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Video Abstract

Supraorbital transciliary keyhole approach for removal of tuberculum sellae meningioma: 3D surgical video

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ABSTRACT

Background: Tuberculum sellae meningiomas have an incidence from 5 to 10% of all intracranial meningiomas[2] and tend to be surgically difficult and challenging tumors given their proximity to important structures such as the internal carotid artery (ICA), anterior cerebral artery (ACA), and optic nerves.[3] Typically, their growth is posteriorly and superiorly oriented, thereby displacing the optic nerves and causing visual dysfunction, which is the primary indication for surgical treatment.[1] The main goals of the treatment are the preservation or restoration of visual abilities and a complete tumor resection.[1] Conventionally, surgical approaches to tuberculum meningiomas involve largely invasive extended bifrontal, interhemispheric, orbitozygomatic, pterional, and subfrontal eyebrow approaches. The supraorbital craniotomy, however, is a minimally invasive transcranial approach that offers a similar surgical corridor to conventional transcranial approaches, using a limited craniotomy and minimal brain retraction that can be used for tumoral and vascular pathologies,[4,5] offering added cosmetic outcomes.[1] We present the case of a patient undergoing a supraorbital transciliary craniotomy with a tuberculum sellae meningioma causing bitemporal hemianopsia.

Case Description: A 70-year-old female with chronic headaches and progressive vision loss and visual field deficit for about 1 year. On ophthalmological evaluation, she was able to fixate and follow objects with each eye, light perception was only present in the right eye, and the vision in the left eye was 0.2 decimal units. Her visual fields demonstrated severe campimetric deficits. Her extraocular movements were intact and bilateral pupils were equal, round, and reactive to light. MRI of the brain demonstrated tuberculum sellae meningioma with bilateral optic canal invasion, displacing the chiasm, and extending ≥180° around the medial ICA wall and anterior ACA wall. The patient underwent supraorbital transciliary keyhole approach for total resection of the tumor. Postoperatively, visual acuity and visual field were significantly improved.

Conclusion: Performing a supraorbital transciliary keyhole craniotomy for tuberculum sellae meningiomas requires an adequate and meticulous preoperative planning to determine the optimal surgical corridor to the lesion. The use of supraorbital craniotomy is safe with good cosmetic results and potentially lower morbidity allowing for adequate exposure, resection, and release of neurovascular structures.

Keywords: Keyhole approaches, Meningioma, Supraorbital craniotomy, Transciliar, Tuberculum sellae

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

Annotations[1-5]

1) 00:00 – Case presentation
2) 00:39 – Anatomic landmarks for the approach
3) 00:52 – Supraorbital transciliar keyhole approach
4) 01:54 – Tumor resection
5) 03:37 – Anterior communicating complex dissection
6) 04:54 – Surgical field anatomy
7) 05:30 – Postoperative CT and outcome.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Conflicts of interest

There are no conflicts of interest.

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