



# RETINAL DETACHMENT



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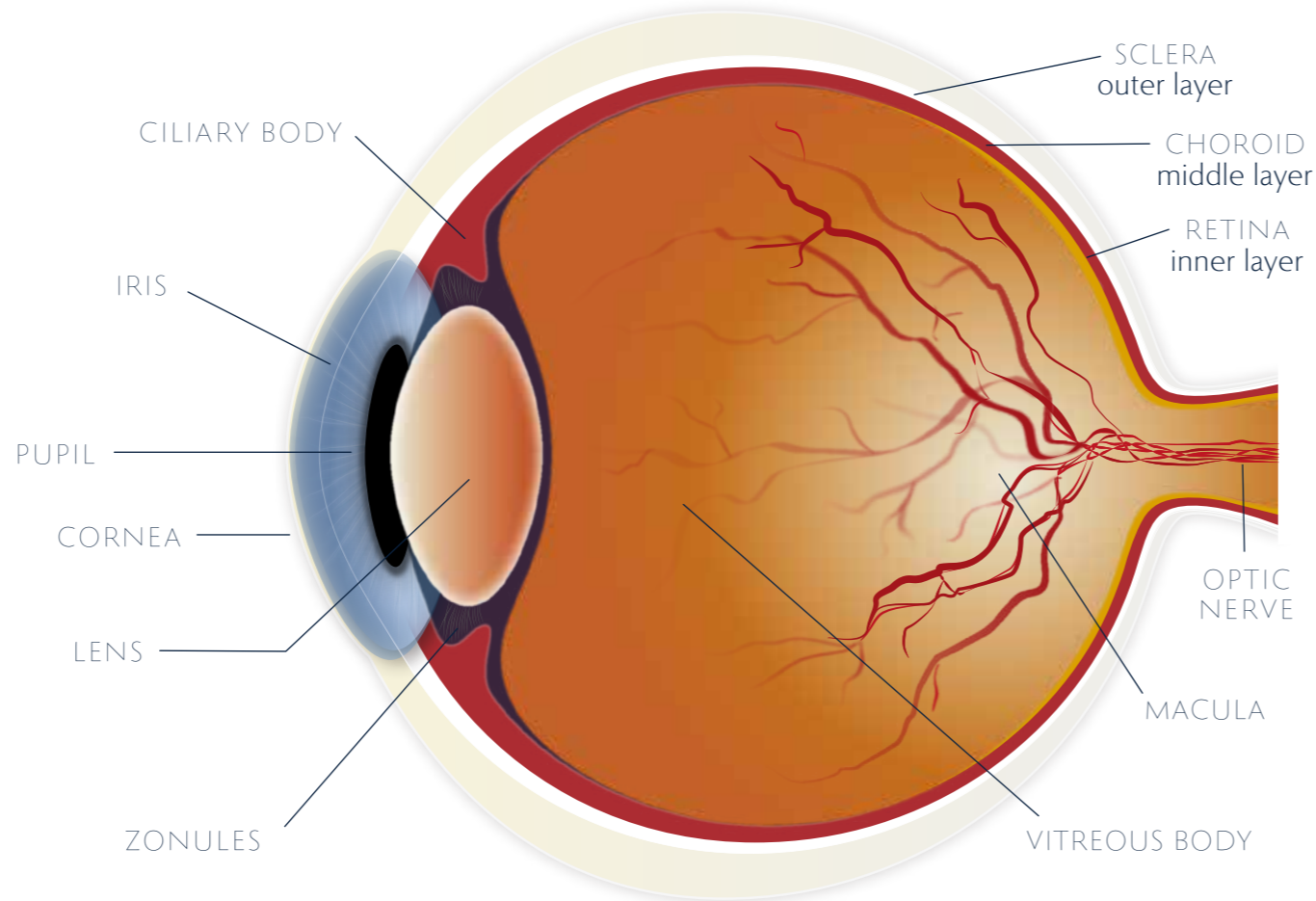
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AFTER SURGERY

# anatomy

## EYE ANATOMY

It is helpful to know a little about the eye and how it works in order to understand the effect retinal detachment has on your vision, and how it can be treated.



