Factors affecting stromal hydration of clear corneal incision architecture

We have some comments about the article by Calladine et al.1 that we would like to share with the authors. First, one factor that might cause the difference in architecture between hydrated clear corneal incisions (CCIs) and nonhydrated CCIs is the corneal stromal edema at the incision site induced by hydration.2 The authors might have to record the grade of edema at the CCIs before hydration under the surgical microscope. This measurement could serve as the baseline status of the CCI edema before hydration. The difference in the baseline status between the 2 study groups might contribute to the architectural differences detected by anterior segment optical coherence tomography.

Second, Calladine et al. might consider the cataract nucleus grading of the patients when interpreting the data. This is because the harder the lens nucleus, the more ultrasound energy would be used and the more damage to the corneal endothelium, leading to more corneal edema; even a phaco burn might occur at the CCIs.

Third, the authors might have to adjust for factors other than stromal hydration that could influence the development of Descemet membrane detachment (DMD); ie, specifying every abnormal finding at the cornea before the surgeries, especially those at the CCI sites. In our clinical practice, we found that patients with arcus senilis were prone to developing DMD during phacoemulsification surgery. We also discovered that local DMD was more common in phacoemulsification surgery done by junior surgeons than in those done by senior surgeons. This may be due to the junior surgeons having less skill in controlling the phaco handpiece, which might accidentally “shave off” a piece of Descemet membrane. Even senior surgeons may have different styles of controlling the phaco handpiece. Therefore, Calladine et al. might consider comparing the architectural features in 2 groups of patients whose surgeries were done by the same surgeon. A hard lens nucleus might be another factor causing more local DMD due to more manipulation to the CCIs by the handpiece. Patient compliance might also affect the occurrence of DMD. When the patients have poor compliance, the surgeons might have to control the eye and adjust the eye’s position using the handpiece and chopper from time to time, possibly leading to excessive manipulation of the CCIs. Six patients in the Calladine et al. study1 had surgery under topical anesthesia, and they were in the no-hydration group. We are interested in knowing their compliance. If most of them had poor compliance during surgery, the actual difference in DMD might be more than the data provided in the article.

Fourth, we wonder why the authors did not remove the ophthalmic vicosurgical device (OVD) from the posterior chamber at the end of surgery. As we all know, residual OVD can cause postoperative intracocular pressure (IOP) elevation. The high postoperative IOP in this study might be due to the residual OVD in the posterior chamber. Since the authors claimed that hydration of the CCIs “tends to leave the eye with a higher IOP in the early postoperative period,” the possible effect of residual OVD in postoperative IOP should have been eliminated. In our practice, we usually remove the OVD in the posterior chamber at the end of an uneventful phacoemulsification and posterior chamber intraocular lens (IOL) implantation. One sign that we use to ensure complete removal of OVD is the appearance of posterior capsule lines, which are the thin parallel lines on the posterior capsule caused by the tension of the IOL haptic. We also wonder why the authors did not measure the central corneal thickness for each patient before surgery or at the time of IOP measurement and compare the CCT in the 2 study groups; CCT might affect the IOP measured by Goldmann applanation tonometry.3,4

Finally, we think it would be more reasonable to measure the CCI length immediately after the CCI was done because it served as the baseline of the CCI length before hydration. Although this may be unrealistic and the procedure may lead to a higher possibility of intraocular infection, it would be better for the authors to point it out when they discussed their results and claimed that hydration could increase the CCI length.

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REFERENCES