

## Case Report

# Should routine MRI of the lumbar spine be required prior to lumbar epidural steroid injection for sciatica pain?

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## Abstract

**Background:** We describe three patients who received lumbar epidural steroid injections (LESI) for lumbosacral radicular pain that resulted in worsening of their symptoms. The procedures were performed following a review of remote diagnostic imaging studies. These cases demonstrate the lack of consensus in pain management domains for how to approach the workup and treatment of persistent/chronic low back pain, with a noted fragmentation in pain management strategies and applied therapies.

**Case Description:** We present three patients; two female patients (37 and 38 years old) undergoing LESI for remotely diagnosed disc herniations, and one 61-year-old male receiving an LESI for a presumed, unverified lumbar intervertebral disc disorder. Following a worsening of symptoms after LESI, neurosurgical consultations ultimately determined the presence of, respectively, an epidural hematoma, a neurilemoma, and a lung cancer metastasis to the sacrum as the source of symptoms, instead of being due to the intervertebral disc pathology.

**Conclusions:** We would like to emphasize several principles in the diagnosis and use of imaging of the lumbosacral region prior to undertaking invasive neuraxial procedures.

**Key Words:** Epidural steroid injection, low back pain, magnetic resonance imaging, pain management

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## INTRODUCTION

Clinical practice guidelines in the management of low back pain (LBP) lack clarity and consistency among and between different medical specialties. The Institute for Clinical Systems Improvement (ICSI) and American College of Physicians (ACP) and American Pain Society (APS)<sup>[1]</sup> made strong recommendations to evaluate persistent LBP with magnetic resonance

imaging (MRI) or computer tomography (CT, if no MRI available) in candidates for lumbar epidural steroid injections (LESI) to rule out red-flag signs, such as infection, cancer, or fracture.

We report three cases of radicular LBP to address several concerns in the management and utility of diagnostic imaging of the lumbosacral region prior to considering interventional pain management procedures. These cases

demonstrate the lack of consensus in pain management domains for how to approach the workup and treatment of persistent/chronic LBP, with a noted fragmentation in pain management strategies and applied therapies.

## CASE DESCRIPTIONS

### Case #1

A 38-year-old female presented with progressive, nonradiating LBP with proximal lower extremity weakness after having undergone an LESI at another pain clinic for an L2-L3 disc extrusion documented on an MRI performed 9 years previously. She exhibited motor weakness on flexion/extension of the left hip (3/5) and leg (4/5), with proximal sensory loss. The new lumbar MRI revealed an epidural left-sided mass at the L2-L3. At surgery (hemilaminectomy), this proved to be an epidural hematoma [Figure 1]; within 2 postoperative weeks, she recovered completely.

### Case #2

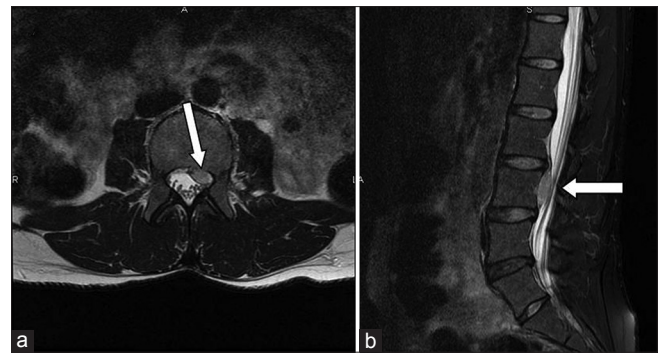
A 37-year-old female presented with severe left S1 radiculopathy and left-leg weakness in the past year without pain relief after three LESI injections performed elsewhere for an L5-S1 disc herniation documented on an MRI. She noted excruciating pain following a recent LESI with persistent left-sided radiculopathy and worsening left-leg weakness. An updated lumbar MRI revealed an enhanced intraspinal and probable intradural lesion at the left S1 nerve root with high suspicion for tumor [Figure 2]. She underwent a surgical excision of an S1-root neurilemoma and attained complete pain relief postoperatively, with return of neurological function.

