

# Accelerated corneal CXL to arrest progression of corneal ectasia



A prospective multicenter study

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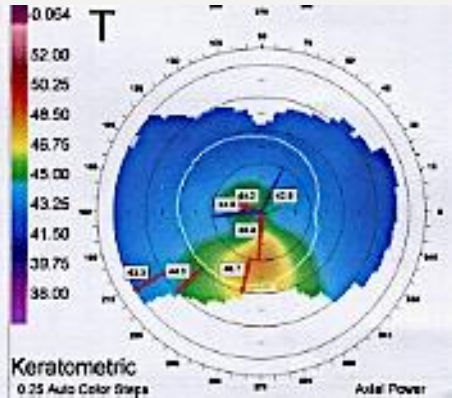
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Financial interests: None

# Aim of the study

To report results of **epithelium-off** accelerated corneal collagen crosslinking (**ACXL**) in patients with **progressive keratoconus** (KC)



# Materials & Methods

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Prospective, non-randomized, non-comparative, interventional and multicenter (RVI & COB) clinical study → January 2014 – May 2017

All consecutive patients with topographic evidence of **progressive KC**:

- an increase of >1.0 diopter in the steepest meridian in keratometry
- a decrease in visual acuity
- and/or a change in manifest refractive cylinder of >1.0 diopter

# Materials & Methods

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## ACXL protocols:

- **Continuous** (c-ACXL; RVI)
  - 9 mW/cm<sup>2</sup>, 10', 5.4 J/cm<sup>2</sup>
- **Pulsed** (p-ACXL; COB)
  - 2"ON/1"OFF, 30 mW/cm<sup>2</sup>, 4.5', 5.4 J/cm<sup>2</sup>
- Only 1 treatment/eye

## Data collection:

- Demographics (age, gender)
- BCVA
- Sphere, cylinder, SE
- Topographical keratometry

## Timepoints:

- Preoperatively and at 1, 3, 6, 12, 18 and 24 months postoperatively



## DEMOGRAPHICS

	<b>c-ACXL</b> (RVI)	<b>p-ACXL</b> (COB)	TOTAL	p value
Patients (N=78)	55 (70.5%)	23 (29.5%)	78	
Eyes (N=96)	64 (66.7%)	32 (33.3%)	96	
Bilateral	9 (14.1%)	9 (28.1%)	18	
Age (years)	20.8±4.4 (14-33)	26.7±7.7 (12-37)		<b>&lt;0.0001</b>
Follow-up (months)	14.6±6.5 (3-34)	16.4±6.9 (2-30)		0.2336
Complications	No major complications noted			

c-ACXL: continuous accelerated crosslinking; p-ACXL: pulsed accelerated crosslinking; RVI: Royal Victoria Infirmary; COB: Centro de Oftalmología Barraquer;

