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# **Vitreotomy Surgery for Vitreous Haemorrhage**

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## **Vitrectomy Surgery for Vitreous Haemorrhage**

Your eye specialist, Andrew Luff, has diagnosed a condition known as vitreous haemorrhage in one or both of your eyes.

This booklet provides information to help you understand the condition and how it can be treated. This should enable you to make an informed decision about whether to proceed with surgery.

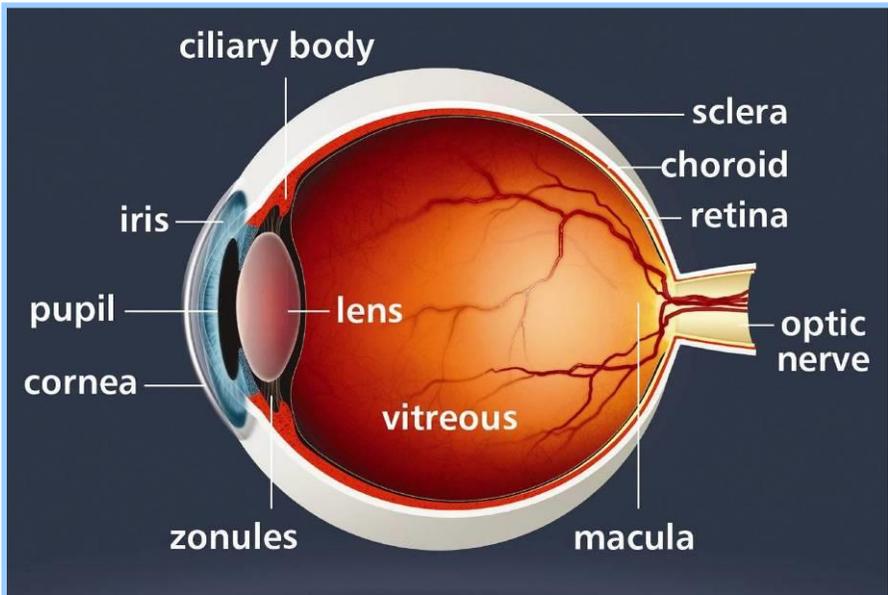
If you have questions that are not answered in this booklet, you should ask any member of our team.

## What is a vitreous haemorrhage?

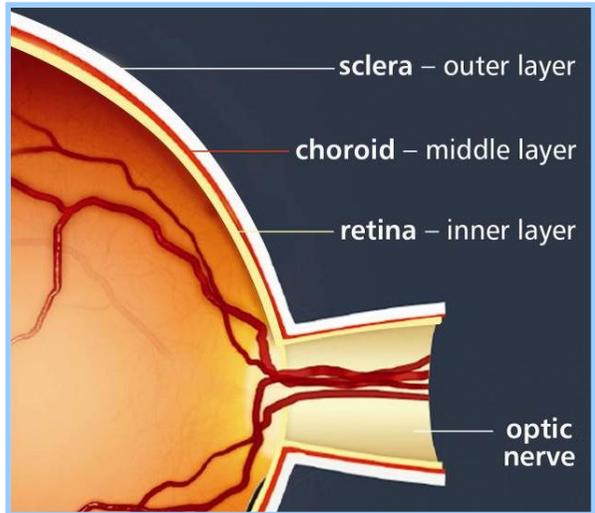
The term vitreous haemorrhage implies bleeding into the vitreous cavity of the eye. The degree of visual loss depends upon the extent of bleeding and can range from mildly troublesome “floaters” to a complete loss of all useful vision.

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

### Anatomy of a normal eye



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 light into electrical impulses.

In the 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.

The **macula** is a small area at the centre of the retina. It is very important as it is responsible for our central vision.

It allows us to see fine detail for activities such as reading, recognising faces, watching television and driving. It also enables us to see colour.

The **choroid** is the underlying vascular (blood vessel) layer of the eye, from which the retina receives oxygen and nutrients.

