

Focal 6-o'clock Nd: YAG-capsulotomy for the treatment of early onset incomplete capsular block syndrome

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Abstract

We report on a patient who developed capsular block syndrome (CBS) in the early postoperative period with marked myopic shift in absence of anterior dislocation of the posterior-chamber intraocular lens (PC/IOL) and iris diaphragm. Treatment with focal 6-o'clock Nd: YAG-capsulotomy resulted in complete visual acuity restoration. To the best of our knowledge this is the first case of early onset CBS with significant myopic shift in absence of anterior PC/IOL dislocation, which was successfully treated with focal 6-o'clock Nd: YAG-capsulotomy. The possible underlying pathophysiological mechanism is discussed. Hippokratia 2010; 14 (4): 277-278

Key words: capsular block syndrome, YAG-capsulotomy, focal, incomplete

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Capsular block syndrome (CBS) is a relatively rare complication of cataract surgery, first described by Davison¹. It usually occurs in the early postoperative period due to fluid accumulation between the implanted posterior-chamber intraocular lens (PC/IOL) and the posterior capsule. Its typical manifestations include significant distension of the posterior capsule, anterior shift of the PC/IOL and iris diaphragm with postoperative myopic shift, shallowing of the anterior chamber and raised intraocular eye pressure (IOP)^{2,3}. Cases of incomplete CBS of late onset, even several years after cataract surgery, without shallow anterior chamber, raised IOP and myopic shift were reported⁴.

We report a case of early onset CBS, with marked myopic shift and absence of PC/IOL anterior dislocation. The possible pathophysiological mechanism of CBS in this unusual case and the way of treatment are discussed.

Case report

A 67-year-old woman with nuclear cataract in the left eye underwent an uneventful phacoemulsification following the surgical steps below: a temporal clear corneal incision, anterior continuous curvilinear capsulorhexis and implantation of a foldable acrylic PC/IOL in the bag (Acrysof IQ, Alcon laboratories), using sodium hyaluronate 1% (Healon, Advanced Medical Optics). The target postoperative refraction was -0.5. On the first postoperative day, slit-lamp revealed: clear cornea, round dilated pupil due to mydriatics, centralized PC/IOL seated in the bag, deep anterior chamber with mild to moderate inflammation (cells++ and Tyndall+). Intraocular pressure was 12 mm Hg. Best-corrected visual acuity was (BCVA) 0.8 (refraction: -1.0/-1.0/154°). One week later, the patient presented with deterioration of the left eye visual acuity.

BCVA was 0.4 (refraction: -2.0/-1.0/154°). Slit-lamp examination disclosed the accumulation of a transparent substance between the posterior surface of the PC/IOL and the posterior capsule with prominent capsular bag distension; no dislocation of PC/IOL was noticed (Figure 1). Diagnosis of CBS was made and Nd:YAG capsulotomy at 6 o'clock was performed. Five days later, the space between PC/IOL and posterior capsule disappeared and BCVA improved to 0.9 (refraction: -0.75/-1.0/156°) (Figure 2).

Discussion

CBS is an uncommon complication of cataract surgery, characterized by marked distension of the posterior capsular bag. It usually occurs in the early postopera-

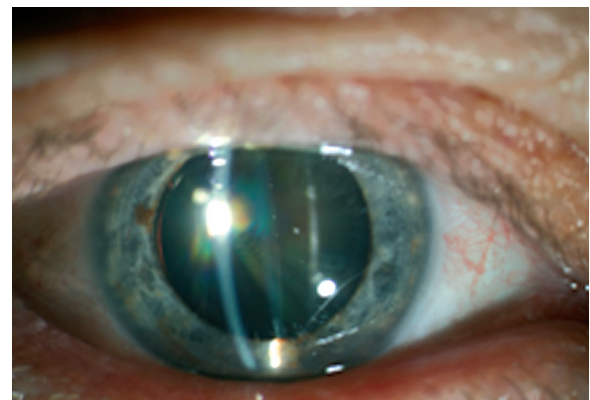


Figure 1: Slit-lamp examination disclosed the accumulation of a transparent substance between the posterior surface of PC/IOL and the posterior capsule with prominent capsular bag distension.

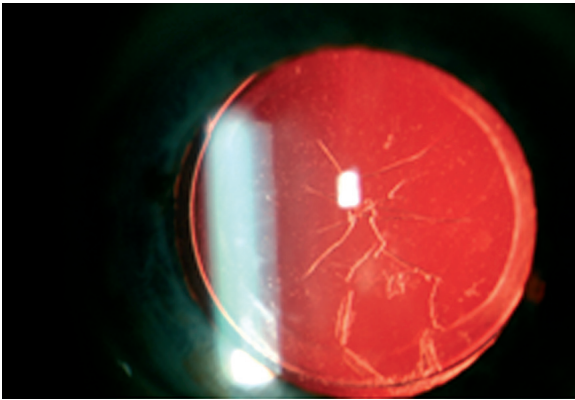


Figure 2: Slit-lamp examination five days after Nd:YAG capsulotomy at 6 o' clock revealed that the optic empty space between PC/IOL and posterior capsule disappeared.

tive period and is characterized by myopic shift due to PC/IOL and iris diaphragm anterior dislocation and elevated IOP due to shallowing of the anterior chamber^{2,3}. CBS has been also described in late postoperative period, even 5 years after phacoemulsification, with mild clinical manifestations⁵.

It has been postulated that CBS is the result of viscoelastic material entrapment between the intraocular lens and the posterior capsule⁶. Viscoelastic substances create an osmotic gradient across the capsular membrane thereby generating distension of the posterior capsule, as they equalize their osmolality with the surrounding vitreous⁶. Sometimes, retained viscoelastic promotes the proliferation of remaining lenticular epithelial cells, creating a milky-like colloidal suspension, typically observed in CBS cases of late onset⁴. Large diameter anterior chamber lenses, PMMA and silicone foldable PC/IOL have also been associated with development of CBS^{4,6}. In our patient an acrylic PC/IOL was used.

Our patient had also a significant myopic shift without dislocation of PC/IOL. The anterior chamber was deep. None of the predisposing factors mentioned above were present in our case. The refractive index of Healon (1.3347) is similar to that of aqueous humor (1.336) and therefore it is unlikely that Healon significantly influenced the myopic shift. We assume that the presence of lenticular epithelial cells and debris in the posterior bag increased the refractive index of the entrapped viscoelastic, generating an additional 'intraocular lens' and modifying the postoperative refraction.

Evacuation of this "artificial intraocular lens" was achieved with focal Nd:YAG capsulotomy at 6 o' clock. Full visual restoration was achieved 5 days after the Nd:YAG intervention.

Our case indicates that myopic shift in CBS is not attributed only to PC/IOL dislocation; the biochemical and cellular composition of the accumulated substance could also play a role, even in the early postoperative period. Focal 6 o' clock Nd:YAG capsulotomy could be a safe and effective method of treatment.

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