Strategies for getting to grips with brunescent cataracts

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in Vienna

THOROUGH pre-operative preparation and rigorous surgical technique goes a long way towards dealing effectively with brunescent or rock-hard cataracts, according to Lisa B Arbisser.

“These are some of the most challenging cataract cases that we come across, but with the right surgical approach we can remove these dense nuclei efficiently and with the same degree of safety as for less dense cataracts,” said Dr Arbisser.

Addressing the joint meeting of the European Society of Ophthalmology (SOE) and the American Academy of Ophthalmology (AAO), Dr Arbisser in private practice at Eye Surgeons Associates PC, Iowa and Illinois Quad Cities, said that the location of her practice has given her plenty of scope to tackle harder cataracts.

“I live in Iowa where we regularly see patients come off the farm with brunescent and hypermature lenses, so we have a lot of experience in dealing with these very hard nuclei,” she said.

Discussing her surgical technique in more detail, Dr Arbisser said that she prefers to use a vertical chop technique using a Rosen chopper for these difficult cataract cases.

“I find there are several advantages in using a vertical chop approach for these types of lenses. It is extremely endothelium-friendly and is also gentle on the zonules as well which are often compromised in many of these rock-hard cases,” she said.

Dr Arbisser said that there are a number of important principles to bear in mind for all types of cataract procedure, but especially so in more challenging cases. She noted the importance of maintaining appropriate anterior chamber pressure throughout the entire procedure, especially in myopic eyes or cases of post pars-plana vitrectomy where stability is paramount.

She also stressed the need to keep ‘tissue relationships’ in the right place.

“By this I mean that I make the capsulehhexis the appropriate size for the implant rather than for the nucleus, and I can keep everything in its appropriate place until the very end of the procedure where I can bring fragments up into the anterior chamber only when they become small and manageable and no longer pose any problems to the endothelium,” she said.

A key part of this strategy is the use of viscoelastics, using the ‘soft shell’ technique advocated by Steve Arshinoff, to maintain a protective coating on sensitive ocular tissues, added Dr Arbisser.

“This approach allows me to use a dispersive viscoelastic with a cohesive underneath in order to coat the endothelium and I don’t hesitate to replace the viscoelastic if I sense that I have penetrated the barrier protecting the endothelium in longer and more difficult cases,” she said.

While the temptation to apply strong pressure to the globe in cases of brunescent cataract is strong, Dr Arbisser said that it is important to exercise patience with such dense nuclei.

“My belief is to keep your hands light and not to push the globe around more than necessary. If you exercise restraint, keep everything in the proper plane and keep your hands light, you are far less likely to generate problems such as iris prolapse and other complications,” she said.

Surgeons should also give high priority to ensuring that the patient is fully comfortable for these more difficult procedures, said Dr Arbisser.

“I perform about 70 per cent of my surgery with topical and intracameral lidocaine. For the remaining 30 per cent, however, I use peribulbar anaesthesia for those patients with very high anxiety levels or those who can’t cooperate for indirect ophthalmoscopy. We can also anticipate that some patients might have more discomfort - the high myope for example - and take appropriate steps in advance to ensure that surgery goes as smoothly as possible,” she said.

Using video footage to illustrate her technique, Dr Arbisser said that she prefers to use a small paracentesis in order to maintain a stable anterior chamber.

“I am always a little surprised to see some surgeons making a paracentesis of 1.0mm. Mine is about 0.3mm on the inside and 0.5mm on the outside, which is more than sufficient. Richard MacKool has shown how much BSS is lost through a 1.0mm paracentesis, so it makes sense to keep things watertight,” she said.

She noted that with harder cataracts, hydrodissection takes considerable time to perform due to weak zonules and “nucleofied” epinucleus with little cortex present.

“I allow the OVD to come out during hydrodissection so as not to tamponade the rhexis and cause undue pressure in the bag then I start very gently to rotate the nucleus in order to minimise potential trauma to the zonules. For my approach to nuclear disassembly, which I call circumferential disassembly, it is essential to have the nucleus free,” she said.

With the Infiniti Vision system (Alcon), Dr Arbisser said that she uses very little phaco energy by choosing a burst mode in order to minimise the risk of thermal burn. Rather than trying to crack all the way through to the back of the lens, she said that a better approach with brunescent lenses is to divide the nucleus into smaller pieces.

“I divide the lens into smaller sections by debulking the endonucleus away from the outer nucleus and epinucleus. This plane is easily found once anterior superficial radial cracks open the inner nucleus to you like a clam shell opens to reveal the meat. This hardest inner nuclear material can then be removed while I am in the posterior chamber. I use any bubbles stuck in the soft shell as a kind of barometer in order to know that I have a good coat of viscoelastic underneath the endothelium and it will remain there almost to the end of the procedure. I proceed around the lens making small chops and using a sweeping motion to cut some of the interdigitated fibres and to bring lens fragments into the centre,” she said.

Dr Arbisser said that she uses torsional mixed with longitudinal ultrasound to prevent clogging in these very dense lenses. She uses a Kelman 0.9mm, 30-degree angled tip to maintain followability and minimise the amount of energy being delivered into the eye.

“Essentially what we are doing is trying to debulk the lens from the inside out. I make very small little chops with small bursts of phaco energy, which I use to lollipop the nucleus and to gain purchase on the lens in order to apply mechanical forces and to help emulsify it. I find it best to use non-continuous phaco mode not only to reduce the thermal energy but also to maintain a hold on the fragments that I am trying to chop,” she said.

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