The wall of the eye is formed by three layers – the retina, the choroid and the sclera. The retina is the light-sensitive nerve tissue that lines the inner wall of the eye. Rays of light enter the eye, passing through the cornea, pupil and lens before focusing on to the retina. The retina contains photoreceptors which convert these light rays into electrical impulses. In a healthy eye, these impulses are sent via the optic nerve to the brain where sight is interpreted as clear, bright, colourful images. The retina can be likened to photographic film in a camera.

If a hole develops in the retina, fluid is able to seep beneath as the retina separates from the eye wall. The choroid is the underlying vascular (blood vessel) layer of the eye from which the photoreceptors of the retina receive oxygen and nutrients. When a detachment occurs, the affected part of the retina is unable to function, and if it is not re-attached promptly, permanent visual loss may ensue. The vitreous is the clear gel-like substance which fills the hollow space behind the lens. As we age, this vitreous gel opacifies and shrinks away from the retina. This is very common, occurring in about 75 per cent of people over the age of 65. Separation of the vitreous gel from the retina is known as posterior vitreous detachment or PVD. It does not itself cause any permanent loss of vision although floaters may be troublesome. As the vitreous gel is attached to the retina more firmly in some places than others, the retina may tear as the gel separates.

# what is retinal detachment?

Sitting at the back of our eyes, the retina is the thin layer of nerves that enables our brains to receive light and transform it into images.

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Retinal detachment is a separation of the light-sensitive retina from the eye wall. This usually starts towards the periphery of the retina and spreads centrally. Separation prevents normal retinal function, and patients will become aware of worsening visual loss which, if not repaired promptly, will result in permanent visual impairment or even blindness in the affected eye.



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## CAUSES OF retinal detachment

Anyone can develop a retinal detachment at any time, and it is unlikely it has been caused by anything you have done. However, some people are at a greater risk than others of developing this condition.

### Pre-disposing factors for detachment:

- **Age.** Posterior vitreous detachment occurs more commonly as we age, and it is at the time of PVD that there is the greatest risk of retinal detachment.
- **Myopia.** Short-sighted people (myopes) are much more susceptible because their eyes are larger than average, resulting in a thinner, more fragile retina. Myopes also develop PVD earlier and are more prone to weakness of peripheral retina.
- **Trauma.** People who have sustained direct trauma to the eye or face may suffer a detachment.
- **Cataract surgery.** Any form of intra-ocular surgery will slightly increase the risk of detachment.
- **Familial retinal detachment.** This occurs as a consequence of inherited retinal weakness, although this is rare. If you have a retinal detachment in one eye, you are at an increased risk of developing similar change in the other. Your fellow eye will be examined to determine the need for preventative laser treatment.





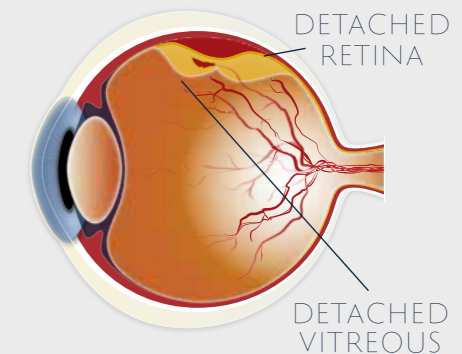
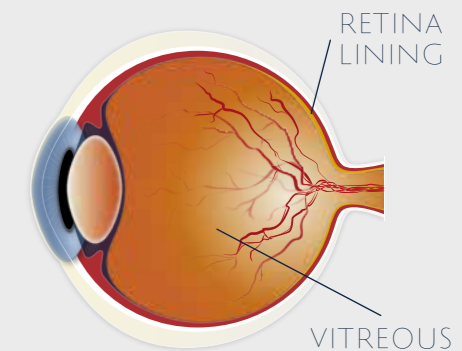
## POSTERIOR VITREOUS DETACHMENT SYMPTOMS

- Flashes of light seen as arcs in the periphery of vision, more noticeable in dim illumination.
- New floaters which may vary from small spots or 'cobwebs' to larger patches of mistiness which flick across the field of vision on eye movement.

## RETINAL DETACHMENT SYMPTOMS

- A shadow spreading across the vision, starting peripherally and moving centrally.
- Blurred or distorted central vision implying involvement of the central macular retina.

