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CASE REPORT

Late-onset capsular block syndrome: A rare complication and its surgical management

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Purpose: Late-onset capsular block syndrome is one of rare complications after cataract surgery. In this study, we report the diagnosis and successful surgical management of this syndrome.
Case report: A 70 year-old man presented with significant decrease of vision in his right eye for 4 years. He underwent cataract extraction through phacoemulsification with in-bag intraocular lens (IOL) implantation in the right eye 8 years ago, which was uneventful. Patient's presenting vision was 6/60 in the right eye with a whitish fluid-filled space between the posterior capsule and back surface of IOL optic. He underwent surgical removal of the "IOL-capsule complex" with anterior vitrectomy (AVT). The microbiological culture report of IOL-capsule complex showed no bacterial growth. Visual rehabilitation was restored by implanting an anterior chamber lens 2 months afterward.
Conclusion: Although rare but delayed presentation of capsular block syndrome has reported, conventional treatment with Nd:YAG laser capsulotomy could not exclude the risk of intraocular infection spread. Extraction of IOL-capsule complex with AVT followed by delay anterior chamber lens implantation can restore the visual function and reduce the risk of intraocular infection.

Keywords: Phacoemulsification, capsulorhexis, intraocular lens (IOL), Nd:YAG laser capsulotomy, IOL-capsule complex

Introduction

Capsular syndrome (CBS) of delayed onset is one of rare complications after cataract surgery, especially after phacoemulsification in case of continuous curvilinear capsulorhexis (CCC) and implantation of in-bag intraocular lens (IOL) (1, 2). Patient may present with disturbance of vision, usually reduced vision and forward displacement of the posterior chamber IOL due to accumulation of whitish fluid-like material between the posterior lens capsule and back surface of IOL, thereby causing distension of capsular bag (3).

Miyake et al. (4) classified CBS into three categories: intraoperative, early postoperative, and late onset. Intraoperative capsular block can occur during hydrodissection when saline solution accumulates between the nucleus and the posterior capsular bag and may result in posterior capsular rent and decrease of nucleus in vitreous cavity. Early postoperative capsular block occurs due to accumulation of viscoelastic material between the posterior capsule and posterior surface of IOL, usually within 2 weeks after cataract surgery. The late-onset type may occur after months or years after surgery due to proliferation and metaplasia of residual epithelial cells, thus forming characteristic milky-white substances behind the IOL.

Literature search found the usual presenting time of late-onset CBS is about 3.8 years after cataract surgery. Some

studies reported that it may present even 12 years after surgery (1, 5).

Nd:YAG laser posterior capsulotomy is the treatment of choice for late-onset CBS, creating path for leakage of accumulated material into vitreous cavity and subsequently improving the visual acuity. Sequestered low-virulent organism may release after treatment with Nd:YAG and can cause intraocular inflammation. There is a case report of rare *Propionibacterium acnes* endophthalmitis following Nd:YAG treatment (6). Clinician should be aware about it, and in cases where laser capsulotomy is not possible, the removal of whitish material may need surgical intervention (2, 3, 7).

We described a case report of delayed-onset CBS occurring 8 years after phacoemulsification surgery. We treated it surgically by removing the "IOL-capsule complex" as a whole, followed by anterior vitrectomy (AVT) and late implantation of anterior chamber intraocular lens (AC-IOL).

Case report

A 70-year-old man presented with a 4-year history of blurred vision in the right eye. He underwent uneventful phacoemulsification surgery with posterior chamber IOL implantation in his right eye 8 years ago. His presenting visual acuity in the right eye was 6/60, and retinoscopy revealed dull reflex. Slit-lamp biomicroscopy showed a whitish and turbid fluid-filled space between the posterior lens capsule and the posterior surface of IOL (**Figures 1A, B**). Anterior chamber was quiet and there was no forward shifting of IOL. Posterior segment could not be visualized due to hazy appearance. B-scan ultrasonography shows attached retina with echo-free vitreous cavity. His left eye was pseudophakic, with a vision acuity of 6/9. He had no history of systemic diseases.

