

2nd Avedro CXL meeting,
ROME 2013

Crosslinking and Long-Term hyperopic LASIK Stability Initial Clinical Findings in Contralateral Eye Study

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AJK is a consultant for Alcon, Wavelight and Avedro.



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Cross-linking... edible materials summer 2013



Saturday
September
14th, 2013



3D Athens Course

Next Saturday
Athens!



Program Schedule - Saturday 14th 2013

- 10:00 - 10:30 REGISTRATION & COFFEE
- 10:30 - 10:45 WELCOME & INTRODUCTION
- 10:45 - 12:30 FEMTOSECOND AND NANOSECOND LASER APPLICATIONS IN CORNEA, REFRACTIVE AND CATARACT SURGERY
 - 1. Femto Refractive Surgery 3D video applications 10' & Discussion 1'
 - 2. Femto Transplantation surgery applications 10' - 30 Surgery video symposium 10'
 - 3. Femto Cataract surgery 3D video applications 10' & Discussion 1'
 - 4. Femto IOL applications 10' - 30 Surgery video symposium 10'
 - 5. Nanosecond laser Cataract applications 10' & Discussion 1'
 - 6. Combined Nano / Femto Cataract surgery 10' - 30 Surgery video symposium 10'
- 12:30 - 13:30 LUNCH
- 13:30 - 13:30 WELCOME IN COLLAGEN CROSS-LINKING (CXL) DEMONSTRATION AND PERFORMING OUR TECHNIQUE

- 1. Higher and very high Flashes (200-400/cm²) CXL The Avastin KXL 10'
 - 2. Pulsing/CXL Pumping 10'
 - 3. Customized CXL and the Athens Protocol 10'
 - 4. Refractive CXL results (new technology CXL II) 10'
 - 5. LASIK (Micro / Pringles and Hyperopic) 10'
 - 6. Use of the new Toric IOL (Optaris) in CXL cases 10'
- 14:00 - 16:00 COFFEE BREAK
- WELCOME IN CORNEAL IMAGING (group A & B)'
- 1. Scheimpflug Imaging Pentacam 10'
 - 2. Placido and IOL NEWTON Topography 10'
 - 3. Interferometric Pachymetry & Topography Aberrometry 10'
 - 4. Scatter measurement device (E-Quant) 10'
 - 5. Contact Sensitivity, Contact Angle & Snow 10/11 10'
 - 6. Anterior Segment OCT with emphasis on epithelial mapping and dry eye 10'

Inquire at +30 210 7472770 <http://www.kanelloupsoulis.gr>
 Website availability will be limited to all participants. Registration Priority will be given.

- 7. High-Frequency Ultrasound 10'
 - 8. Pupillometry Corneal Shift Studies 10'
- *Group A will be discussing 3D video symposium, group B will do so with the first half and then create an each entity. In the workshop course, each participant will see and master the equipment in operation, analyze and make a diagnosis analysis file.

Course Faculty

A. John Kanellopoulos, MD, Athens, Greece & New York, NY, USA
 a Novel CXL application
 a Novel Femto application
 a Novel imaging application

George Asimellis, PhD, Athens, Greece
 Corneal imaging principles

Ioannis Adamidis, MD, Iraklio, Crete, Greece
 Epithelial Corneal imaging

Ioannis Datsis, MD, Athens, Greece
 Micro imaging in anterior segment surgery

Konstantinos Karalidakis, MD, Athens, Greece
 Dry eye principles, imaging and management

David Harman, MD, Reumarkt, Germany
 The Salpigis LASIK Wave experience

Yvonne Kozoulikis, MD, Alexandroupoli, Greece
 Biomechanical contribution to CXL-ORA

Ronald R. Krueger, MD, Cleveland, Ohio, USA
 Customized Ablation and CXL (Athens Protocol)

Bradley I. Sandeman, MD, Atlanta, Georgia, USA
 Correlation of Corneal Imaging in IOL suspect diagnosis

Ahmed Seilly, MD, Cairo, Egypt
 Femto keratoplasty

Theo Seiler, MD, Zurich, Switzerland
 Femtosecond laser assisted GALK and PK

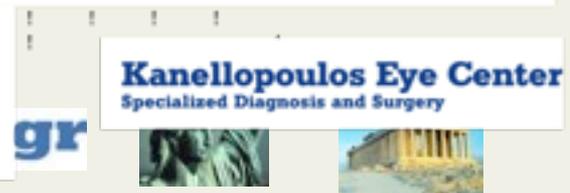
Rohit Shetty, MD, Bangalore, India
 OCT intra operative imaging in anterior segment surgery

Pavel Stodulka, MD, Prague, Czech Republic
 Femto / Nano second laser cataract surgery

