

# Having tube surgery for glaucoma

Department of Ophthalmology

Information for Patients

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## Why have I been recommended for tube surgery?

You have been recommended to have this operation either because your eye pressure is too high and/or your glaucoma is still getting worse. You may have already tried using eye drops or had other glaucoma surgery (such as a trabeculectomy) and this has not worked.

## What is tube surgery?

This surgery is referred to as 'tube surgery' as it involves placing a small device, with a very fine tube, into your eye to allow fluid to drain. This should help lower your eye pressure and reduce the amount of glaucoma treatment you are on (such as how many eye drops you use). The 'tube' can also be called a valve, aqueous shunt, drainage implant, drainage device or filtration device.

The type of tube used at Leicester Royal Infirmary is the Baerveldt tube, which is made up of a silicone tube (less than 1mm in diameter) and a base plate. The open end of the tube, which is cut to fit your eye, is placed within the front chamber of the eye and allows the fluid to drain to the base plate.

The base plate is placed on to your eye underneath the layer called the conjunctiva (the skin of the eye) and between the eye muscles. The base plate sits behind the eyelids and will not usually be seen.

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or call 111 for non-emergency medical advice**

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To give feedback about this information sheet, contact [InformationForPatients@uhl-tr.nhs.uk](mailto:InformationForPatients@uhl-tr.nhs.uk)

The base plate forms the area where the fluid will collect before being absorbed into the blood stream. For the Baerveldt tube, the area where the fluid collects does not form straight away and needs around 6 weeks of healing to form.

The tube that sits on the surface of the eye needs to be covered to try and stop damage to the conjunctiva (the tissue that lines the inside of the eyelids). This is done by stitching a patch of donor eye tissue over the tube. All tissue is dead and so does not have the risk of rejection that can happen with living tissues. All tissues are tested very carefully for infectious diseases including syphilis, hepatitis B and C and HIV. However, they cannot be tested for something called a prion disease (also called 'mad cow disease'), but there have been no reported cases of prion disease from glaucoma surgery.

If the flow of fluid is too high in the first 6 weeks, the eye pressure can go very low. In order to try and stop this, the Baerveldt tube needs to be blocked with a cord (sometimes called a stich or suture) placed within the tube. The eye pressure is usually slightly high in the first 6 weeks, to try and stop the eye pressure from going too low.

If your eye doctor is happy the tube is working well, the cord can be removed from the tube to allow the tube to work on its own. This is usually the case for 2 out of 3 patients. The other patients have the cord kept in place. The cord is usually removed in the operating theatre, but this is a small, quick procedure.

## Benefits of the operation

This surgery is to try and help keep the vision you have by slowing down the glaucoma damage, over the long term. We know from an audit in Leicester Royal Infirmary that:

- tube surgery was successful in lowering the eye pressure in 94% of patients.
- the average eye pressure lowered from 30 mmHg before surgery to 14mmHg after surgery.
- before having tube surgery, patients were on an average of 3 different eye drops, which reduced to an average of 1 eye drop after surgery.
- 2 out of 3 patients taking a tablet called acetazolamide before their surgery were able to stop this, and keep off this medication after surgery.

Long term success rates (e.g. 10 and 20 years later) for tube surgery are not known. However, some studies have suggested that a tube that is functioning successfully at 5 years will continue to do so in the longer term.

## What if I decide not to have the operation?

You have been offered this operation because the pressure in your eye is too high and if not treated there is a high risk you will go blind in that eye.

There may be other options for treatment, however it is likely your glaucoma specialist doesn't feel these will be enough to treat your condition. However, your glaucoma specialist will be happy to discuss other options with you. You should not feel that you are being forced into having this operation and you will be given time to think about it, but any delay in treatment may cause damage to your eyesight that you can't get back.

## Preparing for the operation

Your surgeon will discuss the anaesthetic options for your operation. Most patients have their operation while asleep (under general anaesthetic). If you have a general anaesthetic then you will need extra tests as part of your pre-operative assessment. Please remember to bring a full list of any medication to this appointment.

You may be offered a 'local anaesthetic' where the eye is numbed with an injection and the operation is done while you are awake.

