Ophthalmology mini-osce 2017

By your colleagues:
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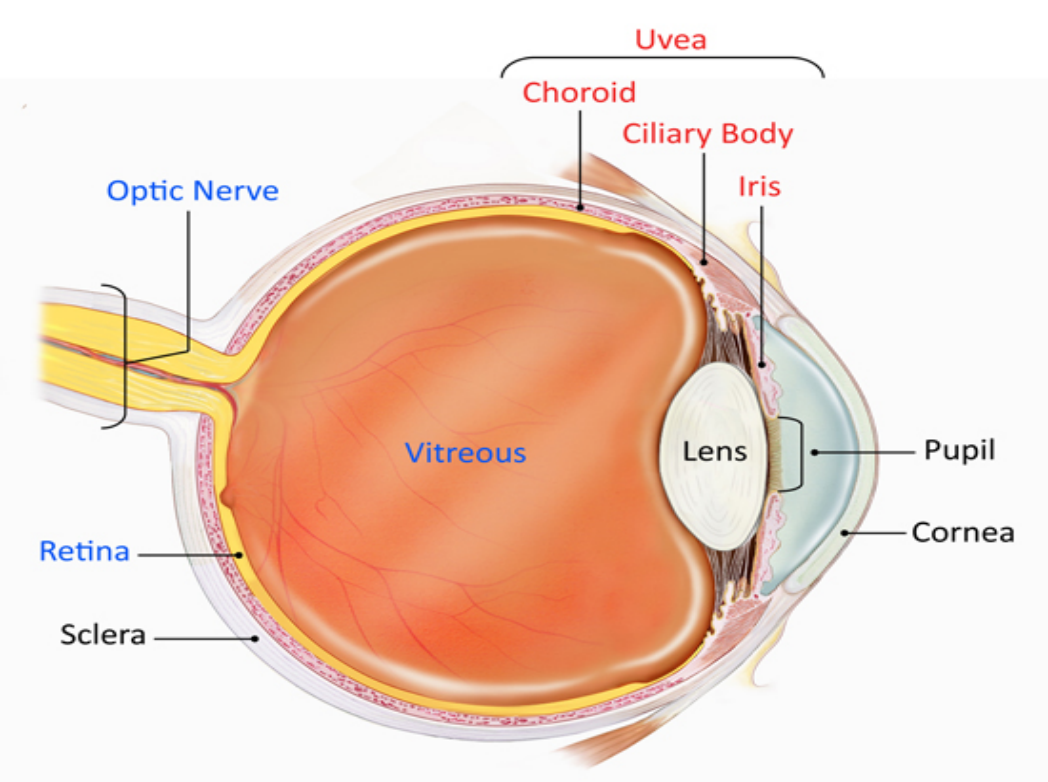
دكتور 2013


Uvea
Choroid
Ciliary Body
Iris
Optic Nerve
Vitreous
Lens
Pupil
Cornea
Retina
Sclera

Conjunctiva, cornea & sclera

By: Ghaida

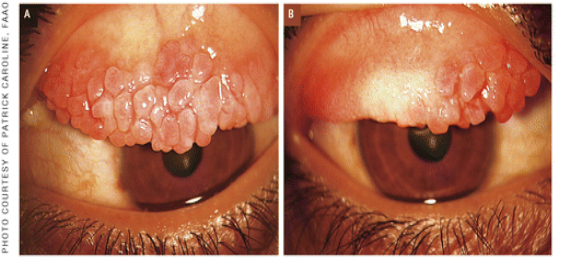
Important signs in conjuctival diseases

1-conjuctival injection:

Dilation of the conjuctival vasculture.

2-papillae: raised lesions in the upper tarsal conjunctiva, they are non-specific sign of chronic inflammation.

Giant papillae are typical of allergic eye disease , and they may result as a result of contact lens wear.



2- follicles:

Found usually in the lower tarsal conjunctiva and upper tarsal border and occasionally at the limbus.

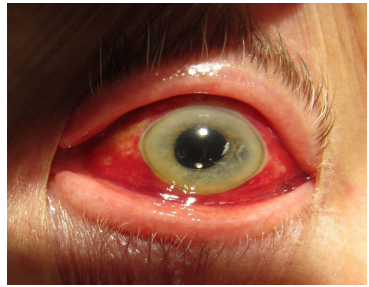
-each follicle represents a lymphoid collection

-it's a ***specific*** sign for viral and chlamydial infections

3- **subconjuctival hemorrhage:**

Bright red in colour because it's fully oxygenated through the ambient air through the conjunctiva.

Ddx: high blood pressure, **<u>trauma to the eye most common cause</u>**, or a base of skull fracture if you can't see the posterior border, warfarin or aspirin side effect.



Conjuctival diseases

1- Inflammmatory diseases

1- bacterial conjunctivitis:

***Symptoms:**

Redness (conjunctival injection).

Purulunt discharge.

Ocular ***irritation*** (NOT PAIN).

***causative organism:**

Staphylococcus, streptococcus, Pneumococcus and haemophilus.

***Tx**: (usually it's self limiting):

-topical Broad spectrum antibiotic eye drop (chloramphenicol)

- Conjunctival swabs for culture is indicated In severe cases or if there is no resolution.

2-viral conjunctivitis:

Characterized by:

-Redness (conjunctival injection).

-Ocular irritation (NOT PAIN).

-**watery** discharge

-Conjuctival follicles(follicular conjunctivitis).

-preauricular lymph nodes.

-Lid edema and excessive lacrimation.

-can cause corneal ulceration.

***causative agents:**

Adenovirus,it's self limiting 4-7 days and highl

Contagious.

***Tx:**

Self limiting, Avoid contact with others, wash your hands, If you wear contact lenses, you should throw away contacts worn while you have the

3- chlamydial infections:

Caused by the intracellular organism **chlamydia trachomatis**. 2 forms:

3-1: inclusion keratoconjuctivitis:

STD, it may take chronic course, mucopurulent follicular conjunctivitis, micropannus,supepithelial scarring, associated with urethritis and cervicitis.

Tx: topical and systemic tetracyclin and refer the pt to the STD clinic.

3-2 trachoma:

The commonest infective cause of blindness in the world.

The house fly acts as a vector.

Encouraged by: poor hygiene, overcrowding in dry,hot climate.

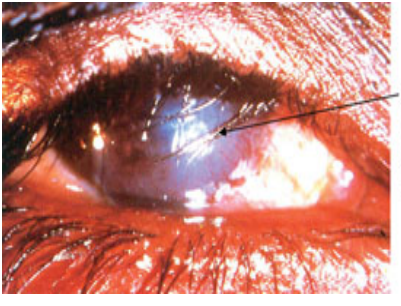
hallmark of the disease is Subconjunctival fibrosis caused by frequent reinfection

Blindness is due to corneal scarring from recurrent keratitis and trichiasis.

Tx: oral and topical tetracyclin or erythromycin or single oral dose azithromycin

Entropion and trichiasis requires surgery

Subconjunctival scarring in trachomas



Entropion

typical micro pannus of trachoma

16. Trachoma

FOLLICLES (TF): INTENSE INFLAMMATION (TI): CONJUNCTIVAL SCARRING (TS): TRICHIASIS (TT)

1 FOLLICLES OF TRACHOMA (TF)
2 INTENSE INFLAMMATION OF TRACHOMA
3 CONJUNCTIVAL SCARRING OF TRACHOMA (TS)
4 TRICHIASIS OF TRACHOMA (TT)

4-Allergic conjunctivitis:

Acute: itchiness, chemosis, lacrimation

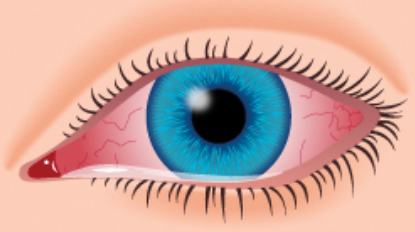
vernal conjunctivitis: itchiness, photophopia, lacrimation, papillary conjunctivitis may form giant cobblestones , limbal follicles and white spots, punctate lesions on the cornea,

***Tx:**

Initially: Mast cell stabilizers or antihistamines,

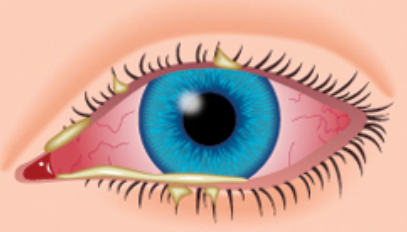
In severe cases: Topical steroids (avoid long uses)

Giant cobblestone papillae in vernal conjuctivitis



Viral conjunctivitis

The type of conjunctivitis most commonly associated with the term "pink eye." Appearance: red, itchy, watery eye. Can affect one or both eyes. Highly contagious.



Bacterial conjunctivitis

A red eye with a sticky yellow or yellow/green discharge. Eyelids may be stuck together upon waking. Can affect one or both eyes. Usually spread by direct contact only.

Allergic conjunctivitis

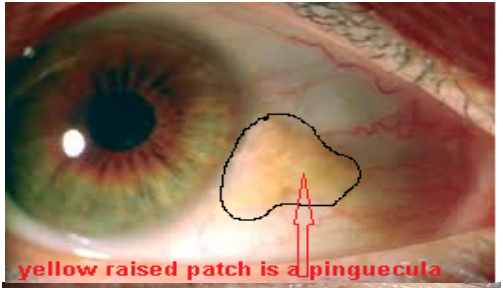
Very similar in appearance to viral conjunctivitis, but accompanied by nasal congestion, sneezing, eyelid swelling and sensitivity to light. Both eyes are affected. Not contagious.

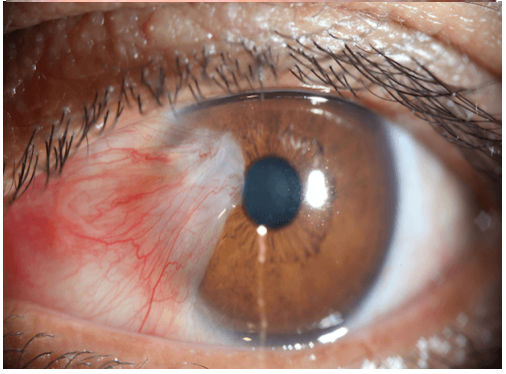
Normal eye

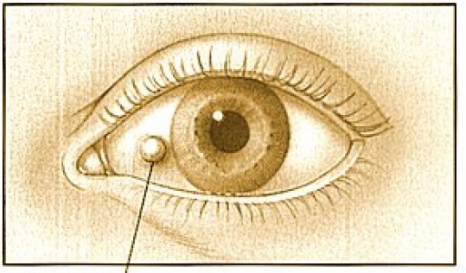
In a healthy eye, the sclera is essentially white with only a few small blood vessels visible. There is an adequate tear film, with no significant discharge or watering.

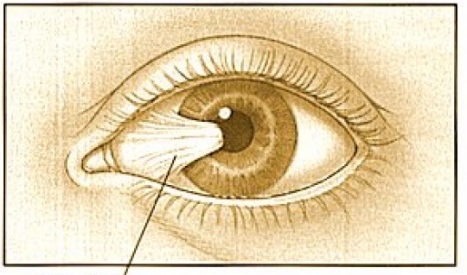
2-conjuctival degeneration

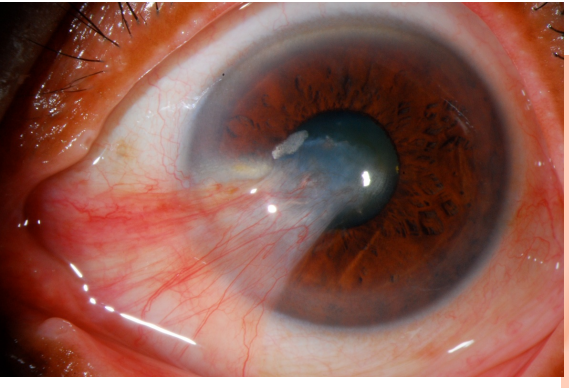
Pterygia and pinguecula

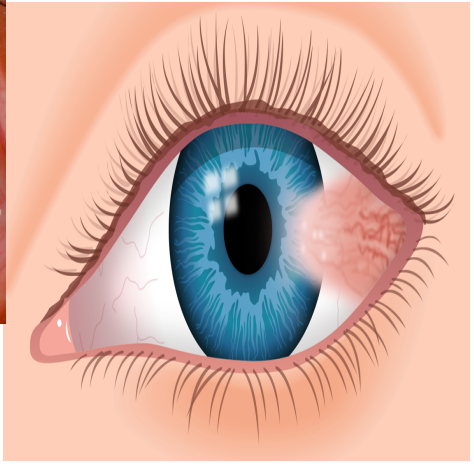












Pterygia

Pterygia and pingueculae are forms of corneal degeneration found on the interpalpebral bulbar conjunctiva.

Result from the excessive exposure to the reflected or the direct ultraviolet component of the sunlight.

Pingueculae :are small, elevated yellowish paralimbal lesion and never impinge on the cornea, may cause discomfort.

Tx: Artificial tears for discomfort and for cosmetic reason, surgical excision

Pterygia: are wing-shaped lesions, they may extend into the cornea and cause irritation, FB sensation , itchy eyes , tearing and may encroach onto the visual axis if extensive.

***Tx**: they can be excised but may recur.

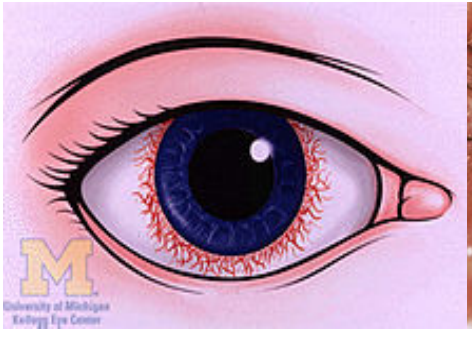
Important signs of corneal diseases

1- **ciliary flush (injection).**

Redness is localized to the limbus.

3 important Differential diagnosis:

- Keratitis – uveitis - acute glaucoma



2- corneal edema (epithelial or sromal):

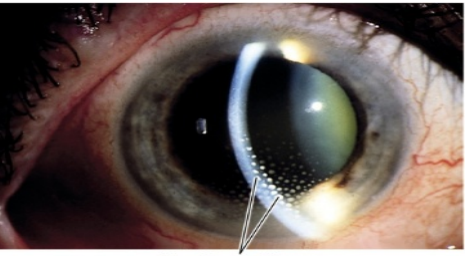
It causes clouding of the cornea.

Diffuse corneal edema

3- keratic precipitates KPs:

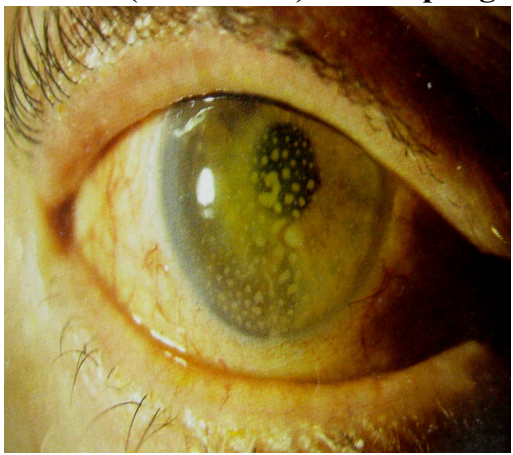
Deposits of cells on the corneal endothelium.

-Fine KPs: neutrophils, lymphocytes.



Keratic precipitates

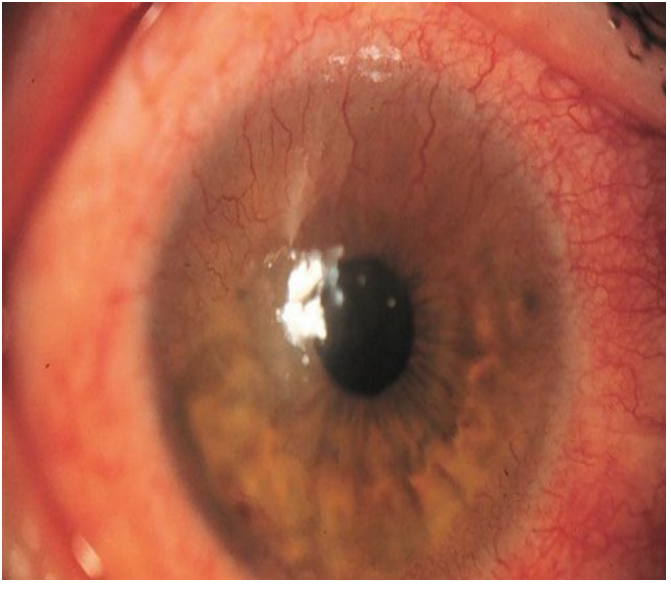
Coarse KPs(mutton fat): macrophages



4-Corneal-pannus

*Blood vessels formation under the corneal epithelium.

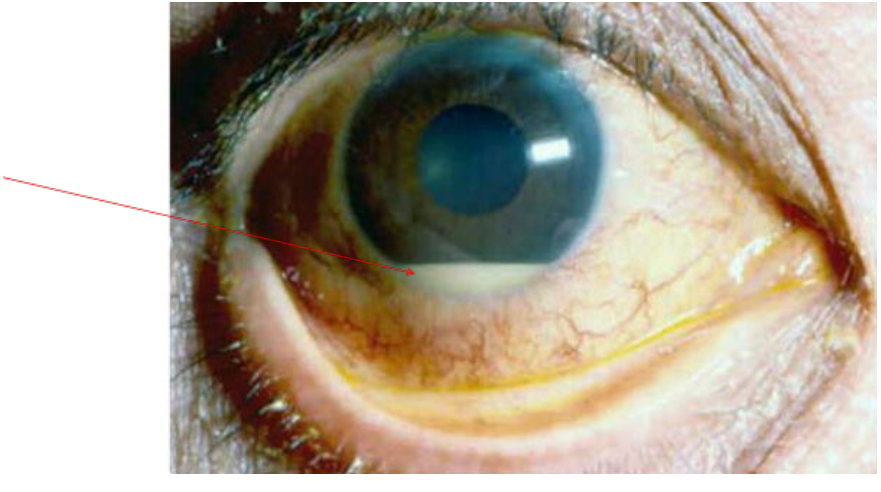
•Caused by:
*Chronic keratitis
*Ill fitting contact lenses
*Alkali injury
*Ocular insult due to infectious keratitis.



5- Hypopyon

collection of WBCs in the anterior chamber.

causes : bacterial keratitis , ant. Uveitis



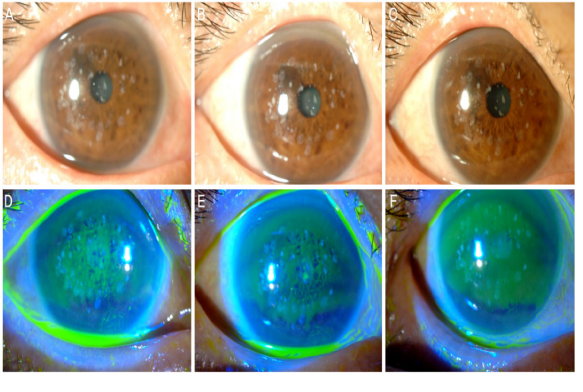
6- punctate epithelial erosions (PEE):

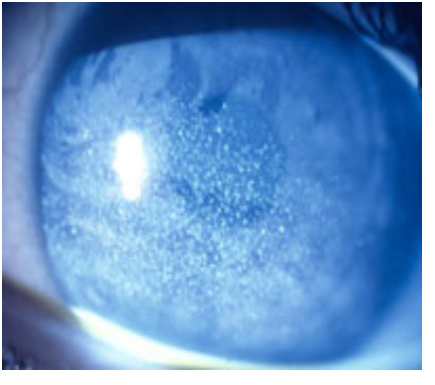
Points of ***superficial*** epthelial cell loss or dysfunction.

