Glaucoma UK

Glaucoma surgery:

Shunt or tube

Glaucoma UK helpline

If you have questions about anything to do with glaucoma, contact our helpline on:

01233 648 170

Monday to Friday 9.30am to 5.00pm

Calls are charged at your standard network cost.

Other ways to find out more

Email: **helpline@glaucoma.uk**

Visit our website: **glaucoma.uk**

Help us keep our services free

Glaucoma UK is the UK's only charity solely focused on ending preventable vision loss from glaucoma. Everyone who needs help and information about glaucoma should be able to get it for free. That's why there's no charge for our booklets and services. We rely on donations, and every contribution truly matters.

If you'd like to contribute to the cost of this booklet or help fund our services, please go to **www.glaucoma.uk/donate** or call **01233 648 164**. We really could not continue without our amazing supporters. Thank you.

Contents

Key points

Shunt surgery or tube surgery are two names for the same form of eye surgery for glaucoma. We call it shunt surgery in this booklet.

Shunt surgery helps to reduce eye pressure and prevent future vision loss.

Contact your eye clinic straight away if you get any side effects or symptoms that worry you.

After shunt surgery:

- Most people have good eye pressure and only mild, short-term side effects.
- You'll need to use eye drops for two–three months to help your eye heal.
- You'll have several follow-up appointments at the eye clinic.
- You'll need to take at least two weeks off work, education or training.
- It may take up to three months for your vision to settle.

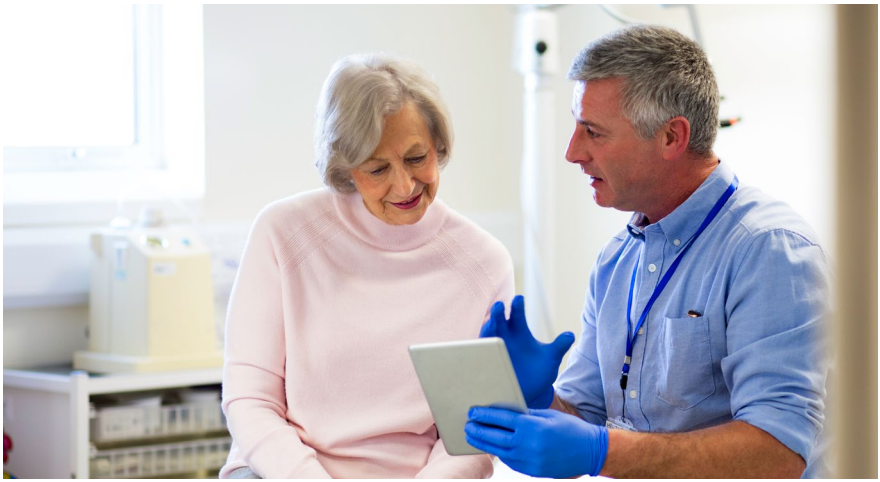
What is shunt surgery?

Shunt surgery is a treatment to lower eye pressure in people with glaucoma.

Shunt surgery is sometimes called tube surgery, aqueous shunt surgery, aqueous shunt implantation, glaucoma drainage implant surgery or glaucoma device surgery. We call it shunt surgery for the rest of this booklet.

Your eye doctor is most likely to offer you shunt surgery if:

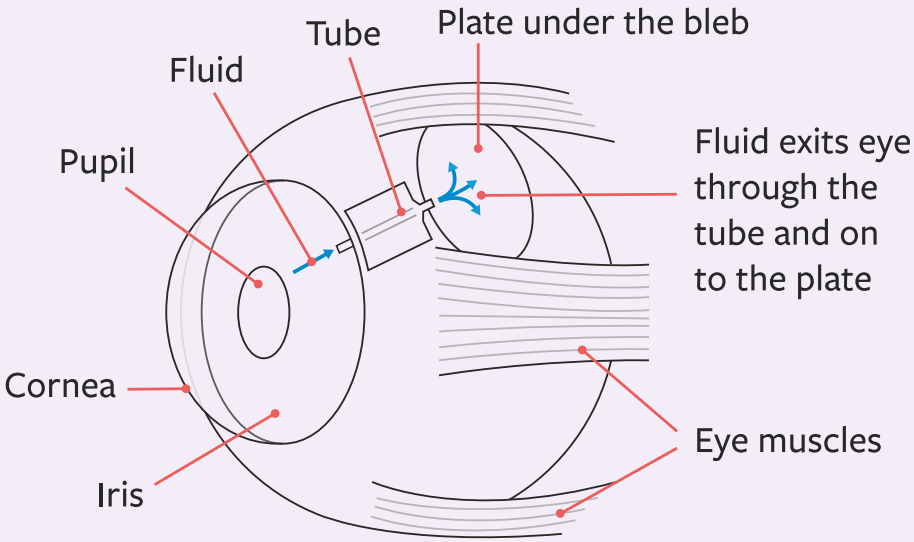
- your eye pressure is still too high after other more common treatments such as eye drops or laser treatment;
- your glaucoma is advanced.



