New techniques help surgeons safely manage floppy iris syndrome

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A COMBINATION of viscodilation using Healon5 (AMO) and low-flow, low-vacuum surgery provides a safe and effective means of controlling intraoperative floppy iris syndrome (IFIS) during cataract procedures, according to Robert H Osher MD, professor of ophthalmology at the University of Cincinnati and medical director emeritus at the Cincinnati Eye Institute.

“I have been very impressed by the performance of this ophthalmic viscoelastic device (OVD). By safely and effectively causing viscomydriasis and generating pseudo-tome to prevent iris bowing, Healon5 has been very helpful in floppy iris patients. In fact, I use Healon5 in all of my patients. The real payoff is a safe operation and the day after surgery, when you examine these patients, the corneas look wonderful,” he said.

Dr Osher said that the problem of IFIS has reached almost epidemic proportions in the US and has been linked in one study to an increased rate of complications during cataract surgery such as iris trauma, posterior capsule rupture and vitreous loss.

Flomax link to IFIS

He complimented the investigational work of Drs David Chang and John Campbell in establishing the link between the use of Flomax, the most commonly prescribed alpha-adrenergic blocker for the treatment of benign prostatic hyperplasia (BPH), and the growing incidence of IFIS. The syndrome is characterised by a hypotonic bowing iris, along with a tendency towards progressive miosis and prolapse of the iris into the phaco tunnel or into the side port during cataract surgery.

Describing his technique in more detail, Dr Osher said that there are several reasons why he prefers to manage IFIS with Healon5.

“Of the clear benefits with this OVD is that you always get good mechanical pupil dilation. In our study of 50 consecutive patients, we observed between 1.0mm and 3.0mm of viscomydriasis for each patient. Another advantage is that Healon5 produces pseudo-tome by holding the iris back while I am working. I prefer to work with 2.2mm microphaco in combination with torsional ultrasound and I like to use a small incision when dealing with a floppy iris. If the pupil comes down, despite adenalin in the infusion, I will also inject intracameral phenylephrine as suggested by Dr Richard Packard. Iris retractors are a last resort. But nothing seems to work as well in my hands as using Healon5,” he said.

Dr Osher explained that Healon5 is first placed on the iris just under the incision. This makes the iris concave and displaces it away from the incision, thereby preventing the iris from leaping out of the incision as the rest of the anterior chamber is filled with OVD.

Benefit of ‘slow motion’ phaco

The ‘slow motion’ phacoemulsification technique, with low vacuum and low flow parameters, enables Dr Osher to maintain Healon5 in the eye. “I remove the nucleus and the cortex below the OVD and if I lose Healon5 in these cases, I simply refill as needed. One has to feel comfortable working beneath viscoadaptive with the right parameters so that you don’t obstruct flow and generate a thermal burn. Another bonus is that the Healon5 keeps the IOL haptics folded until I manipulate the lens and position it where I want it to be,” he said.

In order to remove the OVD at the end of the procedure, Dr Osher advises using Dr Manfred Tetz’s two-compartment technique in which the I/A tip is placed behind the IOL and the viscoadaptive is aspirated from the capsular bag. He also hydrates the incision as an extra measure of security before removing the OVD, as Healon5 may mask positive pressure and result in chamber instability when the I/A tip is withdrawn, he warned.

Dr Osher said that managing IFIS with Healon5 is safe and effective with successful outcomes in more than 50 patients treated to date. Complications noted by Dr Osher thus far include a torn posterior capsule in one eye and transient iris prolapse in three eyes with only one significant iris bruise, all occurring as he was developing this vissurgical technique.

The case for bimanual MICS

In a separate presentation, Howard Fine MD said that while he agreed that Healon5 is very useful in the management of IFIS, his clinical experience suggests that it does not provide a complete solution in all cases.

Dr Fine said he is a very strong proponent of bimanual microincision phacoemulsification, which works well with Healon5 in cases of IFIS. He also noted that bimanual microincision phaco in the case of soft or moderate nuclear densities is advantageous because the small size of the incisions makes it less likely that the iris will actually prolapse if it comes to the incision.

Using video footage, Dr Fine explained how he performs cortical cleaning hydrodissection and hydrodelineation before the lens is hydroexpressed into the plane of the iris.

“We use Healon5 to dilate the pupil and we tamponade the iris using the irrigator in the high anterior chamber. The lens keeps the iris back, and the irrigation anterior to the iris tends to prevent the iris from bowing,” he said.

Dr Fine said that the endonucleus is removed using very little ultrasound energy and high vacuum while carouselling the nuclear complex in the plane of the iris.

“At the end of the removal of the endonucleus, we can see how the iris is held back by the remaining epinuclear shell, which is then removed by the phacoemulsification needle,” he said.

Morcher Pupil Dilator

Another useful tool in the management of IFIS is the Morcher Pupil Dilator ring (FCI Ophthalmics), said Dr Fine. The 1.0mm PMMA ring incorporates flanges with positioning holes for adjusting its position and it can be inserted with an injection system so the flanges engage the pupil as it is introduced.

Dr Fine explained that the ring is introduced after incision construction and filling the anterior chamber with a dispersive viscoelastic. Once the ring is in place, the surgeon can proceed with capsulorhexis, the various hydrosteps, phacoemulsification, cortical cleanup and IOL implantation.

Prior to removing the viscoelastic, Dr Fine explained that the ring is disengaged from the pupil and moved to the extreme right side of the anterior chamber with the leading edge of the open portion of the ring directly facing the incision. The injection instrument can then be placed back into the incision, and the hook in the injection system can be used to engage the leading eyelet and draw the ring back into the injector by the spring-loaded plunger.

In complex cases involving a combination of floppy iris, shallow anterior chamber and pseudoexfoliation, Dr Fine said that his preference is to perform a 25-gauge vitrectomy as an initial step in the operation.

“This deepens the chamber, facilitates reprolap work of the iris, and creates adequate room for further manipulations,” he said.

Dr Fine noted the importance of continuing to tamponade the globe in such cases to avoid problems associated with the high-speed vitrector overly softening the eye. Once the transcleral vitreotomy is complete, he said that there is no need for the conjunctival and scleral incisions to be sutured. Viscoelastic is then infused into the anterior chamber and capsulorhexis is performed. A capsular tension ring is injected into the capsular fornix to stabilise the lens during the extraction procedure and to provide some additional long-term centration of the IOL. Horizontal chopping is preferred, said Dr Fine, because it avoids downward pressure on the lens, which could affect the weakened zonules.

In cases in which there is no opportunity to perform hydrodissection or hydrodelineation because of the tendency of the iris to prolapse, Dr Fine suggested creating a bowl out of a small portion of the central endonucleus and then using Dr Abhay Vasava’s technique of inside-out hydrodelineation.

“This enables us to mobilise and rotate the residual rim of the endonucleus and to chop in the traditional fashion. And once we have done that, the residual epinucleus can usually be removed as well in the usual manner,” he said.

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