

# Having tube surgery for glaucoma

Department of Ophthalmology

Information for Patients

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## Why have I been recommended for tube surgery?

This leaflet is for people whose eye pressure is too high and/or your glaucoma is still getting worse. You may have tried eye drops or had other glaucoma surgery (such as a trabeculectomy) and this has not worked.

## What is tube surgery?

A small device with a very fine tube is put into your eye to help fluid drain. This lowers eye pressure and reduces the need for glaucoma treatment you are on such as how many eye drops. The 'tube' can also be called a valve, aqueous shunt, drainage implant, drainage device or filtration device.

We use the Baerveldt tube. It is a silicone tube (less than 1mm in diameter) and a base plate. The tube is put in the front chamber of the eye. It lets the fluid drain to the base plate.

The base plate is put under the skin of the eye (conjunctiva) and between the eye muscles. The base plate sits behind the eyelids. It will not usually be seen.

The base plate forms the area where the fluid will collect before being absorbed into the blood stream. It takes around 6 weeks for the fluid collection area to form.

A patch of donor eye tissue is stitched over the tube to protect the conjunctiva. All tissue is dead. It does not have the risk of rejection that can happen with

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or call 111 for non-emergency medical advice**

Visit [www.leicestershospitals.nhs.uk](http://www.leicestershospitals.nhs.uk) for maps and information about visiting Leicester's Hospitals  
To give feedback about this information sheet, contact [InformationForPatients@uhl-tr.nhs.uk](mailto:InformationForPatients@uhl-tr.nhs.uk)

living tissues. All tissues are tested for infectious diseases including syphilis, hepatitis B and C and HIV. They cannot be tested for something called a prion disease (also called 'mad cow disease'). 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. 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 let the tube 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. It 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 that:

- tube surgery lowers eye pressure in 94% of patients.
- the average eye pressure drops from 30 mmHg before surgery to 14mmHg after surgery.
- patients go from using 3 different eye drops to 1 eye drop after surgery.
- 2 out of 3 patients stop taking acetazolamide after their surgery

Long term success rates (for example 10 and 20 years later) for tube surgery are not known. Some studies have suggested that a tube that is working well at 5 years will continue to do so in the longer term.

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

If your eye pressure is too high and not treated there is a high risk you will go blind in that eye.

There may be other options for treatment, but it is likely your glaucoma specialist does not feel these will be enough to treat your condition. 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. You will be given time to think about it. Please be aware 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. 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'. 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 take warfarin check your INR level a week before your operation. If your INR is above the target level, then your GP 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. You 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. They will talk to you again about the operation.
- You will then 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. They will inject some anaesthetic around your eye. This is not painful. You may feel a pressure sensation as the anaesthetic goes in. The anaesthetic not only numbs your eye, it also relaxes the muscles around the eye. It 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. The surgeon can stop and top-up your anaesthetic.
- Your eye will be cleaned.
- A sterile plastic sheet (called a drape) will be placed over your eye. It will cover your head and face. If you are awake for the procedure, the drape will be held away from your nose and mouth. 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. 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. You will be given
  - a steroid eye drop to use every 2 hours during the day (but sometimes more)
  - 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?

- Your tears may be blood stained and your 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.

Your glaucoma specialist will check your eye pressure after the operation.

**High pressure:** this is not uncommon after the operation. 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). You 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. It 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 raise 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
- 6 weeks

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. We will need to check your eye after the operation. 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.

The operation does not bring back vision you have lost or 'cure' your glaucoma. It aims to slow down (as much as possible) further vision loss from glaucoma.

**Time off work:** we advise you to take 2 weeks off work. If there are problems or your job involves heavy lifting or working in a dusty environment, you may need 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** - Rare (about 1 in 1000 patients). Everything possible is done to reduce the risk of infection during the operation. 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. It will go away on its own. This has only happened to 2 patients at Leicester Royal Infirmary. If it does not, a small operation can remove it. Bleeding at the back of the eye can affect 1 in 100 patients. It 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. It should improve slowly over a few weeks.

- **Clouding of the lens in your eye (cataract)** - if you have had cataract surgery 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 one to form earlier than normal. In an eye that has had tube surgery, a cataract can be removed in the usual way.
- **Double vision** - the tube 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** - 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, a small operation can correct it.
- **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** - there is a small risk of the tube wearing away despite tissue patch.
- **Damage to the cornea** - the tube can rub on the inside surface of the cornea. This can cause the cornea to become cloudy. Usually, this is spotted by your glaucoma specialist before it becomes a problem. The tube can be moved with a small 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 more blurring of your vision, more pain, more 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. 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. We may need to arrange to give you preservative free medication).
7. You can wear your glasses the day after surgery. You may want to have sunglasses to wear as the eye may be sensitive to light.
8. You can fly after surgery, but please do not let any trip affect your follow-up appointments.
9. You can shower and wash your hair. Be careful not to let any water get in your eye.
10. You should plan to avoid driving for 2 weeks after your operation. 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**. It is in Windsor Eye Clinic, Level 1, Windsor Building, Leicester Royal Infirmary:

Opening times: Monday to Friday, 8.30am to 4.30pm

Saturday and 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/>

