

Late Term Accumulation of Milky Material Behind an Acrylic Hydrophilic Intraocular Lens

Akrilik Hidrofilik Göz İçi Lens Arkasında Geç Dönem Süt Benzeri Materyal Birikimi

İbrahim Çağrı TÜRKER¹, Dilek GÜVEN², İnci DARUGA¹

Case Report

Olgu Sunumu

ABSTRACT

Foldable hydrophilic intraocular lenses are known to prevent epithelial migration and posterior capsule opacification owing to their square edge design and good contact with the anterior capsule. In this report the diagnosis, surgical treatment, and ultrasonographic features of late accumulation of milky material behind an acrylic intraocular lens are described.

Key Words: Hydrophilic acrylic lens, posterior capsule opacification, intraocular lens opacification, phacoemulsification, ultrasonography, capsular block syndrome.

ÖZ

Foldable hidrofilik intraokuler lenslerin epitelyal göçü engellemeleri, arka kapsül opasifikasyonunu keskin optik kenar yapısı ve ön kapsülle iyi temasta olmaları ile önledikleri bilinir. Bu olgu sunumunda akrilik hidrofilik intraokuler lens arkasında geç dönem süt benzeri materyal birikiminin, cerrahi tedavisi ve ultrasonografik özellikleri anlatılmıştır.

Anahtar Kelimeler: Hidrofilik akrilik lens, arka kapsül opasifikasyonu, intraokuler lens opasifikasyonu, ultrasonografi, kapsüler blok sendrom.

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INTRODUCTION

Capsular block syndrome (CBS) is a complication of cataract extraction and intraocular lens (IOL) implantation surgery that can occur during and after surgery. Depending on the time of onset, CBS can be classified as; intraoperative which is seen at the time of lens luxation following hydrodissection, early postoperative that is seen within 2 weeks after the surgery and late postoperative CBS.¹ The fluid that accumulates between the IOL and the capsular bag in the capsular block syndrome may involve either residual viscoelastic material, lens epithelial cell remnants or lens cortex.

Here we discuss clinical appearance, diagnostic evaluation and treatment approach in a case with late CBS presenting with an opacification indistinguishable from IOL opacity.

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1- Şişli Etfal Eğitim ve Araştırma Hastanesi, 1. Göz Kliniği, İstanbul, Uz. Dr.
2- Şişli Etfal Eğitim ve Araştırma Hastanesi, 1. Göz Kliniği, İstanbul, Doç. Dr.

1- M.D. Şişli Etfal Training and Research Hospital 1 st Eye Clinic İstanbul/TURKEY
TÜRKER İ.Ç., drcagriturker@hotmail.com
DARUGA İ., incidaruga@yahoo.com
2- M.D. Associate Professor, Şişli Etfal Training and Research Hospital 1 st Eye Clinic
İstanbul/TURKEY
GÜVEN D., dkguven@hotmail.com

Correspondence: M.D. İbrahim Çağrı TÜRKER
Şişli Etfal Training and Research Hospital 1 st Eye Clinic İstanbul/TURKEY

CASE REPORT

A 61-year-old diabetic male patient who had phacoemulsification and IOL implantation for mature cataract six years ago applied because of blurring of vision in his right eye. Best corrected Snellen visual acuities (BCVA) were 5/10 in the right eye and 10/10 in the left eye. Intraocular pressures with applanation tonometry were 16mmHg in both eyes. He was pseudophakic bilaterally. In the right eye, there was an opacification at the location of the IOL as seen through the pupillary area (Figure 1a). The homogeneous milky opacification contained tiny white particules heterogenously scattered and suspended without any movement (Figure 1b). This opacification was first misdiagnosed as diffuse IOL opacification. Biomicroscopic evaluation revealed opaque anterior capsule opening that was tightly attached to the peripheral IOL optic (Figure 1c). There was no anterior chamber inflammatory reaction and anterior chamber depth was normal. According to the patient's previous records the implanted lens was Softec Model I with 21 D power, 5.75 mm optic diameter, 12.0 mm length and SN: 91292623 (Lenstec Inc, St. Petersburg, Florida). The left eye was pseudophakic with IOL in the bag and with no capsular opacity. The anterior chamber depth was normal. Fundus examination revealed only few microaneurysms. B-mode and A-mode ultrasonography (Figure 2a) of the right eye showed three very high reflective spikes at the IOL location whereas in the left eye there were only two very high reflective spikes (Figure 2b). There were no abnormal vitreous or retinal pathology but a few artifactual spikes existed due to presence of IOLs. An exploratory and therapeutic surgery was planned under retrobulbar anesthesia and informed consent of the patient was taken. At the very beginning of the surgery as soon as a side port was formed by an MVR knife, because of a sudden change in the anterior chamber pressure a whitish fluid which was entrapped in the retrolental space moved to the anterior chamber spontaneously. Bimanually the anterior chamber and capsular bag was irrigated and aspirated. Entire capsular bag had retained and/or regenerated cortical material remnants. Diamond-dusted polisher was used for cortical cleaning. The surgery was completed uneventfully.

Post-operatively topical antibiotic, steroid and cycloplegic was applied. BCVA increased to 8/10 in the right eye. Biomicroscopy revealed clear anterior capsule, posterior capsule and IOL surface (Figure 3). In the repeat B-mode and A-mode ultrasonography of the right eye we detected two very high reflective spikes corresponding to the IOL location as was detected in the left eye (Figure 2c).

