



Gaza Ophthalmic Centre

0.2.2 Ophthalmic Clinical Examination (Part 2)

4TH YEAR MEDICAL STUDENTS

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Gaza Ophthalmic Centre

2021

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.Good morning. This is the second part of the ophthalmic clinical examination

Iris and pupil

• Iris:

1. Colour
2. Pattern
3. Defects
4. Adhesions (synechiae)
5. Nodules
6. Neoplasm
7. New vessels



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When you comment on the iris and the pupil, we need to comment on the iris color and its pattern whether there is any defects or adhesions in the iris and the pupil the presence of masses nodules or neoplasms. And if there is new vessels of the pupil

Iris and pupil

- **Pupil:**

1. Shape
2. Regularity
3. Size
4. Reaction to light

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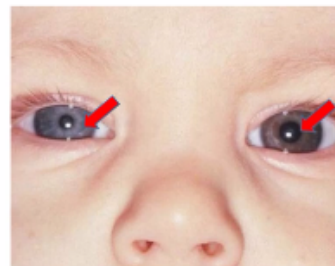
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the pupil we comment on the shape its regularity equality between both sides the size of each pupil, and its reaction to light direct and in direct

Iris and pupil

- **Iris:**

1. Colour
 1. Heterochromia Iridis
2. Pattern



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the iris color can be the whole signal of like in the upper right here we have a case of heterochromia which means the two eye have different colors. And that's a case of congenital Horner syndrome. The pattern as you can see on the lower line, it can be very different from one person to the other and even between one eye and the other eye in the .same person

Iris and pupil

- **Iris:**

1. Defects
2. Adhesions (synechiae)

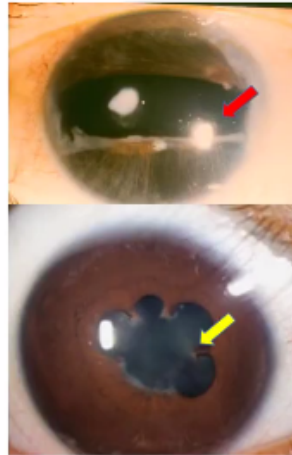


Fig. 2 Synechiae, inflammatory adhesions between the iris and lens surface.

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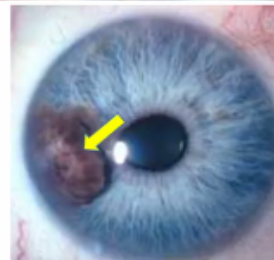
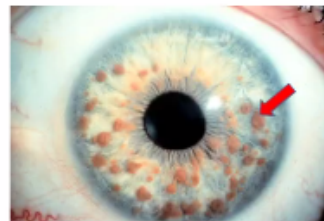
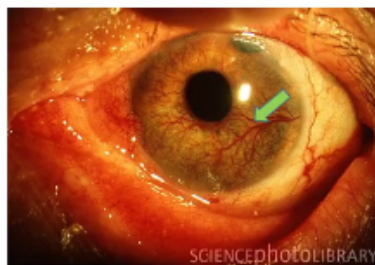


The iris can show a defect with a traumatic or surgical like of the upper one or adhesion or synechiae, like following severe anterior uveitis

Iris and pupil

- **Iris:**

1. Nodules
2. Neoplasm
3. New vessels



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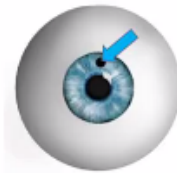


nodules on the iris can denote some disease like here, this is lisch nodules and also like on the right bottom one, this is a pneoplastic nodule larger one, while on the bottom left we see there is severe neovascularization of the iris, mostly due to severe diabetic eye disease or .central retinal vein occlusion

Iris and pupil

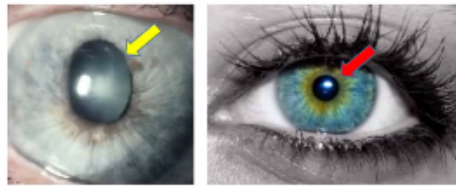
- **Pupil:**

- Shape
 - Round
 - Oval
 - Irregular
 - Coloboma
 - PI



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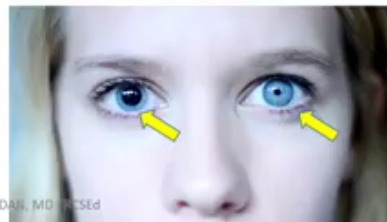