Symptoms of retinal detachment or posterior vitreous detachment should be reported as a matter of urgency.



Comparison of a healthy eye and an eye with retinal detachment



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## RETINAL DETACHMENT treatment

### WHEN SHOULD YOU HAVE RETINAL DETACHMENT SURGERY?

Many retinal detachments constitute a medical emergency. There is a limited window of opportunity to repair the detachment before permanent visual loss is suffered.

The aim is to intervene before the detachment has progressed to involve the central macula, which would be perceived by you as a cloud or curtain coming across the centre of your vision. While peripheral vision will improve following a detachment repair, your central vision, if affected, can never fully recover. When the loss of central vision is recent, urgent surgery with prompt re-attachment of the macular retina can achieve substantial central visual improvement.

Occasionally, a detachment may be longstanding and its progress limited, such that central vision has been spared. Surgery in these cases is not urgent. There are a number of ways to treat retinal detachment and the most appropriate treatment for you will be based on the type, location and extent of the detached retina. The purpose of surgery is to reposition the retina on to the inside wall of the eye. In 90 per cent of cases this can be achieved with a single operation. The reason to proceed with surgery is to prevent blindness.

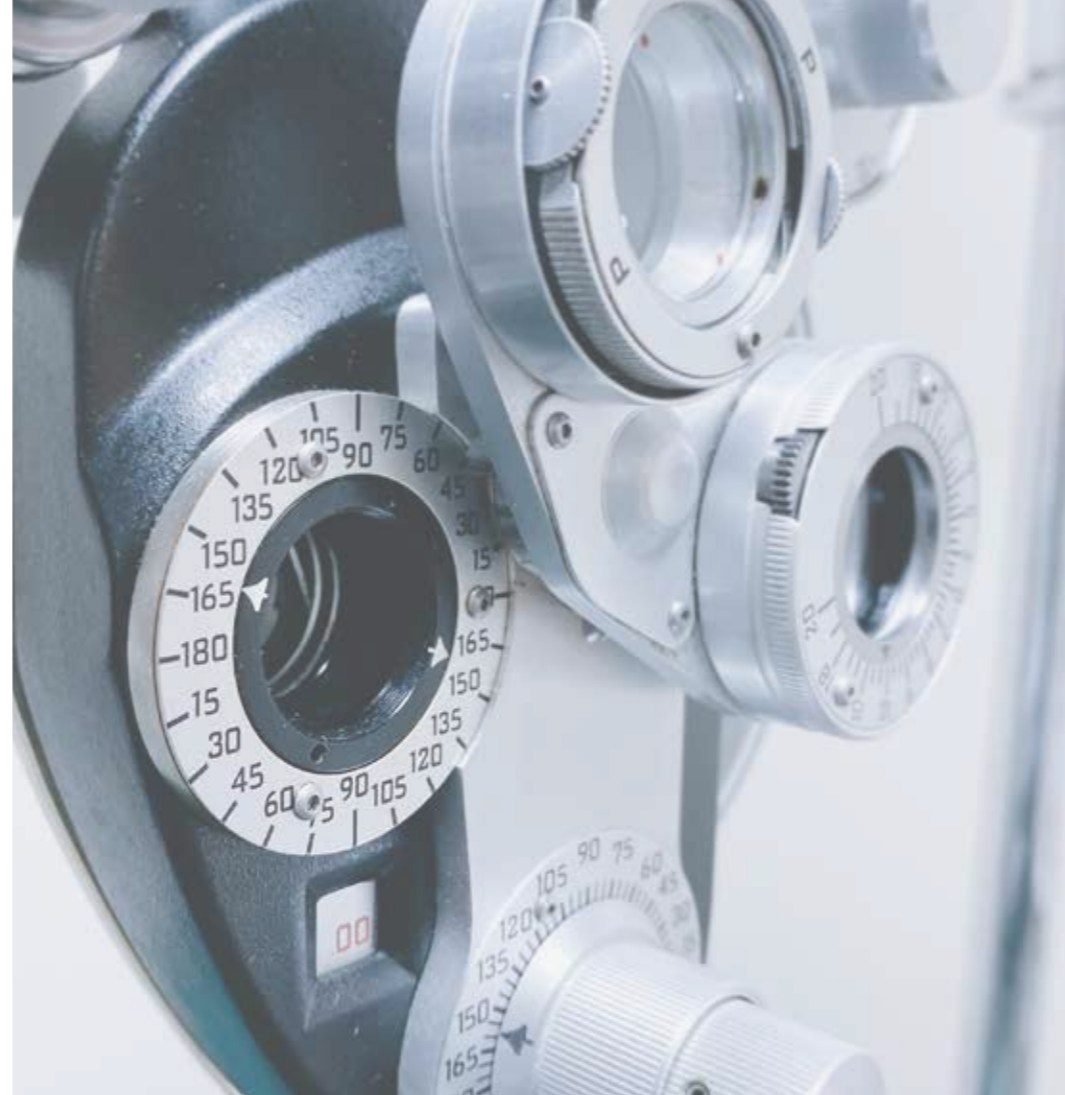


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## BEFORE SURGERY

### WHAT TO CONSIDER PRIOR TO SURGERY

It is important that we have knowledge of any prescribed medications you are taking. You will probably be asked to continue these in the usual way, but some medications can cause complications during ophthalmic procedures.



This includes warfarin, an anti-clotting agent. If you normally take this, you may be asked to stop for a few days prior to admission. You can resume taking it immediately after surgery. If you take a diuretic ('water tablet') and are having surgery on a morning operating list, you may wish to postpone taking it until after your operation. As most vitrectomy surgery is carried out under local anaesthesia, there are usually no restrictions on what you may eat and drink prior to admission. If the use of sedation during surgery has been discussed, you should avoid eating a heavy meal during the two hours prior to hospital admission. Occasionally surgery may be carried out under general anaesthesia. If you are

going to have a general anaesthetic, you will be advised of the need to fast prior to surgery. Repair of a retinal detachment involves filling the vitreous cavity (the hollow space behind the lens of the eye), with an inert gas, the purpose of which is to reattach the area of detached retina. The day after surgery the eye will be almost completely full of gas, which makes vision so blurry that it is almost useless. Vision gradually returns as the gas bubble reabsorbs and the vitreous cavity refills with naturally produced aqueous fluid. It is important to remember that many activities of daily living will be compromised by the poor vision in your operated eye, and for the first couple of weeks it will be impossible to drive.

