Late-onset capsular bag distension syndrome following cataract surgery

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DECLARATIONS

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Capsular bag distension syndrome (CBDS) is an unusual cause of late visual impairment after cataract surgery with characteristic features and can be easily treated to rapidly restore visual function.

Case report

A 74-year-old man presented to the ophthalmology outpatient clinic with reduced visual acuity and increasing haziness of vision in his left eye over several months. Seven years previously he had undergone uneventful cataract surgery with phacoemulsification and insertion of a posterior chamber lens (+14.5 dioptres Alcon MA60BM, 6.0 mm optic) in the same eye. There had been no postoperative complications and his preoperative best-corrected visual acuity of 6/24 had improved to 6/9 four weeks following surgery. The postoperative spherical equivalent refraction was −0.125 dioptres.

At the current presentation, his best-corrected visual acuity was 6/9 in the right eye and 6/18 in the left eye. Slit lamp biomicroscopic examination revealed a posterior chamber intraocular lens with a distended posterior capsule and an opaque fluid sequestered between the intraocular lens optic and posterior capsule (retrolenticular pseudohypopyon) (Figure 1). Intraocular pressure was within the normal range and there was no evidence of anterior or posterior segment inflammation.

Posterior capsulotomy with Nd:YAG laser was undertaken, and immediately after the posterior capsule was breached, the milky white fluid was observed to pour through the capsulotomy into the vitreous cavity. Upon completion of the capsulotomy the sequestered fluid had disappeared from the capsular bag, the posterior capsule distension had resolved with the lens capsule anatomically positioned immediately behind the intraocular lens optic (Figure 2). Immediate post-laser visual acuity was 6/12, and at follow-up six weeks later, this had improved further to 6/9 with no intraocular inflammation.

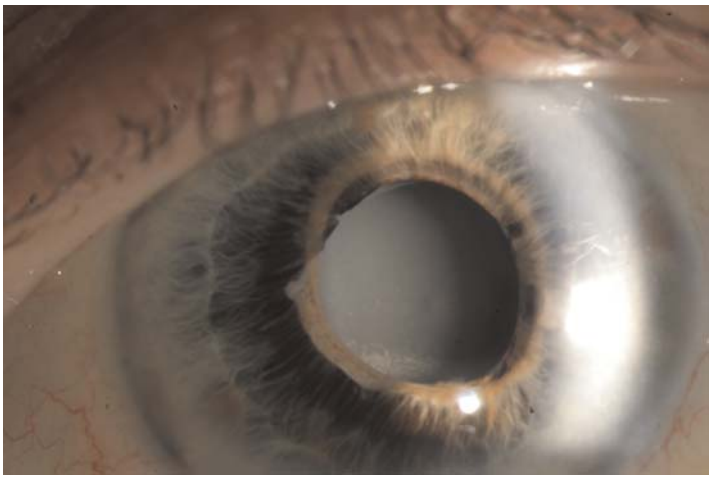
Discussion

CBDS is an uncommon, but well recognized cause of reduced vision following cataract surgery. It usually presents in the immediate postoperative period, with shallowing of the anterior chamber, unexpected myopic refraction and accumulation of liquefied substance between the implanted lens and posterior capsule.[1–4] It may rarely present many years after surgery, with reduced vision but no significant refractive change.[1,5] The present case demonstrates this unusual presentation of delayed postoperative visual impairment and its management, with photographic documentation of the clinical course.

