



# Bilateral posterior capsule rupture and anterior vitreous prolapse from vigorous eye rubbing

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## ABSTRACT

**Purpose:** We present the case of a 71-year-old male who developed decreased visual acuity eleven years after uncomplicated bilateral cataract extraction and in-the-bag IOL implantation following recent bouts of vigorous eye rubbing.

**Observations:** On examination, the posterior capsules were ruptured centrally in both eyes, and there was anterior vitreous prolapse bilaterally. While both IOLs remained in the visual axis, there was mild bilateral decentration and resultant decreased vision.

**Conclusion and importance:** To the authors' knowledge, this is the first reported case of bilateral simultaneous posterior capsule rupture with anterior vitreous prolapse due to eye rubbing. Contrasting to previous case reports, this scenario demonstrates that severe eye rubbing can have variable severity and complications. Frequent and vigorous eye rubbing can be a precipitating cause of late postoperative posterior capsule rupture and should be avoided in pseudophakic patients, especially those with older IOL models.

## 1. Introduction

Spontaneous postoperative posterior capsule rupture is a rare phenomenon usually occurring after blunt trauma.<sup>1,2</sup> When it does occur, it is often associated with intraocular lens dislocation into the vitreous. Common risk factors for late postoperative IOL dislocation include pseudoexfoliation syndrome, uveitis, trauma, and myopia which can induce zonular instability.<sup>3</sup> A case series reported that in-the-bag IOL dislocations have been associated with underlying uveitis of which untreated HIV can be a chief cause, however no such association has been found with controlled HIV infection.<sup>4</sup> Intraoperative floppy iris syndrome (IFIS), found in up to 65% of patients taking tamsulosin, increases the risk of intraoperative posterior capsule rupture, but there is no literature associating IFIS with late postoperative capsule rupture.<sup>5</sup> We report a case of spontaneous posterior capsule rupture secondary to eye rubbing eleven years after cataract extraction and IOL implantation with associated anterior vitreous prolapse.

## 2. Case report

A 71-year-old male with a history of HIV controlled with

emtricitabine, rilpivirine, and tenofovir therapy and IFIS secondary to tamsulosin presented with decreased visual acuity bilaterally, eleven years after uncomplicated bilateral phacoemulsification cataract extraction and insertion of single piece in-the-bag intraocular lenses (IOL). Past medical history was also significant for allergic conjunctivitis, gastroesophageal reflux disease, and a remote episode of Bell's palsy approximately eighteen years in the past. The only other ocular comorbidity was meibomian gland dysfunction. The patient had a history of posterior subcapsular cataracts in both eyes, with the left being worse than the right. The cataract surgeries were uncomplicated; intraoperatively, irises were noted to be very floppy and care was taken to avoid trauma or prolapse during the operations. Postoperative courses for both eyes were normal. Since the cataract extractions eleven years ago, he had received yearly ophthalmic exams, all of which were normal apart from a mild posterior capsule opacification in the left eye which did not require YAG capsulotomy. From 2010, his intraocular pressure remained stable throughout follow-ups. His unaided visual acuity remained 20/20 until 2015 when a simple refractive error of +0.50–1.00 × 105 in the right and plano –0.75 × 080 in the left reduced the unaided visual acuity to 20/25 and required spectacle correction.

During the most recent visit in 2021 the patient complained of

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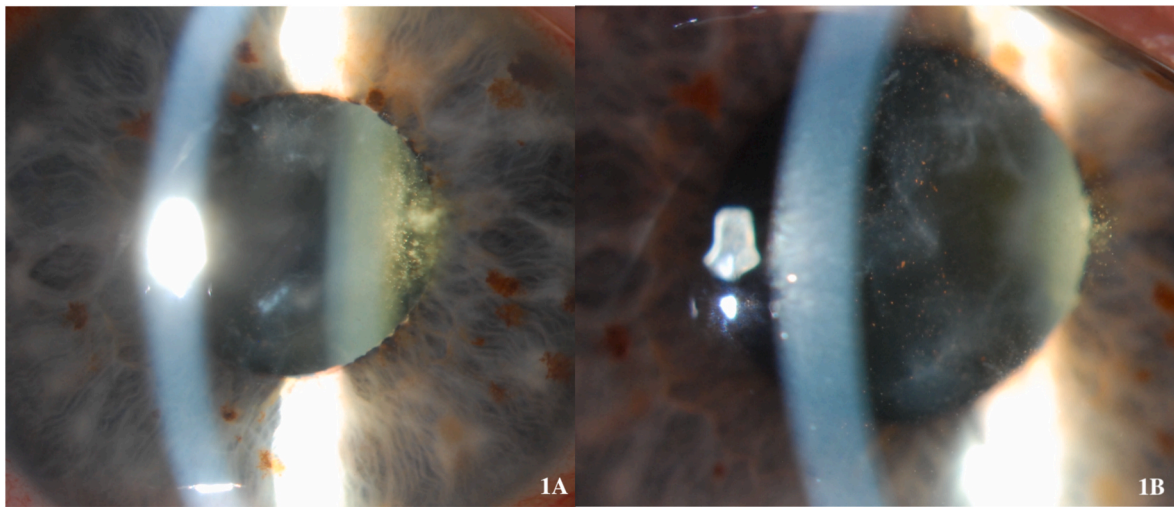


Fig. 1. Slit lamp photos showing vitreous prolapse into the anterior chamber (1A and 1B).