Your ability to cope with everyday tasks will at that point depend upon vision in the fellow eye. For those patients whose central vision in the fellow eye is compromised, it is important to think about planning meals and arranging some help about the house for the first couple of weeks.

#### **WHAT HAPPENS NEXT**

Once a decision has been made to proceed with surgery, our secretarial team will liaise with you to arrange a convenient date on one of our operating lists. This will be at one of the private hospitals in your local area.

You will receive confirmation of your admission date from the hospital bookings department, together with a health questionnaire and some general information about your chosen hospital. Surgery is usually carried out as a day case, with a hospital stay of a few hours. Remember, you should not drive yourself to the hospital.



You may want a relative or friend to accompany you, or to drop you off and return to collect you when you are ready to go home. Alternatively, if you find getting to and from the hospital difficult, we may be able to offer assistance.

Please alert the secretarial team if this is the case, as the hospital bookings office is not able to help with transport arrangements.

#### **HOW TO PAY FOR SURGERY**

If you belong to a private health insurance scheme you may be obliged, under the terms of your policy, to undergo surgery at a particular hospital.

It is therefore important that you notify your insurer of the intended procedure, and check whether you are fully covered

for admission to the hospital of your choice. As retinal detachment is a serious problem that requires immediate attention, you are advised to check with your health insurance company that you are eligible for private treatment. If you do not have private health insurance, you may choose to pay for your procedure as a self-funding patient.

Please ask for details of the costs involved as prices may vary between hospitals, and are subject to change.

The fixed cost covers all procedures carried out on the day of surgery, additional surgical correction within one month, and the first post-operative check. Additional costs may be incurred for more prolonged follow-up and any subsequent treatments.

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## THE DAY OF SURGERY

### WHAT TO EXPECT ON ADMISSION TO HOSPITAL

You will be welcomed at the hospital and shown to the ward where you will be settled in. A nurse will carry out routine investigations including checking your pulse and blood pressure.



The nurse will also check the details of any medications you are taking and ask questions about your general health.

