DOI: 10.7860/JCDR/2026/90142.24435

Case Report

Radiology Section

Non Dysraphic Intradural Extramedullary Spinal Lipoma Presenting with Myeloradiculopathy: A Case Report

PRAVEEN K SHARMA[1], SRI INDIRA KUMAR UDHAY[2]

ABSTRACT

Non Dysraphic Intradural Extramedullary Spinal Lipomas (N-DEISLs) are benign tumours that are extremely rare, comprising less than 1% of all spinal neoplasms. There is an increase in the detection of these congenital incidental lesions in adults with the widespread use of high-resolution Magnetic Resonance Imaging (MRI). Hereby, the authors present a case report of a 55-year-old female patient presenting with acute-on-chronic left-sided myeloradiculopathy. Alongside L4-L5 lumbar spondylosis, an intradural extramedullary lipoma at the L1-L3 level was also detected on MRI. Multidisciplinary evaluation determined that myeloradiculopathy was driven by degenerative changes and not associated with the lipoma. The patient was successfully conservatively managed with neuropathic analgesics and physiotherapy, avoiding surgical intervention. A comprehensive literature search was conducted across major databases on adult N-DEISLs. The present case highlights the necessity for meticulous clinicoradiologic correlation to prevent unnecessary surgical morbidity.

Keywords: Conservative management, Magnetic resonance imaging, Neuropathic analgesics, Physiotherapy, Spinal cord compression

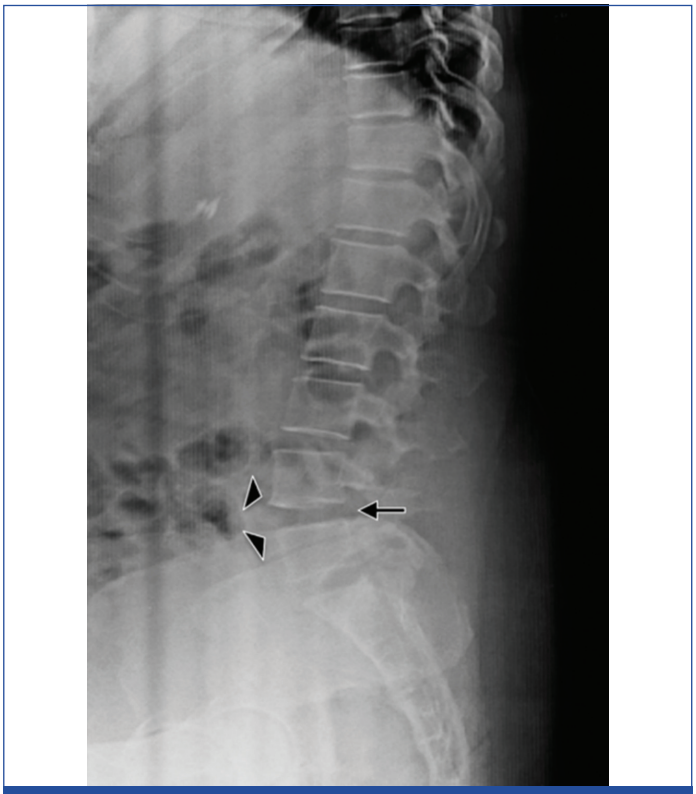
CASE REPORT

A 55-year-old female with a known history of diabetes mellitus Type 2 presented with a two-week history of acute-on-chronic left-sided limb pain, progressive weakness and gait difficulty, which culminated in a sudden exacerbation on the day of admission. The patient denied any history of trauma, fever, constitutional symptoms, bowel or bladder dysfunction. There was no prior history of spinal surgery or known congenital anomalies.

On physical examination, the patient was alert, haemodynamically stable, and lacked any cutaneous lesions such as hypertrichosis, dermal sinus, lipomatous swelling, or midline defects. Cardiovascular, respiratory, and abdominal examinations were normal with no evidence of systemic infections or malignancy. A detailed neurological evaluation demonstrated a Medical Research Council (MRC) grade 4/5 motor weakness in the left lower limb, whereas the right-side strength was fully preserved. Muscular tone was normal bilaterally. Deep tendon reflexes were physiologic on the right side and mildly brisk on the left-side, whereas on the left-side, the plantar response was mute.

