Improved Outcomes with Infraneural TFESI After Failed Supraneural Injections in Severe Foraminal Stenosis

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INTRODUCTION

Transforaminal epidural steroid injections (TFESIs) are commonly performed using a supraneural approach for lumbar radiculopathy. However, severe foraminal stenosis may limit effective medication delivery despite technically successful injections.

Alternative approaches, including infraneural targeting, may improve ventral epidural spread in select patients.

METHODS

Patient informed consent was obtained for submission and presentation of this case report. All protected health information was de-identified; exempt from IRB review per institutional policy. Clinical records, procedural documentation, imaging findings, and follow-up communications were reviewed.

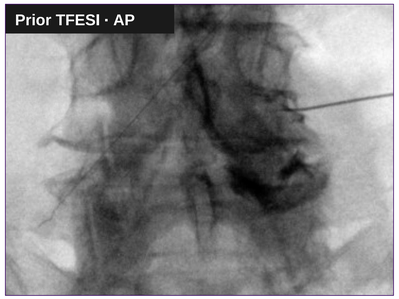
CASE PRESENTATION

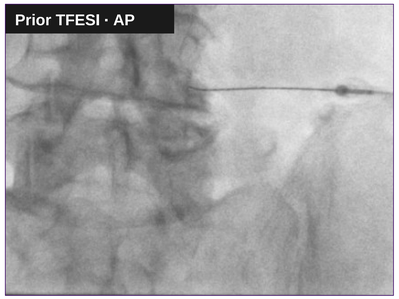
- **86-year-old man** with chronic low back pain and progressive right lower-extremity radicular pain and neurogenic claudication; walking limited to < 1 block
- Pain radiated from the lateral hip to the anterior thigh and lateral shin
- **MRI:** severe right L4 foraminal stenosis compressing the exiting L4 nerve root, with multilevel degenerative spondylosis and central canal stenosis
- **Prior care:** multiple fluoroscopically guided right L4–L5 supraneural TFESIs over several years, with progressively diminishing benefit
- **Intervention:** fluoroscopically guided right L4–L5 infraneural TFESI with dexamethasone and local anesthetic; no complications

In severe foraminal stenosis, switching from a supraneural to an infraneural TFESI trajectory turned days of relief into months.

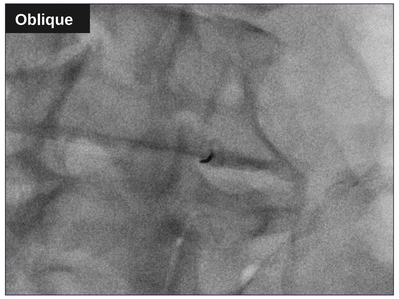
FLUOROSCOPIC COMPARISON (RIGHT L4–L5 TFESI)

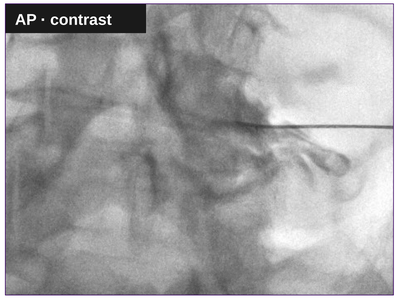
SUPRANEURAL
Prior injections
~40% relief lasting only days





INFRANEURAL
Index injection
Walked ~2.5 miles; relief for months





CLINICAL COURSE

< 1 block
walking tolerance at presentation

~40% · days
relief after the most recent supraneural TFESI (earlier ones rarely > 1 week)

~2.5 miles
walking after infraneural TFESI, pain 3–4/10, sustained for months until planned endoscopic decompression

DISCUSSION

Severe foraminal stenosis may limit the effectiveness of conventional supraneural TFESIs despite technically successful procedures.

Prior studies suggest infraneural approaches may improve ventral epidural spread in severe foraminal stenosis.

This case supports considering alternative needle trajectories in carefully selected patients with refractory lumbar radiculopathy.

REFERENCES

1. Park Y, Lee JH, Park KD, et al. Comparison of the Kambin triangle and subpedicular approaches in lumbar transforaminal epidural injection. Pain Physician. 2012;15(4):321-328.
2. Lee JW, Kim SH, Lee IS, et al. Therapeutic effect and contrast dispersion patterns of retrodiscal versus subpedicular transforaminal epidural steroid injection. Pain Physician. 2021;24:E159-E167.
3. Candido KD, Knezevic NN, et al. Lumbar transforaminal epidural injections and the “safe triangle”: myth or reality? AJR Am J Roentgenol. 2017;208(4):W177-W183.

Patient informed consent was obtained for submission and presentation of this case report. All images have been de-identified. No off-label drug use.