Thomas J. T.P. Van den Berg, PhD, Amsterdam, The Netherlands
 Scatter measurements and clinical consideration in visual function

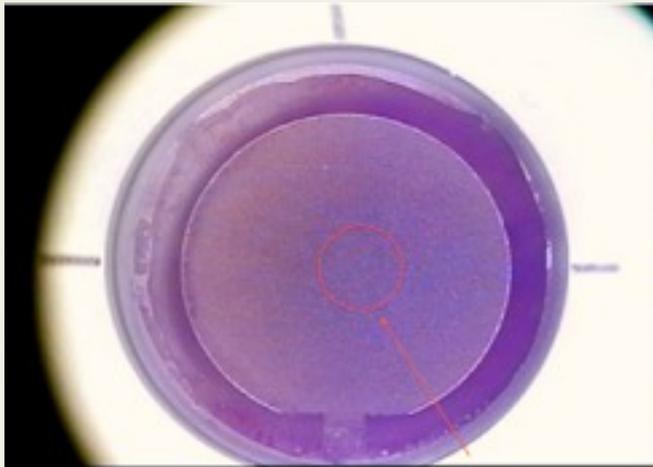


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Topography-guided

JRS Sept/Oct
2005



Topography-guided Custom Retreatments in 27 Symptomatic Eyes

A. John Kanellopoulos, MD

ABSTRACT

PURPOSE: To evaluate the use of topography-guided ablations for refractive irregularities induced by previous surgery.

METHODS: This prospective, non-comparative trial comprised 27 symptomatic eyes with a history of LASIK for myopia that underwent topography-guided treatment with the ALLEGRETTO WAVE system. Pre- and postoperative refraction, uncorrected visual acuity (UCVA), best spectacle-corrected visual acuity (BSCVA), corneal asphericity (Q value), low contrast sensitivity, and patient's subjective assessment of improvement were measured.

RESULTS: Preoperative data were sphere -0.84 ± 1.37 diopters (D), cylinder -1.55 ± 0.78 D, UCVA 20/49 ± 0.22 , BSCVA 20/32 ± 0.15 , and Q value 1.46 ± 0.79 . Postoperative data at mean 6-month follow-up were: sphere -0.61 ± 0.81 D, cylinder -0.53 ± 0.58 D, UCVA 20/25 ± 0.21 ($P < .01$), BSCVA 20/21 ± 0.14 ($P < .001$), and Q value 1.07 ± 0.89 . Contrast sensitivity scores improved by 70%. No loss of BSCVA occurred in any patient.

CONCLUSIONS: Topography-guided treatments may be effective in correcting the quality of vision; it should be viewed as a possible two-step procedure due to spherical adjustment that may change refraction unpredictably. [*J Refract Surg.* 2005;21:5513-5518.]

Approximately 5% to 25% of refractive procedures result with a less than satisfactory outcome postoperatively.¹⁻¹⁰ Aside from residual refractive error or overcorrection, these patients frequently have some form of irregular astigmatism induced by small optical zones and/or decentered ablations. These types of refractive errors are difficult to correct with standard treatments because of their irregular nature and would benefit more from customized ablation.

Although the term "customized treatment" usually is used for wavefront-guided treatments, topography-guided ablation is also a form of customized ablation. However, instead of conforming treatment to the wavefront map, it uses the patient's topography height map as the basis for the treatment.¹¹

We previously reported our experience in enhancing these cases with wavefront-guided treatments with the ALLEGRETTO WAVE platform (WaveLight Technology AG, Erlangen, Germany) with satisfactory success.¹²

PATIENTS AND METHODS

The study design is a non-comparative case series on 27 eyes (22 patients) that underwent topography-guided enhancement with the ALLEGRETTO WAVE platform (Table). No control group was used or gender matching was done. These were consecutive cases that were treated by a single surgeon (A.J.K.) in a refractive surgery center in Athens, Greece.

Patients with previous myopic or hyperopic laser surgery, who were dissatisfied with their quality of vision and either had residual myopia, hyperopia, or mixed astigmatism were included in the study. The indications were: 1) small origina

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The author has no financial interest in the materials presented herein.

Presented in part at the Sixth International Congress on Wavefront Sensing and Optimized Refractive Corrections, February 11-13, 2005, Athens, Greece.

