Centration and Corneal Inlays

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## Global Presbyopic Population

<table>
<thead>
<tr>
<th>Region</th>
<th>Total Population (Millions)</th>
<th>2020* Presbyopes (Millions)</th>
<th>% of Population</th>
<th>Economic Means (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>5.0</td>
<td>2.6</td>
<td>46.0%</td>
<td>1.2</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>7.3</td>
<td>3.6</td>
<td>49.3%</td>
<td>1.4</td>
</tr>
<tr>
<td>Japan</td>
<td>121.6</td>
<td>60.9</td>
<td>50.1%</td>
<td>23.1</td>
</tr>
<tr>
<td>US</td>
<td>341.4</td>
<td>125.2</td>
<td>36.7%</td>
<td>57.6</td>
</tr>
<tr>
<td>Western Europe</td>
<td>393.4</td>
<td>176.0</td>
<td>44.7%</td>
<td>68.6</td>
</tr>
</tbody>
</table>

Source: CIA World Factbook for Population/Age & Market Scope

*Projections
Importance of centration
Where should you place an inlay?

A. Pupil center
B. First purkinje
C. Other
Inlay Placement

• Target inlay placement over the 1st Purkinje
• If there is a significant difference between 1st Purkinje and pupil center, place inlay half way between
• The guideline for inlay placement is to target within 300 microns from desired position
Near Acuity Relative to Inlay Placement Concentric with Coaxially Fixated First Purkinje

Percent Chance of Achieving J2 or Better Near Visual Acuity

- 3 Month Data
- N=49

* Data courtesy of Dr. Minoru Tomita
Centration guidance system

- Pre-op Diagnostic
  - Identify 1st Purkinje reflex
  - Identify pupil centroid
- Surgical Guidance
  - Real-time inlay placement indicator
- Post-op Assessment
  - Intended vs. achieved placement
Centration guidance system

Waring IV, GO
Guiding Recenteration

Immediately Post-op

Inlay Location
511 microns temporal
98 microns superior

After Recenteration

Inlay Location
9 microns temporal
90 microns superior

Waring IV, GO
Guiding Recentration

Immediately Post-Op

Inlay Location
511 microns temporal
98 microns superior

Day 1 Post-Op
20/25, J3

After Recentration

Inlay Location
9 microns temporal
90 microns superior

Waring IV, GO
**Case 1: Centration Planning**

**Pre-Op Data:**

1) **Purkinje vs Pupil:**
   - -375μm (x)
   - -219μm (y)
2) **Cord Length:** 435μm

**Inlay Placement Target:**

1) **Inlay vs Pupil:**
   - -186μm (x)
   - -110μm (y)
2) **Inlay vs Purkinje:**
   - 186μm (x)
   - 110μm (y)
Case 2: Centration Planning

Pre-Op Data:

1) Purkinje vs Pupil:
   - 110μm (x)
   - 50μm (y)
2) Cord Length: 121μm

Target Inlay Placement:

1) Inlay vs Pupil:
   - 110μm (x)
   - 50μm (y)
2) Inlay vs Purkinje:
   - 0μm (x)
   - 0μm (y)
Intraoperative Concentration Device
Centration and LVC
Summary

• Centration is an important consideration for corneal inlays
• Preoperative assessment of angle kappa and anatomy aids in successful placement
  – Similar to planning with topography
• New diagnostic and intraoperative technology
• Improved our understanding of importance of centration for all refractive surgery
  – LVC
  – MFIOLs
Thank You

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