Once this has all been completed, the nurse will instil the drops, or a pellet, which dilate your pupil in readiness for the operation.

The ophthalmic nurse will come to see you on the ward to explain what will happen during and after the operation, and to answer any further questions you may have.

You will be asked to sign a consent form to state that you have been provided with, and understand, all the information given relating to the operation (including the risks and benefits of surgery), and that you agree to the proposed treatment.

You will be taken to the operating theatre in your normal clothes, so it is important to wear something comfortable.

## DURING SURGERY

The procedure is vitrectomy, retinopexy and gas tamponade. Vitrectomy means removal of the vitreous (the gel-like substance that fills the eye behind the lens), and is a necessary part of the treatment for a number of conditions affecting either the retina or the vitreous itself. In your case, vitrectomy allows the eye to be filled with a bubble of inert gas, pushing the retina back into position. The retina is then sealed around the causative holes (retinopexy) with either laser or cryotherapy (freezing). Surgery is usually carried out under local anaesthesia which involves gently injecting anaesthetic around the eye.

The anaesthesia will numb the eye and allow it to remain still during the procedure. You will be offered sedation, which will help you relax while the procedure is carried out.

You will be awake during the operation and will be aware of some movement and touch, but the procedure will be painless.

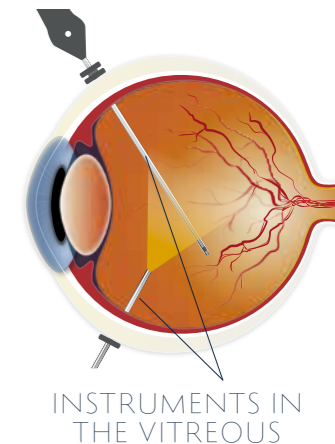


You will be made comfortable on the operating table, following which the skin around your eye will be thoroughly cleansed and a sterile cover ('drape') will be placed over your eye and face. The cover will be lifted off your mouth so you can talk and breathe easily. Your eyelids will be gently held open, although your eye will feel closed. You will see little of what is happening during surgery but we will explain what we are doing as the operation goes along.

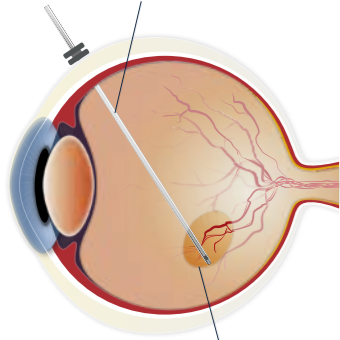
The theatre staff will make sure you are comfortable and help you relax. Someone will be there to hold your hand if you wish.

The operation usually takes about 45 minutes, but in some cases it may take longer.

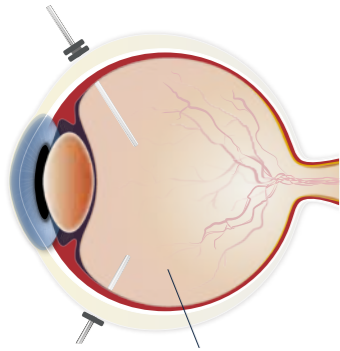
Surgery is performed with the aid of an operating microscope and special lenses which give the surgeon a clear image of the vitreous and retina. Three tiny incisions are made in the sclera (the white of the eye) to enable instruments to be passed into the vitreous.



VITRECTOMY CUTTER



REMOVAL OF VITREOUS GEL



GAS-FILLED VITREOUS CAVITY

The first of these incisions is for a saline infusion (a 'drip') to replace fluid as vitreous is removed from the eye, maintaining the pressure and therefore the shape of the eye during surgery. The second is for a fibre-optic light to illuminate inside the eye, and the third is for the operating instrument, starting with a vitrectomy cutter which enables safe removal of the vitreous gel from inside the eye. Following removal of the gel, a series of steps is performed to re-attach the retina. The water inside the eye is first replaced with air to push the retina back into position. Laser or cryotherapy (freezing) is used to treat the area of retina around the hole. This causes inflammation and as the eye heals, permanent adherence ('welding') of the retina to the eye wall occurs.



The air inside the eye is replaced by an inert gas to give a longer lasting gas-fill, and a better chance of the retina re-attaching successfully to the eye wall.

