

Durable Cervical Nerve Root Stimulation for C7/C8 Neuralgia

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Case Presentation

- A 91-year-old male presented to the pain center for refractory cervical radicular pain
- Patient with cervical spinal stenosis despite a ACDF of C5-C7.
- His pain presented in the C7 and C8 nerve distribution
- Failure of time, physical therapy, epidurals, and medications
- Initially nerve root stimulation was performed with a temporary 60-day percutaneous system peripheral nerve stimulator (Fig 1)
- This provided 90-100% relief of his pain for over the 60 days of placement and approximately 6-8 weeks after removal.
- He opted to move forward with a durable peripheral nerve stimulator in lieu of spinal cord or DRG stimulation. (Fig 2)

References

1. Falco FJ, Kim D, Onyewu CO. Cervical nerve root stimulation: demonstration of an extra-foraminal technique. Pain Physician. 2004 Jan;7(1):99-102. PMID: 16868619.
2. Mainkar O, Singh H, Gargya A, Lee J, Valimahomed A, Gulati A. Ultrasound-Guided Peripheral Nerve Stimulation of Cervical, Thoracic, and Lumbar Spinal Nerves for Dermatomal Pain: A Case Series. Neuromodulation. 2021 Aug;24(6):1059-1066. doi: 10.1111/ner.13334. Epub 2020 Dec 14. PMID: 33314509.



Figure 1 – 60 day temporary PNS

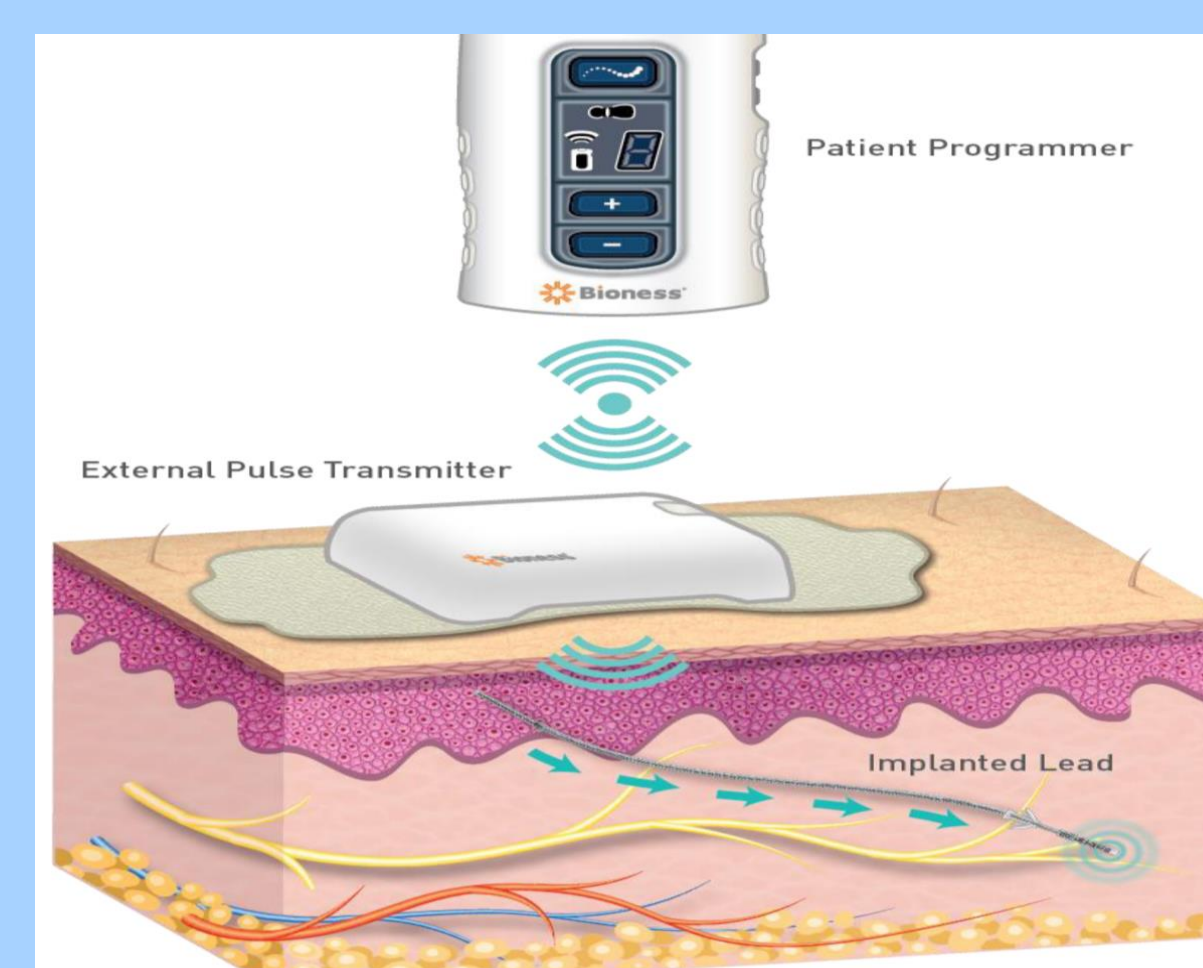


Figure 2 – Durable 3-contact PNS array

Results

- Using a modified transforaminal approach and patient sensorimotor feedback, two separate leads were placed on the C7 and C8 nerve roots.
- Initially, a 60 day temporary PNS array allowed a trial of stimulation with a hope for prolonged relief
- Secondarily, a durable PNS array was surgically implanted similarly.



