



## A Case Of Subperiosteal Hematoma Of The Orbit In 15-Year-Old Child Post-Trauma And Its Management

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### Abstract

Subperiosteal hematoma is a rare entity in the orbit. Most common cause of Subperiosteal hematoma is trauma. The complications of subperiosteal hematoma are proptosis, diplopia, hypoglobus, decreased range of motion. If not resolved sometimes this can lead to muscle fibrosis and optic neuropathy due to compression. Treatment options consist of observation, surgical intervention in form of needle aspiration or incision, and drainage. Early diagnosis and management help in treating the disease without some dreadful sequelae. This case report discusses the presentation of subperiosteal hematoma in a young child post trauma and complete resolution after needle aspiration of hematoma.

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### Introduction

Duke-Elder et al. proposed using four general groups to classify the causes of hematoma in the orbit including (1) trauma, (2) vascular lesion, (3) hematological disease, and (4) idiopathic <sup>1</sup>. Most common cause of periosteal hematoma is trauma. Subperiosteal hematoma of the orbit can present as proptosis. The complications of subperiosteal hematoma are diplopia, hypoglobus, decrease range of motion, optic neuropathy due to compression.<sup>2</sup> Sometimes post-trauma the hematoma can remain unnoticed due to lid swelling associated with direct trauma and the diplopia hypoglobus etc are neglected. Treatment options consist of observation, surgical intervention in form of needle aspiration or incision, and drainage. We present a case of subperiosteal hematoma which was unnoticed for 10 days post-trauma, as lid edema was hiding the underlying deformity and the patient did not seek treatment. After diagnosis, it was treated with needle aspiration.

### Case report

A 15-year-old boy presented to the Ophthalmology department of NSCB Zonal Hospital Mandi with swelling in his left eye for 10 days after falling off from stairs and sustained injuries on the left side of his face. There was no complaint of decreased visual acuity, eye pain. Also, there was no history of previous diplopia or proptosis earlier. Past medical and ocular histories were unremarkable.

On examination, the visual acuity was 6/6 in both eyes. There was no relative afferent pupillary defect. Intraocular pressure was normal in both eyes. The left eye was displaced inferiorly, and Hertel exophthalmometry showed 3 mm of proptosis of the left eye. There was restriction in extraocular movement of the left eye in upgaze associated with diplopia on upgaze. External examination of the right eye, anterior segment examination of both eyes, and fundus examination of both eyes were normal.

Computed tomography (CT) of the orbits and brain was done and it revealed an oval mass along the roof

of the left orbit of size 4 cm x 2 cm (Fig 2). There was no associated bony orbit fracture. Clinical history and CT were consistent with the diagnosis of subperiosteal hematoma. The patient was managed conservatively initially with anti-inflammatory and

antibiotics but after a follow-up of 5 days the patient complaint of an increase in diplopia. The downward displacement remained the same. So surgical management was considered because of the progression of the disease.

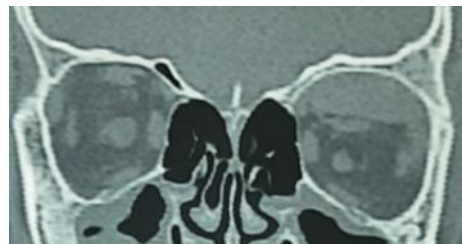
**Figure 1a Preoperative photograph shows proptosis and inferior displacement of the left eye.**



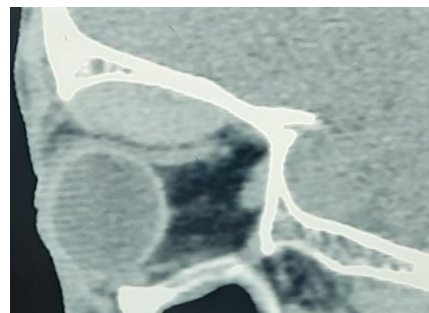
**Figure 2a Limitation in extraocular movement on upgaze**



**Figure 2b Coronal CT scan demonstrates a well-circumscribed mass in the left superior orbit.**



**Figure 2 b Sagittal CT scan demonstrates a well-circumscribed mass in the left superior orbit with compression of the superior rectus muscle.**



**Figure 3 resolution of downward displacement following needle aspiration**

Drainage of the hematoma was planned by needle aspiration under general anesthesia after written consent from parents. A wide bore 22 gauge needle on a syringe was inserted into the superior orbit until the blood appeared in the syringe. Approx. 6 ml of dark blood was aspirated. Followed by resolution of proptosis. There was a further decrease in proptosis and diplopia on subsequent follow-up. Visual acuity was 6/6, and extraocular movements were full and free. The Patient remained asymptomatic with a normal examination (Fig 3) at the 2 months follow-up visit.

### Conclusion

Orbital subperiosteal hemorrhages are rare, resulting from rupture of subperiosteal vessels.<sup>3,4</sup> The hematomas can develop acutely or within a few days of orbital trauma. In our case, there was a delay in diagnosis of subperiosteal hematoma as there was associated eyelid swelling for which this patient did not seek consultation. Clinical findings of subperiosteal hematoma include acute proptosis, limitation of motility, and compressive optic neuropathy.<sup>3</sup> Chronic complications may occur from infection, expansion of hematoma, strabismus, choroidal folds, or persisting mass.<sup>1</sup> CT demonstrated a well-defined, extraconal, blood dense mass adjacent to an orbital wall. Differential diagnosis includes subperiosteal abscess, rhabdomyosarcoma, orbital pseudotumor, lymphangioma, carotid-cavernous fistula, arteriovenous malformation, orbital hematoma, or frontal sinus mucocele.

Management options include observation, needle aspiration, and surgical evacuation. Small hemorrhages without decreased vision may be observed for spontaneous resolution. Intervention is recommended for compressive optic neuropathy, progressive proptosis, suspicion of a tumor, or rebleed.<sup>4</sup> Drainage has been performed successfully through needle aspiration<sup>2,3</sup> and surgical

evacuation.<sup>5</sup> Needle aspiration is less invasive but does not remove clots or stop active bleeding. Orbital exploration allows removal of coagulated blood, drain placement, and fracture repair. In a review of 11 cases in the literature, six patients underwent needle aspiration, four patients underwent surgical evacuation, and one case spontaneously resolved after 6 months.<sup>4</sup>

Subperiosteal hematoma of the orbit must be considered in the differential diagnosis of unilateral proptosis after trauma. Haematomas can be observed when vision is not threatened. However, early intervention can hasten the resolution of symptoms and prevent chronic complications. Needle aspiration in appropriate cases is a successful and minimally invasive method of treatment.

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