For the gas bubble to be effective, 'posturing' may be required.

Posturing means positioning the eye so that the bubble, which will always float vertically upwards, presses against the site of the repair.

The bubble in the eye behaves like the bubble in a spirit level, always finding the uppermost point. It is important to remember it is the position of the eye, (which way the eye is looking) rather than the position of the head, which really matters.

The gas reabsorbs over a period of time (between one and eight weeks depending upon the type of gas used), and the eye refills with the natural aqueous fluid which is produced by your eye.

Before leaving hospital you will be given clear instructions on precisely how to posture. Occasionally, if it is felt that a gas bubble will be inadequate to re-attach the retina, silicone oil is used instead.

This can remain within the eye indefinitely, but whenever possible will be removed two or three months after surgery. The three tiny scleral incisions seal spontaneously, so we no longer require sutures in the vast majority of cases.



### **IMMEDIATELY AFTER SURGERY**

After the operation, you will return to the ward with a pad and plastic shield covering the operated eye. This remains in place overnight. You will be given a combination of antibiotic and anti-inflammatory eye drops, along with a pressure-lowering drop to take home, with written instructions on how to instil these and the frequency with which they should be used.

We will make sure you know how to care for your eye when you get home. You will be given information on caring for your eye and any particular instructions regarding posturing. This is an important part of the treatment, and your co-operation is vital to give your retina the best chance of re-attachment.

While resting after the operation, you will be offered refreshments. You may leave the hospital when you feel ready. During the first few hours after your operation the eye may feel sore. This is nothing to worry about and standard analgesics can be taken, such as those taken for headache.



## AFTER Surgery

### THE DAY AFTER YOUR SURGERY

The plastic shield can be removed on the morning after your surgery. You do not need to use it thereafter, although some patients prefer to wear the shield for the first few nights for peace of mind.

You may find the eye is a bit sticky and there might have been a slight pink discharge overnight. This is quite normal and you should cleanse the eye only if necessary, by wiping gently across your closed eyelids with cotton wool dampened with clean water. You will then need to start your eye drops, following the detailed written instructions given to you before you left hospital. Advice will be given on when to reduce and stop using your eye drops. For the first two or three days we may ask you to take a Diamox tablet in the morning and night to help control the pressure within the eye. If you are running out of drops before your post-operative follow-up appointment at the clinic, we will be able to provide you with a repeat prescription (usually without the need to be seen at the practice).

The operated eye may be sore for the first few days and feel gritty for a couple of

weeks. Occasionally the area surrounding the eye can become slightly bruised and you may notice puffiness of the eyelids if you have been asked to posture in certain positions. This is nothing to worry about – it will settle over the first couple of weeks.

You will receive a telephone call from the ophthalmic nurse within 48 hours of your surgery to check that all is well. If you have any concerns before this, please do not hesitate to contact us via the telephone number at the back of this booklet.

### How quickly will your vision improve?

The success of the operation depends on how much of the retina had detached and for how long prior to surgery. If you had previously noticed a shadow or curtain blocking out part of your vision, this will usually improve when the retina has been put back in place.

If your ability to see fine detail was damaged before the operation (implying detachment of the central macular retina), this will not fully recover following the procedure. Your final visual result will not be known for several months following surgery. The gas bubble will obscure your vision while it reabsorbs, over the next few weeks. As the bubble reabsorbs your view of the world re-appears from above, the upper 'edge' of the bubble gradually lowering in your visual field. The world viewed through the bubble will be fuzzy or blurred. The bubble will become smaller and may break up before disappearing completely, at which time you should have a full field of vision. If silicone oil has been used, it usually results in poor vision while the oil is present. Oil produces a long-sighted change, for which a temporary spectacle prescription may occasionally help. We will advise whether new spectacles are appropriate. In most cases, once the retina has re-attached to the eye wall, surgery will be performed to remove the oil. Laser is sometimes applied prior to oil removal, to minimise the risk of re-detachment.



