Cataract Removal in a Glaucomatous Eye With a Small Pupil

After gentle pupillary stretching, cataract surgery was completed with the Ahmed Valve in place.

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When performing cataract surgery in eyes with small pupils, one should be cognizant of the higher risk for intra- and postoperative complications, including difficulty with capsulorrhexis creation and cataract removal and the chance for iris trauma, capsular tear, posterior capsular rupture, vitreous loss, and increased inflammation to occur. Although cataract surgery in eyes with small pupils is a fairly regular procedure, it less commonly performed in eyes with small pupils and concomitant glaucoma.

This past summer, a patient with chronic glaucoma presented at the LaserVision.gr Eye Institute in Athens, Greece, for cataract surgery. In addition to an Ahmed Valve (New World Medical) that had previously been implanted in the anterior chamber, he had a small pupil and anterior synechiae. This procedure was complicated only by the presence of the small pupil (Figure 1). A. John Kanellopoulos, MD, performed the procedure and documented it in a video, which is available at eyetube.net/?v=gipid.

GENTLE STRETCHING

The Ahmed Valve was clearly visible at the 9:30-o’clock position. Dr. Kanellopoulos placed the main incision at the 10-o’clock position and filled the anterior chamber with Viscoat (Alcon) ophthalmic viscosurgical device (OVD). This copious amount of OVD would be washed out thoroughly at the end of the case to ensure that it did not go through the opening of the Ahmed Valve.

With a Kulgen hook in one hand and a collar button hook in the other, Dr. Kanellopoulos reached underneath the pupillary aperture and began manipulating the sides of the pupil outward in an effort to gently induce stretching (Figure 2). Controlled, slow maneuvers are mandatory in these cases. After the pupil was stretched as far as it would go in one direction, Dr. Kanellopoulos paused for a few seconds before releasing the instruments. This helped to engage the pupillary muscle to promote maximal stretching. He repeated the same maneuvers 90° away, with the Kulgen hook placed superiorly and the collar button hook inferiorly (Figure 3).

Dr. Kanellopoulos then injected more Viscoat into the anterior chamber to further dilate the pupil and provide adequate space for a manual capsulorrhexis with Utrata forceps. He performed the capsulorrhexis with extreme care, as it was expected that the patient had pseudoexfoliation—a common occurrence in Greek patients.
With injection of balanced saline solution, hydrodissection and hydrodelineation were performed, and Dr. Kanellopoulos noted a nice fluid wave behind the cataract and the pupillary aperture. Once the lens was mobilized, he made an initial groove in the lens, cracked it in half with the phaco probe, and rotated the nucleus to create quadrants. He carefully engaged the cataract fragments with the phaco tip the entire time, in order to prevent them from being sucked into the Ahmed Valve (Figure 4).

After lens removal was complete, Dr. Kanellopoulos inflated the anterior chamber with methylcellulose to expand the pupillary aperture and implanted an AcrySof aspheric IOL (Alcon), twisting ever so slightly as the lens unfolded to encourage horizontal orientation.

According to Dr. Kanellopoulos, perhaps the most important part of any cataract procedure is complete removal of the OVD at the end of surgery (Figure 5). In this patient, he spent significant time removing OVD from the anterior chamber and from behind the lens, in order to enhance lens control predictability, encourage adhesion of the IOL to the capsule, and, particularly in this patient, ensure proper continued function of the Ahmed Valve. Dr. Kanellopoulos then hydrated the wounds and injected acetylcholine chloride to constrict the pupil.

CONCLUSION
This challenging situation turned out to be a routine cataract surgery procedure. The take-home message from this case was to be careful to address the pupillary aperture with the right type of OVD.