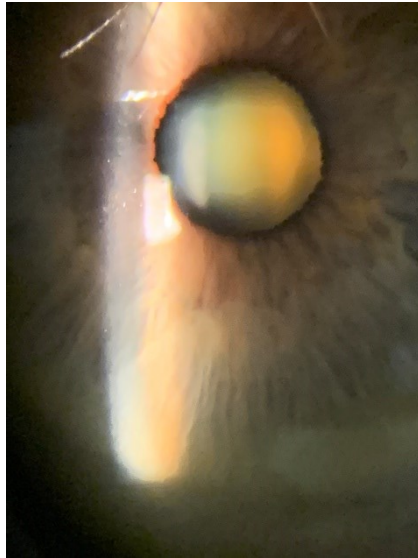


Cataract Surgery



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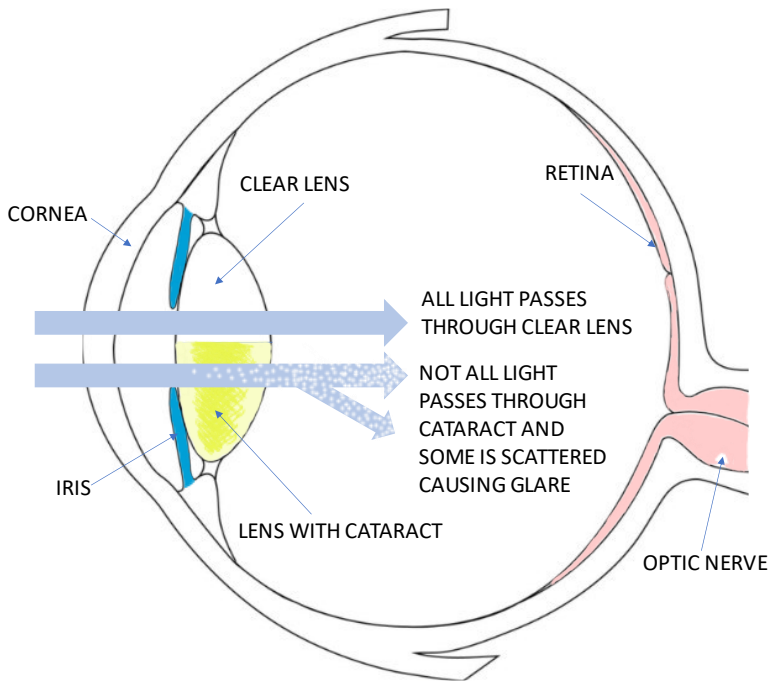
Cataract and Lens Replacement

You have been diagnosed as having cataract or you have come in to discuss lens replacement surgery with your eye specialist, Chris McLean.

This booklet will give you more information but may not answer all your questions. Please let us know if you require any more information and we will be happy to give you any additional details you require.

What is cataract?

A cataract refers to the human lens losing its transparency. It is helpful to look at a diagram of an eye to remind you that the lens sits at the front of the eye, immediately behind the iris, the coloured part of the eye. The lens should allow light to pass through it and at the same time focus the light evenly. A cataract stops the lens from focusing and allowing light to easily pass through it and will often scatter the light as well. This causes blurring of the vision and also glare due to the irregular scattering of the light.



The **cornea** is the clear window at the front of the eye. During cataract surgery very small incisions are made in the cornea to gain access to the lens. If the cornea is circular, light travels through it evenly. If the cornea is more oval in shape then light does not pass through it evenly and this is called **astigmatism**.

The **iris**, the coloured part of the eye, sits behind the cornea and directly in front of the lens. The **pupil** is the hole in the centre of the iris which leads directly to the lens.

Behind the lens is the **vitreous** gel, where **floaters** are situated. Lining the space which encloses the vitreous gel, is the **retina**. This is the light sensitive layer of the eye which captures light impulses as electrical charges and transmits them along the retinal nerve fibres, which coalesce as the **optic nerve**. The optic nerve then takes the nerve fibres to the brain, which converts them into images.

