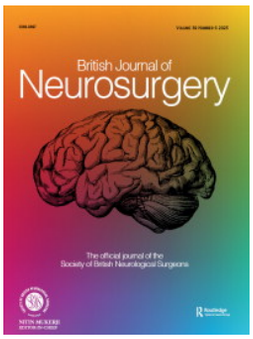

British Journal of Neurosurgery

ISSN: 0268-8697 (Print) 1360-046X (Online) Journal homepage: www.tandfonline.com/journals/ibjn20

Proceedings of the 2025 Autumn Meeting of the Society of British Neurological Surgeons

Carole Turner

To cite this article: Carole Turner (06 Nov 2025): Proceedings of the 2025 Autumn Meeting of the Society of British Neurological Surgeons, British Journal of Neurosurgery, DOI: 10.1080/02688697.2025.2577527

To link to this article: https://doi.org/10.1080/02688697.2025.2577527

BRITISH JOURNAL OF NEUROSURGERY
https://doi.org/10.1080/02688697.2025.2577527

Taylor & Francis
Taylor & Francis Group

PROCEEDINGS

Proceedings of the 2025 Autumn Meeting of the Society of British Neurological Surgeons

This meeting was hosted by Southmead Hospital, Bristol, 24th–26th September 2025 at the Ashton Gate Stadium, Bristol. The full abstracts of the platform presentations are followed by the titles of those submissions accepted as e-posters. The order of abstracts is that of presentation. Any papers in the programme that were not presented to the society at the meeting have not been published.

MAIN LECTURE THEATRE
WEDS 24TH SEPT
WM1 HOT TOPICS
WM1-1

Landscape and feasibility of NHS brain tumour whole genome sequencing: Tessa Jowell BRAIN MATRIX interim analysis

V. Wykes[a,b], L. Abell[a], J. Savage[a], R. Mant[a], A. Kirkham[a], O. Ansorge[c,d], G. Thompson[e], A. Waldman[e], L. Billingham[a], C. Watts[a,b] and Tessa Jowell BRAIN MATRIX Investigators

[a]University of Birmingham, Birmingham, UK; [b]Queen Elizabeth Hospital Birmingham, Birmingham, UK; [c]University of Oxford, Oxford, UK; [d]Oxford University Hospitals NHS Trust, Oxford, UK; [e]University of Edinburgh, Edinburgh, UK

Objective: Review of patients with glioma in terms of presenting symptoms, first medical contact, neurosurgical respective outcomes and whole genome sequencing (WGS) access.
Design: The Tessa Jowell BRAIN MATRIX platform study (TJBM-NCT04274283) aims to improve the knowledge of and treatment for glioma, by providing an integrated molecular diagnosis using standard-of-care WGS and facilitating interventional clinical trial recruitment.
Subjects: First 500 patients from 11 centres recruited to the TJBM study (14/Dec/2020–31/Jan/2025; recruitment ongoing).
Method: Data snapshot 30/Apr/2025. Interim analysis conducted in *R* version *4.3.1*.
Results:

- For 500 recruited patients: median age is 57 years (interquartile range 45–66); male gender 62%, ethnicity self-reported as White (92%), Asian (3%), Black/Caribbean or African (2%), other ethnic group (2%).
- Patients with glioma presented predominantly to the Emergency Department (68%) or General Practice (24%). Commonest symptoms included headache (45%), seizures (41%), cognitive change (29%), speech difficulties (29%), weakness or paralysis (26%). Over half (54%) of patients received CT head as first diagnostic imaging modality.
- Extent of glioma resection defined as gross-total resection was achieved in 22% of patients. Near-total resection (>90% but <100%), subtotal resection (20–90%), and debulking surgery (<50% resection) was achieved in 42, 24 and 7%, respectively. Less than 5% of patients had an open-/needle-biopsy, for predominantly WHO grade 4 glioma.
- The integrated histological-molecular diagnosis is adult diffuse glioma in 97%, comprising high grade glioma (85%).
- Currently, 161 (40%) of the 379 patients registered at English TJBM centres have a completed WGS report. Median time from sample collection to WGS report is 193 days (interquartile range 98–405).

Conclusion:

- Inequality and logistical challenges in the NHS WGS pathway hinder timely and uniform access for glioma patients across the UK.
- The TJBM infrastructure provides a trial-competent network to evaluate innovative models of genomic care and implement emerging genomic technologies.

WM1-2

Green neuro-oncology: a carbon footprint analysis

S. Momin[a,b], S. Jagadeesan[a], J. Worrall[a] and E. Albanese[a]

[a]Royal Stoke University Hospital, Stoke-on-Trent, UK; [b]University of Birmingham, Birmingham, UK

Objective: Remote consultations are an increasingly common method of delivering outpatient care throughout the NHS, accelerated by digital innovation and the COVID-19 pandemic. This approach supports the NHS's environmental sustainability objectives, reportedly saving between 0.70 and 372 kg CO_2-equivalent per consultation. However, in neurosurgical practice – particularly in neuro-oncology where in-person clinical assessment is integral to management decisions – the effectiveness of telephone consultations remain uncertain.

Design: Retrospective single-centre series of outpatient consultations conducted by a single neuro-oncology neurosurgeon (EA) throughout the entire 2024 calendar year.
Subjects: Neurosurgical patients under neuro-oncology outpatient review (new and follow-up).
Method: Appointment modality (telephone or face-to-face) and consultation type (new or follow-up) were recorded. Patients' perspectives on the mode of appointment were collected informally. Carbon footprint was calculated using published estimates and contextualised using into real-world comparators.
Results: During the study period, 568 patients attended 74 clinics. Of these, 347 (61%) consultations were via telephone, with 273 (79%) being follow-up appointments. Of the 221 face-to-face appointments, 131 (59%) were follow-up. Patient experiences were comparable across both formats. Interim analysis showed that patients with stable non-malignant pathology were predominantly selected for new and follow-up telephone appointments. There were no safety events in either group. Each telephone consultation saved a median estimated 7.13kg CO_2. Extrapolated to the total telephone appointment population, total CO_2 savings for all telephone appointments equated to the emissions from a round-trip drive from London to Beijing, China.
Conclusion: Remote neurosurgical consultations can reduce environmental impact without compromising patient safety. Further work will evaluate patient-level factors influencing appointment modality and provide an updated carbon footprint analysis.

WM1-3

Timing is everything: outcomes for external ventricular drain procedures relative to index operations in HES data

D. Thompson[a,b], A. Helmy[a] and D. Cromwell[c]
[a]Cambridge University Hospitals, Cambridge, UK; [b]Southmead Hospital, Bristol, UK; [c]London School of Hygiene and Tropical Medicine, London, UK

Objective: External ventricular drain (EVD) insertion is a common neurosurgical procedure performed for diverse indications. While often used in outcome benchmarking, EVD cohorts are typically treated as homogeneous despite variation in pathology and timing of insertion. This study aimed to stratify patients including by the temporal relationship between EVD and other neurosurgical procedures to assess implications for risk adjustment and performance comparison.
Design: We conducted a retrospective cohort study using Hospital Episode Statistics (HES) data linked to the Office for National Statistics death registry.
Subjects: Adult patients ($\geq$18 years) undergoing EVD insertion at NHS neurosurgical centres in England between April 2013 and March 2020 were included. Patients were categorised by the timing of EVD relative to an index neurosurgical procedure: EVD-only, EVD-before, EVD-same-day, and EVD-after.
Method: Outcomes included 90-day mortality, 30-day readmission, and length of stay (LOS). Logistic regression assessed predictors of 90-day mortality. Quantile regression and funnel plots were used for unit-level performance comparisons.
Results: The cohort included 10,239 patients: 28.8% EVD-only, 21.8% EVD-before, 33.5% EVD-same-day, and 16.0% EVD-after. Overall 90-day mortality was 26.7%, ranging from 19.7% (EVD-same-day) to 43.2% (EVD-only). Logistic regression identified age, comorbidity, admission type, neurosurgical category, and EVD timing as significant predictors (AUC: 0.71). Kaplan-Meier analysis showed early mortality concentrated in the EVD-only group. Median LOS was 21 days (IQR: 10–38), and 30-day readmission rate was 8.5%. Risk-adjusted funnel plots revealed inter-unit variation in outcomes, which narrowed after adjustment.
Conclusion: EVD insertion defines a high-risk, heterogeneous neurosurgical cohort with substantial variation in mortality, LOS, and readmission across centres. Stratifying by EVD timing improves risk adjustment and may support fairer performance benchmarking. EVD timing could serve as a proxy for disease severity and improve how we compare the performance between centres through the lens of this common Neurosurgical procedure.

WM1-4

Data still birth! One of the lowest coding data captures by a health board – a closed loop audit of spinal trauma treated by instrumented surgeries and associated coding in a major trauma centre

S. Prakash, R. Vemaraju and S. Ahuja
University Hospital of Wales, Cardiff, UK

Objective: The yearly activity data displayed on the Welsh health ministry dashboard revealed 0 cases of spinal trauma operations registered for the previous financial year despite a substantial amount of spinal surgical activity. We wanted to investigate the reasons behind it.
Design: A retrospective analysis of coding practices of all spinal trauma surgeries was performed for the financial year 2023/2024. Significant factors were identified and interventions applied prospectively.
Subjects: All spinal trauma cases treated with instrumented surgery were assessed for the financial year 2023/2024 and: 2024/2025.
Method: A simple Microsoft Excel based analysis was carried out comparing the two financial years.
Results: For the financial year 2023/2024, a total of 110 patients who underwent spinal surgical procedures were identified. This excluded discectomies/decompressions for cauda equina syndrome, wound wash outs, CSF leak repairs and removal of metal work. The Bluespier system which is used for recording operation notes had only produced relevant ICD 10 and OPCS codes for 6 cases. The coding department struggling with staff shortages, poor IT infrastructure

were unable to get these 6 cases for HRG coding due to delays of more than 6 months, which led to the health ministry dashboard registering the number '0' for spinal trauma cases for the only major trauma centre in Wales. Given the financial constraints of the health boards to provide more resources, it was decided that a consultant and a senior spinal fellow audits the codes monthly before sending data to the coding department. For the financial year 2024/2025, 122 spinal trauma instrumented cases were identified. Appropriate codes were applied by the consultant and the senior fellow. In spite of these 4 cases could not be coded due to lack of good operative notes.

Conclusion: Basic HRG code without CC codes (HC20H) amounts to a minimum payment of GBP7651/case. In 2023/2024 the hospital lost GBP 841,610 in revenue which underlines the importance of dedicating resources to coding.

WM1-5

The consultant neurosurgery workforce in the UK: demographics, pressures and future directions from the 2023 royal college of surgeons workforce census

A.-V. Gherman and I. Kamaly-Asl
Royal Manchester Children's Hospital, Manchester, UK

Objective: To evaluate the workforce, challenges and future direction of neurosurgery at a consultant level in the UK.

Design: Cross-sectional analysis of consultant-level data from the Royal College of Surgeons England 2023 Surgical Workforce Census.

Subjects: Consultant neurosurgeons from across the UK who responded to the RCSE 2023 census survey. Comparative data from consultant in other surgical specialties were also analysed.

Method: Data analysed included consultant demographics, job description including elective and on call responsibilities, operative time, supporting professional activities, perceived challenges and future directions.

Results: 222 Consultant neurosurgeons responded to the census survey. Neurosurgery had the lowest proportion of female consultants (12.3%) across all surgical specialties (vs. 26.8%, $p = 0.0001$). Most consultants were aged 45–54, 80% identifying as White British/White other and 65.5% were British graduates. 7.2% Have both NHS and University appointments and 10.7% work less than full time. Access to theatre was reported as the top challenge by 72.4%—significantly higher than other specialties ($p = 0.0001$). A substantial 84.7% have on call duties, yet only 33.5% are free from elective duties during these periods (vs. 52% across other specialties, $p = 0.0001$). 62.1% Neurosurgery consultants had only 1–1.5 SPAs and 29.4% have 2–2.5 SPAs, significantly lower than the 36.75% average of other specialties ($p < 0.05$). 8.5% Neurosurgery consultants reported having no SPAs, significantly higher than the other specialties ($p < 0.05$). More than three quarters exceeded their contracted hours and only 50.2% used their full annual leave. 44.5% had considered leaving their role in the past year. Burnout and stress, financial pressures, systemic workplace inefficiencies were frequent cited challenges.

Conclusion: UK consultant neurosurgeons face high workload, inadequate theatre access, gender imbalance, and limited non-clinical time, as highlighted through the RCS 2023 Census findings. All of these have an impact on job satisfaction, retention and workforce planning, which in a high-stake specialty like neurosurgery need to be addressed to secure a sustainable future of British neurosurgery.

WM2 SHORT ORALS
WM2-1

Multi-disciplinary management of spontaneous and complex post-op spinal infection with antibiotics – is 6 weeks the magic number? Experience of a tertiary spinal centre

A. Basnet[a], O. Kouli[a], S. Lofthouse[a], J. Leahy[a], S. Larkin[a,b], D. Carter[a] and N. Carleton-Bland[a]
[a]The Walton Centre, Liverpool, UK; [b]Liverpool University Hospital, Liverpool, UK

WM2-2

Intra-operative colour Doppler ultrasound for spinal dural arteriovenous fistulas: a convenient method for surgical re-assurance

T. Hoy
Townsville University Hospital, Townsville, Australia

Objective: Spinal dural arteriovenous fistulas (dAVF) are the most common spinal vascular malformation. dAVF are characterised via digital subtraction angiogram (DSA) though treatment is usually through surgical disconnection via a laminectomy, durotomy, and resection of the visible fistula with the aid of indocyanine green angiography (ICG). A less common technique we have used is the use of intra-operative colour Doppler ultrasound (IOUS) prior to the durotomy and post resection to address several challenges.

Results:

- The DSA only defines the anatomy of the dAVF in isolation. Pre-durotomy IOUS provides real-time information about its relationship to the cord and surrounding structures and ensures the correct level is being operated on, the bony exposure is adequate, and that the durotomy is appropriately sized and positioned. Intra-operative DSA can also be used for this purpose though this is a more resource heavy technique.
- Though ICG helps define the fistulous point and that it has been disconnected, any arterialised veins anterior to the cord cannot be visualised. IOUS can be performed before and after fistulous

disconnection to confirm these vessels have changed from high flow dilated veins to low flow, narrower ones. If this is not seen, the surgeon can attempt further disconnection of the fistula, or search for occult second fistulous points. Otherwise, incomplete disconnection may only be seen on the post-op DSA, requiring a second operation.
- ICG requires the use of a compatible microscope with fluorescein capabilities, which may not always be available. IOUS can be used as a cheap substitute.

Conclusion: IOUS is a cheap, user friendly technique which provides re-assurance that the fistula has been appropriately disconnected in real time. We have performed this technique on three patients in our unit and look forward to sharing intra-operative videos and hope others will adopt and develop this technique further.

WM2-3

Clinical and radiological outcomes following cervical disc replacement

H. Vakil, A. Zolnourian, M. Susruta, K. Kavi, R. Suckling, M. Baraka, M. Sampson and E. Shenouda

Southampton University Hospital NHS Trust, Southampton, UK

Objective: This study aimed to evaluate the clinical and radiological outcomes following anterior cervical disc replacement.
Design: A retrospective single-surgeon cohort study (2007–2024) evaluating 125 ACDR cases assessed clinical outcomes, radiographic motion preservation, and complications, revealing significant functional improvements, low complication rates, and durable motion preservation over long-term follow-up.
Subjects: Anterior cervical disc replacement, cervical radiculopathy, myelopathy, motion preservation, clinical outcomes, radiological analysis, long-term follow-up.
Method: This retrospective cohort study evaluated the outcomes of ACDR performed by a single surgeon over a 17-year period, focusing on clinical efficacy, radiological parameters, and complication rates. Patients who underwent ACDR between 2007 and 2024 were identified from a single-surgeon database. Data collected included demographics, surgical indications, Visual Analogue Scale (VAS) scores for arm and neck pain, Neck Disability Index (NDI), and Nurick grades. Annual dynamic cervical spine X-rays assessed angular motion, evidence of fusion, and heterotopic ossification. Complications were also recorded and analysed.
Results: A total of 125 patients were included, with 50% female and a mean age of 44 years (range 28–76). Single-level ACDR was performed in 85.6%, and 14.4% underwent multi-level procedures. Median pre-operative NDI was 28.5, improving significantly to 4 post-operatively. VAS scores showed marked improvement, with medians decreasing from 6 to 1. Radiological analysis revealed preserved angular motion post-operatively, with a mean of 4.5 degrees. Heterotopic ossification was observed in 32% of patients but did not significantly impact clinical outcomes. Complication rates were low, with no adverse events affecting long-term results.
Conclusion: This study with a longest study follow-up in the literature,17 years, highlights cervical disc replacement as an effective surgical intervention, offering substantial improvements in pain and disability. Careful patient selection ensures low complication rates, minimal loss of cervical motion, and delayed or avoided fusion in most cases. Long-term outcomes further validate the procedure's durability and effectiveness.

WM2-4

Artificial intelligence in paediatric scoliosis surgery: systematic review of predictive models and neurosurgical implications

C. Fung Chiu

University of Buckingham, Crewe, UK

Objective: To evaluate the effectiveness of artificial intelligence (AI) models in predicting postoperative rehabilitation outcomes in paediatric patients undergoing posterior spinal fusion (PSF) for adolescent idiopathic scoliosis (AIS). To assess the accuracy of AI models in forecasting postoperative spinal alignment and identifying key predictors of clinical outcomes.
Design: Systematic review conducted in accordance with PRISMA guidelines.
Subjects: Paediatric patients (<18 years) with AIS treated by PSF. Two studies were included: one multicentre cohort ($n = 455$) and one institutional cohort ($n = 425$).
Method: Following PRISMA guidelines, comprehensive searches were conducted across PubMed, Cochrane, Embase, Medline, and The Spine Journal using terms related to paediatric scoliosis, posterior spinal fusion, and predictive analytics. Of 1,127 articles screened, two studies met inclusion criteria, focusing on patients under 18 undergoing PSF with AI-based outcome prediction. Models were assessed using area under the receiver operating characteristic curve (AUROC), mean absolute error (MAE), mean squared error (MSE), expected calibration error (ECE), and SHapley Additive exPlanations (SHAP) values.
Results: The first study ($n = 455$) tested six machine learning models across 171 preoperative features; XGBoost achieved AUROCs of 0.86 (6 months), 0.84 (1 year), and 0.83 (2 years), with ECE improving from 0.2138 to 0.0362 post-calibration. SHAP analysis identified thoracic apical translation, T1 tilt, and baseline pain as key predictors. The second study ($n = 425$) compared four deep learning models; the MLP model yielded the lowest MAE (2.43) and MSE (11.76), demonstrating robust convergence but lacking external validation.
Conclusion: Despite limited evidence, current findings highlight AI's potential to enhance precision, safety, and personalization in paediatric scoliosis surgery. Future research should focus on using large, multicentre datasets, including

measures like the minimal clinically important difference (MCID), and developing tools that can be used directly in clinical settings to support real-time decision-making.

WM2-5

Screening for post-operative dysphagia and dysphonia in patients undergoing anterior cervical spine surgery to improve diagnosis and reporting

C. K. Au-Yeung[a], Y. A. Chowdhury[b], N. Furtado[a] and C. Dawson[a]

[a]Queen Elizabeth Hospital, Birmingham, UK; [b]King's College Hospital, London, UK

Objective: Retrospective service evaluation at our centre over 14 months revealed 11% (11/103) patients who underwent anterior cervical spine surgery (ACSS) developed new-onset dysphagia, and 6% (6/103) had dysphonia. Inconsistent screening of eating/drinking tolerance and voice quality post-operatively may lead to under-reporting of symptoms and delay SLT referrals, compromising patient care. Our aim is to design a training session to improve awareness and documentation of dysphagia and dysphonia among multidisciplinary team (MDT) and assess whether this revealed a higher and more accurate incidence.
Design: Re-audit, retrospective study
Method: Following MDT training, we re-audited the documentation of dysphagia and dysphonia screening and frequency of SLT referrals. A 'Look, Feel, Move' framework for cranial nerves IX and X examination was introduced to educate, standardize practice and encourage systematic screening.
Results: During December 2022 to September 2024, 73 patients (58% males, mean age =53, range =17–79) underwent ACSS. Dysphagia: 15% (11/73) had new dysphagia and referred to SLT. Swallowing severity ranged from RBHOS 1 to 8 (mean RBHOS =6). Swallowing screening rates increased from 60 to 67% by nurses; and 35–67% by neurosurgeons. Dysphonia: 4% (3/73) developed new-onset dysphonia post-operatively; including one patient with unilateral vocal cord palsy. Nurse screening rate increased from 0 to 15%, and neurosurgeon screening from 28 to 75%. Despite improved screening rates, 4/8 patients with documented odynophagia and/or hoarseness were not referred to SLT.
Conclusion: There was an increase of dysphagia and dysphonia screening rates post-intervention across nursing and surgical teams, with a corresponding small increase of incidence from the first round of service evaluation. However, gaps remain in referral practices, as 50% of symptomatic patients were not referred to SLT. Despite small sample size, our findings highlight the need for a robust and clearly defined screening and referral pathway to accurately capture and address dysphagia and dysphonia in our ACSS cohort.

WM2-6

Optimising postoperative spine outcomes: an umbrella review of enhanced recovery after spinal surgery (ERASS) protocols

D. Sescu[a], D. Dahiya[b], L. Scaramuzzo[c], S. Corluka[d], S. Muthu[e], S. Cho[f], Z. Buser[g], S. Yoon[h] and A. Demetriades[i]

[a]University of Aberdeen, Aberdeen, UK; [b]Aberdeen Royal Infirmary, Aberdeen, UK; [c]Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Rome, Italy; [d]University Hospital Centre Sestre Milosrdnice, Zagreb, Croatia; [e]Meenakshi Medical College Hospital and Research Institute, Chennai, India; [f]Icahn School of Medicine at Mount Sinai, New York, NY, USA; [g]NYU Grossman School of Medicine, New York, NY, USA; [h]Emory University, Atlanta, GA, USA; [i]Royal Infirmary Edinburgh, Edinburgh, UK

Objective: Enhanced Recovery After Surgery (ERAS) protocols aim to improve recovery, reduce complications, and optimise surgical outcomes. Despite their growing adoption in spinal surgery, no standardised ERAS for spinal surgery (ERASS) exists, and evidence synthesis is limited. This umbrella review consolidates findings from systematic reviews (SRs) and meta-analyses (MAs) to evaluate the clinical and economic impact of ERASS and identify gaps for future research.
Design: Umbrella review (review of reviews)
Method: A systematic search of Ovid MEDLINE, Embase, Cochrane Database of Systematic Reviews, Centre for Reviews and Dissemination, and Web of Science (1990–2024) identified SRs and MAs assessing ERASS protocols. Data extraction followed PRISMA and PRIOR guidelines, with methodological quality assessed using AMSTAR-2 and ROBIS. Overlapping primary studies were removed before recalculating pooled meta-analytic estimates using fixed or random-effects models based on heterogeneity. Primary outcomes included hospital length of stay (LOS), postoperative complications, readmission rates, healthcare costs, patient-reported pain scores, and opioid consumption.
Results: Seventeen SRs and 55 MAs, covering 319 primary studies ($n = 221{,}605$ participants), were analysed. ERASS significantly reduced LOS (−1.55 days; 95% CI, −1.83 to −1.27; $p < 0.01$), postoperative complications (RR =0.61; 95% CI, 0.52–0.72; $p < 0.01$), opioid consumption (−7.26 mg morphine equivalents; 95% CI, −10.82 to −3.70 mg; $p < 0.01$), healthcare costs (−$1,029.41 per patient; 95% CI, −1,630.17 to −$428.65; $p < 0.01$). Readmission rates were not significantly impacted (RR =0.91; $p = 0.38$). Patient-reported pain scores showed a modest, non-significant reduction (−0.27; 95% CI, −0.66 to 0.13; $p = 0.19$). High heterogeneity was observed, reflecting differences in ERASS protocols and study designs.
Conclusion: ERASS protocols significantly reduce LOS, complications, opioid use, and costs, supporting their broader implementation in spinal surgery. However, variations in protocol components and inconsistent reporting highlight the need for standardised ERASS guidelines. Future research should focus on optimising under-represented ERASS elements, addressing heterogeneity, and incorporating long-term functional and patient-reported outcomes.

WM2-7

Back in the game: return to sport after lumbar spine surgery

D. Dahiya[a,b], R. Zhan[a] and A. Demetriades[a,c]
[a]Edinburgh Spinal Surgery Outcomes Study Group, Edinburgh, UK; [b]Aberdeen Royal Infirmary, Aberdeen, UK; [c]Edinburgh Royal Infirmary, Edinburgh, UK

Objective: To synthesise evidence on return to play (RTP) rates and timelines in athletes undergoing lumbar spine surgery and to compare outcomes across surgical procedures.
Design: Systematic review conducted in accordance with PRISMA 2020 and PERSiST guidelines.
Subjects: Competitive and recreational athletes undergoing lumbar discectomy, spinal fusion, direct pars repair, or total disc replacement (TDR) for lumbar disc herniation, spondylolysis, spondylolisthesis, or degenerative disc disease.
Method: A comprehensive search of PubMed, MEDLINE, EMBASE and Cochrane Library was performed in May 2025. Studies were included if they reported RTP outcomes in athletes post-lumbar surgery. Data on RTP rates and time to RTP were extracted and analysed. Risk of bias was assessed using the Newcastle–Ottawa Scale and JBI checklist.
Results: Ninety studies were included. Discectomy ($n = 1436$) showed an RTP rate of 80.3%, with a mean time of 4.7 months. Minimally invasive techniques such as percutaneous endoscopic discectomy and microendoscopic discectomy had shorter RTP times (3.3 and 2.5 months, respectively). Fusion ($n = 225$) had the lowest RTP rate (72.9%) and the longest mean RTP time (7.9 months). Direct pars repair ($n = 303$) achieved an 85.8% RTP rate with a mean of 6.7 months. TDR ($n = 124$) showed the highest RTP rate (88.7%) and shortest RTP time (3.7 months). Considerable heterogeneity existed in RTP definitions and rehabilitation protocols.
Conclusion: Discectomy and TDR are associated with the most favourable RTP profiles in athletes, while fusion and pars repair involve longer recoveries. This review provides evidence-based estimates to guide surgical decision-making and athlete counselling. Standardised RTP definitions and sport-specific research are essential for advancing care in this population.

WM2-8
WITHDRAWN

WM2-9

Outcome of bladder function after delayed surgery for cauda equina syndrome: a single centre study

M. R. Hassan and M. Dherijha
Salford Royal Hospital, Manchester, UK

Objective: To evaluate outcome of bladder function in cauda equina syndrome patients who underwent surgery after 2 weeks of onset of bladder dysfunction. To compare outcome of bladder function in CES patients who had surgery before and after 2 weeks of onset of bladder dysfunction.
Subjects: CES patients who received surgical treatment at Salford Royal Hospital from January 2022 to December 2023.
Method: In this retrospective study information was collected from hospital database in regard to bladder function on admission and discharge and at follow up.
Results: 137 CES patients with bladder dysfunction were included. Duration of bladder symptoms was stratified into 2 groups: 2 weeks and 2 weeks or more. 122 Patients had surgery within 2 weeks of onset of bladder dysfunction and 15 patients had surgery after 2 weeks. Time to decompression was an important prognostic factor for bladder function. However, improvement was observed in patients who were operated even after 2 weeks of symptom onset.
Conclusion: The presented data demostrate that bladder fucntion improves with surgical intervenrtion even after delayed presentation. This will help clinicians to make management plan and inform patients about postoperative outcome more realistically.

WM2-10

Single-institution experience of dynamic (flexion–extension) cervical spine MRI in cervical myeloradiculopathy: impact on clinical management and outcomes

G. A. Selvan, A. Faizan, M. Ali, A. Shaikh and V. Sivasubramaniam
St George's Hospital, London, UK

Objective: Standard cervical spine MRI in a neutral position may miss dynamic pathologies such as positional cord compression, ligamentous buckling, or occult canal narrowing—particularly when imaging is non-concordant with ongoing symptoms of cervical myeloradiculopathy. This study evaluates whether flexion–extension MRI improves detection of such occult compressions and influences surgical decision-making.
Design: Retrospective observational study.
Subjects: All patients who were treated at St George's and had dynamic MRI studies.
Method: A retrospective analysis of all cervical dynamic MRI scans performed over the last two years was conducted. Radiological parameters were assessed, including changes in canal diameter and presence of cord signal changes. These were correlated with subsequent changes in management and post-operative outcomes, measured using the modified Japanese Orthopaedic Association (mJOA) score.
Results: Dynamic MRI revealed additional spinal cord compression or instability in 27% of cases not evident on

standard neutral imaging. Based on these findings, 28% of patients who were initially not scheduled for surgery had their treatment plans revised and underwent surgical intervention. Overall, 33% of patients proceeded to surgery, with 80% reporting significant symptom improvement or resolution postoperatively. Patients with cord signal changes had an average canal diameter reduction of 19% on dynamic views, compared to 12% in those without signal changes. No adverse events were associated with dynamic MRI.

Conclusion: Dynamic cervical MRI offers valuable diagnostic and prognostic insights in selected patients with myeloradiculopathy, particularly when standard imaging is inconclusive. Significant dynamic compression correlates with cord signal changes and justifies changes in surgical planning. Incorporating dynamic MRI into routine evaluation in select cases can enhance detection of surgically relevant pathology, guide targeted intervention, and improve patient outcomes.

WM2-11

Genetic mutations in sporadic skull base meningiomas: a systematic review and meta-analysis

Y. Verma[a], A. Khanom[b], T. Dawson[c], G. Roberts[c], N. Gurusinghe[c] and A. Alalade[c]

[a]Western General Hospital, Edinburgh, UK; [b]University of Liverpool, Liverpool, UK; [c]Royal Preston Hospital, Preston, UK

Objective: Meningiomas are CNS neoplasms with diverse biological behaviours which has resulted in increasing emphasis on the genetic and molecular characterisation of these tumours. Other than NF2 inactivation, multiple non-NF2 mutations have also been identified. Literature shows that these mutations potentially influence meningioma location, histology and WHO grade. We performed a systematic review and meta-analysis to identify genetic mutations in sporadic meningiomas. We focused on the correlation between genetic mutations and tumour location, histopathological features and WHO grade.

Design: Systematic review and meta-analysis.

Method: 15 Articles were included. Univariate analysis was performed to identify potential associations between genetic mutations and clinical, pathological and molecular characteristics. Non-parametric chi squared tests were used to analyse individual mutations.

Results: 328 Sporadic meningiomas were identified. NF2 mutations were associated with convexity and falcine/parasagittal tumour locations ($p < 0.001$) and grade I histology ($p < 0.001$). CDKN2A/B mutations were linked with convexity localisation ($p < 0.001$) and high-grade tumour histology ($p < 0.001$). AKT1 mutated tumors were associated with meningothelial and transitional histology ($p = 0.017$). KLF4 mutations were associated with middle and posterior skull base localisation ($p = 0.031$) and meningothelial histology ($p = 0.034$). TRAF7 mutations were associated with skull base localisation ($p < 0.001$) and grade I meningothelial and transitional histology ($p < 0.001$). TERT mutations are associated with convexity localisation ($p < 0.001$) and higher WHO grade ($p < 0.001$).

Conclusion: To our knowledge, we present the first systematic review that demonstrates significant associations between mutational profile and tumour localisation, histology and WHO grade, distinguishing between peripheral and skull base meningiomas. We show that genetic alterations underpin meningioma biopathology and thereby influence their aggressiveness, recurrence risk and overall survival. These mutations may play a role in improved diagnosis, inform prognosis and potentially improve therapeutics, in the era of precision medicine.

WM2-12

Outcomes following transsphenoidal surgery for non-functioning pituitary macroadenomas in patients over 75 years old: 10 year tertiary-centre experience

M. Veremu[a], N. Wang[b], C. S. Gillespie[a], Y. Chedid[a], D. Borsetto[c], A. S. Powlson[d], M. Gurnell[d], R. Mannion[a], T. Santarius[a] and A. Kolias[a]

[a]Division of Neurosurgery, Department of Clinical Neurosciences, University of Cambridge and Addenbrooke's Hospital, Cambridge, UK; [b]University of Cambridge, Cambridge, UK; [c]Department of Otolaryngology-Head & Neck Surgery, Cambridge University Hospitals, Cambridge, UK; [d]Metabolic Research Laboratories, Institute of Metabolic Science, University of Cambridge and Cambridge NIHR Biomedical Research Centre, Addenbrooke's Hospital, Cambridge, UK

Objective: To evaluate surgical intent and visual outcomes in elderly patients with Non-Functioning Pituitary macro adenomas (NFA's) undergoing transsphenoidal surgery (TSS).

Design: Retrospective observational cohort study.

