

TLC Vision®

Refractive Surgery FAQs.

Help your doctor with refractive surgery patient education

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Clinical Services
TLC Laser Eye Centers



Refractive Surgery

Corneal

- LASIK
- Surface Ablation
 - PRK
 - LASEK
 - Epi-LASIK
- AK - Femto
- ICRS - Intacs
- Inlays
 - Kamra

Intraocular

- Phakic IOL
 - Verisyis
 - Visian
- CLE – Clear Lens Extraction
- Cataract Surgery
 - Toric IOL
 - Multifocal IOL
 - Accommodative IOL
 - Femtosecond Assisted

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The OD's role in Refractive Surgery

- Determine the patient's interest
- Make the patient aware of your ability to co-manage surgery
- Discuss advancements in the field
- Outline expectations
 - Presbyopia/monovision
 - Enhancements
 - Risks
- Make a recommendation
- Manage post-op care and expectations

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Refractive Error

- Myopia
- Astigmatism
- Hyperopia
- Presbyopia

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Myopia

FDA Approval	Common Use
▪ LASIK: 1D – 14D	▪ LASIK: 1D – 8D
▪ PRK: 1D – 13D	▪ PRK: 1D – 6D
▪ Intacs: 1D- 3D	▪ Intacs: 1D- 3D
▪ P-IOL: 3D- 20D	▪ P-IOL: 8D- 20D
▪ CLE/CAT: any	▪ CLE/CAT: any

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Myopic Astigmatism

FDA Approval	Common Use
▪ LASIK: -0.25D – -6D	▪ LASIK: -0.25D – -3.50D
▪ PRK: -0.25D – -6D	▪ PRK: -0.25D – -3.50D
▪ Intacs: NONE	▪ Intacs: NONE
▪ P-IOL: NONE	▪ P-IOL: NONE
▪ CLE/CAT: -0.75D - -3D	▪ CLE/CAT: -0.75D - -3D

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Hyperopia

FDA Approval	Common Use
▪ LASIK: 0.25D – 6D	▪ LASIK: 0.25D – 4D
▪ PRK: 0.25D – 6D	▪ PRK: 0.25D – 4D
▪ Intacs: NONE	▪ Intacs: NONE
▪ P-IOL: NONE	▪ P-IOL: NONE
▪ CLE/CAT: any	▪ CLE/CAT: any

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Hyperopic Astigmatism

FDA Approval	Common Use
▪ LASIK: 0.25D – 6D	▪ LASIK: 0.25D – 4D
▪ PRK: 0.25D – 6D	▪ PRK: 0.25D – 4D
▪ Intacs: NONE	▪ Intacs: NONE
▪ P-IOL: NONE	▪ P-IOL: NONE
▪ CLE/CAT: -0.75 -3D	▪ CLE/CAT: -0.75 - -3D

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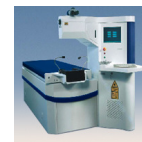
Mixed Astigmatism

FDA Approval	Common Use
▪ LASIK: 1D – 6D	▪ LASIK: 1D – 4D
▪ PRK: 1D – 6D	▪ PRK: 1D – 4D
▪ Intacs: NONE	▪ Intacs: NONE
▪ P-IOL: NONE	▪ P-IOL: NONE
▪ CLE/CAT: -0.75D - -3D	▪ CLE/CAT: -0.75 - -3D

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FDA Approved LASERS

- Alcon – Allegretto
- B&L – Zyoptix
- AMO – VISX CustomVue
- Nidek – EC5000
- Zeiss- Meditec Mel 80



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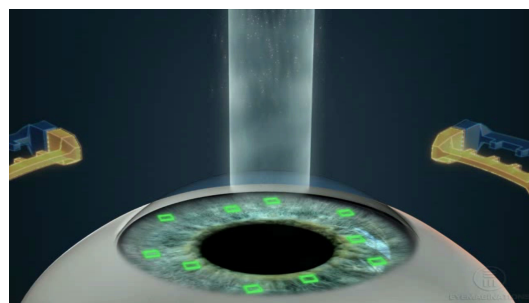
VISX CustomVue Platform



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Eye Tracking & Iris Registration



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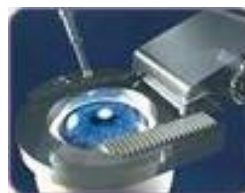
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LASIK & Surface Ablation Types of Corneal Ablation

- **Conventional Spherical treatment**
 - Program laser with spectacle Rx
 - Induces significant spherical aberration
 - Rarely performed
- **Wavefront Guided – Custom**
 - Uses patient's aberrometry to guide treatment
 - Induce less spherical aberration compared to conventional ablations
 - Increase Quality of Vision
- **Prolate – Optimized**
 - Age-related prolate pattern
 - Induce less spherical aberration compared to conventional ablations
 - Increase Quality of Vision

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Mechanical Microkeratome



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Mechanical Microkeratome



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Femtosecond Lasers

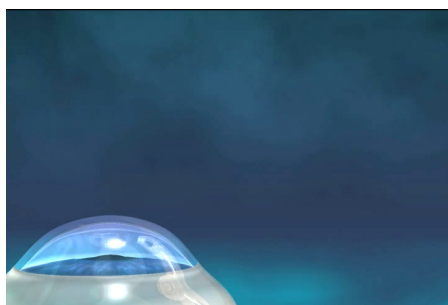
- Intralase
 - iFS
- Ziemer
 - LDV
- Femtec
 - 2010 Perfect Vision
- Zeiss
 - VisuMax
- Technolas
 - Victus



