

BILATERAL 16-CUT RADIAL KERATOTOMY

What's the best surgical strategy for this patient's brunescant cataracts?

BY BARRY A. SCHECHTER, MD; ARTHUR B. CUMMINGS, MB CHB, FCS(SA), MMED(OPHTH), FRCS(EDIN); AND VANESSA NGAKEG, MD

CASE PRESENTATION

A 71-year-old woman presented for a cataract surgery evaluation. The patient's medical history was significant for bilateral 16-cut radial keratotomy (RK) in the 1980s.

Uncorrected distance visual acuity (UDVA) was 20/60- OD and 20/100- OS. BCVA was 20/60- OD with a manifest refraction of plano and 20/60 OS with a manifest refraction of +1.25 -0.75 x 175°. An examination of the anterior and posterior segments was within normal limits except for the RK scars. Significant central brunescant cataracts were present bilaterally, denser in the left eye. Keratometry (K) readings were 34.00 D @ 91° and 38.75 D @ 1° OD and 36.50 D @ 85° and 38.25 D @ 175° OS.

How would you proceed?

—Case prepared by Barry A. Schechter, MD



ARTHUR B. CUMMINGS, MB CHB, FCS(SA),
MMED(OPHTH), FRCS(EDIN)

Cataract surgery is refractive surgery today. In other words, this patient is going to expect a good refractive outcome. The problem for the surgeon is that achieving this goal will be a major challenge. My first step would be to set reasonable expectations for this patient. I would discuss postoperative adjustments to the outcome with PRK (possibly topography-guided) and/or supplementary add-on (ie, piggyback) IOLs.

Next, corneal topography and tomography would be performed to provide a clearer picture of the regularity and stability of the corneas. The case presentation suggests that multiple scans obtained at different times of day may be required. I would give more weight to the measurements obtained in the morning so that the refractive shift over the course of the day is more myopic. A 16-cut RK procedure can result in an unstable refraction and topography, whereas

an eight-cut RK procedure rarely does. I would like to see the average K values for the central 1-, 2-, 3-, and 4-mm zones. Different devices provide different parameters, but most can provide an average value taken over the central area. These K values can be used in regular IOL formulas. My approach would be to use a double-K method of calculation for the K values (using the K readings obtained before the RK procedure and the K readings obtained before cataract surgery) and then to use a vergence formula.

I would use the ASCRS IOL calculator for prior RK and enter data for as many of the parameters as possible. This approach has been reliable for me.

I would wait 2 to 3 months until refractive stability is achieved before refining the outcome. I would start with the nondominant eye in case wild fluctuations in refractive outcomes occur postoperatively. Patients generally find this approach reassuring; they are more comfortable proceeding with surgery on the second eye once they are happy with the results for the first eye. My preference would be PRK or add-on IOLs rather than an IOL exchange. If the refractive outcome fluctuates, CXL can be considered. If fluctuation is detected preoperatively, it would make sense to use the mean central K value for the IOL calculation and then to target -0.50 or -0.75 D.

I would consider using a pinhole IOL such as the IC-8 (AcuFocus). This IOL design reduces aberrations, visual side effects, and the effects of residual sphere and astigmatism. I would implant this lens in the nondominant eye first and gauge the patient's response to the outcome. If she loves the improvement in quality of vision from a reduction in higher-order aberrations and either does not mind or notice dimming of vision, I would discuss the option of implanting an IC-8 in the dominant eye as well. If, however, she has a problem with dimming, then I would implant a monofocal IOL in the dominant eye.

Once an IC-8 has been implanted in the first eye, it is straightforward for patients to compare the vision of their two eyes and to decide which they prefer. Treating the nondominant eye first allows a comparative trial and assists patients with IOL selection.



Figure 2. Postoperative appearance of the eye. One of the RK incisions avulsed during cataract surgery and had to be closed with a suture.

seal.¹ The patient was instructed to administer besifloxacin ophthalmic suspension 0.6% (Besivance, Bausch + Lomb) twice daily for 1 week, bromfenac ophthalmic solution 0.075% (BromSite, Sun Pharma) daily for 2 weeks, and loteprednol etabonate ophthalmic gel 0.38% (Lotemax SM, Bausch + Lomb) four times daily, tapered over 2 weeks.

One day after surgery, UDVA was 20/200 with a pharmacologically dilated pupil (Figure 2). The cataract incision was watertight. Trace corneal edema was evident. IOP was 17 mm Hg. UDVA has remained stable at 20/30 for the past 5 months since the 1-week visit.

I have performed cataract surgery and implantation of a toric IOL in eyes that had a history of eight-cut RK when refractive stability was evident and the corneal incisions

appeared to be stable. I still cautioned these patients, however, that potential instability of the RK incisions might necessitate additional surgery in the future to achieve an optimal refractive outcome. ■

1. Schechter BA, Auerbach DB. Evaluation of a dispersive viscoelastic as a watertight wound closure for cataract surgery. Paper presented at: ASCRS Annual Meeting; April 20-24, 2012; Chicago.

SECTION EDITOR CATHLEEN M. MCCABE, MD

- Cataract and refractive surgery specialist and Medical Director, The Eye Associates, Bradenton and Sarasota, Florida
- cmccabe13@hotmail.com; Twitter @cathyeeye
- Financial disclosure: Consultant, research support, and speakers bureau (Alcon)

ARTHUR B. CUMMINGS, MB CHB, FCS(SA), MMED(OPHTH), FRCS(EDIN)

- Consultant Ophthalmologist, Wellington Eye Clinic, Dublin, Ireland
- Chief Medical Editor, *CRST Europe*
- Global Advisory Board, *CRST*
- Financial disclosure: Board of Directors (Alcon); Medical Advisory Board (Alcon, Scope, TearClear, TearLab, Vivior, WaveLight); Speakers bureau (Alcon, Scope, TearClear, TearLab, Vivior, WaveLight)

VANESSA NGAKENG, MD

- Private practice, Macon, Georgia
- eyesurgeon01@gmail.com
- Financial disclosure: None

BARRY A. SCHECHTER, MD

- Director, Cornea and Cataract Service, Florida Eye Microsurgical Institute, Boynton Beach, Florida
- bdsch77@aol.com
- Financial disclosure: Board of Directors (Innovation Pharmaceuticals); Medical Advisory Board (AmnioChor, Aperta Biosciences); Speakers bureau (Bausch + Lomb, Sun Pharmaceutical Industries)