic, clinical, and radiologic data regarding neuroendoscopically managed patients with intraventricular and skull base tumors, either via full-endoscopic or endoscopically-assisted biopsy were retrieved.

Results:
Seventeen (17) patients were included. The mean age was 31.6 years (88.2% male). Cranial access was accomplished via the Kocher's point in 3 patients and the Keen's point in 1 patient, being tailored according to underlying tumor localization in the remaining cases. Concurrent obstructive hydrocephalus at the time of diagnosis was present in 66.6% of patients. Endoscopic third ventriculostomy was done in 6, septostomy in 4 and fenestration of the underlying lesion in 4 cases. Direct positioning of an Ommaya reservoir or a ventriculoperitoneal shunt was decided in 5 patients. No major perioperative complications were observed. Intraoperative minor intraventricular hemorrhage was observed in 1 case, whereas moderate hyponatremia with seizures occurred in one patient. Of those not treated initially with shunt diversion, three eventually required a ventriculoperitoneal shunt due to delayed hydrocephalus. Diagnostic yield of neuroendoscopy was 100%, whereas mortality rate was 29.4%. Prevalent diagnoses were glioma (23.5%) and craniopharyngioma (17.6%).

Conclusions:
Neuroendoscopic biopsy of intraventricular and skull base tumors represents a safe and effective alternative instead of conventional microsurgery, allowing direct visualization of pathology, management of associated hydrocephalus and low overall complication rates.

TARGETED GLIOBLASTOMA TREATMENT: DEVELOPMENT OF A NOVEL MULTIFUNCTIONAL PEPTIDE-BASED THERAGNOSTIC AGENT

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Objective:
The aim of this study is the development of a novel linear peptide-based vehicle for enhanced targeted glioblastoma treatment, minimizing side effects.

Material-Methods:
The first step was the coupling of RGD, a peptide already known in literature for its crucial role in selectively delivering therapeutic agents to tumor tissues with high specificity. RGD peptide was first conjugated with an analog of sunitinib and then with iCPP.

Results:
Confocal imaging confirmed that the iCPP was localized in the cytoplasm of HeLa cells 1 h after its application The peptide so far was functionalized to carry two cytotoxic agents, one on its BBB permeability site and another onto the site designed for specific proteolytic cleavage and receptor-mediated endocytosis. Last, was the addition of a chelating agent known as DOTA, which is capable of binding Terbium-161 (161Tb). 161Tb provides therapeutic benefits since it emits Auger electrons and beta particles, while its gamma radiation supports diagnostic imaging.

Conclusion:
This multifunctional theragnostic agent, which offers improved BBB penetrating properties, enhanced stability, tumor specific delivery of therapeutics and real-time imaging capabilities, is expected to be a significant advancement in glioblastoma treatment.

Acknowledgements:
This study has been supported by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH—CREATE—INNOVATE (project code: TAEDK-06189/T2EDK-0326, Acronym: Glioblastoma).

DIAGNOSTIC YIELD OF FRAME-BASED VS FRAMELESS NAVIGATION-GUIDED BRAIN BIOPSIES: A SINGLE CENTER RETROSPECTIVE CONTROLLED STUDY

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Objective:
Brain biopsy is traditionally acquired via a frame-based stereotactic technique. With expanding use of neuronavigation, frameless navigated biopsied have become a reasonable alternative. The aim of the study was to compare frame-based and frameless biopsy techniques in terms of diagnostic yield and complications.

Material – method:
We retrospectively identified all cases with a brain biopsy that was not obtained via a craniotomy between 2016 and 2025 in our institution. Clinical course, imaging and pathology results were reviewed.

Results:
Forty-four patients (30 males, 14 females, median age 68 years, interquartile range [IQR] 61-74) underwent a stereotactic (n=33, 75%) or navigated (n=11, 25%) biopsy during the study period. Median length of stay was 1 day (IQR 1-3). Apart from a case of postoperative bleeding in a frame-based biopsy which did not require reoperation, there were no other complications. The most common histopathologic diagnoses were GBM (22.7%), lower-grade glioma (20.4%) and NHL (13.6%). Nine biopsies (20.4%) were inconclusive and there was no statistically significant difference between frame-based and frameless methods (p=0.667).

Conclusions:
Both stereotaxy and neuronavigation are safe and effective alternatives for obtaining histopathological samples while associated with minimal complications. Surgeon preference and institutional availability will likely determine the preferred method given their equivalent results.

PROPHYLAXIS WITH NIMODIPINE AND DEXAMETHASONE AS A PREVENTION OF DELAYED FACIAL NERVE PALSY FOLLOWING VESTIBULAR SCHWANNOMA RESECTION

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Delayed facial nerve palsy following vestibular schwannoma resection is a relatively common complication, with an incidence ranging from 4.8% to 25%.[1][2] This study aimed to evaluate the effect of administering Nimotop (nimodipine) in combination with Dexamed (dexamethasone) on the development of this complication. Nimotop plays a significant role in the regeneration of damaged peripheral nerves.[3] Corticosteroids have a proven anti-edematous and neuroprotective effect.[4] Since nerve swelling is the most frequently mentioned pathophysiological mechanism in relation to the development of delayed palsy, the use of both drugs is well justified.

Methods:
This study includes a retrospective evaluation of patients who underwent vestibular schwannoma resection between 2002 and 2016, during which nimodipine with dexamethasone was not administered, and a prospective follow-up of patients between 2016 and 2023, during which prophylactic therapy was routinely administered. Delayed facial nerve palsy was defined as a decline of 2 grades on the House-Brackmann scale compared to the early postoperative condition, occurring between 5 and 30 days after surgery.[5]

Results:
In our study, we observed a total of 111 patients who underwent vestibular schwannoma resection between 2002 and 2023. The prospective group included 49 patients. The retrospective part included the remaining 62 patients. Delayed facial nerve palsy developed in a total of 8 patients (7.2%), of whom 2 (4.1%) were from the prospective group and 6 (9.7%) from the retrospective group.

Conclusion:
The positive effect of prophylactic neuroprotective vasoactive therapy combining nimodipine and dexamethasone on the preservation of facial and cochlear nerve function has already been demonstrated multiple times,[6] and the descriptive results of this study also suggest a possible beneficial effect on reducing the risk of developing delayed facial nerve palsy after vestibular schwannoma resection.

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DEDICATED NF2 CENTRES IN THE UNITED KINGDOM – LESSONS LEARNT. APPLICABILITY TO THE GREEK NATIONAL HEALTH SYSTEM?

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Background:
Neurofibromatosis type 2-related schwannomatosis (NF2-SWN, formerly NF2) is a rare, autosomal dominant disorder predisposing individuals to bilateral vestibular schwannomas and multiple other central nervous system tumours. Evidence from the UK indicates that management in dedicated NF2 specialist centres improves survival, largely due to multidisciplinary approaches and the prioritisation of conservative tumour management. Historically, Greek patients with NF2 have received fragmented, non-standardised care.

Methods:
This presentation reviews the NHS England-commissioned NF2 service model, introduced in 2013. Four centres (Manchester, Guy's and St Thomas', Cambridge, and Oxford) provide care for all of UK's NF2 population through coordinated, multidisciplinary "one-stop" clinics. Core team members include neurosurgeons, neuro-otologists, geneticists, audiologists, specialist nurses, and other allied professionals. Data were derived from national NHS commissioning guidelines and service specifications.

Results:
Each centre serves 164–284 patients, offering annual comprehensive assessments, centralised surgical services, auditory brainstem implantation, bevacizumab monitoring, and structured genetic counselling. Outcomes include improved hearing preservation, reduced unnecessary interventions, enhanced patient satisfaction, and demonstrable survival benefit. The model facilitates streamlined, holistic care through a hub-and-spoke configuration.

Conclusion:
The UK's nationally commissioned NF2 service illustrates the advantages of centralisation in managing complex genetic disorders. Greece currently lacks such a coordinated framework. Adoption of a similar model, scaled to national needs, could significantly enhance the quality of care for Greek NF2 patients. This experience provides a robust blueprint for service development within the Hellenic National Health System.

POSTER PRESENTATIONS

AGE-RELATED CORRELATIONS IN A SINGLE-CENTER NEUROSURGICAL REGISTRY FOR TRAUMATIC BRAIN INJURY

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Objective:
In traumatic brain injury (TBI) patients, age has been associated with mechanism of injury, imaging findings, length of stay, intensive-care-unit (ICU) admission rate and outcome at discharge. Hereby a single centre clinical series is presented.

Material - Method:
Data on patients with TBI treated at a single centre from November 2024 to March of 2025 were prospectively collected. Data collection methods were applied according to the running multicentre Global Epidemiology and Outcomes following Traumatic Brain Injury (GEO-TBI) registry guidelines.

Results:
Forty-two patients with a mean age of 66 years (SD 21.3) participated in this study. The most frequent finding was subdural haematoma (n = 18), followed by subarachnoid haemorrhage (n = 10), skull fracture (n = 6), contusion (n = 4), diffuse brain oedema (n = 2) and epidural haematoma (n = 1). Age was found to correlate with the mechanism of injury, as falls were more prevalent among the elderly while vehicle accidents among the younger (p = 0.001). ICU admission rate, length of stay, type of subdural haematoma or discharge outcome, as assessed by the Glasgow Outcome Discharge Scale, did not differ significantly among age groups.

Conclusions:
In this study, age has only been significantly associated with the mechanism of injury and not with other outcome parameters. This observation can be explained by the increasingly higher im-

pact of trauma in younger patients, increasing use of anticoagulants in the elderly, easier and earlier access to imaging for both groups and better management of the expected complications during hospitalization.

ANTIBIOTIC PROPHYLAXIS IN ELECTIVE SPINAL OPERATIONS AND POST-OPERATIVE INFECTIONS: A 2-YEAR RETROSPECTIVE STUDY OF A SINGLE CENTER

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Introduction:
Post-operative infection in neurosurgical patients represents a serious problem that can lead to grave consequences. The infection can manifest with pain, stiffness and decreased range of motion. The incidence of post-operative spinal infections ranges from 0,6% up to 18%. The aim of this study is to showcase the infection rates after elective spinal surgery and investigate the efficacy of the two main antibiotic regimes that are used in our department.

Methods- Material:
This is a 2-year retrospective study of our department's database. Adult patients that underwent elective spinal surgery were included. There were 2 main antibiotic protocols used: vancomycin for 3 doses (1gr pre-operatively and 2 doses of 1gr post-operatively every 12h) and vancomycin/ceftriaxone for 2 days followed by 2nd generation cephalosporins for 5 days.

Results:
516 patients that underwent elective spinal surgery were included. 18 patients were diagnosed with post-operative infection, the majority of them was early (<14 days post-operatively) and were manifested as skin and soft tissue infections. No statistically significant difference was noted between the operations with and without instrumentation. No statistically significant difference was noted between the vancomycin and vancomycin/ceftriaxone groups. The most common pathogens were Staphylococcus, Klebsiella and Acinetobacter. In 34% of the cases, no pathogen was identified by wound and blood cultures.

Conclusions:
Post-operative infection after spinal surgery remains a serious complication after a neurosurgical procedure. This showcases the need for pre-operative screening so the appropriate antibiotic could be administered.

AQUEDUCT STENT PLACEMENT: OUR MICROSCOPIC AND ENDOSCOPIC EXPERIENCE

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Objective:
Complicated hydrocephalus often involves stenting of the aqueduct of Sylvius to restore cerebrospinal fluid flow. In the past few years we performed six operations involving stent placement in the aqueduct, for various underlying pathologies: the standard microscopic approach and a novel endoscopic approach through the posterior fossa. This study aims to highlight the feasibility and outcomes of each technique.

Material-Methods:
Six patients with varying pathologies leading to aqueductal stenosis underwent stent placement. Three patients had stent placement via the standard microscopic technique after fourth ventricle tumor removal, while the other three underwent endoscopic stent placement in a trapped fourth ventricle, through the posterior fossa, a technique not widely described in the literature. The selection of approach was based on anatomical considerations as well as the approach used for the original pathology. Patient outcomes, procedural success, and complications were assessed.

Results:
All six patients experienced successful stent placement and improved cerebrospinal fluid dynamics. The microscopic technique demonstrated consistent results with minimal complications. The endoscopic posterior fossa approach allowed for direct visualization and precise placement of the stent, with no significant adverse events. Postoperative imaging confirmed adequate stent positioning and patency in all cases.

Conclusions:
This series demonstrates that stent placement in the aqueduct of Sylvius can be effectively achieved using both microscopic and endoscopic approaches. The novel endoscopic method through posterior fossa, expands the surgical options for complex cases and should be involved in a neurosurgeon's armamentarium when feasible.

DIFFERENTIAL TARGET MULTIPLEXED (DTM) STIMULATION IN VIRGIN BACK PATIENTS WITH REFRACTORY BACK PAIN: A 3-YEAR SINGLE-CENTER EXPERIENCE

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Objective:
Chronic back pain is a widespread condition for which there are many different therapeutic approaches. Spinal cord stimulation (SCS) is used for refractory back pain, especially in persistent spinal pain syndrome (PSPS) type 2. The neuromodulatory approach is not established in non-preoperated, so-called "virgin-back" patients (PSPS type 1) with refractory back pain. With the novel combined neuron and glial cell stimulation (differential target multiplexed stimulation, DTM), these cells are specifically stimulated. Glial cells outnumber neurons in the spinal cord by a ratio of 12:1. Chronic pain can occur when the neuron-glial cell interaction is disturbed. The aim of this paper is to present our 3-year clinical experience with this new algorithm in virgin-back patients.

Material – Method:
Three patients (m:f = 1:2) with chronic refractory back pain with PSPS type 1 with an average duration of suffering of 11.8 years were treated with SCS systems (2 eight-pole electrodes per patient) and then adjusted with the DTM waveform. The pain intensity was assessed using the numerical rating scale (NRS; 0: no pain, 10: extremely severe pain) both preoperatively and during the trial phase as well as in a 3-year follow-up.

Results:
Preoperatively, the average NRS was 8.5 (7-9), during the trial phase it was 2.1 (0-3). The trial phase was successfully completed in all patients. In the 3-year follow-up, the average NRS was 3.2 (1-5), which corresponds to an average reduction in pain intensity of 62%. No complications occurred during the course of the trial.

Conclusions:
There are few publications on SCS therapy for PSPS type 1. A multicenter study by Al-Kaisy et al. with 89 patients and a high-fre-

quency form of stimulation resulted in a 70% reduction in pain in the 12-month follow-up. Our patient collective confirms the positive effect and pain relief with the DTM algorithm in the 3-year follow-up. For the results of the long-term effect, further observations and studies with a larger collective are required.

EPIDEMIOLOGY OF INTRACRANIAL TUMORS IN IOANNINA, GREECE (2003-2023)

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Abstract:
Objective: We conducted a retrospective study to determine the epidemiology of intracranial tumors in our department based on the data of cases that underwent surgery in our clinic.

Material - Methods:
We collected and reviewed all cases of intracranial tumors that were surgically treated at the Neurosurgery Department of the University Hospital of Ioannina from 2003 to 2023.

Results:
From January 1st 2003 to December 31st 2023, 823 cases were identified, involving adult patients aged 19-89 years, with a mean age of 56.6 years. The most common tumor was meningioma, accounting for 32% of cases, followed by glioblastomas, metastases, and other types of gliomas. Gliomas, including glioblastomas, made up 37% of the tumors that were surgically treated, making them the most frequent type of both primary and overall brain tumors. Among the secondary brain tumors, the most common primary site was the lung, accounting for 43.55% of cases, followed by tumors of unknown primary origin. Between the two decades, we observed an overall decrease in the number of cases surgically treated in our clinic. However, the total number of gliomas increased, mainly due to a rise in glioblastoma cases.

Conclusion:
The current study represents the first epidemiological research on brain tumors in the adult population of our country. Gliomas are the most common type of primary brain tumor, primarily due to the high number of glioblastomas, the incidence of which appears to have increased in the last decade. Finally, according to our study's data, there is a trend of decreasing overall brain tumor numbers.

INTRAOPERATIVE NEUROPHYSIOLOGICAL MONITORING FOR INTRAMEDULLARY SPINAL CORD TUMORS

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Objective:
Intramedullary spinal cord tumors (IMSCT) are rare but significant causes of neurological morbidity, comprising 2-4 % of all central nervous system tumors. Due to their proximity to major spinal cord fiber bundles, tumor resection carries a high risk of neurological deterioration. Intraoperative neurophysiological monitoring (IONM) is critical to prevent irreversible damage and sensory or motor deficits. IONM typically includes somatosensory-evoked potentials (SSEPs) and motor-evoked potentials (MEPs) complemented by D-wave monitoring and dorsal column mapping (DCM).

Materials and Methods:
We performed a retrospective study of patients who underwent surgical treatment for IMSCT at our hospital over the past 5 years. Demographic, radiological, and clinical data were reviewed and correlated with intraoperative electrophysiological mapping and postoperative outcomes.

Results:
Four IMSCT patients were identified, with diagnoses of cervical (3/4) and thoracic (1/4) ependymoma. Intraoperatively, MEPs, SSEPs, and D-wave monitoring were conducted for all patients, with one also undergoing DCM. Complete resection was achieved in all cases, and at 6-month follow-up, no new neurological deficits were observed.

Conclusions:
IONM, including SSEPs, MEPs and D-wave, are essential in preserving spinal cord function during IMSCT resection. Each method has specific strengths and limitations, and D-wave is particularly correlated with long-term functional outcomes, while DCM aids in identifying midline, especially in eccentric tumors.

MICROSURGICAL ANATOMY OF THE CINGULATE GYRUS AND REVIEW OF ITS FUNCTION

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Objective:
The cingulate gyrus is the most prominent gyrus of the medial surface of the brain. Few anatomical studies have been published regarding its anatomy. The object of this study was to identify precise morphology and connections of the gyrus and to collect data about its functions.

Material – Method:
Ten formalin-fixed brain hemispheres were used for this study. Fiber dissection was performed by using the Klingler's technique, utilizing the freeze-thaw procedure to explore the white matter connections of the gyrus. A literature review was conducted in online databases gathering data regarding functional properties and surgical implications.

Results:
The cingulate gyrus extends from the frontal lobe to the parietal lobe, between the cingulate sulcus and the corpus callosum. It is part of the limbic system or the Papez circuit. Gradual dissection of the gyrus reveals the cingulum and short connections with the proximal white matter pathways. Processing of emotions, regulation of endocrine and autonomic responses, cognitive processing, visuospatial orientation, reward-based decision making are some of the functions that have been proposed in the literature.

