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An Award-Winning Instrument Set for Microincisional Cataract Surgery

Surgeons need MICS instruments that are comfortable and easy to use.

BY STEVEN M. SILVERSTEIN, MD

As corneal incisions inevitably become smaller, it is essential that instrument design keeps pace as the cataract procedure continues to evolve. While each surgeon is entitled to his or her own personal preference, never for a moment take for granted the importance of high-quality, precision instrumentation.

—Robert H. Osher, MD

The concept of performing cataract surgery through sub-2-mm incisions is not new; different methods of lenticular disassembly through small incisions were being considered even before the advent of phacoemulsification. Initially, the absence of IOLs suitable for use with small incisions prevented widespread adoption of microincisional cataract surgery (MICS). What was the point of operating through small wounds when we would have to enlarge them to accommodate the implant? Thus, MICS received little attention in the United States until foldable IOLs and microincisional injection systems reached the US market. One of the newest developments in MICS IOL technology is the Akreos MICS lens (Bausch + Lomb, Rochester, NY), which can be injected through a sub–2-mm incision.

Another reason for the wider adoption of MICS is the availability of microincisional phaco platforms such as the Stellaris Vision Enhancement System (Bausch + Lomb) (Figure 1). This platform has fluidic settings specifically designed for MICS surgery. Systems like the Stellaris help to maintain a stable anterior chamber with minimal trampolining of the posterior capsule while minimizing the potential for wound burn at the incision site.

MICS SURGERY NECESSITATED MICS INSTRUMENTS

Following the advent of phaco and IOL technologies dedicated to MICS, we surgeons needed microincisional instruments with which to perform small-incision surgery. Although several colleagues have designed superb individual microincisional instruments, we had no complete set of easy-to-use MICS instruments. I was given the opportunity to design a complete set of MICS instrumentation by Storz Ophthalmic Instruments (St. Louis, MO). These instruments are as user friendly and as efficient for the recent MICS surgeon as they are for the most experienced hands.

Figure 1. The Stellaris Vision Enhancement System features specific settings for MICS.

CAPSULORHEXIS FORCEPS

Keeping in mind the unique range of motion that capsulorhexis instruments require in MICS, the Silverstein MICS 1.8-mm Capsulorhexis Forceps (E2026) is equipped with extra-long (81 mm) arms so that the tips do not have to open widely inside the eye (Figure 2A). The sharp, pointed tips allow easy puncture of the anterior capsule without requiring the use of both a cystotome needle and forceps (Figure 2B). Furthermore, the arms are marked at 5.5 and 6 mm to help the surgeon size and center the capsulorhexis. Warren Hill, MD, of Mesa, Arizona, and others have

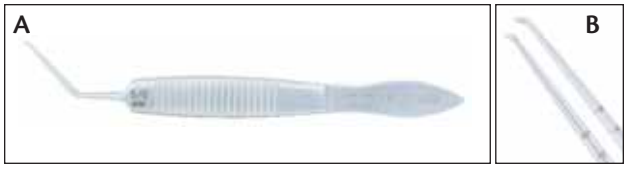

Figure 2. The Silverstein MICS 1.8-mm Capsulorhexis Forceps (E2026).

Figure 3. The modified Wiles Hydrodissection Cannula MICS (E4429).

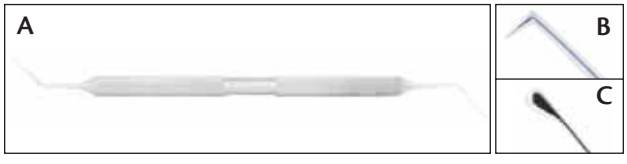

Figure 4. The Silverstein Phaco Manipulator & Quick Chop (E0641).

described how the consistent sizing and positioning of the capsulorhexis is an important factor in the predictability of surgical outcomes.[1] The laser-etched marks on the MICS 1.8-mm Capsulorhexis Forceps allow surgeons to map out their starting and ending points in vivo. This feature has saved me from having to purchase more expensive instruments to size and center the capsulorhexis.

IRRIGATING CANNULA

The second MICS instrument in this series, the modified Wiles Hydrodissection Cannula MICS (E4429; Figure 3A and B), inserts comfortably through sub–2-mm incisions, yet it has an irrigating stream sufficient for hydrodissection and for removing subincisional cortex. It is a thin, J-style cannula, which I prefer over angled or flat-tipped straight cannulas, because the bent tip enables me to irrigate and hydrodissect directly underneath the incision site.

LENS MANIPULATOR

The final instrument in the MICS set is the Silverstein Phaco Manipulator & Quick Chop (E0641; Figure 4A-C). My goal in designing this device was to create one instrument

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for use in any disassembly technique, be it chopping, divide-and-conquer, or anterior chamber flip. One end of the Phaco Manipulator is flat, smooth, and shaped like a spatula, and the opposite end is a sharp chopper. This instrument has a slender profile for comfortable handling, and can be used to divide any density of cataract.

CURRENT USE OF MICS

Currently, I use MICS via the Stellaris Vision Enhancement System for approximately 40% of my cataract cases. In addition, I employ this technique in any eye that has undergone RK in order to avoid the previous radial incisions and to reduce the likelihood of splaying the corneal incision. I also use MICS in patients who have had prior vitreoretinal surgery, especially retinal detachment repair, because these eyes require as much stability and as little manipulation as possible. The sleeve of the Stellaris' phaco handpiece is designed to promote consistent irrigation flow (minimizing the potential for wound burn) and to prevent oarlocking. The system's EQ Fluidics controls the dynamics of aspiration during flow and vacuum modes for an exceptionally stable anterior chamber. Again, I enjoy using the Akreos MI60 IOL because it inserts through its injector into a sub–2-mm incision, and I can place the trailing footplates effortlessly into the capsular bag with either a lens rotator, or more simply, the I/A handpiece during OVD removal. ■

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1. Hill WE. Does the capsulorhexis affect refractive outcomes? *Cataract & Refractive Surgery Today*. 2007;7(10):89-90.