



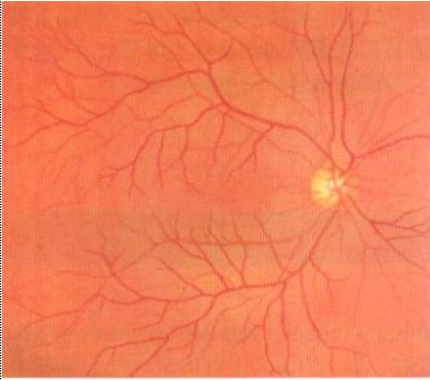
ophthalmology
Team

Ophthalmology OSCE

Done by: Shahd Saleh Al-Awwad

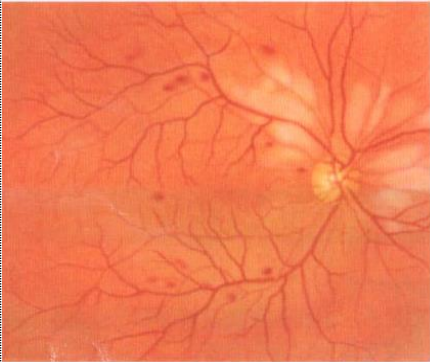
Wish you all the best =)

Retinal examination :



1. normal

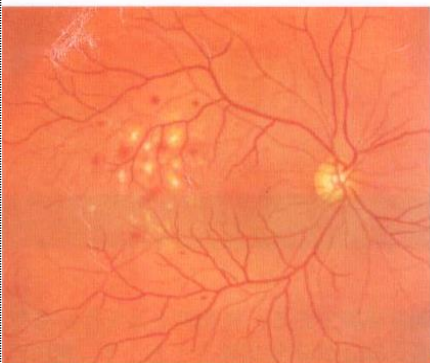
The color of the fundus is brown or orange. A slightly dark spot in the middle is the macula. At the portion 15 degrees nasally from the center on the horizontal axis, there is the papilla of the optic nerve which is circular or slightly elliptical shaped and has a slightly brighter tinge. The border between the papilla and the surrounding retina is clearly defined. The center of the papilla is indented and brighter than the periphery (excavatio papillae), and appears pale yellow. The area of the indentation is less than 60% of the total area of the papilla, and the retinal arteries and veins extend upward and downward nasally and aurally from the papilla's nasal side. On the nasal side, they run straight. The fine arteries and veins running from the papilla to the macula run straight. The arteries are bright red and the veins are darker, and in the center of the arteries appears a white linear reflection about 40 or 45% of the artery in width. The diameter of the artery is from 2/3 to 3/4 that of the vein.



2. hypertensive retinopathy

Arterial vasoconstriction grade 3, arteriosclerosis grade 1, hemorrhages, cotton wool spots, and simple vein concealment.

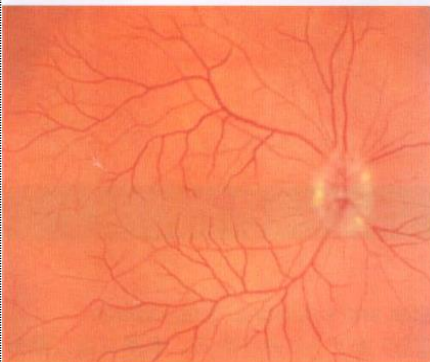
The diameter of the constricted arteries is irregular and less than half that of the corresponding veins. Spotty hemorrhages are scattered. Soft exudates (cotton-wool patches) exhibit localized insufficient blood supply of the optical nerve tissue. Simple vein concealment appears at the crossings of artery and vein.



3. simple/background diabetic retinopathy

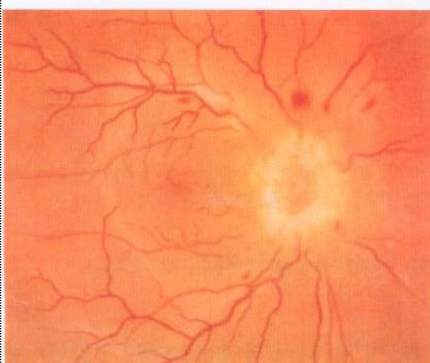
Microaneurysms, hemorrhages and hard exudates.

Spotty hemorrhages are scattered around. The extremely small red dots are microaneurysms, and the hard exudates are also apparent.



