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# Topography-guided PRK for irregular astigmatism correction in keratoconus patients using MicroScan Visum excimer laser

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## Purpose

To explore the use of the MicroScan Visum excimer laser (Optosystems, Troitsk, Russia) in topography-guided PRK performed after collagen cross-linking (CXL) in keratoconus patients

## Materials and Methods

Prospective, noncomparative study comprised 27 eyes of 27 patients  
Keratoconus grade 2,3 (Amsler-Krumeich classification)

Mean age  $28,3 \pm 5,1$  years

All eyes had standard CXL procedure 9-12 months before PRK performed with UV-X 1000 illumination system (IROC AG, Zurich, Switzerland)

Transepithelial Topography-Giuded PRK was performed with MicroScan Visum excimer laser





## Inclusion criteria for PRK

- Pachymetry at thinnest point 450 $\mu$ m or more
- Stable refraction and keratometry 6 months before PRK
- Contact lens intolerance
- Kmax up to 65D

## Examination

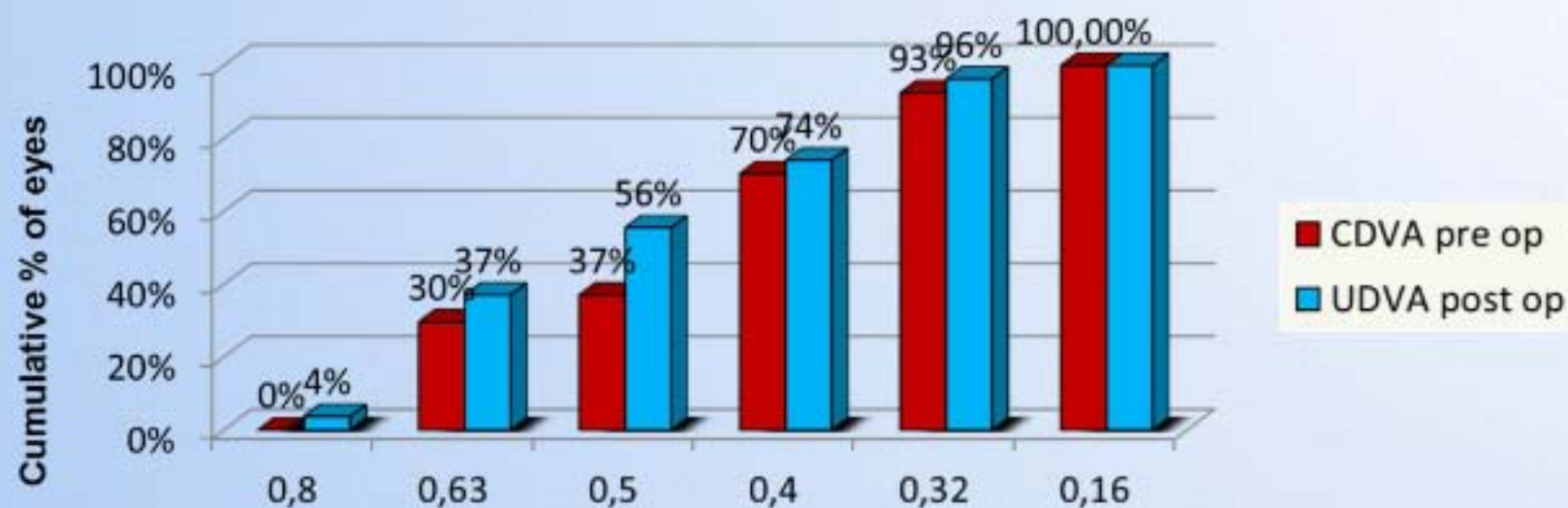
Pre op., 1 week, 1,3,6,12 months post.op.

- UDVA, CDVA
- Corneal topography (TMS-4, Tomey)
- Pachymetry (Visante OCT, Carl Zeiss Meditech)
- Ocular aberrations (OPD Scan, Nidek, Japan)
- Slit-lamp examination



