

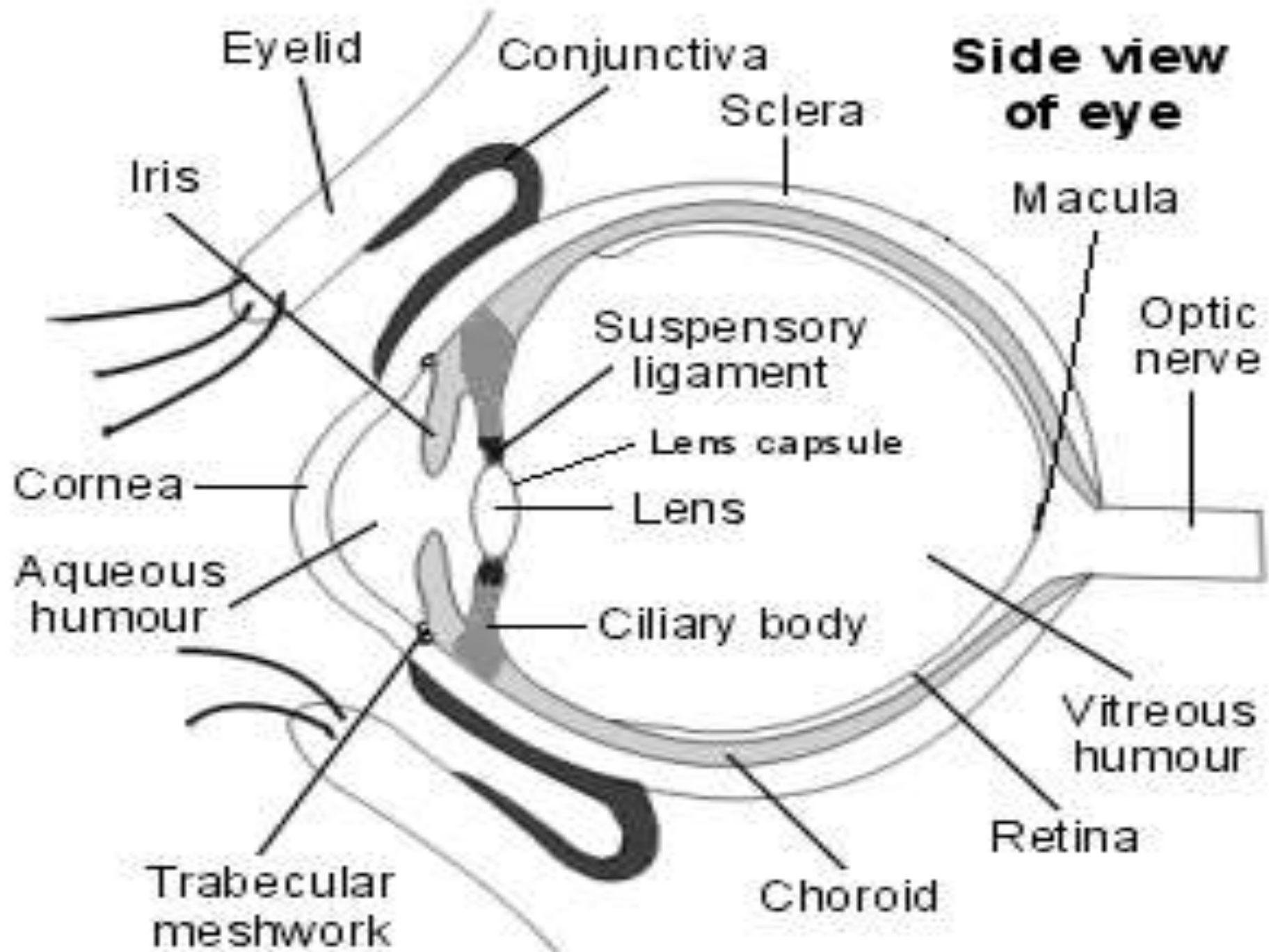
Glaucoma

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Introduction

- ❑ Glaucoma are ocular disorder characterized by changes in the optic nerve head (optic disc) and by loss of visual sensitivity and field.
- ❑ It may be generally defined as those conditions in which the intraocular pressure (IOP) is too high for the normal functioning of the optic nerve head.