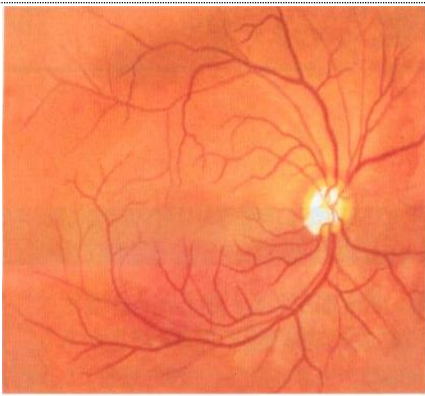
4. papilledema (chronic phase)

Caused by chronically increased intracranial pressure. The papilla of the optic nerve swells and protrudes into the vitreous body. The apical indentation of it (excavatio papillae) disappears, and the boundary between the papilla and surrounding retina becomes unclear. But in contrast to the acute phase, the amount of bleeding and exudation is smaller, and the degree of venous engorgement is less.



5. papilledema (acute phase)

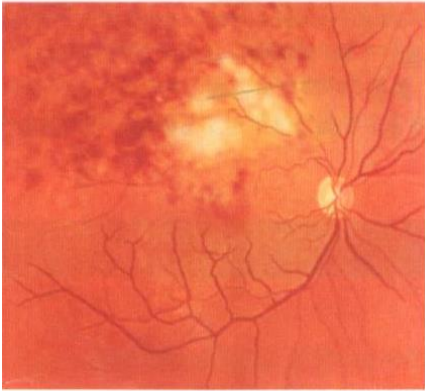
Generally occurs as a result of increased intracranial pressure. The papilla swells and protrudes into the vitreous body. The apical indentation (excavatio papillae) disappears. The boundary between the papilla and the surrounding retina becomes unclear, and the retinal veins become engorged. Splinter hemorrhages appear in the retina.



6. glaucomatous optic atrophy

Glaucomatous optic disc cupping and nerve fiber bundle defect.

Glaucoma causes optic nerve atrophy. The indentation of the optic papilla (excavatio papillae) become pale and enlarges, and the diameter of it becomes over 60% of the total diameter of the papilla. (cup/disc ratio: C/D>0.6) The color of the margin of papilla is normal, and the border between the papilla and the surrounding retina is distinct. When the papillary indentation stands out in this way, glaucoma should be suspected even without any other symptoms. Nerve fiber bundle defect appears in a radiating pattern from the papilla.



7. retinal vein occlusion (acute phase)

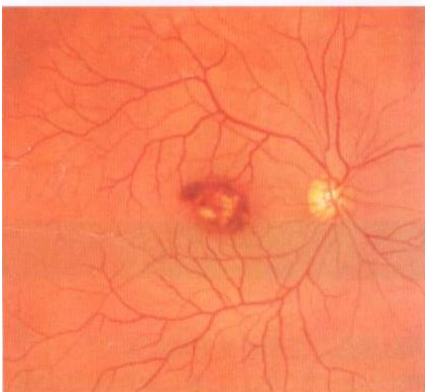
Flame-shaped hemorrhages and cotton wool spots.

Caused by venous occlusion at the venous/arterial crossings where veins are pressed by sclerotic arteries. Flame shaped hemorrhages run along the surface of retinal veins, and soft white spots (cotton wool spots) appear. In areas without hemorrhages, crossing phenomena by arteriosclerosis can be observed.



8. retinal vein occlusion (after retinal laser photocoagulation)

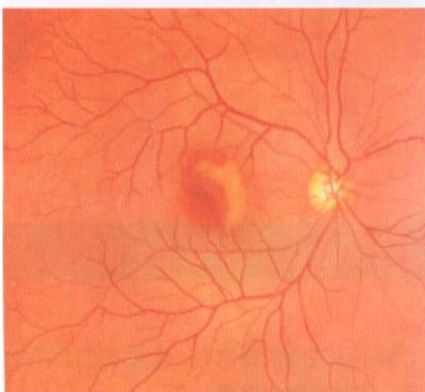
The scar from retinal laser photocoagulation treatment can be seen as a series of whitish spots. After bleeding, the retinal veins form white lines.



9. toxoplasmosis

Retinochoroiditis.

Caused by *Toxoplasma gondii*, the most of cases are inapparent infection. There are congenital cases and acquired cases, of which the present example is the latter. The lesion usually appears at posterior area of the retina, and causes localized exudative retinochoroiditis. In this case, white and gray lump can be seen at the macula.



