Biaxial technique offers stable chamber and safer procedures

Gilles Lesieur

Dermot McGrath
in Paris

BIAXIAL microincisional phacoemulsification is a safe and efficient procedure for cataract removal that offers several clear advantages over traditional coaxial methods, according to a surgeon in Paris.

Speaking at the annual meeting of the French Implant and Refractive Surgery Association (SAFIR), Gilles Lesieur MD, in private practice in Albi, France, said that enhanced anterior chamber stability and improved safety through the separation of irrigation and aspiration were among the principal benefits of adopting a biaxial approach.

"While a lot of emphasis is often placed on the decreasing size of incisions, I think for me the main advantages of biaxial phacoemulsification are the improved safety for our patients and the enhanced stability of the anterior chamber," he said.

Dr Lesieur said that while there is much debate over the correct terminology used to describe the technique of cataract extraction by means of two paracentesis-type incisions, he personally favours Steve Arshinoff's use of the term 'biaxial phacoemulsification'.

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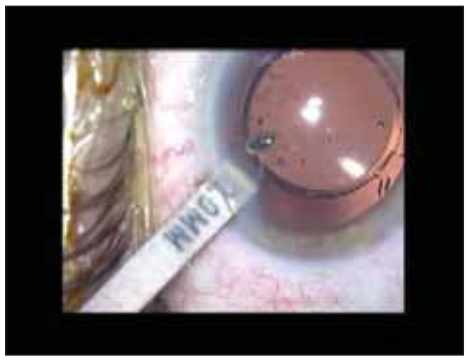
"This seems more appropriate to me than 'bimanual phaco' because the term clearly indicates the separation of irrigation and aspiration during the entire surgical procedure," he said.

New cutters and choppers

Discussing his technique in more detail, Dr Lesieur said that two instruments – the micro-cutter and the HydroChopper – have a key role to play in ensuring the success of biaxial surgery. While there is a large range of excellent micro-cutters and knives on the market, Dr Lesieur said he prefers to use an adapted blade from Gouttebarge Coupe Precision (GCP) in order to ensure a controlled and precise incision.

For chopping, Dr Lesieur has teamed up with Katena Products Inc to produce the Lesieur HydroChopper, which features a smooth flat chopper tip extending from the anterior surface of the irrigator. The design provides a tip that is efficient for chopping as well as manipulating the nucleus without endangering the posterior capsule, said Dr Lesieur. The end opening port supplies maximum irrigation, and dual oval side ports help avoid surge if the end port become occluded, especially when working with a vacuum greater than 400 mmHg. The HydroChopper is available with a 0.8mm wide tip for vertical chopping and a 0.4mm wide tip for horizontal chopping.

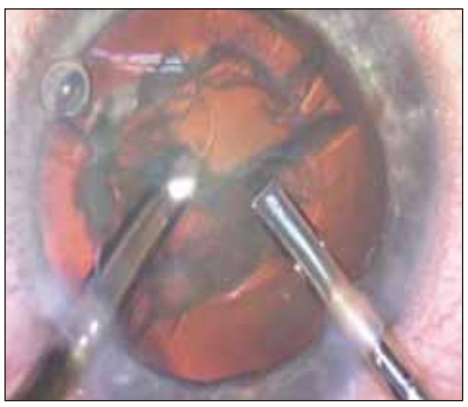
When selecting an ophthalmic viscoelastic device (OVD), Dr Lesieur advises using one with good cohesive properties such as Healon 5 (AMO), which allows for a better manipulation of nuclear fragments and good protection of the corneal endothelium during phacoemulsification. He noted that the downside of using a viscoadaptive OVD is a slightly more difficult capsulorhexis, so he suggests applying a layer of BSS between the anterior capsule and the OVD before starting the rhexis.



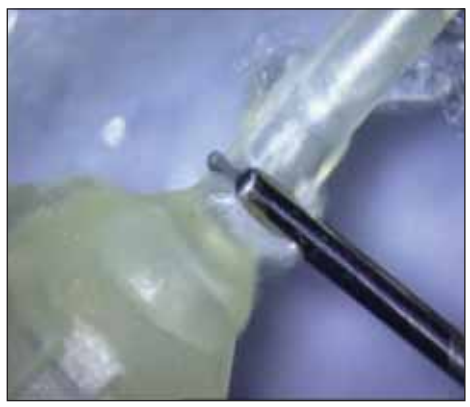
Incision size remains unenlarged following IOL implantation

IOL is implanted through unenlarged incision

Courtesy of Gilles Lesieur MD



Quick chop



HydroChopper - two sideports avoid surge during phacochop

Maximising ultrasound efficiency

For his biaxial procedures, Dr Lesieur uses the latest Whitestar ICE (Increased Control and Efficiency) technology with Sovereign phacoemulsification (AMO), which he said makes the surgeon's job easier by providing increased surgical control of the anterior chamber environment and maximising the efficiency of ultrasound. The system can be used effectively with all cataract densities.

Dr Lesieur highlighted two features of ICE that he believes make it particularly effective for biaxial surgery.

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First, with ICE, surgeons can vary the duration of the pulse power and then add a burst of energy at the beginning of the ultrasonic wave to provide a 'kick' at the beginning of each burst.

"This is particularly useful for hard cataracts as it generates more emulsification power to fragment the nuclear material with less energy," he said.

The kick function also allows the surgeon to craft the burst of power for as short or as long a period as required. The surgeon can opt to keep the kick constant across the phaco power range or alter it so that it rises and falls as power increases, resulting in improved cutting efficiency.

Another important feature of ICE is the CASE (Chamber Stabilization Environment) technology that enables surgeons to optimise the use of fluidics during cataract removal while significantly reducing surge on occlusion break. Within 26 milliseconds, the pre-programmed CASE settings proactively adjust vacuum before the occlusion breaks to significantly reduce chamber shallowing and helping to maintain chamber stability, said Dr Lesieur.

Microincision IOLs

Turning to IOLs currently available, Dr Lesieur cited the new MicroFlex (Physiol) as being particularly well adapted to biaxial microincision surgery. The MicroFlex is made of a 25% water-content hydrophilic acrylic material and can be injected through a 2.0mm incision.

Summing up, Dr Lesieur emphasised that the crucial difference with a biaxial approach is not the size of the incision, but rather the separation of inflow and outflow. He added that the new tools and technology provide increased surgical control of the anterior chamber environment, maximise the efficiency of ultrasound and ultimately result in safer procedures for his patients.

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