

# COMPARISON BETWEEN IOL MASTER AND LENSTAR IN PREDICTABILITY OF INTRAOCULAR LENS POWER CALCULATION IN MYOPIC CATARACTOUS PATIENTS

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## Introduction:

- Ocular biometry is an essential procedure in ophthalmology as it is used to calculate the optical power of intraocular lens that replaces the cataract lens in pseudophakic cataract corrections
- Biometric data are important such as Axial length, keratometry values, Anterior chamber depth, corneal power are necessary parameters for IOLs power calculation and for satisfied outcomes after IOLs implantation
- Biometry can be performed by both ultrasonic and optical biometry but non-contact optical methods (IOL Master700 and the Lenstar900) are now preferred due to their significantly higher resolution, better patient comfort and greater acceptability
- IOL Master uses the partial coherence interferometry technology for AL measurements with automated keratometry, ACD and corneal white-to-white distance measurements in one instrument
- The Lenstar 900 is based on optical low coherence reflectometry can provide a nine accurate measurements such as AL, ACD, lens thickness and , keratometric readings, corneal diameter, pupil size and retinal thickness at the point of fixation.

## Aim of the work:

- compare the predictability of two devices; IOLMaster 700 and Lenstar LS 900 in myopic patients in the determination of the adequate power of an intraocular lens.

## Patients:

- prospective clinical study that included 30 myopic eyes (AL> 24 mm) of patients who underwent an uneventful phacoemulsification surgery and intra ocular lens implantation.

## Methods:

All patients included in the study were subjected to the following:

1. Informed consent.
2. Full history taking with complete clinical ophthalmological examination.
3. A brief slit-lamp biomicroscopy examination by a single experienced examiner to confirm the diagnosis of cataract.
4. Each patient was consecutively examined using the two optical biometers (the Lenstar LS 900 and the IOL Master 700) before pupillary dilatation by the same physician using SRK/T formula
5. All patients will undergo phacoemulsification and posterior chamber Akreos IOLs implantation by the same surgeon.
6. Manifest refraction was performed 4 to 6 weeks postoperatively to all patients and according to subjective refraction, the SE and error in prediction of IOLMaster 700 and Lenstar 90 was obtained and compared. Biometry measurements (AL, K1, K2 and Average K) and IOL power calculations were compared.



IOL Master 700 from Zeiss

Lenstar LS 900

## Results:

- Total Predictability of IOL Master 700 ranged from 0.0 – 1.52 D, with mean absolute error  $\pm$  SD being  $0.54 \pm 0.46$  D, total Predictability of Lenstar 900 ranged from 0.0 – 1.01 D, with mean absolute error  $\pm$  SD being  $0.40 \pm 0.32$  D. No statistical significance was found between both methods ( $p=0.569$ ).
- There were no statistical differences between the two devices as regarding the AL ( $P = 0.545$ ) and Strong positive Correlation ( $r=1$ ).
- There were no statistical differences between the two devices regarding average K ( $P = 0.097$ ) Strong positive Correlation ( $r=0.997$ )
- There were no statistical differences between the two devices regarding ACD ( $P = 0.877$ ) Strong positive Correlation ( $r=0.966$ )
- There were no statistical differences between the two devices regarding IOL power calculation SRK/T ( $P = 0.769$ ) Strong positive Correlation ( $r=0.999$ )

## Conclusion:

There were no statistical differences between the 2 devices (the IOLM700 and LS900) used in the current study regarding the mean absolute prediction error. There high correlation and agreement for the AL, average K, ACD and calculation of IOLs implant power with the SRK/T formula. So, the current study concluded that the choice between the two devices will not affect the postoperative outcome as both devices provide accurate postoperative results.