

review potential research opportunities that nTMS provides. Details of Phase 2 clinical trial of nTMS for improving neuro-cognitive outcomes will be discussed. **Results:** Case illustrations will be provided. Preliminary results of Phase 2 clinical study will be discussed. **Conclusions:** Navigated TMS provides another tool in the armamentarium of neurosurgeons to better manage and approach complex and eloquent lesions in the brain.

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Novel use of fluorescein sodium in the resection of a pediatric posterior fossa tumor

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Background: Gross total resection of pediatric posterior fossa tumors is paramount towards improving progression-free survival.

Fluorescein accumulates in tumoral tissue, where the blood-brain barrier is disrupted. It can therefore potentially aid in differentiating tumoral versus normal tissue. We aimed to evaluate the efficacy of fluorescent-guidance (using fluorescein) towards the resection of a pediatric cerebellar tumor, as the index case at our institution using this technique. **Methods:** 5 mg/kg of IV fluorescein sodium was injected upon induction of general anesthesia. During tumor resection, a yellow 560-nm filter (Kinevo microscope, Zeiss) was employed for fluorescent-guidance. The extent of resection was assessed via post-operative MRI. **Results:** There were no adverse side effects experienced by the patient. Tumoral material was clearly visualized under the yellow 560-nm filter, allowing for satisfactory gross total resection of the lesion (confirmed on post-operative MRI). Preliminary pathology was consistent with medulloblastoma. **Conclusions:** Fluorescent-guided resection of pediatric posterior fossa tumors appears to be a safe and useful adjunct for gross total resection of these lesions. To the best of our knowledge, this is the first reported case in Canada wherein IV fluorescein was used under a yellow 560-nm filter for resection of a posterior fossa medulloblastoma in a child.

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Practice patterns in the management of residual/recurrent non-functioning pituitary adenomas: results from a Canada-wide survey

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Background: Postoperative follow-up of non-functioning pituitary adenomas (NFAs) occasionally detects residual or recurrent disease. Subsequent treatment options range from continued follow-up, to re-resection or radiotherapy. To better understand current practice patterns on this topic, we surveyed neurosurgeons and radiation oncologists in Canada. **Methods:** Skull-base neurosurgeons and radiation oncologists across Canada were invited to complete a 25-item online questionnaire. Summary statistics were computed and 2-tailed t-tests were performed to assess significance. **Results:** 33 participants returned completed questionnaires: neurosurgeons (n=20, 61%) and radiation oncologists (ROs; n=13, 39%). When treating giant (>3cm) tumours, 92% of neurosurgeons in practice for less than 15 years use an endoscopic approach, as compared to only 57% of

neurosurgeons in practice for 15 years or more. Additionally, younger neurosurgeons have a greater tendency to advocate for stereotactic radiosurgery (SRS) or re-resection (54% and 38%, respectively), as compared to older surgeons who show a higher propensity (29%) to advocate for observation. The presence of cavernous sinus extension appears to encourage neurosurgeons (40%) to offer radiotherapy sooner, as compared to 62% of ROs. **Conclusions:** Our results identify both variations and commonalities in practice amongst Canadian neurosurgeons. Approaches deviate in the setting of residual tumors based on years of practice.

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Metabolomic and lipidomic profiling of high and low grade gliomas - a matched serum and tissue clinical study

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Background: It is well understood that gliomas require vast supply of energy to proliferate, invade and spread. We wished to identify novel biomarkers by comparing normal brain and plasma to high and low grade gliomas using newer techniques in laser ionization mass spectroscopy - precision metabolomics and lipidomics. **Methods:** Single center IRB approved tissue bank of "normal" brain and plasma (n=6) and IDH wild-type GBM tissue and plasma (n=29), IDH mutant GBM tissue and plasma (n=6), Low grade glioma (n=4) tissue and plasma were analyzed for over 2000 endogenous metabolites and complex lipids. Unbiased clustering and Random Forest plots and pathway analysis were performed with appropriate statistical analysis (significance $p < 0.05$). **Results:** IDH mutant GBM had higher levels of 2-HG, however, plasma 2-HG did not reflect IDH genotype. Changes in glucose and fatty acid utilization were observed in IDH WT and mutant gliomas compared to normal brain tissue. Lipidomics of plasma and tissue of normal and gliomas did not reveal a biomarker reaching statistical significance. **Conclusions:** We will continue to investigate if plasma and tissue biomarkers including hypotaurine, methionine, branched chain amino acid catabolites and pregnenolone can be used to predict tumor progression, response to treatment and clinical outcomes.

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Novalis Certification of stereotactic radiosurgery programs: methodology and current status

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Background: The Novalis Certification Program is dedicated to providing a comprehensive and independent assessment of safety and quality in stereotactic radiosurgery (SRS). **Methods:** The program includes an independent review of SRS program structure, adequacy of personnel resources and training, appropriateness and use of technology, program quality management, patient-specific quality assurance and equipment quality control. Centres applying for Novalis Certification complete a self-study prior to a one-day visit by reviewers. Reviewers generate a descriptive 77-point report which is voted on by a multidisciplinary expert panel. Outcomes of reviews include mandatory requirements and optional recommendations, with the former requiring resolution prior to award of Certification. Sites undergo recertification every 4 years. **Results:** To date,