In shunt surgery, your eye doctor inserts a small tube into your eye.

- **Fluid** from inside your eye drains through the tube onto a **plate** and into a small blister under your eyelid. The blister is known as a **bleb**. The plate makes a space for fluid to collect in the bleb.
- From the bleb, the fluid goes into your bloodstream. It does not add to tears.
- Because more fluid drains out of your eye, your eye pressure falls.
- Lower eye pressure slows future vision loss from glaucoma.
- The tube is sometimes called a shunt. A shunt is a medical device or tube that moves fluid from one place to another.

▼ **Shunt surgery**

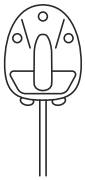


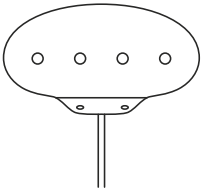
There are several kinds of shunt, and your eye doctor will choose which to use.

Each shunt does the same thing. The main difference is in how your eye doctor controls the amount of aqueous that drains through the shunt. Talk to your eye doctor about which device is right for you and why.

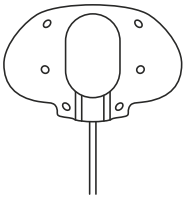
Ahmed glaucoma valve ▶

Some shunts, such as the Ahmed glaucoma valve, have a valve to control how much fluid drains through the shunt.

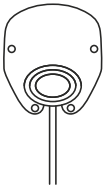




Baerveldt



PAUL



Molteno

Other shunts, such as the Baerveldt, PAUL and Molteno implants, have no valve. Instead, your eye doctor uses stitches to control how much fluid drains through the shunt.

If you need shunt surgery in both eyes, your eye doctor may do it in:

- both eyes at the same time;
- one eye at a time if it's safe to wait for surgery in your second eye.

If you have surgery in one eye at a time, you'll usually have at least a few weeks in between to recover.

Although eye surgery can be scary, it may help to remember that shunt surgery works well for most people. Most people only get mild, short-term side effects. More severe or long-term side effects are uncommon. You need to balance the possible risks of shunt surgery against the possible risks to your vision of not having it.

Talk to your eye doctor about any concerns you have.

Our helpline can also answer many questions or pair you for a chat with someone who's already had the surgery.

Shunt surgery or minimally invasive glaucoma surgery?

There are lots of forms of surgery for glaucoma, including a group known as "Minimally invasive glaucoma surgery" (MIGS). Both shunt surgery and some MIGS (such as the iStent or Preserflo) insert a tube into your eye. It's easy to get shunt surgery and MIGS mixed up. But MIGS and shunt surgery are different. If you've been offered surgery and are unsure if it's shunt surgery or something else, ask your eye doctor or contact our helpline. This booklet is about shunt surgery.

What is glaucoma?

Glaucoma is a group of common eye diseases where your optic nerve has become damaged.

Your optic nerve connects your eye to your brain, so damage to this nerve affects your vision.

