

Correlation of stromal demarcation line depth and topographic outcome after corneal cross-linking with two different treatment protocols.

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The authors have no financial interest in any of the mentioned products

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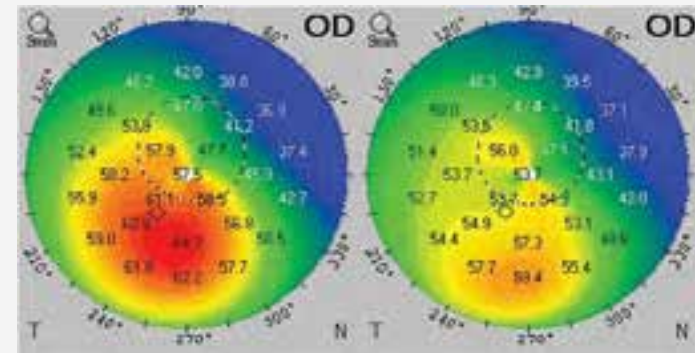
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Background

Is there a correlation between depth of the demarcation line (DL) and the flattening of the cornea?



The deeper the DL...



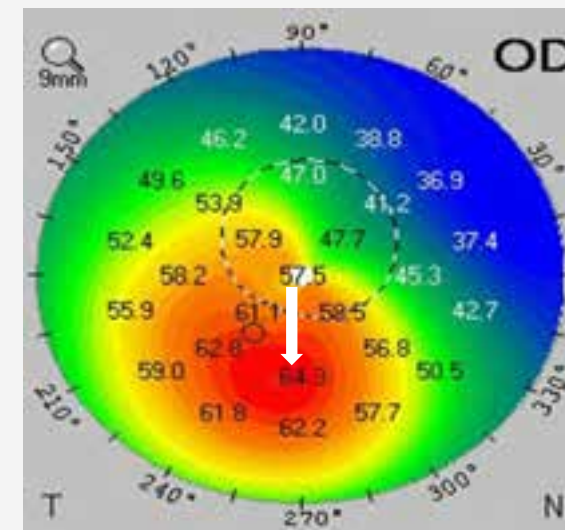
...the more the CXL effect?

Differences between treatment protocols have further supported this theory.

To date there is no data available to support this theory.

Methods

- **Studydesign:** retrospective analysis
- **Inclusion:** progressive keratoconus ($K_{max} > 48.00$ D)
- **Main outcome measures:** central stromal DL-depth (μm), K_{max} (Dpt)
- **Tomography:** (Pentacam-HR; Oculus GmbH)
- **Pearson Correlations:**
DL-depth (1 month) - ΔK_{max} (12 months)
DL/CCT Ratio (1 months) - ΔK_{max} (12 months)



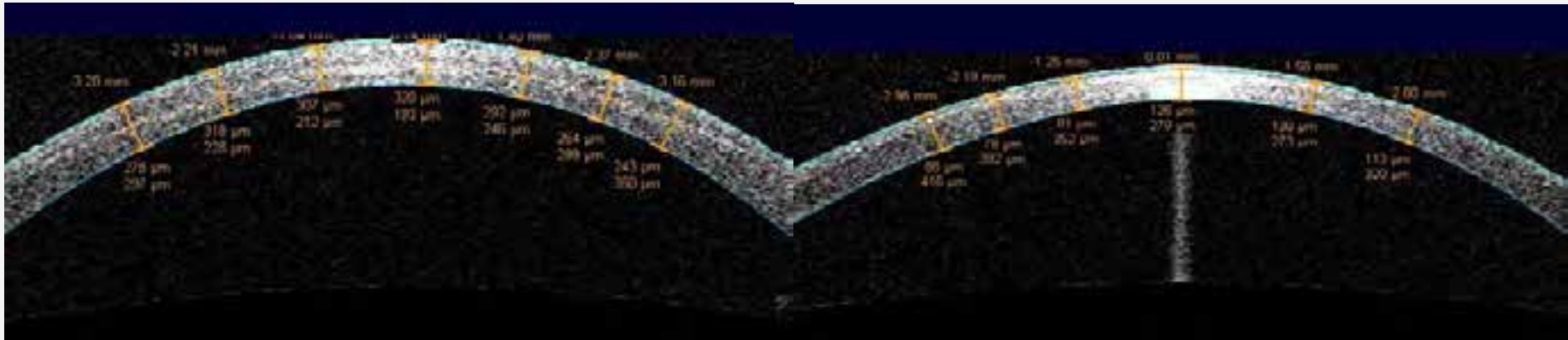
Two separate groups have been investigated in this trial.

