

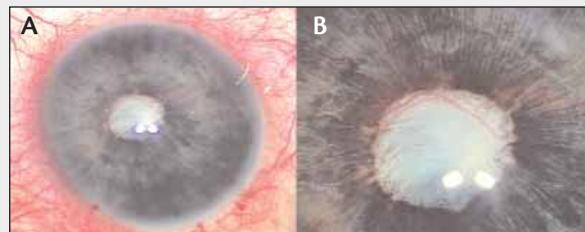
# Combined Surgery in a Unioocular, Mentally Retarded Patient

BY GUILLERMO ROCHA, MD, FRCSC; ROBERTO PINEDA, MD; AND JAMES FREEMAN, MD

## CASE PRESENTATION

A 45-year-old, unioocular, mentally retarded, incommunicative female presented with redness in her functional left eye. She responded to light by squeezing her eyelids. Her IOP measured 45 mm Hg. A limited slit-lamp examination revealed 2+ to 3+ ciliary flushing; a small, clear cornea; a flat anterior chamber; and a white, opaque cataract. B-scan ultrasonography showed an open funnel and a total retinal detachment. The retinal team recommended cataract surgery for the purposes of diagnosis and therapeutic visualization, and they anticipated subsequent retinal intervention.

The patient was brought to the OR under general anesthesia. The surgeon re-formed the anterior chamber with Viscoat (Alcon Laboratories, Inc., Fort Worth, TX) and Healon 5 (Advanced Medical Optics, Inc., Santa Ana, CA) and lysed diffuse iridocorneal adhesions. The iris margin was adherent to the lens, and numerous vessels traversed the pupillary aperture (Figure 1). The surgeon placed a 25-gauge needle through the iris, just beyond the adhesions that could not be lysed. He injected an ophthalmic viscosurgical device (OVD) into the retroiridial space. Next, he sharply dissected the pupillary margin from the anterior capsule with 23-gauge, curved intraocular scissors. After placing iris retractors, he painted the anterior capsule with trypan blue.



**Figure 1.** Low and high magnification of the patient's eye at the beginning of the case shows a tiny pupil fused to the white lens (A) and large-caliber vessels spanning the pupil (B).

The capsule was calcified, and the surgeon performed a capsulotomy with the 23-gauge scissors. The zonules were highly unstable, and the lenticular material was calcified throughout. The surgeon prolapsed the nucleus into the anterior chamber (Figure 2).

How would you proceed?



**Figure 2.** The calcified, loose lens has been prolapsed into the anterior chamber. Iris hooks remain in place.

## GUILLERMO ROCHA, MD, FRCSC

This patient should be approached with caution and with the understanding that her prognosis may be guarded. It is highly unlikely that a long-standing, funnel-shaped retinal detachment would result from an IOP of 45 mm Hg. The extension of blood vessels from the iris over the pupillary area and the calcified cataract suggest conditions such as uncontrolled proliferative diabetic retinopathy with ensuing neovascular glaucoma and tractional retinal detachment or previous ocular trauma. These aspects need to be considered with respect to any subsequent interventions.

Once the lens has been prolapsed into the anterior chamber, lacking capsular support, it needs to be removed. I would create a 5-mm scleral tunnel incision, fill the space posterior to the lens with a dispersive OVD, and enter the anterior chamber using a 2.65-mm keratome. I would then extend the wound to accommodate a lens glide that would be placed posterior to the lens, thus supporting it. Using an OVD, I would then proceed to remove the lens and capsule in toto. I would securely close the wound with 10-0 nylon.

At this stage, I would allow the retina surgeon to con-

tinue. Concerns would include the funnel-shaped nature of the detachment and the presence of blood vessels, in addition to the high IOP. There might be a need for silicone oil to anatomically reattach the retina as well as for intraocularly delivered medications such as an anti-VEGF agent (Avastin; Genentech, Inc., South San Francisco, CA) or steroids to control the vascular and inflammatory components.

I would not place an IOL on this operative day but rather would wait until the retina surgeon cleared the implantation. Without capsular support, the options for a secondary implant would be placement in the anterior chamber, iris fixation, or placement in the sulcus with scleral fixation. I would rule out an ACIOL owing to the presence of iridocorneal adhesions and the patient's history of glaucoma. Due to the presence of iris blood vessels, I would also avoid an iris-fixated IOL. My choice for this patient would therefore be a sclerally fixated PCIOL in the sulcus.

**“In this case, I would be careful to ensure the proper and secure closure of the incision, because the patient might rub her eye during the postoperative period.”**

**—Guillermo Rocha, MD, FRCSC**

The technique I currently employ involves creating small peritomies diagonally to the main wound (ie, for a temporal approach in a right eye, superotemporally and inferonasally). After applying cautery, I make a 300- $\mu$ m incision with a guarded diamond knife 1.5 mm posterior to the limbus. Next, I prepare a PMMA IOL implant with fixation eyelets in its haptics using two double-armed 9-0 Prolene sutures (Ethicon, Inc., Somerville, NJ). After opening the main wound and filling the anterior chamber with an OVD, I pass the needles using an ab externo technique with the aid of a bent, 26-gauge needle to dock the suture needle. I then insert the lens and rotate it into place. Next, I tie the sutures and hide the knots or rotate them in the groove.

