Moorfields Eye Hospital NHS
NHS Foundation Trust

celerated Pulsed
sslinking for Keratoc

ello Leucci
l M Gore
Anand
aos Kopsachilis
ael N Nicholae
ail I Malandrakis
D Allan

iCXL Zurich, 2nd December 2016

Financial disclosures: None

Study Objective

To report 24-month results of accelerated continuous vs. pulsed corneal cross-linking in progressive keratoconus using the Avedro KXL® system

Primary Outcome Measure:

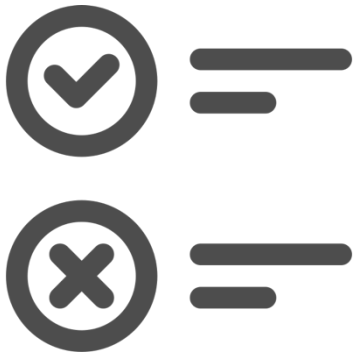
- Keratometric stability / Failure rates

Secondary Outcome Measure(s):

- Vision
- Rate of infective keratitis

Image by Gregor Črešnar; The Noun Project (Creative Commons)

Methodology



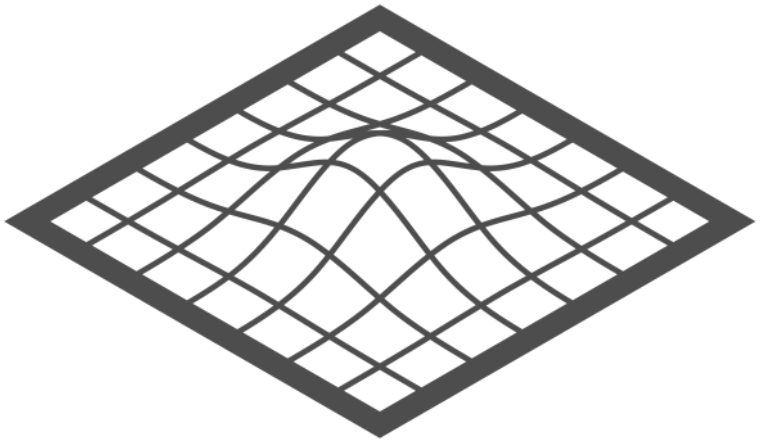
- **Prospective Case Series**

- Inclusion Criteria
  - Pre-Op ectasia progression ≥1D or ≥2.5D
- Exclusion Criteria
  - Minimum Stromal thickness <375µm
  - Active ocular surface disease

- **10 minutes Riboflavin 0.1% soak**
- Continuous UVA exposure at 30mW/cm^2 for 4 minutes (2013-14)
- Pulsed UVA exposure at 30mW/cm^2 (1.5 seconds on/off) for 8 minutes (2014 onwards)

Images by Schmidt Sergey and Carin Marzaro; The Noun Project (Creative Commons)

Staging and Disease Severity



Topography: 2 Stages[1]

