

LONG TERM COMPARISON OF SEQUENTIAL VS. SIMULTANEOUS COLLAGEN CROSS-LINKING (CXL) AND TOPOGRAPHY-GUIDED PRK (tPRK) FOR KERATOCONUS (KCN)

A. John Kanellopoulos, MD

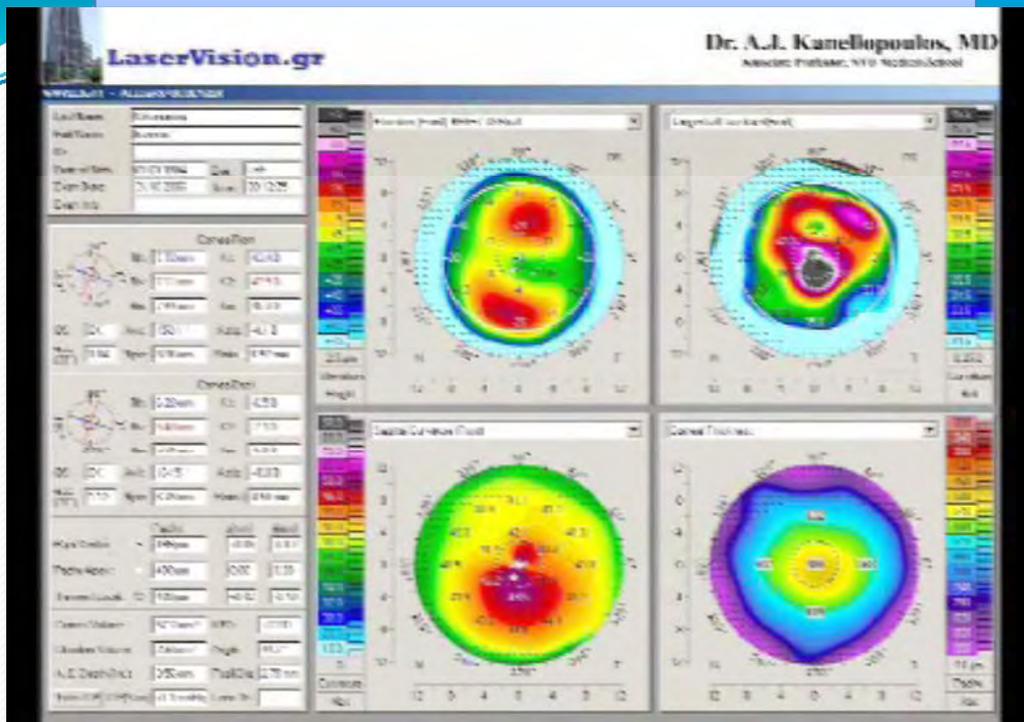
*Director, Laservision.gr Institute, Athens, Greece
Clinical Associate Professor NYU Medical School, NY
Manhattan Eye, Ear and Throat Hospital, New York, NY*

Purpose: Long term evaluation of the safety and efficacy of sequential to simultaneous collagen cross-linking (CXL) and topography-guided PRK (tPRK).

