

A rare case of traumatic subretinal migration of crystalline lens, corroborated histologically

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Blunt trauma is the most common cause of posterior dislocation of the crystalline lens. We describe a rare case of subretinal migration of crystalline lens through the giant retinal tear following blunt ocular trauma. This incidental finding of subretinal dislocation of lens following blunt ocular trauma was confirmed on histopathological examination of the enucleated eye. This complication has not been described by histopathological examination in literature so far.

Key words: Blunt ocular trauma, histopathology, subretinal crystalline lens

Trauma is the most common cause of dislocation or subluxation of the crystalline lens.^[1] Blunt trauma may cause sudden, transient shortening of the eye in the anteroposterior direction and believed to lead to equatorial expansion, which can stretch or break the zonules.^[2] Blunt injury to the eye results in a spectrum of damage including traumatic hyphema, anterior chamber angle recession, lens dislocation, penetrating eye injury, vitreous hemorrhage, commotion retinae with intraretinal hemorrhage, and peripheral retinal or choroidal breaks.^[3] Herein, we report a unique case of subretinal migration of crystalline lens through giant retinal tear following blunt ocular trauma, confirmed on histopathological examination.

Case Report

A 32-year-old male attended the emergency eye clinic, complaining of the sudden reduction in vision, intense pain, watering, and swelling of the lids following blunt trauma

to his right eye (RE) sustained 6–8 h before presentation. On examination, the vision in RE was a perception of light with good projection in all quadrants. Examination of the RE revealed lid edema, ecchymosis, subconjunctival hemorrhage, full thickness central cornea tear with the expulsion of the iris, and full chambered hyphema. The patient had corneal rupture [zone 1, open globe injury as per Birmingham Eye Trauma Terminology classification system] due to accidental slippage over the corner of a plastic table at home. There were no pathologic findings in the left eye and had best-corrected visual acuity of 20/20 at the time of presentation.

Initial management of this patient included the administration of analgesia, intravenous antibiotics, and tetanus prophylaxis. An eye shield was used for protection to prevent further accidental trauma, and the patient was subsequently prepared for wound repair. Preoperative B-Scan ultrasonography was avoided in this patient with the fear of expulsion of intraocular contents. The risks and benefits of general anesthesia and alternatives of all anesthetic options explained clearly to the patient. The patient refused to do surgery under GA; therefore, the regional anesthesia was preferred in this patient. A high-risk consent explaining the extremely guarded visual prognosis was obtained from the patient before the primary repair of RE. Reconstruction of the right anterior segment was performed under local anesthesia. Incarcerated iris was dissected from the wound, and remaining iris was retroplated into the anterior chamber. An anterior vitrectomy was performed and 10-0 nylon sutures were used for wound closure. Pupillary aphakia was noticed; therefore, posterior dislocation of crystalline lens was assumed intraoperatively. Postoperatively, intraocular pressure was persistently in the higher range despite the prompt use of systemic and topical antiglaucoma medication. The patient had severe corneal edema due to secondary glaucoma precluding fundal view and further management. B-scan ultrasonography of the RE revealed vitreous hemorrhages and total retinal detachment. The patient was treated with contact laser diode cyclophotocoagulation (DLCP) to the superior and inferior half of the ciliary body of the RE. Twenty-five diode laser burns of 2000 ms duration and using a power of 2000 mW were applied. The patient had persistently raised intraocular pressure, complaints of severe pain, discomfort, and the visual acuity of no perception of light even after DLCP. A diagnosis of a painful blind eye was made. Due to severe pain, discomfort, and nil visual prognosis in RE, the patient preferred enucleation with silicone ball implant. The patient was properly explained about the procedure, and proper informed consent was obtained prior of enucleation. The specimen was sent for histopathological examination. Left eye remained unremarkable with a best-corrected visual acuity of 20/20.

Access this article online	
Quick Response Code:	Website: www.ijjo.in
	DOI: 10.4103/ijjo.IJO_613_17

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Manuscript received: 18.07.17; **Revision accepted:** 25.09.17

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Cite this article as: Bawankar P, Das D, Agarwal B, Bhattacharjee K, Tayab S, Deka P, *et al.* A rare case of traumatic subretinal migration of crystalline lens, corroborated histologically. *Indian J Ophthalmol* 2017;65:1495-7.

