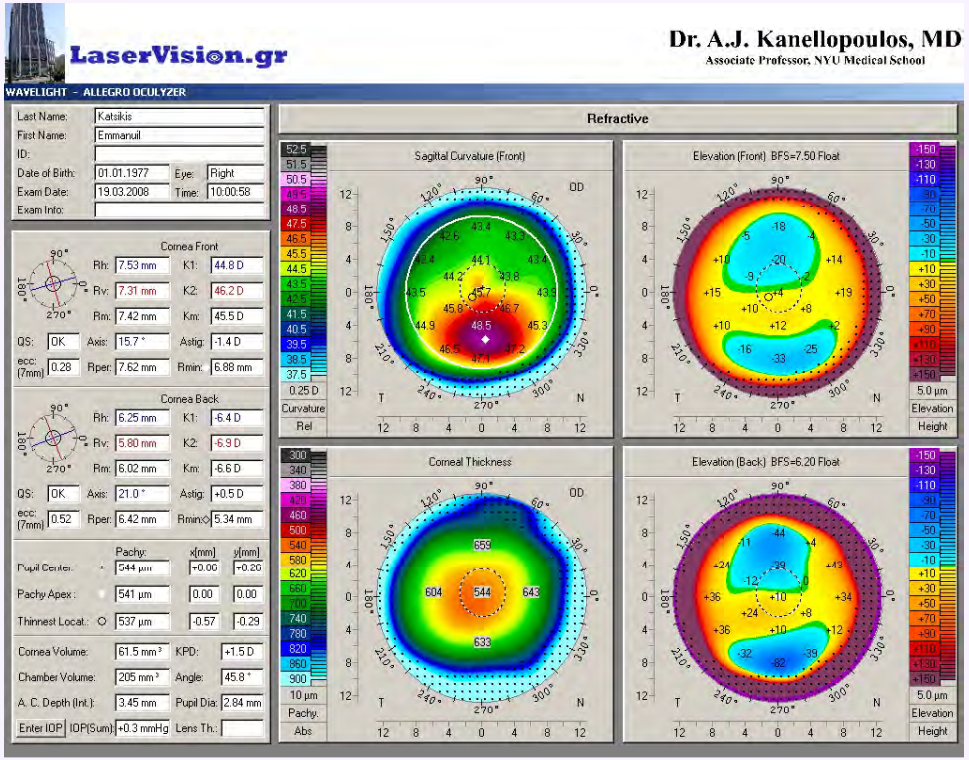
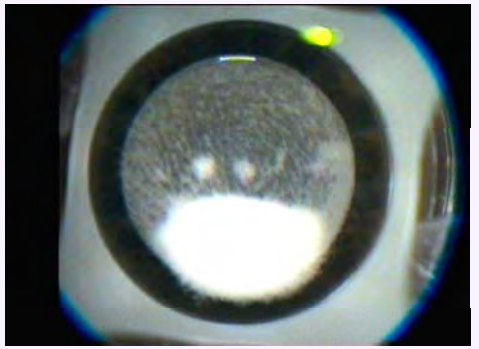
31y/o -7.50 -2.5 x165, 537 um
LASIK?

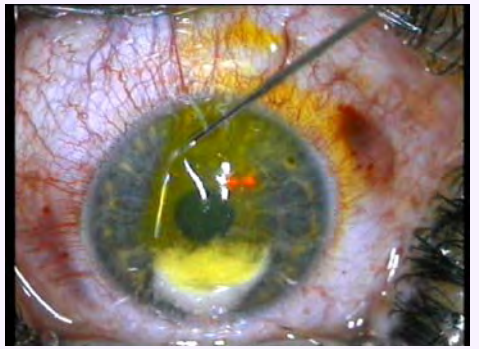
AAO 07:
Collagen cross-linking with riboflavin Intralase pocket



