Ophthalmology department

Glaucoma drainage device (tube) implantation

Information for patients, relatives and carers

Introduction

This leaflet has been designed to give you information about a **surgical drainage device** to help treat your condition. We hope to answer some of the questions you might have although it is not meant to replace the discussion between you and your medical team. The aim is to help you understand more about what is discussed and if you have any questions about the information below, please contact us

What are glaucoma drainage devices?

Glaucoma drainage devices, also known as glaucoma tubes, are employed to alleviate intraocular pressure (pressure within the eye) in individuals suffering from glaucoma. They facilitate the drainage of aqueous humor (the eye's fluid) from the interior of the eye to a reservoir known as a bleb, situated behind the eyelid.

The two most commonly utilized devices are the Baerveldt glaucoma implant and the Ahmed glaucoma valve. Other implants that are offered are: eyePlate PAUL® Glaucoma Implant and Ahmed® ClearPath™Implant.

These devices consist of a slender silicone tube with a diameter of 0.6mm, which is attached to a plate. The tube is surgically inserted into the front (anterior) chamber of the eye, allowing the controlled drainage of fluid to the plate, functioning as a reservoir. The fluid is later absorbed by blood vessels on the eye's surface. This process effectively reduces intraocular pressure, preventing further damage to the patient's vision. However, it's important to note that it cannot restore vision that has already been lost.

Why should I have the glaucoma drainage device?

A glaucoma drainage device, also known as a glaucoma implant or glaucoma shunt, may be recommended by your eye doctor (ophthalmologist) to manage glaucoma when other treatment options, such as eye drops, medications, laser therapy, or trabeculotomy, have not been effective in controlling intraocular pressure (IOP).

Glaucoma is a progressive eye condition characterised by increased IOP, which can damage the optic nerve and lead to vision loss. Here are some reasons why a glaucoma drainage device might be necessary:

- **uncontrolled intraocular pressure (IOP):** glaucoma drainage devices are typically considered when medications and other less invasive treatments fail to adequately control your IOP. High IOP is a major risk factor for glaucoma progression
- **advanced glaucoma:** in cases of advanced or severe glaucoma, where the damage to the optic nerve and vision loss is significant, a drainage device might be considered to help lower IOP and preserve remaining vision
- **contraindications or intolerance to medications:** if you cannot tolerate glaucoma medications due to allergies or side effects, or if medications are contraindicated due to other health conditions, a drainage device may be a suitable alternative
- **previous surgical failure:** some individuals may have undergone trabeculotomy or other surgical procedures for glaucoma that were not successful. In such cases, a glaucoma drainage device may be considered as a second-line surgical option
- **complex cases:** for patients with secondary glaucomas or other complicated forms of the condition, a drainage device can be a viable treatment option. Secondary glaucomas are caused by other eye conditions or underlying health issues
- **medication non-compliance:** in cases where patients have difficulty sticking to the prescribed medication regimen, a drainage device can provide a more reliable method of IOP control

It's important to note that the decision to use a glaucoma drainage device is made on a case-by-case basis. Your ophthalmologist will consider various factors, including the severity of your glaucoma, your overall eye health, and your individual medical history before recommending this surgical option. While glaucoma drainage devices can effectively lower IOP and prevent further vision loss in many cases, they also come with potential risks and complications, so the decision should be made in consultation with your healthcare provider.

What are the risks of having the surgery?

- **infection (less than 1%):** there's a very low risk of getting an eye infection after the surgery, happening in less than 1 out of 100 people
- **bleeding (2-3%):** some bleeding can occur during or after surgery, but severe bleeding is relatively rare, happening in about 2 to 3 out of 100 people
- **eye pressure changes (common):** after surgery, your eye pressure might change temporarily, but this is usually not a big problem and is common
- **eye pressure too low (hypotony) (1-5%):** in a small percentage of cases, your eye pressure might become too low, leading to temporary vision issues, occurring in about 1 to 5 out of 100 people
- **blood in the eye (hyphema) (5-10%):** around 5 to 10 out of 100 people might have some blood inside the eye after surgery, causing temporary blurriness

- **cyst formation (less than 5%):** in a small number of cases, fluid-filled lumps can form near the surgery site, but it's usually not a major concern, happening in less than 5 out of 100 people
- **cornea swelling (corneal oedema) (5-10%):** swelling of the front part of the eye occurs in about 5 to 10 out of 100 people after surgery, but it usually goes away with time.
- **eye infection (endophthalmitis) (very rare):** this is extremely rare, with less than 1 out of 1,000 people experiencing a severe eye infection after surgery
- **problems with the drainage tube or device (1-10%):** depending on the specific device used, there's a chance (1 to 10 out of 100) that you might have problems like the tube becoming exposed or eroded
- **need for more surgeries (varies):** in some cases, you might need additional surgeries to address complications or improve results, but it varies from person to person
- **persistent or worsening glaucoma (low):** There's a relatively low risk that your glaucoma won't get better or might worsen after surgery
- **vision loss (very rare):** while the goal of surgery is to prevent vision loss, there's a very low risk, with less than 1 out of 100 people experiencing vision issues
- **sympathetic ophthalmia** is an exceptionally rare condition in which one eye becomes inflamed as a response to injury or inflammation in the other eye. It can result in vision loss in both eyes, although it is a very infrequent occurrence. This condition highlights the importance of closely monitoring and managing eye health, especially when one eye undergoes surgery or experiences inflammation, to prevent the development of sympathetic ophthalmia in the other eye

These percentages are approximate, and your doctor will provide you with personalised information and guidance based on your specific situation. Remember that following your doctor's advice and attending regular check-ups can help reduce these risks and increase your chances of a successful outcome.

