

# Is There Light at the End of the Tunnel?

BY SOM PRASAD, MS, FRCS, FRCOPHTH, FACS

This case has stuck in my mind due to the unique circumstances of the patient, her eye, and some of the unexpected events that occurred during surgery. In many ways, this case is the classic example of Murphy's Law: If anything can go wrong, it will go wrong. During the course of the surgery, with every change in strategy, another difficulty arose and increased the complexity of the situation. Eventually, all I could manage was to somehow reach the end of the case.

## BACKGROUND

This patient had a long and complex history. She underwent RK 20 years earlier, but her previous records were unavailable, because the clinic where this was done had long closed down. According to the patient, she had surgery three times in her highly myopic left eye in an attempt to achieve the desired refractive outcome. More than a decade ago, she developed a retinal detachment in her right eye that could not be successfully repaired, and she lost all vision in that eye. For years, she managed with her left eye. Due to gradually decreasing vision, however, she wanted to proceed with cataract surgery in her only seeing eye.

## SURGICAL PLAN

Upon examination, the patient had 16 RK incisions with alternate cuts extending into the sclera (Figure 1) and a moderately advanced cataract. Although I had operated on eyes with previous RK before, I had never come across an eye with such extensive incisions. After considering the findings, I consulted the literature and also discussed the surgical approach with a colleague. I planned to use a biaxial microincisional approach with incisions placed in the posterior limbus with the hope of avoiding the RK incisions opening up and leading to a nightmare during surgery. I aimed to keep my incision size minimal so that they would not cross the RK incisions. Because of the patient's high myopia, I decided to implant a capsular tension ring (CTR) and ordered a -10.00 D Sensor IOL (Abbott Medical Optics Inc.).

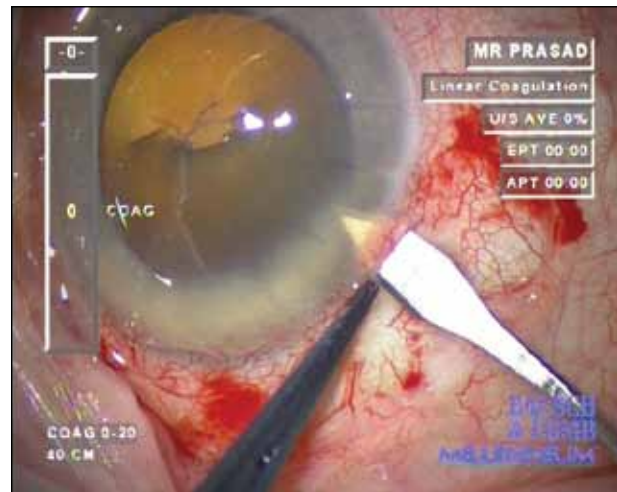


Figure 1. Previous RK incisions with “enhancement” and incisions extending into the sclera. Note the central corneal epithelium has been damaged during draping.

## SURGICAL COURSE

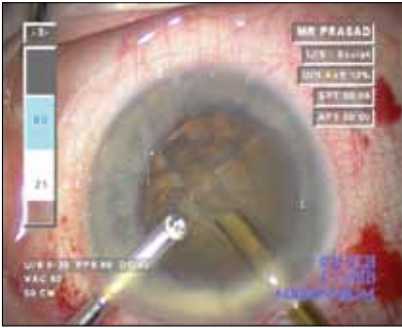
The patient was nervous, and I was tense due to the multiple issues that could potentially lead to trouble. The patient chose to undergo the procedure under a general anesthetic. Although it is unusual in contemporary adult cataract practice to employ a general anesthetic, in hindsight, it proved helpful that I complied with her wishes. Iris hooks and a Malyugin Ring (MicroSurgical Technology) were on standby, however, I did not like the idea of making multiple incisions in this eye, at least until phacoemulsification was completed.

Things did not start well. As soon as I incised the drape to place the lid speculum, I realized that I had accidentally damaged the corneal epithelium, which was coming away in the central corneal area (Figure 1). After taking down the conjunctiva with small peritomies, I placed limbal incisions. Despite the compromised view, the capsulorhexis went well. After hydrodissection, I

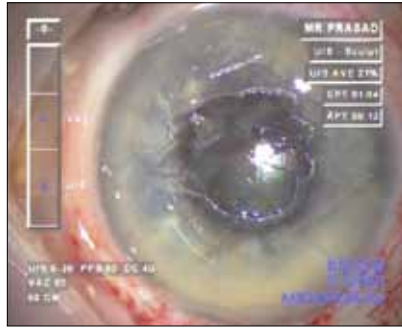


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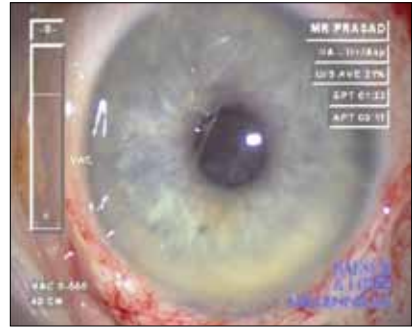
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**Figure 2.** The surgeon performs biaxial microincision phacoemulsification. Posterior limbal incisions are placed so as not to cross the old RK incisions.



