

CURRENT AND FUTURE OPTIONS FOR THE CORRECTION OF PRESBYOPIA

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MONOVISION

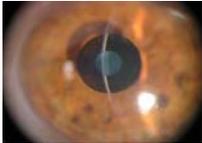
Longest history w both contacts, lasik, lols
Easiest and cheapest
Arguments continue on best residual—generally between -1.25 and -2.00
Pros: Immediate results
Cons: Some loss of stereopsis and loss of distance VA in one eye

- MonoVA lasik can be difficult to reverse and does make future lens calculations more difficult

INLAYS

Kamra: first to get FDA approval.
Performed in deep corneal pocket and requires a special instrument for centration
Produces increased depth of field by pinhole effect
Cons: Highest cost of all inlays to perform.

- 1.6 mm pupil for lift in non dom eye resulting in permanent loss in contrast sensitivity.
- Cosmesis (black eye)
- Fibrosis of inlay as foreign body



KAMRA CONTINUED

Pros: Good near VA with mild compromise of distance vision
 No diminished stereopsis or binocularity
 Removeable
 Range of vision



RAINDROP

2mm transparent hydrogel inlay -30 microns thick
 Placed under a 30% central thickness lasik flap
 Inlay placed over pupil without need for special centration instruments
 Av 5 lines gained of near and 3 of intermediate
 Provides increased depth of focus but steeping central cornea (profocal)
 Distance VA remains good with av of 1 line loss of BCVA
 Little or no effect on contrast sensitivity
 Removable
 Fibrosis can occur



Raindrop™ Near Vision Inlay

Physiologically transparent corneal inlay

- Hydrogel, invisible to the naked eye
- 99.7% light transmittance

Biocompatible

- Similar water content and refractive index as the cornea
- Excellent nutrient flow

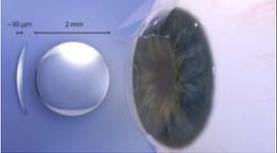
Small

- 2.00 mm diameter, 30 microns thick

Easily inserted under a femtosecond laser corneal flap

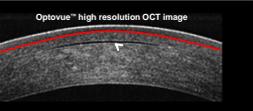
Thin edge allows cornea to lay flat and seal securely

Removeable




RAINDROP – MECHANISM OF ACTION

Epithelial re-modeling over the inlay creates a Profocal™ cornea with near vision centered over the pupil and gradually transitioning to intermediate and distance vision out to the periphery



Optovue™ high resolution OCT image

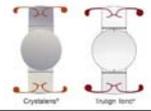
iTrace™ wavefront aberrometry showing a Profocal™ cornea with vision for



1. Near
2. Intermediate
3. Distance vision

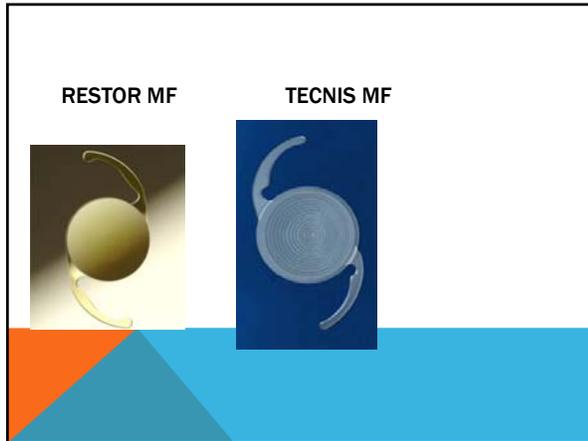
ACCOMODATIVE IOL'S

Crystalens and Trulign (Crystal w Toric correction)
 Correct range of vision by both accommodation and extended depth of focus
 Correct high myopes to high hyperopes
 Pros: Good distance and intermediate with variable amounts of near unless non dom eye over corrected.
 Cons: Can use with mild ARMD, glaucoma, post refractive surgery (RK and LVC).
 Cons: fibrosis syndrome (Z) and more frequent need for refractive touch ups (LVC or PB lens)



MULTIFOCALS

ReStor and Tecnis MF
 Newer lower add versions have been well accepted by patients and docs yielding more acceptable near focal points and intermediate vision
 Glare and Halo less noticeable or adaptable if one selects out for pts with lower aberrations (corneal coma).
 Centration can still be an issue for ReStor
 Must target less than .75D astig for better visual quality.
 Pupil size can effect near and distance vision.



EXTENDED DEPT OF FOCUS

Tecnis Symphony and Symphony Toric
Still has rings but not a true multifocal. Thus fewer issues with glare and halo
Increase depth of focus with diffractive optics to increase field of vision and decreases chromatic aberration.
Compromise is in fine near VA

The image displays two contact lenses, the Tecnis Symphony and the Symphony Toric, both featuring a ring-like design. The Tecnis Symphony lens is on the left and the Symphony Toric lens is on the right. Both lenses are shown against a white background with the brand name 'TECNIS Symphony' printed above them. The background of the slide is white with a blue and orange geometric design at the bottom.

RxSight (Formerly Calhoun Vision)

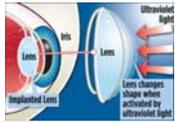
Recently FDA approved for patients with $\geq .75$ D of corneal astigmatism.
IOL utilizing UV light adjustment to change the shape of the lens for increasing depth of field, sphere change or toric change.
When a portion of the lens is irradiated with near-UV light, it polymerizes the macromers in the plastic matrix of the lens
This light treatment can change both sphere and astigmatism correction within the lens as needed. The treatment is later fixed in with a different UV light treatment.

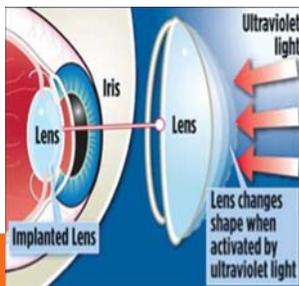
The image is split into two parts. On the left, a surgeon in a blue cap and mask is performing a procedure on a patient's eye using a surgical microscope. On the right, a close-up of the RxSight lens is shown, which is a spherical lens with a thin, curved ring around its equator. The background of the slide is white with a blue and orange geometric design at the bottom.

THE FUTURE

Drops such as PRX-100 by Presbyopia therapies and Ev06 (Novartis). Provides miosis without stimulating accommodation. (1.6-1.9 mm pupil for 8 hours)

Trifocal IOL's: Zeiss AT-LISA and Fine Trifocal used outside US with good success: uses constructive interference to capture and redistribute incoming light. Less issues with glare/halo





FluidVision by PowerVision: Acrylic IOL with ant and post optics with central cavity between them. Compressible haptics contain silicone oil based fluid. Requires large incision currently.

Liquid Crystal by Elenza

- Combines nanotechnology, artificial intelligence and advanced electronics to seamlessly autofocus an optic. Does not need accommodative muscles to work—senses pupil size and reacts.

FLUIDVISION



The FluidVision lens from PowerVision stores a fluid in the haptics in the periphery of the lens. Then, accommodative effort forces the fluid to the center, deforming the anterior optic and shifting the eye's focus.

Visibility Implants from Refocus:

- 4 scleral tunnel implants in oblique quadrants to strengthen the ciliary accommodative reaction.
- Flexivue corneal inlay—inlay with 3 add powers that is placed in a deep pocket

No surgery in the visual axis



Clearly, we have many options for presbyopia management currently and the future looks bright for additions to this sought after technology

Thank you for your attention
