

Lumbar Spinal Meningioma- A common tumor in an uncommon location: A case report

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ABSTRACT:

Meningioma in the spinal canal commonly appears as intradural extramedullary spinal tumors at the dorsal and cervical region but is rare in the lumbar area. A 36-year-old man presented to us with complaints of left sciatica, weakness, and difficulty in movements of his left toes for a couple of months. Magnetic Resonance Imaging revealed an enhancing oval-shaped lesion at the level of L4, and histopathology revealed a meningioma. The complete removal has been done with hemilaminectomy for this common tumor in an uncommon location.

Key Words:

Meningioma, Spinal tumors, Hemilaminectomy.

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Introduction

The meninges originate from meninx, a Greek term meaning membrane, which Erasistratus first introduced in the third century.¹ Meninges is known as the covering of the central nervous system, which consists of the brain and the spinal cord. The outer meningeal covering of the brain and spinal cord is dura mater, a Latin word that means 'tough mother.'¹ Spinal meningioma is the second most common intradural extramedullary tumor after schwannoma, and it originates from the meningotheelial arachnoid membranes within the dura mater.² This lesion

has a more muscular female sex predisposition in adults than intracranial meningiomas.³ Spinal meningiomas are slow-growing benign intradural tumors exclusively rare in the lumbar areas but primarily observed in the thoracic and cervical regions at an incidence rate of 2-14%.⁴ We present a case of lumbar spinal meningioma in a male with unprecedented surgical management.

Case presentation

A 36-year-old man presented to us with gradually progressive left-sided sciatica and difficulty in moving his left toes over several months. Upon examination of

the lower limbs, the patient exhibited left-sided distal muscle wasting. The straight leg raise test on the left side was positive at 50 degrees. Muscle strength in the left extensor hallucis longus (EHL) and ankle plantar flexion was graded 3/5 on the MRC scale. Additionally, knee and ankle reflexes were diminished on the left side, and there was reduced sensation in the L4 to S1 dermatomes on the left lower limb. Magnetic Resonance Imaging (MRI) revealed a well-defined, oval-shaped, regular margined, enhancing lesion attached to the anterior lateral surface of the dura at the level of L4 vertebrae (Figure 1,2). Left-sided L4 hemilaminectomy under general anesthesia (GA) was planned. The patient was in the prone position with adequate padding. A 5 cm posterior midline incision was made. Following a left-sided subperiosteal dissection (Figure 3), a left-sided L4 laminectomy was performed without injuring the facet joint (Figure 4). Left-sided 2 cm durotomy was done with an 11-blade after tilting the operative table on the right side. With meticulous dissection, the total tumor had been removed. Watertight dural closure was done with 5-0 R/B prolene. Layered closure was done. The patient was discharged on the 3rd POD as the post-operative period was uneventful with the histopathology of Meningothelial Meningioma, NOS, WHO grade I (Figure 5). The patient walked into us independently on his one-month follow-up visit (Figure 6).

Discussion

Spinal meningioma is a slow-growing, benign tumor primarily affecting the dorsal spine and the cervical spine in an intradural extramedullary lesion. Cushing and Eisenhardt's 1938 surgical removal of a spinal meningioma was a groundbreaking achievement in neurosurgery.⁵ However, the lumbar spinal meningioma in male patients is an infrequent presentation.⁴ Various techniques exist for the removal of lumbar intradural extramedullary tumors, with less invasive methods such as hemilaminectomy gaining popularity due to their preservation of spinal biomechanics and early return to work. Less operative time with minimal blood loss has made these techniques more lucrative. However, the selection of surgical approach depends upon the size, location, radiological type of the lesion, and some patient factors.⁶ Turel MK et al. (2015) recommended hemilaminectomy as a quick, safe, minimally invasive procedure with minimal morbidity and no mortality for the removal of intradural extramedullary tumors. Liao D et al. (2023)

suggested hemilaminectomy as a rapid and safe procedure to remove intradural and extradural tumors. In summary, hemilaminectomy at most weight-bearing zones, lumbar vertebrae, is an excellent technique to remove intradural tumors like meningioma successfully. Well-preserved spinal biomechanics is ensured, along with minimal tissue damage, which encourages early functional recovery. However, well-equipped instruments and skilled surgical expertise are mandatory.

Conclusion

Meningioma is expected in the dorsal and cervical spine but rare in the lumbar spine. In this case, single-side subperiosteal dissection and one-level hemilaminectomy for tumor removal resulted in an excellent functional recovery. Lumbar spinal meningioma is an uncommon condition, but the single-level hemilaminectomy for tumor removal has made it unique.

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Conflicts of interest

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Figure 1 Preoperative sagittal MRI of the Lumbosacral spine (T1WI, T2WI)

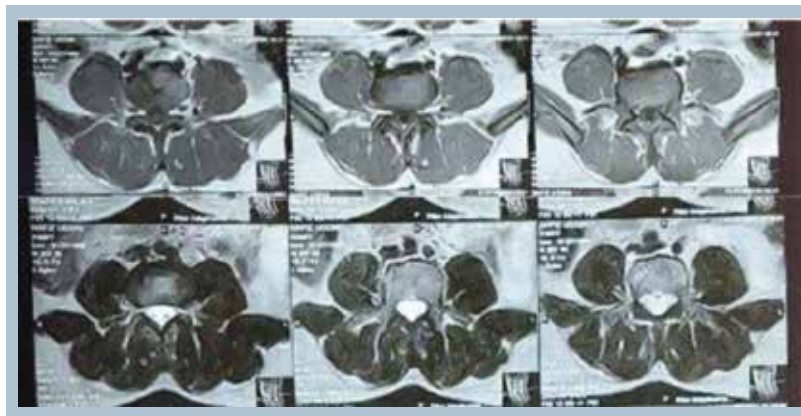


Figure 2 Preoperative axial MRI of the Lumbosacral spine (T1WI, T2WI)

