

## Thoracal meningioma and neurological status recovery 6 months postoperative: A case report

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### Abstract

**Introduction:** Meningioma is the most common intradural tumor of the spinal cord in adults. Spinal meningioma arises from slow-growing arachnoid cap cells, which are generally located intradural extramedullary and grow laterally into the subarachnoid space to stretch the surrounding arachnoid. Local pain is usually the first major symptom. However, the majority of cases are diagnosed after the onset of neurological deficits or impaired walking.

**Case Presentation:** Woman, 46 years old, with back pain radiating to both legs in the last 2 years before surgery. At 16 months before surgery, she had paralysis of both legs with bowel and bladder incontinence. Preoperative physical examination shows no muscle contraction on both lower extremities, with hypoesthesia in the Thoracal 2 dermatome. MRI examination shows intradural extramedullary mass at the level of the 2nd thoracal that compresses the entire spinal canal. Laminectomy surgery on thoracal 2 and tumor resection in toto were performed. Surgical resection showed a tumor mass of 2x1,2x1cm with a thick, spongy, brownish-yellow consistency. Histopathological examination shows psammomatous type meningioma, WHO Grade 1. The patient was discharged postoperatively with palpable muscle contractions on both legs, accompanied by no sensory abnormalities. Evaluation 1 month postoperatively, the patient was able to voluntarily move the lower extremities accompanied by the return of ability to micturate and defecate. Examination at 6 months postoperatively, the patient was able to walk without assistance and no other neurological deficit was found.

**Conclusion:** Tumor resection remains as treatment of choice for spinal meningioma regardless of neurological deficit onset and histological type of tumor.

**Keywords:** Spinal meningioma; Neurological deficit; In-toto surgery; Recovery

### 1. Introduction

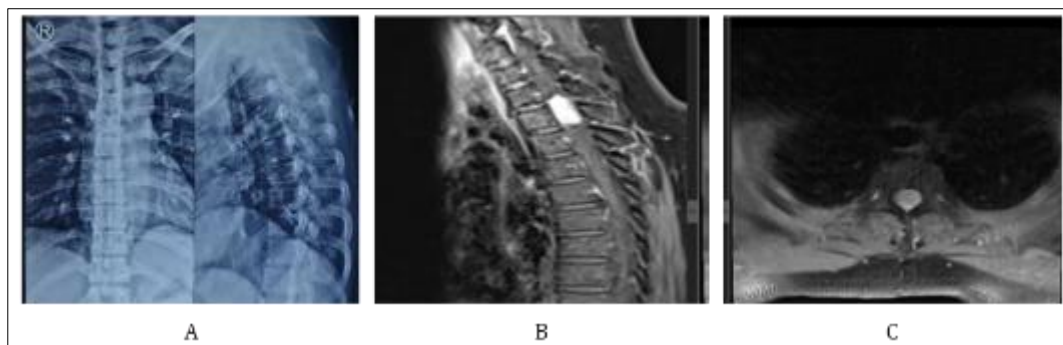
Meningioma is the most common intradural tumor of the spinal cord in adults. Spinal meningioma arises from slow-growing arachnoid cap cells, which are generally located intradural extramedullary and grow laterally into the subarachnoid space to stretch the surrounding arachnoid[1]. Local pain is usually the first major symptom. However, the majority of cases are diagnosed after the onset of neurological deficits or impaired walking[2].

### 2. Case Report

A woman, 46 years old, with a chief complaint of back pain radiating to both legs in the last 2 years before surgery. At 16 months before surgery, she had paralysis of both legs with bowel and bladder incontinence. Preoperative physical

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examination shows no muscle contraction on both lower extremities with a manual muscle testing (MMT) score of 0/0 and hypoesthesia at the Thoracal 2 dermatome and below. Pre-operative X-ray shows no abnormality while MRI imaging shows intradural extramedullary mass at the level of the 2nd thoracal that compresses the entire spinal canal (Figure 1).



**Figure 1** Thoracal X-ray before surgery (A). Thoracal MRI imaging before surgery (B & C)

The patient underwent laminectomy and durotomy on thoracal 2 and then tumor resection in-toto was performed. Surgical resection showed tumor mass 2x1,2x1cm with a thick, spongy, brownish-yellow consistency. Histopathological examination shows psammomatous type meningioma WHO Grade 1 (Figure 2).



**Figure 2** Clinical picture during surgery, laminectomy, durotomy, and tumor being resected (A). Resected tumor (B). Histopathology result (C)

The patient was discharged with palpable muscle contractions and an MMT score of 1/1 on both legs. Evaluation 1-month post-operative, the patient was able to voluntarily move the lower extremities accompanied by the return of the ability to control micturate and defecate with no sensory abnormality. On examination at 6 months post-operative, the patient was able to walk without assistance with an MMT score of 5/5 on both sides, and no other neurological deficit was found.

### 3. Discussion

The thoracic region is the area where spinal meningiomas are most frequently located, with a tendency to occur at the age of 40-70 and found more in women than men with a ratio of up to 9:1 [1], [3]. Female predilection is thought to be caused by sex hormones on women. The majority of spinal meningiomas are intradural such as this case, but a small percentage can be extradural, or both intradural and extradural [4].

Spinal meningioma is a slow-growing tumor, therefore symptoms arise when the tumor size has reached a significant size to compress the spinal medulla. Local pain is one of the first major symptoms, however, diagnosis of spinal meningioma is usually presented late until neurological deficit or walking impairment has manifested such as in this case [2].

Tumor resection surgery remains the main choice in cases of spinal meningioma regardless of the onset of neurological deficits. Surgical treatment with single-level posterior laminectomy or hemilaminectomy for access to the spinal sac and

spinal cord for tumor resection may be applied for the majority of dorsal and dorsolateral tumors such as in this case [5]. Psammomatous meningiomas are associated with a poorer prognosis due to the least cellularity and strong attachment of the mass to blood vessels and the spinal cord [6], but in this case, total resection of the tumor was achieved and total resection is advocated whenever possible as in other studies [7]. Surgical resection of spinal meningioma is recommended to be performed urgently [3], however, in this case, surgery was performed 16 months after limb paralysis occurred, and complete neurological recovery was achieved 6 months postoperatively.

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#### 4. Conclusion

Tumor resection remains as treatment of choice for spinal meningioma. Total *in-toto* resection of spinal meningioma is able to be achieved even in psammomatous type tumors. Recovery of neurological status in spinal meningioma cases is not dependent on the timing of surgery and the onset of neurological deficit.

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#### Compliance with ethical standards

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##### *Disclosure of conflict of interest*

The authors declare no conflict of interest in this study.

##### *Statement of informed consent*

Informed consent was obtained from the patient presented in the study.

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