Lancashire Teaching Hospitals
NHS Foundation Trust

Information for patients and carers

Preserflo® MicroShunt
Minimally Invasive Glaucoma Surgery (MIGS)

What is glaucoma?

Glaucoma is a common eye condition where the pressure in the eye increases due to problems in the natural drainage system of the affected eye(s). This drainage system acts to prevent fluid (called aqueous humour) build-up in the eye. This increased pressure can damage the nerve connecting the eye to the brain (called the optic nerve). If not treated, this damage prevents the optic nerve from sending information from your eye(s) to your brain, leading to loss of vision. The condition can affect one or both eyes and can affect people of any age but is more common amongst people over 65 years old.

What is minimally invasive glaucoma surgery?

Minimally invasive glaucoma surgery (MIGS) refers to a range of techniques and procedures that aim to reduce pressure within the eye. MIBS aims to improve the drainage of fluid within the eye to prevent further damage to the optic nerve. The term ‘minimally invasive’ refers to tiny, microscopic equipment being used that has been designed to reduce risks compared to procedures that use larger equipment. Preserflo® MicroShunt is categorised as a MIGS procedure.

What is Preserflo™ MicroShunt and what makes it different to other procedures?

The Preserflo® MicroShunt is an 8-9mm long tube which is inserted into the eye to create a new bypass pathway for draining excess aqueous fluid, thus reducing pressure in the eye and potentially reducing the need for medication. Compared to other tubes that are available Preserflo® MicroShunt is made of a material more compatible with the body and is therefore less likely to be rejected.

Who is suitable for Preserflo® MicroShunt?

The MicroShunt is suitable for patients with moderate-to-advanced glaucoma, its pressure lowering effect is better than implants/shunts that target the normal drainage channels.

How will this procedure help me?

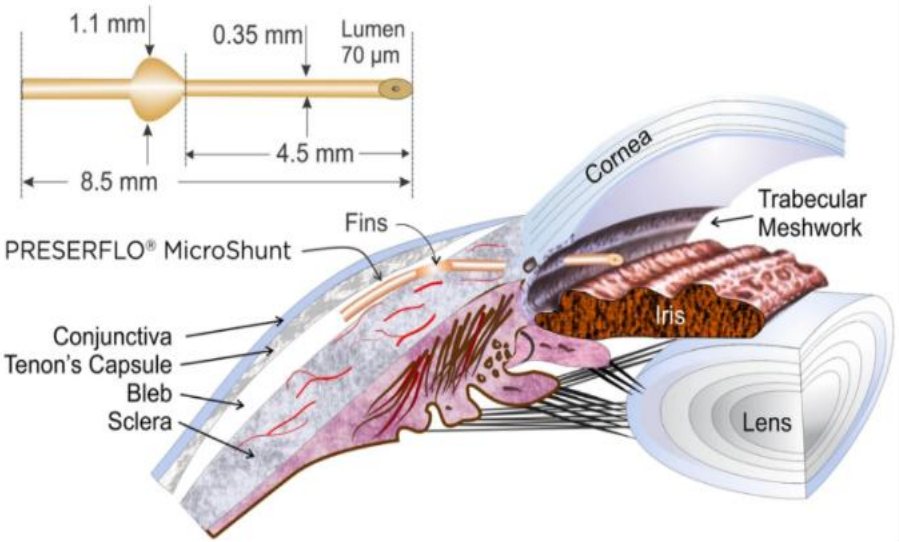


Image adapted from: Sadruddin, O., *et al.* Ab externo implantation of the MicroShunt, a poly (styrene-*block*-isobutylene-*block*-styrene) surgical device for the treatment of primary open-angle glaucoma: a review. *Eye and Vision* 6, 36 (2019).

By creating a new bypass pathway for fluid to drain from the eye, the pressure in the eye will reduce and thereby reduce the risk of damage or further damage to the optic nerve. The Preserflo® MicroShunt works by draining fluid from inside the eye to under a thin skin-like membrane (the conjunctiva) covering the white outer part of the eye. The shunt can only be seen inside the eye with a microscope. The image above shows the approximate dimensions of the MicroShunt and where it is positioned within the eye.