Conclusions:
Cingulate gyrus is a long gyrus in the medial aspect of the brain, connecting many different regions and affecting various functions. It provides a large field for future research both for its anatomy and its functional significance.

PAINFUL BONE MARROW EDEMA OF THE KNEE. COULD THIS SYMPTOM INDICATE THE EXISTENCE OF AN OBTURATOR NERVE SCHWANNOMA?

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Objective:
Obturator neuropathy due to pelvic seated schwannoma is exceptional, and infrequently present to the neurosurgeon. We report a case of a paravesically located obturator nerve schwannoma, which presented with transient knee arthropathy.

Material-Method:
A 40 year-old man, without history of trauma, was referred for deteriorating pain in the inner side of left knee and gradually gait disability. Magnetic Resonance Imaging (MRI) revealed typical findings for bone marrow edema of the medial condyle of the left knee. Despite treatment with nonsteroidal anti-inflammatory drugs and calcitonin, the patient complained for knee pain deterioration accompanied in the next weeks by transient, episodic pain in the left hip. A second MRI of the knee and the pelvis showed deterioration of the knee bone edema, no findings of the left hip, and a mass lesion of the obturator nerve (2x3 cm), on the left side of the bladder that extended into the obturator foramen. Preserving the continuity of the nerve, a complete microsurgical excision of the lesion, was performed.

Results:
Histopathologic examination revealed a benign schwannoma. Full recovery of the symptoms was noted within 2 weeks. A repeat MRI performed at the 6 month follow up revealed recovery of the knee bone edema and no recurrence of the tumor.

Conclusion:
Knee complaints may be the first symptom of an isolated obturator mononeuropathy due to a schwannoma. This differential diagnostic possibility is important for early recognition and treatment in patient management.

SAFETY AND FEASIBILITY OF TRANSCRANIAL EXTRADURAL ANTERIOR CLINOIDECTOMY IN EARLY CONSULTANT PRACTICE: A SINGLE-CENTER RETROSPECTIVE STUDY

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Background:
Transcranial extradural anterior clinoidectomy is a crucial yet challenging technique in skull-base neurosurgery, providing access to the orbital apex and adjacent structures. The complexity arises from proximity to the internal carotid artery(ICA) and optic nerve, with potential complications of bleeding and visual deterioration that is associated with heat exposure, vibration and optic nerve manipulation during the procedure. This study evaluates the safety and feasibility of this approach performed by a newly appointed board-certified neurosurgeon in their 18 months as consultant.

Methods:
A retrospective review was conducted of all anterior clinoidectomy procedures performed by the consultant at our institution, between 2023 and 2025. Data was extracted from electronic health records.

Results:
19 cases were identified. The pathologies included sphenoid wing meningioma(n=1); clinoidal meningioma(n=5); spheno-orbital meningioma(n=6); tuberculum sellae meningioma(n=5); cavernous meningioma(n=1); clinoidal and optic canal meningioma(n=1). Most patients were female(89%), with an average age of 49.9 years(+/-13.4). Common presenting symptoms were worsening vision(79%), headaches(32%) and unilateral facial numbness(16%). 2 patients had growth of residual meningioma having had previous craniotomies. Complications included one post-operative haematoma requiring evacuation, one ophthalmic vein thrombus requiring a 3-month course of anticoagulation, and one superficial cranial wound site infection treated with oral antibiotics. No ICA or optic nerve injuries occurred. Extraocular movements were intact post-operatively. Visual acuity(VA) was recorded pre- and post- operatively in 4 patients, all of whom had stable or improved vision. 10 patients had post-operative VA scores reported, with 9 achieving 'good' vision(≥0.5;Snellen). 2 of these patients demonstrated 'perfect' vision(≥1.0;Snellen).

Conclusions:
Anterior clinoidectomy is a safe and effective procedure for newly appointed fellowship trained skull-base neurosurgeons. Visual outcomes were stable or improved, with no ICA injuries, supporting its feasibility in early consultant practice.

SURGERY FOLLOWED BY RADIOSURGERY VS. RADIOSURGERY ALONE FOR LARGE POSTERIOR FOSSA METASTASES: A COMPARATIVE OUTCOMES ANALYSIS

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Objective:
Brain metastases (BrMs) affect ~20% of cancer patients, with 15–25% located in the posterior fossa (PF). Large PF-BrMs pose a high risk for brainstem compression and hydrocephalus. This study compares outcomes between surgical resection followed by stereotactic radiosurgery (S+SRS) and SRS alone for large PF-BrMs.

Material – Method:
A retrospective review of 64 patients with PF-BrMs ≥4 cc was conducted using a prospective database. Patients were grouped into S+SRS and SRS-alone cohorts. Clinical, radiological, and outcome data were analyzed. Primary endpoints were overall survival (OS) and local failure (LF).

Results:
S+SRS patients were more symptomatic, with higher rates of gait imbalance (97% vs. 47%), intracranial hypertension (80% vs. 35%), fourth-ventricle compression (96% vs. 47%), and hydrocephalus (29% vs. 0%). Tumor volumes were larger in S+SRS (29.8 vs. 6.7 cm^3, $p < 0.001$). LF occurred at 12 months (SRS) vs. 17 months (S+SRS), and OS was significantly longer in the S+SRS group (26 vs. 12 months, $p = 0.001$).

Conclusions:
Patients with larger, symptomatic PF-BrMs were more likely to undergo S+SRS. This approach was associated with improved local control and significantly longer survival. Surgical resection followed by radiosurgery should be strongly considered in selected patients with large PF-BrMs.

CHARACTERISATION OF TMELOW GBM: INSIGHTS INTO GENE EXPRESSION AND THERAPEUTIC VULNERABILITIES

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Background:
Glioblastoma (GBM) is the most common CNS malignancy in adults. It's poor prognosis, marked intra-tumoural heterogeneity and inter-patient differences underpins disease morbidity and mortality1. To improve treatment strategies, recent research has identified three distinct GBM subtypes, TMEHigh, TMEMedium and TMELow, stratified based on their tumour microenvironment2. Herein, we aim identify targeted, precision medicine strategies for TMELow GBM patients through characterization TMELow tumours.

Methods:
TME subtypes were applied to the Cancer Genome Atlas (TCGA; N=68)3,4, GLIOTRAIN (N=123)2 and Chinese Glioma Genome Atlas (CGGA)5 cohorts (N=71) as previously published2. Differential gene expression (DEG; DESeq2, edgeR) and pathway analysis (PROGENy) was used to identify the most upregulated and downregulated genes in TMELow tumours compared to TMEMed and TMEHigh tumours. Kaplan Meier survival analysis was performed on the most upregulated genes within the TCGA TMELow cohort (cut off value was the median threshold; N=16). Statistical significance between groups was assessed via log-rank test.

Results:
Firstly, DEG analysis of the all datasests revealed highly upregulated C1orf112 (GLIOTRAIN and TCGA cohorts), FGR and alpha-L-fucosidase 2 (FUCA2) in TMELow tumours. Moreover, Kaplan Meier analysis identified trends towards improved survival when alpha-L-fucosidase 2 (FUCA2) ($p=0.054$) and FGR ($p=0.16$) were upregulated. No significant association with survival was identified with C1orf112 upregulation ($p>0.61$). No significant trend correlating with survival was identified in any downregulated genes. Interestingly, Neuroligin-3 (NLGN3) expression was significantly upreglated in TMELow GBM tumours compared to TMEHigh tumours ($p<0.05$) and a significant trend towards improved survival was observed in TMELow tumours with lower NLGN3 expression.

Discussion:
Overall, this project aims to uncover critical insights into the molecular landscape of TMELow GBM, offering a foundation for developing targeted therapeutic strategies. Our results indicate that NLGN3 (or indeed downstream) targeting may prove a viable approach for the treatment of TMELow GBM.

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THE LONG-TERM FUNCTIONAL OUTCOMES OF PATIENTS FOLLOWING A TRAUMATIC BRAIN INJURY

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Introduction:
Traumatic Brain Injury (TBI) continues to be a critical global health issue, representing a principal cause of morbidity and mortality worldwide, impacting over 50 million people each year. Moreover, the worldwide incidence of TBI cases is increasing, particularly among older adults and especially following low-energy trauma.

Methods:
This audit study was conducted at a single institution in Dublin, Ireland. Data was included for all patients admitted with a TBI from January 1, 2022, to December 31, 2023. Exclusion criteria were patients under the age of 18, pregnant women, and those with existing epilepsy.

Results:
Information was gathered on 325 patients. This data was further categorised into 135 mild TBI, 70 moderate TBI, and 120 severe TBI included for analysis. The average age of our study group was 47 years, with males accounting for approximately 80% of the patients. The GCS, scan findings, and whether the patient was initially intubated upon admission were recorded. We also recorded if patients had seizures on admission, during their stay and, when possible, if they continued to have seizures on discharge.

Conclusions:
Data analysis is ongoing. However, we have noted that most patients presented with mild or severe TBI according to international classification. Regardless of the initial categorisation, any TBI can have massive long-term effects on patients and their families. This can lead to them requiring long-term physical, mental, and financial side effects, which in turn proves a global health challenge.

THERANOSTICS FOR GLIOMA TREATMENT. CONSTRUCTION OF A NOVEL BIOCONJUGATE

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Objective:
Glioblastoma (GBM) is a brain tumour that poses various challenges. At the same time, the effectiveness of temozolomide (TMZ), the standard glioma treatment, is restricted by the presence of the blood–brain barrier (BBB) and blood–tumour barrier (BTB), which impede drug delivery to the brain.

Material-Methods:
Angiopep-2, a peptide capable of crossing these barriers via receptor-mediated transcytosis (RMT), shows promise but faces limitations, including susceptibility to enzymatic degradation, the variable receptor-dependent efficiency and insufficient brain selectivity. This study presents the development of novel bioconjugates designed to address these challenges and improve glioma treatment.

Results:
These bioconjugates incorporate peptide transporters for the targeted delivery of antitumor cargos, like TMZ, into the brain and are functionalized with chelating agents that bind terbium, lutetium or gallium-68 enabling both therapeutic and diagnostic applications. Preliminary cellular uptake experiments demonstrated efficient membrane penetration of the peptide carriers without cytotoxicity in T98 cell lines. Planned studies include monitoring the BBB penetration ability of the conjugates, as well as antitumor efficacy, and biodistribution of DOTA-radiolabelled conjugates in preclinical models.

Conclusion:
The synthesized conjugates are anticipated to act as theranostics, allowing for both the treatment and the effectiveness of diagnostic imaging of glioma.

Acknowledgements:
This study has been supported by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH—CREATE—INNOVATE (project code: TAEDK-06189/T2EDK-0326, Acronym: Glioblastoma).

ERCUTANEOUS ABLATION WITH A BIPOLAR RADIOFREQUENCY SYSTEM (B RFA) COMBINED WITH VERTEBROPLASTY AND RADIOTHERAPY: A RETROSPECTIVE STUDY OF 40 PATIENTS WITH SPINAL METASTASES IN THE CONTEXT OF OLIGOMETASTATIC DISEASE

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Purpose:
This retrospective study evaluates the outcomes of 40 patients with oligometastatic bone disease treated using an articulated bipolar radiofrequency ablation (bRFA) system combined with vertebroplasty, followed by local radiotherapy over a 2-year period.

Materials and Methods:
Treatment effectiveness was assessed on the day of the procedure, at 3 days, 1 week, 1 month, and 3 months post-procedure using pain scores (VAS and NRS-11) and the FACT-G7 scale for quality of life evaluation.

Results:
Forty patients with oligometastatic spinal metastases underwent bRFA combined with vertebroplasty and subsequent radiotherapy, targeting 45 vertebral sites (18 thoracic, 27 lumbar). Patients were categorized into palliative (n=31) and curative (n=9) groups. All procedures were technically successful, with no significant complications. Mean Visual Analog Scale (VAS) pain scores improved significantly, decreasing from 7.31 pre-procedure to 3.65 at 3 days and 2.61 at 6 months. Both groups experienced comparable pain relief. Quality of life scores increased from 13.0 to 15.11 at 6 months. Local control was achieved in all patients, with 100% recurrence-free survival at 12 months in the curative group. All procedures employed a single-needle technique using the vertebral neck approach for lumbar vertebrae or a lateral paravertebral approach for thoracic vertebrae, performed under local anesthesia. No significant complications were noted, and lesion control was achieved in all cases.

Conclusions:
This study supports the effectiveness of minimally invasive techniques combined with radiotherapy for pain relief, stabilization, and local control of spinal metastatic fractures, providing promising outcomes for patients with oligometastatic disease.

ENDOSCOPIC ENDONASAL SURGERY FOR PROLACTINOMAS: OUTCOMES, PREDICTORS OF REMISSION, AND MANAGEMENT OF PERSISTENT CASES

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Objective:
The role of endoscopic endonasal surgery (EES) in prolactinoma treatment remains a topic of ongoing investigation. This study evaluates EES effectiveness in achieving remission, identifies prognostic factors, and outlines strategies for managing persistent disease.

Material – Method:
A retrospective analysis was conducted on 47 patients who underwent EES for prolactinomas over 10 years, with a mean follow-up of 59.9 months. Primary outcomes included early remission and long-term disease control. Factors analyzed included tumor characteristics, preoperative prolactin (PRL) levels, cavernous sinus (CS) invasion, and extent of resection (EOR).

Results:
Surgical indications included dopamine agonist (DA) resistance or intolerance in 76.7% of cases. Early remission occurred in 80% of microprolactinomas and 100% of microadenomas confined to the pituitary. Predictors of early remission included female gender (p=0.03), lower PRL levels (p=0.014), microadenoma (p=0.001),

absence of hemorrhage (p=0.001), no CS invasion (p<0.001), and greater EOR (p<0.001). Persistent disease was observed in 48.9%, with 47% achieving remission through DA therapy alone. Six patients required additional EES and/or radiotherapy, with remission in 66.7%. At final follow-up, 76.6% achieved remission, and 95.8% experienced symptom relief. Long-term remission correlated with no prior surgery (p=0.001), absence of CS invasion (p=0.01), and greater EOR (p<0.001).

Conclusions:
EES is highly effective for microprolactinomas, achieving high remission rates and significant tumor volume reduction in invasive cases. A multidisciplinary approach integrating surgery, DA therapy, and adjuvant treatment ensures long-term disease control and symptom relief in most patients.

SURGICAL EXCISION OF PILOCYTIC ASTROCYTOMAS OF THE BRAINSTEM : PRESENTATION OF CASES

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Objective:
Pilocytic astrocytomas are typically benign, slow-growing, circumscribed brain lesions, often affecting younger ages. Surgical excision is usually considered "curative". However, when located in the brainstem, they pose a special challenge to neurosurgeons.

Materials - Methods:
In the last year (Dec 2023-Dec 2024), 4 patients presented to our department, with MRI imaging indicating a brainstem lesion. Two patients had a lesion located in the medulla, one in the pons and the last patient had a lesion located in the pontomedullary junction. All lesions had radiographic findings suggestive of a pilocytic astrocytoma.

Results:
All patients underwent surgical excision. Approaches utilized were the far-lateral approach, retrosigmoid approach and presigmoid approach. Gross total removal was achieved in all cases. Histopathologic examination proved the presence of pilocytic astrocytomas, CNS WHO Grade 1. No serious complications were documented. A tracheostomy was performed in two patients, that was removed after several weeks. All four patients were discharged after a short period, with no new neurologic deficits.

Conclusions:
Pilocytic astrocytomas located in the brainstem are a special entity, that is still a challenge among neurosurgeons. However, when carefully planned and when the most suitable approach is selected, they can be effectively treated, often offering curative results.

A HOLISTIC APPROACH TO SUBDURAL EMPYEMA SECONDARY TO FRONTAL SINUSITIS: A CASE ILLUSTRATION

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Background:
Subdural empyema (SDE) is a life-threatening intracranial infection characterized by the accumulation of purulent material in the subdural space. It commonly arises as a complication of bacterial sinusitis, with frontal sinusitis being a particularly frequent source due to its close proximity to the intracranial compartment. If left untreated, SDE can progress rapidly, leading to severe neurological deficits, seizures, coma, or even death.

Methods:
We present the case of a 59-year-old woman with a history of coronary artery disease on antiplatelet therapy who initially received a four-day course of empirical antibiotics for suspected sinusitis after developing a fever of up to 39.8°C. However, due to progressive clinical deterioration—characterized by a decline in consciousness, persistent fever, and positive meningeal irritation signs—she was urgently transferred to our hospital for further evaluation. A brain CT scan revealed a large subdural empyema in the right cerebral hemisphere and complete erosion of the posterior wall of the frontal sinus. The patient was immediately taken to the operating room, where an extensive right craniotomy was performed to drain the SDE. Simultaneously, surgical debridement and reconstruction of the frontal sinus were carried out.

Results:
The patient's postoperative recovery was uneventful, with significant neurological improvement observed immediately. Postoperative neuroimaging confirmed the complete resolution of the empyema. The patient was discharged without complications, and follow-up evaluations at 6, 12, 18, and 36 months showed no recurrence of the infection or sinus issues.

Conclusions:
This case highlights the importance of a holistic approach in managing SDE secondary to complicated frontal sinusitis, emphasizing the role of appropriate reconstruction techniques in infection management. Early surgical intervention, combining empyema drainage with frontal sinus reconstruction, proved to be an effective strategy for achieving favorable outcomes and preventing long-term neurological sequelae.

A NOVEL THERANOSTIC PLATFORM BASED ON TRIAZINE FOR EARLY GLIOBLASTOMA DIAGNOSIS AND THERAPY USING TEMOZOLOMIDE AND TECHNETIUM-99M

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Objective:
Glioblastoma is the most aggressive primary brain tumor in adults with dismal prognosis despite surgical excision and radiochemotherapy. Theranostic agents combining diagnosis and therapy offer a promising approach to overcoming these challenges. Technetium-99m-Tetrofosmin ([99mTc]Tc-TF) has been previously showed by our group promising for early glioblastoma imaging, while temozolomide (TMZ) remains the standard chemotherapy The primary objective of this study is to develop an innovative theranostic molecule combining both.

Material-Methods:
More specifically the compound bears two temozolomide elements and one chelating agent loaded in a triazine based multifunctional substrate. The construct was tested in glioblastoma cell lines. Biodistribution was evaluated in mice.

