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Orbital Hemangioma

Cavernous Hemangioma of the Orbit: A Case Report

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Abstract **Case Report**

Cavernous hemangiomas (CH) are the most common primary vascular tumors in adults, often located within the muscle cone of the orbit. These benign tumors typically present with progressive exophthalmos and visual disturbances. This case report details the presentation, diagnosis, and management of an orbital cavernous hemangioma (OCH) in a 29-year-old male with a 4-year history of non-pulsatile, irreducible exophthalmos and gradual vision loss. Imaging, including contrast-enhanced CT, confirmed the diagnosis, and surgical excision was performed using a left hemi-coronal approach. Postoperatively, the patient had an uneventful recovery, and histopathology confirmed the mass as a cavernous hemangioma. OCHs, though rare, are the most common benign orbital tumors, and surgical removal remains the treatment of choice, particularly when the tumor causes functional or aesthetic concerns. Conservative management may be considered for small, asymptomatic lesions. The prognosis is generally excellent following complete excision, with a low recurrence rate and significant improvement in both cosmetic and functional outcomes. Early diagnosis through imaging and careful surgical planning is critical for optimal results.

Keywords: Cavernous Hemangioma, Orbital Tumor, Exophthalmos, Surgical Excision, Vision Loss.

INTRODUCTION

Cavernous hemangiomas are the most common type of primary vascular tumors in adults, characterized by their slow growth and benign nature. These tumors are most frequently located behind the globe within the muscle cone of the orbit. The objective of this paper is to provide a detailed overview of the clinical presentation, diagnostic approach, and management of orbital cavernous hemangiomas, to assist surgeons in making informed decisions regarding diagnosis and treatment.

CASE REPORT

A 29-year-old male with no significant medical history presented with a 4-year history of left-sided exophthalmos. The exophthalmos was non-pulsatile, irreducible, and painless, associated with a gradual decrease in visual acuity. There were no complaints of diplopia or limitations in ocular motility. A contrast-enhanced orbital CT scan revealed a hypervascular, intra-conal mass in close proximity to the optic nerve, consistent with a cavernous hemangioma.

Surgical access was obtained via a left hemi-coronal approach. After subgaleal dissection and separation of the temporal muscle from the lateral orbital wall, an osteotomy of the external orbital wall was performed. This allowed access to the orbital cavity, where the hemangioma was visualized and carefully dissected from surrounding tissue. Total excision of the mass was achieved, and the external orbital wall was reconstructed with a microplate. The postoperative course was uneventful, and histopathological examination confirmed the diagnosis of a cavernous hemangioma with a major axis of 2.5 cm.

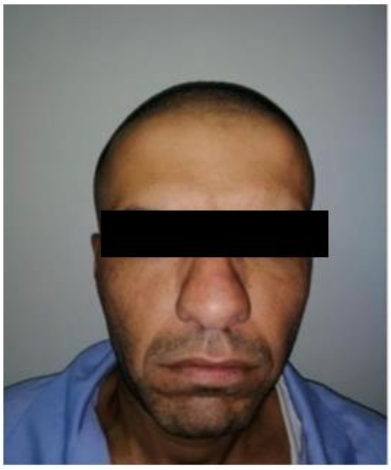

Figure 1: Left exophthalmos

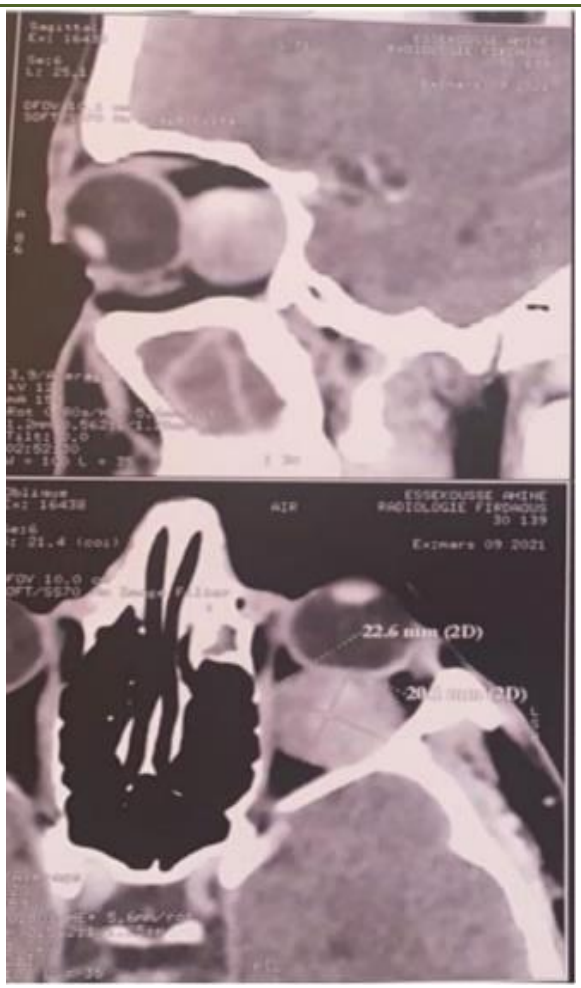

Figure 2: Orbital CT scan showing a hypervascularized intraconical left orbital mass