10. age-related macular degeneration

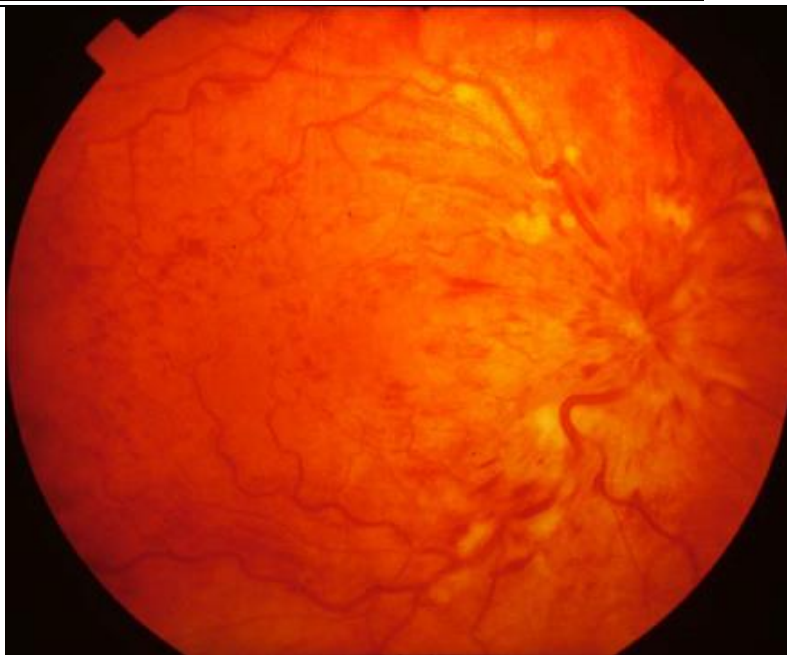
The exudative and hemorrhagic changes of the macula which are seen mostly in patients over age 60. In the present case, the white area of exudates and the red area of hemorrhage are seen at the macula. Severe level of visual impairment occurs after repeated hemorrhage from newly formed blood vessels



Normal



1 Senile macula degeneration. The disc appears normal but there is unusual pigmentation at the macula. This patient also has drusen which are asymptomatic nodules occurring in the choroid.



2-Central retinal vein occlusion. Typical 'stormy sunset' appearance with engorged veins with haemorrhages alongside them.



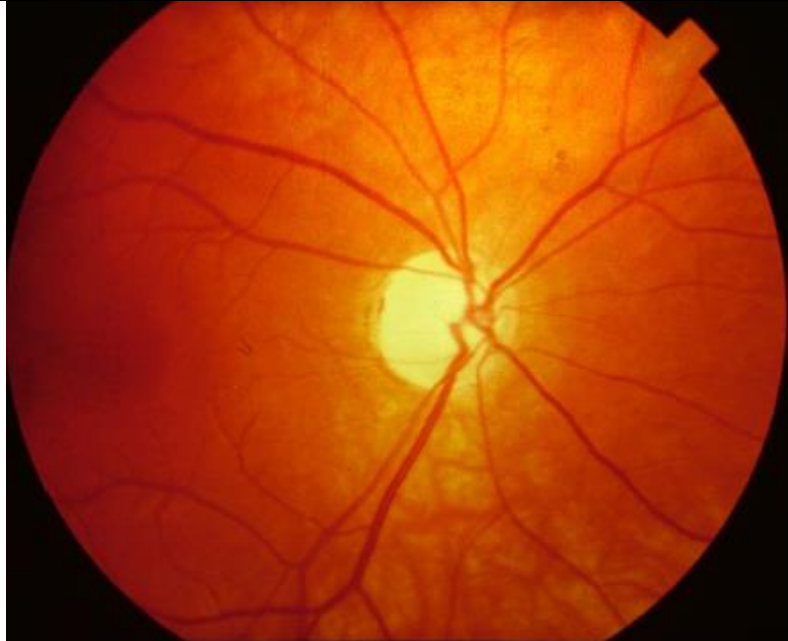
3 Hypertensive retinopathy. The retinal arteries have become narrow and tortuous. In more advanced cases haemorrhages and 'star burst' exudates occur together with papilloedema.



