



Occult Nonmetallic Intraocular Foreign Body

Syed Zafar MD*, **Mandeep Lamba MD**, **Diljeet Gahir MD**, **Haya Qasem MD**
Ophthalmology, Prime Hospital, Dubai, United Arab Emirates

DOI: [10.62856/djcro.v1i1.28](https://doi.org/10.62856/djcro.v1i1.28)

*Corresponding author:

Syed Zafar MD

Ophthalmology

Prime Hospital

Dubai, United Arab Emirates E-

mail: zafarssyed77@gmail.com

Introduction

Eye injuries are a leading cause of monocular blindness in children and often result in significant ocular morbidity. It is estimated that 55% of all eye injuries occur before age 25 years, and as many as 160,000 school-age children in the United States are treated for ocular trauma each year.¹

Male patients with eye injuries outnumbered female patients by a ratio of approximately 4:1. Eye injuries in 11- to 15-year-old children occurred at more than twice the rate than for younger children. The most common cause of pediatric ocular trauma was accidental blows and falls. Sports and recreational activities accounted for 27% of all eye injuries, 39% of all nonpenetrating injuries, and 40% of all injuries in 11- to 15-year-old children.²

We present a unique case of serious eye injury caused by an unusual event in a child under age 1 year.

Case Report

A 6-month-old female presented with mild pain, epiphora and photophobia for 48 hours. The parents mentioned that the symptoms were first noticed while the child was playing with her mother's make-up kit which included hair straightener and hair makeup needles which were found to be scattered around their crying child. For the next 48 hours, the parents gave their child artificial tear drops, hoping the symptoms would subside.

During initial assessment, the patient was found to have profound vision loss in the involved eye and was only able to perceive light. Leukocoria was found in the involved eye, and the patient was referred to the vitreo-retinal unit.

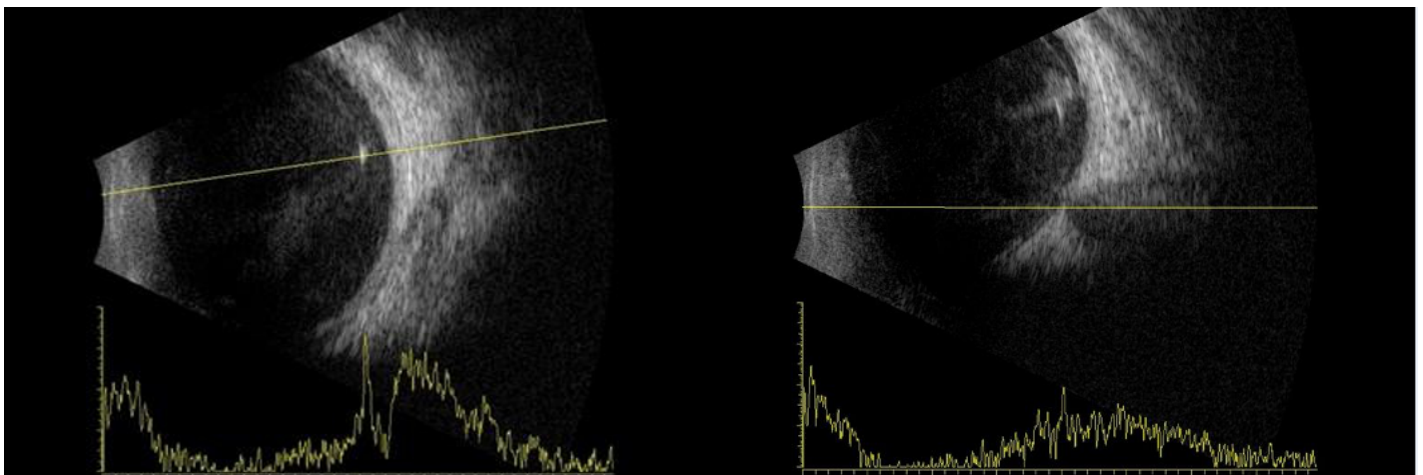
In the vitreoretinal unit, the child was comfortable and asymptomatic. A 2 mm self-sealing entry wound at the limbus was present and it appeared to have been created by a sharp object. An iridodialysis was present

underneath the entry wound. A fibrin membrane was present in the pupillary plane, and a 2 mm pseudohypopyon was present. An opacified lens was seen on handheld slit-lamp examination.

