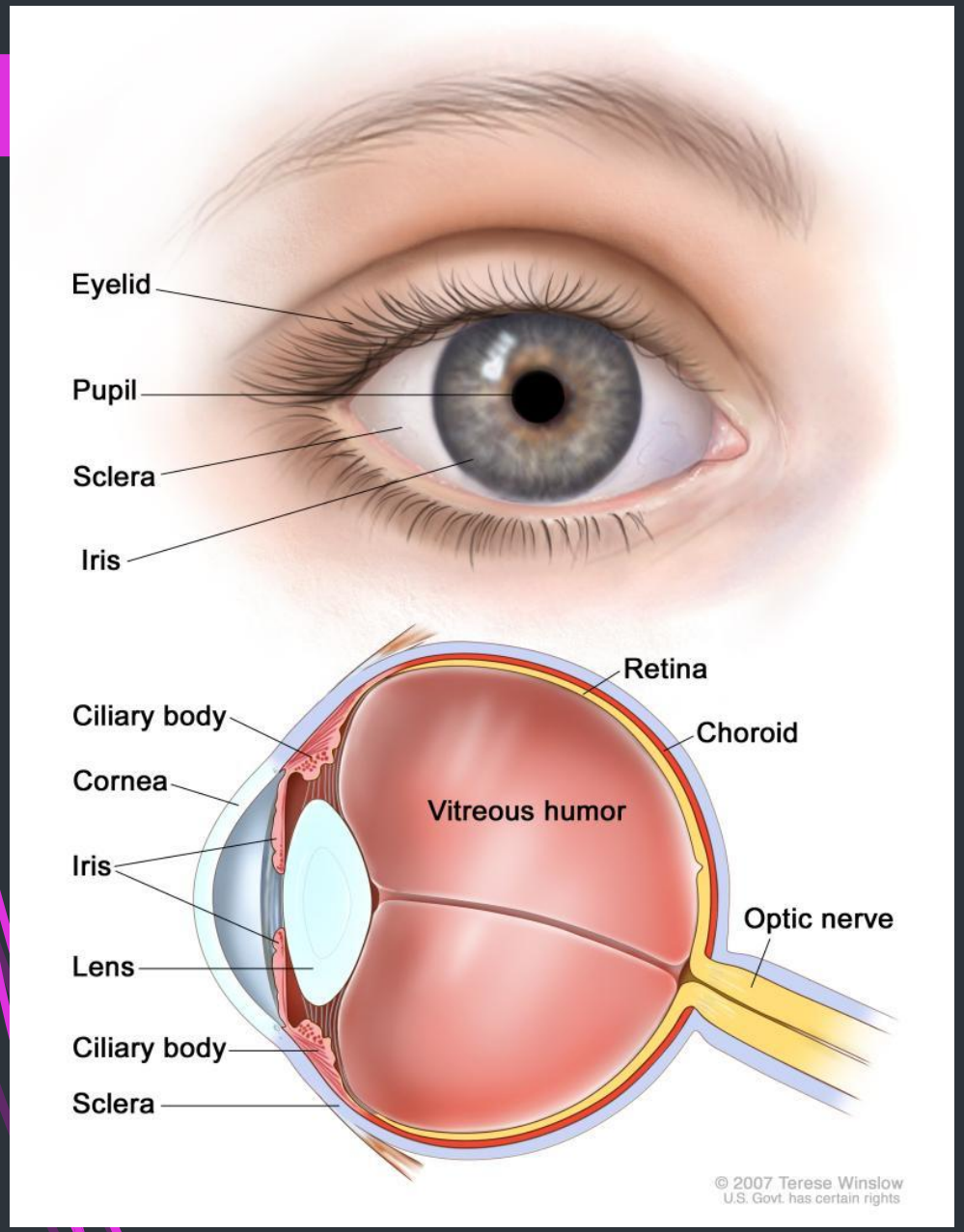
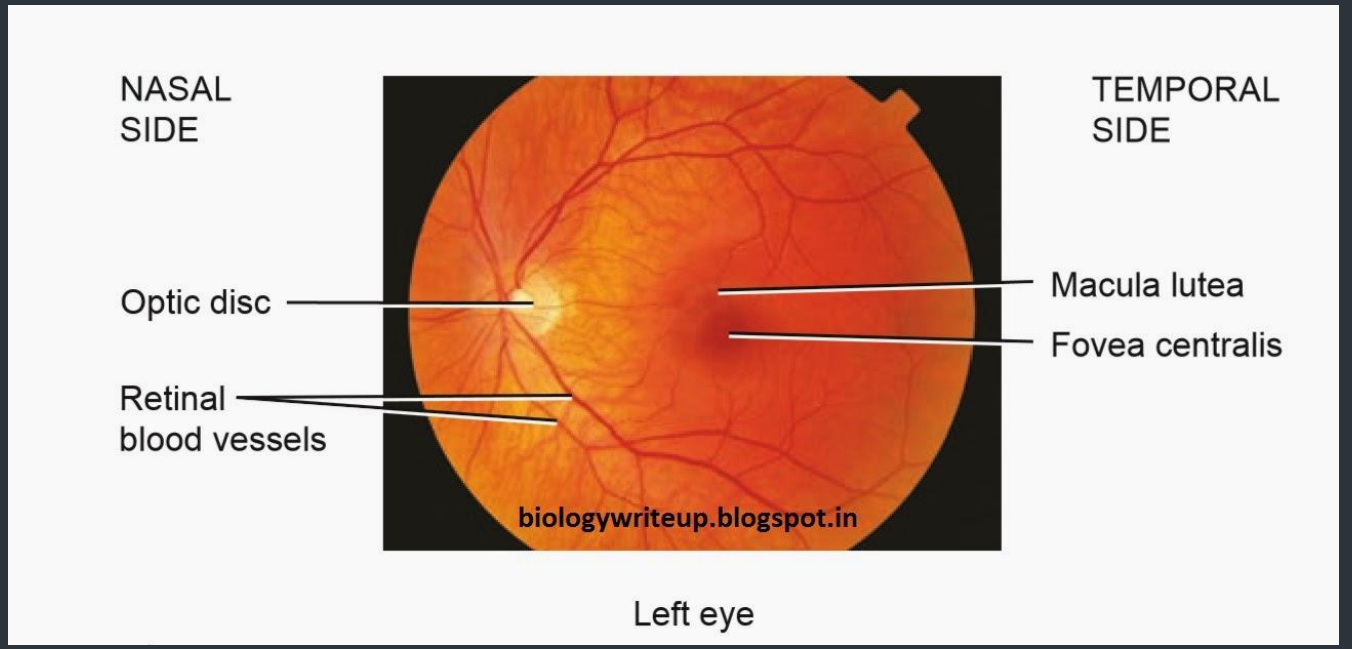
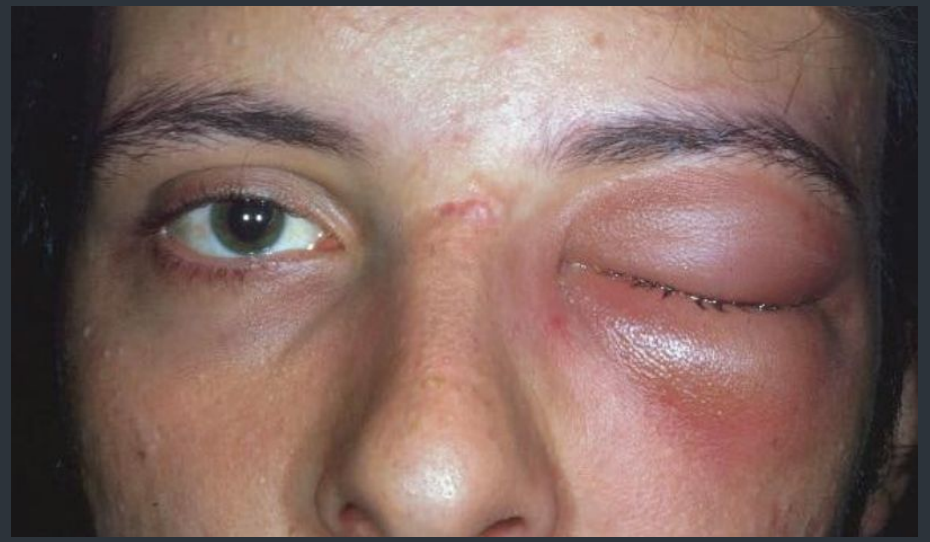
Ophthalmology


