A novel case of implantable restorative neurostimulation to the multifidus muscle in a patient with previous multifidus sparing ultrasonic decompression

Ranjeev Chabra, M.D., Emily Duboy, M.D., Matthew Voelker, D.O., Megan McGuire, M.D., Anthony Giuffrida, M.D. ***No External Funding***

BACKGROUND

- Estimated point prevalence of low back pain (LBP) is 11.9% with a 1-month prevalence of 23.3%.[1]
- Chronic LBP (cLBP) consists of cyclical muscle weakening, pain, and suppression of core spinal muscle activity.
- Arthrogenic inhibition may occur when facet joint pain alters afferent nociceptive signaling, inhibiting neuromuscular activation of the multifidus.
- Multifidus instability may lead to atrophy, evidenced by fatty infiltration on MRI, causing joint overload and consequent mechanical cLBP.[2]

CASE DESCRIPTION

- 69-year-old, 89kg male accountant, not on any chronic medications, with cLBP limiting strenuous activity and a prior multifidus sparing ultrasonic decompression and unilateral fusion.
- Despite initial treatments, including physical therapy, lumbar MBB, RFA, bilateral SIJ injections, lumbar ESI's, and spine surgery, the patient failed to achieve symptomatic relief.

GOOD SHEPHERD REHABILITATION

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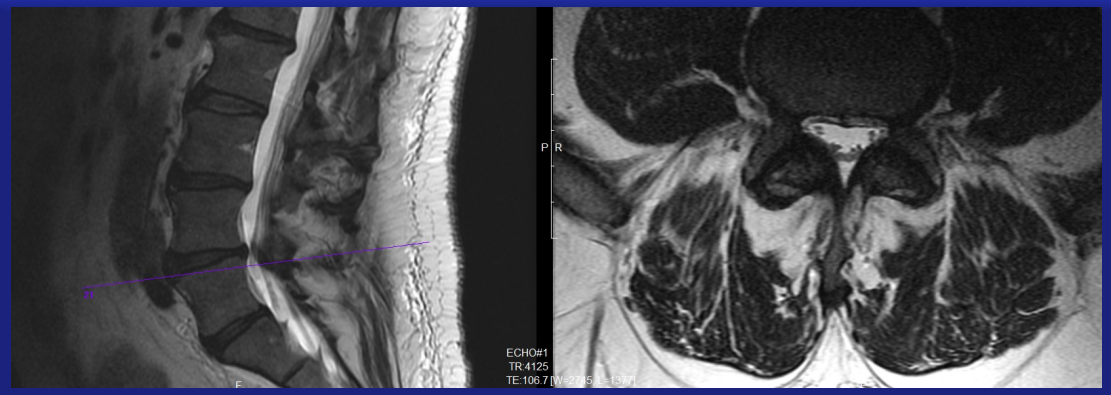
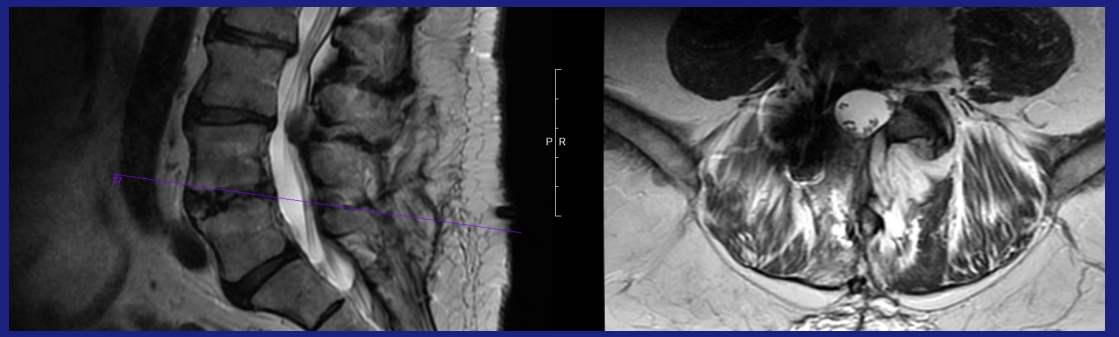
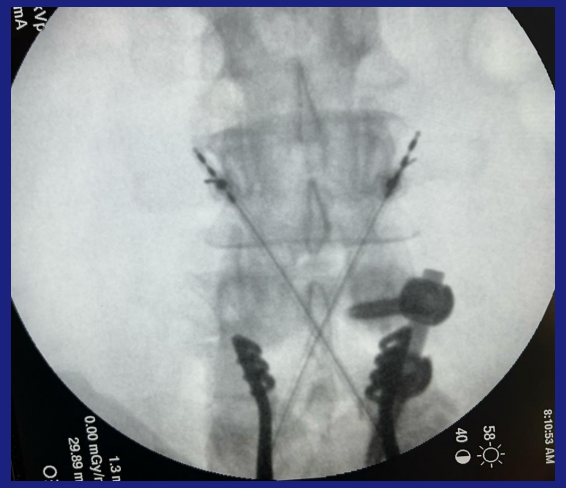
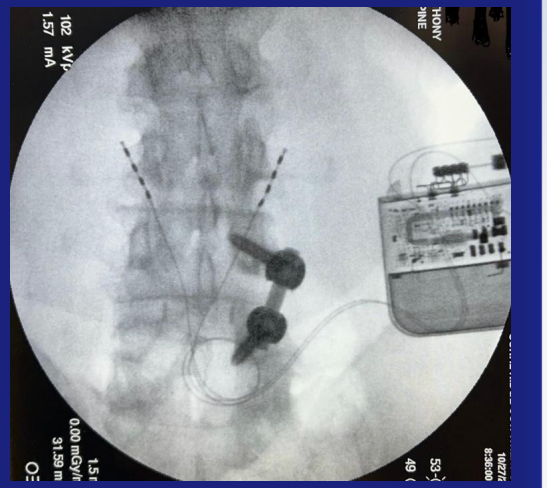


MRI L-SPINE 2015



MRI PREOP L-SPINE





INTRAOPERATIVE FLUORO

EXAM AND IMAGING

- Physical exam was remarkable for positive facet-loading test, multifidus-lift test, and prone instability.
- MRI revealed stable postsurgical stenosis with fatty atrophy of paraspinal muscles at the lower lumbar levels.
- MRI from years prior with remarkably higher muscle bulk and less fatty infiltration.
- Exam revealing functional segmental instability and MRI exhibiting multifidus fat infiltration, both evident in this patient, are FDA-approved indications for use of an implantable restorative neurostimulator of the in individuals who have failed traditional therapies and are poor surgical candidates.[3]
- Thus, patient was scheduled for implantation of the restorative neurostimulator for management of intractable cLBP.

PROCEDURE AND FOLLOW UP

- An incision was made over the L4 spinous process, and leads were fluoroscopically guided to the L2 medial branch of the dorsal ramus, utilizing electrical stimulation to confirm multifidus contraction.
- An implantable pulse generator (IPG) was placed in the gluteal region with leads subcutaneously tunneled to the IPG.
- Despite peer-reviewed studies and favorable safety data, there is limited literature on ReActiv8 use in patients with prior spine surgery, making **continued follow-up necessary to appreciate functional outcomes in this unique population.**