Intralase pocket



0.1% riboflavin



Shorter duration, higher ultraviolet A irradiation (UVA) fluence collagen cross-linking (CCL) for keratoconus (KCN)

A. John Kanellopoulos, MD

From the: New York University School of Medicine, Manhattan Eye, Ear and Throat Hospital, New York, NY, USA
Laservision.gr Institute, Athens, Greece

LaserVision.gr

Background:

We have presented our experience over the last 6 years in using this entity in its standard form in past AAO metings. With goal to shorten the duration and potentially increase efficacy we opted to study a model of CCL of higher UVA light intensity (from 3mW to 7 mW/cm2) and the same adjunct 0.1% topical riboflavin sodium phosphate solution.

Objective :To evaluate the safety and efficacy of higher UVA fluence and shorter duration for collagen cross-linking in KCN.

Design: Prospective, randomised comparative case series.

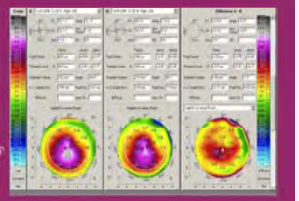
Methods: 15 patients with bilateral keratoconus were studied. All cases were evaluated for UCVA, BSCVA, refraction, keratometry changes (K), topography changes, endothelium cell changes and cornea clarity. All eyes received CCL with topical 0.1% riboflavin solution drops and in regard to UVA they were randomized for each patient: 15 eyes were CCL with 7mW/cm2 for 15 minutes and the15 contra lateral eyes with 3mW/ cm2 for 30 minutes.
Mean follow up was 1.5 years

Results:

The mean improvement of UCVA was 0.2 to 0.4,
BSCVA improved from 0.4 to 0.7,
The average change of spherical equivalent was 1.5D reduction in myopia, the average change in cylinder was 2.1D reduction, The average highest keratometry was 51.2D pre-op and changed to 48.5D post-op **There was no statistical difference in the means in the 2 groups.**

	UCVA	BSCVA	Sph. EQ change	Cylinder change	ECC change	Topo changes	Complications
7mW	0.2	0.3	1.5D	2.2D	100	2.3	0
3mW	0.2	0.3	1.4D	2D	200	2.1	0

Example case pre- and post-op Pentacam changes along with slit lamp photo of cross-linking changes in the cornea 3 months later



Conclusions

Shorter duration, higher UVA fluence CCL appears to be as safe and as effective in stabilization of ectasia in KCN.
It may cause less cell toxicity due to lesser cornea dehydration (less time) and shorter exposure of keratocytes and endothelial cells to UV light along with riboflavin. Further studies are needed to validate this data.

Safety and efficacy of prophylactic, ultraviolet A irradiation (UVA) cross-linking (CCL) combined at the completion for high risk myopic PRK cases.

Dimitrios Miltsakakis, MD[1], and A. John Kanellopoulos, MD[2-4]

1: Geniko Kratiko Hospital, Athens, Greece, 2: New York University School of Medicine,
3: Manhattan Eye, Ear and Throat Hospital, New York, NY, USA, 4: Laservision.gr Institute, Athens, Greece

LaserVision.gr

Background:

Cornea ectasia is a feared complication in laser refractive surgery. It appears more common in irregular corneas such as forme fruste keratoconus and/or when excessive cornea thinning is mandaded for the correction of the refractive error with the excimer laser treatment. Over the last 6 years we have studied in over 800 cases the use of collagen cross-linking as a means of stabilizing cornea ectasia. We have presented in several past AAO meetings the application of CCL in keratoconus and cornea ectasia cases following laser refractive surgery

Objective: To evaluate the safety and efficacy of ultraviolet A irradiation (UVA) cross-linking (CCL) combined at the completion for high risk myopic PRK cases, such as myopia over 6 diopters and/ orforme fruste keratoconus, or pre-op thickness less than 490 microns
Design: Prospective, non-comparative case series.