Results:
The agent reduced GBM cell viability in a concentration-dependent manner. The IC50 values for T98 cells was 79 μM and for U87 cells was 107 μM. Radiolabeling with 99mTc was facile and robust. There was significant brain uptake and fast clearance from all organs. Brain/Blood ratios show an increasing trend, due to the low blood activity at 1h post-injection.

Conclusion: The proposed theranostic molecule holds significant potential for advancing glioblastoma diagnosis and treatment.

Acknowledgements:
This study has been supported by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH—CREATE—INNOVATE (project code: TAEDK-06189/T2EDK-0326, Acronym: Glioblastoma).

A RARE CASE OF A FEMALE PATIENT WITH AN INFECTION OF SPINAL INSTRUMENTATION: HOW TO HANDLE IT?

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Objective:
Surgical site infection is a frequently occurring complication in spinal instrumentation that requires aggressive treatment with antibiotics and/ or surgery, in order to avoid long-term loss of function and life- threatening pathologies. The exact treatment plan should be individualized.

Material- Method:
A case of a 71-year-old female patient with severe post-operative SSI due to Acinetobacter baumannii is described below.

Results:
A 71-year-old female diabetic patient underwent lumbar spinal fusion, due to severe low back pain and radiculopathy due to foraminal stenosis of L4-L5 and symptomatic L5 spondylolisthesis. Ten days post-operatively, she complained about fever and erythema, swelling, and wound drainage. Wound drainage cultivation, blood tests and lumbar spine MRI were conducted, and the patient received intravenous antibiotic treatment. MRI showed large pseudomeningocele. Inflammation markers were found to be elevated, and drainage cultivation was positive for Acinetobacter baumannii. The patient underwent complete implant removal in conjunction with appropriate antibiotherapy for six weeks. During the follow-up period, the patient complained about severe back pain. We referred her to our hospital's pain clinic.

Conclusion:
Post- operative infection of spinal instrumentation is a frequent complication that should be treated individually, taking into consideration the patient's characteristics, the severity of the infection and the necessity of a possible surgical procedure.

A RARE CASE OF ABDOMINAL CEREBROSPINAL FLUID (CSF) PSEUDOCYST

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Objective:
We present a case of a 35-year-old, male patient with a history of a right ventriculoperitoneal shunt (VPS) placed in childhood.

Material – Method:
The patient was referred to our department due to a combination of symptoms, including headaches, vomiting, and lethargy.

The brain CT scan confirmed a dilation of the ventricular system, as compared to a previous scan and we perform an abdominal CT scan that revealed the presence of an intraabdominal pseudocyst, with the distal end of the VPS coursing within it.

The patient underwent a total cyst excision and repositioning of the shunt tip through a minimally invasive laparoscopic approach. CSF culture was reported as sterile.

Results:
Patient was discharged asymptomatic on post-operative day 7 and kept on regular follow-up.

Conclusions:
The placement of a ventriculoperitoneal shunt is a lifelong responsibility and close follow up is required. Cerebrospinal fluid pseudo cyst is a rare complication of ventriculoperitoneal shunt procedure for hydrocephalus. It is a collection of fluid that accumulate around the tip of the distal catheter and surrounded by a wall of fibrous tissue lacking a true epithelium. It is associated with high recurrence rate so surveillance and proper management is crucial for ensuring a good quality of life.

A RARE TYPE OF HYPERPYREXIA IN TRAUMATIC CERVICAL SPINAL CORD INJURY: A CASE REPORT

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Introduction:
Fever is not an uncommon symptom in patients with traumatic spinal cord injury, usually caused by aspiration or bacterial pneumonia due to impaired function of the thoracic wall and the prolonged bed rest. There is documentation of a type of extreme hyperpyrexia that is correlated with traumatic spinal cord injury called quad fever. The aim of this study is to showcase this rare type of fever that is often accompanied with high mortality.

Material:
This case report consisted by a previous healthy 56-year-old male that was brought to our emergency department after an accidental fall of 10 meters in his workplace. During his admission, the patient was fully conscious with GCS 15/15 and hemodynamically stable. The patient was paraplegic, with sensory level of T1 and no anal tone (complete spinal cord injury, ASIA A). A full body CT was performed that showed multiple fractures of cervical and thoracic vertebrae, left ribs and left scapula and grade I splenic rupture. The patient developed a high fever (>39o) 12 hours after his admission with no response to antipyretic and antibiotic drugs. The fever reached up to 41o and was managed only with physical cooling methods.

Discussion:
Although the actual pathophysiology of quad fever is still unclear, there are hypotheses including dysautonomia etc. The treatment with pharmaceutics is usually inadequate and there is a need for external cooling methods.

Conclusion:
Quad fever is an entity that should be considered in cases of spinal cord injuries in order to reduce its high mortality rates.

BACLOFEN AS AN EPILEPTIC TRIGGER IN NEUROSURGERY

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Objective:
Baclofen is used to reduce spasticity in selected patients, among which, trauma patients. Seizures may occur due to baclofen withdrawal, overdose, or individual susceptibility. We present a case report of a patient who experienced seizures following baclofen administration, emphasizing the need for careful dosing and monitoring.

Methods:

Retrospectively we collected the medical files of a 58 years-old male patient, was transferred to our department from the ICU because of post-inflammatory hemorrhagic non-obstractive hydrocephalus caused as a complication of CNS inflammation and recurring spontaneous intracerebral hemorrhages.

Results:
The poor communicating status of the patient attributed to hydrocephalus. The patient transfered to our department ventriculoperitoneal (Vp) shunt implantation. Preoperatively the patient presented spontaenous eye opening, global aphasia and quadriparesis. Postoperatively he showed progressive improvement as his aphasia resolved. However he presented spasticity as a result of persistent hemiplegia. Baclofen has been administered twice and in both cases tonicoclonic seizures occured repetively, half an hour after the administration. Laboratory tests ruled out metabolic abnormalities, and brain imaging revealed no acute lesions. The seizure resolved after discontinuation of baclofen and intravenous administration of diazepam.

Conclusion:
Baclofen-induced seizures have been reported primarily in cases of abrupt withdrawal or overdose, but they can also occur in therapeutic doses, particularly in patients with renal impairment or unknown susceptibility. Baclofen's mechanism modulates neuronal excitability. This modulation may paradoxically lower the seizure threshold. Previous case reports have documented similar presentations, underscoring the need for personalized dose adjustments and careful monitoring.

BONE EROSION OF FRONTAL SINUS' POSTERIOR WALL AND SUBDURAL EMPYEMA: A NEGLECTED PARANASAL SINUSES' OSTEOMYELITIS LEADING TO COMA

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Introduction:
Intracranial complications of paranasal sinusitis account of less than 10% in different series the last 70 years.

Case report:
A 57-year male patient was admitted comatose in our Department. From history he had confusion, headache, vomiting, dizziness and gradually a decline in GCS with a slight right hemiparesis and generalized seizures led to coma and intubation. CT scan revealed a 2-cm subdural empyema of left hemisphere with more than 1 cm midline shift, sinusitis of left inferior nasal concha, ethmoid, maxillary, frontal and sphenoid bones with purulent material intraorbitally which has displaced medial rectus muscle and with expansion to the orbital fat accompanied by a mild left exopthalmus. The posterior wall of left frontal sinus had a wide defect. He received a left craniotomy, drainage of empyema, careful lavage of open cavities and cranialization of left frontal sinus. After 48 hours ENT Department performed an endoscopic left maxillary antrostomy and total drainage of purulent material. The combined cultures revealed Prevotella Otis and Staphylococcus Hemolyticus. Based on these we followed a 6-week conservative treatment included vaborbactam, metronidazole and daptomycin.

Discussion:
In our case osteomyelitis arrived from maxillary sinus and spread to almost in half of facial bones. We suspected that it was a neglected case where patient was unconcerned for any symptoms from paranasal sinuses. Infection in this compartment rarely has intracranial complications, such as subdural empyema.

Conclusion:
Subdural empyema remains a main complication even in patients without predisposing factors. Aggressive interventions should be the goal standard of treatment.

CASE-BASED INSIGHTS INTO SURGICAL ANATOMY AND INTRAOPERATIVE ADAPTABILITY IN SKULL BASE AND NEUROVASCULAR SURGERY

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Introduction:
Skull base and neurovascular surgery require a deep understanding of complex anatomical structures and advanced microsurgical techniques. Despite thorough preoperative planning, intraoperative challenges often demand real-time adjustments. This study presents three cases illustrating how anatomical knowledge supports microsurgical strategy while adaptability ensures optimal outcomes.

Methods:
Three representative cases were analyzed. The first case involved the resection of an insular and temporal glioma in a patient with acute neurological decline. Detailed regional anatomy facilitated complete tumor resection while preserving eloquent brain regions. The second case focused on optic nerve decompression in a pediatric patient with hyperostosis and associated craniosynostosis syndrome. Precise skull base dissection allowed for effective decompression and structural preservation. The third case involved MCA aneurysm clipping, where unexpected residual blood flow required intraoperative adjustments to ensure complete occlusion.

Results:
Anatomical knowledge was pivotal in each case. In glioma resection, familiarity with insular and perisylvian regions ensured safe tumor removal while protecting vital structures. In optic nerve decompression, understanding skull base anatomy enabled targeted bone removal without damaging adjacent neurovascular elements. For MCA aneurysm clipping, intraoperative adjustments were essential to achieve complete occlusion.

Conclusion:
These cases emphasize the shared principles of microsurgical precision, real-time problem-solving, and anatomical expertise in

skull base and neurovascular surgery. They highlight the importance of case-based learning and adaptability in optimizing neurosurgical outcomes.

CHORDOMA OF THE LUMBAR SPINE: A CASE REPORT AND LITERATURE REVIEW

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Objective:
Chordomas are rare tumors arising from the notochord. Although their main locations are the skull base and the sacrococcygeal spine, they could occur in the rest of the spine. This is a case report of a patient with a chordoma in the lumbar spine.

Material – Method:
We present a 74-year-old patient with gradually increasing lumbar pain that has been present for three months and left leg pain. Imaging studies revealed abnormal tissue covering the whole body of the L5 vertebra with pressure effects on thecal sac causing narrowing of the left lateral recess and exiting neural foramina. We conducted a literature review to identify similar clinical cases and the optimal treatment.

Results:
Posterior lumbar decompression and partial resection of the neoplasm-biopsy was performed. Histopathology was compatible with chordoma. Two days after the operation, the patient was discharged and referred to proton beam therapy.

Conclusions:
Evaluation of the lumbar pain includes a wide differential diagnosis. Chordomas are a challenging diagnosis requiring immediate intervention and a multimodal approach.

CHRONIC SUBDURAL HAEMATOMA IN YOUNG ADULTS: SMALL CASE SERIES

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Objective:
Common in older individuals but very rare in young adults, chronic subdural haematomas (CSDHs) are usually neglected or untreated, due to initially mild and unspecific symptoms. Here, a small case series with younger CSDH patients is reported.

Material - Method:
All patients younger than 45 years treated for CSDH in a tertiary hospital between 2023 and 2025 were included in this study. The four otherwise healthy individuals, two male and two female, aged from 28 to 41, presented with persistent headache, vomit, hemiparesis and/or gait disorders. On brain computed tomography (CT) scan, bilateral CSDHs were found in one patient and unilateral in the remaining three. Three patients had a traumatic brain injury before one month, while one patient experienced no traumatic incident and the aetiology remains unknown. No vascular pathology was found with digital subtraction angiography.

Results:
All patients underwent surgical evacuation through burr holes, thorough irrigation of the subdural space and drainage of the haematoma. No complications occurred. Postoperative CT scan verified the complete evacuation of the haematomas and the restoration of the compressed brain tissue. The average length of hospitalization was 4 days. All patients showed full neurological recovery.

Conclusions:
Haematoma thickness and midline shift are usually more severe in elderly patients, probably due to brain atrophy. In younger patients, severe symptoms such as hemiparesis and mental status deterioration are observed even with less conspicuous radiologic findings. Treated appropriately, the outcome in younger adults is favourable with no evident remission and no mortality.

COMPARING MICROSURGERY VERSUS RADIOSURGERY IN BRAIN MELANOMA METASTASES

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Objective:
To compare the outcomes of microsurgical resection and stereotactic radiosurgery (SRS) for patients with metastatic brain melanoma, focusing on survival, local control, neurological function, and adverse effects.

Material – Method:
A systematic review was conducted following PRISMA guidelines and PICO framework on PubMed, and Scopus Library for the last five years. Inclusion criteria included comparative studies on microsurgery and radiosurgery for adult patients with brain melanoma metastases, written in English, French or German. Exclusion criteria were case reports, reviews, letters to the editor, grey literature, pediatric population and studies that do not include data on overall survival, local progression, post-treatment complications, and neurological outcomes.

Results:
An advanced search in PubMed and Scopus yielded 718 studies, of which 44 duplicates were deleted. A total of 45 studies were included in the study, and the rest were excluded due to the wrong population, intervention, study design and publication type. The combination of surgery with SRS improves survival and was especially beneficial for larger tumors >3cm. The same was achieved for local tumor control, neurological function and quality of life. In terms of adverse effects, it seems that surgery with SRS had fewer side effects than whole brain radiotherapy.

Conclusions:
Both microsurgery and SRS have distinct advantages in managing brain metastases from melanoma. Depending on tumor size, patient condition and treatment goals, the combination of surgical excision with adjuvant SRS should be the treatment of choice on prolonging survival, controlling tumor, reducing adverse effects and improving neurological function.

COMPLICATION AVOIDANCE IN VENTRICULOSCOPY: PEARLS AND PITFALLS

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Objective:
To highlight key strategies in minimizing complications during Ventriculoscopic procedures, based on practical clinical experience and surgical refinement.

Material – Method:
A retrospective review of all the wet field neuroendoscopic cases performed by a single surgeon over the last 10 years was conducted, including third ventriculostomies, arachnoid cyst fenestrations, colloid cysts resections, biopsies and tumor excisions. Data regarding intraoperative difficulties, complications, and techniques used to avoid or manage them were collected and analyzed.

Results:
The overall complication rate was <5%, with the most frequent issues including intraventricular hemorrhage, chemical meningitis and transient neurological deficits. The most common causes were poor trajectory planning, limited visualization due to insufficient irrigation, and anatomical misinterpretation. Preventive measures such as preoperative imaging with tract planning, continuous irrigation management, clear identification of anatomical landmarks, and intraoperative flexibility were found to be critical. Specific "pearls" included using the choroid plexus and mammillary bodies as consistent orientation landmarks, and applying minimal instrument manipulation within tight ventricular spaces.

Conclusions:
Ventriculoscopy demands a structured, anatomy-based approach to reduce complications. Awareness of common pitfalls, combined with adherence to technical "pearls", significantly enhances surgical safety. Ongoing experience and sharing of practical insights can refine operative techniques and improve outcomes.

DELAYED COMPLICATIONS AFTER COMPROMISATION OF SINUS CAVITIES DURING CRANIOTOMIES: A CASE SERIES

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Introduction:
The selection of the proper craniotomy is a very important step in the neurosurgical practice. There are numerous cases which require a craniotomy that compromises the sinuses to achieve the best approach to treat an intracranial lesion. Although, precautionary measures are always taken, there can be complications. The aim of this study was to showcase the delayed complications after the opening of sinus cavities and their treatment.

Methods-materials:
This is a 5-year retrospective study of our department's database. Adult patients with delayed complications (>2 weeks) after craniotomies for cranial operations were included.

Discussion:
4 cases were included in this review. 3 patients had complications after the opening of the frontal sinuses and 1 case developed delayed CSF leak through the internal acoustic canal and the mastoid cells after the removal of an acoustic schwannoma. The complications of the frontal sinuses' cases included 1 case of CSF rhinorrhea and 2 cases of subcutaneous infection. In 2 of the cases of the opening of the frontal sinuses, the complications appeared >1 year post-operatively and after a respiratory infection. All the patients were treated surgically with good results and no further complications.

Conclusion:
Delayed post-operative complications are not uncommon, especially after craniotomies that neighbor the sinus cavities. Therefore, it is recommended to treat them promptly to avoid further life-threatening complications.

DELAYED CSF LEAK AFTER THE DRILLING OF THE INTERNAL ACOUSTIC CANAL: A CASE REPORT

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Introduction:
Cerebrospinal fluid (CSF) leak is a known complication after cranial surgical procedures which can have severe consequences, especially after a retrosigmoid approach. The most usual passage of the CSF leakage is through the craniotomy, but that is not always the case. The aim of this study is to showcase this rare case of CSF leak that is often non considered.

Material:
This case report consisted by a 65-year-old male with a cystic vestibular schwannoma at the left cerebello-pontine angle (Koos grade IV). The initial surgery was uneventful. The patient was discharged with no apparent CSF leakage clinically. At the 13th post-operative day, CSF rhinorrhea was diagnosed. A CT scan of the lithoid bones revealed the opening of mastoid cells at the site of the drilling of the internal acoustic meatus and no CSF collection at the site of the craniotomy. The patient was readmitted and a lumbar drain was placed for 7 days but with no resolution of the CSF leak. A second surgery was performed and a lumbo-peritoneal shunt was placed.

Discussion:
The incidence of CSF leak after cranial neurosurgical operations can range from 1 to 14% and is approximately 6% after vestibular schwannoma removal. The CSF leak through the drilled internal acoustic canal is rare and needs invasive methods to be resolved.

Conclusion:
CSF leak through after the drilling of the internal acoustic canal is rare but could be considered in the cases of hyperpneumatisation of mastoid air cells. It can be prevented intraoperatively with the usage of bone wax and other sealant materials.

EVALUATING THE PREDICTIVE VALUE OF CT-DERIVED HOUNSFIELD UNITS AND MRI-DERIVED BONE QUALITY SCORES FOR CAGE SUBSIDENCE FOLLOWING CERVICAL OR LUMBAR FUSION: A META-ANALYSIS

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Objective:
This study aims to assess whether Hounsfield units (HU) and Vertebral Bone Quality (VBQ) scores can predict cage subsidence in spinal fusion patients.

Methods:
Standard medical databases were searched to identify studies comparing HU or VBQ scores in patients with and without cage subsidence following cervical or lumbar fusion. Meta-analysis

was performed using Review Manager Software 5.4 with a random-effects model following PRISMA guidelines.

