Extending Depth of Focus Using Small Aperture IOL During Cataract Surgery
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Small Aperture Moves Inside the Eye

KAMRA™ Corneal Inlay
IC-8™ Small-Aperture IOL

Small Aperture IOL Milestones

• **2011**: 1st implants in Honduras by Dr. Kevin Waltz
• **2012**: Proof of Concept study with 3-piece silicone IOL
  • Dr. Barragan and Prof. Grabner
• **2013**: Single-piece hydrophobic acrylic IC-8 IOL study
  • Prof. Grabner and Dr. Ang: Prospective multicenter study
• **2014**: IC-8 IOL and inserter achieve CE Mark

Silicone IOL
Hydrophobic Acrylic IOL
IC-8 IOL Inserter
CE Marked IC-8™ IOL Design

• IOL Material
  – Single-piece hydrophobic acrylic

• Mask
  – PVDF & nano-particles of carbon
  – 1.36mm aperture
  – 3.23mm total diameter
  – 3200 microperforations
  – 5 microns thick

Study Design

• Prospective, Non-comparative case series
• Monocular Implants: IC-8 IOL and Monofocal IOL
• Binocular Implants: IC-8 IOL both eyes
• 16 eyes of 16 patients with monocular IC-8 IOL implants
• 12 eyes of 6 patients with bilateral IC-8 IOL implants

Study results
Extends Depth of Focus

• Defocus curve results from IC-8™ IOL patients demonstrate broad range of vision across near, intermediate and far distances versus a monofocal IOL
• Vision at 20/40 or better for a range of 4D when implanted with an IC-8 IOL

Excellent Visual Acuity Across all Distances

• Mean achieved UCIVA in the IC-8™ IOL eye is J2, with refractive target correction to -0.75D mean improves to J1
• 89% of eyes achieved J1 or better TCIVA

Excellent Visual Acuity Across all Distances

• Mean achieved UCIVA and TCIVA in the IC-8™ IOL eye is 20/20
• 100% of patients achieved 20/25 TCIVA
Excellent Visual Acuity Across all Distances

- Mean achieved UCDVA and TCDVA in the IC-8™ IOL eye is 20/20
- 100% of patients achieved 20/25 TCDVA

Contrast Sensitivity

- Contrast sensitivity in the IC-8 IOL eye is similar to the monofocal eye at ALL spatial frequencies (with glare)
- Contrast sensitivity in the IC-8 IOL eye is lower by 0.1 to 0.2 log units when compared to the monofocal eye at ALL spatial frequencies (no glare)

No Surgical Adaptation Needed

- Personal cataract removal technique acceptable
  - Choice of manual or femtosecond laser-created incisions, capsulotomy and lens fragmentation
- In the bag lens placement same as any standard IOL:
  - Haptics at 6 and 12 o’clock
  - Nudge nasal if possible
- To date no centration issues experienced with any version of the lens
Investigating Bilateral Implantation

- 6 patients implanted bilaterally
- 6 month results:
  - UCNVA: 100% J2 or better
  - UCIVA: 100% J1 or better
  - UCDVA: 100% 20/20 or better
- Bilateral IC-8™ patients showed comparable photopic and mesopic contrast scores, with and without glare, to patients with an IC-8 IDL and a monofocal IOL.

Pearls and Tips

- Implantation
- Refractive targeting
- Postoperative care

Summary

- Reliably extends depth of focus
- Excellent visual acuity across all focal distances
- Lens design is forgiving of refractive misses
- Low level of visual symptoms
- Free of centration issues
- No surgical adaptation necessary
- Ocular assessments and procedures possible post implantation
- Bilateral implantation results are promising