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(CASE REPORT)

Cervical intradural extramedullary relapse of multiple myeloma: Case report and review of the literature

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Abstract

Multiple myeloma (MM) frequently involves the spine through vertebral lesions with epidural extension causing spinal cord compression. Intradural extramedullary (IDEM) spinal involvement is exceedingly rare and may mimic common IDEM tumors such as schwannoma or meningioma on MRI. Case presentation: A 66-year-old man with MM in complete hematologic remission presented with worsening right cervicobrachial neuralgia progressing to cervical myelopathy with Brown–Séquard syndrome. Cervical MRI revealed a solitary contrast-enhancing IDEM mass at C3 with right foraminal extension, initially suggestive of schwannoma. The patient underwent surgical decompression and gross-total resection. Histopathology and immunohistochemistry confirmed a plasma cell neoplasm consistent with MM relapse (plasmacytoma). The patient was referred to the hematology department for multidisciplinary management. Conclusion: IDEM spinal involvement in MM is exceptional. Surgical resection is often required for diagnosis and urgent decompression, followed by adjuvant oncologic treatment.

Keywords: Intradural extramedullary (IDEM); Multiple myeloma; Plasmacytoma; Spinal cord compression; Cervical spine

1. Introduction

Extramedullary manifestations of multiple myeloma (MM) are increasingly recognized, occurring in approximately 7% of patients at diagnosis and in an additional proportion during the course of disease.(1) Central nervous system (CNS) involvement remains uncommon (reported in <1% of MM patients) and is associated with poor outcomes.(1–3)

Intradural spinal involvement represents an exceptional form of CNS disease.(4) It may present as a focal intradural extramedullary (IDEM) mass, frequently mimicking common IDEM tumors (schwannoma or meningioma) on MRI, thereby necessitating histopathological confirmation. (3)

Because the published evidence is limited to isolated case reports and small series, standardized management is lacking and treatment is usually individualized in a multidisciplinary setting.(1,3)

Here, we report a cervical IDEM relapse of MM presenting with Brown–Séquard syndrome and provide a literature review focused on clinical presentation, anatomical distribution, management, and outcomes.

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2. Case report

A 66-year-old man with a history of multiple myeloma in complete hematological remission for the past two years was admitted for progressively worsening right cervicobrachial neuralgia. Neurological examination revealed Brown–Séquard syndrome, characterized by right-sided hemiparesis with ipsilateral impairment of fine touch, vibration, and proprioception, and contralateral loss of pain and temperature sensation. Cervical MRI demonstrated a space-occupying lesion at the C3 level with right foraminal extension, initially considered most consistent with schwannoma (Figs.1-4). Laboratory investigations were unremarkable, including renal and liver function tests. Given the neurological deficit, surgical intervention was indicated. The patient underwent C3 laminectomy; after durotomy, a reddish, firm intradural extramedullary mass with no dural attachment and extending into the right neural foramen was identified and completely removed. Postoperatively, the patient underwent functional rehabilitation with significant improvement in pain and neurological symptoms. Clinical follow-up at 6 months and 1 year revealed no abnormalities. Histopathological examination with immunohistochemistry supported the diagnosis of a plasma cell neoplasm consistent with MM relapse (plasmacytoma) (Fig. 4,5).

