shown to be an accurate method of tonometry of whole globes; however, its use in corneoscleral rims in an artificial anterior chamber system has not been extensively studied. We found confirmation of intrachamber pressure with the TonoPen to be time consuming, variable between TonoPens, and consistently over or under the readings obtained with Barraquer tonometry.

Elevating the bottle of irrigant to the maximal height allowable is certainly a viable method of obtaining adequate intrachamber pressure. When we used this technique, we experienced corneal perforations with the 350 μm head as well as with the 250 μm head. We suspect this complication is due to subtle herniation of tissue from high intrachamber pressure and an inadequate corneoscleral rim diameter, not inadequate corneal thickness as suggested by Li et al.

For this reason, we have modified our technique by titrating the bottle height to correspond to a reading of 65 mm Hg with Barraquer tonometry and request that corneoscleral rims used for lamellar transplantation have at least a 2.0 mm rim. Since implementing these modifications, we have not experienced corneal perforations.

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References

Reply: We thank Drs. Springs and Wiley for the interesting points raised in their letter. They postulate some differences between Barraquer and TonoPen tonometry that have not been documented using this system. The artificial anterior chamber certainly constitutes a different environment to confidently measure the intrachamber pressure with preexisting technologies. However, we believe the common instruments for tonometry may show a close approximation for comparative purposes. Although our data are not published, we compared pneumotonometry and TonoPen tonometry using the artificial anterior chamber and found no significant differences. However, we observed superior reproducibility using the thinnest head tested (180 μm) in terms of the lowest standard deviation. This may account for more standardized and widespread use of the microkeratome with this head thickness. It is likely that the use of thicker heads may require conditions that differ from those used with thinner “standard” cutting heads.

Drs. Springs and Wiley titrated the bottle height to maintain 65 mm Hg and obtained no perforations. This observation was also seen in our original series using a lower intrachamber pressure (TonoPen ~53 mm Hg). Nonetheless, the thickness variability using the thick-cutting heads was higher and the accuracy was lower. Therefore, we agree with Drs. Springs and Wiley that the intrachamber pressure is an important factor to consider to avoid unexpected perforations. We also believe that their hypothesis of a subtle herniation of tissue using a higher pressure might play a role in corneal perforations. The cut diameter and thickness should be taken into account when selecting the intrachamber pressure to be used. The biomechanical properties of the cornea may change with deeper and larger cuts using an artificial anterior chamber. The intrachamber pressure should therefore be adapted to these variables to obtain accuracy in the expected disk dimensions.

We are grateful to Drs. Springs and Wiley for the contribution of their important observations to the development of new insights for the use of this instrument. There are several confounding factors that must be addressed to understand corneal biomechanics under these ex vivo circumstances.

—Ashley Behrens, MD, Li Li, MD, Roy S. Chuck, MD

Defining Mesopic and Scotopic

In their paper comparing the pupil card and the pupillometer, Pop and coauthors make the following statement: “Colvard reports that it is difficult for clinicians to measure pupil size with the Rosenbaum card in scotopic luminance. Because of the examiner bias, the present study showed that measurements done in scotopic luminance with the Colvard pupillometer were...
not better than the measurements with the Rosenbaum card in mesopic luminance.”

This statement is misleading, although I am certain this was not the intent of the authors. The problem is one of definitions. Pop and coauthors refer to my article on measuring scotopic pupil dilation with an office pupillometer. This study measured mesopic pupil size at 15 lux and scotopic pupil size at 3 lux. Pop and coauthors measured mesopic pupil size at 2 to 5 lux and scotopic pupil size at 0.7 lux. Because we used the same terms to describe different levels of illumination, the above statement by Pop and coauthors is very confusing.

Previously in clinical ophthalmology, it has not been necessary for us to be very precise in our use of the terms mesopic and scotopic. Issues of visual quality and pupil measurement in low levels of illumination, however, have become very important in refractive surgery. I have been guilty, as have others, of using these terms simply to mean dark and darker. Scotopic should be used when available light energy is insufficient to stimulate cone photoreceptors. At these levels of illumination, only rod receptors are active. Scotopic conditions exist at low levels of illumination, below 0.01 and 0.05 lux. Mesopic conditions exist when there is reduced illumination but cone receptors are stimulated. Textbooks give a broad range of mesopic levels from 0.007 to 100 lux. From a practical standpoint, the levels of illumination encountered during night driving represent mesopic conditions.

I would like to urge us in conversations and publications to adopt the guidelines consistent with those presented by Dr. Emanuel Rosen in a recent editorial. If we consistently use mesopic to refer to levels of illumination between 0.05 and 50 lux and scotopic to refer to levels less than 0.05 lux, we will be able to communicate more accurately.

Disagreement and controversy are vital to the advancement of our field. Agreement on the definition of our terms is mandatory if we are to have meaningful dialogue.

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References

Postoperative Infectious Endophthalmitis

Postoperative infectious endophthalmitis is a serious complication of cataract surgery. The incidence of culture-positive endophthalmitis has been steadily declining. The authors of the article on bacterial contamination of the anterior chamber during phacoemulsification state that the current incidence of postoperative endophthalmitis is low, between 0.07% and 0.13%. I would like to update that finding; there are studies in which the incidence may be even lower.

In my study of culture-positive endophthalmitis with a 12-year follow-up, the incidence was 0.05%; in the last 5 years of the study, it was 0.03% or 1 in 3000 cases. These studies become more difficult because of the rarity of the complication and several variables in surgical techniques and reporting. However, continuing to monitor and measure this important complication will enable us to develop better preventive methods.

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References

Reply: We agree with Dr. Bohigian and thank him for highlighting his article. His series provides additional evidence of the low rate of culture-positive endophthalmitis after phacoemulsification cataract surgery. It is essential to continue to monitor the frequency of uncommon sight-threatening complications such as infectious endophthalmitis to minimize the risk of visual loss in patients having cataract surgery. —Peter McCluskey, MD