

# LENS IMPLANT SURGERY

Jonathan Luck FRCS FRCOphth



THE LUCK VISION

PARTNERSHIP



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OPMI Lumera *i*

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## INTRODUCTION

Lens implant surgery (also called refractive lens surgery or refractive lens exchange) is a surgical procedure to remove the natural lens of the eye and replace it with an artificial lens, or intra-ocular lens implant (IOL).

The lens implants are specially engineered to provide focussing power to suit the individual, and the procedure is done to reduce reliance on glasses. It's identical to a cataract operation, but a cataract operation is normally done to remove the natural lens because it has become cloudy and is interfering with vision.

This booklet will give you an introduction to lens implant surgery and what to expect when you come for a consultation, and also if you decide to have surgery. It's not designed to replace a detailed consultation, but we hope it'll give you a reasonable idea about what to expect.

Please also read the accompanying booklet 'Informed Consent for Lens Implant Surgery' that has more information and which you will need to sign if you decide to have treatment.

## INTRODUCTION

“It is now almost three and six weeks since you operated on my right and left eyes respectively. Your recommendation to use the latest type of lens implant has been extremely sound advice. My range of vision in both eyes is quite remarkable, ranging from clearly seeing distant landscapes, computer and television screens to reading the newspaper.”

Mr William W (Lens implant surgery patient)



MR JONATHAN LUCK

## ABOUT JONATHAN LUCK

Various factors influence the likelihood of a successful outcome after surgery, but the surgeon performing the procedure is amongst the most important.

Jonathan Luck is a Consultant Ophthalmic Surgeon at the CircleBath Hospital and the Royal United Hospital, Bath. As a specialist cataract and refractive surgeon he has carried out many thousands of procedures over the last 20 years. He has an excellent reputation both for his surgical expertise and his professional and personable approach.

Mr Luck is a senior examiner for the Royal College of Ophthalmologists (RCOphth), and sits on the committee that designs and writes the final RCOphth examinations. He is a faculty and committee member of the RCOphth microsurgical skills team. He is an elected council member of the United Kingdom Society of Cataract and Refractive Surgery, and the secretary of the British Society of Refractive Surgeons. He is currently president of the South Western Ophthalmological Society.

Mr Luck uses only the latest technology and lens implants, and unlike some other clinics, Mr Luck will see you personally at the consultation, and will carry out and supervise every aspect of your care.

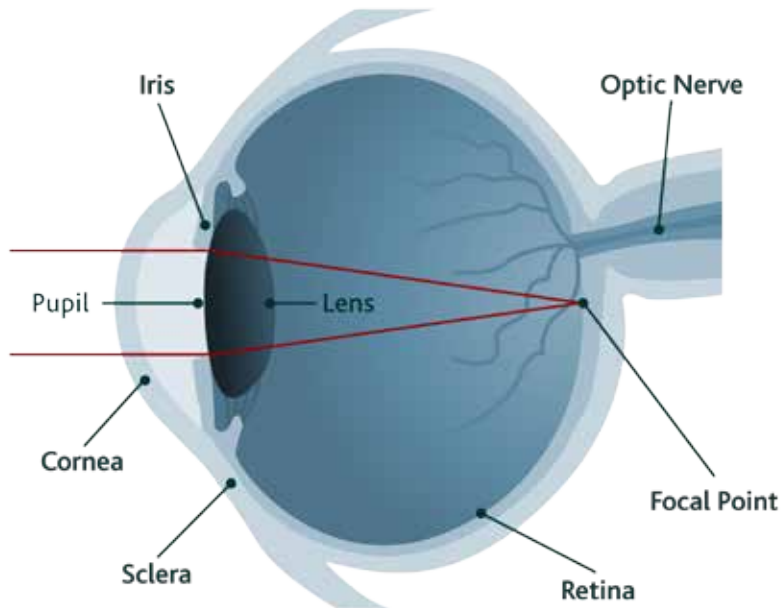
## REFRACTIVE ERROR AND THE NEED FOR GLASSES

The cornea, the clear window at the front of the eye, and the lens focus light onto the retina, the light sensitive layer at the back of the eye. The cornea provides about 75% of the refracting (focusing) power of the eye. The lens inside the eye provides the remaining power. The shape or curvature of the cornea determines how well you see and how in focus an image is when it reaches the brain. The retina sends the 'picture' of the viewed object to the brain where the object is then 'seen'.

