

# Comparison of Biometric Measurements Obtained Using 2 Noncontact Optical Biometers

Raphaël AMAR OD [1,2]

NO FINANCIAL INTEREST

[1] Clinique de la vision, Paris, France

[2] American Hospital of Paris, Neuilly/Seine, France



American Hospital of Paris

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## NONCONTACT OPTICAL BIOMETERS



**AL-Scan**



**IOL Master**

### PURPOSE

**Measurement accuracy of a new optical biometer AL-Scan (Nidek) compared to the IOL Master V.5 (Carl Zeiss Meditec) device.**

### SETTING

**Clinique de la Vision, Paris, France**

### METHODS

In a **prospective clinical study** biometric measurements with intra-ocular lens power calculation using the AL-Scan device were performed on **25 eyes of 13 patients**. Measurements were repeated using the IOL Master V.5 device. Results were elaborated using Pearson's correlation for **Axial length (AL), mean Keratometry (Km), Anterior Chamber Distance (ACD)** and **IOL calculation (118, SRKT formula)**.

# METHODS

N (eyes)	25
Patients	13
Sex	7 F / 6 M
Mean Age $\pm$ SD (years)	48,7 $\pm$ 23,4 [20; 81]

## Inclusion Criteria:

- Patient over 18
- Non operated eye
- Phakic eye

## Exclusion Criteria:

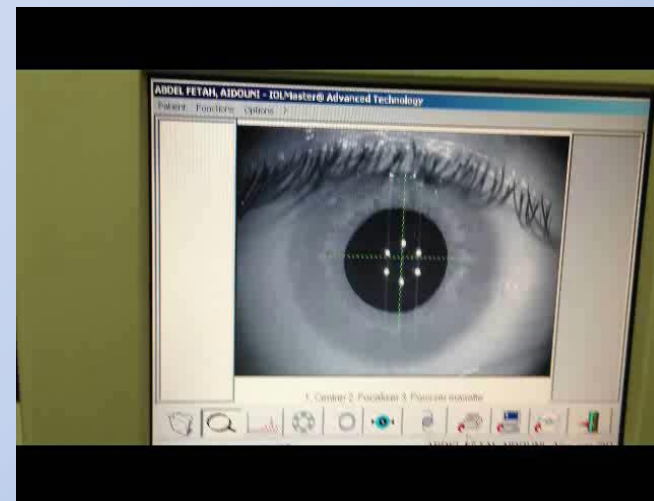
- Corneal or ocular surface pathology
- Dense cataract

## Many mesures were performed with both devices on each eye included :

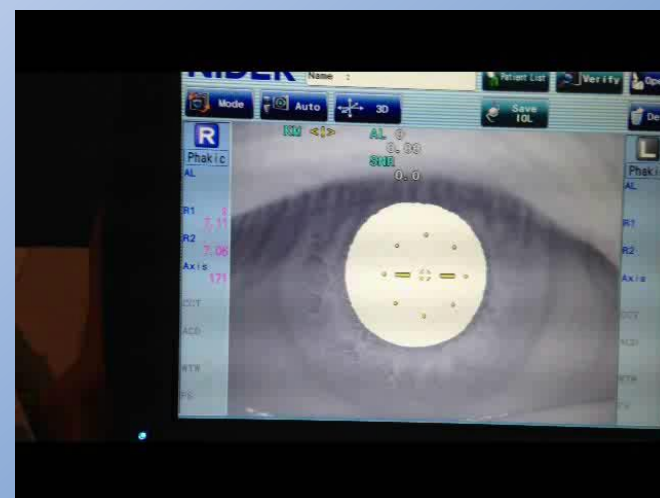
- 1) Mean Axial Length x 5
- 2) Mean central keratometry (Km, diopters) x 3
- 3) Anterior Chamber Distance (ACD, mm) x 1
- 4) Simulation of IOL calculation with SRKT formula, and A constant =118

The data correlation analysis was evaluated using Spearman's rank correlation coefficient (by XLstat software)

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Measurements with IOL Master



Measurements with AL-Scan

# RESULTS

	AL-Scan (n=25)	IOL Master (n=25)	Spearman Coef.	p-values
AL (mm)	24,18 ± 1,64 [21,42 ; 26,96]	24,15 ± 1,66 [21,41 ; 26,98]	<b>R = 0,997</b>	p < 0,0001
Km (D) 2,4 mm zone (AL-Scan)	44,17 ± 1,79 [41,51 ; 47,40]	44,22 ± 1,77 [41,51 ; 47,58]	<b>R = 0,989</b>	p < 0,0001
Km (D) 3,3 mm zone (AL-Scan)	44,16 ± 1,79 [41,51 ; 47,47]	44,22 ± 1,77 [41,51 ; 47,58]	<b>R = 0,982</b>	p < 0,0001
ACD (mm)	3,54 ± 0,56 [2,48 ; 4,39]	3,50 ± 0,57 [2,24 ; 4,42]	<b>R = 0,977</b>	p < 0,0001
IOL Calculation (D) SRKT, const A 118	17,50 ± 5,52 [7,00 ; 27,50]	17,48 ± 5,49 [6,50 ; 27,00]	<b>R = 0,999</b>	p < 0,0001

