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CASE REPORT

C2 neurofibroma excision: An illustrative video

Rajinder Kumar[1], Sandeep Mishra[1*†] and Swarnarekha Narayanan[2]

[1]Department of Neurosurgery, All India Institute of Medical Sciences, New Delhi, India
[2]Department of Neurosurgery, Govt. Kalaignar Centenary Super Speciality Hospital, Chennai, Tamil Nadu, India

*__Correspondence:__
Sandeep Mishra,
sndp.msra@gmail.com

†__ORCID:__
Sandeep Mishra
0000-0002-3714-0918

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Spinal neurofibromas are rare, benign tumors that can occur sporadically or in association with neurocutaneous syndromes. These tumors may remain asymptomatic for extended periods, often growing to form a characteristic dumbbell shape as they extend through intervertebral foramina. Dumbbell-shaped neurofibromas of the upper cervical nerve roots pose a particular surgical challenge due to their proximity to critical structures like the vertebral artery. This case report presents a 36-year-old male who developed progressive neck pain, upper limb weakness, and worsening gait due to a large C2 dumbbell-shaped neurofibroma. C1–C2 laminectomy and near-total excision of the lesion were done. Gradual recovery of motor function was observed over follow-up. This report underscores the complexities of managing C2 nerve root neurofibromas, emphasizing their potential for significant neurological deficits despite their benign nature.

Keywords: Spinal, Neurofibroma, Cervical, Surgery, Dumbbell

Introduction

Spinal neurofibromas are rare benign tumors that can occur sporadically or as part of neurofibromatosis type 1 (1). These tumors can grow significantly while remaining asymptomatic, often extending through the intervertebral foramina to form a characteristic dumbbell shape. Dumbbell-shaped neurofibromas of the C2 nerve root present a challenging pathology, characterized by their large size and proximity to critical structures such as the vertebral artery, which significantly complicates surgical excision. We illustrate the clinical aspects and surgical management of a similar case here.

Case report

A 36-year-old male presented to our hospital with neck pain and progressive weakness, initially affecting his left upper limb and gradually spreading to other extremities, with worsening gait over the last year. Over time, his symptoms deteriorated significantly, eventually requiring assistance with daily activities. His past medical history was unremarkable. The neurological assessment revealed intact cranial nerve function and a normal ophthalmic evaluation. Motor examination showed muscle strength of 3 to 4-/5 [Medical Research Council (MRC) grade] in both upper and lower extremities and hypesthesia below the C3 level. He exhibited a positive Hoffman sign in the left upper limb, bilateral sustained clonus, and generalized hyperreflexia.

A contrast-enhanced MRI revealed a large, dumbbell-shaped extramedullary tumor located intra- and extradural,

VIDEO 1 | Illustrative Video of C2 Schwannoma Excision
https://youtu.be/BVc-gGA1G3k

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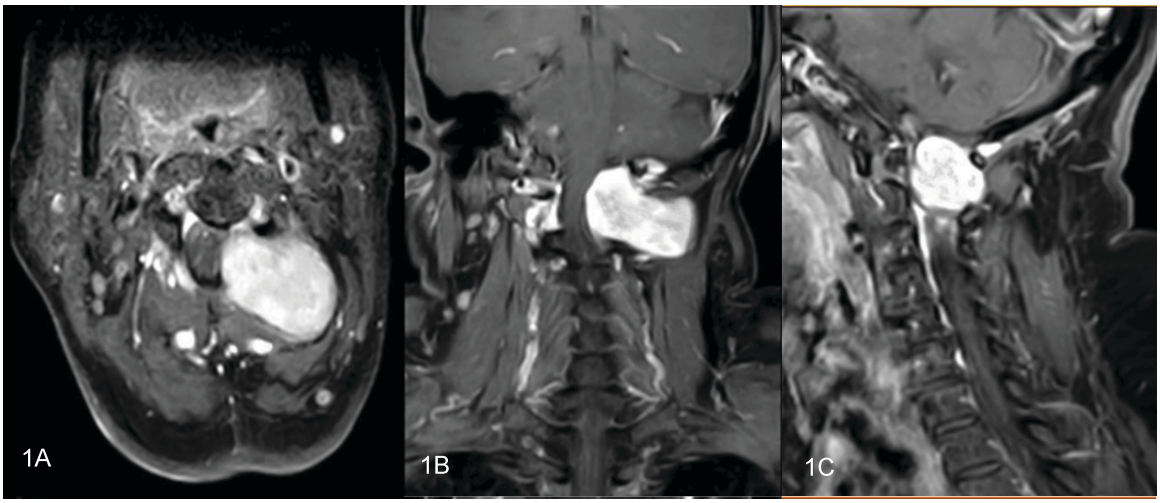