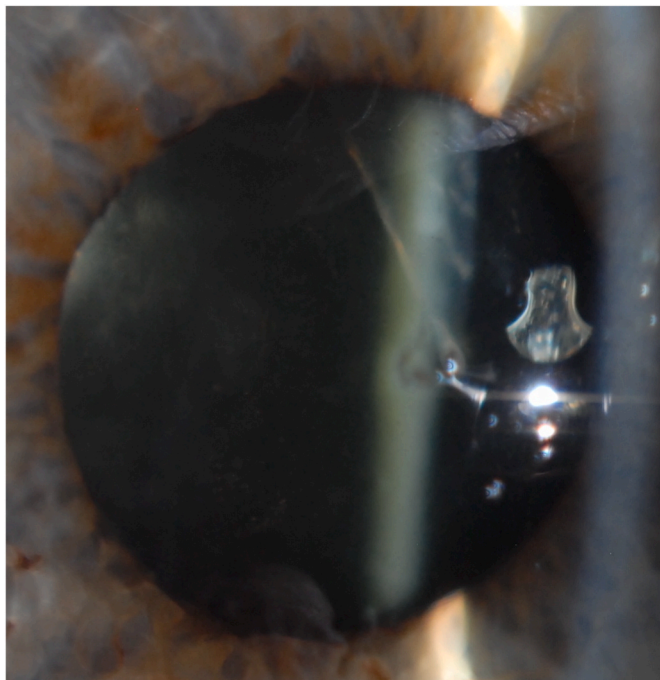


Fig. 2. Slit lamp photo showing curled capsular “flap” in the left eye.

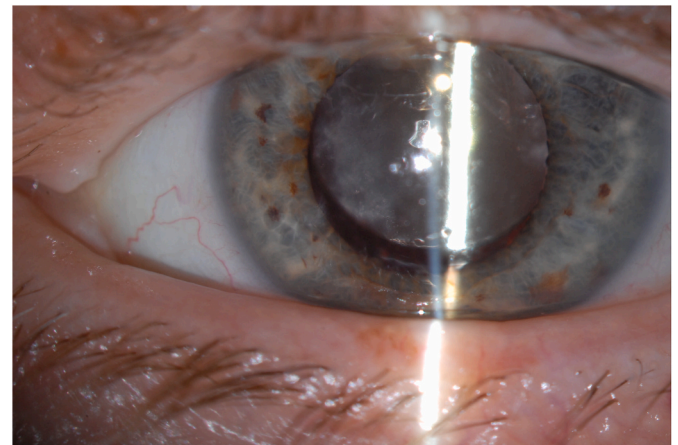


Fig. 4. Slit lamp photo of left eye showing decentration of the IOL.

reduced vision in both eyes. His base eye exam showed visual acuity of 20/50 OD and 20/30 OS, and intraocular pressures were 18 mmHg OD and 13 mmHg OS checked via applanation. Pupils were equal, round, and reactive to light and accommodation. The patient reported no recent trauma to the eyes and denied any ocular pain, floaters, flashes, or dry eye. On slit lamp examination, meibomian gland dysfunction and telangiectasias were noted bilaterally on the lids, and moderate papillae

were noted on the conjunctiva. There were pigmented cells and vitreous prolapse in the anterior chambers bilaterally (Fig. 1). The patient had very light blue irises, but there was no evidence of loss of peripupillary ruff or transillumination defects nor have there ever been in the past. Pseudoexfoliation syndrome was therefore ruled unlikely given lack of clinical signs. The posterior capsules of both eyes were open, and a curled capsular “flap” with a linear tear could be seen on the left side suggesting a traumatic capsular blow out (Fig. 2). Anterior chamber ocular coherence tomography also showed curling of the posterior capsule and confirmed the clinical appearance of the linear tear (Fig. 3). Zonulopathy was noted in the left eye, and the IOL was slightly posteriorly displaced leading to a hyperopic shift. Mild decentration of the IOL was noted bilaterally (Fig. 4), and there was posterior vitreous detachment OU. Upon further questioning, the patient denied any blunt force trauma to the eyes recently but did note that he had been

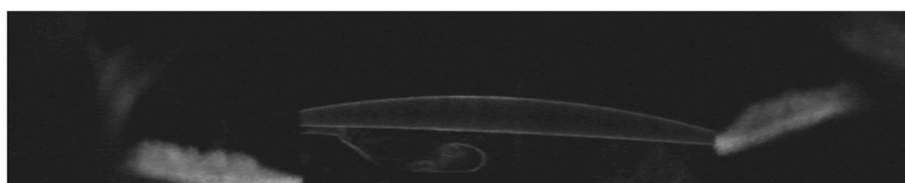


Fig. 3. Ocular coherence tomography showing curling of posterior capsule in the left eye.

vigorously rubbing his eyes for the past few months due to severe allergic itchiness. He has had a history of allergic conjunctivitis in the past with eye rubbing, and his symptoms were particularly worse this past Spring. As he describes it, "I've been gouging my eyes with my knuckles" due to severe allergies and allergic conjunctivitis while visiting Florida.