# Visual acuity

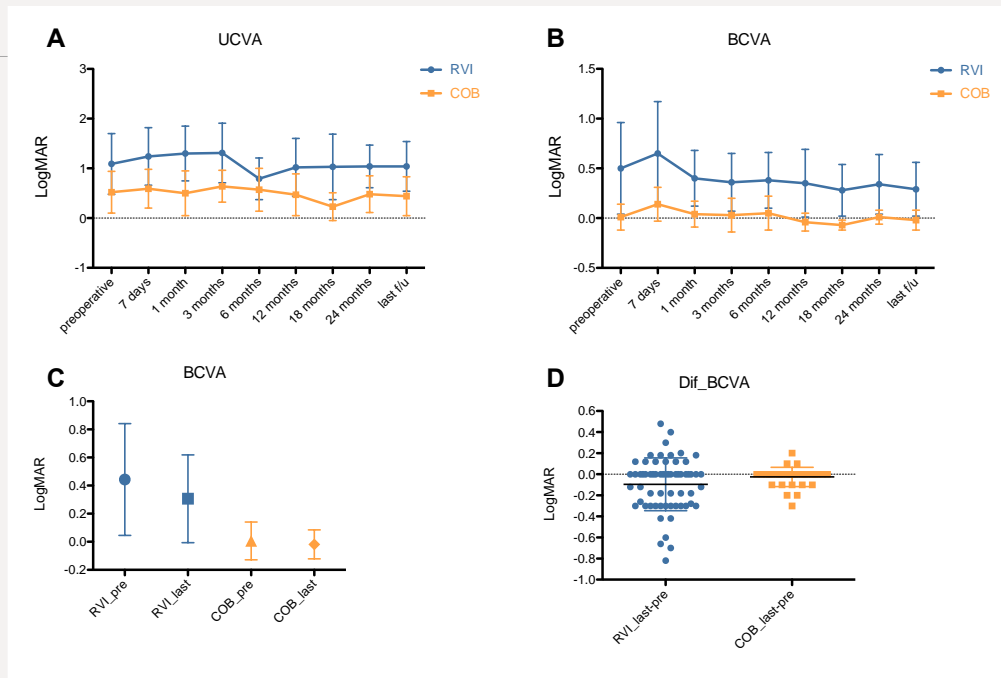
## LogMAR

Mean **BCVA**:

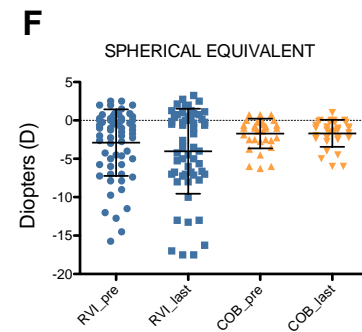
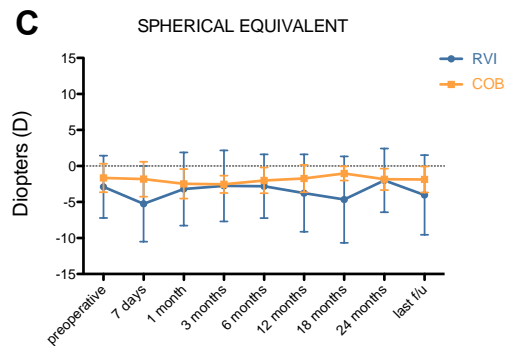
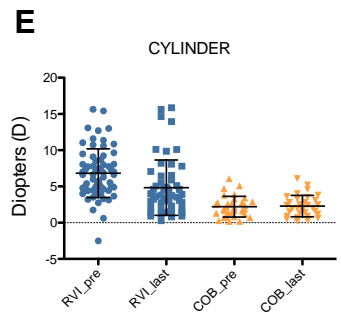
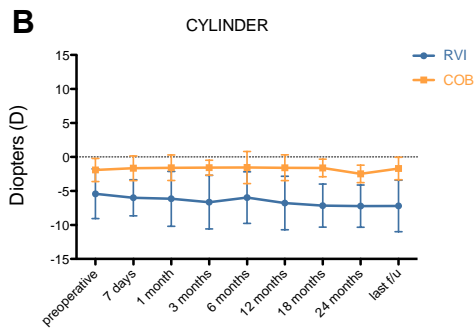
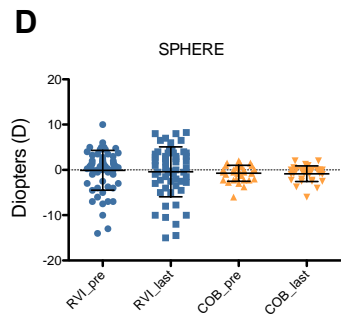
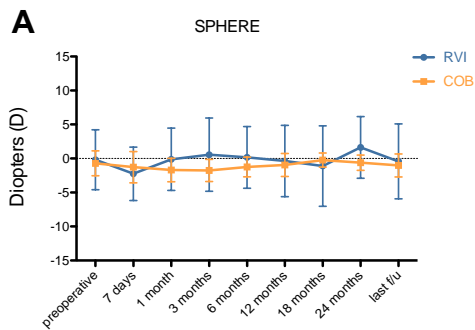
- **c-ACXL**:  $0.4 \pm 0.4$  preoperatively and  $0.3 \pm 0.3$  at last f/u ( $p=0.0014$ )
- **p-ACXL**:  $0.01 \pm 0.1$  preop and  $-0.01 \pm 0.1$  at last f/u ( $p=0.1554$ )

