



Video Abstract

Semi-sitting position and retrosigmoid approach for a large petroclival meningioma resection: 3-dimensional operative video

Rodrigo Uribe-Pacheco¹, Marcos Vinicius Sangrador-Deitos², Gerardo Yoshiaki Guinto-Nishimura¹, Juan Francisco Villalonga³, Matias Baldoncini⁴, Ramiro López Elizalde⁵, Alvaro Campero⁶

¹Department of Neurosurgery, National Institute of Neurology and Neurosurgery “Manuel Velasco Suárez,” Mexico City, ²Department of Neurosurgery, Hellion Zambrano Hospital, Tecnológico de Monterrey, San Pedro Garza García, Mexico, ³Tucuman Neurosurgical Innovation Lab, Faculty of Medicine, National University of Tucuman, San Miguel de Tucumán, ⁴Department of Neurosurgery, San Fernando Hospital, San Fernando, Buenos Aires, Argentina, ⁵Prevention and Health Promotion Undersecretary, National Health Ministry of Mexico, Mexico City, Mexico, ⁶Department of Neurosurgery, Padilla Hospital of Tucuman, San Miguel de Tucuman, Argentina.

E-mail: *Rodrigo Uribe-Pacheco - ruribe@innn.edu.mx; Marcos Vinicius Sangrador-Deitos - msangrador@tec.mx; Gerardo Yoshiaki Guinto-Nishimura - guintongy@gmail.com; Juan Francisco Villalonga - jfvillalonga@gmail.com; Matias Baldoncini - drbaldoncinimatias@gmail.com; Ramiro López Elizalde - ramiro.lelizalde@issste.gob.mx; Alvaro Campero - alvarocampero@yahoo.com.ar



*Corresponding author:
Rodrigo Uribe-Pacheco,
Department of Neurosurgery,
National Institute of Neurology and
Neurosurgery “Manuel Velasco Suárez,”
Mexico City.
ruribe@innn.edu.mx

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ABSTRACT

Background: Petroclival meningiomas are still a neurosurgical challenge due to their proximity to cranial nerves and cerebral vasculature along the surgical corridor. The usual extension of large petroclival meningiomas is along the posterior fossa, frequently compromising and displacing adjunct cranial nerves such as the sixth and seventh-eighth cranial nerve complex with brainstem compression, causing progressive neurological deficit and severe headache. The goal of sizeable petroclival meningioma surgery treatment is a maximal resection with preservation of neurological function. Several surgical approaches to the petroclival region have been described, and decisions depend on the valuable hearing, tumor origin, and lesion extension. Alongside, the semi-sitting position is a simple and feasible adaptation for several posterior fossa interventions, reducing venous hemorrhage and preventing venous air embolism.

Case Description: Hereby, we present the case of a 39-year-old female patient with progressive intermittent headache and right-sided hemiparesis secondary to a large petroclival meningioma. After a careful case study, surgical treatment was performed employing a retrosigmoid approach, aiming for the safest and maximal resection possible.

Conclusion: The retrosigmoid is an auditory sparing procedure that, with a semi-sitting position, provides direct visualization of the posterior fossa lateral triangles and the tumor and its dural implantation site with no blood and surgical view comprised of debris. This surgical video illustrates anatomical nuances and critical aspects of the retrosigmoid approach and semi-sitting position as safe and adequate access to complete resection and a favorable long-term clinical outcome. The patient consented to the procedure and the publication of his/her image.

Keywords: 3D operative video, Petroclival meningioma, Retrosigmoid approach, Semi-sitting position, Skull-base surgery

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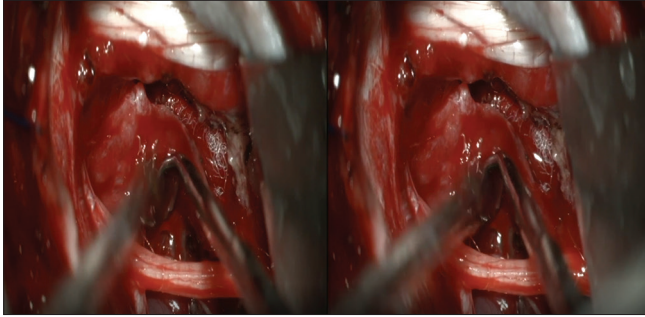
Annotations^[1-11]

00:40 - MRI findings compatible with petroclival meningioma^[1,3,8,9]

00:50 - Tumor size, extension, and rationale for treatment and surgical approach decision.^[4,6]

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Video 1: Case presentation and microsurgical video in double-image to enable 3D visualization. (Alternative link to watch Surgical video in better quality: <https://www.dropbox.com/scl/fi/tzs3qkaq55lp5a495syox/retrosig-petroclival-mng-final.mov?rlkey=05zmt60z6bc5v84r22e611jy&dl=0>)

01:33 - Benefits of semi-sitting position^[11]

01:43 - Surgical goal for petroclival meningioma with retrosigmoid approach^[7,9,10]

08:45 - Disease background^[2,5]

Ethical approval

Institutional Review Board approval is not required.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the

writing or editing of the manuscript and no images were manipulated using AI.

REFERENCES

1. Bricolo AP, Turazzi S, Talacchi A, Cristofori L. Microsurgical removal of petroclival meningiomas: A report of 33 patients. *Neurosurgery* 1992;31:81328.
2. Castellano F, Ruggiero G. Meningiomas of the posterior fossa. *Acta Radiol Suppl* 1953;104:177.
3. Couldwell WT, Fukushima T, Giannotta SL, Weiss MH. Petroclival meningiomas: Surgical experience in 109 cases. *J Neurosurg* 1996;84:208.
4. Kankane VK, Misra BK. Petroclival meningioma: Management strategy and results in 21st century. *Asian J Neurosurg* 2021;16:89-95.
5. Martínez R, Vaquero J, Areitio E, Bravo G. Meningiomas of the posterior fossa. *Surg Neurol* 1983;19:23743.
6. Maurer AJ, Safavi-Abbasi S, Cheema AA, Glenn CA, Sughrue M. Management of petroclival meningiomas: A Review of the development of current therapy. *J Neurol Surg B* 2014;75:358-67.
7. Nguyen MP, Morshed RA, Cheung SW, Theodosopoulos PV, McDermott MW. Postoperative complications and neurological deficits after petroclival region meningioma resection: A case series. *Oper Neurosurg* 2023;25:251-9.
8. Samii M, Tatagiba M. Experience with 36 surgical cases of petroclival meningiomas. *Acta Neurochir (Wien)* 1992;118:2732.
9. Sekhar LN, Wright DC, Richardson R, Monacci W. Petroclival and foramen magnum meningiomas: Surgical approaches and pitfalls. *J Neurooncol* 1996;29:24959.
10. Singh N, Singh DK, Ahmad F, Kumar R. The retrosigmoid approach: Workhorse for petroclival meningioma surgery. *Asian J Neurosurg* 2019;14:188-92.
11. Wang X, Li M, Liang J, Liu Q, Ma T, Chen G, *et al.* Monitoring of intracranial venous sinus pressure and prevention for venous air embolism during operation with semi-sitting position. *J Clin Neurosci* 2020;81:220-6.

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