The pupil should be as we can see on the upper right should be perfectly rounded both pupils should be of equal size, which means regular and both pupils should react in the same amount to light, direct and indirect however, abnormalities as we can see on the top left, abnormal shape oval Pupil abnormal vermiform movement of the pupil. Or we can even have defective part, like a coloboma on the bottom right and middle. Also iatrogenic .peripheral iridectomy will show as a whole as we can see on the bottom left case

Iris and pupil

- **Pupil:**

- Regularity
 - Equal pupils
 - Unequal pupils
 - Anisocoria



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Here on the top picture we can see that both pupils are rounded and regular in shape. And in color while on the bottom one you can see that the left one is much larger than the right one. one is what we call anisocoria

Iris and pupil

- **Pupil:**

- Reaction to light



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Reaction to light the upper one is in the dark and you can see that the left pupil which is much larger than the right one is widely dilated. However when we shine the light onto that pupil, you can see that it briskly constricts to even smaller side than the other one this is a ?(complex case of (abnormal pupillary reaction

Lens

- **"Pupil Colour"**

- Transparency

- Position

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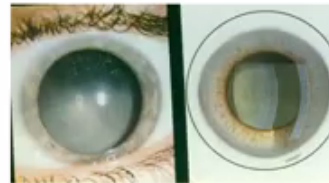
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The lens can be seen through the slit lamp or the ophthalmoscope. Pathology of the lens can change the pupil color also can detect problems and the transparency or position of the lens .itself

Lens

- *Pupil Colour*

- Black in young individuals
- Grey in older persons



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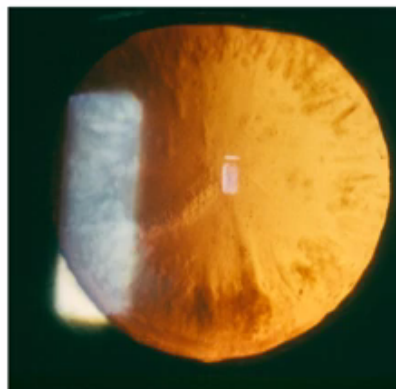
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The pupil color in young individual is usually black. However, if the patient starts developing cataract, this color can get a little bit grayish and to get white at the end. A cataract means .whitewater of a waterfall

Lens

- Transparency



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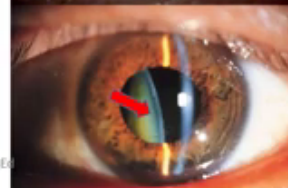
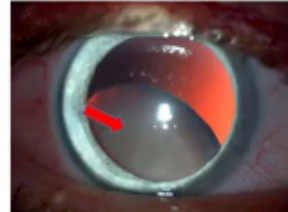
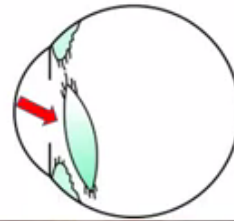
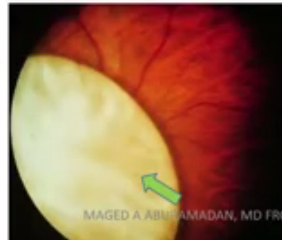
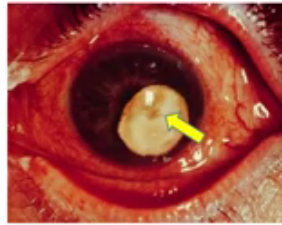
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This is a red reflex, we shine the light into the eye and then we look at the light coming back from the retina. It denotes the opacity and the loss of transparency is lens opacity and it ?.denotes sort of a cut

Lens

- Position
 - Subluxated
 - Dislocated
 - Anterior
 - Posterior



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The lens should be in the center of the eye in between the posterior chamber anteriorly and the vitreous posteriorly suspended with the zonules to the ciliary body. However, due to trauma or other pathology, it might be subluxated like in the right middle we see it's going down in the case of homocystinuria due to weakness of the zonules on the bottom right

It's a cataract lens, and it's dislocated a little bit up. However, on the left side, we can see the lens dislocate totally into the anterior chamber on the top and back onto the vitreous cavity on the bottom

