



## Video Abstract

# Minimally invasive nummular approach to a giant meningioma of the anterior fossa

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### Video available on:

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### Quick Response Code:



## ABSTRACT

**Background:** Several approaches are described for giant meningiomas of the anterior skull base. Recently, endonasal endoscopic approaches have been described as a minimally invasive (MI) alternative. However, the extension of dissection of the nose cavity and the risks of CSF leak do not fit in the MI prerogatives. We present an operative video illustrating a MI transcortical approach through a nummular craniotomy for a giant meningioma of the anterior fossa.

**Case Description:** We report an 83-year-old female patient. On neurological examination, she was drowsy and hemiparetic on the left side. MRI scan demonstrated a giant anterior fossa lesion (7.6 × 6.2 × 6 cm). An 1.5 diameter craniotomy was placed in the right frontal region after MRI 3D reconstruction analysis. The first step was to debulk the core of the tumor with the ultrasonic aspirator. An important aspect is that the surgeon needs to rotate its positions around the patient in a 360° fashion for a total resection. The final step was to inspect the surgical cavity with the endoscope to check for any remaining tumor. The patient was discharged home 1 day after the surgery with no new deficits.

**Conclusion:** Giant meningiomas of the anterior fossa are a different entity. When they reach the cortical surface, the surgical approach can be different from the common skull base meningiomas. We demonstrate that a MI transcortical approach can be a safe alternative for giant meningiomas, especially for high-risk patients, as the elderly ones.

**Keywords:** Giant meningiomas, Minimally invasive neurosurgery, Olfactory groove meningioma, Tuberculum sellae meningiomas

### [Video 1]-Available on:

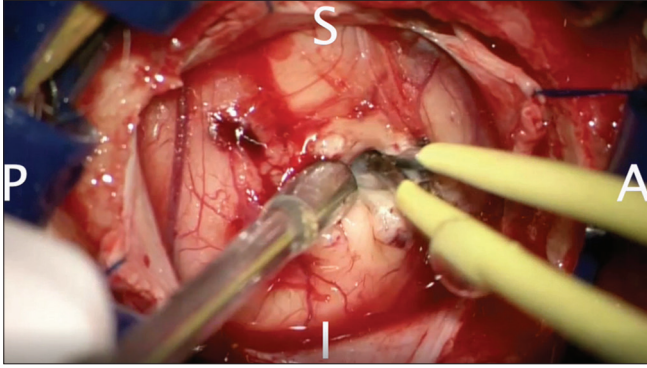
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### Annotations<sup>[1-6]</sup>

- 1) 0–05 s – Title.
- 2) 06–35 s – Clinical presentation.
- 3) 36–56 s – Neurological exam.
- 4) 57 s–1 min 26 s – T1 with contrast and T2 axial views demonstrating the tumor, adjacent brain edema and the midline shift. Red arrow points to the edema in the T2 axial view.

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**Video 1:** MIS approach to giant meningiomas of the anterior fossa 1 cm corticectomy.

- 5) 1 min 27 s–1 min 44 s – Neuroimaging findings (MRA) – 3D reconstruction. Both ACAs are displaced by the lesion.
- 6) 1 min 42 s–3 min – In order to perform a MIS approach, the main strategy was to find the best point of attack that would give Exposure to the long axis of the tumor. Two others important of characteristics of the lesion were the absence of encasement of arteries and a good plane of CSF in T2.
- 7) 3 min 01 s–3 min 12 s – The main risks listed are refractory brain edema, injury of important structures, loss of spatial reference, and bleeding.
- 8) 3 min 13 s–3 min 29 s – Complete resection with a small 3,5 cm incision and consequently less trauma and post operative inflammation creating a good scenario for lower chances of surgical and clinical complications and a short length of stay - 24 hours.
- 9) 3 min 18 s–3 min 42 s – Alternatives. Some alternatives approaches were listed: bicoronal, pterional, supraorbital, and extended endoscopic endonasal approach.
- 10) 3 min 42 s–4 min – Equipment. Neuronavigation, neuromonitoring, ultrasonic aspirator and a neuroendoscope for inspection of the surgical cavity.
- 11) 4 min 1 s–4 min 53 s – Description of the setup.
- 12) 4 min 24 s – Description of plan B (Mannitol and/or Standard Pterional Craniotomy).
- 13) 4 min 54 s–5 min 32 s – Key surgical steps. One important aspect is that the surgeon must move the microscope around the patient's head in a 360 degree fashion.

#### Intraoperative video

- 1) 5 min 49 s–5 min 50 s – Corticectomy – Thin layer of the right frontal cortex.
- 2) 5 min 51 s–6 min 34 s – Debulking the core of the tumor using an ultrasonic aspirator.

- 3) 6 min 35 s–6 min 59 s – Dissecting the tumor from the brain.
- 4) 7 min–7 min 05 s – Reaching the skull base anteriorly.
- 5) 7 min 06 s–7 min 25 s – Dissecting the tumor posteriorly.
- 6) 7 min 26 s–7 min 31 s – Optic nerve.
- 7) 7 min 32 s–7 min 54 s – Final aspect – Endoscopic view.
- 8) 7 min 44 s–8 min 02 s – Neuroimaging – Postop.
- 9) 8 min 03 s–8 min 08 s – Late postoperative CT (3 months).
- 10) 8 min 09 s–8 min 31 s – 3D reconstruction.
- 11) 8 min 32 s – 8 min 50 s – Review of clinical outcome. Immediate postoperative course, follow-up (01 year), pathology.

#### 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.

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