Subjects: Consecutive NFA patients aged >75 who underwent TSS between October 2014 and October 2024 at a tertiary neurosurgery centre (Addenbrooke's Hospital, Cambridge, UK). Patients with apoplexy or secreting tumours were excluded.

Method: Surgical outcomes, visual acuity (VA), visual fields (VF), and retinal nerve fibre layer (RNFL) thickness (if available) were assessed pre- and post-operatively, with changes identified.

Results: 33 Patients (66 eyes) were included (mean age 79.6 years [SD 3.64]; 72.7% male). The most common indication for surgery was progressive tumour growth with documented visual impairment. At baseline, 90.9% had VA or VF impairment (30/33); mean RNFL thickness (available in 17/33) was 73.9 μm (SD 14.3, range 46–100). Vision improved in 43.3% (13/30) postoperatively; 6.1% (2/33) worsened (2 in worsened VF) and 54.5% (18/33) remained stable. On review of the post-op baseline imaging, 22 pts (66.7%) had complete or near total resection and 10 (30.3%) had small remnant

disease (1 did not have a post-op MRI due to a pacemaker). Four patients had a post-op CSF leak, all of which required further intervention. Three patients had temporary post-op SIADH. One patient required new long term hormone replacement post-operatively. Two re-operations occurred: one early for a haematoma and one 17 months later for growth of remnant. No perioperative deaths occurred. Patients were stratified by surgical indication: (A= 28pts) progressive tumour growth with documented visual impairment vs. (B = 5pts) tumour growth without documented visual impairment. Between groups A and B, group A had significantly lower mean pre-op RNFL thickness (70.4 vs. 90.2 μm, $p = 0.024$).

Conclusion: TSS in patients over 75 years old is safe and can result in stabilisation or improvement of vision.

WM2-13

Outcomes of primary versus secondary percutaneous intervention for trigeminal neuralgia

Y. Guo, R. Mannion and M. Guilfoyle
Addenbrooke's Hospital, Cambridge, UK

Objective: To compare the recurrence and retreatment after percutaneous procedures (radiofrequency ablation and glycerol rhizotomy) for trigeminal neuralgia.

Design: A retrospective audit.

Subjects: 306 Percutaneous procedures, comprising 242 radiofrequency ablations (RFA) and 64 glycerol rhizotomies (GZ) performed on patients with trigeminal neuralgia (TN) at a single tertiary centre between November 2014 and January 2025.

Method: Demographic, procedural and outcome data were collected for all included interventions. Rates of retreatment at 12, 24 and 60 months were analysed, stratified by primary versus secondary interventions.

Results: Mean patient age was 71.5 ± 11.15 years, with 62.1% female. 111 Procedures were primary percutaneous intervention; 22 had prior microvascular decompression and 1 had previous gamma knife stereotactic radiosurgery (SRS). 195 Were secondary percutaneous interventions following a previous RFA or GZ. Single division lesions were performed in 50.4% of RFA procedures. Among the 306 procedures, permanent reduction in sensation of some degree was reported in 12.1% of patients. One patient developed meningitis (0.3%) and there were 7 puncture-site haematomas that resolved without intervention (2.3%). Repeat intervention rates for recurrence of TN at 12, 24 and 60 months after a primary RFA or GZ were 23.4, 34.2 and 41.4%, respectively. Most patients (82.6%) underwent repeat percutaneous lesioning; 15.2% instead were offered microvascular decompression and 2.2% were referred for SRS. For secondary percutaneous interventions, the subsequent repeat treatment rates were 24.6% at 12 months, 44.1% at 24 months, and 57.4% at 60 months.

Conclusion: Following primary percutaneous treatment for TN around a quarter of patients will need reintervention within one year and around a third by two years, but a substantial proportion have longer term relief from pain. Sustained benefit is lower following secondary procedures but it is effective for the majority of patients at two years. Treatment of TN with RFA/GZ is very safe.

WM2-14

Deep brain stimulation for dystonia – the Bristol experience

J. Yuen, E. Tan, M. Boca and R. Ashida
Southmead Hospital, Bristol, UK

Objective: Dystonia is a debilitating movement disorder with multiple different aetiologies. Refractory cases have been reported to be successfully managed by deep brain stimulation (DBS). In our centre, we employ the technique of asleep direct image-guided DBS implantation with robotic assistance. Here we report the experience in our tertiary centre in Bristol.

Design: Retrospective, single-centre.

Subjects: Dystonia patients treated with DBS.

Method: Data between 2013 and 2021 was collected retrospectively using hospital medical records. Cases were subcategorised into primary generalised, secondary generalised and focal subtypes. Burke-Fahn-Marsden Dystonia Rating Scale (BFMRS) was assessed at baseline and one year post-DBS for generalised dystonia, while Toronto Western Spasmodic Torticollis Rating Scale (TWSTRS) was applied for cervical dystonia.

Results: 50 Cases were identified. Mean age was 50 yrs ([17–75] yrs), with 56% male. Mean duration from onset of symptoms to operation was 22.2 yrs ([4–54] yrs). DBS targets employed included mainly globus pallidus internus (74%), as well as others such as subthalamic nucleus, zona incerta, centromedian nucleus of the thalamus. For primary generalised subtypes ($n = 12$), the average reduction in BFMRS score was 61.0% ($p = 0.015$). For secondary generalised subtypes ($n = 5$), the average reduction in BFMRS score was 24.0% ($p = 0.133$). For cervical dystonia ($n = 31$), the average reduction in TWSTRS score was 55.9% ($p < 0.001$). Seven patients required readmission due to complications (three due to infection and others due to discomfort or hardware issues). The main limitations of the study are limited sample size, retrospective nature and missing values due to non-standardised post-operative assessments.

Conclusion: Our results confirm that DBS is a robust therapeutic option for different subtypes of refractory dystonia. Further studies would help to delineate the optimal targets for different subtypes, as well as the optimal timing for surgery.

WM2-15

Surgical outcomes of microvascular decompression of the facial nerve for hemifacial spasm

R. Moon, R. Ashida, N. Slator and N. Patel
North Bristol NHS Trust, Bristol, UK

Objective: Microvascular decompression of the facial nerve is the only definitive treatment option available for hemifacial spasm. We present our experience in a 16-year patient cohort.
Design: Retrospective cohort study.
Subjects: All patients undergoing microvascular decompression of the facial nerve, September 2007 – December 2023, in a single tertiary neurosurgical centre.
Method: Retrospective review of clinical, radiological and neuro-physiological data. All patients underwent surgical decompression via retrosigmoid minicraniotomy with intra-operative lateral spread (LSR) and brainstem auditory evoked response recording.
Results: 151 patients underwent microvascular decompression of the facial nerve during the study timeframe, with full follow-up data available for 124. Of these, 74% were female, mean age at surgery was 54 years, and 15% were revision cases. Median duration of symptoms was 6 years. All patients had a pre-operative LSR, which intra-operatively was abolished in 99 cases (80%), partially abolished in 13 (10%), and unrecordable/uninterpretable in 6 (5%). Neurovascular compression was due to PICA in 54 cases, AICA in 63, vertebral artery in 15, and Teflon in 9. At follow-up 10 patients (8%) reported hearing reduction. Two patients required surgical re-exploration for CSF leak and 2 patients suffered intra-operative haemorrhage. Of the 105 patients undergoing primary MVD, 103 (98%) reported significant symptomatic benefit (65 cure, 38 partial response). 2 Patients had no response to initial surgery. At follow-up, 86 (82%) reported significant symptomatic benefit (69 cure/near complete alleviation, 17 partial response). 17 patients (16%) underwent revision surgery. Of the 19 patients having revision MVD, 18 (95%) had significant symptomatic improvement (12 cure, 6 partial response). At follow-up, 18 (95%) still had significant improvement (13 cure/near complete alleviation, 5 partial response). Age, symptom duration/severity, severity of intra-operative compression or abolition of LSR were not associated with long term outcome.
Conclusion: We report an overall symptomatic improvement rate of 83% following microvascular decompression of the facial nerve. Revision decompression offers excellent response rates for those patients with persistent spasm and evidence of persisting LSR.

WM2-16

Deep brain stimulation in schizophrenia- a systematic review

A. Bashir[a], J. Sivakumaran[b], G. Amirthalingam[c], K. Sivakumaran[d], V. Phillips[e], A. Raslan[f] and K Ashkan[f]

[a]Worcestershire Acute Hospitals NHS Trust, Worcester, UK; [b]James Paget University Hospital NHS Foundation Trust, Great Yarmouth, UK; [c]Salford Royal Hospital Northern Care Alliance NHS Trust, Salford, UK; [d]Imperial College London, London, UK; [e]University of Cambridge, Cambridge, UK; [f]King's College Hospital NHS Foundation Trust, London, UK

Objective: Schizophrenia affects ~1% of the population, with 30% classified as treatment-resistant (TRS). Deep Brain Stimulation (DBS), studied in OCD and tic disorder previously, has been proposed for TRS, though clinical outcomes remain inconsistent. This systematic review evaluates clinical and preclinical evidence on DBS in schizophrenia, examining underlying mechanisms, optimal cerebral targets, and effects exerted on psychotic as well as general cognitive symptoms.
Design: Systematic review of clinical and preclinical studies investigating DBS for schizophrenia.
Subjects: Patients with schizophrenia undergoing DBS and animal models of schizophrenia used to explore DBS mechanisms, targets, and effects.
Method: A systematic search of PubMed, Scopus, Web of Science, Embase, and Cochrane Library was conducted for English-language studies published up to February 2025. The search strategy was peer-reviewed using the PRESS checklist. Twenty-one studies met inclusion criteria: six clinical and fifteen preclinical. References were managed using EndNote 21 with the Bramer method for de-duplication, and screening was performed in Rayyan. Data extraction focused on symptom changes, cognitive outcomes, and neurophysiological effects. The review process adhered to PRISMA and PRISMA-S guidelines.
Results: Clinical studies showed variable improvements in positive symptoms with DBS targeting the Nucleus Accumbens (NAcc), Subgenual Cingulate Gyrus (SCG), and Substantia Nigra Pars Reticulata (SNr). NAcc stimulation yielded the most consistent benefits; SCG was associated with modest functional gains; SNr resulted in complete hallucination remission in one case. Side effects were mild and transient. Preclinical studies demonstrated that DBS modulates schizophrenia-relevant circuits, reduces psychosis-like behaviours, abnormal oscillatory activity, and neuroinflammation. Stimulation of the Medial Prefrontal Cortex (mPFC), Medial Septal Nucleus (MSN), and NAcc improved cognition, sensory processing, and network synchrony.
Conclusion: DBS holds promise for TRS, particularly for positive symptoms and cognitive deficits. NAcc stimulation appears most consistently beneficial. However, variability in outcomes and the limited number of high-quality clinical trials underscore the need for well-powered randomized-controlled trials targeting the NAcc and other potential therapeutic targets.

PARALLEL SESSION
WP1
SHORT ORALS

WP1-1
WITHDRAWN

WP1-2
WITHDRAWN

WP1-3

External validation of the Liverpool Head Injury Tomography Score for mild traumatic brain injury

M. Kingham[a], C. Gillespie[a,b], M. Veremu[a], Y. Chedid[b], W. Cook[a,b], D. Clark[a,b], V. Newcombe[b], P. Hutchinson[a,b], C. McMahon[c] and A. Joannides[a,b]

[a]Department of Neurosurgery, Addenbrooke's Hospital, Cambridge, UK; [b]Department of Clinical Neurosciences, University of Cambridge, Cambridge, UK; [c]Department of Neurosurgery, The Walton Centre NHS Foundation Trust, Liverpool, UK

Objective: Mild traumatic brain injury (mTBI) referrals make up a significant proportion of the on-call workload for neurosurgeons. This study aimed to externally validate a radiological scoring system to define a 'clinically significant' mild TBI and evaluate its impact on referrals, if implemented.
Design: Retrospective, single-centre external validation study
Subjects: 1547 mTBI referrals to a tertiary trauma centre, over the age of 16 years were included in the study and used to validate the score.
Method: Retrospective, external validation of the Liverpool Head Injury Tomography Score (LIV-HITS). Consecutive neurosurgery referrals to a tertiary trauma centre for mild TBI were included (1st January 2022–1st August 2022). Patient demographics, mechanism of injury, LIV-HITS and management decision were identified, and diagnostic accuracy determined.
Results: 147 (9.5%) of Referrals were accepted for transfer, and 1400 (89.5%) were designated as local management. LIV-HITS was 99.3% sensitive and 43.9% specific, with a positive predictive value of 15.7% and negative predictive value of 99.8%. Discriminatory power of the model was fair (AUC: 0.71, 95% CI 0.66–0.76). In 6 months, the score identified 615 referrals (39.8%) that could have been successfully managed without neurosurgical input if the scoring system was used.
Conclusion: LIV-HITS is over 99% sensitive at excluding a clinically significant mild TBI in an externally validated cohort. However, discriminatory power of the score is poor. Utilising the score in clinical practice could lead to a 40% reduction in mild TBI referrals, whilst identifying potentially clinically significant mild TBI that would warrant neurosurgical consideration.

WP1-4

Surgical management of cavernous malformations in eloquent areas: a 10-year single-centre retrospective case-series

G. Vavoulis, A. Tsitlakidis, B. Almasarwah, T. Vogiatzoglou, K. Rados, E. Nikolaou, A. Diakogeorgiou, A. Mitropoulos and K. Vlachos

KAT Attica General Hospital, Kifisia, Greece

Objective: Despite the anatomical challenges, surgery is effective and safe for treating symptomatic cavernous malformations (CMs) in eloquent areas, such as the brainstem and spinal cord. This study aims to assess the clinical outcomes and complication profiles of patients undergoing resection of such lesions.
Design: Retrospective surgical case series.
Subjects: Cases treated for a CM in an eloquent central nervous system area from June 2015 to May 2025.
Method: Retrospective data collection on patient demographics, CM location, surgical approach, postoperative length of stay (LOS), outcome and complications.
Results: Eleven patients (mean age 55.3 ± 14.6 years, M: F = 4:7) were included in the study. The CMs were located in the thalamus ($n = 1$), the cerebellum ($n = 1$), the brainstem ($n = 5$) or the thoracic spine ($n = 4$). The lesions were resected through a posterior midline myelotomy ($n = 4$) or a subtemporal ($n = 2$), suboccipital transcerebellar ($n = 1$), suboccipital telovelar ($n = 3$) or endoscopically-assisted parieto-occipital transventricular approach ($n = 1$). The mean postoperative LOS was 26.8 ± 42.5 days. Nine patients (82%) had postoperatively improved at the 6-month follow-up, four of them after a transient neurological worsening. One patient remained paraplegic and another worsened to a vegetative state. Regarding complications, one patient developed a thalamic venous infarct resulting in prolonged stay in the ICU and severe right hemiparesis and another manifested severe atelectasis and pleural effusion requiring transfer to the pulmonology department.
Conclusion: While serious complications occurred in two cases, the overall morbidity rate remained acceptable for this technically demanding pathology. These findings support the continued role of microsurgical resection in the management of symptomatic CMs when performed by experienced neurosurgical teams.

WP1-5

Clinico-radiological outcomes of direct cerebral re-vascularization procedures for complex aneurysms: a 10-year retrospective review

A. (Boh) Sofia[a,b], J. Muyenga-Muyenga[a], S. Phillips[a], D. Minks[c], S. Renowden[c], R. Edwards[a,b], R. Nelson[a] and M. K. Teo[a]

[a]Department of Neurosurgery, North Bristol NHS Trust, Bristol, UK; [b]Department of Neurosurgery, Bristol Royal Hospital for Children, Bristol, UK; [c]Department of Neuroradiology, North Bristol NHS Trust, Bristol, UK

Objective: Direct revascularization procedures for patients with complex aneurysms are highly efficacious either as standalone bypass and aneurysm occlusion or in combination with further adjunct endovascular treatment. The Bristol Brain Bypass centre has a long tradition of performing bypasses over the last few decades, with over 100 direct-bypasses in the last 10 years. We present our experience over the past 10-years of direct-bypasses for patients with complex aneurysms previously managed with various endovascular approaches, failed clipping or unamenable to either treatment strategy.
Design: Our bypass database was retrospectively interrogated to identify all direct-bypass procedures performed for giant/complex aneurysms.
Subjects: From November 2015 to March 2025, 34 direct-bypasses were performed on 30 patients. There were 13 male and 17 female patients; average age of 48 (range 8–76).
Results: 62% of the bypass procedures were for MCA ($n = 21$) and 18% for ICA/AComm aneurysms (6 each). 76% ($n = 26$) of the anastomoses were ECA/STA to MCA. The rest comprised of ACA-ACA, M2-A2, M1-M2 and ECA-PCA. Radial arteries (67% of cases) and saphenous veins (33%) were used as interposition grafts. Compared to pre-op, 70% of patients had improved/unchanged post-operative MRS scores and 73% of patients had post-operative MRS 0–2. Within 30 days postop, there were 3 postoperative ICHs (2 managed conservatively, 1 evacuated), 1 graft occlusion, 1 procedure related mortality, and on long term follow-up, 2 patients died of aneurysm rupture. The overall radiological outcome was positive with 91% aneurysm occlusion rates.
Conclusion: In this single-centre surgical series, our data highlights that surgery for giant/complex aneurysms are high-risk procedures but that for selective patients, the bypass +/− hybrid endovascular treatment procedures can be performed safely with favourable outcomes compared to the natural history of the disease process. Most patients were functioning independently with very high aneurysm occlusion rates when compared to alternative treatment modalities.

WP1-6

Stealth-robotic guided biopsy of brain tumours - an institutional experience

N. Jadhav, M. Ahmed, K. Karabatsou, H. Maye, D. DuPlessis, F. Roncaroli and P. D'Urso
Northern Care Alliance, Manchester, UK

Objective: Clinching a clinical diagnosis in cases of deep seated and inoperable brain tumours has always been a challenge in Neuro-oncology. With the advent of technology, we have transitioned from usage of frame to frameless neuronavigation systems for brain tumour biopsy to achieve diagnostic accuracy. The objective of this study the reliability, feasibility and precision of the robotic-guided biopsy. To our knowledge, this is the first series highlighting usage of Stealth Robotic guided assistance in the UK.
Design: We did a retrospective analysis of patients undergoing Stealth-Autoguide brain lesion biopsies at Salford Royal Hospital from the time its usage was started at the Institute.
Subjects: We performed 25 brain lesion biopsies using Stealth-Autoguide, of which 18 were males and 7 females.
Method: We analysed the clinical data, Radiological investigations, diagnostic accuracy and post-operative period follow-up of up to 2 weeks
Results: In our retrospective analysis from September 2023 to May 2025, we performed 25 brain lesion biopsies using Stealth-Autoguide, of which 18 were males and 7 females. Their age range was between 35 and 81 years. The most common location was frontal ($n = 6$), temporal ($n = 5$) followed by gangliocapsular region ($n = 4$), parietal ($n = 7$), brainstem ($n = 2$) and occipital ($n = 1$). We used DTI Imaging sequences in 9 patients for safe surgical planning in technically challenging cases. Our diagnostic accuracy was 100%. None of the patients had any post-operative haematoma warranting surgery nor any of them had any new post-operative deficits. 14 patients were discharged within 24 hours of surgery, 6 patients within 3 days while 6 patients discharge was delayed as pre-procedure had poor baseline performance status.
Conclusion: Stealth -autoguide brain lesion biopsies is a reliable, safe and feasible modality to biopsy deep seated and inoperable brain tumours with an excellent diagnostic yield. With its optimum use, we can decrease the patient morbidity.

WP1-7

Gamma knife treatment for meningiomas: the Bristol experience

A. Mikhalkova[a], E. Dumour[a], V. Iyer[a] and C. Herbert[b]
[a]Southmead Hospital, North Bristol NHS Trust, Bristol, UK; [b]Gamma Knife Centre, University Hospitals Bristol and Weston NHS Foundation Trust, Bristol, UK

Objective: To review the patient demographics, treatment indications, and clinical outcomes of Gamma Knife radiosurgery for meningioma patients at our institution, and to compare our findings with the existing literature.
Design: Retrospective case series analysis.
Subjects: Patients who underwent gamma knife treatment for meningioma at Bristol Gamma Knife Centre between October 2013 and September 2024.
Method: A retrospective review of Gamma Knife treatment plans, imaging, and clinical records was conducted for all patients treated for meningiomas at our centre. Data were analysed and compared with published outcomes from other institutions.
Results: Between October 2013 and September 2024, 157 Gamma Knife procedures were performed in 148 patients (112 female, 36 male) with intracranial meningiomas at the

Bristol Gamma Knife Centre. Of these, 37% (58 treatments) targeted convexity meningiomas, while the remaining 99 treatments addressed lesions in other locations, such as the skull base and tentorial notch. Notably, 27% of patients underwent Gamma Knife treatment for recurrent disease following prior surgical resection.

Conclusion: Although surgical resection remains the cornerstone for managing symptomatic or enlarging meningiomas, Gamma Knife radiosurgery offers a safe and effective treatment alternative, particularly for small to medium-sized tumours located in surgically challenging regions. At our institution, a significant proportion of patients received Gamma Knife as an adjunct to surgery, typically after a period of radiological surveillance.

WP1-8

Intraoperative AI-enhanced optical/spectroscopic imaging in glioma surgery: a pooled analysis

K. Manoharasundaram[a], N. Ebrahimian-Roodbari[a], S. Kalaga[a], J. Sunny[a], K. Lam[b] and K. Tsang[a]

[a]Imperial College Healthcare NHS Trust, London, UK; [b]Imperial College London, London, UK

Objective: In the last 5 years, the use of AI in neurosurgery has been both a theoretically popular and increasingly applied concept throughout all stages of treating neuro-oncological patients. With this study, we focus on glioma surgery and evaluate the diagnostic accuracy and subsequent utility of AI-enhanced intraoperative Raman spectroscopy, stimulated Raman histology and Confocal laser endomicroscopy through pooled analysis of clinical studies in the last 5 years.

Method: We performed an analysis of eight peer reviewed studies from 2019 to 2024 containing 475 glioma patients who underwent resection surgery involving AI-enhanced intraoperative optical technologies as mentioned above, from which we pooled sensitivity, specificity, real-time input-interpretation time and diagnostic accuracy, calculating weighted means with inter-study variance for each.

Results: In six of the eight studies a mean input-interpretation time of $1.9 +- 0.4$ minutes was calculated (time from image/signal input to tissue classification interpretation and output). Sensitivity for tissue classification averaged 93.5% (89.1–97%). Specificity for non-glioma tissue averages 87.1% (82–92.3%). Within this same time period emerged deep convolutional neural networks, which showed a statistically higher diagnostic accuracy compared to traditional machine learning approaches (mean 94.6 vs. 88.9%, respectively), with a statistically significant difference observed in subgroup analysis ($p = 0.017$). Interestingly it was also noted that in settings where frozen section was not the gold standard comparator, AI-enhanced Raman spectroscopy and stimulated Raman histology matched final histopathology in 91–94% of cases.

Conclusion: AI-enhanced intraoperative optical/spectroscopic imaging consistently demonstrates high diagnostic accuracy across the three aforementioned technologies. In combination with a subjectively rapid input-interpretation time of ~2 minutes, this pooled analysis supports its utility and value as an adjunct to intraoperative decision making in glioma surgery, showing potential to also act as an alternative to guide decision making where frozen section may not be readily available.

WP1-9

Factors associated with short-term survival with glioblastoma – an analysis of the Histo-Mol GBM collaborative database

G. Critchley[a,b,c] and S. Robinson[a,c]

[a]University Hospitals Sussex NHS Trust, Brighton, UK; [b]Brighton and Sussex Medical School, Brighton, UK; [c]HIsto-Mol GBM Collaboration, Brighton, UK

Objective: Population level survival for glioblastoma (GBM) remains limited at only 9–12 months. However, whilst a minority of patients have extended survival >24 months (long-term survivors, LTS), a significant proportion survive <6 months (short-term survivors, STS) and the characteristics of STS are poorly defined. Further, the survival benefit with concurrent temozolomide seen in clinical trials only emerges >6 months, with no separation in the survival curves before this.

Design: We used a large multicentre retrospective database of pathologically confirmed IDH wildtype (IDHwt) GBMs diagnosed in 2021.

Method: We investigated differences in the clinical and treatment characteristics of STS compared to LTS. Differences were assessed by independent samples T-test and survival was assessed using Kaplan-Meier methodology.

Results: Of 1612 GBM patients, there were 520 STS (32%) and 243 LTS (15%). STS presented with more motor (47 vs. 30%, $p < 0.001$), cognitive (30 vs. 21%, $p = 0.007$) and behavioural (10 vs. 4%, $p = 0.002$) symptoms, but fewer seizures (20 vs. 30%, $p = 0.003$) and headaches (31 vs. 39%, $p = 0.027$). Performance status (PS) significantly differed ($p < 0.001$) with a greater proportion of PS >2 (36 vs. 9%) and a lower proportion of PS0 (18 vs. 47%) in STS. STS tumours were more commonly midline (10 vs. 3%, $p < 0.001$), multifocal (30 vs. 14%, $p < 0.001$) and contrast enhancing (97 vs. 92%, $p = 0.002$). Surgical strategy differed ($p < 0.001$), with more biopsies (50 vs. 13%) and fewer gross total resections (20 vs. 56%) in STS.

Conclusion: We present a well-characterised clinical cohort of pathologically confirmed IDHwt GBM STS, demonstrating clear differences from LTS. STS represent a third of pathologically confirmed GBM patients, plus additional patients who were not felt suitable for pathological confirmation. Further research to reliably predict STS at diagnosis would help patients make more informed decisions about their treatment.

WP1-10

The use of fluorescein sodium in neuro-oncological procedures: an early single-centre experience

A. Kaldas, J. Clerkin, M. Walker, M. Fabian, A. Durnford, J. Roach, A. Zafar and P. Grundy
University Hospital Southampton NHS Foundation Trust, Southampton, UK

Objective: 5ALA intra-operative fluorescence is an established adjunct in maximising extent of resection in high-grade-gliomas (HGG). Fluorescein Sodium (FS) is an alternative and cheaper (£8.64 per dose) fluorophore with reported successful use in multiple malignant lesions in both resection and biopsy procedures. We sought to perform a pilot study to observe the utility of FS in malignant brain tumours for both resection and to guide stereotactic biopsy sampling.
Design: Pilot study.
Subjects: All adult patients with suspected malignant brain tumours (HGG, metastasis and lymphomas) were prospectively screened between February-April 2025. Those undergoing craniotomy for resection and stereotactic biopsy with FS were included. Patients were counselled pre-operatively and included if consent was given.
Method: FS 5mg/kg was intravenously administered in the anaesthetic room approximately 30 mins before skin incision. Intra-operative fluorescence was interrogated using a 560nm integrated filter on the surgical microscope. Samples were labelled intra-operatively and divided into subgroups: FS-positive, FS-negative, FS and 5ALA positive, FS-positive/5ALA-negative, FS -negative/5ALA-positive. Patient demographic, performance status (PS), radiological, histological and outcome data were collected.
Results: 30 Patients were identified. Median age was 68 with a male: female ratio =1.07:1. 21/30 cases were PS0-1. 19/30 patients underwent craniotomy and tumour resection. 28/30(93.3%) of lesions were contrast enhancing on preoperative MRI. 29/30 showed positive intra-operative FS-fluorescence. 10/11 of the biopsy cohort had FS-fluorescence at target and yielded positive pathology. Concordance between FS and 5ALA was observed in 7/9 HGG cases. FS negative samples were taken from 7 cases, 6 were concordant with negative pathology. 3/30 of cases had intra-operative samples that were FS positive and pathology negative. 2/30 had post operative complications (weakness and pulmonary embolism). We reported one mortality secondary to intracranial bleed distant from resection cavity. One case was non-diagnostic. We observed no FS related complications.
Conclusion: FS represents a safe and cost-effective fluorophore for use in both HGG and other malignant tumours. It demonstrated an acceptable concordance with 5ALA for HGG. FS also demonstrated potential utility in optimising sampling in stereotactic biopsy particularly where intra-operative histology is not logistically possible.

WP1-11

Independent replication of use of nanopore-based diagnostic assay for rapid brain tumour diagnosis

V. Wykes[a,b], V. Crispi[a,b], S. Manan[a,b], L. Ames[a], J. Stockton[a], N. Chadderton[b], L. James[b], K. Charles[b], A. Fair[b], S. Sanai[b], O. Elmoursi[b], V. Petrik[b], A. Rossdeutsch[b], I. Urghratdar[b], A. White[b], A. Zisakis[b], S. Nagaraju[b], U. Pohl[b], P. Taniere[b], S. Paine[c,d], M. Loose[d], A. Beggs[a] and C. Watts[a,b]
[a]University of Birmingham, Birmingham, UK; [b]Queen Elizabeth Hospital Birmingham, Birmingham, UK; [c]Nottingham University Hospitals NHS Trust, Nottingham, UK; [d]University of Nottingham, Nottingham, UK

Objective: Molecular diagnosis of an individual's brain cancer is essential to guide precision therapies. NHS diagnostic turn-around-time takes weeks to months following surgery. A new sequencing technology from Oxford Nanopore Technologies, coupled with a research-based diagnostic tool ROBIN (doi.org/10.1093/neuonc/noaf103) can provide methylation-based diagnosis within hours, and molecular variant identification within 1–2 days. We independently replicate feasibility of using this diagnostic assay within the NHS, supported by a University of Birmingham-Queen Elizabeth Hospital Birmingham collaboration, and Brain Tumour Charity funding.
Design: Prospective cohort validation study.
Subjects: Patients undergoing surgery with NHS whole genome sequencing for radiological presumed glioma (01/Jan/2025–01/Jun/2025) were consented for genomic research.
Method: Tumour DNA was extracted in the pathology department and NHS staff were trained by university scientists in long read sequencing using PromethION flow cells and ROBIN software. Concordance of the ROBIN methylation classifiers and glioma methylation status is reported.
Results: 20 Patients were recruited: median age 58.5 years (interquartile range 38–79); male gender 60%, ethnicity self-reported as White (70), Asian (25%), Black/Caribbean or African (5%). The integrated histopathology-molecular diagnosis confirmed Glioblastoma IDH-wild type (13, 65%), Astrocytoma IDH-mutant (3, 15%), Diffuse hemispheric glioma (H3G34-mutant; 1, 5%), Anaplastic Pleomorphic Xanthoastrocytoma (1, 5%) Metastasis (Melanoma, Oesophageal; 2, 10%). Classifier performance demonstrated concordant diagnosis in 70% of cases. Misclassified samples included: tumours that were outside of the classifier remit (1 oesophageal metastasis), low tumour content in recurrent glioma (1). The classifier reported inflammatory tissue in 3 high grade glioma cases with satisfactory tissue content but high necrosis content. Of 13 glioma cases with completed NHS methylation status, 9 (70%) were concordant and 2 (15%) failed.

Conclusion: This work demonstrates good concordance between a rapid diagnostic assay and current standard of care pathology diagnostics within the clinical setting. A close working partnership between surgeons, pathologists, and scientists is essential. Access to larger, more diverse samples will help refine these classifiers over time to further improve real-world accuracy and generalisability.

WP1-12

Introduction of a neurosurgery-geriatric in-reach service: a quantitative service evaluation

O. Tijani[a], D. Jesuyajolu[a], A. Dapaah[a], M. Vettasseri[b], S. Ali[b], S. Basu[a] and B. White[a]

[a]Department of Neurosurgery, Queen's Medical Centre, Nottingham, UK; [b]Department of Geriatric Medicine, Queen's Medical Centre, Nottingham, UK

Objective: As the number of older patients receiving neurosurgical intervention is increasing, combining neurosurgical and geriatric care has the potential to optimise clinical outcomes. The neurosurgical and geriatric teams at our institution collaborated to launch a twice weekly in-reach service for elderly patients on Neurosurgical wards in January 2025. Our objective was to evaluate the benefits of this service, identify areas for improvement and analyse its impact.
Design: This was a prospective quantitative study and quality improvement project.
Subjects: Neurosurgical patients were screened for complex medical issues requiring geriatric input with an initial screening age of 70 (younger patients were included if medically appropriate).
Method: Since the inception of the service, demographic data and patient management plans have been prospectively securely recorded. Using our database, we analysed 10 ward rounds to identify the age, diagnoses, number of patients seen and the proportion of patients requiring investigations, interventions, medication alterations, referrals and decisions on anticoagulants.
Results: 57 Patient reviews were undertaken across 10 ward rounds. Additional medical input opportunities were identified in 55 visits (96%). Further investigations were requested in 65% of visits ($n = 37$), whilst 67% ($n = 38$) had additional interventions. Notably, 53% ($n = 30$) had medications optimised or altered. Anticoagulants were stopped permanently in 3 of the reviews. Referrals were requested in 32% ($n = 18$) and new medical conditions were identified in 7% ($n = 4$). 40 (70%) patients had multiple issues addressed, with 9 (16%) patient reviews identifying 4 or more additional input opportunities. The most prevalent diagnosis was chronic subdural haematoma; other diagnoses included subarachnoid haemorrhage, normal pressure hydrocephalus, brain or spinal tumour, intracerebral haematoma, wound dehiscence, and degenerative spine disorders.
Conclusion: Our findings suggest that a neurosurgery-geriatric in-reach service can potentially benefit most older neurosurgical patients by identifying and addressing additional medical needs. Future longitudinal analysis will be undertaken to optimise the service and assess secondary aims, which are reduced length of stay on neurosurgery wards and increased discharges to patient homes or residential homes rather than secondary care for ongoing medical management.

