

Customized CXL

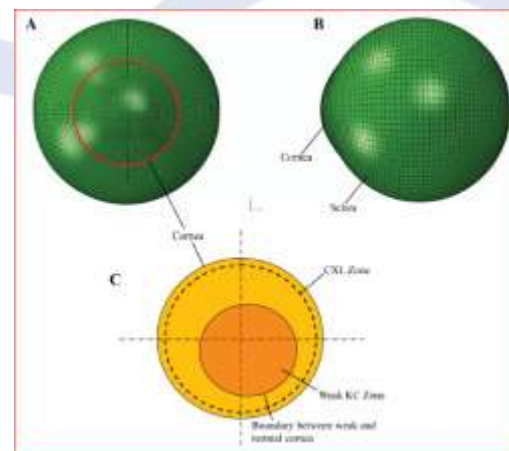
Theo Seiler

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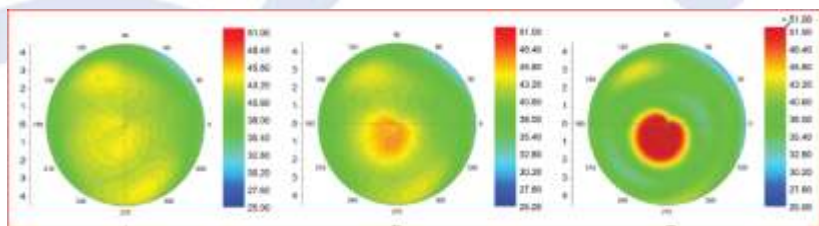
Customized CXL



AS Roy and WJ Dupps, IOVS 2011



Customized CXL



10%

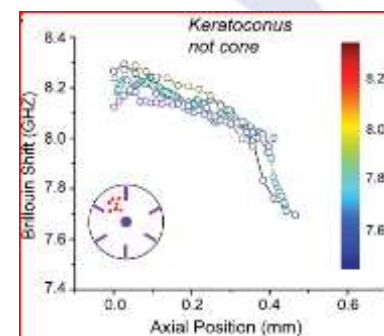
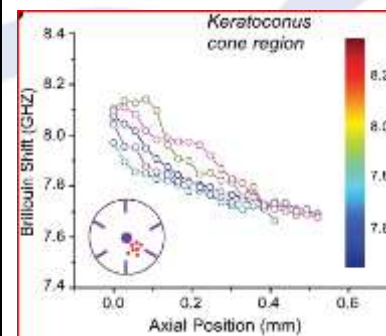
Reduction of E-module

30%

45%

AS Roy and WJ Dupps, IOVS 2011

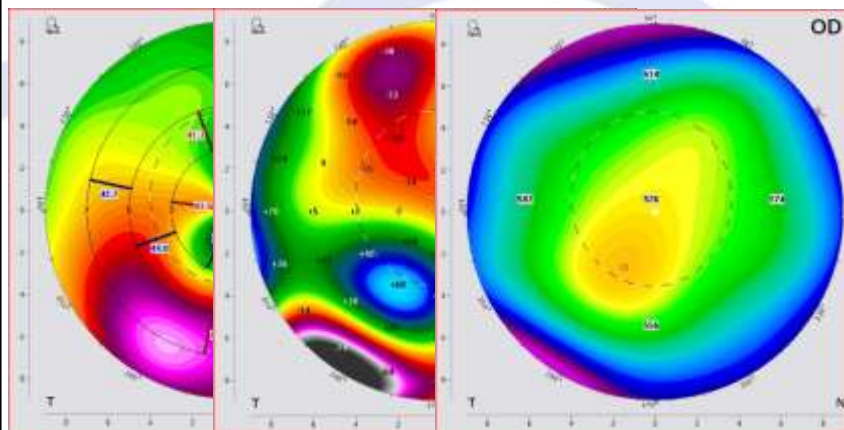
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G Scarcelli et al., IOVS 2014

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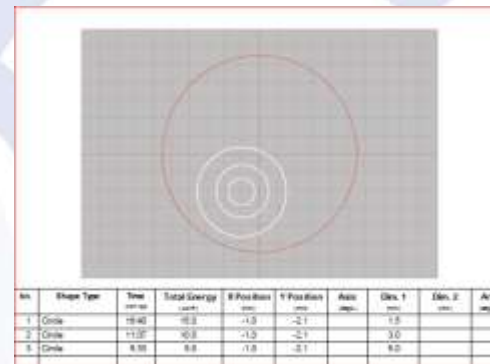
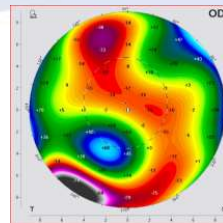
Customized CXL



