

What is a Trabeculectomy?

Introduction

Trabeculectomy is an operation which lowers the pressure inside the eye for patients with glaucoma. A small hole in the eye wall (sclera) is made and covered by a thin trap-door in the sclera. The fluid inside the eye, drains through the trap-door to a small pool or bleb just under the eye surface, hidden by the eyelid (see Figure 1). The trap-door is stitched down in a way that prevents the eye fluid from draining out too quickly.

By draining the eye fluid out through the hole and trap-door the trabeculectomy operation reduces the pressure on the optic nerve and prevents further damage and further loss of vision from glaucoma.

The aim of the operation is to preserve your remaining vision. It will not improve your vision. Control of the eye pressure with a trabeculectomy will not bring back vision already lost from glaucoma.

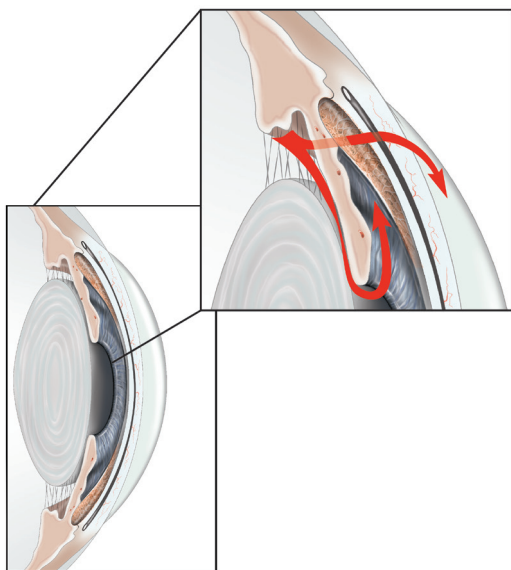


Figure 1 a Diagram showing flow of eye fluid through a normal trabeculectomy

How will my eye look after a trabeculectomy?

In the early period after surgery the eye will be red and swollen to a variable degree. The eyelid will also droop partially. This resolves over a period of weeks to months. The bleb is not usually visible to the naked eye after the trabeculectomy operation. The bleb may, be seen if the patient looks in the mirror and raises the upper eyelid.

After surgery, most patients feel no sensation from the presence of the bleb.

Medication Prior to Surgery

Prior to undergoing surgery, please continue all drops and tablets in accordance with your normal treatment regimen until the morning of the operation. Blood thinning medications such as Aspirin, Warfarin, Clopidogrel should also be continued. If you take Warfarin, please check your INR level at least 1 week prior to surgery to ensure it is within the correct therapeutic range.

If you are having a general anaesthetic, a preoperative assessment of your general health will be carried out just before surgery. Medical conditions like heart disease, uncontrolled high blood pressure or diabetes will need to be addressed before scheduling surgery.

The day of operation

Trabeculectomy surgery usually lasts up to 45 minutes.

It is usually performed under local anaesthesia, though it may also be performed under general anaesthesia.

If your surgery is under local anaesthesia you will be awake during the operation. The eye will be numbed first with eye drops and then an injection of anaesthetic will be given under the eye. The anaesthetic injection may cause a sensation of pressure as it is delivered. This numbs the eye, preventing not only pain but also eye movement during surgery. You will still have sensation of your eye lids as this is not numbed.

During surgery, your face will be covered by a sterile sheet, or drape, which keeps the operation site sterile. You will be aware of the surgeon working around the eye, but should not feel pain. The nurse will hold your hand so that in the event of any pain or discomfort, you can squeeze the nurse's hand. The surgeon will stop the surgery and top-up the anaesthetic if needed. You may also hear the surgeon speaking to the scrub nurse and other members of the surgical team.

Mitomycin C

During the surgery, Mitomycin C may be applied to the surface of the eye for a brief period of time (usually 2-3 minutes). Mitomycin C is a drug that was originally used to treat cancer, but it is also used in glaucoma surgery to reduce scarring. Scarring stops the trabeculectomy from working in the long term, as it prevents the fluid from flowing out of the trap-door. The Mitomycin C is then washed away from the eye with sterile water so that no residual drug remains.

After surgery

Patients are usually discharged home from hospital either the same day or the day after. All patients need to be examined on the day after surgery or the next day.