Eyelid
Pupil
Sclera
Iris
Retina
Ciliary body
Choroid
Cornea
Vitreous humor
Iris
Optic nerve
Lens
Ciliary body
Sclera
© 2007 Terese Winslow
U.S. Govt. has certain rights

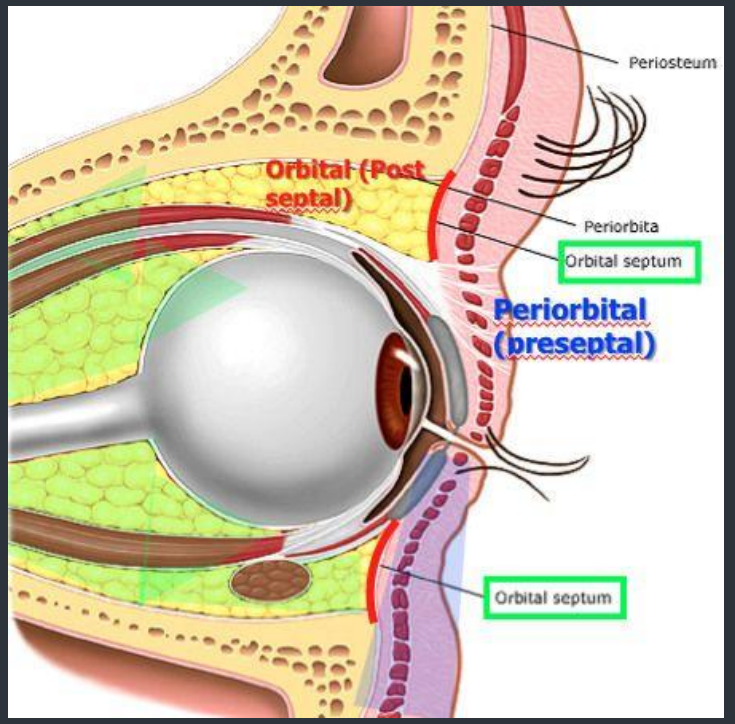

NASAL SIDE
TEMPORAL SIDE
Optic disc
Macula lutea
Fovea centralis
Retinal blood vessels
biologywriteup.blogspot.in
Left eye

Orbital cellulitis



- a systemically unwell patient
- proptosis
- peri-ocular swelling and erythema
- tenderness over the sinuses
- ocular nerve compromise (reduced vision, impaired colour vision or abnormal pupils)
- restricted and painful eye movements

In peri-orbital cellulitis, which usually follows an abrasion, there is no pain or restriction of eye movement



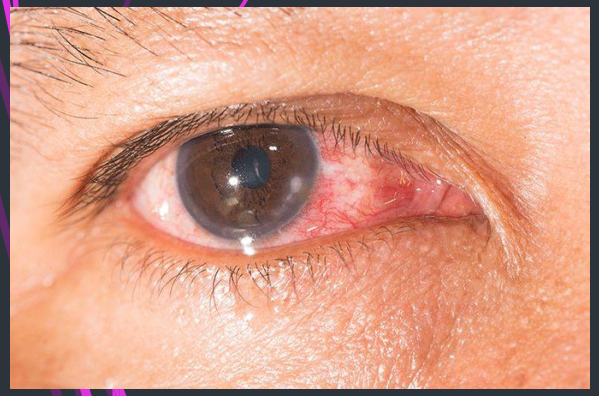
- Treatment is with **IV cefotaxime** until afebrile, then amoxycillin/clavulanate for 7–10 days for peri-orbital cellulitis and for orbital cellulitis, IV cefotaxime + di(flu) cloxacillin together followed by amoxycillin/clavulanate (o) 10 days

Conjunctivitis “Pink eye”

Risk factors: exposure to someone infected, rubbing eyes, contact lenses.

Symptoms:

- Marked, diffuse redness
- Watery, stringy, purulent discharge



Treatment

- Viral
  - Artificial tears, cool compresses, antihistamines
- Bacterial
  - Erythromycin ophthalmic ointment
  - Or Polytrim, Azithromycin, Ciprofloxacin
- Allergic
  - Self-limiting
  - Zyrtec, Claritin

Scleritis and episcleritis

Episcleritis:

- itching
- a red and sore eye
- no discharge
- no watering
- vision normal (usually)
- often sectorial
- usually self-limiting

Scleritis:

- painful
- loss of vision
- urgent referral

Management

- Corticosteroids or
- NSAIDs

Episcleritis
Salmon-pink or red discoloration

Scleritis
Violaceous or purplish discoloration

Corneal abrasion

Causes:

- Trauma
- Contact lens wear/injury
- Infection—microbial keratitis:
  - bacterial (e.g. *Pseudomonas* [contact lens])
- Neurotrophic (e.g. trigeminal nerve defect)
- Immune-related (e.g. rheumatoid arthritis)
- Spontaneous corneal erosion
- Chronic blepharitis
- Overexposure (e.g. eyelid defects)

- Diagnosis is best performed with **a slit lamp** using a cobalt blue filter and **flourescein staining**

