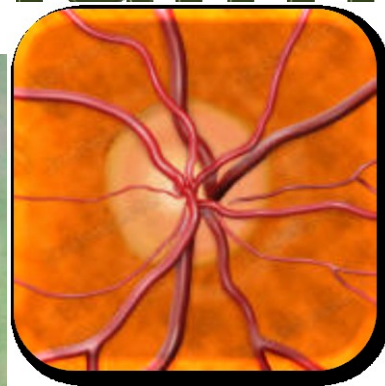


Examination techniques in ophthalmology



MUDr. Bc. Barbora Varadyová PhD., FEBO

Basic examination techniques

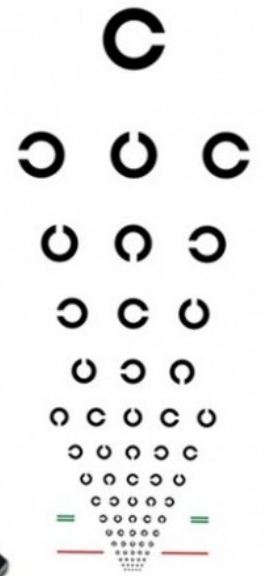
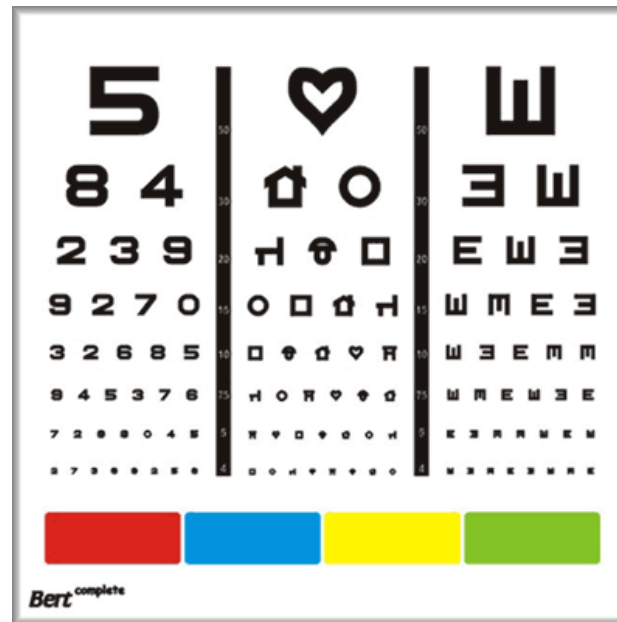
1. Visual acuity
(natural, best corrected)
UCVA, BCVA
1. Measurement of intraocular pressure
2. Slit lamp examination
3. Fundus examination



I. Visual acuity

- Visual acuity (natural, best corrected)

- Distance vision
- Near vision
- Charts



- Snellen
- Landolt ring
- Pictures
- ETDRS – early treatment retinopathy studies
- Jaeger



I. Visual acuity

- Counting finger (metres)
- Hand movement
- Light perception



If the Visual acuity of less than 1 / 60 is recorded as:

Still can't read the chart?

Ask patient to count how many fingers you are holding up at 1 metre.

Keep fingers still. Recorded as Count Fingers (CF @1m)

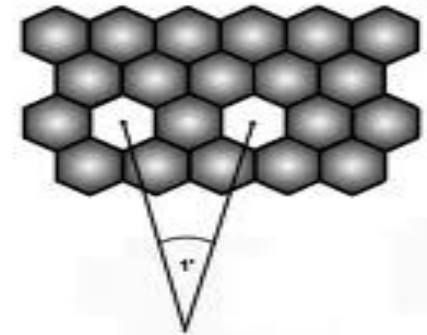
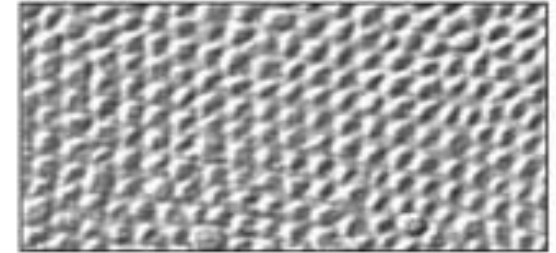
• If they cannot count fingers see if they can see a moving hand. Recorded as Hand Movements (HM @1m)