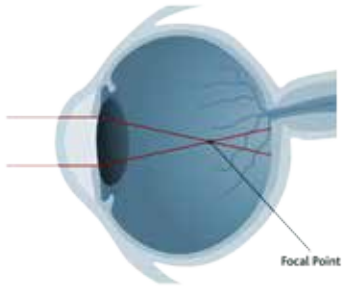
Normally, the eye is able to focus an image of an object at any distance without the need for corrective lenses. An inability to do this is a refractive error and until fairly recently could only be corrected by glasses or contact lenses. Refractive errors are caused by an imbalance between the refractive power of the eye and the length of the eyeball. This means that light rays from an object are not focused clearly on the retina, leading to blurred or misty vision.



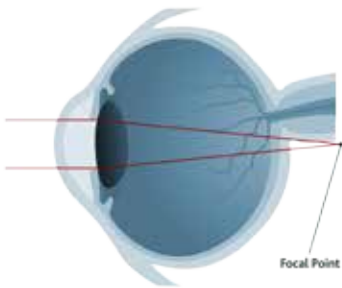
The picture below is of an eye with normal vision. Light from a distant object (the red lines) is focused correctly by the cornea and lens onto the retina, so a clear image is seen.



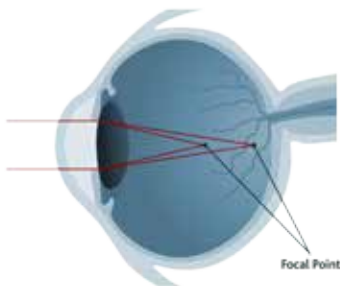
# REFRACTIVE ERROR - THE NEED FOR GLASSES



**Myopia** (near sightedness, short sightedness) is an inability to see objects in the distance clearly without glasses, although it may be possible to see close-up, or read, without correction. Light from a distant object is focused in front of the retina.



**Hyperopia** (long sightedness, far sightedness) is an inability to see near objects without glasses. Objects in the distance are also blurred, but less so. Light from a distant object is focused behind the retina.



**Astigmatism** is a condition where the cornea is more curved in one direction than another, rather like a rugby ball compared to a football. This leads to unequal focusing of light from an object, leading to two focal points and blurry vision.

## HOW IS LENS IMPLANT SURGERY DONE?

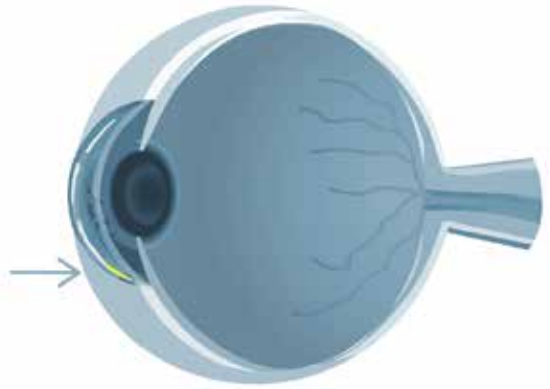
The procedure is identical to a cataract operation. A local anaesthetic is administered, and then sterile drapes are applied to the skin around the eye. A tiny incision is made in the cornea, the clear part of the front of the eye, and an ultrasonic probe is used to soften the natural lens and remove it. The incision is so small it doesn't need any stitches. The technique is known as Phakoemulsification or 'Phako' for short (From the Greek: phakos = lens, and Latin: emulsification = to turn into milk!).

An intra-ocular lens implant (or IOL) is then inserted, folded, into the space left where the natural lens used to be. The lens gently unfolds into exactly its original shape. The lens membrane, or capsular bag, is left intact to provide support for the new lens.

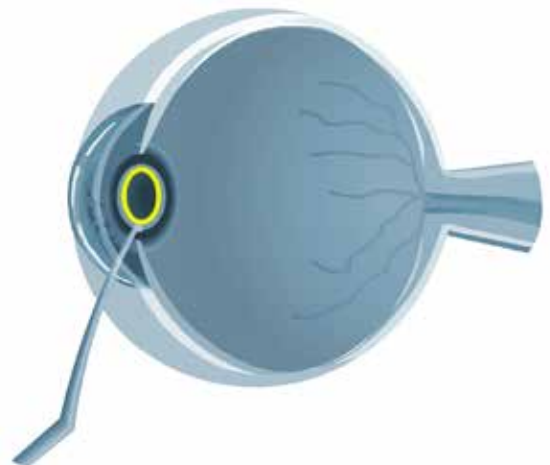
There are modern lasers that will do parts of the surgery, but there has yet to be convincing evidence that they are superior to current techniques.

