

Case Presentation: Homeopathy or Allopathy for Neuropathy? Evidence for Nerve Stimulators in the Treatment of Peripheral Neuralgia

Presenting Author: Lin Zhao MD

Co-Authors: Michael Ries MD, Alaa Abd-Elsayed MD MPH (faculty mentor)

Background/Introduction: The use of peripheral nerve stimulator (PNS) for chronic peripheral pain has been documented as early as 1967 when Wall and Sweet reported eight cases using PNS to reduce chronic peripheral pain [1]. Fifty years later peripheral nerve stimulation is still viewed as a last resort for chronic peripheral nerve pain. Today technological advancements allow for less invasive placement procedures and less noticeable stimulation, making implantation less morbid and more accessible [2]. Here we document the safe and effective use of PNS for a patient with refractory sural neuralgia.

Case Presentation: Our patient presented with a history of right cuboid fracture due to motor vehicle accident status post arthrodesis 10 years ago. Recovery was uncomplicated for seven years postoperatively until she started to experience pain and swelling at the prior surgical site. She subsequently underwent hardware removal for pain alleviation but her pain worsened thereafter with features consistent with sural neuropathic pain. Conservative management with therapy and medication failed therefore chronic pain management was consulted.

Methods: Three sural nerve block trials with 2ml of 0.25% bupivacaine and 40mg of triamcinolone acetonide were effective however duration was short lasting. A decision was made to try PNS to provide longer term relief. Patient underwent psychiatric evaluation and a PNS trial which provided more than 50% improvement in pain. Patient subsequently received a permanent PNS implant. Stimulator lead was placed between the lateral malleolus and achilles tendon, where the sural nerve is located, under fluoroscopic guidance and stimulation was provided using an external antenna and generator. Device was programmed to deliver high frequency stimulation.

Results: One month status post nerve stimulator implantation patient reported considerable improvement in her symptoms, an increased ability to resume long hours of heavy work load, and an ability to decrease her dose of neuropathic medications to half. At one year follow up, patient continued to report the same improvement

Conclusion: PNS has been approved by FDA for pain relieve. We report here a case of significantly improved refractory chronic peripheral neuropathic pain with the use of PNS. Early pain referral with appropriate pain treatment can improve quality of life and avoid side effect of pain medication especially opioid. Further clinical trials and data analysis on PNS is worth investigation to determine if early PNS implantation could benefit patients and reduce overall pain treatment cost.

References:

1. Wall PD, Sweet WH. Temporary abolition of pain in man. *Science* 1967;155(3758):108–9.
2. Banks GP, Winfree CJ. Evolving techniques and indications in peripheral nerve stimulation for pain. *Neurosurg Clin N Am* 30 (2019) 265-273