Ocular pressure

- Digital 
- Tonometer
 - Schiottz tonometer (indentation)
 - Goldman tonometer (applanation)
 - Air puff tonometer

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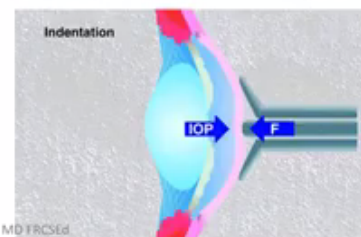
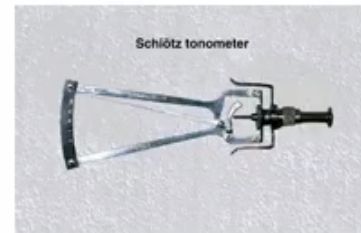
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ocular pressure or intra ocular tension should be measured for every routine case in others above 14 And in cases that indicate that in younger patients, remember that you can never

quantify digitally the intraocular pressure this is unpermissible way, you should use a special instrument called tonometer. And we have several types of tonometer

Ocular pressure

- Tonometer
 - Schiötz tonometer
 - (indentation)



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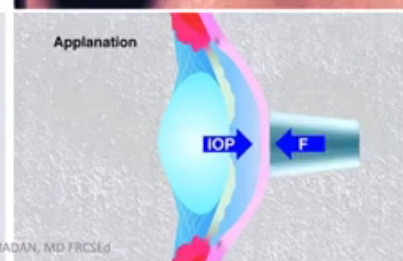
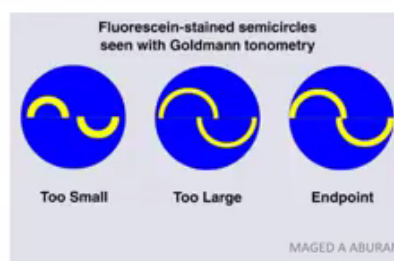
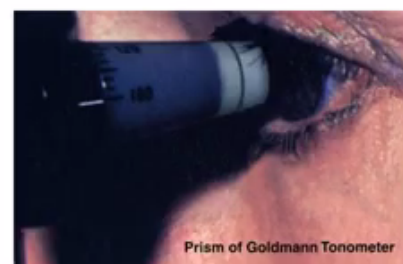


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schiotz tonometer is a manual depends on having a weight and then a measure and it intense which means it changes the shape of the cornea in an amount equivalent between the weight and the intraocular pressure and then you use a special table in order to know the exact intraocular pressure

Ocular pressure

- Tonometer
 - Goldman tonometer
 - (applanation)



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Goldmann tonometer is the golden standard for measuring intraocular tension it is called applanation which means the prism of the tonometer applanate the cornea or makes the surface flat to come directly with the surface of the tonometer .And then there is a dial where you can check the pressure monitor

Visual acuity

1. Landolt's chart etc.
2. Counting fingers: (C.F)
3. Hand movement: (H.M)
4. Perception of light: P.L or No P.L
5. Projection of light: Good or bad

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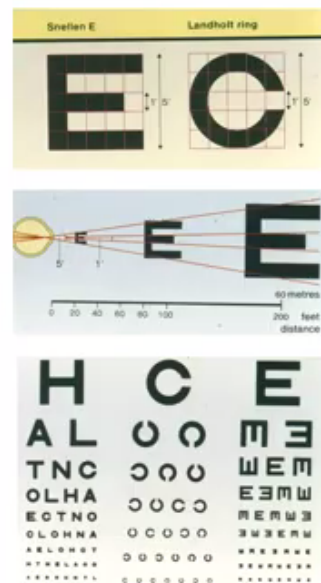
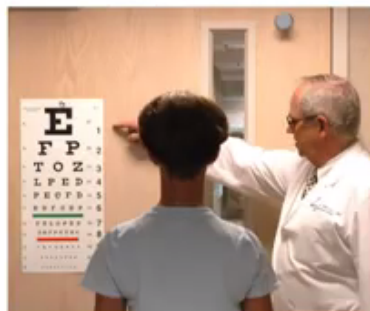
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Of course, the most important functional test to examine is the visual acuity. There are several types of charts to measure the visual acuity. Most important of them is the Landolts and the Snellen. if the patient failed to see These charts, then we can go to other maneuver .like counting finger or hand movement or light option