Due to the unusual nature of the case and involvement of vitreous leak into the anterior chamber, the patient was sent to be seen by the retina service the next day for evaluation. Aside from peripapillary atrophy, trace RPE mottling, and nonexudative dry acute macular degeneration OU, no retinal tears, breaks, or holes were noted. Ocular coherence tomography showed drusen OU, and color fundus photography were consistent with what was seen on exam. IOLs appeared to be stable and unchanged from OCT imaging in the retina clinic. Because of this, a joint decision was made by the comprehensive and retina team to monitor the patient closely with subsequent follow up in the clinic in six months, and surgical planning was not pursued. He was prescribed olopatadine ophthalmic solution, counseled to avoid eye rubbing, and instructed to return for acute vision changes or worsening flashes and floaters. He returned a few weeks later for additional slit lamp photography at which time he said that the olopatadine solution was working well for his allergies. He has yet to return for his six month follow-up visit.

### 3. Discussion

Our case shows that eye rubbing was the likely cause of the ruptured posterior capsules. Late postoperative posterior capsule rupture is a very rare phenomenon but has been reported in select cases. One right-handed patient with facial atopic dermatitis was noted to have unilateral rupture of Zinn's zonule and subluxation of a posterior chamber IOL into the anterior chamber of his right eye two years after cataract surgery.<sup>6</sup> The patient was reported to slap his face and rub his eyelids due to the severe itching from the dermatitis leading the authors to suggest that the joint trauma from slapping and rubbing likely caused the unilateral rupture. A second more recent case was that of a young female with generalized severe atopic eczema who developed bilateral complete posterior capsule rupture with IOL dislocation into the vitreous cavity nine years after cataract surgery.<sup>7</sup> In this case, a Ceon911A IOL was used, and the authors speculate that the sharp thin haptics could have been a possible cause for capsule rupture. This case is similar to the one presented herein with both patients developing bilateral rupture of the posterior capsule after repeat bouts of eye rubbing. However, our case differs by the presence of bilateral vitreous prolapse into the anterior chamber and slight IOL decentration without complete posterior subluxation. Furthermore, our patient had no history of atopic eczema but rather presented with symptoms and exam findings more in line with allergic conjunctivitis. Of note, our patient received Alcon AcrySof SN60WF IOLs in both eyes and to our knowledge there have been no reports of late spontaneous posterior capsule rupture with this particular lens.

In general, the posterior capsule can be more fragile in patients with underlying conditions such as pseudoexfoliation syndrome in which sclerotic changes lead to weakening of the zonular apparatus and abnormal protein deposits on anterior structures.<sup>8,9</sup> Lens dislocation can also occur, and there has been one case report of an 81 year old male with pseudoexfoliation syndrome who experienced bilateral spontaneous partial in-the-bag IOL dislocation seven years after uneventful cataract surgery with no apparent inciting factor.<sup>10</sup> There was no posterior capsule rupture nor vitreous prolapse in this case. The classic findings on exam of pseudoexfoliation syndrome include iris transillumination defects, loss of peripupillary ruff, and increased IOP.<sup>11</sup> None of these findings were noted in our patient; however, the presence of late refractive error changes in our patient may indicate that he already had vulnerable zonular stability, potentially contributing to the capsule rupture from eye rubbing. He also has a history of HIV and IFIS

secondary to tamsulosin use. While floppy-iris syndrome poses increased risks of posterior capsule rupture, zonular dehiscence, corneal endothelial loss, high intraocular pressures, and iris trauma intraoperatively,<sup>5,12,13</sup> we could find no such association between IFIS or tamsulosin use and postoperative capsular instability in the literature. Similarly, our literature search yielded no associations between well controlled HIV and capsular instability or lens dislocations.

### 4. Conclusions

As demonstrated in this case, frequent and vigorous eye rubbing can be a precipitating cause of late postoperative posterior capsule rupture. The presence of bilateral anterior vitreous prolapse is a unique aspect of this case not seen before in previous case reports. Pseudophakic patients, especially those with older model IOLs and/or pseudoexfoliation syndrome, should be advised to avoid vigorous eye rubbing postoperatively.

### Presentations

None.

### Patient consent

The patient provided informed oral consent for publication of this case. This report does not contain any personal identifying information.

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### Authorship

All authors attest that they meet the current ICMJE criteria for authorship.

### Declaration of competing interest

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