Will the procedure be successful?

Preserflo® MicroShunt has been developed with the aim of providing long-term reduction in the pressure created within the eye as a result of fluid build-up and in doing so often reduces the amount of glaucoma medication a patient is using. The aim is the same as that of trabeculectomy (another surgical glaucoma treatment), except that the procedure may not take as long and may not be as high maintenance as a Trabeculectomy. Trials using Preserflo® showed a reduction of the pressure within the eye by an average 55% at 12 months after the procedure, with the average number of glaucoma medications a patient was on reducing compared to before surgery; with 80% of patients coming off glaucoma medication altogether.

Will my eyesight recover?

If you have experienced sight problems as a result of glaucoma this procedure cannot recover any lost sight, however as with all glaucoma treatments, the procedure aims to reduce further damage to the optic nerve and prevent any further loss of vision.

What are the risks associated with the procedure?

There are few complications associated with this procedure, these include:

- Infection and/or swelling – after surgery, antibiotics and anti-inflammatory medication may be given to reduce the risk of these happening, although redness and a sore eye can occur a while after surgery. If this happens you will require an eye appointment to prevent any damage to the eye. Please call the triage line in this instance
- Bleeding in the eye – if this happens your sight may be blurred for 1-2 weeks
- Very low pressure in the eye (hypotony) – though the likelihood of this happening is low compared to other glaucoma procedures,

the pressure in your eye can become lower than required. If this happens it can sometimes resolve spontaneously. The pressure in your eyes will be monitored after your procedure and your ophthalmologist will advise you if this happens

- Over time the eye lowering pressure effect of the MicroShunt may not be as effective; if that happens then you may need to revert back to using glaucoma medication

- Failure of Preserflo will require a revision of the procedure, which entail another operation and is done to remove the scan tissue

- Post operative care can be intense and require the instillation of eye drops every 1-2 hours

- You may be required to attend the hospital for frequent appointments

- If the eye is red and sore at any point in time, this can happen a long time after the procedure itself, a prompt eye appointment needs to be made to prevent further damage and eye getting damaged due to infection if that is found to be the cause. Please call the triage line on the number provided if this should happen

- It is also possible that your glasses prescription may change which can be dealt with three months after the procedure which is when all the globe topography (shape) gets stabilised

- It is not uncommon in patients having had glaucoma operations to have droopy eyelids which can be lifted if they effect the quality of life

What are the alternatives to this procedure?

There are other surgical procedures that can be carried out to treat your glaucoma; this can be discussed with your ophthalmologist. If surgery is

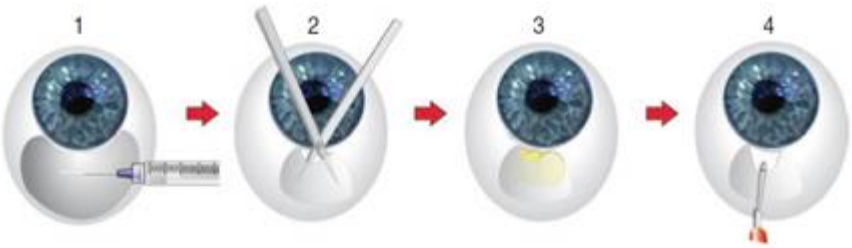
not something you want to consider at this time, please do speak to your ophthalmologist as other options can be discussed, such as using eye drops.

What will be involved in the procedure?

