

Original Articles

Restoring Successful Spinal Cord Stimulation Therapy for a Patient with Severe Pocket Pain Utilizing Nalu Micro-Implantable Pulse Generator

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Spinal cord stimulation (SCS) is a commonly utilized therapy for the treatment of neuropathic pain conditions. The primary indications for SCS therapy are post-laminectomy syndrome as well as complex regional pain syndrome. SCS therapy is minimally invasive and reversible. It involves the implantation of percutaneous or paddle leads along with a surgically implanted pulse generator (IPG). Severe pocket pain from the IPG is a well-known complication following SCS implants that can be challenging to treat and can lead to an explant of the SCS system. We present the case of a patient with post-laminectomy syndrome who underwent an explant of her SCS system due to severe pocket pain complaints. The patient was successfully reimplanted with a Nalu micro-implantable pulse generator for SCS therapy with 75% improvement in her post-laminectomy pain complaints with no complaints of pocket pain.

INTRODUCTION

Chronic pain affects nearly 50 million Americans or greater than 20% of the national population. Back pain alone is one of the most common healthcare burdens and is the leading cause of disability worldwide.^{1,2} Spinal cord stimulation (SCS) is a treatment that can be used for a variety of refractory chronic neuropathic pain conditions.³ The primary indications for SCS therapy are post-laminectomy syndrome as well as complex regional pain syndrome (CRPS).⁴ However, there have been several studies and case reports demonstrating the efficacy of SCS therapy for a variety of neuropathic pain conditions as well as nonsurgical back pain.⁵⁻¹³ SCS is a minimally invasive and reversible therapy that involves a percutaneous trial followed by implantation of percutaneous or paddle leads along with a surgically implanted pulse generator. Pocket pain from the implantable pulse generator (IPG) is a well-known complication following SCS implants and has been reported with a wide range of 5-17%.¹⁴⁻¹⁶

We present our experience managing a patient with post-laminectomy syndrome who was previously treated with SCS therapy with a 75% improvement in her pain. However, the patient was explanted a little over 2 years later due to severe pocket pain complaints. The patient was successfully re-trialed and reimplanted with a Nalu micro-implantable pulse generator for SCS therapy [Nalu Medical, Carlsbad, California] and has regained 75% improvement in her post-laminectomy pain complaints along with reporting no issues with pocket pain.

CASE PRESENTATION

The patient was a 77-year-old female with longstanding low back pain and lumbar radicular pain complaints following prior laminectomy at L4-5. The patient had completed several months of physical therapy, massage therapy, and chiropractic care with no significant benefit. She had trialed epidural steroid injections along with medial branch blocks and sacroiliac joint injections with no substantial improvement. The patient also tried pharmacological treatments including acetaminophen, NSAIDs, membrane stabilizers, muscle relaxers, and opioids. She underwent an SCS trial and implant with >75% improvement in her pain complaints and symptoms but started to develop severe pocket pain complaints. She tried topical medications along with trigger point injections around the IPG but reported no improvement. The pocket pain became so debilitating that the patient underwent an explant of her SCS system 2 years later by a neurosurgeon. The patient was referred to us for further management.

Given the patient's ongoing pain complaints and prior successful response to SCS therapy for her back and radicular pain, we discussed the option of utilizing the Nalu micro-implantable pulse generator for SCS therapy. The patient underwent another SCS trial with percutaneous leads placed at the top of the T7 vertebral bodies. She reported >75% improvement in her pain complaints. She underwent a successful Nalu SCS implant with similar pain relief. She continues to endorse good pain relief without pocket pain

complaints 3 months postoperatively and has been able to minimize medication usage.

DISCUSSION

SCS is now an increasingly utilized therapy for the treatment of post-laminectomy syndrome, complex regional pain syndrome, and a variety of neuropathic pain conditions. SCS provides pain relief by modulation of the pain pathway using electrical current through electrode leads. This therapy is safe, reversible, and effective for a multitude of pain conditions. Generally, SCS implants involve implantation of percutaneous or paddle leads along with a surgically implanted IPG. Pocket pain is a known complication with traditional IPGs and can lead to additional surgeries including pocket revisions and explant of the entire system. Our case is of interest as it demonstrates successful restoration of SCS therapy utilizing the Nalu micro-implantable pulse generator in a patient who required an explant of her previous system.

We believe Nalu SCS technology should be considered and offered to patients who desire a smaller implantable IPG as a personal preference, who are thin and at risk for developing severe pocket pain, and patients who have had successful SCS therapy but have previously suffered from severe pocket pain.

CONCLUSION

This case demonstrates the utility of the Nalu micro-implantable pulse generator. Nalu SCS technology can benefit patients who desire a smaller implantable IPG, are at risk for developing pocket pain, and for patients who have had successful SCS therapy but have previously suffered from severe pocket pain.

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