Coexisting Vertebrogenic and Neurogenic Pain Generators: One Resolves, One Advances to Fusion

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INTRODUCTION

- Chronic low back pain often has overlapping pain generators
- Vertebrogenic pain is axial, arising from basivertebral nerve (BVN) activation by endplate damage and inflammation, seen on MRI as Modic type I/II changes
- Neurogenic and mechanical pain (from stenosis, facet arthropathy, or spondylolisthesis) can coexist with and mimic vertebrogenic pain
- Few reports describe using epidural steroid injections to isolate this axial component and guide BVN ablation
- We present such a case in a woman with multilevel degenerative disease

METHODS

- 69-year-old woman, prior left L5–S1 hemilaminectomy, presented with worsening low back pain radiating into her right leg
- MRI: anterolisthesis at L3–4/L4–5; severe facet arthropathy with central/foraminal stenosis at L3–4 and L4–5; foraminal stenosis and facet arthropathy at L5–S1; Modic type I/II changes at L2–3, L4–5, and L5–S1
- Caudal ESI followed by right L4 transforaminal ESI relieved her leg pain, unmasking axial back pain as 90% of her burden
- BVN ablation was subsequently performed at L3, L4, and L5

RESULTS

- BVN ablation was well tolerated, with no complications
- Provided 50% relief of axial pain, sustained through 8 weeks
- However, her bilateral leg radiculopathy and weakness progressively worsened with new paresthesias, revealing a distinct neurogenic and mechanical process the ablation had not addressed
- She proceeded to decompressive laminectomy and posterior fusion from L3 to the pelvis, tolerated without complication

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Ablating the basivertebral nerve **cut her chronic back pain in half.**

Yet, progressive leg weakness and radiculopathy revealed a second problem, **requiring surgical referral and fusion.**



Figure 1. Sagittal T2 MRI: anterolisthesis at L3–4/L4–5 with Modic type I/II endplate changes at L2–3, L4–5, L5–S1.

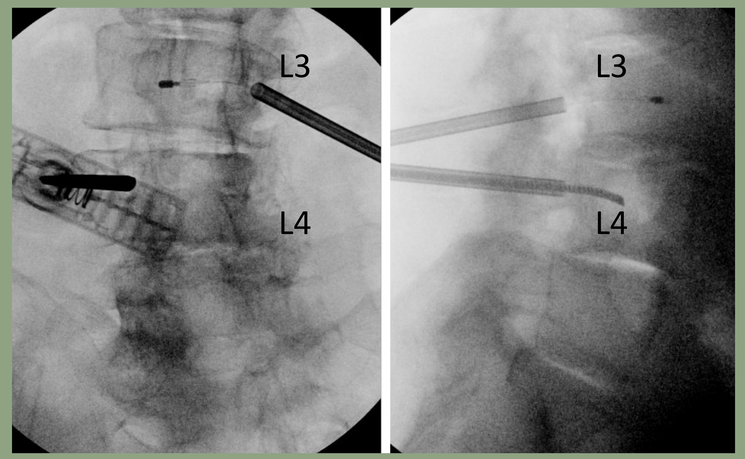


Figure 2. Fluoroscopic views of basivertebral nerve ablation at L3 and L4 (also performed at L5, not pictured).

DISCUSSION

- Injection-response patterns can help isolate an axial vertebrogenic component within overlapping degenerative disease
- BVN ablation provided sustained relief, consistent with prior trials (>50% pain reduction in 66% of patients)
- However, progressive radiculopathy reflected a separate, untreated process that BVN ablation could not address
- A diverging clinical course (improving axial pain alongside worsening neurologic signs) can signal a second, untreated pathology, prompting earlier surgical referral rather than diagnostic delay

IRB & CONSENT

- Patient informed consent was obtained for submission of this case report. The case is exempt from IRB review per Wayne State University policy. All patient PHI has been de-identified.

DISCLOSURES

- No off-label drug use. No trade names, promotional content, or copyrighted material included. No conflicts of interest reported for this submission.

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