FLAP THICKNESS REPRODUCIBILITY USING THE MICROKERATOME CARRIAZO PENDULAR-HEAD 130

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Introduction

- High variability in flap creation between different microkeratomes
- Deviation in flap thickness with the same device among different patients

Microkeratome Manufacturing Factors
- Oscillation speed
- Ring type
- Suction power
- Translation speed
- Different head serial number

Individual Factors
- Age, Sex
- Keratometric features
- Spherical equivalent pre-op
- Pachymetry pre-op
- First vs second eye (cut)
- IOP pre-op
- State of corneal hydration pre/intra-operatively

Purpose

- To compare flap thickness measurements after Laser-in-situ Keratomileusis (LASIK) using Carriazo Pendular Microkeratome - Head 130.

Material and Methods

- Preoperative examination protocol:
  - Visual acuity (UVA and BCVA)
  - Slit-lamp examination
  - Biomicroscopy
  - Topography (Topolyzer Wavelight)
  - Pupillometry (Colvard Pupillometer)
  - Stereoscopic test
  - Tear film break-up time
  - Schirmer’s test
  - Applanation tonometry (Goldmann)
  - Ultrasound pachymetry (Optikon pahymeter)

Eyes were comparable for:
- Preoperative central corneal thickness
- Preoperative spherical equivalent
- Preoperative keratometry
- Preoperative suction ring used
Preoperatively

<table>
<thead>
<tr>
<th>Preoperative measurements</th>
<th>Mean ± SD</th>
<th>P value</th>
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</thead>
<tbody>
<tr>
<td>Central Corneal Thickness (CCT)</td>
<td>547 ± 29 µm</td>
<td>0.124</td>
</tr>
<tr>
<td>K average</td>
<td>43.03 ± 1.48 D</td>
<td>0.794</td>
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<tr>
<td>Spherical equivalent (SE)</td>
<td>-3.25 ± 3.80 D</td>
<td>0.529</td>
</tr>
<tr>
<td>Flap thickness</td>
<td>119 ± 23 µm</td>
<td>0.789</td>
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</tbody>
</table>

Results

<table>
<thead>
<tr>
<th>Mean Flap thickness with different ring sizes</th>
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<tbody>
<tr>
<td>CCT</td>
</tr>
<tr>
<td>Ring 9 n=117 Mean K &gt; 43</td>
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<tr>
<td>Ring 10 n=83 Mean K &lt; 41</td>
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Results

- Strong correlation between flap thickness and central corneal thickness
  - r=0.246

- Low correlation between:
  - flap thickness and SE
    - r=-0.024
  - flap thickness and K-readings
    - r=0.068

Conclusions

- Very good reproducibility
- Flap thickness influenced by the ring size used and the central corneal thickness
- No such effect was found for the spherical equivalent and K-readings
- Customized treatments
Thank you!

http://elkethop.alex.duth.gr