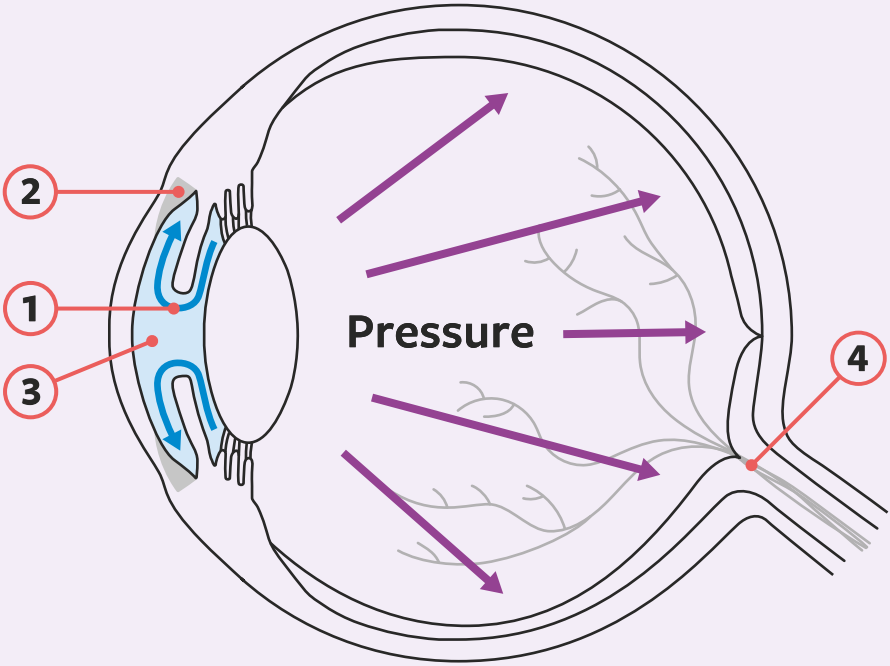
Glaucoma is often linked to a build up of fluid which raises pressure inside the front of your eye. This pressure is known as eye pressure or intraocular pressure (IOP).

What is eye pressure?

The front of your eye contains a watery fluid called **aqueous humour**, **aqueous fluid** or just **aqueous**. Aqueous helps your eye keep its shape and brings nutrients to the front of your eye. Aqueous is made inside your eye and drains out through tiny drainage channels called the **trabecular meshwork**.

If aqueous cannot drain out of your eye properly, it builds up and eye pressure rises. High eye pressure can damage the **optic nerve**.

▼ **How increased pressure at the front of the eye can affect the optic nerve at the back of the eye**



1. Aqueous flows through the pupil

2. Poor drainage of aqueous through the trabecular meshwork

3. Too much aqueous stays in the eye, increasing pressure

4. Increased pressure damages the optic nerve

Before surgery

You and your eye doctor need to decide if shunt surgery is right for you. And you need to plan for the surgery and recovery.

What other treatment options might I have?

Before agreeing to shunt surgery, talk to your eye doctor about all your treatment options.

There are lots of treatment options to lower eye pressure and slow down possible future vision loss. Eye drops and laser treatment are most common. Different kinds of surgery are sometimes options.

You can choose to have no treatment. If you're thinking of doing this, talk to your eye doctor about the possible risks.

Having no treatment increases the risk of losing vision due to glaucoma.

How can I get ready for surgery?

To make your shunt surgery appointment easier for you:

- Plan how you will get to and from your appointment. Do not drive yourself home.
- Take any eye drops or tablets for glaucoma as normal before your shunt surgery, unless your eye doctor or nurse tells you to stop.
- Make a list of questions or concerns, and ask about them before the surgery.
- You'll usually be able to go home on the same day as your shunt surgery, but you'll be at the eye clinic for a few hours. Go prepared. If staying overnight would be better for you, talk to the eye clinic about this before your surgery appointment. Sometimes, your eye doctor will ask you to stay the night.

Why do I have an eye clinic appointment before surgery?

A few days before your shunt surgery, you'll have an eye clinic appointment.

This is so that a nurse can check that you're well enough to have the surgery and answer any questions you have. You may find it helpful to have someone with you at the appointment. They can help you remember what the nurse tells you.

Tell the nurse about any health conditions you have or any medicines you take.

Talk to the nurse about any questions or concerns you have.

What happens during shunt surgery?

You'll go into an operating theatre at the hospital to have shunt surgery.

The surgery usually takes one–two hours.