• Still no result: can they see a pen torch light : Light perception (LP)

• Unable to perceive light: No Light Perception (NLP)

I. Visual acuity

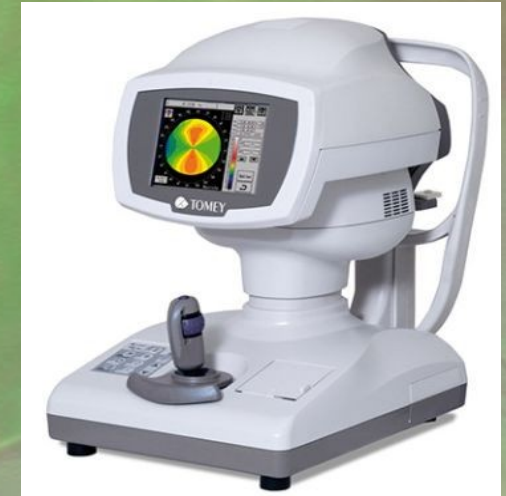
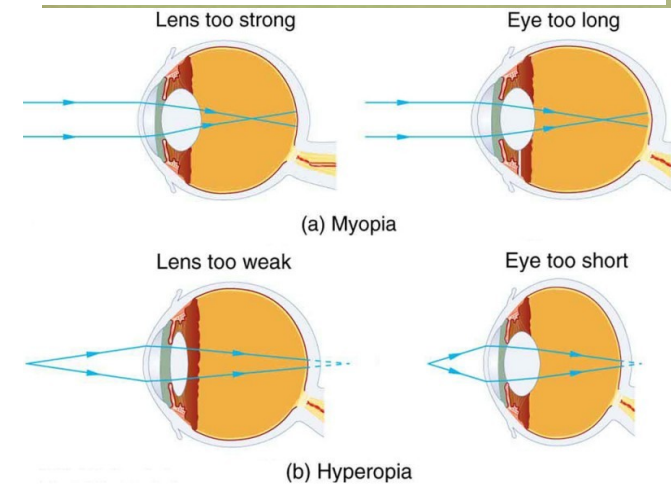
- 5/50 (metres, feet 20/200)
- 0,1



- Minimum separabile – minimum angle of resolution = the least separation at which two parallel lines are recognized by the eye as separate