The eye is normally padded after surgery and the eye pad is removed the following day. If the unoperated eye does not see well, then the operated eye will not be padded. Instead, a clear shield will be placed on the operated eye so that it is still possible to see after surgery.

You should ask a friend or relative to accompany you home after surgery, especially if you have poor sight in the unoperated eye or if you have had a general anaesthetic.

What should I expect to feel during the postoperative period?

It is normal for the vision to be blurred and the eye to be uncomfortable after surgery. The period of blurring is variable. The vision may be particularly blurred for 1-2 weeks following surgery, and then start to improve. It can take 2-3 months for the eye to feel completely normal and the vision to stabilise completely.

You should wear a shield at night for the first 2 weeks or so; this is to prevent any accidental harm to the eye whilst sleeping.

Soreness in the eye after surgery is partly due to the surgery itself, and partly due to the stitches. The stitches do not dissolve and are usually removed in the clinic 2-4 weeks after surgery (this takes 2 – 3 minutes in clinic with the eye numbed using eye drops). The eye usually starts to feel more comfortable after the stitches have been removed.

Eye drops after surgery

Eye drops are very important to prevent scarring and infection. These start the day after surgery. It is not necessary to use eye drops the first night after the surgery. Acetazolamide (Diamox) tablets or any glaucoma medication to the operated eye should be stopped the night after surgery.

It is important that any eye drops for the unoperated eye are continued unless advised otherwise.

The postoperative eye drops will usually consist of an antibiotic (eg. chloramphenicol) and anti-inflammatory steroid (eg. dexamethasone). The steroid eye drop will initially be used intensively (every 2 hours or about 8 times daily) and the antibiotic four times daily. These are intended to be taken during the day only.

You will be given a supply of postoperative eye drops on leaving the hospital which should last one month. The postoperative eye drops will need to be taken for 3 months. You will be advised at each post-operative visit whether a change in the dosage of drops is required. Please ask for a prescription for more drops from the doctor when you run out. Do not stop or change the dosage without consulting the doctor.

Postoperative clinic visits

Patients are usually seen once weekly for the first 4 weeks, and once a month for 3 months. This may be more frequent if the eye pressure is either too high or too low.

During this time stitches may be removed to adjust the flow going through the trap-door and so changing the eye pressure. Injections of steroids or 5-Fluororacil (a drug that reduces scarring), may be given on top of the eye to counteract the body's natural healing process. The injections are performed after the administration of anaesthetic eyedrops, during the clinic appointment itself.

Activity after Surgery

It is very important to avoid strenuous activity during the early post-operative period including weight lifting, swimming, tennis, jogging and contact sports.

It is permissible to watch television and read, as these will not harm the eye. For patients who wish to pray, it is better to kneel but do not to bow the head down to the floor in the first 2 – 3 weeks. Bending over can cause significant pain when the eye is still inflamed after surgery. Activities such as yoga that require head-down posturing should be avoided.

As you will be monitored closely following surgery, you can consult your surgeon before starting any strenuous activity. If the eye pressure is very low after surgery the surgeon may suggest refraining from all exertion and resting until the pressure is restored.

When can I go back to work?

The duration of time off work will depend on factors such as the nature of your work, the vision in the other eye and the pressure in the operated eye.

Typically someone working in an office environment would require 2 weeks off, if the postoperative course is smooth. Someone whose does heavy manual work or work in a dusty environment may require a month or more (e.g. construction workers, farmers).

Contact lens wear after trabeculectomy surgery

Not everyone can continue to wear contact lenses after trabeculectomy surgery, so this is something to consider before having a trabeculectomy operation. If contact lens wear is essential, then other alternatives to trabeculectomy should be considered. Whether or not contact lenses can be worn after surgery depends on the appearance and shape of the bleb. The surgeon will usually be able to advise on this by 6-8 weeks after surgery.

Flying after surgery

Although it is safe to fly after surgery, you should bear in mind your surgeon will wish to see you for frequent monitoring to ensure that the eye pressure is at the correct level.

When is the eye back to normal?

In most cases, it takes 2 to 3 months for the eye to feel completely normal and sometimes longer in more complicated cases. A spectacle test can be performed after 3 months as the spectacle prescription may have changed slightly from the pre-surgery prescription.