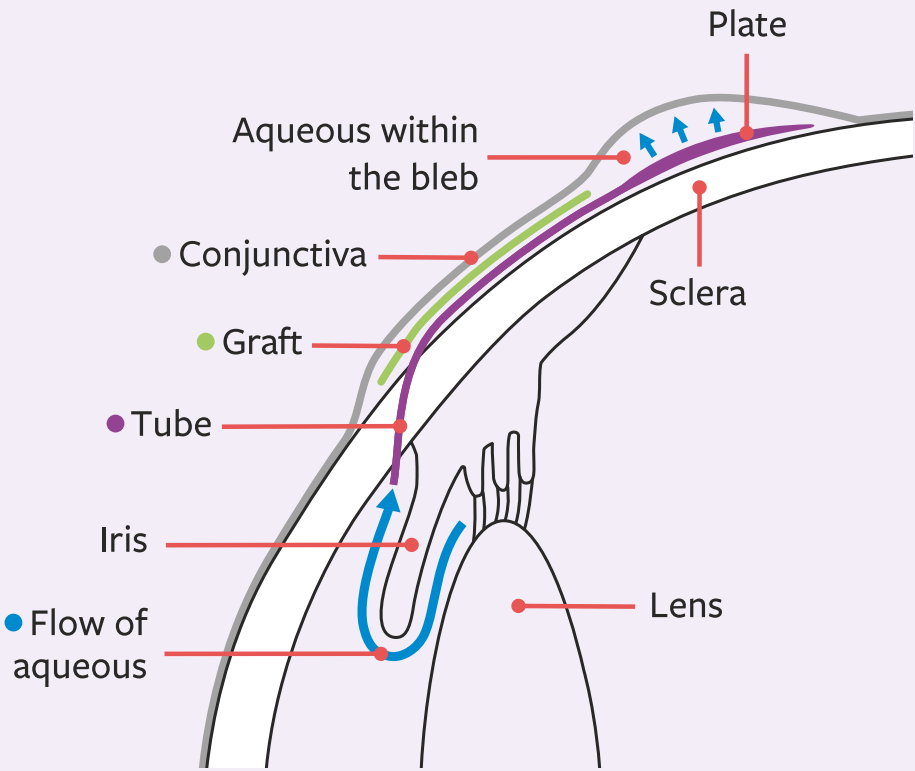
You may have shunt surgery under general or local anaesthetic. Your eye doctor will suggest which is best, but they should take account of which you'd prefer.

With general anaesthetic, you're asleep throughout the surgery and should feel no pain.

With local anaesthetic, you're awake but your eye is numb. If you're having local anaesthetic, your eye doctor will use eye drops and then injections around your eye to numb your eye. You might feel some discomfort or pressure but should feel no pain. If you're anxious, you can ask for medicine to help you relax.

In the surgery, your eye doctor puts a tiny silicone shunt (tube) through your sclera. The sclera is the tough white outer layer of your eye (‘the white of your eye’).

On the outside end of the tube there’s a flat plate that lies under your conjunctiva. Your conjunctiva is the thin, clear skin covering your eye. The plate makes a space for fluid to collect in the bleb.



Your eye doctor may put a patch of tissue from a donor to stop the tube rubbing and damaging the conjunctiva. This patch is sometimes called a graft. The donor tissue comes from the NHS Blood and Transplant service, after they have made sure that it's safe.

After shunt surgery, your eye doctor will put a pad or clear plastic shield over your eye to protect your eye. Keep the pad or shield on until your eye clinic appointment the next day.

Before you go home:

- Your eye doctor will give you eye drops to use at home.
- Ask how to contact the eye clinic in case you have any concerns about your eye.

After surgery

It takes several weeks to recover fully and for your eye pressure to settle after shunt surgery. Talk to your eye doctor about any questions or concerns you have.

How your eye feels

Your eye will be numb for a few hours after shunt surgery. When feeling comes back, your eye may feel sore or scratchy. If it's painful, you can take pain relief tablets.

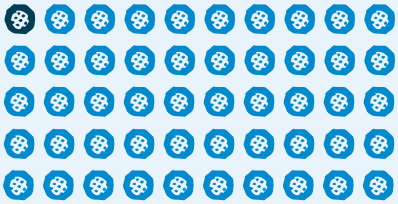
If pain in your eye gets worse, contact the eye clinic.

Your eye should start to feel better after a couple of days, but it may take a few weeks for it to feel completely normal.