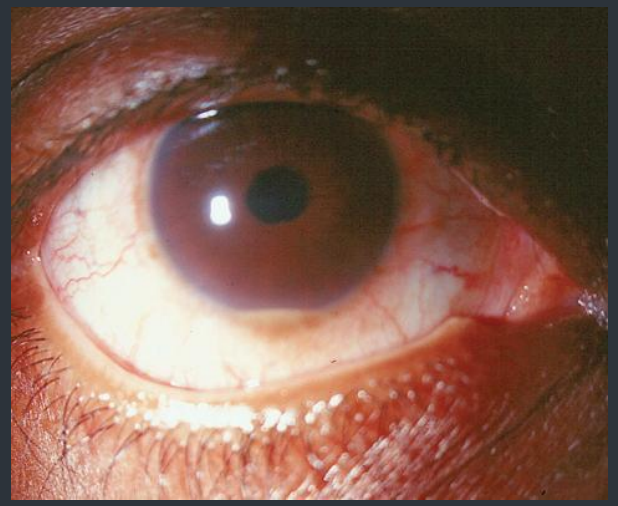
Symptoms:

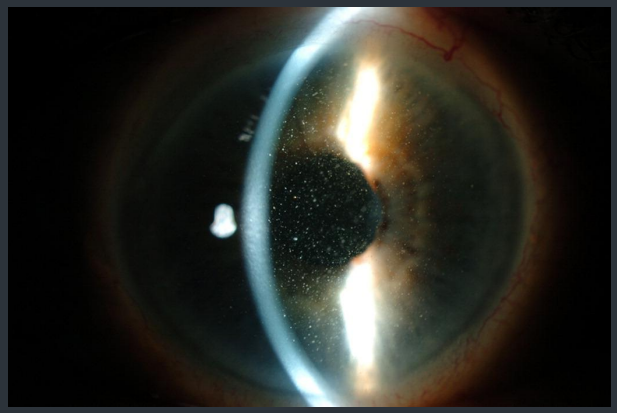
- Ocular pain
- Foreign body sensation
- Watering of the eye (epiphora)
- Blepharospasm
- Blurred vision

Management

- Check for a foreign body
- Treat with chloramphenicol 1% ointment ± homatropine 2% (if pain due to ciliary spasm)
- Double eye pad (if not infected)
- A 6 mm defect heals in 48 hours

Uveitis (iritis)





Clinical feature

- Eye redness, esp. around the edge of the iris
- Eye discomfort or pain
- Increased tearing
- Blurred vision
- Sensitivity to light
- Floaters in the field of vision
- Small pupil

Causes include autoimmune-related diseases such as the *seronegative arthropathies* (e.g. ankylosing spondylitis), *SLE, IBD, sarcoidosis and some infections* (e.g. toxoplasmosis and syphilis)

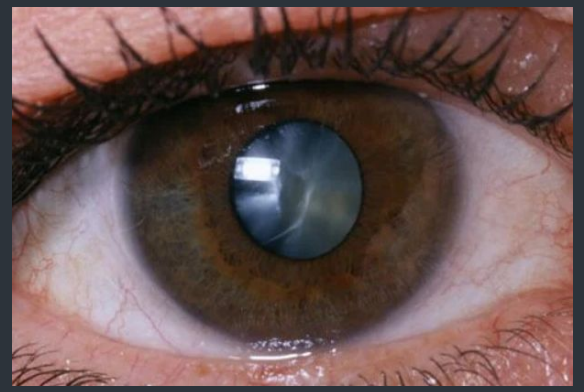
Diagnosis: Slit-lamp examination an increase in the protein content of the aqueous (flare) in the anterior chamber

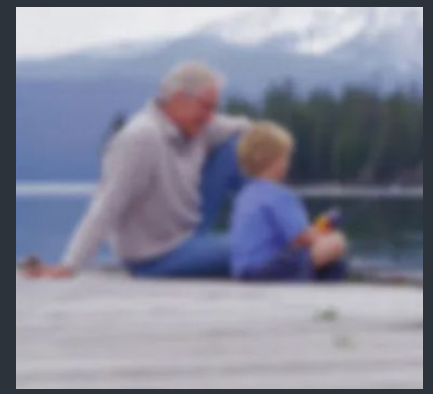
Keratic precipitates it's when WBC display on the back surface of the conea.

Treatment

- pupil dilatation with atropine drops
- topical steroids to suppress inflammation
- systemic corticosteroids

Cataract





- Causes: advancing age, diabetes mellitus, smoking cigarettes, steroids (topical or oral), radiation: long exposure to UV light, TORCH organisms → congenital cataracts, trauma, uveitis, dystrophia myotonica, galactosaemia

Symptoms:

- Blurred vision:
- reading difficulty
- difficulty in recognising faces
- problems with driving, especially at night
- difficulty with television viewing
- reduced ability to see in bright light
- may see haloes around lights

