The Transconjunctival Approach to a Large Retrobulbar Cavernous Hemangioma of the Orbit

Yeong Hoon Kim, MD, Sun Hee Baek, MD, * Woong Chul Choi, MD, PhD*

Department of Ophthalmology, St. Paul’s Hospital,
*Department of Ophthalmology, St. Mary’s Hospital, Catholic University Medical College,
Seoul, Korea

Cavernous hemangiomas are one of the most common benign tumors of the orbit in adults. We report a case of a longstanding retrobulbar hemangioma that was removed successfully through a temporal transconjunctival approach combined with lateral canthotomy. A 45-year-old female patient, with a 15-year history of slowly progressive proptosis and decreased visual acuity of the left eye, had a corrected visual acuity of finger count at 50 cm OS, compared with 1.0 OD. Exophthalmometry by the Nagle’s method measured 15 mm OD by 26 mm OS. Magnetic resonance imaging (MRI) revealed a well-encapsulated retrobulbar main mass, 2.3 x 3.0 x 3.7 cm in size along with multiple small satellite nodules that were displacing the optic nerve and globe superiorly. The tumors were removed through a superotemporal transconjunctival approach combined with lateral canthotomy. Pathological examination revealed an intraorbital cavernous hemangioma. The patient was free of visible scars, proptosis and any other noticeable complications at her last follow-up, 6 months after surgery.

Key words: cavernous hemangioma, lateral canthotomy, retrobulbar tumor, transconjunctival approach

INTRODUCTION

Cavernous hemangiomas are relatively common benign tumors of the orbit, especially in women. Growth is slow but progressive and induces several complications including proptosis, loss of visual acuity, oculomotor palsy and ptosis. Most of these tumors are located within the intracanal space, so lateral orbitotomy is the preferred method of surgical removal. Excision of retrobulbar tumors through a transconjunctival approach is not generally acceptable but can be useful in selected cases. To date no such cases have been reported in Korea. We report a case of retrobulbar cavernous hemangioma that was removed successfully by a superotemporal transconjunctival approach with lateral canthotomy. The overall operation and patient recovery time were shortened and successful functional and aesthetic results were obtained.

CASE REPORT

A 45-year-old female patient visited our outpa-
tient department with the chief complaint of a 15-year history of slowly progressive proptosis and decreased visual acuity of the left eye (Fig. 1A, B). No abnormal findings were found by physical and endocrinological examinations. Ten years previously she had received oral steroid therapy at another hospital for about 45 days. Thereafter, she hadn’t received any additional medical care.

On initial ophthalmologic examination, her corrected visual acuity was finger count at 50 cm OS, compared with 1.0 OD. Exophthalmometry by the Nagle’s method (Oculus, Germany) measured 15 mm OD by 26 mm OS. EOM showed no limitation. The conjunctiva, cornea, anterior chamber, and lens were all within normal limits. Her left pupil was dilated and reacted poorly to light. She had normal intraocular pressure. Funduscopic examination revealed slight optic disc pallor of the left eye.

Preoperative computed tomography showed a slightly enhancing hyperdense retrobulbar mass, 3.2 x 3.3 x 3.3 mm in size, which displaced the optic nerve upward. On axial and sagittal magnetic resonance imaging (MRI), the main retrobulbar mass, 2.3 x 3.0 x 3.7 cm in size, and multiple small satellite nodules appeared well-demarcated in the inferior aspect of the intraconal space. The lesion showed low signal intensity on T1-weighted image and high signal intensity on T2-weighted image (Fig. 2A, B, C).

The operation was performed under general endotracheal anesthesia. Lateral canthotomy was performed to increase exposure (Fig. 3A). The conjunctiva over the superotemporal quadrant was incised, careful dissection of Tenon’s capsule was undertaken, multilobular satellite tumors were observed and removed, and then the well-encapsulated main tumor mass was exposed (Fig. 3B, C). Several neurosurgical sponges were used to dissect the tumor from the adjacent tissue. After sufficient dissection, the tumor could be mobilized freely and was grasped with Mosquito forceps and removed in toto (Fig. 3D, E). Pathologic examination revealed a classic, intraorbital cavernous hemangioma, which was encapsulated by fibrous tissue (Fig. 4.).