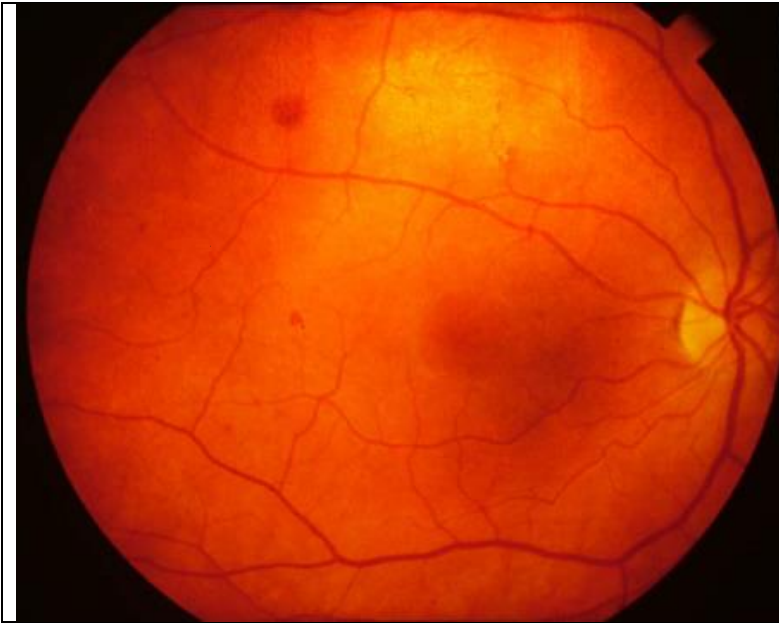
4 Papilloedema. The disc is swollen and the disc margin has disappeared. The veins are congested.



5 Disc cupping. Here the degree of cupping is mild but suggestive of glaucoma. As the condition progresses the optic disc becomes pale and the cup wider and deeper.



6 Optic atrophy. The optic disc is pale and the condition is associated with gradual loss of vision. It may be secondary to a number of conditions including glaucoma, retinal damage, ischaemia and poisoning.



7 Mild background diabetic retinopathy. Haemorrhages and microaneurysms can be seen.



8 Background diabetic retinopathy. There are areas of hard exudates and some evidence of macula involvement.



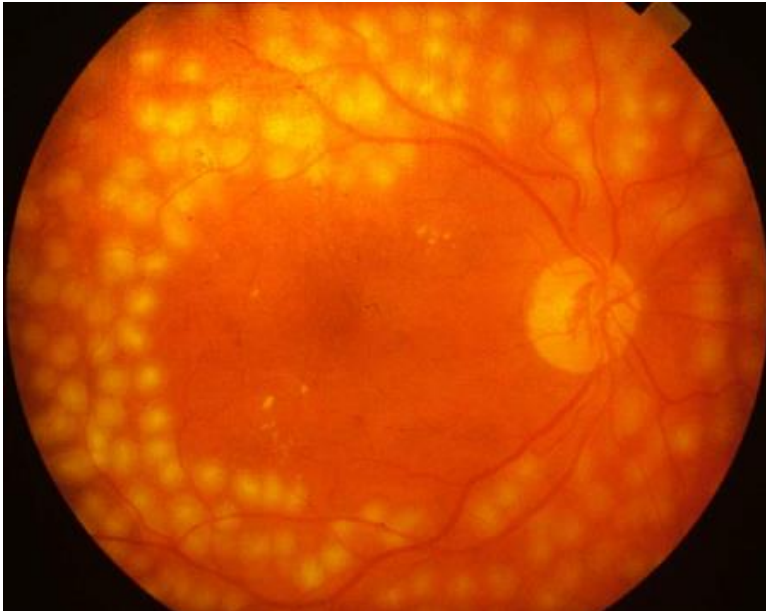
9 Preproliferative diabetic retinopathy with haemorrhages, microaneurysms, and hard and soft exudates.



10 Preproliferative diabetic retinopathy with extensive haemorrhages and exudate formation and a preretinal (subhyaloid) haemorrhage.