Figure 1 Sagittal T1-weighted MRI showing an isointense lesion at the C3 level

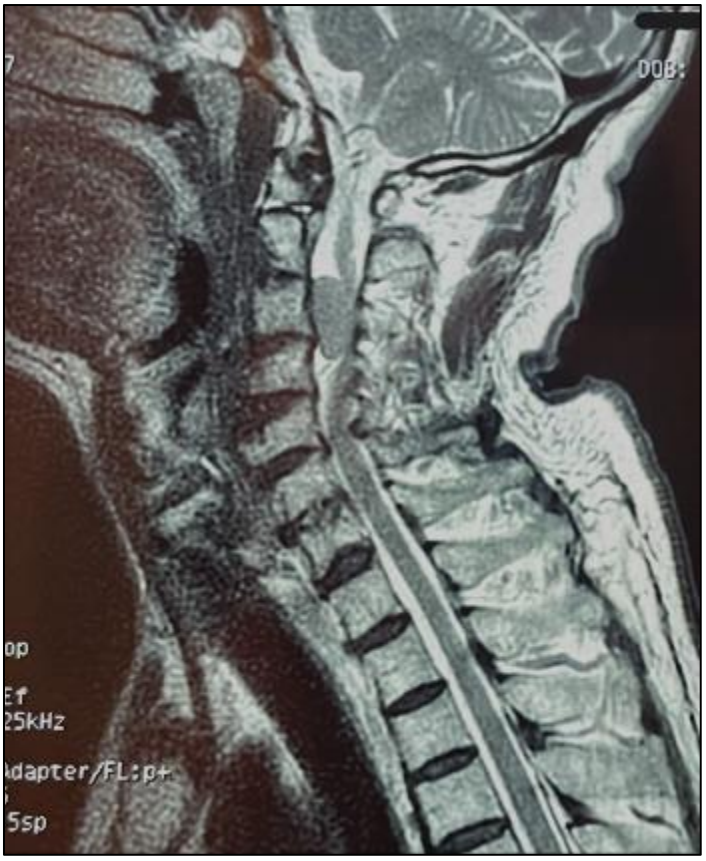

Figure 2 Sagittal T2-weighted MRI showing a well-defined intradural extramedullary lesion compressing the spinal cord

Figure 3 Sagittal gadolinium-enhanced T1-weighted MRI demonstrating lesion enhancement

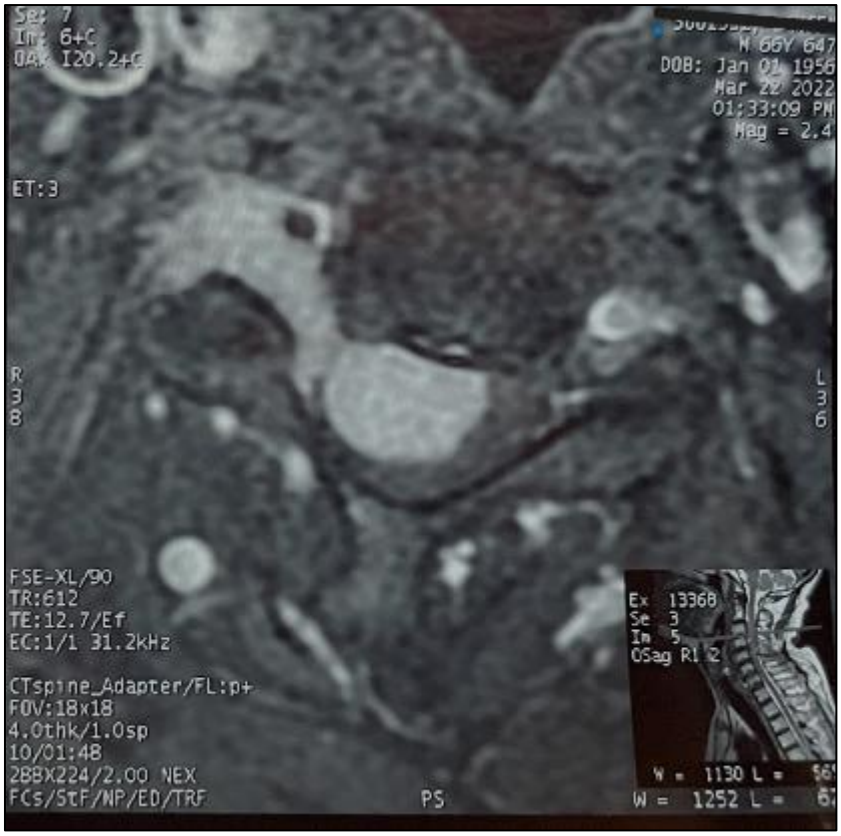

Figure 4 Axial gadolinium-enhanced T1-weighted MRI showing lesion enhancement and foraminal extension

