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Role of Extradural Clinoidectomy and Optic Unroofing in Resection of an Anterior Clinoidal Meningioma with Encasement of the Internal Carotid Artery and Its Branches

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Abstract

Anterior clinoidal meningiomas (ACMs) remain a major neurosurgical challenge. The skull base techniques, including extradural clinoidectomy and optic unroofing performed at the early stage of surgery, provide advantages for improving the extent of resection, and thereby enhancing overall outcome, and particularly visual function. Additionally, when the anterior clinoidal meningiomas encase neurovascular structures, particularly the supraclinoid internal carotid artery and its branches, this further increases morbidity and decreases the extent of resection. Although it might be possible to remove the tumor from the artery wall despite complete encasement or narrowing, the decision of whether the tumor can be safely separated from the arterial wall ultimately must be made intraoperatively.

The patient is a 75-year-old woman with right-sided progressive vision loss. In the neurological examination, she only had light perception in the right eye without any visual acuity or peripheral loss in the left eye. MRI showed a homogeneously enhancing right-sided anterior clinoidal mass with encasing and narrowing of the supraclinoid internal carotid artery (ICA). Computed tomography (CT) angiography showed a mild narrowing of the right supraclinoid ICA with associated a 360-degree encasement. The decision was made to proceed using a pterional approach with extradural anterior clinoidectomy and optic unroofing. The surgery and postoperative course were uneventful. MRI confirmed gross total resection (►**Figs. 1** and **2**). The histopathology

Keywords
- ► anterior clinoidal meningiomas
- ► encasement
- ► extradural clinoidectomy
- ► internal carotid artery
- ► skull base

Conflict of Interest
None declared.

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was a meningothelial meningioma, World Health Organization (WHO) grade I. The patient continues to do well without any recurrence and has shown improved vision at 15-month follow-up.

This video demonstrates important steps of the microsurgical skull base techniques for resection of these challenging tumors.

The link to the video can be found at https://youtu.be/vt3o1c2o8Z0

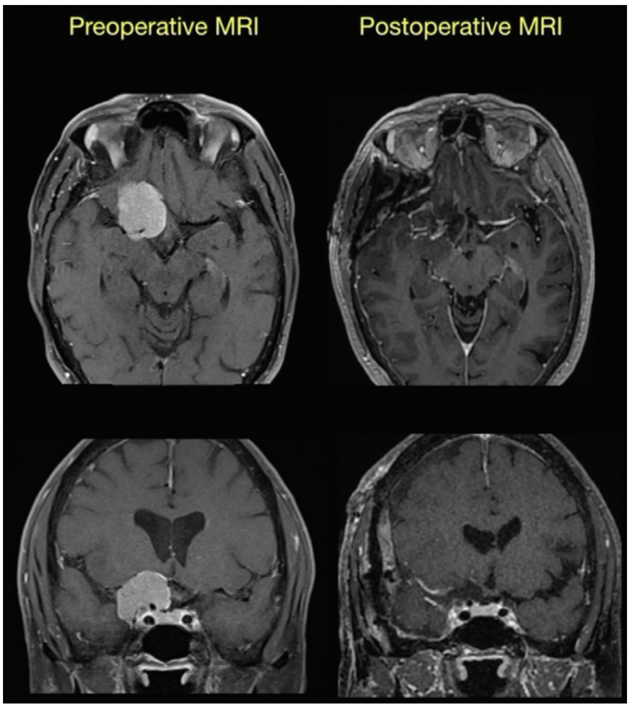

Fig. 1 Preoperative and postoperative MRI images. MRI, magnetic resonance imaging.

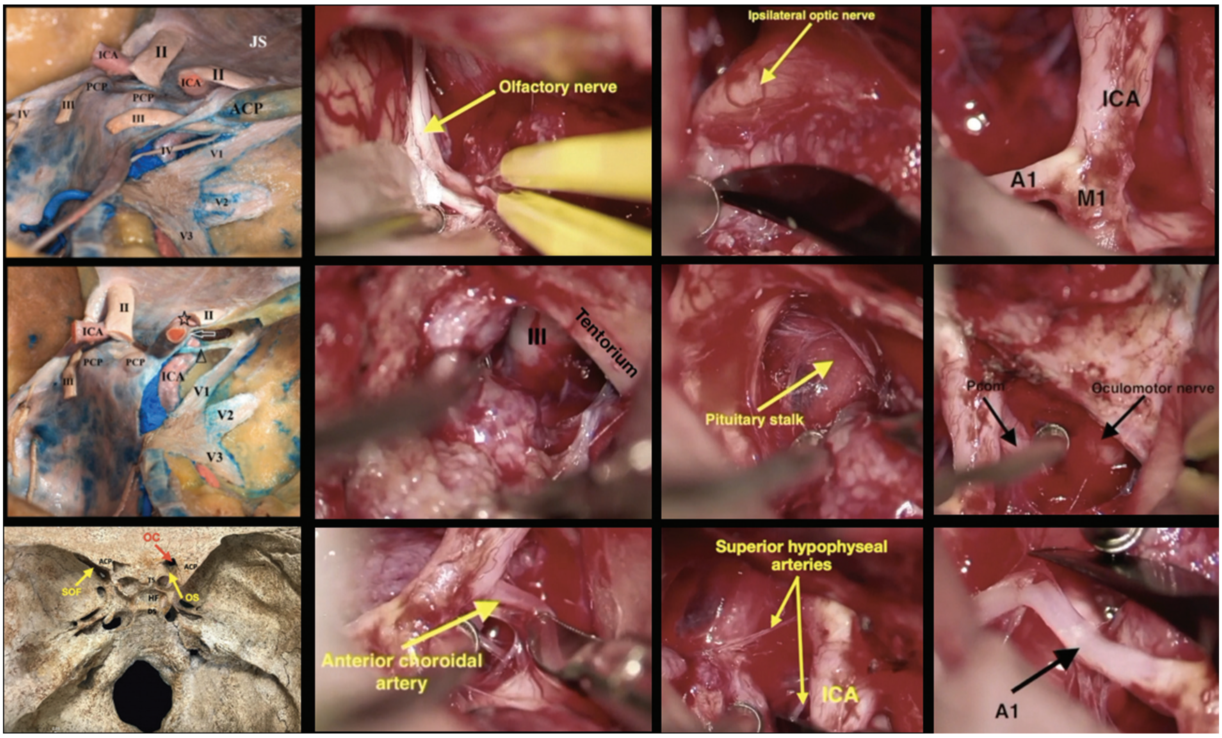

Fig. 2 Cadaveric dissection and intraoperative images. ACP, anterior clinoid process; A1, proximal segment of anterior cerebral artery; DS, dorsum sellae; HF, hypophyseal fossa; ICA, internal carotid artery; II, optic nerve; III, oculomotor nerve; IV, trochlear nerve; M1, proximal segment of middle cerebral artery; OC, optic canal; OS, optic strut; Pcom, posterior communicating artery; PCP, posterior clinoid process; SOF, superior orbital fissure; TS, tuberculum sella; V1, ophthalmic division of trigeminal nerve; V2, maxillary division of trigeminal nerve; V3, mandibular division of trigeminal nerve; VI, abducens nerve.