WP1-13

The innovative development of neurosurgery tracheostomy management – one unit's experience

L. Fitch, A. White, A. Preece, S. Hills, L. Keepax, G. Reeves and C. Dawson

Queen Elizabeth Hospital, Birmingham, UK

Objective: Many neurosurgical patients require tracheostomises for ongoing management. We aimed to evaluate the impact of a peripatetic Multi-Disciplinary Team (MDT) tracheostomy ward round, describing tracheostomy weaning practices and tracheostomy outcomes for neurosurgical patients. Reduced length of time with tracheostomy reduces risk of complications and can reduce nursing dependency.
Design: Retrospective audit of tracheostomy weaning practice and outcomes on a neurosurgical unit has been completed to evaluate a peripatetic ward round style tracheostomy MDT.
Subjects: All patients admitted to neurosurgical wards with tracheostomies between January 2025 and August 2025 at a large tertiary hospital were included. Patients who transferred to rehabilitation units or care settings with tracheostomies in situ were excluded.
Method: Retrospective data was collected for all patients reviewed weekly in their bedspace by the MDT comprising of a TBI Clinical Nurse Specialist, Physiotherapist and Speech and Language Therapist.
Results: 22 Patients were managed by the peripatetic tracheostomy MDT ward round and decannulated on the Neurosurgical wards. Average time with a tracheostomy was 31.7 days with a range from 6 days to 71 days. 14 Patients (64%) received a tracheostomy downsize, all of which were to fenestrated tracheostomy sets. 100% of decannulations were successful, with no tracheostomies requiring re-insertion.
Conclusion: The audit showed that a collaborative MDT approach with a peripatetic ward round is safe and effective in supporting tracheostomy weaning to decannulation. Nil failed decannulations occurred and clinical plans regarding downsize where agreed on at the bedspace and completed following MDT review. Interestingly, 2019 audit data reported time to tracheostomy decannulation was on average 48 days, without a peripatetic tracheostomy MDT. Proactive weaning has multiple patient and healthcare system benefits including earlier time to speech and swallowing, reduces complications and clinical dependency on wards.

WP1-14

Seizure outcomes following vagus nerve stimulation in children with drug-resistant epilepsy

M. Sumner[a,b], J. Kitchen[a], J. Ellenbogen[c,a], K. Hall[a], R. Hills-Smith[a], J. Tan[a], N. Swiderska[a], A. McLaren[a,c] and S. Stivaros[a]

[a]Royal Manchester Children's Hospital, Manchester, UK; [b]University of Manchester, Manchester, UK; [c]Alder Hey Children's Hospital, Liverpool, UK

Objective: Drug-resistant epilepsy (DRE) affects 7–20% of children with epilepsy and is linked to increased morbidity and mortality. For those not eligible for resective surgery, vagus nerve stimulation (VNS) offers adjunctive therapy. This study aims to evaluate the efficacy of VNS in reducing seizure frequency, duration, and severity for paediatric patients with DRE.

Design: Retrospective observational study of VNS efficacy in paediatric drug-resistant epilepsy.

Subjects: 29 Patients (mean age 9 years) with drug-resistant epilepsy and VNS implanted for $\geq$6 months were included. Patients were grouped by epilepsy type: focal ($n = 11$), generalised ($n = 7$), Lennox-Gastaut syndrome ($n = 6$), and other DEEs ($n = 5$).

Method: Patients from Royal Manchester Children's Hospital outpatient clinics were identified. Seizure frequency, duration, and severity (recovery time, rescue medication, hospitalisations, injuries) were recorded pre- and post-VNS from clinic notes. Implantation age, therapy duration, and device settings were also documented.

Results: Among patients with focal epilepsy, 5/11 (45%) experienced a $\geq$50% reduction in seizure frequency following VNS therapy, including one patient who became seizure-free. In the generalised epilepsy group, 5/7 patients (71%) achieved a $\geq$50% reduction. For those with Lennox-Gastaut syndrome, 3/6 patients (50%) demonstrated a $\geq$50% reduction. Patients with other DEEs showed a $\geq$50% reduction in 3/5 cases (60%), with one patient becoming seizure-free. Overall, 18/29 patients (62%) had at least a 50% reduction in seizure frequency post-VNS, and 2 patients became seizure-free. VNS therapy appeared most effective between 12 and 24 months after implantation among responders. One patient with focal epilepsy became seizure-free 8 months post-implantation, while another patient achieved seizure freedom after 1 year. Additionally, 20/29 patients (69%) had shorter seizures following VNS, and 21/29 patients (72%) showed a reduction in seizure severity after VNS therapy.

Conclusion: Overall, VNS achieved a $\geq$50% reduction in seizure frequency in 62% of patients with drug-resistant epilepsy, with optimal efficacy observed between 12 and 24 months post-implantation. VNS also contributed to shorter seizure duration and reduced seizure severity in most patients, highlighting its value as an adjunctive treatment option for managing drug-resistant epilepsy.

THURS 25TH SEPTEMBER
TM1
ONCOLOGY

TM1-1

Diffuse low grade glioma patients – what is the progression in current times?

E. Smellie[a], M. Mohamed[b] and K. Whitehouse[b]

[a]Cardiff University, Cardiff, UK; [b]University Hospital Wales, Cardiff, UK

Objective: Since the 2016, and 2021, WHO CNS guidelines, the definition of diffuse low–grade glioma (dLGG) is much clearer, relying on the presence of IDH-mutation and, for oligodendroglioma diagnosis, 1p19q co-deletion. This molecular reclassification has rendered many historical outcome datasets outdated and less applicable to modern cohorts. This study aims to characterise patients with IDH-mutant gliomas through the dLGG clinic in University Hospital Wales, Cardiff, and to analyse their disease patterns, progression, treatment strategies, and survival outcomes

Method: Retrospective analysis of all new diagnoses of patients with dLGG from 2017 to 2021 (inclusive), via a prospectively-collected database of all patients seen through the dLGG clinic. Clinical data were collected via electronic patient data up to 01/01/2024, including presentation, imaging, surgical intervention, extent of resection, adjuvant therapies, surveillance, and outcomes.

Results: 81 Patients were identified, with a median follow-up of 4 years. 37.0% had an IDH-mutant 1p19q non-codeleted astrocytoma (22.2% grade 2, 13.6% grade 3), 40.7% had an IDH-mutant 1p19q codeleted oligodendroglioma (27.2% grade 2, 13.6% grade 3). 65.4% had cytoreductive resection, 17.3% had biopsy, 17.3% had surveillance only. 62.3% of resection patients received planned chemotherapy/radiotherapy straight after surgery, 13.2% had delayed chemotherapy/radiotherapy post-progression, and 24.5% had surveillance monitoring post-resection. Amongst the biopsy patients, 78.6% had planned chemotherapy/radiotherapy post-biopsy, whilst 21.4% surveillance post-biopsy. There have been 7 deaths (8.6%) during follow-up; 3 of these were grade 3 astrocytomas at median 3 years, 2 were grade 3 oligodendrogliomas at median 2 years, 1 was a grade 2 astrocytoma at 4 years, 1 was a surveillance patient at 1 year.

Conclusion: This evaluation outlines the patterns of survival and progression amongst dLGG patients in South and West Wales. Historically, median survival of astrocytomas had been quoted as 1–5 years, and our early follow-up data indicates that survival is improved on these statistics

TM1-2

Recurrent glioblastoma: a study to evaluate the benefit of repeat surgery on overall survival and associated morbidity

M. Elhawi[a], N. Jadhav[a], M. Aldameiry[a], Y. Tyrrell[b], P. D'Urso[a], C. McBain[c], H. Maye[a], D. Coope[a], M. Bailey[a] and K. Karabatsou[a]

[a]Salford Royal Hospital, Manchester, UK; [b]University of Manchester, Manchester, UK; [c]The Christie NHS Foundation Trust, Manchester, UK

Objective: Glioblastoma is the most aggressive primary brain tumour. Its recurrence is inevitable given its natural history. OS survival of patients with GBM is on average 12–16 months. The aim of the study is to review the effect of redo surgery on prolonging the OS in patient with recurrent GBM; a secondary outcome was to assess the morbidity inferred by revisional surgery.
Design: Retrospective observational cohort study.
Subjects: The Data of our cohort of 738 glioma patients who had surgery for GBM in a 10-year period in Salford Royal Hospital were retrospectively analysed. 591 patients had confirmed IDH-wildtype GBM according to 2021 WHO CNS tumour classification. Of those, 68 had surgeries for recurrent disease. Most of them ($n = 66$) had 2 surgeries, one had 3 and one had 4 surgeries in total. Age ranged from 35 to 74; there were 19 females and 49 males.
Method: The overall survival was calculated from the day of initial surgery to the date of death. Extent of resection followed RANO criteria. Oncological treatment details from the Christie NHS foundation Trust were also collected.
Results: Tumours were mainly temporal with one being multifocal and one being multicentric. EOR was 8 GTR, 22 NTR and 38 STR. Postoperative complications occurred in 15 patients: 1 death due to pulmonary embolism, 6 dysphasia (3 transient), 4 weakness (1 transient), 3 infections and 1 homonymous hemianopia. The median OS was 23.23 months (8.7–82 months) with 2-year survival of 53.85% and 5-year survival was 6.15%. Survival was higher when GTR/NTR was achieved. Patients who received radiotherapy within 30 days of first surgery ($n = 24$) had OS of 30 months while those who received after 30 days ($n = 44$) were 19 months. Following repeat surgery, 5 patients underwent Immunotherapy, 10 re-irradiation, 48 chemotherapy whereas 10 of them had no additional treatments. 13 patients enrolled in trials after redo surgery (4 Ipi-glio, 4 Checkmate, 3 Brioche, 2 Paradigm) with median OS of 35 months (20–52 months).
Conclusion: Redo surgery for rGBM and EOR has shown an improvement in OS and in facilitating additional treatments. While other factors could have contributed to our results, this warrants further research and well-designed multicentric studies to validate the effect of the above on overall survival in rGBM.

TM1-3

Artificial intelligence pipeline predicts three-tiered integrated molecular-morphologic risk score of meningiomas from routine pre-operative magnetic resonance imaging

D. Veljanoski[a,b]*, A. Golbaf[a]*, P. Chawda[a,b], M. Thurston[a,b], J. Cutajar[a,b], D. Hilton[b], M. Teo[c], M. Werndle[c], S. Gaudl[a], E. Ifeachor[a] and C. O. Hanemann[a,b]

[a]University of Plymouth, Plymouth, UK; [b]University Hospitals Plymouth NHS Trust, Plymouth, UK; [c]Southmead Hospital, Bristol, UK

Objective: Meningiomas are the most common primary intracranial neoplasms. A significant unmet clinical need exists for accurate, non-invasive biomarkers to risk-stratify patients and guide treatment decision-making. Recent advances in epigenetic profiling have led to the merging of histopathological grade, DNA methylation class, and copy number variation into an integrated risk score (IRS), demonstrated to be a powerful predictor of risk of progression, outperforming histopathological assessment alone. However, such stratification is only available post-operatively. We aimed to develop an artificial intelligence (AI) pipeline to predict the molecular-morphologic IRS from routine pre-operative MRI.
Design: We retrospectively analysed multi-institutional prospectively compiled datasets.
Subjects: Patients with histologically confirmed intracranial meningiomas and matched DNA methylation and copy number variation profiles.
Method: T1-weighted contrast-enhanced MRI scans were preprocessed and segmented. We first developed a radiomics model and trained a support vector machine (SVM) classifier. We then developed two deep learning models using 2D slices from MRI volumes: a convolutional neural network (CNN) based on ResNet101, and a vision transformer (ViT). Model performance was assessed on an internal test set using accuracy, area under the curve (AUC), precision, recall, and F1-score.
Results: Seventy-six patients met the inclusion criteria. The SVM model using radiomic features achieved an AUC of 81.2% and accuracy of 81.5%. The ResNet101 model achieved 92.2% accuracy. The ViT-L16 model outperformed all others, achieving 99.5% accuracy in binary classification (low vs. intermediate/high) and 99.3% in three-tiered IRS prediction, with 100% precision and recall in predicting high IRS tumours despite marked class imbalance.
Conclusion: This study represents the first application of the ViT architecture to meningiomas, and the first to predict, with high accuracy, the three-tiered IRS – a combined molecular-morphologic score - from routine pre-operative neuroimaging. By integrating the transformer-based architecture with radiological data, this pipeline provides a biologically informed and clinically relevant model with potential for future use in early risk stratification and decision support in the management of patients with meningiomas.

TM1-4

An external validation of Oswestry Spinal Risk Index (OSRI) in patients treated with radiotherapy only

S. Prakash[a], E. Hodges[b], M. Havard[b] and S. Ahuja[a]

[a]Welsh Centre for Spinal Surgery and Trauma, University Hospital of Wales, Cardiff, UK; [b]Cardiff University School of Medicine, Cardiff, UK

Objective: Many external validation studies of the OSRI as well as comparison studies of OSRI with other spinal metastasis scoring system have been carried out in the past. But nearly all of them have studied patients who were treated with surgery. We wanted to assess patients treated with radiotherapy only and validate the OSRI. If OSRI could accurately predict survival of patients treated with radiotherapy only, it will further help with initial or emergency decision making when a patient is referred to the spinal surgical team.
Design: The OSRI scores for 150 patients treated for metastatic spinal cord compression (MSCC) at a regional cancer centre were calculated over a period of 4 years. This was a retrospective study. The actual and the predicted survival times were compared.
Subjects: 150 patients with MSCC who were exclusively treated with radiotherapy were analysed for their OSRI scores and duration of survival.
Method: Standard Kaplan–Meier survival analysis was used. Log Rank (Mantel-cox), Breslow (Generalised Wilcoxon) and Taron ware comparisons were performed.
Results: The following is the patient numbers. OSRI 1(34), OSRI 2(25), OSRI 3(13), OSRI 4(20), OSRI 5(37), OSRI 6 (13) and OSRI 7(8). Log rank (Mantel-cox), Breslow (*Generalised Wilcoxon*) and Tarone-ware tests showed statistically significant differences between survival curves for patients in each OSRI risk group ($p < 0.001$). Paired sample correlations showed a statistically significant similarity between estimated survival and actual survival ($p < 0.001$).
Conclusion: The OSRI is a simple but accurate and time tested tool that can be used to predict survival in patients with MSCC. Our study is the first study, which looks into patients treated with radiotherapy only. Even though our study has its limitations being a retrospective study, it still adds to the pool of evidence that OSRI is a versatile index which can be applied easily for quick decision making while treating a devastating diagnosis of MSCC.

TM1-5

Antiepileptic drugs in glioblastoma patients: dichotomic variable or mechanism of action dependent?

O. Genel[a], S. Alzarouni[b], A. Mirza[c,d], Y. Chowdhury[d], A. Elhag[d], K. Cikurel[e], D. Joe[e], G. Finnerty[e], R. Gullan[d], K. Ashkan[d], R. Bhangoo[d], F. Vergani[d] and J. P. Lavrador[d,f]

[a]Cambridge University Hospitals NHS Trust, Cambridge, UK; [b]King's College Hospital NHS Trust, London, UK; [c]Havering and Redbridge University Hospitals NHS Trust, London, UK; [d]Department of Neurosurgery, King's College Hospital NHS Trust, London, UK; [e]Department of Neurology, King's College Hospital NHS Trust, London, UK; [f]Catolica Medical School, Oeiras, Portugal

Objective: Recent evidence has demonstrated a tight relationship between neuronal activity and GBM growth, involving novel mechanisms such as neuron-glioma synapses and tumour microtube networks. Seizure activity and antiepileptic drug (AED) usage are highly prevalent amongst GBM patients. In this present study, we investigate the impact of AEDs and their mechanism of action on overall survival (OS) in a cohort of patients treated for glioblastoma.
Design: Retrospective cohort study.
Subjects: GBM patients.
Method: Molecular, imaging and survival characteristics were collected. Extent of resection (EOR) was calculated and patients were classified into subgroups according to the RANO criteria for EOR. Multivariate analyses were performed at 4 different timepoints by (i) patients who did and did not use AEDs; (ii) use of individual AEDs and (iii) use of AEDs with the same mechanism of action.
Results: A total of 236 patients were included in the analysis, 178 of which were on anti-epileptics (75.4%). 129 patients (72.5%) were on monotherapy and 58 (30.7%) were on polytherapy. Median survival was 16.17 months for patients taking AEDs and 13.82 months for patients not taking AEDs ($p = 0.781$). Whilst adjuvant treatment significantly influenced patient survival, non-AED patients had no significant differences in survival with adjuvant treatment compared to the AEDs group ($p = 0.585$). We investigated the impact of specific AED mechanism of action. Among these, the overall survival was significantly higher in the voltage-gated sodium channel (VGNC) blocker group (20.3% of patients on AEDs) when compared to patients not on AEDs (HR $=0.67$, $p = 0.045$). No impact was observed with other mechanisms of action ($p > 0.05$).
Conclusion: As a group, patients on AEDs do not have an improvement in overall survival when compared with patients on no-AED treatment. When specific mechanisms of action are considered, voltage-gated sodium channel (VGNC) blocker AEDs are related with an improvement in overall survival.

TM1-6

The British object and action naming test for intraoperative mapping (BOATIM): a standardised and clinically tested framework for awake brain surgery

H. Mumtaz[a], A. Piasecki[a,b], M. Kirjavainen[b], M. Newson[a,b], M. Farrow[b], M. Cree[b] and N. Barua[a,b]

[a]University of the West of England, Bristol, UK; [b]Southmead Hospital, Bristol, UK

TM1-7

Health burden of epilepsy and seizures in neurooncology: an international cohort study of administrative healthcare data

M. Arish Mustafa[a,b], A. Bakhsh[b], C. Cook[c], A. G. Marson[c], R. Zakaria[b,d], G. Y. H. Lip[a,e], G. K. Mbizvo[a,f,c] and M. D. Jenkinson[b,g]

[a]Liverpool Centre for Cardiovascular Science, University of Liverpool, Liverpool, UK; [b]Department of Neurosurgery, The Walton Centre NHS Foundation Trust, Liverpool, UK; [c]Department of Neurology, The Walton Centre NHS Foundation Trust, Liverpool, UK; [d]Department of Molecular and Clinical Cancer Medicine, University of Liverpool, Liverpool, UK; [e]Liverpool Heart and Chest Hospital, Liverpool, UK; [f]Pharmacology and Therapeutics, Institute of Systems, Molecular and Integrative Biology, University of Liverpool, Liverpool, UK; [g]Institute of Systems, Molecular, & Integrative Biology, University of Liverpool, Liverpool, UK

Objective: Describe health burden, defined as (a) all-cause deaths, (b) A&E attendance, (c) ambulance use requiring advanced-life-support, and (d) hospital admission, across: (1) Malignant neoplasm of brain, (2) Benign neoplasm of meninges and (3) Brain metastases.
Design: An international cohort study of administrative healthcare data.
Subjects: Adult patients (>18y/o) with a brain tumour were included.
Method: TriNetX, an international administrative database representing over 120 health-care-organisations and 250 million patients, was queried. Cohorts were patients with and without epilepsy/seizures in a survival analysis. Cohorts were propensity score matched for baseline demographics, comorbidities, medications, and labs. Hazard ratios (HRs) were estimated with 95% confidence intervals (CIs) and a 0.05 log-rank P cut-off.
Results: Malignant neoplasm of brain: Patients with epilepsy/seizures were more likely to be admitted to hospital ($n = 37{,}960$; HR 1.566 (95%CI 1.526–1.607, $p < 0.0001$), present to A&E [$n = 16{,}590$; HR 1.239 (95%CI 1.165–1.317, $p < 0.0001$)], and die [$n = 58{,}583$; HR 1.147 (95%CI 1.124–1.17, $p < 0.0001$)]. Benign neoplasm of meninges: Patients with epilepsy/seizures were more likely to be admitted to hospital [$n = 24{,}463$; HR 1.714 (95%CI 1.662–1.767, $p < 0.0001$)], present to A&E [$n = 23{,}617$; HR 1.262 (95%CI 1.22–1.306, $p < 0.0001$)], and die [$n = 31{,}056$; HR 1.475 (95%CI 1.419–1.533, $p < 0.0001$)]. Brain metastases: Patients with epilepsy/seizures were more likely to be admitted to hospital [$n = 15{,}875$; HR 1.478 (95%CI 1.43–1.528, $p < 0.0001$)], present to A&E [$n = 15{,}309$; HR 1.2 (95%CI 1.151–1.25, $p < 0.0001$)], and die [$n = 35{,}464$; HR 1.024 (95%CI 1.003–1.045, $p = 0.0245$)]. Patients who had pre-operative seizures, when compared to post-operative seizures had a worse composite outcome of A&E attendance, ambulance use, and hospital admission: (a) Malignant neoplasm: $n = 4{,}746$, HR 1.599 (95%CI 1.521–1.628, $p < 0.0001$), (b) Benign neoplasm: $n = 2{,}832$, HR 1.661 (95%CI 1.555–1.773, $p < 0.0001$), and (c) Brain metastases: $n = 1{,}484$, HR 1.391 (95%CI 1.28–1.51, $p < 0.0001$).
Conclusion: Brain tumour patients that develop seizures/epilepsy or pre-operative seizures have worse outcomes when compared to controls. Development of seizures/epilepsy may reflect tumour burden and overall health.

TM2
SKULLBASE

TM2-1

Contemporary multi-corridor approaches to complex paediatric skull base pathologies over a 5-year period: need for specialist paediatric skull base expertise

C. Cernei[a], E. Drosos[a], M. Asad[b], J. Wakefield[a], R. Cox[a], A. Cameron[a], M. Teo[a], L. Melia[b], S. Hunt[b], R. Ford[b], W. Singleton[b], G. Fellows[b], R. Edwards[a,b], W. Bennett[b] and K. Abhinav[a]

[a]North Bristol NHS Trust, Bristol, UK; [b]Bristol Children's Hospital, Bristol, UK

Objective: We aim to describe the use of contemporary skull base approaches in paediatric population.
Design: Retrospective chart review.
Subjects: Paediatric patients undergoing complex skull base approaches over a 5-year period performed by the senior author (KAA) in conjunction with a multidisciplinary team were included.
Method: Data included patient age, tumour histology, pre- and post-operative visual status, pituitary function, recurrence status and surgical complications among others.
Results: 32 Procedures in 25 patients [age: 2–17, mean: 9] were performed. EEA was used in 20 cases (63%), with a 10% postoperative CSF leak rate [2/20; recurrent craniopharyngioma (1); odontoidectomy (1)]. Craniopharyngioma [recurrent (6); primary (3)] was the most common pathology treated via EEA. All craniopharyngiomas achieved gross or near-total resection with no hypothalamic morbidity or visual worsening. Other indications included: odontoidectomy for basilar invagination, germ cell tumour, spontaneous or iatrogenic CSF leaks, and pituitary adenomas. Transorbital corridor including lateral orbitotomy (via eyelid incision) was used for accessing parasellar/middle fossa region for complex spontaneous CSF leak (1) and Meckel's cave encephalocele (1) with supraorbital corridor (via eyelid or supraciliary incision) being utilised for recurrent Craniopharyngioma (1) and suprasellar epidermoid (1). Hybrid EEA and transorbital corridors was also used for a

large skull base fibroma (1). Complex open approaches including petrosectomy/middle fossa peeling enabled access to cavernous sinus and petrous apex pathologies.
Conclusion: EEA remains the predominant corridor for paediatric skull pathologies with almost all craniopharyngiomas being treated successfully via this route despite technical challenges in paediatric population. Utilisation of open and transorbital corridors enabled 360-degree access to the whole spectrum of complex paediatric skull base pathologies with good postoperative outcomes. These procedures should be undertaken in dedicated centres involving a specialist skull base paediatric neurosurgeon working with otolaryngology, oculoplastic and paediatric neurosurgical team.

TM2-2

Olfactory dysfunction and cacosmia following prophylactic fat graft application in transsphenoidal pituitary surgery

S. Khalil[a], M. El-Din El-Fellah[b], B. Kennard[b] and A. Borg[b]

[a]University College London Medical School, London, UK; [b]National Hospital for Neurology and Neurosurgery, London, UK

Objective: To assess whether prophylactic fat grafting during transsphenoidal pituitary surgery is associated with a higher incidence of postoperative olfactory dysfunction, particularly persistent cacosmia.
Design: A retrospective cohort study using the NHNN pituitary surgery database. Literature review revealed a lack of data specifically quantifying olfactory impact of fat grafts, highlighting a research gap. Patients undergoing surgery between Sept 2023 and Apr 2024 were randomly selected for inclusion.
Subjects: Patients who underwent transsphenoidal pituitary surgery; exclusions included prior sinonasal disease, extended endoscopic approaches, multiple surgeries, prior sinonasal surgery or radiotherapy. 50 patients were analysed (25 fat graft, 25 non-fat graft).
Method: Telephone follow-up was performed ~1 year post-op using a modified SNOT-22 questionnaire. Data were analysed using independent samples *t*-tests with *post-hoc* 95% CI and Cohen's *d* to determine effect sizes.
Results: Fat graft patients had significantly higher mean SNOT-22 scores (34 ± 8.2 vs. 15 ± 4.3, $p < 0.01$) and olfactory subscores (18 ± 6.5 vs. 4 ± 2.2, $p < 0.01$). Persistent cacosmia was reported in 60% of the fat graft group vs. 10% in non-fat grafts. Findings align with prior studies, though ours is among the first to quantify the correlation.
Conclusion: Prophylactic fat grafting is linked to increased olfactory dysfunction post-transsphenoidal surgery despite reducing CSF leak rates. Potential mechanisms may include fat degradation in the sphenoid sinus. Further research should explore graft alternatives, refined placement, and postoperative care to mitigate this complication.

TM2-3

Technical nuances for resection of chordomas and chondrosarcomas: dealing with significant calcification, vascular encasement and inferolateral extension of skull base sarcomas

E. Drosos[a], C. Cernei[a], M. Asad[a], L. Melia[b], W. Bennett[c] and K. Abhinav[a]

[a]Bristol Institute of Clinical Neurosciences, Department of Neurosurgery, Southmead Hospital, Bristol, UK; [b]Department of Ear, Nose and Throat, Royal United hospital, Bath, UK; [c]Department of Ear, Nose and Throat, University Hospitals Bristol NHS Foundation Trust, Bristol, UK

Objective: Expanded endoscopic endonasal transclival approach (EETA) is increasingly used for resection of chordomas and chondrosarcomas. Radical resection requires adjuncts towards expanding the endonasal corridor. In chondrosarcomas, challenges include accessing the petrous bone and inferolateral petroclival fissure. Significant intratumoral calcification and vascular encasement can augment these challenges. We defined these adjuncts from supra-to sublacerum compartments using anatomical dissections and nuances for dealing with significant intratumoral calcifications.
Design: Anatomical dissections and study of surgical techniques by senior author. Clinical application and retrospective study of patient outcomes.
Subjects: Skull base; anatomy; chordoma; chondrosarcoma.
Method: Of 12 skull base sarcoma cases, 9 primary cases (3 chordoma and 6 chondrosarcoma) were performed via EETA over 36 months by senior author utilising these surgical adjuncts. Heavy calcification was present in at least 3 cases (chordoma =1; chondrosarcoma= 2).
Results: In the supralacerum compartment key manoeuvres included: exposure of paraclinoidal internal carotid artery (ICA); interdural/transcavernous pituitary transposition and posterior clinoidectomy; skeletonization of paraclival ICA followed by its detethering and use of the Caldwell-Luc if applicable. These facilitated access to upper clival and lateral aspects of the mid-clival bone and petrous temporal bone. In the sublacerum compartment key adjuncts included: skeletonization of paraclival ICA with its detethering as above followed by inferior mobilisation of the eustachian tube to access inferolateral petroclival fissure and jugular tubercle. Of 9 cases undergoing EETA, none suffered new neurological deficit with five recovering to improved bulbar and other cranial nerve function. Ultrasonic claw attachment was a useful adjunct for enabling radical resection of calcified components in addition to use of endomicroneurosurgery.
Conclusion: Supra- and sublacerum transclival approaches centred on foramen lacerum require a thorough understanding of the loco-regional anatomy. These adjuncts permit safe maximal resection of chondroid tumours with implications for resection of other lesions like petroclival meningiomas. Microneurosurgical principles should be adhered to for safe resection of these lesions.

TM2-4

Application of standardized postoperative pathway in endonasal transsphenoidal pituitary surgery

E. Drosos[a], G. Wordsworth[b], P. Yajnik[b], K. Bradley[b], L. Melia[c], W. Bennett[d], K. Abhinav[a] and A. Williams[a]

[a]Department of Neurosurgery, Bristol Institute of Clinical Neurosciences, Southmead Hospital, Bristol, UK; [b]Department of Endocrinology, Southmead Hospital, Bristol, UK; [c]Department of Ear, Nose and Throat, Royal United hospital, Bath, UK; [d]Department of Ear, Nose and Throat, University Hospitals Bristol NHS Foundation Trust, Bristol, UK

Objective: The Enhanced Recovery After Endonasal Transsphenoidal Surgery pathway (ERAS) has been implemented in our department since 01/2020.The aim of the protocol was to optimize post-operative patient flow, standardizing the care and minimizing patient attendance to local services for issues not requiring tertiary level care.
Design: We recently audited the application of the ERAS protocol in the post-operative care of patients with pituitary tumours undergoing transsphenoidal surgery in our department.
Method: We retrospectively reviewed data for these patients via the National Consultant Information Programme (NCIP) in the period between 01/2020 and 12/2024. We divided the patients into complex and non-complex pathologies based on lateral extension of the pituitary lesion and previous operations. For protocol applicability purposes, we focused on the cases fulfilling the criteria for non-complex patients and reviewed adherence to the ERAS protocol as well as its impact on patient flow measured by length of stay and readmission rate. Target post-operative discharge was set at $<$48 hours.
Results: Overall, 304 admissions were recorded. After excluding non-adenoma cases, 198 cases remained. Target discharge timing was achieved in 41% (range 1–57 days). Main reason for discharge between days 3 and 4 was early electrolyte concerns and suboptimal protocol compliance. Discharge at 5-8 days was due to endocrinology concerns (adrenal insufficiency or fluid/electrolyte imbalance), whereas complications like CSF leak, systemic infection or epistaxis were responsible for post-operative stays $>$8 days. Out of 198 patients, 21 re-attendances were recorded. Main reasons were medical concerns including electrolyte and hormone disturbances, requiring admission and medication adjustment, epistaxis, surgical cavity bleeding and CSF leak. Only 29% (6/21) represented in the immediate post-operative period with concerns not requiring hospital-level care (headache, urinary tract infection).
Conclusion: We have reviewed the implementation of a standardized protocol, showcasing the optimization of post-operative patient flow.

TM2-5

Frontal vs. bifrontal vs. pterional approach to resections of large anterior skull base meningiomas: a propensity-score matched cohort study

Y. Akkara[a], G. Fuller[a], S. Commiteri[a], A. Ganguli[a], S. Bougrine[a], J. Das[b] and R. Nair[b]

[a]Imperial College London School of Medicine, London, UK; [b]Imperial College Healthcare NHS Trust, London, UK

Objective: Large anterior skull base meningiomas ($\geq$3cm) are common and challenging brain tumours to resect. This study evaluates the role of the (unilateral) frontal, bifrontal, and pterional craniotomies on outcomes following resection.
Design: This is a retrospective study of all patients with large anterior skull base operated on at our institution between 2010 and 2024 using the frontal, bifrontal, and pterional approaches.
Subjects: All patients were $\geq$18 years and had $\geq$1 year of clinical follow-up data.
Method: Propensity-score matching with a one-to-many nearest neighbour matching algorithm was used to achieve 3 groups of similar patients, based on size, grade, and preoperative KPS. The Shapiro–Wilk test, paired *T*-test, ANOVA, and Tukey test were used to establish statistical significance. Pearson's *R* was used to evaluate PSM success, with the Log-rank test used within Kaplan–Meier (KM) analysis.
Results: 337 Patients (140M, 197F) were included, with 80, 189, and 68 patients undergoing bifrontal, frontal, and pterional craniotomies, respectively. Patients in the bifrontal group presented with significantly higher tumour size (5.46 cm, $p = 0.0021$) and lower mean preoperative KPS (71.15, $p = 0.0059$), while patients in the frontal group reported a significantly higher tumour grade vs. other groups (1.65, $p = 0.0025$). Following PSM, the bifrontal group reported a significantly higher frequency of medical (25.0%, $p < 0.0001$) and surgical (22.5%, $p < 0.0001$) complications, alongside significantly worse cosmetic outcomes (6.25%, $p = 0.0054$) vs. other groups. KM analysis showed a significantly higher rate of minor complications in the bifrontal group ($p = 0.0497$), alongside reduced progression-free survival in the frontal group ($p = 0.0048$).
Conclusion: The findings suggest significant difference in baseline characteristics and operative outcomes across the 3 groups, highlighting predictive factors and risk profiles that neurosurgeons can include in peri-operative planning.