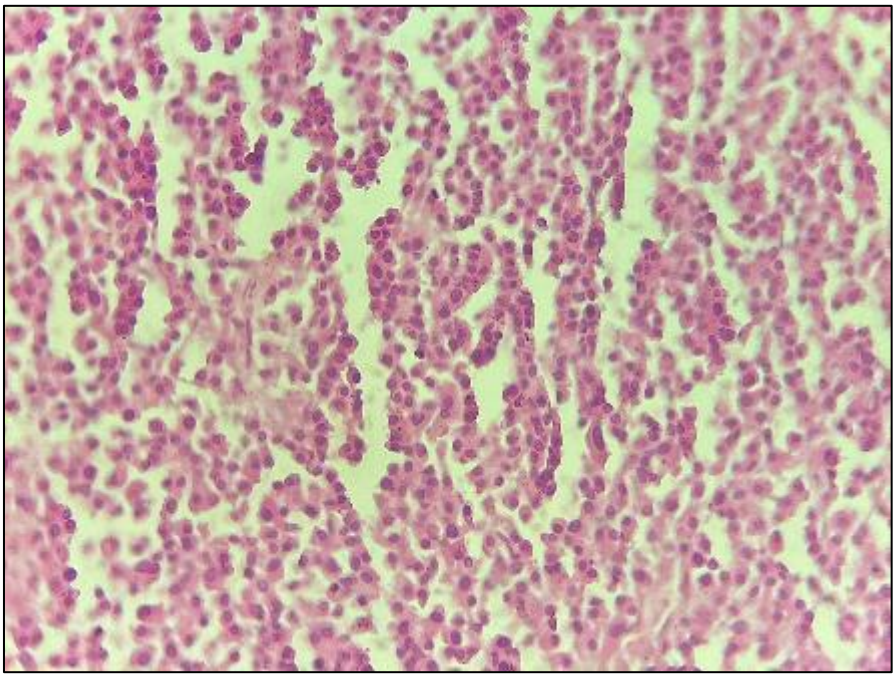

Figure 5 Hematoxylin and eosin (H&E) staining (high-power magnification) showing dense sheets of mature plasma cells with abundant cytoplasm and eccentrically placed nuclei with mottled ("clock-face") chromatin, consistent with plasmacytic differentiation

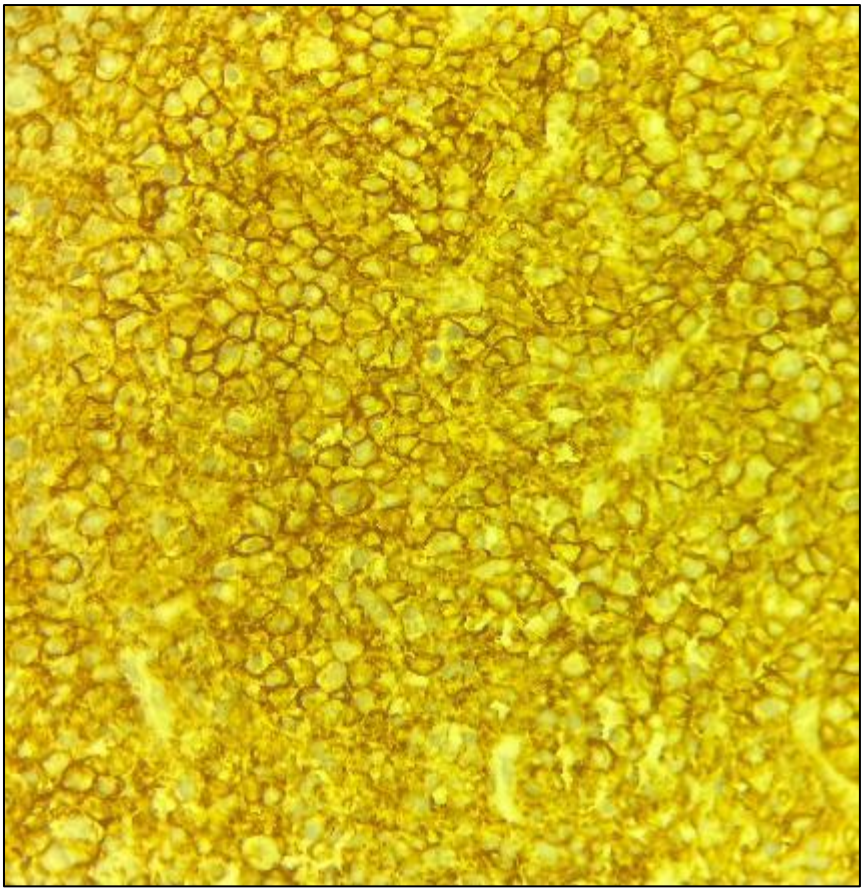

Figure 6 CD138 immunohistochemistry (high-power view) showing diffuse, strong membranous and cytoplasmic staining of tumor plasma cells