Methods

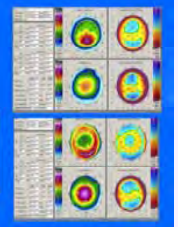
45 PRK cases had treated with the Alcon Allegretto Wave excimer platform were evaluated peri-operatively for:
UCVA, BSCVA, refraction, keratometry (K), topography (T), total pachymetry (tP), endothelium(ECC).
All eyes at the completion of the PRK were CCL with 7mW/ cm2 for 10 minutes along with application of 0.1% riboflavin solution.
Mean follow up was 1.6 years (1 to 4)

Surgical Methods: Following our routine PRK technique (epithelial removal with diluted ETOH, 20 seconds of 0.02% MMC) 0.1% topical riboflavin sodium phospate (Priavision, USA) was administered and the cornea surface irradiated with UVA light (Priavision, USA) of 7mW /cm2 fluence for 15 minutes. A bandage contact was used for 4 days, topical ofloxacin for 10 days and topical prednisolone, along with oral vitamin C for 2 months.

Results:

Mean values: UCVA changed from 0.2 to 1.2 (20/100 to 20/15),
BSCVA 1.1 to 1.2, spherical equivalent -6.25D to +0..2D,
Keratometry: 45.5D to 39D, Total Pachymetry: 495 to 385,
Endothelial Cell Count: 2750 to 2800.
None of the cases developed signs of ectasia

Example case pre-op and post-op



Conclusions

UVA CCL for high risk PRK cases appears to be a safe and effective prophylactic adjunct treatment against potential ectasia in the average 1.6 years of follow-up in this case series.
It required no nomogram adjustment in our hands and did not alter the routine healing pattern that our PRK cases had prior to this treatment.

