Successful Use of Neuromodulation for Treatment of Refractory Post Mastectomy Pain Syndrome

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Introduction

- Breast cancer is the most common cancer diagnosed globally according to the American Cancer Society.
- A cornerstone of breast cancer treatment involves surgical excision with either mastectomy or lumpectomy with radiation.
- Postoperative pain at least 3 months following mastectomy occurs in 36-47% of patients and is referred to as post mastectomy pain syndrome (PMPS) if it is neuropathic in nature involving the anterior surface of the chest axilla, shoulder, or upper half of the arm.
- PMPS is thought to evolve from entrapment or damage to the intercostobrachial nerve during axillary node dissection or surgical manipulation resulting in sensitization of peripheral nociceptors and ectopic neural activity.[2] This condition causes significant morbidity among mastectomy patients, and no gold standard treatment exists.
- Here we describe a successful trial and implantation of a dorsal column spinal cord stimulator in a patient experiencing PMPS pain which was previously refractory to oral medications, physical therapy, and targeted nerve injections.

Case Presentation

- A 57-year-old female presented to the interventional pain clinic with right sided neuropathic breast pain that started at the end of October 2019 following treatment for breast cancer.
- The pain was described as diffuse neuropathic pain along her right breast, axilla, and right upper extremity. She had allodynia in these areas as well. She had previously tried physical therapy and desensitization without relief. Multiple nerve blocks and spine injections were trialed without long pain relief. Her pain was managed with Lyrica 75 mg twice daily, but her symptoms continued to limit her daily activities. She noted that the nerve pain became much more severe if she missed even one dose of Lyrica.
- Baseline ODI scores ranged from 6/10 to 10/10 with an ODI of 42% Decision was made to trial neuromodulation Epidural access was obtained at the T12/L1 level, and neurostimulator electrode lead placement was placed at the top of thoracic T2 and middle of T3 vertebral levels Following SCS, she experienced over 80% pain relief during the trial implantation as well as significant improvements in mood and functional ability. Notably, the patient did not require any neuropathic pain medication during the trial.
- A permanent SCS was implanted with the patient continuing to experience significant pain relief and significant improvement in ODI to less than 8% which is consistent with no disability.

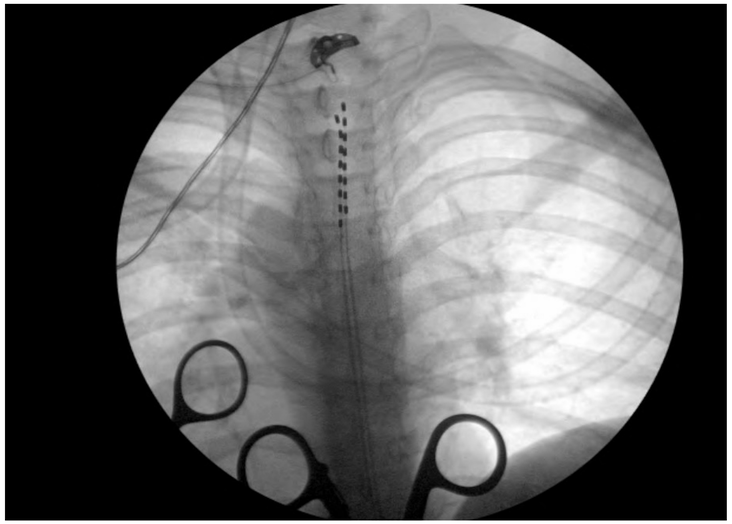

Figure 1: Fluoroscopic Visualization of SCS Lead Placement for PMPS

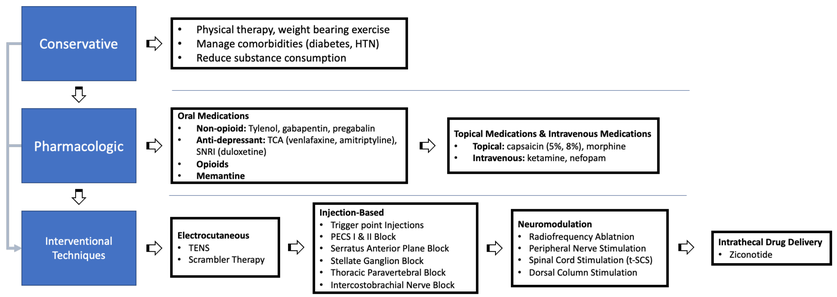

Figure 2: Map of Treatment Options for Post Mastectomy Pain Syndrome

Discussion

- PMPS can be challenging to treat as current treatment options are limited and many have sparse supporting literature. Often patients need to heavily rely on neuropathic oral medications such as gabapentin and pregabalin. However, these medications are not always successful and also come with unwanted side effects of drowsiness, altered mental status, and weight gain.
- Alternatively, peripheral nerve blocks have utility but are difficult to obtain long lasting pain relief.
- Neuromodulation has been FDA approved for various neuropathic pain conditions including post-laminectomy pain syndrome, complex regional pain syndrome, and diabetic neuropathy
- Given the large neuropathic component of PMPS, we feel trialing a spinal cord stimulator among patients who have failed conventional therapy to assess the improvement in a patient's ODI is warranted.
- A 7-patient case series done at a major US cancer center for PMPS patients found 85% of patients achieved > 50% pain relief with neuromodulation.[4] A case report of a PMPS patient from Germany who underwent DRG stimulation was followed over a course of 4 years with her medication requirements decreased by 50% and a 4-point NRS-11 pain scale score decrease.[5] These cases highlight the importance of patient selection in the utility of neuromodulation for PMPS.
- A recent systematic review on neuromodulation for cancer related pain also showed significant utility amongst case studies for chronic chest wall / thoracic level pain post-cancer treatment
- SCS should be considered in patients who are experiencing continued neuropathic pain after failing conservative therapies including desensitization, physical therapy, oral neuropathic medications, and peripheral nerve blocks. After a successful SCS trial, our patient's implant successfully eliminated oral medications completely and, more importantly, improved her quality of life. She has returned running, traveling, and she finally feels that she has healed from her breast cancer battle.

References

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