3. Discussion

Intradural spinal involvement by multiple myeloma (MM) or plasmacytoma is exceedingly rare and represents an exceptional form of central nervous system dissemination. Reported intradural presentations generally fall into two clinical patterns: focal intradural extramedullary (IDEM) masses and diffuse/leptomeningeal disease, most commonly involving the cauda equina.(2–6)

From a practical standpoint, IDEM lesions are clinically important because their imaging appearance overlaps with more common benign IDEM tumors, particularly schwannomas and meningiomas. As a result, preoperative diagnosis can be challenging when a well-circumscribed enhancing lesion is seen, especially with foraminal extension, a feature often associated with nerve sheath tumors. (1,3,5)

MRI remains the imaging modality of choice to assess lesion location and extent; however, the radiological pattern is non-specific and definitive diagnosis relies on histopathological confirmation. This is particularly true in patients with known MM or previous remission, where an IDEM lesion may represent focal extramedullary relapse.(1,3,7,8)

When neurological deficits are present, early surgical decompression plays a pivotal role by providing rapid symptom relief and securing diagnostic tissue. Several focal IDEM cases—including cervical lesions—were treated surgically with favorable postoperative neurological outcomes, followed by adjuvant systemic therapy and/or radiotherapy according to disease status and staging.(1,5,9,10)

In contrast, diffuse leptomeningeal involvement carries a markedly worse prognosis and usually reflects aggressive systemic disease. These cases often require systemic therapy and, in selected situations, intrathecal treatment and/or neuraxial irradiation; nevertheless, outcomes remain poor in many reports despite multimodal management.(4,6)

Finally, because available evidence is limited to isolated case reports spanning several decades, reporting is heterogeneous and early publications may lack key clinical variables. (3,11) For this reason, extracting only explicitly reported data and labeling missing items as "NR" is recommended to avoid data inconsistency and unverifiable extrapolation, particularly in historical cases.

Table 1 Literature review of intradural spinal involvement in multiple myeloma / plasmacytoma

Year	Reference	Diagnosis	Age/Sex	Known MM	Location	Presentation	Treatment	Outcome
1959 (11)	Sod & Wiener (1959)	IDEM plasmacytoma (reported)	45/M	Yes	T5	paraparesis	Laminectomy+ GTR	Improved
2002 (12)	Hayakawa et al. (2002)	Intradural relapse (MM)	55/M	Yes	Cauda equina + brain	CSF plasma cells	NR	NR
2007 (9)	Zazpe et al. (2007)	Solitary plasmacytoma (IDEM)	25/F	No	T2–T3	Pain, paraparesis	GTR + RT	Remission
2013 (6)	Vale et al. (2013)	Leptomeningeal MM (cauda equina)	51/M	Yes	Cauda equina	Pain, weakness	Intrathecal chemo ± RT	Death
2018 (13)	Cekdemir et al. (2018)	Cauda equina involvement (MM)	51/F	Yes	L4–S1	Cauda equina syndrome	Chemotherapy	Improved
2019 (7)	Singh et al. (2019)	Solitary plasmacytoma (IDEM)	54/M	No	L2	Radiculopathy	Surgery + RT	Good
2019 (1)	Faddoul et al. (2019)	MM relapse (cervical IDEM)	67/F	Yes	C7	Radiculopathy	Surgery	Improved
2020 (4)	Hsu et al. (2020)	Leptomeningeal MM	60/F	Yes	Cauda equina + intracranial	Weakness	Surgery + chemotherapy	Death
2021 (10)	Glasser & Glasser (2021)	MM-associated plasmacytoma (IDEM)	50/F	Yes	L3	Pain, deficit	Surgery + RT	Improved
Present case	El Akroud et al.	MM relapse (cervical IDEM plasmacytoma)	66/M	Yes	C3	Cervicobrachial neuralgia; Brown–Séquard	Surgery; hematology referral	Improved
2025 (3)	Prather et al. (2025)	MM relapse (thoracic IDEM)	53/M	Yes	T3–T4	Compression	Surgery	Dissemination
2025 (5)	Wang et al. (2025)	Plasmacytoma (IDEM) in MM setting	67/F	Yes	C2–C3	Myelopathy	Surgery + RT	Improved

Abbreviations: IDEM = intradural extramedullary; CNS = central nervous system; CSF = cerebrospinal fluid; RT = radiotherapy; GTR = gross total resection; NR = not reported.

