



Treatment of Failed Back Surgery Syndrome pain with a Peripheral Nerve Stimulator

Authors: Akshat Gargya, MD FIPP; Robert Selko, DO; Laura Weiland, PA-C; Naeem Haider, MD

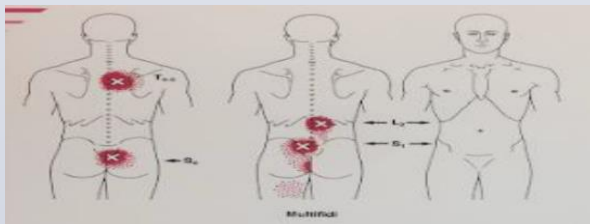
Department of Anesthesiology: Division of Interventional Pain; University of Vermont Medical Center

ABSTRACT

We present a case of 66-year-old male with a history of right L3-L4 laminotomy and bilateral L4-L5 laminectomy for neurogenic claudication 1.5 years ago. He previously had an L3-L4 hemi laminotomy 15 years ago for a synovial cyst. His PMH included obesity, uncontrolled DM, CKD on dialysis, atrial fibrillation on Eliquis, and CAD. He visited our clinic complaining of chronic low back and occasional left medial leg pain stopping at the knee. The pain was described as an achy sensation in the back and sharp in the legs. It was rated at an intensity of 10/10 and severely limited his movement. The pain worsened with minimal activity and had not responded to prior steroid injections or Gabapentin use. Physical examination showed positive facet loading and a midline healed surgical scar. Strength was 5/5 and sensation was intact to light touch. A lumbar MRI scan revealed moderate bilateral foraminal narrowing at L2-L3, severe foraminal narrowing at L4-L5, and extensive multilevel arthritis in the lumbar spine along with post-surgical changes at L3-L5 vertebrae. He was scheduled for a Lumbar medial branch Peripheral Nerve Stimulator implantation with SPRINT which was done at the L3 and L5 level on the left side. Access to these 2 locations with a stimulating needle was extremely difficult due to extensive scar tissue from multiple prior back surgeries. He was seen in the clinic 2 months post-procedure for lead removal and reported resolution of both low back and leg pain. His pain score was 0/10 for leg and 4/10 for low back pain. Our case highlights PNS's potential in treating pain from possible neuralgia to lumbar spinal nerves and medial branches caused by scar tissue post-laminectomy, indicating a new PNS application in this patient population who may not qualify for a spinal cord stimulator.

INTRODUCTION

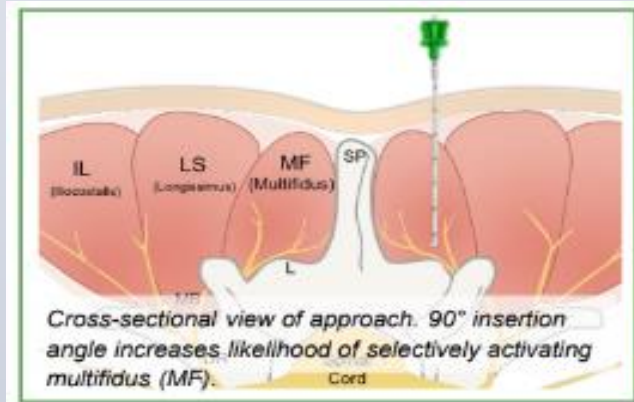
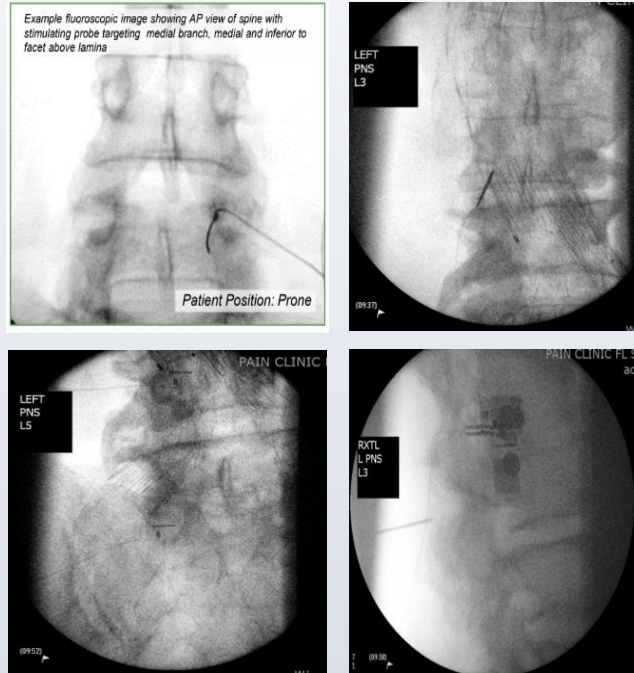
Pain radiating from the low back into the lower limb can be multifactorial and involve different pain generators including: radiculopathy, spinal stenosis, facet arthropathy, femoroacetabular arthritis, sacroiliac joint pathology, and myofascial referred pain from the lumbar paraspinals or buttock. Referred pain from the multifidus muscle can present in the low back, buttocks, and proximal thigh and does not classically cross the knee joint.