Baseline laboratory testing revealed a mild anaemia (Haemoglobin 10 g/dL) and a slight elevation in C-reactive Protein level (CRP) of 12.5 mg/L. The platelet count, total leukocyte count, and liver and renal function tests were within normal limits. The patient had suboptimal glycaemic control (HbA1c of 8.2%).

Plain radiographs of the lumbosacral spine (lateral view) showed mild anterior marginal osteophytes and vertebral endplate sclerosis across all lumbar vertebrae, with a mild decrease in intervertebral disc space (<25%) at the L4-5 level [Table/Fig-1]. These findings were consistent with Kellgren-Lawrence Grade 2 lumbar spondylosis and degenerative disc disease. Plain Computed Tomography (CT) of the lumbosacral spine revealed an intradural, extramedullary, focal hypodense mass (110 Hounsfield units) located in the posterior thecal sac, spanning the L1 to L3 vertebral levels. The mass measured approximately 7 mm anteroposterior, 14 mm transverse, and 61 mm Craniocaudal, with a volume of 3 cc, exhibiting central homogeneity and smooth peripheral margins [Table/Fig-2a-c].



[Table/Fig-1]: The plain lateral radiograph of the Lumbosacral (LS) spine shows-large thick black arrowheads denote mild anterior marginal osteophytes and mild vertebral endplate sclerosis across all lumbar vertebrae. The short thick black arrow highlights a mildly decreased intervertebral disc space (< 25%) at the L4-L5 level.

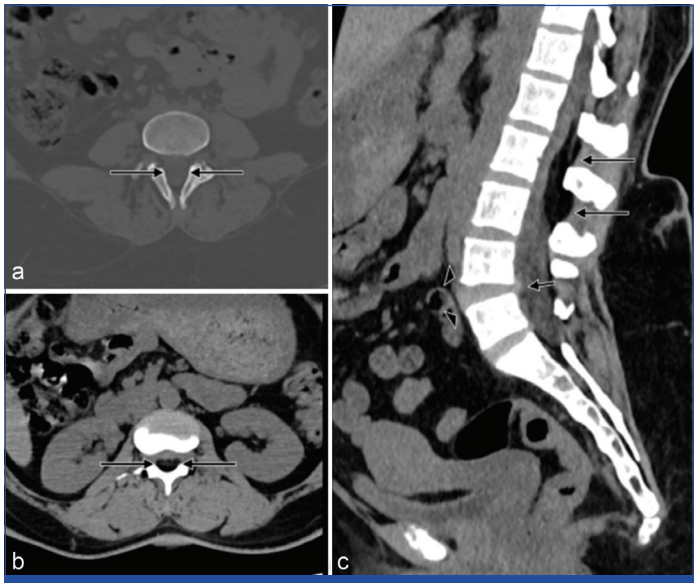
High-resolution lumbosacral spine MRI provided definitive characterisation of the mass, revealing it to be uniformly hyperintense on the T1-weighted sequences and mildly hyperintense on the T2-weighted sequences. The lesion was completely suppressed on Short-Tau Inversion Recovery (STIR) sequences, confirming its lipomatous composition. The mass caused complete obliteration of posterior thecal sac, abutting the lower dorsal cord and conus medullaris. No myelomalacia or abnormally low-lying conus was seen. The MRI also confirmed Pfirrmann Grade III disc desiccation

and mild posterior intervertebral disc bulge at the level of L4-L5, which was causing an indentation of the anterior thecal sac. STIR hyperintensities, which may suggest oedema, were also noted in the subcutaneous planes at the L1-L2 level [Table/Fig-3a-c].

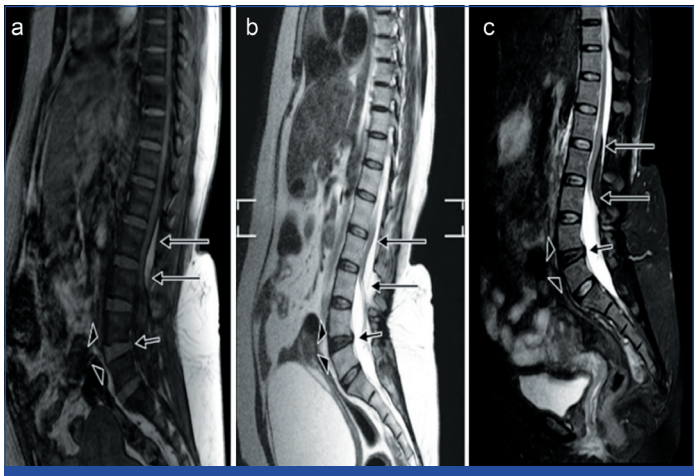
No acute complications related to the intradural lipoma were identified. The lesion was considered an incidental finding, and there was no clinical radiological concordance between the patient's presenting symptoms and the tumour.