B-scan ultrasonography showed a hyper-reflective area that was concerning for an intraocular foreign body (IOFB) that was close to the retina (Figures 1A and 1B). The vitreous and subhyaloid space had mild to moderate intensity spikes on A-scan with limited after-movement indicative of possible endophthalmitis. An X-ray & subsequent CT scan did not reveal a radiopaque IOFB.

The limbal self-sealing wound was reinforced with suture. A pars plana vitrectomy, lensectomy, removal of the IOFB, and endolaser placement was performed. Intraoperative findings were notable for the presence of antero-posterior rupture of the crystalline lens capsule. Lensectomy was performed and attention was given to the posterior segment. There was marked preretinal inflammatory material concerning for early endophthalmitis (Figure 2). Diagonally opposite to the entry point, a retinal break with preretinal and subretinal hemorrhage was present. An eyelash was lodged inside the retinal break (Figure 3). The intact eyelash, presumed to belong to the patient, was removed through the vitrectomy port. It was 5 mm in length (Figure 4). Intravitreal antibiotics were placed.

Three months ago postoperatively, the visual acuity improved to 6/24 (20/80) with aphakic correction. The eye was quiet, and the retina was attached. Intraocular lens implantation and iridodialysis repair was planned along with amblyopia management.



Figures 1A and 1B. Gentle B-scan ultrasonography was performed since the entry wound had self-sealed and thus the risk for loss of intraocular contents was low. A hyper-reflective area that was concerning for an intraocular foreign body was noted.

