

Initial clinical experience with the FS200 Femto and EX500 excimer lasers by Wavelight for LASIK **ESCRS, Istanbul 2011**

A. John Kanellopoulos, MD
Professor NYU Medical School, NY
Director, Laservision.gr Institute, Athens, Greece
Kyros Moutsouris, MD
Cornea specialist, Laservision.gr Institute, Athens, Greece

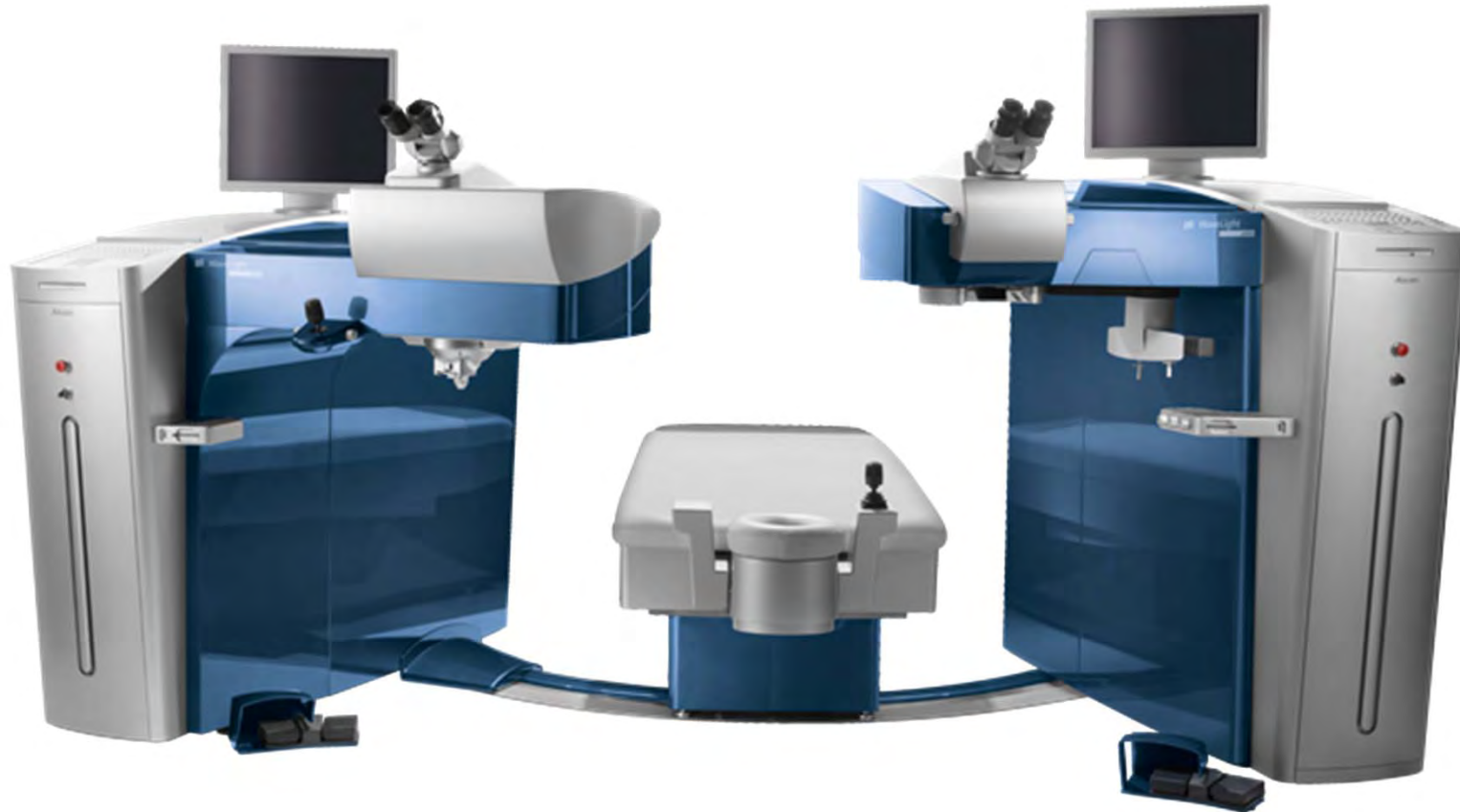
Financial Interest: Travel Reimbursement from Alcon,
Wavelight, Bausch and Lomb