It takes a few hours for local anaesthetic to wear off. Until it does, the muscles around your eye will not work fully. This may make you see double. Any double vision will stop when the local anaesthetic wears off.

How your eye looks

For a few weeks after surgery, your eye might look bloodshot (red) and your eyelid may be swollen or droopy. Your eyelid usually recovers when you finish the eye drops.



◀ Around **1 in 50** people has a droopy eyelid for longer, possibly for ever. Your eye doctor can usually put this right with eyelid surgery.

Within a few months, your eye should look like it did before surgery.

The plate and bleb are usually hidden under your top eyelid, but they might show when you're looking down and inwards. If you have a patch of donor tissue, people might be able to see this.

Eye drops or tablets after shunt surgery

Before you go home after your surgery, your eye doctor will give you eye drops to take home. You'll need to use these for up to three months.

Some of the eye drops prevent infection. Most people need to use these about four times a day.

Other eye drops prevent inflammation (soreness and redness) in your eye. Most people need to use these about eight times a day.

You need to put the eye drops in throughout the day, but you do not need to wake during the night to use them.

Your eye doctor may also give you tablets to prevent inflammation in your eye.

Your eye doctor will give you a month's supply of eye drops or tablets when you leave the hospital. Ask the eye doctor or your GP for a repeat prescription. Your eye doctor will tell you when to stop.

If you usually use eye drops for glaucoma, your eye doctor might ask you to stop putting them in your eye that's had shunt surgery. Remember to keep putting your eye drops for glaucoma in your other eye, if needed. Always talk to your eye doctor before stopping or changing your eye drops.

How do I use eye drops?

Always read the patient information leaflet that comes with your eye drops. It has important information about how to store and use your drops and about possible side effects.

It's common to find it hard to put in eye drops. There are lots of ways to put eye drops in, and lots of aids that can make it easier. For help, contact our helpline or ask a healthcare professional such as a nurse, eye care liaison officer, pharmacist or optometrist.

Top tips:

- Wash your hands before and after using your eye drops.
- If two drops go into your eye, that's okay.
- After putting in your eye drops, gently close your eye. With a finger, press lightly on the corner of your eye near your nose for a couple of minutes. This blocks your tear duct, and helps keep the eye drop in your eye where it's needed.
- More than one type of eye drop? Wait at least 5 minutes between each one.

Follow-up appointments

You'll have a series of follow-up appointments to check that your eye is okay.

The first appointment will usually be the day after your shunt surgery. This is when your eye doctor will take the pad or shield off your eye.

If all's well, you'll typically then have weekly appointments for four weeks. You might have more appointments if your eye pressure is too high or too low.

If you live far from the hospital where you had your surgery, you may be able to have some appointments at an eye clinic closer to home.

At your appointments, your eye doctor may give you other treatment to make sure that the right amount of aqueous drains out of your eye.

They may:

- adjust or remove the stitches in the tube to control how much aqueous drains through the shunt;
- adjust the valve in the shunt to control how much aqueous drains through it;
- give you laser treatment or another small surgery to help the tube work properly;
- give you injections to prevent scarring;
- inject a gel, fluid or gas into your eye to raise your eye pressure.

If you need any treatment, your eye doctor will numb your eye first.

What if my eye pressure stays high?

There are lots of treatments for glaucoma. For most people, there is at least one that will lower eye pressure. If one treatment fails to lower your eye pressure, your eye doctor may try another. It may take time to find the right one for you. As your glaucoma changes, the best treatment for you may also change. Everyone is different.

Contact lenses and glasses

If you usually wear contact lenses, talk to your eye doctor about them.

Do not wear contact lenses after shunt surgery until your eye doctor tells you it's okay.

If you wear glasses or contact lenses, it's likely that you'll need new ones after shunt surgery.

If you've not worn glasses before, there's a small chance you might need to start wearing them after shunt surgery.

Before getting new glasses or lenses, talk to your eye doctor and give your vision time to clear. As a rough guide, expect to wait three months.

Going back to your normal activities

Sleep

You'll need to wear an eye shield at night for a couple of weeks to stop you accidentally hurting your eye when you're asleep.

Showering and washing your hair

Be careful not to get water in your eye for a few weeks.