TM2-6

Assessing patient-reported quality of life outcomes after meningioma surgery using a condition-specific measure: a single centre study

N. Ghantous[a], S. Yohannes[a], R. Thevarasan[b], A. Punekar[b], J. Aliaga-Arias[b], D. Kalaitzoglou[b], J. Shapey[b], S. Barazi[b], N. Thomas[b] and E. Maratos[b]

[a]King's College London, London, UK; [b]King's College Hospital, London, UK

Objective: Meningiomas are the most common primary intracranial tumour, yet evidence on the long-term functional outcomes of surgical resection remains limited. Postoperative evaluations focus on radiological and oncological outcomes, often overlooking cognitive, emotional, and psychosocial sequelae. Many patients experience persistent deficits, such as visual impairment, fatigue, sleep disruption and anxiety, despite clinical remission. As healthcare shifts towards patient-centred care, integrating the assessment of health-related quality of life (HRQOL) in the postoperative functional outcome is essential to improve the surgical management of meningioma. The aim of this study was to characterise the postoperative HRQOL of patients undergone surgical resection of skull base meningiomas in a reference centre, with a view to influencing the National Anterior Skull Base Audit dataset.
Design: Single centre retrospective analysis.
Subjects: Consecutive series of cases undergone surgical resection of skull base meningiomata from 2023 to 2025, age $\geq$18 years at time of surgery, and integrated WHO grade 1 or 2.
Method: The Meningioma Quality of Life (MQOL) questionnaire, a validated, condition-specific patient-reported outcome measure (PROM) was delivered via semi-structured telephone interviews. HRQOL, neurological deficits, and patterns of impairment were assessed.
Results: 48 Patients were included. MQOL scores were obtained for the week immediately prior to surgery and the current time point. To date, 15 patients have completed the MQOL. Preliminary analysis demonstrates that on average 8 of 9 domains deteriorated postoperatively, with 53% of patients reporting a net reduction in QOL. The mean change across all domains was −0.26.
Conclusion: To our knowledge, this marks the first use of a disease-specific PROM in the UK to evaluate postoperative HRQOL in meningioma. Early findings suggest that significant QOL impairments persist despite favourable surgical outcomes. Integration of PROMs like the MQOL into the anterior skull base audit dataset may help improve postoperative care and enhance preoperative counselling regarding expectations after surgery. Limitations of the study include the retrospective nature of the data collection, and this will be addressed in future work.

TM2-7

Comparative efficacy of endoscopic endonasal transsphenoidal surgery and radiosurgery in the treatment of residual pituitary adenomas with cavernous sinus invasion: a systematic review and meta-analysis

S. Kannan[a], Y. Dhoundiyal[a], S. Somanathan[a], S. Raman[a] and A. Alalade[a,b]

[a]University of Central Lancashire, Preston, UK; [b]Royal Preston Hospital, Preston, UK

Objective: Pituitary adenomas, due to their deep-seated location and proximity to critical neurovascular structures, remain challenging lesions to manage. Two major therapeutic strategies—endoscopic endonasal transsphenoidal surgery (ETSS) and stereotactic radiosurgery (SRS)—have emerged as key tools in the treatment of residual or recurrent adenomas with cavernous sinus invasion. This systematic review and meta-analysis aimed to compare the clinical efficacy and safety of ETSS and SRS in adult patients with these complex lesions.
Method: A comprehensive literature search was performed across PubMed, MEDLINE, Ovid, and Embase for English-language primary studies published between January 2000 and December 2024. Studies included reported outcomes for ETSS and/or SRS in adult patients with residual or recurrent pituitary adenomas involving the cavernous sinus. Reviews, non-English papers, and pediatric series were excluded. (PROSPERO: CRD42024610204)
Results: Twenty-four studies encompassing 1098 patients were included (ETSS: 714; SRS: 378). The pooled endocrine remission rate was higher in the ETSS group (46%; 95% CI: 41–52%) compared to SRS (34%; 95% CI: 28–39%). SRS showed a lower 12-month recurrence rate (14%; 95% CI: 10–20%) than ETSS (19%; 95% CI: 16–23%). Overall complication rates were greater with ETSS (26%; 95% CI: 22–30%) than SRS (11%; 95% CI: 8–14%). However, cranial neuropathies were slightly more common in the SRS cohort (6%; 95% CI: 2–14%) versus ETSS (3%; 95% CI: 1–6%).
Conclusion: ETSS is associated with superior endocrine remission, particularly in functional adenomas, while SRS offers lower recurrence and complication rates. These findings support a tailored, multidisciplinary approach, where treatment modality selection is based on tumour biology, cavernous sinus invasion, and individual patient factors. Integration of both modalities may optimize outcomes in managing invasive pituitary adenomas.

TM3
BASIC SCIENCE/FUNCTIONAL
TM3-1

Revisiting spinal cord stimulation for dystonia: a narrative review and rationale for re-exploration

V. Parmar[a,b], T. Chaudri[a,b], S. Gutierrez[b], Y. Aldabbagh[b], H. Akram[b], F. Morgante[c,d], E. Pereira[e], R. Brownstone[b,f] and A. Natalwala[b,f]

[a]Good Hope Hospital, Birmingham, UK; [b]Unit of Functional Neurosurgery, National Hospital for Neurology and Neurosurgery, London, UK; [c]Neurosciences Research Centre, Molecular and Clinical Sciences Research Institute, St George's University of London, London, UK; [d]Department of Experimental and Clinical Medicine, University of Messina,

Messina, Italy; [e]Neurosciences Research Centre, Molecular and Clinical Sciences Institute, St George's University of London, London, UK; [f]Department for Neuromuscular diseases, Institute of Neurology, University College London, London, UK

Objective: To critically evaluate historical and contemporary evidence on spinal cord stimulation (SCS) as a treatment for dystonias, and to examine whether modern advances in neuromodulation and evolving insights into dystonia pathophysiology justify renewed clinical investigation.
Design: Narrative review synthesising historical case series, trials, and recent experimental data on SCS in dystonia. Key mechanistic and methodological limitations in prior studies are analysed, and future directions for research and clinical application are proposed.
Subjects: Human patients with focal, segmental, or generalised dystonia treated with SCS across 14 studies, including one double-blind RCT, historical case series, and a recent case series using burst SCS. Where relevant, evidence from dystonia animal models and preclinical SCS literature was also included.
Method: MEDLINE and EMBASE were searched using terms for dystonia and spinal cord stimulation, with no restriction on date or publication type. Studies reporting SCS for dystonia were included. Extracted data included dystonia subtype, electrode type, vertebral level, stimulation settings, symptom outcomes, and complications. Methodological strengths and limitations were examined to identify reasons for conflicting results.
Results: Early case series using high-frequency SCS (typically 1100–1400 Hz) reported encouraging outcomes in cervical and generalised dystonia, though outcome measures were often subjective and varied. Later studies, including a double-blind trial, failed to demonstrate consistent benefit, potentially due to methodological limitations such as subtherapeutic stimulation frequencies, short follow-up durations, and inconsistent patient selection. More recent mechanistic studies suggest that spinal circuit dysfunction may be sufficient to produce dystonic symptoms, and that SCS may modulate these circuits. A 2020 case series using burst stimulation reported improvement in motor symptoms and pain in patients with cervical dystonia, although the study was small and lacked standardised follow-up. Taken together, these findings suggest that a cautious re-evaluation of SCS in selected patients may be warranted.
Conclusion: Methodological limitations and outdated technology may underlie previous inconsistencies in SCS outcomes. Recent advances in mechanistic understanding, neuromodulation technology, and clinical application may justify re-evaluating SCS as a potential adjunct or alternative to DBS in selected patients with residual motor symptoms or pain.

TM3-2

Assessment on barriers to accessing deep brain stimulation (DBS) services at a regional neurosciences centre

C. Cernei, L. Hanley, J. Yuen, M. Soliman and R. Ashida

North Bristol NHS Trust, Bristol, UK

Objective: Deep Brain Stimulation (DBS) is a well-established treatment for movement disorders, yet disparities in access remain significant. Studies consistently show underrepresentation of ethnic minorities and women in DBS cohorts driven by socioeconomic, cultural, and systemic barriers. UK data on how these disparities manifest within surgical pathways are limited. We evaluated the demographic data or ethnicity or ethnicity and socioeconomic status of patients accessing the tertiary movement disorder centre and undergoing DBS implantation.
Design: A retrospective service evaluation at North Bristol NHS Trust analysed Movement Disorder MDT referrals and DBS surgery between April 2019 and March 2023.
Subjects: All of the movement disorder patients referred to the North Bristol Movement Disorders MDT were included.
Method: Demographic data (age, gender, ethnicity) were extracted from electronic records. The ethnicity coding completeness and the proportion of surgical patients from the minority ethnic background were evaluated.
Results: 2,159 Patients accessed the service; 1,134 were discussed at MDT. Of these, 583 (51.4%) proceeded to DBS. The MDT cohort was 56% male and 44% female, with a mean age of 67.4 years. Ethnicity was uncoded in 813 patients (37.7%). Among those with recorded ethnicity, White British patients made up 57.2% of all users, with all White subgroups totalling 58.4%. In contrast, non-White groups accounted for 4.5%.
Conclusion: Minority ethnic groups appear underrepresented in our DBS surgical pathway. Incomplete ethnicity data limits formal analysis. A review of referral and coding pathways is underway to guide equitable service development. The effect of early piloting of potential solutions such as remote clinic consultations and programming and translation of clinical documents are reviewed. Further strategies include mandatory demographic coding, community outreach, and culturally sensitive decision aids.

TM3-3

Effect of deep brain stimulation on non-motor symptoms of Parkinson's disease

M. Soliman[a,b], M. Smith[a], K. Elbahy[c], M. Elnokaly[b], A. Abdelmaksoud[b] and R. Ashida[a]

[a]Southmead Hospital, Bristol, UK; [b]Helwan University, Cairo, Egypt; [c]Ain Shams University, Cairo, Egypt

Objective: Evaluation of the effects of deep brain stimulation (DBS) on non-motor symptoms (NMS) in Parkinson's disease (PD) patients, with exploiting optimum contact sites within STN in addition to compare conventional and adaptive DBS in NMS control. The study also explores the use of artificial intelligence (AI) to monitor and analyse DBS outcomes by

processing data from wearable sensors and clinical assessments. AI algorithms may enable early detection of symptom changes, optimize stimulation parameters, and provide personalized feedback, enhancing the precision and responsiveness of DBS therapy.
Design: Prospective longitudinal cohort study.
Subjects: Thirty patients with Parkinson's disease undergoing DBS at Southmead Hospital, UK.
Method: Assessments will include validated scales such as the Non-Motor Symptoms Scale (NMSS), Scales for Outcomes in Parkinson's Disease - Autonomic Dysfunction (SCOPA-AUT), *International Consultation on Incontinence Questionnaire* (ICIQ modules), and King's Parkinson's Disease Pain Scale (KPPS), *SCOPA-Sleep questionnaire* along with AI-assisted analysis. Objective markers of NMS will also be collected, such as bedside bladder ultrasound and postural blood pressure assessment. Correlation with lead placement will be verified via intraoperative imaging, and stimulation parameters will be standardized and recorded. Data will be collected preoperatively and postoperatively across several follow-up visits.
Results: The study explores the improvements in various domains of NMS with DBS therapy. It also explores the potential of digital and clinical biomarkers in enhancing the assessment of DBS outcomes. Additionally, the study will assess stimulation-related side effects and complications, aiming to better understand the overall risk-benefit profile of DBS. This comprehensive approach is intended to inform more personalized and effective DBS management strategies.
Conclusion: Findings from this research aim to contribute to the optimization of DBS strategies tailored to individual NMS profiles, potentially leading to improved personalised management in PD.

TM3-4
WITHDRAWN

TM3-5

Unveiling the microvascular anatomy of the human fornix: from microanatomy to surgical implications

E. Strachan[a], T. Santarius[b] and I. Maldonado[c]
[a]University Hospital Southampton, Southampton, UK; [b]Cambridge University Hospitals, Cambridge, UK; [c]Faculté de Médicine Université de Tours, Laboratoire d'Anatomie & iBraiN, Tours, France

Objective: In the pursuit of a comprehensive knowledge of neurovascular anatomy, the fornix is a conspicuous exception that warrants our greater attention. Whilst several putative parent vessels exist, these are largely unproven and subject to significant interindividual variability. This study is the first of its kind that aims to elucidate the entirety of the microvascular anatomy of the fornix, with demonstrable advantages for safer neurosurgical practice in the deep and eloquent regions of the brain.
Design: Post-mortem, *ex-vivo* preservation and dissection of human brains through a local Body Donation Programme at the Université de Tours, France.
Subjects: Volunteers enrolled on the Faculté de Médicine, Dons Du Corps Programme.
Method: Donations were received within a 48-hour post-mortem interval and underwent bilateral carotid artery elevation and intravascular irrigation before fixation with 4% buffered formaldehyde. Brains were extracted up to 24 hours later and underwent selective catheterisation of target vessels and injection of coloured gelatine solutions to isolate specific vascular territories of interest. The fornix and its vasculature was then dissected under a Leica M720 OH5 surgical light microscope.
Results: The fornix has a complex and multi-faceted vascular supply, befitting its extensive projection and embryological origins. This can now be defined as arising from distinct anterior and posterior territories, with an emphasis on the choroidal arteries and paraterminal branches of the anterior communicating artery complex. This 360-degree concept is demonstrated here through both 2D and 3D anatomical images, helping to illustrate this complex anatomy and novel dissection technique.
Conclusion: The fornix receives its vascular supply from multiple parent vessels throughout the extent of its projection from mesial temporal lobe to the hypothalamus. This concept is presented here comprehensively for the first time. This microanatomical knowledge is essential to ensure safer neurovascular intervention and to safeguard patients from devastating cognitive deficits when utilising otherwise essential neurosurgical corridors.

TM3-6

Axonal injury is a targetable driver of glioblastoma progression

Z. F. Baronik[a], M. Clements[a], W. Tang[b], H. Simpson Ragdale[a], R. Oria[c], D. Volteras[b], I. White[a], G. Beattie[a], I. Uddin[a], T. Lenn[a], R. Lindsay[a], S. Castro Devesa[a], S. Karamched[a], M. Lythgoe[a], V. Shahrezaei[b], V. M. Weaver[c], R. Sugisawa[d], F. Roncaroli[e], S. Marguerat[b], C. Hill[a] and S. Parrinello[a]
[a]University College London, London, UK; [b]Imperial College London, London, UK; [c]University of California, San Francisco, USA; [d]Faculty of Medicine, Kindai University, Osaka, Japan; [e]University of Manchester, Manchester, UK

TM3-7

Cell-intrinsic metabolic phenotypes identified in glioblastoma patients using mass spectrometry imaging of 13C-labeled glucose metabolism

A. Tsyben[a,b], A. Dannhorn[c], G. Hamm[c], D. Laurent Couturier[d], M. Pitoulias[a], M. Briggs[e], R. Mair[a] and K. Brindle[a]

[a]CRUK, University of Cambridge, Cambridge, UK; [b]North Bristol NHS Trust, Bristol, UK; [c]AstraZeneca, Cambridge, UK; [d]University of Cambridge, Cambridge, UK; [e]Addenbrooke's Hospital, Cambridge, UK

TM3-8

Understanding the role of the hippo signalling pathway in spinal ependymoma tumour biology

O. Wakefield[a], D. Hilton[b], L. Laraba[a], D. Parkinson[a], O. Hanemann[a] and H. Roy[a]

[a]University of Plymouth, Plymouth, UK; [b]University Hospitals Plymouth NHS Trust, Plymouth, UK

Objective: *NF2*-related schwannomatosis causes development of schwannomas, meningiomas, and ependymomas. Dysregulation of Hippo signalling due to mutations in *NF2*, which encodes an upstream regulator of the pathway, causes increased transcriptional activity of YAP and TAZ, which promotes tumour growth. Ependymomas are cancers of ependymal cells that arise throughout the central nervous system and vary significantly in prognosis/likelihood of recurrence. The subtype caused by *NF2*-related schwannomatosis is classical spinal. This project aims to explore the effect of Hippo dysregulation that occurs due to *NF2* mutations on the tumour microenvironment of ependymomas, since the composition of the immune microenvironment of ependymomas can influence prognosis.

Design: 20 Primary ependymoma samples were used in conjunction with publicly available RNA-sequencing datasets to investigate the correlation between Hippo pathway activity and various immune cell compositions in the tumour microenvironment.

Subjects: The primary samples were diagnosed by histopathology and consisted of 10 classical spinal and 10 myxopapillary ependymomas, another subtype that occurs in the same location but not due to NF2-related Schwannomatosis.

Method: Publicly available RNA-sequencing datasets were analysed using CIBERSORTX to determine the abundance of immune cells based on the expression of their genetic signatures. Immunohistochemistry and methylation analysis was performed on the primary samples, and some were sent for Next Generation Sequencing.

Results: Using YAP/TAZ immunohistochemistry, we have shown that there is a significant correlation between CD163 positive macrophage infiltration and Hippo signalling inactivation in all ependymomas examined using Pearson's correlation (p value $=0.033$). We have also identified a significant correlation between the genetic expression signatures for M2 macrophage infiltration and CYR61 expression in publicly available ependymoma RNA-sequencing datasets using Pearson's correlation (p value $=0.039$), with CYR61 being a target gene of Hippo signalling.

Conclusion: Hippo signalling dysregulation, as could be caused by *NF2*-related schwannomatosis, correlates with an immunosuppressive tumour immune microenvironment. Future work aims to explore a broader range of immune cells in primary samples by multiplex immunohistochemistry.

PARALLEL SESSION
TP1 GENERAL AND TEACHING & TRAINING

TP1-1

The choroidal fissure: in medias res

E. Strachan[a], T. Santarius[b] and I. Maldonado[c]

[a]University Hospital Southampton, Southampton, UK; [b]Cambridge University Hospitals, Cambridge, UK; [c]Faculté de Médicine, Université de Tours, Laboratoire d'Anatomie & iBraiN, Tours, France

Objective: The choroidal fissure is an anatomical landmark that is notable for both its simplicity and complexity. Owing to its three-dimensional relationships deep within the brain, perhaps alien to the more regular familiarity of the cerebral cortex, it is often a hard concept to understand for many trainees. Yet, it is no less important to have a comprehensive understanding of its central position in many subjects pertinent to neurosurgical care and disease. Arguably, the choroidal fissure is truly in the 'midst of all things' and warrants particular attention from established and prospective neurosurgery trainees alike. Not only does the choroidal fissure define itself as an anatomical constant, but it also presents intriguing insights into our phylogenetic history and subsequent anatomical peculiarities; as well as explaining the behaviour of certain commonly related pathologies, all whilst providing us with a unique surgical corridor to deep components of the brain. This presentation relates to the Sir Hugh Cairns Essay Prize 2025 winning entry and is intended to provide a comprehensive perspective on the choroidal fissure that brings into view its anatomical, functional, evolutionary and pathological importance. Furthermore, this method is proposed as an effective tool in the pursuit of neuroanatomical knowledge as a whole that can be applied throughout neurosurgical training.

TP1-2

Development and rollout of a nurse-led regional neurosurgical education programme for non-specialist healthcare professionals, designed to reduce regional inequalities in standards of care for neurosurgical patients

K. Grieve[a,b], P. Hutchinson[b,c], N. Deakin[a,b], R. Legge[b], H. Mee[a,b] and J. Fenner[a,b]

[a]East of England Neurosurgical Network (EoE NN), Cambridge, UK; [b]Cambridge University Hospital, Cambridge, UK; [c]University of Cambridge, Cambridge, UK

Objective: To design, and implement, a Neurosurgery Clinical Network (NCN)-agreed training plan for non-specialist healthcare professionals across the East of England (EoE).
Design: Following regional EoE visits to 10 of the 17 secondary care organisation there was a recurring theme of a paucity of knowledge, guidance and clinical confidence around management of neurosurgical patients. Development of the NCN-agreed training plan is led by the EoE NN Specialist Nurse. Completed stages include conceptualisation (April/May 2025) and launch of a virtual scoping poll to interrogate current knowledge, gaps, and delivery preferences (June 2025).
Subjects: Healthcare professionals of all grades in neurosurgical patient care and community organisations. Relevant working groups include AHPs, doctors, nurses and healthcare support workers.
Method: Development of the training plan will occur in parallel to delivery of educational sessions, which are tailored to sector, specialty, and locality and delivered in-person, hybrid, or virtual. Continual collection of participant feedback will identify themes for future education sessions, with expansion of popular topics to the wider regional audience. Prepared educational material will be accessible via EoE NN FutureNHS page including session recordings, guidance (NICE, DVLA), and condition-specific documentation.
Results: Previous EoE NN education sessions have been co-hosted with EoE Trauma Network and Paediatric Critical Care. The first Nurse-led EoE NN education sessions were delivered in Spring 2025, delivering morning face-to-face sessions within the Emergency Department. Feedback has been extremely positive, mirroring success from 2024.
Conclusion: The EoE NN has pioneered a Nurse-led programme of neurosurgical education for healthcare professionals at all levels of care. Our aim is for all individuals to feel comfortable and confident in providing high-quality care for patients with cranial neurosurgical conditions. The dynamic delivery model will ensure that the educational content is continually guided by the needs of our region, with an aim of reducing inequalities in standards of neurosurgical care.

TP1-3

Closed-loop audit of safety and quality of neurosurgical SHO handover in Addenbrookes Hospital, Cambridge University Hospitals (CUH)

A.-R. Abdel Fattah, C. Gillespie and C. Craven
Department of Neurosurgery, Division of Clinical Neurosciences, Addenbrookes Hospital, Cambridge University Hospitals, Cambridge, UK

Objective: Complete and structured clinical handovers are crucial for patient safety. NICE guidelines outline the minimum standard for all medical handovers (March-2018). This clinical audit evaluates the safety and completeness of weekend handovers among neurosurgical senior-house-officers (SHOs) at Addenbrooke's Hospital, aiming to align practices with the national standard.
Design: Clinical Audit.
Subjects: Senior house officers in Department of Neurosurgery at Addenbrookes Hospital.
Method: Data were collated across three audit cycles between 13th-December-2024 and 9th-May-2025 via weekly questionnaires. Variables collated included degree of neurosurgical experience, completeness of clinical details (using SBAR-format), clinical-preparedness, confidence in the safety of handover, and compliance with implemented tools.
Results: In the first cycle (Dec-2024 to Jan-2025, $N = 15$), two-thirds (66.7%) of SHOs had over 4-months of experience. Mean handover completeness was 1.6/4 on Likert-scale (40%); 30% aware of clinically-unstable patients. Overall, 3/15(20%) felt prepared for the weekend. Less than half (46.7%) received a complete handover, and 5/15 (26.7%) considered it clinically safe - all five trainees had prior neurosurgical experience. Following the implementation of an electronic-handover template and trainee-wide email reminders (Cycle 2: Jan–Feb 2025, $N = 14$), clinical preparedness rose to 64.3%. However, handover completeness only improved to 2.4/4 (60%), likely due to limited compliance (35.7%). In response, visual prompts and a mandatory Friday SBAR-style verbal handover were introduced. In the third cycle (Mar–May 2025, $N = 26$), handover completeness increased to 3.5/4 (87.5%) and awareness of unstable patients to 3.75/4 (93.8%), with compliance rising to 69.2%. Only 11.5% felt partially-prepared or unprepared. Twenty-two respondents (84.6%) reported receiving a complete handover and 19/26 (73.1%) deemed it clinically-safe. In a post SHO-changeover sensitivity analysis ($N = 16$), this rose to 93.8% completeness and 87.5% safety.
Conclusion: Structured electronic-templates combined with focused verbal handovers markedly improved handover quality, clinical-preparedness, and perceived clinical-safety. To achieve 100% compliance with NICE guidance, printed SBAR summaries on ward rounds will be introduced to further orientate SHOs with their patients.

TP1-4

Perception of neurosurgery as a career: perspectives among junior doctors and medical students

N. Danushka[a], R. Jayasinghe[b], Y. Jeyaratnam[c] and D. Attanayake[a]
[a]National Hospital of Sri Lanka, Colombo, Sri Lanka; [b]Derriford Hospital, Plymouth Trust, Plymouth, UK; [c]Faculty of Medicine, Colombo, Sri Lanka

Objective: The study aimed to investigate the perceptions of junior doctors regarding neurosurgery as a future career choice.
Design: A cross-sectional study
Subjects: Final-year medical students, post-interns, and surgical registrars before subspecialty selection were included.

Method: An email survey was conducted. The validated, self-administered questionnaire inquired about the perceived challenges and motivating factors regarding neurosurgery.
Results: Out of the 135 emails, 85 individuals responded. Male: Female ratio was 5:3 and the mean age was 27.97 + 3.87 years. There were 67% medical students, and 14.1% post-intern doctors. Out of them, 82.4% had less than one month of exposure in neurosurgery and 51.8% described their experience on neurosurgery during the clinical exposure as good. But 72.9% of participants think that exposure to neurosurgery training is inadequate. Therefore, 52.9% of the participants considered pursuing neurosurgery as a career. Most of them agreed that the positive aspects of neurosurgery as a career are performing life-saving interventions (96.4%), high precision and skill required (100%), advancements in technology (85.8%), and complex problem-solving (88.2%). Commonly perceived challenges were long surgical procedures (88.2%), long working hours (89.4%), erosion of family and social life (81.1%). Statistically significant associations were found between gender ($p = 0.043$), age ($r = 0.19$, $p < 0.001$) and duration of clinical exposure ($r = 0.245$, $p = 0.024$) versus positive perceptions. Their current designation was not associated with positive or negative perceptions. Interestingly, clinical experience in neurosurgery was significantly correlated with negative perceptions ($r = 0.216$, $p = 0.047$).
Conclusion: Over 53% of juniors are interested in pursuing a career in neurosurgery. Their positive perceptions towards neurosurgery are associated with age, gender, and duration of exposure to neurosurgery. Therefore, significant exposure via teaching and training would improve the career interest in neurosurgery.

TP1-5

Supra-regional online teaching: navigating the challenges of providing digital neurosurgical education

O. Sluijters[a], M. Teo[a], A. Williams[a], A. Helmy[b], S. Jeffery[c] and K. Tsang[d]

[a]Department of Neurosurgery, North Bristol NHS Trust, Bristol, UK; [b]Department of Neurosurgery, Cambridge University Hospitals, Cambridge, UK; [c]Department of Neurosurgery, University Hospitals Plymouth NHS Trust, Plymouth, UK; [d]Department of Neurosurgery, Imperial College Healthcare NHS Trust, London, UK

Objective: To establish a supra-regional teaching program that improves access to didactic teaching sessions for neurosurgical trainees
Design: A fortnightly online teaching programme was established as a collaboration between the neurosurgery departments of Bristol, Plymouth, Cambridge and Imperial, with later inclusion of trainees in Oxford, Southampton, Cardiff and West-Midlands. Sessions were consultant-led, rotating by unit and theme. All sessions were recorded and uploaded to the MedAll platform to enable asynchronous access. Attendance records were kept and feedback was obtained through a structured survey after 1 year, based on Moore's framework for evaluating medical education.
Subjects: UK-based neurosurgical trainees
Results: Between April 2024 and June 2025, 26 sessions were delivered, covering all major neurosurgical subspecialties. Mean live attendance was 19.3 (7–34, SD =5.1)) and mean online views per session was 14.6 (1–28, SD =7.3). Structured feedback ($n = 21$) showed high overall satisfaction (8.8/10) with moderate to high perceived impact on knowledge clinical practice and patient care. There was limited perceived impact on an organisational level. Limited support to attend sessions, related to rotas and encouragement was raised. The ability to access recordings was rated highly.
Conclusion: An online teaching programme can effectively supplement neurosurgical training by offering regular, accessible educational resources. While online teaching is inherently limited by challenges of attendance, access and trainee engagement, the feedback and continued usage of the resources underscores the value of this initiative. There is a role for such programs alongside nationally led efforts to enhance neurosurgical education.

TP1-6

Hands-on surgical experience of first-year neurosurgical trainees in Sri Lanka: descriptive study

N. Danushka[a], Y. Jeyaratnam[b], P. Pirakash[a], V. Wedagedara[c], R. Jayasinghe[d] and D. Attanayake[a]

[a]National Hospital of Sri Lanka, Colombo, Sri Lanka; [b]Faculty of Medicine, Colombo, Sri Lanka; [c]National Hospital, Galle, Sri Lanka; [d]Derriford Hospital, Plymouth Trust, Plymouth, UK

Objective: Early surgical exposure plays a pivotal role in shaping competent neurosurgeons. In low- and middle-income countries such as Sri Lanka, variability in training resources and caseload may influence the degree of operative involvement among trainees. This study evaluates the nature and extent of hands-on surgical experience acquired by first-year senior registrars (SRs) in neurosurgery in Sri Lanka.
Design: A descriptive cross-sectional study.
Subjects: Logbooks of neurosurgical SRs who completed the first year of training were retrospectively analyzed.
Method: Surgical procedures were categorized into trauma vs. non-trauma and elective vs. emergency. The level of involvement—whether as primary surgeon or assistant—was recorded. Data were analyzed to calculate average case volumes and distribution patterns across different procedure types.
Results: On average, each trainee recorded 358 procedures during the first year, comprising 71 trauma-related and 274 non-trauma surgeries. Of the trauma surgeries, 63 were independently performed by SRs. Among non-trauma cases, SRs served as the primary surgeon in 161 procedures. Each trainee independently performed an average of 57 tumour resections and 12 aneurysm clippings. Additionally, each

trainee was involved in approximately 120 major spinal surgeries as the primary operator. In terms of major emergency interventions, the average caseload included 22 decompressive craniectomies and 10 intracerebral hematoma evacuations. Trauma surgeries independently performed by trainees included an average of 18 epidural hematomas and 20 subdural hematomas in the first year.
Conclusion: First-year senior registrars in neurosurgery in Sri Lanka acquire significant hands-on surgical experience, particularly in non-trauma cranial and spinal procedures. However, to ensure comprehensive training, greater emphasis on trauma exposure and complex surgical cases is warranted.

TP1-7

An analysis of neurosurgery training in the UK: lessons from the 2023 Royal College of Surgeons workforce census

A.-V. Gherman and I. Kamaly-Asl
Royal Manchester Children's Hospital, Manchester, UK

Objective: To provide an up-to-date overview of the neurosurgical training in the UK, sharing insights into the trainees' experience, key challenges and workforce trends.
Design: Cross-sectional analysis of workforce data from the Royal College of Surgeons of England (RCSE) 2023 surgical workforce census.
Subjects: The study includes responses from trainees, SAS surgeons, locally employed doctors (LEDs) from all surgical specialties.
Method: Data were extracted from the RCSE census toolkit and analysed using descriptive and comparative statistics. Comparative analysis across all surgical specialties was conducted to contextualise the findings.
Results: 167 Neurosurgery doctors who are not yet consultants responded to the survey, 8.4% core trainees, 52% higher surgical trainees, 18.6% LEDs and 21% SAS doctors. The neurosurgery cohort in the UK is diverse, with 58.1% identifying as non-White British. Gender disparity remains the most significant in neurosurgery compared to other surgical specialties, although improving amongst trainees (25.5% female trainees vs. 12.3% female consultants). Theatre access was the most reported challenge by 72% of responders, significantly more limited than all other surgical specialties. 82.4% of neurosurgery responders always or frequently work beyond their contracted hours, the highest percentage of all specialties ($p = 0.0001$) and only 50% utilise their full annual leave allowance. Despite these pressures, burnout in neurosurgery was reported by 56.4%, the lowest amongst all other specialties ($p = 0.134$). 31.3% of responders would consider leaving neurosurgery entirely and 53.7% would recommend their specialty to a friend. Subgroup analysis revealed that neurosurgeons who are parents reported higher burnout rates and were less likely to recommend the specialty than those who are not parents. (37.5% parents vs. 63.6% not parents).
Conclusion: Neurosurgery training in the UK remains uniquely demanding. Significant challenges exist in operative access, work-life balance and disparity. Trainees paradoxically reporting the lowest burnout rates among surgical specialties suggests perhaps that the passion and fulfilment found in their workload is a buffer against the stress and system challenges.

