



CASE REPORT

A Deceiving Refractive Surprise - Post Cataract Surgery Revealing a Dark Secret Beneath

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Introduction

Refractive surprise postoperative cataract surgery is quite an anxious situation for both patients and surgeons, in this modern era where cataract surgery has evolved to a refractive surgery. Here we present an interesting case of post-cataract refractive surprise, where intraoperative events were uneventful and no preoperative fundus pathology of significance. Postoperatively refractive surprise was hyperopic, but on detailed fundus evaluation was diagnosed as pachychoroid syndrome.

This case is unique where postoperative refractive surprise, turned out due to pachychoroid spectrum syndrome which is rare and can be found out through OCT and other imaging modalities which an anterior segment surgeon usually misses or unaware of leading to mismanagement and unnecessary IOL exchange which further deteriorates the situation.

Case Description

A 59-year-old male came with complaint of defective vision in left eye. Vision in right eye was 6/6p and in left eye was 6/18 with -1.00 Dsph 6/9. On slit lamp examination right eye was pseudophakic and left eye was immature cataract. Fundus showed few retinal pigment epithelium (RPE) alterations in both eyes. Patient underwent left eye cataract surgery with Edof (enhanced depth of focus) lens. On postoperative day 1, vision was 6/24 with +1.00/+1.00×90° 6/9p and near vision N18 with +1.50 Dsph N8. On repeat A scan measurement there was discrepancy in axial length and

IOL power variation by 1.50 Dsph more. Patient was planned for IOL exchange on the same day but had a doubt since patient was myopic preoperatively and axial length was almost same in both eyes, sudden hyperopic shift which raised suspicion. On fundus examination both eyes had RPE changes with left eye macular reflex dull (Figure 1). On OCT, there was marked fluid collection beneath choroid and SRF (Subretinal fluid) in posterior pole (red arrow), coming to diagnosis of pachychoroid spectrum (Figure 2) leading to false hyperopia.

B scan showing RCS (retinochoroid scleral) thickness temporal to disc [red arrow] (Figure 3) and fundus autofluorescence showing hyperfluorescence in posterior pole [red arrow] (Figure 4) all favoring pachychoroid spectrum of disease.

Patient was started on Tab. Eplerenone twice daily for 1 month and vitamin tablet. On follow-up after 1 month, there was completed resolution of SRF and posterior choroidal loculation of fluid (Figure 5) on OCT and B scan, patient vision regained to 6/6.

Discussion

In the modern era people expect spectacle independence post cataract surgery. When it comes to refractive surprises after cataract surgery, an ounce of prevention is worth a pound of cure, and surprises can be anticipated in certain patients. Various factors influence refractive outcome post cataract surgery like preoperative biometry assessment, IOL power calculation, ocular surface pathology, intraoperative factors like misplacing IOL in sulcus or upside-down



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Figure 1: Fundus examination both eyes had RPE changes with left eye macular reflex dull.

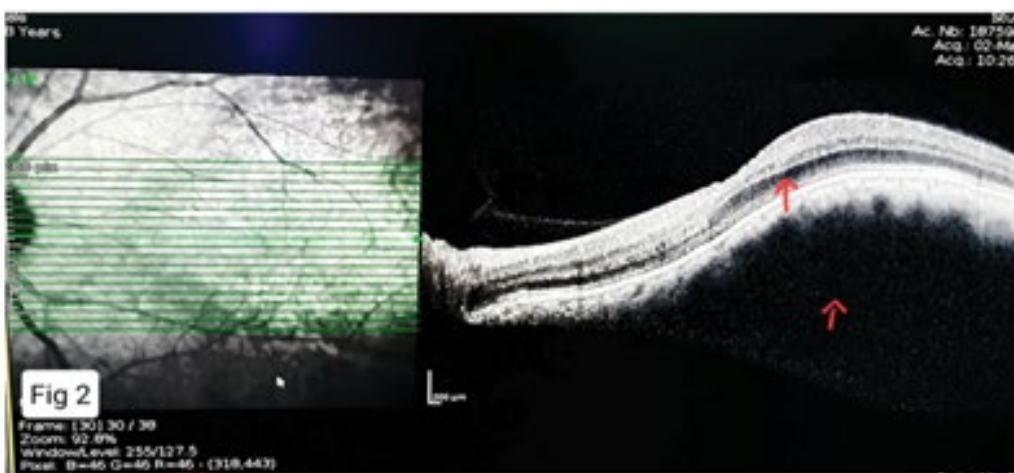


Figure 2: Diagnosis of pachychoroid spectrum leading to false hyperopia.

