

Endoscopic Endonasal Transconjunctival Resection of a Right Orbital Cavernous Hemangioma

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Abstract

We present a combined endoscopic endonasal and transconjunctival approach for resection of a symptomatic right orbital cavernous hemangioma. A 46-year-old female with progressive proptosis and decreased visual acuity underwent a multidisciplinary resection achieving en bloc tumor removal with preservation of all extraocular muscles and the optic nerve. Postoperatively, the patient demonstrated resolution of proptosis, improved visual acuity, and no diplopia.

Introduction

Orbital cavernous hemangiomas are the most common primary orbital tumor in adults, representing benign vascular malformations that typically present with progressive proptosis, visual field defects, and decreased acuity as they compress surrounding structures. Traditional surgical approaches including lateral orbitotomy and transcranial routes each carry specific morbidities related to extensive bone work and tissue manipulation.

The combined endoscopic endonasal and transconjunctival technique offers direct intraconal access with minimal brain retraction, preserved facial anatomy, and excellent visualization of critical structures. This approach is particularly valuable for medially located intraconal lesions where the endonasal corridor provides a natural path to the tumor while the transconjunctival component enables optimal muscle retraction without extensive external dissection.

Case Presentation

A 46-year-old female presented with 6-12 months of progressive right eye proptosis and decreased visual acuity, predominantly affecting the inferior visual field. MRI revealed a T2 hyperintense intraconal mass (figure 1) causing upward displacement of the optic nerve with interval growth compared to prior imaging. A three-team collaborative approach was employed with ENT, Neurosurgery, and Oculoplastic Surgery working in coordination.

The patient was positioned supine with stereotactic navigation registered. The endonasal phase consisted of middle turbinate resection, maxillary antrostomy, anterior and posterior ethmoidectomy, sphenoidotomy, frontal sinusotomy, and posterior septectomy to maximize working space. The lamina papyracea and inferior orbital wall were then removed while preserving the periorbita. Longitudinal incisions were made in the periorbita along the axis of the medial and inferior rectus muscles to access the intraconal space. The Oculoplastic Surgery team then performed a transconjunctival peritomy and sub-Tenon's dissection to expose and retract the medial and inferior recti. This expanded the operative corridor as well as protected the extra-ocular muscles during dissection (figure 2). Circumferential tumor dissection was performed, with en bloc removal achieved.



Figure 1a. T1 axial post contrast demonstrating an enhancing right intraconal mass consistent with an orbital cavernous hemangioma. Figure 1b demonstrates a T2 hyperintense intraconal lesion again consistent with an orbital cavernous hemangioma.

Results

Complete en bloc resection was confirmed by intraoperative navigation, and the pupil remained reactive throughout the procedure, confirming preserved optic nerve function. Postoperatively, the patient demonstrated complete resolution of proptosis, significant improvement in visual acuity, and absence of diplopia with intact extraocular movements. Only minimal headaches and sinus pressure were reported. Histopathology confirmed cavernous hemangioma with characteristic thick-walled vessels and bland endothelial lining. Immunohistochemistry was positive for CD31 and CD34, confirming the vascular nature of the lesion.

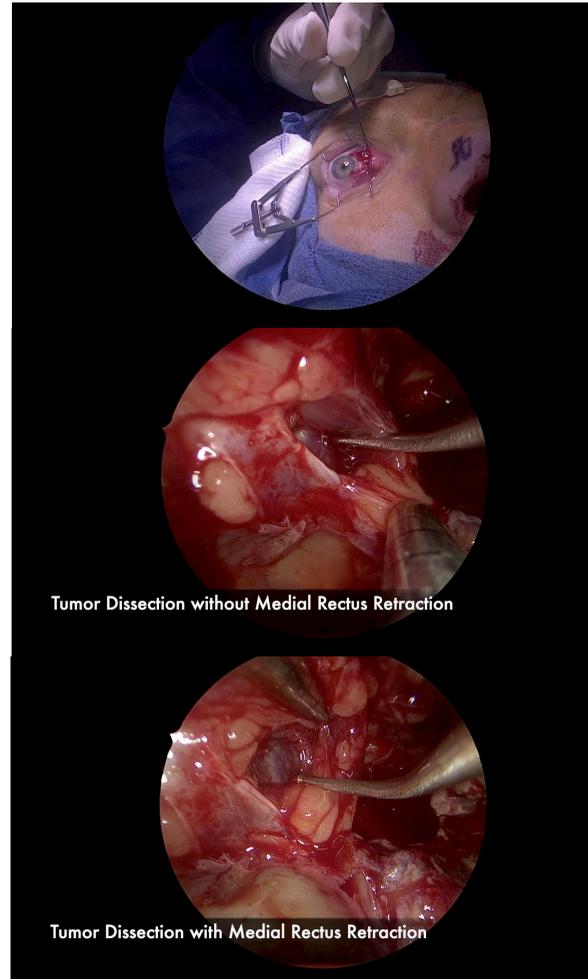


Figure 2a. (top) demonstrating the subconjunctival dissection and retraction of the medial rectus. Figure 2b. (middle) demonstrates the endoscopic endonasal operative corridor without medial rectus retraction. Figure 2c. (bottom) shows the improved operative corridor after medial rectus retraction is applied as in figure 1a.

Discussion

The endoscopic endonasal corridor provides direct access to the intraconal space through the natural plane between the medial and inferior rectus muscles, avoiding the morbidity of craniotomy or lateral orbitotomy. The addition of transconjunctival assistance enables gentle yet effective muscle retraction, dramatically improving endoscopic visualization during tumor dissection without the extensive dissection required for purely external approaches. Key technical nuances include preserving periorbita integrity until deliberate entry, coordinated multi-team retraction, and gentle circumferential dissection to protect surrounding neurovascular structures. This case demonstrates that the combined approach can achieve complete resection with excellent functional preservation in appropriately selected patients.

Conclusions

The combined endoscopic endonasal and transconjunctival approach is a safe and effective technique for medially located intraconal orbital tumors. This multidisciplinary strategy provides superior visualization, precise tumor dissection, and preservation of critical orbital structures with excellent functional outcomes and minimal morbidity.

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