Classification of glaucoma

- Primary glaucoma
 - Open angle
 - Angle closure
- Secondary glaucoma
 - Open angle
 - Angle closure
- Congenital glaucoma

ETIOLOGY

▶ The factors that determine the level of IOP are

➤ The rate of aqueous humour production

➤ The resistance encountered in the outflow channels

fine balance between these is necessary to keep the pressure within the eye in the range of 16-21mmHg.

Rate of aqueous humour production

- ▶ Production of aqueous humour occurs in the ciliary epithelium by two mechanisms:

Secretion due to an active metabolic process

Ultrafiltration influenced by the level of blood pressure in the ciliary capillaries

OUT FLOW OF AQUOUS HUMOR

- ▶ 80% through the trabecular meshwork into the canal of schlemm and into the venous circulation via the aqueous veins.
- ▶ 20% through the ciliary body into the suprachoroidal space to be drained into the ciliary body ,choroid sclera via the venous circulation (uveosclera pathway)

PRIMARY OPEN - ANGLE GLAUCOMA

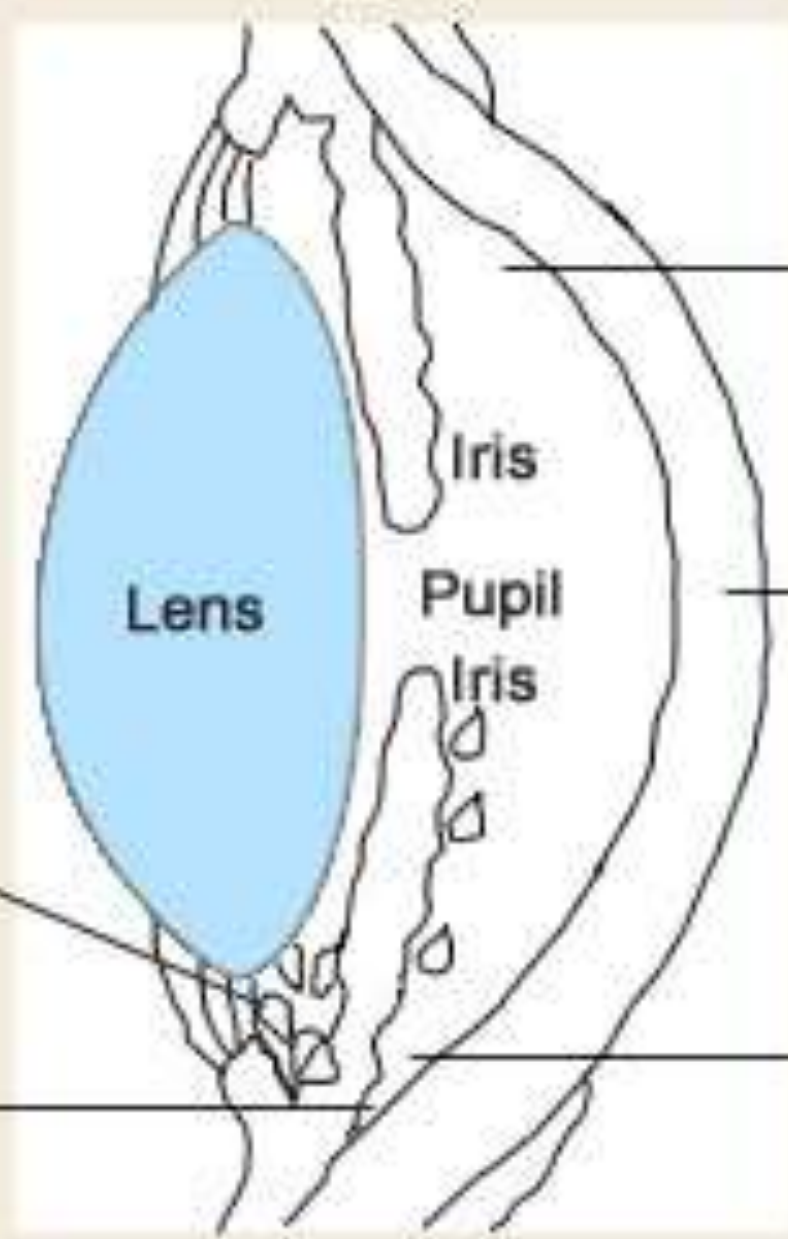
- ▶ Referred to as chronic simple glaucoma
- ▶ Associated with a relative obstruction to aqueous outflow through the trabecular meshwork
- ▶ Is a chronic progressive disease of insidious onset
- ▶ Affecting both the eyes .