The **vitreous** is the clear jelly-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 seventy-five per cent of people over the age of sixty-five.

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 some patients are immediately troubled by floaters or a generalised mistiness. Very occasionally PVD results in tearing of the retina, with the risk of retinal detachment.

Tearing of the retina, with or without retinal detachment, is one possible cause of vitreous haemorrhage. Other causes will be discussed later.

### **What causes a vitreous haemorrhage?**

The vitreous cavity of a healthy eye is filled with nothing other than clear vitreous gel. Bleeding can come either from normal retinal vessels which have been subjected to some kind of trauma, or from abnormal retinal blood vessels.

Normal blood vessels can be damaged when the vitreous separates from the retina at the time of posterior vitreous detachment. This is more common in short-sighted (myopic) eyes and always raises the possibility that the retina may have been torn. This puts the eye at risk of retinal detachment.

Direct trauma to the eyeball can cause bleeding, but the eye is remarkably resilient and even a hefty knock may not cause a vitreous haemorrhage.

Bleeding from abnormal retinal vessels occurs in a number of conditions, many of which will have been diagnosed prior to the vitreous haemorrhage and for which some treatment may already have been initiated.

The common causes are;

- **diabetic retinopathy**; abnormal blood vessels grow on the surface of the retina in response to poor retinal blood flow. This may have already been diagnosed and in some cases laser treatment applied;
- **retinal vein occlusion**; blockage of the retinal vein or one of its branches results in poor blood flow to an area of the retina. The retina responds by growing abnormal blood vessels, which unfortunately do little to help retinal function, but are fragile and susceptible to bleeding;
- **age-related macular degeneration**; about ten per cent of patients with macular degeneration develop the “wet” form of the disease, with an abnormal meshwork of blood vessels growing beneath the central macular retina. Although very uncommon, patients with severe wet macular degeneration can develop a “breakthrough” bleed into the vitreous cavity of the eye.

### **How does a vitreous haemorrhage affect your sight?**

Vitreous haemorrhage causes a spectrum of visual symptoms of varying severity;

- floaters, which may be anything from small dots to large clouds of “debris”;
- a haziness of the entire visual field;

- profound visual loss, preventing even “hand movements” vision.



Example of vision with floaters

### **When should you have surgery for vitreous haemorrhage?**

This depends upon a number of factors, but important considerations are;

- if a pre-existing abnormality has been documented, for example abnormal blood vessels in diabetic retinopathy, it may be appropriate to wait a few weeks for spontaneous clearing;
- if a severe bleed with profound visual loss has occurred, resulting in no clear view of the retina, more urgent surgery will be recommended;

- those patients with no pre-existing ocular disease, the concern being that bleeding may be a result of posterior vitreous detachment and that shrinkage of the vitreous jelly, sufficient to cause bleeding, may have also torn the retina. If the peripheral retina, where tears normally occur, cannot be clearly visualised urgent surgery is essential. The risk of retinal detachment accompanying vitreous haemorrhage is increased in cases of short-sightedness or when the fellow eye has already suffered a retinal detachment.

### **What do you need 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 taking these in the usual way, but some medications can cause complications during any surgical procedure. This includes warfarin, an anti-clotting agent. If you normally take this you may be asked to stop it 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 and if you are going to have a general anaesthetic you will be advised of the need to fast prior to surgery.

## **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 sessions. 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 do you 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.

If you do not have private health insurance, you may choose any of the local hospitals and attend 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 subsequent treatments.

### **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 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 own clothes, so it is important to wear something comfortable.

## What happens during surgery?

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 may be offered sedation if you are particularly anxious, which will help you relax whilst 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.

