

Retained Wooden Intra-Lenticular Organic Foreign Body-Could it remains Asymptomatic and Sterile-?

Case Study

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Abstract

Introduction: To discuss possible factors responsible for ocular inertness without resulting in an inflammatory incitement is the objective of this case study. A 35-year-old female patient presented with visual loss in the right eye following an accidental stick injury at the workplace one year back. Previous medication history includes topical instillation of antibacterial and anti-fungal agents with cycloplegics that resulted in relief of redness and eye pain. The patient noticed painless progressive visual loss for the past year and is now reported to the outpatient ophthalmic department. The patient was diagnosed to have adherent leucoma that obscured underlying traumatic cataract with the presence of light perception and accurate light projection.

Hyper reflective echoic reverberations noticed within the crystalline lens on B-scan ultrasonography suggesting a possible presence of an intra-lenticular foreign body that the egression of the foreign body was confirmed during cataract extraction particularly on performing hydro procedures and cortical cleanup. A provisional diagnosis of traumatic cataract with adherent leucoma was considered and accordingly managed by performing penetrating keratoplasty, cataract extraction and sulcus fixated intraocular lens implantation.

Previously controlled infection with antimicrobial topical administration, crystalline lens response of embedding foreign body within opacified lens fibres, ocular, and systemic immunological response are some of the few plausible implications leading to its inertness. Hence, we recommend a B scan investigation in all cases of traumatic cataracts and corneal opacities to diagnose and to formulate action strategic plans for achieving good visual outcomes.

Keywords: B-scan Ultrasonography; Intra Lenticular Foreign Body; Traumatic Cataract; Adherent Leucoma; Penetrating Keratoplasty; Triple Procedure; Inertness.

Introduction

Ocular defensive mechanisms that combat retained intraocular foreign body (IOFB) reaction whether organic or non-organic, largely depends on their chemical composition, sterility, duration of stay, and location in addition to hosts tissue vascularity differentiation. Asymptomatic and incidental diagnosis is the common mode of presentation of intralenticular foreign bodies neverthe-

less previous case studies revealed acute visual loss due to cataract induced by a metallic foreign body.[1] A retrospective study reported the incidence of intralenticular foreign bodies in 17 (6.94%) eyes out of 245 eyes.[2]. Inert and sterile foreign bodies such as stone, sand, glass, porcelain, plastic, and cilia are generally well tolerated and possibly resort to masterly inactive intervention if their location is outside the visual axis.[3, 4]

Another retrospective study reported wood as an ILFB in one

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(4.8%) eye out of 21 eyes among all other types of foreign bodies. [5] Common reactive metallic foreign bodies are zinc, aluminum, copper, and iron that incite inflammation-causing glial and fibrovascular proliferation in the vitreous cavity and the retina. The occurrence of retinal detachment, infective endophthalmitis, and phthisis bulbi complicates the process of further visual loss progression. Consequently, especially copper and iron foreign bodies are prone to their migration causing further tissue damage.

This is probably the second case report of vegetative foreign body embedding and retaining in the crystalline lens for about one year without inciting an inflammatory reaction and to describe the possible resisting factors responsible for ocular unresponsiveness is the objective of this case study.

Case Description

A 35-year-old female patient presented with diminished vision in her right eye following a wooden stick injury while working in the fields 12 months ago manifesting with pain, redness, and visual reduction. Resolution of the symptoms observed on instilling some topical antibiotics, anti-fungal, and cycloplegic agents for about 10 days while the visual loss continues to progress, however unfortunately the patient discontinued treatment and abstained from hospital follow-ups. A central adherent leucoma measuring about 6 mm in dimension, irregular anterior chamber depth, presence of light perception, and an accurate projection of rays of light were noticed on cursory ocular examination. On B-Scan echography, an attached retina was noted with an optically empty vitreous cavity in addition to observing moderate to high hyper-reflective echoes that possibly arose in the crystalline lens suggesting a retained intra-lenticular foreign body (RILFB). (Fig 1)

A triple procedure composed of penetrating keratoplasty, cataract extraction, and intraocular lens implantation was considered taking into account the contralateral biometric values for calculating IOL power. After performing corneal trephination and releasing

the anterior synechiae and irido-lenticular adhesions, intracameral adrenaline was instilled to achieve pupil dilation followed by capsular staining with trypan blue.