You should continue all your medication until the morning of your operation. If you are on warfarin you should have your INR level checked a week before your operation. If your INR is above the target level, then your GP doctor can help to bring the level down before your surgery. We will also check your INR on the day of surgery to be sure that it is safe to go ahead with your surgery. You do not need to stop your warfarin for this operation and should continue taking it as usual after the operation.

## What should I expect on the day of the operation?

Your surgeon will look at your eye and talk to you again about the operation before getting you to sign the consent form. The operation will last between 1 and 2 hours.

If you are having local anaesthetic then the anaesthetic doctor will numb your eye with some eye drops and then inject some anaesthetic around your eye. This is not painful but you may feel a pressure sensation as the anaesthetic goes in. The anaesthetic not only numbs your eye, but also relaxes the muscles around the eye and makes your vision blurred. You may have some blurred vision and double vision after the operation until the anaesthetic wears off.

When having a local anaesthetic, if you get any discomfort during the operation, then you should raise your hand slowly and the surgeon can stop and top-up your anaesthetic.

Your eye will be cleaned and a sterile plastic sheet (called a drape) will be placed over your eye and will cover your head and face. If you are awake for the procedure, the drape will be held away from your nose and mouth and air will be circulated under the drape.

If you are awake for the operation you will hear the doctors and nurses constantly talking to one another. This is normal and you should not be concerned by it. If anyone needs to speak to you directly then they will address you by name.

At the end of the operation, an eye pad and shield will be placed over the eye to protect the eye. This should be worn overnight and we will remove it the next morning when you come back for your check-up. If you have very poor vision in your other eye then we can avoid padding the operated eye.

You will be given eye drops after your operation to use in your operated eye. The discharge nurse will let you know when to take the eye drops and how long for. Usually you will be given a steroid eye drop to use every 2 hours during the day (but sometimes more) and an antibiotic eye drop to use 4 times a day. Some patients also need tablet medication after the operation.

Most patients go home on the same day as the operation. A relative or friend should take you home, especially if your sight is poor in the other eye. If you had a general anaesthetic you will need someone to stay with you overnight in case there are any problems. If you do not have anyone to stay with you after an operation, then we can arrange for you to stay in hospital overnight.

## What should I expect after the operation?

You may notice that your tears are blood stained and that the eye is watery. The eye will look very red and swollen; you may even have bruised eyelids. You may also get some level of discomfort. This is all normal.

It is important for your glaucoma specialist to closely check the eye pressure after the operation:

**High pressure** - this is not uncommon after the operation and you will need to start some eye drops or tablets. This is not a sign that your operation has failed. If the pressure is very high straight after the operation, it may be that the tube is blocked (for example, by a blood clot) and may need surgery to move the blockage.

**Low pressure** - if too much fluid is passing through the tube then the pressure can go very low. This can be a risk if you do not rest after the operation.

Low pressure increases the risk of a major bleed inside of the eye and can also reduce your vision. You may need to go back to the operating theatre urgently to place a stitch around the tube to reduce the flow or to inject a gel into the eye to increase the eye pressure. This can affect the chances of success from your tube surgery.

Your eye pressure and general health of the eye will be checked at 1 day, 1 week, 3 weeks and 6 weeks after the operation. If there are any problems, you may need to be seen more often. The aftercare and healing process of the eye is very important for the success of the operation. Careful monitoring of your eye after the operation and making the right changes to your treatments can have a very big change on the long term success of the surgery. The tube may also need to be adjusted, which may mean a second smaller operation.

You should remember that this operation will not bring back vision you have lost or 'cure' your glaucoma. The main aim is to slow down (as much as possible) further vision loss from glaucoma.

We advise patients to take 2 weeks off from their employment. If there are problems with your operation or your job involves heavy lifting or working in a dusty environment, then you may be advised to take more time off work.

## What are the risks of the operation?

Apart from the problems with high and low pressure, you should be aware of the following risks:

- **Infection** - infection inside the eye is rare (about 1 in 1000 patients). Everything possible is done to reduce the risk of infection during the operation and we would encourage you to be careful to keep the eye clean and use the antibiotic drops as prescribed after the operation. Early symptoms can include blurry vision, increased pain, redness of the eye, or thick discharge from the eye. If you have any of these symptoms, you should go to Eye Casualty.
- **Bleeding** - you may see blood in the front of your eye, but this will stop on its own. This has only happened to 2 patients at Leicester Royal Infirmary. This blood will usually go away on its own, but if it doesn't, it can be washed-out with a small operation. Bleeding at the back of the eye can affect 1 in 100 patients and is more dangerous. It usually only happens if the eye pressure is very low.