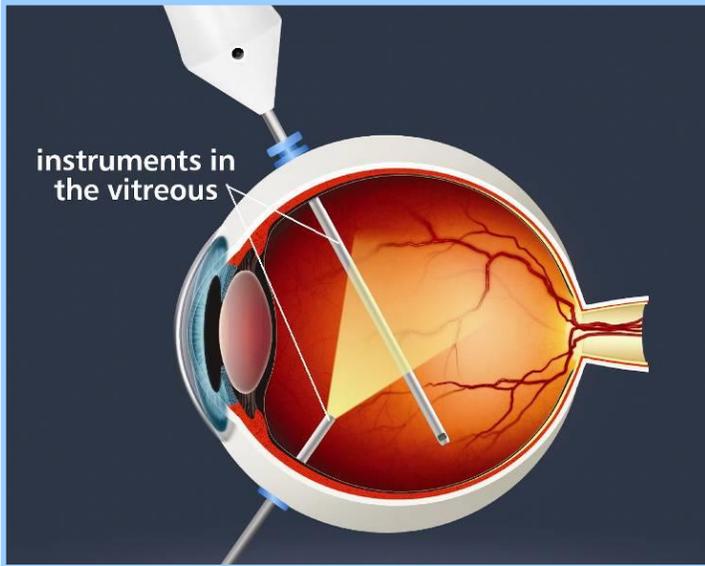
You will be made comfortable on the operating couch, following which the skin around your eye will be thoroughly cleansed and a sterile cover (“drape”) will be placed over your eye and face. The cover will be lifted off your mouth so you can talk and breathe easily. Your eyelids will be gently held open, 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.



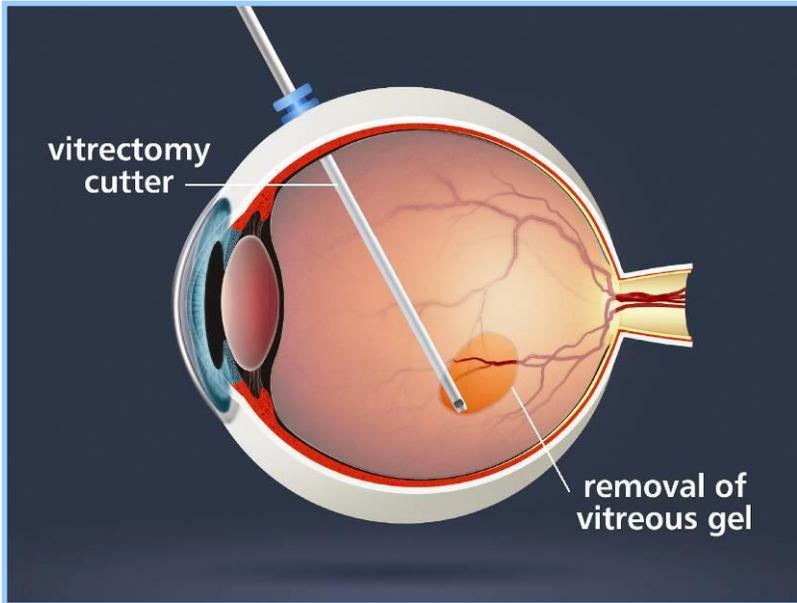
The theatre staff will make sure you are comfortable and help you relax. Someone will be there to hold your hand if you wish.

The operation usually takes about forty-five minutes, but in some cases 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.