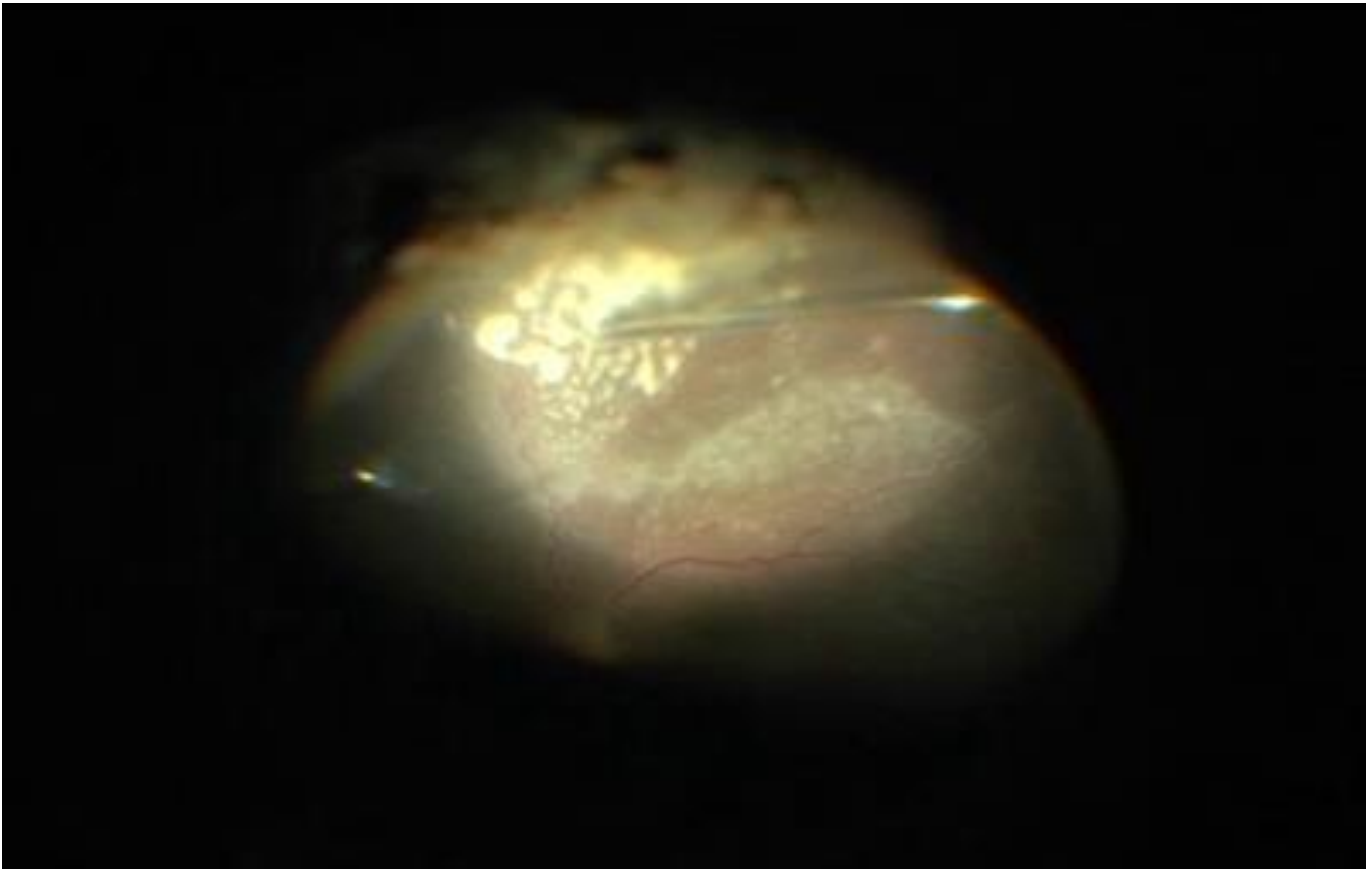


Figure 2. There was marked preretinal inflammatory material concerning for early endophthalmitis.