FIGURE 1 | Preoperative axial **(A)**, coronal **(B)**, and sagittal **(C)** contrast-enhanced MRI image showing a large, dumbbell-shaped extramedullary tumor located intra- and extradural, involving the left C1–C2 neural foramina and compressing the spinal cord.

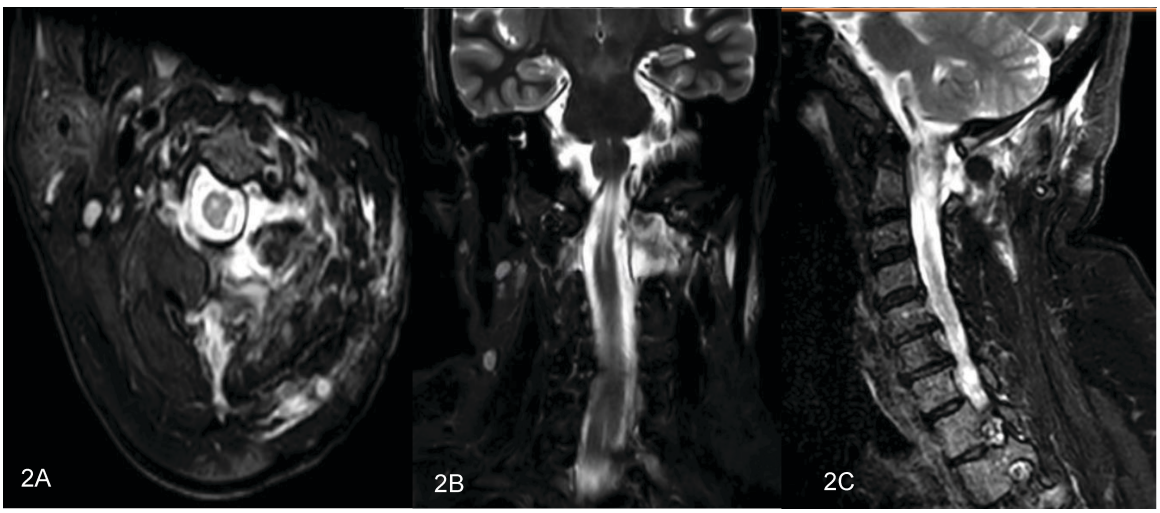

FIGURE 2 | Postoperative axial **(A)**, coronal **(B)**, and sagittal **(C)** T2-weighted MRI image showing the near-total removal of the tumor.

involving the left C1–C2 neural foramina and compressing the spinal cord (**Figure 1** and **Video 1**). The patient underwent an extensive C1 and C2 laminectomy with complete excision of the intra- and extradural tumor. Postoperative MRI confirmed the near-total removal of the tumor (**Figure 2**). The immediate postoperative period was uneventful, though no significant improvement in weakness was observed on the first day. However, the patient showed gradual improvement in quadriparesis during follow-up visits.

In conclusion, spinal neurofibromas, particularly the dumbbell-shaped variety of the C2 nerve root, present a formidable surgical challenge due to their significant size and proximity to critical structures such as the vertebral artery. Despite their typically benign nature and potential for asymptomatic growth, these tumors can cause substantial neurological deficits.

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

References

1. Ferreira AC, de Blanco CMB, Trindade JVC, de Mattos GB, Joaquim AF. Surgical outcome of spinal schwannoma and neurofibroma. *Rev Assoc Médica Bras.* (2023) 69:e20230190. doi: 10.1590/1806-9282.20230190