

SURGERY FOR OPEN-ANGLE GLAUCOMA

In open-angle glaucoma, **aqueous humor**, the fluid that normally flows in and out of the eye, has difficulty leaving through the eye's sponge-like drainage system, the **trabecular meshwork**.

When this occurs, pressure within the eye, called **intraocular pressure**, builds up and may damage the optic nerve and lead to vision loss. Medications, laser surgery, or other glaucoma surgeries may be used to lower and control the eye pressure.

When is surgery necessary?

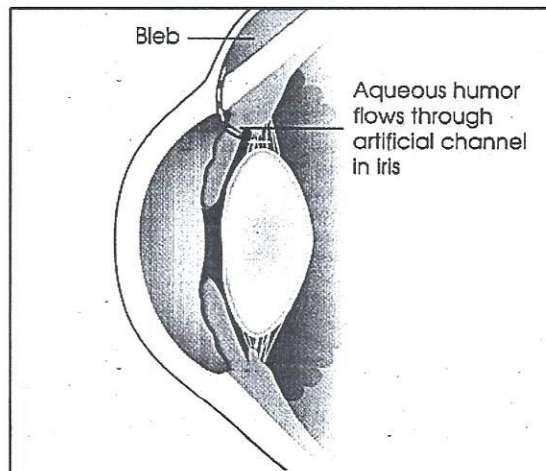
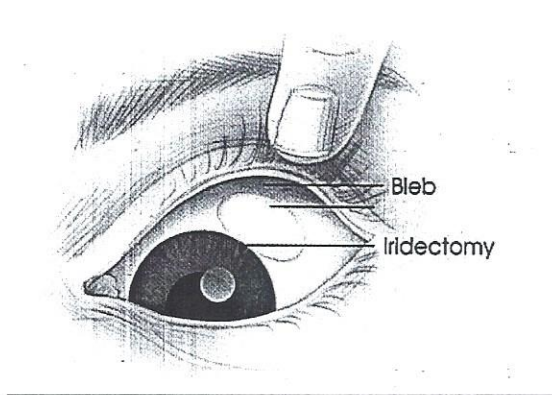
When medications or laser treatment cannot lower eye pressure caused by glaucoma, surgery is usually recommended. Of the possible procedures, glaucoma filtration surgery, also called trabeculectomy, is the most common.

How is a trabeculectomy done?

A small flap is made in the **sclera** (the white of the eye). A **filtration bleb**, or reservoir, is created under the **conjunctiva**, the thin, clear coating covering the sclera. The aqueous humor inside the eye can now drain through the flap and collect in the bleb, where it is then absorbed into the lymph and blood vessels around the eye.

After the bleb is carefully constructed, the incision is closed with tiny stitches. Some of these stitches may be removed after surgery to increase fluid drainage.

Drugs to reduce scarring are often applied during and after surgery.



THE BLEB LOOKS LIKE A BUMP OR BLISTER ON THE WHITE OF THE EYE BUT IS USUALLY HIDDEN BY THE UPPER EYELID.

FLUID DRAINS FROM THE INSIDE OF THE EYE INTO THE BLEB.

What can you expect if you have surgery?

Before surgery

You will continue to use your glaucoma medications until just prior to surgery. If you take aspirin or any products containing aspirin, these should be discontinued at least 7-10 days prior to surgery. If you take Coumadin, you will need to discontinue this medication 3-5 days prior to surgery. The precise timing for stopping and resuming your medication is usually coordinated with your internist or cardiologist.

The day of surgery

A trabeculectomy is done as an outpatient (day) surgery with a local anesthetic to prevent discomfort during the operation. You may be given a sedative to help you relax. General anesthesia is rarely necessary. The procedure is usually performed in less than an hour but it may take longer if you have had previous eye surgery, or if your eye is inflamed or abnormal blood vessels are present.

After surgery

Postoperative care is as important to the long-term success of the operation as the surgery itself. In follow-up appointments, your ophthalmologist (Eye M.D.) will examine the filtering bleb, the external appearance of the eye, your eye pressure, and the back of your eye. You should avoid lifting, bending, or straining after surgery until your eye pressure stabilizes.

Pain is unusual after surgery, although your eye may feel tender and sensitive. A non-aspirin pain reliever is usually sufficient to treat any discomfort.

Sudden, severe or deep-seated pain, especially if it is associated with loss of vision, should be reported to your ophthalmologist immediately.

Eye pressure is adequately controlled in three out of four people. Although follow-up visits are still necessary, many people no longer need to use eyedrops. However, if the new opening closes or too much fluid drains from the eye, additional surgery may be necessary.

What will my vision be like?

Vision may fluctuate daily after surgery. Generally your vision is blurry for several weeks. There may or may not be a change in your glasses prescription after surgery.

If a cataract is present or another complication exists, vision may not return to what it was before surgery. Surgery cannot restore vision already lost from glaucoma.

Complications

As with all surgeries, there are risks associated with a trabeculectomy. One of the most common complications is scarring. Other complications include:

- infection;
- bleeding;
- cataract;
- loss of vision.

