Cessation of Soft Contact Lens Wear Prior to Refractive LASER- is Two Weeks Long Enough?

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Cessation of soft contact lens wear prior to refractive LASER surgery- is two weeks long enough?

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Introduction
• Soft contact lens (CL) wear can result in changes to corneal shape. Resolution time, following removal of the CL, can vary with recovery rates of between 2.5 ± 2.1 and 7.8 ± 8.5 weeks depending on lens type.
• Regulations regarding cessation of CL wear prior to refractive laser surgery can vary according to the regulating body. Current FDA guidelines recommend CLs are left out for at least 2 days prior to examination and treatment.
• The Royal College of Optometrists (U.K.) recommends leaving out CL for 1 day before consultation and do not specify any time before refractive surgery treatment.

Aims
• To investigate the influence of CL wear on corneal measurements prior to refractive surgery.
• To assess impact of CL wear on outcomes of refractive laser surgery.

Materials and methods
• A retrospective analysis was undertaken for a group of full-time soft CL wearing patients. CL group (n=45), who presented for refractive laser surgery between 2007 and 2009.
• Myopic patients with astigmatism of <1.50DC were included for analysis.
• Full-time CL wear was defined as wearing soft CL ≥5 days a week in the previous year.
• Data was obtained from the first consultation (C1) and the second consultation (C2) when the CL wearers ceased CL wear for a 2-week period.

Anterior segment image using a Pentacam

Figure 1: Central curvature and thickness data were obtained using a Pentacam. The Pentacam measures data on the anterior and posterior surfaces.

Results
The profile of the CL and NCL groups are described in table 1.

Table 1. Analysis of demographic data obtained from the CL and NCL groups showed that there were no statistically significant differences between the gender of the groups (P=0.32).

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Mean ± SD</th>
<th>CL (n=45)</th>
<th>NCL (n=22)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>32 ± 2.7</td>
<td>37 ± 2.1</td>
<td>0.078</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>32 ± 5</td>
<td>37 ± 1.9</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Central curvature and thickness data were obtained using a Pentacam. The Pentacam measures data on the anterior and posterior surfaces.

<table>
<thead>
<tr>
<th>Central curvature</th>
<th>First visit</th>
<th>Second visit</th>
<th>CL (n=45)</th>
<th>NCL (n=22)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corneal curvature</td>
<td>7.85 ± 0.22</td>
<td>7.61 ± 0.34</td>
<td>3.86 ± 0.45</td>
<td>3.65 ± 0.54</td>
<td>0.064</td>
</tr>
<tr>
<td>Tangential curvature</td>
<td>7.35 ± 0.35</td>
<td>7.30 ± 0.26</td>
<td>0.121 ± 0.05</td>
<td>0.062 ± 0.03</td>
<td>0.017</td>
</tr>
</tbody>
</table>

Table 3. Central corneal thickness was measured using the Pentacam at 4.5mm inferior, superior, nasal and inferior to pupil centre.

<table>
<thead>
<tr>
<th>Corneal thickness</th>
<th>First visit</th>
<th>Second visit</th>
<th>CL (n=45)</th>
<th>NCL (n=22)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.75 ± 0.16</td>
<td>4.75 ± 0.16</td>
<td>0.008</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Refractive surgery outcomes
• The central keratometry and tangential curvature showed no statistically significant differences between groups (CL vs. NCL).
• Tangential curvature was significantly steeper at the inferior cornea for the CL group at C1. Differences between first and second visit were not significant in neither the CL nor the NCL groups with exception of the inferior cornea which flattened in the CL group and steepened in the control group at C2.

Conclusions
• Central and tangential curvature showed no statistically significant differences between CL groups at C1 or C2. This would indicate corneal stability between the two visits.
• The significant flattening in tangential curvature seen at the inferior cornea in the CL group could indicate that there was a resolution of inferior steepening following cessation of CL wear as the cornea returned to a normal profile. This reinforces the fact that tangential curvature is more sensitive than keratometry or sagittal curvature in the detection of small changes in corneal shape.
• Central and nasal corneal thickness following 2 weeks cessation of CL wear were increased in the CL group, which indicated a restoration of the normal shape after corneal wearing.
• Contact lens wear appeared to have an influence on corneal measurements prior to refractive LASER surgery; however, it did not appear to have a negative implication for outcomes following refractive surgery.

References cited