

Decentered, Three-Piece IOL and an Open Posterior Capsule

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CASE PRESENTATION

A 62-year-old woman with a history of amblyopia in her left eye underwent bilateral cataract surgery in April 2013. The patient presents for an evaluation of a decentered IOL and a visual disturbance in her right eye. She complains that, with her right eye, she sees a sideways “V” coming off lights, making it very difficult for her to drive at night. The use of pilocarpine has slightly decreased her symptoms, but the patient desires surgical correction of the problem.

On examination, her visual acuity measures $-1.25 +1.00 \times 140 = 20/30-2$ OD and $-1.00 +1.00 \times 140 = 20/25$ OS. A slit-lamp examination of the right eye finds a nasally decentered three-piece IOL and an open posterior capsule (Figure 1). The remainder of the examination is normal, and a dilated retinal examination and macular optical coherence tomography show no abnormalities. Measurements with the Pentacam Comprehensive Eye Scanner (Oculus Optikgeräte) produce keratometry (K) readings of 41.2 and 42.6 @ 87°.

What surgical approach would you recommend for this patient?

—Case prepared by Audrey Talley Rostov, MD.

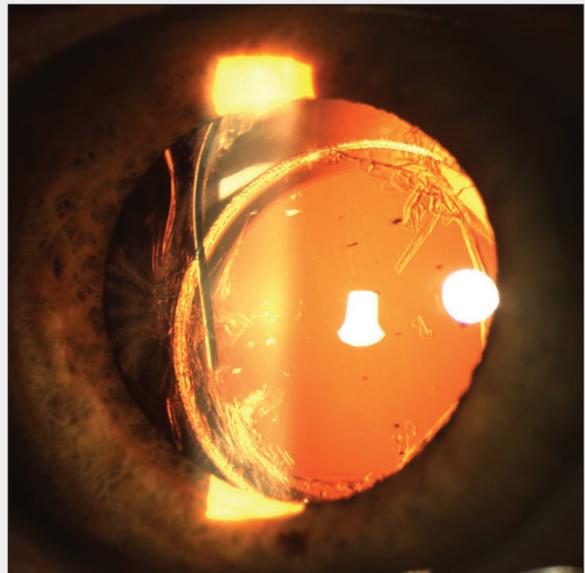


Figure 1. A nasally decentered three-piece IOL and an open posterior capsule.

ELIZABETH A. DAVIS, MD

There are several options for surgical correction in this case, depending on the findings at the time of surgery. Because a year has elapsed since the original procedure, it is uncertain preoperatively whether it will be possible to safely dissect the three-piece IOL out of the capsule, which also happens to be open. I would therefore start with a retrobulbar block to achieve good anesthesia and akinesia. I would then attempt to viscodissect the IOL out of the capsule. I would also inject viscoelastic posterior to the optic to keep back the vitreous.

If the IOL were readily mobilized and there were adequate capsular support, I would place the implant in the sulcus and capture the optic in the capsular opening. Any prolapsing vitreous would require a vitrectomy. If it were not possible to perform optic capture (due to either too large a capsulotomy or a decentered capsulotomy), the IOL could be left as is in the sulcus if the lens appeared to be stable and unlikely to decenter. Otherwise, I would consider iris fixation of the haptics with a 10–0 Prolene suture (Ethicon).

If the IOL could not be mobilized from the capsule,

the most likely cause would be fibrosis of the haptics in between the capsular leaflets. In this situation, I would mobilize the optic, amputate it free of the haptics at their junction with scissors, and remove the optic from the eye. The IOL could be cut in half if I wished to permit removal through a small incision. Again, I would perform a vitrectomy as needed. If capsular support were adequate, I could then place a three-piece IOL in the sulcus. As before, I could perform optic capture and suture the haptics to the iris, or I could simply leave the lens in the sulcus if the IOL were stable. If capsular support were inadequate, then I would either suture in a posterior chamber IOL (PCIOL) or place an anterior chamber IOL (ACIOL).

The choice of IOL would determine the size of the incision. I use a rigid PMMA lens for scleral suturing, so if it or an ACIOL were required, a 6-mm scleral incision would be necessary. With the other options, I could perform the entire procedure through a 2.65-mm corneal incision.

In addition to explaining the usual risks of this type of surgery, I would inform the patient that her refractive error might shift postoperatively, given the changing position of the optic and the potential for induced astigmatism if a large incision were required.

NICOLE R. FRAM, MD

Figure 1 depicts a nasally decentered, upside-down, three-piece PCIOL in the bag with an open capsule. The patient's visual symptoms are likely caused by decentration and tilting of the optic. If the lens was not decentered immediately postoperatively and the patient enjoyed good vision prior to decentration, then one could simply lasso the haptics to the sclera and restore functional vision. An alternate approach would be to perform an IOL exchange by means of an iris suture fixation technique.