Following consultation between the neurological and the neurosurgery departments, surgical intervention was not preferred, and conservative management was recommended. The patient was managed with neuropathic analgesics, structured physiotherapy, optimisation of glycaemic control and supportive psychiatric care for associated depressive symptoms.

During five days of hospitalisation, the patient showed gradual clinical improvement in limb strength as well as in ambulation. After 14 days of conservative treatment, significant improvement was seen. At outpatient follow-up visits at the 3rd and 6th months, structured physiotherapy had improved the neurological deficits that were attributed to her lumbar spondylosis and degenerative disc disease.



[Table/Fig-2]: Plain Computed Tomography (CT) scans of the lumbosacral spine in axial: (a, b) and sagittal reformatted; (c) Planes. Large thick black arrows highlight an intradural, extramedullary, focal hypodense (fat-dense) mass lesion. Large thick black arrowheads point to mild anterior marginal osteophytes and mild vertebral endplate sclerosis. The short thick black arrow indicates a mildly decreased inter-vertebral disc space at the L4-L5 level.



[Table/Fig-3]: Plain Magnetic Resonance Imaging (MRI) of the lumbosacral spine in sagittal planes. Large thick black arrows highlight an intradural, extramedullary mass exhibiting focal T1-hyperintensity, T2-hyperintensity, and complete signal suppression on STIR sequences. Large thick black arrowheads point to mild anterior marginal osteophytes. The short thick black arrow indicates a mildly decreased intervertebral disc space and a mild posterior disc bulge at the L4-L5 level.

DISCUSSION

Intradural spinal lipomas are benign hamartomatous lesions of mature adipose tissue that comprise less than 1% of intraspinal benign tumours [1]. N-DEISLs are rare, representing roughly 0.45% to 0.6% of all spinal tumours, and are primarily diagnosed during adolescence and adulthood [2,3].

The embryogenesis of intradural spinal lipomas is explained by the “developmental error theory”. This theory suggests that premature disjunction of the neuroectoderm from cutaneous ectoderm during primary neurulation allows the paraxial mesenchymal cells to enter the closing neural tube and differentiate into adipocytes. Due to this developmental origin, many authors classify intradural spinal lipomas as a congenital hamartoma rather than a true neoplasm [4].

The N-DEISLs are slow-growing lesions. The symptoms are largely determined by the anatomical location, size, and mass of the tumour and its effect on the spinal cord [3]. Progressive cord compression can lead to neurodegenerative decline over the years, presenting as sensory deficits, weakness, gait ataxia, and sphincter dysfunction.

Intradural lipomas demonstrate characteristic MRI features, including homogeneous hyperintensity on T1-weighted images, variable hyperintensity on T2-weighted images, complete signal suppression on fat-suppressed or STIR sequences, and an absence of contrast enhancement. These imaging characteristics reliably distinguish lipomas from most other intradural neoplasms. Fat-suppressed MRI sequences are particularly valuable for confirming the fatty nature of the lesion, while cine MRI may be used in selected cases to evaluate associated Cerebrospinal Fluid (CSF) flow disturbances when clinically indicated [5].

The management strategy for N-DEISL is debatable, but is increasingly shifting towards conservative and tissue-sparing strategies. Early widespread practices of aggressive radical excision resulted in high rates of postoperative neurological morbidity, as these lipomas lack a true histological cleavage plane and are intimately adhered to the spinal cord and nerve roots [6]. Recent literature highlights the variability in managing these rare entities. The present case differs substantially from that reported by Raees S et al., [7]. Their patient presented with progressive thoracic myelopathy caused by a T10-T11 non dysraphic intradural spinal lipoma producing significant cord compression and tethering, necessitating partial surgical debulking. In contrast, although present patient harbored a long-segment L1-L3 intradural extramedullary lipoma with characteristic MRI features, meticulous clinicoradiological correlation demonstrated that the neurological deficits were more consistent with coexisting L4-L5 degenerative spondylosis than with the lipoma itself. Consequently, conservative management resulted in sustained neurological improvement without surgical intervention [7].