	Kmax	max post float	min. pachy
X/mm	- 1.6	- 1.0	- 0.7
Y/mm	- 3.2	- 1.8	- 1.3

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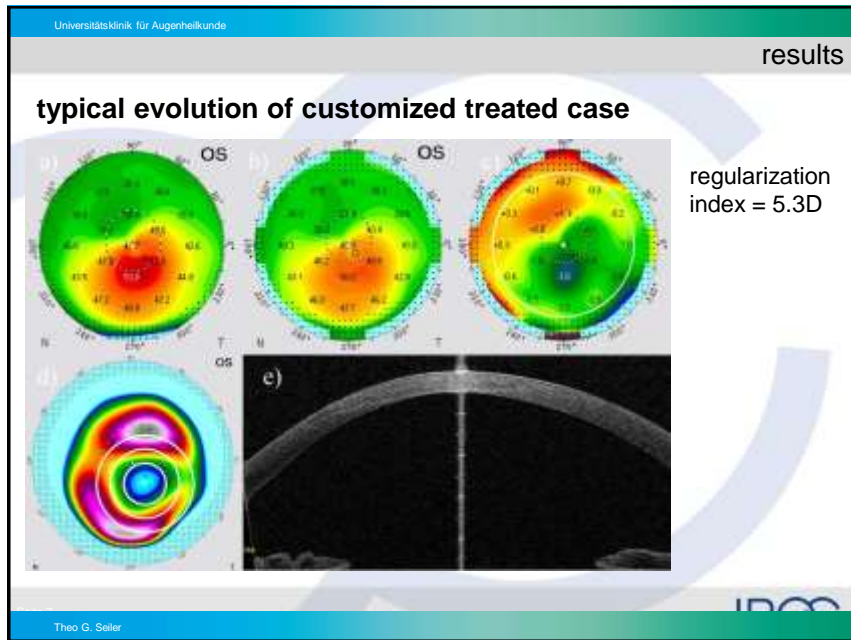
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Seq.	Shape Type	Time (min)	Total Energy (μm²)	X Pos (mm)	Y Pos (mm)	Axis (mm)	Dim. 1 (mm)	Dim. 2 (mm)	Arc (deg)
1	Circle	18.40	18.3	+1.3	-2.1		1.5		
2	Circle	11.37	30.3	+1.3	-2.1		3.0		
3	Circle	8.55	8.8	+1.3	-2.1		6.0		

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results

significant differences in 1 year changes between groups

	customized CXL	standard CXL	p-value
ΔK_{\max} [D]	-1.7 ± 2.0	-0.9 ± 1.3	0.03
regularization index [D]	5.2 ± 2.7	4.1 ± 3.1	0.03
epithelial healing time [days]	2.56 ± 0.5	3.19 ± 0.73	0.02
Δ -logMAR	-0.07 ± 0.20	-0.04 ± 0.14	0.22

Theo G. Seiler

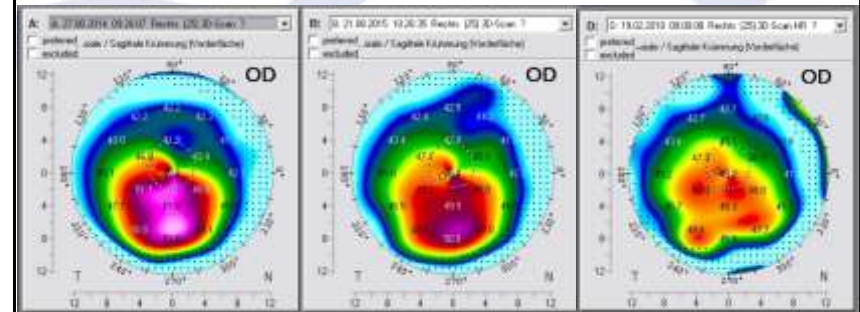
Customized CXL

flattening Kmax	CXL 1y (n=20)	cCXL 1y (n=19)
> 1D	37%	53%
> 2D	11%	37%
> 3D	8%	21%
< -1D	2%	5%