Standard Dresden Protokoll (SDP)

- Dextran 20% - 30 Minuten
- UV-X 1000 (Innocross)
- $3\text{mW}/\text{cm}^2$ 30 minutes

Accelerated CXL (ACP)

- HPMC – 10 Minuten
- UV-X 2000 (Innocross)
- $9\text{mW}/\text{cm}^2$ 10 minutes

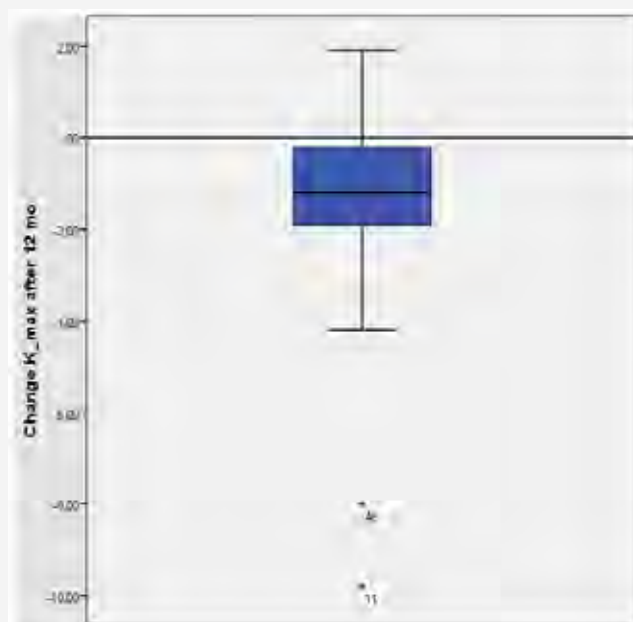


Depth of the central demarcation line: flap tool
Visante OCT (Zeiss)

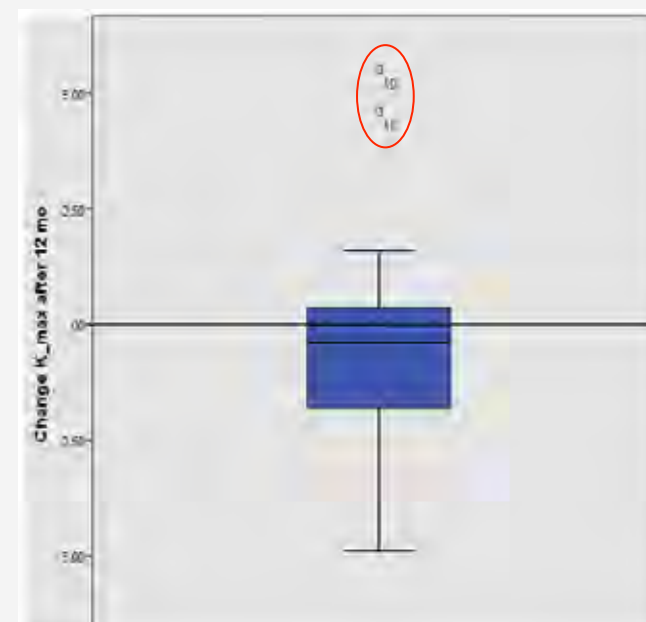
Results

	SDP	ACP
Eyes	50	43
DL-depth	326.57±76.64 μm	168.74±73.15 μm
DL/CCT	0.68±0.15	0.37±0.16
Δ Kmax (12mo)	-1.32 ± 2.20 D	-0.77 ± 2.36 D

