CASE REPORT

Long-term stability of intraocular lens optic capture after femtosecond laser capsulotomy in traumatic cataract with coexisting subluxation and posterior capsule dehiscence

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We report the long-term visual outcome and stability of intraocular lens (IOL) optic capture after femtosecond laser capsulotomy. A patient with a traumatic cataract and 3 clock hours of subluxation had femtosecond laser–assisted cataract surgery during which a clinically undetected posterior capsule dehiscence was noted on the integrated optical coherence tomography line scan. The laser created an appropriately sized, circular free-floating anterior capsulotomy centered on the capsular bag. Pneumodissection and lens fragmentation completed nucleus management with minimal additional zonular stress. Optic capture of the IOL by the capsulorhexis margin ensured the long-term stability and centration in this case of combined zonular dialysis and posterior capsule dehiscence.

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Online Video

Blunt trauma to the eye can cause lenticular damage such as subluxation, dislocation, disruption of the lens capsule, zonular weakness, and cataract formation. Partial or total damage to the zonular fibers may occur and result in subluxation or total displacement of the lens. For better visual outcomes, it is important to know the preoperative high-risk situations and intraoperative warning signs. Total cataract or dense posterior subcapsular cataract makes complete preoperative evaluation difficult and therefore increases intraoperative challenges.

Although cataract surgery is generally safe and effective, the outcome, especially in challenging cases, is largely dependent on the surgeon’s experience and expertise. The most common intraoperative complication in traumatic cataracts is irregularity of the capsulotomy. Femtosecond laser–assisted cataract surgery offers advantages in complex cataracts such as traumatic and subluxated cataracts. We report a case of femtosecond laser–assisted cataract surgery in a traumatic cataract with coexisting subluxation and posterior capsule dehiscence.

CASE REPORT

A 45-year-old man presented to the hospital in May 2013 with a history of blunt trauma to the right eye from a shuttlecock during a game of badminton 6 months earlier. The corrected distance visual acuity was 6/24 in the right eye and 6/6 in the left eye. The cornea was clear. The iris had multiple sphincter tears, and the pupil was irregular. There was no iridodialysis. There was a dense posterior subcapsular cataract. Three clock hours of zonular dialysis were present between 2.30 and 5.30 through which a vitreous blob with iris pigment had prolapsed into the anterior chamber. Gonioscopy showed 2 clock hours of angle recession from 1 o’clock to 3 o’clock with peripheral anterior synechiae extending inferiorly from 3 o’clock to 7 o’clock. There was no evidence of a cyclodialysis cleft. The posterior segment did not show other sequelae of the blunt injury such as retinal dialysis or choroidal rupture. Prophylactic barrage laser was performed for superotemporal lattice in both eyes. As the reduction in visual acuity could be attributed to the dense posterior subcapsular cataract, cataract surgery was planned under guarded visual prognosis in view of the history of trauma and the presence of subluxation.

Cataract surgery was performed using the femtosecond laser (Lensx, Alcon Laboratories, Inc.). An eccentric 4.8 mm capsulotomy centered on the lens was created (Figure 1, A). A 2.8 mm temporal corneal incision and two 1.0 mm side ports 60 degrees from the main port were made. Nucleus fragmentation was done using the chop and cylinder technique with energy of 10 mJ (spot and layer separations 9 μm each). Energy used for capsulotomy, primary incision, and secondary incisions was 8.0 mJ, 6.5 mJ, and 6.0 mJ respectively (spot and layer separations 5 μm and 4 μm, respectively). The optical coherence tomography (OCT) line...
scan showed a nasal posterior capsule irregularity in the region of the zonular dialysis with associated anterior vitreous face disturbances suggestive of a preexisting posterior capsule dehiscence (Figure 1, B).

After the posterior capsule dehiscence was detected, the surgical plan was modified to include appropriate retinal support if needed. Intraoperatively, a Slade spatula was used to open the femtosecond incisions. The capsulotomy was complete and centered on the capsular bag. Pneumodissection following femtosecond nucleus fragmentation allowed nucleus mobilization without hydrodissection, which was not appropriate given the potential posterior capsule dehiscence. The nucleus was separated along the femtosecond cleavage planes and aspirated with the phacoemulsification probe with minimal posterior capsule and zonular stress. During irrigation/aspiration, the preexisting posterior capsule rupture became visible. A heavy molecular weight ophthalmic viscosurgical device (sodium chondroitin sulfate 4.0%–sodium hyaluronate 3.0%, Viscoat) was injected to...
tamponade the vitreous and complete cortical aspiration. Anterior vitrectomy was done to remove the vitreous from the anterior chamber and capsular bag. Because of the large posterior capsule tear, centering the bag with a capsular tension ring (CTR) and in-the-bag implantation of an intraocular lens (IOL) was deferred. A large-optic 3-piece IOL (Acrysof MA60AC, Alcon Laboratories, Inc.) was placed in the sulcus with the optic captured in the capsular bag to ensure long-term centration and stability of the IOL (Video 1, available at http://jcrsjournal.org).

One month postoperatively the uncorrected distance visual acuity was 6/6 in both eyes. With a near addition of +2.5 diopters, the corrected near visual acuity was N6. These have been stable for 3 years. Figure 2 is a postoperative slitlamp photograph of a centered, optic-captured IOL in situ.

**DISCUSSION**

Zonular dialysis after blunt ocular trauma is caused by the change in the globe’s configuration at the time of the blunt injury. However, posterior capsule rupture following blunt trauma appears rarely, and combined zonular dialysis and injury. However, posterior capsule rupture following blunt cataracts. Achieving a completely round, appropriately corrected near visual acuity was N6. These have been stable for 3 years. Figure 2 is a postoperative slitlamp photograph of a centered, optic-captured IOL in situ.

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DISCLOSURES
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