Purpose

Experience with cross-linking since 2002

Treated over 100 ectasia cases

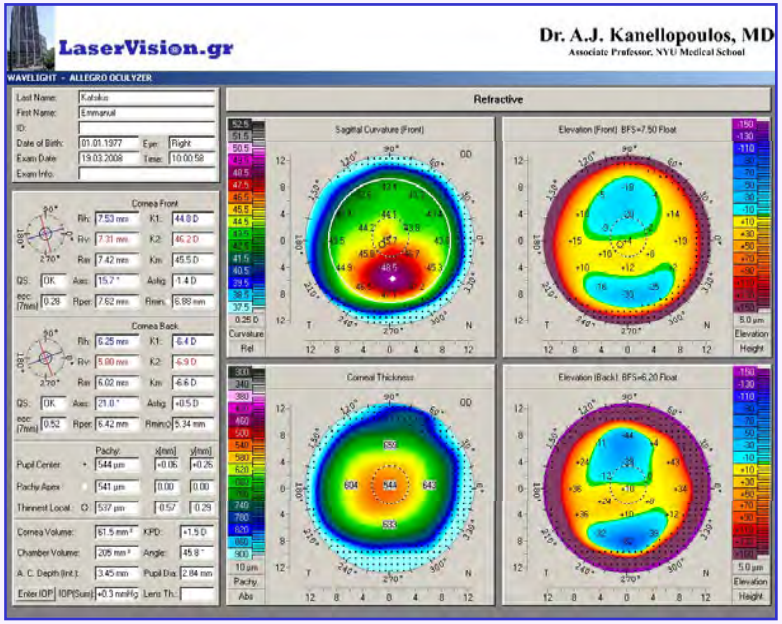
Over 700 KCN cases

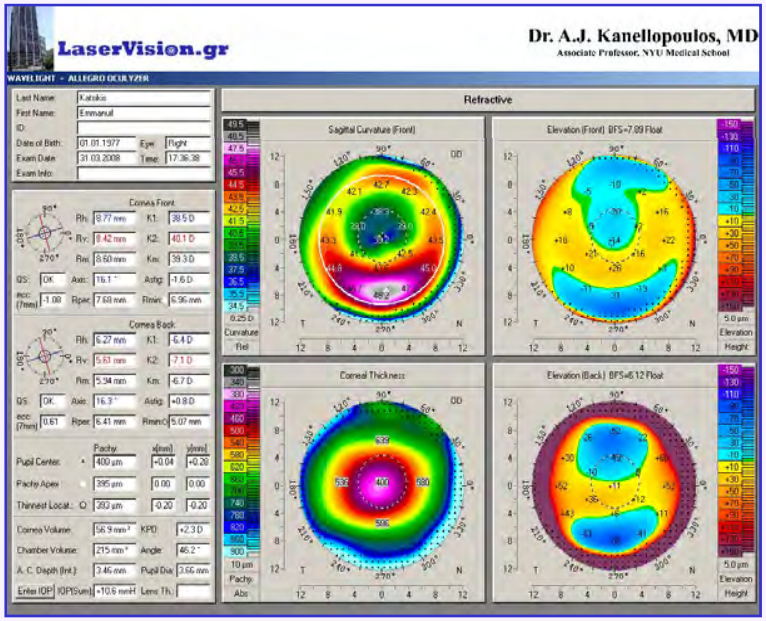
Over 150 primary refractive surgery cases

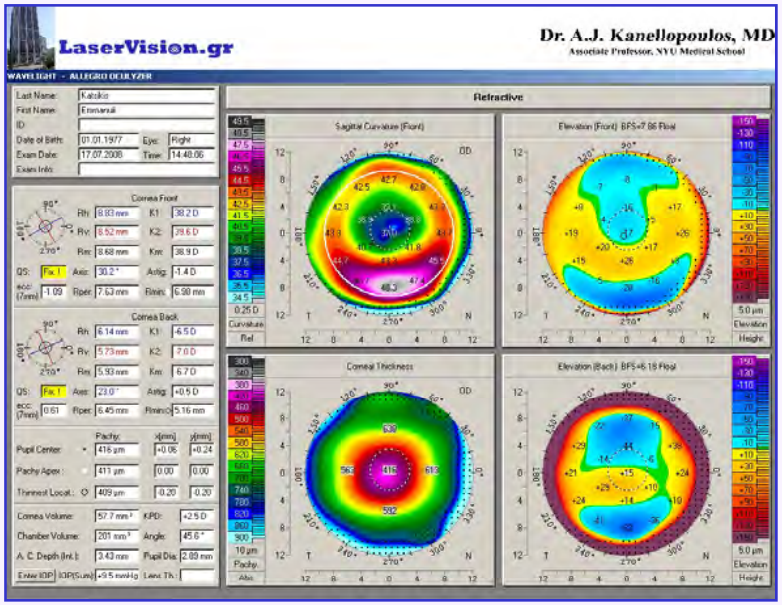
To evaluate the safety and efficacy of ultraviolet A irradiation (UVA) cross-linking (CCL) combined at the completion for high risk myopic LASIK cases
Setting: Laservision.gr Institute , Athens, Greece

