

# Combined Expanded Endoscopic Endonasal (EEA) and Transorbital One-Piece Fronto-Orbital Craniotomy for 360-Degree Optic Nerve Decompression in a Large Multicompartmental Meningioma

Evangelos Drosos<sup>1</sup>, Mahmoud Asad<sup>1</sup>, Cristina Cernei<sup>1</sup>, Camille K. Milton<sup>2</sup>,  
Michelle Spear<sup>3</sup>, Warren Bennett<sup>1</sup>, Kumar Abhinav<sup>1</sup>

<sup>1</sup>Bristol Institute of Clinical Neurosciences, Southmead Hospital, Bristol, UK

<sup>2</sup>Semmes Murphey Clinic, University of Tennessee

<sup>3</sup>University of Bristol, Department of Anatomy

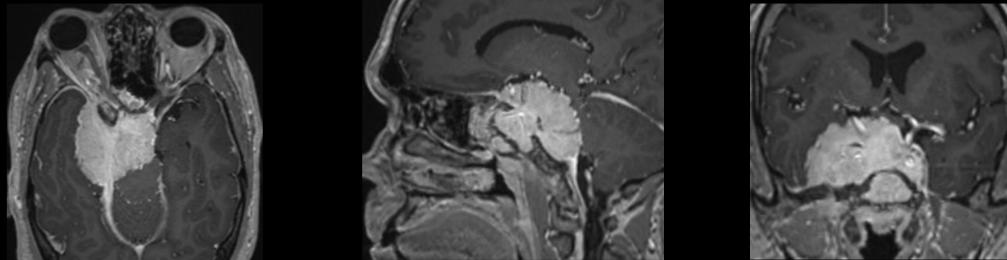
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## Case Presentation

45-year-old male with unilateral tinnitus and progressive right sided vision loss.  
Visual acuity: right eye 6/19 with RAPD; left eye 6/6; remainder of neurological examination was unremarkable



Preoperative post contrast MRI of a large multicompartmental meningioma with severe compression of the right optic nerve



Preoperative 3D CT

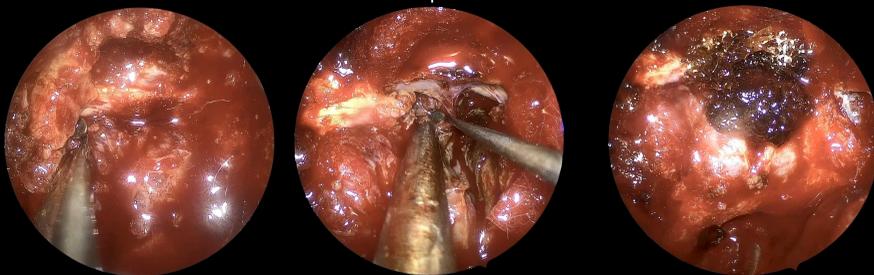
Post EEA medial optic canal decompression

Post 360 optic canal decompression

Extended lateral orbitotomy reconstruction

## Surgical Rationale, Technical Nuances, and Follow-Up Strategy

Stage 1 - Expanded endoscopic endonasal medial optic canal & infrachiasmatic decompression

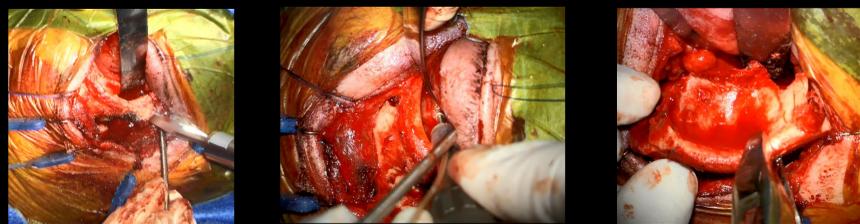


Medial optic canal decompression

Infrachiasmatic decompression

Final view

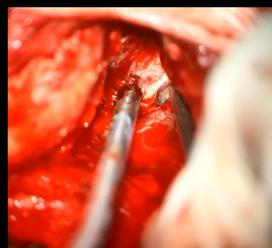
Stage 2 - Complete decompression of optic nerve combined with supra- and retro-chiasmatic decompression



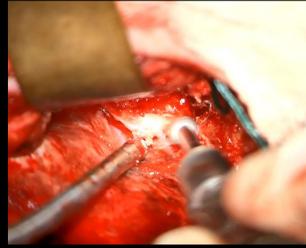
V-shaped osteotomy of frontal process of zygomatic bone to improve cosmesis

Orbital Roof Drilling

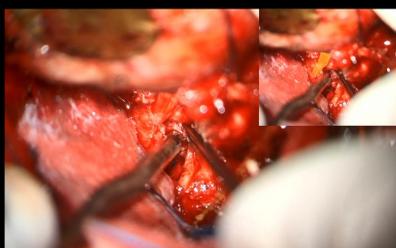
One-piece removal of the superior and lateral orbital walls



Interdural cavernous sinus dissection (Hakuba Technique) to expose the anterior clinoid process



Anterior Clinoidectomy for 360 degree optic nerve decompression



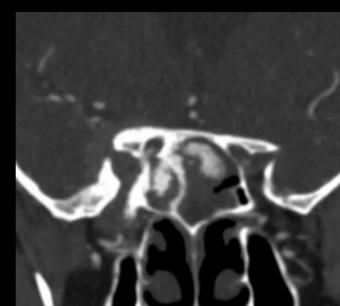
Further tumour decompression



Resection of affected middle fossa dura and reconstruction with synthetic allograft

## Discussion

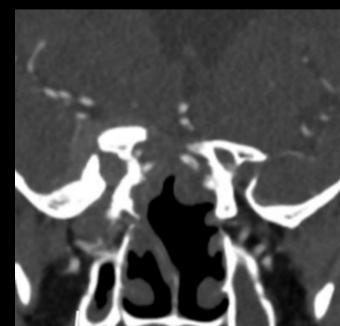
A staged strategy permits anatomical decompression along the full medial–lateral axis of the optic nerve. The EEA provides early medial optic canal unroofing, infrachiasmatic decompression, and tumour devascularization while preserving the superior hypophyseal arterial supply. The subsequent transorbital one-piece fronto-orbital craniotomy allows extradural anterior clinoidectomy, lateral canal decompression, and interdural cavernous sinus dissection (Hakuba technique), enabling true 360° decompression under direct visualization. Sequential bony removal and vascular preservation are critical technical determinants of safety.



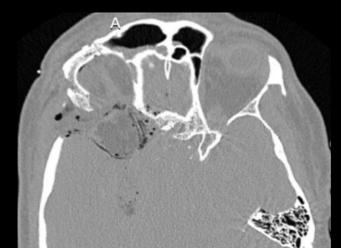
Pre-operative Coronal CT view of the optic strut



Pre-operative Axial CT



Coronal CT view of the optic strut – post 1<sup>st</sup> stage EEA medial optic canal decompression



Final Post-operative Axial CT

Post operatively, the patient demonstrated objective visual improvement without new neurological deficit or CSF leak and returned to functional baseline. Histology confirmed WHO grade I meningioma. Given the residual posterior fossa component, a surveillance strategy has been adopted with interval imaging. Further intervention will be reserved for radiological progression or development of brainstem-related symptoms, at which point targeted posterior fossa decompression would be considered within a staged skull base management algorithm.

## Conclusion

A staged EEA–transorbital strategy enables safe 360° optic nerve decompression in selected multicompartmental meningiomas while preserving vascular supply and minimizing retraction.