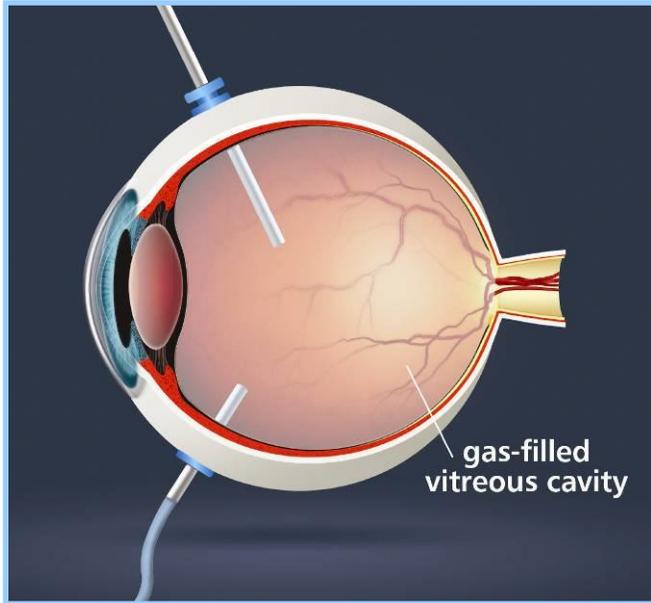


The first of these is a saline infusion (a “drip”) to replace fluid in the eye, maintaining the pressure and therefore the shape of the eye during surgery; the second is a fibre-optic light to illuminate inside the eye; and the third is for the operating instrument, starting with a vitrectomy cutter which enables safe removal of the vitreous gel from inside the eye.



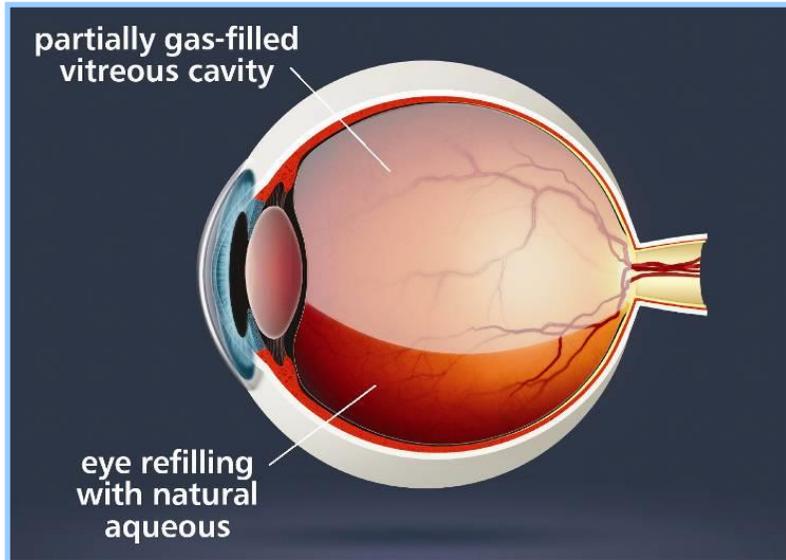
Once all the blood has been cleared from the vitreous cavity of the eye, a careful inspection will normally reveal the point of bleeding. This can be treated with cauterisation and measures taken to prevent further bleeding in the future, for example using laser treatment. If the vitreous haemorrhage is identified as originating from a retinal tear, then laser or cryotherapy (freezing treatment) will be used to secure the retina into position. In those cases where the retinal tear has already resulted in an area of retina detaching from the eye wall, the water inside the eye is first replaced with air to push the retina back into position.

Laser or cryotherapy is used to treat the area of retina around the hole. This results in inflammation inducing permanent adherence of the retina to the eye wall. An inert gas is substituted for the air inside the eye to give a longer lasting gas-fill and a better chance for the retina to stick successfully to the eye wall.



For the gas bubble to be effective “posturing” may be required such that the floating gas bubble presses against the retinal hole. Posturing means positioning the eye so that the gas 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 re-absorbs over a period of time (between one and eight weeks depending upon the type of gas used) and the eye refills this space with aqueous solution which is optically identical to vitreous.

Traditionally the three scleral incisions are sutured at completion of the operation but with the finer instruments now available, most patients will benefit from a “sutureless” technique, with self-sealing incision sites.

### **Immediately after your operation**

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 antibiotic and anti-inflammatory eye drop to take home, with written instructions on how to instil this and the frequency with which it should be used. We will make sure you know how to care for your eye when you get home.

Whilst 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 your eye may feel sore. This is nothing to worry about and your normal headache tablets should settle any discomfort.

### **The day after your surgery**

The pad covering your eye can be removed on the morning after your surgery. You do not need to use it thereafter, although some patients prefer to wear the clear plastic 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 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 the hospital.

Advice will be given on when to reduce and stop your eye drops.

