



Anterior capsular contraction syndrome with hyperopic shift

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ABSTRACT

Purpose: To present a case of anterior capsular contraction syndrome with hyperopic shift two weeks after an uncomplicated combined cataract surgery and pars plana vitrectomy.

Observations: A 55-year-old man, with no known risk factors, who developed anterior capsular contraction syndrome with hyperopic shift two weeks after an uncomplicated combined cataract surgery and pars plana vitrectomy. Hyperopic shift was caused by posterior displacement of the intraocular lens with anterior flexion of the haptics. Manual peeling of the anterior capsule using the can-opener approach and microscissors successfully restored vision and corrected refractive errors.

Conclusions and Importance: Anterior capsular contraction syndrome is a complication of cataract surgery and is known to be affected by zonular weakness, pre-existing systemic and ocular conditions, intraocular lens materials, and intraoperative complications. Careful maneuver with surgery or laser can effectively restore vision and correct refraction.

1. Introduction

Anterior capsular contraction syndrome (CCS) is a rare but well-known complication of continuous curvilinear capsulorhexis in cataract surgery, presumably due to the unequal centripetal force of the zonules and proliferative myofibroblastic metaplasia of anterior lens epithelial cells (LECs).^{1,2} The reduction in the size of the anterior capsulotomy can lead to impaired visual function owing to the opacified remnants within the visual axis or intraocular lens (IOL) decentration within the capsular bag. This case report highlights the early development of CCS with hyperopic shift after combined cataract surgery and vitrectomy in a patient with no known risk factors.

2. Case report

A 55-year-old man without any systemic disease presented with a sudden onset, painless, blurred vision of the right eye. Two weeks prior, he underwent combined pars plana vitrectomy and cataract surgery with a 5.5-mm diameter of curvilinear capsulorhexis (Fig. 1A) and in-the-bag implantation of preloaded, single-piece acrylic and hydrophilic intraocular lens (IOL). The surgery resulted in no complications, and postoperative refraction was plano, with a visual acuity of 20/40. Two weeks after, the patient's refraction of the right eye increased to +3.50,

with a visual acuity of 20/200. A dilated slit-lamp examination revealed centripetal opacity with tilting haptic of the IOL (Fig. 1B, 1C). A final diagnosis of capsular contraction syndrome (CSS) with IOL haptic tilt was made. The patient underwent manual peeling of the membrane using the can-opener approach and microscissors to remove the residual fibrotic capsule (Fig. 1D). His visual acuity returned to 20/40 with plano refraction and no recurrence of CSS.

3. Discussion

Anterior CSS usually develops within three to six months after cataract surgery due to the transdifferentiation of the residual LECs to myofibroblasts, with expression of the actin smooth muscle.¹ A retrospective study of 260 eyes found that the incidence of CCS was 1.5% and that it is often associated with pseudoexfoliation syndrome, uveitis, high myopia, retinitis pigmentosa, and diabetic retinopathy.³ Furthermore, zonular weakness, small capsulorhexis, IOL design and composition, and unfinished polishing during surgery can provoke CCS.¹ Surgical factors did not play a role because the capsulorhexis size was 5.5 mm, and polishing was performed meticulously; however, the hydrophilic IOL material used in this patient may have promoted CCS development. A case series showed hyperopic shift caused by CCS after phacoemulsification and intraocular lens implantation due to posterior vaulting of

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the IOL.¹ A hyperopic shift was seen similarly in our patient, where the haptic was anteriorly tilted, causing the IOL body to be posteriorly displaced. Treatment options for CCS include Nd:YAG laser anterior capsulotomy, surgical intervention with microscissors, or a vitrector.¹

4. Conclusions

Two weeks after combined cataract surgery and pars plana vitrectomy, the patient developed a hyperopic shift due to CCS. The CCS caused a hyperopic shift due to anterior haptic tilt and displacement of the IOL body posteriorly. Manual peeling with microscissors can effectively restore vision and correct refraction.

Patient consent

Consent to publish the case report was obtained. This report does not contain any personal information that could lead to the identification of the patient.

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Authorship

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Research ethics

We further confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript.

IRB approval was obtained (required for studies and series of 3 or more cases) (TSGHIRB No.: A202005018).

Written consent to publish potentially identifying information, such

as details of the case and photographs, was obtained from the patient(s) or their legal guardian(s).

Intellectual property

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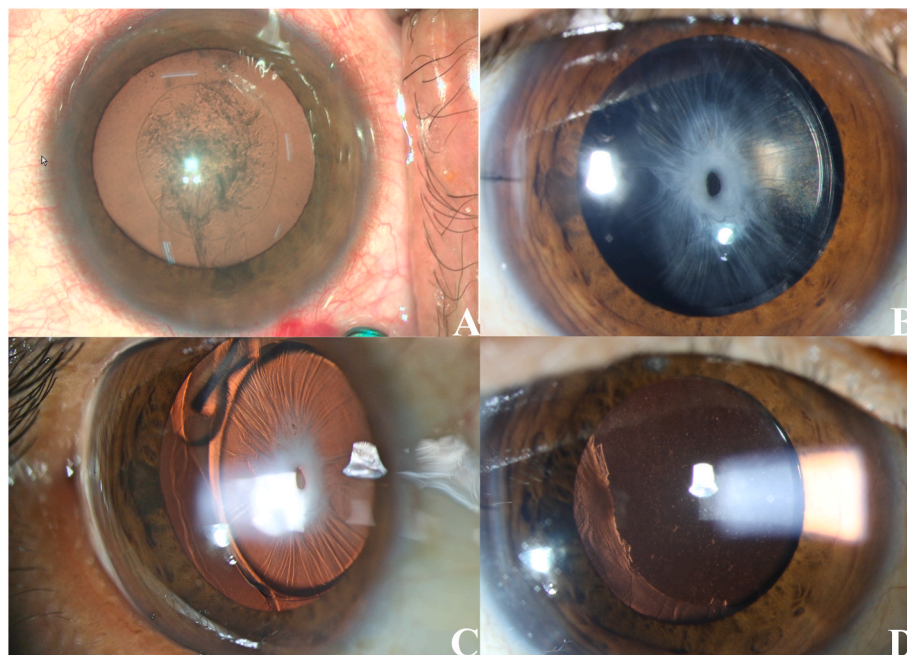


Fig. 1. Anterior segment of the right eye. (A) A 5.5 mm continuous curvilinear capsularhexis. Slit lamp examination shows (B) contraction of the capsularhexis opening and (C) anterior tilt of the haptic intraocular lens (red arrow). (D) A clear anterior capsule opening post-surgery. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

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CRediT authorship contribution statement

Kathy Ming Feng: Conceptualization, Data curation, Methodology, Software, Writing – original draft. **Yun-Hsiang Chang:** Conceptualization, Software, Validation. **Chang-Min Liang:** Methodology, Resources, Visualization, Investigation. **Shu-I Pao:** Project administration, Supervision, Writing – review & editing.

Declaration of competing interest

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