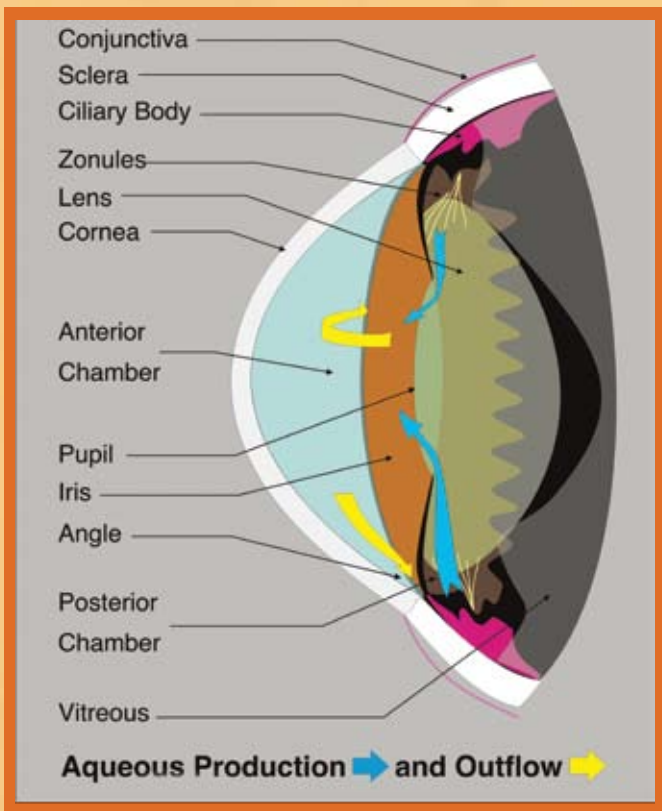


**Glaucoma** is characterized by progressive loss of optic nerve fibers manifested by a reduction in the field of vision (see *Glaucoma is a Blinding Disease*). Visual symptoms are not perceptible until in the advanced stage. There are two types of glaucoma based on the status of the angle of the eye: open angle and angle closure (see *Open Angle Glaucoma* and *Angle Closure Glaucoma*).



### TREATMENT GOAL

There is no conjunctiva for nerve loss since damaged nerve fibers cannot be regenerated. Currently, the only effective way of halting nerve fiber loss is by lowering eye pressure. Eye pressure in glaucoma patients is usually elevated (>20mmHg). Depending on the assessment of your doctor regarding your optic nerves (done by *Optic Nerve Head Analysis*) and your field of *visual Field Testing*, a target pressure is set for the affected eye to stop optic nerve fibers from dying.

*Continued from Cycloablation...*

In this procedure called cyclocryotherapy, a small probe that looks like a ballpen is placed on top of the eye where the ciliary body should be and the temperature of its tip is brought down to less than 0°C. The cold travels into the eye and, in alternate freezing and thawing cycles, destroys the cells of the ciliary body. Another way to achieve this effect is by employing laser energy (cyclophotocoagulation). The doctor determines how much of the ciliary body should be treated to achieve the desired effect.

### Risks

Overdoing cycloablation may cause intractable hypotony and might eventually lead to a shrunken eyeball which is why this is usually reserved for non-sighted eyes where the main goal of treatment is to stop the pain.

### Post-Operative Care

Post-operative care is simple since there was no entry into the eyeball. Pain from inflammation caused by the destruction of tissue may be present for one or two weeks.

### DISCLAIMER

This has been produced and is presented by Galileo SurgiCenter purely as information for our patients in a highly simplified and abbreviated form. It is not meant to contravene or substitute your doctor's assessment of your condition and opinion about your treatment.



Cataract & Glaucoma Center

G/F Belson House 271 EDSA

(near the corner of Connecticut St.) Mandaluyong City

Phone No.: 721-6412 / 721-7135/ 721-1677/ 726 -9815

[www.galileoeyecenter.com](http://www.galileoeyecenter.com)

# Surgery in Glaucoma

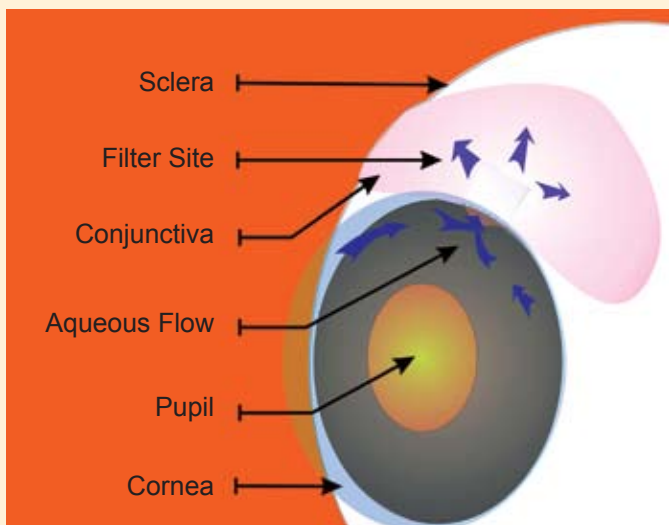


## INDICATIONS OF SURGERY

Medications in the form of eye drops lower eye pressure. Laser procedures either prevent the rise in eye pressure or actually reduce pressure by facilitating the exit of fluid from the eye (see *Lasers in Glaucoma* and *SLT*). There are also surgical procedures that reduce eye pressure. These are resorted to usually when in the doctor's assessment medications and/or laser cannot bring down the eye pressure to target levels, especially if multiple drugs are already being tried and if very low pressures are necessary. Since glaucoma is a chronic disease, the therapeutic regimen prescribed by the doctor has to be followed continuously. If a patient has problems following or complying with the drops, surgery may also be considered.