Driving

If you drive, ask your eye doctor to tell you when it is safe to do so. You must not drive for a few days after shunt surgery. You may need to wait for a few weeks.

Leisure activities and exercise

Gentle activities such as watching television and reading are fine. Your eye may tire more easily for the first few days after shunt surgery.

In general, for the first four weeks after your shunt surgery, avoid:

- **Strenuous activity** (such as tennis, jogging and contact sports)

- **Swimming and other water sports** (they make infection more likely)
- **Wearing goggles** (goggles increase pressure on your eye)
- **Yoga or Pilates poses** where your head is below your heart
- **Bending your head forward** (for example gardening. If you want to pray, you can kneel but do not bow your head to the floor)

Sometimes eye pressure is too low for a while after shunt surgery. If your eye pressure is too low, your eye doctor may ask you to stop all exercise until your eye pressure has risen.

Work, education or training

You'll need to take at least two weeks off work, education or training. You may need to take longer if, for example, you do a lot of heavy manual work or you work somewhere dusty.

Ask your eye doctor how long you should take off work. It'll depend on the pressure in your eye and on the work you do. How much you can see with your other eye and how much you rely on your vision may also make a difference.

Flying

It's safe to fly after shunt surgery, but as you'll need to go to several follow-up appointments, it's best not to book a trip straight away. Wait until your eye doctor says it's okay.

How well does shunt surgery work?

Shunt surgery works well for most people. Talk to your eye doctor about how well it may work for you.

Shunt surgery aims to lower eye pressure. It can take a few weeks for your eye pressure to settle after shunt surgery. You and your eye doctor will know how well the surgery has worked for you once your eye pressure settles.

For most people, shunt surgery lowers eye pressure more than eye drops or laser treatment. After shunt surgery, you may be able to stop using glaucoma eye drops. If you still need to use them, you may be able to use fewer.

Five years after surgery, shunts still work well for more than **7 in 10** people.

Fewer than **3 in 10** people need other treatment to lower eye pressure.

Shunt surgery reduces the risk of future vision loss. Any vision loss you already have from glaucoma is irreversible. This can be difficult to come to terms with.

Our helpline is there for you to talk through how you're feeling as well as the practical side of things.

01233 648 170

Monday to Friday 9.30am to 5.00pm

What are the side effects and risks?

For a few weeks after surgery, it's common for:

- Your eye to be sore (you can take pain relief tablets)
- Your eye to be red
- Your eyelid to be droopy
- Your vision to be blurry
- Your eye pressure to be low

Talk to your eye doctor about any side effects you get. Your eye doctor can help.

Your eye pressure may get better on its own. If not, your eye doctor may:

- Change your glaucoma eye drops
- Adjust the stitches or valve in the shunt
- Inject a fluid, gas or gel into your eye

Over time, your bleb might get bigger. If it does, you may find that:

- Your eyelid is raised or droopy
- Your eye gets dry or uncomfortable
- People can see the bleb

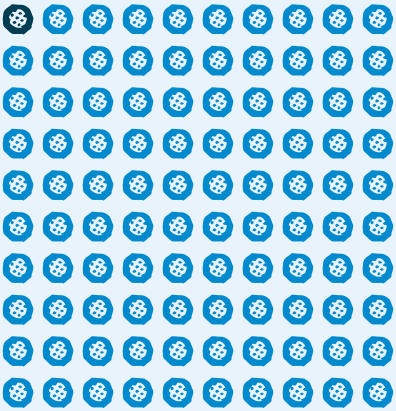
If your bleb gets bigger, talk to your eye doctor. They can prescribe lubricating eye drops, ointments or gels to make your eye more comfortable. They may offer you more surgery to make the bleb smaller.

Severe problems with shunt surgery are uncommon. Problems are most likely in the few weeks after surgery but can happen at any time, even years later. They can include:

Cataracts. A cataract is clouding of the lens. Anyone can get cataracts, but having shunt surgery increases the risk. Most cataracts can be treated.

Infections. The risk of an infection in your bleb or inside your eye is small, but the risk lasts forever. Contact the eye clinic straight away if the eye you've had shunt surgery in ever gets red, sticky or painful. It could be a sign of infection that could damage your vision. Early treatment helps protect your eye.

