

Dislocated Iris-Fixated PCIOL

BY RICHARD S. HOFFMAN, MD; IRENE C. KUO, MD; CYNTHIA MATOSSIAN, MD; GARY MILLER, MD; AND IQBAL IKE K. AHMED, MD

CASE PRESENTATION

A 21-year-old man presents with a complaint of poor vision in his right eye since yesterday (Figure 1). He has a history of a paintball injury to this eye that resulted in a traumatic cataract, which was extracted with subsequent placement of a sutured, iris-fixated PCIOL 5 years ago. His left eye is normal, with a UCVA of 20/20. Keratometry readings for the patient's right eye are 41.00 @ 171 and 44.25 @ 81. The manifest refraction for his right eye is +11.25 -1.25 X 165.

How would you proceed?

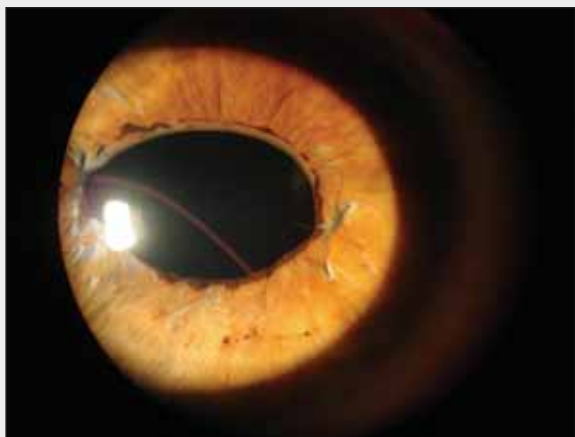


Figure 1. The patient's right eye has a history of a traumatic cataract that was extracted, with subsequent placement of a sutured iris-fixated PCIOL.

RICHARD S. HOFFMAN, MD

Before determining the surgical approach to this dislocated IOL, it would be important to lay the patient back in the examination chair to observe where the IOL will rest when he is supine on the operating table. If the IOL will be approachable while he is in a supine position, I would attempt iris fixation again. After injecting a dispersive viscoelastic, I would hold the IOL's haptic close to the haptic-optic junction with a microincisional intraocular

grasper (MicroSurgical Technology [MST], Redmond, WA), while I used a second grasper to pull the end of the haptic out of the Prolene suture (Ethicon Inc., Somerville, NJ; visible on the left side of Figure 1). I could then use the second grasper to prolapse the IOL's optic in front of the pupil, while keeping the haptics behind the iris.

Due to their higher level of activity and more violent head movements compared with typical cataract patients, young patients frequently dislodge an iris-fixated IOL from the iris when only one fixation suture is used per haptic. To avoid a second dislocation, I would place two fixation sutures per haptic. One suture would be placed close to the haptic-optic junction, and the other would be placed in the iris periphery. Passing the needle through as small a bite of full-thickness iris as possible would help avoid pupillary peaking. Using four fixation sutures would eliminate the possibility of one of the haptics' slipping through one of the fixation sutures. After the haptics were sutured (using a Siepser slipknot technique), and the optic was prolapsed back behind the iris, I would repair the small iris defect (temporal margin) with a single 10-0 Prolene suture using the same Siepser technique.

IRENE C. KUO, MD

This case appears to be one of an iris-sutured PCIOL that has subluxated 5 years after surgery for a traumatic cataract. The patient's manifest refraction is consistent with an aphakic correction, given the degree of the IOL's subluxation (I am assuming his BCVA is 20/20). The fact that the suture is still visible on the anterior surface of the iris indicates "cheese wiring" was not the reason. Rather, the suture loop may still be intact and may have slipped off the haptic, or the haptic may have eroded through the suture posterior to the iris. Biodegradation of the suture (reported more often with scleral-fixated IOLs) seems less likely in the aqueous environment.^{1,2} The sutures were placed not in the peripheral iris but close to the pupillary margin, and this may have resulted in not only the ovalized pupil but also increased tension on the sutures.

There are two options. The first is to explant the subluxated IOL and replace it with another IOL. Alternatively, the surgeon could reposition and resuture the subluxated IOL, this time using 9–0 Prolene, which has a greater cross-sectional diameter and 60% greater tensile strength than does 10–0 Prolene.¹ Regardless, the IOL should be free of vitreous adhesions before the surgeon proceeds, and he or she should use copious amounts of dispersive viscoelastic.