PREVELANCE

- ▶ It is most common type of glaucoma and affects approximately 1 in 200 of the population over the age of 40 years.
- ▶ POAG is responsible for about 20% of all cases of blindness in the UK
- ▶ Affects both sexes equally
- ▶ frequently an inherited condition; with approximately 10% of first degree relative of POAG suffers eventually developing the disease.

PATHOPHYSIOLOGY-POAG

- ▶ In POAG increased resistance within the drainage channels causes the rise in IOP
- ▶ Resistance to aqueous outflow lies in the dense juxtacanalicular trabecular meshwork or the endothelium lining wall of schlemm's canal
- ▶ Additional contributing factor include increased susceptibility of the optic nerve to ischemia, reduced or dysregulated blood flow excitotoxicity autoimmune reaction and other abnormal physiological processes.



Anterior Chamber

Iris

Lens

Pupil

Iris

Cornea

Fluid Forms Here

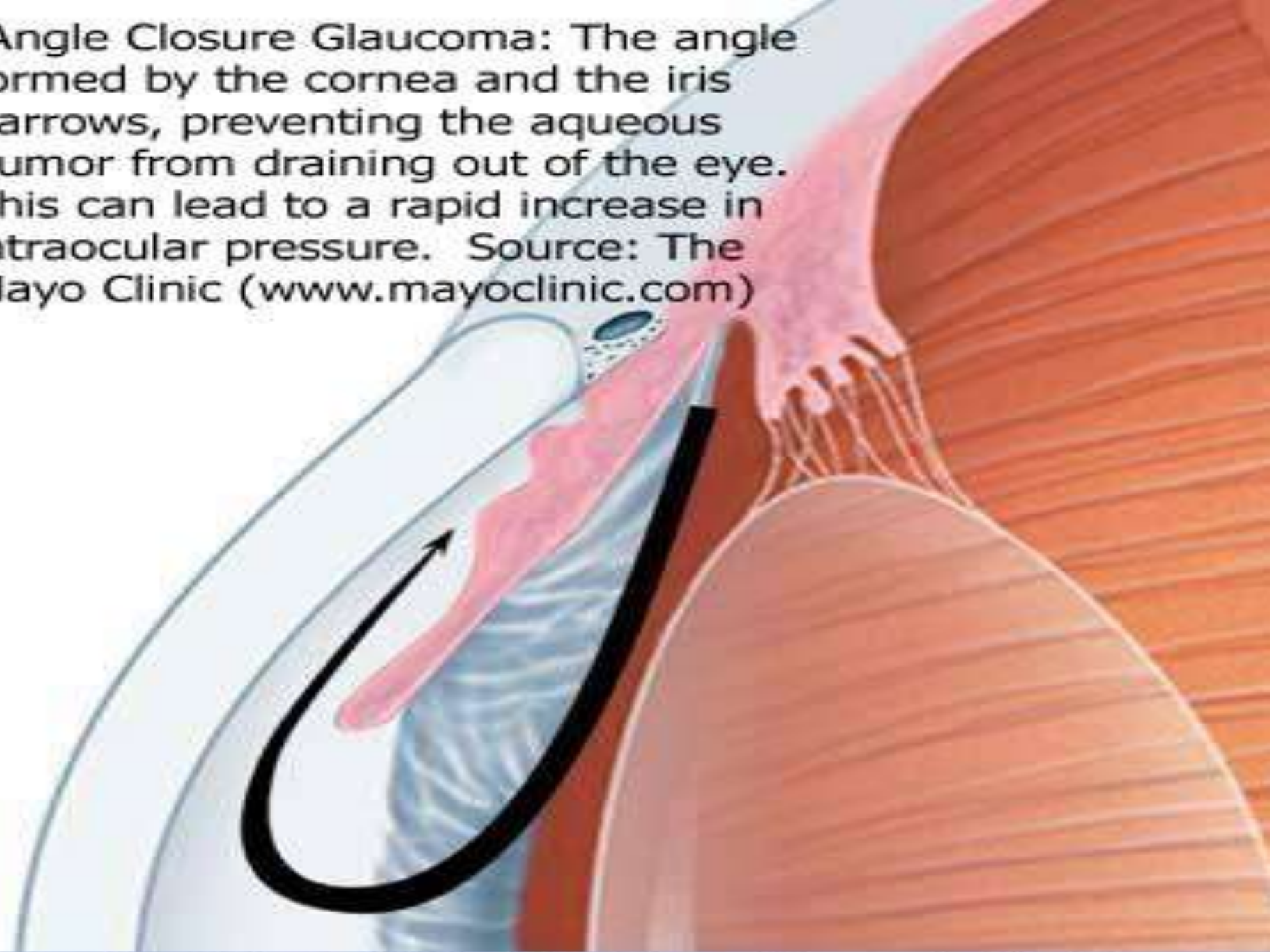
Fluid Exits Here

Angle

PRIMARY ANGLE CLOSURE GLAUCOMA

- ▶ Is a condition in which closure of the angle by peripheral iris results in a reduction in aqueous outflow .
- ▶ The disease affects 1 in 1000 adults over the age of 40 years and occurs in four times as many females as males

Angle Closure Glaucoma: The angle formed by the cornea and the iris narrows, preventing the aqueous humor from draining out of the eye. This can lead to a rapid increase in intraocular pressure. Source: The Mayo Clinic (www.mayoclinic.com)



Pathophysiology-PACG

- ▶ In PACG the rise in IOP is caused by a decreased outflow of aqueous humor, due to closure of the chamber angle by the peripheral iris

SECONDARY OPEN ANGLE GLAUCOMA

- ▶ Decreased outflow of aqueous results from other CAUSES

Pseudoexfoliative glaucoma

Pigmentary glaucoma

Topical Corticosteroids

Phacolytic glaucoma

- ▶ PAEDIATRIC GLAUCOMA CAN BE CONGENITAL OR DEVELOP DURING INFANCY OR LATER CHILDHOOD.

CLINICAL PRESENTATION

- ▶ Open -angle glaucoma is slowly progressive and is usually asymptomatic until the onset of substantial visual field loss.
- ▶ Visual field defects include
 - General peripheral visual field constriction
 - Isolated scotomas or blind spots
 - Nasal step
 - Enlargement of blind spot
 - Arc like scotomas
 - Reduced contrast sensitivity