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Customized CXL



pre-op

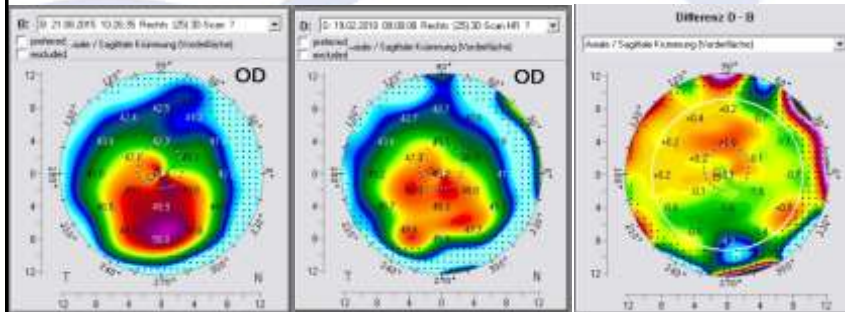
1 year post-op

3 years post-op

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Customized CXL



1 year post-op

3 years post-op

difference

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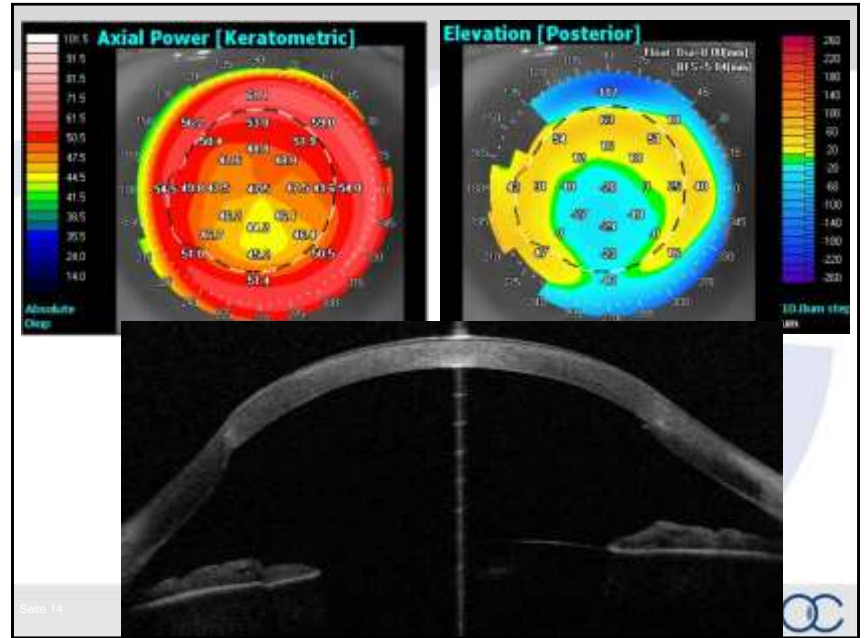
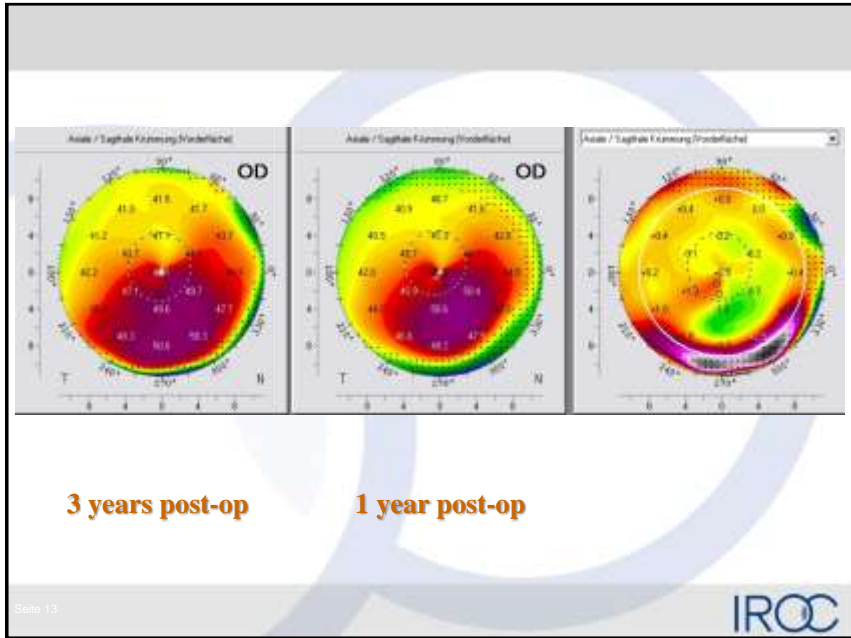
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Customized CXL

flattening Kmax	CXL 1y (n=20)	cCXL 1y (n=19)	cCXL 3y (n=19)
> 1D	37%	53%	63%
> 2D	11%	37%	56%
> 3D	8%	21%	31%
< -1D	2%	5%	

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State Type	Time	Total Energy	X Pos Fiber	Y Position	Axial	Dist. 1
	sec	Joule	mm	mm	cm	mm
Normal	11.07	10.0	8.8	-8.0		11.0

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Conclusions

1. Customized CXL appears to be more effective compared to the Dresden protocol.
2. Customized CXL is considered to be safer because of shorter re-epithelization.
3. The regularization process continues for years.
4. New patterns will be designed for special applications.

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