International Journal Dental and Medical Sciences Research
Volume 5, Issue 5, Sep-Oct 2023 pp 585-587 www.ijdmsrjournal.com ISSN: 2582-6018

Late onset capsular bag distension syndrome treated with Neodymium yttrium aluminium garnet laser capsulotomy

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Date of Submission: 20-10-2023 Date of Acceptance: 31-10-2023

ABSTRACT: Capsular bag distension syndrome is characterized by the expansion of the normal potential space between the posterior capsule and the IOL, causing distension of the capsular bag. A 63years old male underwent phacoemulsification left eye(LE) 4years back.On examination,LE vision was 20/30, IOP was 16mmHg and showed clear fluid due to retained viscoelastic material in the bag behind IOL and posterior capsular opacification.He was treated with Nd:YAG capsulotomy and no inflammation was noted post laser.

Key words: Viscoelastic material, Capsular bag distension syndrome, Posterior capsular opacification.

I. INTRODUCTION:

The Capsular bag distension syndrome (CBDS) has other terms also like, capsular block syndrome, capsular bag hyperdistension, capsulorrhexis block syndrome or viscoelastic entrapment syndrome were first described by Davison.[(1)] This is a rare complication of cataract surgery involving an anterior continuous curvilinear capsulorrhexis (CCC) and in-the-bag intraocular lens (IOL) implantation. It is characterized by the expansion of the normal potential space between the posterior capsule and the IOL, causing distension of the capsular bag leading to the manifestations of syndrome.[(2)]

II. CASE REPORT:

After obtaining consent, a 63 years old male patient who came with complaints of diminution of vision right eye from 2years was examined. His vision was 20/200 in right eye (RE) and was 20/60 (-1.50 DC@100°20/30) in left eye(LE). Slit lamp examination showed dense cataractous lens and rest within normal limits (WNL) in RE. LE showed foldable(single piece, acrylic, hydrophobic) intraocular lens in the bag with presence of clear fluid in the bag behind IOL and posterior capsular opacification (Fig 1(a,b)). He underwent phacoemulsification LE 4 years ago. Patient didn't have any complaints regarding LE. Intra ocular pressure (IOP) was 18 and 16 mm Hg in RE and LE respectively. RE fundus was hazy because of dense cataract but was grossly WNL, LE was normal.He was diagnosed as LE capsular bag distension syndrome and as the fluid in the bag appeared clear, Neodymium-doped yttrium aluminium garnet (Nd YAG) capsulotomy was done under topical antibiotic and steroid cover. After the capsulotomy, the bag was cleared of the fluid (Fig 1 (c)) and was started on ofloxacin + dexamethasone eye drops 4times in a day. Two weeks after capsulotomy, his vision was 20/20 with +1.0 -1.50@100°, IOP was 16mm Hg and there was no reaction in the anterior chamber or vitreous and fundus was WNL.

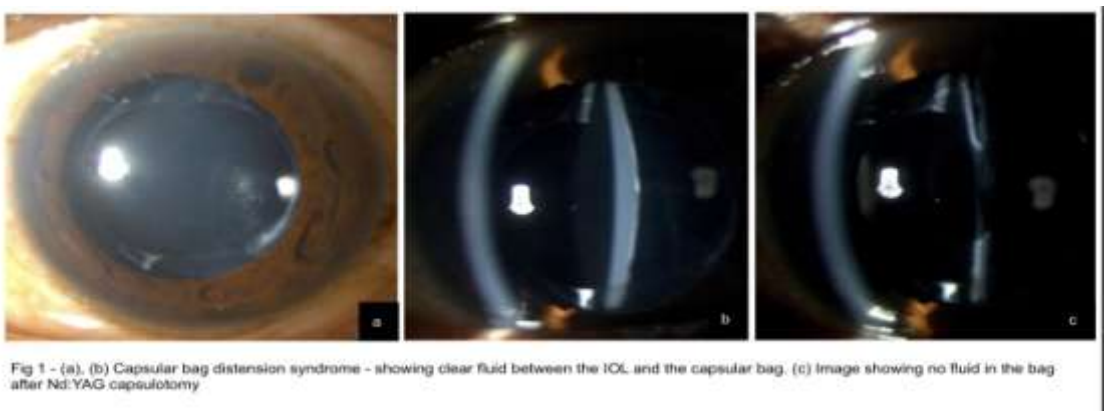

Fig 1 - (a),(b) Capsular bag distension syndrome - showing clear fluid between the IOL and the capsular bag. (c) Image showing no fluid in the bag after Nd: YAG capsulotomy

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III. DISCUSSION:

Capsular bag distension syndrome is an uncommon and a rare complication of cataract surgery. It is characterised by the presence of an optically clear space between the IOL and the posterior capsule, with posterior bowing of the capsule into the anterior vitreous. Due to the distension of the bag there occurs shallowing of the anterior chamber (AC), unexpected myopic over-refraction, and occasionally, persistent uveitis. The final refractive error in our case after doing YAG capsulotomy was +1.0 -1.50@100° and before doing YAG capsulotomy, it was -1.50 DC@100°. The zero spherical refractive error before YAG capsulotomy was caused by the relative anterior shift of IOL due to the push caused by retained visco elastic material in the bag leading to the myopic shift there by nullifying the spherical refractive power.

Capsular bag distension syndrome can occur intraoperatively or postoperatively[3]. Most of the times, CBDS develop immediately after the surgery, but late presentations like even after 5 years post operatively also reported.[4]

The syndrome is because of viscoelastic material trapped between the IOL and the posterior capsule[5]. The trapped viscoelastic material creates an osmotic gradient across the capsular membrane, and so it takes time to equalize its osmolality with the surrounding vitreous and aqueous, this explains why the syndrome is not observed intraoperatively. The remaining lens epithelial cells gets support from the retained viscoelastic material leading to proliferation of the cells creating a colloidal suspension. The presence of a slightly cloudy or turbid fluid, so-called lacteocrumenasia, between the IOL and posterior capsule is due to the mixture of viscoelastic and denatured lens protein.[6] The smaller diameter of the anterior continuous curvilinear capsulorrhexis(CCC) than the diameter of the IOL optic leads to the firm apposition of lens capsule to the optic preventing the egress of the residual viscoelastic from the capsular bag. It was reported that fibronectin bounding capacity of acrylic hydrophobic IOLs is morethan that of hydrophilic IOLs leading to adhesion of the CCC margin to the optic of the IOL leading to the collection of viscoelastic material in the bag.[7]Though CCC was morethan 5mm in our case, the acrylic hydrophobic nature of the IOL might be the reason for the development of CBDS. The best way to prevent CBDS is by washing the cortical lens remnants and the viscoelastic agent thoroughly after IOL insertion.

In a study done by Muñoz-Negrete FJ et al.,[2] one case required surgical capsulotomy with pars plana vitrectomy but 3 cases were treated with ND:YAG capsulotomy without any post laser inflammation similar to our case.In a case report done by Justin C. Galvin et al., 2 cases were treated with parsplana vitrectomy and surgical capsulotomy.[8] Intra-operative and early onset CBDS are often associated with high intraocular pressures and shallow anterior chamber but these features sometimes normalize in late-onset CBDS.[9,10] As our case was a late onset CBDS, there were no such signs.

IV. CONCLUSION:

Though capsular bag distension syndrome is a rare complication, it can safely be treated with simple Nd:YAG laser capsulotomy with prophylactic antibiotic and steroid eye drops instead of going for an interventional procedure like vitrectomy.

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