

CRYSTALENS® IOL vs. CK Comparison Chart ©

	CRYSTALENS	CK
Name Detail	Crystalens by Eyeonics, also known as Accommodating IOL for Cataracts, Refractive Lens Exchange, Crystalens, Crystal Lens, Crystal-Lens, Crysta-Lens.	Conductive Keratoplasty, also known as Near Vision CK.
Corrective Uses	Lens replacement for cataracts, presbyopia and refractive lens disease; alternative to monovision with an IOL that can not accommodate.	Moderate farsightedness, astigmatism, presbyopia in patients over 40 or patients with previous lens implants (IOL).
Procedure Length	15-45 minutes per eye. Usually only one eye is done at a time with the second eye done 3-8 days later.	Outpatient procedure. Laser treatment about 3 minutes per eye, with whole procedure taking about 15 minutes.
Procedural Notes	Differs from monofocal IOLs by focusing near and far. The natural lens of the eye is removed and replaced with a single-focus accommodating IOL. The eyes' muscles actually move the lens to accommodate the change in focus.	Creates monovision, one eye for close vision, one eye for distance vision. Uses radio waves instead of a laser. Shrinks collagen in the outer edges of the cornea. Increases curvature of cornea. Appropriate for ages 40+. In presbyopia the non-dominant eye is correction for near-vision (monovision technique). Allows correction of -1.00 to -2.00 diopters. Is non-invasive. No alcohol is used.
Healing & Recovery	Faster than CK, longer than with monovision IOL. Usually can drive, read and watch TV the next day. Distance recovery is immediate, computer distance takes 1 or more weeks for recovery, reading distance takes 1 or more weeks for recovery.	Visual fluctuations over the first two weeks. Fuzzy functional the next day. Light sensitivity the first week. Recovery slower than LASIK. Usually can return to work the next day.
Benefits	Long term outcomes are stable. Measurable improvement in accommodation. Vision quality comparable or superior to regular IOL. Best clarity of vision. Eyes focus similarly to natural focus. Good distance vision, good computer distance vision, good night vision and clarity. Provides the best night vision from among current available IOL procedures. Less improvement for reading range vision. Retains binocular vision.	Effects can last for two years or longer. Improvements are giving more stable results than in the past. Minimally invasive with fewer complications than other refractive error correction procedures. More effective monovision, less blurring than contact lenses or laser correction. Painless except for slight pressure sensation. For farsighted corrections, both eyes can be treated in same visit. Induced astigmatism usually temporary, resolving without treatment. Can be used to create monovision in presbyopic patients. Time will eventually reverse overcorrections.

CRYSTALENS**CK****Potential Drawbacks**

Has a limited range of accommodation allowing some ability to change focus, but accommodation is not fully restored. A few patients experience less accommodation after surgery if their natural accommodation was better than this procedure provides. The procedure is more difficult and requires a well experienced surgeon. More expensive than IOL. Some insurance pays only part or none of this higher technology. May take up to one year to adapt. May need reading glasses for smaller print.

Astigmatism can be a complication if induced by this procedure, and will usually worsen over one month, then resolve in 2-3 more months. Decreased depth perception with monovision. History of reverting to original vision-rate of loss about 1.00 diopter per 2-3 years. Procedure is not reversible. May need glasses or contact lenses for clarity in distance vision.

Indications for Procedure

Cataract, presbyopia, people who need good night vision, people who don't mind using reading glasses.

Farsightedness, presbyopia, maximum 0.75 diopters astigmatism, age over 40, +0.75 - +3.25 diopters of refractive error.

Contradictions to Procedure

No known contraindications. Precautions include weak ciliary muscle contractions, damaged zonules, incomplete pupil dilatation, excessive pupil dilatation. Conditions must be stable for people with diabetes, infections or other health problems. Thin cornea, age under 18 or over 40, poor vision, outside correctable range, unstable prescription, vision changes within 2 years, eye disease or abnormality, diabetic retinopathy, cataracts, glaucoma, ocular hypertension, autoimmune disorders, medications such as steroids or immunosuppressants, pregnancy, nursing, hypertension, keratoconus or other irregularly shaped cornea, large pupils, dry eye, Herpes Simplex of the eye, prior eye injury, corneal scarring, naturally elevated HOA.