What are the risks of not having treatment?

If the eye pressure is not well-controlled, further damage to the nerve of the eye is very likely to happen, and that in turn will lead to irreversible sight loss.

What happens before the surgery?

You will receive instructions to use the appropriate eye drops and/or oral tablets as part of your treatment plan until the day of your surgery.

Before the glaucoma drainage device implantation surgery, a preoperative assessment of your overall health will be conducted. Any underlying medical conditions, such as heart

disease, uncontrolled high blood pressure, or diabetes, will need to be managed before scheduling the surgery. It's essential that there are no active infections anywhere in your body at the time of the surgery. If a new infection arises in your body before the surgery, please inform your eye surgeon.

If you are currently taking blood-thinning medications like warfarin, clopidogrel, rivaroxaban, or dabigatran, please notify your eye surgeon during the consultation and the nurse during the preoperative assessment. In some cases, these medications may need to be temporarily stopped to reduce the risk of bleeding during surgery. Patients using warfarin are advised to regularly check their blood's clotting level (for example, INR) at least ten days before surgery to ensure it falls within the appropriate range.

What happens on the day of my procedure?

You will be taken care of by the team at the surgical ward, the details of which will be provided on the appointment letter. The team will meet you before the surgery, conduct a few checks before the procedure, answer any queries you might have and ensure the plan is all set for the surgery.

What happens during the procedure?

Glaucoma drainage device surgery is typically performed with general anaesthesia, although in some cases, it can be done with local anaesthesia. The surgery usually lasts around two hours.

If you undergo surgery with local anaesthesia, you will be awake throughout the procedure, and you'll need to lie relatively flat. The anaesthesia is administered around the eye, and you may experience some mild discomfort, feeling a slight pressure as the anaesthesia takes effect. This injection is essential to prevent pain and excessive eye movement during the surgery. For several hours, your vision may be extremely blurred or even completely obscured.

A sterile sheet will cover your face during the surgery. While you'll be aware of the surgeon working around your eye, you should not feel any pain. Someone will be there to hold your hand during the procedure, and if you experience any pain or discomfort, you can squeeze their hand to alert the surgeon. Because this is a lengthy procedure, you might receive additional anaesthesia during the surgery. You may also hear the surgeon talking to the scrub nurse and other members of the surgical team.

What happens after the procedure?

Typically, you'll be allowed to return home a few hours after recovering from the effects of the general anaesthesia and when you feel well enough. Your eye will be covered with a dressing, and this dressing will stay in place overnight.

It's recommended that patients, especially those with poor vision in the non-operated eye or those who had general anaesthesia, arrange for a friend or family member to accompany them home after the surgery.

As the anaesthesia wears off, you may start to feel some discomfort in your eye. The pain is generally mild, and you can use your usual pain relief medications, like paracetamol or ibuprofen, to ease it.

The dressing should be removed at home the following morning, and you can begin using the prescribed eye drops after cleaning your eye.

All patients will need to have a follow-up examination one day after the surgery. So, if you're having day case surgery, you'll need to return to the hospital for this check-up the day after your procedure

A note about donating blood and blood-related products after surgery:

A donor graft – Tutoplast® Pericardium, Cornea or Sclera – is often used in drainage device implantation surgery to cover the tube. This reduces the risks of exposure and infections and brings down the potential risks of the procedure.

If you are a blood donor, please check with your blood donation facility to see if use of a graft would mean that your donation should not go ahead (be a contraindication).

If you wish to be an organ donor, you must notify your donation center if you have had a scleral transplant in glaucoma surgery (though this is rarely used as donor tissue).

Do I have to use eye drops after surgery?

Following your surgery, you will receive a prescription for specific eye drops. These drops should be started on the morning after your surgery and need to be used consistently.

The postoperative eye drop regimen typically consists of several types of drops:

- you will be prescribed an antibiotic eye drop, such as chloramphenicol, which should be applied four times a day
- an anti-inflammatory steroid eye drop, like Pred Forte, Maxidex, or dexamethasone, will also be required every two hours during the first few weeks
- some patients may also be given a pupil-dilating eye drop, such as mydrilate or atropine, if deemed necessary
- in most cases, your surgeon is likely to prescribe a course of oral steroid tablets

The usage of these postoperative eye drops is typically necessary for a period ranging from three to six months. During each postoperative visit, your surgeon will provide guidance on whether any adjustments to the drop dosage are needed. It's worth noting that some patients

may also need to continue using the glaucoma eye drops they were using prior to the surgery, and your surgeon will advise you if this is the case.