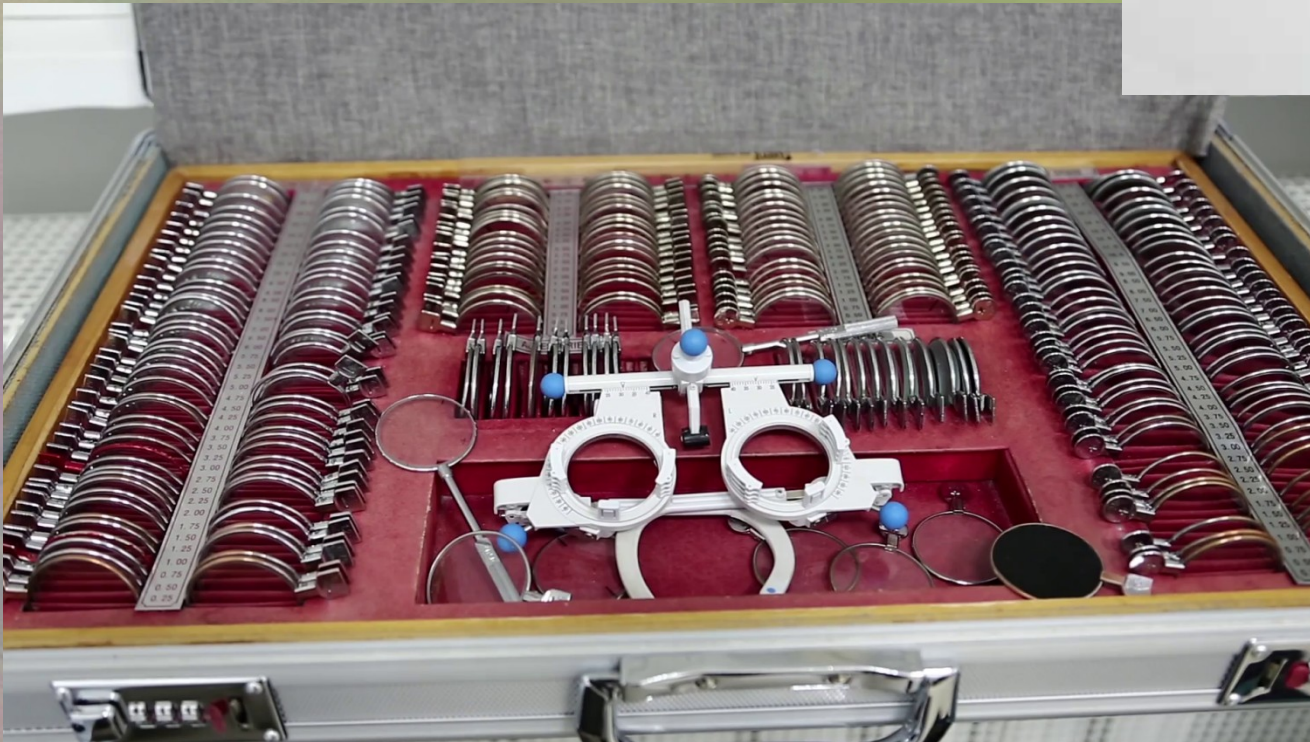
II. Refraction

- **Refractive error is an optical abnormality in which the shape of the eye fails to bring light into sharp focus on the retina, resulting in blurred or distorted vision.**
- **In optometry, a "refraction" procedure is the measurement of refractive error**
- **Autorefractor**