The complexity of this case arises from the large posterior capsular opening and the IOL's potential for dislocation to the posterior pole during intraocular maneuvering. A pars plana safety suture or "Masket basket" using straight 10-0 polypropylene sutures docked into a 27-gauge needle, placed 2 mm posterior to the limbus and 4 mm apart in the horizontal and vertical meridians, would provide a "safety net" during IOL exchange and allow for complex maneuvering of the IOL (Figure 2). A triamcinolone-assisted anterior vitrectomy using a pars plana approach would be advisable before and after the IOL exchange to confirm that there was no vitreous traction during IOL exchange.

With careful viscodissection, the PCIOL could be rotated into the ciliary sulcus and removed by hemisection with the assistance of a microsurgical forceps and



Figure 2. Pars plana safety basket suture fixated in the horizontal and vertical meridians.

scissors. A new three-piece PCIOL could then be folded and inserted through a 3.5-mm clear corneal incision into the ciliary sulcus. If there were an intact anterior curvilinear capsulotomy, the optic could be captured behind the anterior capsule. Because of the obvious zonular issues demonstrated by decentration, the haptics should be secured using iris suture fixation with a McCannel or Siepser technique.

BONNIE AN HENDERSON, MD

It is unclear whether the incidence of PCIOLs' late dislocation is increasing or whether these cases are just receiving more attention. Although this case is not one of a spontaneous late dislocation due to the open posterior capsule and presumably complicated primary surgery, the options for treatment remain the same: perform an IOL exchange or suture the current IOL into place.

It would be helpful to investigate whether or not the patient underwent a vitrectomy as part of the primary cataract surgery. If she did, the anterior segment surgeon will likely be able to operate without the assistance of a retina colleague. If the patient has not had a vitrectomy, however, the procedure will most likely involve a pars plana incision. A surgeon who is not comfortable operating via the pars plana may wish to plan the procedure as a joint retina/anterior case.

If an IOL exchange is planned, a pars plana incision can be made to permit injection of a dispersive viscoelastic and elevation of the IOL into the anterior chamber. Once the IOL has been stabilized in the anterior chamber, a vitrectomy can be performed to clear any attachments to the IOL. I prefer to create a 3-mm scleral tunnel incision. The IOL can then be bisected using microscissors/microforceps and removed via the tunnel incision. Next, a secondary IOL of the surgeon's choice (ACIOL, sutured IOL, glued IOL, or iris claw IOL) can be placed.

If the plan is to suture the current IOL, the surgeon can

(courtesy of Samuel Masket, MD, and Nicole R. Fram, MD)

use 9–0 Prolene or Gore-Tex (W.L. Gore & Associates) to lasso the haptics and fixate them to the sclera. Many reports of suturing a dislocated PCIOL to the sclera have been published, starting in the 1980s.¹⁻³ Iris fixation of the IOL is also possible, but I find that scleral fixation is easier in a case such as this one, because the haptics are often fibrosed/misshapen and therefore difficult to suture to the iris.

Regardless of the approach, the goal is to center and stabilize the IOL with no subsequent complications. No two cases are alike, so it is useful to be competent at all of the different techniques in order to achieve this outcome.

RICHARD S. HOFFMAN, MD

Recentration of the IOL can be accomplished quickly and easily using scleral fixation of the IOL-bag complex. The first step is to make two 35° limbal relaxing incisions (LRIs) at the 140° and 320° meridians at a depth of 350 µm. If the patient's K readings correspond to the 140° meridian, then making the incisions at 600 µm will reduce or eliminate her astigmatism. Because her K readings are steep at 87°, trying to reduce her astigmatism by placing deep 600-µm LRIs at 87° may be an option. This meridian may make recentration a little more challenging but not impossible, especially if two fixation sites are used at 87° and 267°.

The LRIs will act as the starting points for scleral pockets for fixation of the IOL's haptics to the sclera. Each LRI is dissected posteriorly within the plane of the sclera for approximately 3 mm. A paracentesis is then made just anterior to each of the LRIs in order to pass a double-armed 9–0 Prolene suture across the anterior chamber to fixate the IOL using a 27-gauge needle for docking. One arm passes through the bag and behind the haptic. The other goes above the bag and haptic. The surgeon removes these needles from the globe and cuts them from the sutures. The suture ends are then retrieved from the opening of the scleral pocket by placing a Sinsky hook into the pocket and pulling out the end of each suture. After tightening and tying the sutures to recenter the IOL, the surgeon trims them at the knot, which is allowed to slide under the protective roof of the scleral pocket. The same maneuver is then performed for the opposite scleral pocket.⁴

WHAT I DID: AUDREY R. TALLEY ROSTOV, MD

I made two bimanual incisions and injected an ophthalmic viscosurgical device (OVD) posterior to the IOL. I placed additional dispersive OVD anterior to the IOL to protect the endothelium. The IOL was easily mobilized, cut with scissors (MicroSurgical Technology), and removed through a 3-mm incision. There was no vitreous presentation. I then placed an AQ2010V IOL (STAAR Surgical) in the ciliary sulcus. Due to the large and asymmetric anterior capsulorhexis, optic capture was not

performed. I removed the OVD, added acetylcholine (Miochol-E; Bausch + Lomb), and closed the incisions with hydration. The patient is happy postoperatively with a visual acuity of -0.50 +0.75 × 85 = 20/25. Her dysphotopsias have completely resolved. ■

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