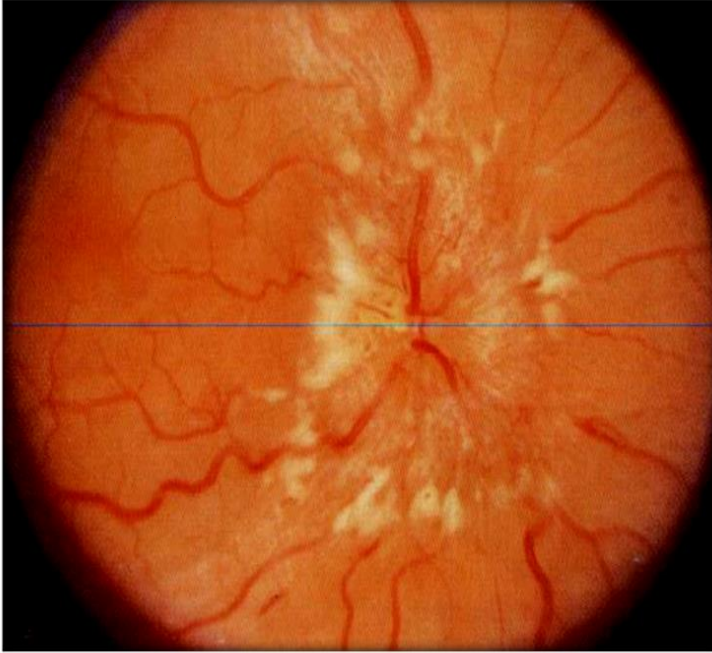
11 Proliferative diabetic retinopathy with new vessel formation.



12 Diabetic retinopathy recently treated with laser photocoagulation.



Non-proliferative diabetic retinopathy
Treated by laser photocoagulation



Papilledema
Causes:
Hypertension
Pseudotumor cerebri



Retinal detachment
2 causes:
High myopia
Retina detachment of opposite eye

Visual field, Tonometry , Pupillary examination

Objective :

a) Visual field

- overview of visual pathway
- basics of confrontation field testing
- common field defects
- localizing field defects

b) Tonometry

- intraocular pressure measurement conventions and population means
- types of tonometers (Goldmann application tonometers, tonopen, etc)

c) Pupill examination

- general pupillary observation
- light-reflex test
- swinging flashlight test
- near-reflex test
- relative afferent pupillary defect

Task	performed	Not performed
Introduce yourself		
Ask for permission		
Wash hand		
Explain procedure		
Visual fields		
Position (the position should be in front of the patients So face is level with patients face)		
Instruct patient to cover one eye and to look at the examiner eye that is opposite of the patient while the other eye is cover		
Place your hand midway between self and the patient		
Ask the patient to identify how many fingers are displayed or when he can see the fingers (don't let the patient look directly at fingers)		
Compare patients field of vision against yours		
Test each of the four quadrants		
Repeat for other eye		
Comment on common visual field defect (Central scotoma - Bitemporal hemianopia - binasal hemianopsia - Homonymous hemianopia - Altitudinal field defects)		
Comment on localize field defects (Central scotoma – Enlarged blind spot – Arcuate nasal field defect – Wedge shaped temporal field defect)		
Pupillary examination		
Assessment of the size and symmetry of the pupil in a normal light		
Instruct patient to look at distant target and not to focus on the light		
Shine light on each pupil in turn to inspect for pupillary constriction (direct light reflex)		
Changing light rapidly from one pupil to the other and back again to check for equal pupillary constriction to rule out afferent defect (swinging flashlight test)		
Comment if the patient have relative afferent pupillary defect		
Ask patient to look into distance and then at your finger Comment on Accommodation , convergence and miosis		
Tonometry		
Indicate the uses of tonometry (measure intra-ocular pressure)		
Types (goldmann applanation– tonopen – non contact tonometry “ air puff “)		
Required 1- goldmann applanation required topical anesthesia (propacaine), fluorescein dye and tension drops 2- tono-pen required topical anesthesia (propacaine)		
Normal intra-ocular pressure (10-21)		

Visual Acuity and ophthalmoscope

a) Visual acuity

- concept of visual acuity
- measurement notations and abbreviations
- test targets
- visual acuity measurement (far and near)
- pinhole acuity test

Task	Performed	Not Performed
Introduce yourself		
take permeation		
Explain the procedure		
VISUAL ACUITY (The sharpness of near and distance vision)		
Ask the patient to wear their best spectacle correction (e.g. glasses or contact lenses)		
Place Snellen letter chart or the E chart 20 feet away from the patient		
Occlude one eye completely using the palm of their hand or an eye occlude, to allow vision testing in the opposite eye.		
Have patient read the letters from the eye chart		
Record visual acuity as a fraction.		
Use the pinhole acuity test If the patient cannot discern the symbols on the eye chart		
Near Vision If distance visual acuity test is not practical, check for near vision using a reading card, if available, or a Snellen chart.		
Ask patient to wear reading glasses if owned.		
Patient holds the near test chart at about 40 cm		
Test each eye separately		
If visual acuity is not recordable with usual tests, check for "counts fingers", "hand motion", light perception, etc.		
Repeat the test on the other eye		
Color Vision test with Ishihara test plates		

b) Ophthalmoscopy

- use of direct Ophthalmoscope to assess the red reflex and detect its abnormalities. Also to examine and comment on retinal and disc condition.
- brief about indirect ophthalmoscope