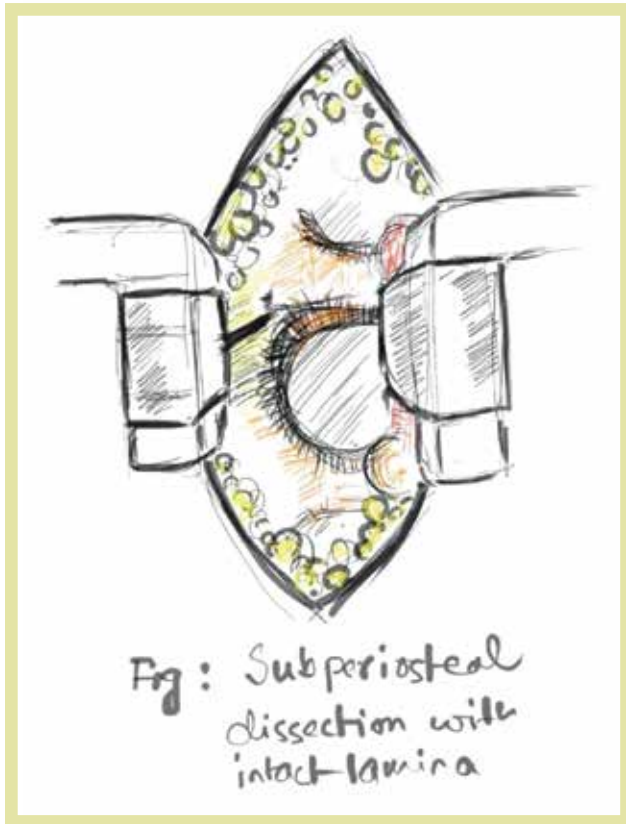


Figure 3 Per operative drawing of subperiosteal dissection

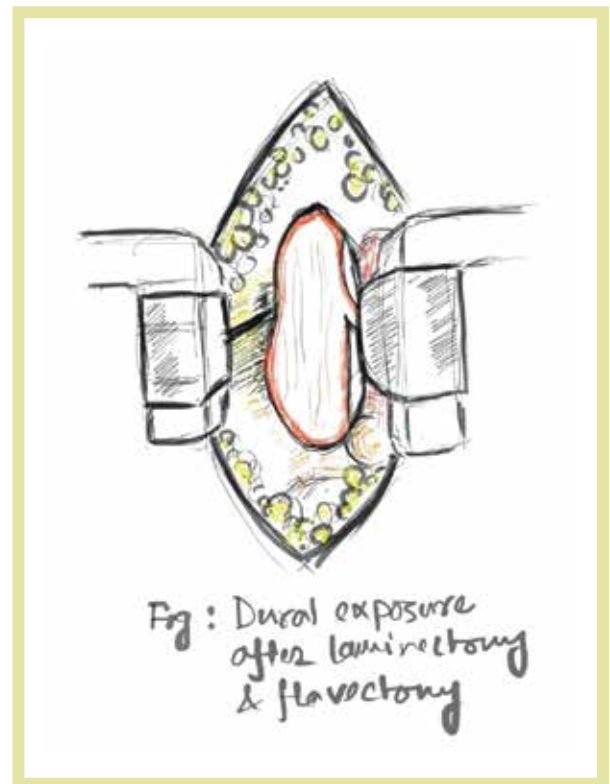


Figure 4 Per operative drawing of hemilaminectomy

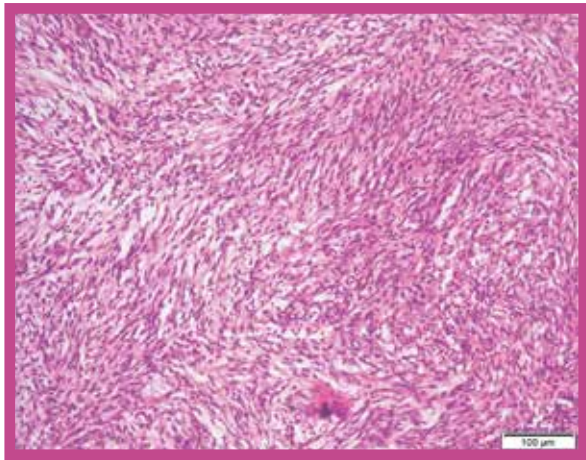


Figure 5a Histopathology

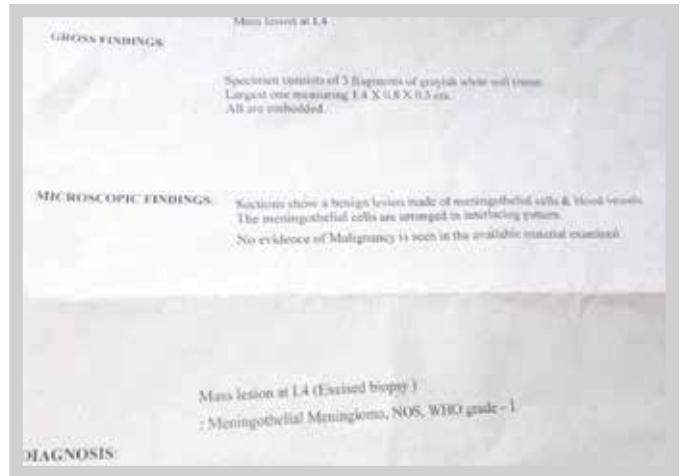


Figure 5b Histopathology



Figure 6 Postoperative follow up