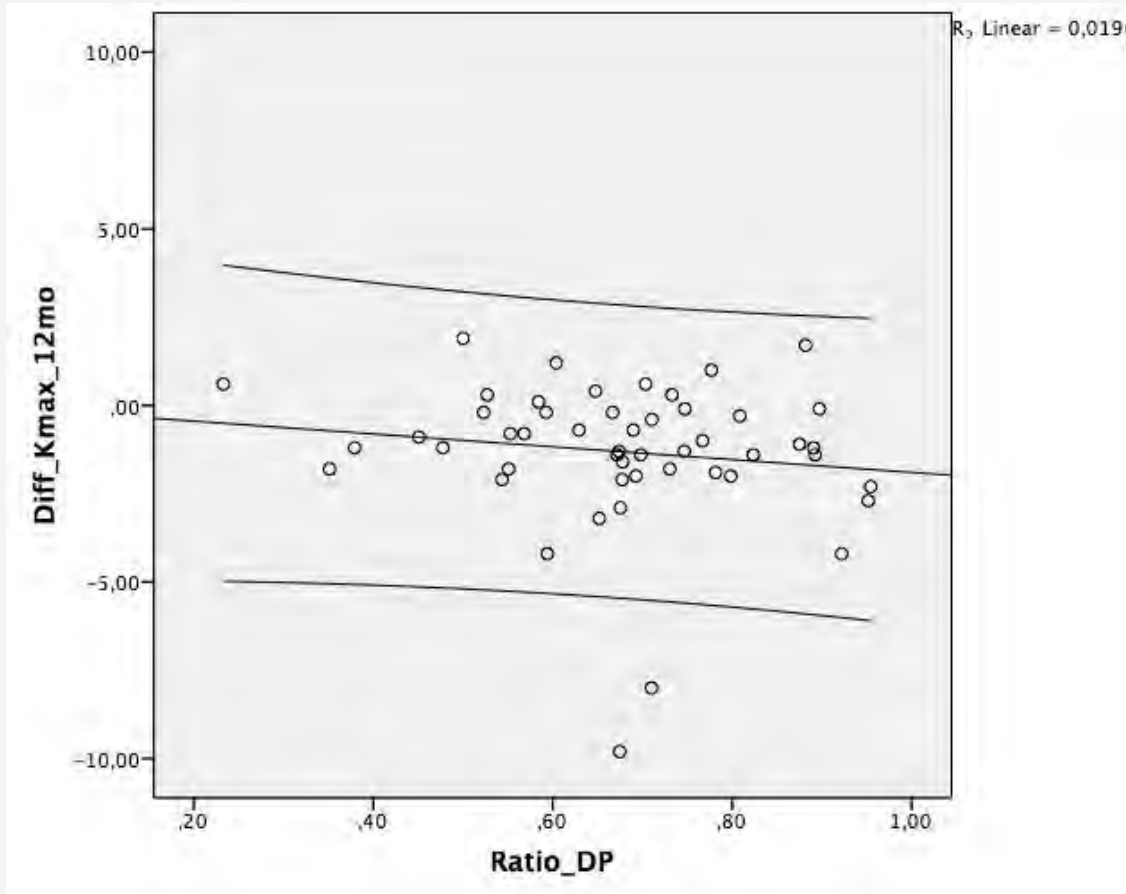
Change Kmax after 12 months (SDP)



Change Kmax after 12 months (ACP)



