

Two One-Eyed Patients

BY RANDALL J. OLSON, MD

For Cataract & Refractive Surgery Today's November 2008 issue, I asked several leading cataract surgeons to recall and describe their most challenging case. Such accounts remind us that even the best surgeons are occasionally humbled, but how they approach the technical and emotional challenges of these patients is what makes them excellent physicians. For the column, "My Most Difficult Case," I will ask more leading cataract surgeons to share the lessons from their most challenging case ever. This month, Randall Olson, MD, has provided a candid, gut-wrenching article that exemplifies the courage and generosity that surgeons must possess in order to share these personal stories for our collective benefit.

—David F. Chang, MD, Section Editor

When asked to describe my most difficult case ever, two scary examples came to mind. The first was a tough case that ended well. The other ended in disaster. I think the lessons from both are important.

CASE No. 1

Patient History and Clinical Findings

A 66-year-old male had nanophthalmos with 15-mm globes. He had already lost one eye (no light perception) due to a disastrous cataract procedure and had vowed never to undergo cataract surgery in his fellow eye. The patient was a well-respected leader in a neighboring state. The cataract progressed, but no ophthalmologist wanted to perform the surgery. When the patient was finally referred to me in 1996, he was legally blind and had difficulty functioning. Upon examination, I found that one of his eyes was phthisical due to complications from previous cataract surgery. His other eye had a rock-hard cataract and a BCVA of count fingers at 4 feet. The cataract filled most of the anterior chamber, and the patient was now starting to have difficulty with phacomorphic glaucoma.

The earlier cataract surgery had resulted in a choroidal effusion. A planned extracapsular cataract extraction had resulted in the loss of the intraocular contents. It seemed to me that the best surgical approach for the remaining eye was phacoemulsification in an attempt to maintain the IOP throughout the procedure. The eye's refractive error was great (62.00 D). I told the patient that I would consider implanting a piggyback IOL but that my top priority was completing the surgery without losing the eye.

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Surgical Course

On the day of surgery, thoughts about the lack of anterior chamber and the horrendous result of the patient's first cataract procedure filled me with trepidation and concern. Because the risk of a choroidal effusion was high, I had decided that I would attempt to perform the entire cataract procedure through a small incision. My big worry was that I had no good backup plan. Most of the ophthalmic viscosurgical devices (OVDs) and phaco techniques used today were not available. Nonetheless, I felt confident about my phaco chop approach to very hard cataracts. I decided to perform mechanical segmentation and to use virtually no ultrasound, because I would, at least at first, be working right next to the cornea.

I made a 2.8-mm incision but found creating the capsulorhexis very difficult, because I had virtually no room in which to work. The viscoelastics available at that time provided little help in terms of creating space. I was extremely nervous about attempting a vitrectomy to give me more room to work in, because I knew that any hypotony could initiate a choroidal effusion. I finally completed the capsulorhexis and was able to rotate the nucleus.

As I began horizontal chop, I encountered multiple woody nuclear connections. With difficulty, I removed one small piece and then mashed it into the phaco tip without ultrasound. I had used a dispersive OVD but was deeply concerned about corneal endothelial trauma. Eventually, dealing with one piece at a time, I created some working space and could start using low amounts of ultrasound. I successfully removed the entire nucleus while maintaining corneal clarity. As I finished the case, I rapidly transitioned from phacoemulsification to I/A. I removed all of the cortex and, before exiting the eye every time, filled the eye with an OVD to maintain the IOP.

I placed the highest-powered (35.00 D) foldable IOL I had available so that I would not need to enlarge the incision. I then removed the viscoelastic and immediately reinflated the chamber. I chickened out on placing a second IOL. Although I was using predominantly sutureless incisions at the time, I placed a suture in this incision as insurance against a leaky wound and potential disaster.

Outcome

The residual refractive error was large, but the patient could see 20/25 to 20/30 with a contact lens or aphakic spectacles. He was ecstatic. In retrospect, I probably should have placed a piggyback IOL. The eye was so small, however, that the implantation of a single IOL had left little room, and the placement of piggyback lenses was not common at the time.