The amount of cylinder in the patient's manifest refraction is not consistent with the keratometry. For this reason as well as concerns about accurate axial placement when suturing a toric lens to the iris, I would not suture fixate a three-piece toric IOL (MicroSil; HumanOptics AG, Erlangen, Germany), even if such a lens were available in the United States. Given this patient's youth and risk of long-term endothelial loss, I would not primarily choose an ACIOL or iris-claw aphakic IOL (available outside the United States).

That leaves the option of repositioning the subluxated IOL and suturing it either to the peripheral iris or to the sclera with 9–0 Prolene using a Siepser slipknot.³ I would prefer the peripheral iris to the sclera, given the history of trauma and a small case series suggesting that the sclera in such individuals may be compromised and predispose them to suture erosion.⁴

Postoperatively, I would monitor the patient for stability of refraction over a period of a few months. I would then offer laser refractive surgery to correct any residual refractive error if he were not satisfied with his UCVA.

CYNTHIA MATOSSIAN, MD

The nasal suture has broken, with subsequent subluxation of the PCIOL below the inferior pupillary margin, resulting in a sudden decrease in vision. The BCVA for this injured right eye is not available.

A thorough examination including gonioscopy is required to rule out damage to the angle. I would also recommend a retinal consultation, because the PCIOL may dislocate into the vitreous, either before the date of surgery or during surgery. In addition to discussing the surgical risks, the ophthalmologist will need to ensure that the patient has reasonable expectations for the outcome of the procedure.

Assuming average surgically induced astigmatism of 0.50 D, this patient will have a crossed-cylindrical result of 3.73 D X 82. A toric IOL is contraindicated, because there is no capsule, so I would plan to perform a limbal relaxing incision (LRI) to decrease his astigmatism. I would start the patient on an antibiotic and a non-steroidal drop preoperatively.

For surgery, I would use my standard temporal

approach. After making the LRI, I would start with a sideport incision and use a viscoadaptive ophthalmic viscosurgical device to prop up the subluxated IOL. Then, I would construct my temporal incision and place a Sheets glide under the IOL for stability. With MST forceps, I would gently retrieve the PCIOL so that the optic was delivered through the pupil, into the anterior chamber. With MST scissors, I would bisect and then remove the optic. I would then proceed with a planned vitrectomy, with Triesence (Alcon Laboratories, Inc.) available in the room in case I needed it.

The options in this case are iris or scleral fixation of a PCIOL or an ACIOL. Assuming there is no significant damage to the angle, I would opt for an ACIOL, because it ensures minimal tilting of the IOL and does not pose the long-term risk of transscleral fixation and suture erosion in this 21-year-old. After instilling acetylcholine chloride for miosis, I would enlarge the temporal incision and place an ACIOL in the anterior chamber after filling it with an ophthalmic viscosurgical device. Then, I would gently rotate the haptics to orient them at the 12- and 6-o'clock positions. After completing a peripheral iridectomy, I would close the eye with multiple interrupted 10–0 nylon sutures.

GARY MILLER, MD, AND IQBAL IKE K. AHMED, MD

This patient has a stable, three-piece, iris-sutured PCIOL that has acutely subluxated, likely due to one haptic's slipping out of its knot. It appears that there are two polypropylene sutures at the pupillary margin. If used to support an iris-fixated PCIOL, they are likely to distort the pupil and/or risk subluxation.

Assuming that the PCIOL was the appropriate power for this eye, as minimalists, our preference would be to attempt refixation of the IOL to the posterior iris. We have found this tissue to be an excellent platform for IOL fixation with this type of lens. This time, however, we would attempt to suture the haptics to the midperipheral iris, where the tissue is more taut and stable. For security, we would refixate both haptics, which would necessitate the removal of the remaining fixated haptic from its knot.