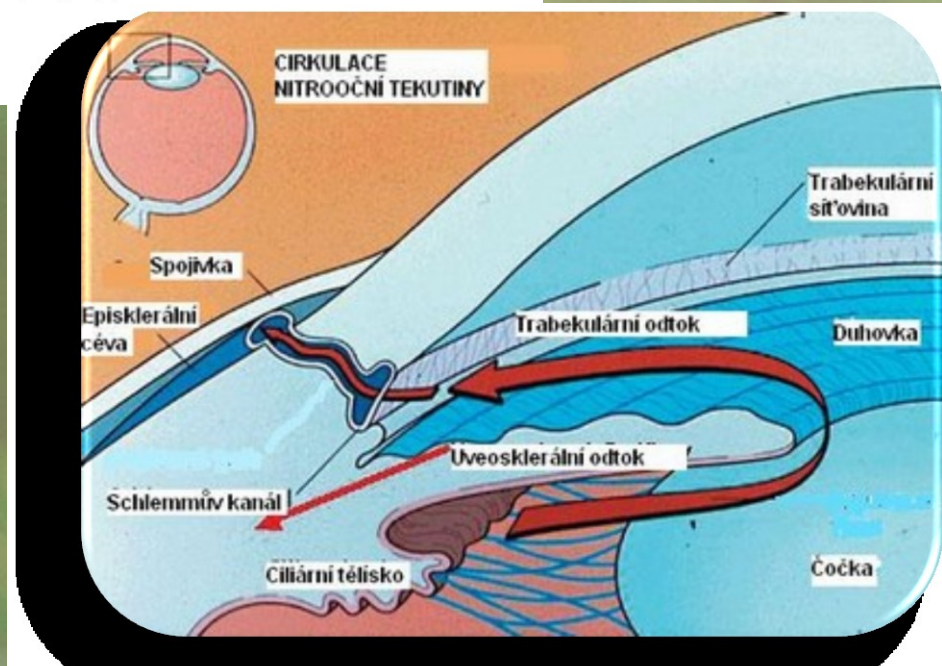
II. Refraction

- Frames
- lenses



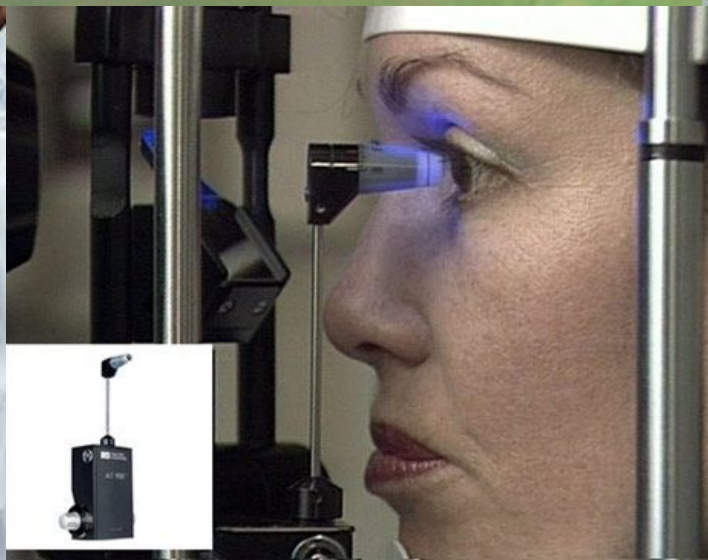
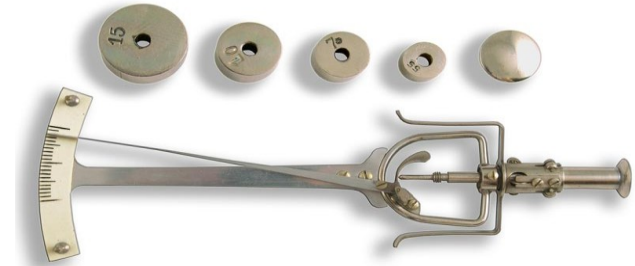
III. Tonometry

- Contact techniques
- Schiötz tonometry
- Goldmann applanation tonometry
- Non contact techniques
- Jet air (air puff)



