

REFRACTIVE AND TOPOGRAPHIC RESULTS OF CROSSLINKING TREATMENT IN EYES WITH INTACS

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Keratoconus treatment alternatives:

- Epikeratophaki
- Sectorial keratotomy
- Photorefractive keratotomy
- Conductive keratoplasty
- Lamellar keratoplasty
- Penetrating keratoplasty
- Intracorneal ring segments
- Crosslinking with riboflavin

} combined ??

- Intacs alone may not stop progressive keratoconus



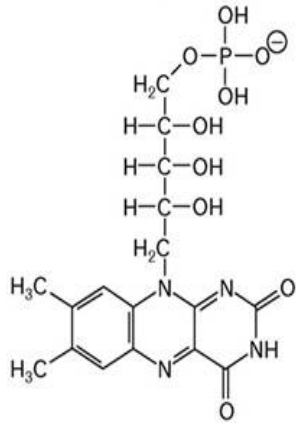
- Increase in mean-K between 6 and 36 months : 1,67 D

(Alio et al, JCRS 2006)

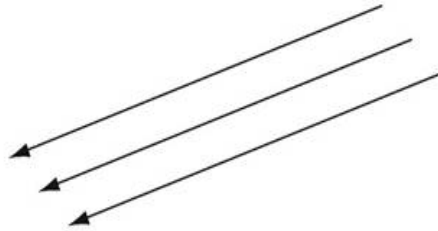
CROSSLINKING TREATMENT

1. Combined application of UVA and riboflavin

Riboflavin (vit. B2)



Ultraviolet irradiation

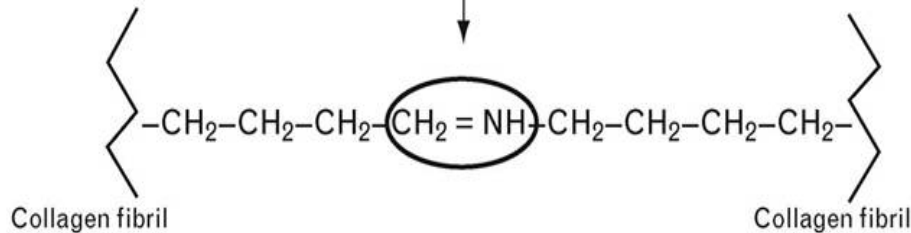


2. Production of oxygen radicals

O_2^-



3. Induction of collagen cross-links



Keratoconus is associated with low corneal hysteresis.

(Luce, JCRS, January 2005)

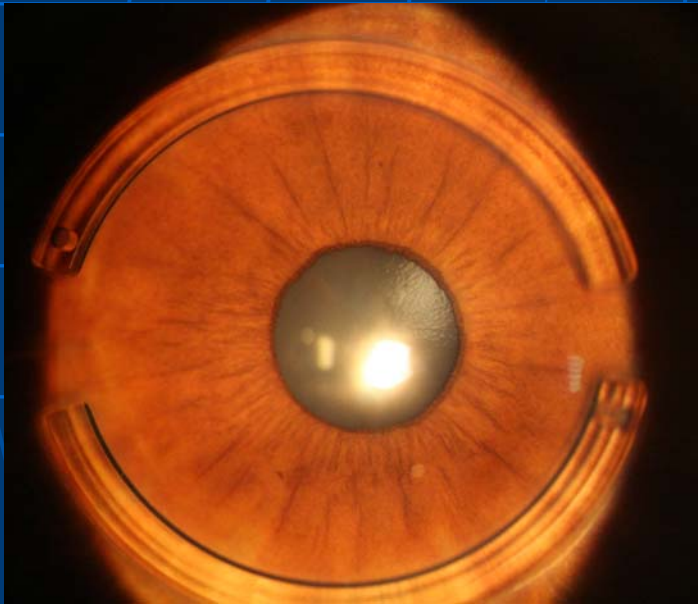
Increase in biomechanical strength after crosslinking has been demonstrated.