Visual acuity

- Landolt's chart (C)
- Snellen's chart (E)



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Here on the top right, we have the ring Lundell crank, and then on the top left we can see Snellen II chart, notice that the construction of both of them are almost the same, it's a square five by five squares and then on various distances, each letter gives the same exact .amount of angle on the eye

Visual acuity

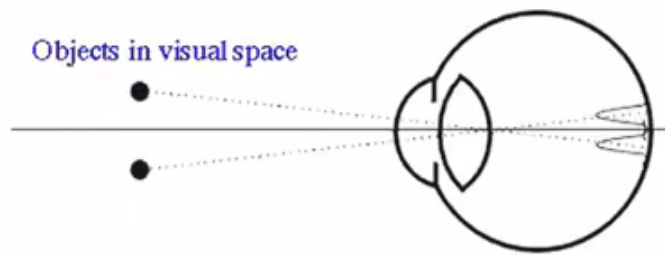


Figure 10. Two point sources and their point spread function at the back of the eye.

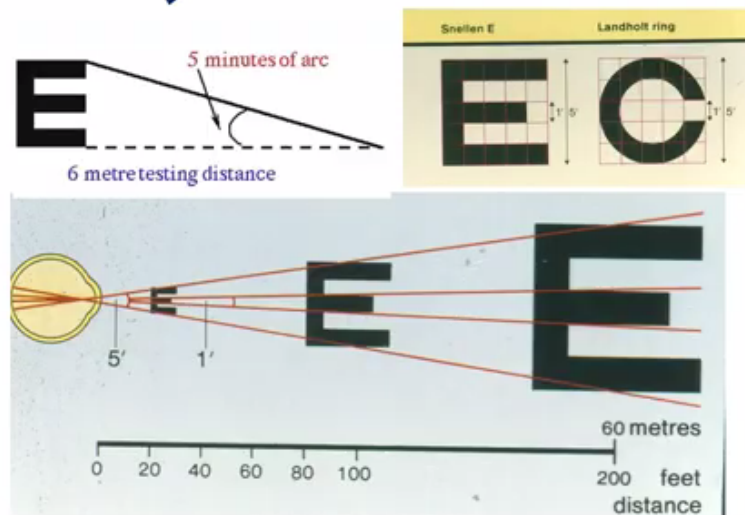
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The principle is that when you have two objects in visual space in front of the eye, then it's a picture or an image formed on the retina. And there is a minimal distance between or minimal angle separating the two objects about one minute arc should be available to see them as two otherwise it will be seen as one large object

Visual acuity



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So this is used in the design. Each letter at the pre designed distance from the subject gives exactly five minutes of arc, the full letter and one minute of arc for each limb of the letter. What do we mean by six six or 6/60? It is simple. If you put the patient on six meter distance from the chart, and then he can see all the lines tell what the normal person is expected to see at six meters, then his vision is six over six. However, if he sits at six meters, and he can see letters that only up to the letter or the line that the normal subjects supposed to see at

Visual acuity

- Hand movement: (H.M)



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if you fail to see that then on a distance of 20 to 25 centimeters from the eye, you move your hand against a backlight. And if the patient can see then you can see how to movement otherwise, you go to Next step

Visual acuity

Perception of light:

- P.L or
- No P.L

Projection of light:

- Good or
- Bad



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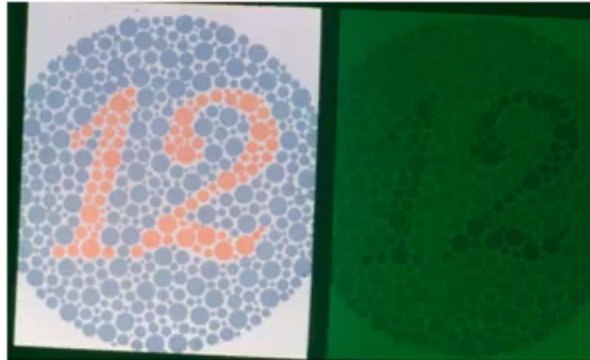


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which means you shine a light on the subjects eye, and you will ask him if he perceived the , light or he did not or no PL. If he perceived the light, you go further and shine the light from .four different quadrants to see whether you have good or bad projection of light