Although the success rate is quite high, sometimes a single surgical procedure cannot halt the progression of glaucoma. Another surgery and/or continued treatment with medications may be necessary.

An eye that has undergone a trabeculectomy and has a functioning bleb will always be susceptible to infection. A red, uncomfortable eye may be a sign of infection and needs to be attended to urgently.

Are there alternatives to glaucoma filtration surgery?

Depending on the type and severity of glaucoma and how much the pressure needs to be lowered to halt its progression, several other treatment procedures are available.

Aqueous shunt surgery

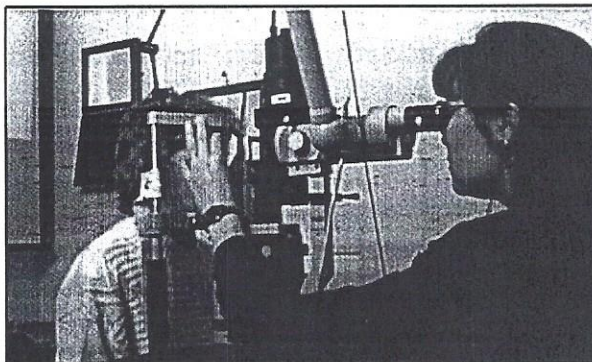
When the risk is high that a trabeculectomy will fail, especially in neovascular glaucoma or glaucoma associated with inflammation in the eye, an aqueous shunt surgery may be recommended. An aqueous shunt is a small tube or valve placed in the eye through a tiny incision. The shunt drains excess fluid into a small reservoir placed on the eye.

This surgery, like a trabeculectomy, is an outpatient surgical procedure. Risks of surgery and postoperative care are similar to those for a trabeculectomy.

Argon Laser trabeculectomy (ALT)

In argon laser trabeculectomy, an argon laser makes tiny, evenly spaced burns in the trabecular meshwork. The laser does not create new drainage holes, but appears to stimulate the drain to function more effectively. The procedure is performed in an ophthalmologist's clinic with an eyedrop anesthetic, and can usually be completed within 15-20 minutes. Since eye pressure is monitored after surgery, the total office time required may last 2 to 3 hours. A few people experience a rise in eye pressure shortly after laser trabeculoplasty.

People often need to continue taking some glaucoma medications after laser trabeculoplasty. There is usually little pain associated with this laser procedure and few complications. Laser trabeculoplasty effectively lowers eye pressure three quarters of the time. But for many people laser trabeculoplasty is not a permanent solution. Nearly half the people who receive laser trabeculoplasty have increased eye pressure again after five years. For people who have had a successful laser trabeculoplasty, it may be repeated with a similar pressure-lowering effect.



PATIENT UNDERGOING ARGON LASER TRABECULOPLASTY (ALT)

Cyclophotocoagulation

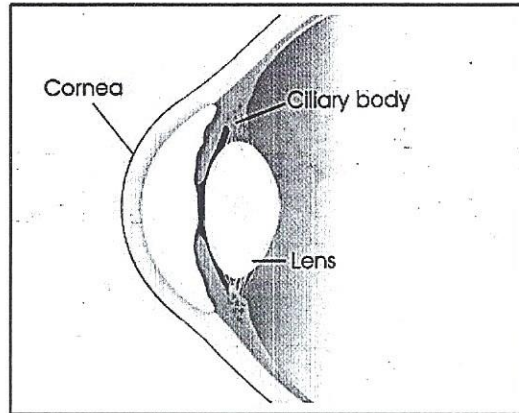
When attempts to increase the amount of fluid draining from the eye through the trabecular meshwork fail, another treatment option is to reduce the amount of fluid entering the eye. Cyclophotocoagulation is a procedure that uses a laser beam to treat parts of your eye's ciliary body. The ciliary body is a band of tissue just behind where the cornea meets the white part of your eye. It produces the aqueous humor. Treating parts of the ciliary body can reduce the production of aqueous humor, thus lowering eye pressure.

Cyclophotocoagulation is generally used to treat advanced or aggressive open-angle glaucoma. It is usually used after other treatments have proven unsuccessful. The procedure is performed with local anesthesia. When the anesthetic

wears off after the procedure, you may experience some pain or discomfort. Your ophthalmologist may prescribe medication such as Tylenol with codeine or Vicodin to help ease the discomfort.

In follow-up exams after cyclophotocoagulation, your ophthalmologist will check for inflammation and monitor the pressure in your eye.

Risks associated with cyclophotocoagulation include pain, inflammation, and decreased vision. While the risks may sound unpleasant, keep in mind that unless severe glaucoma is treated, you run the risk of losing vision permanently.



IN CYCLOPHOTOCOAGULATION, THE LASER IS AIMED AT THE CILIARY BODY, THE PART OF THE EYE THAT PRODUCES AQUEOUS HUMOR.

Loss of vision can be prevented

Vision loss from glaucoma can be prevented if it is caught and treated in time. Glaucoma filtration surgery is the most common glaucoma surgery. Although complications may occur, most are treatable. While glaucoma treatments cannot restore vision already lost from glaucoma, early detection and treatment of glaucoma offers the best chance of preserving vision.