Results:
Thirty studies were included: 11 on cervical fusion (5 VBQ, 4 HU, 2 both) and 19 on lumbar fusion (9 VBQ, 9 HU, 1 both). Patients with cage subsidence had significantly higher VBQ scores in lumbar (SMD: 1.06, 95% CI: [0.86, 1.26], P < 0.00001) and cervical fusions (SMD: 1.41, 95% CI: [0.84, 1.99], P < 0.00001), indicating poorer bone quality. Conversley lower HU values were significantly associated with cage subsidence in lumbar (SMD: -1.3, 95% CI: [-1.71, -0.89], P < 0.00001) and cervical fusions (SMD: -1.19, 95% CI: [-1.47, -0.91], P < 0.00001). Higher VBQ scores increased subsidence risk (OR: 2.5, 95% CI: [1.86, 3.36], P < 0.00001), while higher HU weakly reduced risk (OR: 0.97, 95% CI: [0.94, 1.00], P = 0.05). Pooled diagnostic accuracy was 84% (95% CI [0.79, 0.89]) for VBQ and 88% (95% CI [0.85, 0.91]) for HU.

Conclusion:
Cage subsidence is significantly associated with lower HU and higher VBQ scores. While VBQ had a stronger association, HU showed slightly superior diagnostic accuracy. Both metrics effectively predict bone quality and subsidence risk.

EVALUATION OF SUPRAORBITAL KEYHOLE APPROACH VERSUS FRONTALLY FAVOURED PTERIONAL APPROACH IN THE SURGICAL TREATMENT OF TUBERCULUM SELLAE MENINGIOMA: SINGLE CENTRE EXPERIENCES

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Objective:
Tuberculum Sellae Meningioma (TSM) presents a significant surgical challenge for neurosurgeons. This study aims to compare the pterional approach with the supraorbital eyebrow approach and to share our experience.

Material-Method:
We conducted a retrospective study of patients who underwent surgery for TSM at our center from 2020 to the present. Our analysis included preoperative and postoperative clinical data. We assessed the visual function of each patient before and after surgery as the primary outcome.

Results:
Thirteen patients (M/F 3/10) with a mean age of 59.3 underwent craniotomy for TSM. In 10 patients a frontally favoured pterional craniotomy was performed while in the remaining 3 a supraorbital craniotomy. Gross total resection (GTR) was achieved in 9 out of 10 patients (90%) in the pterional group and in 2 out of 3 patients (66.7%) in the supraorbital group. In our series all patients underwent a craniotomy ipsilateral to the most affected optic nerve. Postoperatively, a patient who underwent a pterional craniotomy developed postoperative meningitis while another developed worsening of visual fields at the 3-month follow-up. Among the patients who underwent a supraorbital craniotomy, one exhibited an immediate postoperative worsening of visual disturbances, while another required reoperation due to a brain abscess resulting from frontal sinus opening.

Conclusions:
Our experience provides evidence that the frontally favoured pterional craniotomy with partial splitting of the Sylvian fissure achieves a high tumor resection rate with less postoperative complications compared to other approaches.

EXPANDING SURGICAL OPTIONS: THE TRANSGLABELLAR APPROACH FOR PITUITARY ADENOMA REMOVAL

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Objective:
Endoscopic transsphenoidal surgery is the gold standard for pituitary adenoma resection. However, in cases where this approach is not feasible—such as in large, invasive, firm or ectopic adenomas—craniotomy is required. Most neurosurgeons typically opt for pterional, bifrontal, or bicoronal approaches; the transglabellar approach remains underutilized despite its advantages. This study presents our experience with this approach, highlighting its efficacy, reduced surgical morbidity, and cosmetic outcomes.

Material and Methods:
In the last five years, fifteen patients with pituitary adenomas (out of 352 total pituitary cases) underwent resection via the transglabellar approach at our institution. These cases involved tumors with suprasellar or parasellar extension, where an endoscopic transsphenoidal route was deemed unsuitable or following an inconclusive transsphenoidal approach (ie incomplete resection). The transglabellar technique involved a small midline skin incision at the glabella, followed by a limited craniotomy for direct tumor access. We assessed surgical duration, extent of resection, complications, and cosmetic outcomes.

Results:
Gross total resection was achieved in 80% of cases, with the remaining patients undergoing subtotal resection due to tumor invasion of critical structures. No major complications such as cerebrospinal fluid leaks, vascular injury, or permanent neurological deficits were observed. Compared to traditional craniotomies, the transglabellar approach allowed for a shorter operative time and reduced blood loss. Postoperative imaging confirmed successful decompression of the optic apparatus in all cases. Cosmetic outcomes were on par due to the smaller incision and minimal bony exposure.

Conclusions:
The transglabellar approach offers a safe and effective alternative for pituitary adenoma resection when craniotomy is required. It provides direct tumor access with reduced surgical trauma, shorter operative time, and acceptable aesthetic results. Our experience suggests that this technique should be considered in selected cases requiring a transcranial route.

EXTREMELY UNUSUAL BREAST CANCER METASTASIS TO THE RIGHT EXTERNAL CAROTID ARTERY DISTRIBUTION AREA

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Objective:
Breast cancer is the second most frequent source of cerebral metastasis. We report on a case of a patient with medical history of breast cancer presenting simultaneously with right-sided intracranial and extracranial metastasis.

Material - Methods:
A 49-year old female patient was referred to our Department

due to enhancing infiltrative lesions of the right temporal muscle, ipsilateral hemicranium and underlying dura found in a follow up magnetic resonance imaging (MRI) scan. The latter had been ordered because the patient complained of intermittent episodes of right scalp edema over the last 3 months. The patient had undergone breast tumor excision with lymphadenectomy 3 years ago, followed by radiotherapy and immunotherapy with no known metastases. Taking into consideration her medical history and the MRI findings, a biopsy was performed and samples were taken from the muscle, skull, and dura. Pathology report confirmed the presence of breast cancer metastasis.

Results:
Although it's reported that out of all cerebral metastases, breast cancer is responsible for about 10% of the cases, there are only a few reports in the literature of both intracranial and extracranial metastasis. Moreover, it's worth mentioning that all three infiltrated structures' blood supply, in our case, is provided by the right external carotid artery, which explains why these structures of the head were affected.

Conclusions:
It's uncommon for breast cancer to cause extracranial and intracranial metastasis at the same time and very rare to metastasize widely to an artery's distribution area.

FLUORESCENCE FOR PRECLINICAL STUDIES AND TERBIUM-161 RADIOLABELING FOR DIAGNOSTIC PURPOSES. DUAL CANCER IMAGING VIA THE DEVELOPMENT OF A GLUCOSE-TARGETED PLATFORM

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Objective:
Effective treatment of cancer, especially in challenging cases like glioblastoma, mainly depends on the utilization of specific tools that can identify and accumulate into cancer cells while maintaining cytotoxic properties.

Material – Methods:
This approach involves first diagnosis followed by targeted toxicity to cancer cells via chemotherapy and/or radiation. Monitoring these interactions in real time provides important information for determining treatment response and the effectiveness of preclinical anticancer medications, as well as insight into the mechanisms of action.

Results:
A positive-charged cyanine-based probe that fluoresces in the rear infrared and is intended for mitochondrial targeting since glioma cells overexpress mitochondria is demonstrated. The design of this probe allows for the two-axis analysis of mitochondrial metabolism. The first one relies on fluorescence intensity increasing in response to rising environmental viscosity and the second one in its fluorescence responds to specific metabolites. Additionally, a glucose moiety has been introduced into the molecule to facilitate preferential uptake by cancer cells through GLUT receptors. Another crucial feature of this probe is its integrated chelating substituent, which enables binding to the Auger-emitting radioisotope Terbium-161 (161Tb).

Conclusion:
We have designed, synthesized, and characterized a multifunctional theranostic tool that enables dual imaging capabilities.

Acknowledgements:
This study has been supported by the European Regional Development Fund of the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH—CREATE—INNOVATE (project code: TAEDK-06189/T2EDK-0326, Acronym: Glioblastoma).

FRONTAL OPEN DEPRESSED SKULL FRACTURES CAUSED BY HAMMER BLOWS: REPORT OF AN UNUSUAL CASE TREATED WITH A SINGLE-STAGE RECONSTRUCTION

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Objective:
Hammer blows often cause serious head injuries. The extent of the injury depends on the thickness of the skull at the site of the blow, the hammer characteristics and the intensity of applied force. Traditionally, staged surgery has been preferred in the treatment of compound depressed fracture and involves the removal of primarily damaged bone and subsequent cranioplasty/reconstruction.

Material - Method:
A 24-year-old male presented with two forehead lacerations after being attacked with a hammer. The patient was neurologically intact. Brain CT scan revealed bilateral depressed frontal skull fractures with underlying epidural air. A surgical operation was decided in order to remove bony fractures, reconstruct the cranial vault and explore for any dural tears.

Results:
Intraoperatively, a standard bicornal incision was done, followed by a bifrontal craniotomy. The fractured segments were removed taking great care to avoid dural tears. We performed immediate reconstruction of the skull deficits with two burr hole covers and the bone was placed in place with two standard plates and one burr hole cover. Postoperatively, the patient remained neurologically stable and he received broad-spectrum antibiotics. Postop CT scan confirmed the correct fixation of the bone without any further pathology. The long-term follow up was uneventful in terms of infection.

Conclusions:
This case highlights our decision to treat in a single-state an open depressed skull fracture with no infection-related late complications. This maybe suggests that immediate single-stage reconstruction is a suitable surgical option with potential benefits in terms of cost-effectiveness, safety and cosmetic outcomes.

GIANT OCCIPITOCEREBELLAR SUBCUTANEOUS MASS: A RARE DISTANT METASTASIS FROM PAPILLARY THYROID CANCER

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Background:
The largest series of skull metastasis from thyroid carcinoma described a frequency of only 2.5%.

Case report:
A 67-year-old woman had observed the last three months a painless palpable mass in the left occipitocerebellar region. MRI examination revealed an extracranial subcutaneous mass with bone erosion with an intracranial part. The mass was resected with excellent neurological outcome. Because of a cardiological history we started anticoagulants in therapeutic dose the 3rd postoperative day. In 24 h she was gradually deteriorated and a CT scan revealed an EDH with subarachnoid hemorrhage in the site of previous surgery. After a surgical evacuation the patient had a transient 6th nerve paresis without other neurological deficits. When histopathological study mentioned a metastasis from papillary adenocarcinoma of thyroid gland, we proceed to PET CT scan where lung metastases were detected.

Discussion:
The most common subtype of thyroid cancer is papillary. Ribs, vertebrae and sternum are common site of metastasis, but skull is an extremely rare case. The midline region in calvarium is a usual location. Gross total resection is followed by an important blood loss which could be fatal.

Conclusion:
Papillary thyroid cancer could be responsible for bone metastasis and should be included in the differential diagnosis of a palpable osteolytic mass of the calvarium despite its extremely low incidence.

GLIOBLASTOMA OF THE PINEAL GLAND: A VERY RARE ENTITY AND A SURGICAL CHALLENGE

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Background:
Pineal glioblastoma (GBM) is an extremely rare and surgically challenging entity with approximately 50 cases reported in the literature as yet. It is a very aggressive subgroup of GBM with even poorer prognosis (median OS of 10.0 months) compared to hemispheric GBMs. In the majority of published cases subtotal resections and biopsies have been performed.

Methods:
We present the case of a 49 year old female, who presented in extremis with obstructive hydrocephalus secondary to a pineal GBM. She was initially treated with a ventriculo-peritoneal shunt and subsequently underwent tumor resection by use of a an occipital, inter-hemispheric, transtentorial, supracerebellar approach which resulted in resection of approximately 90% of the tumor.

Results:
Either endoscopic or microscopic are valid options for pineal tumors. The high vascularity of this specific tumor favoured more a microscopic approach. All distinct stages of surgery, i.e. preoperative investigation and planning, patient positioning, side of craniotomy based on amplitude and location of bridging veins, the use of intraoperative guidance, the dissection of the amplitude of the en route major vessels and the use of adequately long and angled instrumentation for on target manipulations are key factors contributing to maximum safe resection of the tumor.

Conclusions:
Pineal GBM is an extremely rare subgroup of GBMs with dismal prognosis representing a surgical challenge. Meticulous preoperative planning and intraoperative manipulations can result in high rates of resection. In the presenting case there is no evidence of disease progression 15 months after initial surgery.

GROWING FRACTURE IN YOUNG ADULT DUE TO OCCIPITAL CONDYLE FRACTURE. WHAT ARE THE ODDS?

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Background:
Growing fractures are usually seen in children and rarely in adolescents. On the other hand, occipital condyle fractures (OCF) are described as fractures due to high energy trauma. With the expand of imaging, their incidence has been increased but remains quite rare. Until now, the literature has described a few cases of growing fracture in young adults and a little studies showing OCFs.

The present case has the aim to present the first case worldwide with both OCF and growing fracture.

Methods:
A 19-years old male was presented to the emergency department with GCS 3/15 due to a traffic accident. The patient was intubated, and emergent CT scan was obtained. The images showed traumatic SAH, basal fracture projecting to the OCF (type II Anderson and Montensano), C1 and C2 fractures, lung contusions.

Results:
The patient was admitted to the ICU. Conservative therapy was applied for all the injuries. The OCF was treated with halo-device. At two-months follow-up there were no signs of C1 or C2 fractures, nor any neurological deficit. The OCF fracture appeared growing. The decision was to continue with conservative therapy for another four months, during which the patient was at rehabilitation center. At six months follow-up the patient was neurologically intact, without any sign of cervical fracture, nor any cognitive deficits. The OCF fracture appeared growing. However, due to its neurologically intact condition no further management was applied.

Conclusion:
OCF is a rare type of fracture with variable outcomes. On the other hand, growing fracture in adults is described a few more times in the literature with inconclusive management strategies. For its best management, more discussions are needed.

HIPPOCAMPUS AS AN INTRAVENTRICULAR STRUCTURE: ILLUSTRATIVE CASES

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Objective:
The hippocampus is a crucial structure in the brain, primarily associated with memory and spatial navigation. Typically observed through microscopic techniques, the hippocampus is not commonly visualized from an intraventricular perspective. This study aims to explore the unique visualization of the hippocampus via endoscopic intraventricular approaches, highlighting its anatomical landmarks and potential clinical relevance.

Material - Method:
We conducted endoscopic - ventriculoscopic operations in patients for various neurological conditions such as biopsies or cyst fenestrations. Endoscopic cameras provided real-time visualization of the hippocampal anatomy. The anatomical orientation and relationships with surrounding structures were documented and analysed. All operations were conducted using a rigid endoscope.

Results:
The endoscopic intraventricular view revealed the hippocampus as a distinct, curved structure along the floor of the temporal horn of the lateral ventricle. Key landmarks such as the fimbria, dentate gyrus, and hippocampal head were identifiable. This different perspective offered novel insights into the spatial orientation of this crucial structure.

Conclusions:
Endoscopic visualization of the hippocampus from an intraventricular point provides a unique and informative perspective. This approach may enhance surgical navigation and improve diagnostic accuracy in neurological disorders involving the hippocampus.

HOW INTERESTED ARE WE IN CHANGING THE "WITHDRAW POLICY" IN VEGETATIVE STATE IN GREECE?

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Neurosurgery is a challenging specialty with extreme number of patients with deterioration, disability and vegetative state. Every day, severely traumatized patients are presented to the emergency departments needing ICU and/or neurosurgical intervention. In most of the cases, the neurosurgical intervention is highly controversial and debatable.

Worldwide, patients and their legal representatives not only have the ability and right to refuse treatment, but also to withdraw, when there is nothing else to be done. The economic burden of such patients is enormous and the possibility of improvement quite small. Worldwide, there are laws to prevent this outcome, and facilities to hospitalize patients in vegetative state.

In Greece, the law is quite subjective, while there are no concrete private or government facilities to hospitalize patients in vegetative state. The economic burden for the hospitals is expending beyond any possibilities and the outcome is even poorer. The criteria and prognostic scoring systems are available but there is no sufficient insurance neither for the patients, nor for the doctors. The information given to the people to know their possibilities at any given point in their everyday life are extremely limited, as is the interest of the responsible parties.

So, the question here is how interested are we in doing something to change this?

HYBRID SURGICAL APPROACH FOR RESECTION OF INSULAR GLIOMA: A CASE REPORT

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Objective:
Insular gliomas pose significant surgical challenges due to their proximity to critical functional and vascular structures. Maximizing resection while preserving neurological function requires an individualized strategy. We present a 52-year-old female with a left insular glioma treated with a hybrid trans-sylvian and transcortical approach, guided by multiparametric brain mapping.

Material – Method:
The patient presented with focal sensory seizures but demonstrated no motor or language deficits on detailed neurological and neuropsychological assessment. Preoperative fMRI confirmed left language dominance. Tractography and fMRI were integrated into the navigation system for surgical planning, and 5-ALA fluorescence was utilized. An awake craniotomy was performed with cortical and subcortical mapping.

Results:
A trans-sylvian approach was initially used, complemented by transcortical windows after awake cortical language mapping. Subcortical mapping defined resection depth. Anterio-inferior depth was guided by the inferior fronto-occipital fasciculus (IFOF), where stimulation elicited semantic paraphasia. Posterior-superior depth was determined using asleep subcortical motor mapping to protect descending motor pathways. A near-total resection was achieved. The patient experienced transient phonemic paraphasia, resolving within three weeks. Histopathology confirmed astrocytoma, IDH-mutant, WHO Grade 3. She underwent adjuvant chemoradiotherapy.

Conclusions:
A hybrid trans-sylvian and transcortical approach, guided by multiparametric brain mapping, optimizes tumor removal while preserving function. Defining tumor depth through language and motor subcortical mapping is essential for maximal safe resection in insular gliomas.

INTERTHALAMIC ADHESION: CURRENT KNOWLEDGE OF ITS DESCRIPTIVE, FUNCTIONAL AND CLINICAL ANATOMY

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Objective:
We aimed to review the available literature regarding the interthalamic adhesion (ITA) focusing on its anatomical characteristics, functions, related diseases and clinical significance.

Material - Method:
A systematic search was conducted across PubMed, Scopus and Web of Science Core Collection databases, resulting in 278 publications for screening and in finally 96 relevant ones.

Results:
The ITA is present in 48.4–97.7% of individuals, mostly around 80%, and in up to 10% in double form, with higher prevalence in females and minors. Its size varies mainly between 2-22 mm in length, and its midsagittal surface area mainly between 10-50 mm², ranging between 1.5-90 mm². Males tend to have larger ITAs. Its shape differs from oval to comma-shaped and it serves as a midline commissure to the amygdala, hippocampus, and prefrontal cortex. Absence or alterations in ITA size are linked to schizophrenia, major depression, bipolar and borderline personality disorder. It plays a role in emotional regulation and cognitive control, influencing dopamine and norepinephrine release. An enlarged ITA can be associated with hydrocephalus and myelomeningocele. It is implicated in Cornelia de Lange and L1 syndromes, suggesting its potential role as a neurodevelopmental marker. It is surgically important in endoscopic techniques for pineal tumors and as part of commissurotomy in epilepsy.

