



# Visual Rehabilitation after Crosslinking and INTACS for Keratoconus

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## Background

Keratoconus surgical treatment has improved with the introduction of new techniques as corneal collagen cross-linking(CXL) and intraestromal corneal ring segments(ICRS). CXL inhibit progression and ICRS flattens and regularize cornea. Combination treatments' studies showed to be effective as an as an enhancement/stabilizing procedure<sup>1</sup>. Comparative sequence treatments proved ICRS followed by CXL to result in greater improvement of keratoconus<sup>2</sup>.

## Purpose

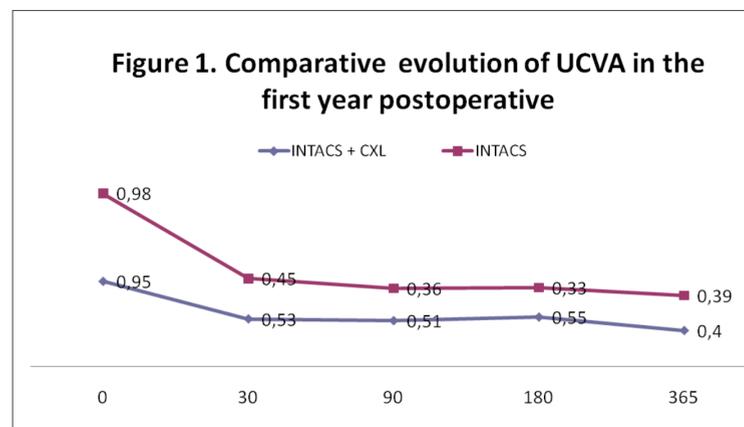
To document results of INTACS for keratoconus, stability over the first follow up year, visual rehabilitation and compare groups with or without crosslinking.

## Methods

This is a prospective, non randomized study of 47 eyes of 37 patients with keratoconus and contact lens intolerance. All were treated with INTACS with the manual technique by the same surgeon between September 2008 and September 2009 and had a 6 month minimum follow-up (mean 9,1 month). Only a group of 21 patients were treated with transepithelial crosslinking at 2-3 months postINTACS. UCVA, BCVA, Kmin, Kmax, and spherical equivalent (EE) were documented.

## Results

In the general group UCVA and BCVA (logMar)significantly improved from 0,96 and 0,30 to 0,48 and 0,19 (p 0,001 and 0,015), and spherical equivalent as well from -5,18 to -3,09 D (p 0,0003). Kmax and Kmin also improved from 53,49 D and 47,90D to 50,90D and 46,37 D (p = 0,0063 and 0,0484). None of the above had a significant difference during follow-up. A successful visual rehabilitation (BCVA 20/40) was achieved in 45 of 47 patients, 40% wearing glasses, 34% with soft contact lenses (spherical, toric, tricurve or piggy back), 25,5% without any kind of correction and none needing RGP. There was no difference between the groups with or without transepithelial crosslinking in any of the above (UCVA p 0,71; BCVA p 0,42; EE p 0,75, Kmax p 0,18; Kmin p 0,30).



## Discussion

CXL studies confirmed that it inhibits progression of corneal ectasia for up to 4 years and decrease Kmax and SE by a mean of 2,01 D and 1,14 D<sup>3-4</sup>. ICRS studies showed a more significant improvement in UCVA,BCVA, Kmax and SE<sup>5</sup>. Theoretically the combination treatment will improve slightly when compared with ICRS alone, but the most important benefit will be long time stability. In our study there was no statically difference between the groups with or without CXL in a 1 year follow up. Studies with longer follow up may help determine the impact of CXL in refractive stability after ICRS.

## Conclusions

Patients improved in all variables and remained stable during follow- up.

There was no significant difference between groups with or without crosslinking.

Successful visual rehabilitation was obtained in 95,7% of patients.

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