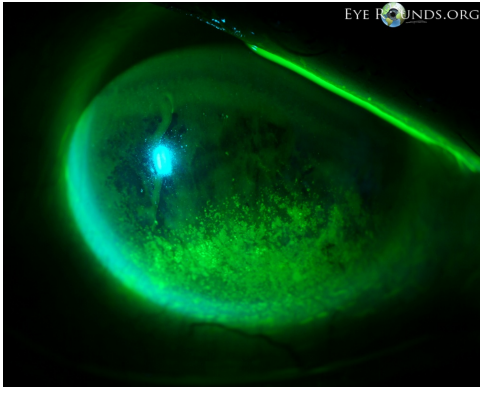
They maybe on:

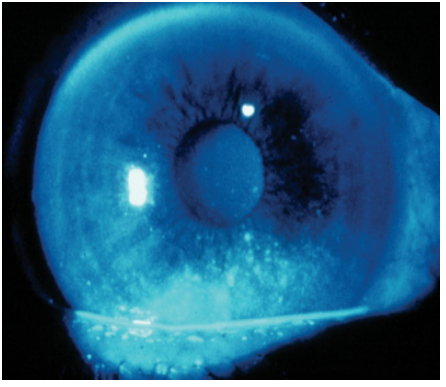
1- in the cornea : they are best detected by fluorescein dye viewed with blue light

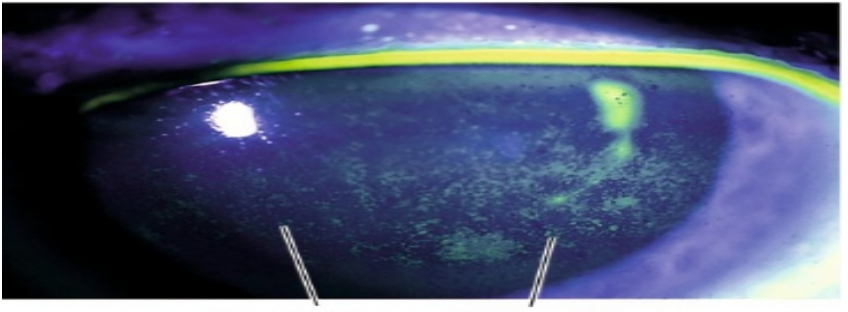
2- in the conjunctiva: they are best stained by lissamine green.











Superficial punctate keratitis

7- **corneal abrasion:**

More extensive epithelial loss (more than PEE).

-due to chemical or physical trauma.s

Corneal abrasion with fluorescein staining

Corneal diseases

Infective corneal diseases

1- herpex simplex keratitis:

-most common cause: herpes simplex virus type 1 (HSV1).

-primary infection it may causes conjunctivitis then followed by resolution and latency of the virus in the trigeminal ganglion.

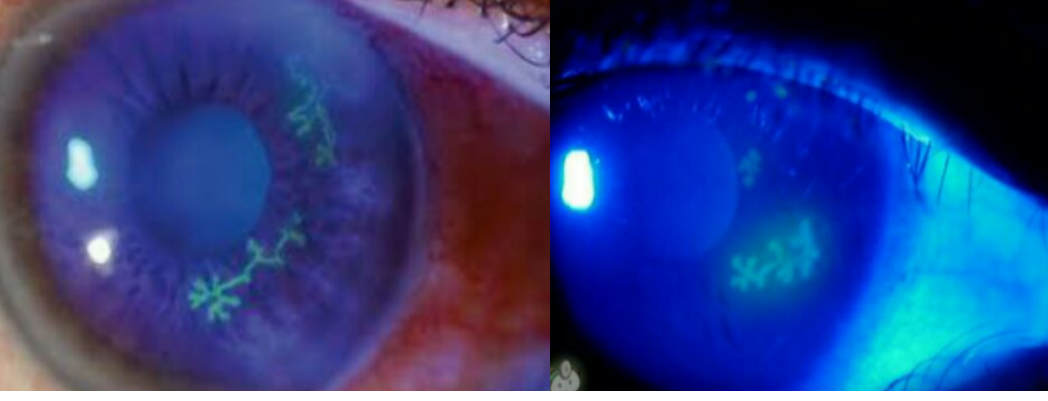
-reactivation of the virus increases if the pt is debilitated (systemic illness,immunosuppression).

It Causes Dendritic ulcer.

Maybe associated with uveitis and glaucoma.

* **Tx:** topical antivirals (Aciclovir). Topical steroids is contraindicated, they may excacerbate the condition.

Dendritic ulcer may heal with scar which may need a corneal graft to restore vision in severe cases.



Sign: Dendritic ulcer

Causative cause: HSV-1

Risk factors: contact lens, prolonged steroid treatment

Ttt: Topical Acyclovir

***Disciform keratitis:**

-another immune reaction to herpes simplex antigen in the stroma.

-**cause** : HSV

- **presents** as disc or ring-shaped stromal edema and clouding without ulceration, blurred vision , light sensitivity

-**Tx:** oral /topical steriods + oral antiviral

2-Herpes zoster ophthalmicus (ophthalmic shingles):

FIGURE 2. Case of herpes zoster ophthalmicus

Photo/MN Oxman, University of California, San Diego

- **cause**: varicella zoster
- **ocular manifestations** : lid swelling , keratitis , iritis , secondary glaucoma , pain and vesicles at the ophthamic divion of the trigiminal nerve .
-there is usually a prodromal period where the pt is systemically unwell.

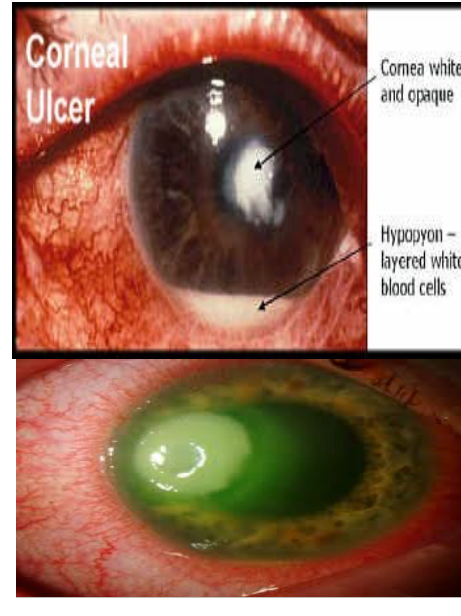
tx :

-oral antivral (acyclovir, famciclovir) within 3 days of vesicles eruption for reducing the neuralgia.
-topical steroids for ocular disease
-antibacterials to cover secondary infection.

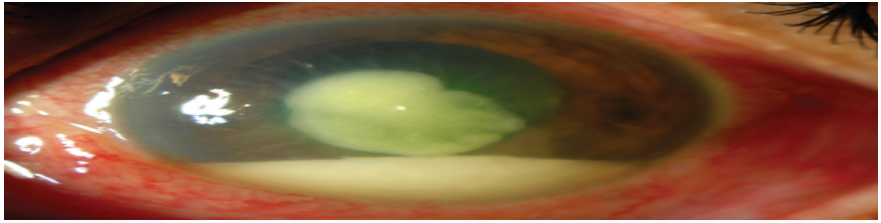
4-Bacterial keratitis

***Signs and symptoms:**

Severe pain, purulent discharge, ciliary injection (flush), visual loss(if the visual axis is involved), hypopyon(a mass of WBCs collected in the anterior chamber), white corneal opacity.

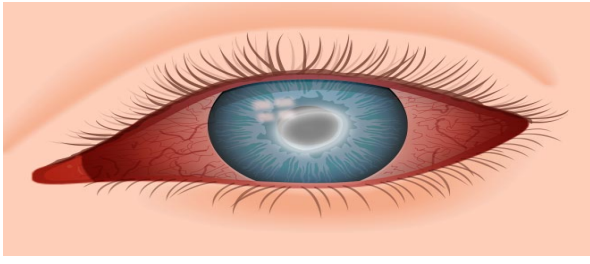


Bacterial keratitis



-**3 serious findings**: hypopyon, ciliary flush, corneal cloudiness
-**Microorganisms**: staph epidermidis, staph aureus, strep pneumonia.
-**RFs**: keratoconjuctivitis sicca (dry eye),contact lens, breach in the epithelium by surgery or trauma, prolonged use of steroids.
-**TX**: topical broad spectrum antibiotics.
****either fluroquinolones (ciprofloxacin, ofloxacin)as

5-acanthamoeba keratitis:



-also named as infective keratitis.
-fresh water amoeba
-associated highly with soft contact lenses
Extremly painful keratits with prominent infiltrated corneal nerves.
The amoeba can be isolated from the cornea or from the contact lens
Tx: Topical chlorhexidine, PHMB,propamidine.

Corneal dystrophies

***Corneal dystrophy:**

-rare inherited disorder)

sx: affect corneal transparency and can cause visual loss, it may cause pain if they cause corneal erosions

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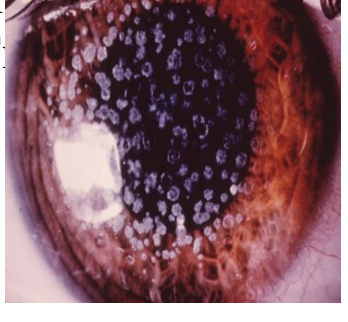
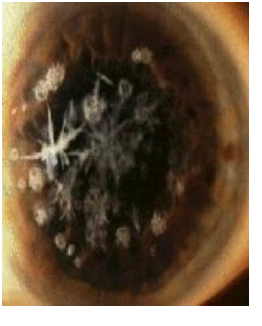




Granular corneal dystrophy

Disorders of shape

1-Keratoconus:

-sporadic, occasionally inherited.

sx; marked myopia, irregular astigmatism , vision loss (painless).

signs; fleisher's ring , apical scar , vogt's stiae, prominent corneal nerve.

mgt : astigmatism corrected by :glasses , contact lenses , UVA radiation in the presence with riboflavin, corneal graft.

Double intrastromal corneal rings.

Used for keratoconus.

Other modalities of ttt:

Glasses, rigid lenses, grafting

Complications of surgery:

Infection (Give TOPICAL antibiotic, not IV), corneal perforation, displacement,

Central corneal degeneration

Band keratopathy

-subepithelial deposition of calcium phosphate . Occur with chronic uveitis or glaucoma.

-may cause visual loss and eros

-it may be a sign of systemic hy

hyperparathyroidism or renal fa

ttt: scraped off surgically or by

More likely occupy the 3oclock and 9'oclock position of the paralimbal cornea.

Peripheral corneal degeneration

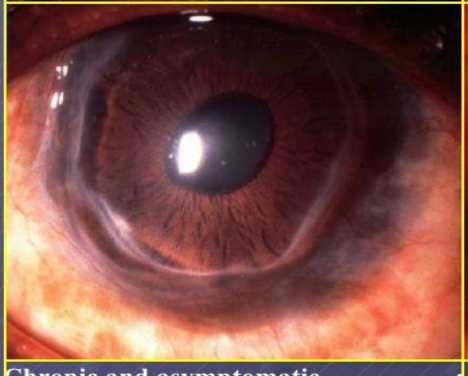
1- corneal thinning:

-rare cause: **painful** peripheral corneal thinning is ***(Mooren's ulcer)***

-melting, starts at limbus & spreads across cornea, immune basis. It may be seen in RA & Wegener's granulomatosis.

-Tx: can be difficult, systemic and topical immunosuppression (steroids or cytotoxic drugs) and antiproteases. Adequate corneal protection and wetting.

Peripheral corneal involvement in rheumatoid arthritis

Without inflammation	With inflammation
	
• Chronic and asymptomatic • Circumferential thinning with intact epithelium ('contact lens cornea')	• Acute and painful • Circumferential ulceration and infiltration

Treatment - systemic steroids and/or cytotoxic drugs

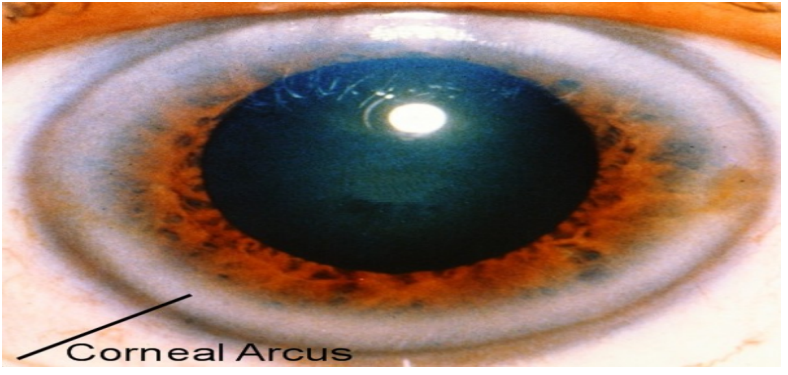
2- lipid arcus:

-peripheral white ring-shaped lipid deposits, separated by the limbus by clear interval.

-normally seen in elderly (above 50)=arcus senilis.

-in younger pts: maybe a sign of hyperlipoproteinaemia.

- doesn't affect vision, no Tx is required.



Corneal grafting

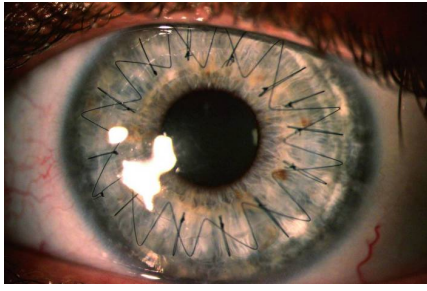
Surgery name: corneal transplantation, corneal grafting

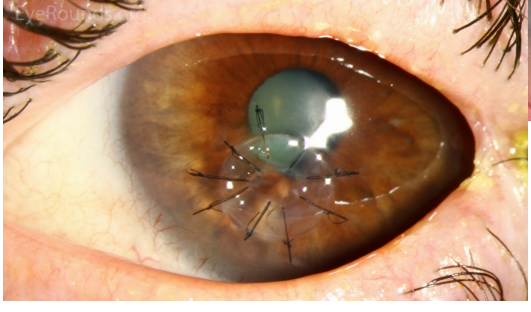
Indications: to restore corneal clarity or repair a perforation in these conditions:

keratoconus, traumatic scar, herpes infxn, corneal dystrophy, interstitial keratitis with marked opacity and decreased visual acuity, decompensated cornea in old ages.

-postop :steroid eye drops to prevent graft rejection.

Complications: rejection, astigmatism, endophthalmitis, recurrence of previos pathology, cataract.





-Penetrating keratoplasty: When the entire cornea is replaced.

-lamellar keratoplasty: when only part of the cornea is replaced.

-Indications for penetrating keratoplasty:

-pseudophakic bullous keratopathy(m.c.c in developed countries).

-keratoconus (m.c.c in developing countries).

-corneal degeneration.

-keratoglobus.

-Corneal dystrophy.

Corneal graft rejection:

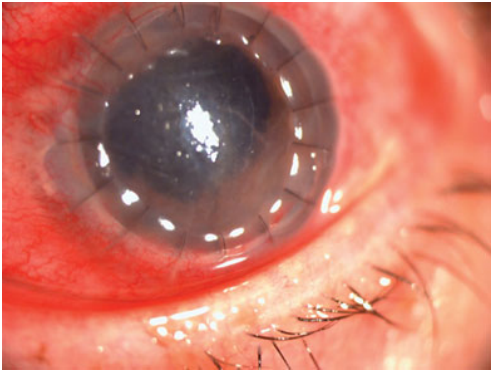
Any patient with:

Red eye, pain or visual loss and had a corneal graft must be seen urgently.

- Examination:

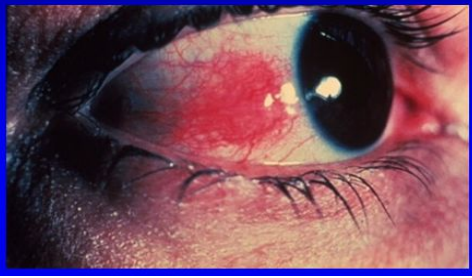
Graft edema,iritis, and a line of activated T-cells attacking the graft endothelium

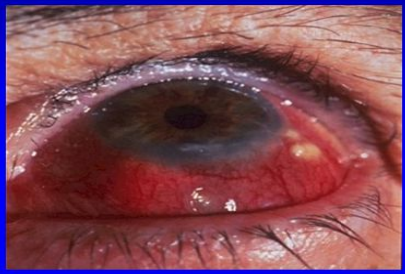
Tx: intensive topical steroid application can restore graft clarity.



Sclera diseases

Episcleritis & Scleritis





Scleritis	Episcleritis
Associated usually with RA, SLE,polyarteritis nodosa	Inflammation of the superficial layer of the sclera
Elderly, usually ass. With systemic diseases	Young age, rarely associated with systemic disease
Intense ocular pain with swelling of the sclera	Self limiting
complications: sclera thinning,keratitis,uveitis, cataract formation, glaucoma	Topical anti-inflammatory and NSAIDs

Glaucoma

Classification of glaucomas:

1-Primary glaucoma:

*chronic open angle.

*Acute and chronic closed angle.

2-Congenital glaucoma:

*Primary.

*Secondary to maternal rubella infection.

*secondary to inherited ocular disorders (ex:aniridia-absence of the iris).

3-Secondary glaucoma(causes):

*Trauma.

*ocular surgery.

*Associated with other ocular dx, uveitis.

*Raised episcleral venous pressure.

*steroid induced

Chronic open angle glaucoma:

Tx:

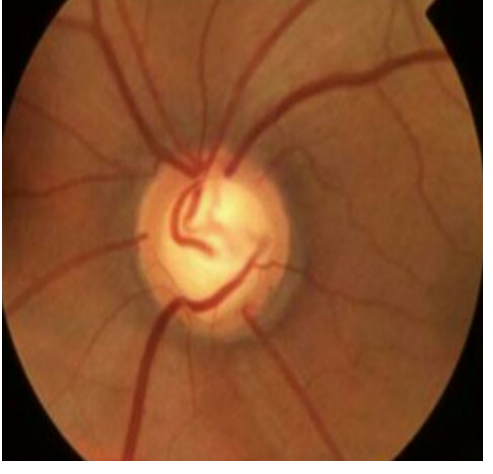
1-Medical:

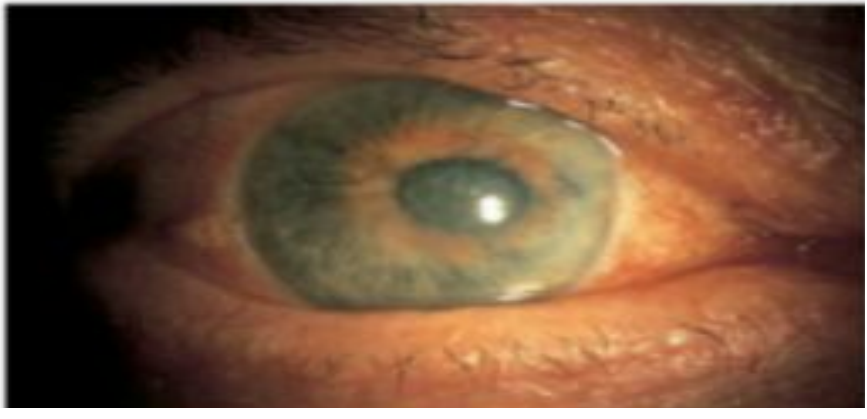
drugs ; prostaglandin , B-blocker , carbonic anhydrase inhibitor.