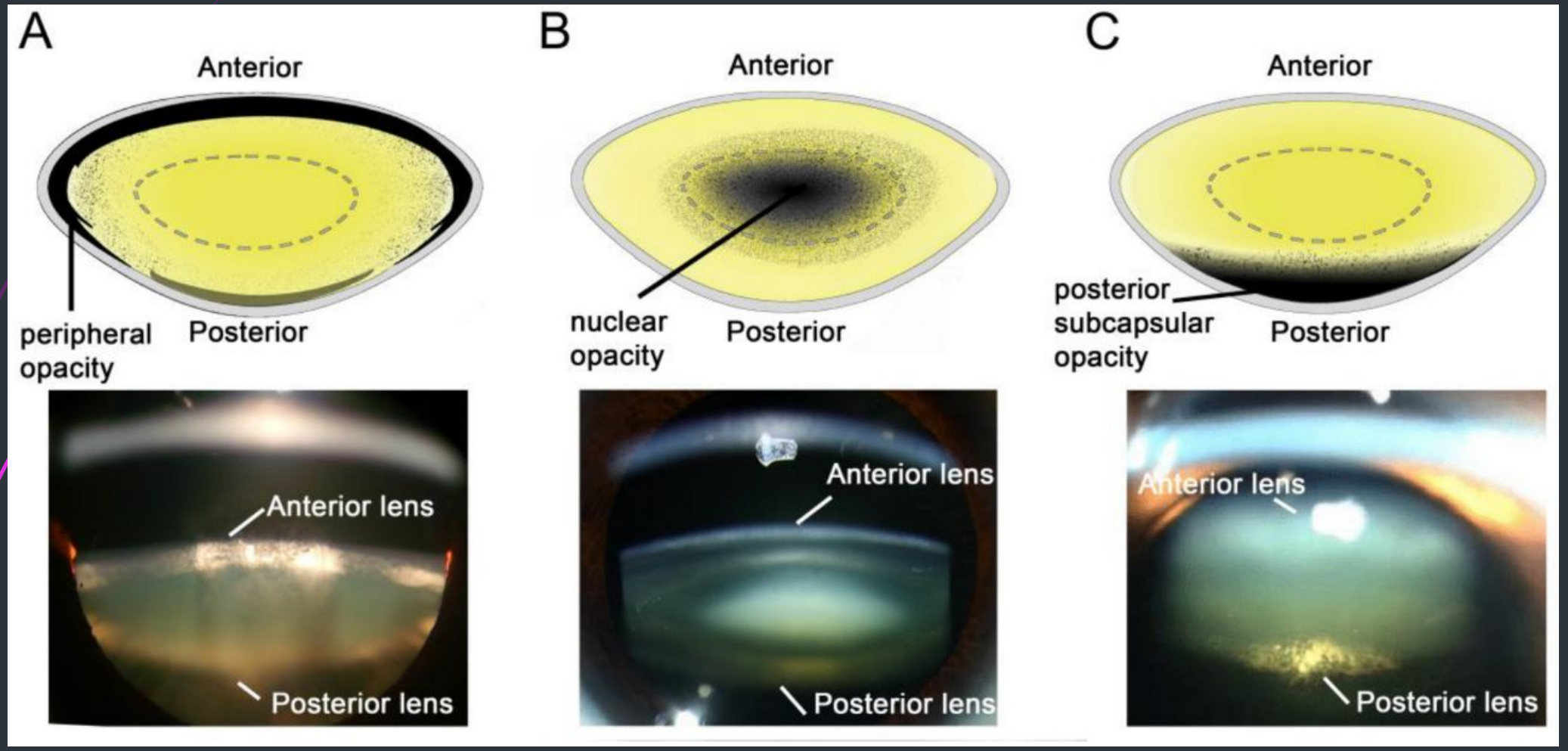
Diagnosis

- Reduced visual acuity (sometimes improved with pinhole)
- Diminished red reflex on ophthalmoscopy
- A change in the appearance of the lens

Management

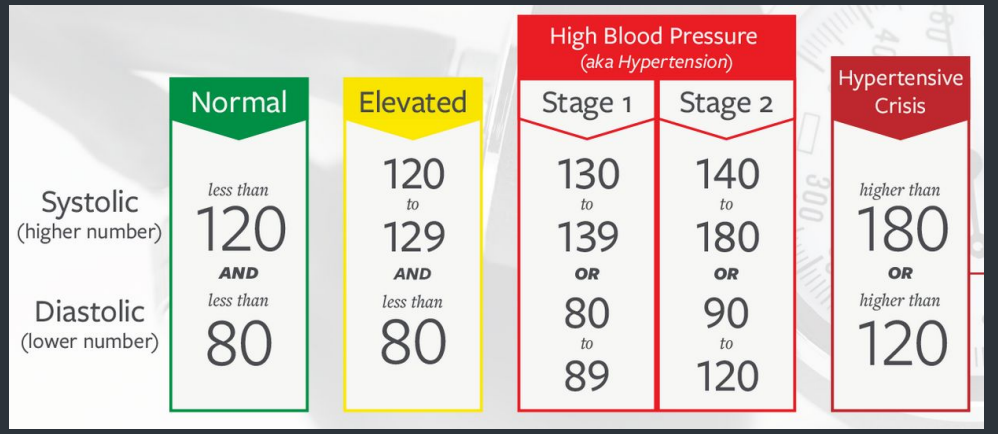
- The removal of the cataractous lens and optical correction to restore vision with an intraocular lens implant

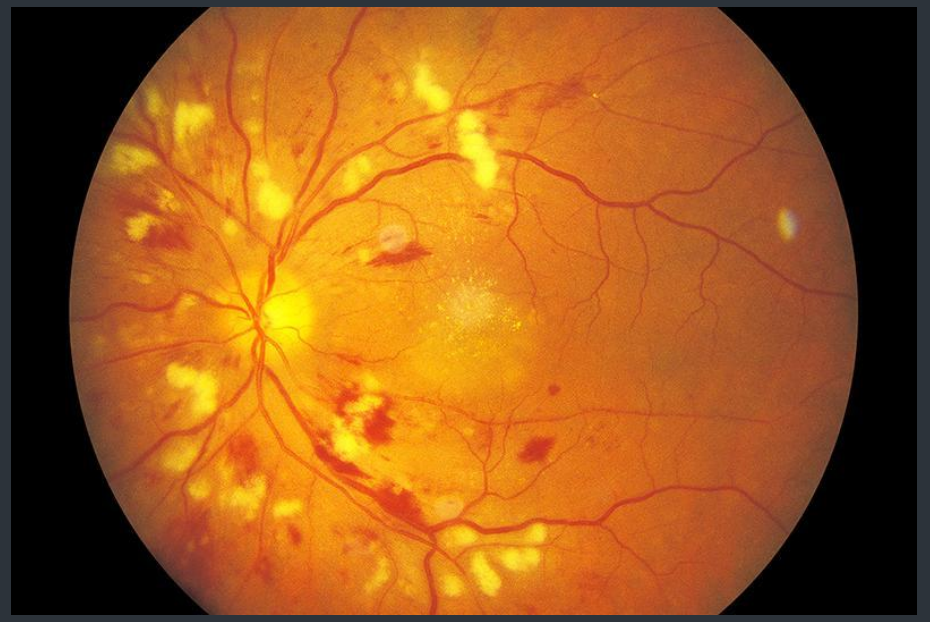
Cataract


A
Anterior
peripheral opacity
Posterior
Anterior lens
Posterior lens
B
Anterior
nuclear opacity
Posterior
Anterior lens
Posterior lens
C
Anterior
posterior subcapsular opacity
Posterior
Anterior lens
Posterior lens

Hypertensive retinopathy

- Risk factors – increasing age, obesity, family history, alcohol, smoking
- Systemic hypertension directly affects the retinal, choroidal and optic nerve vasculature
- Diagnosis: fundoscopic exam or digital retinal photography, findings usually bilateral
- Treatment: blood pressure control





Retinal vessel occlusion

Central retinal artery occlusion

- Sudden loss of vision like a ‘curtain descending’ in one eye
- Vision not improved with 1 mm pinhole
- Usually no light perception

