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Case Report

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Cavernous Hemangioma of the Orbit: A Case Report of Lower Eyelid Subtarsal Approach

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Abstract

The orbit is the bony socket that contains the eyeball, surrounding bone and the muscles that control the eye, as well as nerves and blood vessels and allows for the optic nerve to pass from the eye to the brain. An orbital tumor can arise from any of these structures. Intraorbital cavernous hemangiomas are the most common benign vascular tumors of the orbit in adults. Despite its most common intraconical retrobulbar location, CHO has good vital and functional prognosis due to its slow-growing nature, lasting effect on visual function and ocular motility. The aim of this case report is to review the clinical aspects of CHO and also to define the place of the different surgical approaches to the orbit, and more specifically the lower eyelid subtarsal approach.

Abbreviations

CHO: Cavernous hemangioma of the orbit
H & E: Hematoxylin and eosin
MRI: Magnetic Resonance Imaging

1. Case Report

37year female with no known history of comorbidities presented with retro-orbital in left eye from 15 days. On examination there was mild proptosis in left eye. The rest of the ophthalmologic examination was unremarkable. Orbital MRI revealed cavernous haemangioma over left optic nerve sheath. (Figure 1a, 1b) The patient underwent interim resection of the tumor proceeding with a subtarsal approach to the orbit. The immediate postoperative course was simple, with the occurrence of eyelid ecchymosis and left chemosis completely regressing in a few days. Furthermore, the patient did not have postoperative ptosis, nerve damage, or other complications Histopathology report confirms cavernous haemangioma. (Figure 3)

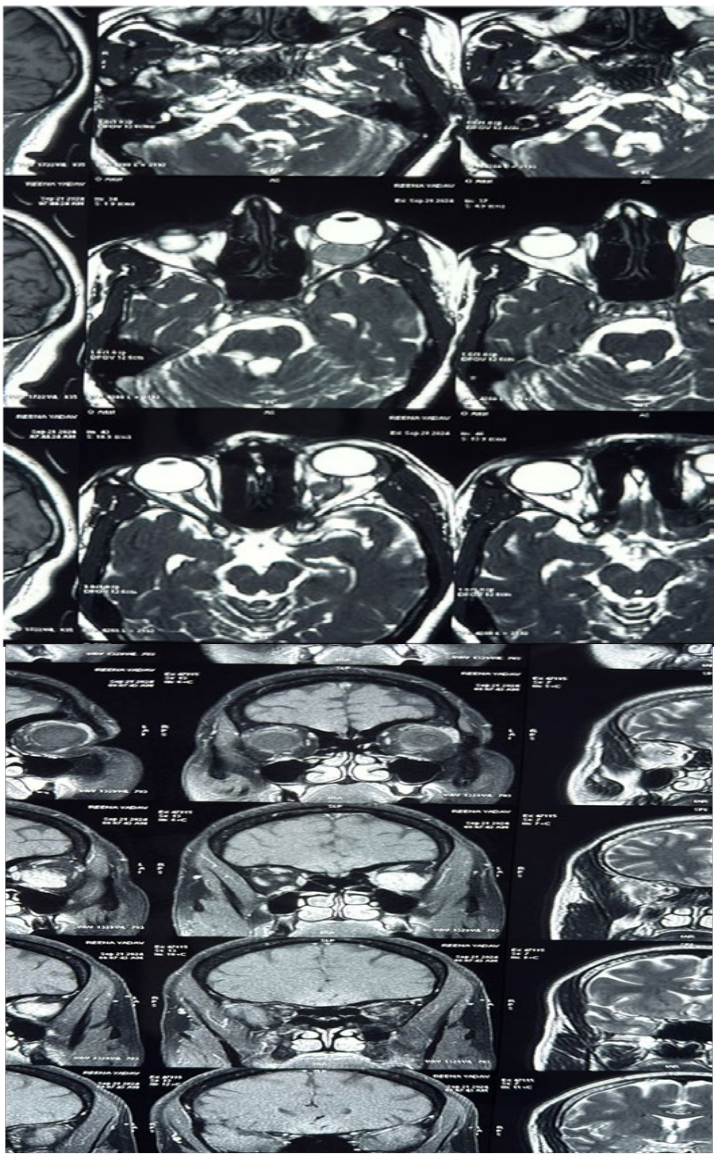


Figure 1: (A) MRI Orbit Axial View (B) Coronal View of Orbit Suggestive of Cavernous Haemangioma Over Left Optic Nerve Sheath

