

Intraosseous Intracept Ablation for Treating Vertebrogenic Pain Resulting in Sustained Pain Relief: A Case Report

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Introduction

- Chronic lower back pain continues to be one of the most prevalent pain conditions in the country and one commonly encountered in pain management clinics.
- Vertebrogenic pain presents similar to axial back pain, described as often sharp or dull through mechanical mechanisms involving nociceptive pathways.
- Vertebrogenic pain originates from the vertebral endplates of each disc and level, innervated by the basivertebral nerve.
- MRI images can confirm vertebrogenic pain through Type 1 vs. Type 2 MODIC changes, showcasing bone marrow edema and inflammation vs. fatty infiltration respectively.
- Ablation of the basivertebral nerve (BVN) at 85 degrees Celsius for 15 minutes has been the standard of care through the radiofrequency standard algorithm.
- We present a case of a patient with chronic low back pain who underwent the Intracept procedure with 7 minute ablations in the L2, L3, and L4 vertebral bodies.

Case Presentation

- A 68 year old female, BMI 24.6, with no significant past medical history or trauma incidents, presented with chronic low back pain for 7+ years.
- Pain Description: Constant, sharp, and aching, worsened by standing and position changes, relieved with walking, stretching, and heat.
- Physical exam findings: Positive for B/L straight leg raise test, lumbar spinous process and paraspinal tenderness, and positive facet loading. There was no compromise in her motor strength or sensation.
- MRI report showed multilevel mild degenerative changes with no high-grade canal stenosis or neural foraminal narrowing at any level. There were Type 1 MODIC endplate changes seen at L2-L3 and a small Schmorl’s node in the L2 superior endplate, demonstrating surrounding marrow edema. Disc desiccation at L1-L2 and L2-L3 resulted in moderate disc height loss.

Procedure

- C-arm was rotated to square off the superior endplate at L4 and rotated approximately 35 degrees to the left to obtain an oblique view with the facet in the midpoint of the vertebral body. Superolateral left L4 pedicle was identified.
- Using aallet, the trocar was advanced through the pedicle from lateral in an anteromedial direction to the posterior aspect of the vertebral body using a combination of AP and lateral views.
- Once the trocar was in position, the curved cannula assembled with the nitinel I-stylet was inserted, rotated counterclockwise, then advanced using aallet in 1-2 mm increments.
- Target was reached when the tip of the stylet was noted to be between 30-50% forward of the posterior wall of the L4 in the lateral view (midway between the superior and inferior endplates) and it crossed the midline of the L4 spinous process in the A.P. view.
- The bipolar radiofrequency probe was inserted into place with ablation of the basivertebral nerve at 85 degrees Celsius for 7 minutes using Relievant’s RFG standard algorithm. Same procedure was done for L2 and L3, with 100% relief 1 week post op.

Discussion

- There has been an increased incidence in vertebral endplate damage contributing to chronic axial lower back pain symptoms compared to facet joints, ligament strains, and other anatomical structures.
- Type I Modic changes indicate bone marrow edema and inflammation from the development of vascular granulation tissue adjacent to the endplates.
- Ablation of the BVN at 85 degrees Celsius for 15 minutes has been the standard protocol. This case shows a 7 minute burn, which can provide similar results depending on the final probe position in the vertebral body.
- For the lumbar spine, the optimal probe position is midline in the AP view, mid-body in the superior inferior orientation, and 30-50% from posterior to anterior in the lateral view. The trocar was inserted on the lateral aspect of the pedicle, with slow advancements medially until the posterior wall of the vertebral body is reached.

Conclusion

The ablation of the basivertebral nerve 30% more anterior to the posterior wall can offer lasting pain relieving results with decreased ablation times. Advancing the trocar and probe laterally to the anteromedial aspect with proper measurements of pedicles is more optimal for positioning.