### **When can you resume normal activities?**

It is vitally important that you do not fly until the gas bubble has reabsorbed, as altitude will cause a pressure rise within the eye and result in irreparable damage. If for any reason you are admitted to hospital while the gas bubble is present, you must mention this to your surgeon and anaesthetist as certain anaesthetic agents can be absorbed into the eye causing a dangerous pressure rise. Alternative intravenous anaesthetics are available. You may return to your normal daily activities as soon as you feel ready to do so, although the need for posturing may initially be limiting. As a guide however, for the first two weeks you should refrain

from swimming, strenuous activities, high impact sports, heavy lifting and wearing eye make-up. You will be unable to drive for the first two or three weeks. The field of vision will be impaired, and the movement of the gas bubble very distracting. Following this, your ability to drive will depend upon a number of factors, including the vision in your other eye and the level of your vision when using both eyes together.

If you are in any doubt regarding your visual status you should refrain from driving until you have been seen for review in the clinic.

Please also remember that you will need to continue putting drops in the eye for four weeks after surgery.

### What can you do to help make the operation a success?

Following your retinal detachment repair, it is very important that you instil the eye drops as instructed, as this will help prevent any complications such as infection or inflammation in the eye.

If you have been asked to posture during the day or sleep in a particular position at night, this is an important part of your treatment and will give your retina the best chance of remaining attached.

You should avoid knocking or rubbing your eye, but you may touch the surrounding area.

Although it is safe to have a shower or bath, take care when washing your hair to avoid getting soapy water in your eye.



### THE RISKS AND COMPLICATIONS

The aim and potential outcome of vitrectomy surgery for retinal detachment will be discussed with you in clinic, and again prior to your operation.

Our team operates from modern private hospitals where the equipment and products used in the operating theatre are of the highest standard. Every effort is made to minimise risk and ensure your operation is safe. Serious problems during or after surgery are rare, however every surgical procedure has risks and potential complications.

#### Complications early in your recovery

- **Initial poor vision.** If the eye is air-filled, your vision will be very poor for the first few days. From your perspective, the air bubble occupies the lower part of your vision and will slowly diminish in size towards the bottom of your visual field.
- **Bruising of the eye or eyelids.** The local anaesthetic may cause some bruising around the eye, particularly on the lower lid. The sclera may be red where the tiny incisions are made into the eye. This

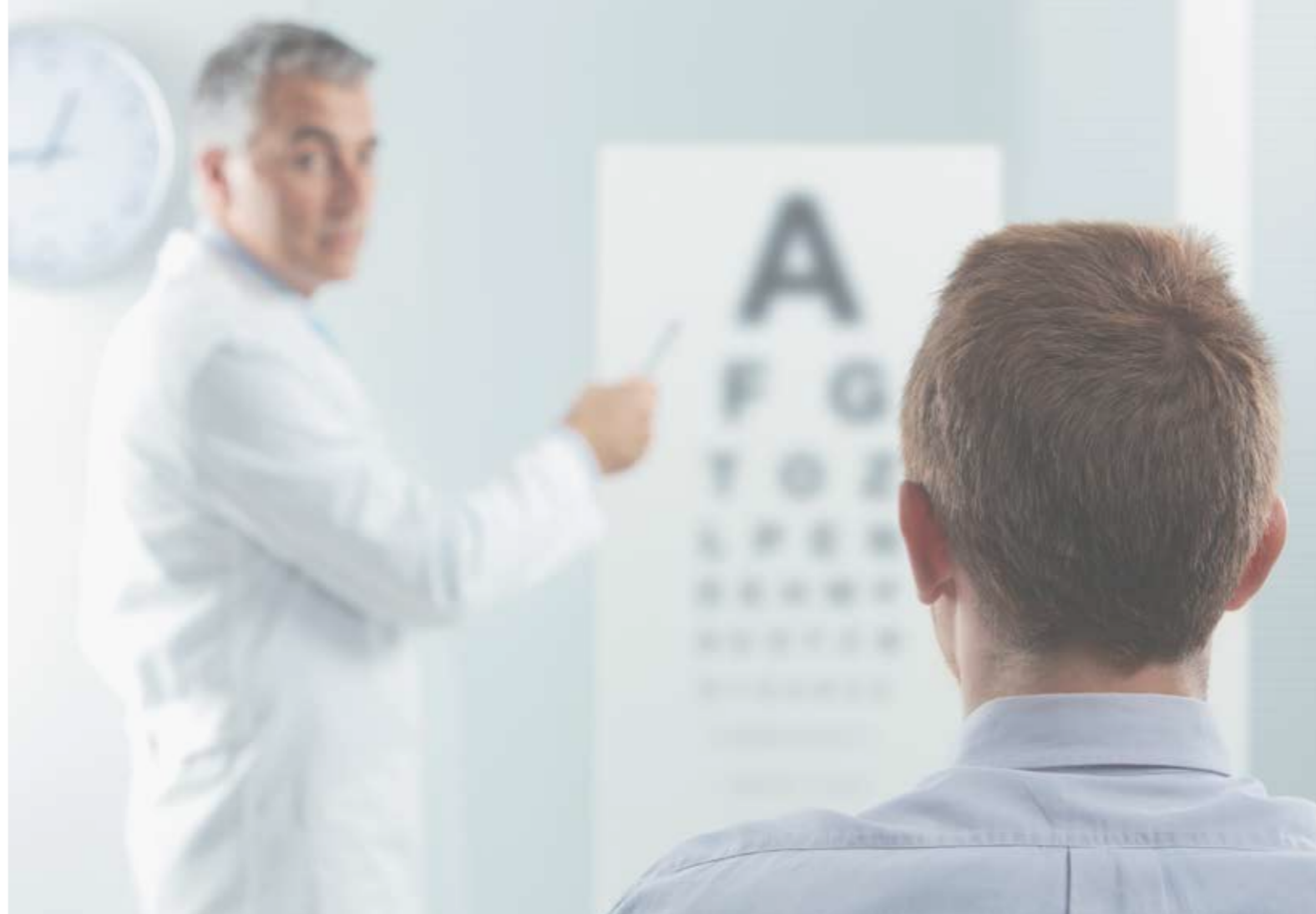
usually resolves completely within the first month.