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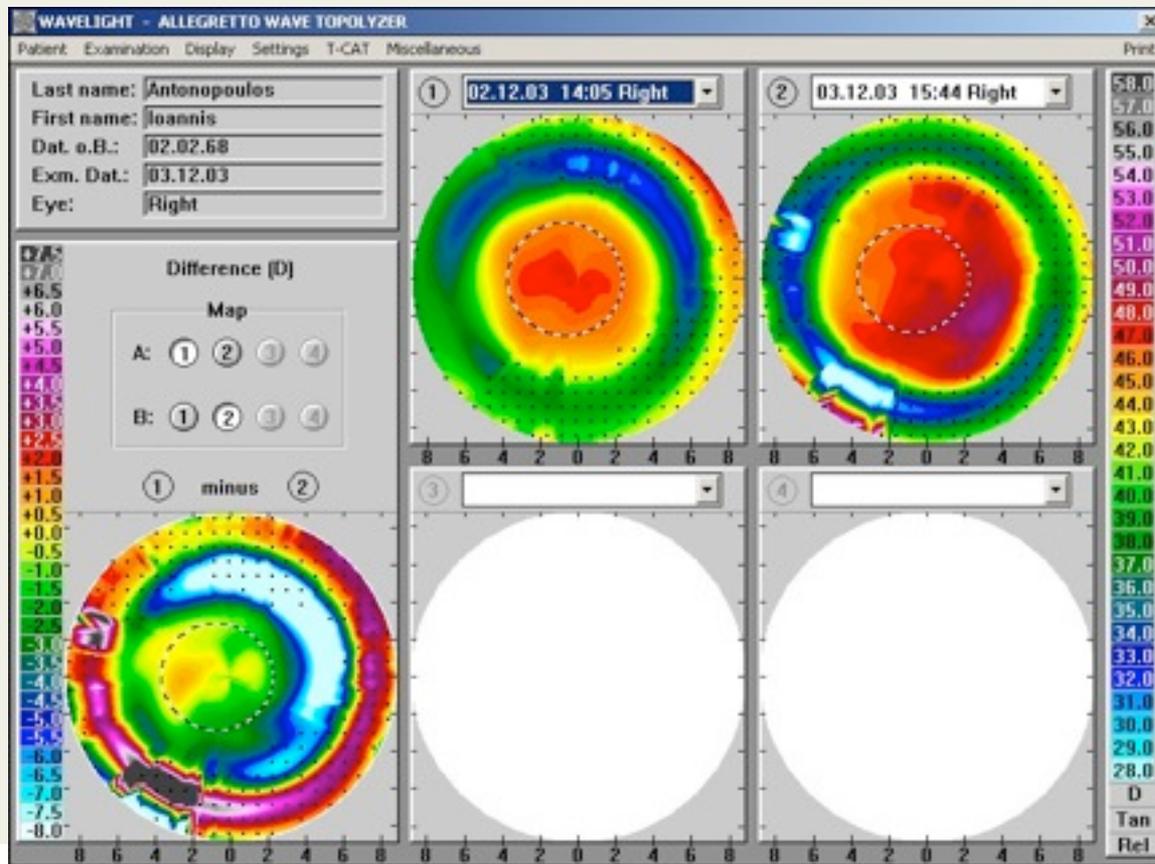
Journal of Refractive Surgery Volume 21 September/October 2005

55



Enlarging optical zone- Hyperopia

S/p LASIK for +4.50, now +1.00 and night vision
down C3, s/p topo-guided CS=C7



Topography-guided hyperopic and hyperopic astigmatism femtosecond laser-assisted LASIK: long-term experience with the 400 Hz eye-Q excimer platform

Anastasios John
Kanellopoulos

Department of Ophthalmology,
New York University Medical School,
New York, NY, and LaserVision.gr
Eye Institute, Athens, Greece

Long-term safety and efficacy follow-up of prophylactic higher fluence collagen cross-linking in high myopic laser-assisted in situ keratomileusis

Anastasios John
Kanellopoulos

LaserVision.gr Institute, Athens,
Greece, and New York University
Medical School, New York, NY, USA