In a healthy, young eye, the lens is able to change shape being thinner to focus in the distance and thicker, to focus on near objects. This ability to change the shape of the lens is lost as we grow older and is called **presbyopia**. This is the point at which reading glasses become necessary.

Cataracts usually develop as a part of the aging process. Early cataracts can temporarily make the lens stronger which can have the surprising effect of making it easier to read. This is short lived once the cataract gets thicker. Cataracts develop as part of the natural aging process of the lens. In younger

people cataract may be caused by injury to the lens, steroid medications, medical conditions such as diabetes, inflammation inside the eye and rarely cataracts that develop in babies before birth.

How do cataracts affect your sight?

Cataracts can cause a number of different visual problems including: blurry vision, faded vision (colours look less intense), glare from low sunlight or oncoming car headlights and double vision in one eye.

Cataracts usually grow slowly, often taking many years before they cause a problem. In fact, it can be a surprise when your optician tells you that you have a cataract, as the change in vision has been so slow, you haven't noticed what you have been missing.

Occasionally, cataracts can grow very quickly due to medications such as steroid tablets or uncontrolled diabetes.

Early cataract changes the refraction of the eye and this can be corrected by getting new glasses. However, there comes a point where the cataract gets so dense that a new pair of glasses does not improve the vision.

When should you have cataract surgery?

There is no specific time when you should have cataract surgery. The decision to have surgery usually comes about when you see your optician for a routine eye test and they notice that even with new glasses your vision is still much blurrier than it should be. Occasionally the vision has decreased so much that driving is no longer safe and must be stopped immediately.

You may notice advancing cataract yourself if some activities become more difficult, such as reading, playing sports or watching television.

In the days when cataract surgery was less refined and the results were not as predictable, cataract surgery was left until the cataract was 'ripe'. This referred to leaving surgery until the cataract was very advanced, at which point there was very little to lose from having surgery.

Nowadays, cataract surgery is much safer, with more predictable results and quicker recovery time and so there is no need to wait until 'the last minute' before having surgery.

What types of lens implant are available?

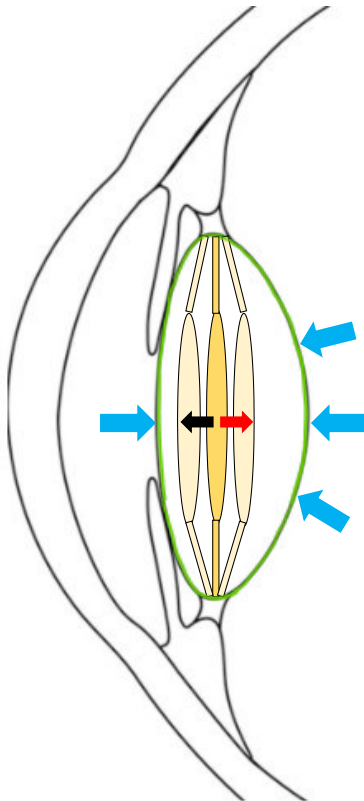
There are different types of intraocular lenses that can be used during cataract surgery. They range from monofocal lenses that focus for one distance to multifocal lenses that focus for distant and close objects and help to reduce dependence on glasses after surgery.

The main consideration when considering the different types of intraocular lenses is whether it is important to reduce your dependency on glasses. If this isn't an issue then a monofocal intraocular lens is a good choice. If you want to reduce your dependency on glasses then you should consider either **monovision**, (where both eyes undergo cataract surgery with monofocal lenses with one set for driving and the other set for reading) or a **multifocal** intraocular lens for both eyes (these lenses allow both eyes to both see objects in the distance and close up).

If independence from glasses is important then it may also be necessary to have a special intraocular lens modification to reduce the degree of **astigmatism** (a **toric** lens).