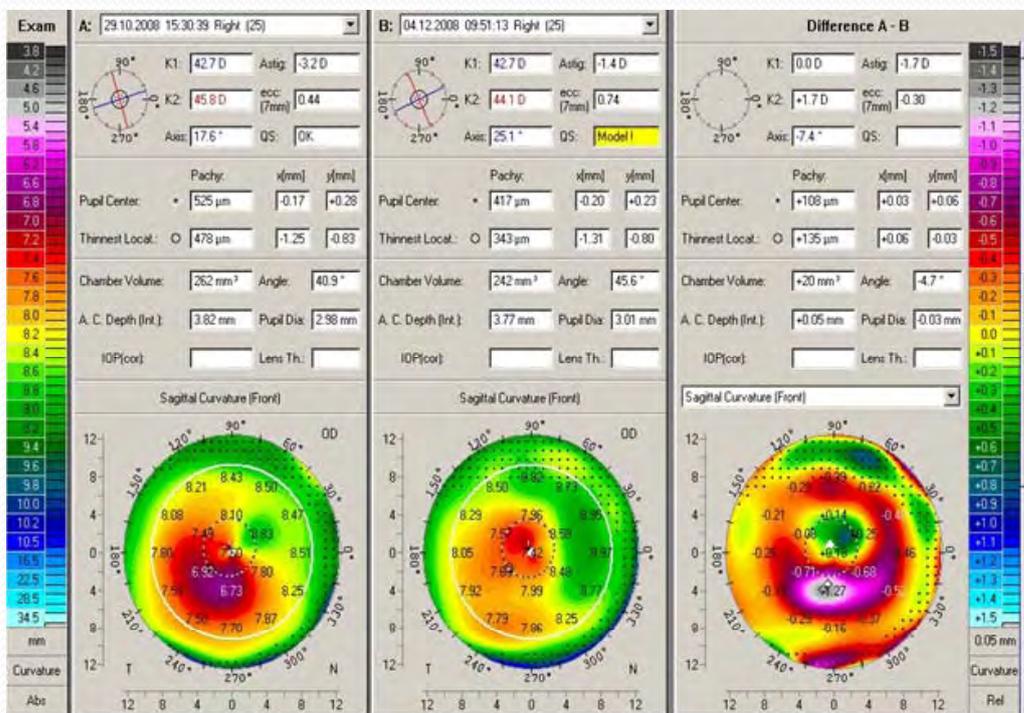
•Methods:

- 325 KCN cases were evaluated before and following both treatments for age, sex, UCVA, BSCVA, refraction, keratometry (K), topography, minimal pachymetry, endothelium (ECC), cornea haze and ectasia stability. 127 eyes (group A) had tPRK at least 6 months following CXL, 198 eyes (group B) had first tPRK combined with CXL. Mean follow-up was 36 months (24 to 68).
- 1-Topo-customised PARTIAL surface ablation
- Epithelial removal: 6.5mm 50nm PTK
- Custom topography-guided treatment utilizing Wavelight topo-guided software (topo or oculink)
- (75% cylinder, some or all sphere limited by cornea thickness up to 50 microns, OZ at least 5mm)
- MMC 0.02% for 20 sec
- 2-Then UVA CXL 3mW/cm² for 30 minutes with riboflavin 0.1% drops
- Follow-up 18-36 months

Surgical technique



From BSCVA 20/40 to UCVA 20/20



Results:

Group A: The mean improvement of UCVA was from 0.12 (+/- 0.3) to 0.35 (+/- 0.25), BSCVA from 0.42 (+/- 0.25) to 0.68 (+/- 0.22). Spherical equivalent reduction (SER): 2.5 diopters (+/- 1.2D), Mean haze score: 1.2 (+/- 0.5), Mean keratometry reduction: 2.75 diopters (+/- 1.3D).

Group B: UCVA from 0.11 (+/-0.2) to 0.5 (+/-0.2), BSCVA: From 0.41 (+/- 0.3) to 0.78 (+/-0.16). SER: 3.2 diopters (+/-1.4D), Mean haze score 0.5 (+/-0.3), Mean keratometry reduction: 3.5 diopters (+/- 1.3). ECC was stable in both groups.

Statistically, group B did better in all fields evaluated: change in: UCVA, and BSCVA, SER, cornea clarity (less post-op haze), mean keratometry reduction.

Conclusions:

Sequential tPRK and CCL appear to be superior to the rehabilitation of KCN.

The advantages in pre-treating with the topo-guided PRK are:

- 1-one procedure*
- 2-less PRK associated scarring*
- 3-redistribution of K strain*
- 4-No need to remove cross-linked cornea*

- This technique may prevent PK as a necessary option and may have wide application*
- Longer follow-up and further studies are necessary*

Thank you