Mean **Dif\_BCVA**:

- **c-ACXL**:  $-0.09$  (SD 0.25)
- **p-ACXL**:  $-0.03$  (SD 0.09)
- A negative value indicates **improvement** in BCVA.

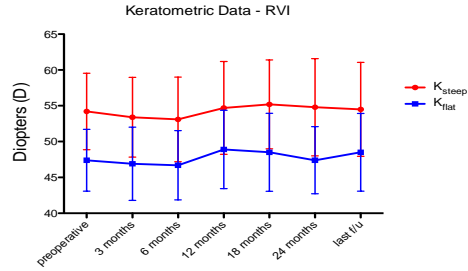
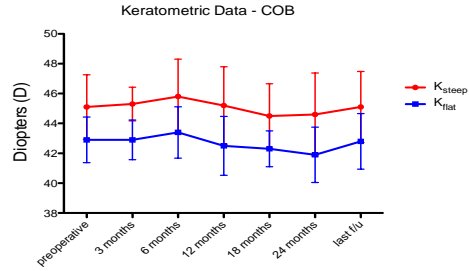
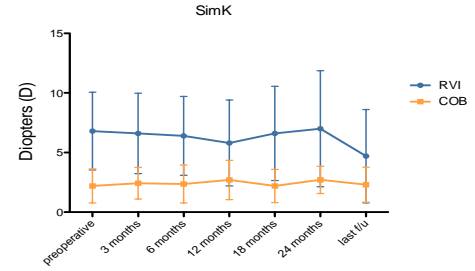
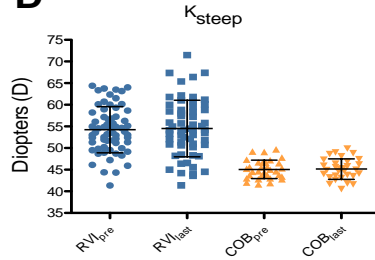
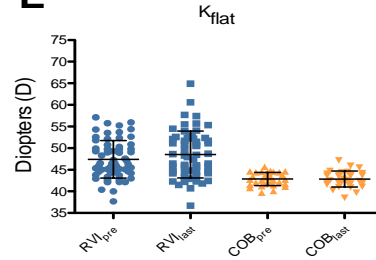
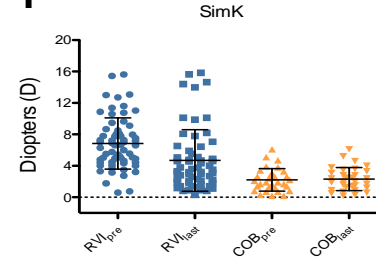






Subjective **sphere** and **SE** did not show statistically significant differences between timepoints ( $p > 0.05$ )

Subjective **cylinder** showed differences ( $p = 0.0013$  for **c-ACXL**;  $p = 0.0358$  for **p-ACXL**)

**A****B****C****D****E****F**

However, keratometric values ( $K_{steep}$ ,  $K_{flat}$ , SimK) remained stable, with no statistically significant differences ( $p > 0.05$ )

Only SimK showed a statistically significant decrease at last follow-up after **c-ACXL** ( $p < 0.0001$ )

# Conclusions

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Both **c-ACXL** and **p-ACXL** seem to be equally **safe** and **effective** ACXL protocols in **stabilizing progression** of keratoconus and can be considered as alternatives to the conventional Dresden protocol.

Nonetheless, more clinical trials on **long-term** efficacy and safety with more patients may be required in the future.



THANK YOU FOR YOUR ATTENTION!

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