On gross examination, the enucleated eyeball measured 22.13 mm anteroposteriorly, 23.87 mm horizontally, and 21.73 mm vertically. The cornea was opaque with vascularization. The lens was opaque and migrated in subretinal space inferiorly with retinal vessels seen over the lens [Fig. 1]. Adjoining retina was detached, and giant retinal tear was noted. This portion of the retina and the cataractous lens was dissected and seen under a compound microscope and documented for the subretinal migration of lens. Flat preparation of the retina showed nerve fiber layer hemorrhages [Fig. 2a] and subretinal lens with the overlying retinal blood vessels [Fig. 2b]. High-resolution images under the compound microscope also revealed focal retinal pigment epithelium (RPE) atrophy overlying the crystalline lens [Fig. 2c] and also showed a portion of the retinal tear, through which probably, migration of lens occurred [Fig. 2d]. The RPE layer was studied, which showed mostly healthy cells [Fig. 3a] with an occasional atrophic changes near the subretinal migrated crystalline lens [Fig. 3b].

Microscopic examination under hematoxylin and eosin stain revealed corneal stromal scarring with an occasional stromal vascularization [Fig. 4a]. The angle of anterior



Figure 1: Gross section of enucleated eyeball showing dislocation of crystalline lens under the detached retina

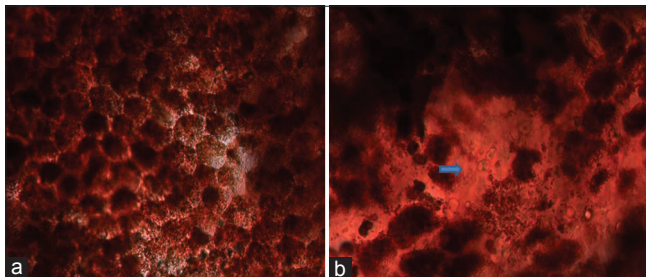


Figure 3: High-resolution images under the compound microscope showing (a) normal retinal pigment epithelium (b) focal retinal pigment epithelium atrophy (arrow)

chamber showed cyclodialysis cleft [Fig. 4b]. Iris details revealed ectropion uvea and neovascularization [Fig. 4d]. Retina showed detachment with superficial nerve fiber layer hemorrhages [Fig. 4c].

Discussion

It is an unusual dislocation of a total crystalline lens in subretinal space after blunt ocular trauma. The presence of a large traumatic retinal tear coupled with a posteriorly dislocated lens resulted in this unique condition. In this clinical setting, the mechanism for subretinal migration of the crystalline lens could be the impact of the trauma producing dislocation of the lens and traumatic retinal detachment with giant retinal tear simultaneously. The migration of crystalline lens into the inferior subretinal space

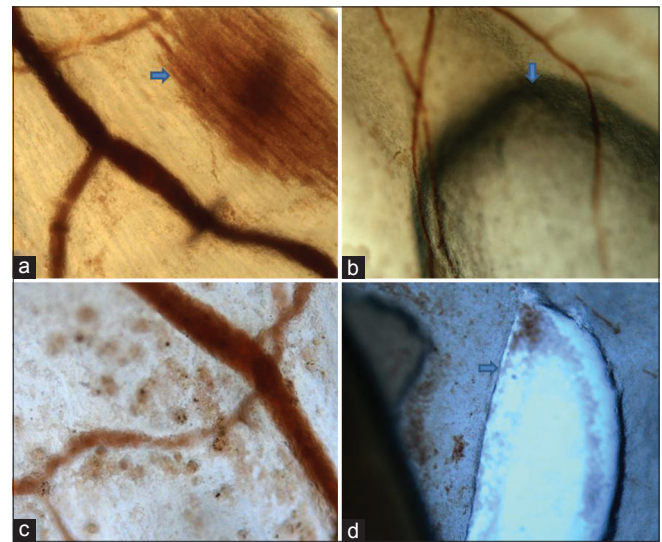


Figure 2: High-resolution images under the compound microscope showing (a) nerve fiber layer hemorrhages (arrow) (b) subretinal lens (arrow) with overlying retinal blood vessels (c) retinal pigment epithelium atrophy overlying crystalline lens (d) retinal tear (arrow)

