



## Undiagnosed Retained Multiple Orbital Foreign Bodies Presenting as A Clinical Surprise

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### Abstract

Orbital injuries with retained intra-orbital foreign bodies (IOFBs) are rare but clinically significant entity that can cause visual loss. It is not uncommon for retained intra-orbital foreign body to be undiagnosed for months and even years especially when they are asymptomatic. Herein, the case of a 39 year old woman with undiagnosed multiple retained IOFBs accidentally discovered during eyelid surgery several months after initial orbital trauma is reported. The need for relevant trauma history, including nature and mechanism of injury, physical examination, and appropriate radiologic evaluation to minimize the chances of missed diagnosis is highlighted

**Keywords:** Orbital, Foreign body, Retained, Undiagnosed

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### I. Introduction

Penetrating orbital trauma with retained intra-orbital foreign bodies (IOFBs) are rare but clinically significant entity, accounting for approximately 2.9% of all orbital injuries<sup>1</sup>. Orbital trauma with retained foreign bodies (FBs) are most often caused by high-velocity injuries like gunshot wounds, assaults or motor vehicle accidents. Others include work-related injuries, falls and accidents involving tools or machinery<sup>1,2</sup>. The clinical presentation of orbital injuries with retained FBs is variable. Associated ophthalmic morbidities which may include visual loss are dependent on the nature and composition of the FB and its size and location within the orbit. Most inorganic FBs (such as metals, glass or plastics) are inactive, but organic materials such as wood can present with late complications such as orbital granuloma, cellulitis, abscess, and discharging sinus<sup>2</sup>. In this report, we present a case of penetrating orbital injury with retained undiagnosed multiple orbital FBs and emphasize the need for relevant trauma history including nature and mechanism of injury, physical examination, and appropriate radiologic evaluation of all cases of orbital trauma to minimize the chances of missed diagnosis.

### II. Case Report

A 39 year old woman presented to our center with history of disfiguring left eyelid and peri-orbital scars following injuries she sustained when she was involved in a road traffic accident 5 months earlier. She said she was a passenger of a motorbike that had head-on collision with a taxi vehicle. In the process, she was thrown onto the windscreen of the taxi which got broken and sustained injuries on her face and left eye. She was treated then at a peripheral hospital close to the scene of the accident. Her treatment included suturing of the wounds on her left eyelids, face and other parts of her body.

On clinical examination, she had scars on her glabella region, left eyelids and cheek area. Her visual acuity was 6/6 on both eyes. There was notching of the medial third of the left upper eyelid margin, cicatricial ectropion and lymphedema of the lower eyelid. Also there was mild restriction of ocular motility on abduction and lagophthalmos of the eyelids on the left eye (Figure 1). The rest of the ocular examination findings were normal. The right eye was essentially normal. Surgical correction of the upper eyelid notching and lower eyelid

cicatricial ectropion was planned. Basic hematological and biochemical test done on her were normal. At surgery, routine cleaning and draping were done. The upper eyelid notching was surgically treated by wedge resection of the notched part of the eyelid. The resultant eyelid defect was then closed directly using 6/0 vicryl sutures in an interrupted fashion. On the lower eyelid, the cicatrix tissue causing ectropion of the lower eyelid was excised completely down to its extent on the cheek. During the process of excision, a foreign body (FB) was found lodged in the anterior part of the inferior-lateral orbit. The FB was retrieved and was found to be an irregularly shaped plastic material (Figure 2A). The resultant eyelid and cheek defects following the cicatrix tissue excision were closed directly in layers up to skin using 6/0 vicryl. She was placed on prophylactic antibiotics and anti-inflammatory medications.