The trick would be to levitate the IOL into position for iris fixation. In this instance, a pars plana approach would be preferable to access the retro-pupillary space to manipulate the PCIOL. To allow for easier intraoperative reversibility of the dilation after the IOL was brought forward, we would dilate the pupil only with topical phenylephrine 2.5% and intracameral preservative-free lidocaine 1%. The IOL is likely to be in the anterior vitreous cavity, and thus an anterior vitrectomy (through the pars plana) would be



(Courtesy of Gary Miller, MD, and Iqbal Ike K. Ahmed, MD, FRCSC)

Figure 2. The surgeon uses a micrograsper to grasp the optic, while bringing it anteriorly into a pupil-capture position (A). The suture needle of 10-0 polypropylene passes through the iris and under the haptic in the midperipheral iris (B). Using a microtying forceps, the surgeon ties the knot to secure the haptic to peripheral iris (C).

important to release any vitreous adhesions to the lens. We would inject sufficient viscoelastic to maintain the anterior chamber. While maintaining a closed system, we would use specialized microinstrumentation (MST micrograspers) to grasp the optic and bring it forward through the pupil to place it in a capturing position (Figure 2A). Next, we would instill Miochol-E (Bausch + Lomb) to constrict the pupil around the optic. We would then rotate the lens to slide the remaining fixated haptic out of its knot, while keeping the optic in a pupil-capture position and the haptics posterior to the iris.

After passing 10-0 polypropylene sutures through the midperipheral iris and under each haptic (Figure 2B), we would tie the sutures using MST's microtying forceps (Figure 2C). Then, we would prolapse the optic back into the posterior chamber.

The patient's astigmatism could be addressed with intraoperative or postoperative LRLs. ■

Section Editor Bonnie A. Henderson, MD, is a partner in Ophthalmic Consultants of Boston and an assistant clinical professor at Harvard Medical School. Thomas A. Oetting, MS, MD, is a clinical professor at the University of Iowa in Iowa City. Tal Raviv, MD, is an attending cornea and refractive surgeon at the New York Eye and Ear Infirmary and an assistant professor of ophthalmology at New York Medical College in Valhalla. Dr. Henderson may be reached at (781) 487-2200, ext. 3321; bahenderson@eyeboston.com.

Iqbal Ike K. Ahmed, MD, FRCSC, is an assistant professor at the University of Toronto and a clinical assistant professor at the University of Utah in Salt Lake City. He acknowledged no financial interest in the products or companies he mentioned. Dr. Ahmed may be reached at (905) 820-3937; ike.ahmed@utoronto.ca.



Richard S. Hoffman, MD, is a clinical associate professor of ophthalmology at the Casey Eye Institute, Oregon Health & Science University, and he is in private practice at Drs. Fine, Hoffman & Packer in Eugene, Oregon. He acknowledged no financial interest in the products or companies he mentioned. Dr. Hoffman may be reached at (541) 687-2110; rshoffman@finemd.com.



Irene C. Kuo, MD, is an associate professor of ophthalmology with the Cornea, Refractive Surgery Services, Wilmer Eye Institute, Johns Hopkins University School of Medicine, Baltimore. She acknowledged no financial interest in the products or companies she mentioned. Dr. Kuo may be reached at ickuo@jhmi.edu.



Cynthia Matossian, MD, is the founder and CEO of Matossian Eye Associates, with offices in Pennsylvania and New Jersey. She is a consultant to and/or speaker for Abbott Medical Optics Inc.; Alcon Laboratories, Inc.; Allergan, Inc.; Inspire Pharmaceuticals, Inc.; Ista Pharmaceuticals, Inc.; and Physician Recommended Nutraceuticals. Dr. Matossian may be reached at (800) 708-8800; cmatossian@matossianeye.com.



Gary Miller, MD, is a clinical fellow in glaucoma and advanced anterior segment surgery at the University of Toronto. He acknowledged no financial interest in the products or companies he mentioned.



1. Price MO, Price FW, Werner L, et al. Late dislocation of scleral-sutured posterior chamber intraocular lenses. *J Cataract Refract Surg.* 2005;31:1320-1326.
2. Drews RC. Quality control, and changing indications for lens implantation; the Seventh Binkhorst Medal Lecture: 1982. *Ophthalmology.* 1983;90:301-310.
3. Chang DF. Siesper sliplink for McCannel iris-suture fixation of subluxated intraocular lenses. *J Cataract Refract Surg.* 2004;30:1170-1176.
4. Kim J, Kinyoun JL, Saperstein DA, Porter SL. Subluxation of transscleral sutured posterior chamber intraocular lens. *Am J Ophthalmol.* 2003;136:382-384.