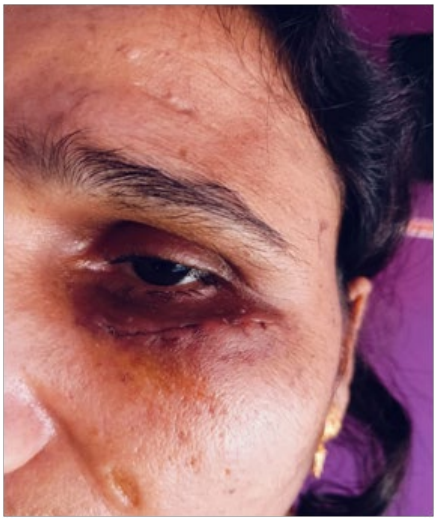


Figure 2: Lower Eyelid Subtarsal Suture Line

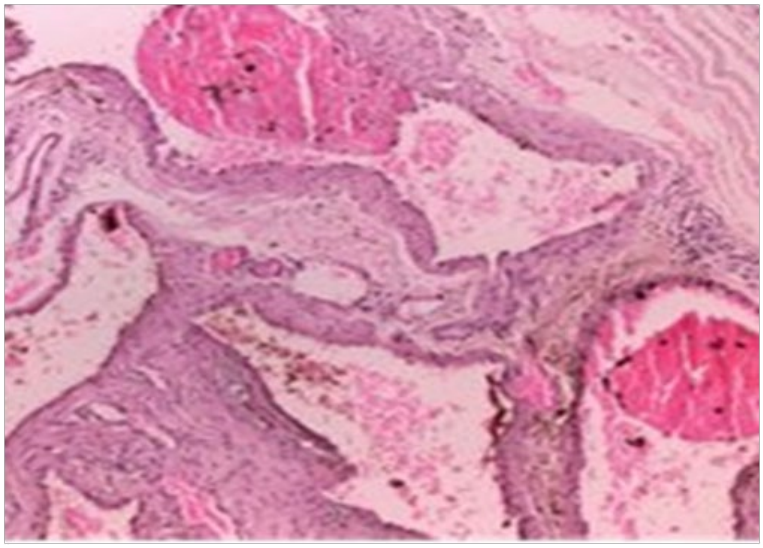
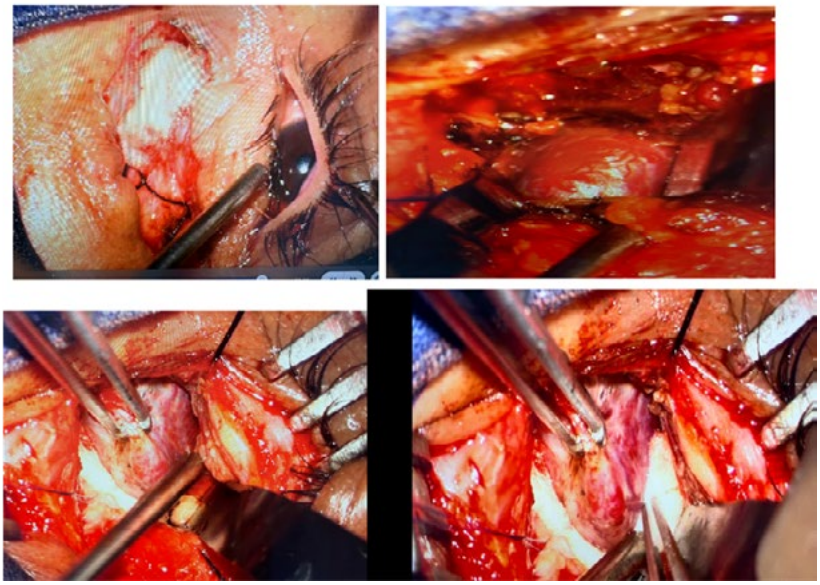


Figure 3: Hematoxylin and Eosin (H&E) Stains Show Dilated Vascular Channels Filled with Red Blood Cells, Thinned Walled Sinusoisal Spaces Lined with Flattened Endothelial Cells

1.1 Preoperative Assessment: Imaging: A detailed preoperative imaging study (e.g., CT scan, MRI) is essential to map the tumor's location, size, and relationship with surrounding structures. Patient Positioning: The patient is usually placed under general anesthesia, and their head is positioned to allow the surgeon optimal access to the lower eyelid. Marking: The surgeon will mark the lower eyelid, identifying the area where the incision will be made.

1.2 Incision and Dissection: Incision Placement: The incision is made along the lower eyelid, just below the lash line, in the subtarsal area (the region below the tarsal plate). This placement minimizes visible scarring and is typically hidden in the natural folds of the eyelid. Skin and Soft Tissue Elevation: The surgeon dissects through the skin and subcutaneous tissues of the lower eyelid to expose the underlying structures. Care is taken to avoid injury to the orbicularis oculi muscle and the lacrimal drainage system.