- Stage 1: K_{max} < 55D = +1D
- Stage 2: K_{max} ≥ 55D = +2.5D

Vision Analysis: Anterior K2

- Stage 1 ≤ 48D
- >48D Stage 2 ≤53D
- >53D Stage 3 ≤55D
- Stage 4 ≥ 55D

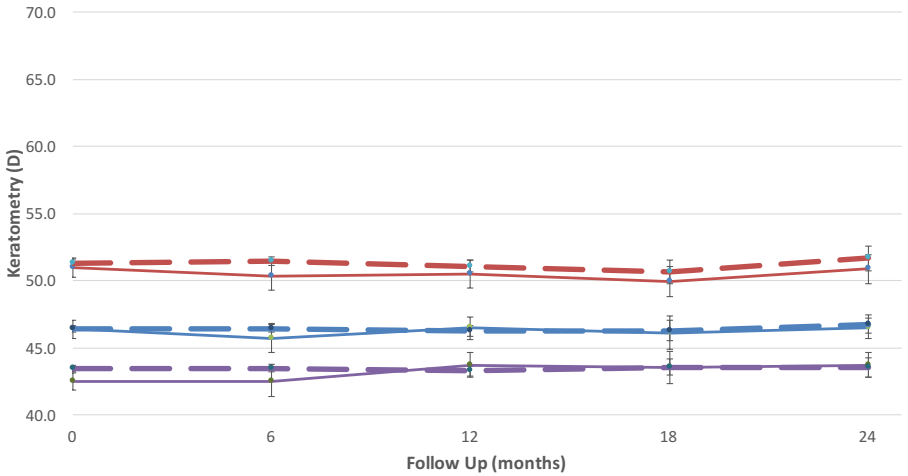
[1] *Differential precision of corneal Pentacam HR measurements in early and advanced keratoconus (Tom H Flynn, Daya P Sharma, Catey Bunce, Mark R Wilkins); Br J Ophthalmol doi:10.1136/bjophthalmol-2015-307201;*

Image by Nono Martinez Alonso; The Noun Project (Creative Commons)