If IOP remains elvated:

2-laser tx: (laser burns to the meshwork).

3-surgical drainage procedures: TRAB (Trabeculectomy).





Acute closed angle glaucoma

c/p: cloudy cornea , fixed mid-dilated pupil (oval shaped).

Mgt: IV acetazolmide, topical pilocarpine , B-blocker , iridotomy by YAG laser or lensectomy

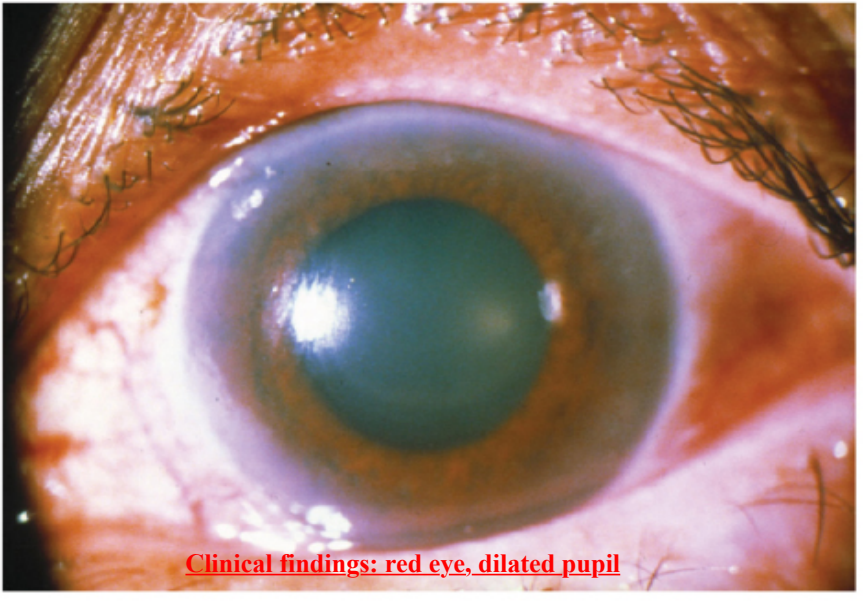


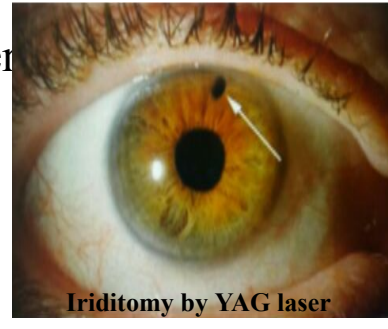
Figure 1 Acute angle-closure glaucoma.
Notes: Image courtesy of Allan Bank, Fellow of the Royal Australian and New Zealand College of Ophthalmologists.

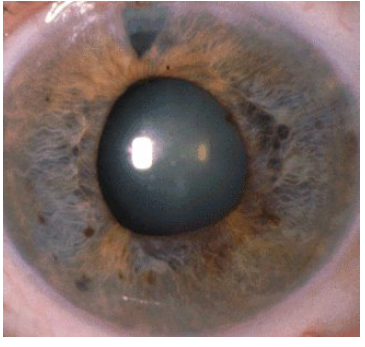
Congenital glaucoma

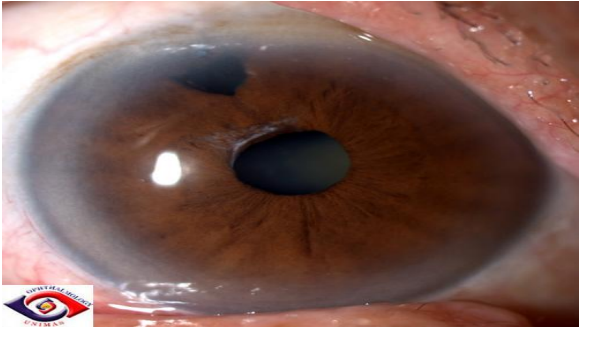
Dx: Congenital glaucoma

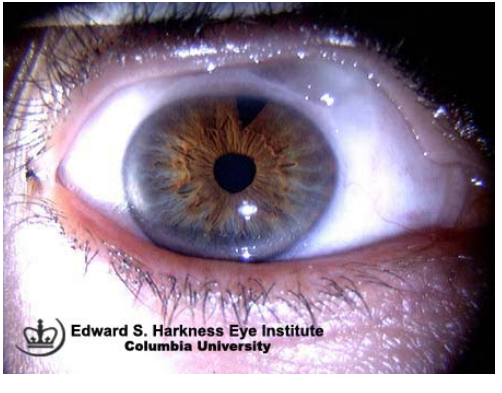
Signs: enlarged globe (buphthalmos), watering, cloudy cornea

-Procedure name :
peripheral Iridotomy (by YAG laser or surgery you should differentiate btween them).
-indication: acute closed angle glaucoma, iris melanoma.
-complications: damage to the cornea and the lens, intraocular inflammation, iris bleedig, pigment dispersion .


Iriditomy by YAG laser

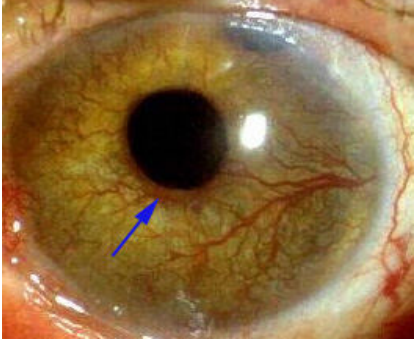






-surgical iriddectomy

You should be able to differentiate between laser and surgical iridectomy.



Rubeosis iridis

-is a medical condition of the iris of the eye in which new abnormal blood vessels (i.e. neovascularization) are found on the surface of the iris.

-**causes**: retinal detachment , oculae syndrome, Diabetic retinopathy

–***Mgt:*** Anti VEGF , Pan retinal photocoaagulopathy .

-It causes secondary glaucoma.

Uvea

By: Ghaida

*Uveal tract= the iris, ciliary body and the choroid

-ciliary body consists of pars plicata + pars plana.

- Inflammation = uveitis.

-it can be classified anatomically:

1- Anterior uveitis = iritis.

2- intermediate uveitis= pars planitis (part of cyclitis, inflammation of the ciliary body) + vitritis (inflammation of cells in the vitreous cavity).

3- Posterior uveitis or chorioretinitis (choroiditis+retinitis) is the inflammation of the retina and choroid.

4- Pan-uveitis is the inflammation of the anterior chamber+vitreous+retina and/or the choroid.

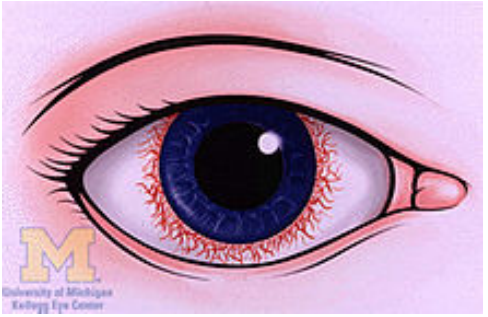
- 50% of pts with uveitis have systematic diseases.
- Symptoms : ocular pain (less frequently in the posterior uveitis, photophopia, blurring vision,redness of the eye, and other systemic syptoms related to the systemic disease

Signs of uveitis:

found in anterior and posterior uveitis:

On examination:

- Visual acuity maybe reduced
- The eye will be inflamed, mostly around the limbus (***ciliary injection, ciliary flush).***

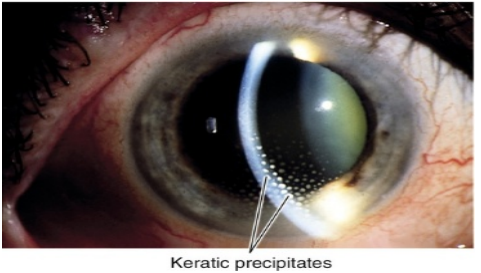


Signs of anterior uveitis

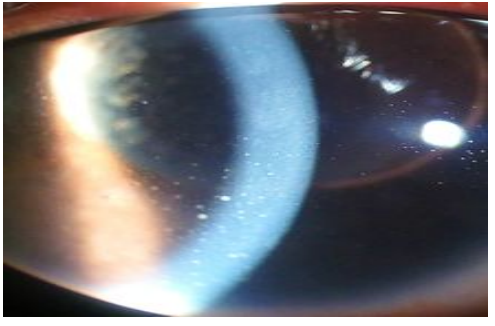
1- keratic precipitates KPs:

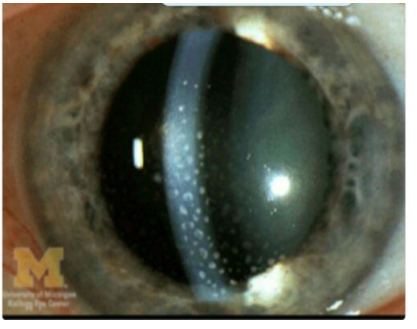
Deposits of inflammatory cells on the corneal endothelium. particularly inferiorly. Either:

-Fine KPs: neutrophils, lymphocytes. **-Coarse KPs(mutton**



Keratic precipitates





Sign: Keratic precipitate

Dx: Ant. Uveitis

Complications: Glucoma, cataract, chronic iritis

Systemic diseases may be associated with:

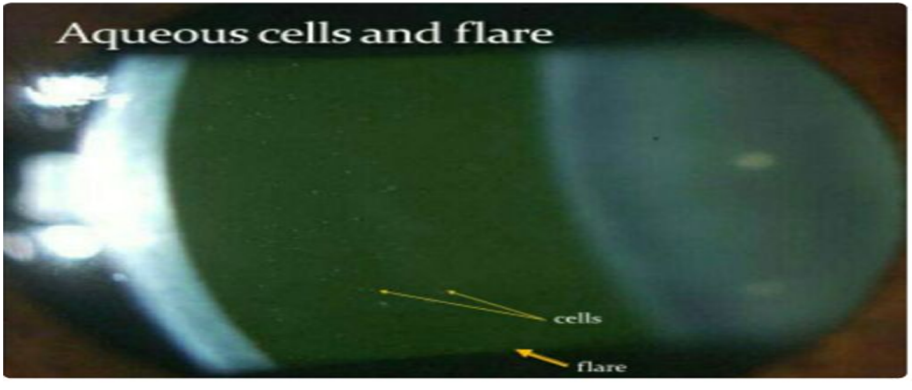
Akylosing spondylitis

Anterior Uveitis – Diagnostic Techniques & Signs

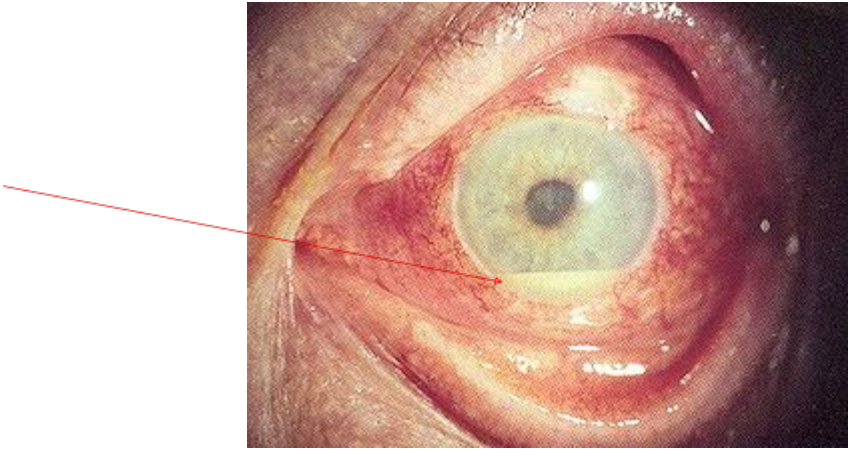
Mutton Fat Keratic Precipitates

2- ***flare*** due to exuded protein and ***aqueous cells***.

Flare: leaking proteins secondary to the breakdown of blood vessles.



3- ***Hypopyon:*** a sign of severe inflammation, there is a sufficient WBCs to collect as a fluid level inferiorly in the anterior chamber.



4- dilation of the iris blood vessels.

5- ***Posterior synechiae (PS):***

Iris is adherent to the lens and bind down the pubil in anterior uveitis.

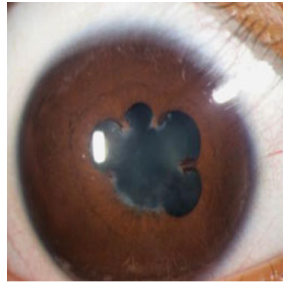
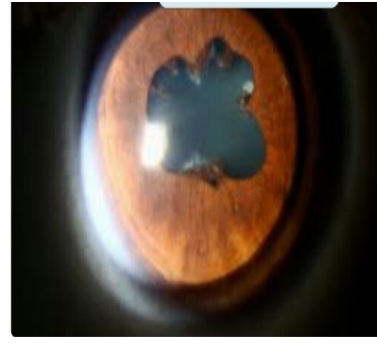


Fig. 2 Synechiae, inflammatory adhesions between the iris and lens surface.



peripheral anterior synechiae PAS:

Between the iris and the trabecular meshwork or cornea may occlude the drainage angle and cause: ***Acute angle closure glaucoma.***

6- the intraocular pressure IOP may be elevated by PAS or increased aqueous protein.

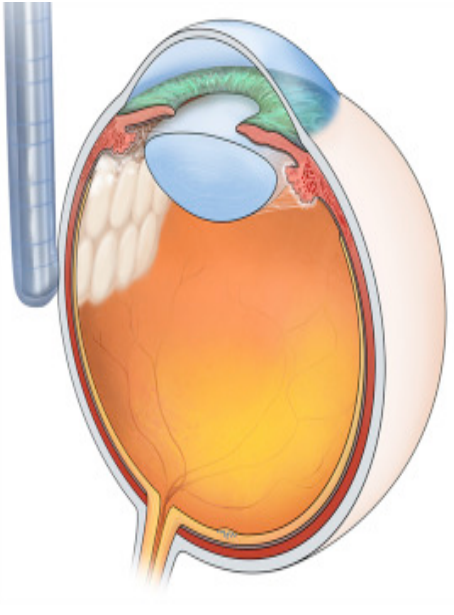
Signs of intermediate and posterior uveitis

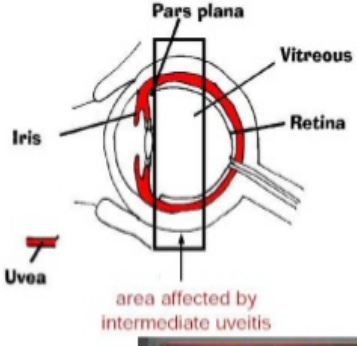
1-Cells in the vitreous.

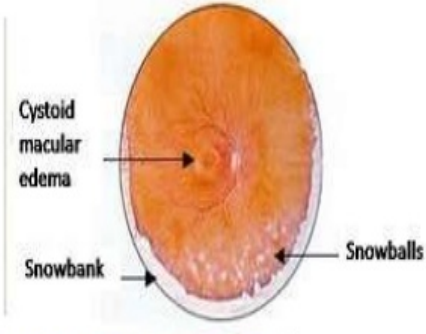
2- retinal or choroidal foci of inflammation.

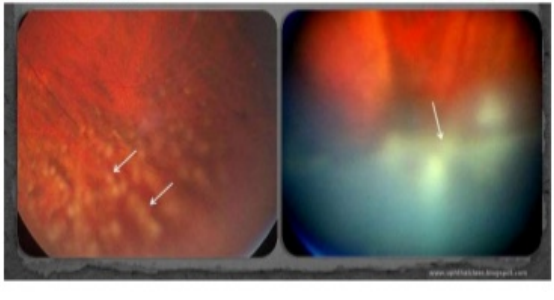
3-macular edema may be present.

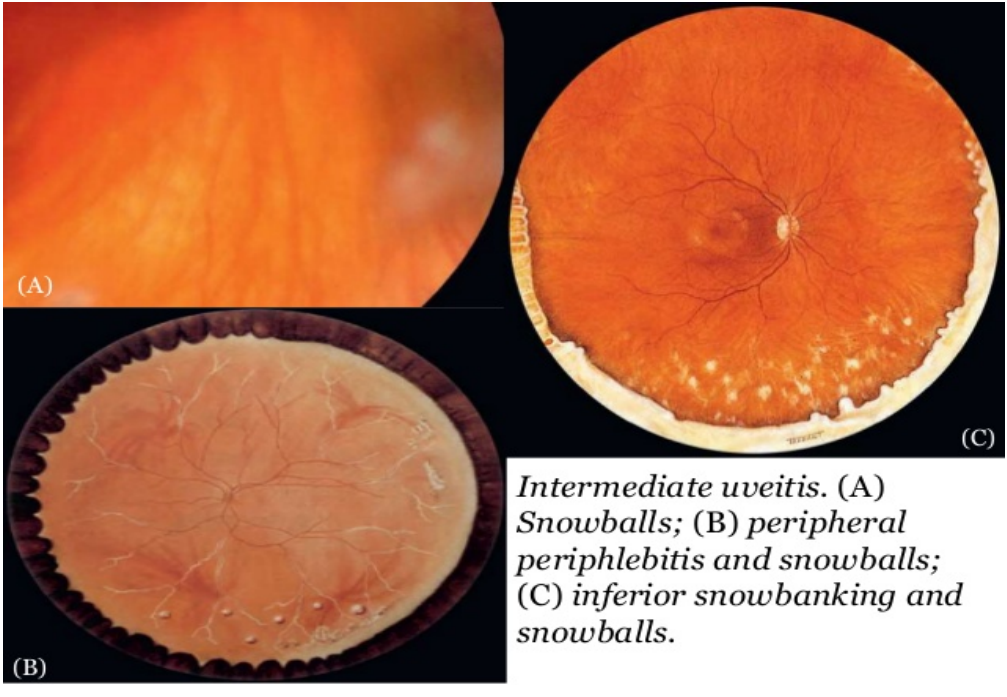
Pars planitis: is considered a subset of ***intermediate uveitis*** and is characterized by the presence ***of white exudates (snowbanks) over the pars plana*** or by ***aggregates of inflammatory cells in the vitreous (snowballs)*** in the absence of an infectious or a systemic disease




Pars plana
Vitreous
Iris
Retina
Uvea
area affected by
intermediate uveitis


Cystoid
macular
edema
Snowbank
Snowballs





Intermediate uveitis. (A) *Snowballs;* (B) *peripheral periphlebitis and snowballs;* (C) *inferior snowbanking and snowballs.*

Treatment of uveitis

-***In anterior uveitis***:

-***topical*** steroids (eye drops).

