

R1 R2 R3 PG0 PG1 Estagiário Tecnólogo PIBIC

Last Name - Oliveira

First Name - Felipe

Middle -

Service (sector)

CLINICAL TRIALS

Nº CEP

01027/06

IMMERSION, APPLANATION AND OPTICAL BIOMETRY: WHICH ONE IS BETTER TO CALCULATION OF MULTIFOCAL INTRAOCULAR LENS POWER?

Filipe de Oliveira, Eduardo S. Soriano, Lincoln Leme Freitas, Cristina Muccioli

BACKGROUND: Many studies have recommended the immersion or optical biometry like the gold-standard method to multifocal intraocular lens (MIOL) calculation. Although the applanation biometry is widely used to monofocal IOL calculation, this technique is not so accurate to MIOL due to corneal indentation resulting in anterior chamber depth (ACD) as well as axial length (AL) shortened.

PURPOSE: To compare the AL and ACD measurements from three different biometric methods widely used at present and to evaluate how much the applanation technique can produce error in MIOL calculation.

METHODS: A study was performed on 92 eyes in 46 patients presenting to clinical practice for cataract surgery with MIOL assessment. Preoperative measurements of AL and ACD was taken with optical (IOLMaster, Zeiss - Germany), immersion and applanation biometry (Ocuscan RxP, Alcon - USA). All measurements were done for an unique biometrist. The measurements were used to determine the MIOL power based on the third generation formulas.

RESULTS: The AL means obtained were by optical biometry (23.10mm \pm 0.93), immersion (23.14mm \pm 0.99) and applanation (23.00mm \pm 1.01). The ACD means were respectively (3.17mm \pm 0.43), (3.21mm \pm 0.41) and (3.08mm \pm 0.40). The ACD correlation coefficients were 0.84 (applanation x optical) and 0.97 (applanation x immersion). The AL correlation coefficient was high (r=0.99) to either correlation. On average the AL measurements by the applanation were shorter by 0.10 mm compared to optical and 0.14 mm to immersion biometry. This shortened measurements can result in post-operative error in myopic direction.

CONCLUSION: The minimal post-operative error in myopic direction might be avoided to MIOL calculation, then the shortened measurements from applanation biometry is not an accurate method for this purpose.