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# Endoscopic endonasal approach for the resection of a clival meningioma: Two-dimensional operative video

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Video Abstract

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# ABSTRACT

**Background:** The endoscopic endonasal approach for the resection of clival meningiomas involves navigating through the nasal cavity and sphenoid sinus to access the clivus. This minimally invasive technique provides enhanced visualization and precision, allowing for effective tumor resection while minimizing damage to surrounding structures and shortening recovery time.

**Case Description:** We present the case of a 43-year-old male who experienced intermittent headaches and dysphagia. Neurological examination revealed right-sided hemiparesis and abolition of the gag reflex. An initial computed tomography scan identified hydrocephalus, which was managed with a ventriculoperitoneal shunt. Subsequent magnetic resonance imaging demonstrated a well-defined extra-axial lesion at the clivus with homogeneous contrast enhancement, a dural tail extending toward the clivus, and brainstem displacement, suggestive of a clival meningioma. Given the tumor's location and characteristics, a minimally invasive endoscopic approach was selected as the preferred surgical strategy. This technique provides several advantages over traditional transcranial methods, including direct tumor visualization, preservation of glandular function, reduced cranial nerve manipulation, and improved control of the posterior fossa's vascular structures.

**Conclusion:** Although the endoscopic endonasal approach offers significant benefits in clival meningioma resection, it requires specialized training to optimize outcomes and minimize complications. This video abstract aims to provide a step-by-step guide to the endonasal corridor leading to the clival region, emphasizing key vascular structures and the transposition of the pituitary gland to facilitate safe and effective tumor removal.

Keywords: Clival meningioma, Endoscopic surgery, Minimally invasive techniques, Skull base tumors, Transnasal approach, Tumor resection

[Video 1]-Available on: www.surgicalneurologyint.com

## Annotations<sup>[1-3]</sup>

- 1. 00:09 Clinical presentation
- 2. 00:32 Neuroimaging findings

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**Video 1:** 2D operative video demonstrating the endoscopic endonasal resection of a clival meningioma, highlighting key surgical steps and anatomical landmarks.

- 3. 01:04 Rationale for the procedure
- 4. 01:20 Risk and benefits
- 5. 02:00 Alternatives
- 6. 02:28 Description of the setup
- 7. 03:13 Pedicled nasoseptal flap grafting
- 8. 03:30 Sphenoidotomy
- 9. 03:33 Identification of osseus landmarks
- 10. 03:38 Resection of sellar floor
- 11. 03:59 Exposure of right cavernous sinus and paraclival ICA
- 12. 04:25 Opening of the anterior wall of the cavernous sinus
- 13. 04:58 Identification of the inferior hypophyseal artery
- 14. 05:09 Interdural pituitary transposition
- 15. 05:20 Bilateral posterior clinoidectomy

- 16. 05:43 Tumor identification
- 17. 06:22 Progressive debulking and dissection from neurovascular structures
- 18. 07:42 Multilayered reconstruction
- 19. 07:59 Disease background
- 20. 08:06 Outcome.

Ethical approval: The Institutional Review Board approval is not required.

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