Success rates

Long-term studies suggest that most people will achieve a low eye pressure without the need for additional glaucoma medication after trabeculectomy surgery. In clinical trials, trabeculectomy has proven consistently more successful at lowering eye pressure than either medication or laser.^{1:2} The success rate of trabeculectomy at controlling the pressure varies according to a number of risk factors including the type of glaucoma, previous surgery, race, age and other conditions.

In one study, after 20 years almost 90% of trabeculectomies were still successful.³ Just under two thirds of these had no glaucoma medication to control the pressure, where as one third still required medication. Roughly 10% will require further surgery for uncontrolled pressure.

Uncommonly, a patient will develop a pressure that is too low, requiring further surgery to elevate the pressure.

Complications

Severe complications are rare and may happen either if the eye pressure drops very low or very quickly during the early postoperative period, or if the eye becomes infected.

Very low eye pressure is the biggest risk in the early postoperative period. Although it is often painless, it may be associated with a dull aching feeling or a throbbing sensation within the operated eye. If you notice severe blurring of vision, distortion or a fluctuating curtain in your vision, you should attend the emergency eye clinic as soon as possible for further assessment.

Very low pressure or a sudden drop in pressure can result in bleeding at the back of the eye (choroidal haemorrhage). This is a very severe blinding complication but rare. In order to ensure that this does not happen the surgeon might suggest further intervention if the pressure becomes very low. This may involve a return to the operating theatre to have the trap-door stitches tightened. Sometimes the surgeon will inject a viscoelastic gel into the eye and wait to observe the result before deciding on further adjustment of the trap-door sutures, as the eye pressure will often stabilise by itself. Sometimes a simple adjustment of medication is sufficient, in which case, neither of the above will be required.

About 5% of trabeculectomy patients require a return to the operating theatre in the first month after surgery for adjustment, either because the pressure is too high or too low.

The risk of serious infection or serious bleeding in the eye from trabeculectomy is rare (approximately 1 in 250).⁴

Longer-Term Risks

The longer-term risks of trabeculectomy are infection, discomfort, cataract and change in glasses prescription. Low pressure occasionally develops in the longer term, but generally the risk of low pressure is highest in the early postoperative period rather than later.

Infection

While the risk of infection after surgery is rare, there is a very small life-time risk that the bleb might become infected.

If you develop a red, sticky or painful eye, it is important you have your eye examined immediately by an eye doctor, as this may be a sign of an infection. While infection is rare, it is very serious and can cause visual loss. The earlier any infection is treated, the better the outcome for the eye.

Discomfort

The bleb may become large. Occasionally this may extend below the eyelid or cause the eyelid to be raised or droopy.

A large bleb may cause disturb the tear film on the eye surface, and can create a feeling of discomfort or drying of the eye. This occurs in about 10% of patients and is usually treatable with artificial tear drops. Occasionally, the discomfort is severe and requires surgery to make the bleb smaller.

Cataract

In patients who have not had cataract surgery, there is a risk that trabeculectomy may worsen an existing cataract³. Your surgeon can advise you on a cataract extraction operation should you develop one.

Changes in glasses prescription

Most patients require a small change in their glasses prescription after trabeculectomy. You should check with the doctor before changing glasses. This is usually 3 months after the operation or when the eye pressure is stable. Rarely, a patient who did not require glasses before surgery develops a need for glasses after surgery.

Reference List

1. Migdal C, Gregory W, Hitchings R. Long-term functional outcome after early surgery compared with laser and medicine in open-angle glaucoma. *Ophthalmology* 1994;101:1651-6.
2. Lichter PR, Musch DC, Gillespie BW, et al. Interim clinical outcomes in the Collaborative Initial Glaucoma Treatment Study comparing initial treatment randomized to medications or surgery. *Ophthalmology* 2001;108:1943-53.
3. Landers J, Martin K, Sarkies N, et al. A twenty-year follow-up study of trabeculectomy: risk factors and outcomes. *Ophthalmology* 2012;119:694-702.
4. Rai P, Kotecha A, Kaltsos K, et al. Changing trends in the incidence of bleb-related infection in trabeculectomy. *Br J Ophthalmol* 2012;96:971-5.

Emergency Eye Clinic: 02920 743 191

Monday to Friday, 9am–5pm, for information and advice on eye conditions and treatments from experienced ophthalmic-trained nurses.

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