The Narrow Way

Thin IOLs and bimanual microincisional cataract surgery.

BY MATTEO PIOVELLA, MD; FABRIZIO I. CAMESASCA, MD; AND BARBARA KUSA, MD

Even for those still convinced of the technical importance of microincisional cataract surgery, it is indisputable that the procedure has not gained wide acceptance among cataract surgeons. Problems include its greater complexity and surgical time compared with a standard coaxial approach. In our 1-year study of the results with microincisional cataract surgery, surgical time was 35% longer than with traditional phaco surgery.[1] At 1 year postoperatively, the decrease in endothelial cell counts was 6.02% with standard phacoemulsification versus 14.29% with microincisional cataract surgery. Moreover, currently available microincisional instrumentation is inadequate, and maneuvering it is challenging.

At present, thin IOLs represent the most convincing reason for pursuing microincisional cataract surgery (see *Clinical Results With the Ultrachoice 1.0 Lens*), although some results in this area have been disappointing. We continue to perform microincisional cataract surgery in a limited number of cases in order to maintain our dexterity with the technique and to keep up to date with advances in phaco technology, software, and instrumentation. This article shares some surgical tips based on our experience.

SURGICAL STRATEGY

The two most critical steps of microincisional cataract surgery are creating the tunnel and the capsulorhexis. For our study, we used 1.3-mm sapphire knives to make the microincisional tunnel and the sideport incision. Too short a tunnel may lead to iris chafing or prolapse, and it may complicate the insertion of surgical instruments if the tunnel's three planes are steep.

Because the tunnel's width is limited, we created the capsulorhexis with a forceps that does not open in the usual way. A whole new generation of 23-gauge coaxial rhexis forceps that work like vitrectomy instruments is now available. Phaco microtips currently feature a 0.9-mm diameter and are coated with carbon to enhance their smoothness and thus decrease the generation of heat during surgery. A 0.9-mm phaco microtip without an irrigation sleeve requires a 1.3-mm incision.

Irrigation is provided through a 1.1-mm sideport incision. A chopper with an anterior instead of lateral opening for irrigation will provide better irrigation and chamber stability. Newly designed instruments combine the irrigating and chopping functions.

Because less space is available in the microincisional setting for phaco motion, which essentially can be only back and forth, most surgeons presently perform phaco chop. Irrigation and aspiration require the use of bimanual, Buratto-style cannulas.

We recommend caution when selecting surgical instrumentation. Several generations of instruments were developed over the course of a few months, each succession featuring important technical improvements. It is therefore

CLINICAL RESULTS WITH THE ULTRACHOICE 1.0 LENS

Presently, we are following a group of 40 eyes of 35 patients who received the Ultrachoice 1.0 lens (Thinoptx, Abingdon, VA; not available in the US) (Figure 1). The plate-haptic lens is 11.2mm wide with a thickness of 350 to 400µm, depending on its power. It is one-fifth as thick as a standard IOL.

In our experience, this single-piece, rollable, acrylic IOL inserts easily through an incision of approximately 2mm. The mean final width of the incision, measured with a caliper after the IOL's insertion, was 2.37 ±0.36mm. Two years postoperatively, patients had a mean visual acuity of 20/30 ±0.52 and a mean spherical equivalent correction of -0.13 ±0.56D. The mean postoperative decrease in patients' endothelial cell counts at 360 days was of 17.2%. Interestingly, coma, spherical aberration, and higher-order aberrations—measured with the WASCA Analyzer (Carl Zeiss Meditec AG, Jena Germany)—had not increased significantly at 1 year compared with normal population values.

We are in the process of evaluating other factors such as the incidence of posterior capsular opacification. The Ultrachoice 1.0 lens does not have a square edge. The rate of posterior capsular opacification appears to be higher with this IOL than with those featuring square edges but lower than with traditional, rigid PMMA lenses.

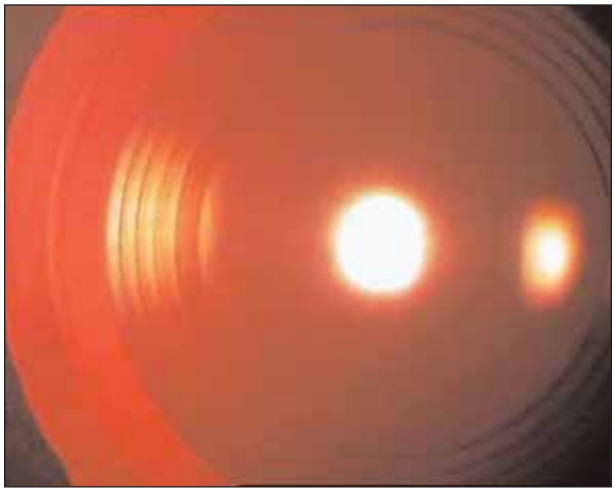

Figure 1. After its implantation, the Ultrachoice 1.0 is viewed with high magnification.

desirable to choose from the most recent generation of instruments.

CONCLUSION

The complexity of bimanual microsurgery entails a steep learning curve as well as longer phaco and surgical times relative to standard coaxial cataract surgery. The procedure is preparing surgeons for the advent of ultrathin, injectable IOLs. Their development, in turn, is spurring the evolution of new instrumentation and equipment. The future of cataract surgery may be a coaxial microincisional procedure. ■

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1. Piovella M, Camesasca FI, Kusa B. Endothelial cell counts after bimanual microincision cataract surgery. Poster presented at: The AAO Annual Meeting; October 15 and 16, 2005; Chicago, IL.