



# Targeting Perfect Vision with the Latest Advances in Refractive Surgery

Refractive errors, such as myopia and presbyopia (lao hua), are common causes of poor vision. Advances in refractive surgery enable all forms of refractive error to be corrected, and patients can achieve excellent vision with greater precision and safety, without the need for spectacles

## Types of refractive error

### Myopia

Myopia is also known as shortsightedness, where one can see better at near while distant objects are blurred. People with higher degrees of myopia have a greater risk of complications that can cause blindness. These complications occur later on in life after the age of 40. Approximately 10% of Singaporeans have high myopia exceeding -6.0 dioptres. People with very high myopia may have a higher risk of retinal tears, retinal detachment, cataract, glaucoma or even macular degeneration. These may cause a person to see spots, shadows, flashes of light, or suffer from blurred vision.

### Presbyopia

Presbyopia is the progressive difficulty in focusing at near objects and reading as one grows older. It happens to everyone as part of the normal ageing process and usually starts at about 40 years of age. It is a result of an age-related decrease in the elasticity of the lens and weakening of the muscles of accommodation, and patients lose the ability to focus at near.

### Astigmatism

Astigmatism occurs when the curvature of one part of the cornea (the central clear part of the eye) is different from another part. This results in light rays being focused at various points in the eye, resulting in blurring and distortion of the image. Most people have some degree of astigmatism.

## Refractive surgery

### LASIK

Laser In Situ Keratomileusis (LASIK) is a laser procedure that corrects the refractive errors of the eye by reshaping the cornea. It has gained tremendous popularity and is currently the most commonly performed refractive procedure because of its high success rate, rapid visual recovery and extremely low risk. It consists of 2 stages: Creation of the corneal flap followed by the reshaping of cornea tissue underneath the flap, and the entire surgery can be completed in around 4 minutes (for each eye). Visual recovery is fast and patients can return to work within 1-2 days after surgery.

### iLASIK: Customised bladeless surgery

The new iDesign wavefront analyser uses detailed, wavefront-generated measurements of how light waves travel through your eyes and fall upon the retina, to create a laser treatment that is completely personalised for your eye anatomy and vision correction needs. The flap diameter, depth, edge angle and morphology can all be programmed and customised to suit each person's cornea to achieve a superior visual result - a 6/6 vision or even better.

### Implantable contact lens (ICL) or Phakic intraocular lens

This operation is suitable for people with high refractive errors (>900 degrees) or people who cannot undergo LASIK due to very thin corneas. ICL can correct a wide range of refractive errors of up to 1,900 degrees of short-sightedness and 500 degrees of astigmatism. It is a simple and painless surgery which takes about 10 minutes. The operation involves inserting an artificial lens into the person's eye through a small incision at the edge of the cornea, and placed behind the iris and in front of the natural crystalline lens. The wound heals on its own without stitches, and recovery after the ICL procedure is relatively fast with minimal discomfort. Once implanted, the lens is invisible to the naked eye and patients can resume all their normal activities within a few days.

### Refractive cataract surgery (Phacoemulsification)

Cataract surgery is usually recommended if the cataract is impairing vision and affecting one's daily activities.

Cataracts may need to be removed if it is very dense, as it may cause complications such as glaucoma. Modern cataract surgery is very advanced and can be performed safely and effectively - it is no longer necessary to wait for cataracts to "ripen" before performing the surgery. A painless procedure which lasts less than 30 minutes, it is one of the safest and most successful operations in the world. The cataract is softened and removed through a small incision 2mm at the edge of the cornea, with an artificial intraocular lens implanted immediately following the cataract removal. The wound often seals on its own without the need for stitches. It is also one of the commonest ways of correcting all forms of refractive error, including myopia (short-sightedness), astigmatism, and presbyopia.

## Treatment of Presbyopia

Presbyopia can be effectively corrected with refractive surgery, so that patients can reduce their need for reading spectacles. If the patient has cataracts, patients can undergo refractive cataract surgery and have their vision and presbyopia corrected with the appropriate intraocular lens.

For patients who do not have cataracts, refractive surgery can correct the patient's pre-existing refractive error (eg. myopia), as well as presbyopia. The commonest option is to do a LASIK monovision correction. In this situation, the patient's Master / Dominant Eye will be corrected to allow the patient to see far. The other eye (non-dominant eye) is corrected for reading, so that patients are able to see both far as well as read. Because the brain automatically chooses clearer eye to see, patients naturally feel comfortable with it and go about the normal routines without the need for spectacles for both far and near vision. **PRIME**



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