Early CBDS presents between 1 day and 2 weeks postoperatively and the most likely explanation is that retained viscoelastic from the surgical procedure accumulates behind the intraocular lens (IOL) as the IOL optic occludes the anterior capsular opening made by the capsulorrhexis.[1,2] The condition is most commonly associated with continuous curvilinear capsulorrhexis, but has also been reported following extracapsular cataract extraction with can-opener type capsulorrhexis and following placement of the IOL in the ciliary sulcus.[1] It may occur following implantation of PMMA or silicone intraocular lenses.[2]

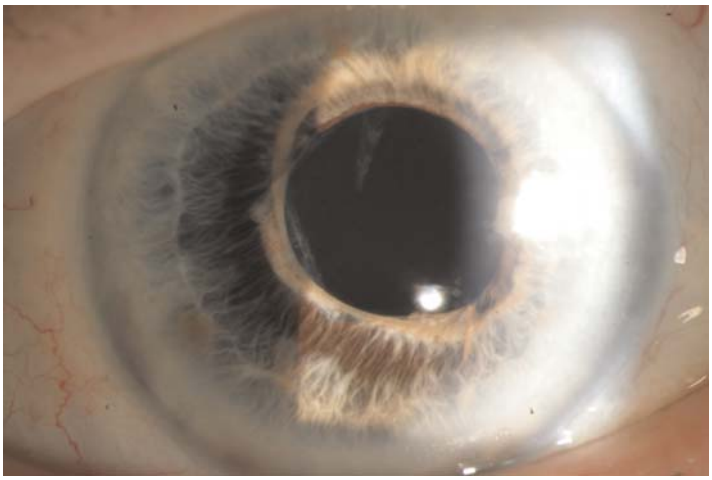
The induced myopia in early CBDS has been demonstrated on ultrasonographic measurement to be in the region of −2.35 dioptres (range +0.13 to −4.50 D).[4] This has been reported to lessen gradually with time with a satisfactory visual

Figure 1
Left eye with opaque fluid sequestered between the intraocular lens and distended posterior capsule



outcome in a conservative management strategy,[2] although in symptomatic cases treatment with Nd:YAG laser capsulotomy can help to release the retained fluid, reduce the unwanted myopia and restore normal anatomic relationships.[4,6,7] Prevention of early CBDS may be facilitated by ensuring an adequate size capsulorrhexis at the time of surgery, and careful attention to the removal of the viscoelastic following implantation of the intraocular lens.[2]

Figure 2
Following Nd:YAG capsulotomy the opaque fluid has disappeared into the vitreous cavity and the visual axis is clear



Late CBDS is very uncommon, and is characterized by reduced vision without significant refractive change, and an accumulation of a turbid fluid between the IOL and the posterior capsule.[1,5] This appears as a retrolenticular pseudohypopyon as in the current case, and it has been postulated that the mechanism of the chronic reaction is the production of collagens from residual lens epithelial cells or necrotic and/or apoptotic autolyzed lens epithelial cells.[6]

Electrophoresis on the opaque sequestrate has been undertaken in a previous case, and confirmed the presence of large amounts of alpha-crystalline, suggesting that the accumulated substance is derived from residual lens epithelial cells.[8] The absence of gammaglobulins suggests antigen-antibody mediated reaction plays no significant part in the pathophysiology.

While CBDS is a clinical diagnosis, Pentacam Scheimpflug imaging may be useful for precisely documenting the presence of the condition and progress after treatment.[7] The present case was successfully treated with Nd:YAG laser capsulotomy, leading to dispersion of the sequestrate, and prompt restoration of visual acuity. The clinical appearances have been captured photographically and are consistent with previously reported cases of late-onset CBDS.[1,5–7]

Kollias *et al.* reported a case of symptomatic late CBDS in which 23-gauge bimanual capsulotomy and anterior vitrectomy were undertaken via a pars plana approach.[9] Microbiological analysis of the sequestered material revealed the presence of *Proprionibacterium acnes*. They have therefore suggested the possibility of an infectious component in the aetiology of the syndrome, and that surgical approach may be considered as an alternative management strategy to Nd:YAG capsulotomy.

Late-onset capsular bag distension syndrome is an uncommonly reported cause of late postoperative visual impairment following cataract surgery, and has characteristic clinical features. Symptomatic cases can be treated with careful Nd:YAG laser posterior capsulotomy, with successful restoration of anatomical relationships and improvement in visual acuity.

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