
Multi-Technician Biometry Study of 1 Eye

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Purpose

To evaluate the accuracy and reproducibility of the axial length measurement of one eye performed by multiple technicians utilizing immersion biometry with an infusion scleral shell.

Examiners and Setting

The measurements were performed by 87 different technicians in eight different locations. The skill level of the test group was varied, consisting of certified and uncertified technicians, the majority of whom had never done an immersion scan. Previous biometry experience ranged from those who had never done any type of biometry to those who had done applanation biometry for more than ten years. The eight different locations listed in table 1 include: Two private practices, one university eye center, four biometry training courses in the US, and one instructional course at the ESCRS in Munich Germany.

Table 1. Examiners by location

#	Setting	Location	Date
13	BHH Eye Center	Lewisburg PA	01/31/03
10	The A-Scan Challenge	Minneapolis MN	07/26/03
3	The Center for Eye Care	Biloxi MS	08/02/03
2	Emory Eye Center	Atlanta GA	08/04/03
14	The A-Scan Challenge	Seattle WA	08/09/03
24	ESCRS 2003	Munich Germany	09/07/03
9	The A-Scan Challenge	Omaha NE	09/27/03
12	The A-Scan Challenge	Philadelphia PA	10/04/03

Patient and Methods

The patient was reclined with his head parallel to the floor. A fixation target was placed on the ceiling in such way that his line of visual axis would be perpendicular to the floor. The examiner was seated on the patient's right side with the biometer placed

The author is a Corporate Certified Ophthalmic Assistant employed by Eye Scan Consulting, a provider of ophthalmic ultrasound training in the US and Europe. He has no financial interest in any products mentioned.

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on his left, directly across. The biometer used, the Accutome AccuSonic, was set on automatic mode with auto-restart off. The probe was inserted into the Prager® infusion scleral shell with a bottle of BSS attached. After instilling two drops of anesthetic in the patient's right eye, the examiner placed the rim of the infusion shell on the limbus with the central axis of the shell/probe aligned along the patient's visual axis i.e. perpendicular to the floor. Balanced saline solution was then infused into the shell, filling the space between the corneal vertex and the tip of the probe. Once sufficient solution covered the tip of the probe, a live scan pattern appeared on the display. The examiner adjusted the alignment of the shell/probe until an accurate scan pattern was obtained and captured. The examiner then evaluated the frozen waveform, verifying the presence of five(5) sharp spikes, each 100% tall, steeply rising. If the scan was acceptable, the examiner "tapped" the foot pedal and continued to capture waveforms in the same manner until 5 accurate measurements were acquired.

Results

87 different technicians obtained 5 readings for a total of 435 readings. The average of all 435 scans was **24.54 mm ± 0.03 mm std deviation**. The shortest measurement was 24.45 mm and the longest was 24.60 mm, a range of 0.15 mm.

Validation

The axial eye length was verified using optical coherence biometry (IOL Master) which obtained an average axial length measurement of 24.56 mm.