It is important to stress that whichever type of intraocular lens is chosen, it is impossible to guarantee that you will be able to get rid of your glasses completely. This is because all intraocular lenses can move slightly in the first week after surgery. Even slight movements can change the sharpness of images focused onto the retina. This can lead to a difference in the predicted result. If this creates noticeable blurring

after surgery then the vision can be sharpened either with glasses or by having laser refractive surgery. By changing the shape of the cornea, the sharpness of the vision can be improved. However, this additional treatment is not covered by insurance companies and must be self funded.



Once the lens has been removed, a new intraocular lens is placed inside the thin covering (capsule) of the old lens (green outline). The lens may move forwards (black arrow) or backwards (red arrow) in the first week after surgery before the capsule naturally shrinks (blue arrows) and grips the lens in position

Considerations before surgery

Before surgery can take place it is necessary to measure the shape of the eye (**biometry**) and these measurements are used to calculate the strength of the new intraocular lens. These painless measurements take about 10 minutes to complete in the outpatient clinic. The calculations are less accurate if you have had laser refractive surgery in the past, have dry eyes or wear contact lenses. **It is important to leave your contact lenses out before these measurements are done**, and you will be given advice about this. If you have dry eyes, make sure you use your regular, lubricating eye drops in the days before the measurements take place. You must mention if you have had laser refractive surgery in the past as the appropriate adjustments need to be made to the lens power calculations to get the best result.

If you take regular medications, there is no need to stop these before cataract surgery. If you take **warfarin** it is important your blood test results stay within the recommended range, so that your blood is not excessively 'thin'. Some medications, such as **Tamsulosin**, can cause the iris to behave abnormally during cataract surgery, which can occasionally lead to more complications. You will be given more information about this if you take Tamsulosin or similar alpha-blocking medications.

Coming into hospital on the day of surgery

Most people have their cataract operation under local anaesthetic and can eat and drink normally before their operation. If you have requested sedation or a general anaesthetic then you need to have no food or drink for six hours before surgery. You will be given written instructions about this to remind you.

Once admitted to the ward you will have some paperwork to fill out with the nurse who will be looking after you. You will have some eye drops which will enlarge the pupil, which is a necessary step before surgery. You will have a mark made with a pen placed above the eye which is due to have surgery. If you are having an oral sedative, this can be given about one hour before surgery on the ward.

What happens during surgery?

You will be taken from the ward area to the operating theatre. It is important that cataract surgery takes place in an extremely clean environment, and so must be done in a modern, fully equipped operating theatre.

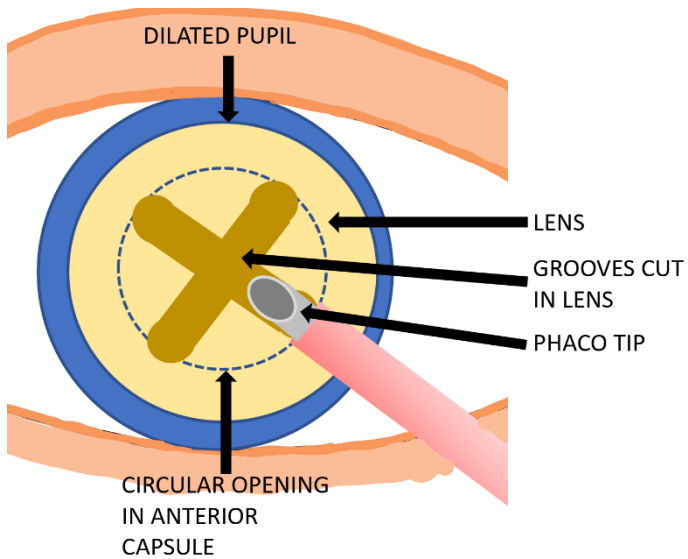
Once in the operating theatre, your details will be checked again and you will have some anaesthetic drops placed in the eye that is due to have surgery. This is the first part of the anaesthetic. The eyelids are cleaned and then a light paper sheet is placed around the eye to keep it clean. The sheet is

