

P.150**Use of Antibacterial Envelopes for Prevention of Infection in Neuromodulation**

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Background: Neuromodulation unit placement carries a historic infection rate as high as 12%. TYRX antibacterial envelopes (Medtronic Inc., Minneapolis, MN), which are absorbable mesh envelopes that elute minocycline and rifampin, have been used in implantable cardiac devices with substantial risk reduction for infection. **Methods:** We conducted a retrospective cohort study of consecutive implantable pulse generator (IPG) and intrathecal pump unit implantation with a TYRX antibacterial envelope©. 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:** In the pre-envelope cohort of 151 IPGs in 116 patients, the infection rate was 18/151 (11.9%). In the antibacterial envelope cohort of 233 IPGs in 185 patients, the infection rate was (2.1%). The absolute risk reduction was 4.6% (95% CI, 0.045-0.048), The pre-envelope cohort of 41 pumps in 39 patients, the infection rate was 6/41 (14.6%). In the antibacterial envelope cohort of 59 pumps in 54 patients, the infection rate was (1.7%). The absolute risk reduction was 12.9% (95% CI 1.6-24.3). **Conclusions:** Usage of an antibacterial envelope for neuromodulation has resulted in a lower infection rate at our center. Based on these results, we recommend the use of antimicrobial envelopes.

P.151**Repeat surgery for recurrent trigeminal neuralgia: a systematic review and meta-analysis**

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Background: The success of repeat surgery for recurrent trigeminal neuralgia (TN)—with microvascular decompression (MVD), percutaneous rhizotomy (PR), or stereotactic radiosurgery (SRS)—is not well-studied. We performed a systematic review and meta-analysis of the literature on repeat surgery recurrent TN, focusing on the durability of pain relief and relative efficacy of MVD, PR, and SRS. **Methods:** A PRISMA systematic review of Medline/Embase/Pubmed identified studies of adults with unilateral idiopathic TN undergoing repeat surgery. The primary outcome of complete pain relief (CPR) at last follow-up was analyzed with a multivariate mixed-effects meta-analysis of proportions. **Results:** Seventy-eight studies met criteria; 61 were included in meta-analyses, containing 29/14/25 cohorts with 900/684/1353 patients undergoing MVD/PR/SRS respectively (mean age 64.7 years, 41% males). Initial CPR was 69% (74%/85%/52%). CPR at mean 39.7 month follow-up (38.3/38.8/41.0) was 48% (59%/60%/34%). Initial CPR for both MVD (CPR: 0.78 [0.70-0.85]) and PR (CPR: 0.93 [0.83-0.98]) was superior to SRS (CPR: 0.48 [0.35-0.61]). At follow-up, MVD

(0.45 [0.32-0.58]) and PR (0.45 [0.30-0.60]) trended towards superior CPR versus SRS (0.25 [0.15-0.37]). **Conclusions:** Half of recurrent TN patients achieve good pain control 3 years after repeat surgery. MVD/PR showed superior initial pain relief and likely better long-term relief. These findings can inform surgical decision-making in this challenging population.

P.152**Efficacy of Dorsal Root Ganglion Stimulation for Post Surgical Neuropathic Pain**

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Background: The dorsal root ganglion (DRG) has been established as an important structure in the development and modulation of chronic neuropathic pain and has demonstrated superiority over spinal cord stimulation in the management of challenging neuropathic pain conditions, including complex regional pain syndrome and chronic post-spine surgery neuropathic pain. DRG has only been available in Canada for patient application since January 2020. The St Pauls Hospital Neuromodulation Program was one of the first Canadian centers to offer this procedure. **Methods:** We reviewed our early experience with DRG therapy in 10 patients. Patient-reported outcome measures were collected pre-trial, post-trial, and post-device implantation, to determine the efficacy of DRG. We hypothesized that DRG stimulation would demonstrate a meaningful change in PROMIS-29 domains and at least 50% improvement in pain intensity at 8 wks. **Results:** All patients demonstrated a > 5 point change in T scores in PROMIS-29 domains suggesting a meaningful benefit. Patients also demonstrated a percentage pain improvement at 8 wks of 64 % based on a numerical rating scale. No major complications were observed. **Conclusions:** DRG stimulation is a safe and effective treatment option for neuropathic pain.