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Femto Second LASIK Flap



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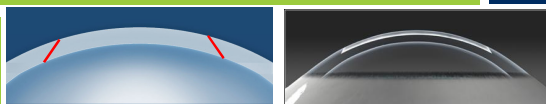
Intralase iFS



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Inverted Bevel-In Side Cut Angle



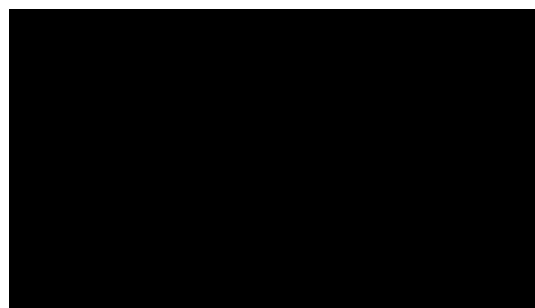
- Provides better wound healing for enhanced biomechanical stability of the post LASIK cornea^{1,2}
- Significantly stronger flap adhesion post-operatively for improved wound healing
 - 3x more force required for iFS™ laser (150° side cut) vs. microkeratome during flap lift²
- Virtually effortless flap lift, replacement, and positioning for maximum flap stability^{3,4}
- Significantly reduced flap gutter³

1. Prof J Marshall, PhD. Data on file, AMO Development, LLC.
 2. Prof M Kooz, MD. Presented ASCRS 2008.
 3. P Binder, MD, A Chayet, MD. Presented ASCRS 2008.
 4. A. Chayet, MD. Data on file, AMO Development, LLC.

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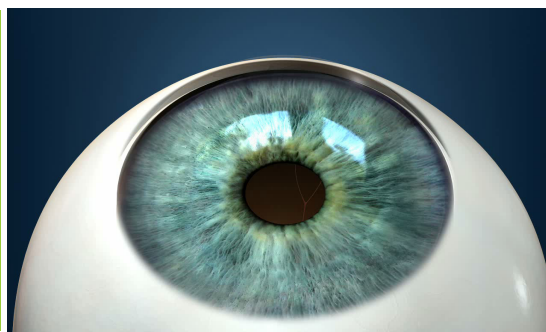
Elliptical Flap with Inverted Side Cut



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Corneal Nerves – Dry Eye



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Advantages of Femtosecond Flap

- Independent specific diameter
 - Independent specific thickness
 - Better flap centration
 - Variable hinge size/location
 - Beveled edge
 - Smooth evenly hydrated stromal bed
 - Conserve tissue
 - Planar shape
- Safer**
 - Less complications
 - Less loss of BCVA
 - More gain of BCVA
 - Biomechanically stronger
 - Lower risk of keratectasia
 - Better Efficacy**
 - Induce less HOA
 - Smoother beds
 - Even hydration
 - Faster visual recovery
 - Better Low Contrast vision

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Femtosecond Laser flap vs. Microkeratome

- What I tell patients about Femtosecond Laser flaps:
 - Less flap-making risk
 - Less long-term consequences if problems
 - More precise
 - More 20/20's-better Visual outcome predictability
 - Better low contrast [night] vision
 - Thinner flaps
 - More tissue left
 - Less dryness
 - Corneal sensation returns faster with femtosecond flap compared to keratome flap

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Patient's Experience

- Key points to discuss with your patients:
 - Risk of enhancement
 - Presbyopia
 - Use of antibiotic and steroid
 - Reduce the risk of infection and inflammation
 - Dry eye
- Expectations for surgery day:
 - Mild oral sedative and numbing drops
 - Pressure feeling during flap creation
 - Vision may grey or black out
 - Burning smell ☹️

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Who is a candidate for Lasik?

- 18 and older (preferably 20-21+)
- No eye disease
- Nearsighted, farsighted, & astigmatism
- Stable prescription
- Not seeking correction for primarily near vision
- *Out of Contact lenses- critical for good outcomes*
 - 2 weeks for soft lenses
 - One month per decade of wear for hard/RGP
 - Until the cornea and RX are stable

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Contraindications for LASIK

- **Keratoconus**
 - Irregular Astigmatism
- **Monocular Patients**
 - Amblyopic patients must have BCVA 20/40 or better
- **Severe Dry Eye**
 - Exposure Keratopathy
- **Pacemaker**

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Common Concerns

- **Dry Eye**
 - No current symptoms, stable RX
- **Previous ocular Herpetic infection**
 - Some surgeons consider this an absolute contraindication
 - No occurrence for 6-12 months
 - Pre-treat with oral Acyclovir
- **Corneal Scar**
 - Consider PRK depending on placement
- **EBMD or Recurrent Corneal Erosion**
 - Consider PRK

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Common Concerns

- **Pregnant/Breastfeeding**
 - 3 normal cycles and stable RX
- **Diabetes**
 - No retinopathy, stable RX, stable/low A1C
- **Autoimmune Conditions**
 - Concern about DES
 - Rheumatoid Arthritis = contraindication
- **HIV**
 - Need blood work

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LASIK Post-Operative Care

- **Patient Instructions during Post Op:**
 - For 1 week -
 - No Swimming or using hot tubs
 - No Makeup
 - No Sports
 - No Rubbing or squeezing the eye (some say 1- 6 months)
 - Avoid dirty environments and wear sunglasses
 - Use the fox shield at night
 - Kick boxing and karate should wait 3 months
 - Scuba diving 1 month