Patient was advised for IOL-capsule complex extraction. After getting written informed consent from patient, surgical removal of the IOL-capsule complex was performed under local anesthesia. Intraoperatively, a 6-mm small incision cataract surgery tunnel was made at the superior limbus after peritomy. The IOL-capsule complex was removed with McPherson forceps, and AVT was performed (**Figure 1C**). Later, the IOL-capsule with turbid fluid is sent for microbiological culture. The microbiological culture report showed no indolent bacterial growth. His postoperative period was uneventful. Two months afterward, the eye became quiet and an AC-IOL was implanted with a superior clear corneal incision (**Figure 1D**). On 2-month follow-up, his best-corrected visual acuity was 6/9 with refraction of −1.50 Dcyl 90°.

Discussion

Davison (8) first reported this condition in 1990. Late-onset CBS is known to occur in phacoemulsification with CCC and IOL implantation within bag but very rarely (9). The incidence of CBS is ?1% (i.e., 0.73%) after phacoemulsification with in-bag IOL implantation in CCC (10).

Late-onset CBS may present weeks to months after cataract surgery (11). It can be found even 12 years after cataract surgery (1, 5) and our case is presented 8 years after surgery. Reduction of visual acuity is the main symptom of CBS without signs of inflammation. In our case, patient presented only with reduced vision, without any sign of intraocular inflammation.

Miyake et al. (4) described the mechanism of late-onset CBS. Proliferation and metaplastic changes of cortical cells with in-bag cause opacification of posterior capsule and seal the gap between IOL and the anterior capsular rim. The turbid fluid is secreted by metaplastic cells, which ultimately accumulated behind the IOL (4).

A few literature has reported that *P. acnes* may sequestrated in-bag capsular in late-onset variety (12). Endophthalmitis due to *P. acnes* after Nd:YAG laser capsulotomy has been reported by Carlson and Koch (13).

Our case presented 8 years after uncomplicated phacoemulsification surgery. By slit-lamp examination, the posterior capsule was not clearly detected due to the presence of thick turbid fluid. Due to the presence of *P. acnes*, an IOL-capsule complex extraction was performed via a small limbal incision and AVT, instead of Nd:YAG laser capsulotomy. Visual rehabilitation was

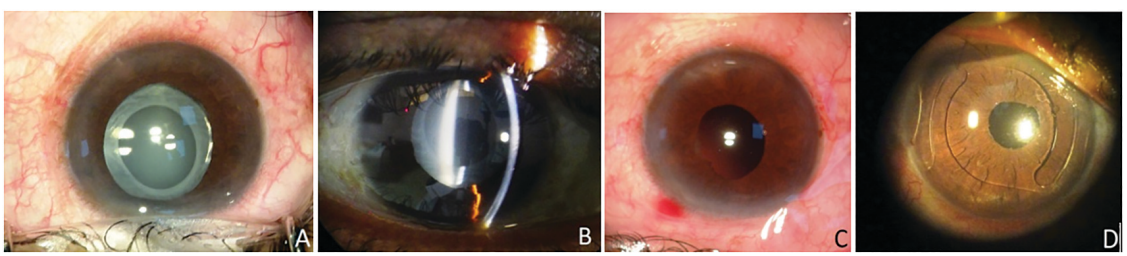

FIGURE 1 | Anterior capsular fibrosis **(A)**, retrolenticular space filled with whitish turbid fluid **(B)**, extraction of IOL-capsule complex and anterior vitrectomy **(C)**, late implantation of AC-IOL **(D)**.

restored by implanting an anterior chamber lens after eye became quiet.

Conclusion

CBS can present after a long period of time with significant loss of vision. The usual treatment for the condition is Nd:YAG laser capsulotomy, but an infective etiology could be present and this may causes intraocular infection. IOL-capsule complex extraction with AVT followed by delay anterior chamber lens implantation can restore the visual function and reduce the risk of intraocular infection.

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