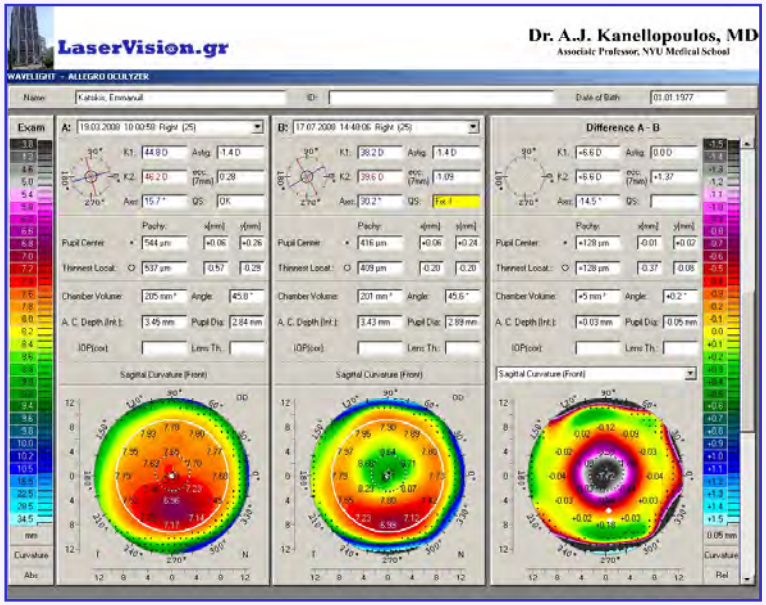
Methods

- 25 LASIK cases treated with a FS60 100 micron Intralase flap and the Wavelight excimer *Pentacam –guided* platform were evaluated peri-operatively for UCVA, BSCVA, refraction, keratometry (K), topography(T), total and flap pachymetry (tP & fP), endothelium(ECC).
- All eyes at the completion LASIK were CCL with *7mW/cm2* for 10 minutes following a *single* instillation of 0.1% riboflavin in the flap interface.
- Mean follow up was 1.5 years (1 to 3)









Pre-(537um)
BSCVA 20/30
1 month
(383um)
5months
(408um)
UCVA 20/20

www.brilliantvision.com

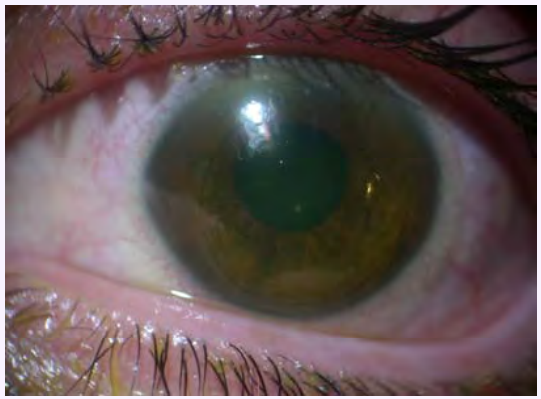
Results

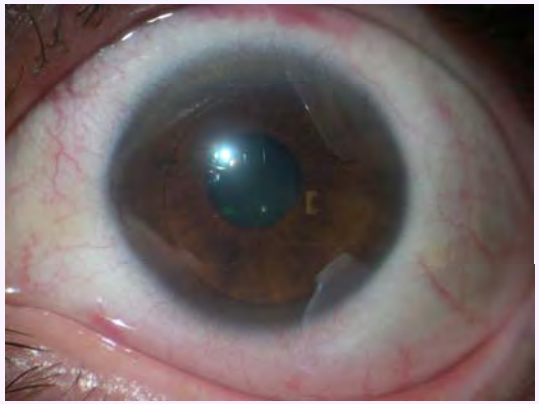
Mean values:

- UCVA changed from 0.2 to 1.2,
- BSCVA 0.1 to 1.2,
- spherical equivalent -7.5D to -0.2D,
- Cyl -1.75 to -0.37

- K: 44.5D to 38D,
- Flap P: 105,
- Total P: 525 to 405,
- ECC: 2750 to 2800.
- No ectasia
- 1 1/2 year follow-up (1-2.5)

Immediately and next day





Conclusions

- Prophylactic collagen cross-linking (CCL) for "high risk" LASIK cases appears to be a safe and effective adjunct treatment against potential ectasia.
- This application may be viewed as the prophylactic customization of the biomechanic behavior of the cornea collagen.
- Not tested- but may make flap re-opening difficult.
- CCL course: IC 243 Room B 408 315-530 PM
- It appears not to affect our treatment nomogram as all cases were within treatment goal as with this novel technique we did not encountered any refractive surprises
- This adjunct cross-linking technique may have wider application in LASIK surgery in the future and potentially in therapeutic LASIK surgery under 18 years of age.