Clinical Ophthalmology 20124:895-901
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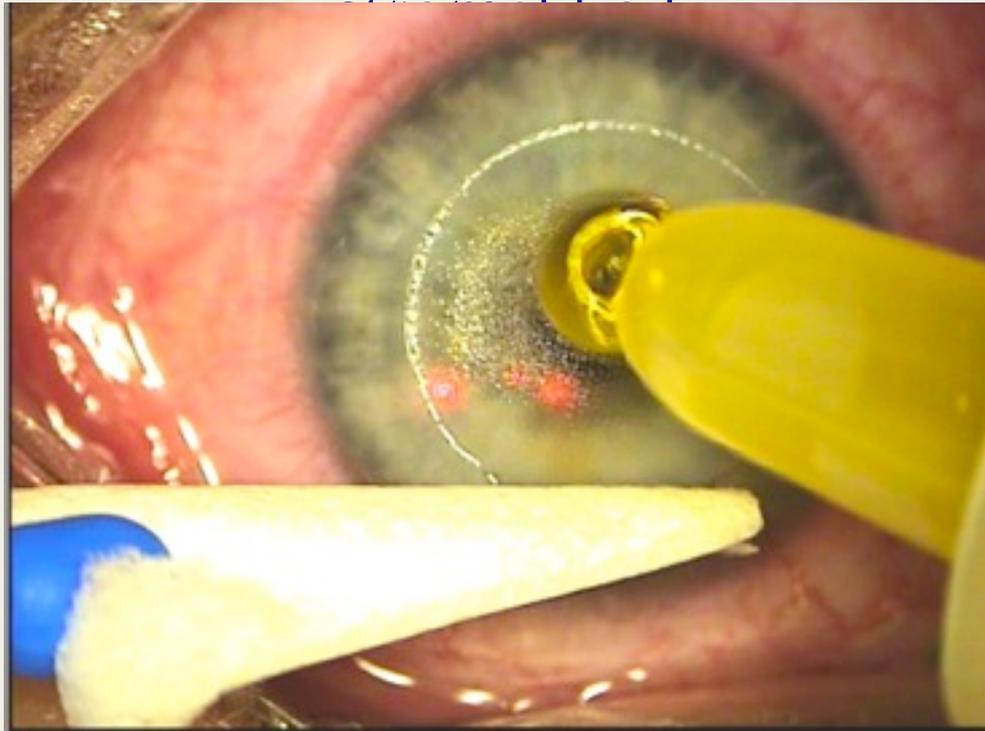
Clinical Ophthalmology 20124:1125-1130
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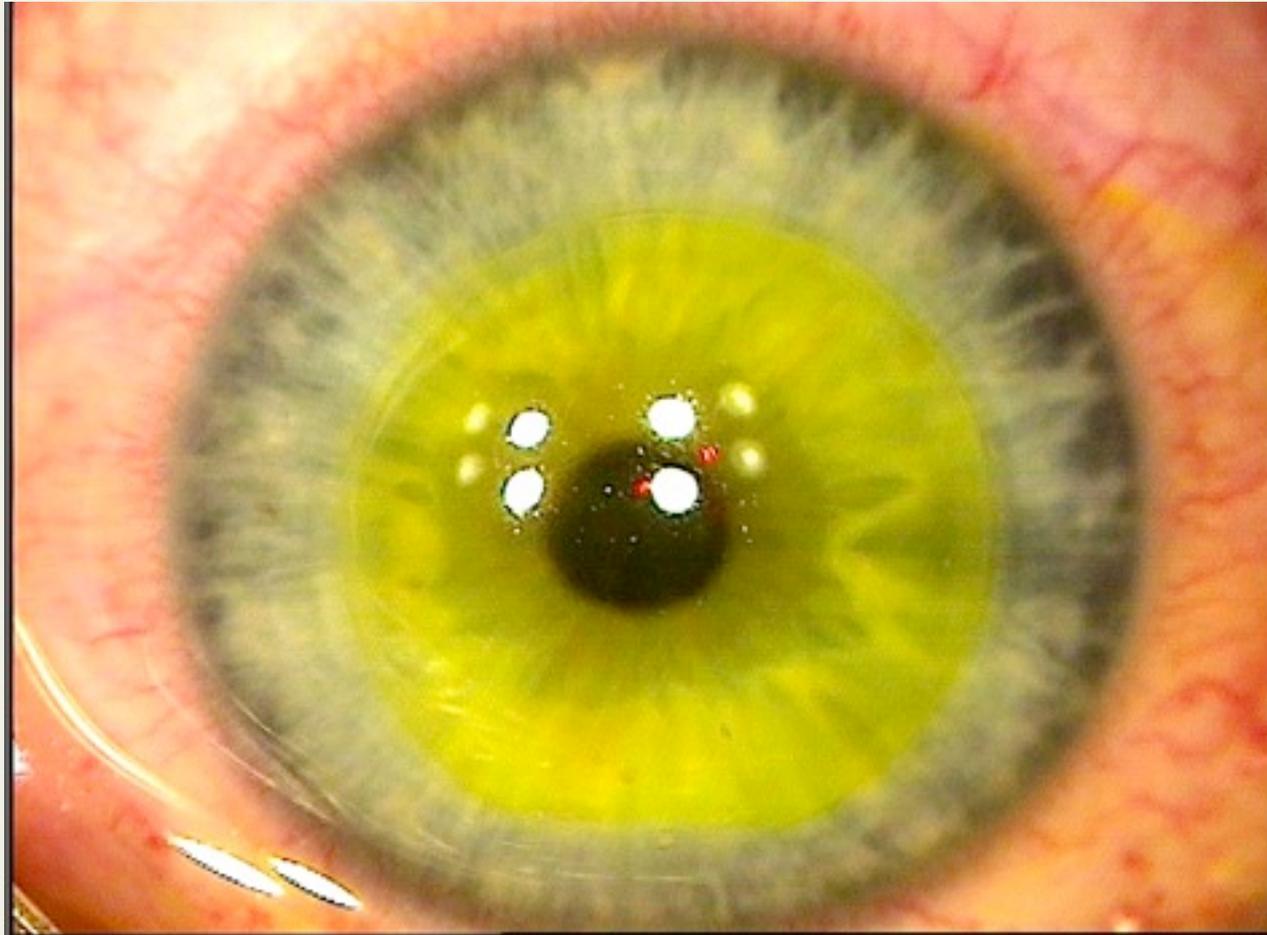
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A drop of 0.1% Vibex Rapid (no dextran) riboflavin sodium solution, just prior to its spread over the exposed



