

## Intramedullary teratoma

Adilson José Manuel de Oliveira<sup>a,b</sup> , Vinicius Monteiro de Paula Guirado<sup>a</sup> ,  
Vitor Nagai Yamaki<sup>a</sup> , Fernando Pereira Frasseto<sup>c</sup> 

**How to cite:** de Oliveira AJM, Guirado VMP, Yamaki VN, Frasseto F. Intramedullary teratoma. *Autops Case Rep* [Internet]. 2019 Oct-Dec; 9(4):e2019105. <https://doi.org/10.4322/acr.2019.105>

### DEAR EDITOR,

We present a case of a young woman with an intramedullary lesion and symptoms of spinal cord compression (lower limbs weakness and urinary retention). The MRI images rendered the preoperative differential diagnoses of neurofibroma and schwannoma; however, teratoma was suspected with the intraoperative findings, which was confirmed by the histological report.

Teratoma of the central nervous system is a rare entity that originates from the embryonic tissues of the three primary embryonic leaflets classified as (i) mature, (ii) immature and (iii) malignant. The intramedullary teratoma comprises 0.2% of all central nervous system tumors. The clinical picture varies according to the site of the lesion, and the most frequent location is the medullary cone. The outcome is usually favorable when a complete resection is feasible. Although complete resection was not possible in our case, the patient had symptomatic improvement.

We present the case of a 35-year-old female, who was referred to our emergency department with a 3-month history of intense low back pain radiating to the lower limbs without any specific dermatome distribution, followed by a progressive loss of the lower limbs' muscular strength, and urinary retention over the last month.

On the neurological examination, the patient presented a grade-III muscular strength for the hip flexion and extension on the right side, and grade-IV on the left side; foot drop on the right side, bilateral L1 to L5 hypoesthesia, bilateral exaggerated patellar reflex, and bilateral Babinski sign.

The laboratory workup was normal, the lumbar spine computed tomography (CT) showed intra-spinal canal injury with scarce zones of calcification in the topography of the second to the fourth lumbar vertebra (Figure 1A), and the magnetic resonance imaging (MRI) showed intramedullary lesion with a heterogeneous aspect in T2 and T1 weighted images, the later showed marked enhancement after gadolinium injection (Figure 1B).

A minimally invasive surgical approach was performed comprising L2 – L3 – L4 hemi laminotomy, dural overture and partial resection of the lesion, which grossly exhibited fibroelastic and exophytic components resembling tooth and hair (Figure 2). The histologic findings were consistent with a mature teratoma (Figure 3).

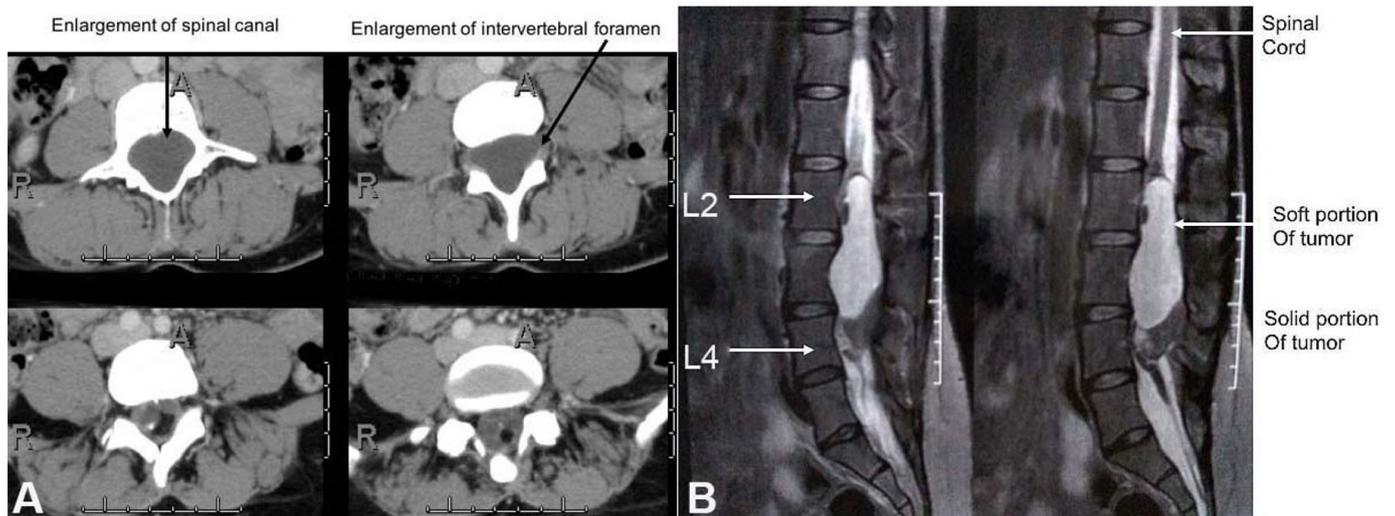
On immediate postoperative follow up, the patient improves the urinary symptom and the hypoesthesia and later partially recovered the motor deficit with the aid of physiotherapy.