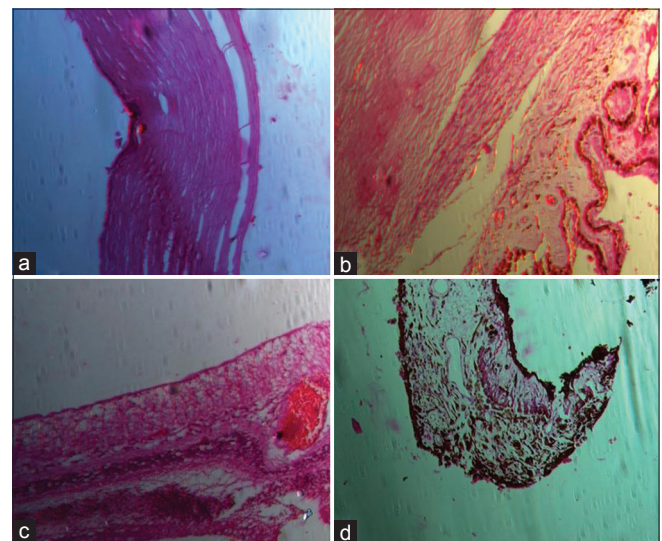


Figure 4: Microscopic examination under H and E stain (x40) revealed (a) corneal stromal scarring with vascularization (b) cyclodialysis cleft (c) nerve fiber layer hemorrhages (d) ectropion uvea with neovascularization

may have been influenced by the direction of the high-velocity impact, gravity, and/or vitreous adhesions.

Traumatic posterior dislocation of a crystalline lens may be complicated by intraocular hemorrhage and retinal detachment as well as other sequelae of blunt ocular trauma including corneal lacerated wound, abrasion and edema, secondary glaucoma, iridodialyses, ciliary body necrosis, retinal nerve fiber layer hemorrhages, and retinal atrophy.^[4,5] In our case, an incidental finding of subretinal dislocation of the lens as well as other sequelae of blunt ocular trauma was supported by histopathological examination of the enucleated eye. Nagaraj *et al.*^[6] reported a case of subretinal migration of a crystalline lens after blunt ocular trauma managed by a three-port pars plana vitrectomy. In another report, a lens nucleus migrated through a retinal dialysis into the subretinal space as a complication of pars plana lensectomy, managed by reattaching the retina over the lens.^[7] Rani *et al.*^[8] reported subretinal migration of lens during phacoemulsification and was managed by creating a retinotomy over the nucleus.

An occurrence of the subretinal crystalline lens after blunt ocular trauma is an uncommon entity. To the best of our knowledge, this is the first reported case of post-traumatic subretinal migration of crystalline lens supported by histopathological examination.

Acknowledgment

We would like to thank Sri Kanchi Sankara Health and Educational Foundation, Guwahati, India.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have

given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Sri Kanchi Sankara Health and Educational Foundation have supported this study.

Conflicts of interest

There are no conflicts of interest.

References

1. Jarrett WH II. Dislocation of the lens. A study of 166 hospitalized cases. *Arch Ophthalmol* 1967;78:289-96.
2. Marcus DM, Topping TM, Frederick AR Jr. Vitreoretinal management of traumatic dislocation of the crystalline lens. *Int Ophthalmol Clin* 1995;35:139-50.
3. Eagling EM. Ocular damage after blunt trauma to the eye. Its relationship to the nature of the injury. *Br J Ophthalmol* 1974;58:126-40.
4. Assia EI, Blotnick CA, Powers TP, Legler UF, Apple DJ. Clinicopathologic study of ocular trauma in eyes with intraocular lenses. *Am J Ophthalmol* 1994;117:30-6.
5. Canavan YM, Archer DB. Anterior segment consequences of blunt ocular injury. *Br J Ophthalmol* 1982;66:549-55.
6. Nagaraj BN, Tirumale S, Sriprakash KS, Savitha CS, Jaydev C. Sub retinal crystalline lens –an unusual complication of blunt trauma. *Asian J Ophthalmol* 2013;13:68-70.
7. Katzen LB, Rogell GD. Subretinal lens: An unusual complication of pars plana lensectomy. *Arch Ophthalmol* 1981;99:1396-7.
8. Rani A, Pal N, Vohra R, Mandal S, Azad R. Subretinal dislocation of the crystalline lens: Unusual complication of phacoemulsification. *J Cataract Refract Surg* 2005;31:1843-4.