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LASIK Post-Operative Care

- **TYPICAL MEDICATION REGIMEN:**
 - Antibiotic - Vigamox/Zymarid qid X 1 week
 - Steroid - Lotemax/FML/Pred Forte
 - q2h x 2 days
 - qid X 5-7 days
 - Artificial Tears qid X 1 month
 - Restasis bid x 1 month
- **Protection of the flaps**
 - Fox shield QHS x 5-7 days
 - Sunglasses outdoors for 1 week
 - Limited physical activity

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LASIK Post-Operative Care

- POST-OP EXAM SCHEDULE
 - Day 1
 - Day 3-5
 - Months 1, 3, 6*, and 12*
- Enhancements:
 - Post op schedule the same as a primary procedure

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LASIK Post-Operative Care

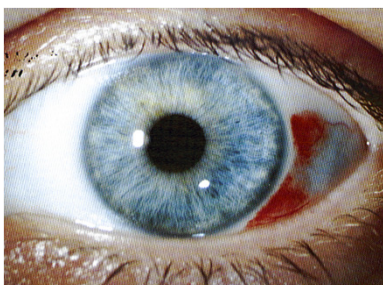
Common Early Clinical Findings:

Visual recovery is quite rapid with LASIK – usually-

- 20/25 or better day 1
- VA varies with amount of myopic correction
- VA recovery is slower with Hyperopes
 - Takes one week to get to good VA, one month to get to great VA (similar to PRK)
 - Usually No “wow” effect on the 1 day post op.
- Age, refractive error, and ocular surface conditions will also contribute to the healing rate

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Subconjunctival Hemorrhages


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Patient RS

- 31 year old male
- 3 hours S/P uneventful LASIK OU
- Patient phones office with complaints of discomfort OU

“My right eye became very uncomfortable about an hour after I got home and the vision is much better currently in my left eye.”

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What do you tell patient?

1. Go back to sleep the eye should feel better in the morning
2. Take another vicodin, that should help the pain
3. It is normal to have pain after LASIK, just increase the artificial tears until the pain goes away
4. RTO now

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LASIK vs. PRK

LASIK

- ▶ Faster recovery, vision functional in a day, great in a week
- ▶ Less discomfort (burning/stinging/tearing 2-3 hours)
- ▶ Less post-op meds
- ▶ Fewer post-op visits
- ▶ Can treat higher Rx*

PRK

- ▶ Less invasive (no flap)
- ▶ Vision usually functional in a week, great in a month
- ▶ No flap complications
- ▶ Can treat low to moderate Rx

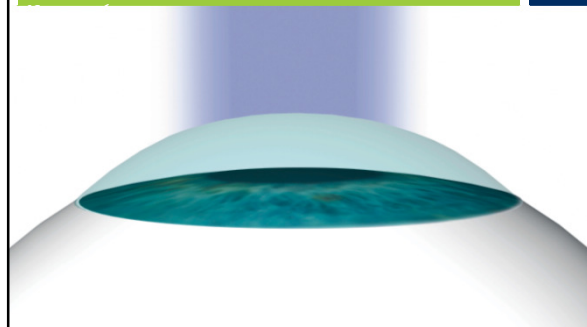
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Surface Ablation = PRK

- Why PRK?
 - Patient's fear of "the flap"
 - Hobby/Job with a high risk for trauma
 - Increased understanding of high risk corneas
 - Improved pain management
 - Use of Mitomycin-C
 - Enhancement of previous Lasik procedure
 - You can perform PRK on your own patients in Oklahoma!!

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Surface Ablation Procedure



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Surface Ablation

- PRK - Epithelium removed:
 - Mechanical debridement (scrape)
 - Transepithelial removal (laser)
 - Chemical Debridement (alcohol)
 - Brush (Amoil's Brush)
- LASEK
 - Epithelial flap produced by alcohol
 - Same laser as PRK
 - Epithelium replaced over ablation area
 - Bandage CL
 - No difference in discomfort or visual recovery

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Surface Ablation

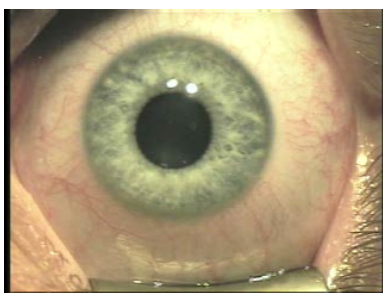
- PRK – Photorefractive keratotomy
- LASEK – Alcohol assisted with epi-flap
- Epi-LASIK – mechanical microkeratome
- ASA – Advanced Surface Ablation -hybrid



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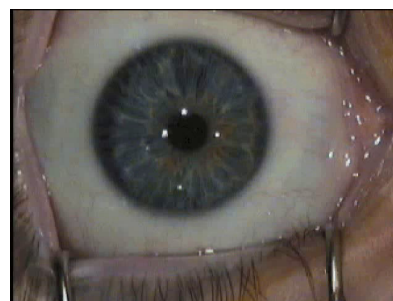
Brush



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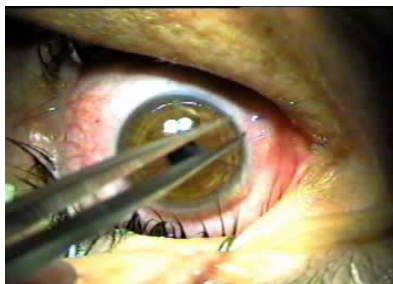
LASEK