Type of Injection	Percent Relief x Time Period
Lumbar Epidural Steroid Injection - Interlaminar L2-L3 (2 months prior to Intracept)	95% Relief x 2 weeks
Bilateral Radiofrequency Thermocoagulation of L3, L4, DR L5 (3 months prior to Intracept)	80% Relief x 2 months
Bilateral Sacroiliac Joint Injection (6 months prior to Intracept)	50% Relief x 3 weeks
Bilateral Radiofrequency Thermocoagulation of L3, L4, DR L5 (9 months prior to Intracept)	80% Relief x 6 months
Bilateral Radiofrequency Thermocoagulation of L3, L4, DR L5 (20 months prior to Intracept)	80% Relief x 6 months

Table 1. List of Procedures for Treatment of Chronic Low Back Pain Prior to Intracept Procedure



Figure 1. Type 1 MODIC Changes of the L2-L3 Region with no Canal Stenosis

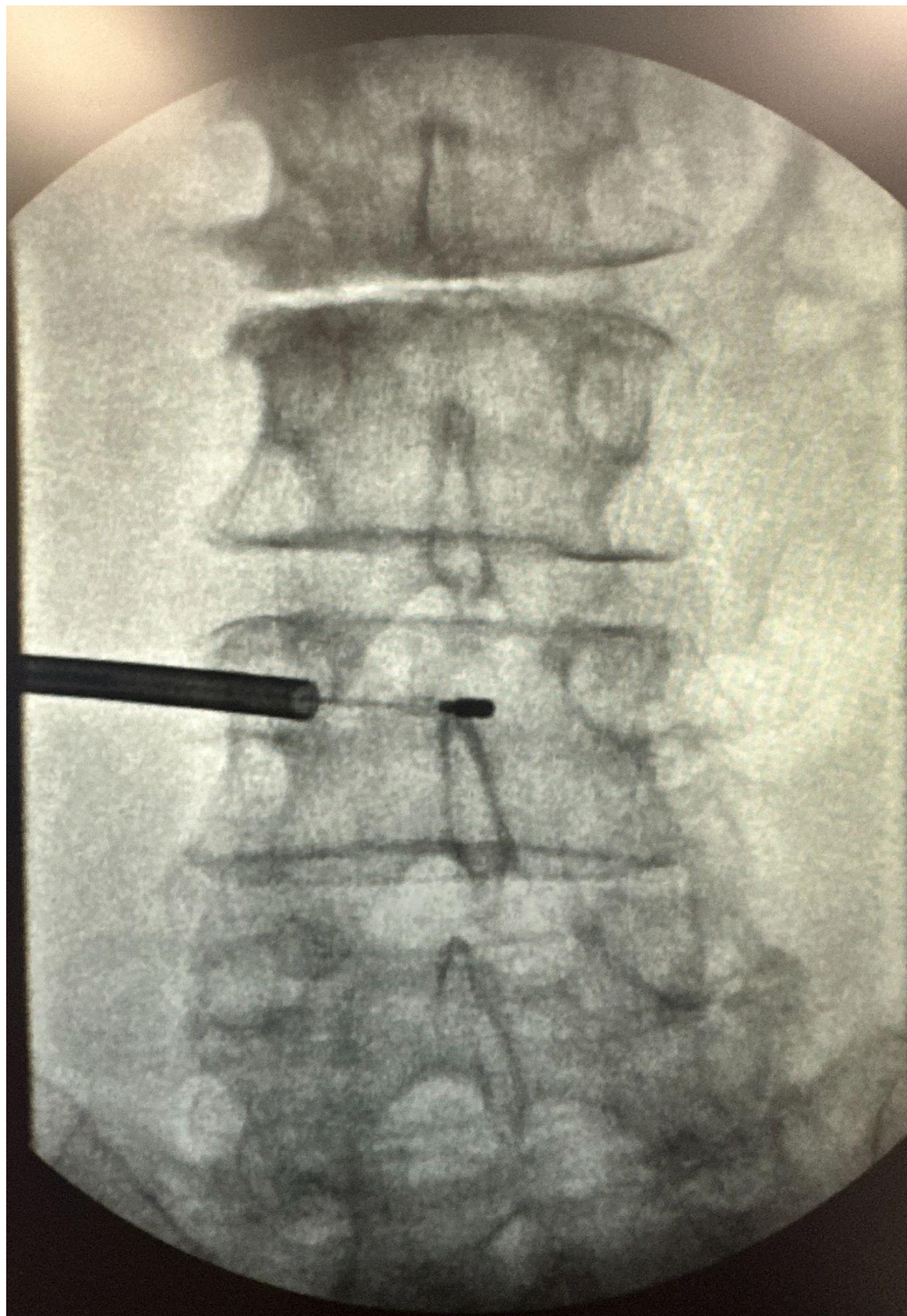


Figure 2. Anterior-Posterior View of the L4 Intraosseous Nerve Ablation

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