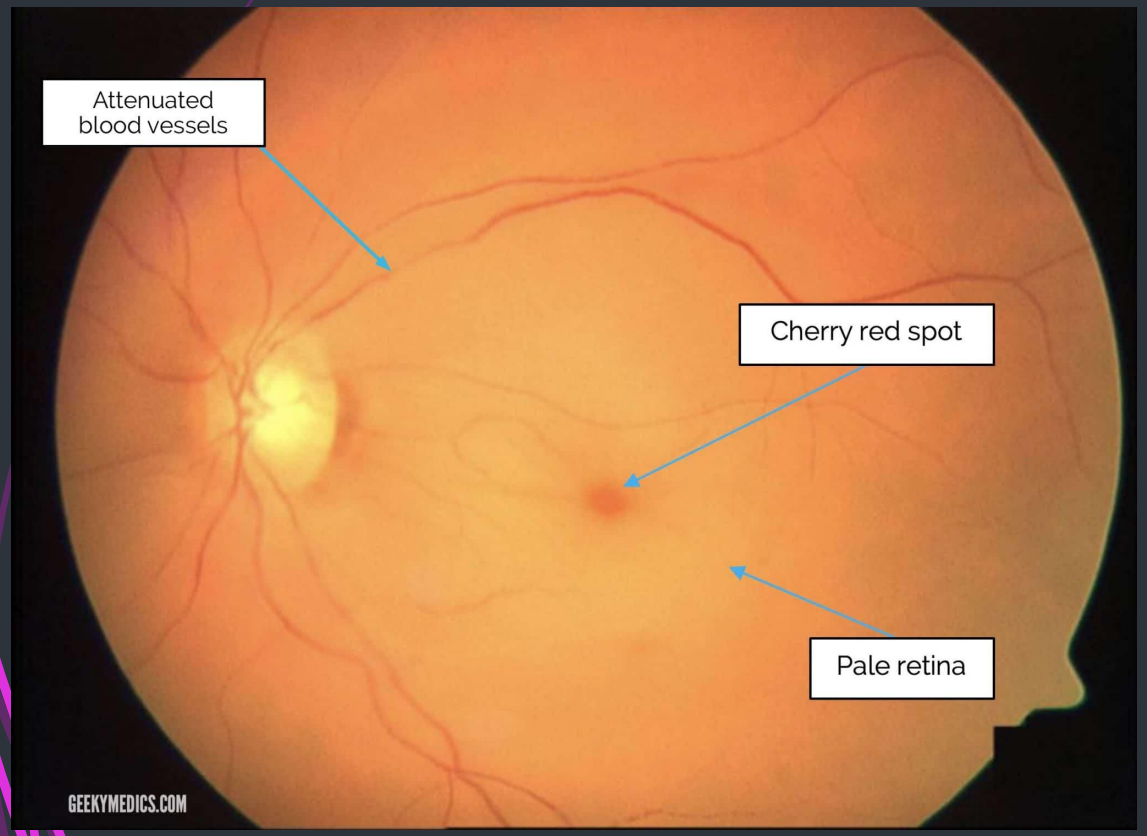
Ophthalmoscopy

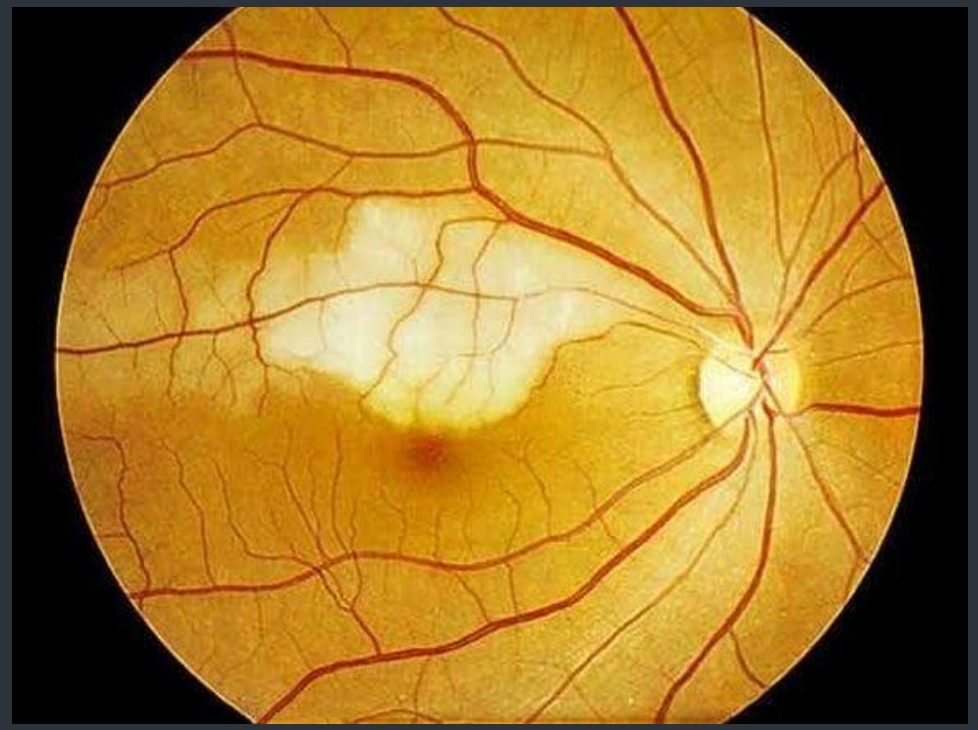
- Initially normal
- May see retinal emboli
- Classic ‘red cherry spot’ at macula

Management

- massage globe digitally through closed eyelids (use rhythmic direct digital pressure)—may dislodge embolus
- rebreathe carbon dioxide (paper bag) or inhale special CO_2 mixture (carbogen)
- intravenous acetazolamide (Diamox) 500 mg
- refer urgently (less than 6 hours)—exclude temporal arteritis

CRAO and BRAO





Retinal vessel occlusion

Central retinal vein thrombosis

- Sudden loss of central vision in one eye (if macula involved): can be gradual over days
- Vision not improved with 1 mm pinhole

