PRK with a Solid-State Laser: 2-year Experience

Dr. M. Rossi, Dr. M. Schmidt, Dr. P. Garimoldi,
Dr. A. Cazzola, Dr. P. Giorgi, Dr. G. Villa,
Dr. D. Todarello, Dr. P. Borsellino, Dr. R. Pinna

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# Katana LaserSoft vs. Excimer Laser

<table>
<thead>
<tr>
<th></th>
<th>Katana LaserSoft</th>
<th>Excimer Laser</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wavelength</strong></td>
<td>210 nm</td>
<td>193 nm</td>
</tr>
<tr>
<td><strong>Laser Fluence</strong></td>
<td>140 mJ/cm²</td>
<td>100-200 mJ/cm²</td>
</tr>
<tr>
<td><strong>Beam Diameter</strong></td>
<td>0.2 – 0.3 mm</td>
<td>0.8 – 2.0 mm</td>
</tr>
<tr>
<td><strong>Beam homogenization method</strong></td>
<td>Not required</td>
<td>Use of UV-optic</td>
</tr>
<tr>
<td><strong>Beam collimation</strong></td>
<td>Collimate</td>
<td>Focused</td>
</tr>
</tbody>
</table>
Clinical Results

- Early experience with Katana LaserSoft solid-state Laser

  - Safety
  - Efficacy
  - Stability
<table>
<thead>
<tr>
<th>Type</th>
<th>Total Treatments</th>
<th>Mean age. 38 ± 13 years old</th>
<th>Preoperative Refraction (mean SE ± SD)</th>
<th>Max. SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Treatments</td>
<td>670 eyes</td>
<td></td>
<td>-2.55 ± 3.05 D</td>
<td></td>
</tr>
<tr>
<td>Myopia and Myopic Astigmatism</td>
<td>528 eyes</td>
<td></td>
<td>-3.61 ± 2.43 D</td>
<td>-12.50 D</td>
</tr>
<tr>
<td>Hyperopia and Hyperopic Astigmatism</td>
<td>107 eyes</td>
<td></td>
<td>+1.94 ± 1.12 D</td>
<td>+5.50 D</td>
</tr>
<tr>
<td>Combined Astigmatism</td>
<td>35 eyes</td>
<td></td>
<td>-0.21 ± 0.70 D</td>
<td>+3.25 D, -5.50 D</td>
</tr>
</tbody>
</table>
Clinical Results: Safety

BCVA \( \downarrow \) 1.0:

- Pre-op: 83%
- After 15 D: 51%
- After 45 D: 72%
- After 90 D: 82%
- After 180 D: 91%
- After 360 D: 92%
Clinical Results: Safety

Myopia

Hyperopia

Astigmatism
Clinical Results: Efficacy

UCVA constantly improving in time
Clinical Results: Efficacy

Myopia

Hyperopia

Astigmatism
Clinical Results: Stability

Clinical results - STABILITY

Attempted versus Achieved Spherical Equivalent over Time
Clinical Results: **Stability**

**Myopia**

**Hyperopia**
Clinical Results: Stability

Myopia

Myopia over 7 D

Ipercorrection

P = 0.0002 after 45 days

P = 0.0001 after 3 months

(duration of treatment ?)
Clinical Results: Refraction

Final Refraction

![Clinical Results Chart](chart.png)
Clinical Results: Refraction

Myopia

Hyperopia
## Clinical Results vs. FDA Targets

### 6 Months Results

<table>
<thead>
<tr>
<th>Variability of Efficacy</th>
<th>FDA</th>
<th>KATANA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCVA 1.0 or better</td>
<td>50%</td>
<td>86%</td>
</tr>
<tr>
<td>UCVA 0.5 or better</td>
<td>85%</td>
<td>97%</td>
</tr>
<tr>
<td>MRSE ± 0.5 D</td>
<td>50%</td>
<td>93%</td>
</tr>
<tr>
<td>MRSE ± 1 D</td>
<td>50%</td>
<td>93%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variability of Safety</th>
<th>FDA</th>
<th>KATANA</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCVA loss &gt; 2 lines</td>
<td>&lt; 5%</td>
<td>2%</td>
</tr>
<tr>
<td>BCVA worse than 0.5</td>
<td>&lt; 1%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Conclusions

Advantages:
- Safe and efficacy laser for refractive surgery
- Reduced corneal inflammation: less pain, faster reepithelization, faster visual recovery

Limits:
- Moderate ipercorrection in high myopia, regressing with postoperative medical treatment
Thank You for your attention

Dr. Marco Rossi

m.rossi@aobusto.it