Conclusions:
The ITA is a limbic structure crucial for emotional regulation and cognitive processing. Its absence or abnormal size is associated with various neuropsychiatric disorders. Further research is needed to explore its role as a potential neurodevelopmental marker and its neurosurgical relevance.

INVESTIGATING THE EFFECT OF SENSORY INTEGRATION ON THE RECOVERY OF PATIENTS AFTER NEUROSURGICAL PROCEDURES

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Objective:
Occupational therapy plays a crucial role in the rehabilitation of patients after neurosurgical procedures. However, the contribution of sensory integration to recovery has not been extensively studied. This study investigates whether occupational therapy techniques focusing on sensory integration can accelerate neuroplasticity and improve functional recovery.

Material – Method:
Thirty patients who underwent neurosurgical procedures (craniotomy, spinal decompression, tumor removal) participated in the study. They were divided into two groups: the control group followed standard rehabilitation, while the experimental group participated in an occupational therapy program incorporating sensory stimulation (customized tactile, proprioceptive, and vestibular stimuli). Evaluation was conducted using the Functional Independence Measure (FIM) and Sensory Profile assessment tools before and after an 8-week intervention.

Results:
The experimental group showed statistically significant improvement ($p<0.05$) in functional independence and cognitive-motor response compared to the control group. Notably, patients with sensory deficits post-surgery demonstrated a faster adaptation to daily activities.

Conclusions:
Integrating sensory integration techniques into postoperative occupational therapy programs can enhance rehabilitation and improve neuroplasticity in patients. The findings suggest the need for further research on the application of personalized sensory interventions in neurosurgical recovery.

IS THERE A CORRELATION BETWEEN MENINGIOMAS AND BREAST CANCER? A LITERATURE REVIEW

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Objective:
Meningioma is the most frequent intracranial primary tumor, occurring mostly in females. Although it remains asymptomatic and non- aggressive in most cases, follow- up is needed. Breast cancer has a continuously increasing incidence, with many patients been diagnosed at an early age. In bibliography, there have been pointed cases with co- existence of these two types of tumors.

Material- Method:
A literature review has been conducted. Eligible articles were identified by researching bibliographical databases. Titles of interest were further reviewed by abstract.

Results:
54 studies were included in our study. Female patients that were diagnosed with intracranial meningioma have approximately 10-fold higher possibility to develop breast cancer. On the other hand, patients with breast cancer have 2- fold higher odds to develop brain meningioma. The exact pathophysiological mechanisms remain unknown, but hormone receptors exist in both neoplasms' development mechanisms and progression.

Conclusion:
Breast cancer in a common type of tumor among female patients that has good prognosis, if it is diagnosed in early stages. Meningiomas are mostly detected accidentally, after undergoing a brain MRI due to non- specific symptoms in young ages. We suggest female patients with meningioma should be screened thoroughly for breast cancer.

LAPAROSCOPIC MANAGEMENT OF A PSEUDOCYST FORMED AROUND THE PERIPHERAL CATHETER OF A VP SHUNT

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Objective:
To present the management of a patient presented with VP shunt dysfunction due to the formation of an abdominal pseudocyst.

Material – Method:
A 35-year-old patient presented to the neurosurgical ED of our hospital with episodes of vomiting in the last 72 hours, dizziness and drowsiness. A VP shunt was implanted for post meningitis hydrocephalous at a younger age and recently the valve was substituted due to dysfunction. A brain CT scan was performed and ventriculomegaly was present. Furthermore, the abdominal CT scan revealed a pseudocyst around the peripheral catheter. The patient underwent a revision surgery with the pseudocyst removed laparoscopically.

Results:
Immediately post-operatively the patient experienced improvement of her symptoms. A post-op brain CT scan showed a normal ventricular system. The patient was then discharged, free of symptoms.

Conclusions:
Pseudocyst is a well described intra-abdominal complication of VP shunt systems. Laparoscopic drainage of the pseudocyst and reposition of the abdominal catheter is a feasible method for this complication.

MANAGEMENT OF SPINAL EPIDURAL LIPOMATOSIS : A CASE REPORT AND LITERATURE REVIEW

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Objective:
Spinal epidural lipomatosis (SEL) refers to a rare condition of pathological unecapsulated adipose tissue accumulation within the spinal epidural space, often leading to spinal cord compression and neurological deficits. Common related causes include obesity, steroids, spine surgery and idiopathic disease. Conservative and surgical treatments are considered when the main goal is to mitigate patient's symptoms.

Material:
A 61 years old male, was admitted to our clinic. He had a history of a couple of months of worsening bilateral leg pain and lower back pain with numbness and difficulty walking. His MRI of the lumbar Spine revealed narrowing of the spinal canal along with epidural lipomatosis. The patient underwent a total surgical resection of the lesion and remission of symptoms was noted.

Conclusions:
Spinal epidural lipomatosis should be considered in patients presenting with unexplained back pain and neurological deficits. Treatment often involves surgical decompression which yields good outcomes when performed early. Recurrence rate is important if risk factors left unadressed.

Keywords:
Spinal epidural lipomatosis, lumbar lipomatosis.

MELOXICAM AS A TREATMENT OF ELEMENTS WITH AMATEUR ATHLETIC ACTIVITY AND CHRONIC LOW BACK PAIN

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Introduction:
Chronic back pain is defined as pain that continues for three months or even longer . Is a condition that effects the quality of life and also the health related quality of life. Also effects the sports performance and the sports health. Aim-Aim of this study was to evaluate the use of use of meloxicam in elements with amateur athletic activity, with chronic low back pain.

Material and Methods:
20 patients with amateur athletic activity (2 soccer, 2 basket ball, 2 voley ball, 2 hand ball, 2 gymnastics, 2 speed runners, 1 tennis, 3 long runners, 4 combat sports), 15 males and 5 females were participated in this study. In all patients we perform clinical neurological exam and radiological exam with x-ray control, ct-images and mri images. For 21 days they receive 7,5 mg meloxicam, two times a day. Range of age 25-45 years and mean age 34. We used specific performance pain tests (oswestry scale and prolo scale) in order to evaluate our results. Follow up was between 12 months and 24 months with mean period of 18 months.

Results:
18 of them (90%) reported optimal results and good reaction to the treatment. 2 of them (10%) reported moderate results and mild reaction to the treatment.

Conclusions:
This therapeutic path seems to be an optimal and safe treatment, especially for amateur athletes. Chronic low back pain remains a situation with necessity of adequate evaluation and management, in order to ameliorate the overall health.

MENINGIOMAS RESECTION- ASSOCIATED VENOUS THROMBOEMBOLISM: PATHOPHYSIOLOGY AND PROPHYLACTIC MEASURES

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Objective:
Meningioma is the most frequent primary brain neoplasm, which is in many cases diagnosed accidentally, after undergoing an MRI for non-specific symptoms. In symptomatic cases or tumors with aggressive behavior, microsurgical resection is the preferred therapeutic option. According to bibliography, there is higher risk for venous thromboembolism (VTE) in patients undergoing meningioma resection, compared to other neoplasms. Some specialists administer anti- coagulation therapy in all patients undergoing this surgical procedure, as a prophylactic measure after surgery, although it should be individualized.

Material- Method:
We conducted a literature review and provided details about our experience in our neurosurgical department.

Results:
This heightened risk arises due to tumor-related factors, such as proinflammatory and procoagulant activity, as well as surgical and perioperative influences, including prolonged immobility, endothelial injury, and venous stasis. Additional factors include neurological deficits, steroid-induced hypercoagulability, and patient-specific risk factors like obesity and advanced age. Preventive strategies, including pharmacological anticoagulation, mechanical prophylaxis, early mobilization, and careful perioperative steroid management, are crucial in reducing VTE incidence and improving post-surgical outcomes. We provided all the characteristics of our selected patients, the therapeutic approach and their follow-up period. One patient developed VTE 2 weeks post- operatively.

Conclusion:
We suggest that patients undergoing meningioma resection should receive anti- coagulation therapy, except for those who have contraindications. Therapy should thereby be personalized.

METHYL ROSMARINATE: A POTENT AGENT FOR GLIOBLASTOMA TREATMENT

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Objective:
To date, several herbal products have been utilized in healthcare for years, especially since several plant derived compounds have demonstrated potential activity against various cancers. Anticancer agents of plant origin that are already in clinical use around the world include vincristine, taxol, vinblastine and camptothecin. Methyl rosmarinate, a hydroxycinnamic acid isolated from Thymus thracicus Velen, has not been previously studied in glioma.

Material – Method:
Its effects on cellular viability was assessed via Trypan Blue and Crystal Violet stains, the cell cycle analysis through flow cytometry, and cell migration by employing the scratch wound healing assay. The possible synergistic effect of RM with temozolomide was studied using CompuSyn software.

Results:
The IC50 value of Methyl rosmarinate for decreased viability in T98 cells and U87 cells was 13 μM and 9.8 μM, respectively. In order to assess the impact of RM on cell cycle progression in T98 and U87 glioblastoma cells, we performed flow cytometry analysis. Both cell lines were treated with IC50 and twice IC50 values of RM for 48 h. The analysis results indicated that RM induced accumulation in subG0 and S cell cycle phases in U87 and in subG0 and G2/M in T98. This agent inhibited cell migration in both cell lines. A strong synergistic effect with temozolomide in U87 cells was found.

Conclusions:
RM had low IC50 values in both cell line. This agent induced cell death and cell cycle arrest. A synergistic effect with temozolomide was found in U87 cells. There is a need for further studies to reproduce these findings in animal models and investigate if RM constitute a potential new therapeutic approach for gliomas.

MICROSURGICAL MANAGEMENT OF PERICALLOSAL AND MIDDLE CEREBRAL ARTERY ANEURYSMS VIA SINGLE FRONTAL CRANIOTOMY: A CASE REPORT

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Objective:
Surgical management of multiple intracranial aneurysms is a viable, yet challenging, option only for nearby aneurysms. The aim of this case-report is to demonstrate microsurgical clipping of a ruptured pericallosal (A3) artery aneurysm and an unruptured middle cerebral artery aneurysm, through a single frontal craniotomy.

Material - Method:
We present a 58 year-old female diagnosed with subarachnoid hemorrhage and two intracranial aneurysms located in the left middle cerebral artery (MCA) and left pericallosal artery(A3 segment). The patient underwent left-sided frontal craniotomy and combined anterior interhemispheric and left subfrontal approach for successful clipping of both aneurysms. Postoperative management was carried out in a neurosurgical critical care Unit. Anatomical and technical consideration are explained in detail in the operation video.

Results:
Transient neurological deterioration with vasospasm was noted early postoperatively without any severe radiological findings on brain imaging. The patient showed improvement with modified Rankin Scale = 2 upon discharge. Follow-up at three months with clinical assessment including mRS and brain cta confirmed complete aneurysm occlusion with no evidence of residual aneurysm. Functional outcome was good (mRS=1 at 3 months), with no major neurological deficits highlighting the effectiveness of the surgical approach in managing the aneurysms concurrently.

Conclusions:
Available literature regarding single-stage clipping of pericallosal and MCA aneurysms through a frontal craniotomy is scarce. This case-report supports the feasibility and effectiveness of single-stage microsurgical clipping, even in the context of complicating factors such as ICH and SAH. A meticulous surgical technique and comprehensive knowledge of anatomy are critical to achieving optimal clinical outcome.

MOLECULAR GLIOBLASTOMAS AS A DISTINCT ENTITY IN THE GRADE 4 GLIOMAS SPECTRUM. A MOLECULAR, RADIOLOGICAL AND CLINICAL ANALYSIS

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Objective:
Molecular glioblastomas represent a distinct entity of IDH-wildtype gliomas, exhibiting the molecular hallmarks of glioblastoma despite lacking the characteristic imaging features of high-grade tumors. This study aims to analyze the radiological, molecular, and clinical characteristics of mGBMs, highlighting their unique presentation and clinical course.

Methods & Materials:
We retrospectively reviewed patients diagnosed with molecular glioblastoma in our institution between 2023 and 2025. Inclusion criteria included IDH-wildtype gliomas harboring at least one of the following molecular alterations: TERT promoter mutation, EGFR amplification/mutation, or +7/-10 chromosomal imbalance. MRI characteristics, including contrast enhancement, T2 hyperintensity, and FLAIR signal, were assessed. Clinical parameters such as mean time from surgery to progression and progression-free survival (PFS) were recorded.

Results:
A total of six patients met the inclusion criteria. MRI analysis revealed low-grade imaging features, including absence of contrast enhancement, hyperintensity on T2-weighted and FLAIR sequences, and lack of necrotic or infiltrative patterns typically seen in conventional glioblastomas. Despite their indolent imaging appearance, the mean PFS was significantly shorter than expected for true low-grade gliomas.

Conclusion:
Molecular glioblastomas, although radiologically mimicking lower-grade gliomas, follow an aggressive clinical course characteristic of glioblastoma. Their distinct molecular profile underscores the need for early recognition and tailored therapeutic strategies. MRI findings alone may lead to underestimation of tumor grade, emphasizing the importance of molecular diagnostics in glioma classification and management.

NEGATIVE CEREBRAL EFFECT OF CSF

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Objective of the study:
Determination of the relationship between CSF and some neurological problems!

Material and Method:
145 patients, age 54-92 years, 59 female and 86 male, undergone of lumbar puncture due to various neurological problems, related to the brain. With LP we measured the intracranial pressure and removed 30 ml of CSF. Immediately after we asked the people to stand and walk. We asked them to give information about the previous symptoms and after the LP. 110 patients undergone an operation for Lumbar Peritoneal shunting.

Results:
125 patients had improvement immediately after the LP. From those that operated In 10 pts the shunt was blocked. 4 patients had infection and we removed the device. After treatment with antibiotics we placed again back the shunt. All the patients are satisfy with this kind of operation. The patients previously taking medication for Parkinson or Alzheimer', or MS either stopped taking, stopped increasing the doses, or reduced their doses.

Conclusions:
All patients with neurological problems related to the brain, should have LP to measure the intracranial pressure and remove 20-30 ml of CSF. The way to check the ICP is LP. So the corresponding treatment for these problems is the LP Shunt. The programmable LP Shunt is the best device today to drainage the CSF, where isn't obstructed hydrocephalus. The disadvantage of the LP Shunt is the difficulties in regulate, due to soft tissue under the shunt.

OCCIPITOCERVICAL FUSION IN A PATIENT WITH C1 AND C2 VERTEBRAE FRACTURE

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Objective:
C1 fractures are relatively rare, but they may lead to life- threatening complications. After assessing the ABCs, the physical examination should be comprehensive. Imaging tests are the "gold standard" diagnostic method, classifying the fracture in a variety of types according to many classifications systems. Unstable fractures with neurological deficiencies should be treated surgically.

Material- Method:
patient's characteristics, laboratory and imaging tests.

Results:
A 78- year- old male patient came to our emergency department, after a motor vehicle accident. He complained about severe neck pain and dizziness. He reported a history of cardiac arrhythmia and type 2 diabetes. After ATLS assessment, the patient underwent brain and cervical CT, which showed type 2 (Traynelis and Benzel classification) and SLICS score 4 C1 and C2 fractures. The patient underwent occipitocervical fusion without any peri- and early post- operative issues. Twenty days post-operatively, the patient came to our department due to wound dehiscence and draining fluid. In collaboration with plastic surgeons, we conduct skin grafting. Drain cultures were positive for Pseudomonas aeruginosa and Enterococcus faecalis. The patient remained in our hospital for a long period of time, due to severe antibiotics side effects, without any issue that pertains the surgical trauma.

Conclusion:
C1 fracture is relatively rare, but its therapy requires a multidisciplinary approach.

OUR EXPERIENCE SURGICAL TREATMENT OF THE SPINE MYELOMA LESION

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Backgrounds:
Among patients with vertebral and extradural tumors of all types, the proportion of myeloma varies from 2 to 21%, with the most representative figures being from 5 to 10%. In 3–5% of cases, the solitary myeloma was detected, which was combined with negative diagnostic criteria for multiple myeloma (MM).

Multiple myeloma (MM) is a malignant monoclonal proliferation of plasma cells. Among primary malignant tumors, myeloma, along with lymphoma, most often affects the spine. Every year among 4–5 people out of 100,000 MM is found.

Diffuse osteoporosis and focal osteolytic destruction are potential causes of pain, pathological fractures, and compression of the spinal cord and/or its roots.

Aim of our work is to analyze the efficacy of contemporary decompressive-and-stabilizing techniques in patients with a spine myelomatosis.

Material and Methods:
The results of treatment of twenty-two patients with spinal myeloma (SM) are shown in the work. Twenty-two patients underwent surgical interventions followed by radiotherapy and chemotherapy: open interventions were performed to all of the patients. All patients underwent specific therapy for SM before and after surgical therapy. Pain regression, neurologic state and quality of life were evaluated after surgery.

Results:
Radiotherapy and chemotherapy are the methods of choice for SM. However, in some cases with increasing neurologic deficit, intractable pains and instability of an involved spine segment, the surgical intervention is necessary and capable to prevent catastrophic complications. Best results, regarding neurologic impairments and quality of life, were achieved in a group of patients in whom decompressive- and-stabilizing procedures were performed.

Conclusion:
Decompressive - and-stabilizing procedures are the ensuring quick regression of a pain syndrome and prevention of pathologic fractures in patients with myelomatosis of the spine.

Key Words:
Myeloma involvement of the spine, pathological fracture, extradural tumors, neurologic state, modern decompressive - and-stabilizing procedures.

PAIN RELIEF WITH RESTORATIVE NEUROSTIMULATION FOR MECHANICAL CHRONIC LOW BACK PAIN: AN 18-MONTH FOLLOW-UP

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Objective:
Mechanical chronic low back pain (CLBP) can be caused by impaired neuromuscular control and degeneration of the multifidus muscles. An implantable system for restorative neurostimulation stimulates the medial branches of the L2 dorsal rami bilaterally. We report the 18-month clinical results in two patients.