Flap repositioned following stromal soak with riboflavin, that is now visible as yellow tinge in the stroma



Methods

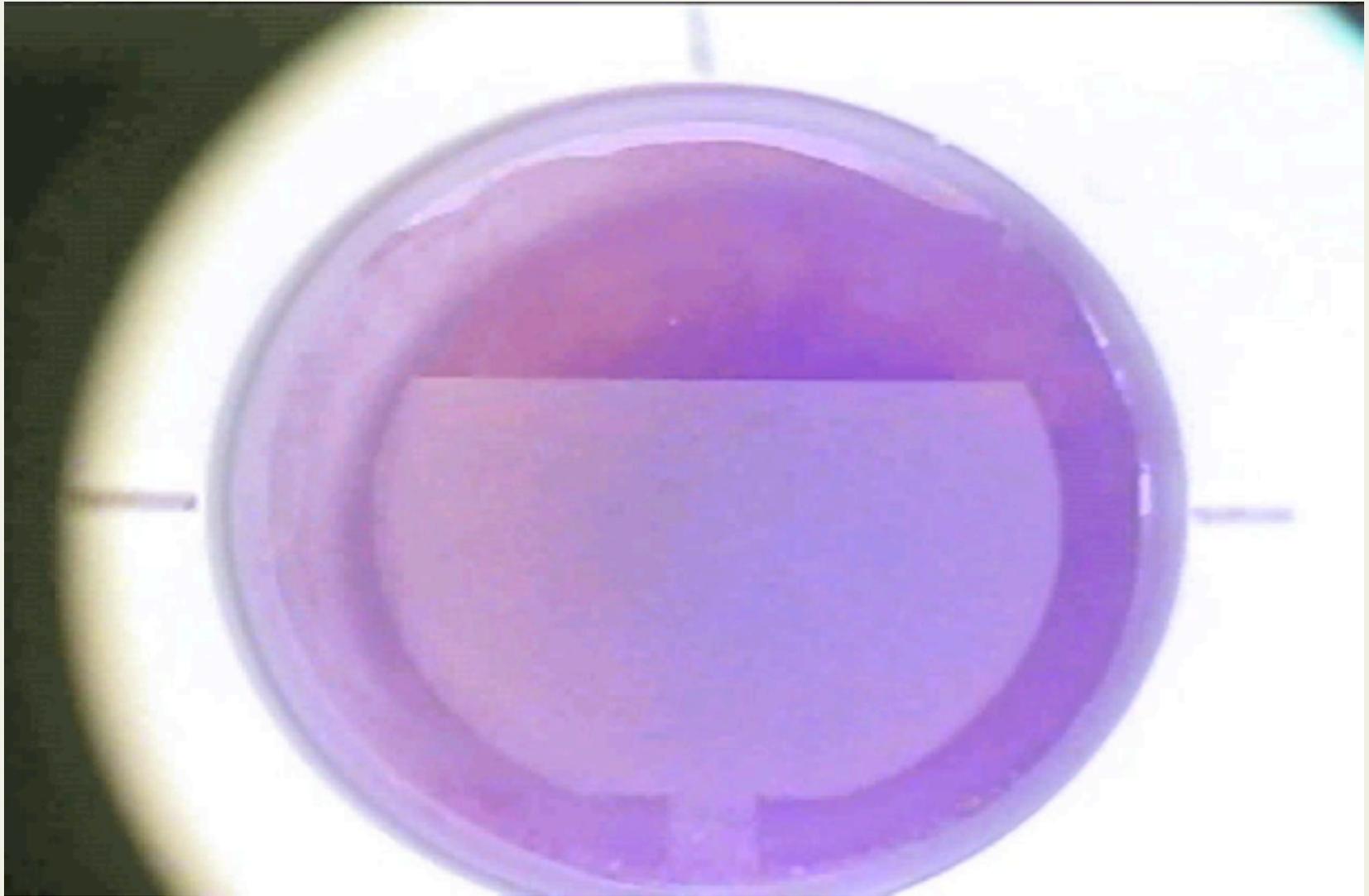
- 47 consecutive hyperopic and hyperopic astigmatic bilateral topography-guided LASIK patients were randomized to receive 90” of 30mW/cm² CXL after in-the-flap administration of a single drop of 0.1% Vibex Rapid riboflavin solution.
- All cases were treated topography-guided with the Alcon Refractive suite: FS200 femtosecond and EX500 excimer lasers. Peri-operative refractive error, OCT, keratometric, topographic and topometric measurements were evaluated
- mean follow-up of 24 months (22-35).