**Figure 3.** The corneal epithelium is removed to improve the surgeon's view.



**Figure 4.** Phacoemulsification is completed, although the pupil is now very small.

started biaxial phacoemulsification. I employed a low bottle height (40-50 cm), a low-duty cycle, and used vacuum with great caution to avoid surges and minimize instability in the anterior chamber (Figure 2). This strategy has served me well in the past, especially if I am careful to only dip the irrigating chopper behind the iris plane when the phaco tip is occluded, as this minimizes turbulent flow posterior to the iris. The rest of the time, the irrigating chopper directs the flow anterior to the iris, essentially acting like an anterior chamber maintainer.

Unfortunately, this was not my day. Although I was worried about the possibility of the long, deep RK incisions opening up, trouble came from another front. The pupil started coming down rapidly, and the anterior chamber was fluctuating wildly. I paused, took a deep breath, and applied intracameral phenylephrine. This maneuver, which is usually very effective, had no bearing on this pupil. I toyed with the idea of making a third incision and placing a Malyugin Ring, but I was reluctant because the RK incisions extended into sclera; although this device would give me a large pupil to work through, I feared that it would add to the instability of the anterior chamber. Similarly, I also did not want to make another four incisions to accommodate iris retractors. I was concerned about breaking the capsular bag, given the high myopia and poor outcome from retinal detachment in the fellow eye.

I stopped to think. My brow was damp, and the scrub nurse helping me was gently asking if I was OK. Thankfully, the patient was asleep, and my worried and nervous demeanor did not transfer to her. I decided to work through a small pupil, but by the time I had succeeded in deepening the grooves, the corneal epithelium had become edematous, and what had been a marginal view became unworkable. In desperation, I

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removed the corneal epithelium to allow a workable view (Figure 3). I used two spatulas to split the nucleus, rotate it, and split it again in the posterior chamber, which I filled with an ophthalmic viscosurgical device (OVD). I had hoped this approach would be safer than directing the flow of fluid behind the iris, which is what I would have had to do if I tried to crack the nucleus using the irrigating chopper or with a chop technique. I was also reluctant to chop with such a small pupil and unstable anterior chamber.

Reentering the eye with the phaco probe and irrigating chopper, I managed to gingerly remove the nucleus, although the pupil was now about 2 mm (Figure 4). Once the nuclear quadrants had been emulsified, I was relieved to some extent, although the case was by no means over. I now felt safer opening one of the 1.7-mm incisions to about 2.5 mm to insert a Malyugin Ring (Figure 5).

My main focus now was how to finish the case. After taking a few deep breaths, I decided to stay with my original plan. With a low bottle height and moderate vacuum, I/A of soft lens material went relatively smoothly (Figure 6). I was sorely tempted to skip the idea of inserting a CTR, but I decided to proceed according to



Figure 5. One of the incisions is now extended, and a Malyugin Ring is introduced.

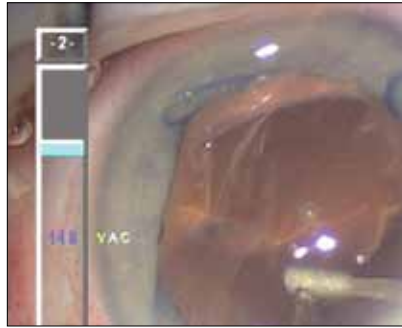


Figure 6. The I/A is completed.



Figure 7. The surgeon guides a CTR into the bag.

plan. Using a bimanual technique, I guided the trailing end of the CTR into the capsular bag (Figure 7).

More, however, was still to come. I realized that I did not have a suitable injector available for the particular IOL I chose to implant. I resorted to using the folding forceps to implant the IOL, but the very thin optic would not unfold. I injected some OVD in between the folded optic to force the IOL to open, and thankfully the lens gently unfolded into the capsular bag. After I removed the Malyugin Ring and OVD, I tested my incisions and placed a bandage contact lens to keep the eye comfortable while the epithelium healed. Finally, I could relax.

### OUTCOME

After I composed myself, I explained to my patient that, although I encountered various difficulties during surgery, I completed the procedure. She was happy and said, "I knew you could do it." I offered to explain the details and the reasons for why she had a contact lens in her eye, which I would remove in a few days, but she was not interested. I was touched by the faith she had in me.

### LESSONS LEARNED

I learned many lessons from this case. Having an extensive realistic discussion about my concerns prior to surgery while maintaining a positive attitude helped my patient to build confidence in my abilities. The fact that I had accepted her wish for a general anesthetic also demonstrated that I was committed to doing my best to accommodate her. If I had insisted on using topical anesthesia, I believe I would have undermined her confidence in me. In retrospect, topical anesthesia could have resulted in a restless patient during the operation, making a difficult situation disastrous.

Regarding the surgical course and outcome, I probably achieved the outcome I desired by not rushing or trying heroics. The approach of slowing down and thinking things through combined with a willingness to continuously analyze options and change surgical plans won the day. Slowing down to take stock of a situation is now central to my surgical approach. Above all, I do not look at the clock or think about the patients who are scheduled to follow. I try to keep my entire focus on the patient directly in front of me. Also, I ensure that everything I may need during the procedure is on hand, should a change in surgical strategy be required. For every case, no matter how routine, I always have a "may need" tray that includes unopened packs of adjuncts such as phenylephrine, Viscoat (Alcon Laboratories, Inc.; my standard OVD is Healon [Abbott Medical Optics Inc.]), a Malyugin Ring, CTR, triamcinolone, an anterior vitrectomy pack, a 10-0 nylon suture, a needle holder, and tying forceps.

I also strive to be supportive of the scrub team and maintain a rapport with them. After all, they are not only concerned about the patient but also the surgeon, should things not go according to plan in the operating room. ■

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