Nearsightedness (this procedure increases nearsighted vision), need for monovision correction, crossed or wandering eye(s), previous corneal surgery, allergies, atopy, inability to adapt to monovision, connective tissue disorder, any need or intent to have a permanent correction done after the CK is done. Pacemaker, due to interference of RF waves. Thin cornea, age under 18 or over 40, poor vision, outside correctable range, unstable prescription, vision changes within 2 years, eye disease or abnormality, diabetic retinopathy, cataracts, glaucoma, ocular hypertension, autoimmune disorders, medications such as steroids or immunosuppressants, pregnancy, nursing, hypertension, keratoconus or other irregularly shaped cornea, large pupils, dry eye, Herpes Simplex of the eye, prior eye injury, corneal scarring, naturally elevated HOA.

RISKS

The Eye Surgery Education Council (ESEC) reports less than 1% experience serious problems if proper screening is done and an experienced surgeon performs the procedure, and 3-5% experience less serious problems that are correctable. There are NO reports of blindness resulting from LASIK or LASEK surgery. Possibility of complications if the flap (created by surgical cutting) is not thick enough or of proper diameter. Diffuse Lamellar Keratitis (DLK), (infiltrates beneath the LASIK flap) can cause inflammation and scarring. This must be treated with antibiotics and steroids, or possibly scraped for removal. Infection - can lead to loss of vision Irregular astigmatism, double vision, ghosting, can result from not centering the laser correction properly (decentered ablation), halos or starbursts when looking at lights, incomplete corrections, over- or under-correction. Undercorrections can be retreated. Over corrections may require using glasses or contact lenses. Erosion of the epithelium, dry eye, infection, keratectasia, weakened, bulging cornea, the alcohol used in this procedure can kill epithelial cells, loss of visual acuity or best corrected vision (BCV) after the procedure, corneal scarring, eyelid droop, chronic discomfort, inability to tolerate contact lenses.

HOW TO AVOID PROBLEMS

Find a surgeon with thousands of procedures of experience. Exams to include routine eye exam, slit-lamp, fundus, corneal thickness, topography and pupillometry, and a Shimer test. Follow instructions carefully after surgery. Request wavefront diagnostics or a reason why this is not recommended. Replace old makeup and don't use for several days after surgery. Avoid strenuous exercise for 1 week. Avoid contaminated water for at least 1 week, including seawater, lakes, swimming pools, spas, etc. Avoid rubbing eyes for 2 weeks. According to studies, surgeons with experience of 700-1,000 or more cases have significantly lower intra-operative complications than surgeons with fewer than 700 cases.

Acronyms not clarified in the chart include:

- BCV = Best Corrected Vision
- BCVA = Best Corrected Visual Acuity (same as BCV)
- DLK = Diffuse Lamellar Keratitis
- HOA = Higher Order Aberrations
- LOA = Lower Order Aberrations
- ASA = Advanced Surface Ablation (Used in PRK and LASEK)
- ICL = Implantable Contact Len
- IOL = Intra-Ocular Lens.

Per the Council for Refractive Surgery Quality Assurance (CRSQA) Standards for refractive surgery:

- Minimum of 90% of patients achieve at least 20/40 uncorrected vision.
- Minimum of 50% of patients achieve at least 20/20 uncorrected vision.
- Minimum of 85% of patients achieve within 1± diopter of target.
- Minimum of 50% of patients achieve within 0.5± diopter of target.
- Maximum of 3% of patients experience complications unresolved by 6 months postop.
- Maximum of 0.5% of patients experience serious (vision-threatening) complications at 6 months post op requiring extensive maintenance or invasive intervention.