Visual Performance of Small-Aperture Intraocular Lens for Extending Depth of Focus in Cataract Patients
One Year Results

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Non ho interessi finanziari nella presentazione
KAMRA, Small Aperture Moves Inside the Eye within the IC8 IOLs Using Standard Implantation Surgical Technique

KAMRA™ Corneal Inlay

IC-8™ Small-Aperture IOL

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Optical Modeling
Extended Depth of Focus Effective for Far Vision
(3.0 mm pupil size)

IC-8™ Small-Aperture IOL (Target Corrected to -0.75 DS)

Standard Monofocal IOL

Diffractive Multifocal IOL
• With both eyes corrected to plano, patients achieve 3.00 D of continuous functional range of vision.
IC8  Far Extended Depth of Focus IOLs
Most Important Advantage
Pinhole Effect is Effective Up to 1.5 D of Astigmatism

Procedure:

• First eye: DOMINANT EYE → monofocal IOL → target PLANO

• Second eye: NON DOMINANT EYE → IC 8 → target -0.75 sf

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IC-8™ IOL Design

- IOL Material
  - Single-piece hydrophobic acrylic

- Mask
  - PVDF and nano-particles of carbon
  - 1.36 mm aperture
  - 3.23 mm total diameter
  - 3200 microperforations
  - 5 microns thick
IC8 and Monofocal IOLs: Monocular UVA
42 eyes of 21 patients: One Year Results

**MONOFOCAL IOL UCVA /20**

**DISTANCE**

**INTERMEDIATE 67 cm**

**NEAR 40 cm**

**IC8 IOL UCVA /20**

**DISTANCE**

**INTERMEDIATE 67 cm**

**NEAR 40 cm**
IC8 and Monofocal IOLs: **Binocular UVA**

42 eyes of 21 patients: One Year Results

### DISTANCE

<table>
<thead>
<tr>
<th></th>
<th>1 Week PO</th>
<th>1 Month PO</th>
<th>3 Months PO</th>
<th>6 Months PO</th>
<th>9 Months PO</th>
<th>1 Year PO</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERMEDIATE 67 cm</td>
<td>18.33</td>
<td>17.76</td>
<td>17.53</td>
<td>16.56</td>
<td>19.5</td>
<td>20</td>
</tr>
<tr>
<td>NEAR 40 cm</td>
<td>32.24</td>
<td>29.02</td>
<td>26.68</td>
<td>28.33</td>
<td>32.11</td>
<td>27.33</td>
</tr>
</tbody>
</table>

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Extended Depth of Focus Distance Vision Effect

• Far vision is not monovision similar: IC8 provide at least 20/25 UFVA

• Pinhole Effect is effective up to 1.50 D of corneal astigmatism and +-1,00 sf Extended Depth of Focus for Far Vision

• Binocular Near Vision is slightly inferior than IC8 eye outcomes because near vision image with monofocal IOL is different and pay a tribute binocularly.

• Bilateral IC8 implantation provide better near vision outcomes

• Temporal visual field slight limiting effect is perceived in some patient due to a mild perception of the small aperture ring
Preoperative Exam Results (21 eye tested)
Normal 61.9% (13 eyes)
Borderline 23.8% (5 eyes)
Outside Normal Limits 14.3% (3 eyes)
Mean MD: -0.76 ± 1.74
Mean PSD: 1.93 ± 1.25

Postoperative Exam Results (20 eyes at 6 months)
Normal 60.00% (12 eyes)
Borderline 30.00% (6 eyes)
Outside Normal Limits 10.00% (2 eyes)
Mean MD: -2.19 ± 1.39
Mean PSD: 2.11 ± 0.56

Visual Field Exam Results are not penalized by the presence of the IC8 Mask

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Daytona Optos 200 degree field

MONOFOCAL IOL

IC8
IC8 Centration
AcuTarget HD Acufocus
Pre Operative Planning for IC8 Centration
and Post Operative Results
IC8 IOL Easier to Center vs. Corneal KAMRA

Preoperative

<table>
<thead>
<tr>
<th>Purkinje vs Pupil Cord Length:</th>
<th>435 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purkinje vs Pupil Angle:</td>
<td>54°</td>
</tr>
<tr>
<td>Purkinje vs Pupil:</td>
<td>-258(x), 350(y) µm</td>
</tr>
<tr>
<td></td>
<td>SUPERONASAL</td>
</tr>
</tbody>
</table>

Postoperative

| Inlay vs Pupil:               | invalid µm |
| Inlay vs Purkinje:            | 76(x), -441(y) µm |

Mean Inlay Vs Purkinje:
X 106.28 µm ± 213.2 µm
Y 0.0 µm ± 139.4 µm
IC 8 IOL Decentration
Two Months PO

Decentered Presbyopic IOL and Quality of Vision
It is the most important IOL related complication
You have to go back to the surgical theatre

BCVA 20/20 -1.50 sph
Slight PCO Decreases Near Depth of Focus
Slight PCO Decreases Near Vision Depth of Focus
As in All Diffractive and EDOF IOLs

AcuTarget HD
Simulation of the image of a baby at 1 meter distance on the patient’s retina

Original Image

Image of a baby at 1 meter distance

Retinal Image

Double-pass Image

OSI: 3.5

Predicted VA:
Decimal 0.7
Snellen 20/29

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Contrast Sensitivity
(n=20 at 6 Months, Optec 6500)

- Binocular contrast sensitivity is equivalent to the contrast sensitivity in the monofocal IOL eye
- Neuroadaptation and retinal response to illumination will further boost the contrast performance in the IC-8™ eye
IC8 and Posterior Capsular Opacity
15 Yag Laser Treatment (70.37%) Total Implant 27 IC8
1 Year PO

27 IC8 IOLs implantation
24 Patients
21 monolateral implants
3 bilateral implants

Before YAG Laser Treatment

Post YAG Laser Treatment

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IC8 IOLs
Yag Laser Treatment
Specific Technique Required to not Damage the Mask

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3 Bilateral Patients Implantation
Mean age 58.33 ±9.45 years
Summary

- Results for the IC-8™ small aperture IOL show:
  - Far and Near Extended range of vision after cataract extraction
    - Mean score of 20/20 across near, intermediate and far distances
    - No difference in symptoms or visual fields seen between IC-8 and fellow eyes
  - Retinal evaluations and surgical procedures are possible to perform with specific technique

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Thank you for your attention