Color Vision

- Ishihara cards



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About 8% of males worldwide will have some sort of color blindness. Ishihara cards are the most common and the most famous cards or method of testing the color vision, it can detect whether the patient had the color defect or not what type of the defect and also whether he is malingering or really have color blind

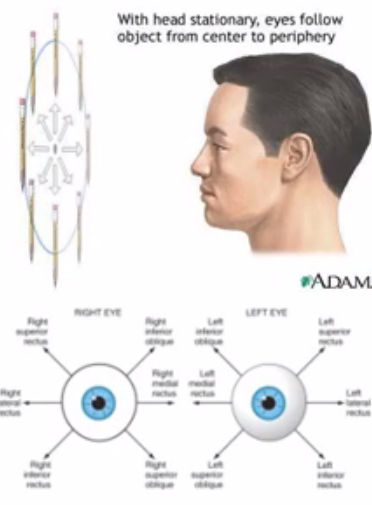
Extraocular muscle

- Ocular movement:
- Cardinal directions
- Cover test



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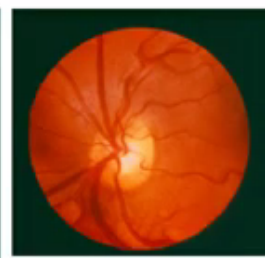
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Extra ocular movement examination is very important, especially in children with refractive error and squinting eyes. Also, it is very important in neuro ophthalmology and patients who have neurological or neuromuscular disease, you will examine the patient in two positions when he's looking straight at the distance of six meters. And also when he looking at near at about 30 centimeters, we asked him to follow a light or move his eye in the cardinal positions which means straight forward the primary position the secondary positions are upright and up left, bottom right and bottom left and extreme right and extreme left we can also a

couple that with a special cover to cover one eye and then the other and see the response of .the patient

Fundus

- Direct Ophthalmoscope:
 - High magnification,
 - Small field
- Indirect Ophthalmoscope:
 - Low magnification,
 - Large field



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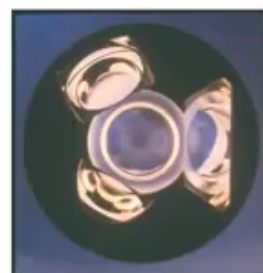
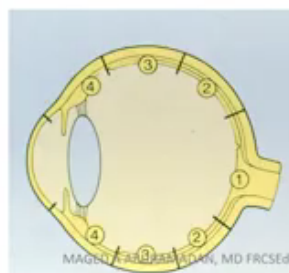
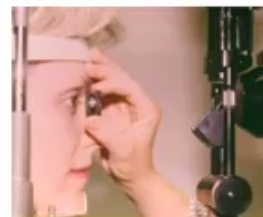
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They fundus can be seen by of direct ophthalmoscope it is the only cranial nerves that you can see in the living subject is the second is the optic nerve or the optic disc and the retinal vessels and the retinal layers. The direct ophthalmoscope as we can see to the right of the screen, its examined in near proximity it gives you large or higher magnification of the optic disk and the structures however, the field of view is small, the indirect gets you a larger distance, it shows lower magnification but the larger field since is may be more useful in .screening purposes

Fundus

- 90 D lens
- 3 Mirror lens



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We can also use bio microscopy with the D lens or 87 lens or the three mirror lens the bottom two picture shows you what each mirror what part of the fundus can be seen with each one

Fundus

• Fluorescein angiography:

- Special dye (IVI)
- to show the
- retina and choroid
- vasculature and
- lesions



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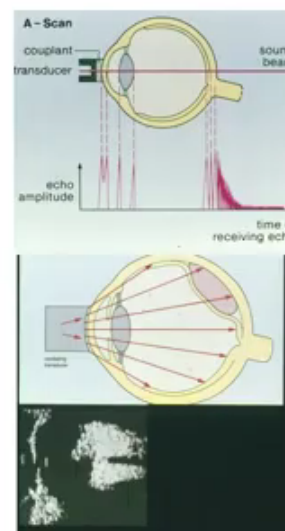
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Here a fluorescein fundus angiography we inject fluorescent material, derived from vitamin a into antecubital vein usually, and then we radiate the eye with the blue light and we detect the coming green fluorescence which shows us the various phases of filling first, the arterial, the capillary, and then the venous and then the push out, we can detect whether there is a normal filling, abnormal filling, leakage defects, ischemia, whatever it's very valuable test