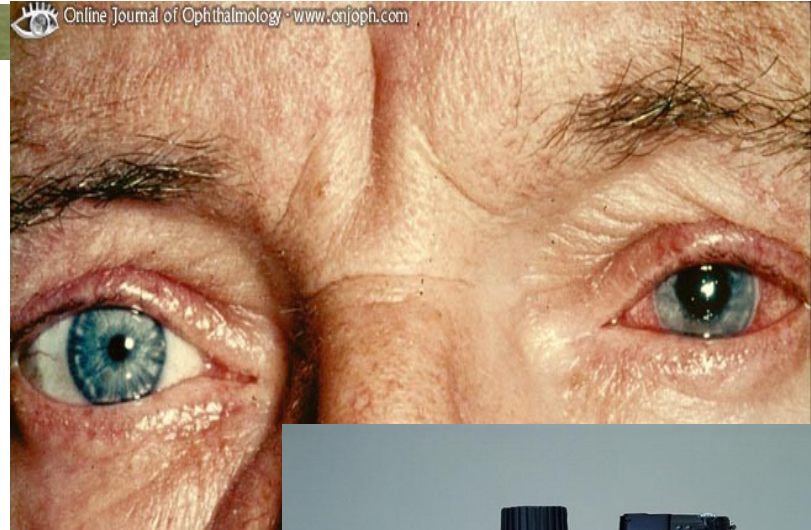
III. Tonometry

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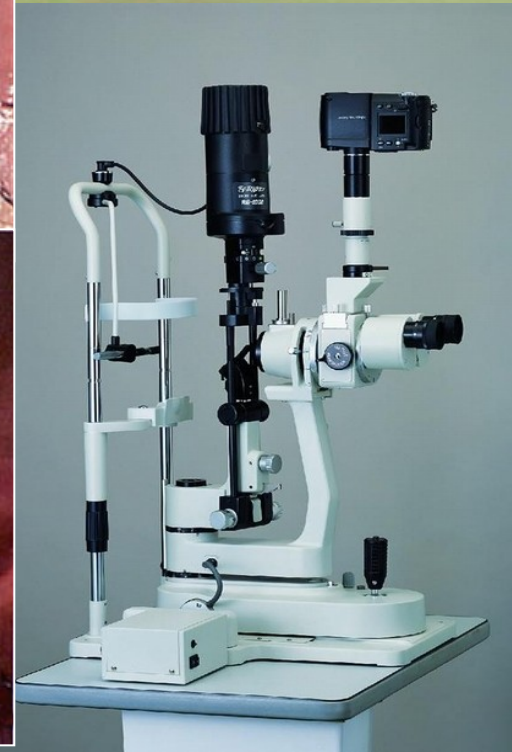
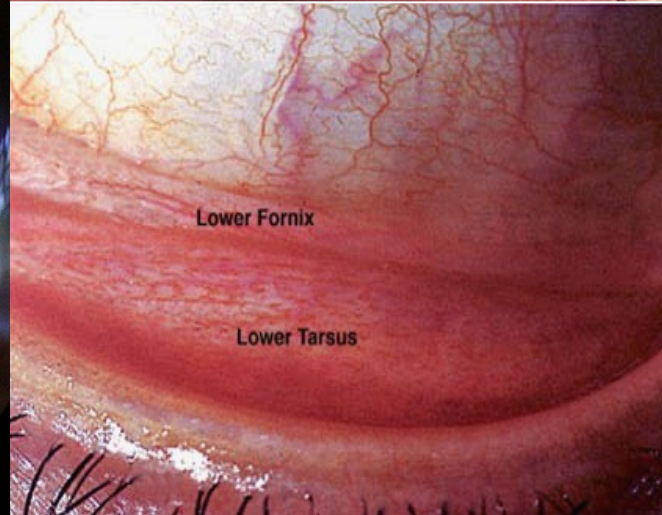
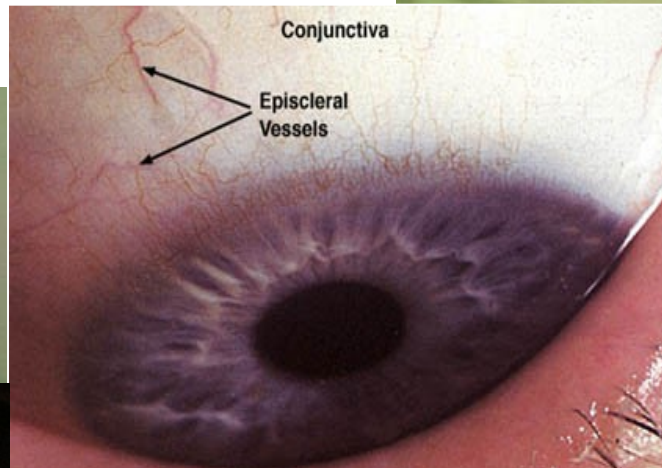
IV. Anterior segment examination

- **Aspection**
- **Slit lamp biomicroscopy**
table mounted microscope with
a special adjustable
illumination source attached