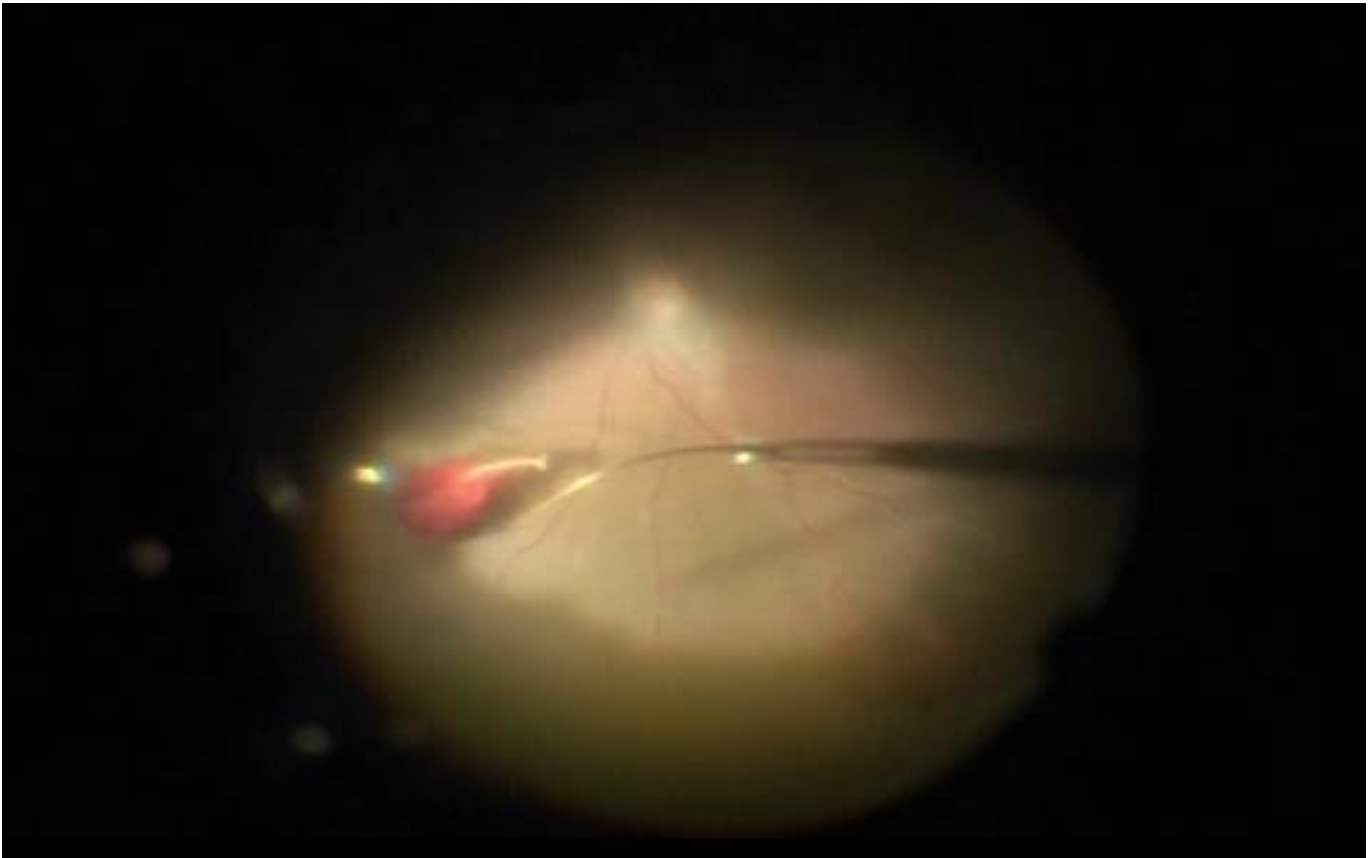


Figure 3. Diagonally opposite to the entry point, a retinal break with preretinal and subretinal hemorrhage was present. An eyelash was lodged inside the retinal break.

