Improving Safety, Visual Recovery, and Outcomes

A surgeon works to fine-tune his procedure.

BY R. BRUCE WALLACE III, MD

Our focus as cataract surgeons usually falls into three major categories: safety, rapid visual recovery, and predictable refractive results. Judging from the interest surrounding femtosecond laser-assisted cataract surgery exhibited at this year's AAO meeting, it appears that technology is likely to shift away from standard phacoemulsification to pre-emulsified procedures offered by the femtosecond laser. These laser-assisted procedures allow for the creation of consistent, properly sized anterior capsulotomies, centered to allow for capsular overlap.

CAPSULOTOMY DIAMETER MARK

Until femtosecond laser cataract surgery is widely available, I advocate the use of a mark placed on the central cornea to help guide a proper capsulotomy. This "capsulotomy diameter mark" is made by placing a 6-mm optical zone marker at the central cornea just prior to making the phaco incisions.[1] I have found that the use of dye is not important, but it is crucial to place the mark slightly away from the nondominant eye (or closing the nondominant eye as recommended by Lisa McIntire, MD). Otherwise, it is possible to offset the mark slightly, which will lead to a decentered capsulotomy. When performing the capsulotomy, I attempt to stay just inside the mark, yielding a 5- to 5.5-mm opening.

SMALL PUPILS

I have started mixing epinephrine 1:10,000 with lidocaine 1% (unpreserved) to help slightly expand small pupils. I simply substitute 1% lidocaine for balanced salt solution when converting epinephrine 1:1000 to 1:10,000. I am also more careful when injecting balanced salt solution around the cortical nuclear complex to allow for cortical cleaving hydrodissection, as described

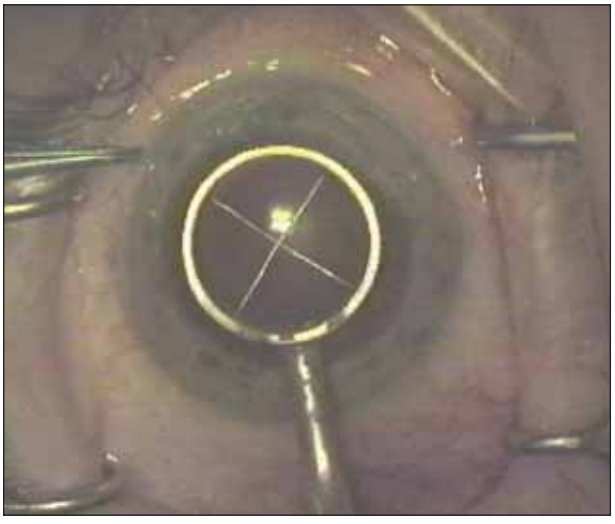

Figure 1. The capsulotomy diameter mark is made by placing a 6-mm optical zone marker at the central cornea.

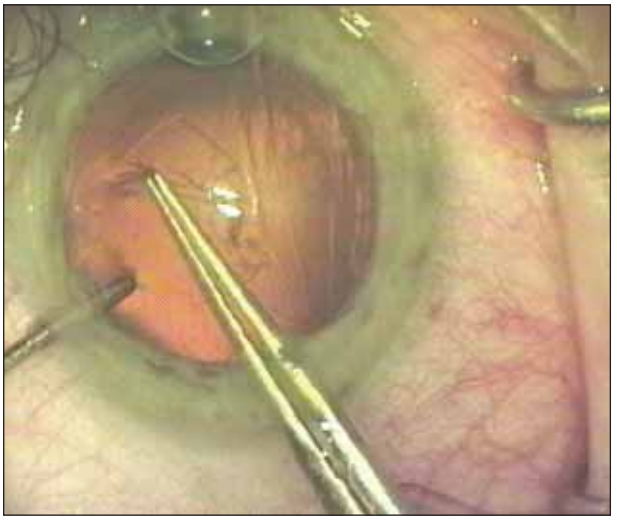

Figure 2. When performing the capsulotomy, the author attempts to stay just inside the mark.

by I. Howard Fine, MD, in 1992. The key here, as explained to me by William Maloney, MD, is not to put any pressure on the plunger of the syringe when placing the 25-gauge cannula just underneath the distal anterior capsular flap. This prevents fluid waves that can develop between the cortex and nucleus.

LIMBAL RELAXING INCISIONS

I have been rethinking when to add limbal relaxing incisions. Recent reports of optical bench studies performed by Scott MacRae, MD, have shown that even 0.50 D of astigmatism can disturb the visual quality of multifocal lenses. Therefore, I am using more single-incision limbal relaxing incisions on the steep axis to avoid postoperative astigmatism in patients who have less than 1.00 D preoperatively. With femtosecond laser cataract surgery, we may refine our nomograms (and algorithms) to achieve even better results than with manual techniques.

VACUUM PHACOFLUIDICS

I have been impressed by the recent improvements in vacuum-based phaco technology and have moved away from peristaltic systems. I now rely on newer venturi-like phacoemulsification offered by the Stellaris Vision Enhancement System (Bausch + Lomb, Rochester, NY) and Whitestar Signature System (Abbott Medical Optics Inc., Santa Ana, CA). Due to enhanced computer digitized feedback, anterior chamber stability is not sacrificed for noticeable improvements in the speed of nuclear removal with these new systems.

Other new things I have been working with in cataract surgery involve fine-tuning individual steps to improve the procedure's safety and predictability and patients' satisfaction with better refractive results. ■

Visit www.eyetube.net/series/improvingphaco/mics-with-crystalens-hd-implant/ to view a video of this technique.

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1. Wallace RB. Capsulotomy diameter mark. *J Cataract Refract Surg.* 2003; 29:1866-1868.