Spontaneous bilateral anterior partial in-the-bag intraocular lens dislocation following routine annual eye examination

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We present the case of an 81-year-old man with pseudoexfoliation syndrome (PXF) in whom spontaneous bilateral anterior partial in-the-bag intraocular lens (IOL) dislocation was diagnosed following a routine dilated examination that demonstrated only mild pseudophacodonesis with no evidence of subluxation. Uneventful cataract surgery with placement of single-piece hydrophobic acrylic posterior chamber IOLs had been performed in both eyes 7 years previously. Bilateral IOL repositioning with scleral fixation was performed to correct the dislocation. Postoperative examinations showed remarkable improvement in visual acuity and IOL stability. We hypothesize that zonular weakness secondary to PXF predisposed the patient to bilateral IOL partial dislocation. Pupil dilation in the setting of mild pseudophacodonesis at the time of routine examination may have been a precipitating factor. To our knowledge, bilateral IOL subluxation/dislocation has been described in a limited number of case reports.

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Online Video

Dislocation of an intraocular lens (IOL) is a rare, often late complication of cataract surgery, occurring in only 0.2% to 3.0% of postoperative cataract patients.[1–3] This postoperative complication ranges from IOL decentration to subluxation, in which the IOL optic covers only a small part of the pupillary space, to luxation of the IOL into the posterior segment. Given the relative rarity of unilateral IOL dislocation, a literature search not surprisingly revealed only a few case reports of bilateral spontaneous in-the-bag IOL dislocation.[4–7] In 1 of the case reports, a patient with gyrate atrophy presented on 2 separate occasions with in-the-bag luxation of a posterior chamber IOL (PC IOL) into the posterior segment.[4] Another patient with gyrate atrophy presented with simultaneous bilateral partial dislocation of a PC IOL into the anterior chamber.[5] A patient with retinitis pigmentosa presented with slight inferior deviation of the IOL within the capsular bag of his right eye and a month later, with haptic prolapse into the anterior chamber of his left eye.[6] Finally, a patient with intermediate uveitis presented with in-the-bag luxation of the PC IOLs into the posterior segment in both eyes.[7]

Intraocular lens dislocation can be classified based by its occurrence relative to the date of implantation. Early IOL dislocation (occurring fewer than 3 months after IOL implantation) is often associated with inadequate IOL fixation, although the advent of continuous curvilinear capsulorhexis has ameliorated the incidence of dislocation in the short term. Late IOL dislocation (occurring more than 3 months after IOL

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implantation) is related to zonular weakness, which is often secondary to pseudoexfoliation (PXF) syndrome, a history of vitreoretinal surgery, or a history of trauma.[8] Surgical management of IOL dislocation consists of IOL exchange or IOL repositioning with scleral or iris fixation.[9] With these procedures, the surgeon can expect to achieve a corrected distance visual acuity (CDVA) of 20/40 in approximately 50% of patients presenting with IOL dislocation.[9,10]

CASE REPORT

An 81-year-old man with mild signs of PXF presented to the clinic for an annual eye examination. At that time, the uncorrected distance visual acuity (UDVA) was $20/30^{+2}$ in the right eye and $20/40^{-1}$ in the left eye. It improved to 20/20 in the right eye with a manifest refraction of −1.00 +1.25 × 15 (addition [add] +2.50) and to 20/25 in the left eye with a manifest refraction of −1.75 +2.00 × 162 (add +2.50). On applanation tonometry, the intraocular pressure (IOP) was 21 mm Hg in the right eye and 17 mm Hg in the left eye. After pupil dilation bilaterally with 1 drop of phenylephrine 2.5% and cyclopentolate 1.0%, slitlamp examination was performed. Mild pseudophacodonesis of the PC IOL was observed in both eyes; otherwise, the patient was asymptomatic. The patient had had phacoemulsification and implantation of an SN60WF (Alcon Laboratories, Inc.) monofocal +19.5 diopters (D) PC IOL in both eyes approximately 6 years and 7 months prior to this annual eye examination. Both procedures were considered uneventful. Since the cataract surgery, all the annual dilated eye examinations had been normal.

