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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.

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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.

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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 chonic 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.

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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 it's 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,