Only information explicitly reported in accessible original articles was extracted. Missing variables were recorded as "NR" to prevent data inconsistency and avoid unverifiable extrapolation, particularly in early reports.

4. Conclusion

Intradural extramedullary spinal involvement in multiple myeloma is exceedingly rare and should be considered in the differential diagnosis of enhancing intradural spinal masses, particularly in patients with a history of MM. Imaging findings are non-specific, and immunohistochemistry is required for definitive diagnosis. Although standardized guidelines are lacking, surgical decompression and resection—when feasible—play a key role in neurological recovery and tissue diagnosis, followed by adjuvant oncologic therapy (systemic treatment and/or radiotherapy) tailored to disease staging.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no financial or non-financial conflicts of interest.

Statement of informed consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. Patient-identifying information has been removed to ensure anonymity.

References

[1] Faddoul J, Sweid A, Jabbour P, Lahoud GA. Cervical intradural recurrence of multiple myeloma during hematological remission: A case report and literature review. Clin Neurol Neurosurg. 2019 Nov;186:105547. doi:10.1016/j.clineuro.2019.105547

[2] Varettoni M, Corso A, Pica G, Mangiacavalli S, Pascutto C, Lazzarino M. Incidence, presenting features and outcome of extramedullary disease in multiple myeloma: a longitudinal study on 1003 consecutive patients. Ann Oncol. 2010 Feb;21(2):325–30. doi:10.1093/annonc/mdp329

[3] Prather KY, Gülsuna B, Balasubramanian K, Shakir HJ, Zhao X, Li C. Spinal intradural lesion as manifestation of multiple myeloma: Illustrative case and systematic review of literature. Surg Neurol Int. 2025 Jun 20;16:247. doi:10.25259/SNI_249_2025

[4] Chen DC, Hsu WL. Multiple myeloma with intracranial and spinal intradural metastasis: A case report. BioMedicine. 2020 Sep 15;10(3):45–9. doi:10.37796/2211-8039.1079

[5] Wang M, Liu L, Yu S. Case report and comprehensive literature review: A rare instance of solitary extramedullary plasmacytoma in the trachea. Respir Med Case Rep. 2025;56:102244. doi:10.1016/j.rmcr.2025.102244

[6] Vale TC, Teixeira GM, Fernandes BFS, Gomez RS, Teixeira AL. Multiple myeloma with cauda equina infiltration. Neurol Sci. 2013 Jan;34(1):103–5. doi:10.1007/s10072-011-0920-x

[7] Singh S, Kumar A, Bhaisora KS, Srivastava AK, Behari S. An unusual case of solitary spinal intradural plasmacytoma: The unforeseen challenge. J Craniovertebral Junction Spine. 2019;10(3):192–6.

[8] Shpilberg KA, Esses SJ, Fowkes ME, Chari A, Sacher M, Naidich TP. Imaging of extraosseous intracranial and intraspinal multiple myeloma, including central nervous system involvement. Clin Imaging. 2015 Mar;39(2):213–9. doi:10.1016/j.clinimag.2014.11.017

[9] Zazpe I, Caballero C, Cabada T, Guerrero D, Gallo-Ruiz A, Portillo E. Solitary thoracic intradural extramedullary plasmacytoma. Acta Neurochir (Wien). 2007 May;149(5):529–32. doi:10.1007/s00701-007-1138-9

[10] Glasser J, Glasser R. Intradural plasmacytoma originating from the filum terminale in the setting of multiple myeloma: illustrative case. J Neurosurg Case Lessons [Internet]. 2021 [cited 2024 Jun 4];1(6). Available from: https://thejns.org/caselessons/view/journals/j-neurosurg-case-lessons/1/6/article-CASE20106.xml

[11] Sod LM, Wiener LM. Intradural extramedullary plasmacytoma: case report. J Neurosurg. 1959;16(1):107–9.

[12] Hitoshi HAYAKAWA, Kosuke OBAMA, Mitsutoshi TARA. Intradural recurrence of multiple myeloma during the hematological complete remission [Internet]. 2002 [cited 2026 May 14]. Available from: https://doi.org/10.11406/rinketsu.43.1009 doi:10.11406/rinketsu.43.1009

[13] Cekdemir D, Soyer N, Gulluoglu H, Yilmaz Ovali G, Tobu M. Cauda equina involvement in newly diagnosed myeloma patient. Clin Case Rep Rev. 2018;4(3). doi:10.15761/CCRR.1000395