(Kohlhaas, JCRS, February 2006)

Purpose

- To evaluate crosslinking (CCL) efficiency in keratoconic eyes with Intacs

Method:



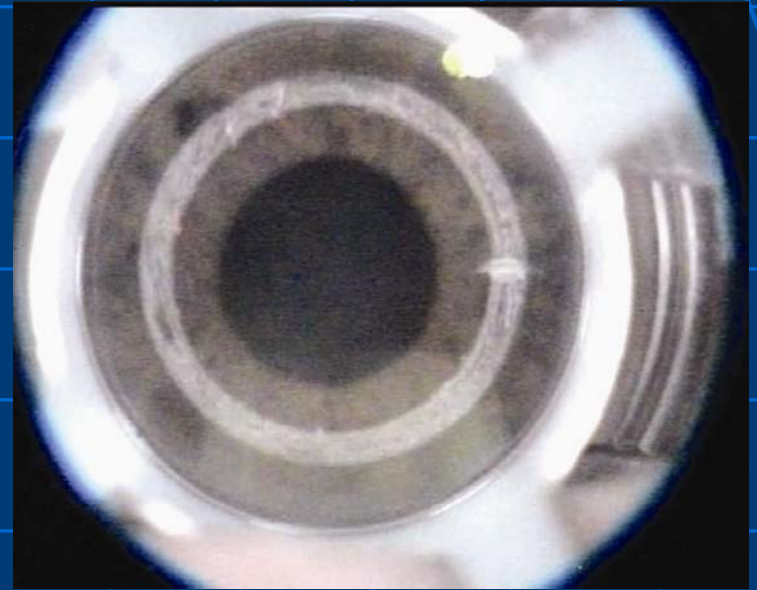
1. session: INTACS

2. session: CCL

- 25 eyes with keratoconus
- Male/female: 7/10
- Mean age: 25,14 \pm 7,11 years old
- Interval between Intacs and Crosslinking: 3,98 months
- Follow-up: 2,96 months (1-6 months)

Intacs procedure

- Intralase
- Temporal incision: 1.5 mm
- No suture
- Channel size: 6.7 x 8.2 mm
- 70% depth of cornea
- No eyes required more than 400 micron tunnel creation



CCL Procedure

■ Before CCL

- riboflavin :every 3 minutes (30 min)
(0,1% riboflavin-5-phosphate and dextran 20%)
- Pilocarpine 2% to
 - constrict the pupil to minimize exposure of the lens
 - decrease photosensitivity.
- Intact epithelium

■ UVA applanation

- 3.0 mW/cm² at 370 nm, 5 cm
- 30-minute application
- riboflavin :every 3 minutes (30 min)



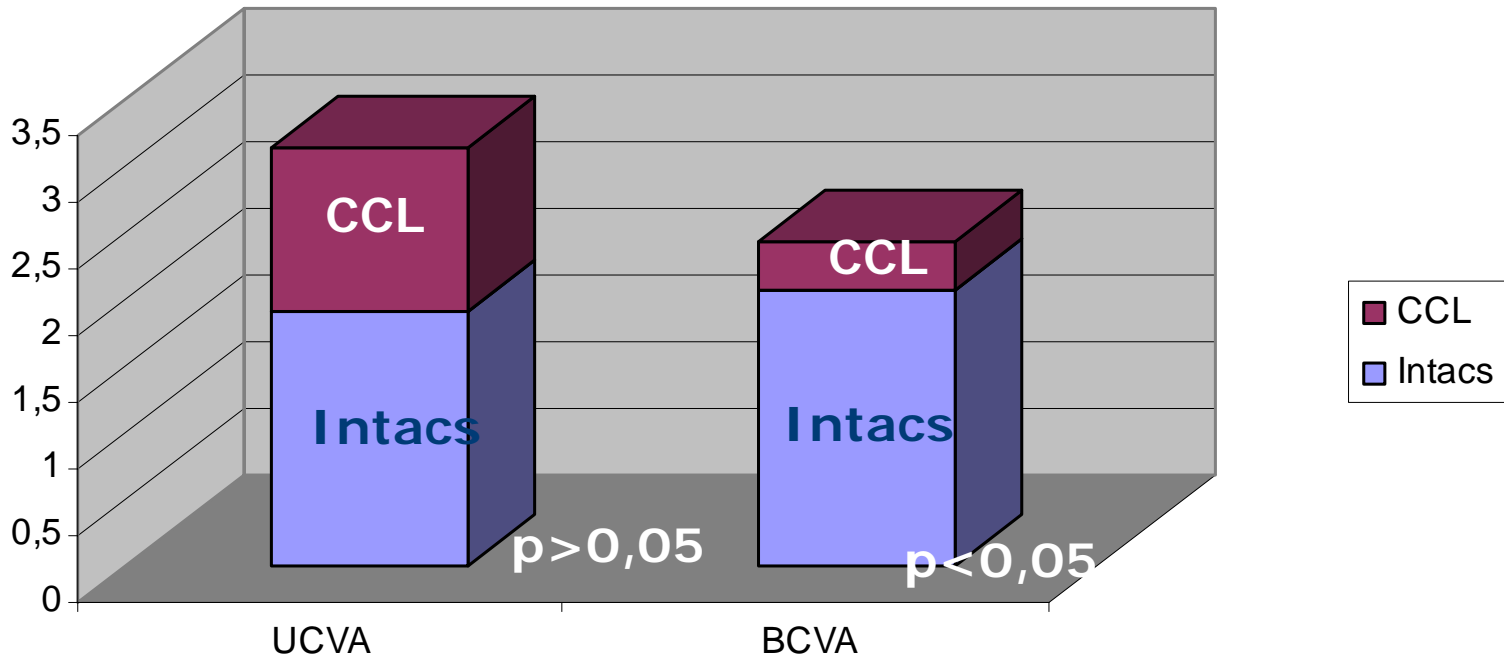
Visual acuities and refractive parameters after Intacs and CCL treatment

