PROSPECTIVE COMPARATIVE STUDY OF BILATERALLY IMPLANTED RAYONE TRIFOCAL VS FINEVISION POD F IN 60 EYES

Tiago B Ferreira
Hospital da Luz – Lisbon, Portugal
Tiago Ferreira’s Financial Disclosure 2018

My “Financial Interest” relevant to this presentation is highlighted in yellow bellow

J&J Vision – C, R

PhysIOL – R

Alcon – R

Ophtec – S
Purpose

To compare the clinical outcomes of two diffractive trifocal IOLs

✓ RayOne trifocal (Rayner)

✓ FineVision POD F (PhysIOL)
Methods

✓ Prospective comparative randomized interventional study

✓ Patients submitted to cataract surgery (corneal astigmatism <0.75 D)

✓ 2 groups (1:1 randomization)

30 eyes (15 patients) – RayOne Trifocal

30 eyes (15 patients) – FineVision POD F

Mean Age 67.0 ± 6.9, Median age 68 (55-79)

✓ 3 months follow-up
Methods

✓ Comprehensive preoperative ophthalmologic examination

✓ Optical biometry (Lenstar LS900; Haag-Streit AG)

Hill-RBF formula for IOL power calculation

Refractive target – first negative value

✓ Surgery – phacoemulsification with clear cornea temporal incision (2.2 mm)
Methods

Main outcome measures

Monocular and binocular visual acuities – ETDRS charts under photopic conditions (85 candelas/m²)

✓ Uncorrected (UDVA) and corrected (CDVA) distance visual acuities

✓ Uncorrected (UIVA) and distance corrected (DCIVA) intermediate visual acuities at 70 cm

✓ Uncorrected (UNVA) and distance corrected (DCNVA) near visual acuities at 40 cm
Methods

Main outcome measures

✓ Manifest refraction

✓ Defocus curves

✓ Contrast sensitivity

✓ Presence of photic phenomena
Results

Spherical Equivalent Refraction Accuracy

<table>
<thead>
<tr>
<th></th>
<th>Rayone Trifocal</th>
<th>Finevision</th>
</tr>
</thead>
<tbody>
<tr>
<td>± 0.50 D</td>
<td>100%</td>
<td>± 0.50 D</td>
</tr>
<tr>
<td>± 1.00 D</td>
<td>100%</td>
<td>± 1.00 D</td>
</tr>
<tr>
<td>± 0.50 D</td>
<td>83.3%</td>
<td>&gt; 0.51</td>
</tr>
<tr>
<td>± 1.00 D</td>
<td>100%</td>
<td>&gt; 0.51</td>
</tr>
</tbody>
</table>

Diopter (D):< -0.51, -0.50 to -0.14, -0.13 to 0.13, 0.14 to 0.50, > 0.51
Results

Monocular visual acuities

**UDVA Monocular**
- t-test: t=-0.5202, p=0.6049

**CDVA Monocular**
- t-test: t=0.0164, p=0.9870

**UIVA Monocular**
- t-test: t=-1.2775, p=0.2067

**DCIVA Monocular**
- t-test: t=0.0124, p=0.9902

**UNVA Monocular**
- t-test: t=-0.1772, p=0.8599

**DCNVA Monocular**
- t-test: t=-0.3558, p=0.7233

(RAYONE TRIFOCAL VS FINEVISION)

Tiago B Ferreira | ESCRs 2018
Results

Monocular photopic (85.0 cd/m\(^2\)) defocus curves

Defocus Curves

Rayone Trifocal
Finevision

Group effect $F(1,318)=1.81$, $p=0.1793$
Results

Photopic contrast sensitivity function (CSF) without glare – (Optec 6500, Stereo Optical, Inc.) luminance level: 85.0 cd/m²
Results

Mesopic CSF with glare – (Optec 6500, Stereo Optical, Inc.)
luminance level: 85.0 cd/m²

CSF (Mesopic Conditions with Glare)
Results

RAYONE TRIFOCAL VS FINEVISION

Photic phenomena – subjective evaluation

McAlinden QoV Questionnaire

QoV Pictures

<table>
<thead>
<tr>
<th>Glare</th>
<th>Haloes</th>
<th>Starbursts</th>
<th>Hazy vision</th>
<th>Blurred vision</th>
<th>Distortion</th>
<th>Double vision</th>
</tr>
</thead>
</table>

Frequency Severity Bothersome
QoV Score [0-100]
Score Category
RayOne Trifocal (n=30) FineVision (n=30)

Global Scores

Statistically significant difference between the 2 groups in Depth Perception (p=0.042)


Results

Photic phenomena – objective evaluation

Light distortion index (LDI)
percentage of the total tested area not visible
due to photic phenomena

Light-distortion analyzer
(HLMP-CW47-RU000, Agilent Technologies)

Conclusions

✓ Both IOLs offer excellent visual and refractive results

✓ Similar contrast sensitivity

✓ Less photic phenomena with the RayOne Trifocal
PROSPECTIVE COMPARATIVE STUDY OF BILATERALLY IMPLANTED RAYONE TRIFOCAL VS FINEVISION POD F IN 60 EYES

Thank you