Results: Topography at 24 months
282 eyes; Age 26±6 years

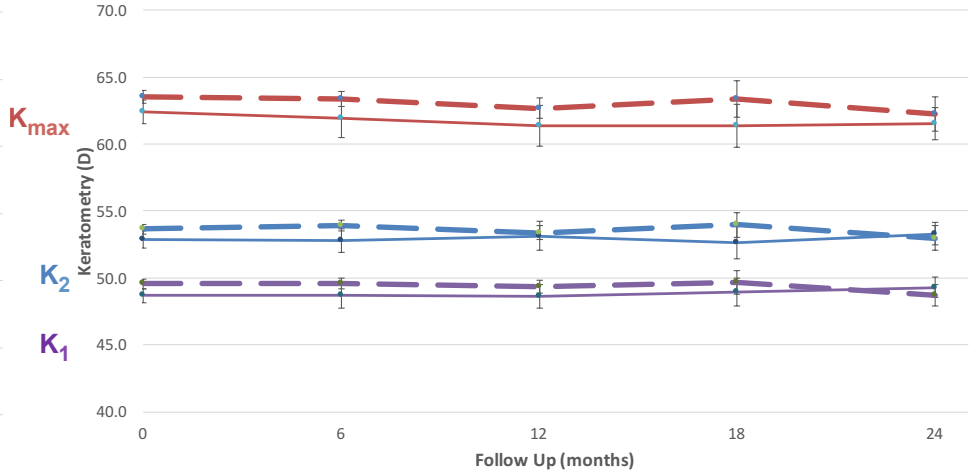
Stage 1: K_{max} < 55D

Topography Baseline to 24 months



Stage 2: K_{max} ≥ 55D

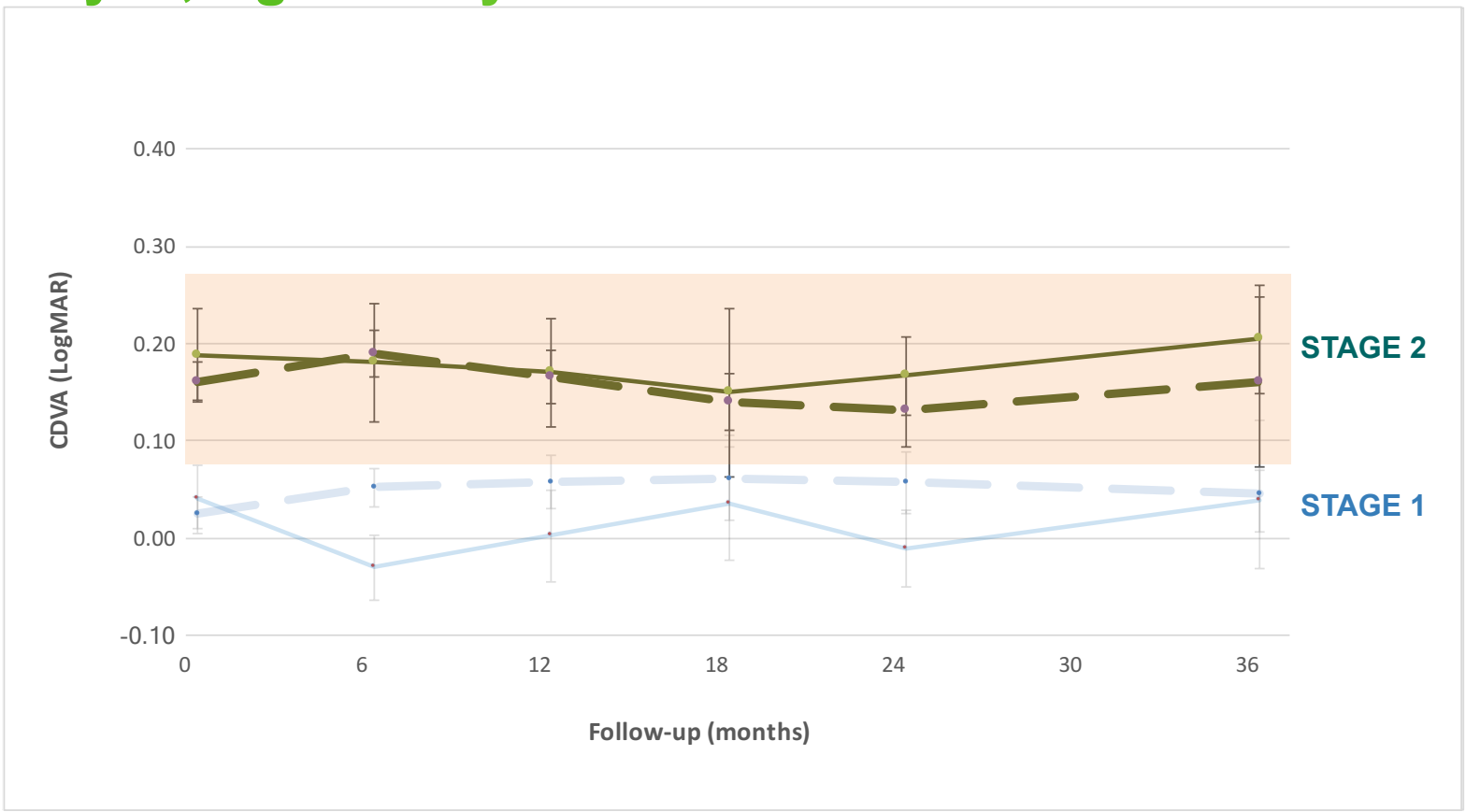
Topography Baseline to 24 months



Results: Topography at 24 months
282 eyes; Age 26±6 years

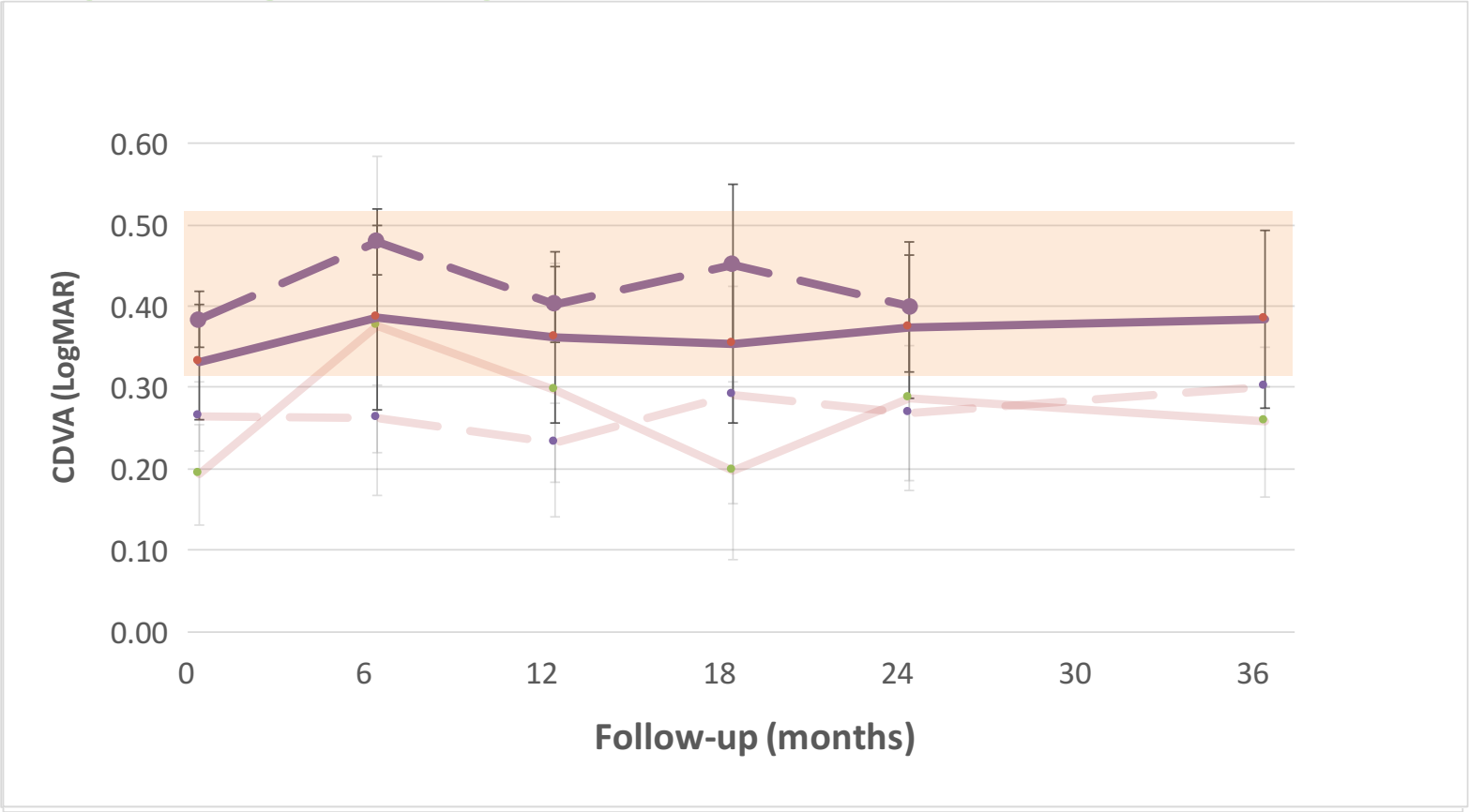
	CONTINUOUS (n=139)		PULSED (n=143)	
	< 55D	≥ 55D	< 55D	≥ 55D
n	*38*	*101*	*47*	*96*
Staged	9.7% (3.7)	5.3% (5.4)	8.7% (4.1)	5% (4.8)
1.5	5% (1.9)	13% (13.1)	3.7% (1.7)	11% (10.6)