Fundus

• Ultrasonography:

- Waves to examine the eye
- if the media is opaque



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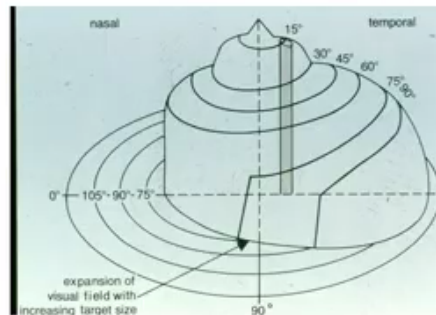
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ultrasonography is used whenever you have a media opacity, like a cataract or a vitreous hemorrhage, and you cannot see what is inside the eye in the retina ultrasonography is most useful in such condition

Visual field analyzer

- To test the visual field
- Type
 - Static
 - Dynamic
- Method
 - Manual
 - Automated (computerized)



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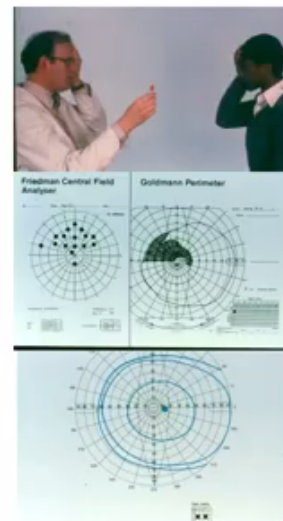
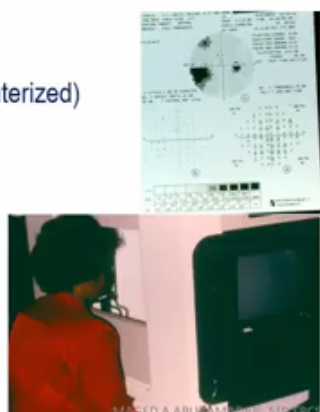
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visual fields is actually a function of the peripheral vision. In addition to the central one. It might be static or dynamic and it might be manual or automated

Visual field analyzer

- Method
 - Manual
 - Automated (computerized)



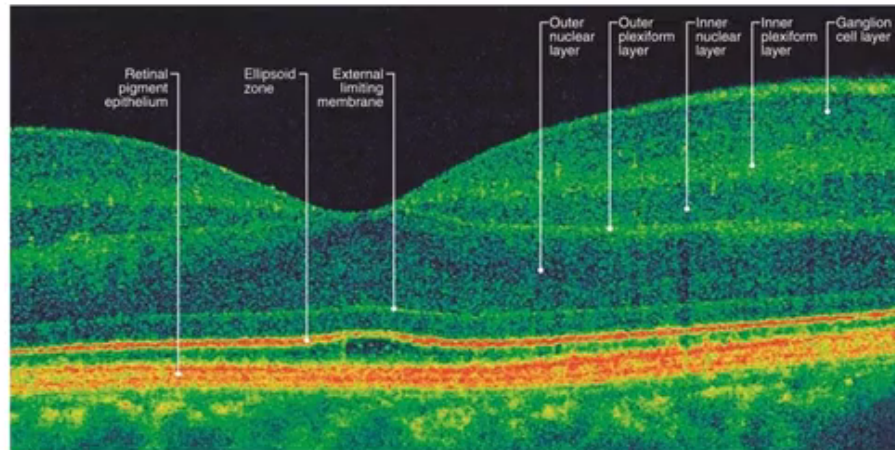
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Here on the right, we have three or four ways of manual, the confrontation method on the top, Friedman and goldbank perimeters which are special equipment and detention Shall screen on the bottom right. On the left we can see the automated or computerized .Perimetry

Ocular Coherence Tomography “OCT”



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The most new and novel imaging facility is the ocular coherence tomography or CT. It is pure light, it has no Radiology at all. It have no relation to CT. It is ocular coherence tomography. As you can see here, it can give you a very clear image of the histological section of the eye you can see the 10 different layers and you can see the fovea to see the macula. You see the retinal pigment epithelium and also some sort of the choroide. This is most promising test. And I would guess it will have a lot of applications in the new near future. Thank you for listening