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LASEK – Discard Flap



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Surface Ablation POST-OP KITS

- Antibiotic (Zymaxid or Vigamox)*
- Steroid (Flarex, FML, Pred Forte, Durazol)
- NSAID (Acular LS, Bromday)
- Lubricants (PF)
- Fox Shields
- Sunglasses
- Post-op Instructions
- **Bring their post op bag for each follow up!!!**

* May be Rx'ed separately

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Surface Ablation – Patient Instructions

- No makeup for 1 week
- No swimming or hot tubs for 1 week
- No exercise for 1 week
- Avoid dirty environments for 1 week
- You may shower, but avoid rubbing the eye and/or getting water or chemicals in the eye

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Surface Ablation Vision Expectations

- 20/40-20/80 Day 1
- 20/40-20/200 Days 2-4
- 20/30-20/80 Day 4-5
- VA rapidly improves 2-3 days after removal of BCL as epithelium thickens and smoothes
- Functional Vision at day 5-6
 - Expect to have driving vision
- Good vision at 1 week to 10 days
- Excellent vision at 4-6 weeks
- Healed at 6 months

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Surface Ablation Post-Operative Visits

- **Daily**, until the Epithelium is filled in and the contact lens is removed
- **1- 2 weeks** after epithelium is healed
- **Months 1, 3, 6,**
- Enhancement if needed at 6 months or later

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Surface Ablation Post-op

- **Antibiotic** x 1 week or until BCL removed
 - 4th generation fluoroquinolone
 - Possibly add Polymyxin B/trimethoprim
- **Steroid** (often a soft steroid)
 - fluorometholone or loteprednol etabonate
 - **fast taper**: QID x 1 week, TID x 1 week, BID x 1 week, qday x 1 week
 - **slow taper**: QID x 1-4 weeks, TID x 1-4 weeks, BID x 1-4 weeks, qday x 1-4 weeks
 - Some surgeons prefer to start with Pred and taper to soft steroid
- **NSAI**
 - 2-4 days for pain control if needed
- **Dry eye management**
 - Artificial tears qid for 1-6 months
 - Cyclosporine 0.05 %

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Surface Ablation POST-OP REGIMEN

- During Epithelial Healing
 - Antibiotic & steroid qid until epithelium healed
 - NSAID 2 days then D/C
 - This may delay epi healing, but makes the eye feel better. It can be used up to 4 days, but try to D/C quickly and if you think the patient is still using it, confiscate the bottle
 - D/C antibiotic once epithelium is healed
 - Topical anesthetic drops (only as an escape from pain, potentially can delay healing)
 - Vitamin C 500mg bid

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Surface Ablation Bandage Contact Lens

- Remove when epithelium is 100% closed
 - usually at day 4-5
- If falls out – RTO
 - Do NOT let patient re-insert lens
- Let patient know that VA immediately after BCL removal may be worse or no change

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T LCV Vision®

Surface Ablation POST-OP REGIMEN

Steroid

- Fast taper

▪ 4 x day for 1 week	4 x day for 1 month
▪ 3 x day for 1 week	3 x day for 1 month
▪ 2 x day for 1 week	2 x day for 1 month
▪ 1 x day for 1 week	1 x day for 1 month
- Lubricants frequently (PF preferred)

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Surface Ablation Post-Operative Care

- PAIN...
 - Onset of pain as early as 30 – 60 minutes after leaving the center.
 - Patients should be advised of variability of discomfort level
 - But often day 2 and 3 are worse than day of surgery

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T LCV Vision®

Pain Control

- Cold (Ice packs)
- Topical NSAID
- Topical Anesthetics*
- Bandage Contact Lenses
- Oral Medications
 - NSAID
 - Steroids
 - Narcotics

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Patient MA

- S/P PRK x 3 day
- I woke up this AM and my left eye hurts A LOT
- No pain last night in either eye
- Feels like a broken contact lens in my left eye
- Vision is blurry in both eyes

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Questions for MA

- Did the bandage contact lens fall out?
- Is the left eye having mucus discharge?
- Is the vision worse in the left eye?

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What do you tell MA?

1. Go back to sleep the eye should feel better in a few hours
2. Take another vicodin, that should help the pain
3. It is normal to have pain after PRK, just increase the artificial tears until the pain goes away
4. RTO today

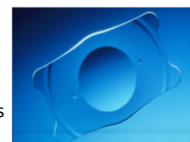
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Phakic IOLs – 2 Types

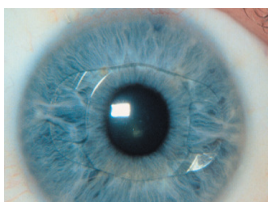
- Anterior Chamber
 - Verisyse
 - Iris clip
- Posterior Chamber
 - Visian
 - Between iris and crystalline lens



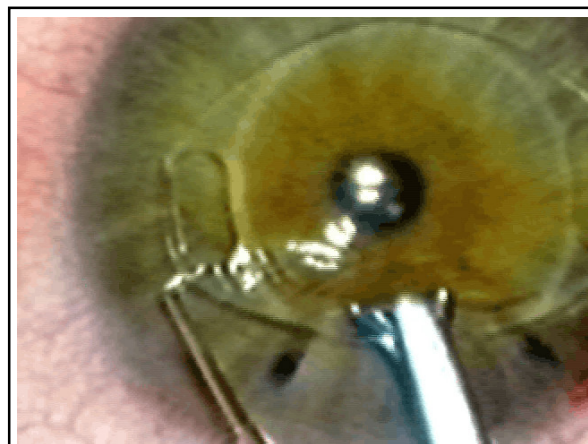
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Verisyse/Artisan Phakic IOL

