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The Effect Of Previous Laser Assisted In Situ Keratomileusis (Lasik) On The Calibration Of Extended Depth Of Focus (Edof) Intraocular Lens: A Direct Comparative Study

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I confirm that I am an Ophtalmologist: Yes

Purpose: Laser assisted in situ keratomileusis (LASIK) has been widely used for the correction of refractive errors in conditions such as myopia and astigmatism. The choice of presbyopia-correcting intraocular lenses (IOLs) for patients undergoing cataract surgery post-LASIK is a significant concern. However, there is a limited number of direct comparison studies between cataract eyes with and without a history of LASIK.

In this study, we conducted a comparative analysis of the performance of patients who underwent extended depth of focus (EDOF) IOL implantation, specifically comparing those with previous LASIK and those without a history of LASIK.

Setting: This is a retrospective, single-centered study. Patients with or without previous LASIK who received cataract surgery and EDOF
Methods: Symfony IOL implantation were included and followed up for at least 1 month. All patients underwent optical biometry with the IOL Master (IOLMaster 500, Carl Zeiss). Calculations for IOL power were determined using the SRK/T formula for non-LASIK patients and the Haigis-L formula for LASIK patients. Patient's demographic and clinical characteristics such as uncorrected distance visual acuity (UDVA) and uncorrected distance visual acuity (UNVA), refractive status and corneal tomography were recorded. Prediction error was defined as the absolute difference between postoperative sphere and target refraction. The right eyes of patients who met the inclusion criteria were selected for the analysis.
Results: Among the 331 recruited eyes, 18 had undergone previous LASIK, and 303 were non-LASIK eyes. After a 1:3 matching for age and gender, the final sample consisted of 17 eyes with previous LASIK and 49 non-LASIK eyes. No significant preoperative differences were observed in target refraction, spherical equivalent (SE), and best-corrected visual acuity. All surgical procedures were conducted smoothly, and all IOLs were placed in the capsular bag. The results of non-inferiority tests showed that non-inferiority of the LASIK group compared to the non-LASIK group for predictive refraction error and UNVA. For UDVA, further regression analysis that matched age and gender did not suggest significant superiority between the two groups.
Conclusions: In conclusion, our study has demonstrated that previous LASIK has no discernible effect on the visual performance of presbyopia correcting EDOF IOLs in respect to absolute refractive error, UNVA, and UDVA. For further validation, larger-scale or multi-center studies may be needed to ensure the robustness and generalizability of our results in diverse clinical settings.

Disclosure of Interest: None Declared