

Multilevel Spinal Extradural En-Plaque Meningioma Involving the Cervicodorsal and Dorsal Spine: A Rare Case Report

Preeti Mahla¹, Bhavna Arora¹, Anupama Malik¹

Received: 15 Feb 2026 | Accepted: 14 Apr 2026 | Published: 14 June 2026

ABSTRACT

Background: Meningiomas are the second most common intraspinal tumors, constituting approximately 25% of all intraspinal tumors. However, extradural spinal en-plaque meningioma is a rare morphological variant characterized by diffuse, sheet-like dural involvement and long-segment extension, often mimicking malignant or inflammatory dural pathologies.

Case Presentation: We report the case of a 57-year-old female presenting with chronic low back pain, difficulty in walking, and progressive bilateral upper limb paraesthesia. Magnetic resonance imaging revealed multifocal en-plaque meningioma involving the cervicodorsal and dorsal spine. The lesions demonstrated characteristic signal intensity and homogeneous enhancement, resulting in significant spinal cord compression with associated compressive myelopathy.

Conclusion: Recognition of these imaging features is essential for accurate diagnosis and appropriate management

Keywords: Spinal Meningioma • En-plaque Meningioma • Extradural Lesion • Compressive Myelopathy • MRI Spine

INTRODUCTION

Spinal meningiomas are the most common benign intradural extramedullary tumors, accounting for approximately 25–45% of all spinal tumors (3). They predominantly affect middle-aged to elderly females and most frequently involve the thoracic spine (4).

The en-plaque variant of meningioma is defined by diffuse, sheet-like growth along the dura mater rather than a focal nodular mass (1). While this growth pattern is well described intracranially, particularly along the sphenoid wing, its occurrence in the spinal canal is rare (2,5). Spinal en-plaque meningiomas often involve long segments of the dura and may circumferentially encase the spinal cord, posing diagnostic and surgical challenges (6).

We present a rare case of multilevel spinal en-plaque meningioma with cervicodorsal and dorsal involvement, highlighting its characteristic MRI features and important differential diagnoses.

CASE REPORT

Clinical and radiological presentation

A 57-year-old female presented with complaints of chronic low backache, difficulty in walking, and recent onset of bilateral upper limb paraesthesia. There was no history of trauma, malignancy, infection, or prior spinal surgery. No other relevant medical history was present.

MRI of the whole spine was performed. Imaging revealed elongated, sheet-like extradural lesions (two in number) along the dural surface, one involving the upper cervicodorsal region (C6 to T2) and another involving the lower dorsal spine (T8 to T11). The lesions were almost circumferentially encasing the spinal cord, resulting in significant narrowing of the thecal sac. The spinal cord at the levels involved appeared flattened and displaced, with intramedullary T2 hyperintensity suggestive of compressive myelopathy.

The lesions appeared isointense on T1-weighted images and hypointense on T2-weighted images and showed intense homogeneous enhancement on post-contrast images. No significant bony changes, including hyperostosis or vertebral body erosion, were identified. There was no foraminal extension of the lesions.

Additionally, MRI of the lumbosacral spine demonstrated spondylodegenerative changes, including Grade II anterolisthesis of L5 over S1, with associated loss of intervertebral disc space and spinal canal compromise. Based on the characteristic imaging findings, a diagnosis of multilevel spinal en-plaque meningioma was suggested.

The patient subsequently underwent surgical intervention, and histopathological examination showed a neoplasm composed of epithelioid-shaped tumor cells arranged in cords and trabeculae in a pale basophilic myxoid stroma, confirming the diagnosis of meningioma.

DISCUSSION

Spinal meningiomas are benign neoplasms arising from arachnoid cap cells of the meninges and constitute a significant proportion of intradural extramedullary spinal tumors (3). These tumors are typically slow-growing and are more commonly encountered in middle-aged to elderly females, likely due to hormonal influences. The majority are intradural; however, extradural and en plaque variants represent uncommon morphological subtypes that may pose diagnostic challenges.

The en plaque variant is characterized by a diffuse, sheet-like pattern of growth along the dura mater rather than forming a discrete, well-circumscribed mass (1). This growth pattern is well recognized intracranially but is distinctly rare in the spinal canal. In the spine, en plaque meningiomas tend to involve long segments of the dura and may circumferentially encase the spinal cord, as seen in the present case. Such extensive involvement can lead to early and significant neurological compromise due to progressive cord compression.

