CORNEAL BIOMECHANICAL CHANGES AFTER FLAPLESS FEMTOLASER VERSUS FEMTO-LASIK

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No financial interest
Small incision refractive lenticule extraction (SMILE)

- Only a single small 3-5 mm incision is used
- No flap is lifted and the lenticule is extracted through the small incision
- Causes less post-operative discomfort, less dry eye
- No flap displacement, even after trauma
- Possibly better biomechanical stability?
The procedure
To evaluate and compare Corneal hysteresis (CH), corneal resistance factor (CRF) in patients with myopia & myopic astigmatism prior to and following small incision lenticule extraction (SMILE) and Femtosecond laser in situ keratomileusis (Femto-LASIK) using the Reichert ocular response analyser (ORA).
Methods
60 eyes of 30 patients were divided into 2 groups

CH and CRF were recorded prior to and 3 months after corneal laser refractive surgery for myopia.
The correlations between postoperative change in hysteresis and stromal ablation/removal depth, percentage of tissue ablated/removed, optical zone, CCT and patient age were also examined.

platform: Visumax 500 (Carl Zeiss meditec) with constant flap/cap thickness of 90 µm and ALLEGRO excimer laser (WaveLight Laser Technologie AG)
Preoperative inclusion criteria:

- Age range 25 to 35.
- Preoperative central corneal thickness from 520µ to 550µ.
- Myopic astigmatism from -3.00 to -5.00 diopters (D) sphere and up to -2.00 D cylinder.
## Similar patient demographics

<table>
<thead>
<tr>
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<th>Smile</th>
<th>Femto-lasik</th>
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<tbody>
<tr>
<td>Number of eyes</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Age</td>
<td>25-35 (29.6 ± 3.5)</td>
<td>25-35 (29.1 ± 4.5)</td>
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<tr>
<td>Preoperative MRSE</td>
<td>-3.89 ± 1.89</td>
<td>-4.12 ± 1.34</td>
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<tr>
<td>Mean preoperative CCT</td>
<td>532µ ± 14.2</td>
<td>536µ ± 11.9</td>
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<tr>
<td></td>
<td>Smile</td>
<td>Femto-lasik</td>
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<tr>
<td>Mean preoperative CH</td>
<td>10.8 ±1.5 mmHg</td>
<td>10.9 ±2.2 mmHg</td>
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<tr>
<td>Mean preoperative CRF</td>
<td>-10.3±1.8</td>
<td>-10.3±1.4</td>
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The percent of change in CH & CRF.
UCVA - Percentage 'EFFICACY'

- 74% at 20/20
- 77% at 20/12.5 or better
- 10% at 20/16
- 10% at 20/25
- 7% at 20/30
- 3% at 20/40
- 3% at 20/50 or worse

CHOICE: SMILE or Femto-Lasik
Conclusion
Corneal hysteresis decreased following Femto-LASIK is much more significant in comparison with the smile group.

Postoperative reduction in hysteresis did not correlate with the amount or percentage of corneal tissue removed, nor with optical zone or patient age.
SPECIAL THANKS TO:
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THANK YOU!