-Prophylactic mydriatics (cyclopentolate) to prevent posterior synechiae formation, and relieve the pain from the ciliary spasm by dilating the pupil

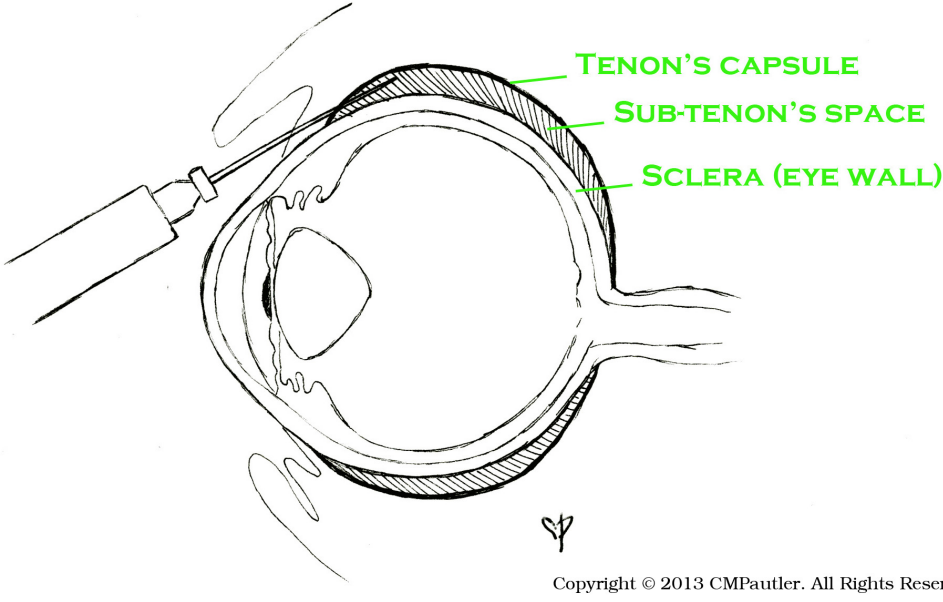
-Subconjunctival mydriatics to break resistant synechiae

-***In posterior uveitis*** :

-***SYSTEMIC*** steroids or steroid injection into the orbital floor or into the sub-Tenon's space.

-specific antibacterial and antiviral to prevent visual loss from secondary infection.s

SUB-TENON'S STEROID INJECTION



Lens and Cataract

By: Ghaida

Cataract: light scattering opacity within the lens

- it's the commonest cause of treatable blindness.
- Risk factors for ***age related (senile)cataract***:

Cumulative exposure for UV radiation, smoking, elevated blood sugar.

Ocular conditions associated with cataract:

Trauma, uveitis, High myopia, topical mediacations (steroid eye drops), intraocular tumor.

Symptoms:

Painless loss of vision, Glare, change in refraction

-in infants, congenital cataract it may cause amblyopia (lazy eye) failure of visual maturation

*Signs:

1- visual acuity is reduced.

(in dark room, the visual acuity may seem satisfactory, if the same test is carried in light the acuity falls as a result of glare and pubil constriction in light).

2- on direct ophthalmoscope cataract appears black against the red reflex.

3- slit Lmp examination gives further details about the exact site and shape of the cataract.

Age related cataract= commonly nuclear,cortical or subcapsular

Steroid induced=commonly posterior subcapsular.

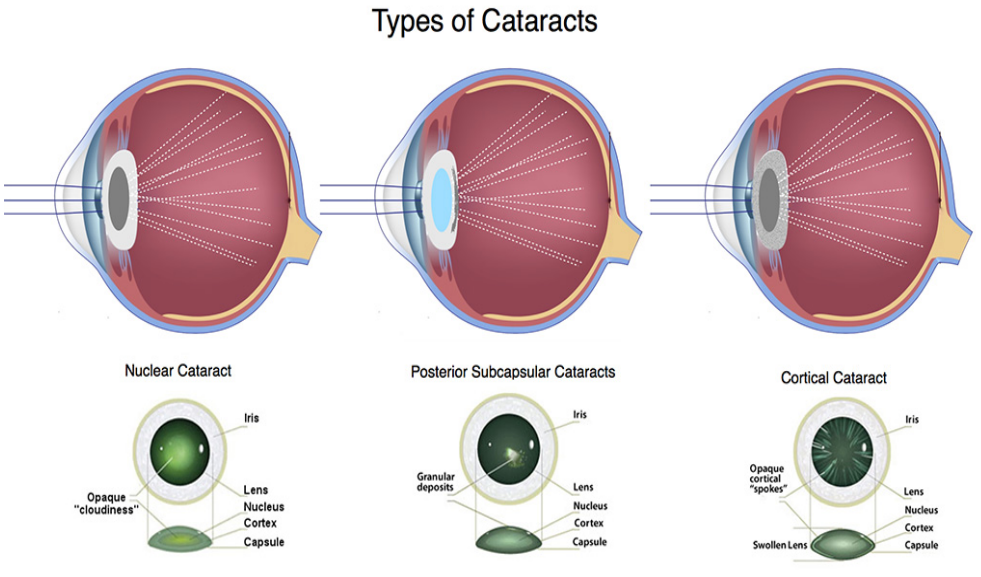
Pigment deposition on the lens+ cataract: suggest previous inflammation

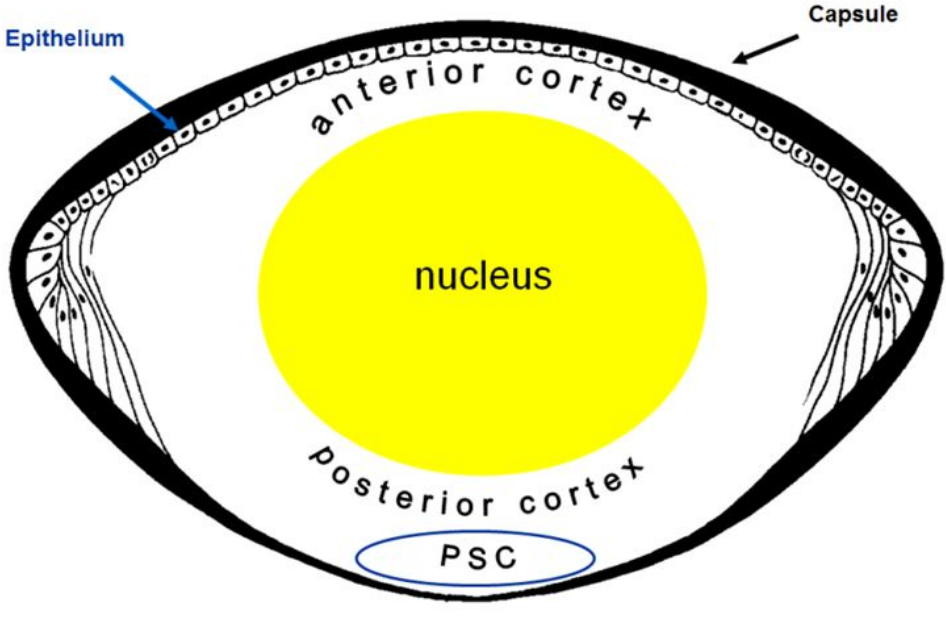
Damage to the iris: suggest previous ocular trauma.

systemic causes of cataract

1- Diabetes
2- metabolic disorders: hypocalcemia, galactosaemia.
3-systemic drugs: steroids,chlorpromazine
4-infection: congenital rubella
5- myotonic dystrophy
6-atopic dermatitis
7-Down's, lowe's syndromes
8-congenital inherited cataract
9-X-Radiation
10-age related senile

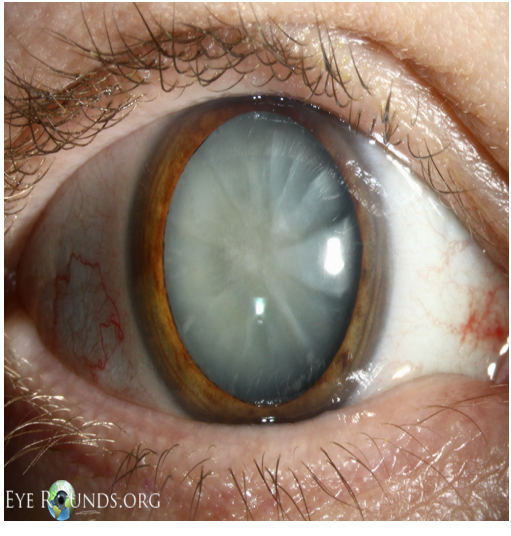
The location of different types of cataract




Epithelium
Capsule
anterior cortex
nucleus
posterior cortex
PSC

Nuclear cataract

Posterior subcapsular cataract



Cortical cataract

*Treatment :

Surgery:

1- phacoemulsification: through limbal incision. **This is now the prefeared method.**

Sutureless , smaller incision.

2- Extracapsular cataract extraction ECCE.

Used in cases of very hard cataract that can't be emulsified by phaco.

Larger incision, need sutures always.

Phacoemulsification surgery steps:

1-Anesthesia :Retrobulbar injection or topical anesthetic eye drops. (The former also provides paralysis of the eye muscles.)

2- Inferior limbal or clear corneal incision.

3- Capsulorhexis

4- Hydrolysis

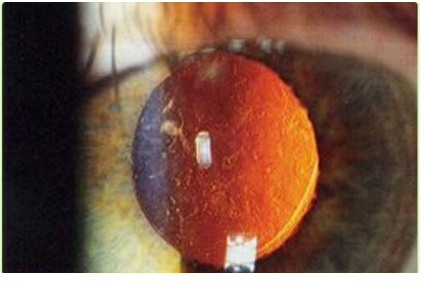
5- Phacoemulsification

6- Irrigation and aspiration

7- Lens insertion at posterior chamber (within the capsular bag).

***Indications for cataract surgery**:

- Mature cataract
- Bilateral congenital cataract (to prevent amblyopia).
- If the patient is diabetic it allows clear follow-up of his retinopathy state,
- Symptoms affecting daily activities



PC Pseudophakic lens

Pseudophakia (Intra-ocular lens)
after cataract surgery, either Phaco or ECCE.

-Complications of cataract surgery:

INTRA-OP

vitreous loss, iris prolapse.

-POST-OP

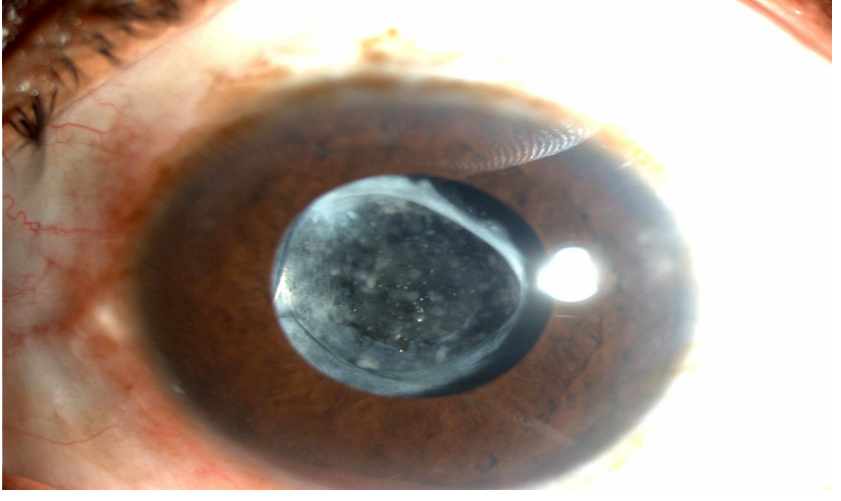
1- Endophthalamitis (MOST serious but rare, Emergency, within few days of surgery with painfull red eye, reduced visual acuity,hypopyon),

2-posterior capsule opacification *(Most Common).*

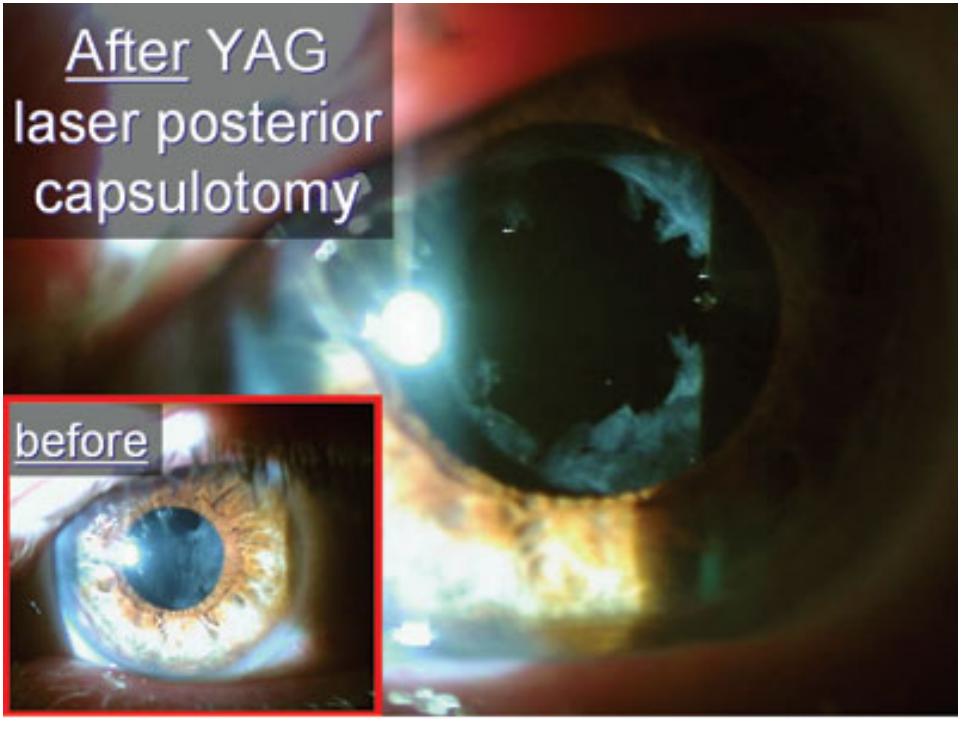
3-cystoid macular edema.

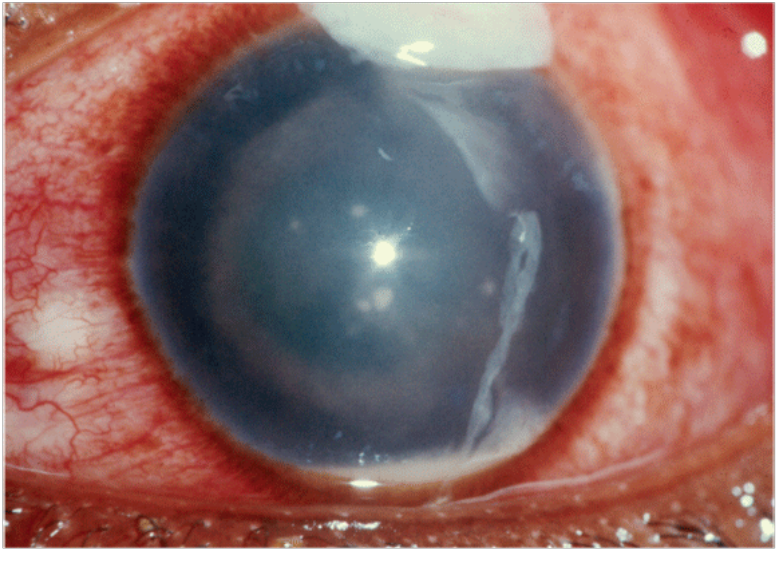
4-Retinal detachment

5-irritation and infection around the fine nylon sutures, symptoms relieved by suture removal.

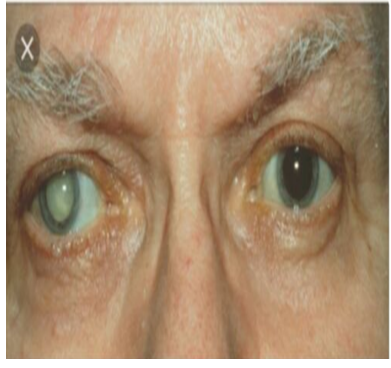


Posterior capsule opacification, The most common complication of the cataract surgery.
Thickening of the back of the lens capsule that holds the artificial lens as residual cells proliferate.
treatment: laser capsulotomy with YAG (ndYAG laser).


After YAG
laser posterior
capsulotomy
before

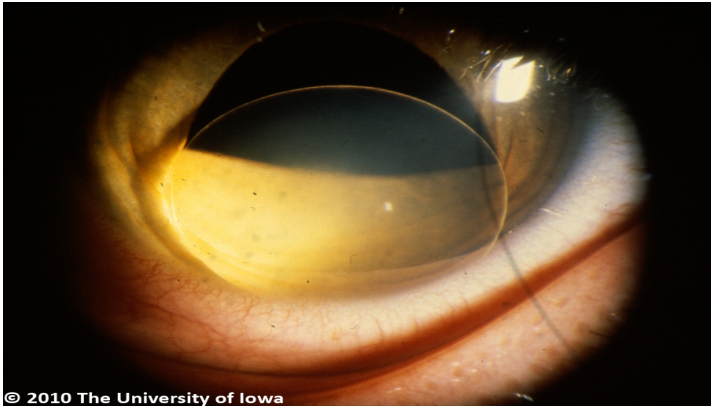


Hypopyon and severe inflammation: hallmarks of endophthalmitis.



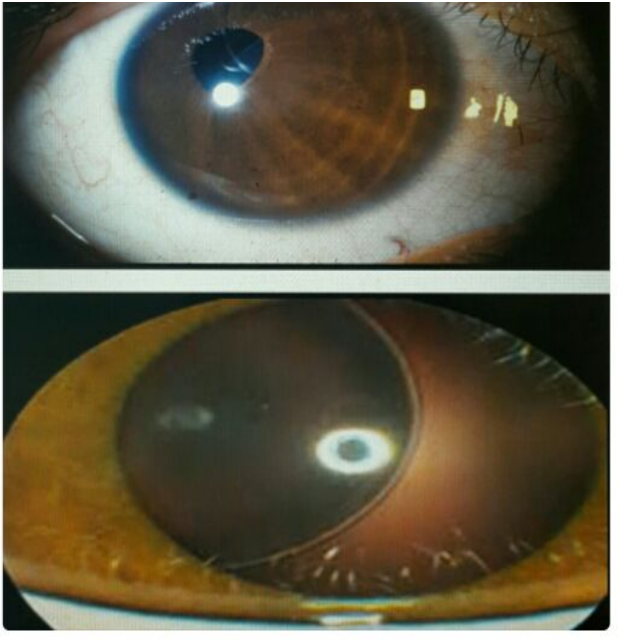
-Dx: Mature cataract
-3 types of surgeries: Phaco, ECCE, ICCE
-Intra-op complications: vitreous loss & iris prolapse
-Post-op: endophthalmitis, RD, cystoid macular edema, opacification of the post. capsule

Change in lens position
Ectopia lentis



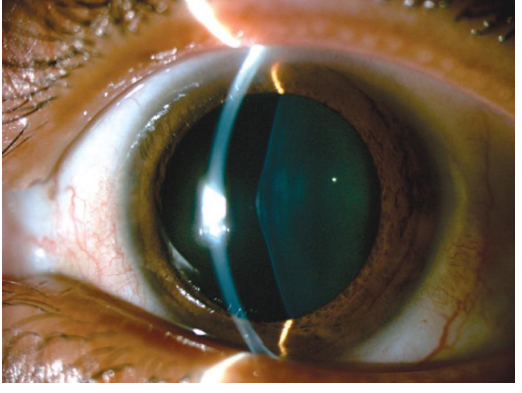
Lens detachment

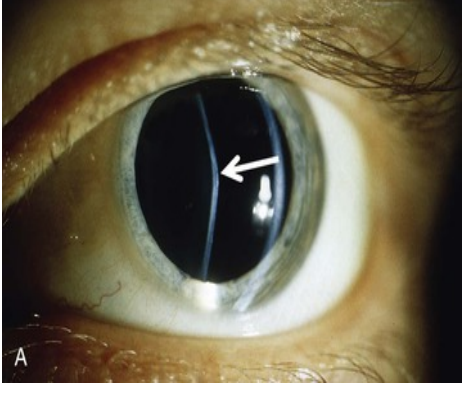
causes : trauma ,metabolic disorder, homocystinurea, CT disorder, Marfan syndrome



Ectopia lentis

Change in lens shape





Anterior Lenticonus

-(the curvature of the anterior part of the lens increased centrally).

