



The LASIK experience

I WHO CAN HAVE LASIK?

To be eligible for LASIK you should be at least 21 years of age, have healthy eyes and be in good general health. Your vision should not have deteriorated significantly over the previous two to three years.

LASIK is not generally recommended for people with eye conditions such as:

- ◆ keratoconus (a degenerative eye disorder that leads to thinning of the cornea causing it to change shape)
- ◆ cataract (clouding of the lens in the eye)
- ◆ glaucoma (increased pressure of the fluid in the eye, leading to optic nerve damage and loss of vision)
- ◆ herpes eye infection.

LASIK may not be suitable for people with other medical conditions such as diabetes, rheumatoid arthritis and lupus, or for those receiving treatment with some medicines, such as oral steroids.

II SELECTING A SURGEON

Not all eye surgeons are experienced in LASIK. Your general practitioner or optician may be able to recommend LASIK surgeons in your area, but you should still ask some questions to ensure that your surgeon is well qualified and highly experienced.

- ◆ How long have they been performing LASIK?
- ◆ How many LASIK procedures do they carry out each month?
- ◆ What are their outcomes data for LASIK surgery? (Make sure you ask for their personal results rather than the results for their clinic)
 - ◆ What proportion of their patients are able to carry out daily tasks without glasses or contact lenses following LASIK?
 - ◆ What proportion of their patients experience complications following LASIK?
 - ◆ How do their results compare to the national average?

III YOUR FIRST APPOINTMENT

It is important that you DO NOT wear contact lenses to your assessment appointment as this makes it impossible to measure your eye properly as wearing contact lenses temporarily changes the shape of the surface of the eye. Soft contact lenses should be taken out at least 24 hours before your appointment and gas permeable or hard lenses at least a week before.

A number of things will be discussed at the appointment, including your reasons for wanting to have laser eye surgery and your expectations of the result. People who have a low or moderate refractive error can usually expect very good outcomes, but people with poorer eyesight may still need glasses for some activities.

You will also be asked about any current or past eye problems, such as infections or injuries, as well as your general health.

A number of tests and measurements will also be carried out:

- ◆ Your vision without glasses or contact lenses, the prescription of your glasses and how well your eyes work together (binocular vision) will be checked.
- ◆ People with long sight usually have an additional test to reveal any hidden refractive error. Eye drops are used to relax the focusing muscles in the eye. The drops may sting for a few moments, but are otherwise painless, however they can cause blurred vision for about 24 hours, so you will not be able to drive home.
- ◆ A computerised picture is taken of the surface of the eye (the cornea) and ultrasound measurements are taken to check its shape and thickness. If the cornea is too thin, LASIK may not be a suitable option for you.
- ◆ Checks will be made to exclude eye conditions such as cataracts or glaucoma. These will include checking the structure of the eye with a special microscope, measuring the pressure of the eye and checking the retina, the back of the eye. These tests may use eye drops that dilate the eye, causing temporarily blurred vision.
- ◆ The size of your pupil in low light conditions will also be checked as people with very large pupils may need a larger area of treatment to minimise the risk of side effects with night vision, such as halos, glare or ghosting.

Based on the results of these checks, your eye surgeon may recommend some new techniques to enhance your LASIK surgery:

- ◆ A Wavefront analyser may be used to detect natural irregularities in the structure of the eye. The laser treatment can then be customised to optimise your LASIK surgery.
- ◆ As some people's eyes rotate when they lie down, a technique called iris registration (similar to security eye scanners) may be recommended. This maps points on the iris and adjusts the laser treatment to compensate for the rotation.

An optometrist may carry out some or all of these initial assessments, but it is important that the operating surgeon personally examines your eyes and discusses the different surgery options that are available to you, explaining the risks and benefits of each procedure. Other possible options include PRK or LASEK. See here ([link to What is LASIK section](#)) for more information about alternative techniques.

IV WHAT HAPPENS DURING LASIK?

Someone should come with you to the clinic on the day of your surgery. Soft contact lenses should be taken out at least 24 hours before your surgery and gas permeable or hard lenses should not have been worn for at least a week. You should also avoid wearing makeup.

Before the procedure starts, the surgeon will put some anaesthetic drops into the eye being treated. That eye will also be cleaned with antiseptic, tape will be placed over the eyelashes and a special clip will be used to keep the eye permanently open. Your other eye will be covered.

The surgeon will then place a suction ring on the eye before raising a small flap in the surface of the cornea to expose the underlying corneal tissue. This has traditionally been done using a mechanical cutter called a microkeratome, but can now also be done using a type of laser called a femtosecond laser. This is not painful, but you will experience loss of vision for about 20 seconds.

