

METHODS

Tuberculum meningioma – Defining those ideal for endoscopic extended endonasal approach

Alistair Lawrence and Ramesh Nair*

Department of Neurosurgery, Charing Cross Hospital, Imperial College Healthcare NHS Trust, London, England

***Correspondence:**Ramesh Nair,
rbrnair@gmail.com**Received:** 20 February 2025; **Accepted:** 19 March 2025; **Published:** 29 March 2025

This study evaluates the endoscopic extended endonasal approach (EEA) for tuberculum sellae meningiomas, emphasizing key anatomical factors for optimal patient selection. The EEA offers direct tumor access with minimal neural manipulation, facilitating complete resection in suitable cases. Limitations include tumors extending beyond the medial optico-carotid recess or encasing vascular structures. Careful preoperative assessment can maximize resection success and minimize complications. A video demonstration of an ideal case is included.

Keywords: endoscopic extended endonasal approach, EEA, tuberculum sellae meningioma, video article, neuro endoscopy, trans-planum trans-tubercular corridor

The endoscopic extended endonasal approach (EEA) for tuberculum sellae meningiomas is influenced by several key anatomical features. Understanding these features is crucial for optimizing surgical outcomes and minimizing complications. Via a transplanum transtuberculum corridor, instant and direct tumor exposure without retraction and manipulation of adjacent vascular and neural structures can be achieved (1). Since the dural attachment is near the paranasal sinuses, early tumor devascularization of the tumor and subsequent total excision of the compromised hyperostotic bone, dural adhesion, and preservation of microvascular circulation to the optic apparatus and optic canal can be optimized. This route is often advantageous when tumor extends into the sellar fossa.

The lateral limit for the EEA is defined by the lateral aspects of the medial optico-carotid recess, the ICA distal ring, and the anterior clinoid process or extension more than 5 mm beyond the lamina papyracea (2) (Video 1). Tumor that extends beyond these limits will not be readily visualized and a Simpson Grade 1 resection will not be achievable. Likewise, tumor that encase vascular structures are typically not best suited for EEA due to the difficulties in gaining control and subsequent repair if a neurovascular injury occurs (3).

VIDEO 1 | Video showing endoscopic extended endonasal approach for tuberculum sellae meningioma.
<https://youtu.be/BzIPiDjaiRM>

With knowledge of these anatomical boundaries specific patient selection can be achieved to accomplish gross total resection and reduce morbidity with an EEA for tuberculum meningiomas. We provide an example of the ideal case in this video.

References

1. Fernandez-Miranda JC, Pinheiro-Nieto C, Gardner PA, Snyderman CH. Endoscopic endonasal approach for a tuberculum sellae meningioma. *J Neurosurg* (2012) (32 Suppl):E8.
2. Di Somma A, Torales J, Cavallo LM, Pineda J, Solari D, Gerardi RM, et al. Defining the lateral limits of the endoscopic endonasal transtuberculum transplanum approach: anatomical study with pertinent quantitative analysis. *J Neurosurg* (2019) 130(3):848–60. doi: 10.3171/2017.9.JNS171406 Epub 2018 Apr 20.
3. Liu JK, Christiano LD, Patel SK, Tubbs RS, Eloy JA. Surgical nuances for removal of tuberculum sellae meningiomas with optic canal involvement using the endoscopic endonasal extended transsphenoidal transplanum transtuberculum approach. *Neurosurg Focus* (2011) 30(5):E2. doi: 10.3171/2011.3.FOCUS115