OPHTHALMOSCOPIC DIRECT EXAMINATION		
Dilate patient's pupils with appropriate drug. (or no dilation)		
Dim the light of the room		
Ask patient to fix his vision on a specific point in the distance		
Use ophthalmoscope in your right hand & right eye to examine the patient's right eye (left hand for left eye)		
assess red reflex comment on anything that interferes with the passage of light that will diminish the red reflex (e.g. large vitreous hemorrhage, cataract)		
Shine light beam from ophthalmoscope into pupil from position approximately 12 inches from the patient and about 15 degrees lateral to patient's line of vision		
Move in toward patient's eye on the 15 degree line up to the point where your own fingers holding the ophthalmoscope contacts patient's cheek		
Place your left hand on the patient head to fix it		
Examine the posterior segment of the eye		
1- vitreous		
2-the optic disc for : - clarity of disc outline - color (yellowish-orange) - cup : disc ratio - sharpness of disc margin - presence of abnormalities surrounding the disc - the blood vessels of the disc		
3- the vessels peripherally: -relative sizes -character of arteriovenous crossings -hemorrhages or exudates		
4- Inspect macular area (-2 disc diameters temporal to disc) -fovea (foveal light reflex)		
5- Retinal background		
Repeat the test on the left eye		

Comparison between direct and indirect ophthalmoscope :

	Direct Ophthalmoscopy	Indirect ophthalmoscopy
Magnification	About 15 times	5 times when a +13D condensing lens is used
Diameter of the field of observation\view	Smaller (about 10° in diameter)	Wider (about 37° in diameter)
Brightness	There is relatively low brightness	There is relatively greater brightness
Structures seen	Central retina only	Peripheral retina seen (<i>by using a scleral depressor in addition to the indirect ophthalmoscopy itself</i>)
Image of the fundus that is seen	Virtual & erect image	Real & inverted image
Stereopsis	Image formed is not stereoscopic	Binocular indirect ophthalmoscopy provides better stereopsis
Retina anterior to the equator	Not well seen (seen with difficulty)	Seen better
Scleral indentation	Difficult	Can be easily done in binocular indirect ophthalmoscopy
Visualization in hazy media	Poor	Better

Direct ophthalmoscope:



External Ocular manifestations

External Ocular Examination, Ocular Motility and Alignment objective :

a) External ocular examination :

- inspection of head and face (skin, bones, lymph nodes, etc.)
- evaluation of eyelids, orbit, and globe
(e.g. ptosis, proptosis)
- using torch to judge corneal clarity and lustre, assess anterior chamber depth, and appreciate cataract
- how to evert upper eyelid for examining the palpebrale conjunctiva

b) Ocular motility and alignment :

- motility and strabismus terminology
- function of extraocular muscle
- ocular motility examination (ductions and versions)
- tests of binocularity and fusion including stereopsis
- tests of alignment including corneal light reflection test, and cover test

SETTING THE STAGE FOR THE INTERVIEW

Introduced him/herself by name.
Identified his/her role.

Patient privacy \ confidentiality
Asked for the patient's full name.
Asked patient's age.

The student washed his/her hands in view of the patient.

The student verbally demonstrated an awareness and respect for patient's comfort level

External ocular examination:

Inspection:

A. Inspection of head and face: skin, bone and lymph nodes

(Note the lymph node drainage for the lateral is perauricular and for the medial is submandibular)
overall comparison of one side of face to the other

B. General appearance of orbits and eyes

overall comparison of orbits and eyes; compare one side to the other note:

Position- alignment - size- shape - symmetry
prominence (bulging) of the eyes (proptosis)
lid retraction
drooping of upper eyelid (ptosis)

note :Asymmetrical proptosis is best detected by looking down at the patient from above and behind

1- Inspect the eyebrows note:

configuration and any scaliness of underlying skin
position of lids in relation to globe (e.g lid retraction)
color (e.g., redness, ecchymosis)
lesions – swelling - discharge
condition and position of the eyelashes
completeness of opening and closure of lids

2- Inspect lacrimal apparatus note:

swelling over lacrimal gland or lacrimal drainage system
excessive tearing

3- Conjunctiva and Sclera:

With patient looking up, pull down lower lid of each eye and expose the sclera and conjunctiva.

