

The Effect of Pupillary Dilatation on IOL Power Measurement by Using IOL Master

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Objective: To assess the difference of IOL power and ocular biometry measurements before and after pupillary dilatation by using IOLMaster.

Design: Prospective study

Methods: The measurements were taken with the IOLMaster® (Carl Zeiss Meditec AG, Jena, Germany) from healthy volunteers. Axial length (AL), corneal curvature both flattest and steepest (K1, K2), and anterior chamber depth (ACD) were measured before and after the dilatation of pupil with 1% tropicamide. The IOL power was calculated using Sanders-Retzlaff-Kraff/Theoretical (SRK/T) formula. The mean difference of each parameter was assessed by Bland-Altman plot analysis.

Results: Three hundred and eighty four eyes of 195 healthy volunteers were measured. The mean age of the patients was 52.39 ± 1.02 years (range 21 - 79). Pupillary dilatation had no significant effect on AL ($P = 0.07$), corneal curvature (steepest K ($P = 0.95$) and flattest K ($P = 0.17$)), and IOL power (Alcon SN60WF) ($P = 0.40$) obtained from the IOL Master. However, ACD was significantly increased postcycloplegia ($p < 0.05$). The Bland-Altman plot indicated a good concordance in nearly all parameters except ACD. For ACD measurements, the 95% limits of agreement between predilatation and postdilatation was -0.47 to 0.23 mm. That means 92.2% of measurement differences were within (LoA from -0.47 to 0.23 mm). There was no eyes that could not be measured by IOL Master.

Conclusions: The dilatation of pupil had no significant effect on AL, corneal curvature and IOL power measurements. However, the ACD was significantly increased postdilatation.