Results

- Mean sphere was +3.25D, Cyl: -1.75D. The CXL cases demonstrated a mean regression from treatment of +0.22D (diopters), the non-CXL cases: + 0.82 D, showing a very strong statistically significant difference even in the first 6 months despite the expected flattening effect of CXL.



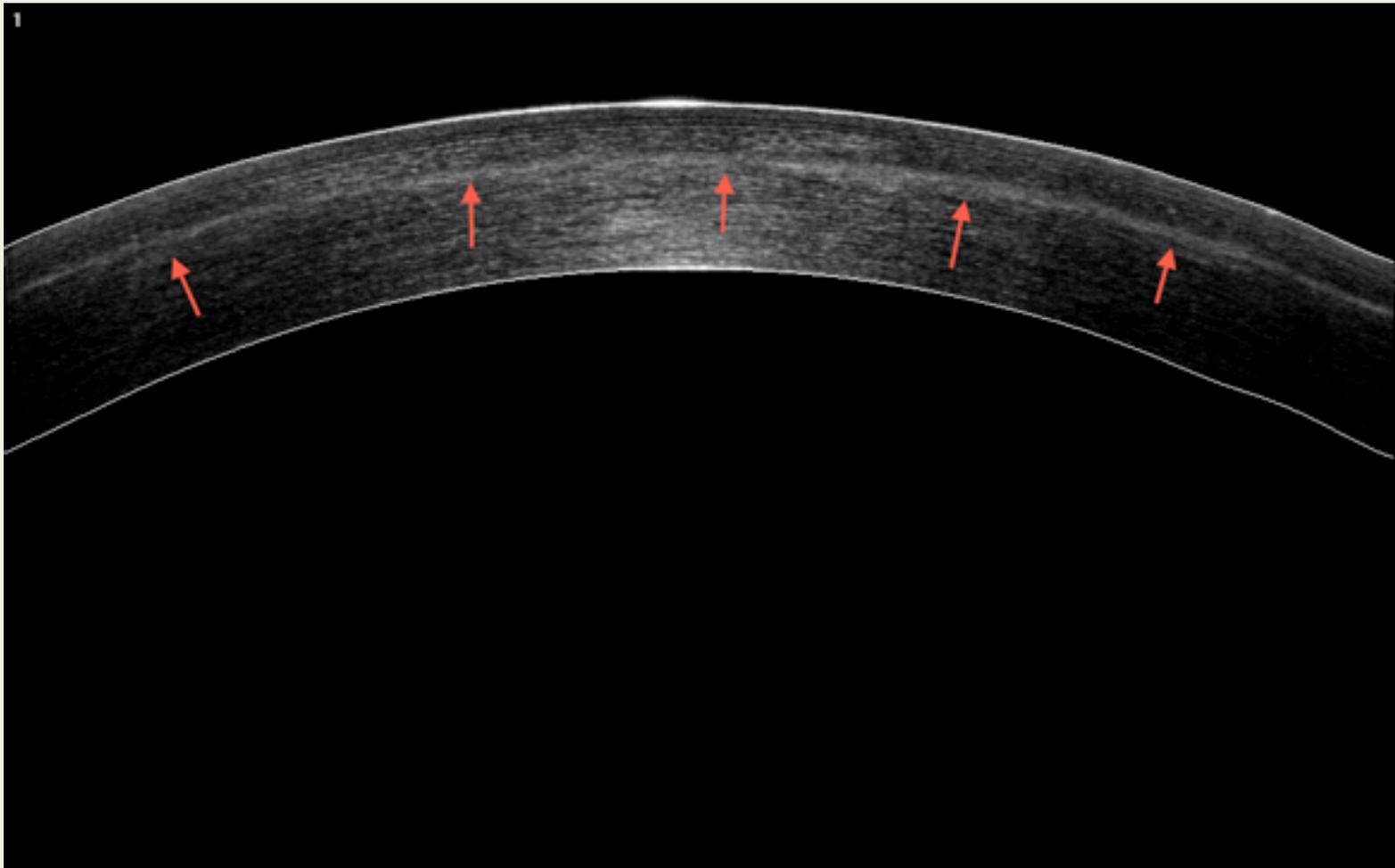




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CXL evidence viewed in corneal OCT