An important point to remember is that **you should continue using any eye drops for the un-operated eye as previously prescribed unless your eye surgeon advises otherwise**. It is critical that you do not discontinue these drops or alter their dosage without consulting your eye surgeon.

What happens to the eye pressure immediately after surgery?

High eye pressure after glaucoma surgery is a possibility, and it may require ongoing management. If you've had a Baerveldt implant, it might have a ligature, as previously mentioned. This ligature could cause elevated pressure for a few weeks after the surgery, and you might need to continue using glaucoma medications during this time. The external ligature could be a self-dissolving suture that naturally absorbs between four to eight weeks post-surgery or a suture that can be treated with laser if necessary.

Additionally, the suture inside the tube will typically need to be removed after two to three months or sometimes sooner, requiring a minor surgical procedure. It's normal for the device to begin draining once the ligatures have been absorbed or removed.

In some cases, after surgery, the eye's pressure may become too low, although this can vary from one individual to another. Typically, this condition is identified during clinic appointments and can often be resolved by discontinuing any eye drops that lower pressure and reducing the use of steroid eye drops. Occasionally, it may be necessary to inject a gel-like substance (viscoelastic) into the front chamber of the eye to raise the pressure. In rare instances, an additional surgical procedure might be required to decrease the drainage from the tube and restore more optimal eye pressure.

After the surgery, what can I do and what can't I do?

Activities you **can** do:

You can generally engage in your regular, non-strenuous daily activities following your surgery, with a few precautions in mind:

- **walking** – you can go for walks but be cautious when navigating stairs to avoid any accidents or strain
- **watching television** – watching tv is a low-impact activity that you can enjoy as part of your recovery
- **reading** – reading is also a suitable and gentle activity for your eyes during the healing process
- **moving around the house** – you can move around your home but do so carefully to prevent accidents or falls. be mindful of your surroundings

- **wearing sunglasses** – if you venture outside, especially on windy days or in bright sunlight, it's advisable to wear sunglasses to protect your eyes

It's important to remember that your recovery should be gradual and not involve strenuous activities. Always follow your doctor's recommendations and any specific instructions they provide to ensure a smooth and safe healing process.

Activities you **cannot** do:

While you're in the process of recovery after your eye surgery, there are some things you should avoid or be cautious about:

- **rubbing your eye** – avoid rubbing your eyes to prevent any disruption to the healing process
- **vigorous activities** – steer clear of vigorous activities, including contact sports, squash, badminton, swimming, gardening, and vacuum cleaning. these activities could put undue strain on your eye
- **driving** – refrain from driving for at least four weeks after the operation or until your eye has fully settled, whichever is later. before resuming driving, it's important to confirm with your surgeon that your eye pressure has stabilised. you should also be able to read the new style car number plate at 20 metres, and your eye should be comfortable
- **eye make-up** – avoid applying eye make-up for three months following the surgery
- **splashing wate**r – be cautious about splashing water into your eye. when showering, try to keep the water away from your face by showering from the neck down. for the first week, when washing your hair, take care not to get soap or shampoo in your eye

Following these guidelines will help ensure a smoother recovery and minimize the risk of complications after your eye surgery. Always consult with your surgeon if you have any specific concerns or questions about your post-operative care.

Who can I contact for more information?

If you have any queries, please do not hesitate to contact the telephone numbers

If your eye becomes red or painful, or have any other concerns, please contact:

Western Eye Hospital emergency department: 020 3312 3245

Western Eye Hospital eye clinic: 020 3312 3236

Alex Cross ward at the Western Eye Hospital: 020 3312 3214

Charing Cross Hospital eye clinic:
020 3311 1109 or 020 3311 1233

Charing Cross Hospital – Riverside Daycare unit: 020 3311 1460

Glaucoma liaison officer: 0203 312 9701

If you have not received a post-surgery appointment, please contact **020 3312 3275 option 2** or email imperial.wehoutpatients@nhs.net

How do I make a comment about my visit?

We aim to provide the best possible service and staff will be happy to answer any of the questions you may have. If you have any **suggestions** or **comments** about your visit, please either speak to a member of staff or contact the patient advice and liaison service (**PALS**) on **020 3313 0088** (Charing Cross, Hammersmith and Queen Charlotte's & Chelsea hospitals), or **020 3312 7777** (St Mary's and Western Eye hospitals). You can also email PALS at imperial.pals@nhs.net The PALS team will listen to your concerns, suggestions or queries and is often able to help solve problems on your behalf.

Alternatively, you may wish to complain by contacting our complaints department:

Complaints department, fourth floor, Salton House, St Mary's Hospital, Praed Street London W2 1NY

Email: ICHC-tr.Complaints@nhs.net

Telephone: **020 3312 1337 / 1349**

Alternative formats

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