Four days after the eye examination, the patient called to report blurry vision that began shortly after his eyes were examined. He was seen in clinic within 2 days, at which time the UDVA was 20/100 in the right eye and 20/100 in the left eye. Applanation tonometry revealed stable IOPs of 20 mm Hg and 18 mm Hg, respectively. Slitlamp examination was remarkable for bilateral anterior partial in-the-bag IOL dislocation (Figure 1, *A* and *B*). Supination and administration of phenylephrine 2.5% and pilocarpine 2.0% were unsuccessful in repositioning the IOLs. At follow-up the next day, the UDVA was 20/150 in the right eye and 20/150 in the left eye and the haptics were still visible within the anterior chamber.

Bilateral IOL repositioning with scleral fixation was performed (right eye and then left eye). Briefly, in the right eye, 2 paracentesis wounds were created at approximately 3:30 and 11:00 o'clock. Microgaspers were then used to position the IOL so the needle containing 9-0 polypropylene (Prolene) could be passed around the haptic using a paracentesis wound. This was initially done nasally; the haptic was appropriately lassoed and the suture tied through sclerotomy sites created approximately 2.5 mm from the limbus. This procedure was done for both haptics (Video 1, available at http://jcrsjournal.org). A similar technique was used in the left eye.

On postoperative day 1, the IOLs were well centered within the capsular bag bilaterally, the UDVA was 20/40 in the right eye and 20/70 in the left eye and the IOP on applanation tonometry was 17 mm Hg in both eyes. At 2 weeks, the UDVA was 20/40 in the right eye and 20/80 in the left eye and the IOP was 20 mm Hg and 19 mm Hg, respectively. There was no change in visual acuity in the right eye with a manifest refraction of −1.00 +1.75 × 41, but the left eye corrected to 20/40 with a manifest refraction of −1.25 +0.75 × 164. The scleral-fixated PC IOLs were well-centered in the undilated state in both eyes with no evidence of inflammation (Figure 1, *C* and *D*).

At 1 month, the UDVA was $20/30^{-1}$ in the right eye and 20/70 in the left eye. It improved to $20/20^{-1}$ in the right eye with a manifest refraction of −1.00 +1.25 × 5 (add +3.00) and to $20/25^{-2}$ in the left eye with a manifest refraction of −1.75 +1.75 × 175 (add +3.00). The IOP was 15 mm Hg in both eyes.

DISCUSSION

This report describes an 81-year-old patient who presented with spontaneous bilateral in-the-bag IOL partial anterior dislocation within days of a routine eye examination. Surgical techniques similar to the ones used in this case have been described.[11,12] To our knowledge, bilateral IOL dislocation (anterior or posterior) has been described in a limited number of reports, including 2 patients with gyrate atrophy,[4,5] a patient with retinitis pigmentosa,[6] and a patient with intermediate uveitis.[7] We postulate that pupil dilation during the patient's routine examination, coupled with diffuse zonular weakness secondary to PXF, may have precipitated bilateral IOL anterior subluxation/dislocation.

Pseudoexfoliation syndrome has been well-described in the literature as a condition in which abnormal basement membrane and extracellular matrix proteins deposit on all anterior segment structures. This results initially in zonule disarticulation from the pars plana, pars plicata, and lens capsules and manifests clinically as lens instability and phacodonesis. Lens subluxation or dislocation can occur spontaneously or in the setting of mild trauma in this weakened zonular state.[8,13]

Intraocular lens dislocation can occur soon after cataract surgery (generally secondary to poor IOL fixation) or months to years after surgery (generally stemming from zonular weakness). In a retrospective case series of 86 IOLs explanted because of late in-the-bag spontaneous IOL dislocation, Davis et al.[8] report that 50% of the IOLs were explanted after dislocation in the setting of PXF, 19% were in eyes with prior vitreoretinal surgery, and 6% were in eyes with a history of trauma. However, in a study by Fernández-Buenaga et al.,[10] high myopia was associated with IOL dislocation in 12 of 61 eyes (19.7%) and was the main predisposing factor in that study. Retinitis pigmentosa and connective tissue disorders such as Marfan syndrome, homocystinuria, hyperlysinemia, Ehler-Danlos, scleroderma, and Weil-Marchesani are associated with IOL dislocation. The mean time between surgery and late-term IOL dislocation has been reported to vary from 7 years and 1 month to 8.5 years.[8,10,14,15]