

Using Thoracic Paravertebral Blocks to Treat Intercostal Neuralgia

Clara Chan BS, Jonathan Kim MD



Introduction

- Intercostal neuralgia encompasses pain associated with the intercostal nerves
- Standard of care can include pain control with NSAIDs, neuropathic medications, and intercostal nerve blocks (ICNBs)¹
- This case details an additional strategy to consider when patient fail the typical course of treatment.

Case Description

36-year old male presented with chronic left-sided thoracic pain, originating from his back and wrapping around his chest

- Patient reported only partial relief following an ICNB
- Performing a thoracic paravertebral block (TPVB) provided **100% pain relief for one week**
- Peripheral nerve stimulation (PNS) system was placed in the paravertebral space for 2 months
- Patient reported **complete pain relief while the leads were in place and even after removal**²

Incorporating thoracic paravertebral blocks and peripheral nerve stimulation into the treatment algorithm for refractory intercostal neuralgia may offer a more comprehensive approach to pain management, ultimately improving patient outcomes.

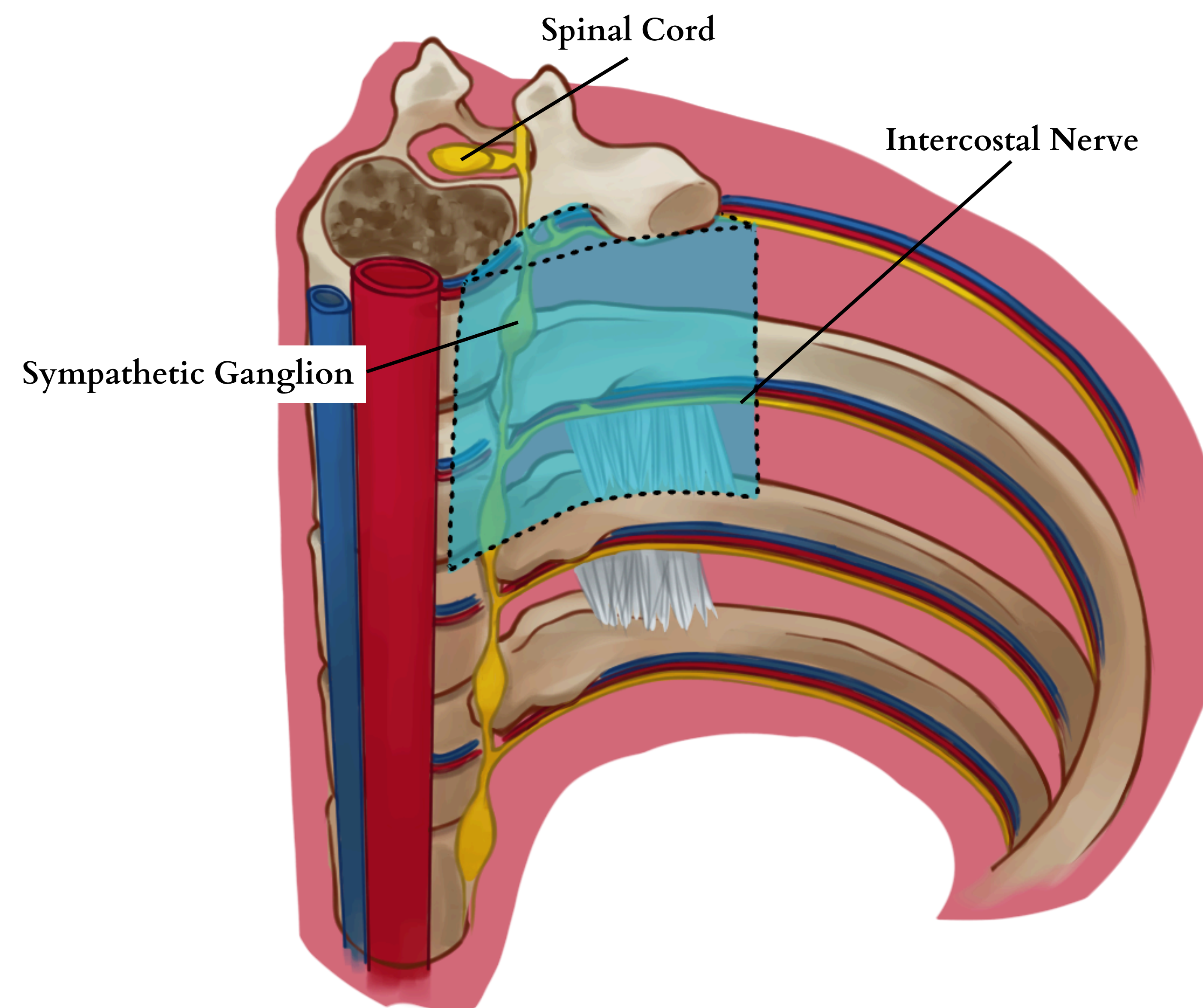


Figure 1: Illustration of the thoracic paravertebral space, highlighted blue, which incorporates the intercostal nerve and sympathetic ganglion.

Discussion

- Sympathetic-mediated pain may explain why patient only had partial relief with an ICNB⁴
- TPVB affects both intercostal nerve as well as sympathetic ganglion, whereas the ICNB only affects sensory nerves
- This sympathetic coverage may account for patients experiencing greater postoperative pain control after thoracic surgery when receiving TPVBs compared to ICNB³
- This patient's pain may have a sympathetic-mediated component resulting in refractory intercostal neuralgia to an ICNB
- PNS to the paravertebral space can result in neuromodulation of the sympathetic ganglion and may account for the patient's long-term pain relief even after removal of the PNS system⁵

References

1. Fazekas D, Doroshenko M, Horn DB. Intercostal Neuralgia. In: StatPearls. StatPearls Publishing; 2024.
2. Stalker RJ, Vervest AC, Groen GJ. The treatment of chronic thoracic segmental pain by radiofrequency percutaneous partial rhizotomy. Journal of Neurosurgery. 1994.
3. Huang S, Deng Y, Wang J, Ji Y, Yin G. Efficacy and safety of paravertebral block versus intercostal nerve block in thoracic surgery and breast surgery: A systematic review and meta-analysis. Plos One; 2020.
4. Chen SS, Zhang JM. Progress in Sympathetically Mediated Pathological Pain. J Anesth Perioper Med. 2015.
5. Lin T, Gargya A, Singh H, Sivanesan E, Gulati A. Mechanism of Peripheral Nerve Stimulation in Chronic Pain. Pain Med. 2020.