New techniques and technology enhance benefits of MICS

Roger F Steinert

Cheryl Guttman in New Orleans

CONTROVERSY persists regarding the utility of bimanual microincision cataract surgery (MICS). Speaking at the "Spotlight on Cataracts 2004: Cataract Controversies" symposium during the 2004 Joint Meeting of the American Academy of Ophthalmology and the European Society of Ophthalmology, Roger F Steinert MD and Richard J Mackool MD debated the pros and cons of MICS.

The MICS technique has become feasible thanks to the advent of phacoemulsification power control systems that deliver ultrasound in microbursts and allow for reductions in exposure to ultrasound energy and heat without sacrificing cutting efficacy. Proponents of the technique point out it can be hypotony, floppy, or premature. Those concepts are based on the belief that there is no need for a smaller incision and that bimanual MICS is slow, too difficult, and does not work, said Dr Steinert.

Old objections to new technology

With respect to the premise that there is no need for a smaller incision, Dr Steinert pointed out that the fallacy of that argument is highlighted by the fact that the same objection has been raised at the juncture of every major incision-related advance in cataract surgery — when extracapsular cataract extraction was introduced, at the time phaco with a PMMA implant was developed, and subsequently with the availability of foldable IOLs for use after coaxial phaco.

Controversy regarding the potential association between clear cornea phaco and a recent increase in endophthalmitis rates is also relevant to the argument that it is unnecessary to transition to a smaller incision.

"If infection risk is increased by clear cornea phaco, then the risk is because the 3.0 mm incision used for coaxial phaco is leaking, not the paracentesis. We have had a paracentesis all the way back to the days of intracapsular surgery," Dr Steinert said. "With MICS, we have 2 incisions that are basically the size of the paracentesis." He acknowledged that there is no IOL available in the United States able to be placed through an incision smaller than 2.0 mm. However, Dr Steinitz proposed that surgeons rely on incision leakage to decrease the risk of corneal burns, flow and vacuum settings must be decreased further because all of the infusion fluid is not being used to maintain IOP. "Raising the bottle increases incision leakage, and in my opinion leaking fluid produces turbulence and followability issues that will increase the amount of fluid passing through the eye and make it less likely to achieve a clear cornea," Dr Mackool said.

New phaco needle decreases leakage

To achieve the goal of a MICS procedure that can be performed with greater flow and vacuum levels, without incision leakage and a risk of wound burn, Dr Mackool designed a new phaco needle for bimanual MICS (Mackool Bimanual tip, Alcon). It features a flared tip that tapers to a narrow internal diameter to reduce surge and permits use of increased flow and vacuum levels. A low coefficient of friction polymer sleeve on the needle reduces friction and permits a tight incision without leakage, he explained.

"Because the incision does not leak, the infusion bottle can be elevated, permitting increased flow and vacuum levels without increasing leakage alongside the needle," Richard J. Mackool MD Mackool said he prefers the burst mode, as he believes it uses less energy.

He noted he still finds bimanual MICS to be slower than coaxial surgery because he still is not able to achieve matching flow and vacuum levels. Comparing the two techniques, Dr Mackool said the MICS procedure takes about twice as long, although he considers the difference to be reasonable.

Meanwhile, he is still awaiting objective data demonstrating that two microincisions are better than one sub-3.0 mm incision. "Maybe a benefit for the smaller incisions will be demonstrated in the future and maybe this procedure will turn out to be something we all like better or at least like better some of the time. But first, it has to be made as surgeon friendly and efficient as possible," Dr Mackool said.

The bottom line from both surgeons, however, was that bimanual MICS becomes a clinically reasonable technique only with the proper instrumentation and instrument settings.

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