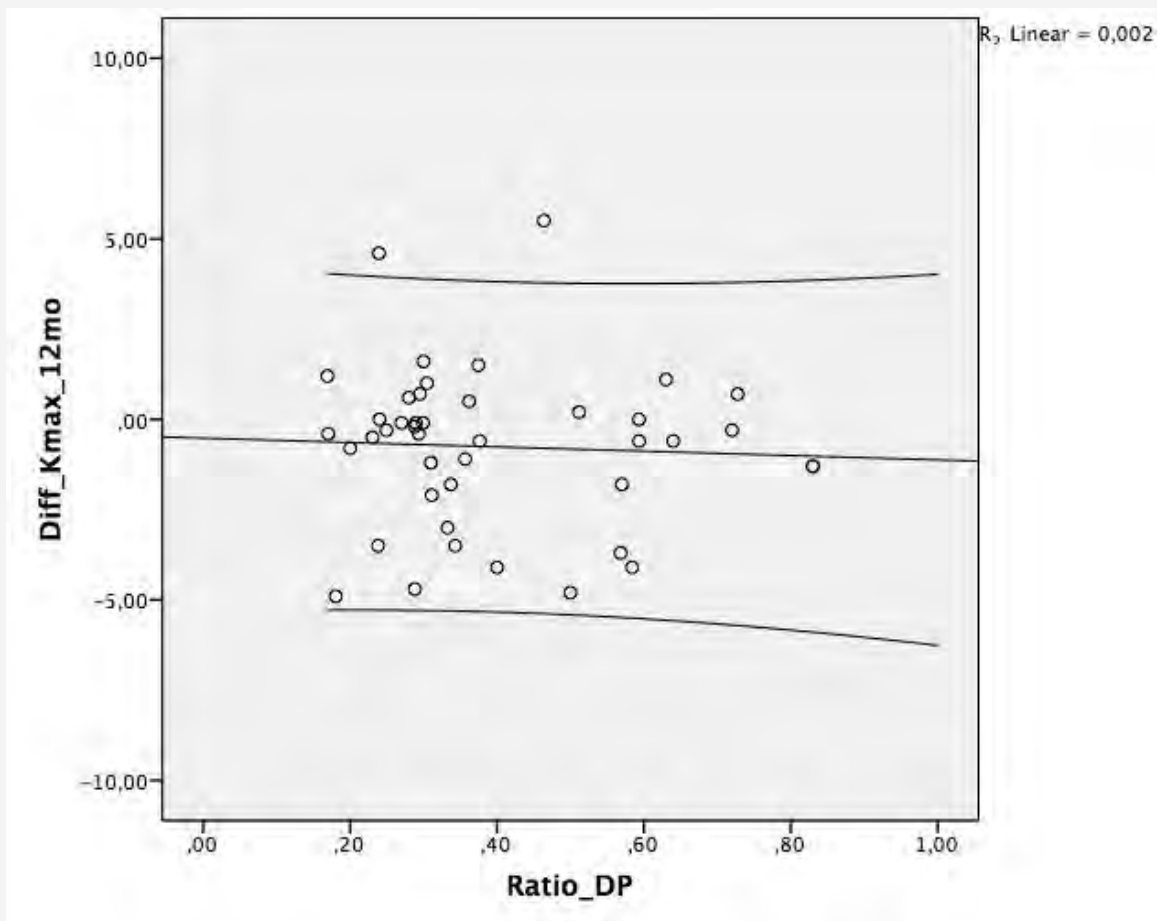
Results: standard protocol



Ratio_DP = DL depth / CCT

Correlation:
Not statistically significant ($p=0,488$)