Using the torch, inspect the sclera and the conjunctiva of lower globe note for:

Color – vascularity- swelling
discharge, secretions

With patient looking down, elevate upper lid of each eye and expose sclera and conjunctiva and note color, vascularity, swelling, discharge, secretions

Note: Do not apply pressure to eyeball itself when pulling open the lids. Hold the lids against the rims of the bony orbit.

4- Cornea and Lens

With oblique and direct lighting, inspect the cornea for clarity and check the depth of the anterior chamber. Examine lens for cataract or any opacities that may be visible through the pupil.

Note : The simplest method of assessing anterior chamber depth, is by shining a pen torch into the patient's eye from the temporal canthus such that the pen torch lies in the same plane as the eye. In the case of a deep anterior chamber, the iris lies flat and the whole iris will be illuminated. In the case of a very shallow anterior chamber the iris lies forward, blocking some of the light and very little of the iris is illuminated. Based on the amount of eye illuminated the ACD can be graded

5- Iris:

Inspect size, shape, markings, color of the iris, and check for lesions of the iris and equality of pupils

Palpation:

1- palpate eyelids note:

Tenderness – Masses - swelling

2- palpate lacrimal apparatus note:

swelling over lacrimal gland or lacrimal drainage system
excessive tearing - Swelling –Tenderness – Masses

- 3- globe orbital rim looking for:
Swelling –Tenderness – Masses- Proptosis
Orbital fracture
- 4- sensation in low eyelid and cheek (infraorbital nerve)

Ocular motility:

Evaluate the primary position of the eye (pt looking straight ahead) Position of the eye while the pt looks in all direction of gaze (by following the examiner 's finger)

- 1- Ask patient to follow a target (finger, pencil, or penlight) held at a comfortable distance from the patient.
- 2- Move target object slowly to each of the six cardinal positions of gaze (in gaze right, check in up, horizontal, and down positions. In gaze left, check in up, horizontal, and down positions) (like H letter).
 - a. Pause during each gaze position to detect nystagmus (oscillations of eyes).
Note : Direction of nystagmus is it vertical or horizontal
 - b. Inspect for:
 - normal and abnormal movements in each direction
 - relation of upper lid to globe as patient moves eye vertically from above downward
 - b. Ask patient about presence of diplopia (double vision)

Ocular alignment:

Evaluation of ocular alignment by

- 1- Corneal light reflex tests : Hirschberg test and Krimsky Test
- 2- Bruckner's test
- 3- Cover/uncover
- 4- alternate cover test

Most important to know

Cover test.

A. Ask patient to fixate his eye on a distant target (over 10 feet away).

- ❖ Do cover-uncover test on each eye. Note any movement of uncovered eye (tropia).
- ❖ Note : tropia a manifest deviation of an eye from the normal position when both eyes are open and uncovered;
- ❖ Note : detect if there is an exotropia (abnormal eye is turned out), esotropia (abnormal eye is turned in), hypertropia (abnormal eye higher than the normal one) or hypotropia (abnormal eye is lower than the normal one).

- ❖ Do alternate cover test. Note any movement of eye as it is uncovered (phoria).
- ❖ Note : phoria is a condition where deviation appears only after some delay, for example as a result of fatigue.

B. Ask patient to fixate on a near target (15 or so inches).

- ❖ Do cover-uncover test on each eye. Note any movement of uncovered eye (tropia).
- ❖ Note : detect if there is an exotropia (abnormal eye is turned out), esotropia (abnormal eye is turned in), hypertropia (abnormal eye higher than the normal one) or hypotropia (abnormal eye is lower than the normal one).
- ❖ - Do alternate cover test. Note any movement of eye as it is uncovered (phoria).