Six months after the operation, exophthalmometry showed 15 mm bilaterally (PD = 60 mm) (Fig. 5A, B). Oculomotor function was normal and visual acuity of the left eye had improved slightly to 0.06. No signs of recurrence or any complications were noted.

**DISCUSSION**

Retrobulbar cavernous hemangioma is one of the most common benign tumors of the orbit. In a study at the Institute of Ophthalmology, New York, of 355 orbital tumors, 50 (14.1%) were hemangiomas. In most cases, close observation is sufficient if there are no signs or symptoms. However, surgical treatment is recommended for optic nerve compression as evidenced by visual-field defects, optic nerve swelling, or pallor. Additional indications include diplopia and bothersome cosmesis.

Several surgical methods have been tried since Asregadoo successfully excised a cavernous hemangioma by using the Naffziger approach. Lateral orbitotomy has been the preferred method because cavernous hemangiomas are usually located intraconally. Lateral orbitotomy offers a wide operational field, but requires skin incision, removal of
bone tissue and anatomical reconstruction. This surgery takes a long time and leaves a scar. In 1924 Tessier performed lower eyelid blepharoplasty by a transconjunctival approach. Tenzel and Miller noted this method and obtained good results in repairing orbital floor fractures via conjunctival incisions. Geyer et al. successfully removed 31 retrobulbar tumors through a transconjunctival approach. Rona and Richard, and Peter et al. used this method successfully not only in inferior orbital tumor excision but also in blepharoplasty, the repair of orbital floor fractures, orbital decompression and socket reconstruction. Finally, McCord also obtained good results in the repair of orbital floor fractures by using the transconjunctival approach combined with lateral canthal techniques to increase exposure.

In general, the transconjunctival approach to the orbit has been under-utilized because of concern regarding inadequate exposure and higher postoperative rates of lower eyelid shortening and ectropion. However, the approach features several advantages compared to conventional methods. Transconjunctival surgery provides excellent exposure of the inferior orbit, leaves no visible scar, and poses lower risk of the complications associated with transcutaneous techniques. Additionally, the transconjunctival approach can be combined with lateral canthotomy to increase exposure. In spite these advantages, this approach cannot be used in cases where the tumor margin is ill-defined, adhesions are present or the risk of malignant changes exists. Fibrous histiocytoma and hemangiopericytoma both have well defined margins by radiologic examination, but the risk of malignant changes and recurrence make the transconjunctival approach inappropriate.
Fig. 3. Surgical procedures. A: Lateral canthotomy to increase exposure. B: Satellite nodules after dissection of conjunctiva and Tenon's capsule. C: Main tumor after removal of the satellite nodules. D: Main tumor mass grasped with Mosquito forceps. E: Main tumor mass and satellite nodules removed.

The transconjunctival approach has several complications of its own including cicatricial entropion, ectropion, lower eyelid retraction, canthal dehiscence, lower eyelid avulsion, canalicular laceration, conjunctival chemosis, and lacrimal sac laceration.\textsuperscript{10,13} Close attention to anatomic landmarks and
Fig. 4. Microscopic examination revealed a cavernous hemangioma, consisting of a small dilated space filled with blood and divided by fibrous tissue (HE stain, x 100).

sound surgical execution will prevent these complications in most patients.\textsuperscript{13}

In summary, well-encapsulated and well-demarcated retrobulbar tumors that haven’t invade the orbital apex can be successfully removed through the transconjunctival approach. However, conventional orbitotomy must always be considered in cases of deeper orbital tumors with possible adhesions to adjacent structures and with malignant potential.\textsuperscript{14} So each case must be decided on an individual basis, with the best surgical approach being determined by careful study of axial, coronal, and sagittal sections from computed tomography and magnetic resonance imaging, and with an emphasis on the size, shape, and location of the tumor and its relationship to vital orbital structures.

We consider this case worthy of report due to the good cosmetic and functional results obtained by using the transconjunctival approach in removing a retrobulbar tumor. However, complete assessment of this technique will require the accumulation of more experience.

REFERENCES


Fig. 5. Postoperative photographs six months after tumor removal through the transconjunctival approach combined with lateral canthotomy. Exophthalmometry measured 15 mm bilaterally (PD = 60 mm). A: frontal view. B: lateral view.