Vision loss. Blurry vision for up to three months after shunt surgery is common, and it'll get better in time.



◀ More serious or sudden vision loss is uncommon, affecting fewer than **1 in 100** people. People with advanced glaucoma may be at higher risk.

Problems with the shunt. Problems with the shunt are rare, but may lead to you needing more surgery. There is a small, long-term risk that the shunt may:

- Get blocked
- Rub your cornea (the clear window at the front of your eye)
- Wear away your conjunctiva (the thin, clear skin over your eye).

Very low eye pressure. It's common for eye pressure to be a bit low after shunt surgery, and it often gets better by itself without causing any harm. But very low eye pressure or a quick drop in pressure can cause bleeding at the back of your eye.

▲ This is uncommon, affecting around **1 in 250** people. But it's serious because it can cause vision loss. Low pressure is most common soon after shunt surgery but it can happen at any time.

Go to Accident and Emergency if you ever notice any signs of infection or low eye pressure, including:

- A dull ache or throbbing in your eye
- Blurry or distorted vision
- A sore, red or sticky eye

If your eye pressure is very low, your eye doctor might suggest treatment such as:

- Adjusting the valve or stiches in the shunt
- Injecting a gel into your eye to raise pressure

Always go to your eye clinic appointments. Often, your eye doctor will notice problems before they become serious.

Top tips

Everyone's experience is different, but here are some top tips from people who've had shunt surgery.

- 'Talk to your eye doctor and to nurses at the eye clinic about anything that's worrying you about your eye or the surgery.'
- 'You have to use lots of drops for a while after surgery. Before surgery, make sure you know how to put drops in or that someone can put them in for you. You do not want to have to try to work it out after surgery.'
- 'I found a reacher (like a litter picker) helpful for picking things up off the floor. It saved me having to bend down.'
- 'Take time just to relax and look after yourself for a few weeks. And if people offer to help with things, say yes!'

Further help and information from Glaucoma UK

We offer other free information booklets on a range of topics, including:

- **Different types of glaucoma**
- **Treatments such as eye drops, laser treatment and other forms of surgery**
- **Driving and glaucoma**

For a full list of available booklets and to order or download them, visit our website or contact our helpline.

As well as our information booklets, helpline and website, there are lots of other ways we can help you to live well with glaucoma.

Some examples of our services are:

- **Buddy scheme**
  If your eyecare professional recommends laser treatment or surgery, we can pair you up for a chat with someone who's already had the treatment.
- **Glaucoma support groups**
  Find out more about glaucoma, share information, and ask questions. Visit our website or call our helpline to see if there's a group near you and to find out about online groups.
- **Health Unlocked**
  Join our online forum and talk to other people with glaucoma. Visit **healthunlocked.com/glaucoma-uk** to get involved.

For more information, to get involved or to give us feedback contact our helpline, visit **www.glaucoma.uk/more** or scan the QR code.

About Glaucoma UK

Glaucoma UK is the charity for people with glaucoma. We raise awareness of the risks of glaucoma, and offer help and support to people living with the disease.

We fund high-quality research into prevention, diagnosis, treatment and, hopefully one day, a cure. We also work with professionals to influence policy and practice with the goal of improving services. Our aim is to end preventable glaucoma vision loss.

Raising awareness

Helping people understand why they may be at risk of glaucoma.

Providing support

Ensuring people can access reliable help and advice when and how they need it.

Influencing policy and professional practice

Advocating for glaucoma patients with those who develop policy, commission services and deliver care.

Supporting research and development

Funding high-quality research into glaucoma prevention, diagnosis, treatment and cure.

Keep in touch

We'd love to keep in touch.

Visit our website to sign up for our email newsletter to hear more about our work and how we can help you.

Join Glaucoma UK

Join Glaucoma UK and become a member of our supportive glaucoma community.

You'll receive exclusive benefits, including our magazine full of news and information about glaucoma.

Find out more at **www.glaucoma.uk/membership** or call **01233 648 164**.

Disclaimer

The information in this booklet was correct at the time of last review and is intended as a general guide only. Always ask an eyecare professional or doctor for advice specific to you.

A list of sources is available on request.

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With thanks to our contributors and reviewers

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