Kanellopoulos, MD
www.brilliantvision.com



WaveLight® Refractive Suite



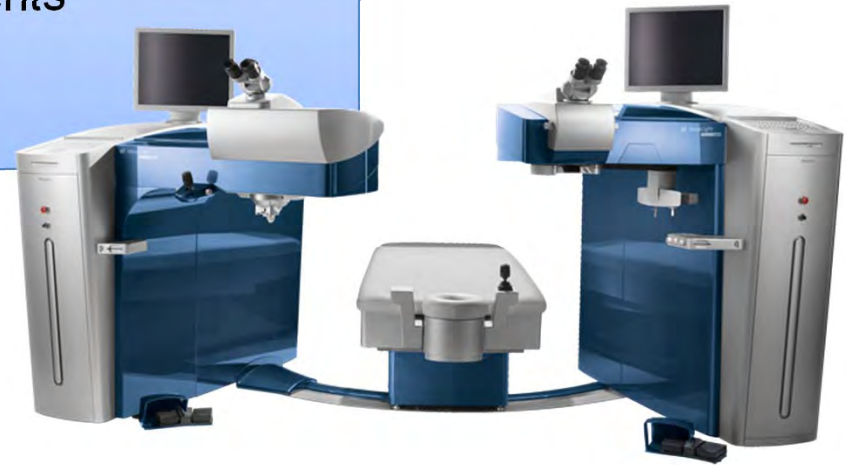
WaveLight® FS200
Femtosecond Laser

WaveLight® EX500
Excimer Laser

WaveLight® Refractive Suite

A truly integrated system, the WaveLight® Refractive Suite features:

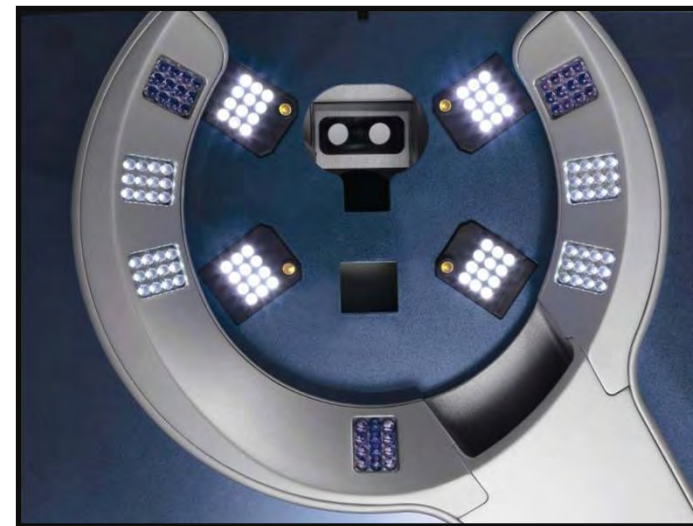
- Ultra fast platform, combining a 500 Hz excimer laser and a 200 kHz femtosecond laser
- Seamless data transfer within WaveNet™, an integrated network
- A small footprint for reduced space requirements
- A swivel bed for simplified patient positioning and enhanced patient comfort



WaveLight® EX500 Excimer Laser

The **1050 Hz** multi-dimensional eye tracker assists in offering exceptional precision and safety:

- Movement tracking with just 2 milliseconds of latency*
- Dynamic pupil tracking from 1.5 mm to 8.0 mm
- Active pupil centroid shift correction
- NeuroTrack to compensate for cyclotorsion



