

Initial LASIK Experience with the Wavelight ALLEGRETTO- WAVE



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Purpose

- To evaluate the safety and efficacy of the use of the Allegretto-Wave excimer laser system (Wavelight, Germany) in our LASIK clinical practice



My Background

- Harvard Medical School-Cornea Fellow
- Cornell University-Cornea Fellow
- Medical Director- TLC Laser Eye Centers
- Director: Refractive Surgery, NYU
- Over 9000 Lasik procedures

Experience-Excimer Lasers

- Summit- Apex plus
- VISX-S2 ans S3
- Lasersight
- Nidek
- Alcon-Ladarvision
- B&L: Technolas 217
- Wavelight: Allegretto-Wave

Key specifications that are important for the clinician:



- - the frequency of the flying spot treatment is 200 Hz
- - the spot size is 0.9 mm;
- - its active eye-tracking system involves an infrared camera and three individual illumination modules to sense the eye movement (by fixing on the pupillary reflex) with a detection frequency of 250 Hz and a reaction time 6 to 8 msec

Key Features



Experience-Microkeratomes

- B&L: ACS
- B&L: Hansatome
- Alcon:SKBM
- Moria:LSK
- Allergan: Amadeus
- Moria: One step
- Moria:M2

Methods:

- 287 consecutive eyes, underwent LASIK for myopia or myopic astigmatism.
- The Allegetto-Wave treats by a gaussian-profile flying-spot of 0.9mm, with 200Hz frequency and a 250Hz active eye-tracker.

Allegretto - [] _ □ ×

File Treatment Allegretto Setup ?

Patient data

Last Name:

First Name:

Eye: OS

Enhancement:

Sex:

Date of Birth: DD.MM.yyyy Age:

Date of Treatment: DD.MM.yyyy

Treatment Data

Surgeon:

	SPH	CYL	Axis
Correction:	<input type="text" value="-3.50"/>	<input type="text" value="-0.75"/>	<input type="text" value="5"/>
Optical Zone:	<input type="text" value="6.5"/> mm		
Ablation zone:	<input type="text" value="8.1"/> mm Outer diameter		
Ablation depth:	<input type="text" value="63"/> μm Maximum		
Flap thickness:	<input type="text" value="160"/> μm Nominal value (see Setup)		
Remaining:	<input type="text" value="277"/> μm stromal thickness		
Center:	dx <input type="text" value="0"/> μm	dy <input type="text" value="0"/> μm	

Examination

Examiner:

K1: D @ °

K2: D @ °

Pachymetry: μm Pupil size: mm

Remark:

Warnings

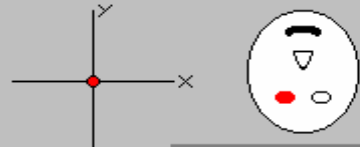
Refraction / Aim

Vertex distance: mm (see Setup)

Surgeon:

	SPH	CYL	Axis
Manifest Refraction:	<input type="text" value="-3.50"/>	<input type="text" value="-0.75"/>	<input type="text" value="5"/>
Refract. aim:	<input type="text" value="0.00"/>	<input type="text" value="0.00"/>	
Optical Zone:	<input type="text" value="6.5"/> mm		
Center:	dx <input type="text" value="0"/> μm	dy <input type="text" value="0"/> μm	