## HOW IS LENS IMPLANT SURGERY DONE?

1) A tiny incision is made in the edge of the cornea, the clear part of the front of the eye, allowing access to the front chamber of the eye

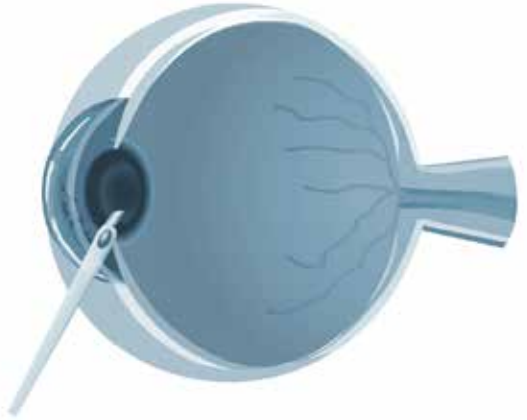


2) A circular opening is made in the transparent lens capsule

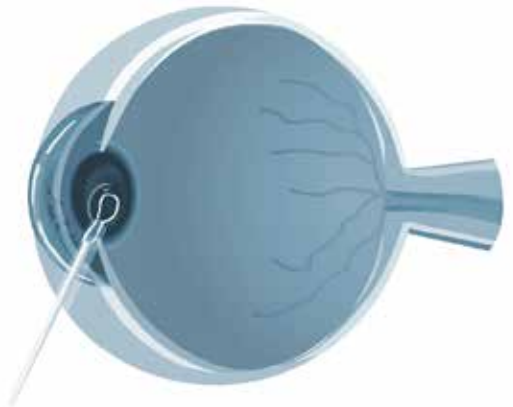


## HOW IS LENS IMPLANT SURGERY DONE?

3) An ultrasonic instrument is used to remove the lens leaving the clear lens membrane 'bag' behind



4) The intra-ocular lens implant is injected, folded, into the capsular bag where it unfolds into place. No stitches are required



## WHAT ARE THE ADVANTAGES OF LENS IMPLANT SURGERY?

- IT'S A FAMILIAR TECHNIQUE WHICH IS FREQUENTLY PERFORMED

The techniques involved are identical to cataract surgery which is a very frequently performed operation. The technology behind the surgery has evolved to a very sophisticated level over the years. Modern lens measurement techniques result in a high degree of accuracy when calculating the power of the lens implant required.

- THE VISUAL OUTCOME IS GENERALLY QUITE STABLE

The natural lens in the eye changes throughout life, and it is this change that is largely responsible for keeping Opticians in business! If your natural lens is replaced, then you should not experience any significant shift in your spectacle requirement (or lack thereof) over the years. It is also, of course, impossible to develop cataracts in the future if you have had lens implant surgery.

## WHAT ARE THE ADVANTAGES OF LENS IMPLANT SURGERY?

### → LENS IMPLANT TECHNOLOGY HAS IMPROVED

Lens implants continue to evolve, although the basic design hasn't altered much over the years. There are now lenses to suit even those with very high prescriptions, and for those with significant astigmatism. Multifocal lenses have improved considerably since they were first used about 20 years ago.

### → PEOPLE WITH VERY HIGH PRESCRIPTIONS CAN BE TREATED

Laser surgery can only treat a certain amount of error, but lens implant surgery can cope with almost all types and degrees of spectacle error. Bespoke lenses can be specially manufactured to treat those with very complex prescriptions. Lens surgery may be suitable for others for whom laser isn't an option, such as those with dry eyes or corneal scarring.

## HOW SAFE IS IT?

In general, 95% of patients will have no problems at all either during or after surgery. Of the remaining 5%, most will only have minor problems that can either be dealt with at the time or will get better by themselves, and do not affect the outcome of the surgery. Some however will need further treatment, including further surgery. 0.1% of patients (1 in every 1000) may have a problem that results in loss of vision.

Please read the accompanying booklet 'informed consent for lens implant surgery' which has more information, and details the risks that are either serious, frequent, or which we feel you would wish to know about. You will need to sign the booklet if you decide to have treatment.

The consultation is an excellent opportunity to discuss any aspect of the surgery with Mr Luck, and please let us know if you have any questions having read the booklets.