### Case #3

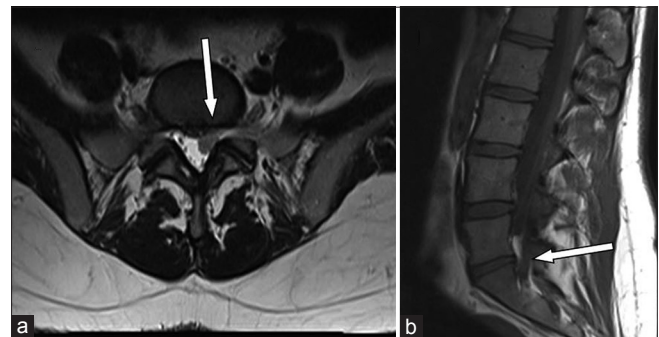
A 61-year-old male presented with 2 months of severe and disabling sacral pain with significant worsening after having undergone an LESI at an outside clinic without obtaining a lumbar MRI. He exhibited significant left-sided motor deficits (2/5 quadriceps strength; 1/5 biceps femoris and gastrocnemius) and sensory deficits, and a 6 months weight-loss of 12 pounds. A lumbar MRI revealed a large sacral mass, impinging on the left S1 nerve root [Figure 3] and infiltrating into nearby muscle and into both the S1 and S2 neural foramina. Oncologic workup revealed this mass to be a metastasis of a lung cancer.

## DISCUSSION

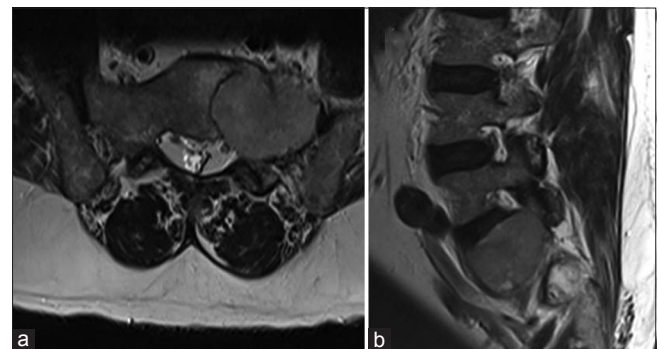
The standard recommendation in acute LBP patients is conservative therapy without prescribing advanced imaging for the first 4–6 weeks of onset unless red-flag signs and symptoms present, or in the face of persistent LBP with radiculopathy. MRI is preferred for ruling out red-flag conditions<sup>[1]</sup> and is more reliable for the



**Figure 1: Lumbar MRI Case 1: L2-L3 Epidural Hematoma (Arrow)**  
(a) Axial plane at L2-L3. (b) Sagittal plane



**Figure 2: Lumbar MRI Case 2: S1-root neurilemoma (Arrow)**  
(a) Axial plane at S1-level. (b) Sagittal plane



**Figure 3: Lumbar MRI Case 3: Sacral metastasis from lung cancer.**  
(a) Axial plane at S1-level (b) Sagittal plane

evaluation of nerve root compression compared with spiral CT and plain X-ray imaging.<sup>[8]</sup>

Deyo *et al.*<sup>[5]</sup> showed that early imaging often led to implementation of unnecessary interventions without improved outcomes due to treatment of incidental findings, leading to ascribing diagnoses to these incidentals noted on MRI. Jarvik *et al.*<sup>[7]</sup> concluded that no significant difference in clinical outcomes were observed during a 12-month follow-up of patients undergoing urgent MRI or radiography for an evaluation of LBP by primary care physician.

Meta-analysis of six randomized trials<sup>[2]</sup> showed no significant improvement in the short-term period

for patients assessed with contemporaneous imaging performed during a period of standard noninvasive therapy. A multi-center randomized trial<sup>[6]</sup> assessing routine use of MRI or CT scans in patients with LBP found no significant difference in therapeutic approaches and clinical outcomes among 782 patients with symptomatic lumbar spine disorders. Cohen *et al.*<sup>[3]</sup> conducted the first randomized trial to correlate the utilization of MRI in clinical decision-making and clinical outcomes for LESI referrals; they reported no significant difference in outcome improvements between patient groups.

An overview of clinical guidelines<sup>[4]</sup> confirmed an existent fragmentation and the lack of uniform clinical practice guidelines in the nonsurgical management of LBP. We strongly encourage using MRI (other studies if contraindicated) regardless of the previous diagnostic imaging.<sup>[6]</sup> A lower threshold for prescribing advanced imaging should be part of the clinician's treatment protocol, and specialists should be experts in the clinical correlation of images prior to referring patients for invasive neuraxial procedures.

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