Wavefront Guided Contact Lenses

Wavefront allows a customized match for the “optical fingerprint” of the eye

Result: 100% refractive error measured

<table>
<thead>
<tr>
<th>Conventional</th>
<th>Wavefront-guided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sphere</td>
<td>Cylinder</td>
</tr>
<tr>
<td></td>
<td>Perfect Match</td>
</tr>
</tbody>
</table>

Human Eye...An Imperfect Instrument

Many localized aberrations
“Optical fingerprint”

Higher order aberrations
- Spherical aberration
- Secondary astigmatism
- Coma
- Trefoil

Why is HOA getting so much attention?
- Any standard optical device can change the HOA a patient perceives because of the aberrations induced by the medium itself
- Conventional refractive surgery can increase HOA
- New instrumentation to measure HOA
- Industry has (and is developing) practical ways to correct HOA

Lower Order Aberrations
- Tilt (prism)
- Defocus (sphere)
- Astigmatism (cylinder)

Lower order aberrations are easily corrected with glasses or contact lenses

Leroy G. Meshel, MD
Ross, CA
### Subjects with higher Order Aberrations

Greater than one third of the emmetropes in recorded studies had significant higher order aberrations (the yellow and orange sections combined).

With myopes over 70% recorded significant higher order aberrations in the same studies.

<table>
<thead>
<tr>
<th>Category</th>
<th>0.1 - 0.2 microns</th>
<th>0.2 - 0.3 microns</th>
<th>0.3 - 0.5 microns</th>
<th>0.5 - 1.0 microns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emmetropes</td>
<td>4%</td>
<td>12%</td>
<td>19%</td>
<td>4%</td>
</tr>
<tr>
<td>Myopes</td>
<td>22%</td>
<td>31%</td>
<td>19%</td>
<td>4%</td>
</tr>
</tbody>
</table>

### Wavefront Contact Lenses

**The ultimate in refractive correction**

<table>
<thead>
<tr>
<th>Conventional Soft Contact Lens</th>
<th>Wavefront Soft Contact Lens</th>
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</table>

### How to fit Wavefront Guided Soft Contact Lenses

- Use an aberrometer to measure the patient’s lower and higher order refractive needs.
- If the patient has aberrations that could affect VA, fit with a pair of acquisition soft contact lenses as provided by the manufacturer.
- Retake the aberrometry readings for both eyes over the acquisition contact lenses.

### The Wavefront Process

#### Data Acquisition

A specially designed “acquisition” trial lens is placed on the eye; wavefront analysis is performed through the “acquisition” trial lens. This collects LOA and HOA, and measurement of optimal optical zone placement in the lens.

#### Data Transfer

Transfer the measured information to the manufacturer for the manufacture of the patient’s WFG Soft Contact Lenses. This information will vary in form depending on the aberrometer.

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Leroy G. Meshel, MD
Ross, CA
Rotation is controlled and the optic center is placed over the pupil—regardless of overall lens centration and rotation.

“... lens decentration along with rotational stability is important to provide the best visual performance…”
— Thomas Hobbs, OD
CL Spectrum, 2008

Summary of Initial 86 Eye Study
- The purpose of this study was to assess WFGCL fit, BCVA of WFGCL vs. previous modality, and to assess the efficacy of the production process from in office capture of information to ultimate dispensing of WFGCL.
- Each eye was fit with a first WFGCL and their BCVA was assessed against previous modality.
- If the first WFGCL didn’t improve vision or fit successfully, then a second WFGCL was made with the over refraction measurement. BCVA was then assessed again.

Summary of Initial 86 Eye Study
- 67% (58/86) of eyes achieved a successful fit on the first lens and showed an increase in BCVA.
- An additional 19% (16/84) of eyes achieved a successful fit on the first lens and had VA equal to their previous modality BCVA.
- A total of 94% (81/86) eyes were fit successfully with VA at least equal to previous BCVA after a second lens (if needed).

Clinical Summary-86 Eyes
- 19/32 lenses were refit in this last group reflecting the more challenging nature of the patients in this group (keratoconus, post LASIK, etc.)
- It is important to note that of those subjects that did not achieve at least one line improvement, most commented on a subjective improvement in visual quality.

Case Study: Former Olympic skier
- Refraction: -10.00 –10.00x27
- Previous VA 20/60
- VA with Wavefront lenses 20/32
- Achieved stereopsis
- Refraction: -8.50 –0.50x80
- Previous VA 20/20
- VA with Wavefront 20/20 with a reported reduction in night glare.

Leroy G. Meshel, MD
Ross, CA
Wavefront Guided Contact Lenses

Wavefront is poised to be the next wave in contact lens correction...

Thank You!

Leroy G. Meshel, MD
Ross, CA