- Current design in use for 15 years
- Over 100,000 myopic, hyperopic, and toric lenses implanted worldwide by more than 5,000 physicians to date
- Myopia -3.0D to -23.5D
- Foldable lens, toric lens and hyperopic lens available in Europe

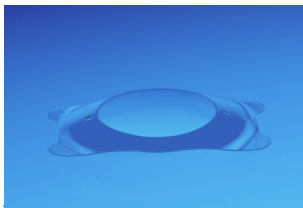


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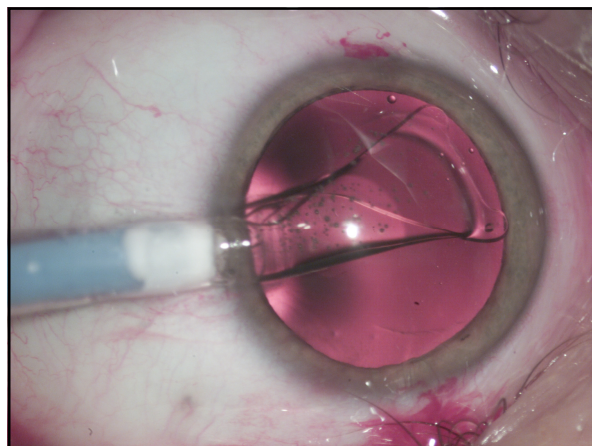


STAAR Visian®

- FDA approval December 2005
- Quality of Vision
- Cosmetic Appearance
- Rapid Recovery
- Removable
- US FDA Approval
 - Correct Myopia 3D -
 - Reduce Myopia 16D
- Toric and hyperopic lens available internationally



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Visian - Simplicity

- A 15 minute out-patient procedure
- Can typically be done with oral sedation and topical anesthesia (IV sedation if necessary)
- Footplates rest in ciliary sulcus requiring no sutures

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Visian - Cosmetic Appearance



Patient cannot see the Visian ICL. .
Reflection from the Verisyse lens is apparent

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Visian - Rapid Recovery

- Injector inserted through 2.8 – 3.5mm incision
- Some pressure felt during surgery
- No sutures
- Very little discomfort immediately after surgery
- Mild FBS and halos for few days
- Halos improve with time

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Visian - Removable

- If patient is unhappy with vision, lens can be easily removed (very flexible)
- Body does not recognize the ICL as foreign, so the lens does not erode into any structures

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Phakic IOL - Patient History and Qualifications

- Careful questioning and gauging expectations
- History of contact lens wear
 - D/C soft lens for 3 days
 - D/C rigid lens for 3 weeks
- Bilateral sequential vs bilateral simultaneous

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Phakic IOL - Contraindications

- Patients under age 21
- Progressive refractive error
- Cornea/Endothelial pathology
- Glaucoma
- Narrow AC angle
- Cataract or capsular opacification
- History of:
 - Iritis
 - Synechiae
 - Pigment dispersion
 - Pseudoexfoliation
- Previous corneal/refractive surgery?
- Keratoconus?

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Phakic IOL - Exam and Testing

- Manifest and cycloplegic refraction
- Unaided and aided visual acuities
- Keratometry or corneal topography
- Gonioscopy (grade 2 or greater)
- Pachymetry-corneal thickness
- Pupil size in normal and mesopic conditions (6mm or under mesopic)

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Phakic IOL - Exam and Testing

- Anterior chamber depth
- Intraocular pressure (IOP)
- Biomicroscopy-dilated and undilated
- Ophthalmoscopy-dilated
- Horizontal white to white-
UBM / caliper / Orbscan / Pentacam
- Endothelial cell count

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Visian - Working Space = Anterior Chamber

- Myopes: Mean ACD = 3.8 mm
- Hyperopes: Mean ACD = 3.3 mm*
 - Not yet FDA Approved

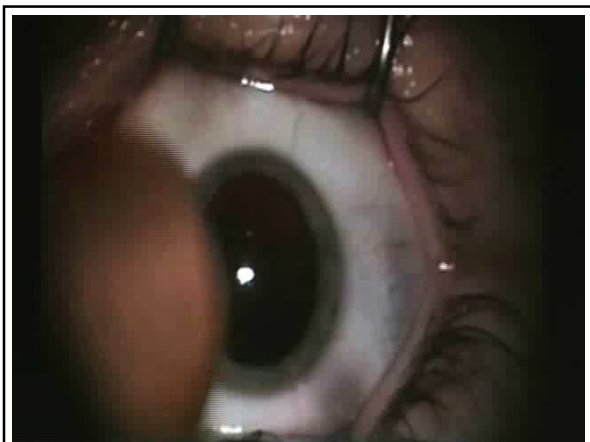
Need minimum of 2.8mm to perform safe surgery

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Visian - Peripheral Iridotomy

- Necessary to avoid pupillary block
- Laser
 - Argon pre-treatment in some cases
 - YAG only in most patients
- Placed in mid-periphery (large >0.5mm)
 - One or two (if 2 then place at 10:30 and 1:30)
- Performed one-week prior to surgery
- Post-op Pred-Forte qid

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Phakic IOL - Patient Selection