Parameter	preop	after Intacs	p*	after CCL	p**
■ UCVA	1,67	3,58	0,05>	4,8	0,05>
■ BCVA	4,47	6,54	0,05>	7,2	0,05>
■ Spher	-3,89	-2,0	0,05>	-1,68	0,05>
■ Cylinder	-3,92	-3,52	0,05<	- 3,1	0,05<
■ Mean-K	49,8	47,6	0,05>	47,2	0,05<
■ Steepest-K	51,4	49,9	0,05>	49,5	0,05<

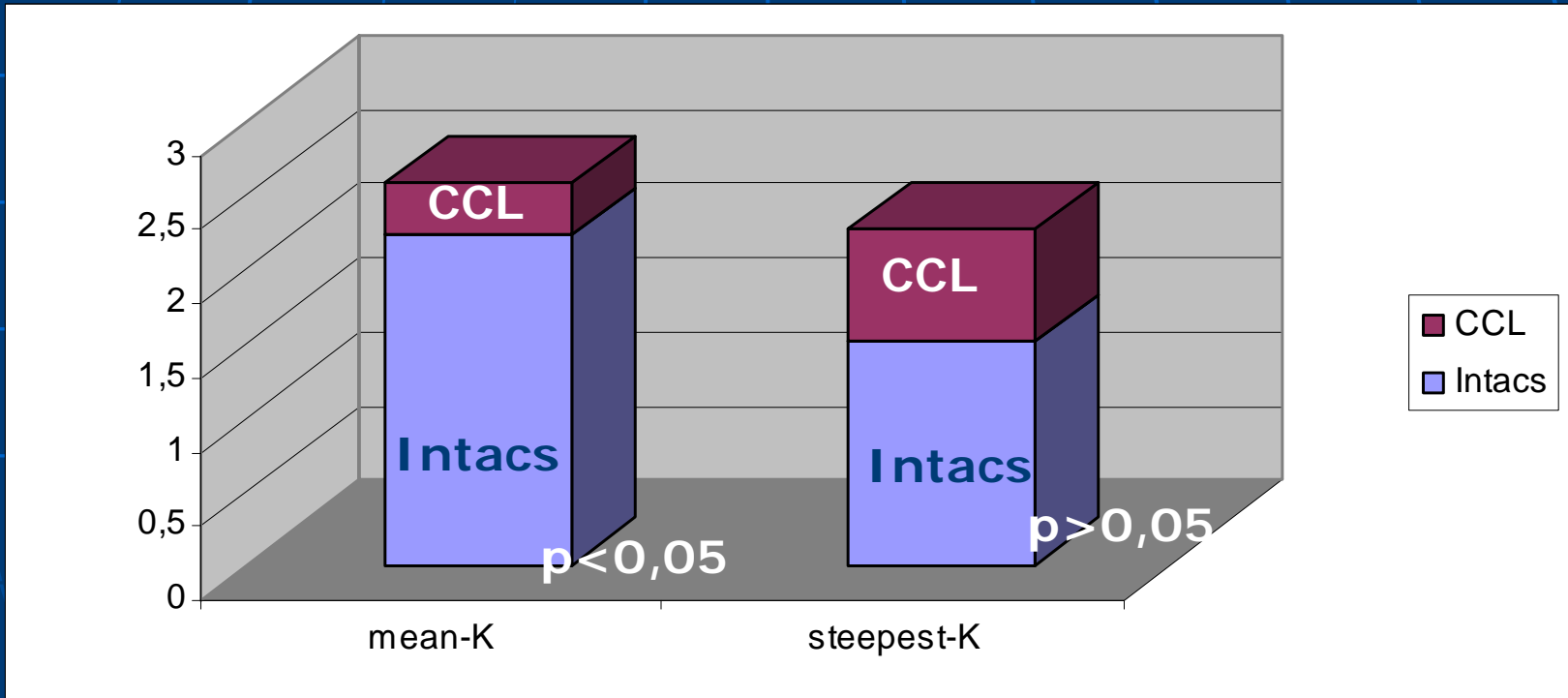
P* : Paired samples test, comparison of preoperative and postIntacs parameters