Comparison of

Epithelial remodeling and CXL



HOME UPDATES PAPERS HISTORY MODELING COMMENTARY LINKS CONTACT

Continuous Tension, Discontinuous Compression: A Model for Biomechanical Support of the Body

The following is the text of an address made before the North American Academy of Manipulative Medicine in 1980. Since then, refined and upgraded editions have been presented to the following: Medical College of Virginia, Anatomy Department of Howard University, The Paleontology Society of the Smithsonian Institution, the Alliance for Engineering in Biology and Medicine (AEBM, 1981), International Society for the Study of the Lumbar Spine in Toronto June, 1982. (Reprinted from the Bulletin of Structural Integration, Vol. 8, No. 2: Spring-Summer 1982) and numerous other venues.

It is only in recent history when we have developed newer materials that we have recognized that tension forces can play a significant role in the integrity of structures. However, engineers use tension mainly as a support system for compression loads. In humans, McNab, Farfan, White and others recognize that tensional components of muscles and ligaments probably play a role in spinal support, but only Kirkby and Robble felt that at times tension may be the major support force of the spine. Robble, however, still believes that the spinal column is capable of functioning only as a "stack of blocks" and Kirkby feels that only when the body is properly "balanced" in the gravitational field does tension function as the major support.

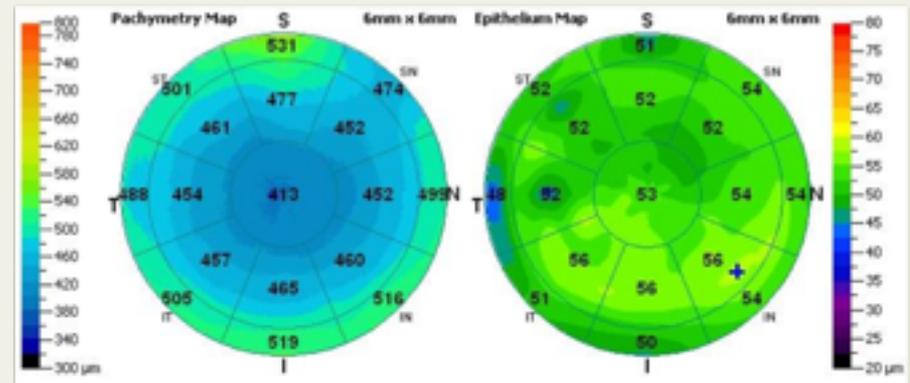
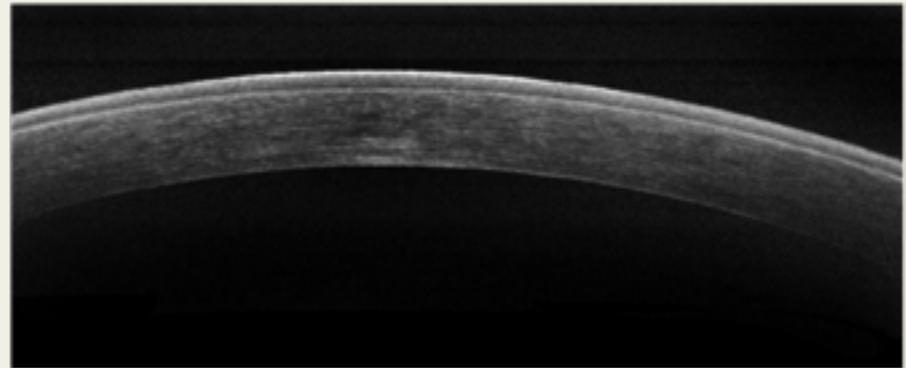
It is the author's contention that only in failure does the spinal column function as a "stack of blocks." The support system of the spine, and indeed the remainder of the body as well, is a function of continuous tension, discontinuous compression, so that the skeleton, rather than being a frame of support to which the muscles and ligaments and tendons attach, has to be considered as compression components suspended within a continuous tension network.