In this case, I would be careful to ensure the proper and secure closure of the incision, because the patient might rub her eye during the postoperative period.

#### **ROBERTO PINEDA, MD**

Several preoperative issues will have bearing on the surgical approach, including an advanced nuclear cataract with calcification and a funnel-shaped retinal detachment with associated iris neovascularization and secondary glaucoma. This patient has limited visual potential.

The goal here is the removal of the cataract to allow the retina surgeon to visualize the posterior pole for surgical intervention. Fortunately, the initial surgery has gone well thus far. Given the advanced calcification of the cataract and zonular instability, however, this is no time for risky maneuvers. I would consider either a mini-nuclear extracapsular cataract extraction or a standard 10-mm limbal incision in order to remove the cataract safely and predictably. Either could be accomplished with gentle viscoexpression of the nucleus, which is in the anterior chamber. I would avoid phacoemulsification in this case, because it would involve too many unpredictable factors.

If the capsular bag is intact, the surgeon can perform I/A and implant a single-piece PMMA PCIOL, but only in the sulcus, because there is zonular instability, and a capsular tension ring cannot be placed due to the scissors capsulotomy. An ACIOL should be avoided due to the neovascular glaucoma. Because of the total retinal detachment, silicone oil will more than likely be required. The surgeon might therefore also consider not placing an IOL at this time, especially if the posterior capsule has been violated, because it might be further damaged during subsequent retinal surgery. One might therefore plan a staged surgery with removal of the silicone oil and the secondary placement of an IOL at a later date if the patient does well. A tube shunt to lower her IOP may be required as well.

Although a large cataract incision would be required, I feel it would be in the patient's best interest to ensure the most predictable surgical outcome and to achieve the goals laid out at the beginning of this case.

#### **JAMES FREEMAN, MD**

The surgeon seems to have managed a very difficult case well to this point. Although it may be tempting to enlarge the existing limbal incision and remove the lens nucleus, I think maintaining an intact globe and closed system are critical in this patient. Developmentally challenged individuals typically are unable to understand or comply with postoperative recommendations, and the surgeon cannot be sure that the patient will not rub her eye vigorously.

Although the lens appears to be very dense and somewhat calcified given the patient's age, I suspect it will emulsify fairly easily. I would proceed with my normal coaxial phacoemulsification using a second instrument such as a Bechert “Y” pick to maximize my ability to manipulate the nucleus. I would use a straight phaco tip but would consider switching to a steeper bevel if the nucleus appeared to be very dense. I would avoid a flared tip, which is more prone to becoming clogged with dense lenticular material. A frequent reassessment of the amount of remaining viscoelastic would be important to protect the endothelium and

other intraocular structures as much as possible. In an eye like this one, it would be especially important to make sure that the flow rates were adequate to prevent corneal burns, which might be more likely in this clinical situation.

I suspect that, after removing the lens, there will be little significant cortex remaining in the bag, but the I/A would allow me an opportunity to evaluate the stability of the capsular bag. If at all possible, it should be left intact and in place. If the instability appears to be limited to a focal area of zonules, I would consider placing a capsular tension ring. Carefully removing the iris hooks and then injecting a small amount of triamcinolone intracamerally would provide better visualization of any vitreous that might have escaped forward through incompetent zonules. I would consider performing a generous inferior peripheral iridotomy in anticipation of the retinal repair, which will most likely involve silicone oil.

After the iridotomy, I would tightly suture the keratome incision and then use the bimanual I/A setup to remove the remaining OVD from the eye. Next, I would perform an intracameral injection of Avastin and a sub-Tenon's injection of triamcinolone. I would defer the placement of an IOL. ■

Section Editors Robert J. Cionni, MD; Michael E. Snyder, MD; and Robert H. Osher, MD, are cataract specialists at the Cincinnati Eye Institute in Ohio. They may be reached at (513) 984-5133; [msnyder@cincinnatieye.com](mailto:msnyder@cincinnatieye.com).

James Freeman, MD, is Clinical Assistant Professor of Ophthalmology at the University of Tennessee in Memphis. He acknowledged no financial interest in the products or companies mentioned herein. Dr. Freeman may be reached at (901) 767-3937; [flyeyes@mac.com](mailto:flyeyes@mac.com).

Roberto Pineda, MD, is Assistant Professor at the Harvard Medical School in Boston. He acknowledged no financial interest in the products or companies mentioned herein. Dr. Pineda may be reached at (617) 523-7900; [rpineda@partners.org](mailto:rpineda@partners.org).

Guillermo Rocha, MD, FRCSC, is Medical Director of GRMC Vision Centre in Brandon, Manitoba, and is Adjunct Professor at the University of Ottawa Eye Institute in Canada. He acknowledged no financial interest in the products or companies mentioned herein. Dr. Rocha may be reached at (204) 727-1954; [rochag@westman.wave.ca](mailto:rochag@westman.wave.ca).



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