¹Department of Radiation Oncology, Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak- 124001, India

Correspondence: Preeti Mahla, Department of Radiation Oncology, Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak-124001, India

Email: preetimahla001@gmail.com

How to cite: Mahla P, Arora B, Malik A. Multilevel spinal extradural en-plaque meningioma involving the cervicodorsal and dorsal spine: A rare case report. *Ann Compr Oncol Biomed Sci.* 2026;1(1):25–28. doi:10.66765/acobs.2026.006

DOI: <https://doi.org/10.66765/acobs.2026.006>



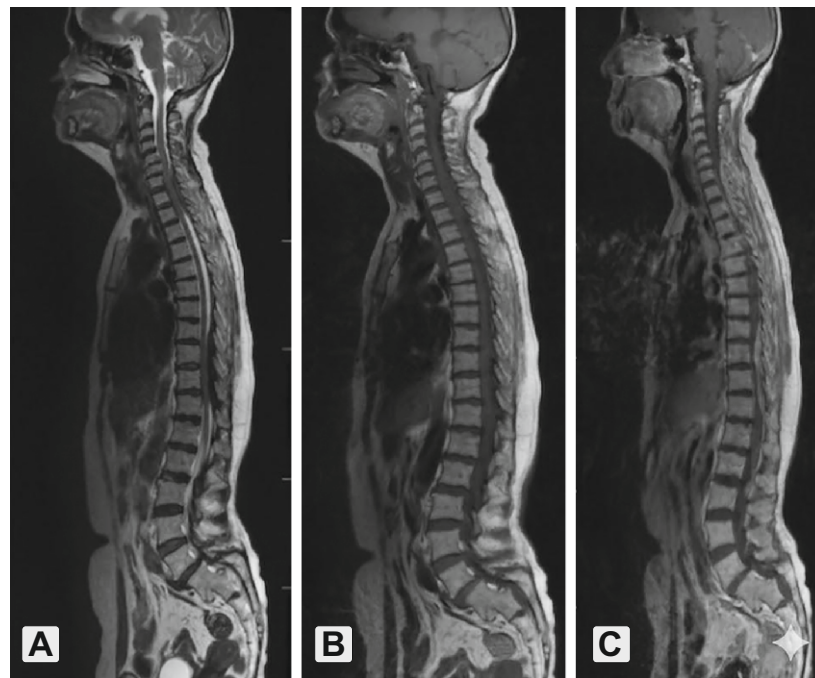


Figure 1: Sagittal magnetic resonance images (MRI) showing two elongated extradural lesions extending from C6 to T2 and T8 to T11, which are iso- to hypointense on T2 (a), isointense on T1 (b), and show homogeneous enhancement on post-contrast images (c).

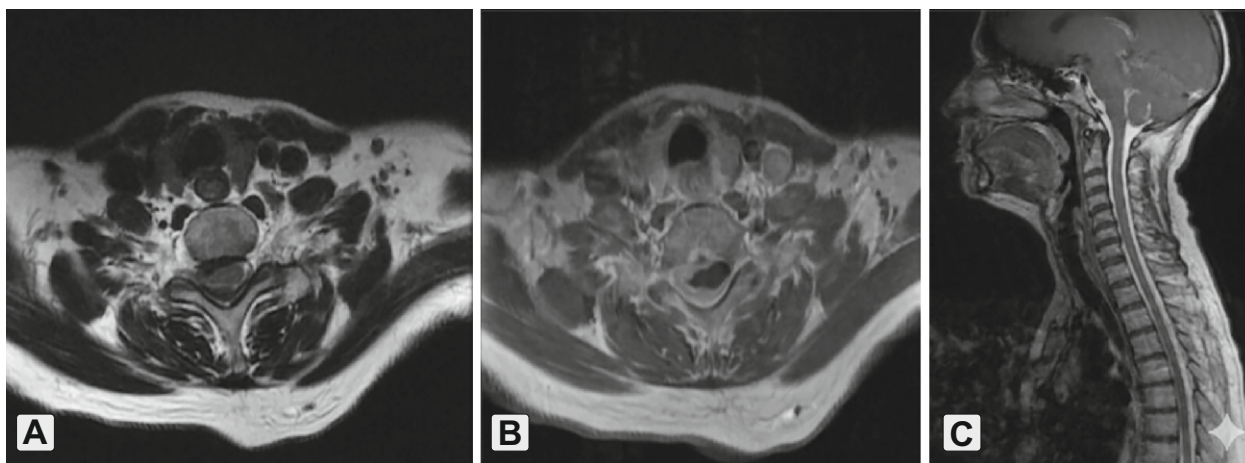


Figure 2: Axial T2 (a), T1 post-contrast (b), and sagittal post-contrast (c) magnetic resonance images (MRI) of the cervical and upper dorsal spine showing a sheet-like, homogeneously enhancing extradural mass lesion almost circumferentially encasing, displacing, and flattening the spinal cord.

