

# Vaulted Anteriorly Captured Haptic

BY JOHN BERDAHL, MD; DAMIEN F. GOLDBERG, MD;  
DAVID A. GOLDMAN, MD; AND ANIL SHIVARAM, MD

## CASE PRESENTATION

A 54-year-old man presents with a complaint of a change in the vision of his left eye over the course of 2 weeks. He underwent bilateral cataract surgery 1 year ago. His UCVA is 20/20 OD and 20/60 OS, improving to 20/20 with a mixed astigmatic correction.

An examination reveals a quiet eye with an anteriorly captured haptic of a single-piece AcrySof IOL (Alcon Laboratories, Inc.). The IOP is within normal limits, and there is a trace amount of pigmented cells in the anterior chamber of the patient's left eye. Dilation and gonioscopy reveal only a nasal shelf of capsule, with no capsule visible temporally (Figure).

How would you proceed?

—Case prepared by Tal Raviv, MD.



Figure. The temporal haptic of a single-piece IOL is captured anteriorly in an eye with minimal residual capsule.

### JOHN BERDAHL, MD

It is surprising that dislocation of this lens apparently happened about 1 year after surgery. I suspect that the temporal haptic was never placed in the capsular bag and that, eventually, contraction of the capsule forced the haptic into the anterior chamber. The peaking of the pupil superiorly likely indicates the presence of a vitreous strand in the anterior chamber. Because no temporal posterior capsule remains, major zonular dehiscence is probable. Alternatively, a posterior capsular rupture occurred at the time of surgery, and the surgeon placed the lens in the sulcus or partially in the capsular bag. Either scenario is inadvisable with a single-piece acrylic lens.

Considering the lack of capsular support, an IOL exchange is warranted with one of the following three reasonable options: placement of (1) an ACIOL, (2) an iris-fixated lens, or (3) a sclerally fixated lens. Generally and in this case, I prefer the last for the reasons of stability and a decreased risk of corectopia.

I would perform a limited pars plana or anterior vitrectomy to remove vitreous present in the anterior chamber and to permit scleral fixation of a lens without vitreous trac-

tion. Through a 4-mm clear corneal incision, I would bisect the current lens with an IOL cutter and remove each hemisphere. Next, I would implant an Akreos AO60 lens (Bausch + Lomb). This soft, hydrophilic acrylic IOL has four loops and zero asphericity. I would pass a 9-0 Prolene suture on a double-armed CIF-4 needle (Ethicon, Inc.) through one set of eyelets. I would place those sutures through the clear corneal incision into the eye and out through the sclera at the ciliary sulcus. I would do the same with the other set of eyelets. In my experience, this approach produces four-point fixation, prevents the lens from tilting, and provides a highly stable surface. Next, I would manually fold the lens and insert it through the 4-mm incision. I would then adjust the suture tension, tie the lens in place, and bury the knots.

### DAMIEN F. GOLDBERG, MD

It is unusual that the haptic would present in the anterior chamber 1 year postoperatively. The temporal capsule could have ruptured during or after surgery, but it appears that a single-piece acrylic IOL was placed either in the ciliary sulcus or in a weakened capsule. When inserting an IOL inside the capsule, I, too, prefer the AcrySof IOL design, but

experience and training have taught me that a three-piece lens such as the MA60AC (Alcon Laboratories, Inc.) is a safer choice when capsular support is slightly compromised. The haptics of a three-piece IOL have a greater capacity for expansion, leading to more stability in the ciliary sulcus than with a single-piece lens.

Implanting a lens in the sulcus moves the effective lens position closer to the cornea, thus strengthening the IOL's effective power. I therefore typically reduce the lens' power by 1.00 D. On his website ([www.doctor-hill.com/iol-main/bag-sulcus.htm](http://www.doctor-hill.com/iol-main/bag-sulcus.htm)), Warren Hill, MD, provides a comprehensive nomogram for adjusting the power of IOLs to be implanted in the sulcus.

In this case, I would remove the current IOL and consider three options: (1) an ACIOL, (2) an iris-fixated IOL, or (3) a sclerally fixated IOL. Before making a decision, it might be a good idea to image the macula with optical coherence tomography to rule out any masked macular edema as well as to assess the health of the cornea with an endothelial cell count. If the endothelial cell count were healthy and the patient were older, I would consider an ACIOL. Because of this patient's age, I believe the IOL should instead be fixated behind the iris.

Scleral fixation is an excellent strategy. I find it challenging always to place the suture perfectly in the ciliary sulcus, however, so the IOL may become tilted. I therefore prefer iris fixation of a PCIOL when there is sufficient iris tissue. I can use a variety of lenses and fold them in a "moustache" configuration to insert through a 3.5-mm clear corneal incision. By allowing the lens to unfold in the anterior chamber, I am able to fixate each haptic to peripheral iris using a 10-0 polypropylene suture (PC-7; Alcon Laboratories, Inc.). I pass the sutures through a paracentesis and tie them to the peripheral iris using a modified Siepser sliding knot. I encounter less IOL tilt with this method of iris fixation.

### **DAVID A. GOLDMAN, MD**

In the figure, one of the IOL's haptics appears in the anterior chamber, and it seems as if a part of the optic is also captured anteriorly. Prior records would be helpful to distinguish whether this was an early postoperative result or a change secondary to ocular trauma. In either case, the astigmatism induced by the tilted IOL and pigmentary dispersion call for removal of the lens before uveitis-glaucoma-hyphema syndrome develops. In some cases, the pupil can be dilated and the lens repositioned posteriorly, but the single-piece IOL cannot be left in the sulcus. The lack of anterior capsule prohibits the IOL's placement within the capsular bag unless the entire bag is reopened and the lens is rotated to a better location. Even then, the dispersed pigment could begin to collect on the IOL, further limiting the patient's vision.