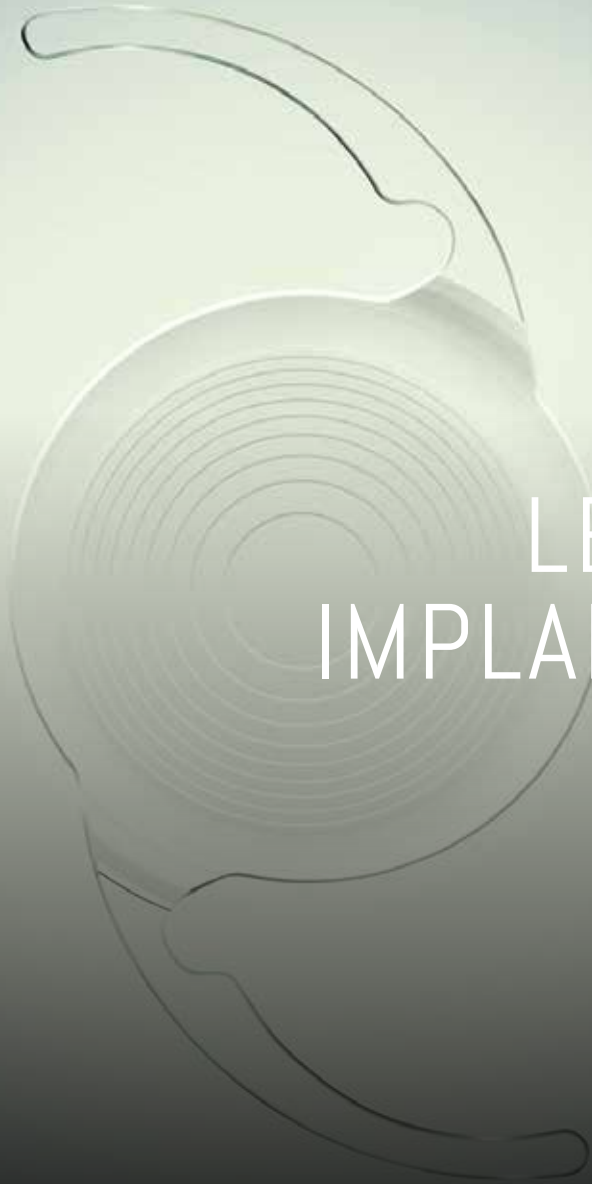


## WHAT WILL MY VISION BE LIKE AFTERWARDS?

Lens implant surgery can be life changing for many.

At the consultation, Mr Luck will advise you on your suitability for lens surgery, and what can be achieved, and what can't. Making sure that expectations are realistic is fundamental to success. The aim always is to get as good an outcome as possible, but it's important to bear in mind that there is a degree of variation between individuals and that there is a small risk of complications, and as a result not everyone will be 100% satisfied afterwards.

Most patients find that after surgery their unaided vision is significantly improved, although there may still be a small spectacle error present. If you wouldn't be prepared to accept anything that's less than perfect, then you would need to consider very carefully whether lens implant surgery is right for you or not.



# LENS IMPLANTS



Lens implant actual size

# LENS IMPLANTS

An intra-ocular lens implant, or IOL, is an artificial lens that is precisely manufactured and engineered to go inside the eye. They come in a range of styles and strengths, and a key part of the consultation is deciding which type of lens would be the best to suit the requirements of the individual.

Lens technology has improved significantly since they were first conceived in the late 50's. There are now lenses that can correct very high spectacle error, including astigmatism, and also correct vision for distance and near using multifocal optics (see page 20).

There are 3 main types of lens implant:

## 1. MONOFOCAL LENSES

Mr Luck uses Aspheric lenses, which are designed to give the best quality vision. These would be suitable for patients who don't mind wearing reading glasses, although often it is possible to offset the focus in one eye to allow 'blended' vision (often called monovision). This can work well, especially if this has already been experienced with contact lenses.

# LENS IMPLANTS

## 2. MULTIFOCAL LENSES

These lenses are specially designed to provide multiple focal points for both distance and near vision, and some of the very latest lenses can provide intermediate vision as well. They are excellent for those who are very motivated to reduce reliance on reading glasses. They are generally very successful, but there is a degree of compromise. Some will notice glare and halos around lights, especially at night, and a small percentage will find these troublesome. These effects often improve with time.

## 3. TORIC LENSES

Both monofocal and multifocal lenses are available in a toric form. Toric lenses are designed to help astigmatism – the condition where your eye is shaped more like a rugby ball than a football. A small degree of astigmatism is extremely common and almost normal; higher degrees of astigmatism are treatable with toric implants but there may be a small amount of remaining spectacle error that requires correction with glasses.