Figure 1: Patient at presentation (A) show disfiguring left eyelid scars, upper eyelid notch and lower lid cicatricial ectropion (B) lagophthalmos of left eyelids

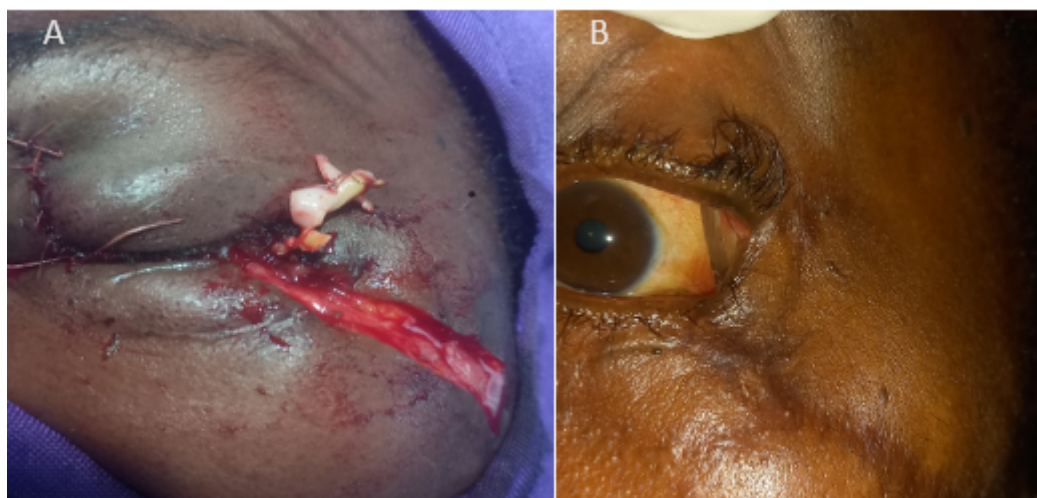


Figure 2: (A) Showing the irregularly shaped plastic foreign body discovered in the anterior-lateral orbit during eyelid surgery (B) Glass foreign body protruding from the lateral orbit at 3 months follow up visit.

Three months after surgery, the patient returned for follow-up with complaints of left eyelid pains associated with FB sensation and diplopia on left gaze. She also complained of sighting a FB material around the left lateral canthal area of the eyelids. On clinical examination, a glass FB was seen protruding from the left lateral orbit (Figure 2B)

CT scan done on her revealed multiple orbital FB in the left lateral orbit consisting of a larger visible one protruding forward, anterior to the lateral orbital margin and a smaller one lodged deep in the posterior orbit (Figure 3A). The protruding larger glass FB was surgically removed by anterior orbitotomy (Figure 3B). The smaller FB was left in the deep orbit after minimal orbital exploratory effort to identify and retrieve it was unsuccessful. At one and 6 months follow up patient had no significant complaints. She was no longer having diplopia and her left eyelids were now closing and opening well without lagophthalmos. Her appearance looked better and she was happy with the outcome of surgery (figure 4).

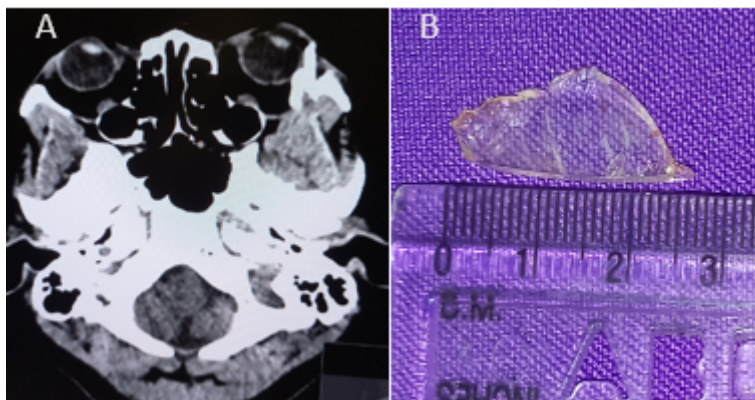


Figure 3: (A) CT Scan image of the intra orbital glass foreign bodies (B) one of the foreign bodies removed from the orbit

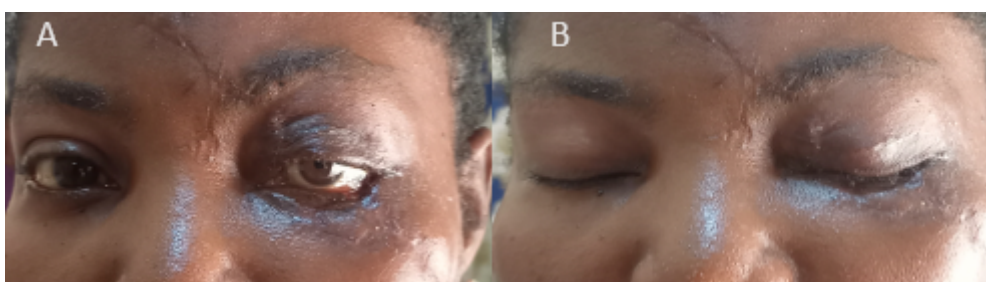


Figure 4: Post operative appearance (A) with eyes open (B) with eyes closed. No lagophthalmos

