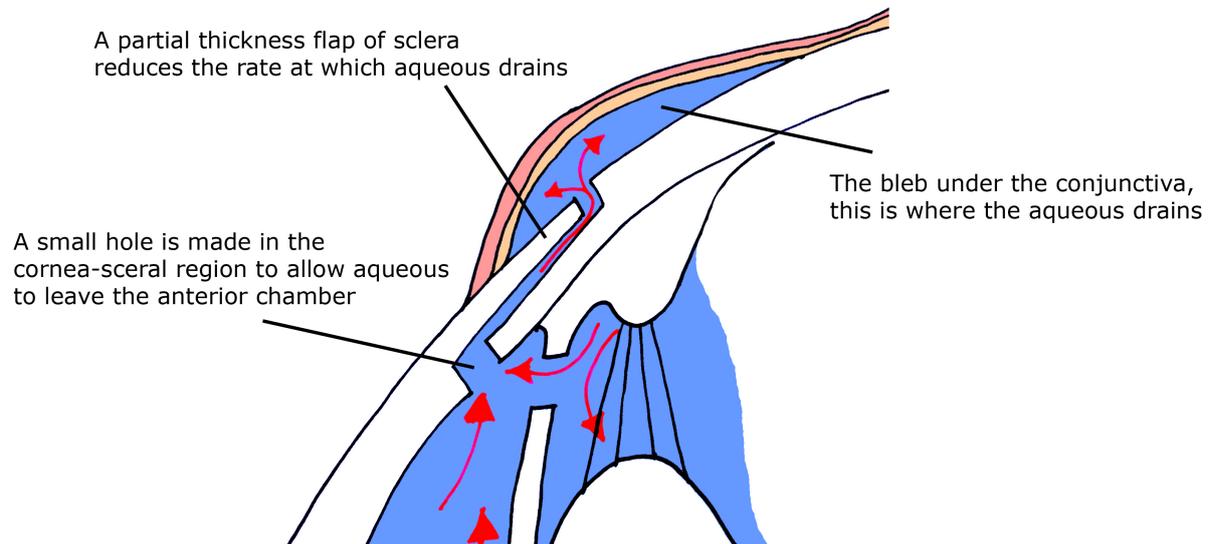


TRABECULECTOMY

Trabeculectomy is a highly effective surgical treatment for glaucoma, which when successful can stabilise the condition and get patients off drops. An advantage of trabeculectomy over other treatments is that it can achieve low target IOPs, so can be used effectively in normal tension glaucoma.



Trabeculectomy works by allowing aqueous to drain out of the eye into a 'bleb' at the top of the eye, covered by the upper lid. It is usually undertaken as day case surgery under local anaesthetic but can also be done with the addition of sedation or general anaesthetic. If successful, trabeculectomy will lead to a stabilisation of glaucoma for a number of years without requiring any IOP-lowering drops.

The main reason trabeculectomies stop working or fail is due to scarring of the tissues around the bleb. At the time of surgery, drugs such as mitomycin C or 5 fluorouracil may be used to reduce the long-term risk of scarring. Post-operatively, trabeculectomies require close monitoring and topical anti-inflammatory drops (steroids) usually for the first 12 weeks after the surgery to ensure that failure is prevented. Serious complications of trabeculectomy are rare but include infection or bleeding that may lead to vision loss in less than 1 in 1000 cases.

How Is Trabeculectomy Performed?

Trabeculectomy involves creating a partial thickness trap door in the sclera (white of the eye) under the upper eyelid, and then making a small hole into the front of the eye, covered over by the trap door.

The trap door allows aqueous to drain in a controlled fashion from the front of the eye into a 'bleb' reservoir under the conjunctiva, which is the membrane covering the eye. In allowing aqueous to drain slowly out of the eye, the IOP is lowered thereby stabilising glaucoma.

It may be performed under local anaesthetic, which involved just numbing the eye itself. Some patients may wish to have intravenous sedation as well, or to have general anaesthetic.

How Successful Is It?

Trabeculectomy carries with it about an 80% chance of long term IOP control without needing drops. In the remaining 20%, patients may need to have a further surgical intervention to get the IOP at the best level or may need to restart a drop or two.

Often, trabeculectomies can be 'resurrected' by carrying out a **needling** procedure to break down scar tissue and re-establish flow of aqueous into the bleb.

Why Do Trabeculectomies Fail And How Can It Be Avoided?

One of the main problems with this type of surgery is that the body's natural healing processes can cause scarring to occur near the trapdoor and under the conjunctiva.

If this happens the drainage can stop and the IOP goes back up.