METHODS

The patient gave informed written consent to proceed with this procedure following a detailed discussion of the risks and benefits associated with PNS in the lumbar spine. The patient was then placed in the prone position, prepped with chlorhexidine, the site was marked and draped with sterile towels, and time out was performed. Strict sterile technique was maintained throughout the procedure.

IMAGING



METHODS CONT.

Using fluoroscopy guidance, Test stimulation was delivered via 17G Stimulating probe inside a percutaneous sleeve to assist in identifying the optimal location for the indwelling lead. Following stimulator intensity optimization, the stimulating probe was removed, leaving the percutaneous lead in position. The lead and introducer were inserted through the percutaneous sleeve to the previously determined location and advanced toward the target site at the pre-determined depth and trajectory.

The microlead connector was attached to the proximal end of the lead and confirmed similar stimulation to the stimulating probe. Placing manual pressure at the distal tip of the introducer, the introducer was removed and the lead was deployed, secured and implanted. The microlead connector was reconnected and stimulation was again delivered to confirm that the lead did not move upon removal of the introducer. Excess lead was trimmed to length. The cable was inserted into the stimulator and the stimulator was positioned on the low back midline area. Occlusive dressing was applied. The patient tolerated the procedure well and there were no apparent complications.

CONCLUSION & DISCUSSION

Note that in the lateral fluoroscopic image on the bottom right, the insertion depth for the L3 PNS introducer is roughly in line with the spinous process. The insertion was complicated by fusion mass and fibrous tissue formation and left superficial to optimal depth

At the 2 month follow up appointment, patient reported resolution of both low back and leg pain. His pain score was 0/10 for leg and 4/10 for low back pain.

This case highlights the potential for peripheral nerve stimulation for low back pain despite limitations in accessing the medial branch target. The field area stimulated may actually be stimulating the terminal axonal branches in the lumbar paraspinals, modulating neuronal transmission the medial, intermediate, and lateral branches of the dorsal ramus of the lumbar spinal nerve.

In the setting of a poor surgical candidate, peripheral nerve stimulation may be a reasonable option even in the presence of fusion mass limiting needle insertion depth. However, it is important to be cognizant of needle depth if patient has had a prior laminectomy.

REFERENCES

Deer TR, Gilmore CA, Desai MJ, Li SC, DePalma MJ, Hopkins TJ, Burgher AH, Spinner DA, Cohen SP, McGee MJ, Boggs JW. *Percutaneous Peripheral Nerve Stimulation of the Medial Branch Nerves for the Treatment of Chronic Axial Back Pain in Patients After Radiofrequency Ablation*, Pain Medicine, 2021

Simons, David G., et al. *Travell & Simon's Myofascial Pain and Dysfunction the Trigger Point Manual*. Williams & Wilkins, 1999.

Funding: No external funding provided for this presentation