P** : Paired samples test, comparison of postIntacs and postCCL parameters

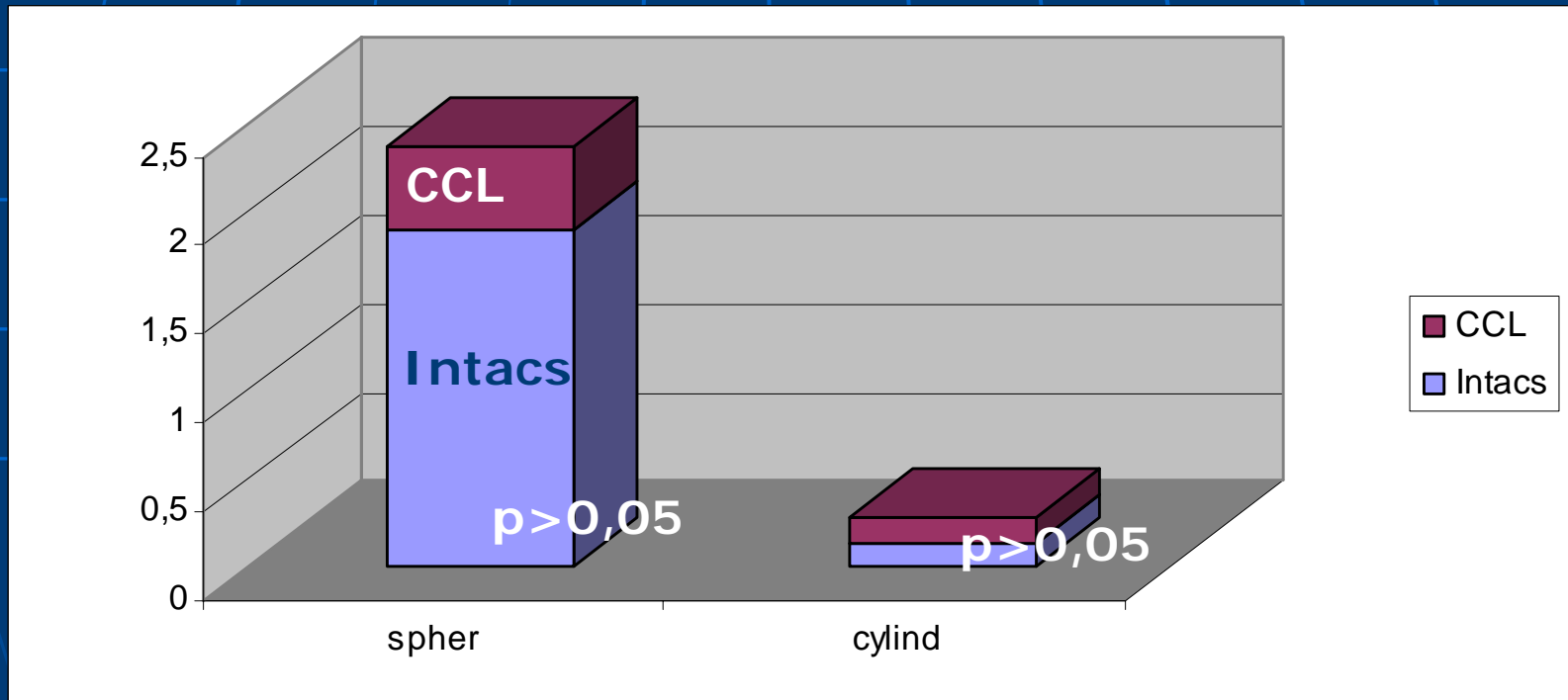
Change in BCVA and UCVA after Intacs and crosslinking treatment



