

GPI-DBS following routine clinical programming. Blood oxygen level-dependent (BOLD) response to stimulation was compared between groups. Phonemic VF was assessed pre- and postoperatively. Results: Voxel-wise t-test between STN-DBS and GPI-DBS BOLD response maps revealed areas of significant difference ($p < 0.001$) in the left frontal operculum and the left caudate head. Stimulation BOLD response appears to show slight inverse correlation with postoperative VF decline. The trend is reversed at the left frontal operculum in STN-DBS compared to GPI-DBS. Conclusions: Decline in VF in PD-DBS seems associated with the stimulation BOLD response at the left frontal operculum and the left caudate head. The effect differs depending on stimulation site, suggesting differing effects on brain network activity.

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Antibacterial envelopes prevent post-operative infections in neuromodulation surgery

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Background: Neuromodulation unit placement can provide efficacious control of many neurological conditions. They are high risk for infection with a historic infection rate as high as 10%. Treatment of infection requires surgical removal and a long course of systemic antibiotics. At our center, one surgeon uses antibacterial envelopes with all implanted neuromodulation devices. Methods: We conducted a retrospective cohort study of consecutive implantable pulse generator (IPG) and intrathecal pump unit implantation with an antibacterial envelope at our center. This cohort was then compared to a historical cohort of consecutive patients undergoing IPG or pump placement or revision prior to the use of the envelopes. Results: IPG: There were 18 (11.9%) class I infections in the pre-envelope cohort compared with 5 (2.1%) in the post-envelope cohort. The absolute risk reduction (ARR) with the use of antibacterial envelopes was 9.85% (95% confidence interval (CI) 4.3-15.4%, $p < 0.01$).

Pump: There were 6 (14.6%) class I infections in the pre-envelope cohort compared with 1 (1.7%) in the post-envelope cohort. The ARR with the use of antibacterial envelopes was 12.9% (95% confidence interval 1.6-24.3, $p < 0.05$). Conclusions: Based on our results, we recommend usage of antibacterial envelopes to reduce infection rates in neuromodulation surgery. Further study is needed.

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A novel electrophysiologic reflex in neurovascular compression syndromes serving as a marker of pain resolution

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Background: Radiofrequency rhizotomy is a commonly used percutaneous technique for treatment of trigeminal

neuralgia especially in cases not eligible for microvascular decompression. This technique is usually performed with the patient under conscious sedation. We devised a method for performance of this technique under general anesthetic with neurophysiology monitoring. Methods: The patient is put under general anaesthetic and EMG monitoring is set up. Needles are placed in temporalis muscle, masseter and mylohyoid or anterior belly of digastric. Resting activity is monitored. Rhizotomy is then performed under fluoroscopic guidance, with monitoring of EMG potentials pre- and post-lesioning, with specific attention paid to presence of an abnormal electrophysiologic reflex. Results: A total of 38 procedures were performed in 23 patients. Of these, 15 were revision procedures. Patients had improvement from BNI pain scale 3.8 ± 0.8 to 1.3 ± 1.5 , and had a reduction in number of medications from 1.9 ± 1.0 to 0.8 ± 0.9 . Survey results indicate greater practitioner satisfaction with this technique. Conclusions: Radiofrequency rhizotomy can be performed under GA with IONM guidance with good results. We present a novel method for EMG-based monitoring. Further study is required to validate this technique.

NEURO-ONCOLOGY

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Weighing the risks and benefits of perioperative steroids in the surgical treatment of malignant brain tumours

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Background: Steroids are widely used in medicine because of their anti-inflammatory and immunosuppressive properties; however, they have numerous adverse effects. In neuro-oncology, dexamethasone is the first-line treatment for vasogenic edema caused by malignant brain tumours. This retrospective chart review investigated the risks and benefits of perioperative steroids in the surgical treatment of malignant brain tumours. Methods: All patients (age ≥ 18 years) who underwent a craniotomy for the treatment of a malignant brain tumour at Windsor Regional Hospital between 2012 and 2020 were assessed for eligibility for this retrospective study. Baseline patient characteristics, cumulative perioperative steroid dose, and postoperative outcomes were recorded from electronic medical records ($n = 362$). Statistical analysis was performed using SPSS. Results: Patients who received a higher cumulative perioperative steroid dose (≥ 80 mg) had a significantly higher rate of postoperative complications compared to those who received a lower dose. These included wound dehiscence, postoperative brain edema on imaging, unplanned return to the operating room, and readmission within 30 days. Conclusions: Steroids are important medications in neuro-oncology, but they are not without potential complications. The findings of this study highlight the need for careful consideration when using steroids in patients undergoing surgical treatment of a malignant brain tumour.