REFRACTIVE AND TOPOGRAPHIC RESULTS OF CROSSTLINKING TREATMENT IN EYES WITH INTACS

Aylin Ertan, MD
Günhal Kamburoğlu, MD

KUDRET EYE HOSPITAL, ANKARA, TURKEY
Keratoconus treatment alternatives:

- Epikeratophakia
- Sectorial keratotomy
- Photorefractive keratotomy
- Conductive keratoplasty
- Lamellar keratoplasty
- Penetrating keratoplasty
- Intracorneal ring segments
- Crosslinking with riboflavin
Intacs alone may not stop progressive keratoconus

- Increase in mean-K between 6 and 36 months: 1.67 D

(Alio et al, JCRS 2006)
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 ± 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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>preop</th>
<th>after Intacs</th>
<th>p*</th>
<th>after CCL</th>
<th>p**</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCVA</td>
<td>1,67</td>
<td>3,58</td>
<td>0,05&gt;</td>
<td>4,8</td>
<td>0,05&gt;</td>
</tr>
<tr>
<td>BCVA</td>
<td>4,47</td>
<td>6,54</td>
<td>0,05&gt;</td>
<td>7,2</td>
<td>0,05&gt;</td>
</tr>
<tr>
<td>Spher</td>
<td>-3,89</td>
<td>-2,0</td>
<td>0,05&gt;</td>
<td>-1,68</td>
<td>0,05&gt;</td>
</tr>
<tr>
<td>Cylinder</td>
<td>-3,92</td>
<td>-3,52</td>
<td>0,05&lt;</td>
<td>-3,1</td>
<td>0,05&lt;</td>
</tr>
<tr>
<td>Mean-K</td>
<td>49,8</td>
<td>47,6</td>
<td>0,05&gt;</td>
<td>47,2</td>
<td>0,05&lt;</td>
</tr>
<tr>
<td>Steepest-K</td>
<td>51,4</td>
<td>49,9</td>
<td>0,05&gt;</td>
<td>49,5</td>
<td>0,05&lt;</td>
</tr>
</tbody>
</table>

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

![Graph showing change in BCVA and UCVA after Intacs and crosslinking treatment](image-url)

- UCVA and BCVA with Intacs and crosslinking treatment
- p > 0.05 for UCVA
- p < 0.05 for BCVA
Change in mean-K and steepest-K value after Intacs and crosslinking treatment

![Bar chart showing comparison of mean-K and steepest-K values between CCL and Intacs after treatment.]
Change in spheric and cylindric values after Intacs and crosslinking treatment

![Graph showing change in spheric and cylindric values after Intacs and crosslinking treatment. The graph indicates that the change is statistically insignificant as shown by p > 0.05.]
29 years-old, male with KC
Conclusion

- Intacs treatment alone helps improve 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