- 25 – 45 yr old
- Myopia -3D to -20D
- Thin corneas
- Irregular topography
- Dry Eye
- Large pupils
- Visually demanding

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Post-op Day 1, 7 and month 1 & 3

- Uncorrected Visual acuity
- Dry Refraction (Day 7 & beyond)
- Biomicroscopy
 - ICL Vault (Vault .5 to 1.5 ct)
 - PI Patency
 - Inflammation
- Tonometry
- Evaluation of crystalline lens
- DFE at 3 month and annual

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Visian - Post-op Care

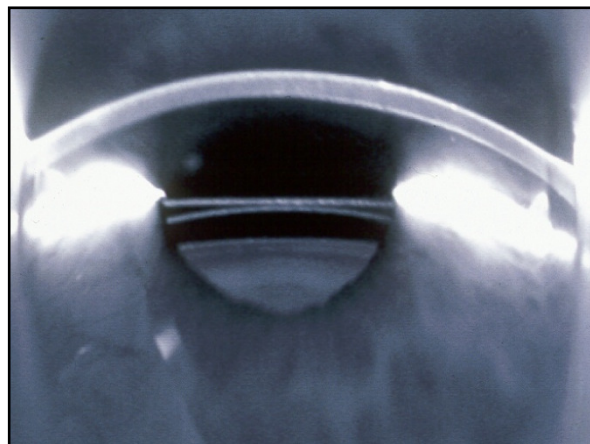
- **IOP is critical**
- Over-refraction
- A/C exam for inflammation
- Evaluate the vault of the ICL
 - .5-1x corneal thickness is ideal
 - Under .5 observe for anterior capsule haze
 - Over 1.5 observe for narrowing angle
- Dilate for crystalline lens evaluation

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Visian - Post-op medications

- Follow normal cataract routine
- First 2 weeks: NSAID, steroid, antibiotic TID
- Next 2 weeks: NSAID and steroid BID

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Visian - Slitlamp Exam



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Phakic IOL - Summary

- Ideal procedure for pre-presbyopic high myopes
- Ideal procedure for thin corneas
- Surgically similar to cataract surgery
- Post op care similar to cataract surgery

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Lens Surgery

- Cataract Surgery
 - Medically necessary (20/50 or worse BCVA)
 - Patient typically pay 20% co-pay
 - Patient pay premium fees for MF & toric IOL
- RLE – Refractive Lens Exchange
 - Not medically necessary
 - Patient pays all fees



TL Vision®

Lens Surgery - Pre Operative Orders

Begin 4-7 days before surgery:

Topical Antibiotic

Topical NSAI

Lid Hygiene



TL Vision®

Systemic Health Considerations

- Clearance by PCP required
- Full eval including EKG must be within 30 days of procedure
- Some surgeons no longer require routine preoperative medical testing

The Value of Routine Preoperative Medical Testing before Cataract Surgery: Oliver D. Schein, M.D., M.P.H., Joanne Katz, Sc.D., Eric B. Bass, M.D., M.P.H., James M. Tielsch, Ph.D., Lisa H. Lubomski, Ph.D., Marc A. Feldman, M.D., M.P.H., Brent G. Petty, M.D., and Earl P. Steinberg, M.D., M.P.P. for the Study of Medical Testing for Cataract Surgery: N Engl J Med 2000; 342:168-175 January 20, 2000

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Lens Surgery

- Unilateral
 - 2nd eye usually done 1-4 weeks after 1st eye
- Performed in hospital or Ambulatory Surgical Center (ASC)

TL Vision®

Cataract Surgery Preparation

- Contact Lens Removal
- D/C RGP 1 to ? Months..check stability
- Helpful to change patient to soft lens if considering referral within 6 months
- D/C soft lens....1-2 weeks ...surgeon dependent

Pre-op Medications

Topical NSAID

Topical Antibiotic

Lid hygiene

T L  Vision®

Cataract - Pre-operative Testing

- | | |
|---|---|
| <ul style="list-style-type: none"> ▪ Uncorrected and Best Corrected VA (monocular and binocular) ▪ Pinhole VA ▪ Binocular Status ▪ EOM's ▪ Pupils ▪ Manifest Refraction ▪ Cycloplegic Refraction | <ul style="list-style-type: none"> ▪ Slit lamp Biomicroscopy ▪ Tonometry ▪ Dilated retinal exam ▪ Manual Keratometry ▪ Topography ▪ Tomography ▪ IOL Master – A-scan ▪ OCT* |
|---|---|

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Informed Consent

- Risks
- Benefits
- Alternatives
- Medications
- Standard Orders

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Cataract - RISKS

- | | |
|---|--|
| <ul style="list-style-type: none"> ▪ Blindness ▪ Endophthalmitis ▪ Retinal Detachment ▪ Corneal Decompensation ▪ CME | <ul style="list-style-type: none"> ▪ Refractive Surprise ▪ Dryness ▪ NVD's/Dysphotopsia ▪ Secondary Cataract |
|---|--|

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Cataract Surgery

▪ Anesthesia

- **Topical** (tetracaine, proparacaine, lidocaine)
 - Advantage – low complication
 - Disadvantage – no EOM akinesis, discomfort
- **Retrolbulbar** (lidocaine, bupivacaine)
 - Advantage – total EOM akinesis
 - Disadvantage – possible globe perforation (long eyes)
- NPO ...no food or drink after dinner day before surgery