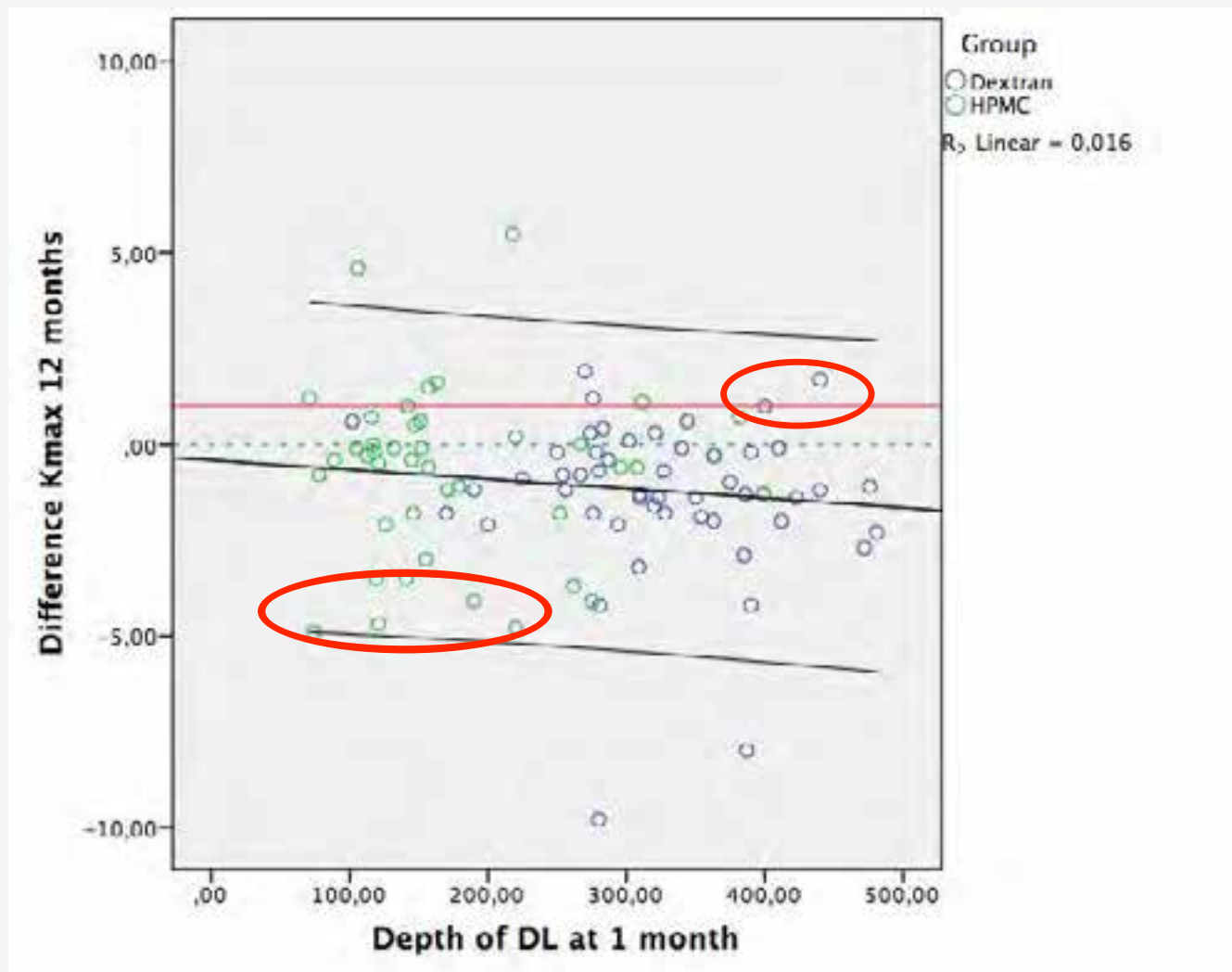
Results: accelerated protocol



Ratio_DP = DL depth / CCT

Correlation:
Not statistically significant ($p = 0,903$)