Material – Method:
Two eligible patients with mechanical CLBP (Numeric Rating Scale, NRS ≥7 & Oswestry Disability Index (ODI) ≥21 points) despite medical management (pain medications & physical therapy) were selected. Both had a positive prone instability test and no indication for spine surgery. Patients were implanted with ReActiv8® system (Mainstay Medical, Dublin, Ireland). Stimulation was delivered for 30 minutes twice daily eliciting repetitive multifidus contractions.

Results:
Participants were 23 & 78 years old, had a history of back pain for 11 & 15 years, had an average low back pain NRS of 8 & 7, ODI of 24 (moderate disability) & 27 (severe disability), EQ-5D (European Quality of Life 5 Dimensions) of 0.58 & 0.48. After 18 months, NRS scores dropped to 0 & 3, ODI scores dropped to 3 (no disability) & 14 (mild disability), and EQ-5D scores increased to 0.84 & 0.68. An NRS improvement of 100% (LBP resolution) & 58% was noted. Both patients had a ≥20-point ODI improvement and both were "very satisfied" with the treatment. The younger patient discontinued (metamizol, ibuprofen) and the older one decreased by 50% (ibuprofen, tilidine, tramadol) consumption of pain medication. Safety compares favorably to other neurostimulation systems, and no lead migrations, infections, or hardware malfunction were observed.

Conclusions:
In these two patients, restorative neurostimulation has proven to be an effective, safe, and durable therapy for refractory, activity-limiting CLBP secondary to impaired multifidus neuromuscular control. Improvements did accrue progressively over time.

POSTOPERATIVE CSF LEAKS FOLLOWING THE TRANSITION FROM MICROSCOPIC TO ENDOSCOPIC TRANSPHENOIDAL SURGERY: A CASE SERIES ANALYSIS

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Objective:
The transition from microscopic to endoscopic TSS has been widely adopted, but its impact on CSF leak rates remains a subject of interest. This study aims to compare the incidence of postoperative cerebrospinal fluid (CSF) leaks following transsphenoidal surgery (TSS) using microscopic and endoscopic techniques over a 23-year period (2002–2025).

Material-Method:
A retrospective review of 386 pituitary surgeries was conducted, comprising 171 microscopic (44.3%) and 215 endoscopic (55.7%) approaches. Postoperative CSF leaks were identified and analyzed for their association with surgical technique, subsequent complications, and patient outcomes. Additionally, we studied the postoperative imaging of patients with postoperative CSF leaks.

Results: Out of the total number of patients, 12 (3.1%) developed postoperative CSF leaks. The microscopic transsphenoidal approach showed a higher incidence, with 10 patients (5.8%) experiencing postoperative CSF leaks, compared to 2 patients (0.9%) who underwent the endoscopic transsphenoidal approach. Of the 10 patients with postoperative CSF leaks in the microscopic group, 2 (20%) developed meningitis, one of which resulted in death. Among the 2 patients with CSF leaks following endoscopic surgery, one developed meningitis. Postoperative CSF leaks have been found to correlate with the size and consistency of the tumor. In microscopic transsphenoidal surgery, more extensive tissue dissection of the sphenoid sinus and skull base was performed in order to improve visualization.

Conclusion:
The transition from microscopic to endoscopic transsphenoidal surgery was associated with a significant reduction in postoperative CSF leaks. Our findings are consistent with the international literature, which reports postoperative CSF leak rates of 4-10% for microscopic transsphenoidal surgery and 1-3% for endoscopic transsphenoidal surgery.

PRESENTATION, MANAGEMENT STRATEGIES, AND OUTCOMES OF INTRACARDIAC CEMENT EMBOLISM FOLLOWING VERTEBRAL AUGMENTATION: A SYSTEMATIC REVIEW OF CASE REPORTS

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Objective:
Intracardiac cement embolism (ICE) is a rare, but potentially life-threatening complication of percutaneous vertebroplasty (PV), percutaneous kyphoplasty (PK), and augmented pedicle screw fixation. This systematic review aims to summarize and compare the management approaches and clinical outcomes of ICE.

Methods:
PRISMA guidelines were followed. Standard medical databases such as MEDLINE, Embase, Pubmed, and Cochrane Library were searched to find case reports or series on patients with ICE following PV, PK, or augmented fixations as there were no available randomised control trials on the subject. Data on patient demographics, embolus location, diagnostic modalities, management strategies, and outcomes were recorded.

Results:
67 case reports and 2 case series were included with 71 patients in total. 67 patients presented symptomatically with the most common complaints being chest pain and dyspnoea, the other 4 cases were incidentally discovered. Emboli were predominantly found in the right heart (69) and were primarily diagnosed via echocardiography or CT. Open heart surgery was the most adopted management strategy (46 cases, 100% retrieval success) especially in complicated symptomatic cases, while endovascular (11 cases, 73% retrieval success) or conservative approaches (14 cases, 2 mortalities) were reserved for asymptomatic cases with smaller emboli. Reported mortality was low across all patients,

but delayed diagnosis was associated with more severe cardiopulmonary complications.

Conclusions:
Open heart surgery seems to be the preferred, most effective intervention for ICE, while endovascular and conservative management may be viable in select cases. Earlier diagnosis is imperative for improving patient outcomes and preventing severe complications.

PRIMARY PARAGANGLIOMA OF THE LUMBAR SPINE: A CASE REPORT AND LITERATURE REVIEW

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Objective:
Paragangliomas are rare neuroendocrine tumors that originate from specialized neural crest cells in the cauda equina, fillum terminale region. Lumbar region paragangliomas are extremely rare. Since 2021, they were classified as "Cauda Equina Neuroendocrine Tumour", in the WHO classification.

Material:
A 36 years old female, was reffered to our clinic, from a private orthopaedic surgeon. She had a history of a couple of months of worsening sciatica. Her MRI of the lumbar Spine, revealed a L1-2, intradural tumour. She underwent total resection and she is now on follow-up.

Conclusions:
Since 2021 the WHO Classification board, has classified these tumour as "Cauda Equina Neuroendocrine Tumour", typically present as our case, rarely with acute paraparesis, or neuroendocrine symptoms due to catecholamine secretion. Endocrinology review and follow –up is needed in case of a paraganglioma. GrossTotal Resection is the treatment of choice.

Keywords:
Paraganglioma, Lumbar spine.

PROPHYLACTIC ANTI- EPILEPTIC DRUGS IN PRACTICING NEUROSURGERY: ARE WE FOLLOWING THE INDICATIONS?

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Objective:
Anti- epileptic drugs (AED) are frequently used in neurosurgery, aiming to lower the probability of seizures and hence prevent adverse effects on the patients. Although well-defined guidelines exist, a few physicians prescribe these drugs for a longer time period and/ or administer AEDs without indications. This practice may cause severe problems in patients' lives, reducing their quality of life and putting them at risk of developing side effects

Material- Method:
A literature review has been conducted. We suggest research on Greek neurosurgical committee and practitioners, in order to identify the adherence on the guidelines.

Results:
most specialists prescribed AED as prophylactic therapy for TBI and tumors. The most frequently used drug is levetiracetam, followed by benzodiazepines. Most physicians administer AED for any abnormal positive brain CT after TBI and for neoplasms occurring in the cerebral cortex. Monotherapy is most preferred, with the new AED becoming a second or third therapeutic option. Physicians who work in smaller and non- specialized health facilities are more likely to provide inappropriate prophylactic therapy.

Conclusion:
It is of utmost importance to follow the guidelines for prophylactic AED, in order to secure the safety of our patients. We believe that a survey in the Greek medical community may help us to raise the awareness among physicians regarding this issue.

RARE CASE OF A LUMBAR PARAGANGLIOMA AND LITERATURE REVIEW

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Objective:
Paraganglioma are tumors originating from paraganglia cells. They usually occur sporadically and involve the skull base and neck. This case report concerns a 36-year-old female patient with a paraganglioma in the lumbar spine. The patient had left-sided 04-05 nerve palsies, without weakness and without back pain. During operation, the tumor was intensely hemorrhagic and friable. The diagnosis of paraganglioma was made by pathological examination.

Material – Method:
Clinical excamination of the patient, operation and gross total resection of the tumor,pathological examination,case recording and report.

Results:
The diagnosis of spinal paragangliomas is rare and difficult. However, some patients may develop a paraganglioma in the lumbar spine and with proper treatment, the patient's symptoms may improve.

Conclusions:
There are few reports in the world literature on patients with paraganglioma in the lumbar spine. Knowledge of this case may increase the sensitivity of clinicians to the existence of similar cases.

RISK FACTORS FOR PACHYMENINGEAL FAILURE AFTER NEUROSURGICAL RESECTION AND ADJUVANT STEREOTACTIC RADIOSURGERY FOR BRAIN METASTASES

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Objective:
Neurosurgical resection (NS) followed by adjuvant stereotactic radiosurgery (SRS) is the standard of care for large brain metastases (BM). Pachymeningeal failure (PMF) is a recently recognized recurrence pattern, distinct from leptomeningeal failure (LMF), occurring in post-surgical SRS-treated patients. This study aimed to identify anatomical and surgical factors influencing PMF risk.

Material – Method:
A prospective database (2009–2021) was analyzed to identify patients who underwent NS + SRS for BM. Clinical, imaging, pathological, and treatment-related variables were evaluated. PMF incidence was assessed using a competing risks model.

Results:
Among 144 patients (median age: 62 years, range 23–90), PMF was observed in 21.5% (31/144). Significant PMF risk factors included female gender (HR 2.65, p=0.013), higher Graded Prognostic Assessment (GPA) index (HR 2.4, p<0.001), absence of prior radiation therapy (p=0.018), controlled extracranial disease (CED) (HR 3.46, p=0.0038), and tumor-pia/dura contact (PDC) (HR 3.30, p=0.0053). In PDC cases, wider target volumes correlated with reduced PMF risk. Multivariate analysis confirmed PDC (HR 3.51, p=0.0053), piecemeal resection (HR 2.38, p=0.027), and CED (HR 3.97, p=0.0016) as independent predictors of PMF. PMF was associated with decreased overall survival (HR 2.90, p<0.001), though its impact was less severe than LMF (HR 10.15, p<0.001).

Conclusions:
Tumor PDC and piecemeal resection are key risk factors for PMF in NS + SRS-treated patients. Wider dural radiotherapy coverage may reduce PMF risk in cases with PDC involvement. Further studies are needed to determine the role of CED in PMF development.

SCHWANNOMA OF THE CERVICAL SPINE: FROM DIAGNOSIS TO TREATMENT

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Objective:
Cervical spine lesions share similar clinical and imaging characteristics and their surgical treatment is dependent on their anatomic location and morphology. Therefore, our aim is to provide a diagnostic and therapeutic stepwise guide for intradural extramedullary Cervical Schwannomas

Methods:
A 65 years old patient with clinically and radiologically established cervical myelopathy was admitted and treated in our Department in October 2024. An MRI of the Cervical spine revealed an anterior intradural lesion extending from C4-5 to C5-6. A Left lower lung lobe lesion found upon CT and PET-CT along with MR Spectroscopy suggesting meningioma as the possible diagnosis, tangled our diagnosis.

Results:
Patient underwent an anterior cervical corpectomy of C5 vertebrae with opening of the dura, removal of the lesion with cage and screw fixation of C4-5 and C5-6 levels.

Post-operatively patient was significantly improved neurologically, walking without support, whilst the post-operative CT cervical spine was reassuring for the excision of the lesion along with the appropriate instrumentation of the cervical spine. Histopathology results confirmed the diagnosis of Cervical Schwannoma.

Conclusion:
Diagnosis of cervical lesions can be challenging and hence a targeted diagnostic workup with imaging and detailed clinical assessment is essential. The gold-standard treatment of the anterior intradural-extramedullary cervical schwannomas is the gross total excision of the lesion, with an anterior surgical approach.

SEQUESTERECTOMY VERSUS DISCECTOMY FOR LUMBAR DISC HERNIATION: A META-ANALYSIS

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Objective:
Lumbar disk herniation (LDH) is a common clinical entity affecting about 1% of the entire population every year. The purpose of this study is to provide a systematic review and meta-analysis of the studies comparing the safety and efficiency of the sequesterectomy vs discectomy in the management of LDH.

Material-Method:
The data collected included patient demographics, spinal level at which the operation occurred, duration of operation and hospital stay, outcome, recurrence rate as well as potential immediate and delayed complications.

Results:
A total of 18 original studies with a cumulative number of 4394 patients were identified. No statistically significant difference was found in the re-herniation and complication rate between the two groups (OR: 1.058, 95% CI: 0.726-1.541, p=.769 and OR: 1.399, 95% CI: 0.964-2.032, p=.077 respectively). The same applied for mean hospital stay (standard difference in means: 0.206, SE= 0.167, p= .219). In contrast, mean operating time was found to be significantly shorter in the sequesterectomy group (standard difference in means: 1.959, SE= 0.534, p< .001). VAS score for back pain two years after the operation was the only index that was significantly higher in patients with discectomy (standard difference in means: 0.348, SE= 0.172, p= .04).

Conclusions:
Based on the available data, the two approaches do not differ in terms of risk of re-herniation, reoperation rate and postoperative complications. Nevertheless, there appears to be a long-term advantage of sequesterectomy over discectomy in reducing back pain.

SINONASAL ADENOCARCINOMA WITH EXTENSIVE CRANIAL INVASION MANAGED WITH BIFRONTAL CRANIOTOMY AND TAILORED SKULL BASE RECONSTRUCTION: A CASE REPORT

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Objective:
Sinonasal carcinomas are rare tumors accounting for less than 3% of all head and neck malignancies. Histologically, they are divided into squamous cell carcinomas and adenocarcinomas, which originate either from respiratory surface epithelium or the underlying seromucinous glands (salivary type). Epithelial type adenocarcinomas are further divided into intestinal and non-intestinal

type. The former has been strongly associated with exposure to wood dust.

Material - Method:
We report the case of a 62-year-old male, who presented with progressive memory and behaviour disorder. The patient remarkably had been working as a carpenter for over 40 years. The MRI scan revealed a large extra-axial mass which invaded the ethmoid bone and extended to the left frontal sinus and nasal cavity.

Results:
A bifrontal craniotomy with cranialization of the frontal sinuses was performed. The extradural tumour was completely resected until the left nasal cavity was exposed, creating a large bony defect. The skull base reconstruction was achieved in a multilayered fashion (snthetic bones, fat, pericranium). Significantly, two synthetic bone grafts were adjusted to the correct size, placed one next to the other and fixed bilaterally to the surrounding healthy fossa in order to reconstruct the bony defect.

Conclusions:
An open skull base approach was opted for this patient due to the extensive intracranial involvement. The main challenge in this approach is the high risk of CSF leak due to the large bony defect formed after tumor removal. This case highlights the importance of a tailored reconsctruction strategy based on tumor`s extent and location.

SIZABLE CAVERNOUS ANGIOMA IN A PATIENT WITH MULTIPLE BRAIN ANGIOMAS

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Objective:
To present a case of a 29y.o female patient with a new cavernous angioma, several smallest brain angiomas and a history of suboccipital craniectomy for a pons cavernous angioma .

Material:
Upon arrival in the emergency department the patient had a right hemiparesis, central VII nerve paresis (existed from previous surgery) and generalized seizures. The brain imaging revealed a sizable cavernous angioma of the left frontal lobe and several smallest angiomas. The patient underwent left frontotemporal craniotomy with total resection of cavernous angioma. The operation was uneventful and the patient was transferred in the ICU for recovery.

Results:
The patient was extubated 24 hrs after the operation in the ICU and no new neurological deficits where observed. She was hospitalized post operative in the Neurosurgery Department for 10 days and was discharged seizure free with instruction for joining a physiotherapy program. Histological examination revealed a cavernous angioma. Two years after the operation the patient is neurologically stable and is being monitored for 2 new angiomas.

Conclusions:
Patients with cavernous angiomas must be monitored closely for recurrence to ensure early diagnosis and proper treatment. The history of prior operation does not change the patient prognosis.

SPONTANEOUS INTRACEREBRAL HEMORRHAGE AS THE INITIAL PRESENTATION OF GLIOBLASTOMA: A CASE REPORT

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Objective:
Spontaneous intracerebral hemorrhage (sICH) is an uncommon presentation of glioblastoma multiforme (GBM), occurring in 3.7%–7.2% of cases. While sICH is often attributed to hypertension or vascular malformations, underlying malignancies should be considered, particularly in atypical cases. We present a 60-year-old male with an unusual sICH location and minimal vascular risk factors, ultimately diagnosed with IDH- wild type GBM.

Material - Method:
A 60-year-old right-handed male with hypertension on triple therapy presented with acute right hemiplegia and expressive aphasia. CT revealed a 60cc left frontal hemorrhage (MFG, IFG) causing 4mm midline shift and pyramidal tract compression. CTA was negative for vascular anomalies, and contrast-enhanced CT showed no pathologic uptake. Given the mass effect, an urgent craniotomy was decided.

Results:
A corticectomy of the MFG was performed and the hematoma was aspirated. During surgery, the posteriormost region of the resection cavity displayed abnormal vascularization, discoloration, and friable tissue suggestive of neoplasia, prompting biopsy and inclusion in the resection. Hemostasis was achieved, revealing normal white matter. Postoperatively, the patient remained aphasic but showed motor recovery (MRC 3/5). Histopathology confirmed GBM.

Conclusions:

This case highlights the need for vigilance in sICH cases with atypical features. While hypertensive hemorrhage is common, neoplastic causes should be considered, especially when location, patient age, or imaging findings deviate from typical patterns. Early surgical intervention facilitated both hematoma evacuation and timely GBM diagnosis. This case also underscores the importance of obtaining intraoperative biopsy when suspicion arises, as prompt histopathological confirmation can significantly impact management and prognosis.

SPONTANEOUS SPINAL SUBDURAL HEMATOMA AT THE THORACOLUMBAR JUNCTION: A RARE CAUSE OF ACUTE PARAPARESIS REQUIRING URGENT INTERVENTION

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Objective:
Spinal subdural hematoma (SSDH) is a rare but serious cause of acute myelopathy, often presenting with sudden paraparesis, sensory disturbances, and, in some cases, sphincter dysfunction. While typically associated with trauma, anticoagulation, or vascular malformations, spontaneous SSDH is uncommon. Rapid diagnosis and early surgical intervention are crucial to prevent permanent neurological deficits.

Material - Method:
A 62-year-old female with a history of arterial hypertension presented with acute paraparesis and thoracolumbar pain. Neurological examination revealed asymmetrical lower limb weakness, more pronounced on the right, with bilateral sensory deficits and absent deep tendon reflexes. Sphincter function remained intact. MRI revealed a spinal subdural hematoma with its epicenter at the conus medullaris (T12–L1), extending superiorly into the lower thoracic spine. Angiographic evaluation ruled out vascular abnormalities.