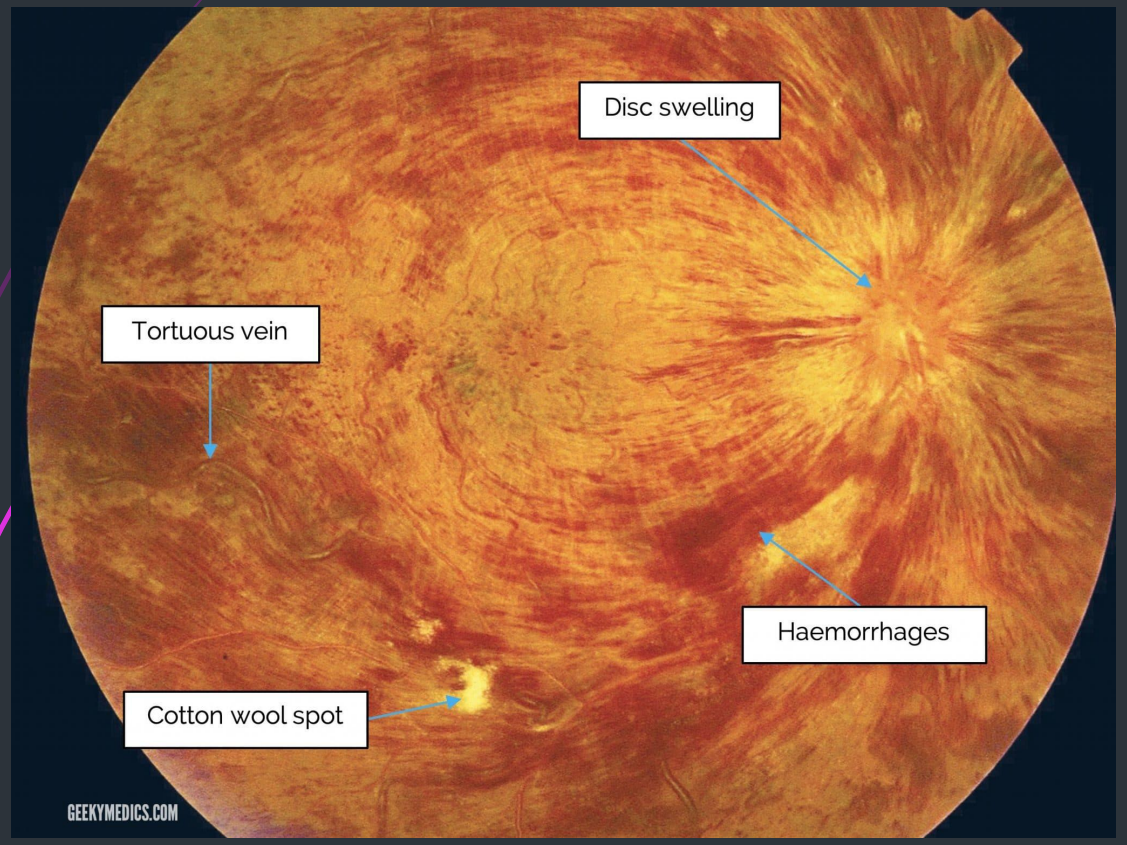
Ophthalmoscopy shows swollen disc and multiple retinal haemorrhages, ‘stormy sunset’ appearance.

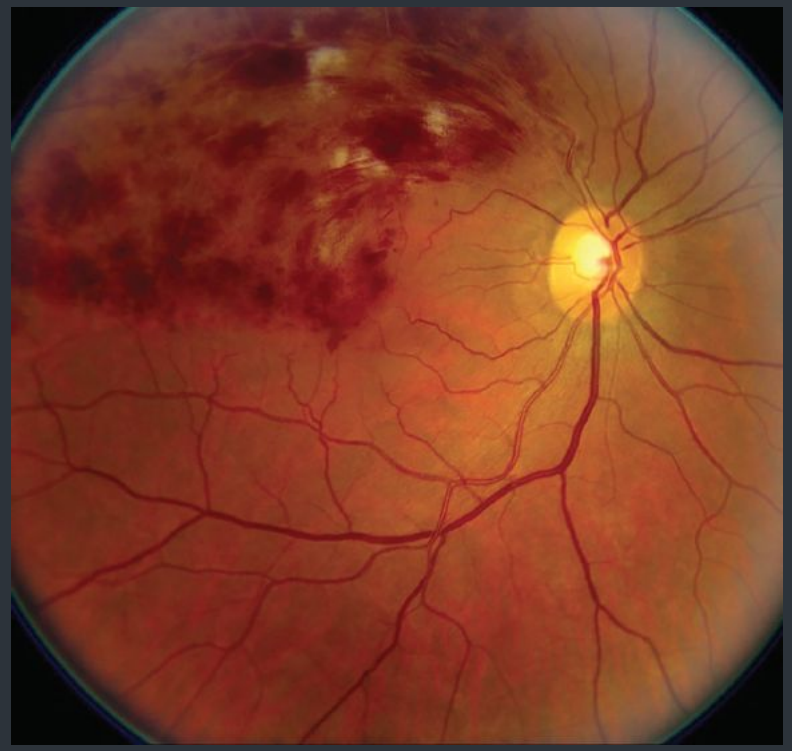
Management

No immediate treatment is effective.

- fibrinolysin treatment
- Laser photocoagulation may be necessary in later stages

CRVO and BRVO





Glaucoma

Normal IOP 10-21mmHG

Open-angle glaucoma

- Gradual increases resistance through the trabecular meshwork
- Risk factors: advancing age, family history, black ethnic origin, myopia
- Symptoms: asymptomatic, loss of peripheral vision, fluctuating pain, blurred vision, halos surrounding lights (worse at night)

Closed-angle glaucoma

- The iris bulges forward and seals off the trabecular meshwork from the anterior chamber
- Risk factors: increasing age, female, family history, Chinese/east Asian ethnic origin, shallow anterior chamber, medications (Noradrenalin, oxybutynin, amitriptyline)
- Symptoms: severe painful red eye, blurred vision, patient >50 years, hazy cornea, fixed semidilated pupil, eye feels hard, halos around lights, associated headache, nausea and vomiting

