
SHORT COMMUNICATION

Case report

Choroidal effusion and hypotony caused by severe anterior lens capsule contraction following cataract surgery

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PURPOSE. *To describe a case of severe anterior capsular contraction associated with choroidal effusion in a 81 year old female with primary open angle glaucoma undergoing routine phacoemulsification cataract surgery.*

CASE REPORT. *Eight weeks following surgery the anterior capsule opening had reduced to 3 mm in size. Intraocular pressure was found to be 4 mmHg and B scan ultrasound revealed a large choroidal effusion. Anterior capsulotomy with Nd:YAG laser was performed. At review, two weeks later, the choroidal effusion had resolved and visual acuity had recovered.*

CONCLUSIONS. *The Nd:YAG laser radial relaxing capsulotomies helped relieve the capsular contraction and associated traction on the ciliary body. (Eur J Ophthalmol 2004; 14: 153-5)*

KEY WORDS. *Capsule contraction, Choroidal effusion, Hypotony*

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Case report

Continuous curvilinear capsulorhexis (CCC) is the procedure of choice for phacoemulsification. Untoward effects of CCC are rare, with capsule contraction syndrome being one of them (1-5). This is characterised by an exaggerated reduction in the anterior capsulotomy opening and equatorial capsular bag diameter. We describe a case in which severe anterior capsule contraction led to hypotonic choroidal effusion.

An 81-year-old woman with primary open-angle glaucoma and previous bilateral trabeculectomy was being followed up in our clinic. Her intraocular pressures were

well controlled without topical medication. She developed a cataract in her right eye reducing her visual acuity to 6/18. Biometry showed an axial length of 21.41 mm. Goldmann applanation tonometry showed an intraocular pressure (IOP) of 14 mmHg in the right eye just prior to surgery. She underwent uneventful phacoemulsification with a CCC of approximately 5.0 mm. A foldable 3-piece intraocular lens (IOL) (Bausch & Lomb, Soflex 2) was implanted into the capsular bag. The lens had a 6.0 mm silicone optic, poly-methylmethacrylate (PMMA) haptics and an overall length of 12.5 mm. In the immediate postoperative period, there was no wound leak. The topical steroids were tapered and discontinued in four weeks.

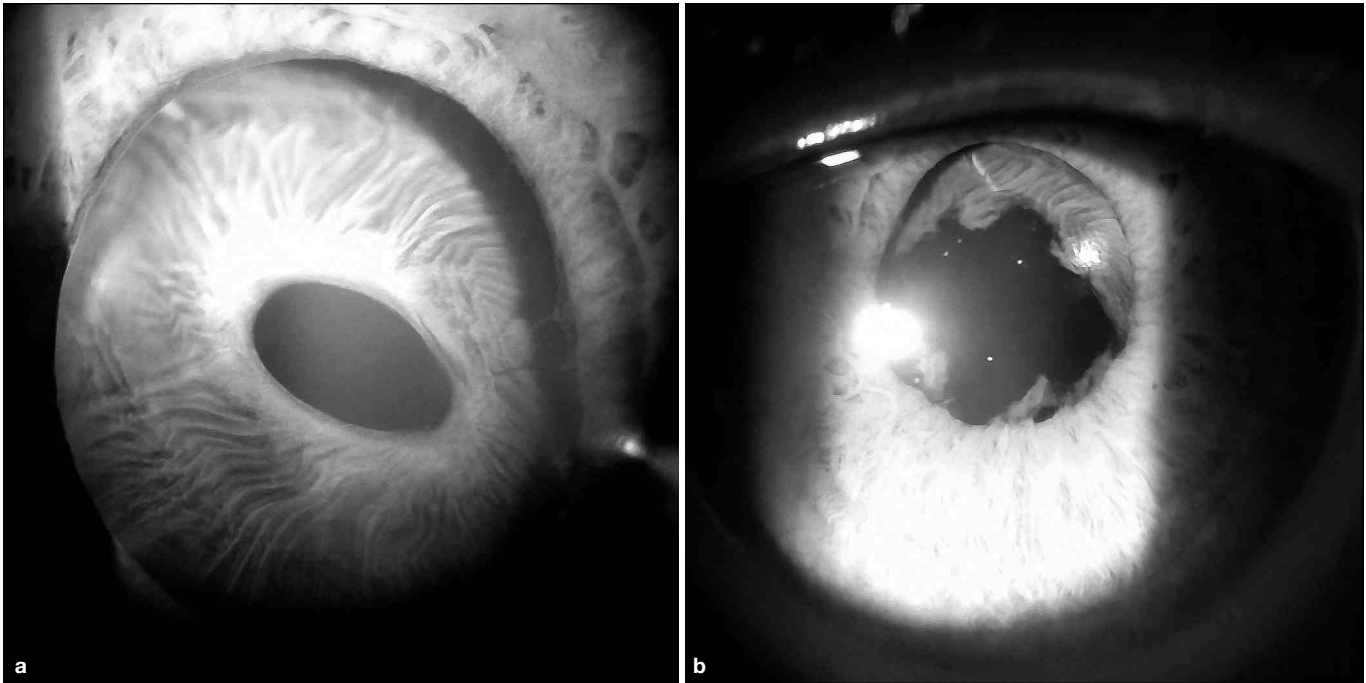


Fig. 1 - a) Anterior segment photograph shows severe anterior capsular contraction. **b)** Post laser, anterior segment photograph shows the radial capsulotomies.