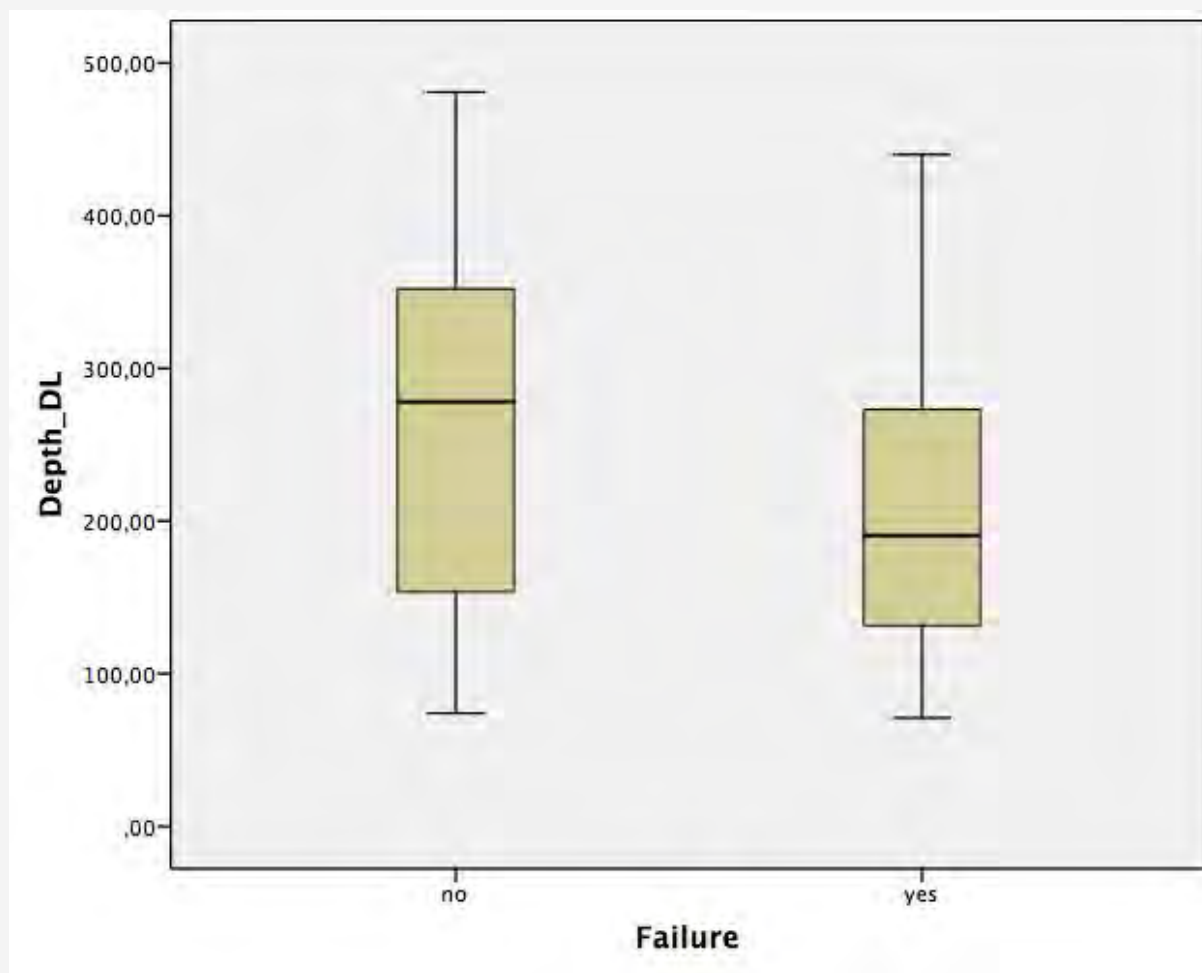
Results: pooled data



Pearson corr. = 0,127
 $p = 0,223$

Results: pooled data

Topographic failures:



$p = 0,192$

- **No correlation** ($r < 0,2$) between DL-depth and reduction of K_{\max} was found in either group.
- Accordingly, the **depth of the DL seems not predictive for the outcome** of the procedure in terms of topography change.
- Other factors (individual stromal wound healing) might influence the variable clinical outcome.