## Results: Efficacy

Uncorrected Distance VA Post Op



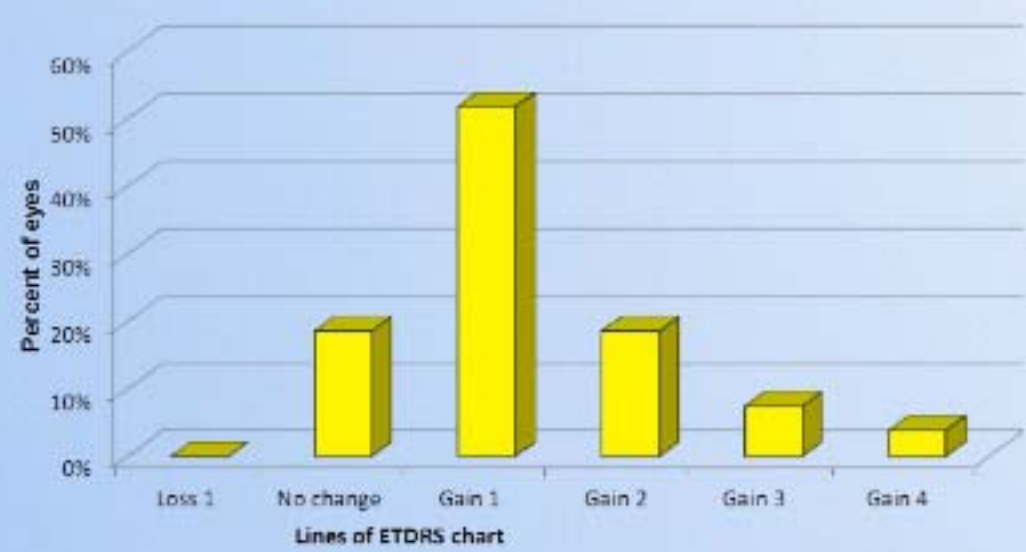
	Preop. Mean $\pm$ SD (range)	12 months postop Mean $\pm$ SD (range)
UDVA	0.09 $\pm$ 0.04 (0.05 to 0.2)	0.44 $\pm$ 0.16 (0.16 to 0.8)
CDVA	0.45 $\pm$ 0.18 (0.05 to 0.7)	0.61 $\pm$ 0.13 (0.16 to 0.9)
SE	-6.51 $\pm$ 1.49	-1.70 $\pm$ 0.35
Cyl	4.73 $\pm$ 2.67	1.81 $\pm$ 0.97





## Results: Safety

Change In Corrected Distace VA 12 months post. op



Subepithelial haze grade 1 developed in 3 cases 1,5 -2 months post.op.and disappeared by 12 months post.op.

## Corneal Topography

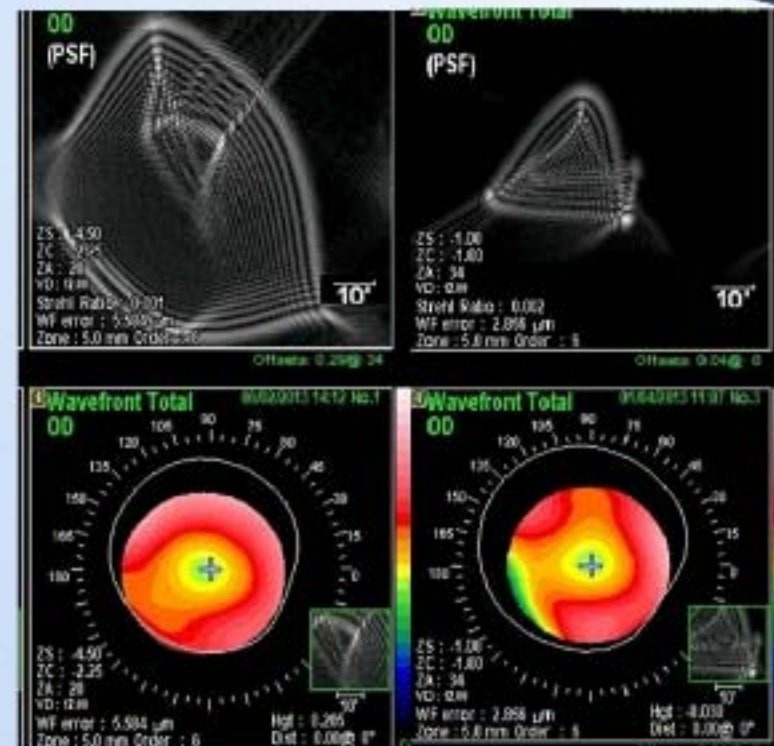
	Pre Op	12 months Post Op
<b>SAI</b>	<b>4,61 ± 0,52</b>	<b>1,71 ± 0,42</b>
<b>K max</b>	<b>53,28 ± 5,11</b>	<b>45,12 ± 3,86</b>
<b>K min</b>	<b>41,84 ± 3,60</b>	<b>42,31 ± 1,77</b>
<b>Irregularity</b>	<b>19,3 ± 3,2</b>	<b>4,72 ± 1,4</b>



## Ocular aberrations

Significant decrease of total wave front (WF) aberrations as well as improvement of PSF were noted in all cases post. op.

The main change of WF error was influenced by decrease of Low Order aberrations



## Conclusion

Topography-guided ablation performed with MicroScan Visum excimer laser appears to be safe and effective for irregular astigmatism correction after CXL in keratoconus patients