Spinal en plaque meningiomas most commonly involve the thoracic region (2,5), likely due to the relatively narrow spinal canal and increased dural surface area. Cervical involvement and multilevel disease, particularly involving both cervicodorsal and dorsal segments, are distinctly uncommon and significantly increase diagnostic complexity. Multifocal or long-segment disease may mimic other pathological entities, including malignant, inflammatory, or infectious conditions, thereby necessitating careful radiological evaluation.

Magnetic resonance imaging plays a pivotal role in the diagnosis. Typical imaging features include isointensity on T1-weighted images and iso- to hypointensity on T2-weighted images, with intense and homogeneous contrast enhancement (6,7). The characteristic sheet-like dural thickening, often with circumferential encasement of the spinal cord, is a key imaging feature. Unlike aggressive lesions, en plaque meningiomas usually do not demonstrate vertebral body destruction or significant foraminal extension. Associated cord compression

may result in intramedullary T2 hyperintensity, reflecting compressive myelopathy.

The differential diagnosis of long-segment enhancing dural-based spinal lesions is broad and includes dural metastases, lymphoma, hypertrophic pachymeningitis, and infectious or inflammatory pachymeningitis (8). Dural metastases typically demonstrate irregular or nodular enhancement and are frequently associated with osseous destruction or a known primary malignancy. Lymphoma may show more infiltrative and diffuse involvement with relatively homogeneous enhancement but often has associated systemic findings. Hypertrophic pachymeningitis and infectious etiologies can present with dural thickening; however, they are usually associated with clinical and laboratory indicators of inflammation or infection. In contrast, the presence of smooth, homogeneous enhancement, T2 hypointensity, absence of vertebral destruction, and lack of foraminal extension favor the diagnosis of en plaque meningioma.

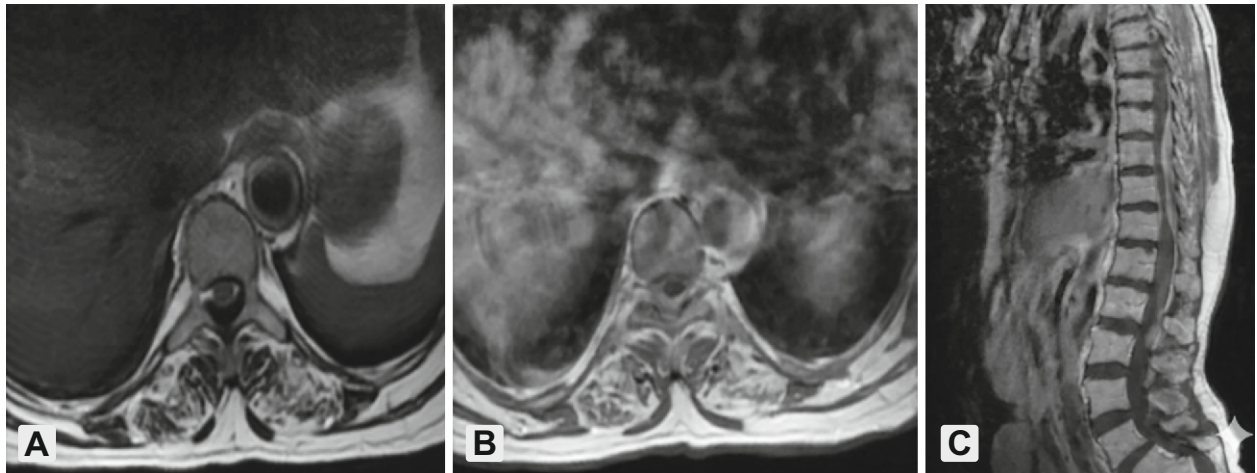


Figure 3: Axial T2 (a), T1 post-contrast (b), and sagittal post-contrast (c) magnetic resonance images (MRI) of the dorsolumbar spine showing a sheet-like, homogeneously enhancing extradural lesion almost circumferentially encasing the spinal cord, displacing and flattening it, and extending from T8 to T11.

Histopathological examination remains the gold standard for definitive diagnosis, typically revealing meningothelial cells arranged in characteristic whorls, with or without psammoma body formation, consistent with WHO grade I meningioma. Correlation with imaging findings is essential for accurate diagnosis and appropriate management planning. Surgical resection remains the treatment of choice; however, complete excision can be technically challenging in en plaque variants due to diffuse dural involvement and circumferential encasement of the spinal cord. Compared to the more common nodular meningiomas, en plaque lesions are associated with a higher likelihood of subtotal resection and recurrence. Therefore, accurate preoperative diagnosis and meticulous surgical planning are crucial. Long-term follow-up is recommended to monitor for recurrence or progression.