 - Reduced peripheral acuity
 - Altered colour vision

In closed angle glaucoma, patients typically experience intermittent prodromal symptoms

- ▶ Blurred vision
- ▶ Hazy vision with halos around lights
- ▶ Headache

Acute episodes produce symptoms associated with a cloudy. Edematous cornea
ocular pain nausea vomiting and abdominal pain and diaphoresis

▶ **Diagnosis of Glaucoma**

- ▶ 1. Intraocular pressure (IOP) and its measurement. (tonometry)
- ▶ 2. Optic disc examination.
- ▶ 3 Visual Field examination (perimetry)

TREATMENT OF OCULAR HYPERTENSION AND OPEN ANGLE GLAUCOMA

- ▶ Treatment is indicated for ocular hypertension if the patient has a significant risk factors
- ▶ IOP greater than 25mmHg
- ▶ vertical cup disc ratio greater than 0.5
- ▶ central corneal thickness less than 555 μ m.
- ▶ family history of glaucoma
- ▶ severe myopia, and presence of only one eye.

Treatment is indicated for all patients with elevated IOP and characteristic optic disc changes or visual field defects

B adrenergic blocking agents

▶ Reduces aqueous production by ciliary body

▶ Betaxolol 0.5% 1 drop bid
 0.25% 1 drop bid

▶ Carteolol 1% 1 drop bid

▶ Levobunolol 0.25 , 0.5% 1 drop bid

▶ Metipranolol 0.3% 1 drop bid

▶ Timolol 0.25, 0.5% 1 drop qd or bid

- ▶ Non specific adrenergic agonist
increases aqueous humor outflow

Epinephrine	0.5%	1 drop bid
Dipivefrin	0.1%	1 drop bid

- ▶ Alpha adrenergic agonist
- ▶ Reduces aqueous humor production
- ▶ Increase uveoscleral outflow

Apraclonidine	0.5%	1 drop tid
Brimonidine	0.15%	1 drop bid

▶ Prostaglandin analogues

- ▶ increased aqueous uveoscleral outflow and to a lesser extent , trabecular outflow

Latanoprost 1 drop q h s	0.0005%	1 drop q h s	bimatoprost	0.035
Travoprost	0.004%	1 drop q h s		

▶ Carbonic anhydrase inhibitors

- ▶ reduces aqueous production by ciliary body

Brinzolamide	1%	bid or tid
Dorzolamide	2%	bid or tid

▶ Systemic carbonic anhydrase inhibitor

Acetazolamide day	125 to 250 mg	2 to 4 times a
Dichlorphenamide day	25 to 50 mg	1 to 3 times a
Methazolamide day	25 to 50 mg	2 to 3 times a

- ▶ Cholinergic agonist
- ▶ increased aqueous humor outflow through trabecular
- ▶ Carbachol 0.75, 1.5, 2.25, 3% 1 drop bid or tid
- ▶ pilocarpine 0.25, 0.5, 1, 2, 4, 6, 8, 10% 1 drop bid or qid.