To understand more see this video :

<http://www.youtube.com/watch?v=dRYBOBSyzAU>

<http://www.youtube.com/watch?v=TxEQWtIXtrI>

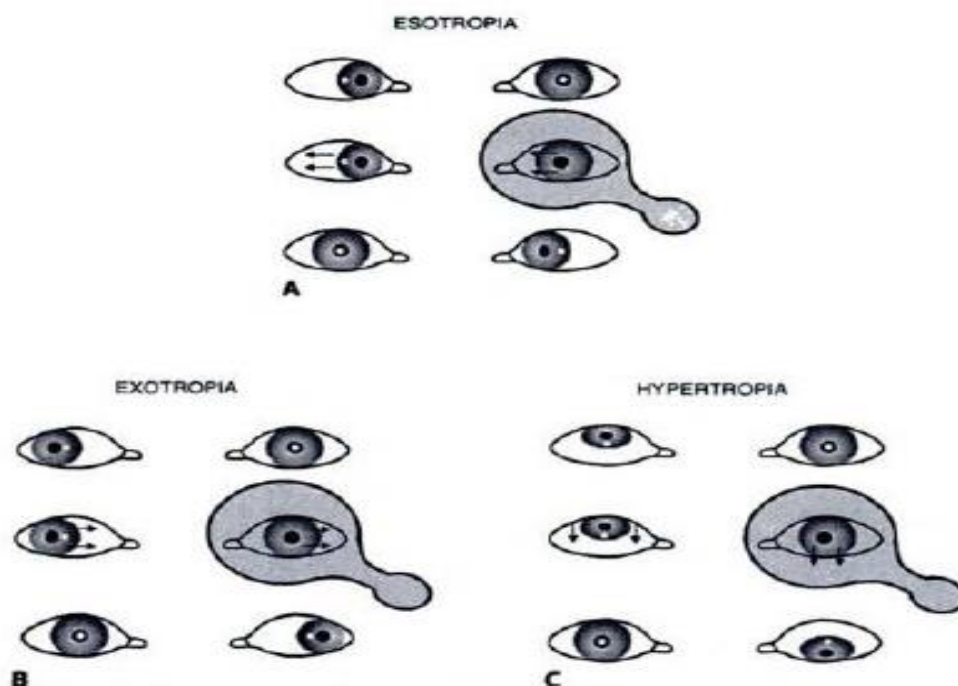


FIGURE 5-9A-C. Cover/uncover test. (A) Esotropia. Left eye is fixing. When the left eye is covered, the right eye moves out to pick up fixation. This outward movement indicates that the right eye is esotropic. (B) Exotropia. Left eye is fixing. When the left eye is covered, the right eye turns in to pick up fixation. The inward movement indicates that the right eye is exotropic. (C) Right hypertropia. Left eye is fixing. Covering the left eye causes the right eye to come down to pick up fixation. Movement of the right eye indicates a right hypertropia.

Hirschberg Test

The Hirschberg test is a way to estimate someone's deviation just by looking at him. Specifically, we look at where the corneal light reflex lies in relation to his pupil and corneoscleral limbus. To perform the Hirschberg test, hold a muscle light a few feet in front of your patient while asking him to fixate on a distant target (not the light). Then, look to see where the reflection from that light occurs on each eye (Figure 7-6). If the eye is straight (ortho), the light reflex should be just nasal to the middle of the pupil. If the light falls to the nasal side, the patient must be exo-, and if it falls on the temporal side, he must be eso-.



Figure 7-6. Estimating the deviation by the Hirschberg test. (a) is ortho because the light reflex is just nasal to the center of the pupil. (b) The light reflex is at the pupillary margin, and this represents a deviation of 30^{Δ} . (c) When the light reflex falls half-way between the pupillary margin and the limbus, this represents a deviation of 60^{Δ} . (d) The limbus represents a deviation of 90^{Δ} .

Krimsky Test ;

The Krimsky test is essentially the Hirschberg test, but with prisms employed to quantitate deviation

BRÜCKNER REFLEX TEST

The Brückner reflex test is performed by using the direct ophthalmoscope to obtain a red reflex from both eyes simultaneously. Make sure that the patient is looking at the light during the Brückner test; if the patient looks to peripheral targets, the test is invalid. In patients with strabismus, the Brückner test will show asymmetrical reflexes with a brighter reflex coming from the deviated eye. There is less pigment in the peripheral retina, so the deviated eye will reflect more light. This is a screening test that identifies strabismus and pathology that

change the normal red reflex including anisometropia, gross retinal pathology, large retinal detachment, and corneal, lenticular, or vitreous opacities (see Chapter 4; Figs. 4-13, 4-14).

To understand more see this video

<http://one.aao.org/Flash/VisionScreening/flashfiles/bruckner.swf>