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Anterior Orbital Cavernous Hemangioma: An Unusual Location (Case Report)

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Abstract **Case Report**

Anterior orbital cavernous hemangioma is a rare benign vascular malformation representing an unusual presentation of orbital cavernous venous malformations, which are more commonly located within the intraconal orbital space. We report the case of a 52-year-old woman presenting with a slowly progressive, painless swelling at the medial canthus of the right orbit evolving over one year. Ophthalmological examination revealed a bluish, non-pulsatile, non-inflammatory periocular mass without exophthalmos or visual impairment. Doppler ultrasonography demonstrated a well-circumscribed lesion with minimal vascular flow. Magnetic resonance imaging revealed a cystic-appearing lesion of the superomedial palpebral soft tissues, hyperintense on T2-weighted imaging and hypointense on T1-weighted imaging, with diffusion restriction and mild peripheral enhancement, initially suggesting an epidermoid cyst. Complete surgical excision was performed through an anterior orbital approach. Histopathological examination confirmed the diagnosis of cavernous hemangioma. The postoperative course was uneventful, with complete resolution and no recurrence. This case highlights the diagnostic challenges associated with atypical anterior orbital cavernous hemangiomas and emphasizes the importance of correlating clinical, radiological, and histopathological findings for accurate diagnosis and optimal management.

Keywords: Anterior orbital cavernous hemangioma, Cavernous venous malformation, Magnetic resonance imaging, Surgical excision, Histopathological examination, Case report.

INTRODUCTION

Anterior orbital cavernous hemangioma represents an uncommon variant of orbital cavernous hemangiomas and is classified as a benign vascular malformation [1,2,15]. In contrast to the more frequently encountered deep intraconal lesions, anterior forms are located closer to the orbital rim, making them more readily detectable on clinical examination and more accessible to surgical management [3,4,5].

CASE REPORT

A 52-year-old woman with no significant past medical history presented with a progressively enlarging swelling at the medial canthus of the right orbit, evolving over a one-year period without associated symptoms. The clinical course was insidious, with no systemic manifestations and preservation of general health.

On examination, a bluish, non-tender, non-inflammatory, non-pulsatile, and non-reducible mass was observed, fixed to the deeper planes. The lesion measured approximately 2 cm in length and 1 cm in width. No exophthalmos was noted. Best-corrected visual acuity was 10/10 in both eyes. Intraocular pressure was within normal limits [13 mmHg in the right eye and 15 mmHg in the left eye]. Slit-lamp examination of the anterior segment and fundoscopic evaluation revealed no abnormalities.Doppler ultrasonography demonstrated a well-circumscribed, rounded lesion with minimal internal vascular flow.

Orbito-cerebral magnetic resonance imaging [MRI] revealed a cystic lesion located within the superomedial palpebral soft tissues of the right orbit. The lesion appeared hyperintense on T2-weighted images and hypointense on T1-weighted images, with marked diffusion restriction and mild peripheral enhancement following contrast administration. It measured 12.5 × 7 × 9 mm [craniocaudal × transverse × anteroposterior]. The lesion was in close proximity to the angular vein, which was displaced posteriorly but remained patent,

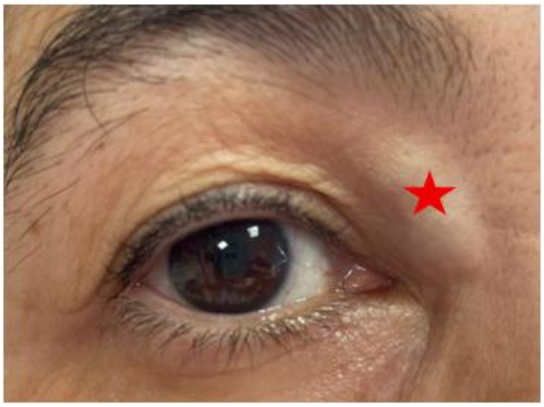
with no evidence of intraorbital extension. These imaging findings were initially suggestive of an epidermoid cyst.