## AM I A GOOD CANDIDATE FOR LENS IMPLANT SURGERY?

You may be suitable if you are:

- Realistic and well-informed about what can and can't be achieved with lens implants
- Short-sighted with a high spectacle prescription
- Long-sighted, needing glasses for distance as well as for near
- Getting early lens changes or cataract formation

Those generally unsuitable (with some exceptions) are:

- Younger patients (in general under the age of 50, although in some cases patients in their 40's could be candidates)
- Those with only slight degrees of spectacle error

If you are interested in your own suitability for lens implant surgery you can fill in our online questionnaire at [www.jonathanluck.com](http://www.jonathanluck.com)



# THE CONSULTATION

## THE CONSULTATION

Consultations with Mr Luck take place at the Circle Hospital near Bath. These involve careful and detailed discussion about a persons lifestyle and visual needs. The aim is to provide a personalised solution for each individual. A thorough eye examination takes place to ensure that there are no other problems present.

This includes dilating the pupils so that the back of the eye can be examined. This can blur vision for several hours, so you will need to either bring a driver or take public transport.

The eyes will be scanned to determine the most appropriate type and power of intra-ocular lens implant that will be placed during surgery. This quick and simple test is performed with the latest technology, using a laser beam to accurately measure the eye.

For contact details or to book a consultation please see the back of this booklet.

## THE CONSULTATION

# For your consultation, please:

- Bring all your present glasses with you and a copy of your most up-to-date spectacle prescription
  
- Bring any tablets or medicines you are taking (or a list of them)
  
- Avoid eye make-up on the consultation day (make-up can get into the tears and can make measuring the surface curvature of the eye difficult)
  
- Leave out your contact lenses prior to the consultation as they affect the measurements that we perform



## THE CONSULTATION

# The minimum time to leave out your contact lenses is:

SOFT LENSES

→ One week

HARD GAS PERMEABLE LENSES

→ Two weeks

We realise that this a major inconvenience for many, especially for those who wear contact lenses most of the time for high spectacle prescriptions. Measurements of the curvature of the cornea are very important for the calculation of the correct power of lens implant, and contact lens wear can significantly affect those measurements.

## TREATMENT & AFTERCARE

### On the day of surgery:

- Wear light and comfortable clothing
- Remove all eye and face make-up including eye-liner, face powder, foundation and mascara (preferably avoid using these products the day before)
- Bring any prescribed medicines and / or inhalers with you
- If you wear contact lenses please remove them the day before
- If the weather is bright bring some dark glasses
- Make arrangements for a friend or partner to escort you home

Upon arrival for surgery, one of the Day Case Unit staff will place a small drug delivery bead just inside your lower eyelid. This is a very easy process and you will not feel the bead once it is in position. It releases medication to dilate the pupil, and saves you having lots of stinging eye drops put in.

## TREATMENT & AFTERCARE

Mr Luck will come along and see you for a brief chat prior to surgery, to explain the process to you and to answer any last minute queries or concerns. He will place a felt-tip mark on the skin above the eye – this is a very standard safety procedure for everything you have two of! There will be quite a few ‘pre-flight’ checks that are there for your safety. They seem obvious, but are very important. If you haven’t done so already, Mr Luck will also ask you to sign the informed consent document which you will have been sent in advance or given along with this booklet.

When you come along to Theatre a local anaesthetic will be administered to make the operation painless. This is usually just some numbing drops, but occasionally we will deliver the anaesthetic via a tiny tube underneath the eye – no sharp needles are used. The other eye will be covered up. The skin around your eye will be thoroughly cleansed and sterile coverings will be placed around your head. During the procedure, although you may see light and movement, you will not be able to see the surgery while it is happening and will not have to worry about keeping your eye open or closed. The operation usually takes about fifteen minutes, sometimes longer.





## TREATMENT & AFTERCARE

### Immediately after surgery:

When the operation is finished, a clear plastic shield will be placed over your eye. This is just to protect your eye for an hour or two while it wakes up – you don't have to wear it after that.

The local anaesthetic takes anywhere between half an hour and two hours plus to fully wear off. If you have had a tube-delivered anaesthetic then you may notice at first that your eyelid is droopy or even closed – this is normal, and recovers promptly. Double vision during this 'waking up' period is also very common and soon wears off. If you have just had drops as anaesthetic, then you will see straight away, but things will be a bit blurry for 12-24 hours, improving steadily.

After a short stay back on the day case unit (and some refreshment!) you will be ready to leave. You should plan to have someone drive you home or take a taxi.