1.3 Accessing the Orbit: Opening the Orbital Septum: The surgeon may need to carefully open the orbital septum (the connective tissue membrane that separates the eye from the surrounding soft tissue) to access the orbit. This step allows the surgeon to get closer to the orbital tumor. Bone and Soft Tissue Dissection: Depending on the tumor's location, the surgeon may use specialized tools to gently retract the orbital contents, or in some cases, perform a limited bone resection (osteotomy) to gain access to the tumor.

1.4 Tumor Removal: Tumor Identification: Once the tumor is exposed, the surgeon carefully identifies its boundaries and any involvement with adjacent structures, such as the optic nerve, blood vessels, or muscle. Excision: The tumor is excised with precision, ensuring clear margins. If the tumor involves surrounding tissues, the surgeon may also remove a portion of the surrounding tissue to ensure complete removal. Hemostasis: Any bleeding from vessels is controlled using cauterization or hemostatic sutures.

1.5 Closure: Orbital Repair: After tumor excision, the orbital contents are carefully repositioned, and any structural damage (such as bone removal) is repaired. Tissue Closure: The incision is closed in layers. First, the deeper tissues (such as the orbital septum) are repaired. Then, the skin is closed using fine sutures, often with a running or interrupted technique. Dressing: A light dressing or antibiotic ointment may be applied to the incision site.

2. Discussion

CHO is the most common benign orbital lesion of adults. It is usually a solitary, unilateral condition, with preferential involvement of the left orbit according to the most extensive published series [1]. Although CHO is re- ported in infants with diffuse neonatal hemangiomatosis, lesions generally remain asymptomatic until adulthood, with the fourth and the fifth being the most affected decades [2].

The preferential anatomic location of CHO is the middle third of the orbit, occurring more frequently within the intraconal space and leading to progressive axial proptosis, which is the most common sign and symptom of CHO (accounting for about 70% of cases) Intra-conical tumors compress the posterior surface of the globe and lead to hyperopia [3].

Imaging plays vital role in diagnosis. On computed tomography, the lesion is well defined, encapsulated, and hyperdense, Magnetic resonance imaging should assess the possible compressive impact, especially on the optic nerve. The lesion is oval and well-defined. A typical CHO appears as a well-defined homogeneous mass showing isointensity or slight hypo intensity in T1-weighted sequences and hyperintensity to muscles in T2-weighted sequences, which is strongly suggestive of the diagnosis. Contrast enhancement is also characteristic, and it is heterogeneous at the start and then becomes homogeneous over time Surgical treatment is indicated only in symptomatic patients. The location of the cavernoma determines the choice of the surgical approach [4].

The basic approach for retrobulbar tumors located in the lateral aspect of the orbit is usually considered the lateral orbitotomy [5]. Lesions located in the superomedial aspect of the orbit are usually approached by a transcranial route. Several microsurgical or endoscopic approaches have been reported in the literature to approach lesions located in the inferomedial aspects of the orbit [6].

In our case, the tumor was left infraorbital intraconal, located in retrobulbar space. Lateral orbitomy is most common surgical approach used in such case. The surgical approach that has been performed was lower eyelid subtarsal excision of tumor without removal of the optic nerve adherent rim. It has the advantages of avoiding traction on optic nerve or optic chiasma, no retraction of brain, no communication with cranial cavity, no pressure on globe and easy reconstruction of orbital floor [7]. The incision below the eyelid is well-concealed in natural folds, making scars less visible. The risk of causing eyelid malposition or other deformities is lower compared to other approaches.

The most serious complication of orbital cavernomas surgery is blindness due to damage to the optic nerve. It can be related to direct damage, traction of the nerve, or a lesion of its vascular supply. The optic nerve decompression, particularly for tumors located in the orbital apex and with a tight relationship with the optic nerve, is useful to reduce the intraoperative traction of the nerve during tumor dissection. The outcome in ocular motility depends on the accuracy of the tumor dissection and the total removal of the tumor. Palpebral ptosis and ocular movement impairment can result from overstretching or contusion of the extraocular muscles during tumor dissection [8].

3. Conclusion

CHO is a common finding in adult patients with slow developing proptosis. Treatment is not always required but is usually indicated in the presence of clinical manifestations. Use of infraorbital approach in tumor occupying intraconal space avoid traction of optic nerve, retraction of brain and allow easy reconstruction of orbital floor.

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