<sup>a</sup> Universidade de São Paulo (USP), Faculty of Medicine, Hospital das Clínicas, Department of Neurology. São Paulo, SP, Brazil

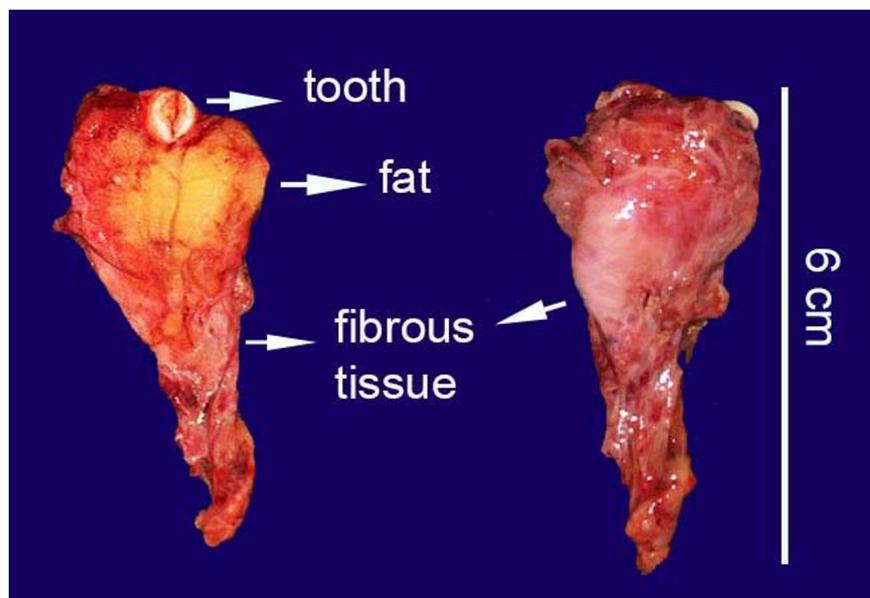
<sup>b</sup> Girassol Clinic, Neurosurgery service, Luanda, Angola

<sup>c</sup> Universidade de São Paulo (USP), Hospital das Clínicas, Department of Pathology. São Paulo, SP, Brazil.

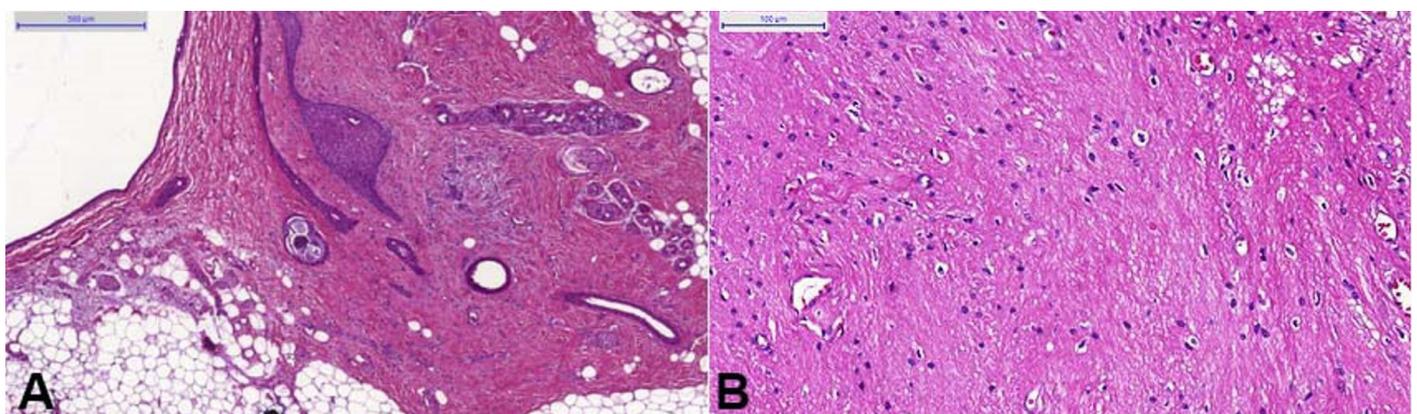




**Figure 1.** **A** – spine CT axial plane showing intraspinal lesion with enlargement of vertebral canal suggesting a slow growing lesion; **B** – Spine MRI, sagittal plane showing lumbosacral region showing a heterogenous intramedullary lesion from L2 to L4 levels.



**Figure 2.** Gross view of the surgical specimen, ventral, and dorsal views are showing fat, fibrous tissues, and a tooth.