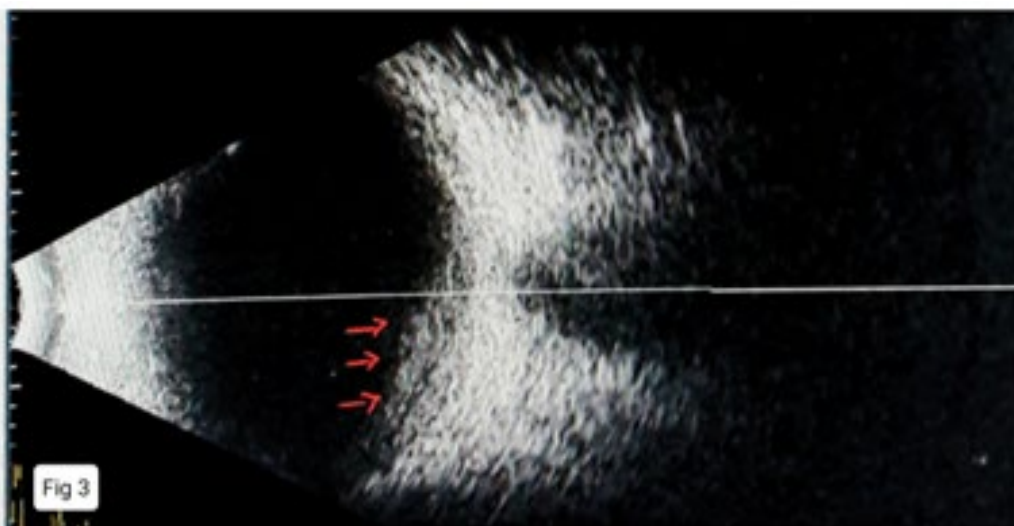


Figure 3: B scan showing RCS (retinochoroid scleral) thickness temporal to disc [red arrow].

placement, extreme refractive powers, corneal pathology.

Modern-day optical biometry has improved refractive outcomes in several ways. A key example is represented

by optical biometers, which allow a high success rate of AL measurements, ranging from 77.0-88.4% with PCI biometers, 79.0% with optical low-coherence reflectometry biometers, to 92.6-99.4% with SS-OCT

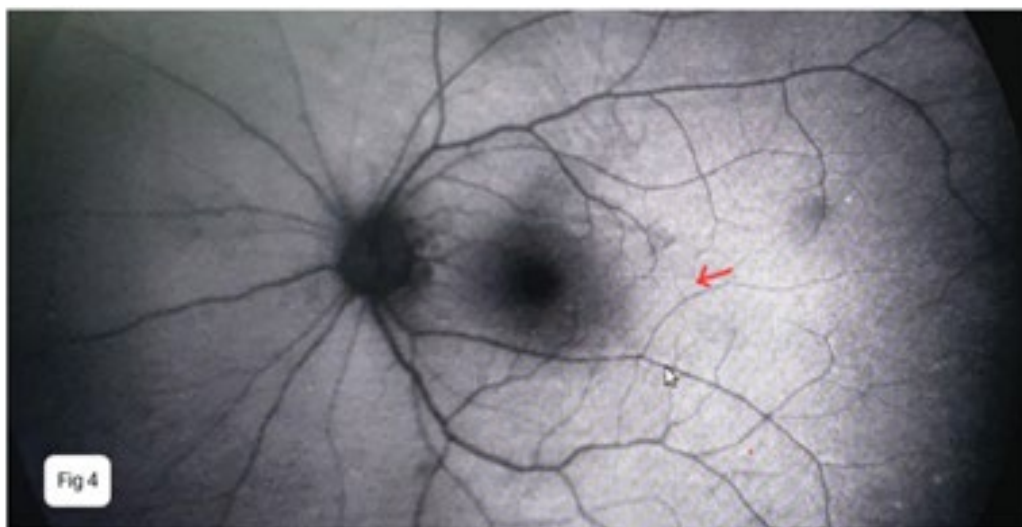


Figure 4: Fundus aautofluorescence showing hyperfluorescence in posterior pole [red arrow].