lifted away from your mouth and oxygen is piped in under the sheet, so you should not have any problems with your breathing. Where the sheet rests against the eye, there is a clear patch. An opening is made in this and then a springy clip is used to gently keep your eyelids open. This feels a little tight at first, but only for a minute. The operating light is then moved directly over the eye. This can seem bright to start with, but the brightness fades after a few minutes. The next step is to add some more anaesthetic, which can feel a little cold for a few seconds. Now you just look at the light directly above you for the next fifteen minutes during the operation. You can see lights during the operation, which come and go, but no details of the operation. There are some buzzing noises in the background, which are part of the normal machines that are used for the surgery. It is very helpful to concentrate on your breathing during the operation. Try slowing your breathing right down by counting to 6 as you breathe in and 6 as you breathe out. This really helps to relax you.

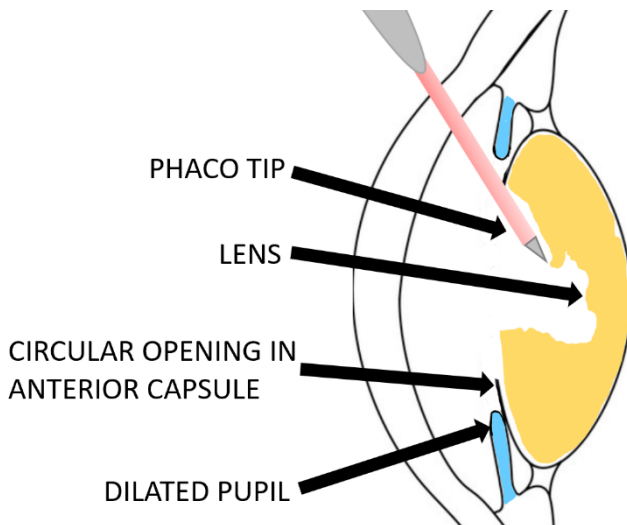
If you have chosen intravenous sedation or a general anaesthetic, you won't be aware of these steps.

At the end of the operation the paper sheet is removed and a plastic cover is placed over the eye to protect it and you are taken back to the ward .

The diagrams below illustrate how the cataract is removed.



Above: Bird's eye view of cataract operation. The phacoemulsification probe breaks the cataract up into pieces and sucks them out of the eye. Below: side view.



After surgery

Once you are back on the ward the nurses will offer you refreshments and check that you are feeling comfortable. You will be given a bottle of antibiotic drops to take home with you, with instructions on how to use them. If your operation was in the morning, you can start the drops that evening. If your operation was in the afternoon then you can start your drops the following morning. You can remove the plastic cover yourself at home, to put in the first drops. The plastic cover should be used to cover your eye when you go to bed, for the first week after surgery. There is no need to use the cover during the day.

When you get home, your eye might be a little achy. This should settle with paracetamol tablets. Often, no analgesia is required after surgery. The eyedrops can be a little stinging, but this is not usually a significant issue.

The day after surgery

Your eye may look a little bloodshot and feel a little gritty and watery the day after your operation. This is quite normal. Start using the antibiotic eye drops you were given at the hospital. Your vision after surgery may fluctuate for the first week and this is quite normal. You may notice more floaters and sometimes a flickering light or a dark line at the outer corner of the eye. This is normal and part of the settling down process.

It is safe to bend down after surgery to put your shoes on and to pick up light objects. However, you should not undertake any strenuous physical exercise for two weeks after surgery. You should not go swimming for at least two weeks after surgery. Avoid using make up for two weeks as well.

If you go outdoors and it is very sunny you will need sunglasses, as your eye will be more sensitive to light for the first two weeks. Be careful walking on uneven ground or walking down stairs immediately after surgery as it can take some time to adjust to your new vision.

Does my vision improve immediately?

Your vision will be blurry for the first twenty four hours (due to the anaesthetic and dilating drops). After this time the vision should start to clear but can take a few days. During the first week the vision can fluctuate from day to day. Your vision should be brighter after surgery and colours can look more intense. If you have astigmatism your vision will not be perfectly sharp until you visit your optician for new glasses.