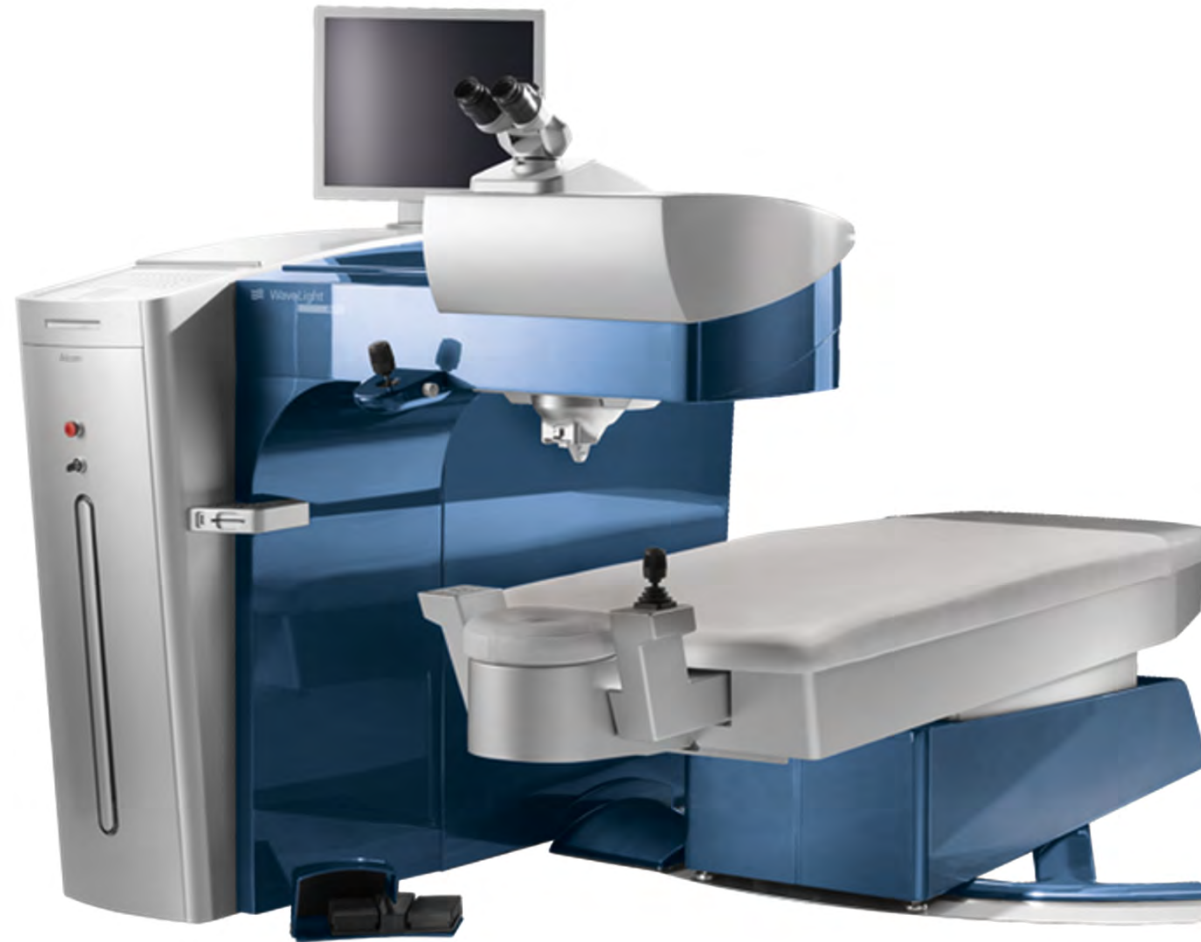
WaveLight® EX500 Excimer Laser

Summary

- 500 Hz laser head treats 1.0 diopter in 1.4 seconds
- 1050 Hz Eye Tracker has a latency of 2 milliseconds
- Patient-Specific applications:
 - Wavefront-Optimized, Wavefront-Guided, Topography-Guided, Custom Q, PTK
- Network connectivity allows seamless data transfer through the full WaveLight® Refractive System
- Advanced ergonomic design with enhanced feature set facilitates patient flow and physician experience