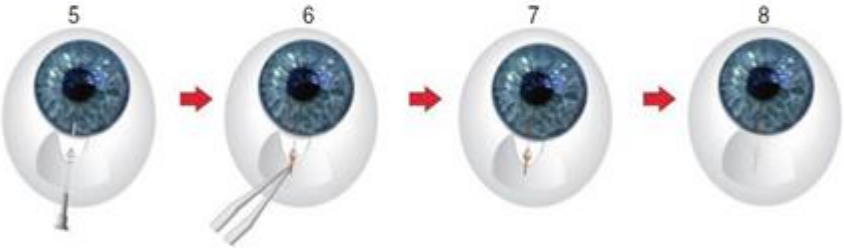
The procedure is carried out in theatre usually under local anaesthetic, which means numbing the eye using eye drops and a small injection. Although the injection will cause a pressure sensation, you should not feel the MicroShunt being inserted.

The procedure is done as a day case procedure and takes about 20 minutes, but you will be in hospital for a few hours for the whole visit. Some patients may have sedation or general anaesthetic; you would require a pre-operative assessment for this.

The conjunctiva will be opened and the MicroShunt inserted. One or two stitches will then be added to close this opening; these stitches will either be removed later at a clinic appointment or will dissolve. The MicroShunt will begin working to lower your eye pressure as soon as it is inserted.



1 Local anaesthetic injected.
2 8-10mm incision
3 Small sponges with anti-inflammatory medication are added to the incision site for 2-3 minutes
4 Area of incision cleaned with sterile water (saline)



5 Needle inserted into incision site to create a thin tunnel connecting the chambers of the eye.
6 Forceps used to insert MicroShunt into tunnel.
7 MicroShunt positioned and secured into tunnel.
8 Shunt observed by surgeon to make sure fluid is flowing and then tucked into final position.

Preserflo® MicroShunt implantation. Image adapted from and owned by Santen Pharmaceutical Co. Ltd., Osaka, Japan.

The images demonstrate insertion of the Preserflo® MicroShunt.

What to expect after surgery

When you come out of theatre you will have a patch over the operated eye. You will be asked to stop all the anti-glaucoma eye drops to the operated eye only. New drops will be prescribed to reduce the risk of inflammation and infection. You must continue with your usual drops to the non-operated eye. You will usually be able to go home the same day. It is better you are accompanied by someone and have someone stay with you for at least 24 hours until you are fully recovered, this is essential if you have a general anaesthetic or sedation.

We will see you in the eye clinic the day after the procedure, then in 1 week, 1 month, 2 months and 3 months.

When can I go back to normal routines?

Given the less invasive nature of this procedure, compared to more traditional invasive glaucoma procedures, the recovery time is typically 2-3 weeks after surgery. Depending on individual circumstances, your ophthalmologist will inform you if your recovery time will be longer.

If you were driving prior to the procedure, you may resume about a week after the procedure as long as your eye feels comfortable and you don't feel that your vision is blurred.

You should avoid strenuous activities for the first month after the procedure; examples include swimming, jogging, tennis, squash, and contact sports.

Contact details

We hope this information is sufficient to help you decide whether to go ahead with surgery. Should you require further advice or information please speak to your doctor.

If you have redness, loss of vision, increasing pain or new light sensitivity following the surgery, contact the number below:

Ophthalmology telephone triage service: **01257 245346**
Monday to Friday 9.00am to 4.30pm

If you feel that your eye condition needs an urgent assessment outside of these hours, please attend the nearest Emergency Department.

Sources of further information

www.lancsteachinghospitals.nhs.uk
www.nhs.uk
www.accessable.co.uk
www.patient.co.uk
www.lancsteachinghospitals.nhs.uk/veteran-aware
https://bepartofresearch.nihr.ac.uk/

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www.lancsteachinghospitals.nhs.uk/patient-information-leaflets

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If you want to stop smoking, you can also contact Smokefree Lancashire on Freephone **08081962638**

Please ask a member of staff if you would like help in understanding this information.
This information can be made available in large print, audio, Braille and in other languages.

Our patient information group review our leaflets regularly, if you feel you would like to feedback on this information or join our reading group please contact on email address:
patientexperienceandinvolvem@LTHTR.nhs.uk

Department: Ophthalmology
Division: Surgery
Production date: September 2025
Review date: September 2028
JR 1358 v1