Myopia
Astigmatism

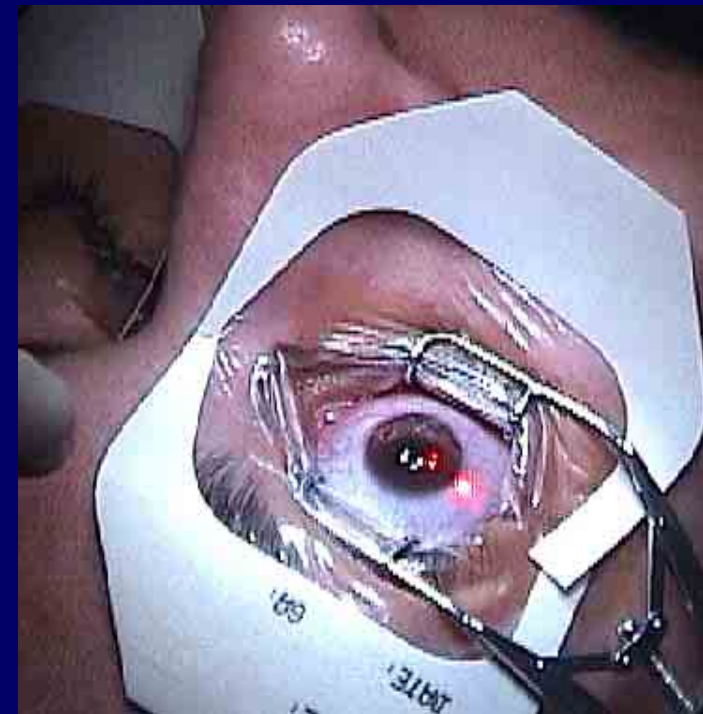
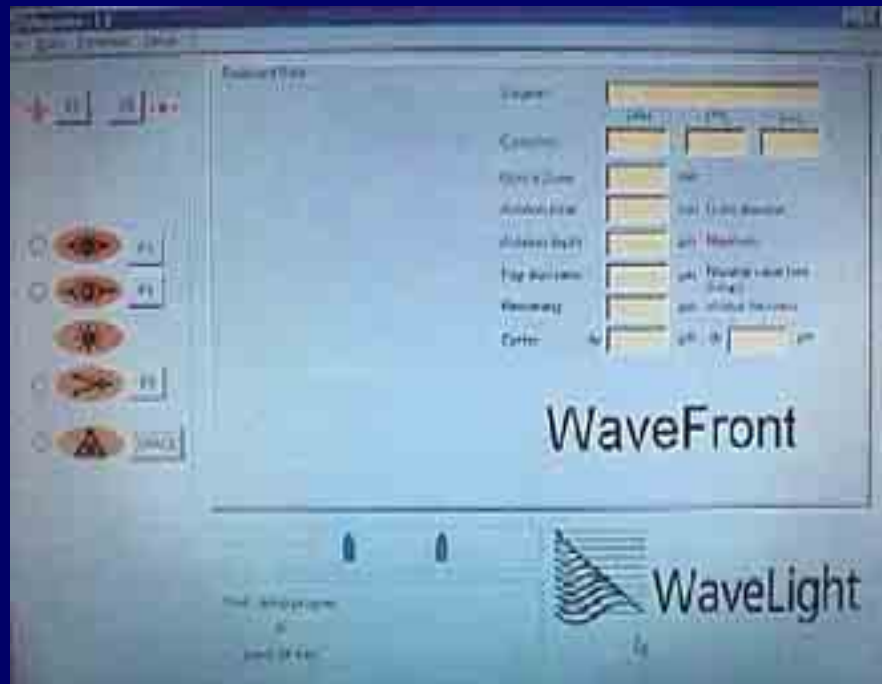


Data to Allegretto

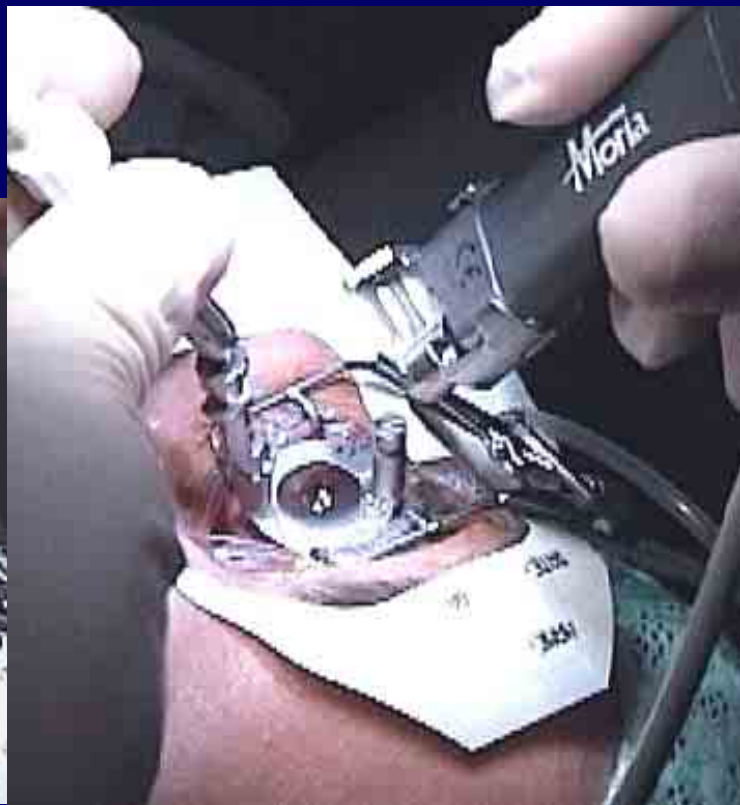
Methods:

- We evaluated amount of myopia and astigmatism, pre- and post-operative: UCVA and BCVA, IOP, endothelial cell count and wavefront analysis by the Wavelight Tscherning aberrometer.
- We utilized the M2 (Moria, France) microkeratome (110-130 plates).
- Mean follow-up was 5-11 months (8)

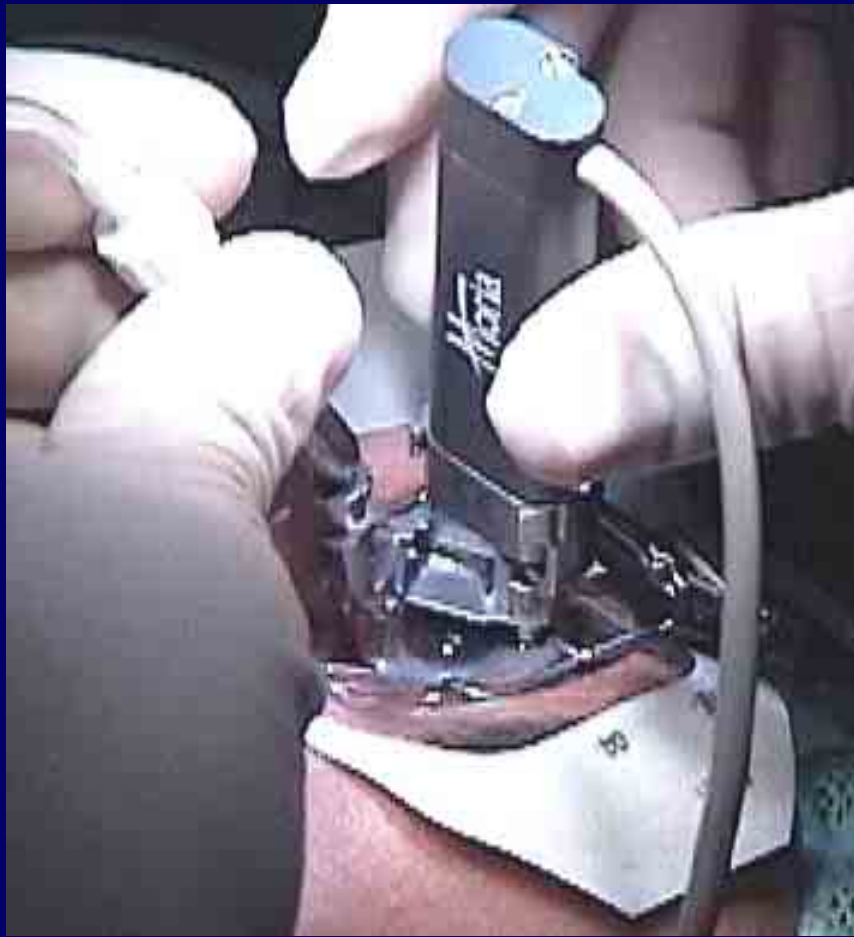
My Technique



Placement of the M2