WaveLight® FS200 Femtosecond Laser



WaveLight® FS200 Femtosecond Laser

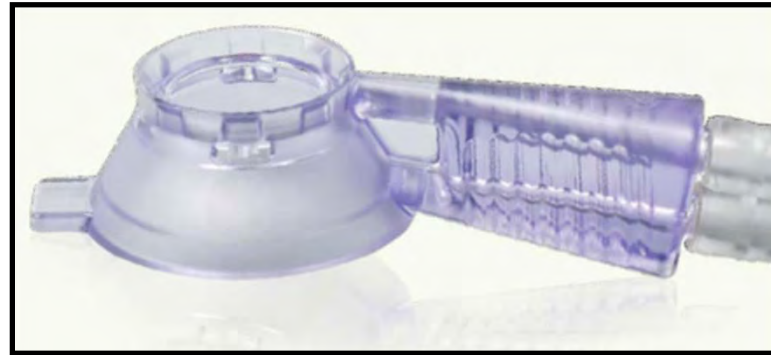
Fast flap creation times
Laser

- Standard flap creation in approximately 8.0 seconds*

- Automated vacuum control of the patient interface for consistent suction

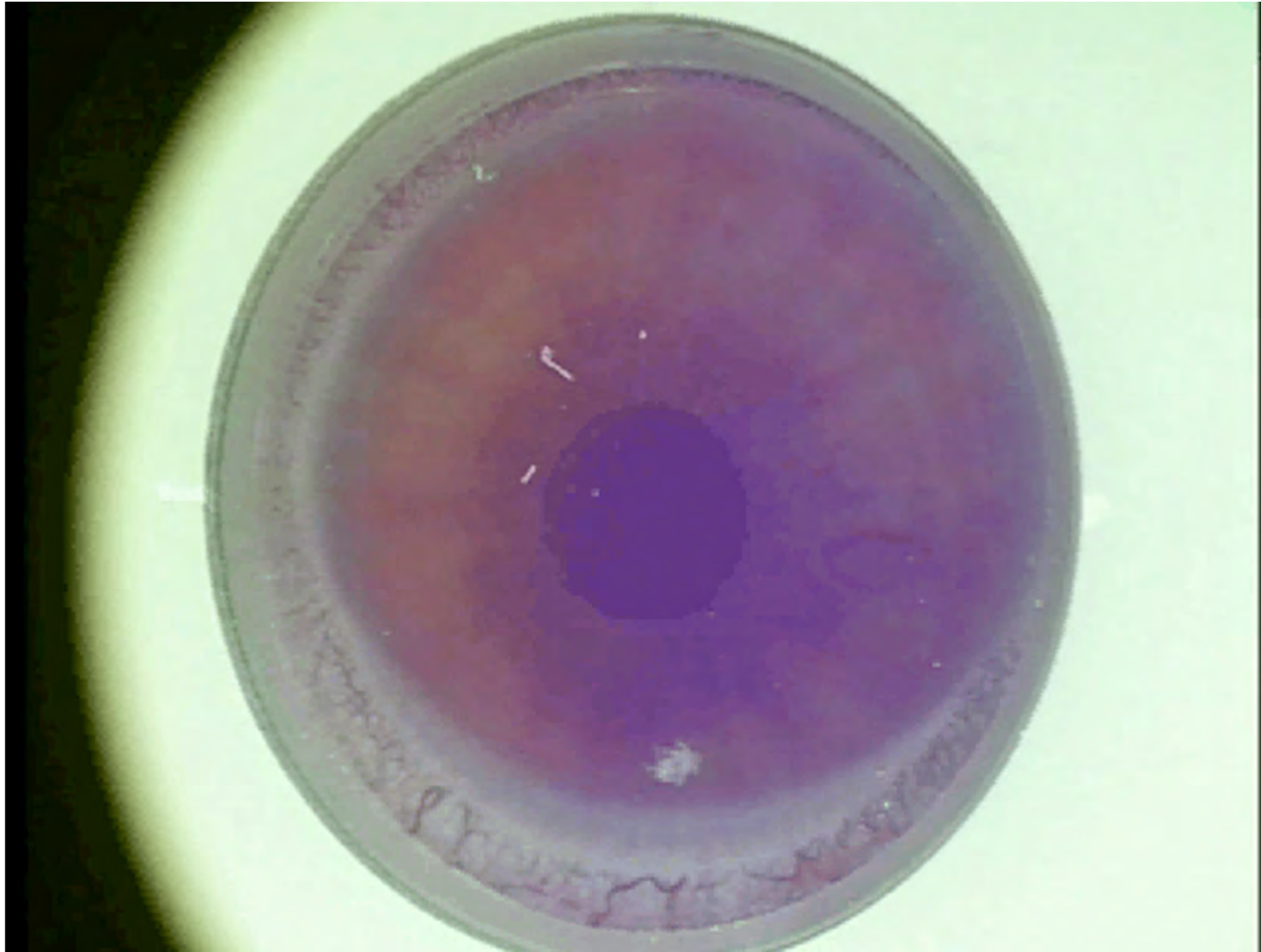
- Minimized IOP and ocular distortion during suction