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Cataract Surgery

▪ Anesthesia

- **Sub-tenon's block**
 - Advantages – safe, total EOM akinesis
 - Disadvantages - none
- **General Anesthesia**
 - Advantages - No pain, total sedation
 - Disadvantages - Complications, Cost
- **Intracameral** – added when discomfort

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Cataract - Pre-op Medications

- **Pupil Dilation**
 - 1% cyclopentolate +
 - 2.5% phenylephrine
 - Dosage 1-2 drops x 10-15minutes 1 hour prior to surgery

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Cataract Surgery - Types

- **ECCE – Extracapsular Cataract Extraction**
 - Scleral incision 5-8mm remove lens and capsule – AC IOL
- **ICCE – Intracapsular Cataract Extraction**
 - Scleral Incision
 - **Corneal Incision – modern approach**
 - PC IOL intracapsular placement
 - PC IOL sulcus placement
 - AC IOL

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Cataract Procedure

- Incision
- Anterior Capsulorrhexis
- Hydrodissection/Hydrodelineation
- Phacoemulsification
 - Ultrasound & Aspiration
- IOL insertion

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IOL

- **1 Piece**
 - Plate
 - Optic-Haptics
- **3 Piece**
 - Optic and 2 Haptics

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Surgery – IOL Choice

- **Monofocal**
 - Distance Vision – will need glasses for NV & IV
 - Monovision
- **Toric – correct astigmatism**
- **Multifocal**
 - Reduce need for reading glasses
 - May increase symptoms of night glare/halos
- **Accommodative**
 - Distance and Intermediate vision
 - Most still need glass for reading
- **Accommodative Toric**
 - Astigmatism correction
 - Distance and intermediate vision

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IOL Calculations

- **Biometry – Axial Length**
 - A-scan
 - Immersion (no corneal compression)
 - IOL Master (optical no touch)
- **Corneal Curvature**
 - Keratometry – manual
 - Auto-keratometry
 - Topography/Tomography

T L  Vision®

IOL Calculation - Formulas

- **SRK/T**
 - Axial Length >22.01mm
- **Holladay II**
 - Axial Length < 22.00mm
 - K's flatter than 42.00D
 - K's Steeper than 47.00D
- **Hoffer Q**
 - Axial length < 22.00mm

TLC Vision®

Cataract Post Operative Care

- Antibiotic
- NSAID
- Steroid



TLC Vision®

Cataract Post Operative Care Antibiotic Medication

Most Commonly used are the 4th generation fluoroquinolone **class** of antibiotics

Resistance in older classes

Ex: Vigamox (moxifloxacin)

Zymaxid (gatifloxacin)

Besivancec (Besifloxacin)



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Cataract Post Operative Care Antibiotic Medication

- Dosing TID or greater
- Do Not Taper
- Typical Order:
Vigamox Oph Sol 5ml
1gtt OD TID 2 weeks



TLC Vision®

Cataract Surgery & Blepharitis

- Pre-treat
 - Lid Scrubs
 - Sterilid
 - OcuSoft
 - Azasite
- Patients at Risk – MRSA Carrier
 - Polytrim Solution
 - Mupirocin gel to lid margin 5 days bid (<http://en.wikipedia.org/wiki/Mupirocin>)



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Cataract Post Operative Care NSAID Medication - Dosage

- Prolensa qd
- Acuvail BID
- Nevanac TID
- Acular LS QID
- Voltaren QID



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Cataract Post Operative Care NSAID Medication

Treatment of postoperative inflammation and reduction of ocular pain in patients who have undergone cataract surgery.¹

Typical Order:

Prolensa
1.7ml x 2 (twin pack)
1gtt OD "QD" 14 days
beginning day before surgery



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Cataract Post Operative Care Topical Steroid

- Pred-forte 1% (Prednisolone Acetate)
- Durezol 0.05% (difluprednate)
- Lotemax (Lotepred Etabonate)



TL Vision®

Cataract Post Operative Care Steroid Medication

Prednisolone Acetate 1%

Typical Order:

Pred-forte 1% Oph Sol
5ml
1gtt OD TID 2 wk then BID
for 2 wk



TL Vision®

Postoperative Visits

- 24-36 Hours
- 7-14 Days
- 3-4 Weeks
- 8-12 Weeks

TL Vision®

Visit #1 24-36 Hours

- History
- UCVA
- Pinhole VA
- Slitlamp Biomicroscopy
- IOP
- Instructions to patient

TL Vision®

Visit #2 7-14 Days

- History
- UCVA
- Autorefraction
- Dry/Wet Refraction*
- Slitlamp Biomicroscopy
- IOP
- Instructions to patient

TL Vision®

Visit #3 3-4 Weeks

- History
- UCVA
- Autorefraction
- Dry/Wet Refraction
- Slitlamp Biomicroscopy
- IOP
- DFE
- Instructions to patient

T L Vision®

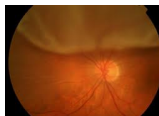
Visit #4 8-12 Weeks

- History
- UCVA
- Autorefraction
- Dry Refraction
- Slitlamp Biomicroscopy
 - Corneal SPK
 - A/C Cells/Flare
 - IOL Position
 - Capsule Clarity
- IOP
- Instructions to patient

T L Vision®

Early Complications - Significant

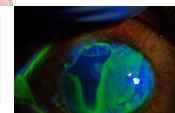
- Wound Leak – flat chamber
- Ocular Hypertension
- Endophthalmitis
- Iris Prolapse/Vitreous in wound
- IOL dislocation/vaulting
- Retinal/Choroidal Detachment