TP1-8

Supporting neurosurgical trainees during pregnancy - a survey of UK trainees and guidance from the british neurosurgical trainee association

A. Bjornson[a], Z. Sher[b], R. Sun[c] and P. De Lacy[a]
[a]Sheffield Teaching Hospitals, Sheffield, UK; [b]University Hospitals Birmingham, Birmingham, UK; [c]University Hospitals Coventry and Warwickshire, Coventry, UK

Objective: Neurosurgical training is challenging, time-intensive, and remains male-dominated. Numerous studies have shown female surgical trainees are more likely to have children later in life, are more likely to suffer from fertility issues and suffer from pregnancy related complications. In addition, they face workplace stigma and an impact on career progression. These challenges are likely to contribute to the failure to attract and retain female neurosurgeons to the profession and limits the gender diversity in our workforce. The BNTA aims to gain a better understanding of the experience of UK neurosurgeons who are pregnant during training and produce a guide to support trainees during this period
Method: The BNTA released an anonymised survey to the neurosurgical trainees via the email mailing list throughout the period February to March 2025.
Results: Eighteen surgeons responded to the survey, with the majority being pregnant in the last 4 years. The results showed that most women became pregnant in the later years of training or fellowship years. There was concern about the stigma and judgement when informing their colleagues of their pregnancy and they experienced an impact on training opportunities, case numbers and alteration to their workload. Ninety percent of respondents experienced pregnancy-related symptoms, which required workplace adjustments. Most did not find it easy to access information about occupational hazards in neurosurgery and were not supported with regular risk assessments. Although 85% of trainees felt somewhat supported on return to work, many felt adjustments such as phased return, less than full time, and reduced on-call burden would improve this transition. Over 40% of respondents were still breast-feeding on return to work.
Conclusion: In response to the survey results, the BNTA have produced a pregnancy in neurosurgery guide. This focuses on managing occupational hazards, workplace adjustments during pregnancy, and guidance for taking time out and returning to work.

TP1-9

A quantitative approach to understanding the effect of the COVID-19 pandemic on training opportunities for neurosurgical trainees in England

D. Thompson[a,b], A. Williams[b], D. MacArthur[c], S. Thomson[d] and A. Helmy[a]

[a]Cambridge University Hospitals, Cambridge, UK; [b]Southmead Hospital, Bristol, UK; [c]Nottingham University Hospital, Nottingham, UK; [d]Elogbook, London, UK

Objective: The literature speaks to the impact of the COVID-19 pandemic having a profound effect upon surgical training. Our objective with this study was to quantify the effect of the COVID-19 pandemic upon Neurosurgical training and to test whether an effect on the quality of Neurosurgical can be inferred from a quantitative methodology.
Method: Surgical training episodes logged by Neurosurgical trainees with a National Training Number (NTN) were provided by eLogbook from the period January 2019 – December 2023. This was crosslinked with trainee data provided by the Intercollegiate Surgical Curriculum Programme (ISCP). This was compared with data from Capse Healthcare Knowledge System that records operative spells in English Neurosurgical Units over the same period.
Results: There were 24,416 surgical training episodes logged by trainees in 2023 compared with 32,033 in 2019. The ratio of surgical training episodes logged to operative spells recorded increased from 0.74 to 0.84 between 2019 and 2021, but fell to 0.72 by 2023. The data when filtered for elective cranial surgical training episodes logged compared with operative spells shows a significant drop from 67 to 60%. However, spinal surgical training episodes logged have risen from 58 to 70% of operative spells but the number of surgical training episodes logged has declined by 1,118. The average number of surgical training episodes logged per year per trainee in 2019/20 was 132 and this has risen every year and stands at 173 in 2022/23.
Conclusion: The primary findings of this study are that the recording of training events is below pre-pandemic levels. 4,617 fewer cases were logged in 2023 than 2019 and the proportion of elective cranial cases logged compared to operative spells fell from 67% in 2019 to 60% in 2023. This study suggests further efforts are needed to safeguard training opportunities and maintain a high quality of training.

TP1-10

Utility of artificial intelligence (AI) and machine learning (ML) in neurodegenerative disorders

M. Maahtaab[a] and S. Murphy[b]

[a]Royal College of Surgeons, Dublin, Ireland; [b]Beaumont Hospital, Dublin, Ireland

TP2 SPINE
TP2-1

Outcomes of surgical decompression for foot drop: a study of predictive factors for recovery

H. Vakil, A. Zolnourian, S. Hosainey, M. Baraka, S. Manivannan, A. Nader-Sepahi and E. Shenouda

Southampton University Hospital NHS Trust, Southampton, UK

Objective: To evaluate factors predicting recovery following surgical decompression for foot drop due to degenerative conditions.
Design: A retrospective cohort study of 119 patients undergoing surgical decompression for degenerative foot drop (2011–2021). Data on demographics, comorbidities, symptom duration, and severity were analysed. Recovery, defined as $\geq$1 MRC grade improvement, was assessed using regression to identify predictors of postoperative neurological improvement.
Subjects: 119 patients (63 men, 55 women; mean age 52) with degenerative foot drop undergoing surgical decompression were included. Patients with foot drop duration exceeding six months were excluded.
Method: This retrospective study reviewed patients undergoing surgical decompression for degenerative foot drop from January 2011 to January 2021. Data included age, sex, duration of foot drop, severity (partial or complete), sensory disturbance, pain at presentation, ischaemic heart disease, diabetes, hypertension, and smoking status. Patients with foot drop exceeding six months and patients who had not undergone surgical decompression for their symptoms were excluded from the study. Recovery was defined as improvement of at least one MRC grading scale.
Results: Of 125 patients, six were excluded due to prolonged foot drop. The cohort included 63 men and 55 women with a mean age of 52 years. Foot drop duration from presentation was categorised as within 3, 7, 10, 14, 21, 30 and 180 days. Aetiologies included degenerative disc disease, stenosis, and cauda equina syndrome. Regression analyses showed younger age (OR 1.06, CI [1.02–1.11], $p < 0.01$), absence of hypertension (OR 0.12, CI [0.02–0.60], $p < 0.01$), and foot drop duration within 3 days (OR 5.07, CI [1.25–28.8], $p < 0.05$) were positive predictors of recovery. Diabetes, ischaemic heart disease, smoking, pain, and foot drop severity were not significant predictors.
Conclusion: Younger, non-hypertensive patients with foot drop $<$3 days are most likely to improve after surgical decompression. These findings highlight the importance of careful patient selection. Individualised decisions and further prospective studies are needed to guide clinical practice.

TP2-2

Influence of distal lumbar lordosis on adjacent segment degeneration after single level lumbar instrumentation

O. Castanedo, R. Hodnett, R. Skeete, J. Merola and S. Morris
Southmead Hospital, Bristol, UK

Objective: One- or two-level lumbar fusion is a common spinal procedure and post-operative adjacent segment degeneration (ASD) remains a critical concern. Sagittal malalignment has previously emerged as a significant factor in deformity surgery, closely linked to the development of adjacent segment disease and implant failure requiring revision surgery. Recent research has suggested distal lumbar lordosis should be similar between all subtypes of spinal sagittal alignment whilst proximal lumbar lordosis varies between subtypes. This study aimed to investigate the relationship between distal lumbar lordosis following single level lumbar instrumentation in the distal lumbar spine, and the development of adjacent segment degeneration requiring revision surgery.
Design: Prospective single centre cohort study with retrospective review of imaging.
Subjects: Between 2014 and 2019, 1174 spinal procedures were performed on 1024 patients, of which 492 patients underwent 519 lumbar procedures. 291 patients were found to have undergone single-level instrumentation between L4 and S1.
Method: Post-operative weight-bearing radiographs were analysed to measure spinopelvic sagittal parameters. Patients who underwent revision surgery due to adjacent segment degeneration were identified. Parameters were analysed for correlation with development of adjacent segment degeneration requiring revision surgery.
Results: There was a minimum 5 year follow-up of 291 patients who underwent single level instrumented surgery between L4 and S1. 222 (76%) underwent instrumentation as the index case while 69 (24%) underwent instrumentation following previous decompressive surgery. 75 (25.7%) cases required revision surgery and 52 (17.8%) were due to adjacent segment degeneration. In the revision for ASD cohort, mean L4-S1 lordosis was 29.7° compared to 33.2° in the other patients, which was a significant difference ($p = 0.016$).
Conclusion: In this long-term follow-up study, reduced post-operative distal lumbar lordosis was significantly associated with increased long-term revision rates secondary to adjacent segment degeneration. These findings underscore the critical importance of restoring and preserving adequate distal lumbar lordosis during single-level lumbar instrumentation, to improve surgical outcomes.

TP2-3

Advancing intelligence: improved agreement between modern ai models and spinal surgeons in complex surgical decision-making

M. N. Elmarawany[a,b], M. Abouelghar[c], S. Mehmet[d], I. Harding[a], A. J. Bowey[e], J. Andrews[e], D. Chan[f], R. Jayasuriya[g], S. Srinivas[g], J. Tomlinson[g], E. Bayley[h], M. P. Grevitt[h], S. James[i], A. Jones[i] and M. J. H. McCarthy[i]
[a]North Bristol NHS Trust, Bristol, UK; [b]Department of Neurosurgery, Menoufia University Hospitals, Menoufia, Egypt; [c]Shebin Elkoum Ophthalmic Hospital, Menoufia, Egypt; [d]University Hospital Lewisham, London, UK; [e]The Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle University, Newcastle, UK; [f]Royal Devon and Exeter Hospital, Exeter, UK; [g]Sheffield Teaching Hospitals, University of Sheffield, Sheffield, UK; [h]Nottingham University Hospitals NHS Trust, Nottingham, UK; [i]University Hospital of Wales, Cardiff, UK

Objective: Artificial intelligence (AI) large language models (LLMs) have shown growing potential in assisting clinical decision-making. A 2023 study comparing ChatGPT-3.5, ChatGPT-4, and Bard with UK spinal surgery consultants demonstrated low agreement levels. This study evaluates the progress of AI by assessing newer models' performance on the same complex surgical scenarios.
Design: Comparative observational study using repeated expert-AI assessments.
Subjects: Four modern AI LLMs—ChatGPT-4o (OpenAI), Deepseek, Gemini (Google), and DougallGPT (a medical-specific model)—were evaluated in February 2025. Their responses were compared to those of ten experienced UK spinal consultants from the original 2023 study.
Method: All models answered 18 complex spinal surgery scenarios multiple times. The most frequent response (mode) per scenario for each LLM was recorded. Cohen's Kappa statistic was used to assess agreement between each LLM and the surgeons' consensus, with p-values reported for statistical significance. The performance of the new models was compared to that of the previous generation (ChatGPT-3.5, ChatGPT-4, and Bard), including a comparison of overall group performance.
Results: Newer AI models demonstrated notably higher agreement with spinal consultants. ChatGPT-4o ($\kappa = 0.263$, $p = 0.018$) and Deepseek ($\kappa = 0.251$, $p = 0.026$) showed statistically significant agreement. Gemini ($\kappa = 0.200$, $p = 0.058$) and DougallGPT ($\kappa = 0.184$, $p = 0.087$) approached significance. In contrast, prior models (ChatGPT-3.5, ChatGPT-4, Bard) exhibited lower, non-significant agreement. The combined 'new LLM modes' showed significantly higher agreement with surgeons ($\kappa = 0.291$, $p = 0.01$) compared to older models ($\kappa = 0.136$, $p = 0.123$).
Conclusion: Modern AI language models exhibit significantly improved alignment with expert spinal surgical decision-making. These results suggest that AI is rapidly evolving and approaching the performance level of human consultants in complex clinical scenarios, with potential implications for future decision support in spine surgery.

TP2-4

Surgeons and robots: unveiling the intraoperative cognitive demands of robotic-assisted spinal surgery

M. Nowell and J. Merola
Southmead Hospital, Bristol, UK

Objective: Recent advancements in medical technology have primarily emphasized patient safety and surgical outcomes, often overlooking the interaction between new technologies and the surgical team. This study addresses the gap by exploring the cognitive workload of surgeons using a new robotic system in spinal surgery. Cognitive workload encompasses various factors such as physical, mental, and temporal costs associated with task performance. High workload, particularly during the learning phase, can increase surgeon errors and negatively impact patient outcomes, as well as disrupt essential teamwork in the operating room.
Design: Quantitative observational study
Subjects: Users of new robot-assisted technology - registrars/fellows/consultants
Method: Data were collected prospectively from the introduction of the robot. Surgeons were asked to complete a questionnaire based on the SURG-TLX, a surgery-specific adaptation of the NASA-TLX workload measure. This tool helps assess the impact of perceived workload stress during complex tasks. Average weighted scores are calculated for mental demand, physical demand, task complexity, situational stress, distraction and temporal demand. An overall workload score is assigned.
Results: 58 robot-assisted spinal surgeries have been performed March – October 2024. 38 (66%) were single-level instrumentation. 45 (76%) were in degenerative spinal conditions. A total of 374 screws placed. 7 (1.9%) had breached but none required revision surgery. The overall weighted scores for each dimension of the SURG-TLX indicate significantly reduced physical demand and notable raised distraction contributing to cognitive workload. The overall workload score was 44 suggesting moderate perceived workload.
Conclusion: Robotic-assisted navigation demonstrates a favourable cognitive workload profile. Enhanced surgeon training could further improve usability and integration into practice.

TP2-5

Evaluating MRI-derived vertebral bone quality scores predictors of postoperative loss of lordosis and cage subsidence following anterior cervical discectomy and fusion

O. Lubbad[a], W. Ullah Mahmood[a], A. Mamun[a], S. Murphy[b,c] and N. Mazarakis[d,e]
[a]Brighton and Sussex Medical School, Brighton, UK; [b]Department of Surgery, Royal College of Surgeons Ireland, Dublin, Ireland; [c]Beaumont Hospital, Dublin, Ireland; [d]Royal Sussex County hospital, Brighton, UK; [e]Royal College of Surgeons in Ireland Medical School, Dublin, Ireland

Objective: Cage subsidence and postoperative loss of cervical lordosis are well-recognised complications following anterior cervical discectomy and fusion (ACDF), both of which can negatively impact clinical and radiological outcomes. Poor bone quality has been increasingly implicated in the development of these complications. While MRI-derived vertebral bone quality (VBQ) scores have been established as a reliable predictor of cage subsidence, their potential role in predicting postoperative loss of lordosis remains unclear. This study aims to evaluate whether VBQ scores can serve as a predictive biomarker for both cage subsidence and the loss of cervical lordosis following ACDF.
Design: Retrospective cohort study
Subjects: Adult patients undergoing single-level ACDF, with MRI scans within a year preoperatively, and radiographic follow up at least 6 months postoperatively.
Method: VBQ scores were calculated using T1-weighted MRI preoperative MRI scans by dividing mean signal intensity of vertebral bodies (C3–C7) by cerebrospinal fluid signal intensity. Radiological outcomes included cage subsidence ($\geq$2 mm disc height loss) and loss of cervical, segmental, and proximal junctional lordosis ($\geq 5^{\circ}$ decrease respective Cobb angle). Analysis was performed using SPSS version 29.
Results: 56 Patients met the eligibility criteria. Cage subsidence occurred in 26 patients and was significantly associated with higher VBQ scores (2.798 vs. 2.148, $p < 0.001$). VBQ remained a significant independent predictor of subsidence in multivariate analysis (OR: 14.54, $p < 0.001$), with an AUC of 0.812. Loss of cervical lordosis occurred in 15 patients and was also associated with higher VBQ scores (2.755 vs. 2.293, $p = 0.004$). VBQ predicted cervical lordosis loss with an AUC of 0.772 and remained significant in multivariate models (OR: 5.534, $p = 0.01$). No statistically significant differences were observed in VBQ scores between patients with segmental and proximal junctional loss of lordosis.
Conclusion: VBQ scores are strong independent predictors of both cage subsidence and postoperative loss of cervical lordosis following ACDF. MRI-based bone quality assessment may assist in preoperative risk stratification and inform surgical decision-making.

TP2-6

Safety and feasibility of anterior cervical discectomy and fusion (ACDF) as a day-case procedure: a single-surgeon experience

N. Slator, J. Mcdowall, A. Philip, L. Hughes, R. Moon and J. Merola
North Bristol NHS Trust, Bristol, UK

Objective: To assess the safety and practicality of performing anterior cervical discectomy and fusion (ACDF) as a day-case procedure.
Design: This prospective case series was conducted over three years by a single spinal surgeon. All elective ACDF patients were pre-operatively screened for same-day discharge. Exclusion criteria included frailty, age >75 years, 3 levels or more level surgery, history of swallowing difficulties, previous anterior cervical surgery or social circumstances

preventing safe same-day discharge. A standardised pre-operative assessment tool was applied.
Subjects: A total of 73 patients underwent ACDF over a consecutive 3-year period: 12 emergency and 61 elective cases. Of the elective group all were assessed for suitability for day-case surgery. 31 Patients (51%) were safely discharged as day-case.
Method: All patients underwent ACDF via a standard right anterior approach under general anaesthetic. Postoperative discharge was based on neurologic stability, oral intake, mobility, pain control and postoperative review for safe swallowing ability. All day-case patients underwent postoperative x-ray within 4 hours of surgery. Follow-up included a postoperative phone call at 2 weeks and a 12-week outpatient review. All complications and readmissions were recorded.
Results: Of the patients who were able to be safely discharged on the same day. There were no complications, readmissions, or reoperations within 30 days. Clinical outcomes were positive, and patient satisfaction was high. A further 6 patients had been planned initially as potential day-case discharge but on post-operative review decision was made to remain as inpatient overnight.
Conclusion: With careful patient selection and a structured peri and post-operative protocol, day-case ACDF is safe and effective. This series reported no postoperative complications or readmissions among the day-case group, supporting this as a viable alternative to inpatient care. Careful pre-operative counselling and patient preparation were key when managing patient's expectations and led to higher reported satisfaction.

TP2-7

Day case cervical spine surgery – a retrospective case series

K. R. Purushottaman[a,b], M. Prasad[a], N. Jayakumar[a] and M. Eren Enc[a]

[a]James Cook University Hospital, Middlesbrough, UK; [b]Newcastle University Medicine Malaysia, Johor Bahru, Malaysia

Objective: This study aims to evaluate the safety and efficacy of day case cervical spine surgery, specifically Anterior Cervical Discectomy and Fusion (ACDF), in reducing hospital length of stay (LOS) without compromising patient outcomes.
Design: A retrospective review of theatre databases was conducted for all ACDF and cervical disc replacement procedures performed between 2017 and 2022.
Subjects: All the cases performed under Consultant Neurosurgeons in JCUH were selected and categorised into two groups based on LOS: <24 hours (day-case) and ≥ 24 hours (inpatient).
Method: Electronic patient records were reviewed to collect data on demographics, LOS, readmission and/or re-operation within 30 days, and symptom status at follow-up.
Results: A total of 319 cases were identified. Of these, 88.1% had a LOS of ≥ 24 hours, while 11.9% were LOS <24 hours. In the LOS ≥ 24 hours group, there is a slight female predominance at a ratio of 1.2:1, whereas in the LOS <24 hours group, there is a slight male predominance at a ratio of 1.1:1. No patients in the LOS <24 hours group had a drain. In the LOS <24 hours group, 84.2% had symptom resolution vs 46.6% in the LOS ≥ 24 hours group, with p value of 0.000004 (<0.05), suggesting a statistically significant association between LOS and symptom resolution. In the LOS ≥ 24 hours group, 2.1% were readmitted within 30 days and 1.4% were re-operated within this time frame whereas in the LOS <24 hours group, 2.6% were readmitted and no patients were re-operated within this time frame. The main cause of this is hematoma, pneumonia & dysphagia. All day-case surgeries were single-level procedures, with intraoperative x-rays performed to check cage positions.
Conclusion: Day case ACDF surgery proved to be safe and produced outcomes comparable to inpatient cases. Further cost-analysis is needed to evaluate the economic benefits of this approach. Optimal patient selection, the use of intraoperative x-rays, and the avoidance of drains where safe may facilitate effective day case ACDF surgery.

TP2-8

Assessment of radiological outcomes and factors contributing to a poor clinical outcome in interlaminar endoscopic spine surgery for spine stenosis decompression

A. Agrawal[a] and N. Baban[b]

[a]University Hospital of Wales, Cardiff, UK; [b]Grand Med Hospital, Ulaanbaatar, Mongolia

Objective: Lumbar spine stenosis is a prevalent degenerative condition significantly impairing quality of life due to neural element compression. Fully endoscopic interlaminar decompression has emerged as a minimally invasive surgical alternative, offering reduced iatrogenic injury and faster recovery. There however exists a gap in information about the spinal canal decompression achieved through this method.
Method: A prospective database of 98 patients who underwent a single level interlaminar decompression of lumbar spine stenosis between April 2019 and Dec 2021 were assessed and followed up on average for 18 months. The dataset was divided into patients who had less than 80% improvement in Oswestry Disability Index (ODI) score from pre-operative to follow up assessment and those that had more than 80% improvement. The Chi-Square test was used to assess the contribution of multiple possible factors to the poorer outcome set. Lumbar spine MRIs of the patients were taken at 3 time points: pre-operatively, immediate post-operatively and at follow up. The area of the spinal canal was calculated on all MRI images at 3 levels – the Upper discal margin, middle discal margin and lower discal margin
Results: Factors showing significant association with poor endoscopic decompression outcomes included diabetes mellitus, presence of root adhesion to the surrounding tissue during surgery, presence of scoliosis, presence of grade 1 spondylolisthesis, presence of anterior and lateral traction

spurs and interspinous ligament degeneration ($p < 0.05$). Clinically, the mean ODI significantly improved from 28.4 ± 7.7 pre-operatively to 5.3 ± 7.0 at final follow-up ($p < 0.001$). Radiologically, a statistically significant increase in spinal canal CSA was observed across all three measured levels between pre-operative and final follow-up assessments ($p < 0.01$ for all comparisons). Specifically, the spinal canal CSA improved by 43% at the upper discal level, 77.5% at the mid-discal level and 85% at the lower discal level

TP2-9

The patients' quality of life after surgical treatment of low back pain: a prospective cross-sectional study of a single centre

M. E. Sakellaridou, I. Galatianou, E. Simoglaki, G. Georg, T. Georgiou, V. Georgilaki, M. Fratzoglou and T. Paleologos
General Hospital of Nikea-Piraeus, Athens, Greece

Objective: Low back pain is a very frequent worldwide problem with significant socioeconomic consequences. Almost 80% of the population is expected to experience it at some point in their lives and the treatment can be conservative, minimally invasive or surgical. Surgery is recommended when there is compression of neural structures or instability and the duration of the symptoms lasts more than 6 weeks or there are neurological deficits. The aim of this study was to investigate the health-related quality of life of patients after discectomy/laminectomy and whether there was a difference between the two procedures.
Design: This was a prospective cross-sectional study.
Subjects: The study sample consisted of all patients who underwent discectomy/laminectomy in our neurosurgical clinic. The patients that underwent spinal fusion were excluded.
Method: Health-related quality of life was assessed with the short health survey questionnaire (SF-12), the back pain was assessed using the Quebec Back Pain Disability Scale (QBPDS) and the patients' functionality was assessed using the TUG test.
Results: The study included 198 patients with mean age 52.1 years. Approximately, 54% of the patients underwent microdiscectomy and 46% laminectomy. More than half of the patients were forced to stop working due to their disease. The patients' lumbar spine pain before surgery was 6.3 ± 1.2, while three days after surgery it was 4.6 ± 1.2 and decreased even more 6 weeks later (1.6 ± 0.8) and 6 months after surgery (0.3 ± 0.5). The patients' quality of life improved significantly both overall and in individual dimensions with a significant difference seemed to exist 6 weeks and 6 months postoperatively. The total QBPDS score decreased from 77.52 ± 12.1 preoperatively to 12.28 ± 11.8 six months postoperatively.
Conclusion: Surgical treatment of low back pain could improve the postoperative quality of life significantly and should be preferred when it is indicated.

TP3
VASCULAR

TP3-1

Risk of aneurysm rupture study - genetic predictors of intracranial aneurysm rupture (ROAR-DNA)

B. Gaastra[a], W. Tapper[a] and D. Bulters[b]
[a]University of Southampton, Southampton, UK; [b]University Hospital Southampton, Southampton, UK

Objective: Genetic factors are thought to play a key role in intracranial aneurysm formation and rupture. However, no current genetic tests identify individuals at risk of aneurysm development, and existing rupture risk prediction models do not incorporate genetic data. ROAR-DNA builds on the Risk of Aneurysm Rupture (ROAR) study and aims to identify genetic variants associated with aneurysm formation and rupture. These genetic markers will be used to inform patient selection for aneurysm screening and integrated into predictive models to help guide treatment decisions.
Design: UK multicentre genome-wide association study of genetic variation associated with aneurysm formation and rupture.
Subjects: All 20,445 members of the ROAR cohort will be invited by text message or post to provide a saliva sample for DNA extraction.
Method: Previous GO-SAH study return rates suggest 6,000 ROAR participants will return saliva samples for DNA analysis. 1,000 with extreme phenotypes will undergo whole-genome sequencing (WGS). These will be combined with WGS data from 1,500 publicly available cases and 100,000 healthy controls. Rare and common variants associated with aneurysm formation and rupture will be identified using burden and single variant tests. Rare variants identified will be added to a customised genotyping array, which will be used to type the remaining 5,000 ROAR-DNA patients and over 3,000 patients from our ongoing GO-SAH study of ruptured aneurysms. The significance and effect-size of both rare and common variants will be determined by a final meta-analysis involving over 10,000 patients.
Results: The results will be disseminated through national and international presentations and published in peer reviewed journals.
Conclusion: ROAR-DNA will be a definitive study of the genetics of intracranial aneurysm formation and rupture. The findings will enable improved risk stratification for aneurysm screening and treatment and provide insight into novel therapeutic targets to prevent rupture.

TP3-2

Does microsurgery have similar neurological outcomes to stereotactic radiosurgery for brainstem cavernous malformation? A systematic review

F. Zahin[a], S. Chaudhry[b], I. Shibi[a], M. Rupakheti[b], M. Poon[c,d] and M. Teo[c]

[a]The University of Buckingham Medical School, Buckingham, UK; [b]The University of Edinburgh Medical School, Edinburgh, UK; [c]Southmead Hospital, North Bristol NHS Trust, Bristol, UK; [d]Centre for Clinical Brain Sciences, University of Edinburgh, Edinburgh, UK

Objective: Brainstem cavernous malformations (BSCMs) are challenging to manage because of the eloquent location. While there are ongoing studies comparing conservative and surgical management, the outcomes following microsurgery or stereotactic radiosurgery (SRS) for BSCM are unclear. We summarised the reported neurological outcome and annual haemorrhage risk following microsurgery and SRS.

Design: Systematic review

Method: We searched PubMed, Medline, Embase, Cochrane, and ClinicalTrials.gov on 30 May 2025 for cohort studies or clinical trials with $\geq$10 patients with BSCM reporting any outcomes $\geq$3 months after microsurgery or SRS. We focussed on neurological outcome (new, worsened, or persistent neurological symptoms) and annual haemorrhagic rate (AHR) in this abstract.

Results: Of the 694 records retrieved, 113 studies reported outcomes at $\geq$3 months after BSCM treatment. Fifteen studies comprising 1,964 BSCM patients reported neurological outcomes or AHR. There was no study reported neurological outcome for both microsurgery and SRS. New, worsened, persistent neurological deficit was observed in 9.2–61.0% after microsurgery (median follow-up time 1.7–12.8 years; 6 studies) and in 7.4–26.7% after SRS (median follow-up time of 3.4–10 years; 4 studies). AHR was 0.4–1.6% following microsurgery (median follow-up time 2.9–6 years; 3 studies) and 1.1–4.6% following SRS (median follow-up time 3.4–15 years; 7 studies). One study compared outcomes following microsurgery and SRS reporting no difference in recurrent haemorrhage (hazard ratio [HR] 3.90, 95% confidence intervals [CI], 0.46–32.65; $p = 0.21$)

Conclusion: Allowing for the inherent selection bias of treatment modality for brainstem cavernoma, lack of randomisation and potential impact of confounding factor, current studies reported similar neurological outcomes following microsurgery and SRS with comparable follow-up time, though granularity is lacking. The AHR is lower after microsurgery. Microsurgery should be considered for those requiring treatment.

TP3-3

Radionecrosis and persistent vascular pathology: clinical, radiological, and histopathological correlates of treatment failure after AVM radiosurgery

F. Steckler[a,b], K. Agyemang[a], M. Helley[a], M. El Sheikh[a], A. Stan[a] and E. J. St. George[a]

[a]The Institute of Neurological Sciences, Queen Elizabeth University Hospital, Glasgow, UK; [b]University of Glasgow, Glasgow, UK

Objective: Symptomatic radionecrosis requiring surgical intervention is uncommon, with limited series detailing its management and even fewer reporting histopathological findings. This study aims to identify factors associated with the need for surgery following stereotactic radiosurgery (SRS) for brain arteriovenous malformations (AVMs) at a regional neurosurgical centre.

Design: Patients from the Institute of Neurological Sciences, Glasgow, who developed a solid enhancing lesion following radiosurgery for brain AVMs that was resected between January 2005 and December 2020 were identified from a prospective database. Further patients from our department who underwent SRS for brain AVMs at the National SRS Unit in Sheffield during the same period were also included.

Subjects: The final dataset comprised of 93 patients.

Method: The cohort was retrospectively analysed and stratified into four outcome groups: resected without RN ($n = 6$), resected post-RN ($n = 7$), conservatively managed RN ($n = 7$), and no RN/no surgery ($n = 73$). Comparative analysis was conducted using IBM SPSS v29. Demographic and treatment-related variables were evaluated using binary logistic regression. Histopathology was reviewed in resected RN cases.

Results: RN occurred in 15.1% of patients. A post-SRS haemorrhage occurred in 9% of the patients. 14% required resection for either their residual AVM or RN, with a median latency from SRS to RN of 8.5 years. Resected cases shared similar features: Large treatment volumes ($\sim$7800-8020mm^3), pre-SRS embolization ($\geq$66%), and high post-SRS haemorrhage rates (29–50%). These were significantly predictors of requiring resection ($p \leq 0.05$). In contrast, patients successfully treated with SRS had smaller treatment volumes (median $<$1280mm^3), lower pre-SRS embolization rates ($<$33%), and post-SRS haemorrhage rates $<$4.1%. Histologically, 71% of resected RN cases showed residual AVM despite angiographic obliteration.

Conclusion: Irradiated AVMs that ultimately require surgical intervention may represent distinct manifestations of treatment failure. Histopathological analysis from our limited series reveals persistent arteriovenous malformation in cases of radionecrosis necessitating surgery, suggesting that incomplete obliteration may underlie these outcomes.

TP3-4

The genetic association between arterial stiffness and atherosclerosis with intracranial aneurysms: insights from the FinnGen and UK biobank studies?

F. Ewbank[a], W. Tapper[b] and D. Bulters[a]
[a]University Hospital Southampton, Southampton, UK; [b]University of Southampton, Southampton, UK

Objective: The role of arterial stiffness and atherosclerosis in the formation and rupture of intracranial aneurysms (IA) is unclear. The aim of this study is to characterise the genetic association between IA and both arterial stiffness and atherosclerosis.
Design: Two sample Mendelian randomisation analyses were performed to characterise the association between objective measures of arterial stiffness and IA using data obtained from the UK Biobank and FinnGen study. Pulse wave arterial stiffness index was used to measure large vessel stiffness and reflection index was used to measure small and medium vessel stiffness. One sample analyses characterised the association between atherosclerosis and related conditions with IA in the FinnGen study.
Subjects: These analyses included 1,338 ruptured IA and 992 unruptured IA in the FinnGen study.
Method: Independent SNPs strongly associated with arterial stiffness and atherosclerosis were used as instrumental variables and primary analyses were based on the inverse variance weighted method.
Results: In the two sample analysis, there was a causal association between pulse wave arterial stiffness index and subarachnoid haemorrhage (SAH) (OR 2.82 [1.34–5.92], $p = 0.01$) but not IA overall or unruptured IA (UIA). There was also no association between the reflection index and IA, UIA or SAH. The one sample analysis showed no association between IA, UIA or SAH and peripheral atherosclerosis, coronary atherosclerosis or ischaemic heart disease. While there was no association between cerebral atherosclerosis and IA, there was an association between ischaemic stroke and IA (OR 1.29 [1.17–1.43], $p < 0.01$), UIA (OR 1.34 [1.16–1.55], $p < 0.01$), and SAH (OR 1.24 [1.09–1.41], $p < 0.01$).
Conclusion: This Mendelian randomisation study suggests large vessel stiffness is causally associated SAH. Arterial stiffness appears to influence the risk of aneurysm rupture rather than formation. It is independent of hypertension and smoking and not mediated though systemic atherosclerosis or cardiovascular disease. Research to investigate alternative interventions to improve arterial stiffness, such as exercise, should be investigated as a way to reduce risk of aneurysm rupture.