Glaucoma

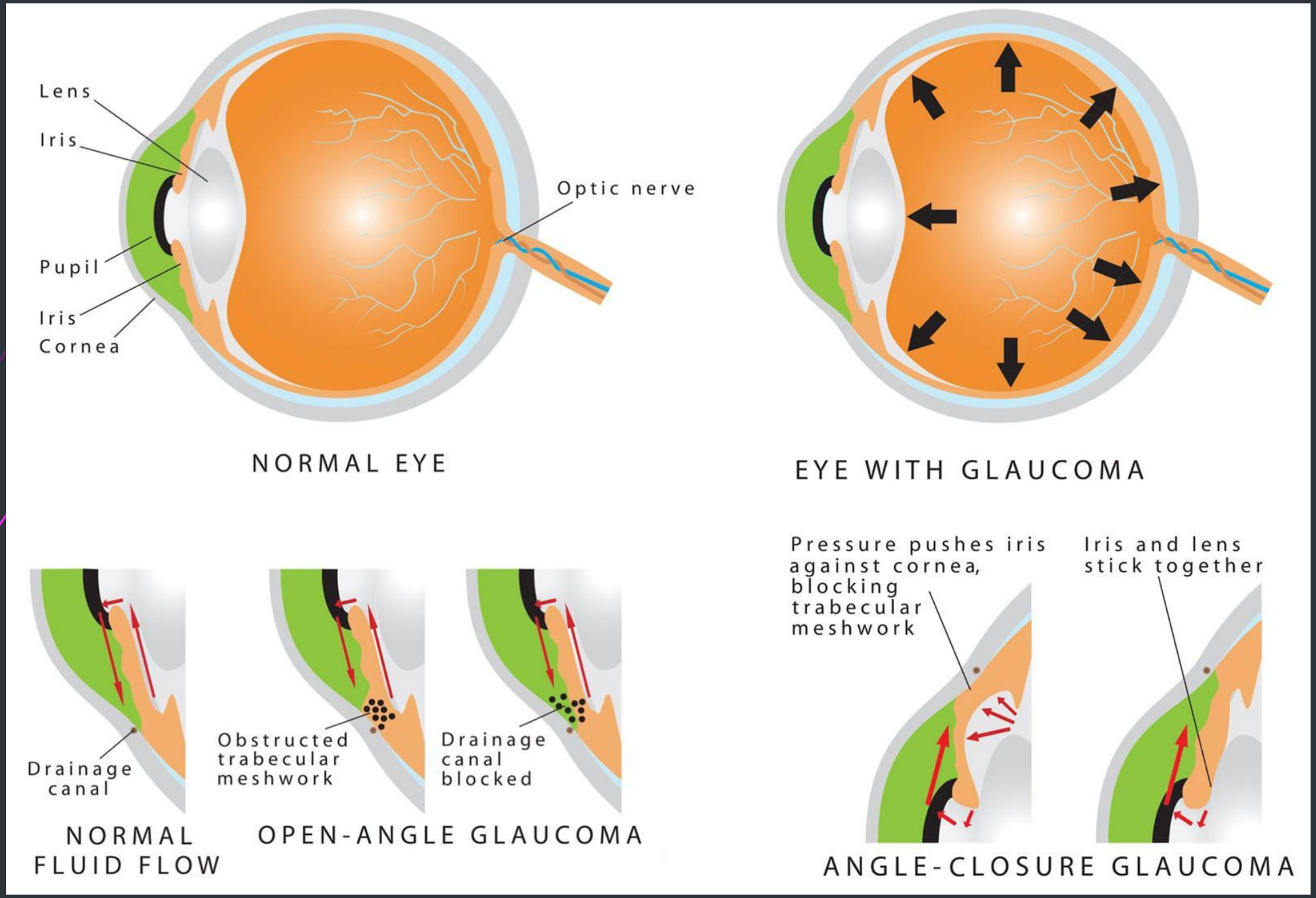
Open-angle glaucoma

Management

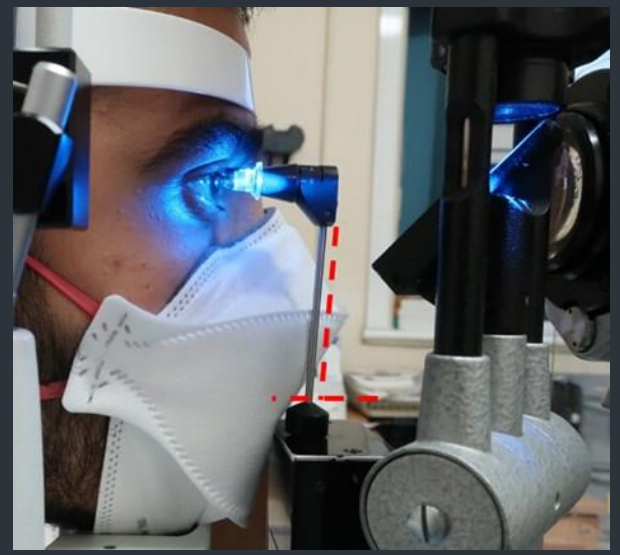
- **timolol or betaxolol** (beta blockers)
- **latanoprost** (or other prostaglandin analogue) drops, once daily
- pilocarpine drops
- dipivefrine drops
- brimonidine drops
- acetazolamide (oral diuretics)
- Surgery or laser therapy for failed medication

Closed-angle glaucoma

- Urgent ophthalmic referral
- Initial management: acetazolamide (Diamox) 500 mg IV and pilocarpine 4% drops to constrict the pupil or pressure-lowering drops
- Surgery: laser iridotomy

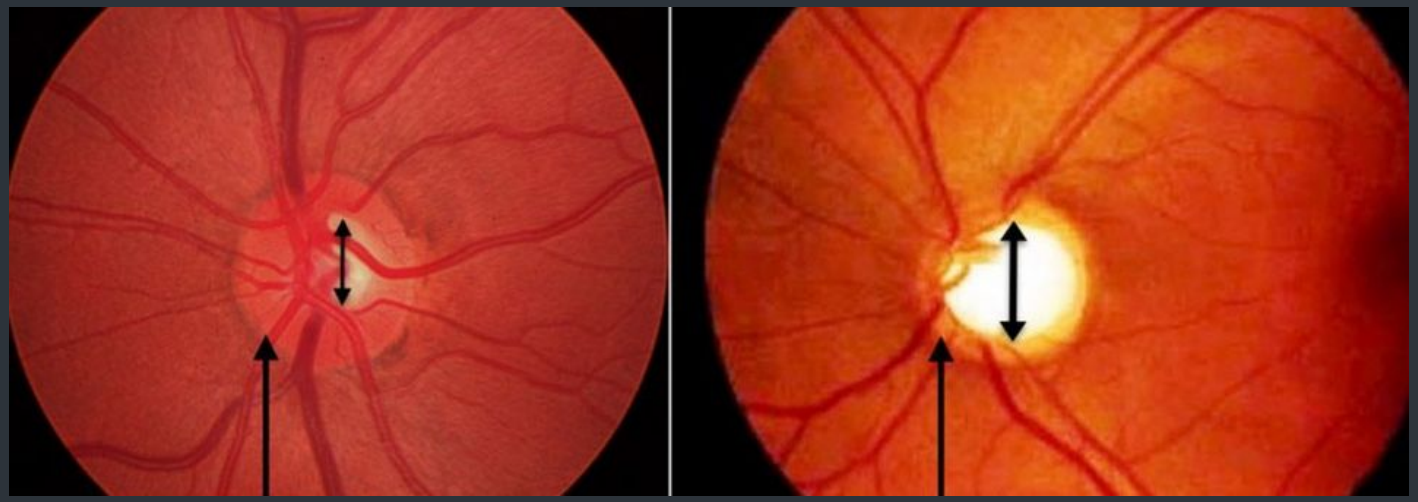

Lens
Iris
Optic nerve
Pupil
Iris
Cornea
NORMAL EYE
EYE WITH GLAUCOMA
Drainage canal
Obstructed trabecular meshwork
Drainage canal blocked
NORMAL FLUID FLOW
OPEN-ANGLE GLAUCOMA
Pressure pushes iris against cornea, blocking trabecular meshwork
Iris and lens stick together
ANGLE-CLOSURE GLAUCOMA

Glaucoma



Investigations

- Tonometry (Goldmann applanation tonometry)
  - Upper limit of normal is 22 mmHg
- Ophthalmoscopy
  - Optic disc cupping >30% of total disc area
- Visual fields
  - peripheral visual loss



