

# Microsurgical Resection of Racemose Neurocysticercosis in the Third Ventricle: A Rare Cause of Intracranial Hypertension

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## Abstract

Neurocysticercosis (NCC) is the most common parasitic infection of the central nervous system, with the racemose form representing a severe variant characterized by multiloculated cysts lacking a visible scolex and preferential involvement of the subarachnoid and intraventricular spaces. Intraventricular racemose NCC frequently results in obstructive hydrocephalus and often requires surgical treatment. This case highlights a safe and effective surgical alternative and reinforces the importance of individualized management strategies in resource-limited environments.

## Introduction

Neurocysticercosis (NCC) is the most prevalent parasitic infection of the central nervous system and remains a major cause of epilepsy and hydrocephalus worldwide, particularly in endemic regions such as Latin America, sub-Saharan Africa, and Southeast Asia.

The racemose variety of NCC and it's caused by the larval form of *Taenia solium* and is an severe form and less common presentation, characterized by multiloculated cysts, typically devoid of a visible scolex. This form is associated with a higher inflammatory burden, progressive mass effect, and frequent obstruction of cerebrospinal fluid (CSF) pathways, leading to hydrocephalus and increased intracranial pressure. Intraventricular NCC, particularly when involving the third ventricle, poses unique diagnostic and therapeutic challenges. Magnetic resonance imaging (MRI) is the modality of choice for diagnosis, as cysts often appear isointense to CSF and may be difficult to detect on computed tomography. Advanced MRI sequences are essential for defining lesion extent, ventricular obstruction, and surgical planning. Surgical management is often required in cases of intraventricular racemose NCC causing hydrocephalus. Neuroendoscopic removal has been widely advocated as the preferred approach due to its minimally invasive nature and favorable outcomes. However, endoscopic resources are not universally available, especially in low- and middle-income settings where NCC is most prevalent. In such scenarios, alternative surgical strategies remain necessary.

We report a case of racemose neurocysticercosis occupying the third ventricle and extending into the interpeduncular cistern, causing obstructive hydrocephalus, successfully treated using a microsurgical approach.

## Case Report

A 52-year-old man from Ceará, Brazil, presented with a one-year history of daily holocranial headaches responsive to analgesics, along with new-onset generalized tonic-clonic seizures, effectively controlled with levetiracetam 1 g/day. Neurological examination was unremarkable. Brain MRI revealed a multiloculated cystic lesion within the third ventricle, isointense to CSF, with posterior extension into the interpeduncular cistern, causing supratentorial hydrocephalus. Surgical intervention was performed via a neuronavigation-guided transulcal transforaminal approach through the inferior frontal sulcus. Intraoperatively, multiple whitish vesicular structures were identified within the third ventricle. Histopathological examination confirmed racemose neurocysticercosis. Postoperative treatment included albendazole (1.2 g/day for 14 days) and dexamethasone. The patient had complete resolution of headaches and remained seizure-free on levetiracetam (1 g/day). Follow-up imaging showed no residual cysts and resolution of hydrocephalus with improve of headache and no recurrence of seizures under continued levetiracetam.

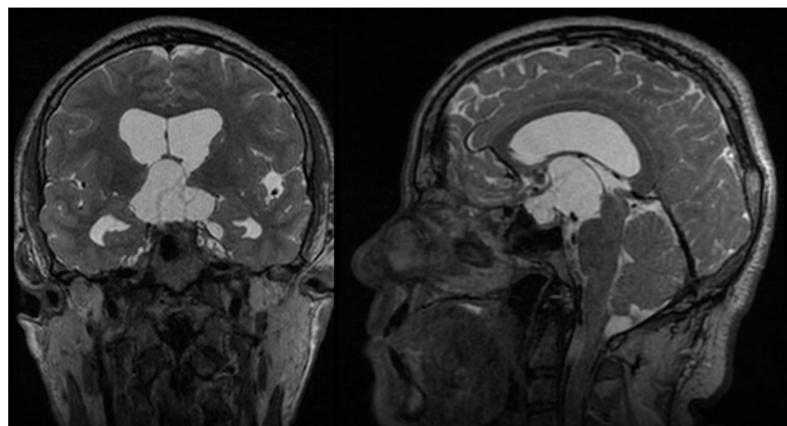


Figure 1. Preoperative magnetic resonance imaging demonstrates a multiloculated cystic lesion within the third ventricle, isointense to cerebrospinal fluid, with posterior extension into the interpeduncular cistern, causing supratentorial hydrocephalus.



Figure 2. Intraoperative microsurgical visualization of multiple whitish vesicular structures occupying the third ventricle.



Figure 3. Gross examination reveals multiple translucent, thin-walled vesicles filled with clear fluid, forming a multiloculated 'grape-like' mass without an identifiable scolex, consistent with racemose neurocysticercosis.

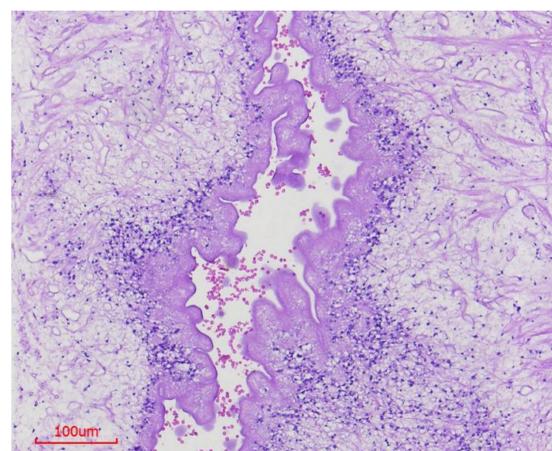


Figure 4. Histological sections demonstrate vesicular walls composed of a wavy cuticular layer and a reticular layer, with focal calcifications. No scolex is identified.

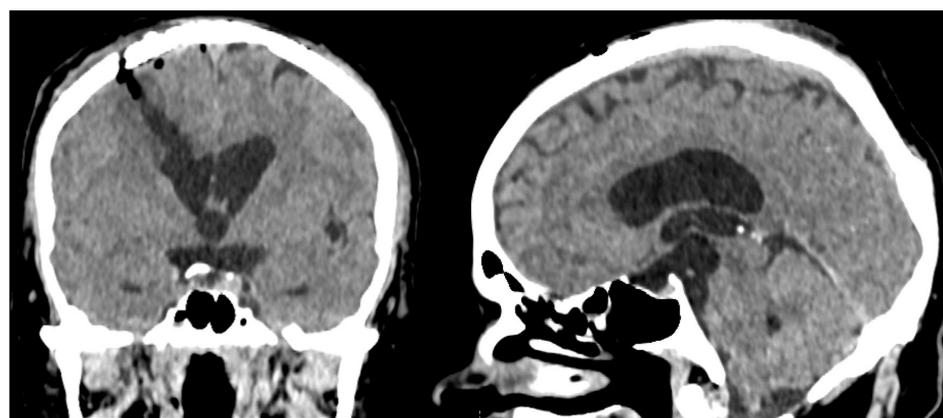


Figure 5. Postoperative tomographic imaging demonstrating no residual cysts and resolution of hydrocephalus.

## Conclusions

Racemose neurocysticercosis should be considered in patients from endemic areas presenting with obstructive hydrocephalus and seizures. When neuroendoscopic resources are unavailable, a neuronavigation-guided microsurgical approach represents a safe and effective alternative for intraventricular lesion removal. Optimal outcomes require a multidisciplinary strategy combining surgical management, antiparasitic therapy, corticosteroids, and symptomatic treatment.

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