At that stage you will be advised of any change to your drop regime. If you are running out of drops before your appointment at the clinic, your GP will be able to provide you with a repeat prescription (usually without the need for you 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.

You will receive a telephone call from the Ophthalmic Nurse on the day after 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 leaflet.

### **How quickly will your vision improve?**

In most cases a dramatic improvement is appreciated from the first post-operative day. It is normal for a small amount of blood to remain and for the vision still to be misty, until residual debris is carried out of the eye through the normal circulation of the eye's aqueous fluid.

If an air or gas bubble has been used to treat an area of detached retina, your vision will be blurry whilst the gas bubble is re-absorbing. This will take between one week and one month, depending on the type of gas used.

For the very occasional case where the cause of bleeding is centred on the macula, for example age-related macular degeneration with breakthrough bleeding, improvements in central vision will be limited, but peripheral vision should return to normal.

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

You may return to your normal daily activities as soon as you feel ready to do so. 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.

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. A gas bubble makes it very difficult to drive for the first couple of weeks as it obscures the visual field and is extremely distracting.

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.

It is acceptable to travel (including by air) following vitrectomy surgery for vitreous haemorrhage, unless it has been necessary to use a gas bubble.

Additionally, all vitrectomy surgery carries a small risk of inducing a retinal tear, for which the eye may be filled temporarily with a gas bubble. For this reason, you should not plan to travel by air for one month after your operation.

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

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

Following your surgery for vitreous haemorrhage it is very important that you instil the eye drops as instructed as this will help prevent complications such as infection or inflammation in the eye.

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 eye can seem more sensitive to bright light for the first few days and you may find dark glasses helpful, especially in strong sunlight.

## **What are the risks and complications?**

The aim and potential outcome of your vitrectomy surgery for vitreous haemorrhage 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.** All vitrectomy surgery carries a small risk of inducing tears in peripheral retina. To prevent subsequent retinal detachment, laser may be used and a bubble of gas injected into the eye. It is not possible to see clearly through a gas bubble and vision will be compromised until spontaneous re-absorption occurs. Specific information will be given immediately after surgery should this be necessary.
- **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.
- **Double vision.** The local anaesthetic injection used to numb your eye takes some time to wear off and this may leave one or more of the muscles around the eye weak for the first few hours. This causes double vision, which resolves spontaneously.
- **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 and if you have previously had a reaction, please inform us prior to surgery so that we can prescribe a preservative-free option.
- **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.

- **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-bleeding.** The possibility of further surgery for recurrent haemorrhage depends upon the cause of the initial bleed.
- **Retinal detachment.** Vitrectomy surgery involves the insertion of instruments into the vitreous cavity of the eye which carries a small risk of tearing the peripheral retina. Although normally identified and treated at the time of surgery, retinal detachment can occur months or even years later. Any increase in floaters and flashing lights, or the appearance of a shadow spreading inwards from the edge of vision, should be reported urgently.
- **Post-vitrectomy cataract.** This 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 some cases patients may be offered phaco-emulsification (cataract surgery) combined with the vitrectomy procedure to avoid the need for further surgery at a later date.

- **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.
- **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, although prolonged or even indefinite use may be required.

## **Getting advice after surgery**

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

### **NUFFIELD HEALTH WESSEX HOSPITAL**

To speak to Mr Luff's medical secretary at Nuffield Hospital in Chandlers Ford, please telephone 0845 652 2414 or 02380 258405

Out of office hours, please telephone the on-call nurse on 023 8026 6377

### **OPTEGRA SURREY EYE HOSPITAL**

To speak to Mr Luff's medical secretary at Optegra's Surrey Eye Hospital in Guildford, please telephone 01483 903004

Out of office hours, please telephone the on-call nurse on 07912 406 463

### **OPTEGRA HAMPSHIRE EYE HOSPITAL**

To speak to Mr Luff's medical secretary at Optegra's Hampshire Eye Hospital in Whiteley, please telephone 01329 316700

Out of office hours, please telephone the on-call nurse on 07540 703 741