CASE No. 2

Patient History and Clinical Findings

In 2001, a male in his 90s presented to me with a rock-hard cataract and count fingers vision in one eye. He had lost his other eye to endophthalmitis following cataract surgery. The patient had delayed cataract surgery on his second eye due to the earlier disaster. He greatly desired better visual function, but none of his local ophthalmologists wanted to perform the procedure. I felt confident that I could help the patient and planned to use a phaco chopping technique. I was not concerned about pseudoexfoliative changes or his earlier experience.

On examination, I saw a deep anterior chamber, and the zonules appeared to be in fine shape despite pseudoexfoliation. The retinal examination was difficult to perform due to the dense cataract, but I saw no reason why the patient should not obtain a successful visual outcome, as I told him and his family.

Surgical Course

The patient received retrobulbar anesthesia. As I performed the capsulorhexis, I realized that the zonules

were very loose. I was able to complete the capsulorhexis but recognized that I had to be extremely careful when extracting the cataract. Rotating the nucleus through the 2.8-mm incision was so difficult that I gave up and began to perform horizontal chop. Removing pieces of the lens one by one eventually created sufficient room for me to move the remaining nucleus without placing tension on the zonules ... or so I thought. Because each fragment had woody connections, nuclear removal took a great deal of time. Once I had extracted approximately two-thirds of the nucleus, the zonules started to unzip. A capsular tension ring was not available to me at that time. Instead, I tried to use my second instrument to hold the capsule in position while I removed the last of the nucleus.

I decided, before I lost the remaining lens fragment, to enlarge the incision to approximately 6 mm so that I could remove the remaining cataract with the capsule. I informed the patient of my plan. As I extended the incision and started to deliver the lens fragment with the capsule, the eye suddenly began to expel the capsular bag and everything else. The globe became rock hard, and I recognized the signs of a severe arterial expulsive hemorrhage. I closed the incision as rapidly as I could with several 9-0 nylon sutures tied tightly, and I cleaned up the vitreous to the best of my ability. The eye continued to be rock hard, so I performed an intravenous injection of mannitol. I decided not to exteriorize the hemorrhage but stayed with the patient until the IOP had returned to a reasonable level. I deferred any additional surgery pending the eye's stabilization.

Outcome

Although no retinal content was lost and I was able to salvage the eye, the patient eventually ended up with hand-motion vision and a distinct decrease in acuity from his preoperative level. He was well connected in my community and told several of our mutual friends that I had destroyed his eye. The patient became severely depressed and died not long after the surgery. His family let me know that they felt his disastrous second cataract procedure was the main reason his life did not last longer.

With an expulsive hemorrhage, I did not feel completely responsible for the poor outcome. I deeply regretted, however, the marked optimism with which I had described how I would restore his vision to the patient and his family.

TEACHING POINTS

I am confident that the first case I described would be easier to manage today by maintaining positive pressure throughout the procedure, using an OVD such as

Healon5 (Advanced Medical Optics, Inc., Santa Ana, CA) to open up a small amount of the anterior chamber, and then performing a small, 25-gauge vitrectomy while always maintaining normal IOP. With a piggyback IOL, the eye's UCVA would have been much better. Regardless, by not overpromising and by carefully executing each operative step, I was able to meet the patient's goals of good vision without the loss of his only eye.

In the second case I described, bilateral surgical complications blinded the patient. Due to my optimism and hubris, I had not fully recognized myself or explained to the patient and his family that cataract surgery and IOL implantation would not be a walk in the park due to the combination of severe pseudoexfoliation syndrome and a rock-hard cataract. With a capsular tension ring, it is likely that I could have completed the nucleus' removal through a phaco incision. The time taken to enlarge the incision with a drop in IOP to zero would have been much shorter. I think that I therefore probably could have avoided the expulsive hemorrhage and ensuing misfortune and turmoil.

Since the second case, I am always extremely cautious with functionally one-eyed patients. I am sure to explain preoperatively that a severe complication can occur, although I will do everything possible to prevent it. I inform patients that today's phaco techniques allow ophthalmologists to remove rock-hard cataracts safely and successfully the majority of time, but I stipulate that the incidence of complications is never zero. ■

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