

# Patient information

# Glaucoma drainage

# surgery – iStent drainage

# implant

---

## Introduction

This leaflet has been written to help you understand more about the surgery for glaucoma known as an iStent drainage implant. It explains what the operation involves, the benefits and risks of it and what you should do afterwards.

This information is designed to help you decide whether you would like this surgery and to make you aware what to expect when you come to hospital.

## What is glaucoma?

Glaucoma is an eye condition that can affect sight, usually due to build-up of pressure within the eye. This eye pressure is known as intraocular pressure (IOP). If it is not treated or if treatment is delayed, it can cause blindness.

A fluid (called aqueous humour) is produced inside the eye. This fluid is needed to:

- provide nutrients to the front of the eye, especially the cornea and lens
- remove waste products from the eye

The fluid drains mainly through a structure called the trabecular meshwork. This meshwork lies in the angle where the cornea meets the iris. The normal pressure in the eye is between 10 and 21 millimetres of mercury (mmHg). If for any reason the fluid is blocked and cannot get out, the pressure can rise and glaucoma may occur.

## **What treatment options and alternatives are there?**

There are various treatment options including tablets, eye drops, laser treatment and drainage surgery which includes trabeculectomy, iStent glaucoma tube and Baerveldt glaucoma tube implantation. Your consultant will discuss all the possible options with you and you can decide which option you prefer.

You do not have to have treatment – it is your decision. However, if glaucoma is not treated, it may cause blindness.

Please note that almost all glaucoma treatments and procedures including laser treatments are used to control glaucoma and not to improve your vision. **Once vision is lost from glaucoma, you cannot get it back. All treatment for glaucoma is aimed at slowing down the rate of progression of glaucoma, to reduce the risk of complete blindness during your lifetime.**

## **What is iStent drainage implant surgery?**

iStent surgery is a relatively new procedure that involves inserting a tiny hollow metal tube (stent) into the trabecular meshwork in the eye. The fluid can then drain through the tube from the front chamber of the eye into the Schlemm's canal. The Schlemm's canal is a collector channel around the iris in the front of the eye. This helps reduce pressure inside the eye.

Reducing pressure on the optic nerve in this way can help prevent further damage and loss of vision in glaucoma.

The iStent is a tiny titanium device that looks like a bent pipe or periscope (see figure 1). It is currently the smallest device implanted in a human body.

