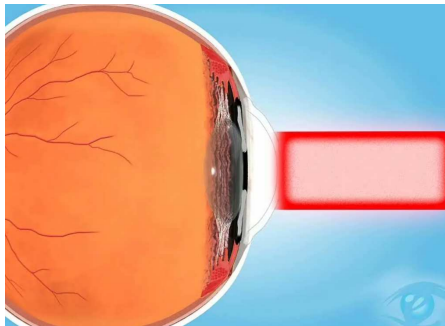


REFRACTIVE SURGERY

Q What is refractive surgery?

A Refractive surgery refers to a range of surgical procedures to correct refractive errors (short-sightedness, long-sightedness and astigmatism), thereby reducing the dependence on spectacles or contact lenses.

There are two main ways of achieving this: firstly by changing the shape of the cornea (the clear window at the front of the eye) or secondly, by replacing the lens inside the eye with a plastic lens of a different power (clear lens



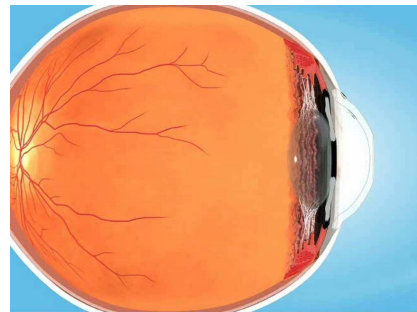
extraction). Clear lens extraction is the preferred option for very high degrees of short-sightedness or where the cornea is unsuitable for surgery. However, this procedure is rather more invasive and the techniques involving reshaping the cornea are generally preferred.

Q Are there different types of refractive surgery?

A Yes – surgical techniques have developed very rapidly over the past 20 years and there are now a range of procedures available.

Radial Keratotomy (RK) was the first type of refractive surgery to be developed. It involved weakening the cornea by making a series of shallow cuts in a radial pattern around the edge of the cornea. This caused the cornea to flatten slightly which reduced short-sightedness. The technique produced variable results and the scarring left on the cornea often

resulted in problems with glare. The technique has now been almost completely replaced by laser surgery.



Photorefractive keratectomy (PRK) has been widely performed since the late 1980s. It involves removing the outer layers of cells from the cornea (the epithelium) and then using a computer-controlled laser to re-shape the cornea. With the development of new techniques, PRK it is now mainly used for low refractive errors. The eye may be sore for about 48 hours after surgery. The healing process then continues for several months and can vary between patients.

Laser Epithelial Keratomileusis (LASEK) is similar to PRK but the surface layer of cells (epithelium) of the cornea is retained as a flap. A special soft contact lens is kept on the eye for 3-4 days after the procedure to allow the surface to heal. The eye is much more comfortable than following PRK. Retaining the epithelium is thought to prevent later complications of haze and speeds up healing.

Laser in situ Keratomileusis (LASIK) has been widely performed since the mid 1990s. Most types of refractive error can be corrected with LASIK but it may

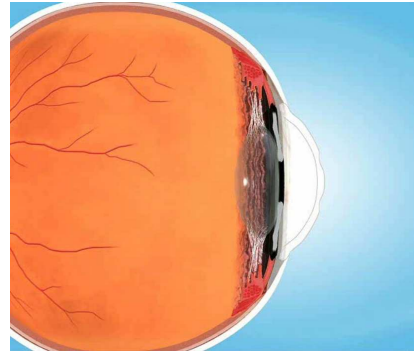
not be suitable for very high prescriptions as the procedure may make the cornea too thin and unstable. It differs from PRK as a cut is made across the cornea by a special instrument (microkeratome) to raise a flap of the cornea. The exposed surface is then reshaped using a computer-controlled laser and the flap is replaced. This results in tissue being removed from the middle layers of the cornea (stroma). LASIK causes minimal pain, and vision tends to recover quickly. However, the surgical technique is more involved and if complications do occur, they may be more serious than after PRK.

EpiLASIK is a new procedure using an instrument called an epikeratome. This creates a very thin flap in the superficial layers of the cornea (epithelium). The laser beam is then applied under the epithelial flap and the flap is then replaced onto the cornea.

Wavefront correction: The optics of the eye are not perfect and even when wearing the correct spectacles, the image will be very slightly out of focus due to these imperfections (aberrations). It is now possible to measure these aberrations and correct them by programming the laser to produce a customised shape on the cornea. While in theory this could result in better quality vision than before surgery, research shows that in most cases the benefits are small.

Q Am I suitable for refractive surgery?

A Most refractive errors can now be corrected by surgery. In general, surgery is only offered to people over the age of 21 whose spectacle prescription has been stable for at least two years. If you are in poor health or have any eye disease you may not be suitable for refractive surgery. Your optometrist will be able to advise you further.



Q What are the risks?

A Refractive surgery techniques have improved dramatically over the past ten years and problems are now quite rare. Complications occur in less than 5% of cases and the surgeon should explain these to you before you consent. Some people have a problem with dry eyes in the months after surgery and artificial tear supplements might be needed in the long term. Some patients experience glare or halo effects when night driving, particularly just after treatment. This is more likely when high prescriptions have been corrected, but is rarely severe. In rare cases, excessive thinning of the cornea can cause the shape to be unstable after treatment. Severe loss of vision is very unusual, but some patients could require corneal surgery or hard contact lenses to restore vision. You should find out exactly how frequently your surgeon has experienced complications and why.