TP3-5

Clinico-radiological outcomes of direct cerebral re-vascularization procedures for moyamoya and other vaso-occlusive diseases: a 10-year retrospective review

A. (Boh) Sofela[a,b], J. Muyenga-Muyenga[a], S. Phillips[a], M. Bradley[c], J. Pearson[d], A. Mallick[e], R. Edwards[a,b], R. Nelson[a] and M. K. Teo[a]
[a]Department of Neurosurgery, North Bristol NHS Trust, Bristol, UK; [b]Department of Neurosurgery, Bristol Royal Hospital for Children, Bristol, UK; [c]Department of Neuroradiology, North Bristol NHS Trust, Bristol, UK; [d]Department of Neurology, North Bristol NHS Trust, Bristol, UK; [e]Department of Neurology, Bristol Royal Hospital for Children, Bristol, UK

Objective: In the current era of neurosurgery, cerebrovascular revascularization procedures are now rarely performed with very few indications. Direct-bypasses are performed for moyamoya angiopathy, selective vaso-occlusive disease, and complex brain aneurysms. We herein present our experience over the past decade, of direct-bypasses for patients with moyamoya angiopathy (moyamoya disease, MMD and moyamoya syndrome, MMS) and vaso-occlusive disease.
Design: Our bypass database was retrospectively interrogated to identify all direct-bypass procedures performed for MMD/MMS or other vaso-occlusive diseases.
Subjects: A total of 73 direct-bypass procedures were performed on 51 patients. 64% of the moyamoya patients were female, average age 35 years (range 3–62 years); while 80% of the vaso-occlusive disease cohort were female, average age 41 years (range 31–54 years). 78% of moyamoya patients are Caucasian and 13% oriental.
Results: The MMD/MMS cohort comprised 5 paediatric (7 direct-bypasses) and 41 adults (60 bypasses), whereas 5 patients had 6 direct-bypass procedures in the vase-occlusive group. In the moyamoya cohort; there was a 16% (11/67) transient neurological event (TNE) rate related to hyper-perfusion post bypass, no DWI changes and with symptoms resolving within a few weeks. The stroke risk was 4% (3/67) per bypass procedure in moyamoya patients. Compared to pre-op, 94% of patients had improved/unchanged post op MRS scores. 91% of moyamoya patients had mild/no post-operative symptoms (MRS 0–2), 9% had moderate to moderate severe disability (MRS 3–4) and there were no procedure related mortalities. In the vaso-occlusive cohort ($n = 5$); one patient had previous endovascular treatment (ICA angioplasty) while the other 4 patients had a direct-bypass as their only treatment. Three patients had improved/unchanged MRS, 1 patient had a TNE and 1 patient had a post-op haematoma. The overall radiological outcome was positive with 100% graft patency/revascularisation rates in moyamoya patients, and 83% (5 out of 6 grafts) patency in the vaso-occlusive cohort.
Conclusion: In this single-centre surgical series, our data shows that direct bypasses in carefully selected and appropriately worked up patients can be performed safely with a favourable risk profile. At the last follow up, most patients

were functioning independently and had good radiological/angiographic outcomes.

FRIDAY 26TH SEPTEMBER
FM1
TRIALS AND GLOBAL NEUROSURGERY

FM1-1

Global neurotrauma outcomes study spine: an international, multi-centre, prospective cohort study on the injury profile, management and outcomes of traumatic spinal injury

S. Mediratta[a], S. Yordanov[a], J. Francis[a], M. Nodale[b], G. Balamurali[c], K. Budahoski[a], T. Khan[d], A. Joannides[a], A. Kolias[a], M. Martin[e], A. Tirsit[f], S. Woodrow[g], P. Hutchinson[a], R. Trivedi[a] and GNOS Spine Collaborative[a]

[a]NIHR Research Group on Acquired Brain and Spine Injury, Cambridge, UK; [b]Cambridge Clinical Trials Unit, Cambridge, UK; [c]Kauvery Hospital, Chennai, India; [d]North West General Hospital & Research Centre, Peshaware, Pakistan; [e]Obex Technologies Ltd, Cambridge, UK; [f]Addis Ababa University, Addis Ababa, Ethiopia; [g]Cleveland Clinic, Akron, OH, USA

Objective: Traumatic spinal injury (TSI) accounts for a significant proportion of disability and death worldwide, with the majority of this burden affecting individuals in low- to middle-income countries. The current global approach to TSI care is inconsistent with considerable geographical differences, and limited data on the impact of these variations on outcomes. GNOS Spine aims to provide a comprehensive summary of the case-mix, management and short-term outcomes of TSI worldwide.
Design: NIHR-funded, international, multi-centre, prospective observational study.
Subjects: Any institution assessing patients with TSI was eligible to participate. All adults with radiologically confirmed TSI were included, in any consecutive 30-day period.
Method: Each participating unit gained local approval, identified patients for inclusion, and conducted anonymised data collection via a secure online platform. The dataset, developed through an iterative process involving clinicians from low and high Human Development Index (HDI) countries, included patient demographics, injury data, local management and timing and nature of surgery, post-operative care and immediate post-operative complications.
Results: 1049 patients (88 hospitals across 28 countries) were included between 30th July 2021 and 29th March 2023, including records from all seven WHO regions and each HDI tier: very-high (574 [55%]), high [170 (16%)], medium [254 (24%)], low [51 (5%)]. The most common injury mechanism was fall from standing in very-high HDI countries (216 [38%]), fall from height in high (59 [35%]) and medium (101 [40%]) HDI countries and road traffic accidents in low HDI countries (29 [57%]). The most common admission Frankel Grade was E in very-high HDI (450 [78%]), high HDI (86 [51%]) and medium HDI countries (116 [46%]), however, A in low HDI countries (21 [41%]). Pre-hospital immobilization and surgical intervention varied significantly between HDI groups. Change in Frankel Grade at discharge (or 6-weeks post-admission) was analysed using a cumulative linear mixed-effects model.
Conclusion: GNOS Spine provides a global snapshot of the case-mix, management, and short-term outcomes of TSI, providing essential data to target and support policy initiatives aiming to improve TSI care and outcomes globally.

FM1-2

ROSSINI-platform trial neurosurgery arm

E. Edlmann[a,b] and M. Jenkinson[c]

[a]University of Plymouth, Plymouth, UK; [b]University Hospitals Plymouth NHS Trust, Plymouth, UK; [c]University of Liverpool, Liverpool, UK

Objective: To reduce surgical site infections (SSI) in neurosurgical patients (age $\geq$12) under-going a craniotomy for any indication.
Design: Platform randomised controlled trial across 6 surgical specialties (neurosurgery, breast, gynaecology, vascular, amputation and cardiac). There are 3 different intra-operative interventions applied within each specialty aimed at reducing SSI. The patients and assessors will be blinded to the interventions. Primary outcome is 30-day SSI rate.
Subjects: Target recruitment is 4,280 patients over 50 months across 23 sites (3–4 patients/site/month). Due to open September 2025.
Method: Patients will be recruited pre-operatively in clinic, ward or ITU depending on the indication for craniotomy (e.g. tumour, trauma, vascular). Exclusions include decompressive craniectomy, involvement of any implant (e.g. cranioplasty, EVD) and known or suspected intra-cranial infection. Consent can be patient, patient representative or independent healthcare representative. Randomisation will occur in the anaesthetic room for up to three intra-operative interventions. The number of interventions (1–3) is determined by acceptability to responsible neurosurgeon. Interventions are: (1) bone flap stored in betadine versus saline, (2) large volume 1L wound irrigation prior to closure (after replacement of bone flap) versus standard practice and (3) topical vancomycin powder under scalp flap (versus none). All patients will be followed up at 30 days by remote wound hub if discharged or by in-patient review if still admitted.
Conclusion: This large national randomised platform study offers the opportunity to better understand SSI in craniotomy patients and assess whether simple interventions can reduce this. The study design will involve multiple interim analyses and therefore substitute out any interventions that are not efficacious and add in new interventions. We will also be learning from the other specialties within the platform about potential interventions which may work for SSI and be able to adopt these during the later stages of the study.

FM1-3

Developing a patient involvement programme

J. Piercy[a], C. Hamilton[a], R. Runcie[b], C. Deaton[c] and A. Joannides[c]

[a]Cambridge University Hospital, Cambridge, UK; [b]Lay Member, Cambridge, UK; [c]Cambridge University, Cambridge, UK

Objective: To develop a diverse and representative group of people with lived experience and a programme of PPI events to inform research and development of technology to improve outcomes from brain injury.
Design: The programme was led by a brain injury survivor and used an iterative evaluation approach to reference delivery.
Subjects: A diverse range of topic from across the brain injury pathway have been discussed. Patient input has influenced study and product design.
Method: Through a process of iterative development, a PPI programme was created. It built on an existing underutilised database of people after brain injury and their carers who were interested in engaging with PPI and utilised video-calling software. It was led by a Brain injury Survivor acting as Facilitator with admin support from a research centre
Results: To date 26 PPI sessions have been completed supporting a total of 29 projects. The diversity of the panel members was comparable to that of the population at large. However, further work is needed, especially in engaging people experiencing homelessness, people living outside of England and those with communication impairments. Feedback from researchers was positive and specific impacts are collected from groups.
Conclusion: Through the leadership of a facilitator who has an understanding of the lived experience of brain injury a PPI programme has been developed. The use of a video-calling platform enabled a wider representation then a face-to-face group would have and techniques such as shortened sessions and single project presentations ensured engagement and impact.

FM1-4

Neglected research in chronic subdural haematoma: systematic review of evidence gaps and their prioritisation by a multi-stakeholder patient and professional group

Y. Chedid[a], E. Goacher[b], M. Veremu[a], C. S. Gillespie[a], D. J. Stubbs[c], B. M. Davies[a] and O. D. Mowforth[a]

[a]Division of Neurosurgery, Department of Clinical Neurosciences, University of Cambridge, Cambridge, UK; [b]Department of Neurosurgery, Hull Teaching Hospitals, Hull, UK; [c]Division of Anaesthesia, University of Cambridge Addenbrooke's Hospital, Cambridge, UK

Objective: Chronic subdural haematoma (CSDH) is a prevalent neurosurgical condition, especially in older adults, with its incidence projected to rise alongside ageing populations. Despite its frequency, significant uncertainty remains regarding optimal management strategies, particularly in areas beyond surgical technique alone. This study systematically identifies gaps in the existing literature on CSDH to guide future research priorities.
Design: PRISMA-adherent systematic review combined with multistakeholder prioritisation.
Subjects: Forty-one clinical questions across 11 thematic areas were generated by a multidisciplinary guideline development group including neurosurgeons, neurologists, geriatricians, and patients.
Method: Forty-one key research questions across surgical, medical, and supportive care domains were developed by a multidisciplinary guideline development group. A systematic search of the literature was conducted on 1st May 2022 using MEDLINE, EMBASE, Cochrane Library, and CINAHL databases. 6,024 articles were screened for relevance to each research question. Questions with no applicable literature were identified. Stakeholder prioritisation of the research gaps was performed via a multistakeholder consensus process, incorporating patient perspectives.
Results: Of the 41 research questions assessed, 19 (46%) had no identifiable published evidence. These gaps spanned seven themes: antithrombotics, communication, decision-making, transfer and pathway, palliative care, postoperative care and recovery, and natural history. Notably, the transfer and pathway and palliative care themes demonstrated a complete lack of applicable literature. The stakeholder group identified three highest-priority areas for future research: (1) perioperative management of antithrombotic agents, (2) benefits of protocolised multidisciplinary care, and (3) understanding the natural history and epidemiology of conservatively managed CSDH. Across all areas, a clear need for a national or international research registry was identified.
Conclusion: Almost half of key research questions in CSDH remain unanswered in the current literature. Significant gaps exist in the evidence base for conservatively managed CSDH, transfer pathways, and palliative care. These findings highlight urgent priorities for future research and underline the necessity for collaborative efforts to build a robust research infrastructure for CSDH management.

FM1-5

Correlation of extent of tumour resection and surgical outcomes in low-grade glioma

K. Paudel

Bharatpur Hospital, Chitwan, Nepal

Objective:

1. To find out the correlation between the extent of tumour resection and postoperative functional

outcomes at 6 months using modified Rankin scale score
2. To identify the correlation between the histological tumour type and the postoperative functional outcomes at 6 months using a modified Rankin scale.

Design: Prospective analytical observational study
Subjects: Patients with histopathology-proven supratentorial low-grade glioma
Method: This study was carried out between April 2023 to March 2024 at National Neurosurgical Referral Centre, Bir Hospital, Kathmandu Nepal. All patient with low grade glioma who opted for surgery were included in this study. Patients were prospectively followed for 6 months postoperatively and data collection was done in preformed pro forma. SPSS ver. 21 was used for data analysis. Student *t*-test was used to compare the means and categorical variables were analysed using chi-square test.
Results: A total of 34 patients underwent surgical excision of low-grade glioma. The mean age of presentation was 35.8 ± 14.4 years (range 5–68 years). LGG has a predilection to occur in the age group 21–40 years. The most common presenting symptoms were headache (70.6%) followed by seizures (61.8%). the most common site was the frontal lobe followed by the insular lobe. In this study, gross total resection was achieved in 17.6%, near total, subtotal, and biopsy in 23.6, 50 and 8.8% respectively. On six months follow-up, the mean modified Rankin scale score was significantly decreased in the near total group (p-value <0.011). Subgroup analysis showed female gender, IDH mutant status and age >30 years were associated with improved functional outcomes at 6 months follow-up.
Conclusion: This study highlights the role of the extent of resection in low-grade glioma as a positive prognostic factor for improved performance. Other factors associated with improved postoperative neurological outcomes were female gender, age >30 years, and IDH mutation.

FM1-6

The impact of problem-based and case-based learning on enhancing neurosurgery recruitment among undergraduate medical students

S. Saghebdoust[a,b,c], A. F. Jouzdani[a], P Delbari[d], M. R. Rouhbakhsh Zahmatkesh[a], M. A. A. Mehrizi[b] and R. Zare[a]

[a]Department of Neurosurgery, Razavi Hospital, Mashhad, Iran; [b]Department of Neurosurgery, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran; [c]King's College Hospital, London, UK; [d]Scientific Research Center, Tehran University of Medical Sciences, Tehran, Iran

Objective: Recruiting medical students for neurosurgery remains challenging due to the specialty's perceived complexity and uncertain career trajectories. Traditional lectures rarely stimulate the critical thinking or enduring enthusiasm needed to drive lasting interest. This study aimed to evaluate whether a hybrid teaching model integrating case-based learning (CBL) with problem-based learning (PBL) improves fourth-year medical students' knowledge retention, case analysis, and clinical reasoning. It also sought to determine if this approach enhances student engagement and fosters a sustained interest in neurosurgery compared to the traditional lecture-based curriculum.
Design: A randomized controlled trial comparing a hybrid PBL–CBL module to a standard lecture-based neurosurgical curriculum.
Subjects: A total of 391 fourth-year clinical medicine students enrolled between July 2021 and January 2023. Students were randomly assigned to either the hybrid module group ($n = 190$) or the lecture-based curriculum group ($n = 201$).
Method: Participants underwent pre- and post-module assessments using quizzes designed to evaluate knowledge retention and case analysis skills. In parallel, anonymous surveys captured self-reported measures of clinical reasoning, communication, collaborative skills, overall competence, and course satisfaction. Subgroup analyses were performed based on students' baseline levels of interest in neurosurgery.
Results: Baseline demographics were comparable between groups. Post-intervention, the hybrid group exhibited significantly higher scores in knowledge, clinical reasoning, communication, and team collaboration (all $p < 0.0001$). While overall satisfaction was higher in the hybrid group (48% 'Very Satisfied' vs. 35% in the lecture group, $p = 0.077$), this group also showed superior performance in case analyses and overall scores. Notably, the percentage of students expressing a serious interest in neurosurgery increased markedly from 13 to 35.8% in the hybrid group, compared to a 17.9% increase in the lecture-based group ($p < 0.001$).
Conclusion: Integrating PBL and CBL into the neurosurgical curriculum significantly enhances both cognitive and clinical skills, elevates student engagement, and substantially raises interest in neurosurgical careers. These findings support the hybrid teaching model as a promising strategy for both academic excellence and targeted recruitment within neurosurgery education.

FM1-7

Correlation of plasma D-dimer with clinic-radiological assessments in paediatric traumatic brain injury

A. Salman Yusuf[a,b], T. I. Mukhtar[c], M. Ahmed[c] and H. Ismail[c]

[a]University of Abuja, Abuja, Nigeria; [b]Department of Neurosurgery, National Hospital Abuja, Abuja, Nigeria; [c]Aminu Kano Teaching Hospital, Kano, Nigeria

Objective: To investigate the potential role of plasma D-dimer in determining the clinical severity and predicting outcome in children with TBI.
Design: A prospective hospital based observational study
Subjects: Children aged 18 years and below with Traumatic brain injury

Method: Data was collected using questionnaires during Patients' hospital stay and at discharge. These include patient's demography, plasma D-dimer level at presentation, Glasgow coma scale score, Rotterdam Computed tomography score and Glasgow outcome score at discharge. Correlations between D-dimer and Glasgow Coma Scale score, Rotterdam score and Glasgow Outcome Score were determined using Pearson's correlation coefficient (*r*) or Spearman's rho correlation coefficient as indicated. *p*-value of less than 0.005 was considered statistically significant.
Results: Patients age ranged from 2 to 15 years (mean age of 8.2 +/− 3.7years). Most of the patients were Male (81.3%). D-dimer was elevated above the normal range in all the patients and it strongly correlated positively with Rotterdam score *r*: 0.81, *p*: 0.001 and negatively correlated with Glasgow Outcome Score *r*: −0.68, *p*: 0.001. A value above 10mg/L, D-dimer was able to predict abnormal computed tomography scan with a sensitivity and specificity of 94.7 and 84.6% respectively. Although it did not correlate with Glasgow Coma Scale Score, D-dimer was a better predictor of Glasgow outcome score than Glasgow Coma Scale Score with a specificity of 90% and positive predictive value of 85.7%.
Conclusion: D-dimer elevation correlates positively with Rotterdam computed tomography score and negatively with Glasgow outcome score. It also serves as a good predictor of outcome.

FM2
TRAUMA

FM2-1

The evolving burden of traumatic brain injury (TBI) referrals to a neurosurgical centre

A. Sheriff[a,b], P. Malhotra[a,b] and A. Helmy[a,b]
[a]Cambridge University Hospitals, Cambridge, UK; [b]University of Cambridge, Cambridge, UK

Objective: To evaluate the demography of TBI referrals to a tertiary neuro-trauma centre and determine workload on the acute neurosurgical on call service.
Design: Retrospective cohort study using an online referral system and patient records.
Subjects: All adult patients referred to the East of England neurosurgical centre with TBI between March 2024 and April 2025 were included. This was compared to referrals in a year unaffected by the COVID-19 pandemic (2018–2019).
Method: The online referral system was interrogated and information relating to each patient's diagnosis, age and referral outcome was captured. Duplicate records for the same patient were removed.
Results: 3050 Adults were referred for TBI between 2024 and 2025. 74% of these referrals (2251 patients) were for patients over 65 years old, 59% (1813 patients) were over 75 years old and 31% (930 patients) were older than 85. Only 26% of the total referrals were for patients aged 65 or younger. Amongst referred patients aged over 65, 8% were transferred for further management compared to 16% of younger patients. 5% of patients over 85 years old were transferred to the tertiary unit whereas the vast majority had local management. Of patients over 65 years old who were transferred, 83% were for chronic subdural haematomas, 9% were acute subdural haematomas and the remainder included skull fractures (2%), traumatic subarachnoid haemorrhage (1%) and diffuse brain injury (1%). The overall number of referrals was 26% higher in 2024/25 (3050 patients) compared to 2018/19 (2418 patients), which was driven by a large increase in patients over the age of 65 from 1611 to 2211.
Conclusion: This work highlights the predominance of older adults amongst TBI referrals. As the population ages, a paradigm shift is required to reduce the growing burden on the on-call service and minimise uncertainty and delays for patients and their relatives. These results corroborate that the significant majority of TBI patients are locally managed without requiring transfer to a neurosurgical centre. The *CUH Trauma Unit Guidance for Inpatient Management of Adult TBI* has therefore been created to support local trauma units.

FM2-2

Outcomes of neurotrauma in anticoagulated patients: a systematic review

N. Ebrahimian-Roodbari, K. Manoharasundaram and K. Tsang
Imperial NHS Trust, London, UK

Objective: To assess the impact of pre-injury anticoagulation on clinical outcomes in patients with TBI
Design: Systematic review conducted according to PRISMA 2020 guidelines. Protocol registered on PROSPERO (registration pending).
Subjects: Adult patients (>16 years) with traumatic brain injury who were receiving oral anticoagulants (vitamin K antagonists, direct oral anticoagulants, or antiplatelet agents) prior to injury
Method: A systematic search of PubMed, EMBASE, Cochrane, and Web of Knowledge was conducted up to September 2024. Studies were included if they compared outcomes in TBI patients on anticoagulants at time of injury versus those not anticoagulated. Primary outcomes included overall and in-hospital mortality; secondary outcomes were length of hospital and ICU stay, neurosurgical intervention requirement, and discharge rates. Pooled odds ratios (OR) and weighted mean differences were calculated using random-effects meta-analysis.
Results: 22 Studies emcompassing over 100,000 patients were included. Anticoagulated patients demonstrated higher overall mortality (OR 1.967; 95% CI: 1.481–2.613; $p < 0.001$), increased in-hospital mortality (OR 1.860; 95% CI: 1.216–2.843; $p = 0.004$), and greater need for neurosurgical intervention (OR 1.351; 95% CI: 1.068–1.708; $p = 0.012$) Subgroup analysis revealed in patients aged ≥50, anticoagulation was significantly associated with increased mortality (OR 1.776; $p = 0.001$). Mild and moderate TBI showed no statistically significant mortality difference.

Conclusion: Pre-injury anticoagulant therapy in TBI is associated with increased risks of mortality and need for neurosurgical intervention, while showing no significant impact on hospital stay, ICU stay, or discharge rates. These findings emphasize the importance of rapid diagnostics, reversal protocols, and multidisciplinary management in anticoagulated TBI patients. Further prospective studies are needed to evaluate specific anticoagulant classes and optimize clinical pathways.

FM2-3

Incidence and clinical impact of subdural hygroma and hydrocephalus after decompressive craniectomy: a single-centre experience

J. Shehata, E. Saravana-Kumar and S. Hettige
St George's Hospital, London, UK

Objective: To quantify the frequency of subdural hygroma (SDG) and hydrocephalus after decompressive craniectomy (DC), identify vulnerable aetiological subgroups, and to determine how SDG influences subsequent hydrocephalus, need for cerebrospinal fluid (CSF) diversion, and cranioplasty timing.
Design: Single-centre, retrospective cohort study of consecutive DCs performed between 2019 and 2025. Demographic, clinical, and operative variables were collated from electronic records, and serial neuroimaging was systematically evaluated for SDG and radiological features of hydrocephalus.
Subjects: 131 patients that underwent DC (mean age $=46 \pm 17$ years; 60% male) comprising 41 with traumatic brain injury (TBI), 48 with malignant ischaemic stroke, 20 with spontaneous intracerebral haemorrhage (ICH), and 22 miscellaneous cases. 101 patients (77%) survived beyond 30 days and formed the analytic cohort.
Method: All computed tomography or magnetic resonance scans post-DC were screened for SDG, SDG-related midline shift, and radiological features of hydrocephalus. Notes were reviewed to identify patients that underwent CSF shunt placement or cranioplasty. χ^b or Fisher's exact tests compared categorical variables; unpaired *t*-tests compared continuous variables (significance threshold $\alpha = 0.05$).
Results: SDG developed in 47/131 patients (35.9%); Incidence differed by indication—TBI 56.1%, ICH 45.0%, ischaemic stroke 22.9% ($p < 0.01$). 9 hygromas (19%) produced significant MLS; 7 occurred after TBI. Patients with MLS were younger (30.3 ± 14.4 y vs. 42.3 ± 15.1 y; $p = 0.058$). Radiological features of hydrocephalus were present in 38 patients (29%); presence of SDG markedly increased risk (19 vs 3%; $p < 0.01$). 12 individuals required permanent CSF diversion. Younger age was a significant risk factor for hydrocephalus requiring CSF diversion ($p = 0.028$). 3 Ventriculoperitoneal shunts were placed before/during cranioplasty and 3 later for delayed hydrocephalus; 4 symptomatic SDGs were treated with subdural-peritoneal shunts. Cranioplasty was completed in 44 survivors.
Conclusion: SDG is frequent after DC—particularly following TBI—and, while usually benign, can exert clinically relevant mass effect in younger patients. SDG is a strong harbinger of later hydrocephalus; rigorous imaging surveillance and timely CSF diversion are therefore essential, especially in younger patients. Prospective studies should refine monitoring intervals and explore preventive strategies tailored to high-risk groups.

FM2-4

Spinal cord blood flow, metabolism, and neurological outcome in patients with acute severe traumatic spinal cord injuries

H. Asif, E. Boseta, A. Zoumprouli, M. Papadopoulos and S. Saadoun
St George's University of London, London, UK

FM2-5

Randomised evaluation of surgical techniques for patients undergoing emergency cranial decompression (RESCUE CD – TBI and stroke)

M. Mohan[a], E. Viaroli[a], I. Devi Bhagavatula[b], C. Jain[b], I. Timofeev[a], D. Shukla[b], P. Hutchinson[a] and A. Kolias[a]
[a]Cambridge University Hospitals, Cambridge, UK; [b]National Institute of Mental Health and Neurosciences, Bangalore, India

Objective: An important early consequence of TBI and stroke is the development of significant brain swelling, which if untreated can lead to herniation and death. This is frequently treated by a decompressive craniectomy (DC). Another option, that is often performed in low and middle-income countries, is a decompressive craniotomy (DCO), in which the bone flap is replaced but not rigidly secured. This allows a degree of outward expansion of the brain and obviating the need for cranioplasty in the future. RESCUE-ICP showed an increased rate of survival in the surgical group while RESCUE-ASDH showed a similar outcome rate between DC and craniotomy. However, surgery was performed in a higher proportion of the craniotomy group, but more wound complications occurred in the craniectomy group. This trial aims to compare the clinical effectiveness of DCO vs DC.
Design: We aim to undertake two multi-centre, pragmatic, parallel group, superiority randomised trials to compare the clinical and cost-effectiveness of DCO VS DC for adult patients with TBI or stroke who are candidates for decompression.
Subjects: Adult patients (aged $\geq$16 years) with TBI or stroke.
Method: We aim to undertake 2 multi-centre trials. Each trial will recruit adult patients with TBI or stroke and the admitting neurosurgeon feels that the patient requires a surgical decompression for the management of TBI or stroke either by a decompressive craniotomy (DCO) or a decompressive

craniectomy (DC)
Results: For each trial, we aim to recruit 430 patients in total (215 in each arm, 10% loss to follow up). We have recently set up the study in India and Pakistan. We are currently starting collaborations with China and Malaysia.
Conclusion: This trial will provide level 1 evidence for DCO versus DC. If you are interested in participating in this randomised trial, please contact Dr Midhun Mohan (mm2446@cam.ac.uk) and Dr Edoardo Viaroli (ev349@cam.ac.uk)

FM2-6

TBI-REPORTER 3P study – a prospective proof of principle study

J. Outtrim[a], D. Chatfield[a], A. Helmy[a,b], D. Sharp[c,d], W. Stewart[e,f], S. Thompson[g], E. Squires[g], C. Hayward[h], J. Piercy[i], F. Lecky[j,k], C Gillespie[a,b], D Menon[a,b] and P. Hutchinson[a,b]

[a]University of Cambridge, Cambridge, UK; [b]Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK; [c]Imperial College Healthcare NHS Trust, London, UK; [d]Imperial College London, London, UK; [e]NHS Greater Glasgow and Clyde, Glasgow, UK; [f]University of Glasgow, Glasgow, UK; [g]Swansea University, Swansea, UK; [h]UK Acquired Brain Injury Forum, London, UK; [i]John Innes Centre, Norwich, UK; [j]University of Sheffield, Sheffield, UK; [k]Salford Royal Hospital Northern Care Alliance NHS Foundation Trust, Salford, UK

Objective: To establish the feasibility of a standardised national TBI reporting network by refining data and biosample collection methods, evaluating clinical implementation, and generating pilot data to support future study planning.
Design: This is a multi-centre, longitudinal prospective observational cohort study enrolling up to 350 patients with varying severities of traumatic brain injury.
Subjects: Adults (18+) who have sustained a traumatic brain injury, are recruited within 24 hours of injury and require a CT scan will be eligible. An additional cohort will include adults who had a TBI at least 6 months earlier.
Method: This multi-centre, prospective observational study will enroll up to 350 patients with varying severities of TBI. Participants will be recruited from multiple clinical settings including Emergency Departments, hospital wards, Intensive Care Units, and outpatient clinics, to capture a broad patient spectrum. Patients will be followed for up to two years to assess recovery trajectories and outcomes. Data collection is modular and includes clinical assessments, MRI scans, biomarker analysis, EEG recordings, and standardized outcome measures. This comprehensive approach allows for detailed monitoring of injury and recovery processes.
Results: The 3P Study is currently recruiting at one site and is awaiting governance approvals at additional sites before opening to recruitment.
Conclusion: The 3P study is the first project for the TBI-REPORTER Network. It will create standardized research procedures for future collaborative studies and show that recruiting patients and conducting research is possible across multiple TBI centres. The data and samples collected will help us run initial analyses to plan future treatment trials. Overall, this project could improve TBI care for both individuals and the wider population, lead to early scientific progress, and provide valuable resources for future research.

FM2-7

Timing of venous thromboembolism prophylaxis for adult patients with traumatic brain injury (TOP-TBI): a pragmatic, randomised trial protocol

M. Mohan[a], E. Viaroli[a], H. Mee[a], S. Bond[b], D. Horner[c], G. Barton[d], D. J. Painumpara[a], C. Back[a], C. Turner[a], S. Stanworth[e], V. Newcombe[f], S. Venturini[a], D. McAuley[g], J. Coles[f], M. Wilson[h], T. Veenith[i], P. Hutchinson[a] and A. Kolias[a]

[a]Cambridge University Hospitals, Cambridge, UK; [b]Cambridge Clinical Trials Unit, Cambridge, UK; [c]Northern Care Alliance NHS Group, Salford, UK; [d]Norwich Medical School, University of East Anglia, Norwich, UK; [e]Oxford University Hospitals, Oxford, UK; [f]University of Cambridge, Cambridge, UK; [g]School of Medicine, Dentistry and Biomedical Sciences – Wellcome-Wolfson Insitute for Experimental Medicine, Belfast, UK; [h]St. Mary's Hospital, London, UK; [i]University of Wolverhampton, Wolverhampton, UK

Objective: Every year in the UK, an estimated 1.4 million people suffer a Traumatic Brain Injury (TBI) and 200,000 people with TBI are admitted to hospital. Following a TBI, patients are at considerable risk of morbidity and mortality for a number of reasons, including the development of venous thromboembolism (VTE). In hospitalised patients, national guidelines recommend early initiation of pharmacological thromboprophylaxis (PTP) for appropriate patient populations. However, in patients with TBI the optimal timing for initiation of PTP remains unclear. This trial aims to evaluate the clinical and cost-effectiveness of early PTP administration (<72 hours) versus late administration (>120 hours or not administered at clinical discretion) for adult patients with TBI.
Design: This will be a multi-centre, parallel-group, pragmatic, randomised superiority trial.
Subjects: Adult patients (≥16 years of age) with acute TBI.
Method: The inclusion criteria is as follows: adult patients (≥16 years of age), acute TBI, (defined as acute traumatic intracranial haemorrhage on CT imaging, either in isolation or in the context of polytrauma), patients admitted to hospital within 72 hours of injury. The primary outcome will be clinically relevant VTE within 30 days from randomisation, to include any confirmed diagnosis of symptomatic DVT, pulmonary embolism or death related to VTE. All centers who manage patients with TBI are eligible to participate.
Results: We will recruit 1512 patients in total (150 in the internal pilot, 1362 in substantive study). The study will be 60 months in total. The study is open and currently recruiting.
Conclusion: This randomised trial will provide level 1 evidence on the optimal timing of VTE prophylaxis in patients

with TBI. For further information, please contact Midhun Mohan (mm2446@cam.ac.uk) and Angelos Kolias (ak721@cam.ac.uk).