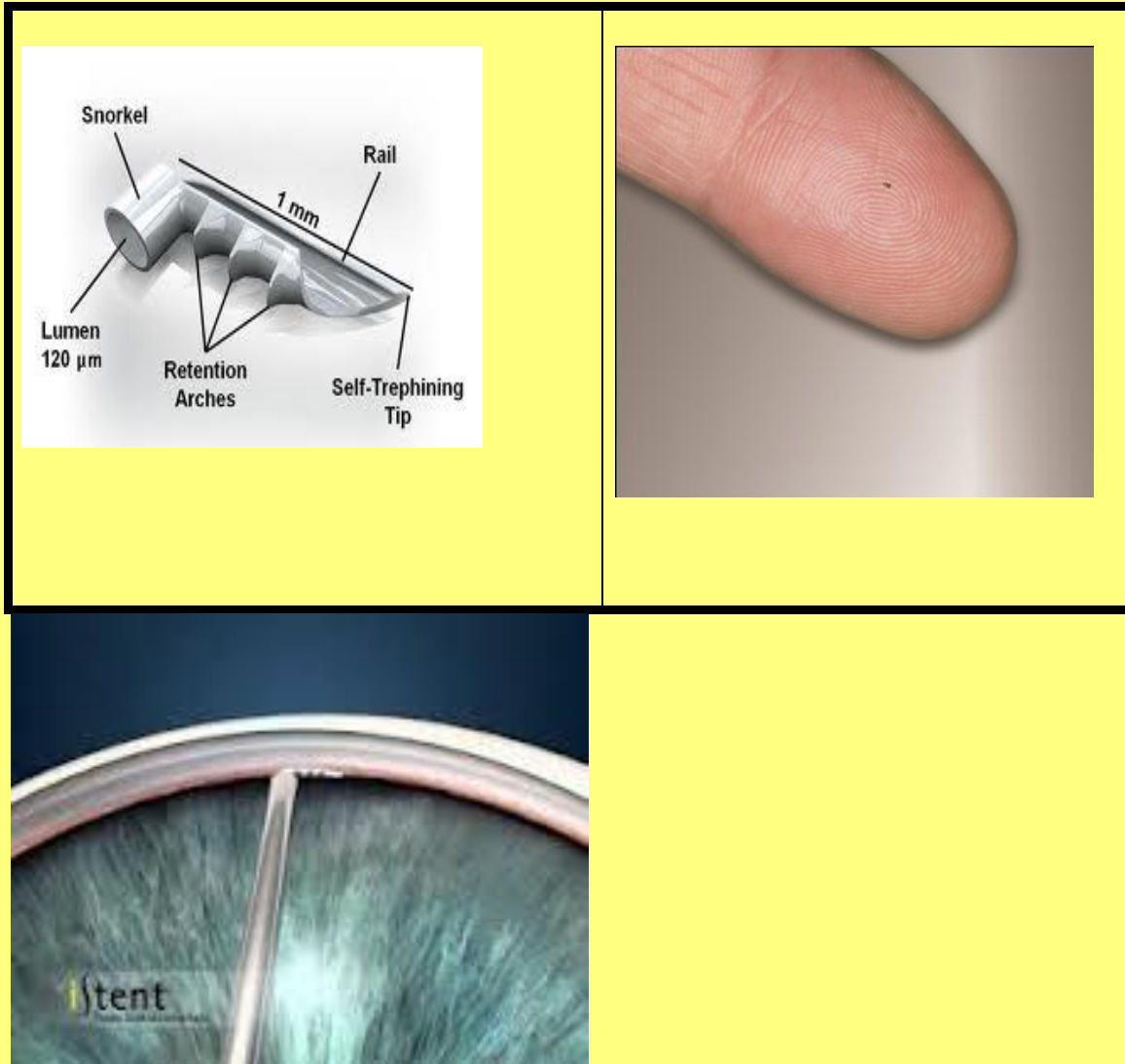


Figure 1 shows the tiny size of an iStent and the insertion of an iStent at the drainage channel.

**Dimension of the iStent:**

- Length: 1mm (one fifth of the size of a grain of rice)
- Height: 0.33mm
- Weight: 60 microgram
- Snorkel: 0.25mm x 120 micrometre (diameter of the tube)

It can be performed as a standalone procedure or combined with cataract surgery. It is as efficient at reducing eye pressure as the best glaucoma medications and avoids the side effects of eye medication.

## **Why is this operation recommended?**

iStent drainage implant surgery is approved to treat moderate to advanced open-angle glaucoma in people who are already using medication to reduce high pressure in the eye.

The iStent drainage implant cannot be used:

- In patients with narrow-angle glaucoma and certain other secondary glaucomas. Secondary glaucoma is where the cause of increased eye pressure can be linked to other eye conditions, operations, injuries or medications.
- In patients with tumours of the optic nerve, chronic inflammatory disease, thyroid eye disease, Sturge-Weber Syndrome or any other conditions where the trabecular meshwork, Schlemm's canal or collector channels are affected.

We can advise you on your suitability for this procedure and give you any further information you need.

## **What are the benefits?**

This operation will not improve your vision or cure glaucoma but aims to or slow down further visual loss from glaucoma damage. The goal is to reduce your risk of blindness from glaucoma in your lifetime.

Other benefits of iStents are:

- It is less invasive surgery compared to other more complex drainage surgeries and it has a faster recovery time.
- It provides an extra option for controlling glaucoma where glaucoma medications, laser or other complex glaucoma surgeries are not appropriate.

- The stent is made from non-magnetic titanium, the same material used for replacing heart valves, so it will not be rejected by your body and it does not cause an allergic reaction. It will not set off airport scanners and will not cause any problems if you need to have an MRI scan.

However, the iStent will not cure your glaucoma, reverse any damage already caused by glaucoma or bring back any lost vision.

### **How successful is it at lowering intraocular pressure (IOP)?**

Data collected on our patients over the period June 2013 to March 2015 showed that IOP was reduced by about 35 per cent in the patients having iStent surgery.

