Comparison of ocular biometry and intraocular lens power using a new biometer and a standard biometer

Sabong Srivannaboon, MD, Chareenun Chirapapaisan, MD, Pratuangsri Chonpimai, BS, Sunisa Koodkaew, BS

Purpose:

To compare the repeatability and reproducibility of ocular biometry and intraocular lens (IOL) power obtained with a new optical biometer (AL-Scan) and a standard optical biometer (IOLMaster 500).

Methods:

Two independent operators measured eyes with cataract using both biometers. The keratometry values, axial length, anterior chamber depth, white-to-white (WTW) corneal diameter, and IOL power calculated using the Holladay 1 formula obtained with each device were recorded. Intraoperator repeatability and interoperator reproducibility of both devices were analyzed using the intraclass correlation coefficient (ICC). The agreement in ocular biometry and IOL power between the 2 devices was evaluated by the Bland-Altman method.

Results:

The study recruited 137 eyes of 81 patients. The repeatability and reproducibility of both devices were high for all ocular biometry measurements (ICC, 0.87-1.00). Except for the WTW corneal diameter (ICC, 0.44), the agreement between the biometers was also high (ICC, 0.98- 0.99). The IOL powers calculated by the Holladay 1 formula were similar between the 2 biometers.

Conclusions:

The new optical biometer provided excellent repeatability and reproducibility for all ocular biometry. Agreement with the standard optical biometer was good except for the WTW corneal diameter.

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