Getting back to normal activities

You may have to wait for your eye to settle before you get back to driving. This varies a lot from person to person and depends on the sharpness of vision in both the operated and

unoperated eyes and also your level of confidence in driving. The best test is to read a car number plate at 20 metres. If you can easily do this then your vision is good enough to drive a car. However, if you have glaucoma you should wait to have your vision checked in the clinic.

If you work, the best time to get back depends on your occupation. If your work involves heavy manual lifting, then you may need to take two weeks off. If your work involves a lot of computer time, it may not be possible to work at the same intensity for the first week. In some cases you may have to wait until you have your glasses updated before you can spend hours at a computer screen.

It is possible to travel abroad soon after cataract surgery. There is no specific time you need to wait but it is important not to travel before you have been reviewed in the clinic.

When will I need to get new glasses?

If you wore glasses before your operation it is likely that they will need to be changed after your operation. However, you need to wait at least four weeks before you get new glasses from your optician. If you go before this time, your prescription may still be changing and any glasses you get then may not be accurate.

In the interim, if your operated eye is uncomfortable looking through your glasses, it may be possible for your optician to

remove the lens from this side of the glasses as a temporary measure.

What are the risks of surgery?

Cataract surgery is one of the most successful operations in modern medicine today. By using the most up to date equipment and techniques, with highly trained staff in a modern operating theatre, over 98% of patients experience an improvement in their vision. However, pre-existing eye conditions such as glaucoma or age related macular degeneration, may affect the degree of improvement.

The following table describes some of the complications that can occur.

Complications at the time of surgery	
Tear of the lens capsule	This may make it difficult to place a lens at the time of surgery and occasionally a second operation is required.
Dropped lens fragment	If part of the lens drops backwards during the operation, it may require a second operation to retrieve it.
Damage to iris	This can occur when the iris behaves unusually, eg in floppy iris syndrome

Complications soon after surgery	
Red, gritty eyes	Eyes can be a little red after surgery and feel gritty. This usually passes after a few days.
Allergy to eye drops	This causes redness, swelling and itching of the eyelids and eye. This is a reaction either to the medication or the preservatives in the drops.
Cystoid macular oedema	Swelling of the central retina which causes blurred vision. With additional drops it settles after 4-8 weeks.
Raised eye pressure	Extra drops are used to lower the eye pressure.
Corneal oedema	Haziness of cornea which usually clears after 1-2 weeks.
Endophthalmitis	Infection inside the eye. Occurs in less than 1 in 1000 cases but can lead to permanent loss of vision.
Movement of the intraocular lens	Occasionally the lens can move slightly out of place in the first weeks after surgery. It can be repositioned in the operating theatre.

Complications late after surgery	
Thickening of the capsular bag	This can occur anytime after surgery, and makes the vision blurry. It is treated with YAG laser capsulotomy.
Retinal detachment	Part of the retina separates from the inner lining of the eye. This is a sight threatening condition and needs to be treated urgently.
Desired visual result is not achieved	Despite the most modern treatment, not everyone will obtain the visual result they want. Although this is usually correctable with glasses, refractive laser surgery is also an option but this is not usually covered by insurance companies and so is self funded
Dry eyes	Dry eyes are increasingly common with age. Cataract surgery can trigger an episode of dryness which should settle after a few weeks with drops.

CHECK LIST

Remember to consider these points to help make your cataract surgery journey as smooth as possible

Question	Circle one choice	
Have you been told you have a weak or lazy eye?	YES	NO
Do you have glaucoma?	YES	NO
Do you have diabetes?	YES	NO
Do you have macular degeneration?	YES	NO
Do you normally wear contact lenses? (If yes, please remove before your clinic appointment)	YES	NO
Do you take blood thinning medication?	YES	NO
Do you take alpha blocking medication? (eg Tamsulosin, Terazosin, Doxazosin, Prazosin)	YES	NO
Do you have any allergies?	YES	NO
Do you suffer from claustrophobia?	YES	NO
Can you lie flat on your back for 20 minutes?	YES	NO

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