## FILTERING PROCEDURE

The most popular surgical procedure for glaucoma is called Trabeculectomy. In trabeculectomy, a small portion of the peripheral corneal tissue that contains the trabecular meshwork is cut out or excised. This creates a window through which aqueous can flow into the space under the conjunctiva. To temper the outflow of aqueous from within the eye, a thin flap of sclera is first made by the surgeon before excision and closed after. The flap covers the hole preventing too much aqueous from leaving the eye and protecting the eye from the possible but unlikely entry of bacteria. This "filter" has to remain patent for pressure to remain at its target levels. Formation of a cataract or an acceleration in its progression have been observed after filtering surgery (see *What is a Cataract?*)



## Risks

Any eye surgery that makes an entry into the globe carries a risk of introducing bacteria with it. If the bacteria thrive, the contamination will lead to fulminant, vision-threatening infection called endophthalmitis, which fortunately is very rare, less than 1 in 1,000 of cases. However, since a successful operation means that there is a permanent "hole," the theoretical possibility of endophthalmitis remains throughout life. Other more probable risks are bleeding, hypotony (when pressures are too low), eye pressure spikes (if filtration is poor), and cataract formation. Because the new aqueous path is not natural, the body's reparative process tends to treat it as a wound and makes several attempts to close the filter by scarring. The chance of a filter "closing" is almost 50% in 2 years; the risk of closing is therefore the most probable risk in filtering surgery. The use of medications that retard healing and reduce inflammation during and after surgery improve the odds of the long-term success of the filter.

## Post-Operative Care

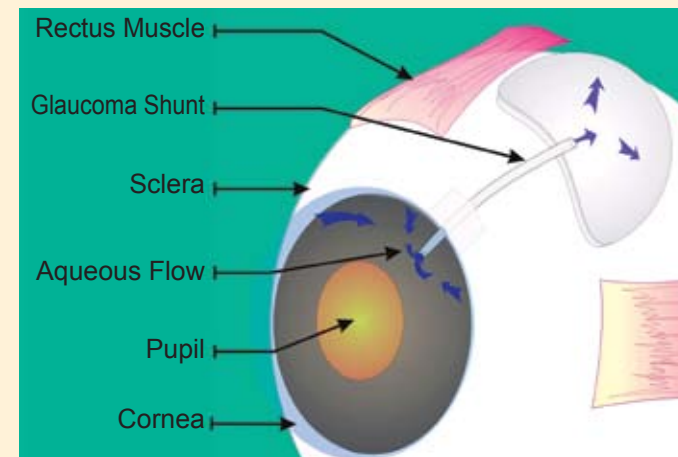
Inflammation is one of the predisposing factors to closure of the filter. Anti-inflammatory drops especially steroids are used to prevent scarring and subsequent closure. Antibiotic drops will also be given for a short time to prevent of infection. The patients might also be encouraged to press the eye intermittently to encourage the flow through the filter. Massaging the eye like this can prevent closure and keep eye pressures at very low levels.

## GLAUCOMA SHUNTS

In eyes with complicated glaucoma or those with previously failed filters, where another filtering operation will probably fail, a glaucoma shunt procedure may have a greater likelihood of success. In this operation, an implant made of an inert material is fixed on top of the scleral coat of the eye. The different types of shunts are basically composed of a small tube that ends in a plate. The tube is inserted into the anterior chamber while the plate is sutured to the sclera. Aqueous passes from within the eye through the tube into the space under the conjunctiva where it is absorbed. The tube should remain patent throughout life since scarring is not a major issue.

## Risks

The risk of endophthalmitis is the same as filtering procedures. Bleeding is rare. Spikes in eye pressure are even more uncommon.



On the other hand, hypotony due to over-filtration is a common phenomenon in the immediate post-operative period. Eventually the eye stabilizes at target pressures. Damage to the cornea occurs if the tip of the tube hits the internal surface of the cornea. This is avoided by proper placement.

Occasionally, the tube erodes through the conjunctiva necessitating repair or amputation of the tube. In few cases, the implant can incite inflammation and some debris may clog the tube. Attempts to restore patency by clearing the tube are usually successful.

## Post-Operative Care

With the better engineered shunts nowadays, the procedure and post-operative course are not difficult as long as the shunt is well placed. Antibiotic and steroid drops are used for several weeks after surgery. Glaucoma medications are usually no longer needed.

## CYCLOABLATION

When an eye with glaucoma reaches pressures of more than 40 mmHg, the patient will experience heaviness and pain and sometimes even headaches on the same side. In a blind or almost blind eye where pain is bothersome, or, in an eye where pressure is still uncontrolled despite all other forms of treatment and surgery, cycloablation may be the last resort. Cycloablation destroys the ciliary body thereby reducing aqueous production. The destruction of the ciliary body can be done by exposing it to freezing temperature for short periods of time.

...continued in the back page.