T L Vision®

Early Complications – Less Urgent

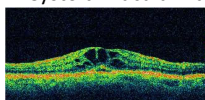
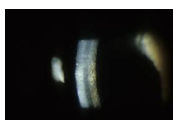
- Wound leak – normal chamber
- Ptosis
- Diplopia
- Corneal Edema
- Hyphema
- Hypopyon
- Pupillary Capture



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Late Complications

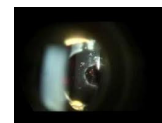
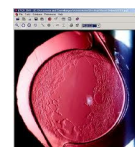
- Ocular Hypertension/Glaucoma
- Ptosis/Diplopia
- Corneal Edema/Decompensation
- Late Hyphema
- Chronic Uveitis
- PCO – Posterior Capsular Opacity
- CME – Cystoid Macular Edema



T L Vision®

PCO – Posterior Capsular Opacity

- This is an outpatient procedure and involves no incision.
- Using the laser beam, the physician makes an opening in the clouded capsule to let light through.
- After the procedure the patient remains in the center for an hour to be sure that pressure in the eye is not elevated.
- An eye examination for any complications should follow at 1 week.



T L Vision®

Types of Premium IOLs available

▪ Toric IOL –

- AcrySof Toric (Alcon)
- Toric (Staar)

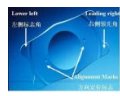


▪ Premium IOL –

➢ Multifocal

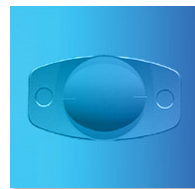
- ReZoom (AMO)
- ReSTOR (Alcon)
- Tecnis (AMO)

➢ Accommodating – Crystalens HD & AO (B&L)



T L Vision®

IOL – Astigmatism Correction



STAAR Toric IOL



Alcon Toric IOL

T L Vision®

Multifocal IOL's - Alcon ReSTOR & AMO Tecnis



The ReSTOR® lens (L) and magnified (R)



AMO Tecnis

Good distance and Near vision
Intermediate vision may be reduced
Poor vision in dim light

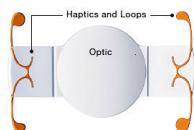
T L Vision®

Introducing the Crystalens AO

Crystalens AO™

Accommodating IOL Crystalens

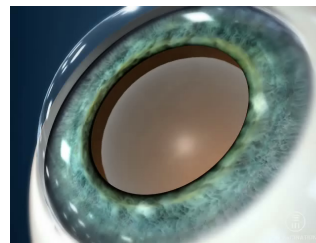
- Near focus achieved by anterior movement at hinges
- Also available with astigmatism correction



T L Vision®

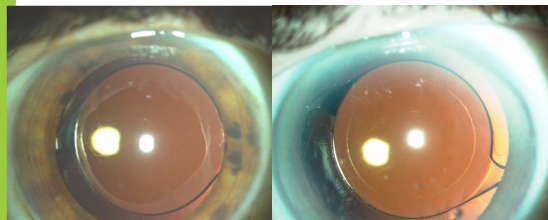
Femtosecond Laser Cataract Surgery

- **More predictable and potentially safer procedure**
 - Perfect capsulotomy sized/shaped/centered
 - Gentle break-up of the clouded lens (phacoemulsification)
 - Perfect water-tight incisions
 - Astigmatism correction



T L Vision®

Manual vs. Femtosecond Cataract Surgery



Manual Surgery

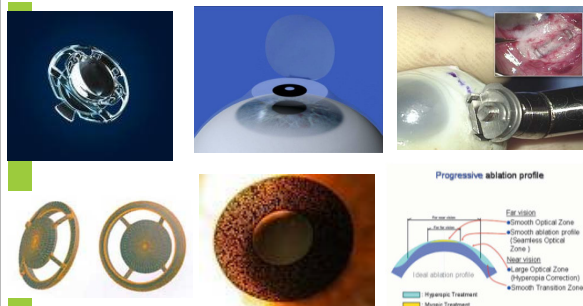
Femto Surgery

TL Vision®
MFO2521 Rev A

Femto Cataract Video

TL Vision®

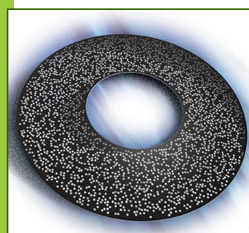
Future Presbyopia Correction



TL Vision®

AcuFocus™ KAMRA Corneal Inlay

Overall diameter: 3.8 mm



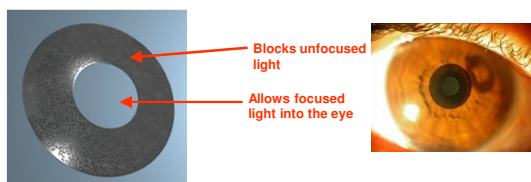
Central aperture: 1.6 mm

- Designed to improve near vision in patients with Presbyopia
 - Easily implanted
 - Minimal impact on distance vision
 - Removable

TL Vision®

AcuFocus™ KAMRA - How it Works

- The small aperture created by the AcuFocus™ ACI 7000 blocks the unfocused light on the retina



TL Vision®

The AcuFocus™ KAMRA - Procedure

- Topical anesthetic eye drops
- Flap created
- The AcuFocus™ ACI 7000 is inserted and centered
- The flap is closed
- Takes less than 30 minutes - start to finish