- **Blurred vision** - your vision will be worse straight after the operation but should improve slowly over a few weeks.
- **Clouding of the lens in your eye (cataract)** - if you have already had cataract surgery then this will not be a problem. If you do have a cataract then we might operate to remove this before your tube surgery. If you do not have a cataract in your operated eye before the operation, the surgery may cause a cataract to form earlier than normal. In an eye that has had tube surgery, a cataract can be removed in the usual way.
- **Double vision** - due to the size of the tube implant and its position near to the muscles that control eye movement, it is possible that it can affect eye movement and cause double vision. If this happens then there are usually simple ways (such as prisms added to your glasses) to correct this.
- **Droopy eyelid** - after any type of eye surgery, the upper eyelid may droop down towards the pupil. This usually fixes itself after a few weeks to months. If not and it is causing a problem, the eyelid position can be changed with a small operation.
- **Cosmetic effect** - sometimes the tube, tissue patch or drainage area can be seen on the surface of the eye.
- **Wearing away of the tube on the surface of the eye** - even though a patch of tissue is used to protect the tube, there is a small risk of the tube wearing away.
- **Damage to the cornea** - sometimes the tube can rub on the inside surface of the cornea, which can cause the cornea to become cloudy. Usually, this is spotted by your glaucoma specialist before it becomes a problem and the tube can be moved with a minor operation. Sometimes the cornea can become cloudy even if the tube is not rubbing. If the cornea remains cloudy then you may need to see a corneal specialist.
- **Failure** - 1 in 12 patients at Leicester Royal Infirmary will have their tube operation fail within 5 years. If this happens, your doctor will talk to you about other treatment options. For example, it is possible to repeat the tube operation and a patient can have more than 1 tube in their eye at the same time.

## Important things to remember

1. Make sure to use all your usual eye drops for your other eye and tablets.
2. Make sure to go to your follow-up appointments. If you miss appointments your surgery could fail or you could lose vision that you cannot get back.
3. If you get increased blurring of your vision, increased pain, increased redness or thick discharge from the eye, please contact or go to your local Eye Casualty.
4. Avoid activities such as sex, sports, jogging, swimming, going to the gym, digging, or bending/lifting for 2 weeks and ask your doctor before starting any of these activities again. Walking, light household chores, watching television and reading are all fine to do.
5. Wear the eye shield at night for the first 2 weeks. Try to sleep on the opposite side to the side of your operated eye or on your back.
6. Avoid contact lenses (usually for at least 4 weeks and we may need to arrange to give you preservative free medication).
7. You can wear your glasses the day after surgery and you may want to have sunglasses to wear as the eye may be sensitive to light.
8. You can fly after surgery, but please don't allow any trip to affect your follow-up appointments.
9. You can shower and wash your hair but be careful not to allow any water to get in your eye.
10. You should plan to avoid driving for 2 weeks after your operation and check with your glaucoma doctor before you start to drive again.

## What to do if you have any concerns

If you want to talk about the procedure in more detail or have any other queries that cannot wait until your appointment, please contact the Eye Department secretaries via the main hospital switchboard on **0300 303 1573**.

If you think you may have a problem after your operation, contact Eye Casualty on **0116 258 6273** or go to the **Eye Casualty Department** located in the Windsor Eye Clinic, Level 1, Windsor Building, Leicester Royal Infirmary:

Opening times: Monday to Friday, 8.30am to 4.30pm  
Saturday & Sunday, 8.30am to 12.30pm

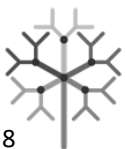
If your problem happens outside these hours and you feel that it is urgent, you should go to the main Emergency Department.

If you want to find out more information about glaucoma and its treatments visit:  
<https://www.nhs.uk/conditions/glaucoma/>

اگر آپ کو یہ معلومات کسی اور زبان میں درکار ہیں، تو براہ کرم مندرجہ ذیل نمبر پر ٹیلی فون کریں۔  
على هذه المعلومات بلغةٍ أخرى، الرجاء الاتصال على رقم الهاتف الذي يظهر في الأسفل  
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