Microkeratome pass

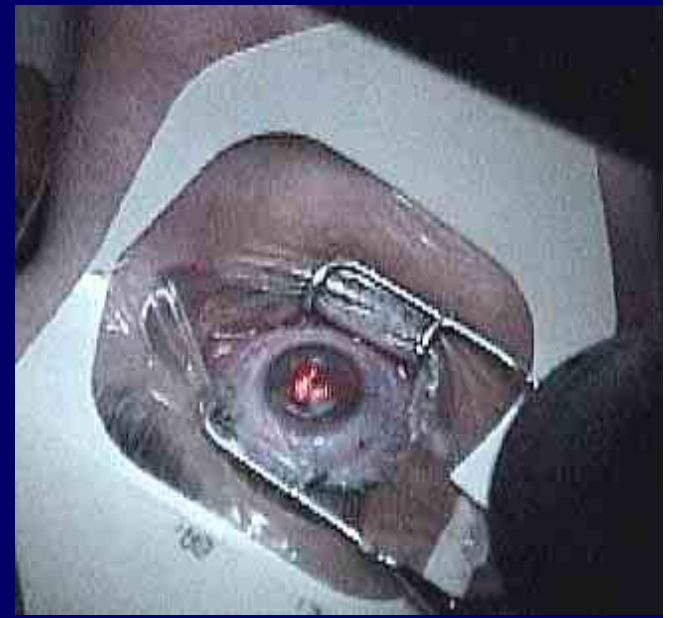
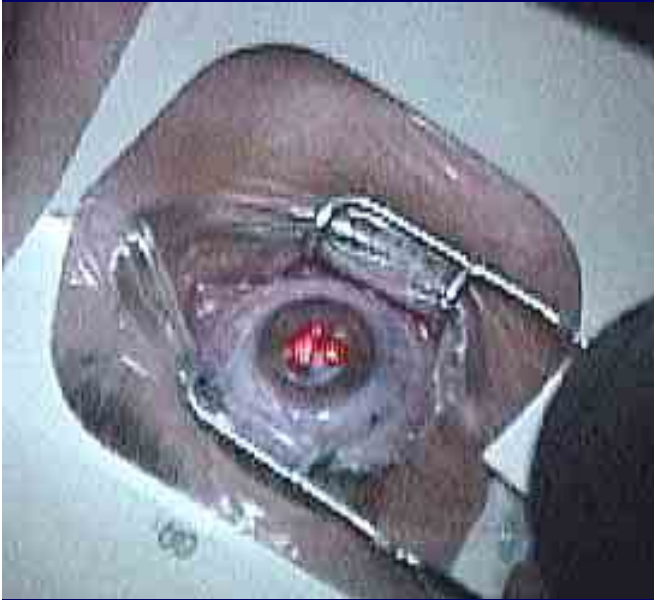


Folding of flap, even moisture on stromal bed

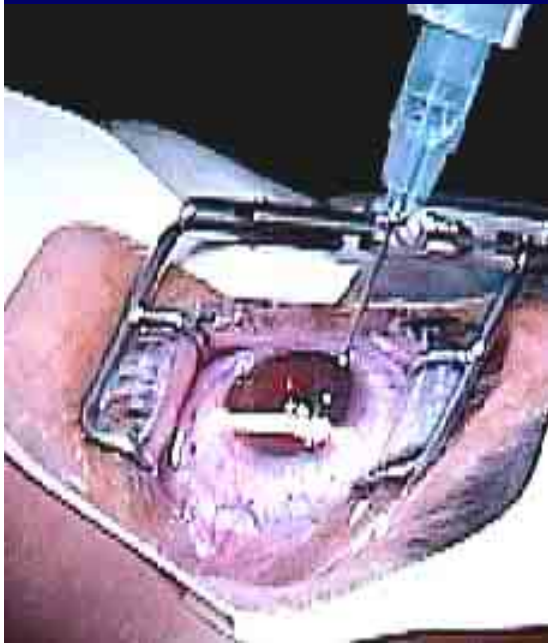


Check parameters Intraoperative moistute eq

PTK	DEPTH	DIA	WaveFront	
LASIK	-2.54	-0.32	0°	6.5mm
	SPH	CYL	AXIS	ØZ
Treatment active				
ArF	N ₂	READY	center	E 69 V 83