### **Safety of the iStent**

The iStent has been approved by the US FDA (United States Food and Drug Administration). There have been no long term significant or persistent side effects noted so far.

### **What are the risks?**

As with all surgery, this operation carries some risks and complications. It is important that we tell you about these risks so that you have the information you need to make a decision about the operation.

Although iStent has been approved for use, it is a new procedure so there is still a lot to learn about it and some of the safety issues may not be known. Data is continually being examined on the outcomes for patients who have the implant so that we can understand more about it.

There could be a risk of the stent becoming blocked or coming out of position. It may not provide long term glaucoma control and there may be failure and or loss of effect with time (as this is a relatively new procedure, long term data is not available).

As with all eye surgery, it also carries the risk of reduced vision or a loss of vision, pain, bleeding, infection and inflammation in the eye. It is possible that you may need further procedures or treatment, if it fails to control your eye pressure.

## **What happens before the operation?**

You should continue any eye drops and tablets for your glaucoma as prescribed, until the time of your surgery, unless directed otherwise specifically. You may be asked to use a new eye drop four times a day, in the eye that will be having surgery, for four weeks before the operation.

If you are taking any blood-thinning tablets (such as warfarin or aspirin), they might increase the risk of bleeding during the operation. You should discuss this with your glaucoma team. They may advise you to stop them for a week before surgery, if this will not affect your general health.

## **What happens during the operation?**

This operation is performed as a day case procedure where you will only need to be in hospital for the day. The doctor will explain the treatment to you and discuss any concerns or questions you may have with you. If you are happy to proceed with the treatment, you will need to sign a consent form.

After this, we will put local anaesthetic solution into the tissue surrounding the eye. To do this, we will put numbing drops into your eye and when your eye is numb, we will inject the anaesthetic into the tissue around your eye. You may feel pressure when we do this but it is not usually painful.



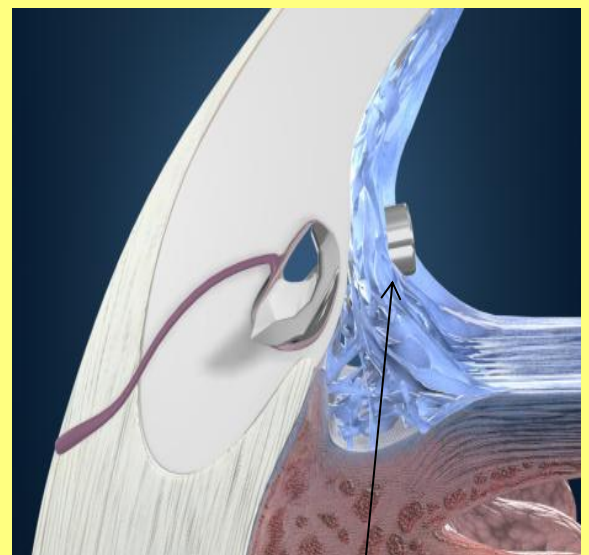
The surgeon will make a small cut in the cornea of your eye. The angle where the cornea meets the iris is opened using a jelly-like substance called viscoelastic. This is injected into a part of the eye known medically as the anterior chamber. The anterior chamber is the fluid-filled space inside the eye between the iris and the cornea's inner surface.

The surgeon will then slide the metal iStent through the trabecular meshwork into the Schlemm's canal, using a special applicator device. The actual iStent device is almost invisible (see figures 2 and 3).



iStent

Figure 2 shows the actual placement of an iStent



iStent

Figure 3 shows drainage through an iStent

The position of the stent is checked, the viscoelastic is removed, and the applicator is taken out. More than one stent can be inserted during the same procedure.

If the operation is going to be combined with cataract surgery, you will be given another information leaflet about this.

## **How long does it take?**

The procedure is relatively short, taking about 30 minutes. When combined with cataract surgery, the procedure will usually take approximately 50 to 60 minutes.

## **What happens after the operation?**

Immediately after your operation, your eye will be covered by an eye pad and protective plastic shield.

You will be given an eye drop to use in the operated eye, usually four times a day, for four weeks. The team will make an appointment for you to be reviewed in the glaucoma clinic the next day. At this visit, your eye surgeon will take off the eye pad and protective eye shield and examine your eye.