**Figure 3.** Photomicrographs of the surgical specimen. **A** – presence of mature, adult-type tissues - skin with cutaneous appendages, connective, and adipose tissues; **B** – neural component, predominantly composed of glial cells and neuropil.

Intradural location of teratomas is rare and intramedullary teratomas are especially occasional. In 1931, Hosoi<sup>1</sup> reported the first case of intradural teratoma. Due to the rarity of this entity, the medical literature gathers only case reports of lesions in the medullary cone region, which usually shows a favorable outcome.<sup>2</sup>

Concerning the tumor pathogenesis, it is mostly accepted that the spinal teratoma arises from primordial germ cells misplaced from the primitive yolk sac into the dorsal midline during their normal migration from the yolk sac to gonadal ridges.<sup>1</sup>

Differently from our case, the teratomas are three times more frequent in men than in women often associated with spinal disorders including spina bifida, split cord malformation, meningomyelocele and lipomeningomyelocele.<sup>3</sup>

Our case is an illustrative case with the learning focused on two main aspects:

1. Always consider all diagnostic hypotheses for intramedullary lesions, even the rarest ones such as teratomas because it can change the surgical approach, the differential diagnosis is challenging because of unspecific clinical features mainly when the associated spinal malformations lacks.<sup>4</sup>
2. Partial resection with preservation of neurological function is a valid option, although most authors advocate radical resection there are reports of partial resections with favorable clinical outcomes and low rates of symptomatic recurrences.<sup>5</sup>

We did not indicate the adjuvant radiotherapy due to the lack of beneficial evidence. Even in the presence of recurrences, the tumor growth is very slow, and no evidence showed that the radiotherapy changed the outcome.<sup>6</sup>

Intradural spinal teratomas are very rare and even more in adults. The heterogeneous signal shown by MRI images can indicate the solid or cystic composition of the tumor, which is extremely helpful for early

diagnosis. The complete resection is the therapy of choice with attention focused on the neurological functions' preservation.

This is an illustrative report of an unexpected diagnosis. This case emphasizes the importance to consider the diagnosis of teratoma among the differential diagnosis of cases with the clinical picture of compression of the medullary cone.

The patient signed the informed consent authorizing the data publication, and the manuscript is by the authorization of the institutional ethics committee.

**KEYWORDS:** Teratoma; Spinal Cord Neoplasms; Neurosurgery.

## REFERENCES

1. Hosoi K. Intradural teratoid tumors of the spinal cord. *Arch Pathol.* 1931;11:875-83.
2. Traul DE, Shaffrey ME, Schiff D, Part I. Spinal-cord neoplasms—intradural neoplasms. *Lancet Oncol.* 2007;8(1):35-45. [http://dx.doi.org/10.1016/S1470-2045\(06\)71009-9](http://dx.doi.org/10.1016/S1470-2045(06)71009-9). PMID:17196509.
3. Hamada H, Kurimoto M, Hayashi N, Hirashima Y, Matsumura N, Endo S. Intramedullary spinal teratoma with spina bifida. *Childs Nerv Syst.* 2001;17(1-2):109-11. <http://dx.doi.org/10.1007/s003810000399>. PMID:11219616.
4. Barahona EA, Olvera JN, Liquidano ME, et al. A special case of intramedullary teratoma in an adult: Literature review. *Rev Med Hosp Gen Mex.* 2018;81(4):237-42.
5. Ak H, Ulu MO, Sar M, Albayram S, Aydın S, Uzan M. Adult intramedullary mature teratoma of the spinal cord: Review of the literature illustrated with an unusual example. *Acta Neurochir.* 2006;148(6):663-9. <http://dx.doi.org/10.1007/s00701-006-0755-z>. PMID:16523223.
6. Allsopp S, Sgouros S, Barber P, Walsh AR. Spinal teratoma: is there a place for adjuvant treatment? Two cases and a review of the literature. *Br J Neurosurg.* 2000;14(5):482-8. <http://dx.doi.org/10.1080/02688690050175364>. PMID:11198778.

**Authors contributions:** de Oliveira AJM wrote the manuscript; Guirado VMP and Yamaki VN were the surgeon of the patient and provided the images. Frassetto FP was the pathologist responsible for the histological report, provided the photomicrographs. All authors collectively proofread the manuscript and approved for publication.

**Conflict of interest:** None

**Financial support:** None

**Submitted on:** June 8<sup>th</sup>, 2019

**Accepted on:** July 1<sup>st</sup>, 2019

**Correspondence:**

Adilson José Manuel de Oliveira

Alameda Santos, 663, Apt 34B – Cerqueira Cesar – São Paulo/SP – Brazil

CEP: 01419-000

Phone: +55 (11) 99779-2709

adilsonvalmont@gmail.com