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## AL-Scan

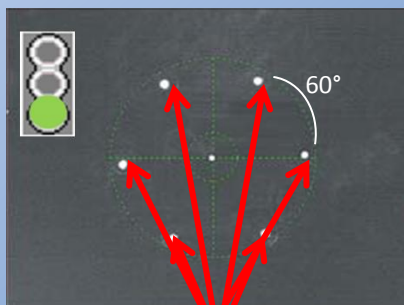


2.4 mm & 3.3 mm  
Keratometric measurement

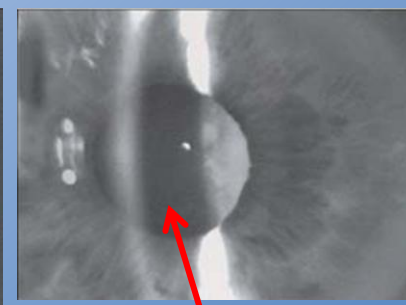


ACD Measurement,  
Scheimpflug analysis

## IOL Master



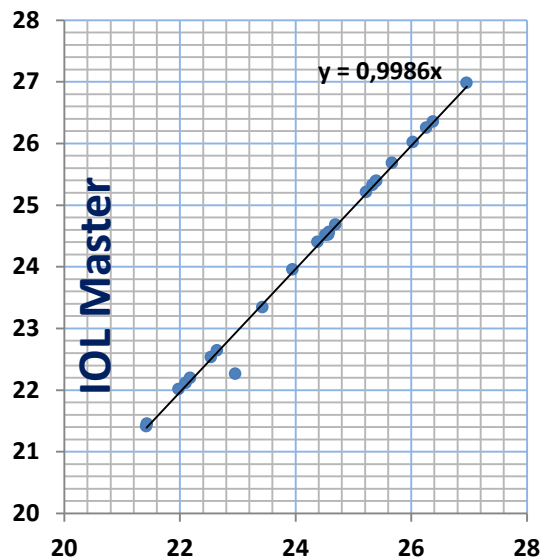
6 points of keratometric  
measurement (2,5 mm zone)



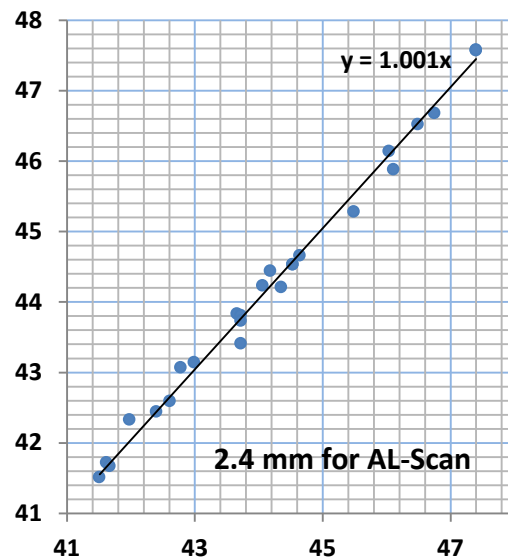
ACD Measurement

# RESULTS

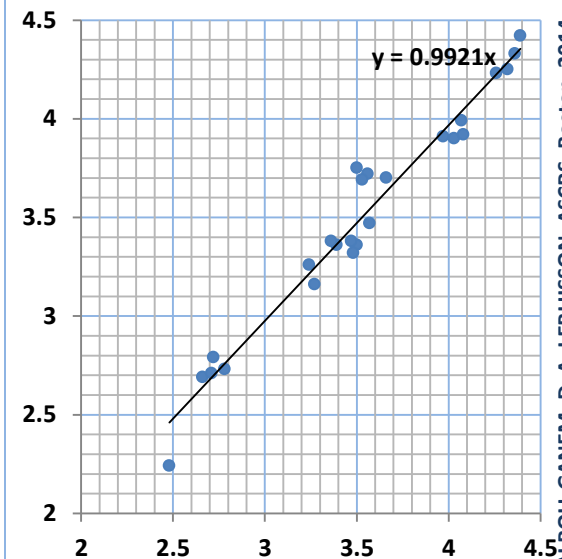
Axial length (mm)



Keratometry (D)



ACD (mm)



AL-Scan

# DISCUSSION

Spearman's rank correlation coefficient evaluation between results of IOL Master and AL-Scan were respectively: 0,996 for mean axial length; 0,996 for mean keratometry (with 2,4 mm diameter AL-Scan measurements), 0,993 for mean keratometry (with 3,3 mm diameter AL-Scan measurements); and 0,999 for IOL calculation (SRK T, A const 118).



## CONCLUSION

In our experience, there was no statistically significant difference in AL, Km, ACD and IOL calculation evaluation between both groups.

The new AL-Scan device performs accurate biometric measurements and intra-ocular lens (IOL) power calculation.

IOL calculation results obtained using the AL-Scan device are similar to those achieved using the IOL Master device (V.5) which is the most widely used partial coherence interferometer.

## Bibliography

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