In order to stop this from happening, special drugs called 'antimetabolites' (most commonly mitomycin C but occasionally 5-fluorouracil) can be applied to the white of the eye during the surgery to reduce the risk of scarring. Application of metabolites at the time of surgery leads to better long term IOP control.

What Does The Post-Operative Care Involve?

Trabeculectomy does require fairly intensive follow-up with visits every week for the first month, and then regularly up until usually 3 months after the surgery.

An intensive course of topical anti-inflammatory steroid drops is required in this time-period (along with a shorter period of less intensive topical antibiotic), tailing gradually down over the course of weeks.

The long-term success of the trabeculectomy is very much dependent on the post-operative management in clinic. Stitches may be removed to lower the IOP and manipulations such as further injections of anti-scarring drugs can be used to reduce the

risk of scarring and failure. All of these interventions are performed at the slit lamp and are painless with the use of topical anaesthesia.

Vision may take up to 6-8 weeks to stabilise but usually returns to the pre-operative state, albeit sometimes requiring an updated glasses prescription. Most patients take 2 weeks off work, but it is possible to get back to work within 1 week depending on how good the vision is in the immediate post-operative period. Patients should not swim during the immediate post-operative period but can restart after 8 weeks, as long as they wear appropriate eye protection. A high level of physical exertion and any activities requiring prolonged head down positions should be avoided if there are periods of hypotony (very low pressure – see below). Long-term, one should avoid sports that involve a risk of direct eye trauma, unless appropriate eye protection is used.

What Are The Possible Complications?

Failure

Discussed above.

Vision Loss

Losing the eyesight completely in the operated eye is fortunately extremely rare.

A serious bleed within the eye during the surgery (suprachoroidal haemorrhage) or serious infection in the eye after the surgery (endophthalmitis) occur in about 1 in 1000 cases and these can lead to vision loss in severe cases or if attempts at treatment are unsuccessful.

There is a phenomenon called 'wipeout' which can occur in eyes with very advanced glaucoma completely losing vision completely after surgery (whether trabeculectomy, cataract surgery or any other kind); this is extremely rare with modern techniques.

It is, however, not uncommon to have a slight reduction in vision after trabeculectomy surgery. In nearly all cases, the vision takes a while to stabilise but by 3 months the vision should be close to, or at, the level it was prior to the surgery. Patients may need to update their glasses prescription at about 8 weeks after surgery.

Rarely, in some advanced cases the vision may drop a few lines on the vision chart despite highly successful surgery. In these cases, though, the expectation is that visual loss would be more severe in the longer term if no surgery had been undertaken.

Hypotony – Low IOP

One of the main concerns of trabeculectomy surgery is that the pressure may go 'too low' if the surgery is working too well and it is draining too much aqueous.

Hypotony may lead to blurred vision and increases the risk of developing a spontaneous bleed in the eye.

In most cases, hypotony in the early stages after surgery will resolve with a modification to the post-operative drop regimen.

Occasionally it may be necessary to inject a form of gel ('viscoelastic') inside the eye at the slit lamp to increase the IOP. If the IOP is not improving and the low IOP is causing poor vision or changes in the cornea or the back of the eye then it is sometimes necessary to go back to the operating theatre to put extra stitches in the trap door to reduce the amount of flow. This will have the effect of increase the IOP and of reversing the complications of the low pressure.

Cataract

Cataract formation may be accelerated after trabeculectomy surgery, so it is not uncommon to need cataract surgery in the years after the trabeculectomy has been undertaken.

Ptosis (Droopy Upper Lid)

Ptosis is not uncommon after trabeculectomy surgery. This normally resolves on its own and is seldom a permanent problem. If it causes a long-term cosmetic problem or if it interferes with vision, then the ptosis can always be addressed surgically.

Discomfort/Pain

The presence of a drainage 'bleb' under the upper eye lid can cause discomfort in some patients. This is called 'bleb dysesthesia'. Whilst this is usually manageable with ocular lubricant drops, occasionally additional surgery to reduce the size and appearance of the bleb may be required to relieve the discomfort.

Driving

It is important to note that trabeculectomy, or any other form of glaucoma surgery, will not restore vision that has already been lost from glaucoma. Patients with glaucoma affecting both eyes and who wish to continue driving will need to inform the DVLA, who will arrange visual field testing at a local high street optometrist.

Once a license has been withdrawn on the grounds of vision, the license cannot be restored on the grounds that a trabeculectomy has been performed.

In patients who are legally entitled to drive, they can usually restart driving a week after trabeculectomy surgery.