- Fast visual regeneration



Patient file 14.02.2011		OD	WaveLight
Created by Lasik		UltraFlap Treatments Performed	Page 2 of 3 pages
Date: 03.02.2011 15:26:42		Treatment Type: Standard	Status: Finished
Treatment Parameters (Standard)		Treatment Screenshot (Standard)	
Ablation			
Abl. Zone	Max. Depth	Min. Pachy	Res. Stroma
9.0 mm	103 µm	492 µm	249 µm
Flap			
Diameter	Thickness	Side Cut Angle	Canal Width
9.5 mm	140 µm	70°	1.3 mm
Hinge			
Position	Length	Angle	Width
90°	3.6 mm	45°	0.4 mm
Laser pulse energy (measured)			
Bed Cut		Side Cut	
0.7 µJ		0.9 µJ	
Laser separations			
Bed Cut		Side Cut	
Spot Separations	Line Separations	Spot Separations	Line Separations
8.0 µm	8.0 µm	5.0 µm	3.0 µm
		Comments	





Methods

78 consecutive LASIK cases in our refractive surgery center in Athens, Greece were evaluated peri-operatively for the following parameters:

Refractive error (RE) , BSCVA, UCVA, Topography and Tomograph, angle kappa, Wavefront analysis, pupilometry , contrast sensitivity, cornea OCT , flap parameters (thickness, diameter, hinge length) and flap creation (FC), excimer laser ablation a novel refractive platform (200kHz femtosecond technology and 500Hz EX excimer laser). All hyperopic eyes were treated with topography -guided ablations in order to match angle kappa deviation of the visual axis. Average follow-up was 6.2 months (4 -10).



Results

We treated 65 myopic eyes (Group A) and 13 hyperopic eyes (Group B). The change from pre- to post-operative was for all parameter means: For Group A: Average RE: -4.5D (-1.50 to -8.50D) to -0.25D; UCVA 20/80 to 20/17, flap thickness (110um, 8mm was planned): 107 microns (+/-5) and 8.1mm diameter, Group B: Average RE: +2.5D (+1.50 to +5.50D) to -0.25; and UCVA: 20/60 to 20/15 with mean flap (135um, 9.5mm was planned) 132 microns (+/-7) and 9.4 mm diameter. FC: was 15 sec *for Group A and 19 sec* for Group B. ELA was 28 and 32 seconds respectively for group B. OP was 7.2 minutes for group A and 7.4 minutes for group B. There was no flap slippage, epithelial ingrowth or diffuse lamellar keratopathy (DLK) in any case.



Summary

- 200 kHz laser
 - Creates a 9.0 mm flap in 8-9 sec.
 - Total procedure time, “suction on” to “suction off” ~30 sec.
- Adjustable flap centration after suction is engaged
- Adjustable hinge placement and flap thickness
- Enhanced suction ring to maximize patient comfort and mitigate increases in IOP
- Network connectivity allows seamless data transfer through the full WaveLight® Refractive System
- Disposable Patient Interface



Conclusions



The “refractive suite” comprises of the

1-200 kHz femto laser

2-500 Hz excimer laser

Clinical results with LASIK show high level of reproducibility

Great safety record so far

Enhanced speed

Networking of diagnostics/both lasers!

-