-seen in Alport's syndrome (AR, deafness+nephropathy).

Retina

By: Farah

Macular edema

Causes:

- intraocular surgery.
- Uveitis.
- retinal vascular disease (e.g. diabetic retinopathy and retinal vein occlusion).
- retinitis pigmentosa.

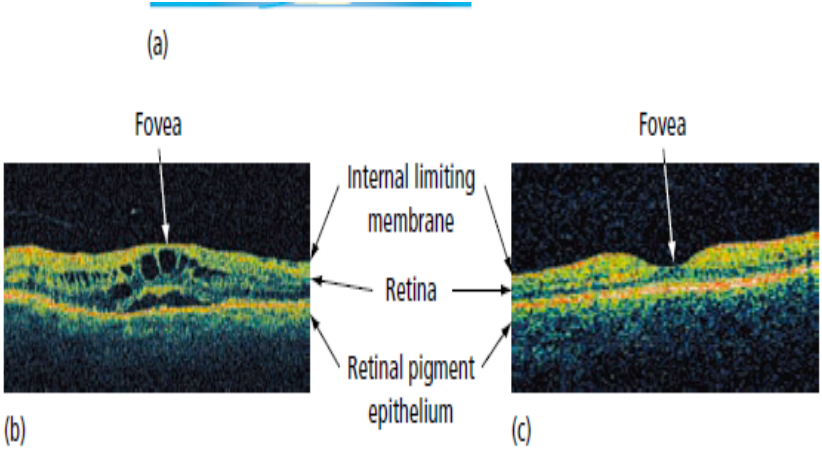
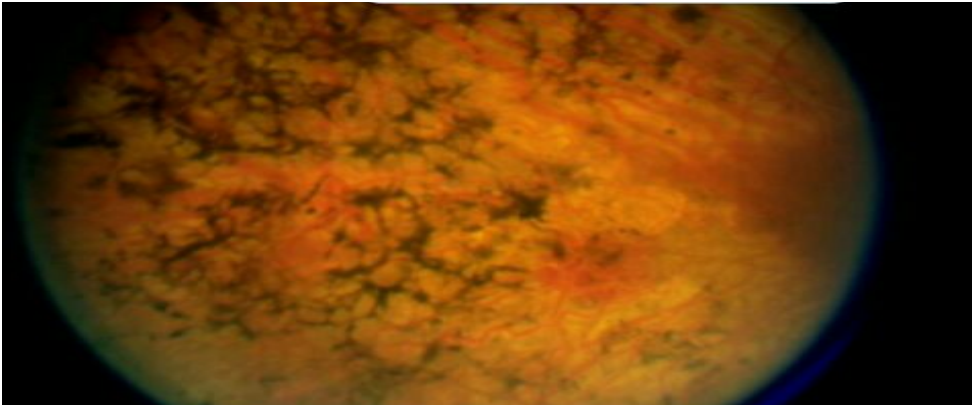


Figure 11.5 (a) The pattern of fluid accumulation in macular oedema (schematic). (b) An optical coherence tomogram (OCT) scan showing cysts of fluid in the retina of a patient with macular oedema, compared to (c) a normal scan.

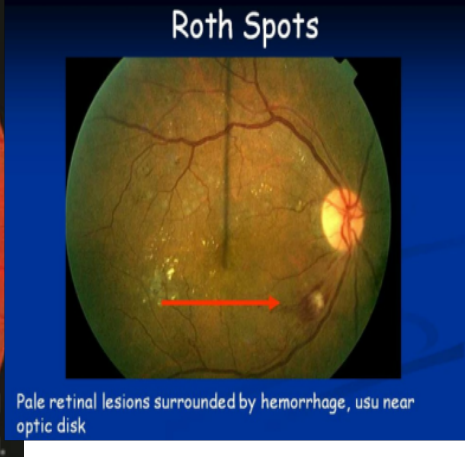


***Retinitis pigmentosa:**

- **symptoms:** night blindness ,tunnel vision ,macular changes.

-**Pathognomonic**: bone specules ,attenuated arterioles , disc pallor.

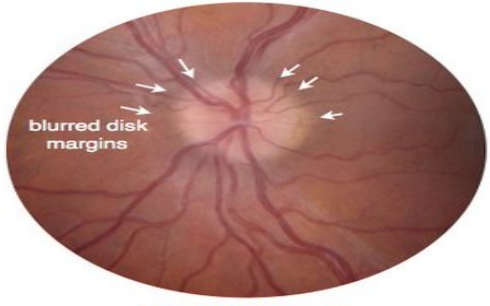
-**complications**: cataract, cystic macular edema



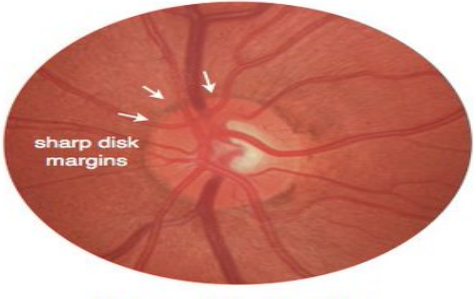
Roth's spot

•Pale retinal lesion surrounded by hemorrhage, flame like

DDx: infective endocarditis, leukemia, diabetic retinopathy.



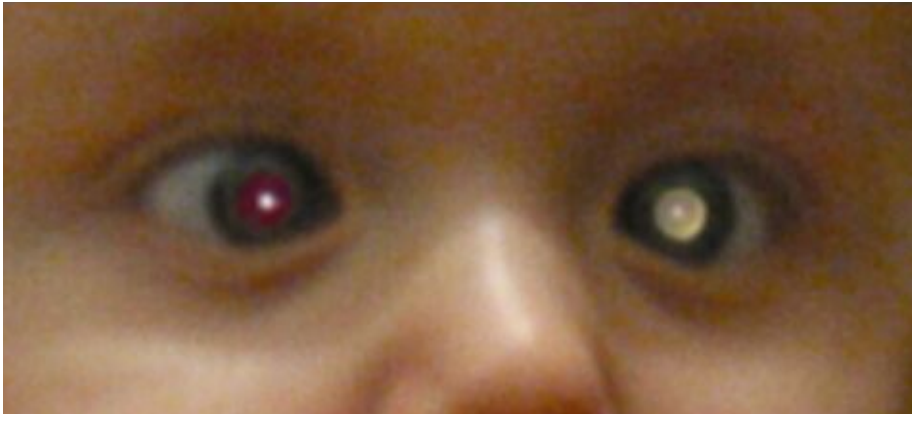
Papilledema



Normal Optic Disk

Dx: Papilledema

Causes: brain tumors, idiopathic Intra cranial HTN, glaucoma, sarcoidosis & lymphoma



Leukocoria

-white pupillary reflex or absent red reflex.

-seen in retinoblastoma, congenital catract, glaucoma, corneal dystrophy.

Diabetic retinopathy

Pathogenesis:

-Chronic hyperglycemia

-Usually asymptomatic and presentation is late, so regular check ups is required

-***2 types:*** non proliferative diabetic retinopathy and proliferative diabetic retinopathy

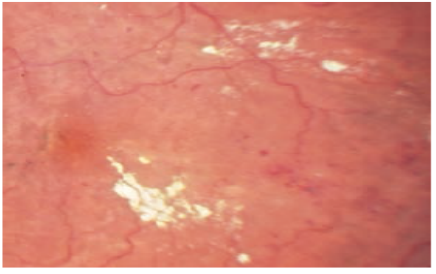
-***Visual loss is usually due to*** :

-macular edema.

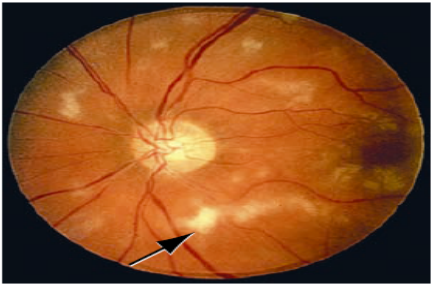
-vitreous hemorrhage.

-retinal detachment.

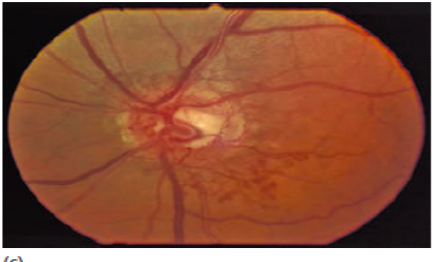
-ischemia of the macula.



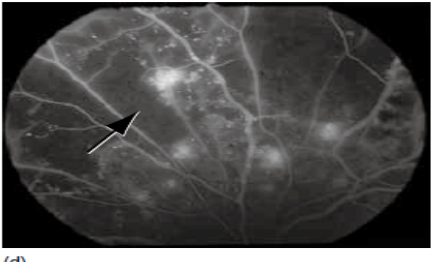
(a)



(b)

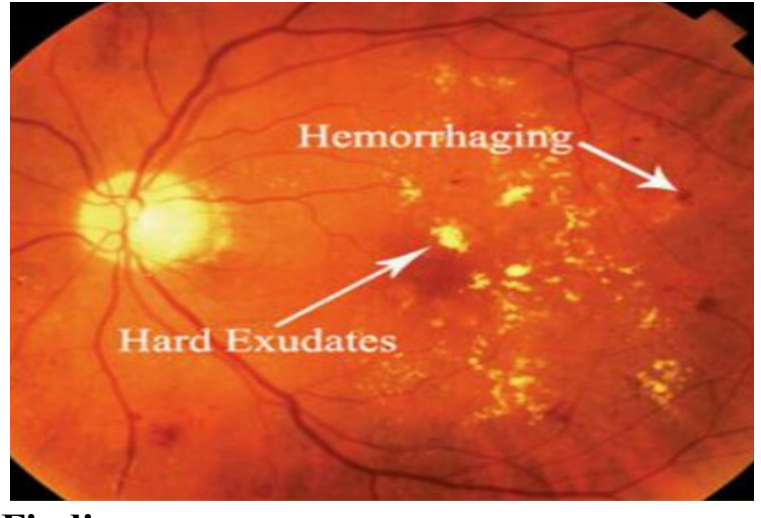


(c)



(d)

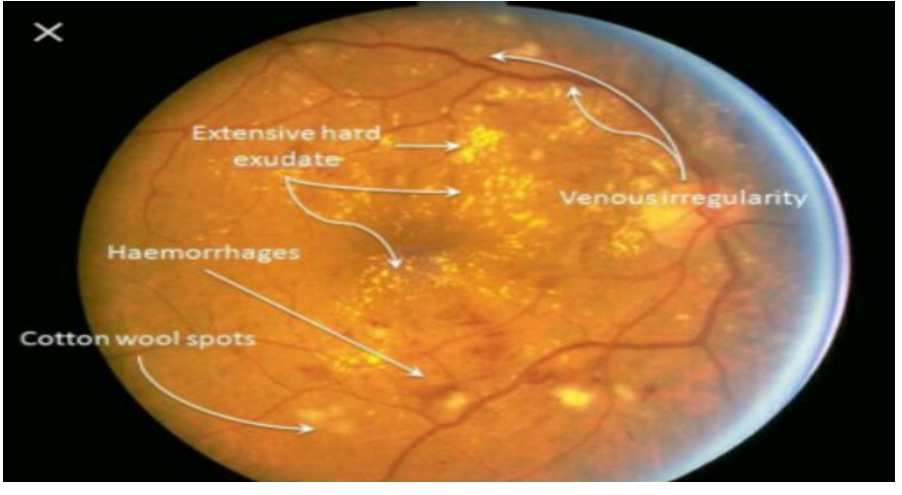
Figure 12.2 The signs of retinal vascular disease: (a) haemorrhage and exudate; (b) cotton-wool spots, note the yellowish nature and distinct margin to the exudates, compared to the less distinct and whiter appearance of the cotton-wool spots; (c) new vessels, here particularly florid and arising at the disc: (d) this fluorescein angiogram demonstrates the occlusion of the retinal capillary circulation (the dark areas (arrow)), the bright areas indicate leakage from new vessels.



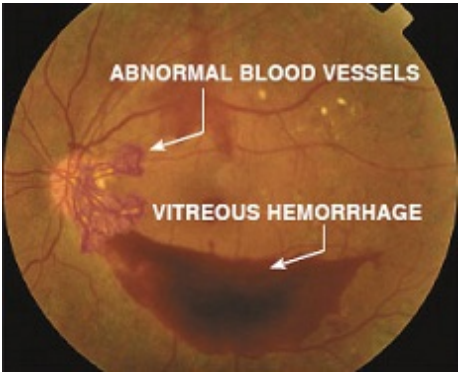
Findings:

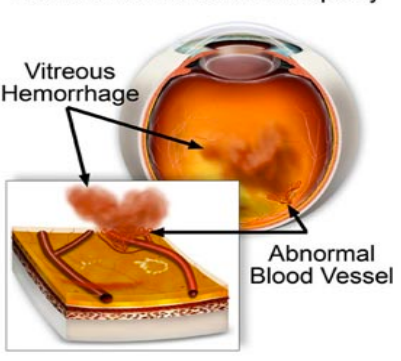
Hemorrhage, hard exudate, microaneurysms.

Dx: Non-proliferative diabetic retinopathy. (NPDR)

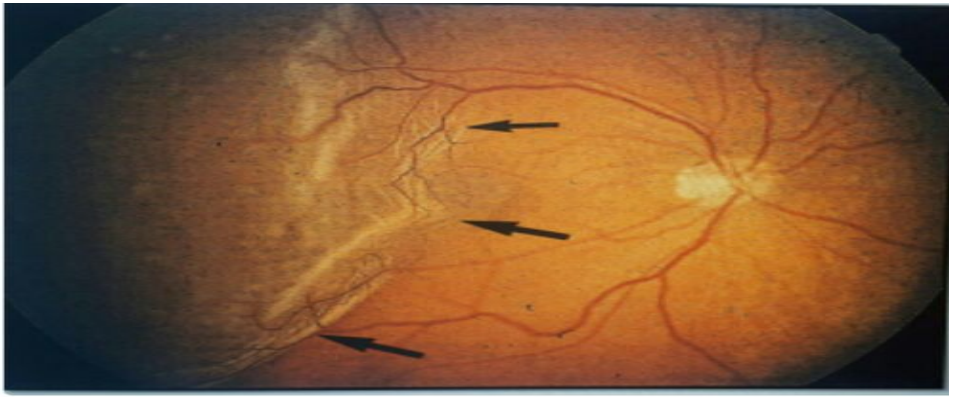


Diabetic retinopathy (non-proliferative):
Mgt: diabetic control, anti VEGF, laser
-if proliferative: diabetic control and panretinal photocoagulation.





Findings: Neovascularization, vitreous hmg.
Dx: Proliferative diabetic retionopathy.
Visual loss is due to: vitreous hemorrhage, Retinal detatchment, ischemic macula.



Dx: Retinal detachment

Risk factors: Trauma, post-cataract surgery, high myopes.

Types: Tractional, exudative, rhigmatogenous

First sign in Diabetic retinopathy: Microaneurysm.

Signs of ischemia in Diabetic retinopathy: cotton wool spots, venous beading, IRMA

***Indxns for panretinal photocoagulation:**

High risk proliferative diabetic retinopathy

Management for diabetic retinopathy:

•Glycemic control with regular follow up.
•Anti VEGF
•Directed laser.
•Panretinal photocoagulation (just for proliferative DR).

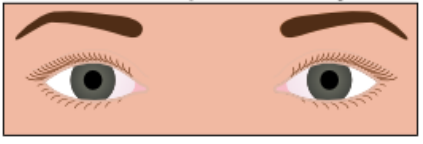
Most important risk factor for diabetic retinopathy:

Duration of DM

Pupil

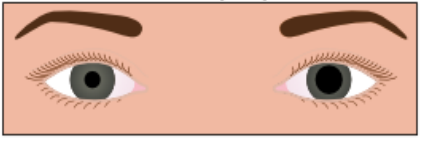
By: Farah

Normal Pupil and Eyelid



Diplopia: One Out

Adie's tonic pupil

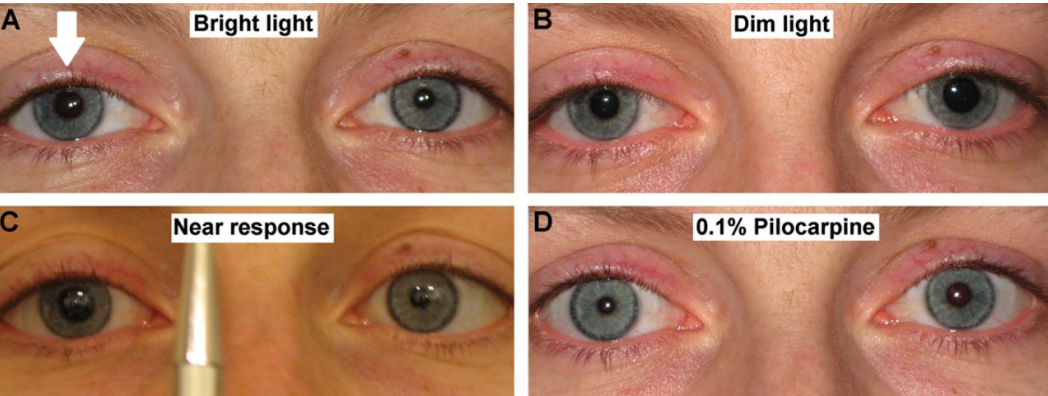


Diplopia: One In

Horner's Syndrome

Adies tonic pupil

- Light- near dissociation---> impaired rxn to light
- Large pupil, unilateral, poor reactivity to light
- Caused by ciliary ganglionitis
- Constrict to diluted pilocarpine 0.1%



Horners syndrome

- loss of sympathetic
- Partial Ptosis, meiosis, anhydrosis
- Causes: syringomyelia, pancoast tumor, neck injury, cavernous sinus disease
- If congenital heterochromia

Diplopia

- Direction of gaze:

Paralytic cause: double vision when looking in direction of paralytic muscle, ex: 3,4&6 CN palsies

Restrictive cause: double vision when looking away from restrictive muscle, ex: thyroid eye disease

Iridodialysis

separation of iris from ciliary body , “D shaped” pupil

causes ; blunt trauma , penetrating trauma , eye surgery ,

ttt: is small they are asx and need no treatment . If large and causing hyphema , then rest , steriods , pupil dilators (cyclopentolate)

antiglaucoma acetazolmide

Strabismus

{ MediFee.com }

Squint Eye (Strabismus)

Normal

(Esotropia)

eye turns inwards

(Exotropia)

eye turns outwards

(Hypotropia)

eye turns downwards

(Hypertropia)

eye turns upwards

Dx: Left eye exotropia

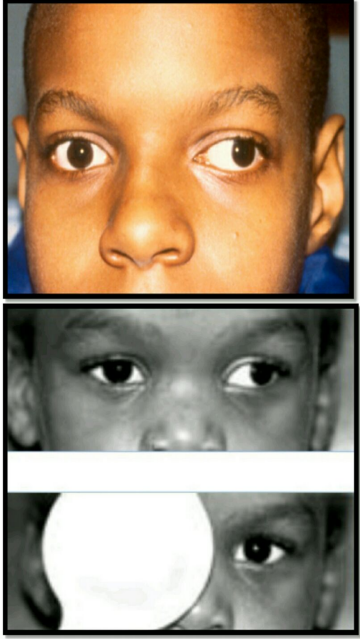
+ve Hirschberg sign

(The light falls on the centre of the right pupil, but is medial to the centre of the left pupil; Therefore, the person has left exotropia)

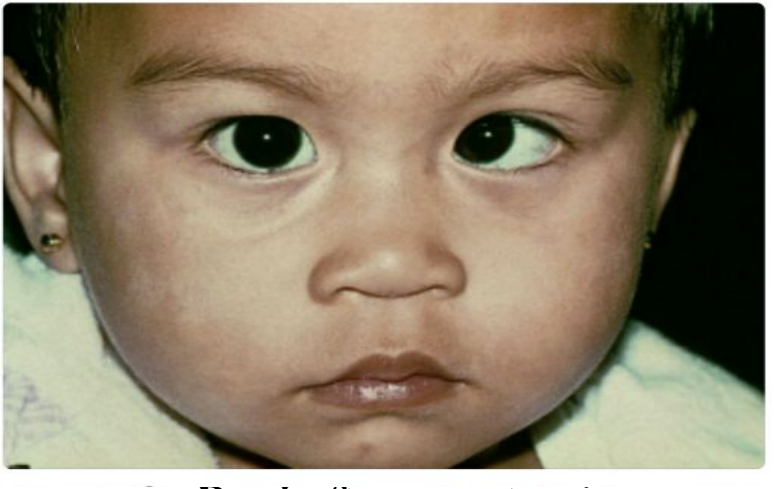
Complication if left untreated: Amblyopia

Symptoms: Diplopia

Dx: Fully accommodative Rt esotropia



LT. exotropia
cover /uncover test



Dx: Left eye esotropia

Test: Hischberg test

Complication: Amblyopia

Dx: Lt eye esotropia
Causes: 6th nerve palsy, refractive error
Tx options: glasses, cover the NL eye

The Eyelids

By: Ghaida

*Diseases of the eyelids:

1-abnormal lid position.