In a very small number of cases the flap is judged to be unsatisfactory so it is replaced without the laser treatment going ahead. It is usually possible for treatment to take place after a wait of about three to six months.

If the flap is satisfactory, you will be asked to fix your eye on a flashing red or green light in the laser opening and the excimer laser treatment to reshape the middle layers of the cornea will start. The laser is extremely accurate and the procedure usually lasts about 30 seconds. You will hear a repetitive tapping noise as the laser treatment is given in a series of short pulses. Laser eye surgery does not generate much heat, but you may be aware of a faint smell of burning, which is completely normal. The flap is then replaced and antibiotic, anti-inflammatory and steroid eye drops are given. A plastic eye shield is also applied to protect the eye and this should remain in place for up to 24 hours.

Because LASIK involves reshaping the cornea, the eye's protective covering, none of the instruments used in the procedure actually enter the eye. The risk of infection following LASIK is therefore very low.

V AFTER YOUR LASIK

You will be asked to use a plastic shield at night to protect your eyes while you are asleep and tinted glasses with ultraviolet protection are needed when out in the sun for the first three months.

Antibiotic and anti-inflammatory eye drops will be prescribed and these are generally recommended for use during the first week after surgery. Lubricating drops are also prescribed and you may find you need to use these for longer – some people who experience dry eyes after LASIK may need to use them for up to six months.

Most people recover quickly from LASIK and are back at work in two to three days. Good vision usually returns after a day or two and vision becomes stable after one to four weeks, although this can take three to nine months in complicated cases.

VI COMPLICATIONS OF LASIK

Like all surgical procedures, there are potential complications and side effects associated with LASIK. Some of these, such as seeing halos around objects, were much more common with the early laser machines which treated a much smaller area than the lasers that are used today.

Your surgeon should discuss your individual risk for any side effects alongside the benefits of the procedure so you can make an informed decision about whether to proceed.

The following side effects have been reported after LASIK:

Reduction in quality of vision

There is a risk (between 2.7% and 4.8%) of a reduction in the quality of vision following LASIK. People who are affected may be able to read two lines less on an optician's reading chart, even when they are wearing the right prescription of glasses.

Minor over- or under-correction of refractive error

People's eyes heal in different ways and at different rates and this may mean that the expected visual correction is not achieved. If this happens, you may be offered a second procedure (known as an enhancement), or you may need to wear glasses or contact lenses for some tasks. Enhancement rates vary from 5% to 15%.

Presbyopia

Presbyopia is the difficulty reading without glasses that usually occurs naturally in the early- to mid-40s. People who are short-sighted may not require glasses for reading when they develop presbyopia as simply removing their distance glasses provides the right level of visual correction. However, a short-sighted person who has their distance vision corrected using LASIK will effectively become normal sighted, and it is likely that they will need to wear reading glasses for tasks such as reading as they reach their 40s.

Difficulty wearing contact lenses

If further visual correction is needed after laser eye surgery, it may be more difficult to wear contact lenses as the cornea has been reshaped.

Instability of the cornea

If the cornea is weakened through the removal of too much tissue during LASIK, the centre of the cornea may bulge, making the eye surface irregular and resulting in poor quality vision. At your pre-operative assessment, your surgeon will take measurements to ensure that 250 microns depth of corneal tissue remains untouched following LASIK, as this is generally accepted as a safe level.

Decreased night or low light vision

Problems with night vision include glare, halos and starbursts seen around objects at night or in dim light and for some people these symptoms can interfere with daily activities, especially with driving at night. Reduced night vision is often temporary, lasting about four to six weeks, but some continue to experience the symptoms in the longer term. These problems are more common in people with particularly large pupils.

Eye sensitivity

For the first few months after surgery, it is quite common for the eye to be slightly more sensitive to touch, but it is rare for this to be severe. The problem persists in less than 1% of patients.

Dry eye

Most people experience dry eye symptoms immediately after laser eye surgery because the surface nerves have been cut. The use of lubricating drops will usually relieve the irritation, but in very severe cases a temporary plug may be placed in the opening of the tear duct to slow tear drainage.

Retinal detachment

People with short sight have a greater risk of retinal detachment and this risk is not reduced by laser eye surgery.

Other rare problems include:

- ◆ incomplete cut of the corneal flap (usually remedied by a repeat procedure after several months)
- ◆ loss or extensive damage to the corneal flap
- ◆ unattached corneal flap, which may require stitches to hold it in place
- ◆ inflammation caused by debris or fibres under the corneal flap
- ◆ growth of the surface layer (epithelial tissue) of the cornea under the corneal flap
- ◆ wrinkling of the corneal flap
- ◆ bleeding or blocking of the retinal artery or other blood vessels
- ◆ penetration of the eye by the microkeratome and possible loss of the eye due to haemorrhage or infection (very rare).