- **A temporary increase in the intra-ocular pressure in the eye.** This necessitates an additional course of eye drops or tablets. If a gas bubble is used, these treatments are given routinely as a precaution. No additional treatment is needed for an air bubble.
- **Allergy to eye drops.** Ocular allergy typically causes lid swelling, itching or redness. If this happens, please let us know and we can prescribe an alternative. Some patients are allergic to the preservative used in eye drops. If you have previously had a reaction, please inform us prior to surgery so that we can prescribe a preservative-free option.
- **Endophthalmitis.** Infection in the eye is a very rare, but potentially devastating complication affecting less than one in a thousand cases. Increasing discomfort, increasing redness of the eye or worsening discharge should be reported immediately.

- **Cystoid macular oedema.** Swelling of the central macular area of the retina causes blurred vision. This usually resolves within a few weeks of using additional eye drops.

#### **Complications late in your recovery**

- **Re-detachment of the retina.** Vitrectomy surgery involves the insertion of instruments into the vitreous cavity of the eye which carries a small risk of additional tears in the peripheral retina. Although normally identified and treated at the time of surgery, retinal detachment (or the retinal holes which cause it) can occur months later. Any increase in floaters and flashing lights, or the appearance of a shadow spreading inwards from the edge of your vision, should be reported urgently.
- **Post-vitrectomy cataract.** Acceleration of the development of cataract is an inevitability following vitreous surgery. It can develop as quickly as a few weeks after surgery, or may take several years to become significant.



In most cases, patients may be offered phacoemulsification (cataract surgery) combined with the vitrectomy procedure to avoid the need for further surgery at a later date.

- **Glaucoma.** Any ocular surgery can increase the risk of glaucoma in later years. Glaucoma is damage to the main optic nerve of the eye, caused by an unsuitably high pressure. It can nearly always be controlled with eye drops, but occasionally a laser procedure or even surgery may be required.
- **Dry eyes.** This is a common symptom with increasing age, for which many sufferers use simple lubricating drops. Interfering with the conjunctiva on the surface of the eye can upset the production of mucus, which is an important constituent of the tear film. In most cases this is temporary, responding to simple measures such as ocular lubricants and warm compress-bathing. We will advise you on a treatment regime if required.



### **ADVICE AFTER YOUR SURGERY**

If you experience any deterioration in your vision, increasing discharge from the eye, continual aching or worsening pain, please contact us immediately.

**0238 2000 200**

During out-of-office hours, please contact the hospital where the surgical procedure was conducted.

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