My approach to exchanging the current lens would involve several steps. First, I would enlarge the pupil with iris hooks so as to better evaluate the capsular bag and zonular status. I would then inject viscoelastic above and below the IOL to dissect it out of the bag. If the posterior capsule were open, I would use a dispersive viscoelastic to prevent vitreous prolapse. In cases such as this one, the haptic in the bag can become fibrotic. I would attempt to inject viscoelastic along the path of the haptic to separate it from the bag, but my threshold for amputating the haptic would be very low. For haptic amputation, I prefer the Packer/Chang IOL cutters (MicroSurgical Technology). I find this sharp instrument easy to handle, and it fits through a paracentesis incision, allowing easy access to the lens.

After separating the IOL from the bag, I would lift it into the anterior chamber and cut it in half with the Packer/Chang IOL cutters. I would remove the halves and then inject an MA50BM IOL into the sulcus with the Monarch B cartridge (both products from Alcon Laboratories, Inc.). Although this is an off-label use of the cartridge, I have found the technique wonderful for injecting a large-optic lens without enlarging a corneal incision. Additionally, the MA50BM lens has a 6.5-mm optic, so in most cases, it can completely cover the former anterior capsulorhexis and act like a manhole cover, negating any vitreous prolapse during the removal of viscoelastic. Should the capsular bag be in surprisingly bad condition, I would fixate the new IOL to the iris.

### **ANIL SHIVARAM, MD**

This semiprotruded lens is already revealing its fate: an exchange. With a single-piece hydrophobic acrylic IOL outside the capsular bag, it is only a matter of time before the trace pigmented cells seen in the anterior chamber become uveitis-glaucoma-hyphema syndrome. Interestingly, the lack of visible temporal capsule and the superiorly peaked pupil indicate that the initial surgery was complicated, likely with vitreous loss. This is a compelling reminder of the importance of positioning a hydrophobic IOL within the bag and not crossing your fingers and closing the eye if the IOL "looks centered." This type of lens is not amenable to iris fixation and must be explanted, particularly when there is no visible capsular support.

I would begin with a triamcinolone-assisted anterior vitrectomy to clear any vitreous present around the IOL. I would then inject a dispersive ophthalmic viscosurgical device to help me isolate the IOL from the vitreous. After explanting the IOL, my preference would be to sclerally fixate a three-piece hydrophobic acrylic lens, preferably an aspheric and aberration-free design such as the Tecnis ZA9003 (Abbott Medical Optics Inc.).

I would perform glued intrascleral haptic fixation of this

lens using a handshake technique.<sup>1</sup> Specifically, I would create two paired 2.5 × 2.5-mm lamellar scleral flaps 180° apart with sclerotomies under the flaps 1 mm from the limbus.

A pars plana vitrectomy through these sclerotomies should allow for excellent vitreous management and clean-up of any residual capsule or cortex. In addition, the vitrectomy would serve as the exit point for haptic fixation and placement within the intrascleral flap. Intrascleral fixation of the lens should provide excellent stability and centration of the IOL, while minimizing the pseudophacodonesis traditionally seen with other more commonly employed lens-fixation techniques. ■

*Section Editor Thomas A. Oetting, MS, MD, is a clinical professor at the University of Iowa in Iowa City.*

*Section Editor 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. He is also in private practice as a founding partner of New York Laser Eye in New York. Dr. Raviv may be reached at (212) 448-1005; tal.raviv@nylasereye.com.*

*Section Editor Audrey R. Talley Rostov, MD, is in private practice with Northwest Eye Surgeons, PC, in Seattle.*

*John Berdahl, MD, is a clinician and researcher with Vance Thompson Vision and Sanford Health in Sioux Falls, South Dakota. He has served as a consultant to Bausch + Lomb, but not on this subject matter, and acknowledged no financial interest in the products he mentioned. Dr. Berdahl may be reached at (605) 610-8881; johnberdahl@gmail.com.*



*Damien F. Goldberg, MD, is an assistant instructor at the Jules Stein Eye Institute and is in private practice with Wolstan & Goldberg Eye Associates in Torrance, California. He is a consultant to Alcon Laboratories, Inc; Allergan, Inc.; and Bausch + Lomb. Dr. Goldberg may be reached at (310) 543-2611; damien\_goldberg@yahoo.com.*



*David A. Goldman, MD, is the founder of Goldman Eye in Palm Beach Gardens, Florida. He is a consultant to Alcon Laboratories, Inc., and Bausch + Lomb. Dr. Goldman may be reached at (561) 630-7120; drdavidgoldman@gmail.com.*



*Anil Shivaram, MD, is in private practice with Claremont Eye Associates in Claremont, California. He is a consultant to Bausch + Lomb and is on the speaker's bureau of Alcon Laboratories, Inc. Dr. Shivaram may be reached at (909) 624-8077; anil.shivaram@claremonteye.com.*



1. Agarwal A, Jacob S, Kumar DA, et al. Handshake technique for glued intrascleral haptic fixation of a posterior chamber intraocular lens. *J Cataract Refract Surg.* 2013;39:317-322.