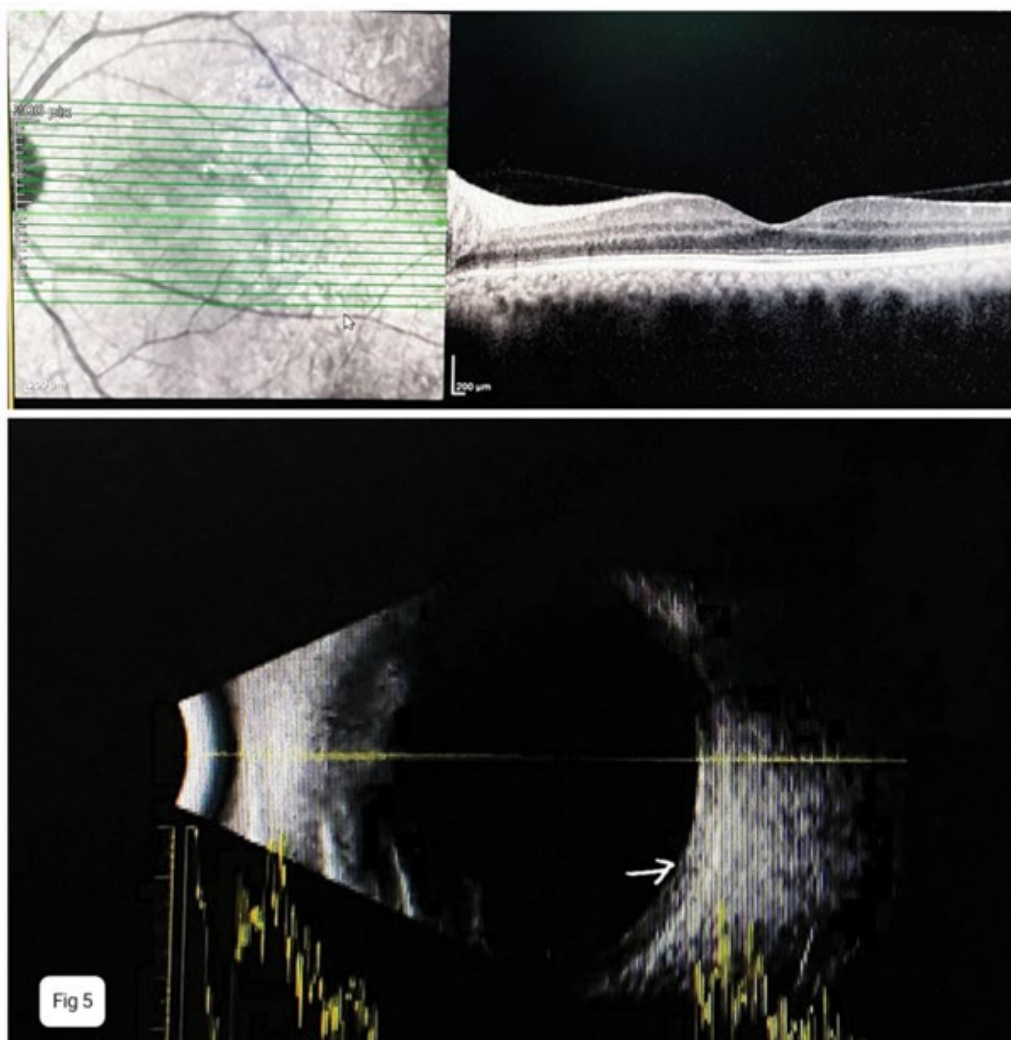


Figure 5: Completed resolution of SRF and posterior choroidal loculation of fluid.

biometers, with the best results to date reported using ARGOS [1-5]. Refractive Surprises are more common in situations where the gold standard for calculating the intra ocular lens power has not been standardized yet like in cases of post RK cataract surgery, post-refractive

cataract surgery, post keratoplasty cataract surgery, in high myopic, high hyperopic eyes, cataract in patient with keratoconus. It is important to double check the accuracy of keratometry, axial length, Intra Ocular Lens (IOL) power selection and the type of formulae which

are used to calculate the IOL power in very small and very large eyes. Capsular bag contraction and phimosis, decentration, lens tilt, posterior capsular opacification are some of the causes of Post-operative refractive surprise. Refractive surprise may manifest as myopia, hyperopia, or astigmatism [6]. Treatments for refractive surprises are conservative and interventional surgical procedures. Conservative treatment is spectacles and contact lenses. Surgical procedure is rotation of misaligned toric IOL, IOL exchange, limbal relaxing or astigmatic keratotomy, piggyback IOL and YAG laser capsulotomy.

Here we highlight a case where refractive surprise is not due to any biometry or intraoperative factors but due to silent choroidal condition pachychoroid leading to posterior loculation of fluid collection in neurosensory and beneath choroid leading to postoperative hypermetropia.

The term “pachychoroid” refers to a newly described phenotype in which functional and structural choroidal changes are thought to play a key pathogenic role in a spectrum of related retinal disorders, the “pachychoroid spectrum” [7]. Several disorders, such as central serous chorioretinopathy (CSC), polypoidal choroidal vasculopathy (PCV), pachychoroid neovascularopathy (PNV), and pachychoroid pigment epitheliopathy (PPE), overlap within the pachychoroid spectrum. The choroidal thickening in CSC could be either localised or diffuse [8,9], with subfoveal choroidal thickness (SFCT) being significantly greater than that in normal eyes [10]. Recently, ‘posterior choroidal fluid loculation’ in the outer choroid has been described using SS-OCT, seen as the hyporeflective areas > 250 microns in eyes with CSC [11].

We describe case of atypical CSC presenting as a solitary choroidal elevation with subretinal fluid (SRF) and posterior choroidal loculation of fluid, leading to false shortening of axial length with hyperopic refractive surprise, which was planned for IOL exchange. Later found to be a pachychoroid disease, which resolved on treatment resulting in emmetropia. Treatment of pachychoroid includes observation, focal laser or oral eplerenone (mineralocorticoid receptor antagonist) [12].

Conclusion

All refractive surprise post cataract surgery may be not due to biometry or ocular surface disorders or aberrations. Posterior segment evaluation especially OCT is crucial in finding such rare scenarios like pachychoroid spectrum which mitigates a false surgical intervention leading to a disastrous result. All anterior segment surgeons should know these conditions before jumping into final decisions. This case is rare in its presentation especially in immediate postoperative period which was never reported before.

Conflict of Interest

None.

Source of Support

None.

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