The patient underwent complete surgical excision of the lesion with adjunctive cryoapplication via an anterior orbital approach. Intraoperatively, the mass was well encapsulated, firm in consistency, and exhibited a hemorrhagic appearance.

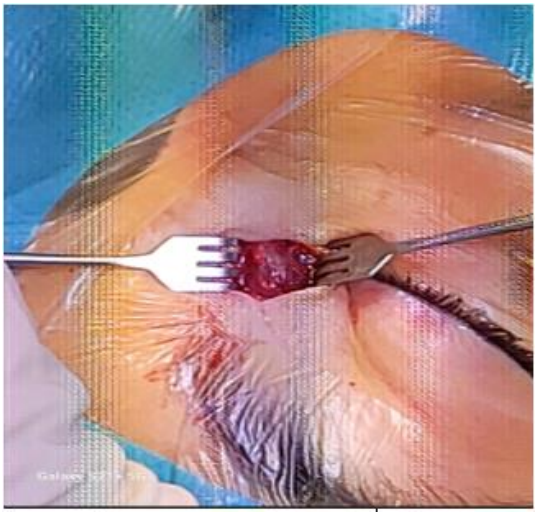
Histopathological examination of the excised specimen confirmed the diagnosis of cavernous hemangioma [Figure].

The postoperative course was uneventful, with complete resolution of the swelling. A transient palpebral ecchymosis was observed, which resolved spontaneously within a few days.

Macroscopic appearance of the lesion : Small painless swelling at the medial orbital canthus with slight upper eyelid fullness and no overlying skin changes

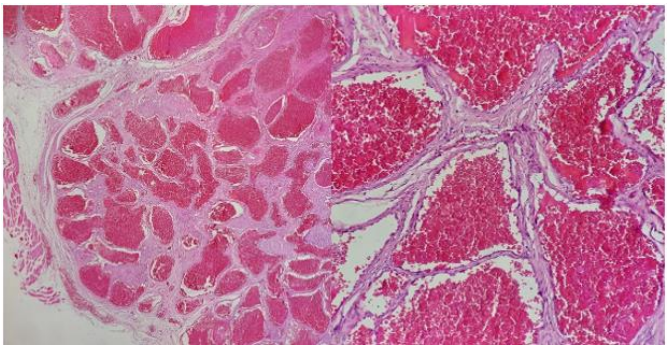


Intraoperative appearance of the medial orbital lesion during surgical excision.

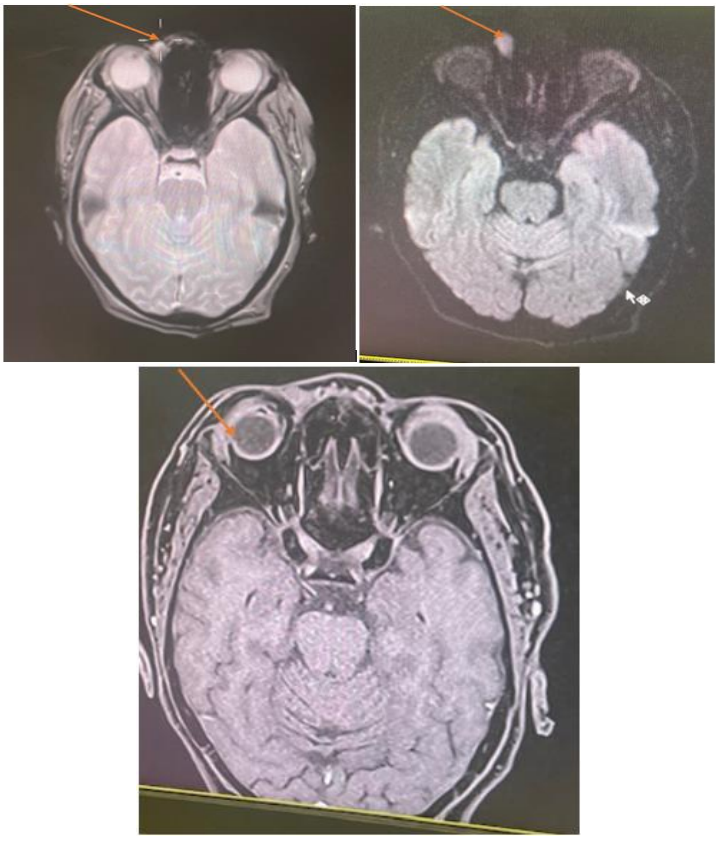


Intraoperative appearance of the medial orbital lesion during surgical excision.