P.153**Profiles and Outcomes of Workers' Compensation Patients Undergoing Spinal Cord Stimulation for Persistent Post Surgical Pain**

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Background: The challenges of chronic pain management, and resulting poorer outcomes, in workers' compensation (WCB) patients has been well established. Spinal cord stimulation (SCS) has been used for the management of low back and radicular neuropathic pain with varying effectiveness and its efficacy in the WCB population has been challenged. We sought to examine our experience using SCS in WCB compared to non WCB patients. **Methods:** A retrospective analysis of 71 WCB patients assessed and treated at the St Pauls Hospital neuromodulation program between 2016-2021 was performed. This group was compared to a cohort on non WCB patients in terms of the likelihood of being offered a trial, proceeding with trial if offered,

and the likelihood of a successful trial proceeding to implant. **Results:** Compared to non WCB, the WCB patients were more likely to be offered a trial (86% vs 77%) and more likely to proceed with a trial if offered (82% vs 71%). Trial to implant ratios were similar in both WCB and non WCB patients (78% vs 77%). **Conclusions:** WCB patients were more likely to be offered a SCS trial and more likely to accept if offered, compared to non-WCB patients. However, both groups were similar in trial to implant probability.

MOVEMENT DISORDERS

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Subcutaneous intrathecal catheter and port implants for administration of Nusinersen in patients with Spinal Muscular Atrophy

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Background: Until recently, no effective treatment was available for spinal muscular atrophy (SMA). In 2017, Health Canada approved intrathecal Nusinersen a medication that prevents degeneration of the motor neurons in the spinal cord. The administration is intrathecally most commonly via lumbar puncture (LP) to have a direct effect on the motor neurons of the spinal cord. Many older patients with SMA and concomitant spinal deformities present technical challenges to access the thecal sac. Different routes have been described for delivery of the medication whoever these techniques may require sedation, are associated with radiation exposure, and demand experience personnel. **Methods:** A new surgical technique has been proposed to overcome these obstacles by combining two Health Canada approved devices: 1) an intrathecal catheter designed for intrathecal baclofen pumps and 2) an implantable subcutaneous port designed for intravascular medication administration **Results:** We describe the technical nuances and outline the clinical outcomes of six patients with complex spine deformities who have undergone such an implant for administration of Nusinersen. **Conclusions:** We discuss the benefits of the procedure which includes: 1) administration in the outpatient setting without sedation, 2) avoidance of costly imaging and experienced personnel, and 3) placement of the catheter in the cervicothoracic junction.

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Prospective cohort analysis of normal versus mild cognitive impairment for quality of life outcome following DBS for Parkinson's disease

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Background: All guidelines for DBS in Parkinson's disease (PD) include a contraindication for 'dementia'. It is unclear where this cut-off should occur and if patients with mild cognitive

impairment (MCI) do not do as well. This prospective cohort analysis assessed if pre-operative cognition affected post-operative quality of life. **Methods:** PD patients receiving bilateral STN-DBS (n=100) were prospectively studied using STROBE guidelines. All had Montreal Cognitive Assessment (MoCA), motor (UPDRS), mood (BDI-II), and quality of life (Parkinson Disease Questionnaire summary index, PDQ-39-SI). Two cohorts, pre-operative MCI (MoCA:18-25) and normal cognition (MoCA:26-30), had post-operative PDQ-39-SI at 1-year. The primary outcome was the proportion of patients with an improved PDQ-39-SI at 1-year. **Results:** Cohorts were not significantly different in age, severity of illness, response to dopamine, or mood. MCI was present in 27/100. Improved quality of life at 1-year occurred in 75% with normal cognition and 70% with MCI (p=0.54) with RR=1.1 (95% CI, 0.8-1.5). Linear regression analysis showed no correlation between pre-operative cognition and post-operative outcome (R²=0.02). **Conclusions:** Parkinson's patients with MCI should be offered DBS if their motor symptoms require surgery. Guidelines for DBS surgery in PD should change from "dementia is contraindicated" to "patients require adequate cognitive functioning, MoCA³18".

NEURO-ONCOLOGY

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Outcomes of Cranial Nerve Deficits in Patients with Pituitary Apoplexy: The Ottawa Hospital Experience

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Background: One of the rare but urgent presentations of a pituitary tumor is pituitary apoplexy. In this case series, we describe our experience regarding the cranial nerve recovery in patients with pituitary apoplexy following endoscopic endonasal transsphenoidal surgery (EETS). **Methods:** Retrospective cohort study with patient characteristics, tumor type, endocrine data, operation data collected. Postoperative data were extracted for the follow-up period available for each patient. **Results:** 15 pituitary apoplexy cases were identified. The cranial nerve deficits presented at admission were: visual deficit (33% patients); unilateral third nerve palsy (47% patients), unilateral sixth nerve palsy (27% patients). Postoperatively, 60% of patients with preoperative visual deficit had normal visual fields and the other 40% showed improvement. From those with oculomotor nerve dysfunction preoperatively, 43% have returned to normal nerve function and 57% presented improvement. 75% cases of abducens nerve palsy resolved postoperatively, while 25% showed improvement. **Conclusions:** Based on this series, surgical treatment should be offered to patients presenting with cranial nerve deficit in the setting of pituitary apoplexy. In this series, all cranial nerve deficits either returned to normal or improved following surgery. Though a small series, the presented results are superior to those reported in the literature for conservative management.