DISCUSSION

Softec 1 (Lenstec) is a single piece acrylic hydrophilic foldable lens with no angulation. The haptics have modified C shape, the optic has equal anterior and posterior convexity and square edge technology. According to Nishi and Nishi this square-edge design of an IOL creates a discontinuous capsule bend angle and retards the migration of equatorial lens epithelial cells onto the posterior capsule resulting in posterior capsular adherence to the posterior surface of the IOL.²

Following cataract surgery and IOL implantation, subcapsular opacification can be seen.³ Remaining anterior lens epithelial cells undergo fibrous metaplasia and lead to anterior and posterior capsule opacification. Morphologically the capsular opacification may be seen as clusters of swollen opacified cells or in a fibrous form. The size of the capsulorhexis, IOL design and material and preexisting factors may have an influence. In order to prevent capsular opacification anterior capsular polishing, 5 mm continuous curvilinear capsulorhexis (CCC), minimizing retained cell or cortex in the capsular bag, blockage of cellular migration should be considered. During surgery hydrodissection-enhanced cortical cleaning, in-the-bag-fixation, having capsulorhexis edge on IOL surface, implanting IOLs with good biocompatibility and square-edge optic design, having maximal IOL optic-posterior capsule contact are among the cautions that will help decreasing posterior capsular opacification. On the other hand when cortical cleaning could not be made properly capsular distention syndrome may occur. The material entrapped in the capsular bag is considered to be delayed accumulation of regenerated cortical lens material. A tight adhesion of the anterior capsule opening



Figure 1a: Anterior segment appearance is like the intraocular lens (IOL) is fully opaque.



Figure 1b: The slit lamp beam does not strike the posterior surface of the IOL. The whitish opacification contained tiny white particules heterogenously scattered and suspended without any movement.



Figure 1c: The entire edge of the anterior capsule is attached to the IOL optic.

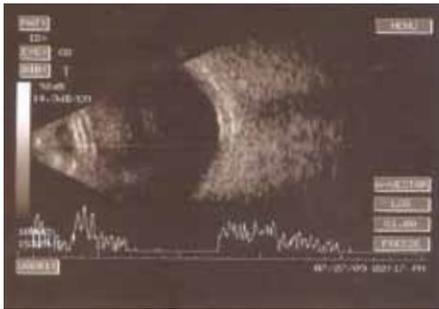


Figure 2a: B-A scan ultrasonography (USG) of the right eye shows three very high reflective spikes at the IOL location (green arrow)

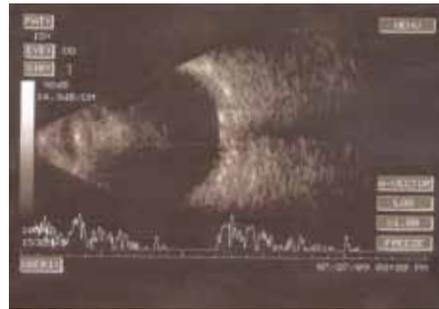


Figure 2b: USG of the left eye reveals only two very high reflective spikes at the IOL location.

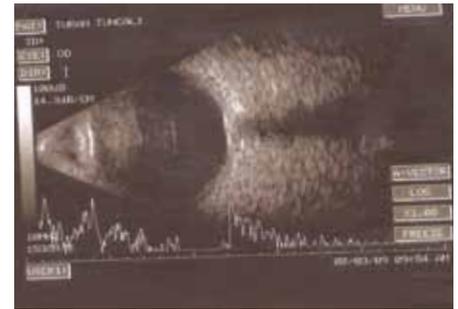


Figure 2c: USG of the right eye after aspiration and irrigation surgery shows two very high reflective spikes corresponding to the IOL location.

ning to the IOL optic may have prevented the fluid and protein material from diffusing into the anterior chamber.

Eifrig reported three cases with milky fluid accumulation in the retro-IOL space who showed a benign course during follow-up.⁴ Miyake et al., called this situation as late postoperative capsular block syndrome accompanying liquefied afte cataract or capsulorhexis-related lacteocrumenasia.¹ In their report of 41 patients who underwent phacoemulsification with CCC and PMMA IOL implantation Miyake et al described a liquefied milky white substance that accumulated between IOL optic and posterior lens capsule.⁵ Fibrosis, Elschnig pearls and Soemmering ring accompanied some of the cases.

In late postoperative capsular block syndrome, it is assumed that osmotic gradient caused by the proteins synthesized by capsular remnants and residual lens epithelial cells causes fluid accumulation in the capsular bag.⁶

Namba et al. reported three cases of accumulation of homogeneous milky fluid in the retro-IOL capsular bag 3-5 years after uneventful phacoemulsification through scleral tunnel incision with CCC and PMMA IOL implantation.⁷ They aspirated the milky fluid with a needle through pars plana incision for analysis, in the third one there was spontaneous resorption of the fluid but

remaining posterior capsule opacity necessitated laser capsulotomy. Bhattacharjee et al. reported two cases with conglomerated whitish fluffy material and crystalline bodies inferiorly located between the IOL and the posterior capsule following uneventful phacoemulsification with CCC and foldable IOL implantation 4 and 7 years ago.⁸ The authors considered this material as regenerated cortical lens material which descended in clumps in the plane between the posterior capsule and the IOL. Both patients refused any intervention and about one year later the fluid and material spontaneously absorbed with clarified capsule.

In all these reports and ours, there was a circumferential adhesion of the edge of the CCC opening to the peripheral IOL optic, there was accumulation of milky fluid in the capsular bag in the retroIOL space, and there was mild to moderate decrease in visual acuity. In our case ultrasonography is found to be useful for diagnosis and follow-up evaluation. As a therapeutic option YAG-laser capsulotomy seems to be least invasive but surgical approach is safe and effective since it provides both evacuation of the milky fluid and cleaning of the cortical material and other precipitates in the capsular bag.



Figure 3: Anterior segment appearance of the right eye after aspiration and irrigation surgery.

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