

ABSTRACT E-BOOK



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MC099-AP1 : Reliability Measurement Of Total Aberrations Using Galilei G4 Dual Scheimpflug Analyzer

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Purpose

To determine the reliability of a recently introduced dual-camera rotating Scheimpflug-Placido imaging system (Galilei G4) in determining wavefront aberrations in young healthy participants. This study aimed to evaluate the reliability measurement of lower and higher order aberration (LoA and HoA) using this instrument.

Methods

38 eyes of subjects aged 21 to 27 years with spherical equivalent ranging from -1.50D to 7.00D were recruited. Corneal wavefront aberrations were measured; LoA (1st and 2nd order aberration), HoA (3rd and 4th order aberration). Any conditions in which corneal videokeratography could not provide reproducible measurement (obstruction of the central cornea) were also excluded. Total corneal aberrations were measured based on root mean square (RMS) value converted from Zernike polynomials. For repeatability measurement, three repetitive measurements in five minutes for each eye in a single session were taken by 2 experience examiners. Time-interval between measurements was set at one week for reproducibility measurement. Repeated-measures analysis of variance (RM-ANOVA), Bland-Altman, limits of agreement and intraclass correlation coefficients (ICCs) were used for analysis.

Results

There was no statistically significant difference between the 3 repeated measures for all aberration ($P > 0.05$). In repeatability testing, ICC (LOA) > 0.850 with decreasing trend of ICC (HOA) ranges from 0.25 to 0.64. Similar patterns were observed in reproducibility testing, ICC (LOA) > 0.90 , while ICC (HOA) ranges from 0.18 to 0.51. Highly reliable findings with narrow limits of agreement (less than 1.0 were observed for both LoA and HoA).

Conclusion

Galilei G4 dual scheimpflug analyzer is highly reliable in measuring wave front aberrations.