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Higher-Order Aberrations Following Ray Trace LASIK and the Impact of Eye Movement on Coma [Letter]

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Dear editor

We read with great interest the article titled "The Product of the Amount of Treatment and Its Topographical Displacement: Correlation with Horizontal and Vertical Coma", and we commend the authors for their insightful work on the relationship between ablation decentration, treatment depth, and the induction of coma in corneal reshaping.[1] The findings are significant and contribute to the growing body of knowledge in refractive surgery and corneal optics. However, we would like to raise a few points for further discussion and clarification:

1. The authors utilize whole-eye higher-order aberrations within the 6mm pupil range as a measurement indicator of postoperative visual effects. It is well established that changes in refractive status before and after refractive surgery may influence postoperative ocular accommodation function, with accommodation being a significant factor affecting whole-eye wavefront aberration.[2] Consequently, it would be advisable to incorporate more stable corneal wavefront aberrations as an evaluation index for visual outcomes.
2. Is it reasonable for this article to use the distance between the maximum depth change point of thickness, both before and after surgery, and the corneal apex as a reference point for decentration? The deepest point of ray-trace-guided LASIK ablation is not necessarily located at the apex of the cornea. Zhu et al reported that the epithelium in the central and paracentral regions of the cornea thickened by 4.44 ± 4.41 microns and 4.60 ± 3.74 microns, respectively, three months post-LASIK.[3] Thus, the proliferative response of the postoperative corneal epithelium may influence the measurement of corneal thickness differences.
3. Furthermore, in the multivariate analysis displaying the products of ablation and decentering, along with the description of eye movement results, we recommend including a table of statistical results. Without this, readers may find it challenging to fully comprehend the findings.
4. Lastly, the article does not explicitly describe the calculation method for the total amount of horizontal and vertical movement. We contend that calculations based on the absolute values of the total amount of horizontal or vertical eye movement would more accurately reflect the intraoperative eye movement amplitude.

Disclosure

The author(s) report no conflicts of interest in this communication.

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