Correspondence


TO THE EDITOR: The January 2017 issue of Ophthalmology included 6 American Academy of Ophthalmology Task Force special reports related to intraocular lenses (IOLs). Several of these were consensus statements reflecting the collective opinion of internationally respected cataract surgeons. These statements are intended to guide future research and reporting in the evolving field of IOL design and in particular to standardize the nomenclature and establish a uniform optical framework. They are likely to be consulted and cited frequently.

One adverse event of IOL implantation is postoperative ovalization of the pupil, and this was addressed specifically in the consensus statement by Masket et al1 on adverse event reporting. A standard operating procedure was defined for oval pupil measurement in Appendix 1 of this report. Unfortunately, the appendix contains an important error.

The authors state that “the only study of the oval pupil available was by Isotani et al2 in 1995.” Khanani et al3 published on this topic in 2004. They measured the horizontal and vertical dark-adapted pupil diameters of the right eye of 24 healthy subjects using infrared still photography and computer-based image analysis. The mean difference in pupil diameter (vertical minus horizontal) was +0.20 mm with a maximum difference of +0.48 mm. Twenty-five percent of eyes had a difference of >0.3 mm (vertical larger). The mean horizontal-to-vertical (HV) ratio was 0.98. In 1969, Haines4 measured the horizontal and vertical pupil diameters in 8 normal subjects in bright light and found a mean HV ratio of 0.96; after dark adaptation, the HV ratio was 0.97. The data reported by Isotani et al2 on dark-adapted normal subjects gave a long axis to short axis ratio of 1.02, with the long axis being “approximately vertical” in all subjects (HV ratio of 0.96). Even cyclopleged pupils maintain an HV ratio of 0.98.5

Because the pupil shape under photopic conditions is now an important clinical outcome measure of IOL implantation, it may be time for population normal values to be established with modern techniques and a larger and older patient cohort. In the meanwhile, investigators should be aware that most humans have vertically oval pupils in bright and dim light. Unless the patient’s preoperative pupil shape and size are well-documented, an oval pupil after surgery may be mistaken for an IOL-induced change; conversely, an oval pupil that becomes rounder owing to the IOL may misclassified as normal and unaffected.

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Financial Disclosures: The author has no proprietary or commercial interest in any materials discussed in this article.

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