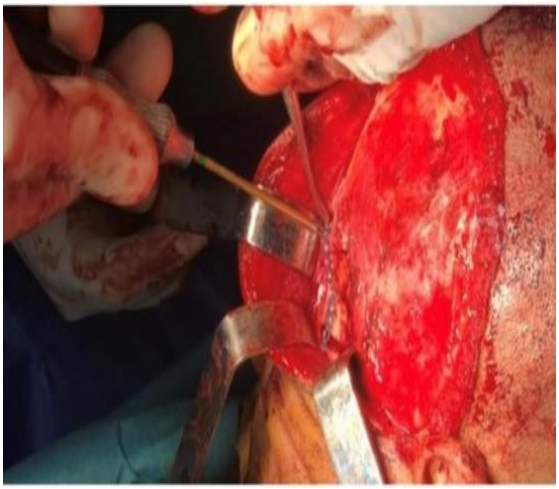

Figure 3: Left hemi-coronal approach with repositioning of the outer wall of the orbit and osteosynthesis using two microplates

DISCUSSION

Orbital cavernous hemangiomas are rare, benign vascular tumors that typically present with slow, progressive exophthalmos. Despite their rarity, they represent the most common type of primary benign orbital tumor, accounting for approximately 4-7% of all orbital masses [1, 2]. The mean age of diagnosis ranges from 39 to 51 years, with a slight male predominance [3]. Exophthalmos is the hallmark symptom, usually gradual in onset, non-pulsatile, reducible, and painless, often accompanied by visual disturbances or ocular motility dysfunction. Acute presentations due to hemorrhage or thrombosis have been reported but are uncommon [4].

Imaging and Diagnosis

Imaging plays a critical role in diagnosing OCH. In the initial evaluation, a contrast-enhanced CT scan can confirm the presence of an orbital mass and help differentiate it from other types of orbital lesions, such as malignant tumors. CT findings typically show a well-defined, hypervascular mass within the muscle cone, without bony involvement (which would suggest a malignant process) [5]. For atypical presentations, MRI is the gold standard for detailed imaging, offering superior soft-tissue contrast. T1-weighted images often show a hypointense mass, while T2-weighted images demonstrate a hyperintense lesion due to its high vascular content. Doppler ultrasonography can also be helpful in assessing the vascularity of the mass [6].

The differential diagnosis includes other vascular lesions such as lymphangiomas, hemangiopericytomas, and orbital varices, all of which have distinctive imaging characteristics. In some cases, histological confirmation via biopsy is required [7].

Treatment and Management

The management of orbital cavernous hemangiomas is primarily surgical. Complete excision of the tumor is the treatment of choice, as it is typically well encapsulated and amenable to enucleation. However, the proximity of the tumor to critical structures such as the optic nerve, oculomotor nerve, and extraocular muscles necessitates careful surgical planning. The risk of postoperative complications, such as optic nerve damage or visual impairment, must be carefully considered before proceeding with surgery.

While surgical intervention is warranted in cases where the hemangioma causes significant functional or aesthetic disturbances (e.g., exophthalmos, visual loss, or ocular motility problems), conservative management may be appropriate in asymptomatic cases, particularly if the tumor is small and not affecting the patient's vision or ocular function [8, 9].

In certain cases, radiation therapy has been suggested as an adjunctive treatment for patients who are poor surgical candidates or for tumors that cannot be completely excised [10].

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Prognosis

The prognosis for patients with orbital cavernous hemangiomas is generally excellent following complete excision. Recurrence is rare, and most patients experience significant improvement in both cosmetic and functional outcomes after surgery [11]. However, as with any orbital surgery, the risk of complications such as postoperative visual disturbances, dry eye, or extraocular muscle dysfunction must be carefully managed.

CONCLUSION

Orbital cavernous hemangiomas are rare, benign vascular tumors that usually present with progressive exophthalmos and visual disturbances. Surgical excision is the primary treatment modality, particularly when the tumor causes significant functional or cosmetic concerns. Conservative management may be considered for small, asymptomatic lesions. Early diagnosis through imaging and careful surgical planning is essential to ensure the best outcomes for patients.

Declaration of Competing Interest

None declared. The authors have no financial, consultative, institutional and other relationships that might lead to bias or conflict of interest.

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