FM2-8

MAST trials – optimizing the management of antiepileptic drugs in TBI patients

E. Viaroli, M. Mohan, H. Mee, A. Shah, C. Turner, A. Kolias and P. J. A. Hutchinson
University of Cambridge, Cambridge, UK

Objective: Post-traumatic seizures (PTS) are classified as early (within 7 days post-TBI) or late (after 7 days). The incidence of early PTS following severe TBI is as high as 14% and their prevention can limit impairments in brain autoregulation, and may prevent development of late PTS. There is no high quality evidence regarding the optimal duration of treatment for patients started on an AED for acute PTS or regarding their prevention. This international NIHR HTA funded project aims to define best practice in the use of AEDs for TBI patients by conducting two randomised clinical trials (RCTs) run in parallel but independent of each other.
Method: MAST Duration: A multi-centre, pragmatic, randomised trial (316 patients, power 83%) to compare the clinical effectiveness (absolute difference in rate of late PTS 24 months post-TBI) of a longer course of AED (>6 months) versus a shorter course (up to 3 months) for TBI patients with early PTS. MAST Prophylaxis: A multi-centre, pragmatic, three arm, randomised trial (960 patients, power 83%) to compare the clinical effectiveness (absolute difference in the rate of PTS within the first 2 weeks post-TBI) of a 7-day course of prophylactic phenytoin or levetiracetam versus no AED.
Results: Both studies are now in their fourth year of recruitment. 915 patients have been enrolled in MAST Prophylaxis, while 220 patients were recruited in MAST Duration. We are aiming to complete recruitment by March 2026.
Conclusion: We are not far from completing both studies, but we need a joint final effort to reach our targets. Both studies have recently become international, so if you would like to collaborate, please email ev349@cam.ac.uk

PARALLEL SESSION
FP1
PAEDIATRICS AND CSF

FP1-1

Presentation and predictors of disease severity in paediatric NF2

J. Read[a], G. Evans[b,c], G. Vassallo[d,c], I. Kamaly-Asl[e,f,c]; On behalf of the English Specialist NF2 Research Group[c]

[a]University of Exeter, Exeter, UK; [b]Manchester Centre for Genomic Medicine, Manchester, UK; [c]The English Specialist NF2 Research Group, Manchester, UK; [d]Department of paediatric neurology, Royal Manchester Children's Hospital, Manchester, UK; [e]Department of Neurosurgery, Royal Manchester Children's Hospital, Manchester, UK; [f]Geoffrey Jefferson Brain Research Centre, University of Manchester, Manchester, UK

Objective: Neurofibromatosis type 2 (NF2) is a rare genetic disorder characterised by multiple tumours. Paediatric cases often present with vague, non-specific symptoms. We aimed to characterise presentation and identify predictors of disease severity in a large paediatric cohort.
Design: Retrospective case series.
Subjects: Patients from the UK national NF2 registry with symptom onset before the age of 16 who met the clinical or genetic diagnostic criteria for NF2.
Method: We retrospectively analysed data from 390 (291 symptomatic, 99 asymptomatic) patients diagnosed with NF2 under the age of 16 from the UK national NF2 registry. Cohort 1 ($n = 275$) consisted of patients who were symptomatic before age 16, and cohort 2 ($n = 269$, 170 symptomatic, 99 asymptomatic) was used for predictive analysis of tumour onset, progression, and survival. Patients were grouped by era: Era 1 (pre-2000), Era 2 (2000–2010), and Era 3 (2010 onwards).
Results: The mean age at symptom onset with 9.3 years, with an average diagnostic delay of 6.8 years. The most common first symptoms were hearing loss (23.6%), visual impairment (17.5%), and neurological deficits (17.5%). Symptom patterns varied by age: visual loss was most common in children under 5, cutaneous symptoms predominant in those aged 6–10, and hearing loss in those aged 11–16. Patients symptomatic at presentation had higher odds of developing vestibular Schwannoma (OR =7.54), cranial meningiomas (OR =2.61) and spinal tumours (OR =3.61). Ten-year survival improved significantly across eras (88% in Era 1 vs 97% in Era 2 vs. 100% in Era 3, $p = 0.014$). Cox regression showed Era 2 to be protective (HR =0.38), while Era 3 showed a trend towards improved survival (HR =0.19), symptomatic at diagnosis remained predictive of poorer survival (HR =2.44).
Conclusion: Paediatric NF2 often presents with non-vestibular symptoms, with visual and cutaneous symptoms being early indicators. Symptomatic presentation in children is associated with more aggressive disease and poorer survival, although survival has improved significantly since 2000, likely due to specialised centres and the UK national NF2 service.

FP1-2

Curved narratives: cultural representation of spinal deformity in children's media and its psychosocial implications

R. Muscogliati[a,b], W. Nocun[b], A. Hassanieh[c], R. El Ballani[c], Z. Najem[c], L. Najem[c], J. Frem[c], K. Younes[c], D. Ezzeddine[c], C. Safi[c], A. Chedid[c], R. Al Najjar[d,e] and E. Najjar[b]

[a]Hull York Medical School, University of York, York, UK; [b]Centre for Spinal Studies and Surgery, Queen's Medical Centre, Nottingham University Hospitals NHS Trust, Nottingham, UK; [c]Gilbert and Rose-Marie Chagoury School of Medicine, Lebanese American University, Byblos, Lebanon; [d]Inria Paris, Paris, France; [e]École Doctorale d'Informatique, Télécommunications et Électronique (ÉDITE), Sorbonne Université, Paris, France

Objective: Spinal deformities, particularly adolescent idiopathic scoliosis (AIS), are associated with impaired self-image. While psychosocial consequences are well-documented in clinical literature, little is known about how such conditions are represented in children's media or how these portrayals may contribute to stigma and self-perception. This study aimed to systematically evaluate how spinal deformities are portrayed in Disney and Pixar animated films and to assess whether recurring visual and narrative stereotypes reflect psychosocial challenges reported by adolescents with AIS.
Design: A systematic review
Method: A systematic content analysis was conducted of all full-length Disney and Pixar films released from 1989 to 2025. Characters were included if they exhibited consistent anatomical features suggestive of kyphosis, scoliosis, or lordosis. Each character was assessed for physical, social, and moral traits using a standardized checklist. Clinical plausibility was confirmed by an FRCS-trained spine surgeon. Descriptive statistics were used to analyze prevalence and trait distribution.
Results: Forty-eight characters met inclusion criteria, most showing kyphosis (79%). The majority were secondary (42%) or peripheral (35%) figures. Common portrayals included clumsiness (60%), frailty (42%), and frightening demeanour (33%). Only 27% were heroes and 19% were leaders. Female characters were underrepresented (27%).
Conclusion: Spinal deformity is frequently depicted in children's animation through lenses of physical and social inferiority. These portrayals may contribute to internalized stigma and identity challenges in adolescents with AIS. Clinicians should consider these cultural narratives when discussing appearance-related treatment options.

FP1-3

Beyond the curve: sexual and psychological health after adolescent idiopathic scoliosis treatment

I. Ashkar[a], D. El Rayes[a], H. Habib[a], R. Z. Zantout[a], E. Muscogliati[b], W. Nocun[c], R. Muscogliati[b], N. A. Quraishi[d], K. Salem[d] and E. Najjar[d]

[a]Gilbert and Rose-Marie Chagoury School of Medicine, Lebanese American University, Byblos, Lebanon; [b]Hull York Medical School, University of Hull, Hull, UK; [c]School of Medicine, University of Nottingham, Nottingham, UK; [d]Centre for Spinal Studies and Surgery, Queens Medical Centre, Nottingham University Hospitals National Health Service (NHS) Trust, Nottingham, UK

Design: While the primary goal of treating Adolescent Idiopathic Scoliosis (AIS) is curve correction, long-term psychological and sexual outcomes are rarely examined. This systematic review evaluates whether bracing or surgical treatment affects sexual health, body image, and psychological well-being compared to healthy controls.
Method: A systematic review was conducted in accordance with PRISMA guidelines. PubMed, Embase, and CENTRAL were searched up to November 2024 for studies assessing sexual and psychological outcomes in AIS patients treated with bracing or surgery. Inclusion criteria encompassed observational and interventional studies with validated outcome tools. Risk of bias was assessed using the ROBINS-I tool.
Results: Nine studies involving 3,231 participants were included. Among 1,085 AIS patients (average age 15.6 years; 18F:1M), 498 underwent bracing and 587 surgery. Compared to healthy controls, AIS patients reported higher rates of sexual distress, body image dissatisfaction, and reduced self-esteem. Surgically treated patients showed marginally better sexual satisfaction scores than braced patients, though differences in psychological or intimacy measures were inconsistent. Physical limitations and pain-related sexual dysfunction were noted across both treatment groups.
Conclusion: AIS treatment may influence long-term sexual and psychological health, particularly among brace-treated patients. While surgical intervention may offer modest benefits, evidence remains limited. These outcomes should be incorporated into AIS follow-up and future research, emphasizing patient-centred care.

FP1-4

Comprehensive analysis of paediatric endonasal endoscopic surgery: case series and service setup considerations

S. Pattankar[a], S. Okhovat[b], G. Shaikh[b], P. Bhattathiri[a], R. O'Kane[c], A. Amato-Watkins[c] and S. Hassan[a]

[a]Institute of Neurosciences, Glasgow, UK; [b]Queen Elizabeth University Hospitals, Glasgow, UK; [c]Royal Children's Hospital, Glasgow, UK

Objective: This study aimed to (1) assess the clinical outcomes of endoscopic transsphenoidal surgery (ETSS) in paediatric patients with sellar and suprasellar lesions, focusing on resection rates, complications, and functional outcomes, and (2) identify key technical and logistical considerations for establishing a dedicated paediatric endonasal endoscopic surgery service at our institution.
Design: ETSS is increasingly utilized for paediatric skull base lesions, offering a minimally invasive approach with reduced morbidity. However, the unique anatomical challenges in children necessitate specialized techniques and infrastructure, prompting this study to evaluate outcomes and guide service setup.

Method: We conducted a retrospective case series of 11 paediatric patients (13 surgeries, including 2 redo procedures) aged 3–16 years who underwent ETSS for sellar/suprasellar lesions between 2020 and 2023. Data on demographics, tumour characteristics, surgical outcomes, complications, visual and hormonal function, hospital stay, and follow-up were collected. Descriptive statistics summarized the findings, and literature insights informed service setup considerations.
Results: Gross total resection was achieved in 61.5% of surgeries, with a low 23.1% complication rate, including 15.4% CSF leaks, and no major complications. Visual function improved or normalized in most patients, with only 7.7% experiencing a new deficit. However, 53.8% of surgeries resulted in adverse hormonal outcomes, primarily new deficits in craniopharyngioma cases, though both Cushing's patients achieved remission. Mean hospital stay was 13.8 days (range 5–41 days), and at a mean follow-up of 2.7 years, 84.6% of cases were stable, with 30.8% receiving adjuvant therapy. Technical considerations included pediatric-sized endoscopes, navigation systems, multidisciplinary teams, and specialized training.
Conclusion: ETSS is highly effective for paediatric sellar/suprasellar lesions, achieving favourable resection rates and visual outcomes with minimal complications. Despite endocrine challenges, its success in managing diverse pathologies supports its role as a preferred approach. Establishing a paediatric endonasal service requires tailored strategies to optimize outcomes, and future studies should refine techniques.

FP1-5

Postoperative delirium following CSF shunt surgery for normal pressure hydrocephalus: a 5-year retrospective analysis of 326 patients

A. Moraiti[a], K. Wride[a], R. Harris[b] and R. Edwards[a]
[a]Neurosurgery Department, Southmead Hospital, North Bristol NHS Trust, Bristol, UK; [b]Anaesthetic Department, Southmead Hospital, North Bristol NHS Trust, Bristol, UK

Objective: Delirium is a frequent postoperative complication in older neurosurgical patients and is closely associated with cognitive impairment and systemic stress. This study examines the incidence, causative factors, and cognitive outcomes of postoperative delirium (POD) in patients undergoing ventriculo-peritoneal (VP) or ventriculo-atrial (VA) shunt placement for Normal Pressure Hydrocephalus (NPH).
Design: Retrospective review of 326 elective primary VP or VA shunt procedures for NPH between January 2021 and January 2025.
Subjects: 326 patients who underwent elective primary VP or VA shunt surgery for Normal Pressure Hydrocephalus (NPH).
Method: Delirium episodes were classified as acute (in-hospital), or delayed onset (readmission). Cognitive function was assessed using the Montreal Cognitive Assessment (MoCA) or Mini-Mental State Examination (MMSE). Data collected included anaesthetic regimen, sedation depth, ASA score, clinical outcome, discharge delays and age. Co-morbid dementia diagnoses before and after surgery were analysed.
Results: POD occurred in 43 patients (13.2%): 31 acute, 12 delayed onset. 24/43 had pre-operative moderate-to-severe cognitive impairment. Nine patients had a known diagnosis of dementia, while 13 received a new diagnosis post-operatively. Identified triggers included urinary retention ($n = 6$), chest infection ($n = 5$), urinary tract infection ($n = 4$), over-drainage ($n = 3$), hyponatremia ($n = 2$) and single instances of hypoglycaemia, seizures, NSTEMI, acute kidney injury, intracranial haemorrhage, and autistic shutdown. Sixteen cases had no identifiable cause, likely stress-related. Among affected patients, 10 were ASA4 and 33 ASA3. ASA 4 was associated with an increased risk of delirium. Anaesthetic drug protocols were consistent, but depth of anaesthesia may influence risk and is the subject of ongoing analysis. Acute delirium was associated with prolonged hospital stay (1 vs. 11-days $p < 0.01$). Eight patients had persistent cognitive decline.
Conclusion: POD after shunt surgery for NPH is multifactorial and strongly associated with cognitive vulnerability. Both pre-existing and occult dementia play key roles. Although anaesthetic delivery was largely consistent, the technique itself may influence outcomes and warrants further study. Higher ASA scores and older age were also associated with increased POD risk

FP1-6

Following the long-term outcomes and describing the phenotype of late non-responders in iNPH: a 10-year longitudinal study

M. El-Khatib[a], S. Thavarajasingam[b], S. Roxana Kalb[b], A. Salih[a], D. Ramsay[a], A. Thavarajasingam[a], D. Jankovic[b], M. Ottenhause[b], D. Kalasauskas[b], A. Kramer[b], A. Gutenberg[b] and F. Ringel[b]
[a]Imperial College London, London, UK; [b]University Medical Center Mainz, Mainz, Germany

Objective: The diagnosis of Idiopathic Normal Pressure Hydrocephalus (iNPH) is based on a positive shunt response. However, up to 40% of patients who undergo ventriculoperitoneal (VP) shunting fail to exhibit sustained improvement. The management of iNPH remains challenging, particularly for non-responders who deteriorate despite surgery. The objective of this study was to delineate which features differentiate between long term versus short term responders and ascertain whether valve adjustments affect their long term outcome.
Design: Single centre retrospective cohort study
Subjects: Patients that underwent VP shunting for iNPH between December 2006 and December 2016 were included.
Method: Patients were stratified into three groups: early (<6 months) non-responders, late (>6 months) non-responders, and responders. Descriptive statistics, time series plotting, chi-squared tests, and ANOVA analyses were used to delineate any statistically significant demographic, examination or radiological finding that differentiates between the three groups. Additionally, the effect of shunt valve adjustments were compared between these groups.

Results: Our cohort of 65 iNPH patients exhibited a mean follow-up of 3.75 years and consisted of 53.8% early non-responders, 15.4% late non-responders, and 30.8% responders. Co-morbidities, examination and radiological findings did not significantly differentiate between response categories ($p > 0.05$). A considerable subset (15%) experienced symptom deterioration after six months. Shunt valve adjustments were more frequent in non-responders ($p < 0.05$) but did not prevent continued deterioration (only 13% resulted in symptom improvement). In late non-responders, valve adjustments merely slowed symptom progression, without halting deterioration.
Conclusion: Our study underscores that valve pressure adjustments in early non-responders, who likely never benefit from shunt surgery, are not effective. It highlights the emergence of a late non-responder phenotype, where symptom deterioration becomes evident 6 months post-shunting, despite shunt valve adjustments, suggesting that irreversible cerebral changes—such as chronic ischemia and increased brain stiffness—may render such adjustments ineffective. Our findings outline the need to explore alternative treatment strategies for managing symptoms in iNPH non-responders, as well as prolonged follow-up regimens to monitor late non-responders.

FP1-7

Therapeutic lumbar puncture can be an effective treatment in symptomatic paediatric idiopathic syringomyelia

A. Bjornson, E. Goacher, D. Gatt, P. De Lacy and H. Zaki

Sheffield Teaching Hospitals, Sheffield, UK

Objective: Idiopathic syringomyelia represents a group of patients with a syrinx without an underlying pathological cause. Patients may be asymptomatic or present with back pain, leg pain and paraesthesia. In our single centre, therapeutic lumbar punctures are used as a treatment for these symptoms.
Design: A single centre retrospective study looking at patients with symptomatic idiopathic syringomyelia who underwent one or more therapeutic lumbar punctures to determine whether they had any symptomatic improvement.
Method: Patients were identified through the hospital operative database. A retrospective analysis was performed to determine their MRI findings, symptoms, lumbar puncture opening pressure and volume drained, complications and any change in their symptoms. Length of symptomatic improvement and any further subsequent lumbar punctures was also recorded.
Results: 31 patients were identified. Median age at time of first lumbar puncture was 12 years (range 3–17). The majority had a thoracic syrinx and median syrinx length was 3 vertebrae. 7/31 (23%) patients had significant long-term improvement or resolution in their symptoms following a single lumbar puncture. 13/31 (42%) patients had temporary improvement of their symptoms and underwent further lumbar punctures. 3/31 (10%) patients had resolution of their symptoms after more than one lumbar puncture. 8/31 (26%) patients did not experience any improvement in their symptoms. Symptomatic improvement was significantly more likely in those with a high opening pressure of above 23.5cm H_2O (OR 13 (1.3 – 126.3) $p = 0.02$). Average length of follow up was 3.5 yrs (range 6 months –9 years). Complications occurred in 9/16 patients, with 8 of these experiencing a low pressure headache, and 1 patient experiencing temporary back pain following the lumbar puncture.
Conclusion: Lumbar puncture can be a safe and effective treatment for symptomatic idiopathic syringomyelia in the paediatric population. It is more effective in those with a higher opening CSF pressure.

FP1-8

External ventricular drain infections: a single-centre audit of infection rate, risk factors, and diagnostic uncertainty

G. Konstantinou[a,b], A. Dravid[a,b], H. Kareem[b] and H. Adams[b]

[a]Department of Medicine, Imperial College London, London, UK; [b]Department of Neurosurgery, Imperial College Healthcare NHS Trust, London, UK

Objective: External ventricular drain (EVD) insertion is a routine neurosurgical procedure. EVD-related infections (EVDRIs) show heterogeneity in reported rates and risk factors. Diagnosis is complicated by suspected infections lacking microbiological confirmation. We report our centre's infection rate, assess risk factors and analyse suspected infections to characterise their clinical profile and distinction from confirmed cases.
Method: All EVD insertions ($N = 314$) from 2020 to 2023 at a tertiary centre were retrospectively studied. Patients with prior CNS infections were excluded. Infections were classified as confirmed (positive cultures that prompted treatment) or suspected (negative cultures but prompted treatment). Data on reported risk factors and laboratory markers were collected. Chi-squared and t-test were used. Multivariable regression was performed for variables with $p < 0.05$. Receiver Operating Curve (ROC) analysis was used for Cell index (CSF WBC:RBC/Blood WBC:RBC)
Results: 253 EVD lines were analysed, with an infection rate of 19% (48/253): 6.3% confirmed and 12.6% suspected. Traditional risk factors (e.g. CSF leak, EVD duration, sampling frequency) were not associated with infections. Confirmed infections were more likely when procedures occurred during working hours (OR =3.15, 95% CI: 1.10–9.01, $p = 0.033$). Suspected infections were associated with IR procedures (OR =2.88, 95% CI: 1.29–6.45, $p = 0.01$), co-existing infections (OR =2.93, 95% CI: 1.25–6.88, $p = 0.014$), and non-intubated status (OR =0.37, 95% CI: 0.16–0.84, $p = 0.017$). Confirmed cases had a longer time to diagnosis (median 14 vs 7 days, $p = 0.003$) and higher cell index values (median 120 vs. 3, $p = 0.025$) when compared to suspected. ROC analysis of cell

index showed good discriminatory ability (AUC =0.73, 95% CI:0.51–0.95, $p = 0.025$). Spearman's correlation showed the cell index to be positively associated with time to diagnosis (0.332, $p = 0.036$) and duration of antibiotic treatment (0.465, $p = 0.003$).

Conclusion: EVDRIs can present a diagnostic challenge. The cell index may aid in evaluating EVDRIs, with higher values linked to confirmed cases and prolonged treatment. Future EVDRI studies should consider exploring the cell index.

FP1-9

Determinants of adult ventriculoperitoneal shunt failure: insights from the Manchester Centre for clinical neurosciences

J. Stewart[a], J. Warner-Levy[a,b], S. Bate[c], C. McMahon[a], D. Slade[d] and M. Bailey[a]

[a]Manchester Centre for Clinical Neurosciences, Salford, UK; [b]Faculty of Biology, Medicine and Health, The University of Manchester, Manchester, UK; [c]Research and Innovation, Manchester University NHS Foundation Trust, Manchester, UK; [d]Department of General Surgery, Salford Royal Hospital, Salford, UK

E-POSTERS
ALLIED HEALTH

1

AHP-led development of the brain injury integrated care pathway ('BI-ICP') to standardise assessment and treatment of inpatients within a secondary care setting without on-site neurosurgery input – an implementation plan

H. Medel-Gonzalez[a], C. Tuffin[a], N. Deakin[b,c], H. Mee[c], P. Hutchinson[c,b], J. Fenner[b,c], D. Caputo[b,c] and K Grieve[b,c]

[a]East Suffolk and North Essex NHS Foundation Trust, Ipswich, UK; [b]East of England Neurosurgery Network (EoE NN), Cambridge, UK; [c]Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK

2

Embedding patient voice in neurosurgical quality improvement: a nurse-facilitated and community-led approach to communication and continuity of care

D. Caputo[a,b], N. Deakin[a], J. Fenner[a,b], P. Hutchinson[a,b] and Patient Community Voice[a]

[a]East of England Neurosurgery Network (EoE NN), Cambridge, UK; [b]Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK

3

Diversifying the neurosurgery workforce: developing the advanced clinical practitioner (ACP) service

L. Leedham, A. Harper-Payne and S. Camp

Imperial College Healthcare NHS Trust, London, UK

BASIC SCIENCE

1

SOX2 enhances glioblastoma aggressiveness and immune escape in an immunocompetent mouse model

E. Lo[a], C Williams[b] and S Pollard[b]

[a]College of Medicine and Veterinary Medicine, Edinburgh, UK; [b]Centre for Regenerative Medicine, Edinburgh, UK

2

Circumferential spinal cord interface enables high-fidelity motor intent decoding and multimodal sensory discrimination

S. ElHadwe[a,b,c] and D. Barone[a,b,d]

[a]Department of Clinical and Neurosciences, University of Cambridge, Cambridge, UK; [b]Bioelectronics Laboratory, Department of Electrical Engineering, University of Cambridge, Cambridge, UK; [c]Division of Neurosurgery, Free University of Brussels, Brussels, Belgium; [d]Houston Methodist, Houston, TX, USA

3

Understanding the role of TEAD inhibition in SHH subtype medulloblastoma

D. Miller, L. Milling and H. Roy

University of Plymouth, Plymouth, UK

4

Maternally derived mesenchymal stem cells for spinal cord injury: a review of the literature

A. Vogt
Cambridge University Hospital, Cambridge, UK

CEREBRO-SPINAL FLUID

1

Evaluating external ventricular drain infection rates following protocol revision: a retrospective audit at a tertiary neurosurgical centre

M. Karim, C. Cernei, S. Ahmed, E. Harrison, A. Mahableshwar and A. Williams
North Bristol Trust, Bristol, UK

2

Optimising management of refractory idiopathic intracranial hypertension: a shuntogram-based algorithm for surgical decision-making

Z. Li and A. Joannides
Department of Clinical Neurosciences, Cambridge, UK

3

Does intraoperative real-time ultrasound guided external ventricular drain insertion increase operative duration compared to the anatomical landmark technique?

J. Kotecha[a], A. Edwards-Bailey[a], A. Abbas[a], P. Weir[b], S. Howarth[a] and M. Hollingworth[a]
[a]Queen's Medical Centre, Nottingham, UK; [b]Oxford University Hospitals, Oxford, UK

FUNCTIONAL

1

Side effects limiting ceiling of stimulation in VNS (vagus nerve stimulation) and MRI conditionality of VNS in clinical practice: a retrospective study from a major neurosurgical trauma centre

J. Johnson, A. Elyas, L. Taylor, C. Uff, S. Hasan, J. Fidel, T. Stamatopoulos, A. Mansour and V. Tsirka
Royal London Hospital, London, UK

2

Retrospective single centre evaluation of stereo electroencephalography

V. Josan and O. Erum
Salford Royal Hospital NHS, Manchester, UK

3

Examining eslicarbazepine for the treatment of trigeminal neuralgia

B. Hill[a] and G. Eralil[b]
[a]Cardiff University, Cardiff, UK; [b]University Hospital Wales, Cardiff, UK

4

Autoguide robotic implantation of depth electrodes: accuracy and surgical outcomes

O. Kennion, C. Cowie, S. Ellawela, M. Lai and M. Akbar Hussain
Royal Victoria Infirmary, Newcastle Upon Tyne, UK

5

Deep brain stimulation: a new approach to informed consent and shared decision making

C. Zancanella[a], E. Hayes[b], A. McNair[c], A. Williams[b] and R. Ashida[b]
[a]University of Pavia, Pavia, Italy; [b]Neurosurgery Department, Southmead Hospital, Bristol, UK; [c]North Bristol NHS Trust, Bristol, UK

6

A review of the literature on microvascular decompression in the management of trigeminal neuralgia

L. Das Puja[a] and M. Ahmad[b]
[a]Sir Salimullah Medical College, Dhaka, Bangladesh; [b]King's College Hospital NHS Foundation Trust, London, UK

GENERAL NEUROSURGERY

1

Improving ward round documentation in neurosurgery

B. Benzahia[a], J. Booker[b], S. Sinna[b], S. Tominey[b], M. Yacaman[b], S. Bilal[b] and G. McKenna[b]
[a]NHS Grampian, Aberdeen, UK; [b]NHS Barts, London, UK

2

Adherence to national clinical practice guidelines in the management of chronic subdural haematoma and relationship to length of stay and survival

M. R. Jayasinghe[a], N. D. Pitiduwa Gamage[b], S. Williams[a] and E. Edlmann[c]
[a]Department of Neurosurgery, University Hospitals Plymouth NHS Trust, Plymouth, UK; [b]Department of Neurosurgery, National hospital of Sri Lanka, Colombo, Sri Lanka; [c]Consultant Neurosurgeon, Department of Neurosurgery, University Hospitals Plymouth NHS Trust, Plymouth, UK

3

'If it wasn't documented, it didn't happen' – a quality improvement project aimed at senior review documentation

B. Benzahia, D. Kubel and P. Bodkin
NHS Grampian, Aberdeen, UK

4

Influence of drain placement (subdural vs. subgaleal) on postoperative complications and length of stay in patients undergoing surgery for subdural hematoma

A. Vacek and M. Arora
Aberdeen Royal Infirmary, Aberdeen, UK

5

Staff perceptions of the benefits of a new neurosurgery-geriatric in-reach service

O. Tijani[a], D. Jesuyajolu[a], M. Vettasseri[b], A. Dapaah[a], S. Ali[b], S. Basu[a] and B. White[a]
[a]Department of Neurosurgery, Queen's Medical Centre, Nottingham, UK; [b]Department of Geriatric Medicine, Queen's Medical Centre, Nottingham, UK

6

Utilising 7T MRI in the planning of SEEG

M. Sumner[a,b], I. Usher[a], J. Kitchen[a], J. Ellenbogen[a,c], S. Stivaros[a], S. Avula[c], J. Tan[a], N. Swiderska[a], A. McLaren[a,c] and G. Alarcon[a]
[a]Royal Manchester Children's Hospital, Manchester, UK; [b]University of Manchester, Manchester, UK; [c]Alder Hey Children's Hospital, Liverpool, UK

7

Mitigating surgical site infections in neurosurgery: a two-cycle audit of compliance with NICE guidelines and the impact of targeted interventions

S. Saghebdoust[a,b], A. Fathi Jouzdani[a], H. Kheradmand[a], M. R. Rouhbakhsh Zahmatkesh[a] and R. Zare[a]

[a]Razavi Hospital, Mashhad, Islamic Republic of Iran; [b]King's College Hospital, London, UK

8

Day of surgery vs. day before surgery admission for elective neurosurgical cases: comparative analysis of patient preference and impact on cancellation rates

G. Pace, D. Rowland, P. Grover and A. Borg

National Hospital for Neurology and Neurosurgery, London, UK

9

Extracranial causes of subarachnoid haemorrhage: a systematic review of aetiologies, presentations, and outcomes

C. Shun Wen[a], J. Cheong[b], N. Yip[a] and S. Lim[a]

[a]University of Edinburgh, Edinburgh, UK; [b]University of Dundee, Dundee, UK

10

Infection rates and risk factors in external ventricular drains: a retrospective audit from a major neurosurgical trauma centre

B. Benzahia[a], L. G. Nicely[a], J. Johnson[a], U. Tariq[a], A. T. Tuason[a], D. Perera[a], T. Stamatopoulos[a], S. Hasan[a], G. McKenna[a] and V. De Sario[b]

[a]Department of Neurosurgery, Royal London Hospital, London, UK; [b]Department of Microbiology, Royal London Hospital, London, UK

11

Cranial nerve glioblastoma: a literature review

T. Rahman Mim, K. Ali Kawsar and C. Kaliaperumal

The Royal Infirmary of Edinburgh, Edinburgh, UK

GLOBAL

1

Traumatic brain and spine injury, a major public health problem in Nepal, experience from a government hospital

P. Jha[a,b]

[a]Tribhuvan University Teaching Hospital, Kathmandu, Nepal; [b]Province Hospital Surkhet, Surkhet, Nepal

2

Understanding community and patient engagement and involvement (CEI) interventions in acquired brain and spinal injuries (ABSIs): a realist review

A.-R. Abdel Fattah[a,b], D. Sescu[c], S. Nagraj[a,d], K. Jack[e], A. Tirsit[a,f], A. Kumar[a,g], A. Kattack[a], A. Kolias[a,b], P. Hutchinson[a,b] and C. Whiffin[a,h]

[a]NIHR Global Health Research Group on Neurotrauma, University of Cambridge, Cambridge, UK; [b]Department of Neurosurgery, Addenbrooke's Hospital, Cambridge, UK; [c]School of Medicine, Medical Sciences & Nutrition, University of Aberdeen, Aberdeen, UK; [d]Department of Public Health and Primary Care, University of Cambridge, Cambridge, UK; [e]School of Health Sciences, University of Nottingham, Nottingham, UK; [f]Neurosurgery Division, Addis Ababa University, Addis Ababa, Ethiopia; [g]King George Hospital, Visakhapatnam, India; [h]College of Health, Psychology and Social Care, University of Derby, Derby, UK

NEUROVASCULAR

1

Intradural extra-medullary spinal cavernoma T11-L4: a rare phenomenon

T. Nazar[a], K. Patel[a], W.-X. Chong[a], U. Pohl[b], M Yaman Adi[a], S. Nagaraju[b], A. Kamble[a] and S. Mukherjee[a]

[a]University Hospital Coventry and Warwickshire, Coventry, UK; [b]University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK

2

The jugular compression syndrome – review of the literature and case report

A. Vacek[a] and R. Fontes[b]
[a]Aberdeen Royal Infirmary Neurosurgery Department, Aberdeen, UK; [b]Department of Neurological Surgery, Rush University Medical Center, Chicago, IL, USA

3

Application of mR-perfusion in case of ischemic stroke

E. Noureldin and S. Lukoševičius
Lithuanian University of Health Sciences, Kaunas, Lithuania

4

Diagnosis of cerebral vasospasm in subarachnoid haemorrhage patients – critical assessment of neurocritical care monitoring strategies

I. Hossain[a,b] and N. Marklund[c]
[a]Imperial College London, London, UK; [b]University of Cambridge and Addenbrooke's Hospital, Cambridge, UK; [c]Department of Neurosurgery, Skåne University Hospital, Lund University, Lund, Sweden

5

Spontaneous occlusion of brain arteriovenous malformations

Y. Al-Nuaimy[a], M. Poon[b], F. M. Martino[c,b], S. Himel[b,d,e], Y.-W. Fong[b,f], C. Cernei[b], K. Abhinav[b], D. Porter[b] and M. Teo[b]
[a]College of Medicine, Ajman University, Ajman, UAE; [b]Neurosurgery, Southmead Hospital, North Bristol NHS, Bristol, UK; [c]Department of Human Neurosciences, Sapienza University, Rome, Italy; [d]Department of Neurosurgery, University of Tennessee Health Science Center, Memphis, USA; [e]Semmes-Murphey Clinic, Memphis, TN, USA; [f]Division of Neurosurgery, Department of Surgery, Cathay General Hospital, Taipei City, Taiwan

6

Moyamoya angiopathy: evaluation of epidemiological methods in incidence studies

M. Poon[a,b], A. Sofela[a] and M. Teo[a]
[a]Southmead Hospital, Bristol, UK; [b]Centre for Clinical Brain Sciences, Edinburgh, UK