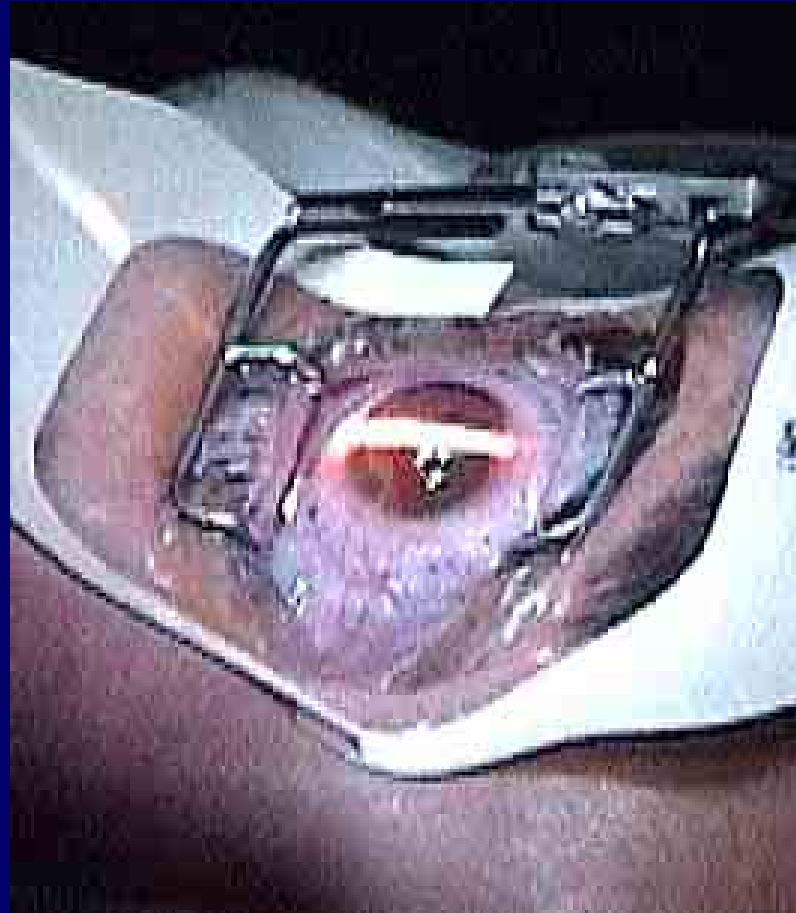
Irrigation of flap and careful wipe



“milky” drop to delineate gutter



2' observation interval



My technique

- **1 Drop of Alcaine**
- Betadine drape
- Isolate eyelids with drape
- Aspirating speculum
- Lubricate blade and rotating parts with Alcaine!!!



My technique

- Careful check of lock
- Alcaine during MK assembly on eye
- Technician observes tubing
- Avoid pt squeeze



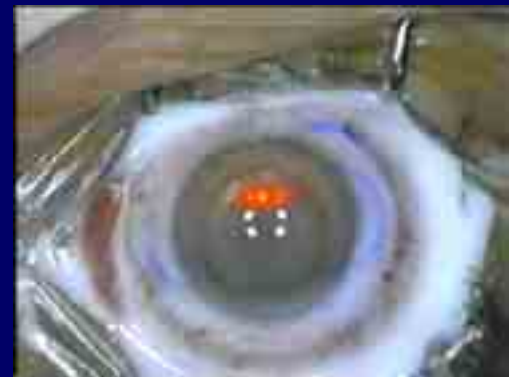
My technique

- “Taco” flap to minimize Dehydration
- Even bed hydration very important



My technique

- Irrigation very important
- “Squeeze” out excess fluid and
Striae with moist Weck-cell
- “Milky” steroid can help
delineate gutter and flap striae



Video

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Surgeon:

Manifest Refraction: SPH CYL Axis ° **Myopia Astigmatism**

Refract. aim:

Optical Zone: mm



Center: dx μm dy μm

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Warnings

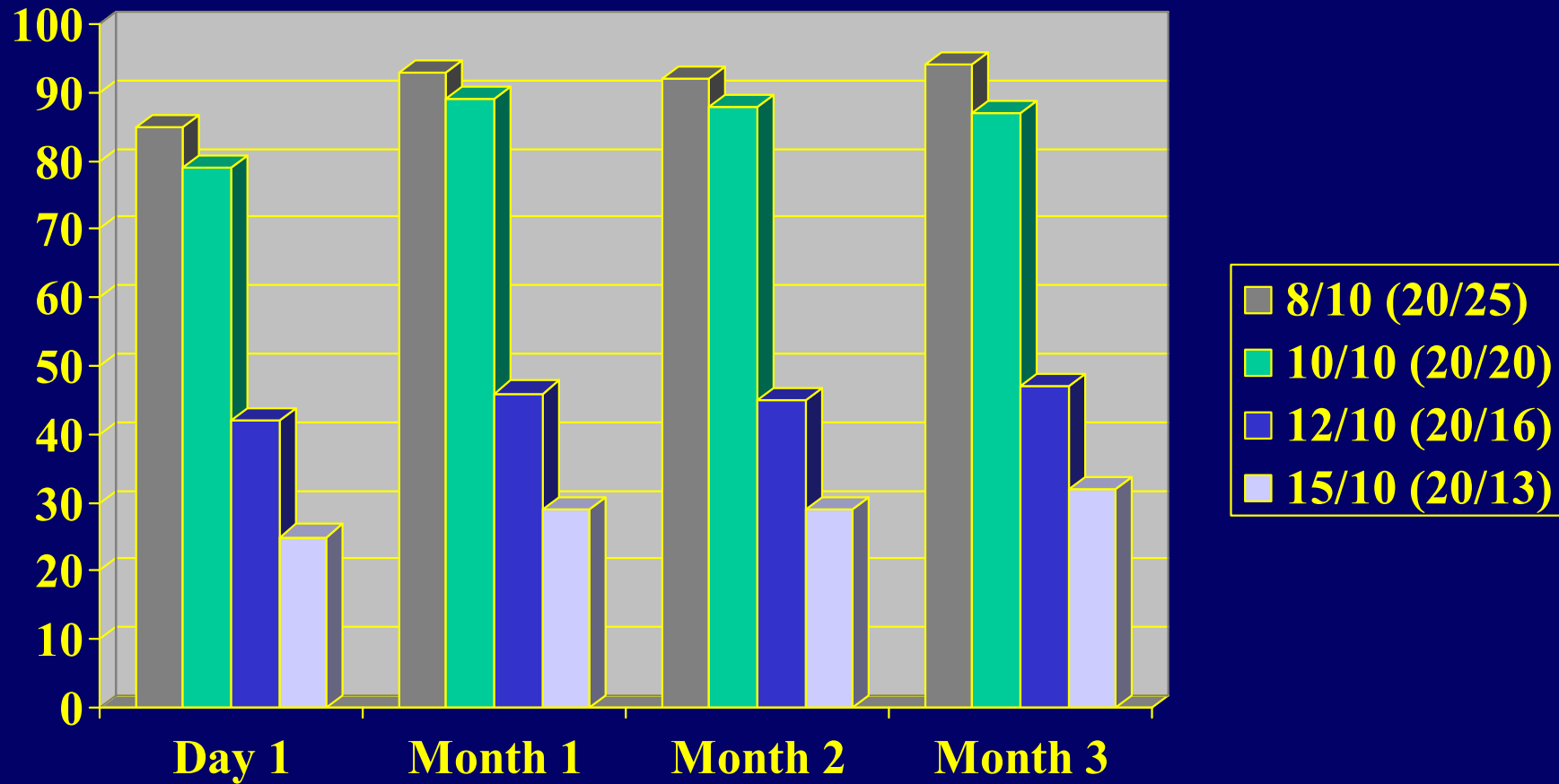
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Results:

- Mean values: The mean pre-operative sphere was -4.75 D (-1.00 to -12.50) and the cylinder -1.25 (-0.25 to -3.75)
- UCVA improved from 20/200 to 20/25. At 3 months 87% of the eyes were 20/20, 47% 20/15 and 32% 20/10. 100% of eye were within ± 1 D at 3 months.

