

Recent upgrades further enhance safety and efficiency of micro-burst phaco system

**Cheryl Guttman
in Lisbon**

ICE, a hardware and software upgrade to the Sovereign® system with WhiteStar™ (AMO), features a reshaped ultrasonic wave and improved fluidics that work in concert to make phacoemulsification of all grades of nuclei safer and more efficient, reported William I. Fishkind MD, at the XXIII Congress of the European Society of Cataract and Refractive Surgeons.

ICE, which is an acronym for “Increased Control and Efficiency”, delivers waveform-modulated packets of energy characterised by an initial 1.0 microsecond “kicker” at the

beginning of each ultrasound pulse. That ultra-short power burst accelerates transient cavitation and helps to maintain a micro-void between the nuclear material and the phaco tip so that emulsification is carried out without occlusion.

“ICE enhances phaco efficiency and control in several ways. It improves cutting efficiency by increasing transient cavitation, which is the most powerful form of cavitation, and it enhances fragment removal by facilitating pre-occlusion phaco. When the nuclear fragments are held slightly away from the phaco tip, they are emulsified most efficiently, and at the same time, occlusion and surge are prevented,” said Dr Fishkind,

clinical professor of ophthalmology, University of Utah, Salt Lake City.

He explained that the end result is that cataract removal can be achieved faster, using less total energy, and with increased anterior chamber stability to decrease the risk of intraoperative complications.

ICE also incorporates new fluidics technology in the form of Chamber Stabilization Environment (CASE) that adds further control of the intraocular environment. CASE is designed to continuously monitor vacuum and adjust it if occlusion occurs, thereby reducing surge and maintaining chamber stability. When the occlusion is cleared, CASE

automatically resets the system to maximum vacuum.

Customisation options

With ICE, surgeons can adjust the duration and amplitude of the initial pulse burst. However, because the technology is so new, Dr Fishkind noted that he has not yet had a chance to experiment extensively with that feature.

“So far I have been using the standard amplitude in which 7% of the preset power comes on in the first microsecond, and a preliminary analysis of my surgical data indicate that approach has resulted in a 30% decrease in my effective phaco time across all categories of nuclei,” he said.

Based on the enhanced safety afforded by that reduction in energy use, Dr Fishkind said he has now changed his technique for cataract removal. He still performs a quick chop procedure, but instead of removing the nuclear pieces deeper within the confines of the capsular bag, he now pulls each piece into the iris plane where it is rechopped and removed with great efficiency.

“If surge occurs, there is a safety advantage for working at the iris plane instead of near the posterior capsule or at the equator. There is also a trade-off with working more anteriorly because it increases ultrasound exposure levels for the corneal endothelium and iris. However, I am less concerned about that issue with ICE because of the low amount of energy I am using in my procedures,” Dr Fishkind said.

Wfishkind@earthlink.net