Eight weeks after surgery, the patient reported reduced vision in the operated eye. The visual acuity was 6/18. Slit lamp biomicroscopy revealed severe contraction of the anterior capsule reducing the CCC opening to about 3.0 mm (Fig. 1a). The IOL was “in the bag” and well centered. The anterior chamber was deep with no inflammatory activity. Goldmann applanation tonometry showed an IOP of 4 mmHg in the right eye and 14 mmHg in the left. Fundus examination revealed a 360-degree choroidal effusion, which was confirmed on B-scan ultrasonography (Fig. 1b).

A neodymium:YAG (Nd:YAG) laser was used to create four relaxing radial cuts to the anterior capsule at 3, 6, 9 and 12 o’clock positions. It was noted that the anterior capsule was very thick. The capsulotomy comprised 115 shots with a power of 2.5 mJ each. Immediate widening of the capsular edges was noted after the procedure (Fig. 2). Topical prednisolone acetate 1% six times a day was prescribed. Two weeks later, fundus examination and B-scan ultrasonography showed resolution of the choroidal effusion. The hypotony resolved and the visual acuity improved to 6/9.

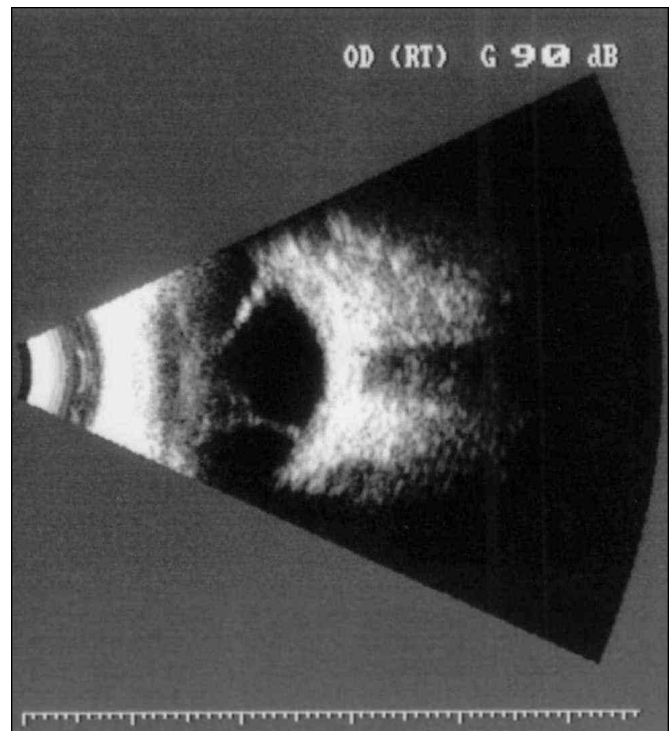


Fig. 2 - Ultrasound B-scan shows choroidal effusion.

DISCUSSION

Davison first described capsule contraction syndrome as a complication of CCC (2). Its effect includes extreme reduction in the capsulectomy opening, malposition of the opening, reduction in equatorial capsular diameter and IOL displacement. It is thought to be due to fibrous dysplasia of residual lens epithelial cells in eyes with relatively weak zonules. It is more frequently seen in those with pseudoexfoliation syndrome, uveitis, pars planitis and myotonic dystrophy (2, 3).

Certain factors are believed to contribute to anterior capsule contraction. Small size of the initial capsulorhexis leads to more lens epithelial cells being left, thereby allowing greater potential for capsule contraction (4). The IOL material may also influence capsular fibrosis. Stiffer haptic designs could lead to less contraction (5). Werner et al (6) compared different IOL styles, and found that the rate of anterior capsule contraction was higher with plate-haptic silicone IOLs compared to three-piece IOLs. Silicone optic-PMMA haptic IOL as used in our case was rated third in this regard.

In our case, there was no pseudoexfoliation or severe ocular inflammation. However the use of silicone IOL may have been a predisposing factor for anterior capsule contraction. The aqueous microenvironment is altered in patients with primary open angle

glaucoma and contains higher levels of various factors (e.g. gelatinase A, TGF-beta 2) that may contribute to an exaggerated fibrous response (7,8). None of the cases in Davison's report (2) developed ocular hypotony. We also postulate that prior trabeculectomy (due to the anatomical changes to the angle following removal of part of the trabecular meshwork) may form a potential weak zone through which aqueous could flow into the suprachoroidal space if there was sufficient traction on the ciliary body. In this case, we believe that severe capsule contraction would have led to tractional ciliary body detachment, resulting in hypotony and choroidal effusion. B-scan ultrasonography is useful to confirm the clinical findings. Although not performed, high-resolution ultrasound biomicroscopy can help assess ciliary body changes in such cases.

The Nd:YAG laser radial relaxing capsulotomies helped relieve the capsular contraction and associated traction on the ciliary body. Where laser is ineffective, surgical radial capsulotomies may be performed.

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