2-inflammation.

3-lid lumps

4- abnormalities of the lashes.

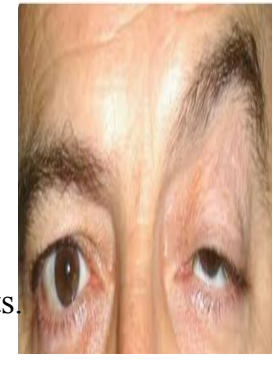
1-abnormal lid position.

1-Ptosis:

-possible causes:

1-mechanical factors:

large lid lesions pulling the lid down, lid oedema, tethering of the lid by conjunctival scarring, structural abnormalities (ex:disinsertion of the aponeurosis of the levator muscle in elderly patients.



2- Neurological causes:

3rd nerve palsy, horner's syndrome (mild ptosis), Marcus-Gunn jaw-winking syndrome.

3-Myogenic causes:

Myasthenia gravis, forms of muscular dystrophy, chronic external ophthalmoplegia.

Signs : reduced palpebral aperature , partially covered pupil, elevated eyebrow

Symptoms:

Cosmetic effect, impaired vision, symptoms and signs associated with the underlying cause (asymmetric pubil in horner's syndrome. Diplopia and reduced eye movements in a 3rd nerve palsy.

Mgt:

In the absence of a medically treatable dx such as myasthenia gravis, ptosis otherwise needs surgical correction.

-in children surgery is deferred, but maybe expedited if the visual axis is covered to avoid amblyopia.

Muller muscle:

Sympathetic supply

Injury like in horner's syndrome leads to **mild ptosis not complete.**

2-Entropion:

inturning of the lid margin and lashes , elderly

causes: weak orbicularis muscle, conjuctival scarring

c/p: irritation, epiphora (

Mgt:

- temporarily: botulinum
lubricants, taping.

-Permenantly: surgery

3-Ectropion:

-eversion of the lid.

-Causes: age related orbicularis muscle laxity, scarring of periorbital skin, facial palsy.

Signs: epiphora, dry eyes, irritation.

Tx: surgical +lubricants.

2-inflammation of the eyelids

*** Blepharitis**:

-Common, inflammation of the lid margin

-***Anterior blepharitis***:

in lash line, squamous debris around eyelashes, collarette (cylendrical dandruff) Demodex frunculosis, reduced eyelashes, conjunctival injection, staphylococcus, if cornea affected=blepharokeratitis.

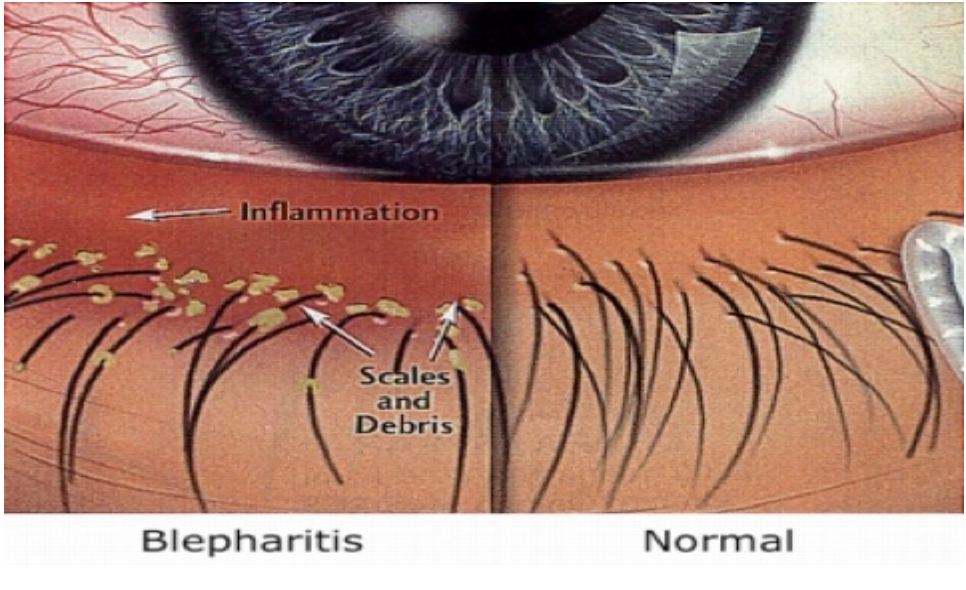
Small infiltrates or ulcers may form in the peripheral cornea Marginal keratitis due to an immune complex response to staphylococcal exotoxins.

-Post. Blepharitis:

Meibomian gland obstructed by squamous debris, injection of the lid margin and conjunctiva, punctate karatitis, tear film abnormalities, thick secretions.

Signs: tired itchy sore eyes.

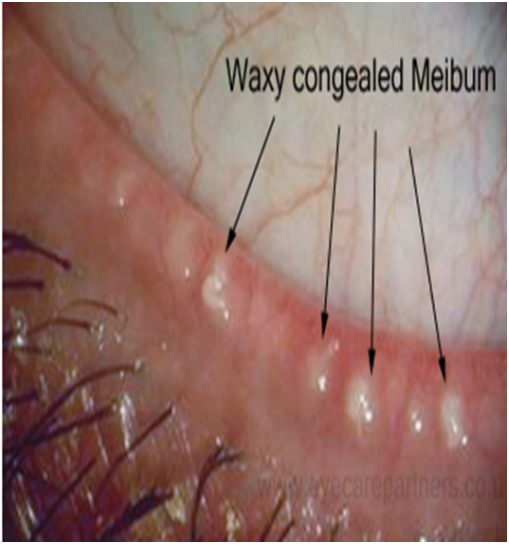
Anterior blepharitis



Crusting of the eyelids and redness of the lid margins are classic signs of blepharitis.

Demodex frunculosis, Anterior blepharitis

Posterior blepharitis



Blepharitis

Anterior blepharitis

Figure 1.21 Greasy lashes which are stuck together in seborrhoeic blepharitis

Posterior blepharitis

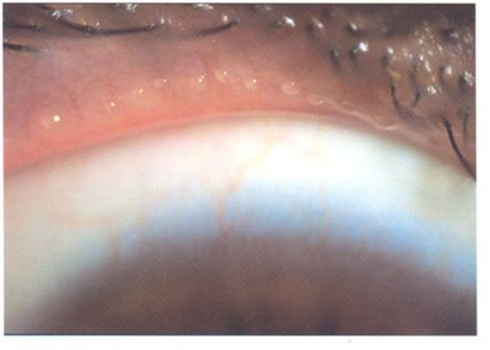


Figure 1.24 Capping by oil of meibomian gland orifices in posterior blepharitis

Treatment:

-For anterior blepharitis:

-Lid toilet with a cotton bud wetted with bicarbonate solution or diluted baby shampoo to remove the squamous debris.

-topical steroids

-in staphylococcal infxn: Topical antibiotics (fusidic acid gel), and sometimes systemic Abx.

-in demodex infestation: Tea tree oil.

-For posterior blepharitis:

-Lid massage after hot bathing to express abnormal secretions ,if fails then topical azithromycin drops .

Benign lid lumps and bumps

1-Chalazion:

granuloma formation in an obstrucetd meibomian gland in the tarsal plate.

C/P : painless.

-**Mgt**:resoves spontaneusly in 6 months.

Internal hordeolum

An abscess within the meibomian gland

c/p: Painfull (unlike chalazion).

Mgt: may respond to topical antibiotics, usually incision Is necessary.

External hordeolum (STYE)

-it's an exquisitely painfull abcess of an eyelash follicle.

- mgt: removal of the associated eyelash and application of hot compresses.

-most cases are self limited, but occasionly systemic antibiotics are required.

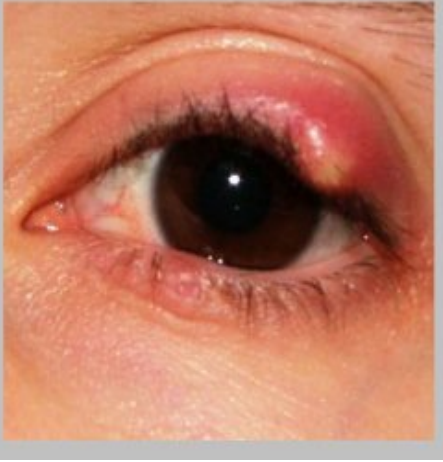
stye

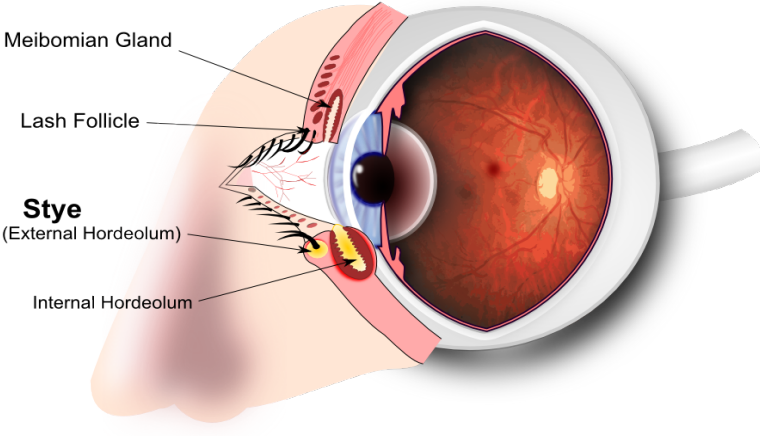
Acute hordeola

Internal hordeolum (acute chalazion)	External hordeolum (stye)
	
• *Staph.* abscess of meibomian glands • Tender swelling within tarsal plate • May discharge through skin or conjunctiva	• *Staph.* abscess of lash follicle and associated gland of Zeis or Moll • Tender swelling at lid margin • May discharge through skin

Hordeolum internal

Hordeolum Eksternal

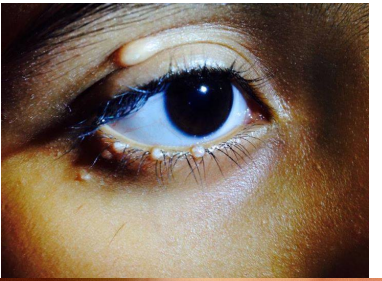



Meibomian Gland
Lash Follicle
Stye
(External Hordeolum)
Internal Hordeolum

2-Molluscum contagiosum:

Pox virus, umbilicated lesions, follicular conjunctivitis.

Tx: excision of the lid lesion



3-Cysts:

3-1: cyst of Zeiss: opaque lesion

Blockage of an accessory sebaceous gland, rarely cause symptoms

Ttt: Excision for cosmetic resons.

3-2 Cyst of moll:

Obstruction of a sweat gland, translucent.

4-squamous cell papilloma:

Frond-like lesions, fibrovascular core & thickened squamous epithelium

-result of infection with human papillomavirus (HPV).

-Asymptomatic, may be excised for cosmetic reasons

5-Xanthelasma :

lipid containing Bilateral lesions, often in the medial side, may be associated with hypercholesterolemia.

-Mgt:

lipid profile

6-Keratoakanthoma:

Brownish-pink, fast growing, centre filled with keratin.

Histology may reveal SCC.

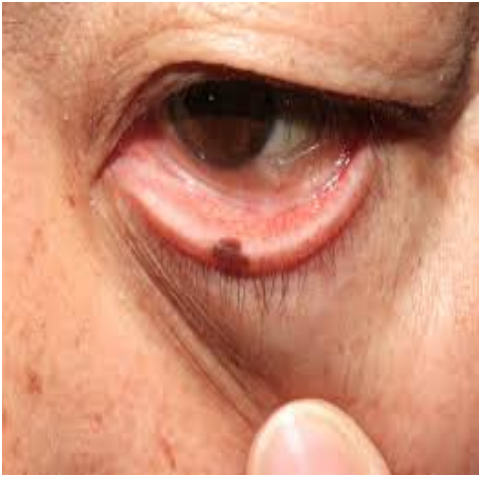
Mgt: Excision

7-Naevus (mole):

-derived from naevus cells (altered melanocytes).

- can be pigmented or non-pigmented.

-N



Malignant tumors

1-BCC:

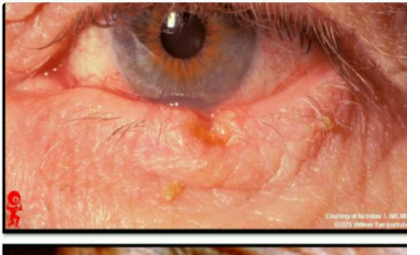
-most common , 90% of eyelid malignancies

slow growing , locally invasive , non metatasizing

-**RF**:UV exposure.

-**C/P**: painless , nodular , sclerosing , ulcerative ***(rodent ulcer)***

er



2- SCC :

-Very rare, more malignant, metastasize to Lymph nodes, hard nodule or scaly patch.

-**RF**:UV exposure.

-**Mgt:** excisional biopsy with safety margin, check cervical lymph nodes.

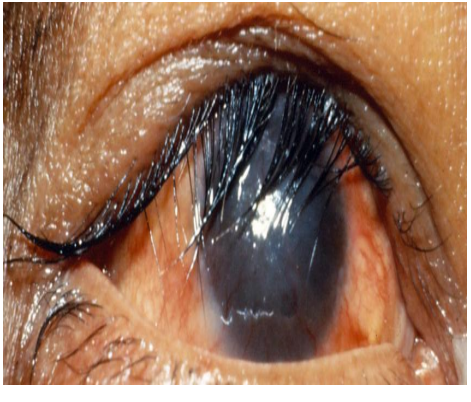
Abnormalities of the lashes

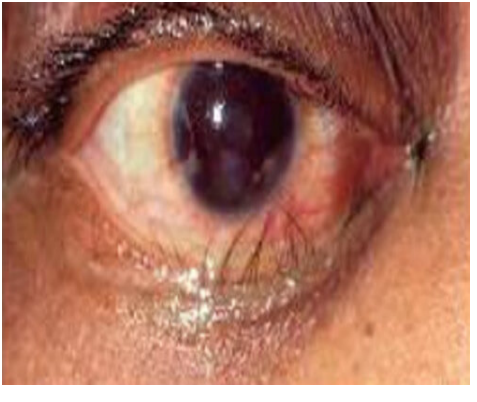
-Trichiasis:

Aberrant eyelashes directed backward towards the globe, distinct from entropion)

-**Symptoms:** irritation+foreign body sensation, abrasion, redness, watering (tearing).

-**Cause**: Trachoma in developing countries.





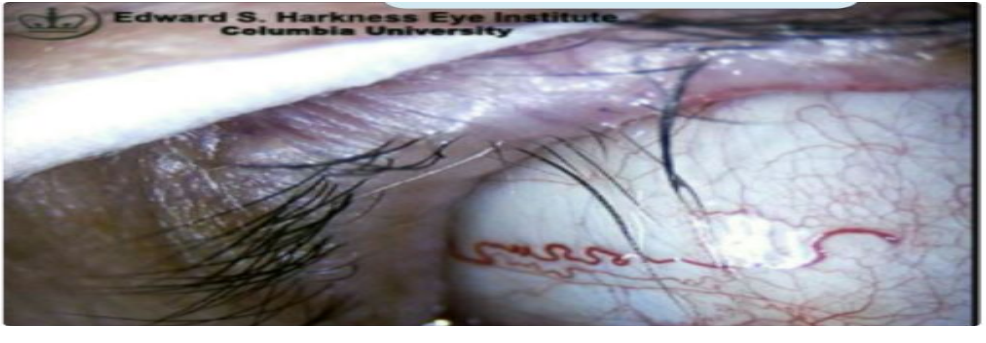
-Complication: corneal abrasion, sometimes blindness in trachoma

Ttt:

- epilation of the offending lashes

-recurrence can be treated by electrolysis or cryotherapy

-Any underlying abnormality of lid position needs surgical correction



The lacrimal system

By: Ghaida

***Abnormalities of the lacrimal gland and system:**

1. Tear flow and evaporation.
2. Drainage of tears.

1. **Tear flow and evaporation:**

1-1 Aqueous deficient – dry eye:

Causes:

1-Normal with age. 2-Sjögren's syndrome

1-2 Evaporative dry eye:

a. inadequate meibomian oil delivery

b. malposition of the eye globe or lid margin (proptosis/ ectropion)

1-3 Inadequate mucous production:

- loss of goblet cells

***Dry eye:**

-***symptoms:*** grittiness, burning, photophobia,heaviness in the lids and ocular fatigue.

-symptoms worse in the evening

-in sevre cases: reduced visual acuity due to corneal damage.

-signs:

In severe cases: staining with fluorescein will show small dots of fluorescence (punctate staining).