## TREATMENT & AFTERCARE

We will give you some drops to use - instructions on how and when these should be used will be given on the day. You should wash your hands before using the drops, and put them in by gently pulling down your lower eyelid and squeezing the bottle held a safe distance above your eye. Don't worry if you miss - try again - you can't put too much in. If someone can put them in for you, then that's ideal. The daycare staff will give you a contact number in case of any problems.



## TREATMENT & AFTERCARE

### The days after surgery:

The following day, your vision should be quite reasonable, although possibly quite blurry to start with. It should improve within 24-48 hours. It is normal for the eye to be a little inflamed, gritty, and watery for a time after surgery. You should try to have a restful couple of days, although you should feel able to resume normal activities within a day or two.

You can bend down to pick things up, and after 24 hours you may wash your hair. Be careful not to get any shampoo in your eye, although generally it won't do any harm. Don't use mascara for the first two weeks, or any other products that may cause pressure on the eye. After this time, apply products around the eye sparingly and with care for the next week or two.

You can drive as soon as you feel comfortable and confident, and as long as you can read a car number plate from about 20 metres away (about three car lengths). Mr Luck will normally see you within the first week or two to check on progress, and advise on driving etc.



## TREATMENT & AFTERCARE

# What if I have a problem?

If you have any worries or concerns prior to or after surgery please contact Mr Luck's secretary Nicky on

01761 422265

The daycare staff will contact you the day after surgery to make sure that all is well.

Following surgery it is extremely unlikely that you will have any problems. However, if you have an accident or you develop significant pain or loss of vision then please contact the daycare unit on the following number:

01761 422241

or if this is outside normal office hours,

01761 422222 (main hospital number)

## FAQS

### Frequently Asked Questions about lens implant surgery

#### Does the lens implant wear out?

No – the lens is made from a high-tech acrylic polymer that is completely inert. There are no moving parts, so the lens can't wear out. They are designed to last a lifetime.

#### Do you treat both eyes at the same time?

There are some surgeons who treat both eyes at the same time, and it is probably safe to do so. However, common practice (which Mr Luck agrees with) is to treat one eye at a time. The main advantage is to see what the outcome is like for the first eye – this sometimes allows slight modifications to the lens power for the second eye to better suit individual requirements.

#### Can I have a general anaesthetic?

95% of patients are fine under just a local anaesthetic. However, if anxiety is a major issue for you, then a general anaesthetic may be preferable.

## FAQS

### Can the lens grow back?

No, but some (roughly 10%) may notice blurring of vision some years after having successful surgery. This is due to clouding of the transparent membrane that is left behind to support the artificial lens. If vision is affected then it can be treated with a special laser, the YAG laser, which allows the surgeon to make a hole in the cloudy capsule and clear the vision.

### Will I see anything during the surgery?

Right at the start you may see something, but very quickly this gets very blurry. Vague shapes and movements may be seen, and some notice vivid coloured lights.

### What if I cough / move / blink during the operation?

A gentle metal spring device is used to hold the eyelids apart, so you don't have to worry about blinking. A nurse or orderly will hold your hand during the procedure if you wish, and you can indicate if you feel the need to cough or sneeze, and the procedure can be paused.

## FAQS

What do I do between my procedures as far as glasses are concerned?

Mr Luck will provide specific advice tailored to the individual. This may be to wear just one contact lens, or go without glasses.

How soon can I exercise after surgery?

Gentle low-impact exercise can be resumed after a few days. High impact activities such as running ought to be avoided for at least a fortnight. You should also avoid swimming for a fortnight.

Will I need glasses afterwards?

Reading glasses are commonly required unless you have had 'blended vision' or a multifocal lens. Mr Luck will discuss with you your likely post-operative spectacle requirement at the consultation. 'Off the shelf' ready readers can be a useful temporary solution.

## FAQS

### Do I need to see my optician again?

Mr Luck will advise on the need for glasses afterwards, and your outside optician will then do an eye test and dispense glasses in the normal way. Even if no glasses are required, then a regular routine check-up on eye health is a good idea every 18 months or so.

### When can I start to use eye make-up?

Avoid eye make-up and mascara for at least two weeks. Facial products such as foundation and powders may be used carefully after a day or so.

### Will my vision change as I get older?

Changes in the natural lens are usually the reason why vision alters as one gets older. After a lens implant operation the vision should be much more stable. Small changes in the requirement for glasses are however possible in the future. It is of course, impossible to develop cataract once you have had lens implant surgery.





**For appointments and enquiries please contact:**

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Main hospital number: 01761 422222

Day Case Unit: 01761 422241

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