Can opener capsulotomy was performed and during hydro procedures and cortical cleanup, egression of a brown triangular wooden foreign body was observed and retrieved from the lenticular substance. The surgical procedure was completed by implanting a sulcus fixated IOL implantation after aspirating the cortico-nuclear matter by irrigation and aspiration. (Fig 2) With Ethilon 10.0 suture material, penetrating keratoplasty was completed by a continuous suturing pattern. And then air bubble was injected for anterior chamber reformation. On the 7th post-operated day, Snellen's visual acuity was restored to 6/36 with stable intraocular lens and anterior chamber maintenance. (Fig 3)

Results and Discussion

Retained intraocular foreign bodies, whether metallic or vegetative predispose to significant visual loss due to their predispositions to endophthalmitis, retinal detachment, and in long-run glaucoma, cataract, inflammation, and foreign body toxicity posing visual problems. Traumatic endophthalmitis and retinal detachment are of particular concern because they tend towards the rapid progression of severe visual loss.

For the asymptomatic nature of RILFB, probable implications in this present case is perhaps attributable to the previous administration of topical broad-spectrum antibiotics and antifungal agents that controlled infection, the role of the inflammatory response of lens opacification producing encapsulation and embedding the foreign body, and possibly to ocular and systemic immunological mechanisms. A previous study hypothesized the sealant-like effect produced by anterior cuboidal cell proliferation once the anterior capsule is disrupted thus protecting the foreign body from deleterious agents.

Table 1. Showing comparative analysis of published literature and present study.

Author	Year of publication	Clinical presentation	Investigations/ Diagnosis	Foreign body type	Management	Visual outcome
Dhawahir-Scala FE6	2005	An 87 year old male presented with Visual acuity of 6/60 LE	Slit lamp examination revealing foreign body in the anterior lens cortex (iron?)	Grenade explosion (accidentally detected) retention period 60 years	Corneal tear repair with iridectomy performed. Conservative management of RILFB	-
Shiraishi S7	2008	A 65 year old male patient DV RE	Slit lamp examination	Oxidised iron retention period 20 years	Phacoemulsification with PL IOL	6/6
Chang YS8	2008	A 66 old male reported with DV (LE)-6/36	Slit lamp examination	Metallic Foreign body- retention period 6months	Phacoemulsification with PL IOL	6/6
Singh R9	2015	A 41 year old male with BCVA of 6/18(RE) since 6 months	Schiemflug imaging	Metallic (chisel and hammering)	Foreign body removed by phacoemulsification	6/6
Present study	-	A 35 year old female presented with PL (LE)	B SCAN ultrasonography	Wooden foreign body (coconut shell)	Triple surgery	6/18

Figure 1. B-scan echography showing hyper-echoic shadows suggesting the retained foreign body.

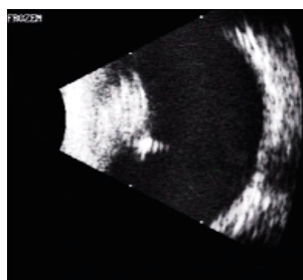
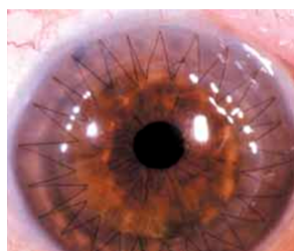


Figure 2. Embedded wooden arrowhead-shaped stick obtained during surgery (possibly coconut shell remnant).



Figure 3. showing Penetrating keratoplasty with Posterior chamber intraocular lens implantation.



A previous medical literature search revealed the asymptomatic nature of metallic ILFB retained for 20 to 60 years. [6-8] Scheimpflug imaging technology offered an alternate diagnostic imaging modality for RILFB localization in another case study publication.[9] Table 1 The ideology of organic foreign bodies resulting in fungal or combined infections has become questionable and emphasizes the need for further studies about the implications of retained organic foreign bodies and their response within the eye. Arora R et al demonstrated foreign body removal by Kelman-Macpherson forceps in contrast to spontaneous egression during cortical clean-up procedures in the present case study.[10]

In conclusion, for patients with a history of stick-injury causing leucomatous opacity, we recommend B scan ultrasound evaluation of crystalline lens preoperatively to look for an embedded intra lenticular foreign body and to perform triple surgery in a single setting procedure that facilitates controlled intra-operative maneuvers.

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