-tags of abnormal mucus may attach to the corneal surface (filamentary keratitis), causing pain due to tugging of these filaments during blinking

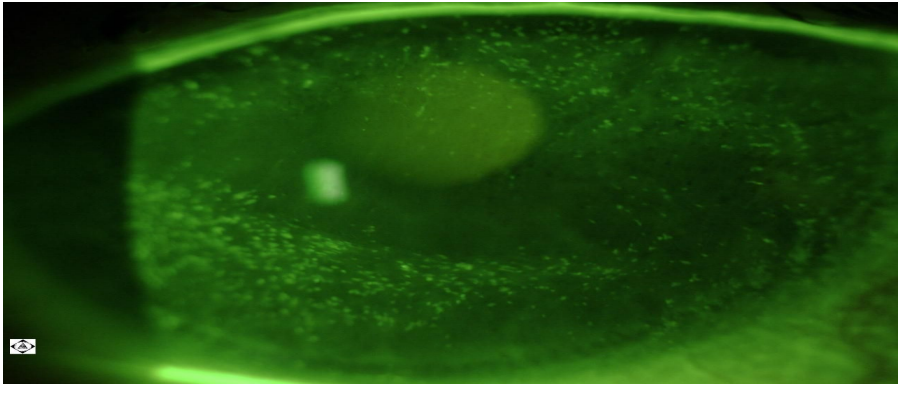
Treatment:

Artificial tears.

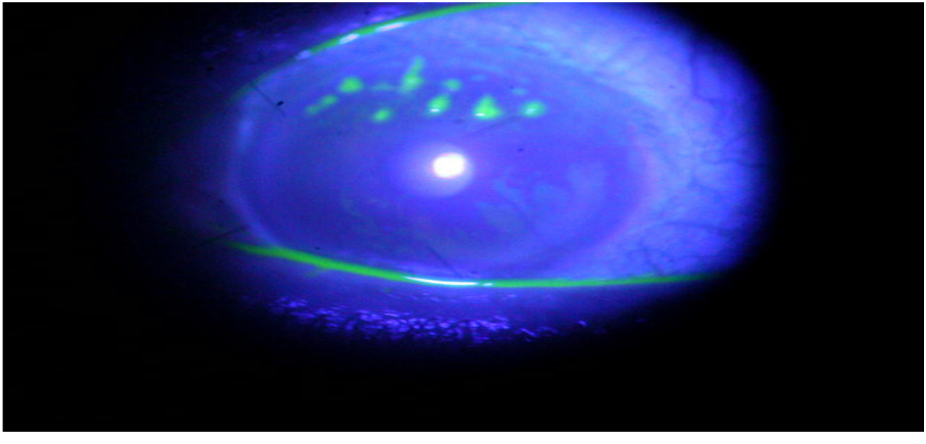
In more severe cases:

-Shielded spectacles to create humid environment around the eye.

- surgery : to occlude the puncta either temporarily or permanently, or to correct the position of the eye lids.

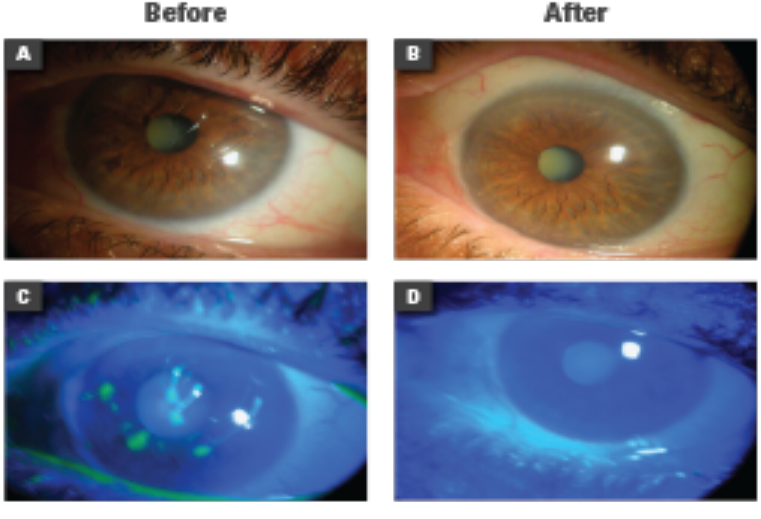


Fluorescein staining of cornea and conjunctiva in a severe dry eye shows ***Punctate staining***



Fluorescein staining of filamentary keratitis

Filamentary Keratitis



2. Disorders of the tear drainage:

2-1 :Obstruction of tear drainage:

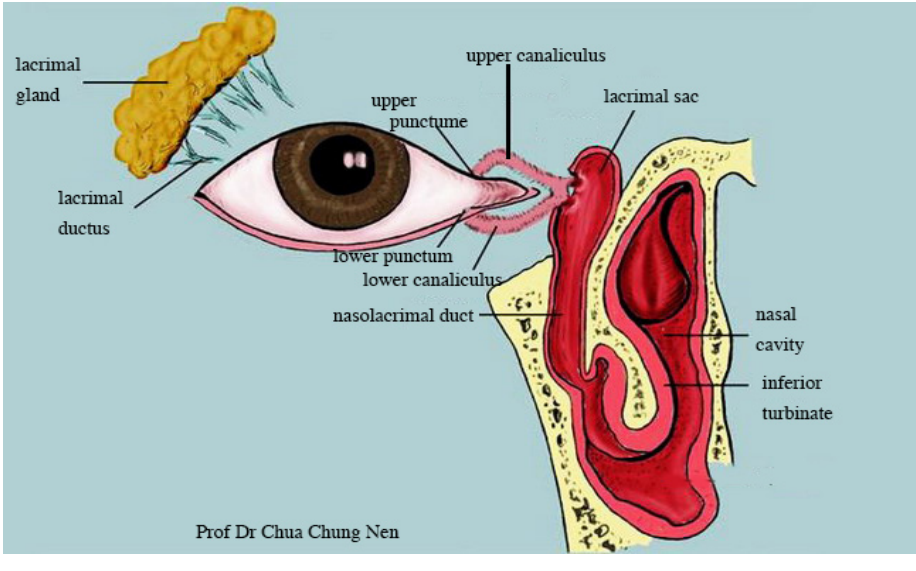
most common site is nasolacrimal duct. - occlusion to any part of the drainage system (when the tearing is termed epiphora)

2-2:Infection - Dacrocystitis

closed obstruction of the drainage system predispose to infection of the lacrimal sac.

- presentation: painful sweeling on the medial side of the orbit.
- treatment: systemic Abs - mostly due to staph or strep

Tear drainage system



***Dacrocystitis:**

infection of the lacrimal sac, secondary to obstruction Of the nasolacrimal duct at the junction of the lacrimal sac.

C/P: pain, redness , swelling over the inner aspect of the lower eyelid and epiphora.

Organism: staphylococcus or streptococcus.

Mgt: admission, systemic Abx , incision and drainage , dacrocystorhinostomy DCR.

Orbit

By: Ghaida

1- proptosis:

-Protrusion of the eye caused by space occupying lesions.

-Exophthalmus: is specific for Graves eye Dx.

-it's measured by exophthalmometer

-if the eye is displaced directly forward= intraconal lesion(within the extraocular muscle cone). Ex:optic nerve sheath meningioma.

-if the eye is displaced to one side=extraconal lesion. Ex: tumor of the lacrimal gland displaces the globe to the nasal side.

-transient proptosis: induced by increasing the cephalic venous pressure (by Valsalva).=orbital varices.

-slow progression: benign tumor.

-fast progression: inflammation, malignancy.

-pain: infxn , inflammation, malignancy.

*Investigations: CT, MRI help in diagnosing and localizing eye disease,

-Signs: Bilateral proptosis & lid retraction.
Most common systemic disease causing this: Grave's disease
complications: optic nerve compression, eye dryness, corneal ulceration.
If it's unilateral proptosis also the m.c.c is Grave's disease.
-Investigations: Thyroid function test.

-Name of this tool: Hertel's exophthalmometer.

-+ve findings if:

1) readings > 21mm (NL range is 12-21).

2) a difference > 2mm between both eyes.

2-Enophthalmus:

-backward displacement of the globe.

-is a feature of an orbital Blowout fracture.

-pseudo-enophthalmus is a feature of horner's syndrome

Blowout fracture:

(more details in the trauma Section).

Fig. 1 Bruising around the eye is a common symptom of a blowout fracture.

3- eyelid and conjuctival changes:

-conjunctival injection and swelling =inflammation or infection process.
-infection is associated with Reduced eye movement+ erythema+swelling of the lids ***(Orbital cellulitis) Serious.***

-With more anterior lid inflammation ***(Preseptal cellulitis):*** eye movements is full, the globe is not affected, thus exclude the more serious orbital cellulitis.

-Dx: LT orbital cellulitis

-Sx: ***reduced eye movements***, periorbital inflammation,swelling and painful proptosed eye.

Investigations : MRI or CT.

-Tx: Broad-spectrum IV Abx, drainage of abscess and orbital decompression if present.

Preseptal cellulitis
just involves the lid structure alone, normal eye movements, the globe is not affected.
tx: oral Abx , warm to hot compressors

*Capillary haemangioma

Fig. 1 A capillary hemangioma is an abnormal overgrowth of blood vessels that is sometimes referred to as a "strawberry" birthmark.

-swelling of the upper lid may cause sufficient ptosis then amblyopia

-most of them undergo spontaneous resolution by 5 yrs of age.

-Mgt: is by observation, Tx is indicated if the size or position obstructs the visual axis and there is a risk for amblyopia, Tx is by :

1-local inhection of steroid– will decrease the size.

2-intralesional or systemic ppropranolol may cause rapid regression.

Dermoid cyst:

-congenital.

-continued ectodermal growth in the medial or lateral aspect of the superior orbit.

-it may occur at the limbus.

-it may has deeper connection, do CT scan prior to the surgery to identify it.

-Tx: surgical excision for cosmetic reasons and to avoid traumatic rupture which also causes scarring

Fig. 1 A dermoid is an overgrowth of normal, non-cancerous tissue in an abnormal location.

trauma

By: Ghaida

Forms of eye injury:

1-Foreign bodies lodgment especially in the cornea.

2-Blunt trauma.

3-penetrating trauma:where ocular structures are damaged by a foreign body which pass the ocular caot and may be retained in the eye.

4-chemical and radiation injury, where the resultant reaction of the ocula tissue causes damage.

1-orbital injury:

BLOW-OUT FRACTURE:

****Signs:***

1-emphysema: due to fracture and rupture of ethmoid and maxillary sinuses.

2-red eye.

3-bruises around eye.

4- patches of paraesthesia below the orbital rim(indicating damage of the infraorbital nerve, common in injury of the floor of orbit).

5-enophthalmus.

6-limitation of upgaze and downgaze eye movement.

7-epiphora if the lacrimal system is involved. (mostly injury at the medial canthus.

Ttt: Most need observation.

Mgt:

-Orbit CT scan if not possible, plain orbital radiograph.

-treatment may be delayed until the periorbital swelling has settled.

-observe the degree of enophthalmus, eye movements.

-if enophthalmus and eye movements limitation are sevre or they are cosmetically unacceptable,then surgical repair is indicated.

Fig. 1 Bruising around the eye is a common symptom of a blowout fracture.

2-penetrating eye injury through the cornea and sclera

Symptoms and signs:

1- Hx of high-velocity object hitting the eye.

2-Dark tissue in the cornea or sclera (iris plugging of a penetrating wound).

3-Distortion of the pubil

4-usually deep anterior chamber

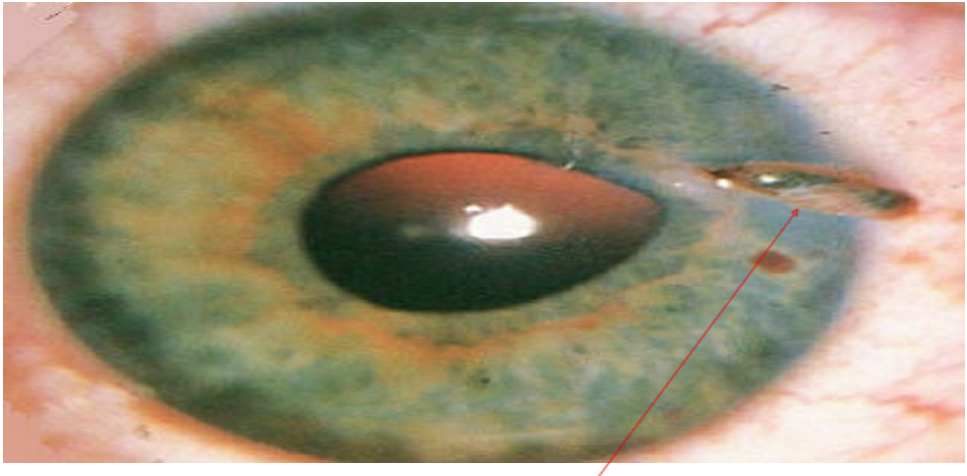
5-cataract.

6-vitreous hemorrhage.

7- raised IOP.

Pentrating eye injury with a pencil.

Note the displacement of the iris and pupil towards 8 O'clock where the perforation occurs at the corneoslceral junction.



Penetrating eye injury.

Note ***the iris prolapse*** and the "tear drop" shape iris prolapsed through the corneal laceration. And the distortion of the pubil.

It is important to exclude the presence of intraocular foreign body.

Management of penetrating trauma:

-once identified no further examination is required, they need urgent ophthalmic Tx.

-Microsurgical suturing to restore the integrity of the globe.

-when the eye has settled from this primary repair , additional surgeries may be required to remove foreign bodies, cataract, corneal graft, repai Retinal detatchment or remove vitreous gel.

2-conjunctiva and sclera :

****Sign: Subconjunctival hemorrhage***

*Retained IRON-containing foreign bodies may have a devastating effect on the eye ***(Siderosis oculi).***

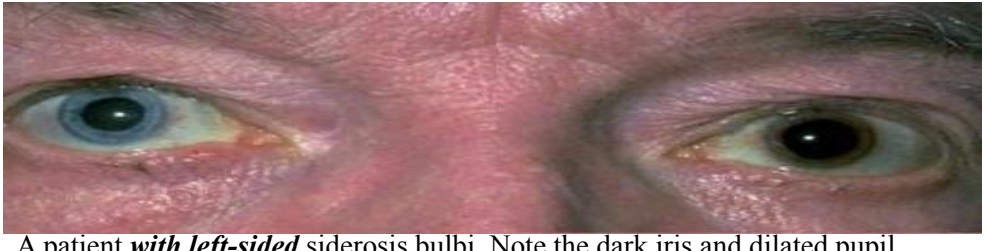
With time these signs are found:

1-heterochromia: discoloration of the iris due to pigment degeneration of the retina

2-Fixed mydriasis.

3-cataract

4-if foreign body is not detected , it may cause irreversible blindness via free radicals production.



A patient ***with left-sided*** siderosis bulbi. Note the dark iris and dilated pupil.

Remember that the abnormal eye is the darker in siderosis bulbi.

chemical injury:

Alkali or acidic

-alkali causes more damage, because it causes liquifactive necrosis, while the acid causes coagulative necrosis.

Signs of alkali burn:

1-the conjunctiva appears white and ischaemic in severe cases

2-hazy sometimes white cornea

***Early* signs and symptoms of a chemical eye burn are:**

Pain

Redness

Irritation

Tearing

Inability to keep the eye open

Sensation of something in the eye

Swelling of the eyelids

Blurred vision

Factors affecting the clinical outcome:

1- type of the agent (acidic or alkaline, alkaline is more serious).

2- PH, both high alkaline ph and low acidic PH are serious.

3-concentration of the offending agent.

3-Duration of exposure.

3-duration between exposure and irrigation.

4-limbal involvement and ischaemia (may prevent regeneration because stem cells are there).

Mgt:

-Irrigate the eye immediately with copious amount of neutral solution form 30 min- 2 hrs, irrigate under the upper and lower eye lids to remove foreign bodies.

-steroids, dilating drops, topical and oral vitamin C improve the healing, systemic and topical anticollagenases (ex:tetracyclines).

Complications:

1-loss of stem cells if involved the limbus (No regeneration)----corneal scarring (white cornea).

2-uveitis

3- secondary glaucoma

3-cataract

4-corneal melt (keratolysis).

4-conjunctival ischemia.

Signs of alkali burn:

1-the conjunctiva appears white and ischaemic in severe cases.

2-hazy,white cornea.

3-The cornea:

1-**corneal abrasion:**

extensive epithelial loss from ***the outer layer of the cornea***.

-the instillation of fluorescein will identify the extent of an abrasion

-due to chemical or physical trauma.

-extremely painful condition

Corneal abrasion with fluorescein staining

Treatment of corneal abrasion:

1-antibiotic ointment with or without eye pad.

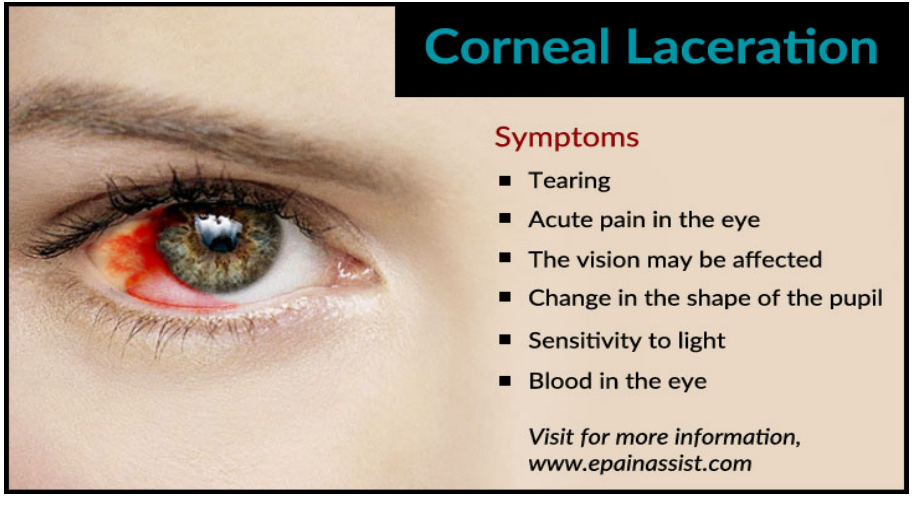
2-dilation of the pubil with cyclopentolate

3- lubricating ointment.

4-UV injury—topical steroids

2-corneal laceration:

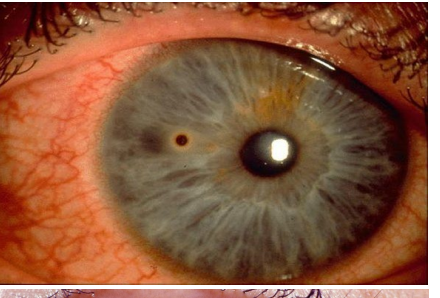
Deeper than than abrasion, maybe fullthckness or partial thickness ,*more serious.*

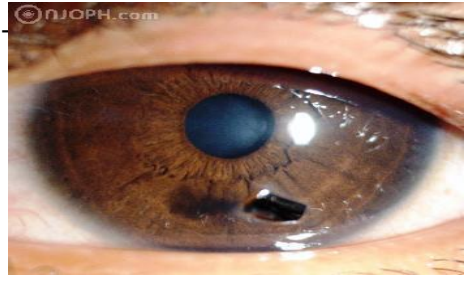


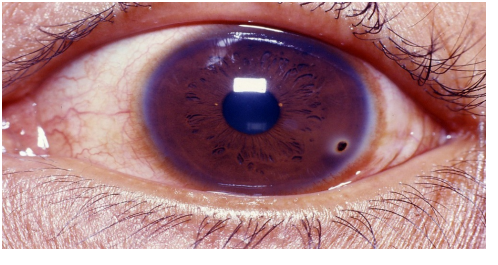
These are cases of penetrating eye injury, showing ***corneal laceration***, ***iris prolapsed*** through the laceration, and there is a ***distortion in the shape of the pubil.***

Source: Riordan-Eva P, Cunningham E: *Vaughan & Asbury's General Ophthalmology*, 18th Edition: http://www.accessmedicine.com

3-corneal foreign body:







Management of corneal foreign bodies:

1-removal of the foreign body with aneedle under topical anaesthesia

2-subtarsal objects can often swept away with a cotton-wool bud from the everted lid.