Similarly, Raj S et al., reported a rare non dysraphic thoracic intradural extramedullary lipoma associated with neurocutaneous melanocytosis that produced progressive neurological deficits and required complete microsurgical excision. In contrast, present patient had an isolated lumbar intradural extramedullary lipoma without associated congenital anomalies, and clinicoradiological correlation identified coexisting lumbar spondylosis rather than the lipoma as the cause of symptoms [8].

For asymptomatic cases or those with incidentalomas such as in the present case, where myeloradiculopathy was attributed to co-existing degenerative spondylosis rather than the lipoma itself, conservative management with rigorous clinical and radiological surveillance is highly recommended.

CONCLUSION(S)

The N-DEISLs are rare, indolent entities that are increasingly discovered as incidentalomas due to the widespread use of high-

resolution MRI. The present case emphasises the critical importance of meticulous clinicoradiological correlation; when a patient's neurological symptoms are entirely attributable to concurrent degenerative spine disease, an incidental N-DEISL should not dictate surgical intervention.

Acknowledgement

The authors acknowledge the patient for providing informed consent and contributing to this learning opportunity.

REFERENCES

[1] Singh A, Gupta V, Singh H, Chand K. Nondysraphic intradural spinal lipoma. J Pediatr Neurosci. 2009;4(1):55-56.
[2] Abuzayed B, Alawneh K, Al Qawasmeh M, Raffee L. Nondysraphic spinal intramedullary lipoma: A rare case and management. Turk Arch Pediatr. 2021;56(1):85-87.
[3] Kabir SMR, Thompson D, Rezajooi K, Casey ATH. Non-dysraphic intradural spinal cord lipoma: Case series, literature review and guidelines for management. Acta Neurochir (Wien). 2010;152(7):1139-44.
[4] Pang D. Total resection of complex spinal cord lipomas: How, why, and when to operate? Neurol Med Chir (Tokyo). 2015;55(9):695-721. Doi: 10.2176/nmc.ra.2014-0442.
[5] Shen SH, Lirng JF, Chang FC, Lee JY, Luo CB, Chen SS, et al. Magnetic resonance imaging appearance of intradural spinal lipoma. Zhonghua Yi Xue Za Zhi (Taipei). 2001;64(6):364-68.
[6] Panagopoulos D, Markogiannakis G, Koutzoglou M. Intradural-extramedullary cervical cord lipoma: Case report and literature review. World Neurosurg. 2018;110:162-68. Doi: 10.1016/j.wneu.2017.11.029.
[7] Raees S, McDougal M, Zaratan A, Chang J, Lui F. Nondysraphic intradural spinal lipoma: A case report and review of pathogenesis. Cureus. 2024;16(8):e66481.
[8] Raj S, Chouksey P, Shrivastava A, Mishra R, Tandon A, Prakash M, et al. Non-dysraphic extramedullary intradural spinal lipoma with neurocutaneous melanocytosis. Br J Neurosurg. 2023;37(6):1824-28.

PARTICULARS OF CONTRIBUTORS:
1. Professor, Department of Radiology, Saveetha Medical College and Hospital, Saveetha Institute of Medical and Technical Sciences (SIMATS), Chennai, Tamil Nadu, India.
2. Postgraduate Student, Department of Radiology, Saveetha Medical College and Hospital, Saveetha Institute of Medical and Technical Sciences (SIMATS), Chennai, Tamil Nadu, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Sri Indira Kumar Udhay,
Postgraduate Student, Department of Radiology, Saveetha Medical College and Hospital, Saveetha Institute of Medical and Technical Sciences (SIMATS), Chennai-602105, Tamil Nadu, India.
E-mail: sriindirakumar@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Jul 09, 2026
- Manual Googling: Aug 08, 2026
- iThenticate Software: Aug 10, 2026 (1%)

ETYMOLOGY: Author Origin

EMENDATIONS: 7

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Apr 29, 2026**
Date of Peer Review: **Jul 14, 2026**
Date of Acceptance: **Aug 12, 2026**
Date of Publishing: **Oct 01, 2026**