CASE REPORT

Necessity of Preprocedural MRI before Spinal Cord Stimulator Placement

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BACKGROUND

SCS is effective for refractory chronic pain, but epidural lead placement risks neurologic injury in certain patients with preexisting spinal pathology.

0.42%
spinal cord injury rate after SCS[1]

4×
odds with thoracic stenosis in prior year[1]

Thoracic MRI is **recommended, not required**, and practice varies.[2,3,5]

CASE

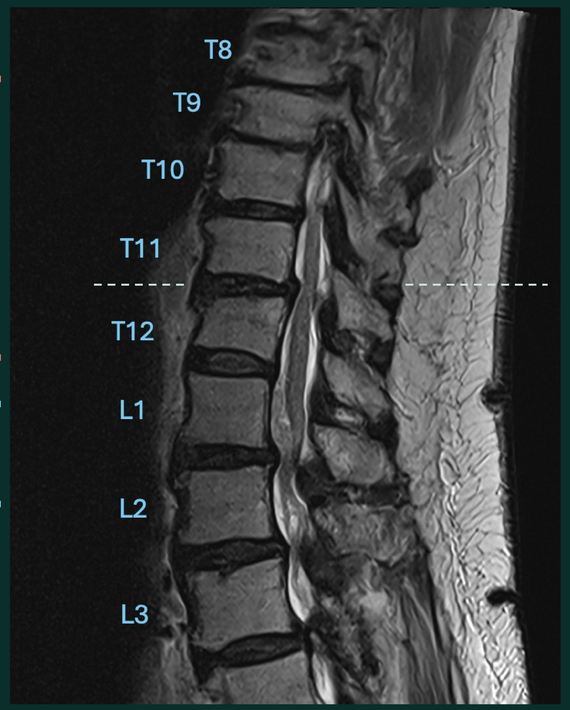
80-year-old woman with chronic neck and back pain, neurogenic claudication, progressive numbness, and worsening balance.

- Known cervical + thoracic stenosis; declined decompression (risk > benefit)
- Conservative + interventional care failed
- SCS considered → protocol thoracic MRI
- **Cord compression + myelomalacia at T9–T12**
- SCS abandoned → neurosurgery, serial neuro monitoring, no intervention to date

Pre-SCS thoracic MRI found spinal cord compression right where the leads would be headed, so SCS was called off.

Image the lead **entry** and **target** zones before every SCS routinely, not selectively.

SAGITTAL T2



TARGET ZONE
T9–T12
Cord compression + myelomalacia

ENTRY ZONE
L1–L2
Severe stenosis, narrowed interlaminar windows

AXIAL T2 · T11–T12

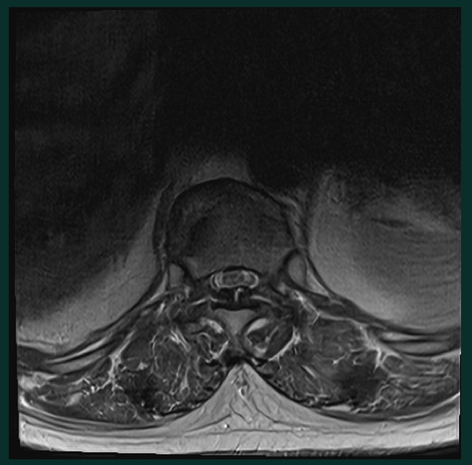


Figure 1. Cord compression across the intended stimulation target.

MRI FINDINGS

Level	Finding	Impact on SCS
C1–C2	6.5 mm intradural mass (incidental)	Needs contrast MRI + neurosurgery
C3–T1	Cord compression (C3–C5), multilevel myelomalacia	Precludes cervical leads
T8–T9	Moderate stenosis, ventral cord deformity	Limits cephalad lead margin
T9–T12	Severe stenosis, cord compression, myelomalacia (progressed)	Target zone: unsafe for leads
L1–L4	Moderate-severe to severe stenosis, grade 1 spondylolisthesis L2–L5	L1–L2 entry: narrowed windows

Table 1. MRI findings and implications for planned SCS lead placement.

WHAT THE EVIDENCE SAYS

22%
of paddle candidates had plans changed by MRI[3]

3%
of percutaneous trials halted by MRI[4]

REFERENCES

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