

# Refractive Lens Exchange

Refractive lens exchange (RLE) is an alternative to laser vision correction and other refractive surgeries. The eye's natural lens is replaced with an artificial lens implant to provide sharper focus. The procedure can correct nearsightedness, farsightedness, astigmatism and presbyopia. Lens implants are high tech marvels that can dramatically improve vision and several options are available to match your lifestyle needs.



## LENS REPLACEMENT

RLE is essentially the same operation performed on 3 million Americans each year to remove and replace lenses clouded by cataracts. The only difference is that the natural lens is not clouded. It is removed simply to correct the eye's focusing power. Our surgeons have performed hundreds of thousands of lens implant procedures and the results are quite predictable.

## LENS IMPLANT OPTIONS

Several types of lenses are available to match your lifestyle needs:

- Single-focus lens implants—provide excellent vision but lack the ability to change focus from far to near so glasses will usually be required for some

activities. However, people highly motivated to reduce dependence on glasses can choose to have monovision where one eye is corrected for near focus and the other for distance.

Because monovision can require some getting used to, we recommend trying it first with contact lenses. Single focus implants are the least expensive option.

- Astigmatism-correcting lens implants—also known as toric implants, compensate for blurred or distorted vision caused by astigmatism while correcting near or farsightedness. Again, glasses will usually be required for some activities. However, people highly motivated to reduce dependence on reading glasses can choose to have

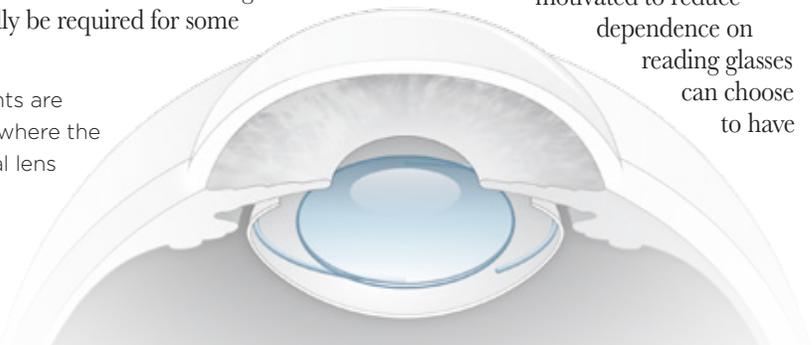
monovision where one eye is corrected for near focus and the other for distance. Astigmatism-correcting implants involve additional exams, testing and costs.

- Multifocal lens implants—also known as presbyopia-correcting implants, are designed to restore the ability to focus near, far and in between. They can greatly reduce or eliminate dependency on corrective lenses. Multifocal implants involve additional exams, testing and costs. To learn more, visit our website or read our multifocal lens implant brochure and watch the corresponding DVD.

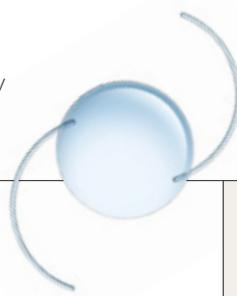
## CATARACTS LATER IN LIFE

Many people begin developing cataracts in their 60s and the majority of Americans have cataract surgery in their early 70s. Having RLE earlier in life provides better vision now and removes the possibility of cataracts forming later. However, medical insurance that covers the cost of cataract surgery does not usually extend to RLE.

Lens implants are positioned where the eye's natural lens used to be.



Spring loaded arms gently hold the tiny implant in place within the eye.



### HOW IMPLANTS EVOLVED

The early development of lens implants was inspired by British pilots injured in World War II. When the plexiglas canopies of their fighter plane's shattered during attacks, tiny fragments of this material sometimes pierced and lodged in the pilots' eyes.

Dr. Harold Ridley, an ophthalmologist in London, discovered it was often safer to leave these plastic fragments in the eye than try to remove them. Since the eye tolerated the material with no adverse reactions, he created an artificial lens implant to be placed inside the eye from the same type of material. However, it was not until the early 1970s that artificial lens implants and surgery techniques developed to the point where the procedure was considered safe and effective. Since then, lens implant technology has steadily improved and become very sophisticated.

### RANGE OF CORRECTION

RLE can correct a wide range of focusing problems from -20 diopters of nearsightedness to +8 diopters of farsightedness—and sometimes even more. Lens implants are also available to correct astigmatism and reduce or eliminate the need for reading glasses.

### HOW SURGERY WORKS

Although RLE is a sophisticated microsurgical process, it is relatively simple for those undergoing treatment. Patients relax in a reclining dental-type chair. They are not put to sleep, but can be sedated with oral medications, if necessary. Only the tissue around the eye is numbed for surgery.

The procedure is performed under a high power microscope and involves two stages: First, the eye's natural lens is removed. Second, an artificial lens is inserted to correct

the eye's focusing power. The surgeon makes a very small opening at the edge of the eye that allows special instruments to reach inside. Using an ultrasonic probe with a tiny tip that vibrates 40,000 to 50,000 times per second, our skilled surgeons gently remove the natural lens of the eye. In a matter of seconds, they carefully guide the pulsating instrument to liquefy the lens material and suction it out of the membrane capsule that holds it in place.

The lens implant is positioned inside the thin, membrane capsule, where the original lens used to be. Now, the treatment is complete. The opening into the eye is so small that it usually heals without any stitches.

### SURGERY RESULTS

Based on the amount of near or farsightedness you have before surgery, the following percentages approximate your chances of achieving 20/20 or 20/40 vision without corrective lenses. These estimates are with single-focus lens implants, assuming that your eyes are healthy and that your best-corrected vision before surgery is 20/20 or better.

Amount of Nearsightedness	Achieve 20/20 or Better	Achieve 20/40 or Better
-2.00 to -4.00	80%	98%
-4.01 to -7.00	80%	98%
-7.01 to -10.00	70%	98%
-10.01 to -15.00	70%	98%
-15.01 to -20.00	60%	98%

Amount of Farsightedness	Achieve 20/20 or Better	Achieve 20/40 or Better
+1.00 to +3.00	70%	98%
+3.01 to +5.00	65%	98%
+5.01 to +8.00	60%	98%

*20/20 is the standard for good vision. If you have 20/40 vision you see at 20 feet what a person with normal vision can see at 40 feet. With 20/40 vision people can legally drive without corrective lenses.*

### CANDIDATES

Good candidates for RLE must meet the following criteria:

- At least 21 years of age
- Stable refraction
- Healthy eyes with no disease or abnormality
- Nearsighted or farsighted within the appropriate range
- Willing to accept the risk of possible complications

Some of the eye measurements needed to determine candidacy require contact lenses to be left out long enough for the eye's shape to normalize. This can take several weeks or more.

### ADVANTAGES

RLE offers several advantages:

- Prevents cataracts from being able to form in the future
- Can correct high degrees of nearsightedness and farsightedness
- Outcomes with standard implants are predictable
- Vision stabilizes quickly
- The cornea is not altered
- Side effects are minimal
- Lens implant can be replaced if needed

### RISKS

Potential risks include:

- Infection
- Hemorrhage
- Swelling or inflammation
- Undercorrection or overcorrection
- Induced astigmatism
- Dislocation of the lens implant
- Glaucoma
- Retinal detachment

### QUESTIONS

Learn more by visiting the cataract section of our website or read our booklet on cataract surgery—as RLE is essentially the same procedure. If you have questions about RLE, talk with your optometric physician or call our refractive surgery counselors.

*Pacific Cataract and Laser Institute  
Refractive Surgery Counselors*

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