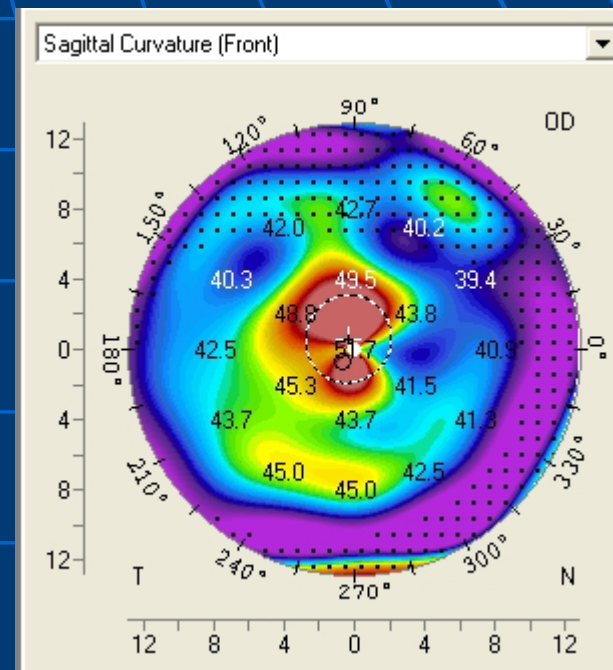
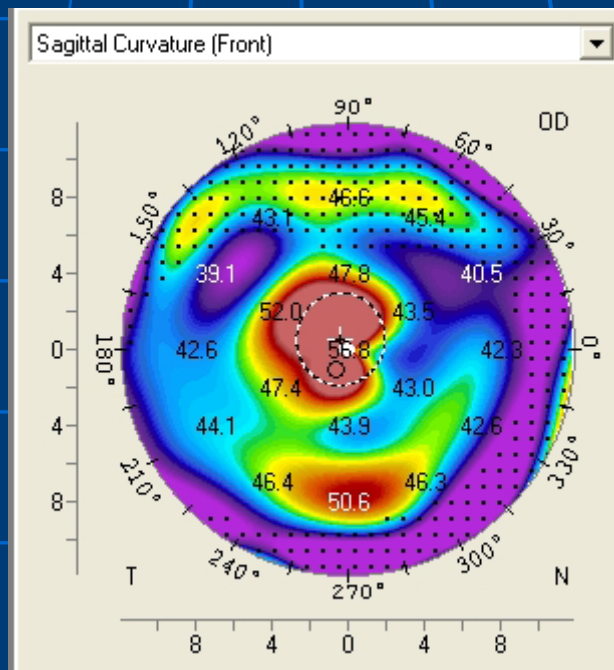
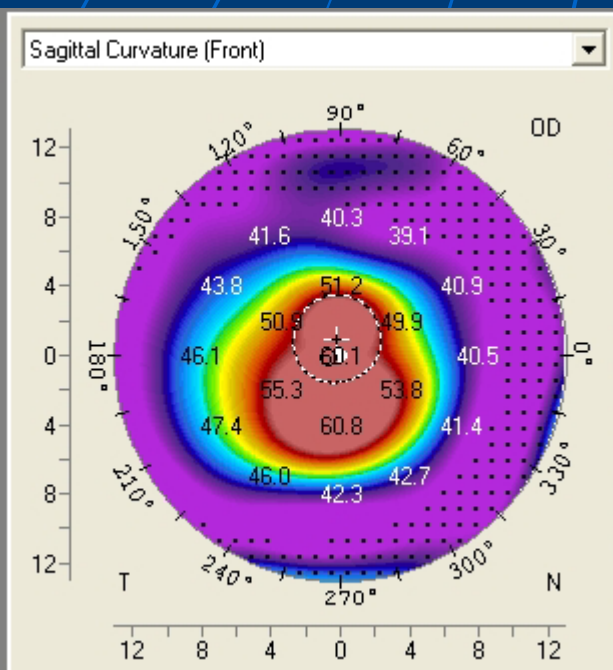
Change in mean-K and steepest-K value after Intacs and crosslinking treatment



Change in spheric and cylindric values after Intacs and crosslinking treatment



29 years-old, male with KC



Pre-op

After Intacs

After CCL

Conclusion

- Intacs treatment alone helps improvement in visual and refractive parameters in KC
- Combining Intacs and CCL treatments may have additive effect in management of KC

Questions

- First CCL then Intacs ?
- Interval between CCL and Intacs ? same session ?
- To which stage KC ?

The limitations of study

- further studies with longer follow-up is needed to show the stability