Since the spine is a mechanical structure, investigators have used mechanical models to attempt to

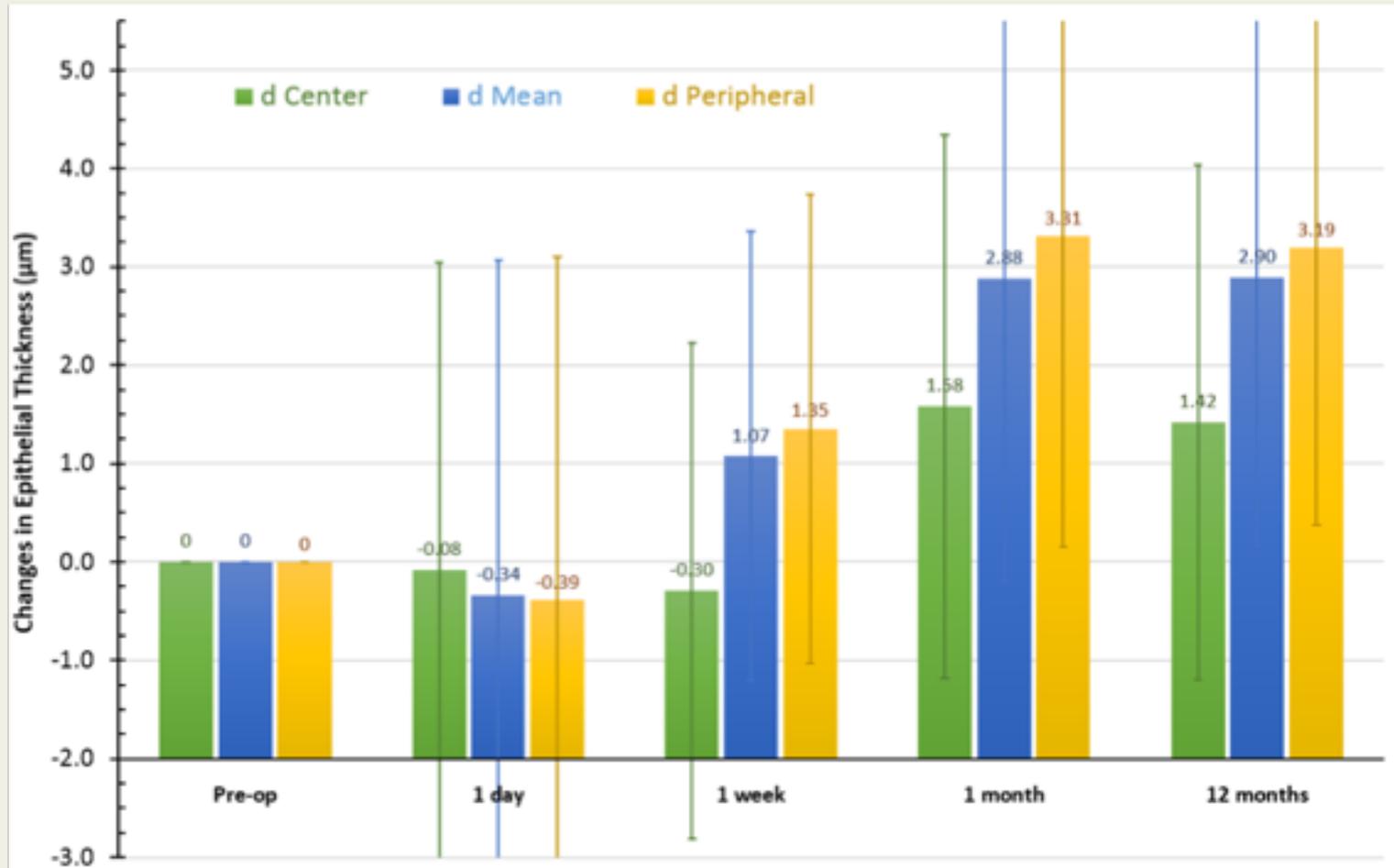


Epithelium remodeling in LASIK Xtra

Top, AS-OCT high-resolution cross-sectional meridional image of and bottom, detail from of the analysis and report software main report, showing corneal and epithelial three-dimensional pachymetry maps over the 6 mm corneal diameter. The symbol * indicates thickness minimum (both corneal and epithelial maps), and the symbol + thickness maximum (epithelial map only). The specific patient (right eye) received LASIK Xtra treatment for -8.00 D of sphere and -0.25 D of astigmatism, and was imaged one month postoperatively.



Average change in epithelial thickness at the center (d Center, green columns), on the mean over the 6 mm diameter (d Mean, blue), and on the 5 mm peripheral zone (d Peripheral, yellow), in comparison to the preoperative baseline levels at one day, one week, one month, and one year (12 months) postoperatively. Error bars indicate the standard deviation. All units in μm .



Conclusions

These preliminary data suggest that the combination of CXL in hyperopic LASIK may offer a very significant synergy in efficacy, suggesting that hyperopic LASIK long term regression may be more related to a cornea biomechanical change and less to latent hyperopia.



Ongoing studies:

- Long term epithelium response
- Light scatter: C-quant and OQAS HD analyzer HD from Visiometrics-preliminary data show no difference in liht scatter aftr first week with LASIK Xtra