7

Unusual presentations of vertebral artery dural arteriovenous fistulas: a two-case report and literature review

A. Abbas, A. Afzal, W. Sage, M. Hollingworth and G. Dow
Nottingham University Hospital, Nottingham, UK

8

Retrospective audit of follow-up templates for standard aneurysm cases in neurovascular MDTs: a time optimization assessment

A. Malli[a], M. N. Elmarawany[b,c] and M. Teo[d]
[a]Department of Neurosurgery, Southmead Hospital, North Bristol Trust, Bristol, UK; [b]North Bristol NHS Trust, Bristol, UK; [c]Department of Neurosurgery, Menoufia University, Menoufia, Egypt; [d]Institute of Clinical Neuroscience, Southmead Hospital, Bristol, UK

9

The effect of milrinone on delayed cerebral ischaemia in aneurysmal subarachnoid haemorrhage: a systematic review

S. Mathew[a], U. Reddy[b] and A. Toma[b]
[a]Univeristy College London, London, UK; [b]National Hospital for Neurology and Neurosurgery, London, UK

10

Microsurgical clipping versus endovascular coiling for distal anterior cerebral artery aneurysms: a meta-analysis of double-armed comparative studies

M. N. Elmarawany[a,b], E. N. Hayes[a], M. Motiwala[c], K. S. Lee[d,e,f] and M. Teo[g]

[a]North Bristol NHS Trust, Bristol, UK; [b]Menoufia University Hospitals, Menoufia, Egypt; [c]University of Tennessee Health Science Center, Memphis, TN, USA; [d]National Neuroscience Institute, Singapore, Singapore; [e]Department of Neurosurgery, King's College Hospital, London, UK; [f]Institute of Psychiatry, Psychology and Neuroscience (IoPPN), King's College London, London, UK; [g]Bristol Institute of Clinical Neuroscience, Southmead Hospital, Bristol, UK

11

The mini-pterional advantage: reduced morbidity and operative time in aneurysm clipping

L. Moreau[a], M. N. Elmarawany[a,b] and M. Teo[c]

[a]North Bristol NHS Trust, Bristol, UK; [b]Neurosurgery Department, Menoufia University Hospitals, Menoufia, Egypt; [c]Bristol Institute of Clinical Neuroscience, Southmead Hospital, Bristol, UK

ONCOLOGY

1

Patients' experience of the neuro-oncology journey: a single-centre evaluation and recommendations

V. Crispi[a], Y. Dinesh[b], A. Singh[b], S. Manan[a], H. Benghiat[c], F. Berki[c], V. Cheng[c], N. Cole[c], O. Elmoursi[a], S. Freeth[c], W. Garratt[c], S. Meade[c], A. Rossdeutsch[a], P. Sanghera[c], A. Zisakis[a], A. White[a], C. Watts[a] and V. Wykes[a]

[a]Department of Neurosurgery, Queen Elizabeth Hospital, Birmingham, UK; [b]College of Medical and Dental Sciences, University of Birmingham, Birmingham, UK; [c]Department of Oncology, Queen Elizabeth Hospital, Birmingham, UK

2

Solitary bone plasmacytoma of the spine: a systematic review

W. Nocun[a], A. Chakar[a], R. Muscogliati[b], M. Daher[a], F. Wadelin[c], N. Quraishi[a] and E. Najjar[a]

[a]Centre for Spinal Studies and Surgery, Nottingham, UK; [b]Hull York Medical School, Hull, UK; [c]Department of Haematology, Nottingham University Hospitals, Nottingham, UK

3

The role of preoperative thrombocytic factors on survival in patients with glioblastoma: a meta-analysis and synopsis of the literature

Y. Akkara[a], J. Hon[a], S. Rehman[a], J. de Groot[b] and M. Williams[c,d]

[a]Imperial College School of Medicine, London, UK; [b]University of California, San Francisco, USA; [c]Computational Oncology Group, Imperial College London, London, UK; [d]Radiotherapy Department, Charing Cross Hospital, London, UK

4

The usefulness of [11C] methionine PET in aiding the differentiation of tumour recurrence from post-radiation related change

F. Noureldin[a], R. Srinivasan[b,c], S. Chicklore[b,d], G. Krokos[b,d], K. Chia[e], A. Swampillai[e], V. Manik[e], R. Bhangoo[a], K. Ashkan[a] and A. Hammers[b,f]

[a]Department of Neurosurgery, King's College Hospital, London, UK; [b]King's College London & Guy's & St Thomas' PET Centre, London, UK; [c]Department of Radiology, Guy's & St Thomas' NHS Foundation Trust, London, UK; [d]School of Biomedical Engineering and Imaging Sciences, King's College London, London, UK; [e]Department of Neuro-Oncology, Guy's & St Thomas' NHS Foundation Trust, UK London; [f]School of Biomedical Engineering and Imaging Sciences, London, UK

5

Multiple ependymomas: insight from a case series

J. Graham and S. Bucur

Royal Sussex County Hospital, Brighton, UK

6

Cranial meningiomas – a comprehensive institutional review over a decade in an Indian population

M. KManivel[a,b], V. Krishnaswamy[b] and G. Krishnamurthy[b]

[a]University Hospitals Plymouth, NHS Trust, Plymouth, UK; [b]Sri Ramachandra Institute of Higher Education and Research, Chennai, India

7

Language testing in awake brain surgery for tumour resection: current perioperative practice in the UK

S. Mariotti[a,b], N. Barua[a,b], T. R. Williamson[a,b], H. Mumtaz[a,b], K. Kinsey[a] and A. Piasecki[a,b]
[a]University of the West of England, Bristol, UK; [b]North Bristol NHS Trust, Bristol, UK

8

Awake craniotomies for epileptic gliomas: a prospective study of intraoperative and postoperative seizure control and prognostic factors

S. Saghebdoust[a,b], A. F. Jouzdani[a], M. Dayyani[c], A.-M. Vasilica[d], G. Soltani[e], H. Amiri[f], M. Aghaee Hakak[f] and R. Zare[a]
[a]Department of Neurosurgery, Razavi Hospital, Mashhad, Iran; [b]King's College Hospital, London, UK; [c]City of Hope Beckman Research Institute and Medical Center, Duarte, CA, USA; [d]University College London, London, UK; [e]Department of Anaesthesiology, Razavi Hospital, Mashhad, Iran; [f]Department of Neurology, Razavi Hospital, Mashhad, Iran

9

Diagnostic correlation of MRI, intraoperative, and histopathological findings in paediatric posterior fossa tumours

M. Nawaz Khan and M. Sohaib
Lady Reading Hospital, Peshawar, Pakistan

10

Repetitive brain tumour biopsy in high-grade gliomas: patients' perspective on acceptability and research

V. Crispi[a,b], Y. Dinesh[c], A. Singh[c], S. Manan[a], H. Benghiat[d], A. Thompson[e], H. Bulbeck[f], C. Watts[a,b], A. Chalmers[g,h] and V Wykes[a,b]
[a]Department of Neurosurgery, Queen Elisabeth Hospital Birmingham, Birmingham, UK; [b]Institute of Cancer and Genomic Sciences, University of Birmingham, Birmingham, UK; [c]School of Medicine, University of Birmingham, Birmingham, UK; [d]Department of Oncology, Queen Elisabeth Hospital Birmingham, Birmingham, UK; [e]Brainstrust, Leeds, UK; [f]Brainstrust, Cowes, UK; [g]Department of Neurosurgery, Beatson West of Scotland Cancer Centre, Glasgow, UK; [h]Institute of Cancer Sciences, University of Glasgow, Glasgow, UK

11

Outcomes following first reoperation in recurrent meningioma: a single-centre experience

M. Veremu[a,b], C. S. Gillespie[a,b], W. Cook[a,b], G. Brown[b], M. S. Khan[a,b], M.A. H. Abdullah[a,b], R. Kirollos[c], T. Santarius[a,b] and A. Helmy[a,b]
[a]Addenbrooke's Hospital, Cambridge, UK; [b]University of Cambridge, Cambridge, UK; [c]National Neuroscience Institute, Singapore, Singapore

12

Minimally invasive tubular retractors: a case series evaluating efficacy, safety and functional outcomes for brain tumour surgeries

N. Jadhav, K. Karabatsou, H. Maye, D. DuPlessis, F. Roncaroli, M. Bailey, D. Coope and P. D'Urso
Northern Care Alliance, Manchester, UK

13

Frailty correlates with worse outcomes and survival following meningioma resection in the elderly: a propensity-score matched analysis employing baseline functional status

Y. Akkara[a], R. Fernandes[a], P. P. Wang[a], A. Abraham[a], H. Bhat[a], J. Das[b], R. Nair[b] and N. Mendoza[b]
[a]Imperial College London School of Medicine, London, UK; [b]Imperial College Healthcare NHS Trust, London, UK

14

Novel surrogate indicators of intracranial meningioma consistency and outcomes following resection

Y. Akkara[a], J. Hon[a], Y. Meadipudi[a], A. Mahmud[a], M. Khan[a], J. Das[b] and R. Nair[b]
[a]Imperial College London School of Medicine, London, UK; [b]Imperial College Healthcare NHS Trust, London, UK

15

Piloting a 5-facet approach to functional outcome assessment in post-operative glioblastoma patients: a prospective single centre cohort study (functional-GB)

E. Bligh[a], J. Igoli[b], O. Salim[c], M. Minnis[d], A. Irving[c], P. Hebda[c] and S. Lammy[d,e]

[a]Wessex Neurological Centre, Southampton, UK; [b]Department of Neurosurgery, Leeds, UK; [c]Institute of Neurosciences, Glasgow, UK; [d]University of Glasgow, Glasgow, UK; [e]Department of Neurosurgery, Nottingham, UK

PAEDIATRICS

1

Clinical audit of time from referral-to-admission for paediatric brain tumour patients at Addenbrookes Hospital, Cambridge University Hospitals (CUH)

A.-R. Abdel Fattah, H. Smart and I. Jalloh

Department of Neurosurgery, Addenbrookes Hospital, Cambridge University Hospitals, Cambridge, UK

2

Factors predicting the response to vagus nerve stimulation (VNS) in pediatric patients with drug-refractory epilepsy: a systematic review and meta-analysis

S. Kannan[a,b], S. Somanathan[b], R. Suvarna[c], M. Madavi Weerasooriya[b] and V. Vakharia[d]

[a]University of Liverpool, Liverpool, UK; [b]University of Central Lancashire, Preston, UK; [c]University of Leeds, Leeds, UK; [d]Department of Neurosurgery, Alder Hey Children's Hospital, Liverpool, UK

3

Outcomes following foramen magnum decompression in paediatric Chiari 1 malformations: a 10-year retrospective case series

C. Cooper[a], F. d'Agnese[b] and S. Magdum[a]

[a]Oxford University Hospitals, Oxford, UK; [b]Oxford University Medical School, Oxford, UK

4

Giant intracranial aneurysms in paediatric patients: a literature review of treatment outcomes, complications and long-term follow-up

D. Bradley[a], J. Ling[a], K. Pearson[a], A. Prasad[a] and C. Kaliaperumal[b]

[a]University of Edinburgh, Edinburgh, UK; [b]Royal Infirmary Edinburgh, Edinburgh, UK

5

Intervention timing and its relation to complication rates for open vault cranial remodelling surgery (OVCRS)

D. McPherson[a], Z. G. Yang[a], P. Dabrowska[a], A. Suraj Prasad[a] and C. Kaliaperumal[b]

[a]Edinburgh University Neurological Society, Edinburgh, UK; [b]Royal infirmary of Edinburgh, Edinburgh, UK

6

Small scale cost benefit analysis of shunting paediatric patients early for elective vs emergency for hydrocephalus

P. Kadam and C. Kaliaperumal

Department of Clinical Neurosciences, Edinburgh, UK

7

Postnatal surgical myelomeningocele repair at a UK tertiary neurosurgical centre: an 8-year service evaluation

R. Shah[a] and C. Craven[b]

[a]University of Cambridge School of Clinical Medicine, Cambridge, UK; [b]Department of Neurosurgery, Cambridge University Hospitals NHS Trust, Cambridge, UK

8

Blood loss in definitive surgery following conservative versus surgical initial haematoma management in paediatric AVMs

M. Sharawi, S. Machiraju, T. Lilo and I. Kamaly-Asl
Department of Paediatric Neurosurgery, at Royal Manchester Children's Hospital, Manchester, UK

PERIPHERAL NERVE

1

Facial nerve reanimation after vestibular schwannoma surgery: a case of successful laterotherminal hypoglossofacial anastomosis

A. Yahia[a] and R. Aggoune[b]
[a]Department of Neurosurgery, Regional University Hospital, Ouargla, Algeria; [b]Department of Neurosurgery, Regional University Hospital, Constantine, Algeria

2

Peripheral nerve sheath tumour resection at a UK tertiary neurosurgical centre: a 9-year service evaluation

R. Shah[a], T. Tajsic[b] and R. Trivedi[b]
[a]University of Cambridge School of Clinical Medicine, Cambridge, UK; [b]Department of Neurosurgery, Cambridge University Hospitals NHS Trust, Cambridge, UK

SKULLBASE

1

Hypervascular vestibular schwannoma: a single centre case series

A. Jayasekera, R. Tan, R. Mathew, A. Boukas, S. Mackeith and S. Jeyaretna
Oxford University Hospitals, Oxford, UK

2

Safety and efficacy of endoscopic transsphenoidal surgery in octogenarians: a case series

A. Mansoor[a], C. Hayhurst[b] and A. Mohamed[b]
[a]Cardiff University, Cardiff, UK; [b]University Hospital of Wales, Cardiff, UK

3

The use of endoscopic dural repair following base of skull surgery: a systematic review

N. Danushka[a], R. Jayasinghe[b], Y. Jeyaratnam[c] and D. Attanayake[a]
[a]National Hospital of Sri Lanka, Colombo, Sri Lanka; [b]Derriford Hospital, Plymouth Trust, Plymouth, UK; [c]Faculty of Medicine, Colombo, Sri Lanka

4

Correlation between lesional volume and postoperative cognition in surgically treated skull base meningiomas: a single-centre experience

D. Roy, T. Mbadugha and A. Alalade
Royal Preston Hospital, Preston, UK

5

Functional outcomes after neurosurgical intervention for head and neck paragangliomas: a systematic review

A. Prasad[a], M. Ravindran[a], A. Sharp[b], A. Sivakumar[a] and C. Kaliaperumal[c]
[a]University of Edinburgh, Edinburgh, UK; [b]University of Dundee, Dundee, UK; [c]Royal Infirmary Edinburgh, Edinburgh, UK

6

Effectiveness of minimally invasive techniques in base of skull meningioma excision: a systematic review

N. Danushka[a], Y. Jeyaratnam[b], R. Jayasinghe[c] and D. Attanayake[a]
[a]National Hospital of Sri Lanka, Colombo, Sri Lanka; [b]Faculty of Medicine, Colombo, Sri Lanka; [c]Derriford Hospital, Plymouth Trust, Plymouth, UK

7

Multi-portal approach to resection of large left sided trigeminal schwannoma

S. Kannan[a], E. Drosos[b], R. Ford[c], S. Hunt[d], A. W. Makowski-Hoyle[d], C. Cernei[b], L. Melia[e], W. Bennet[f] and K. Abhinav[b]

[a]University of Central Lancashire, Preston, UK; [b]Southmead Hospital, Bristol, UK; [c]Bristol Eye Hospital, University Hospitals Bristol NHS Foundation Trust, Bristol, UK, Bristol, UK; [d]University of Sheffield, Sheffield, UK; [e]Department of Ear, Nose and Throat, Royal United Hospital, Bath, UK; [f]Department of Ear, Nose and Throat, University Hospitals Bristol NHS Foundation Trust, Bristol, UK

8

OCTOPit pilot survey: advocating for a multicenter trial to enhance optical coherence tomography in managing asymptomatic pituitary adenomas

S. Pattankar, S. Hassan and M. El-Sheikh

Institute of Neurosciences, Glasgow, UK

SPINE

1

Efficacy of spinal instability neoplastic score in managing patients with metastatic spinal cord compression

M. Saleemi, A. Lagaras, N. Yasin, M. Dherijha and S. Mohammad

Manchester Centre for Clinical Neurosciences, Manchester, UK

2

Early experience with minimally invasive tubular discectomy for lumbar disc pathology

D. Roy, Z. Karmi and S. M. Maroof Hashmi

Royal Preston Hospital, Preston, UK

3

An audit of spinal injuries in patients aged 75 and above

J. Zhang and R. Laing

University of Cambridge, Cambridge, UK

4

Extensive spinal epidural abscess evacuated with single level laminectomy and catheter irrigation

Z. Sher, R. Shah, A. Elmahdi and R. Hussain

University Hospitals Coventry & Warwickshire NHS Trust, Coventry, UK

5

Cauda equina syndrome secondary to intradural haematoma following osteopathic manipulation in an anticoagulated patient

M. Ahmad, J. Jung, I. Domazet, A. Ahmed, D. Bell, I. Malik and G. Grahovac

King's College Hospital, London, UK

6

Does pelvic fixation in neuromuscular scoliosis correction affect radiological and functional outcomes? A systematic review and meta-analysis

R. Muscogliati[a], W. Nocun[b], R. Masarwa[b], E. Najjar[b], M. Daher[b], M. Elmshneb[b], A. Goswami[b,c], A. Abdelazim Hassan[b], N. A. Quraishi[b] and M. S. Patel[b]

[a]Hull York Medical School, University of Hull, Hull, UK; [b]Centre for Spinal Studies and Surgery, Queens Medical Centre, Nottingham University Hospitals NHS Trust, Nottingham, UK; [c]Vardhaman Hospital, Muzaffarnagar, Uttar Pradesh, India

7

Outcome of surgically treated intradural extramedullary spinal tumours: a single-centre experience over a decade

A. Haque[a] and K. Ghosh[b]

[a]University of Manchester, Manchester, UK; [b]Lancashire Teaching Hospitals NHS Foundation Trust, Preston, UK

8

Factors associated with the outcomes of lumbar discectomy surgery: a single centre experience

N. Danushka[a], R. Jayasinghe[b], D. Malki[a], Y. Jeyaratnam[c] and D. Attanayake[a]

[a]National Hospital of Sri Lanka, Colombo, Sri Lanka; [b]Derriford Hospital, Plymouth Trust, Plymouth, UK; [c]Faculty of Medicine, Colombo, Sri Lanka

9

An audit assessing the clinical efficacy of thoraco-lumbo-sacral orthosis (TLSO) bracing for AO grade a1 acute lumbar fractures

E. Saravanakumar[a], G. Arul Selvan[a], A. Shaikh[a], J. Coyle[b] and V. Sivasubramanian[a]

[a]St George's Hospital, London, UK; [b]St George's University, London, UK

10

Clinical presentation, surgical management, and outcomes of spinal meningiomas: a single-centre retrospective analysis of 111 cases

S. Mirza, A. Zolnourian, M. Baraka, B. Edwards, S. Manivannan, S. Wahab and A. Nader-Sepahi

Wessex Neurological Centre, Southampton, UK

11

Operative strategies for symptomatic thoracic disc herniations: a single centre retrospective analysis

M. Mathew[a,b], V. Arzoglou[b], G. Spink[b], E. Ukponmwan[b], M. Hussain[b] and S. Dambatta[b]

[a]Queen Elizabeth University Hospital, Glasgow, UK; [b]Hull University Teaching Hospital NHS Trust, Hull, UK

12

Neurological deficits and complications in surgical and conservative treatment of spondylodiscitis – a systematic review and meta-analysis

Z. Karagozlu[a], K. Loupasaki[a], E. Porritt[a], R. Fakak[b], M. Koci[a], D. Ramsay[a], J. Neuhoff[c], H. Ponniah[a], A. Kramer[d] and S. Thavarajasingam[d]

[a]Imperial College London School of Medicine, London, UK; [b]University of Nicosia Medical School, Nicosia, Cyprus; [c]Center for Spinal Surgery and Neurosurgery, Berufsgenossenschaftliche Unfallklinik Frankfurt am Main, Frankfurt am Main, Germany; [d]LMU University Hospital, Munich, Germany

13

Outcomes of surgically treated intramedullary spinal tumours: a single-centre experience over a decade

A. Haque[a] and K. Ghosh[b]

[a]University of Manchester, Manchester, UK; [b]Lancashire Teaching Hospitals NHS Foundation Trust, Preston, UK

14

Subsidence after anterior cervical discectomy and fusion: a comparative analysis of three interbody cage designs

E. Hayes, R. Hodnett, M. Poon, N. Slator, M. Nowell and J. Merola

Southmead Hospital, North Bristol NHS Trust, Bristol, UK

15

Evaluating North Bristol NHS trust's compliance with GIRFT guidelines and their impact on cauda equina syndrome pathway outcomes

O. Stait[a], M. Soliman[a], M. N. Elmarawany[a,b] and A. Williams[a]

[a]North Bristol NHS Trust, Bristol, UK; [b]Menoufia University Hospitals, Menoufia, Egypt

16

The impact of aging on locomotor recovery in preclinical models of traumatic spinal cord injury: a systematic review

A. Bhatti, Z. Li, Y. Guo, J. Brannigan, F. Bhatti, I. Kuhn, B. Davies, M. Kotter and O. Mowforth

Department of Clinical Neurosciences, Cambridge, UK

17

Rethinking dural tears: do minimally invasive techniques outperform open surgery?

A. Majed[a], P. Kmeid[a], G. Koberianos[a], A. Hajaig[a], H. Kahwaji[a], Y. Moghnie[a], W. Nocun[b], R. Muscogliati[b], N. Badhe[c] and E. Najjar[b]

[a]Gilbert & Rose-Marie Chagoury School of Medicine, Lebanese American University, Byblos, Lebanon; [b]The Centre for Spinal Studies and Surgery, Nottingham, UK; [c]University of Cambridge, Cambridge, UK

18

Erector spinae plane block vs. caudal block in children – systematic review and meta-analysis

A. Chedid[a], R. Masarwa[b], R. Muscogliati[b], W Nocun[b], K Younes[a], A Hassanieh[a], D Ezzedine[a], L Najem[a], C Safi[a], Z Najem[a], N. Badhe[c], K. Malek[a] and E. Najjar[b]

[a]Gilbert and Rose-Marie Chagoury School of Medicine, Lebanese American University, Byblos, Lebanon; [b]Centre for Spinal Studies and Surgery Queens Medical Centre, Nottingham University Hospitals NHS Trust, Nottingham, UK; [c]University of Cambridge, Cambridge, UK

19

Two cords, three operations: multistage surgical management of adult diastematomyelia with lumbosacral instrumentation

O. Burton[a,b], A. Pandit[a,c], R. Basra[a], J. Penn[a] and G. Prezerakos[a]

[a]Victor Horsley Department of Neurosurgery, National Hospital for Neurology and Neurosurgery, Queen Square, London, UK; [b]Healthcare Quality Improvement Partnership (HQIP), London, UK; [c]High-Dimensional Neurology, Queen Square Institute of Neurology, University College London, London, UK

20

QIP on the rate of day case lumbar decompression/discectomies at Salford Royal Hospital (Northern Care Alliance)

M. Sankar[a], K. Tan[a], M. Saleemi[b] and M. Dherijha[b]

[a]University of Manchester, Manchester, UK; [b]Northern Care Alliance, Manchester, UK

21

Risk factors for surgical site infections (SSIs) after spinal surgery: a systematic review and meta-analysis

S. Rosenke[a,b], M. Kisekka[a,c], H. Darweesh[a,d], B. Kajenthra[a] and J. Hewitt[a,e]

[a]Lancaster University, Lancaster, UK; [b]University College London, London, UK; [c]King's College London, London, UK; [d]Durham University, Durham, UK; [e]Nottingham University Hospital Trust, Nottingham, UK

22

The clinical utility of intraoperative neuromonitoring in anterior cervical discectomy and fusion: a systematic review

C. K. Au-Yeung[a], A. Anuzis[b] and F. Rasul[a]

[a]University Hospital of Coventry and Warwickshire, Coventry, UK; [b]Royal National Orthopaedic Trust, London, UK

23

A characterisation of spinal lesions in a cohort with neurofibromatosis type 1 and dural ectasia

Mo Sial and K. J. George

Salford Royal Hospital, Manchester, UK

24

ACDF self locking cages – experience of over 300 patients

A. Nannapaneni[a], R. Vemaraju[b], S. Williams[b] and R. Nannapaneni[b]

[a]Imperial College School of Medicine, London, UK; [b]University Hospital of Wales, Cardiff, UK

25

A patient perspective of the consent process in spinal surgery

A. Bjornson[a], M. Swindley[b] and G. Spink[c]

[a]Sheffield Teaching Hospitals, Sheffield, UK; [b]University of Hull, Hull, UK; [c]Hull University Teaching Hospital, Hull, UK

26

Pregnancy in women with spina bifida: a systematic review of maternal and neonatal outcomes and neurosurgical implications for clinical management

N. Zhe Wei Yip[a], C. Hui Xin Lim[b], Q. Kaleem[c], R. Pillai[a] and C. Kaliaperumal[a]

[a]Department of Clinical Neuroscience, Royal Infirmary of Edinburgh, Edinburgh, UK; [b]Ninewells Hospital, Dundee, Dundee, UK; [c]St. George's University, West Indies, Grenada

27

Surgical nuances for safeguarding anomalous vertebral artery during atlantoaxial/occipital-C2 fixation in complex cV junction pathologies – operative video article

A. Mittal[a], H. Patel[b], R. Mishra[b], M. Baniya[b], P. Gupta[b], A. Agrawal[b] and A Shrivastava[b]

[a]Queens Hospital, Barking Havering & Redbridge University Hospital NHS Trust, Romford, UK; [b]All India Institute of Medical Sciences, Bhopal, India

28

Successful treatment of an aggressive vertebral haemangioma with radiofrequency ablation and laminectomy: a case report

Z. Li, R. Trivedi and J. Francis

Department of Clinical Neurosciences, University of Cambridge, Cambridge, UK

29

Turning the screw: assessing the impact of full power-assisted vs. Manual pedicle screw insertion in spine surgery

W. Nocun[a], R. Muscogliati[b], N. Badhe[c], V. Bharathidasan[d], G. Vimal[d], K. Parvathi Nair[d] and E. Najjar[b]

[a]School of Medicine, University of Nottingham, Nottingham, UK; [b]Centre for Spinal Studies and Surgery, Queens Medical Centre, Nottingham University Hospitals National Health Service (NHS) Trust, Nottingham, UK; [c]School of Clinical Medicine, University of Cambridge, Cambridge, UK; [d]Amrita Institute of Medical Science and Research, Kochi, India

30

Heterogeneity in reporting of baseline variables in the surgical management of spinal cord cavernous malformations: a systematic review

T. Ferreira[a], L. Naraine[b], J. K. Tan[c], H. Malik[d] and M. K. Teo[b]

[a]St Thomas' Hospital, London, UK; [b]Southmead Hospital, Bristol, UK; [c]University of Manchester, Manchester, UK; [d]Bristol Medical School, University of Bristol, Bristol, UK

TEACHING AND TRAINING

1

DVLA advice in neurosurgical discharge letters: automating care of the individual

A. Iqbal[a], M. China[b], M. Abdulla[a] and R. Trivedi[a]

[a]Addenbrookes Hospital, CUH, Cambridge, UK; [b]National Hospital for Neurology and Neurosurgery, London, UK

2

Experiences of successful candidates prior to ST1 training: the changing landscape of neurosurgery in the UK

P. Kadam and C. Kaliaperumal

Department of Clinical Neurosciences, Edinburgh, UK

3

Knowledge of external ventricular drainage among nursing officers in neurocritical care

N. Danushka[a], R. Jayasinghe[b], Y. Jeyaratnam[c] and D. Attanayake[a]

[a]National Hospital of Sri Lanka, Colombo, Sri Lanka; [b]Derrifoed Hospital, Plymouth Trust, Plymouth, UK; [c]Faculty of Medicine, Colombo, Sri Lanka

4

What do speech therapists got to do with neurosurgery: the impact of an interdisciplinary simulated hands-on workshop for aspiring neurosurgeons

C. K. Au-Yeung[a,b], S. L. Ang[c,b], V. Wong[d,b], E. Yan[b], Y.-T. Chia[e,b], K. Z. Thant[f] and S. Solanki[a]

[a]UKUHCW, Coventry, UK; [b]Speech Therapists' Links, UK; [c]East Sussex Healthcare NHS Trust, East Sussex, UK; [d]LNWH, London, UK; [e]KK Women's and Children's Hospital, Singapore, Singapore; [f]Queen Elizabeth Hospital, Birmingham, UK

TRAUMA

1

Bridging the gap: a closed-loop audit of CT scan utilization in head injury patients

S. Saghebdoust[a,b,c], R. Zare[a], A. F. Jouzdani[a], M. R. Rouhbakhsh Zahmatkesh[a] and H. Baharvahdat[a,b,d]

[a]Department of Neurosurgery, Razavi Hospital, Mashhad, Islamic Republic of Iran; [b]Department of Neuroradiology, Razavi Hospital, Mashhad, Islamic Republic of Iran; [c]Department of Neurosurgery, King's College Hospital, London, UK; [d]Department of Interventional Neuroradiology, Rothschild Foundation Hospital, Paris, France

2

Outcomes of postoperative drainage following cranioplasty: a systematic review

Z. Li, Y. Guo, S. Yang and C. Gillespie

University of Cambridge, Cambridge, UK

3

A retrospective cohort study of neurotrauma admissions at a major London Trauma Centre

C. Co, W. Dawes, S. Mallia, M. Hilling, E. Greeves, D. Perera, J. Barber, C. Uff, J. Bal and K. Abubaker

Royal London Hospital, London, UK

4

Decompressive craniectomy in trauma: what you need to know

J. T. Sunny, G. Solomou, M. Mohan, I. Hossain, A. Kolias and P. Hutchinson

Cambridge University Hospital, Cambridge, UK

5

Rapid antimicrobial-impregnated 3D-printed negative mould technique for PMMA cranioplasty in emergent management of syndrome of the trephined

T. Chaudri[a], N. Gikas[b], A. Belli[b,c,d], A. Stevens[b,c], M. Svolkinas[e] and E. Hargreaves[e]

[a]1Good Hope Hospital, Birmingham, UK; [b]Queen Elizabeth Hospital Birmingham, Birmingham, UK; [c]College of Medical and Dental Sciences, University of Birmingham, Birmingham, UK; [d]The National Institute for Health and Care Research Health Protection Research Unit (HPRU) in Emergency Preparedness and Response, University of Birmingham, Birmingham, UK; [e]Maxillofacial Prosthetics Department, Queen Elizabeth Hospital Birmingham, Birmingham, UK

6

Management of concussion in para-athletes: a single-centre case series

A. Singh[a], S. Momin[b,c], K. Gregory[d], A Stevens[b,c] and A Belli[b,c]

[a]University of Birmingham Medical School, Birmingham, UK; [b]Department of Neurosurgery, Queen Elizabeth Hospital, Birmingham, UK; [c]Institute of Inflammation and Ageing, University of Birmingham, Birmingham, UK; [d]Sport and Exercise Medicine, Queen Elizabeth Hospital, Birmingham, UK

7

Long term outcomes of cranioplasty in trauma survivors: a 10-year follow-up study

N. Danushka[a], Y. Jeyaratnam[b], R. Jayasinghe[c] and D. Attanayake[a]

[a]National Hospital of Sri Lanka, Colombo, Sri Lanka; [b]Faculty of Medicine, Colombo, Sri Lanka; [c]Derriford Hospital, Plymouth Trust, Plymouth, UK

8

Patterns of acute neurosurgical presentations to two neurosurgical units before, during, and after the COVID-19 pandemic

Z. Li[a], E. Simmons[b], R. Fernández-Méndez[c], A. Joannides[a] and P. Hutchinson[a]

[a]University of Cambridge, Cambridge, UK; [b]Orion MedTech Ltd CIC, Cambridge, UK; [c]Jaume I University, Castellón de la Plana, Spain

9

Implementation of the CUH trauma unit guidance for inpatient management of adult traumatic brain injury: a cross-sectional survey

P. Malhotra[a,b], M. Kingham[a,b], C. Gillespie[a,b] and A Helmy[a,b]

[a]Cambridge University Hospitals, Cambridge, UK; [b]University of Cambridge, Cambridge, UK

10

Early mobilisation in chronic subdural hematoma: a systematic review and meta-analysis

Y. Chedid[a], C. S. Gillespie[a], M. Veremu[a], W. H. Cook[a], U. Al-Dallal[a], M. Ashraf[b], O. D. Mowforth[a], D. J. Stubbs[c], B. M. Davies[a] and E Goacher[d]

[a]Department of Clinical Neurosciences, University of Cambridge, Cambridge, UK; [b]Wolfson School of Medicine, University of Glasgow, Glasgow, UK; [c]Perioperative, Acute, Critical, and Emergency Care Section, University of Cambridge, Cambridge, UK; [d]Sheffield University Teaching Hospitals NHS Trust, Sheffield, UK