TREATMENT OF CLOSED ANGLE GLAUCOMA

- ▶ Requires rapid reduction of IOP .
- ▶ Iredectomy is the definitive treatment , which produces a hole in the iris that permits aqueous flow to move directly from posterior to anterior chamber
- ▶ Drug therapy of an acute attack typically consist of an osmotic agent and secretory inhibitors (eg. Beta blockers , alpha 2 agonist latanoprost, or CAI)with or without pilocarpine

TREATMENT OF CLOSED ANGLE GLAUCOMA

- ▶ Osmotic agents are used because they rapidly decrease IOP

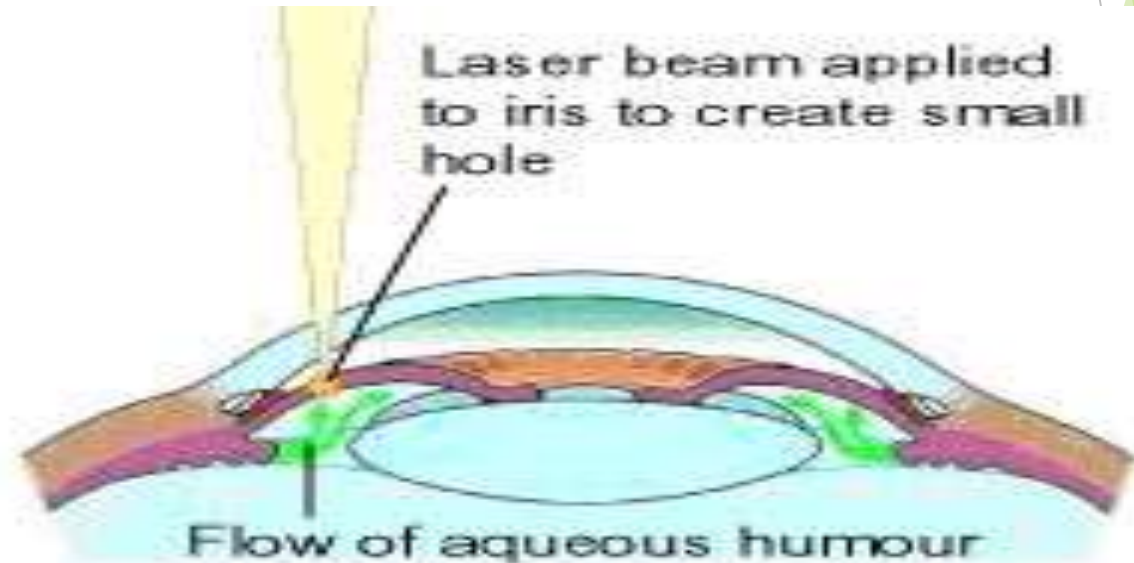
Eg: GLYCERINE 1 to 2 g /kg orally

Mannitol 1 to 2g/kg iv

Topical corticosteroids can be used to reduce ocular inflammation

- ▶ Argon laser trabeculoplasty

- ▶ This treatment involves the application of laser energy (usually argon green) to the trabecular meshwork, thereby improving the rate of outflow of aqueous humour.



Source: International Glaucoma Association
(www.glaucoma-association.com)

▶ Surgical Procedures for Glaucoma

Trabeculectomy (with or without antimetabolites

- Cataracts may progress rapidly after trabeculectomy.

thank you

The image features the words "thank you" in a bold, 3D, sans-serif font. The text is rendered with a vertical color gradient, transitioning from a bright yellow at the top to a deep orange at the bottom. The letters are thick and have a slight shadow, giving them a three-dimensional appearance. The text is positioned on a white background that is tilted slightly to the right. On the right side of the image, there are several overlapping, semi-transparent green geometric shapes, including triangles and polygons, creating a modern, abstract design. The overall composition is clean and professional.