Keratitis

- *Keratitis* is inflammation of the cornea
- pain, impaired eyesight, photophobia (light sensitivity), red eye and a 'gritty' sensation
- Causes: viral (HSV, Herpes zoster keratitis), bacterial (staph), fungal, amoebic (Acanthamoebic keratitis), parasitic (Onchocercal keratitis,)

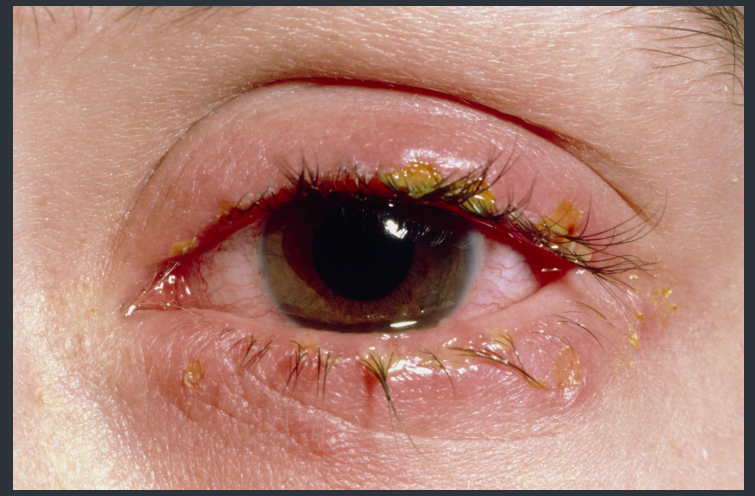
- Treatment
- depends on the cause of the keratitis
- antibacterial, antifungal, or antiviral therapyantibacterial, antifungal, or antiviral therapy

Blepharitis

Associated with secondary ocular effects such as styes, chalazia and conjunctival or corneal ulceration

The two types are:

- Anterior - around the skin, eyelashes, and lash follicles
- Posterior blepharitis involves the meibomian gland orifices, meibomian glands, tarsal plate, and blepharo-conjunctival junction
- anterior blepharitis—staphylococcal
- posterior blepharitis—seborrhoeic and rosacea



Clinical features

- Persistent sore eyes or eyelids
- Irritation, grittiness, burning, dryness and ‘something in the eye’ sensation
- Lid or conjunctival swelling and redness
- Crusts or scales around the base of the eyelids
- Discharge or stickiness, especially in morning
- Inflammation and crusting of the lid margins

Blepharitis

Management

Anterior blepharitis

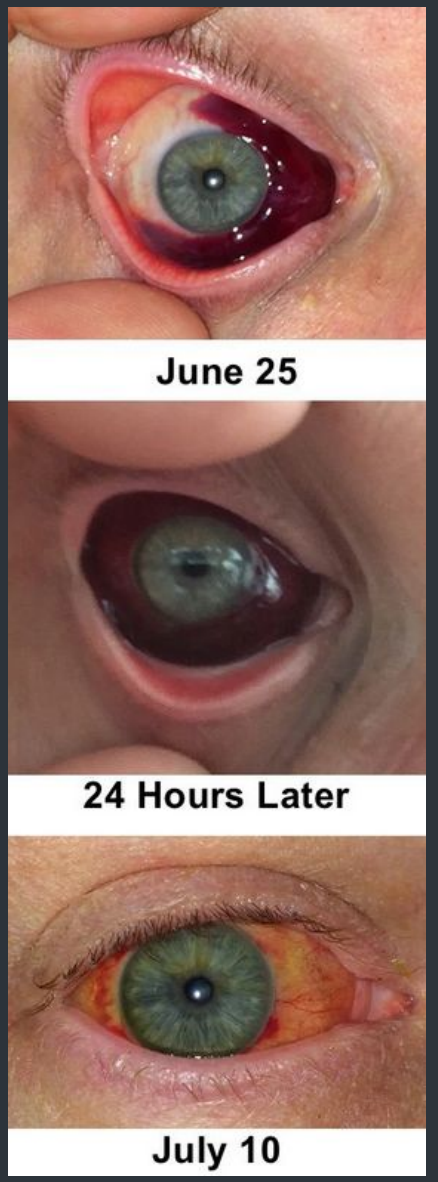
- A systematic and long-term commitment to a program of eyelid margin hygiene
- Or apply chloromycetin 1% ointment once or twice daily for 4 weeks and review

Posterior blepharitis

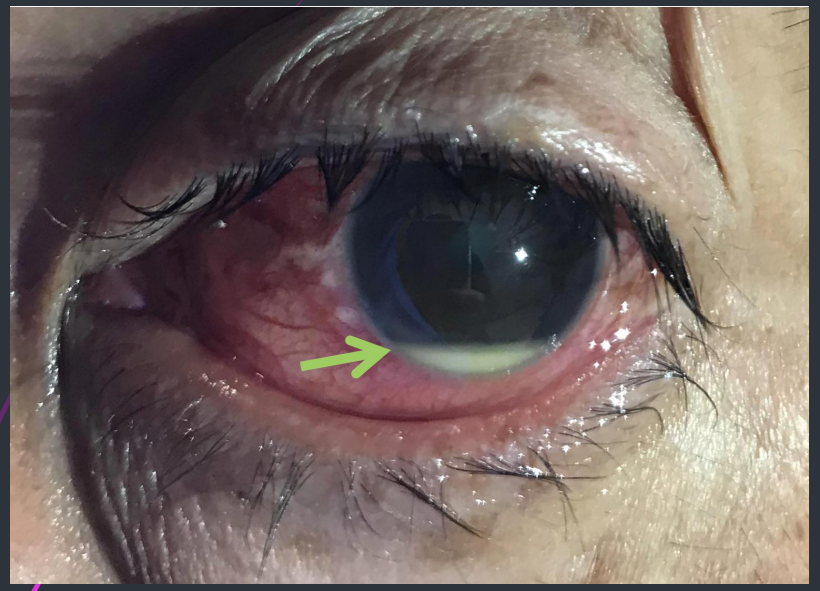
- Eyelid hygiene
- Ocular lubricants
- short-term use of a mild topical corticosteroid ointment
- antibiotic ointment tetracycline hydrochloride 1% or framycetin 0.5% or chloramphenicol 1% ointment to lid margins 3–6-hourly
- systemic antibiotics: doxycycline 50 mg daily for at least 8 weeks (erythromycin for children
- <8 years), or flucloxacillin may be required for lid abscess.

Subconjunctival hemorrhage

- A beefy red localised haemorrhage with a definite posterior margin, it is pain free.
- Usually causes by sudden increase in intrathoracic pressure such as coughing and sneezing
- No local therapy is necessary. The haemorrhage absorbs over 2 weeks.



Hypopyon and hyphema



inflammatory cells in the anterior chamber of the eye.
The most common cause of hypopyon is endophthalmitis.

Blood within the aqueous fluid of the anterior chamber.
The most common cause of hyphema is trauma