The iStent should start working immediately after surgery or at least within the next few weeks. At this point, your eye surgeon will look at the possibility of reducing your eye drop medications. If your eye pressure is stable, you will either no longer have to use eye drops, or you will have to use fewer eye drop medications.

## **What should I look out for at home?**

### **If you have any of the following after surgery:**

- reduced vision or loss of vision
- severe pain that does not go away
- any abnormal discharge from your eye, especially if it is increasing

please contact the Urgent Referral Clinic team at Russells Hall Hospital Eye Clinic on:

**01384 456111 ext. 3633**



## Follow up appointments

In order that we can check your eye, you will need to come to the Eye Clinic after **one day, one week and later depending on your particular condition.**

## Can I find out more?

You can find more information on iStent drainage implants, glaucoma, risk of blindness from glaucoma and various treatment options from the following websites:

<https://www.youtube.com/watch?v=4nzJAgn4z2k>

<http://www.glaukos.com/istent>

<http://www.glaukos.com/patients/istent-overview>

<http://www.glaucoma-association.com/>

<http://www.glaucoma-association.com/about-glaucoma/what-is-glaucoma>

[http://www.nei.nih.gov/health/glaucoma/glaucoma\\_facts.asp](http://www.nei.nih.gov/health/glaucoma/glaucoma_facts.asp)

<http://www.rnib.org.uk/eyehealth/eyeconditions/eyeconditionsdn/Pages/glaucoma.aspx>

<http://en.wikipedia.org/wiki/Glaucoma>

<http://www.nice.org.uk/guidance/cg85/ifp/chapter/About-this-information>

<https://www.rcophth.ac.uk/patients/glaucoma/>

## Note

The information in this booklet is provided for information only. It is **not** a substitute for professional medical advice or care by a qualified doctor or other healthcare professional. The information is general for the procedure. Individual experiences may vary and all the points may not apply to all patients at all times. Please discuss your individual circumstances with your eye doctor. **Always** check with your doctor if you have any concerns about your condition or treatment.

Always discuss with your doctor if you have any doubts or concerns about any part of the information in this booklet.

Ophthalmology Department  
Russells Hall Hospital

**If there is anything you do not understand, or you are concerned about any part of the procedure, or are worried after your operation, contact:**

The Urgent Referral Clinic team at Russells Hall Hospital Eye Clinic on:

**01384 456111 ext. 3633**

**This leaflet can be downloaded or printed from:**

<http://dudleygroup.nhs.uk/services-and-wards/ophthalmology/>

Author:

Mr Akash Raj, MD, MRCS, DRCOphth, FRCS, FRCOphth  
Consultant ophthalmologist (Glaucoma Lead)

**This leaflet can be made available in large print, audio version and in other languages, please call 0800 073 0510.**

للحصول على هذه النشرة بحجم أكبر، وعلى شكل إصدار صوتي و بلغات  
08000730510 أخرى، الرجاء الاتصال بالرقم

此宣传单可提供大字版本、音频版本和其它语言版本，  
请拨打电话：0800 073 0510。

Ulotka dostępna jest również w dużym druku, wersji  
audio lub w innym języku. W tym celu zadzwoń pod  
numer 0800 073 0510.

ਇਹ ਪਰਚਾ ਵੱਡੇ ਅੱਖਰਾਂ, ਬੋਲ ਕੇ ਰੀਕਾਰਡ ਕੀਤਾ ਹੋਇਆ ਅਤੇ  
ਦੂਸਰੀਆਂ ਭਾਸ਼ਾਵਾਂ ਵਿਚ ਵੀ ਪ੍ਰਾਪਤ ਹੋ ਸਕਦਾ ਹੈ,  
0800 073 0510 ਤੇ ਫੋਨ ਕਰੋ ਜੀ।

Aceasta broșura poate fi pusă la dispoziție tipărită cu  
caractere mari, versiune audio sau în alte limbi,  
pentru acest lucru vă rugăm sunați la  
0800 073 0510.

یہ کتابچہ آپ کو بڑے حروف کی لکھائی، سمعی صورت اور دیگر  
زبانوں میں مہیا کیا جا سکتا ہے۔ برائے مہربانی فون نمبر  
08000730510 پر رابطہ کریں۔