Results:
The patient underwent posterior decompression with laminectomies from T11 to L2. Intraoperatively, no abnormal vessels were identified, and the subdural hematoma was extensively irrigated and aspirated from the conus medullaris and cauda equina. A meningoplasty with fascia was performed to facilitate decompression. Due to the involvement of the thoracolumbar junction, posterior transpedicular fixation from T11 to L2 was performed to maintain spinal stability and prevent postoperative deformity. Postoperatively, the patient had significant motor improvement. Follow-up MRI confirmed near-total hematoma evacuation and adequate decompression.

Conclusions:
Spontaneous SSDH at the thoracolumbar junction is a rare serious condition requiring urgent recognition and intervention. This case highlights the importance of early diagnosis, timely surgical decompression, and spinal stabilization when necessary to optimize neurological recovery and prevent long-term complications.

SURVIVAL AFTER SEVERE RESPIRATORY ACIDOSIS IN A CERVICAL SPINAL CORD INJURY PATIENT WITH PACEMAKER IMPLANTATION FOR LIFE-THREATENING BRADYCARDIA AND RECURRENT EPISODES OF ATELECTASIS

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Objective:
Life-threatening bradycardia is a well-documented complication of acute spinal cord injury (SCI), primarily due to disruption of supraspinal sympathetic pathways. Numerous case reports suggest that cardiac pacemaker implantation can serve as a definitive intervention for life-threatening bradycardia, potentially enhancing survival rates among patients with high-level spinal cord injuries.

Case summary:
A 51-year-old male was admitted following a motor vehicle accident that resulted in a severe C6–C7 fracture-translocation. Despite emergent laminectomy, the injury resulted in paraplegia of the lower extremities and severe paresis of the upper extremities. Postoperatively, the patient experienced multiple bradycardic arrest episodes necessitating resuscitation and initiation of an isoproterenol infusion. Early implantation of a cardiac pacemaker was performed as a prophylactic measure to prevent further bradycardic events. Due to the location of the injury, the patient experienced also multiple episodes of atelectasis, despite having undergone tracheostomy and being placed on mechanical ventilation. During a severe episode of atelectasis, the patient became unresponsive, cyanotic, and arterial blood gas analysis revealed severe respiratory acidosis with a pH of 6.8. It is likely that the patient would not have survived without pacemaker support, underscoring its potential to improve outcomes in patients with high cervical SCI, where multiple organ systems may be compromised.

Conclusions:
Patients with high-level SCI are at risk for cardiac arrest due to multiple mechanisms, including autonomic dysregulation and respiratory failure. Pacemaker implantation represents a critical safety intervention in selected cases, and future clinical guidelines should consider defining clear criteria for its use in this patient population.

TEMPORAL EXTRADURAL HEMATOMA MIMICKING MENINGIOMA IN AN OLD FEMALE PATIENT

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Objective:
Epidural hematoma (EDH) is present in about 1% of all head trauma admissions. We present a case of a patient with a temporal EDH mimicking meningioma.

Material - Methods:
A 79-year old female patient was transferred to the Emergency Department due to fall from standing height. Her Glasgow Coma Scale (GCS) score was 15/15. Her computed tomography (CT) scan showed a right temporal bone fracture and a hyperdense extradural lesion consistent with EDH. Investigation with intravenous contrast revealed vessel-like formations within the lesion which raised the suspicion of a meningioma. A second CT scan, the following day, showed no significant changes of this lesion. She was treated conservatively and was discharged home 4 days later.

Results:
Oxymoronically, a magnetic resonance imaging (MRI) study, 2 weeks later, wasn't helpful in the differentiation between the two lesions. Finally, in the CT scan one month later, the lesion almost disappeared, thus confirming the EDH diagnosis. Meningiomas are found in about 3% of the population and 1.8 times more often in females, whereas EDH is 4 times more frequent in males. Moreover, the median age of diagnosis of meningiomas is 65 years while EDH is rare after the age of 60 due to dura's adherence to the skull. In the acute phase, CT may not help in the differential diagnosis because EDH and not-calcified meningiomas have similar Hounsfield units range.

Conclusions:
Neurosurgeons should keep in mind that EDH is possible in the elderly and could rarely mimic other lesions such as meningiomas.

THE ROLE OF NEUROSURGERY IN PLASMACYTOMA AND MULTIPLE MYELOMA SPINE METASTASES

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Objective:
To evaluate the role of neurosurgery in patients with spinal metastases from plasmacytoma or multiple myeloma, focusing on indications, techniques, and clinical outcomes in the context of overall survival, local progression, post-treatment complications, and neurological outcomes.

Material – Method:
A systematic review was conducted following PRISMA guidelines and PICO framework on PubMed, and Scopus Library without a time filter. Inclusion criteria were original studies reporting on adult patients with plasmacytoma or multiple myeloma metastasis to the spine treated surgically, written in English, French or German. Exclusion criteria were case reports, reviews, letters to the editor, grey literature, pediatric population and studies that do not include data on key outcomes.

Results:
Our search yielded 353 studies out of which 60 duplicates were deleted. A total of 53 studies were included in the study and the rest met the exclusion criteria. Surgery was indicated for spinal cord compression, instability, and intractable pain. Neurological improvement was reported in the majority of patients with preoperative deficits. Most common interventions were decompressive laminectomy, posterior fixation, and vertebroplasty/kyphoplasty. Pain relief was consistently reported post-operatively, and posterior instrumentation was associated with longer survival in selected cases. The complication rates were low across studies.

Conclusions:
Neurosurgical management offers clinical benefit in selected cases in the context of instability or neurological compromise. An operation improves pain and function and may contribute to prolonged survival. Consequently, a multidisciplinary approach is essential, and future prospective studies are needed to establish optimal treatment strategy.

THE SPINAL ARTHRODESIS WITH INTRA-ARTICULAR FACET PROSTHESIS AS A METHOD OF SURGICAL MANAGEMENT OF THE DEGENERATIVE SPINE DISEASE: OUR EXPERIENCE

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Objective:
"Facet Wedge" technique or spinal arthrodesis with intra- articular facet prosthesis is an innovative minimal invasive technique in spinal surgery, which is becoming increasingly famous among neurosurgeons, due to its ease, effectiveness and safety. This procedure is used to implant specialized bolts through the facet joints of two or more vertebrae, locking the vertebrae together and stabilizing the spine.

Material- Method:
We provide our patients' characteristics and therapeutic plan. A case has been described thoroughly.

Results:
Between March 2021 to December 2023, 9 patients were treated in our department using interfacetal implants. In most cases, the prosthesis was placed in one segment, bilaterally. Compared with other spinal surgical methods, this technique showed shorter operative time, less perioperative hemorrhage, lower operative cost, lower hospitalization time and no incidence of surgical site infection. In terms of neurological symptoms, patients mentioned immediate relief, with early painless mobilization.

Conclusion:
The spinal arthrodesis with interfacetal intra-articular prosthesis is an alternative and effective method of surgical management of spinal instability. It allows less tissue damage, reduced blood loss, and a shorter recovery time. More research is needed in order to test its effectiveness in further spinal pathologies.

THE TRANSBASAL APPROACH: EXPANDING OPTIONS FOR COMPLEX CRANIAL SURGERY

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Objective:
Clival tumors, be it either meningiomas, chordomas, or craniopharyngiomas, classically pose a special challenge in neurosurgery. With the advent of modern, less invasive endoscopic techniques, more traditional, technically demanding approaches - particularly especially the transbasal approach, have recently taken a backseat. However, even though endoscopic techniques have streamlined clival surgery by reducing surgical time and the frequency for major complications, the narrow corridors through which this region is accessed may hinder the ability to achieve complete tumor resection. In contrast, the transbasal approach offers a wider surgical field with adequate exposure of the sensitive anatomical structures of the region and more angles of attack, allowing for maximized resections.

Material-Methods:
In this case series we present data on patients who underwent the transbasal approach between 2015-2025 in a tertiary neurosurgical center in Greece.

Results:
A total of 6 patients underwent the transbasal approach for the treatment of large clival chordomas (4 patients) and meningiomas (2 patients). Intraoperatively, certain techniques such as careful drilling of the skull base while avoiding the major arterial trunks and hypophyseal transposition are necessary for ensuring safe passage to the posterior fossa. Gross-total resection was achieved in 2 and almost complete in 4. The most common complication was post-surgical cerebrospinal fluid leaks and pneumocephalus, that required surgical treatment in 2 patients, while 4 patients also presented with transient diabetes insipidus and hypophyseal insufficiency.

Conclusions:
The transbasal approach remains a viable and effective surgical option for clival tumors when performed by experienced surgical teams. Careful patient selection, considering the anatomical and unique characteristics of each tumor, is crucial for optimizing outcomes.

THE USE OF 4.0mm UNIVERSAL CANNULATED COMPRESSION SCREWS IN THE FIXATION OF UNSTABLE ODONTOID FRACTURES. TECHNICAL NOTE

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Objective:
Type II Anderson-D'Alonzo fractures, with posterior displacement (>6mm) and a high risk of pseudarthrosis, are the most common indication for anterior screw fixation of the odontoid. However, the purchase of specialized odontoid fixation systems (e.g., the Apfelbaum Odontoid Fixation System, Ulrich Medical Instruments, etc.) is often difficult. We present our experience with the use of universal 4.0mm cannulated compression screws in the treatment of these fractures.

Material-Method:
Between 2023 and 2024, two patients were surgically treated at our Department for unstable type II Anderson-D'Alonzo fractures of the odontoid. Anterior screw fixation of the odontoid was performed according to Boehler. Due to the difficulty in obtaining specialized fixation systems, a Königsee universal screw system was used. A typical anterior cervical approach to the C2/3 junction was performed with the placement of a cannulated guide at the base of C2. Using a cannulated electric drill, a K-wire was placed under fluoroscopic guidance to the apex of the odontoid. The odontoid was then fixed with standard 4.0mm cannulated self-tapping compression screws.

Results:
The average duration of surgery was 50 minutes. Immediate postoperative course was uneventful. On follow-up at 6-8 months, no postoperative pseudarthrosis was observed. Radiological studies confirmed the desired position of the fixation materials and the healing of the fractures in the correct position, restoring stability at the craniovertebral junction.

Conclusions:
We believe that the use of universal 4.0mm cannulated compression screws is a good and safe alternative technique for the anterior screw fixation of unstable odontoid fractures.

THIRD VENTRICLE COLLOID CYSTS. INCLUSION CRITERIA FOR SURGERY AND APPROACH SELECTION FOR BETTER OUTCOME. SINGLE SURGEON'S EXPERIENCE

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Objective:
Colloid cysts are rare benign clinical entities, most of them found in the third ventricle with incidence estimated at 2–3 cases per million of population per year. Despite their benign nature, under certain circumstances they can become life threatening. The aim of the study is to show that early diagnosis and selection of the appropriate procedure is of great importance in the management of colloid cysts.

Material–Method:
The current study presents data acquired from one hospital in a 4-year period regarding the management of 36 colloid cysts by a single surgeon, of which 27 were treated surgically. The colloid cyst risk score (CCRS) was used to classify the non-urgent cases into high, moderate, and low risk before selecting surgical versus conservative management. The surgeon's learning curve, the size of the ventricles, the size of the cyst, the age of the patient, and the availability of equipment were considered for the selection of the type of procedure. Fully endoscopic approach was selected for 12 patients versus 16 interhemispheric transcallosal approaches.

Results:
Good recovery with gross total resection of the cyst was achieved in all the cases with only minor complications and no permanent neurological deficit.

Conclusion:
Early management for the urgent cases with hydrocephalus and selection of a tailored, patient-specific approach by experienced surgeons can ensure an excellent outcome.

THROMBOSED POSTERIOR INFERIOR CEREBELLAR ARTERY (PICA) DURING POSTERIOR FOSSA DECOMPRESSION: AN ILLUSTRATIVE CASE REPORT

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Objective:
Large posterior fossa cerebellar infarcts are usually a neurosurgical emergency due to compression of the fourth ventricle and obstructive hydrocephalus. Vertebrobasilar atherosclerotic disease and cardioembolism are the most common etiologies for these infarcts. Although modern imaging techniques can localize the affected areas, full illustration of thrombosed small vessels is commonly difficult.

Material - Method:
We present a 43-year-old patient with gradually decreased consciousness and an acute cerebellar infarct, with normal computed tomography angiography of the brain on admission.

Results:
An external ventricular drain was initially placed to manage the hydrocephalus. Due to further deterioration, the patient was submitted to posterior fossa decompressive craniectomy. Intraoperatively, a fully thrombosed PICA was detected. The patient returned intubated to the intensive care unit for further treatment.

Conclusions:
Thrombosed vessels causing infarcts are rarely visualised preoperatively. Images during surgeries aid in better comprehension of the underlying pathology and planning of the procedure.

TRAPPED FOURTH VENTRICLE IN SHUNTED HYDROCEPHALUS: A CASE ILLUSTRATION

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Background:
Trapped fourth ventricle (TFV) is a rare but significant complication of shunted hydrocephalus, characterized by progressive neurological deterioration due to cerebrospinal fluid (CSF) entrapment within the fourth ventricle.

Methods:
We present a 19-year-old male with a long history of five time revised shunt-related neonatal hydrocephalus who developed progressive neurological deterioration due to a trapped fourth ventricle and subsequent brainstem compression.

Results:
The patient was managed as soon as possible by inserting a new VP shunt in the fourth ventricle. Following the procedure, the patient demonstrated significant clinical improvement with resolution of symptoms and a good neurological recovery. Discussion is evolving regarding the pathophysiological mechanisms of this entity and potential therapeutic options.

Conclusions:
TFV is a rare but challenging condition in shunted hydrocephalic patients, necessitating individualized treatment approaches. In our patient, surgical intervention aimed at restoring normal CSF flow and relieving mass effect led to symptomatic improvement. This case underscores the importance of maintaining a high index of suspicion in patients with a history of multiple shunt revisions. Early imaging and tailored surgical management are critical to prevent irreversible neurological damage.

TREATMENT OF HEAD TRAUMA DUE TO GUNSHOT INJURY

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Objective:
Gunshot head injury is a relatively rare and usually fatal cause of penetrating brain injury. The extent of the damage depends on the type of the bullet, its diameter and its speed, while it is ranked among the most lethal of all firearm injuries.

Material - Method:
We present the case of a 44-year-old male with a gunshot head injury, admitted comatose and hemodynamically unstable with anisocoria on the left. He had a small entry site at the left occipital area and an extensive exit site at the left parietal area. The brain CT scan revealed a comminuted skull fracture with intracerebral bone fragments and haemorrhagic contusions. Urgent craniectomy, surgical wound debridement, haematoma and bone fragment removal, followed by primary wound closure, was performed.

Results:
Postoperatively, the patient was gradually fully awakened, although he had right hemiplegia and aphasia. The case was complicated by: (a) wound dehiscence and concurrent cerebrospinal fluid leakage, treated with surgical debridement and secondary wound closure using a vascularized flap and a free autologous partial-thickness skin graft, (b) Klebsiella wound infection, treated with combined intravenous and intrathecal antimicrobial treatment, and (c) subdural purulent effusion and wound dehiscence, treated with a modification of the intravenous treatment and surgical drainage of the effusion. Complete remission of the infection was achieved.

Conclusions:
Gunshot head injury cases are challenging and require treatment efforts from a multidisciplinary team. Immediate surgery and early recognition and treatment of the frequent complications are critical.

TREATMENT OF VENTRICULITIS-MENINGITIS VIA INTRATHECAL TYGECYCLINE

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Objective:
A 47-year-old male patient was admitted with a subarachnoid hemorrhage (Hunt and Hess grade V, Fisher scale 4) caused by a ruptured anterior communicating artery aneurysm. After intubation, an external ventricular drainage (EVD) was inserted. The patient remained in the intensive care unit for six months, during which several difficult treatment decisions were made.

Methods:
Initial attempts to secure the aneurysm with endovascular embolization were postponed due to a worsening respiratory condition. Second attempt, made 10 days later, was successful without complications. The EVD was closed after two weeks beacuse intracranial pressure improved and CT scans showed favorable results. The EVD was removed shortly afterward. A percutaneous tracheostomy was performed, but shortly after its placement, the patient's condition rapidly worsened. Infections led to high fever and hemodynamic instability. A new EVD was placed due to compromised cerebrospinal fluid (CSF) circulation and intracranial hypertension, revealing a central nervous system infection.

Results:
Infections of the CSF following EVD placement are a serious complication linked to high mortality and morbidity rates. Initial intrathecal antimicrobial therapy with colistin and amikacin proved ineffective. Tigecycline therapy was initiated, continuing for 21 days, which successfully sterilized the CSF. Although intraventricular tigecycline injection has not been extensively studied, it showed promise in this case.

Conclusions:
Ventriculitis and meningitis are severe conditions following neurosurgical interventions. Choosing the right antibiotic therapy presents a significant challenge for ICU teams. In this case, intrathecal tigecycline demonstrated potential as an effective treatment in specific instances. Further research is necessary to determine the optimal dosages and safety profiles.

TRUE SUPERFICIAL TEMPORAL ARTERY GIANT ANEURYSM: A RARE CASE REPORT

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Objective:
Traumatic aneurysms of the superficial temporal artery (STA) are often reported in the literature. On the contrary, spontaneous "true" STA giant aneurysms are quite rare. Here, we describe a case of spontaneous giant STA aneurysm of 50-mm diameter rapidly grown in short period that required excision in order to prevent further expansion.

Material - Method:
An 81-year-old male with a giant pulsatile mass of 50-mm diameter in the right temporal region presented to our outpatient clinic. The patient had no history of head trauma. Neurologically intact, he underwent a doppler ultrasound plus three dimensional (3D) CT angiography that revealed a true giant STA aneurysm partially thrombosed. The frontal branch of the STA was not visible through doppler but the parietal branch was patent despite a slight turbulence of blood flow in the huge aneurysm.

Results:
During the operation, a curvilinear incision was done in order to carefully expose and dissect the proximal STA. Bipolar cauterization and transection of the proximal end were followed by wide skeletonization of the mass from the surrounding dense connective tissue above the temporalis muscular fascia. Postoperatively,

the patient had a good recovery and satisfying cosmetic result.