2.5	1.3% (0.5)		2% (0.9)	

Results: Best Corrected Visual Acuity at 24 months
243 eyes; Age 26±6 years

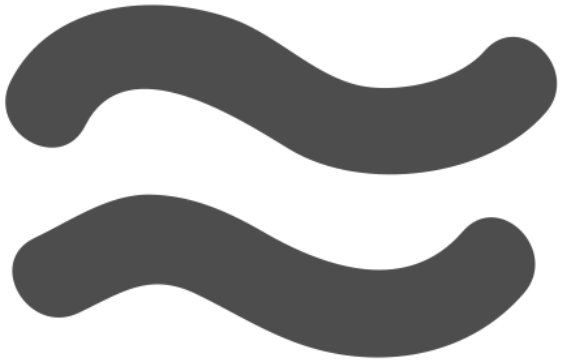


Repeated Visual Acuity Measurement: Establishing the Patient's Own Criterion for Change (BROWN, BRIAN PhD; Loive –Kitchin, Jan 1993; OVS

Results: Best Corrected Visual Acuity at 24 months
243 eyes; Age 26±6 years



Conclusion



Efficacy was similar for both accelerated continuous and pulsed CXL in stabilising disease progression in keratoconus.

Image by Jason D. Rowley; The Noun Project (Creative Commons)