- The leads were implanted with percutaneous tunnels to allow an external pulse generator patch to rest comfortably on the patient's trapezius.
- The patient was able to tolerate therapy and stimulation with impressive relief of his ongoing C7/C8 neuralgia.



Figure 3: Fluoroscopy guided identification of nerve root targets

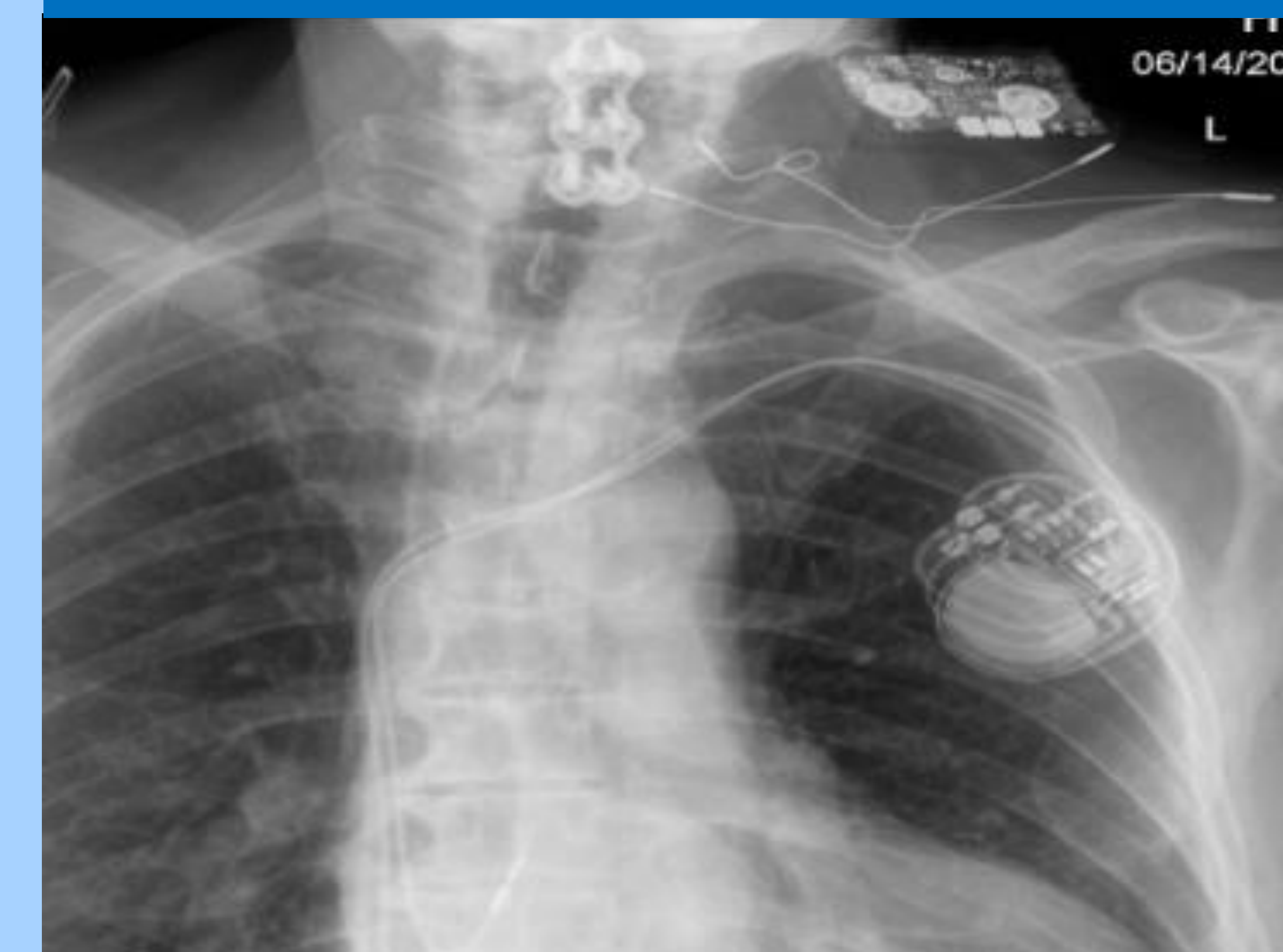


Figure 4: Post operative Chest Xray with leads at C8/T1 nerve root and Stimrouter device visualized

Discussion

- Cervical nerve root pain is challenging due to the difficulty to provide durable dorsal column mediated stimulation, the risks of off-label DRG stimulation with the vertebral arteries, and the intrinsic struggles of intrathecal therapy or neuro-ablative options in this patient population.
- This poster presents a simple technique for placement using two different hardware options for a temporary trial and a durable implant of the cervical nerve root targets.
- With the development of percutaneously inserted devices, there has been an increase in peripheral nerve stimulation as a less invasive alternative to spinal column and dorsal root ganglion stimulation.¹
- Peripheral and cervical nerve root stimulation can be used to treat pain in conditions that have failed SCS, or in patients that are not amenable.²
- This technique can also be used for patients with chronic cervical radiculopathy in which a cervical epidural is not possible, including central canal stenosis, previous surgery, or other spinal anomalies.²