Macroscopically, it consisted of a solitary encapsulated nodular lesion, dark red to violaceous, measuring 0.8 × 0.7 cm, with a smooth glistening surface and focal vascular congestion



Microscopic examination revealed a benign vascular tumor proliferation composed of variably sized dilated and ectatic vascular spaces, lined by a regular flattened endothelial lining. The vascular lumina were congested with erythrocytes. These histopathological findings were consistent with a cavernous hemangioma



Orbital MRI demonstrated a well-circumscribed medial extraconal orbital lesion located near the medial canthus. The mass appeared rounded and homogeneous, without evidence of adjacent bone destruction or intraorbital infiltration. It showed hyperintense signal on T2-weighted images and intermediate to low signal intensity on T1-weighted sequences, findings suggestive of a benign vascular lesion, particularly cavernous hemangioma. No intracranial extension or optic nerve compression was identified

DISCUSSION

Orbital cavernous hemangioma, more accurately referred to as a cavernous venous malformation, is a benign, encapsulated vascular lesion composed of dilated vascular channels lined by endothelial cells[2,5,15]. It represents the most common primary orbital tumor in adults, accounting for approximately 4% of all orbital tumors [7,10].

These lesions are typically located within the intraconal space, where the dense vascular network predisposes to their development [1,3,5]. They most commonly present with slowly progressive unilateral proptosis [3,6,12]. In contrast, anterior orbital cavernous hemangiomas are rare and may present as a localized periocular mass without associated exophthalmos, as illustrated in the present case [4,5].

Histologically, these lesions consist of large, blood-filled vascular spaces separated by fibrous septa [1,5]. They are currently regarded as low-flow venous malformations rather than true neoplasms[2,15]. Hormonal influences, particularly estrogen and progesterone, have been implicated in their pathogenesis, which may account for their higher prevalence in female patients [3,5].

Imaging plays a pivotal role in the diagnostic evaluation [8,9,14]. Computed tomography typically demonstrates a well-defined, hyperdense lesion with progressive contrast enhancement [8,11]. Magnetic resonance imaging provides superior tissue characterization and is particularly valuable in atypical presentations [9,11,14]. In the present case, imaging findings were misleading and suggested an epidermoid cyst, highlighting the potential for diagnostic uncertainty. Doppler ultrasound may further support the diagnosis by demonstrating low-flow vascular characteristics [13,14].

Despite advances in imaging modalities, histopathological examination remains the gold standard for definitive diagnosis [5,13].

The therapeutic approach depends on lesion size, location, symptomatology, and functional impact [3,5,13]. Observation is often appropriate for small, asymptomatic lesions, particularly in anterior locations where growth tends to be limited. Surgical excision is indicated in cases of visual impairment, significant cosmetic concern, or diagnostic uncertainty.

In anterior orbital lesions, surgical management is generally less invasive and can be performed through a limited incision with excellent functional and cosmetic outcomes [4,5]. Complete excision is typically curative, and recurrence is uncommon [3,6].

The prognosis of orbital cavernous hemangioma is excellent, given its benign nature and absence of malignant potential. In our case, complete excision resulted in full resolution without complications or recurrence [1,5].

CONCLUSION

Anterior orbital cavernous hemangioma is a rare clinical entity characterized by slow growth and often subtle presentation [4,5]. While many cases can be managed conservatively, surgical excision remains the treatment of choice in symptomatic or diagnostically uncertain cases [3,5,13].

Advances in imaging, combined with histopathological confirmation, enable accurate diagnosis and appropriate therapeutic decision-making [8,9,14]. A tailored, patient-specific approach is essential to optimize outcomes while minimizing unnecessary interventions [5,13].

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