Conclusions:
Spontaneous true STA aneurysms are rare and their course unpredictable. Through the case description, it is outlined the importance of 3D CTA even if the doppler US is negative. The hypothesis of an initial totally thrombosed giant aneurysm that recanalized and transformed rapidly in a giant partially thrombosed STA aneurysm should always kept in mind.

UTILITY OF ARTIFICIAL INTELLIGENCE (AI) AND MACHINE LEARNING (ML) IN INTRAOPERATIVE RAMAN SPECTROSCOPY (IRS) AND STIMULATED RAMAN HISTOLOGY (SRH) FOR NEAR REAL-TIME DIAGNOSIS IN CENTRAL NERVOUS SYSTEM (CNS) TUMOUR SURGERY-A SCOPING REVIEW

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Objectives:
Central nervous system (CNS) tumours pose significant surgical challenges given their highly infiltrative nature. Intraoperative Raman spectroscopy (iRS) enables molecular analysis of unprocessed tissue samples, distinguishing tumour from normal brain tissue based on vibrational spectral signatures. Stimulated Raman histology (SRH) provides cellular-level imaging of unprocessed tissue for histopathological assessment. However, both techniques require expert interpretation and are time-consuming.

Design. This review evaluates the application of Artificial intelligence (AI) and Machine Learning (ML) models in iRS and SRH, highlighting their potential in achieving near real-time intraoperative diagnosis and streamlining neurosurgical decision-making and workflows.

Subjects:
Six studies of 513 patients surgery were included in the review

Methods. Database searches identified studies on the utility of AI-ML models in iRS and SRH for CNS tumour surgery. Metrics including tumour margin detection, accuracy, sensitivity, specificity, and impact on intraoperative decision-making and workflows were analyzed.

Results:
SRH combined with Convolutional Neural Networks enabled near real-time histopathological diagnosis from fresh, unprocessed CNS tumour biopsies within operating theatres, reducing diagnosis time by 91.7% (2.5 minutes vs. 30 minutes), with an accuracy non-inferior to neuropathologists. Other ML models have achieved 93.9% accuracy in molecular subtyping of Isocitrate Dehydrogenase (IDH) and 1p/19q statuses in diffuse gliomas. In meningiomas, iRS augmented with supervised ML models distinguished infiltrated dura from healthy tissue with 95.44% specificity, maximizing extent of tumour resection. Some models outperformed 5-ALA fluorescence in glioblastoma diagnosis, increasing accuracy by 76% (p=0.0009). In Primary CNS Lymphoma versus glioblastoma, iRS with ML models achieved 89% sensitivity, guiding decisions on whether to proceed with surgical intervention. AI algorithms also improved iRS accuracy by filtering ambient light artifacts in operating theatres.

Conclusions:
The integration of AI-ML with iRS and SRH is a significant advancement in CNS tumour surgery, enhancing surgical workflows. Future research should refine AI algorithms and further validate clinical outcomes in neurosurgical practice.

VAGUS NERVE STIMULATION IN OBESITY: WHERE ARE WE?

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Objective:
Obesity has become a worldwide health issue, causing major life-threating pathologies and lowering the quality of life. Pharmacological therapeutic options have been researched, unfortunately with severe side effects and poor adherence. Bariatric surgery remains an option, but its indication concerns a very small proportion of patients. Vagus Nerve Stimulation (VNS) has emerged during the last decade, as a potential therapeutic approach for obesity due to its critical role in regulating appetite, metabolism, and digestion. By modulating vagal signaling, VNS can suppress appetite, enhance metabolic regulation, and delay gastric emptying, leading to reduced caloric intake and weight loss.

Material- Method:
A literature review has been conducted.

Results:
Studies have shown that VNS can influence the hypothalamus, promoting fat oxidation and improving glucose metabolism. Clinical trials, such as the ReCharge Trial, have demonstrated that implanted VNS devices lead to modest weight loss in obese patients, although the results are not as significant as those seen with bariatric surgery. VNS presents, also, several challenges (surgical technique, side effects, variable patient responsiveness)

Conclusion:
Further research is needed to optimize stimulation parameters, improve clinical efficacy, and compare VNS to established obesity treatments. While VNS shows promise in obesity management, it is not yet a first-line therapy, and more studies are required to determine its long-term benefits and broader clinical applications.

VERNET SYNDROME SECONDARY TO OCCIPITAL CONDYLE FRACTURE. CASE REPORT AND LITERATURE REVIEW

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Objective:
Vernet syndrome is a rare clinical condition characterized by lower nerve palsies of IX-X-XI cranial nerves mostly due to lesions, injuries or trauma affecting the craniocervical region.

Material:
Case report of a 70 year old patient, who presented with dysphagia, hoarseness and neck weakness after a road traffic accident. He suffered a left sided occipital condyle fracture.

Results:
The patient had suffered an occipital condyle fracture, with palsy of the cranial nerves IX-XI. Despite conservative treatment the palsies sustain, and he is now on gastrostomy. Literature review highlights key findings on Vernet syndrome etiology, clinical presentation, diagnostic imaging and treatment strategies.

Conclusion:
Occipital Condyle fractures are not minor injuries. They are often presented with lower cranial nerve palsies, conditions that can be

permanent, resulting in severe disability of patients

Keywords: Vernet syndrome, occipital condyle fracture, trauma, lower cranial nerve palsy.

EFFICACY OF PERCUTANEOUS LASER DISK DECOMPRESSION (PLDD) USING HO:YAG LASER. A 2 -YEAR FOLLOW- UP

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Introduction:
Disc herniation of intervertebral disc is a common cause of low back pain. It can lead to physical disability with significant impact on social life and economy. It has a high prevalence at the ages of 40 to 60 years old, especially those with strenuous physical activity, but affects also younger population.

Methods:
A total of 20 patients who met the criteria of PLDD underwent treatment between 2018-2020. Mean age was 40 years old.18 patients underwent one level PLDD and 2 patients two level PLDD. The severity of the pain was measured by the Numeric Visual Scale (NVS) and the Oswestry Disability Index (ODI). The size of the hernia was also measured at the same intervals. All patients had at least 2 years follow-up.

Purpose:
To retrospectively evaluate the effectiveness of Laser Disk Decompression (PLDD) using Ho:YAG laser in patients with low back pain or sciatica symptoms attributed to contained disk herniation.

Results:
Mean baseline pain score before treatment was 9, 2 +/- 0,8 NVS units. This was reduced to a mean value of 1.6 +/- 0.8 units. Additionally, there is a significant statistical differencefor hernia size and ODI score between pre and post procedure measurements.

Conclusion:
PLDD using Ho:YAG laser is a safeand effective minimally-invasive method for patients with chronic low back pain owing to disc protrusion, and thus can be considered as a suitable choice in treating those patients.

ΧΕΙΡΟΥΡΓΙΚΗ ΑΝΤΙΜΕΤΩΠΙΣΗ ΚΑΛΟΗΘΩΝ ΟΓΚΩΝ ΝΩΤΙΑΙΟΥ ΜΥΕΛΟΥ

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Στη σύγχρονη ιατρική πρακτική, η χειρουργική αντιμετώπιση καλοήθων όγκων του νωτιαίου μυελού, όπως τα νευρινώματα και τα μηνιγγιώματα, αποτελεί κρίσιμη πρόκληση για τους νευροχειρουργούς. Οι συγκεκριμένοι όγκοι μπορεί να προκαλέσουν συμπτώματα όπως πόνο, νευρολογικές διαταραχές και αστάθεια στη σπονδυλική στήλη, γεγονός που καθιστά απαραίτητη την έγκαιρη και σωστή διάγνωση και παρέμβαση.

Στην παρουσίαση μας, θα αναλύσουμε την κλινική εμπειρία του τμήματος Νευροχειρουργικής του Metropolitan στο χειρουργικό χειρισμό αυτών των όγκων, εστιάζοντας σε:

1. Διαγνωστικές μεθόδους:
Χρήση απεικονιστικών τεχνικών για την ακριβή εκτίμηση των όγκων και τον προγραμματισμό της χειρουργικής παρέμβασης.

2. Χειρουργικές τεχνικές:
Στρατηγικές για την αφαίρεση των νευρινωμάτων και μηνιγγιωμάτων, με έμφαση στη διατήρηση της μυϊκής και αισθητικής λειτουργίας του ασθενούς.

3. Αστάθεια της Σπονδυλικής Στήλης:
Ανάλυση σπάνιων περιπτώσεων αστάθειας που μπορεί να προκύψουν από την παρουσία όγκων, συμπεριλαμβανομένων των χειρουργικών τεχνικών για την αποκατάσταση της σταθερότητας.

Θα παρουσιαστούν επίσης κλινικά περιστατικά που δείχνουν τη σημασία της εξατομικευμένης προσέγγισης στα χειρουργικά πρωτόκολλα, καθώς και τα αποτελέσματα που προκύπτουν από την εμπειρία μας. Η προσοχή μας εστιάζεται στην ελαχιστοποίηση των επιπλοκών και τη βελτίωση της ποιότητας ζωής των ασθενών.

Η ανταλλαγή γνώσεων και πρακτικών σχετικά με τη χειρουργική αντιμετώπιση των καλοήθων όγκων του νωτιαίου μυελού και τις συναφείς προκλήσεις θα συμβάλλει στη βελτίωση των θεραπευτικών στρατηγικών και στην προαγωγή της κλινικής πρακτικής στο πεδίο της νευροχειρουργικής.

DESIGN AND CONSTRUCTION OF A HAND SUPPORT SYSTEM FOR MICRO-NEUROSURGICAL PROCEDURES

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Objective:
The neurosurgeon is often required to operate under magnification through the surgical microscope, for many hours. This results in the emergence, after several hours, of what is known as "finger fatigue tremor," which hinders the safe continuation of the surgery. To address this issue, we designed and constructed a hand support system using inexpensive materials.

Material-Method:
A common walking cane was chosen, made of aluminum with a telescopic mechanism allowing height adjustment from 0.89 to 1.00m. Additionally, it is equipped with a special rotating four-pronged base with stand-up type suction cups. This design allows the cane to stand wherever it is placed, while also permitting rotation around its axis without losing balance. The maximum permissible load for suspension is 125kg. The handgrip at the top of the cane was removed, and a custom horizontal tube (40cm in length & 5cm in diameter), appropriately padded for comfortable support of both hands/wrists of the surgeon, was attached and stabilized.

Results:
The above system was used in 32 neurosurgical procedures (aneurysms, AVMs, brain tumors, etc.) with absolute success, without any dysfunctional or ergonomic application issues. The construction allowed the surgeon's hands to approach and move away from the surgical field while providing support and rest during the procedure. The system was sterilized using sterilized square sheets that were tied to the bottom of the cane.

Conclusions:
The appropriate selection, combined with the tailored modification of inexpensive materials to suit specific needs, can offer practical solutions in certain cases.

ENDOSCOPIC AND MICROSCOPIC RESECTION OF COLLOID CYSTS: A SINGLE CENTER EXPERIENCE

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Introduction:
Colloid cysts of the third ventricle are rare, benign lesions that can lead to obstructive hydrocephalus and neurological symptoms. The optimal surgical approach—endoscopic or microscopic—remains debated. This study presents our clinic's experience in managing colloid cysts using both techniques. Methods: A retrospective review of patients treated for colloid cysts at our clinic was conducted between the last four years. A total of 16 patients underwent surgical resection: 7 via endoscopic removal and 9 using microscopic surgery. Patient demographics, surgical outcomes, complications, and recurrence rates were analysed.

Results:
Overall, both techniques yielded favorable outcomes. The endoscopic group demonstrated shorter duration of hospitalization, with fewer postoperative complications. Endoscopic removal was typically accompanied by standard ETV and septostomy, diminishing the need for future shunting. Microscopic resection via transcallosal route provided shorter operative durations in larger lesions (>1.5cm) but was associated with longer recovery periods. Septostomy and occasionally third ventriculostomy were also performed. One patient needed a permanent shunt post-operatively. No recurrence was observed in either approach.

Conclusions:
Our experience suggests that both endoscopic and microscopic resection are effective for colloid cyst management. Endoscopic surgery offers a minimally invasive alternative with faster recovery, while microscopic surgery ensures meticulous removal in select cases. A tailored approach based on cyst size, location, and patient factors is recommended.

EVOLUTION OF MINIMALLY INVASIVE LATERAL SACROILIAC FUSION - FROM X-RAYS TO ROBOTICS.

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Introduction:
Sacro-iliac (SI) joint dysfunction is considered to be one of the causes of low back and/or leg pain in patients with failed back surgery syndrome (FBSS). SI joint fixation and fusion is a therapeutic option for patients in whom conservative treatment failed.

Material and methods:
From 2015 to 2024, we performed minimally invasive lateral fixation on 53 SI joints of 31 patients. All patients underwent a strict diagnostic protocol based on the failure of conservative management of FBSS at a single chronic pain center. Evaluation of pain signs, positive provocative maneuvers, negative radiological evaluation of spine and hip joints (X-rays and MRI), psychological and PET-NAF CT evaluation, quantitative gait analysis, positive SI joint injections, and informed consent comprised the selection strategy of patients for surgery. The first two patients were treated using intraoperative X-ray navigation, the following 13 patients were operated using intraoperative CT-guided control, and the final sixteen patients were treated using robotically guided screw insertion.

Results:
One patient in the CT-guided group had temporary S1 dysesthesia due to K-wire migration. No other intra- or postoperative complications were identified. In all groups, there was not a single case of screw malposition. The robotic guided technique of SI fusion reduced operating time and skin incision, eliminated radiation exposure to the surgical team, and enhanced procedure safety by eliminating the risk of K-wire migration. There were no clinical differences in the outcome, with all groups experiencing a reduction in ODI score of approximately 20 points.

Conclusion:
In selected cases of FBSS, SI fixation and fusion are beneficial. The robotic guide insertion technique increased surgical efficiency and patient safety. Based on strict indication criteria, regardless of the type of navigation procedure, the clinical outcomes are identical.

THE WILTSE APPROACH: A TARGETED SOLUTION FOR LUMBAR FAR-LATERAL DISC HERNIATIONS

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Objective:
Lumbar far-lateral disc herniations account for 5%–10% of all lumbar disc herniations. The Wiltse approach, a paraspinal surgical technique, is less frequently utilized compared to the conventional midline approach but offers significant advantages in the treatment of these specific disc herniations. This study aims to highlight the advantages of the Wiltse approach and to present clinical outcomes from our experience.

Material- Method:
A retrospective analysis was performed on patients treated surgically for degenerative extra-foraminal lumbar disc herniations at the General Hospital of Nikaia-Piraeus from 2023 to the present. All procedures utilized the Wiltse approach in combination with microdiscectomy. Pain levels were assessed using the Visual Analog Scale (VAS).

Results:
A cohort of six patients (F/M: 2/4) with a mean age of 51 years underwent the Wiltse approach for lumbar far-lateral disc herniations that were symptomatic and had failed conservative treatments. The herniation levels were L5-S1 in three patients, L4-L5 in two patients and L3-L4 in one patient. The mean postoperative VAS score was 7.6 on the second day, and 1.8 on the seventh postoperative day. The mean duration of hospital stay was 3 days. No significant intraoperative or postoperative complications occurred throughout the study period.

Conclusions:
The Wiltse approach is a highly effective surgical option for treating far-lateral disc herniations, providing direct access to the affected area. Postoperatively, our patients experienced an increase in the VAS score due to the manipulation of the paraspinal muscles. This approach is a valuable tool in the arsenal of spinal surgery.

TRANSORBITAL NEUROENDSOCOPIC SURGERY (TONES): PRESENTATION OF TECHNIQUE AND ILLUSTRATION OF A CLINICAL CASE OF FRONTAL SINUS MENINGOENCEPHALOCELE

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Objective:
To present the transorbital neuroendoscopic approach (TONES) as a minimally invasive alternative for the treatment of anterior skull base defects.

Materials and Methods:
We used 2 formalin cadavers and performed endoscopic dissections of the anterior cranial fossa (ACF), using a superolateral transorbital corridor. TONES was applied to test the feasibility of the approach in accessing the lateral anterior skull base. We conducted a retrospective review of a clinical case in which a meningoencephalocele, resulting from a defect in the medial orbital roof, was treated with via TONES.

Results:
Cadaveric dissections showed that TONES affords good access to the orbital part of anterior skull base. TONES was applied to a 42 year old female patient that presented with recurrent unilateral CSF rhinorrhea from a defect in the anterior skull base. The procedure lasted 1.5 hours. Blood loss was less than 200ml. The patient recovered without complications, exhibited no postoperative CSF leakage or neurological deficits, and was discharged on postoperative day three. At the three-month follow-up, she remained asymptomatic with no recurrence.

Conclusion:
TONES offers a safe and effective minimally invasive alternative for treating anterior skull base defects, without the complications associated with traditional approaches. Its utilization should be considered in selected cases where the defects located lateral to the cribiform plate.

PLACEMENT OF SENSOR TECHNOLOGY IMPLANT FOR TELEMETRIC MEASUREMENT OF INTRACRANIAL PRESSURE IN A PEDIATRIC ONCOLOGY PATIENT WITH COMPLICATED HYDROCEPHALUS

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Objective:
The frequency of hydrocephalus in pediatric neurosurgery patients is very high and affects severely the majority of them, since headaches and unspecific clinical and neurological symptoms cannot be positively related to possible overdrainage or underdrainage mechanism. Determining the ICP would be extremely valuable for shunt evaluation in these patients. In our study, we evaluated a novel telemetric device to individually adjust shunt valve settings according to ICP measurements.

Material:
We present the case of a 14 year-old female patient undergoing oncological therapy due to an intraventricular brain malignancy. Following shunt placement, the patient, despite serial shunt evaluations and pressure readjustments, showed repeated clinical signs of unstable ICP and radiological images of over- and underdrainage. Inevitably she underwent multiple revisions. Different valve mechanisms were tested and several adjustments were made unfortunately with no enduring effect. Due to the variable presentation of clinical and neurological signs and eventually a gradual deterioration of her neurological state, we integrated a sensor technology implant for telemetric measurement of the ICP in continuance with her shunt.

Results:
Multiple single and continuous measurements of ICP made it possible to adjust properly the valve mechanism opening pressure resulting in improvement of her clinical state, while securing the requisite time for the ventricular system to adapt without risking any neurological sequelae.

Conclusions:
The implantable sensor device with telemetric readout of the ICP is a promising tool in the treatment of complex cases hydrocephalus. It can improve the outcome of patients suffering from drainage-related problems, by allowing neurosurgeons draw conclusions about the functionality of the shunt system, avoiding multiple radiological examinations and reducing the rate of revisions.


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