3-Microsurgical techniques can be used.

3-examinationof the eye carefully with dilation of the pubil.

4-orbital CT scan

Causes of corneal injury:

1-penetrating eye injury.

2-Chemical burns

3-foreign body

4-electromagnetic radiation

5-unprotected exposure to UV radiation

4- The anterior chamber:

<u>It's either Blunt trauma: (signs)</u>

1-hyphaema (hemorrhage into the Anterior chamber, collects with fluid level

2-iris dialysis (iris detachment from it's insertion in the ciliary body , produce ***D-shaped pupil.***

3-Fixed dilation of the pupil ***(Traumatic mydriasis).***

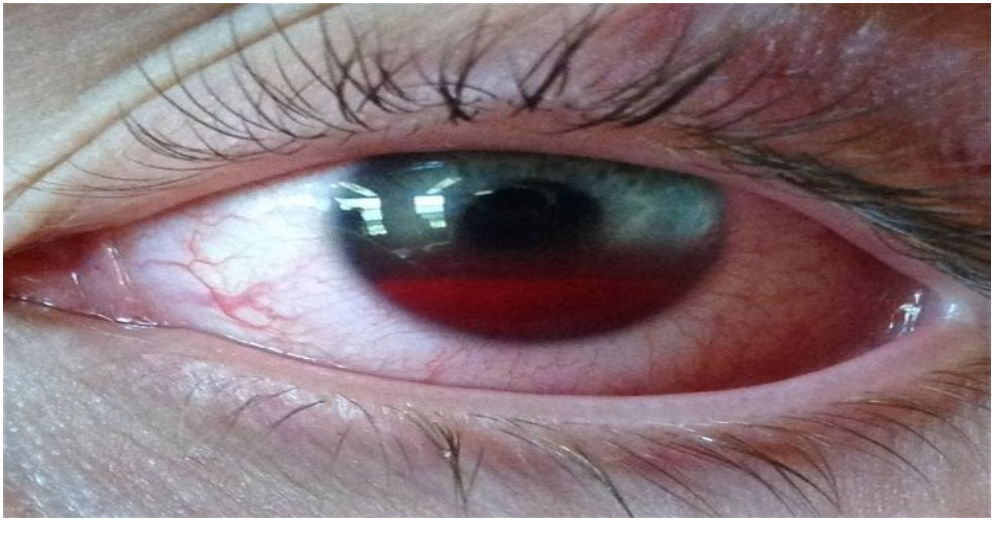
<u>Or penetrating trauma:</u>

1-Hyphaema.

2-corneal laceration

3-pluging of the iris through the laceration

4-distortion of the pupil shape



Hyphaema
The commonest complication is increased intraocular pressuere

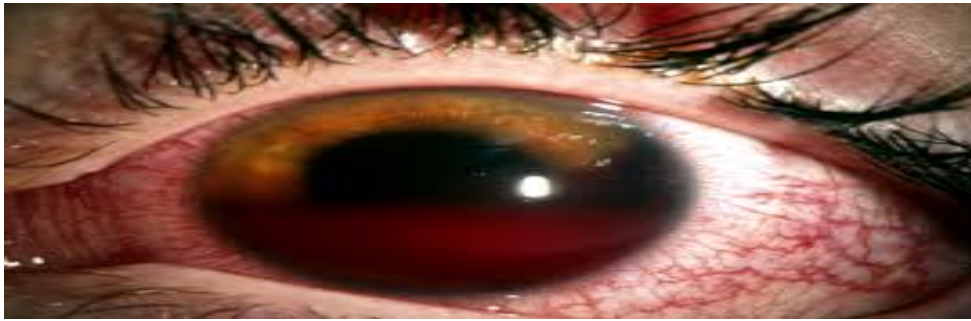
Hyphaema Mgt:

1-Rest, steroid eye drops, pubil dilation (cyclopentolate).

(adults in home, children may require admission for few days).

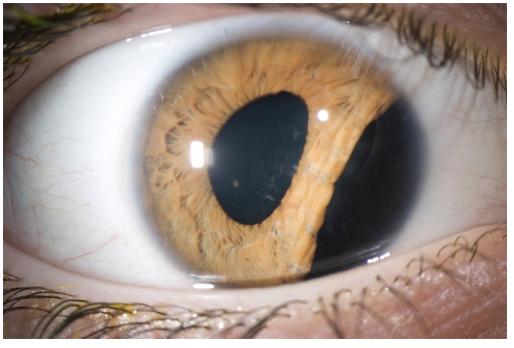
2-if medical Tx fails, then surgical mgt is required.

3- check for other complications of blunt trauma when the hyphaema settles.



-Dx: Hyphaema
-Causes: trauma, infection (herpes), abnormal BVs on the surface of the iris.
Tx: B-blockers, alpha agonists, systemic carbonic anhydrase, mannitol.
If uncomplicated,:we'll go to surgery which is AC

Blunt eye injury to the Anterior chamber in the Right eye showing Hyphaema and Fixed dilated pupil (Traumatic mydriasis).



iris dialysis, iridodialysis ,D-shaped pupil.

-In case of Blunt trauma to the Anterior chamber.

Iridodialysis
separation of iris from ciliary body , “D shaped” pupil
causes: blunt trauma , penetrating trauma , eye surgery.
ttt: is small they are asx and need no treatment . If large and causing hyphema , then rest , steriods , pupil dilators (cyclopentolate), antiglaucoma acetazolmide

Again, penetrating eye trauma with:
corneal laceration
pluging of the iris through the laceration
distortion of the pupil shape.

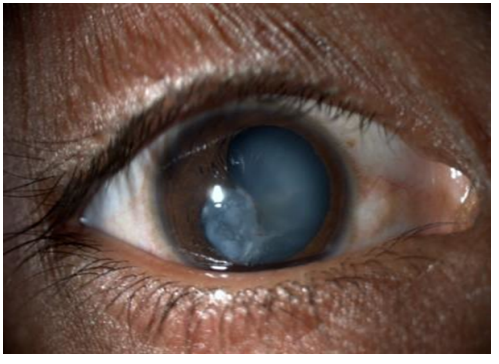
The lens:

Trauma can cause:

1-lens dislocation.

2- blunt trauma may cause a posterior subcapsular cataract **within hours** of the injury.

3-direct penetrating trauma abruptly causes cataract



Traumatic cataract, notice the: -distruption of the pupil.
-the distruption of the iris
-iridodialysis . Which are signs indicating trauma.

5-The fundus:

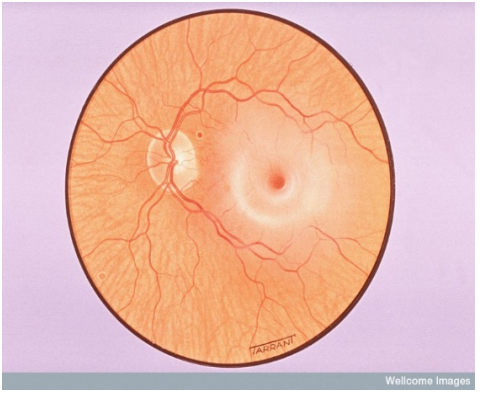
-direct ophthalmoscopy after full mydriasis: may show retinal hmg, retinal edema(commotion retinae),retinal dialysis., chroid maybe torn causing suretinal hmg and subsequent scarring

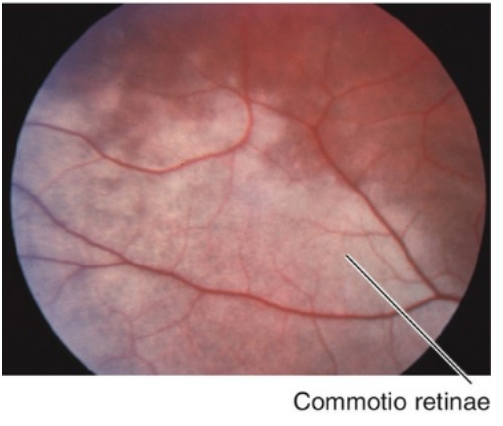
-indirect ophthalmoscopy or slit lamp examination:

To show peripheral retinal changes.

-absence of red reflex and fundus details= vitreos hmg.

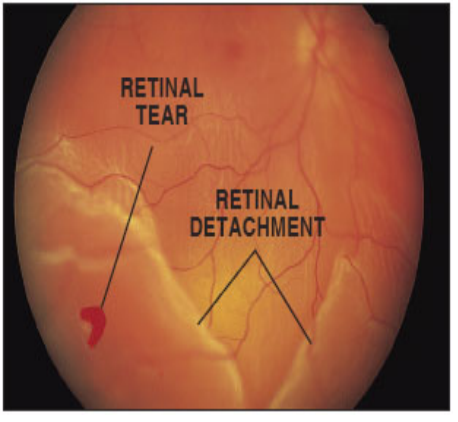
-pale optic disc from traumatic optic neuropathy (optic nerve avulsion).

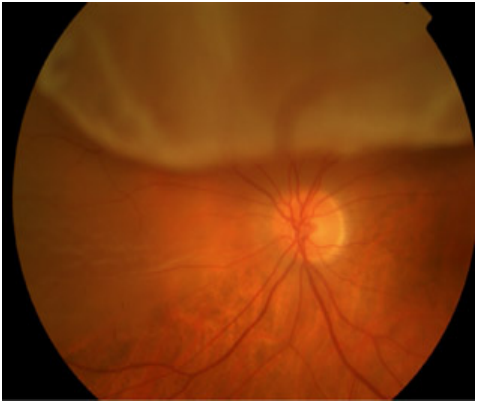




-retinal edema(commotion retinae).

-(mgt is observation)





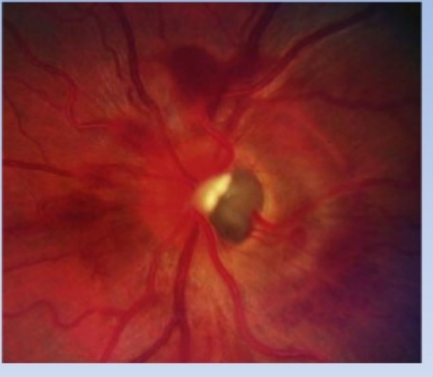
-retinal dialysis ,detachment.

-Mgt:surgical repair.

vitreos hemorrhage

-Mgt:vitrectomy.

Traumatic optic neuropathy (TON)



Optic nerve avulsion

Clinical Optics

By: Ghaida

***Optics:**

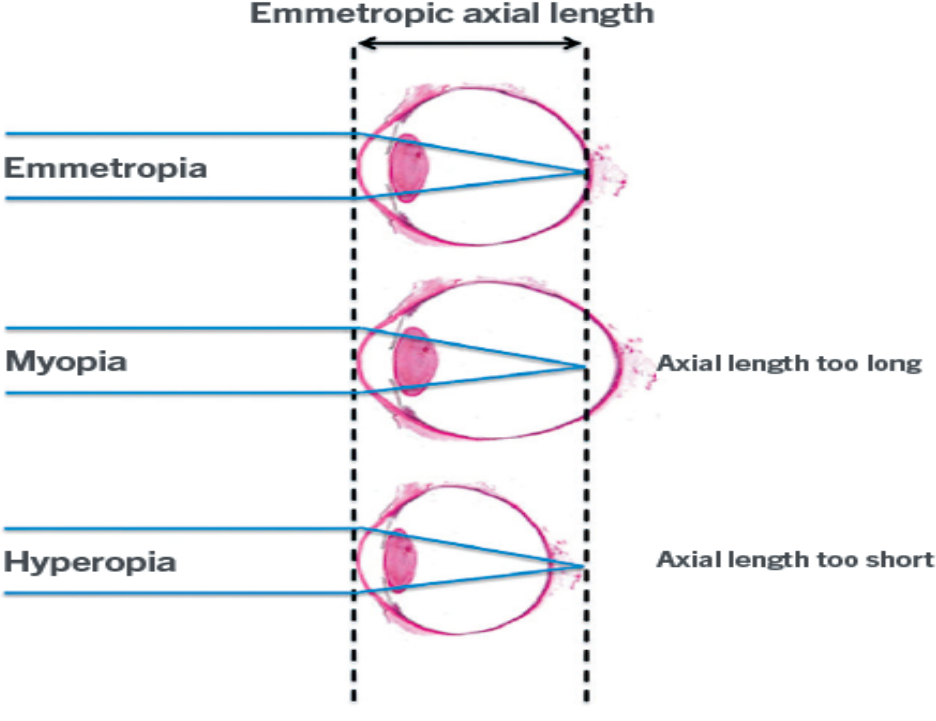
-emmetropia: normal refractive state of the eye, when 2 parallel rays of light from a distant object are brought to a focus on the retina when the eye at rest.

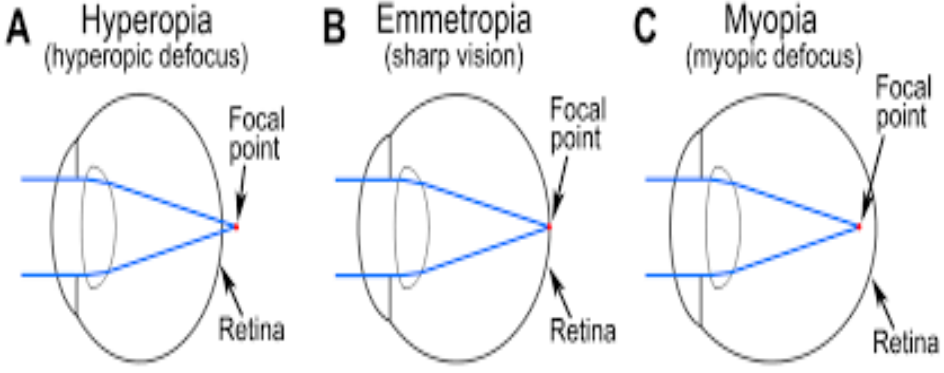
-***ametropia:*** parallel rays are not brought to a focus on the retina with the eye is at rest. It's devided into:

1-***Myopia*** (short-sightedness): high optical power, the parallel rays of light are brought to a focus in front of the retina.(usually because the eye is too long).

2-***Hypermetropia***(long-sightedness): low optical power, the parallel rays of light converge towards a point behind the retina. (usually because the eye is too short).

3-***Astigmatism***: the optical power of the cornea in different planes is not equal. Parallel rays of light passing through these different planes are brought to different points of focus.


Emmetropic axial length
Emmetropia
Myopia
Axial length too long
Hyperopia
Axial length too short


A
Hyperopia
(hyperopic defocus)
Focal point
Retina
B
Emmetropia
(sharp vision)
Focal point
Retina
C
Myopia
(myopic defocus)
Focal point
Retina

All three types of ametropia can be corrected by

***spectacle lenses:**

1- in myopia they diverge the rays, diverging lens, concave lens.

2-in hypermetropia they converge the rays, converging lens, convex lens.

3-in astigmatism: lens correct the non spherical shape of the cornea.

***contact lenses: either rigid gas permeable, or soft.**

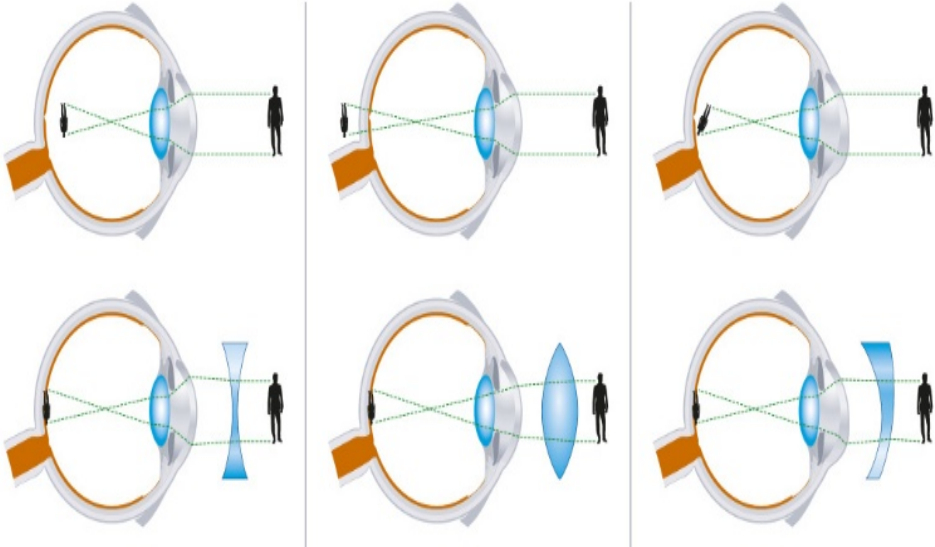
***refractive surgery :**

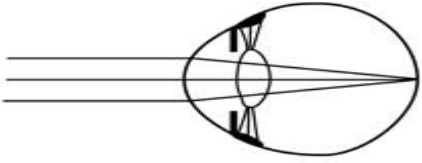
PRK, LASIK, LASEK.

In myopia:flattening of the cornea, in hypermetropia: steepening it.

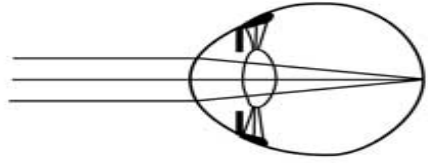
-after PRK: pain is reduced by provision of a bandage contact lens, Topical or systemic NSAIDs

-LASEK flap take longer time to heal than LASIK flap.


Myopia
Hyperopia
Astigmatism

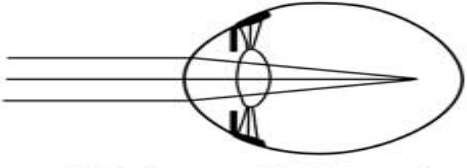


Normal eye



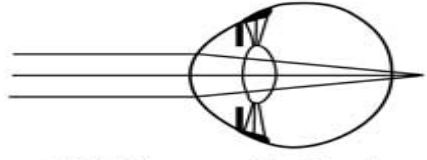
Normal eye

Myopia



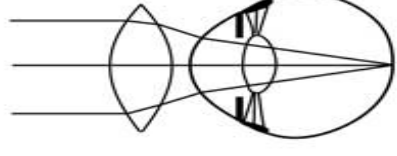
Light focused in front of retina

Hypermetropia



Light focused behind the retina

Corrected with concave lens



Corrected with convex lens

P.S: When you are asked to describe a photo in the exam don't forget to mention the sides RT or LT.

-Don't forget to check the past papers file.

GOOD LUCK