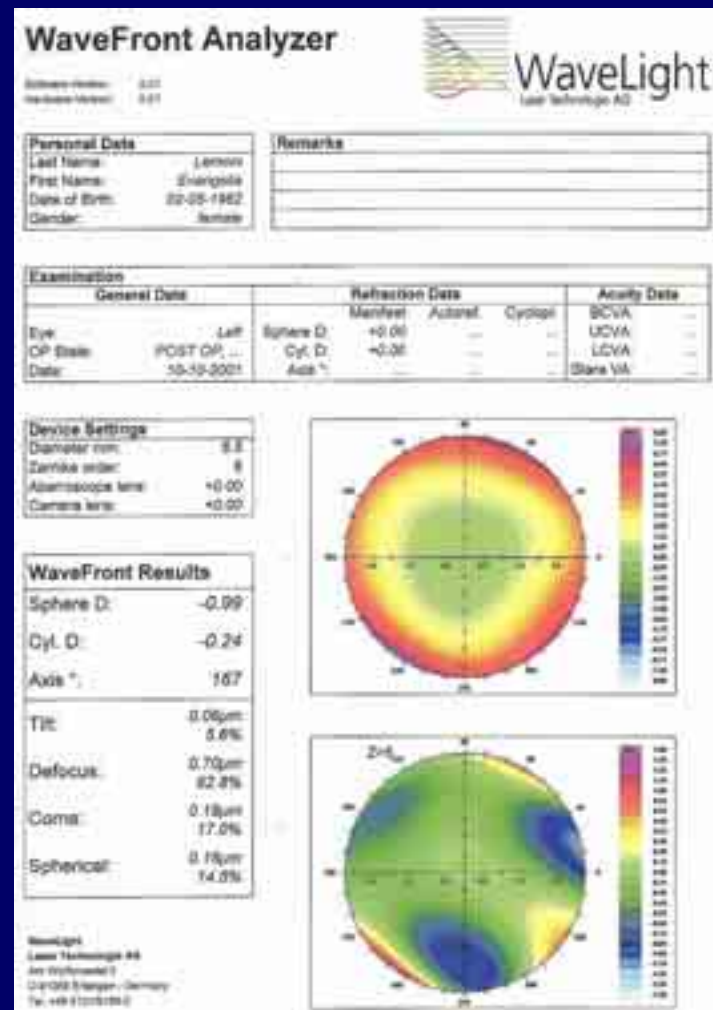
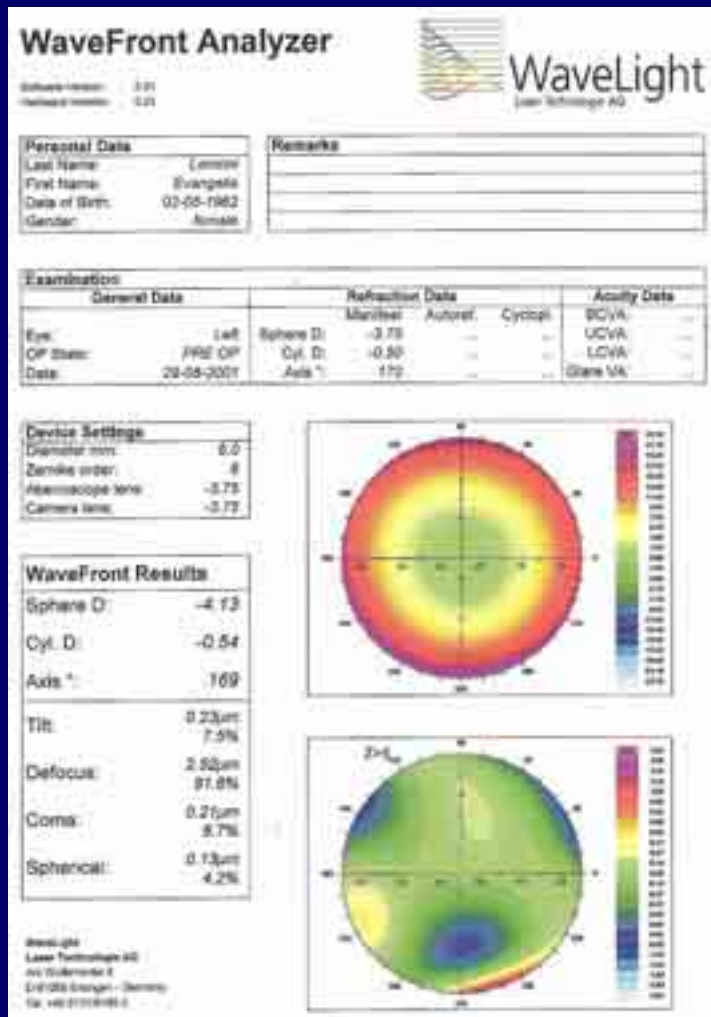
Results



