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Analysis of Wavefront-derived Refraction with Two Different Hartmann-Shack Aberrometers

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Purpose: To compare cycloplegic refractions to preoperative and postoperative wavefront-derived refractions from LADARWave (Alcon) and Zywave (Bausch & Lomb) devices. **Methods:** As part of a prospective study, 100 eyes of 50 healthy myopic patients (spherical equivalent; -6.00 to -1.00D) were enrolled for customized ablation in both eyes. Preoperative and postoperative (1st, 3rd and 6th month) ocular wavefront measurements are being evaluated using the LADARWave and Zywave aberrometers, according to each respective manufacturer's guidelines. With cycloplegic refraction as gold standard, the spherical equivalent refraction, sphere, and cylinder are being compared to the wavefront-derived refractions. **Results:** The average preoperative spherical equivalent refraction was $-3.25 \pm 1.27D$. Both wavefront devices spherical equivalent, sphere and cylinder derived refraction were highly correlated to cycloplegic measurements in the preoperative. Considering total pupil diameter the post op Zywave derived refraction showed less correlation with manifest and cycloplegic refraction. **Conclusion:** Ladarwave and Zywave derived refractions were strongly correlated with clinical refraction in virgin eyes. However in eyes previously submitted to refractive surgery this correlation was weaker for both devices.