### III. Discussion

Given the location and nature of the plastic FB accidentally discovered and retrieved from the left inferior-lateral orbit of this patient during eyelid surgery and the subsequent partial extrusion of the glass FB within a three months period, it can be postulated that the plastic FB prevented the anterior migration of the second (glass) FB. Removal of the plastic FB probably created a tract for easy migration of the glass FB. This probably explains why the retained glass FB became partially extruded to the notice of the patient within 3 months after removal of the more anteriorly located plastic FB.

Recognizing retained orbital foreign bodies secondary to trauma can be a challenge. Our patient presented with a complaint of disfiguring left eyelid scars following trauma she had 5 months earlier. The accidental discovery of plastic foreign body in the anterior orbit during eyelid surgery for cicatricial ectropion and later glass material protruding from the orbit was a clinical surprise.

It is not uncommon for retained intra-orbital foreign bodies to be undiagnosed for months and even years especially when they are asymptomatic as seen in this case<sup>3-4</sup>. Apart from retained orbital FB being asymptomatic, missed diagnosis of retained intra-orbital FB could occur due to a number of reasons such as: (1). Inability of the patient to give detailed history of the mechanism of the injury (2). Non detection of the FB during radiological evaluation (3). Focusing of attention to superficial wounds and non-consideration of the possibility of orbital FBs by clinicians during evaluation<sup>3</sup>. In this case our attention was focused mainly on the disfiguring scars on the patient's eyelids which was her primary concern. Also the largely asymptomatic nature of the multiple orbital FBs in her orbit and the fact that she had been evaluated and treated at a peripheral hospital several months earlier dampened our clinical suspicion of retained IOFB.

The presence of an IOFB should be suspected in every case of orbital trauma so as to minimize the chances of missed diagnosis. Appropriate trauma history, physical examination, and radiologic evaluation are essential to diagnosing retained IOFB<sup>6</sup>. Diagnostic imaging modalities are critical in the diagnosis, confirmation, and localization of IOFBs. Computed tomography or plain radiography can detect metallic FB without difficulty, whereas organic FBs may be difficult to detect. Magnetic resonance imaging (MRI) is best suited for the evaluation of organic FB but is contraindicated when the FB is metallic. Computed tomography is regarded as the imaging modality of choice for evaluation of orbital FBs because it is safe to use in cases of metallic orbital FBs. Furthermore, it can diagnose orbital sepsis and fractures of the orbital wall accurately<sup>8</sup>.

The management approach for IOFBs should be tailored to the individual patient, taking into consideration factors such as the foreign body's location, composition, size, and any associated complications<sup>1</sup>. Surgical removal of FB in the posterior orbit has higher chances of leading to disturbance of ocular motility and optic neuropathy. Large-sized FBs as well as anteriorly located FB which can easily be accessed are

recommended for removal, whereas posteriorly located FBs could be managed conservatively <sup>9</sup>. If the FB is organic or causing ocular problems, surgical removal is advised. When it is inorganic, anteriorly located, and asymptomatic, decision for surgical removal may depend on the patient's wish <sup>10</sup>. However, it should be noted that inorganic magnetic FBs left in the orbit can render a patient unfit for future MRI evaluation. This is because of their potential to cause significant ocular injuries following exposure to strong magnetic force <sup>7</sup>.

In this patient, the first FB was accidentally discovered in the anterior orbit and was easily removed. The second FB was partially extruded from the orbit and was causing clinical problem hence its removal. The third foreign body seen on CT scan was posteriorly located, appeared small and did not cause clinical problems, hence it was left in the orbit.

#### **IV. Conclusion**

A high index of clinical suspicion of retained intra-orbital foreign body should be entertained in every case of orbital trauma even in asymptomatic patients. Relevant trauma history including nature and mechanism of injury, physical examination, and appropriate imaging modality are necessary to minimize the chances of missed diagnosis

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