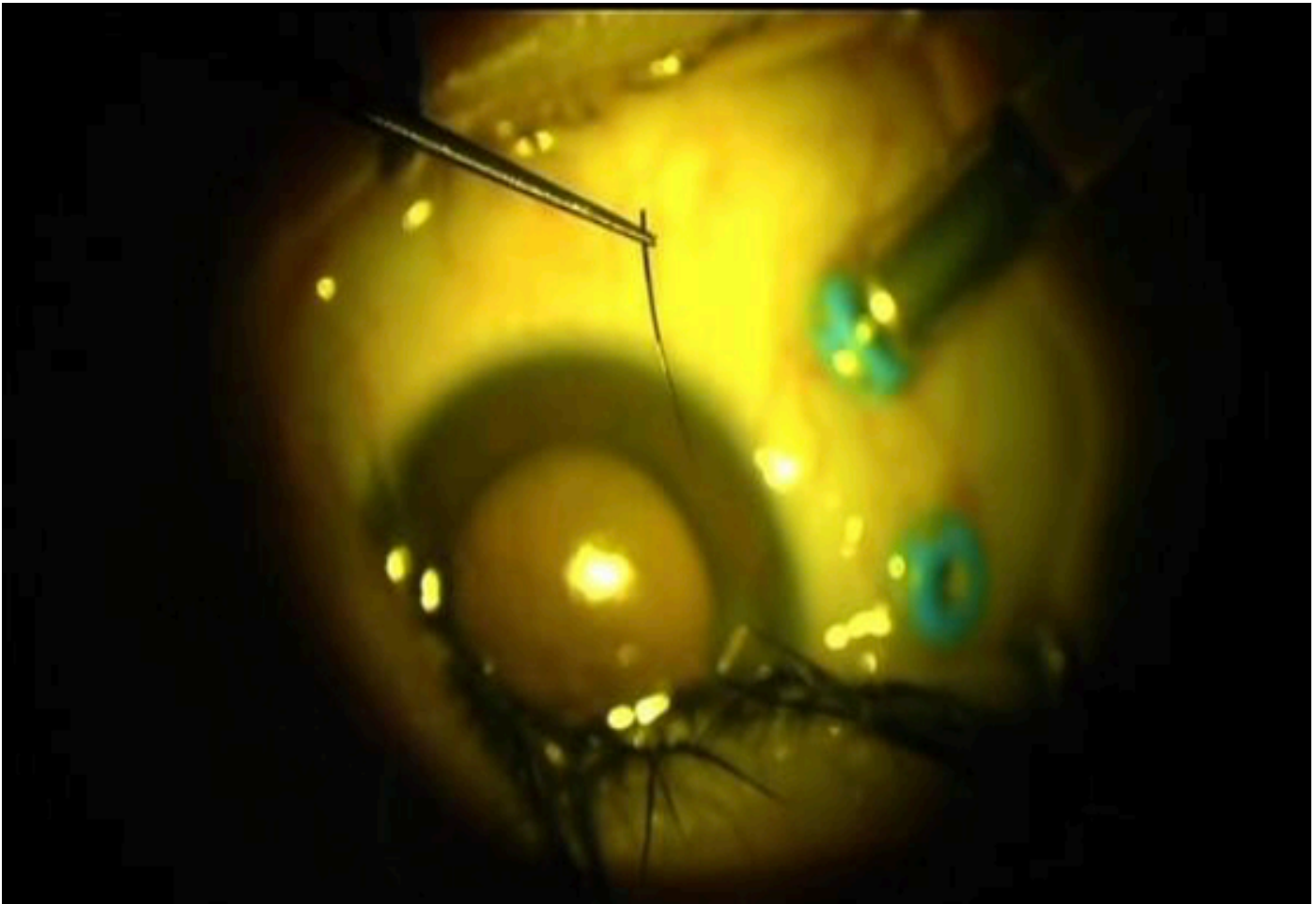


Figure 4. The intact eyelash, presumed to belong to the patient, was removed through the vitrectomy port. It was 5 mm in length.

Discussion

Intraocular foreign bodies carry a high risk of complications, especially when not detected promptly. In adults, there may be an eye injury that is not immediately brought to a physician's attention, while children may deny trauma altogether.

In a study of eye injuries in Kashan, Iran, most of the injuries were unintentional (93%). The majority of the injuries occurred at home (66%). Other injuries occurred at school (15%) and during sports play (9%). Pediatric eye injuries are common during the spring and summer months and on weekends. During these times, children spend a greater amount of time outdoors and have increased amounts of time free from organized and supervised school activities. This may increase the incidence of eye injury.³ Sharp objects such as knives or scissors were the most common cause of open globe injuries. Visual acuity less than 20/50 occurred in three open globe injury patients.⁴

In a study of children under the age of 16 years in Kaser El Aini Hospital, Egypt, endophthalmitis occurred more commonly following open globe injuries associated with sharp objects (30%) than with open globe injuries following blunt trauma (10%). Nonmetallic IOFBs were more likely to be associated with endophthalmitis than metallic IOFBs.⁵ Open globe injuries with IOFB involving the posterior segment are

associated with higher complication and re-operation rates and worse visual prognosis than those only involving the anterior segment.⁶ The presence of an IOFB is associated with a higher incidence of severe vision loss. Occult IOFBs present a particular challenge as by definition they are often not diagnosed promptly and present with concurrent endophthalmitis and retinal detachment.⁷

Gentle B-scan ultrasonography in an eye with an open globe may identify an IOFB but its use has risk for further expulsion of intraocular contents. Ultrasonography is suboptimal for echolucent IOFBs and can lead to a missed diagnosis. Orbital CT scan offers relatively higher sensitivity for IOFBs especially with 1-1.5 mm cuts and can detect stone, glass, and metal. But in cases of less radiodense foreign bodies, CT imaging has reduced sensitivity.⁷ MRI typically detects nonmagnetic metallic IOFBs smaller than 0.5mm and glass, wood, ceramic, and plastic. Note that MRI is not recommended if the IOFB may be magnetic.

Use of intravitreal antibiotics in open globe injuries at higher risk of endophthalmitis may be warranted.⁸ Despite intravitreal and even intravenous antibiotics in select cases, the prognosis of post-traumatic endophthalmitis is often poor, with 90% of patients having poor visual outcomes.

An eyelash IOFB is uncommon but is more commonly associated with industrial trauma, where the risk of high-velocity impact and complex injuries is greater.⁹ Our case is unique since an intraocular eyelash was present in an open globe injury in an infant that resulted from playing with the contents of a make-up kit.

Conclusion

This case illustrates the importance of having a high index of suspicion for the presence of an intraocular foreign body, even an eyelash, in all open globe injuries, even when associated with a seemingly low-risk mechanism of injury.

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Statement of Ethics

This case report adheres to patient confidentiality and ethical principles in accordance with the guidelines of the Declaration of Helsinki and relevant local regulations. Written consent was obtained from the patient for the publication of this case report.

Conflict of Interest Statement

The authors declare no conflicts of interest related to this topic.

Funding

This work received no funding or grant support.

Authorship

We attest that all authors contributed significantly to the creation of this manuscript, each having fulfilled the criteria as established by the ICMJE.