Early recognition of this rare entity on imaging is essential, as it directly influences surgical approach, extent of resection, and overall patient outcome.

CONCLUSION

Spinal en-plaque meningioma is a rare entity that should be considered in the differential diagnosis of long-segment, enhancing dural-based spinal lesions. Recognition of its characteristic MRI features is essential for accurate diagnosis, surgical planning, and optimal patient management.

ETHICAL APPROVAL

Ethical approval was not required for this case report in accordance with institutional policies. The study was conducted in compliance with the ethical standards of the institutional and/or national research committee and with the Declaration of Helsinki.

INFORMED CONSENT

Written informed consent was obtained from the patient(s) for publication of the images and associated clinical information.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

AUTHOR CONTRIBUTIONS

Conceptualization: Preeti Mahla

Investigation: Preeti Mahla, Bhavna Arora, Anupama Malik

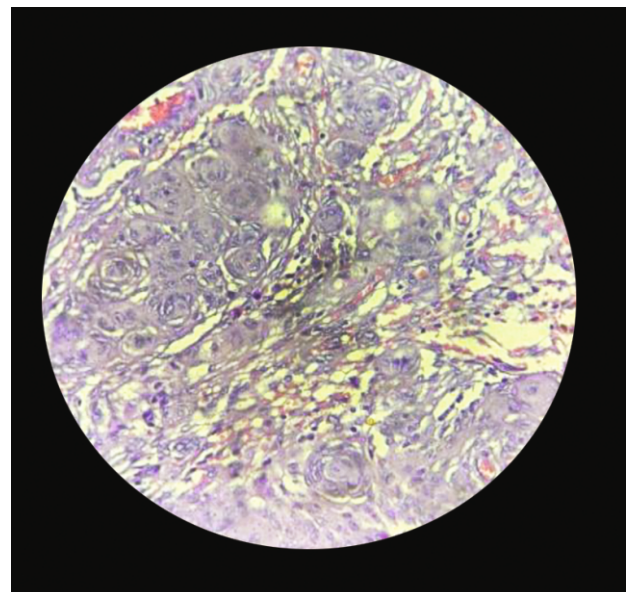


Figure 4: Hematoxylin and eosin section showing meningothelial cells with lobular to fascicular arrangements and occasional presence of psammoma bodies (hematoxylin and eosin stain, $\times 200$).

Data curation: Preeti Mahla, Bhavna Arora

Literature review: Anupama Malik

Writing original draft: Preeti Mahla

Writing review & editing: Preeti Mahla, Bhavna Arora, Anupama Malik

Supervision: Preeti Mahla

Corresponding author: Preeti Mahla

FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

DATA AVAILABILITY STATEMENT

Data supporting the findings of this case report are available from the corresponding author upon reasonable request, subject to patient confidentiality considerations.

ACKNOWLEDGMENTS

The authors declare that no funding, technical, or administrative support was received.

AI USAGE STATEMENT

AI-assisted tools (ChatGPT) were used for framework development and proofreading. The authors take full responsibility for the accuracy and integrity of the content.

ORCID ID

- **Preeti Mahla:** <https://orcid.org/0009-0002-5579-3776>
- **Bhavna Arora:** <https://orcid.org/0000-0002-5923-0578>
- **Anupama Malik:** <https://orcid.org/0009-0000-3570-3070>

REFERENCES

1. Kim KS, Weinberg PE. Spinal en-plaque meningioma. *AJNR Am J Neuroradiol*. 1982;3(5):561-563.
2. Levy WJ, Bay J, Dohn D. Spinal cord meningioma. *J Neurosurg*. 1982;56(5):696-705.
3. Solero CL, Fornari M, Giombini S, et al. Spinal meningiomas: review of 174 operated cases. *Neurosurgery*. 1989;25(2):153-160.
4. Roux FX, Nataf F, Pinaudeau M, et al. Intraspinal meningiomas: review of 54 cases. *Neurosurgery*. 1996;39(1):30-34.
5. Setzer M, Vatter H, Marquardt G, et al. Management of spinal meningiomas. *Neurosurg Focus*. 2007;22(1):E14.
6. Nakamura M, Tsuji O, Fujiyoshi K, et al. Long-term surgical outcomes of spinal meningiomas. *Spine (Phila Pa 1976)*. 2012;37(10):E617-E623.
7. Maiuri F, De Caro ML, De Divitiis O, et al. Spinal meningiomas: age-related features. *Clin Neurol Neurosurg*. 2011;113(1):34-38.
8. Friedman DP, Flanders AE. Spinal dural lesions: differential diagnosis. *Radiol Clin North Am*. 1991;29(4):817-846.