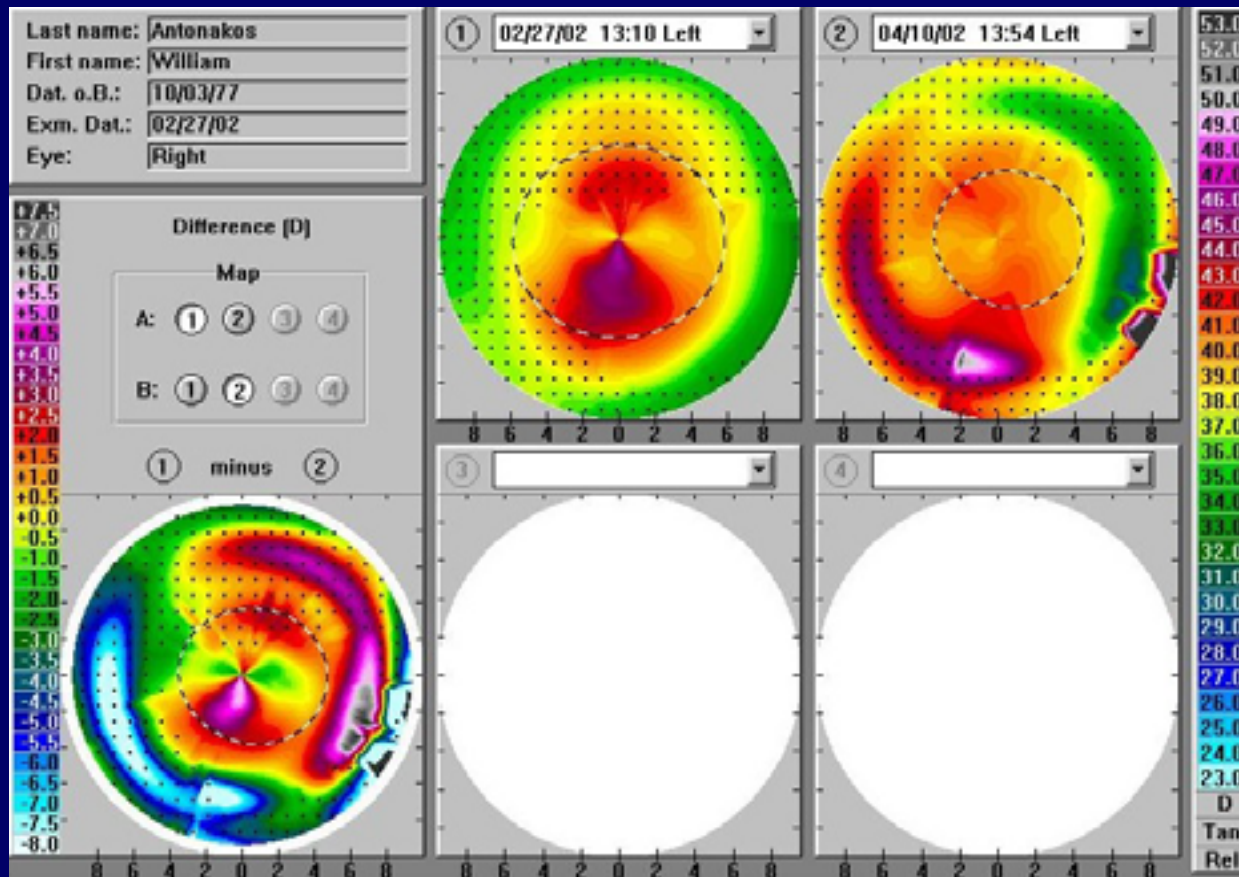
Results:

- Wavefront analysis showed a postoperative increase in coma of only 35% (mean coma of 6% pre-op to 9% post-op)
- 37% of eyes gained at least 1 line of BCVA
- No complications were noted in this limited group

Pre- and Post-op Wave BCVA improved 10/10 to 12/10

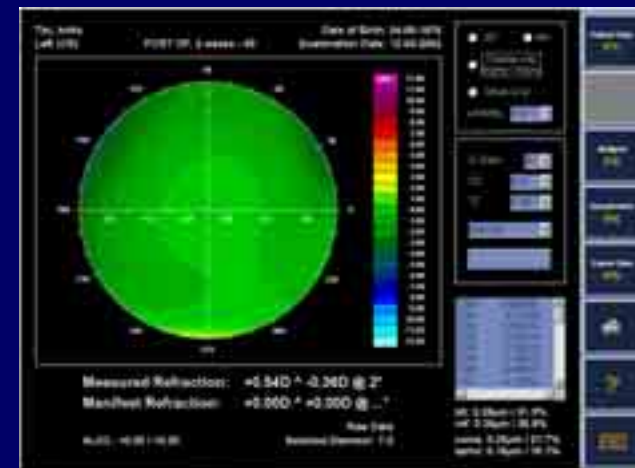


+2.00 -7.00 x 167 BCVA 6/10
3m post: +0.50 -0.50 x 19 UCVA 9/10



Wavefront-guided

- 10 patients
- One eye wave, one non
- Wave: RMSh pre-op 0.12-0.35 (0.17), post-op 0.11
- Non-wave: pre-op 0.165 post-op: 0.195



Conclusions:

- LASIK utilizing the ALLEGRETTO-WAVE excimer laser with a 0.9mm flying-spot and 200Hz frequency appears to be safe and effective in the correction of myopic astigmatism.
- The postoperative results at 3 months are impressive for correction, improvement in BCVA that coincides with little induction of high order aberrations (coma).

Conclusions:

- The postoperative results at day one were very impressive, possibly deriving from the smooth ablation pattern of corneal stroma bed
- Very significant improvement in BCVA postoperatively
- These data are regular, non-wavefront guided treatments

Thank You

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