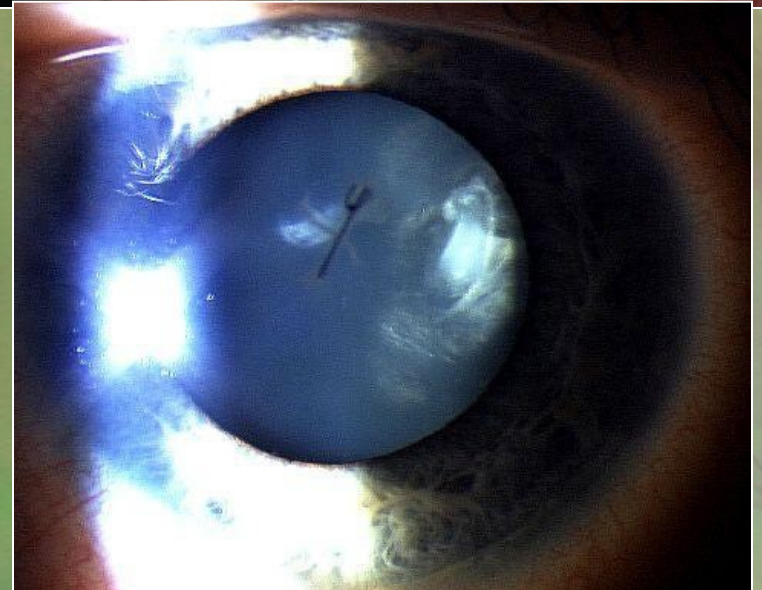
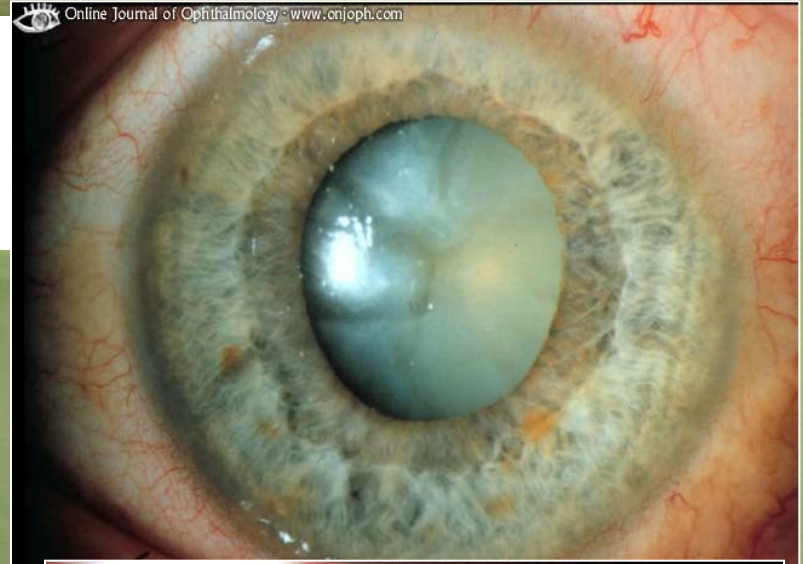
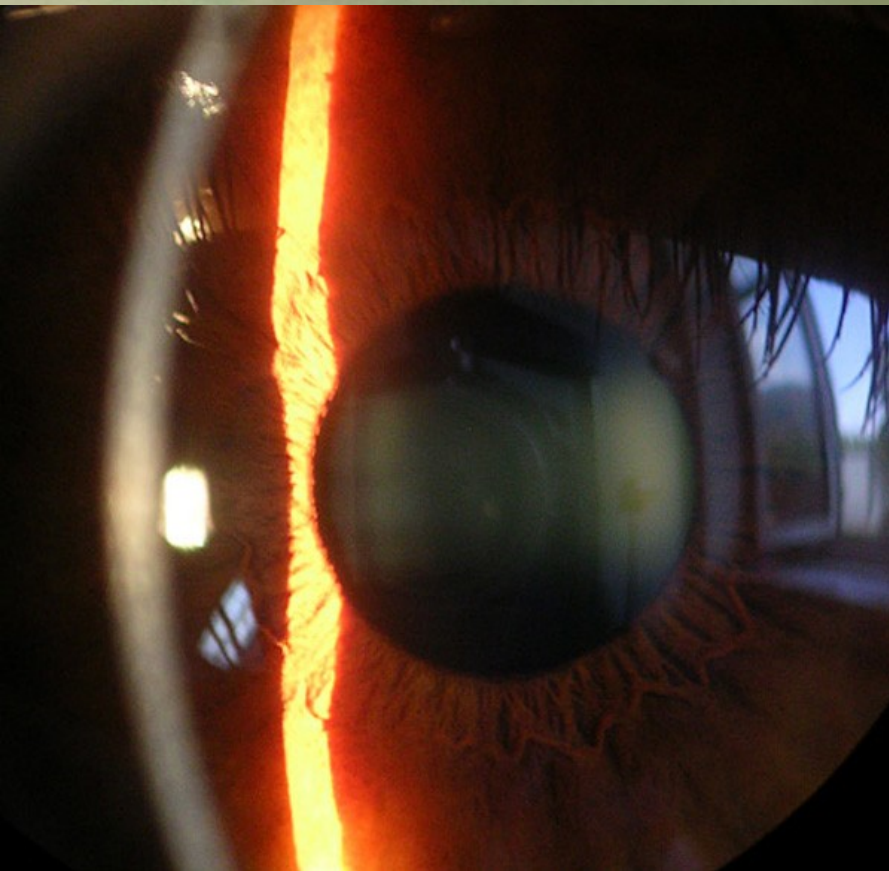
IV. Anterior segment examination

- Slit lamp biomicroscopy



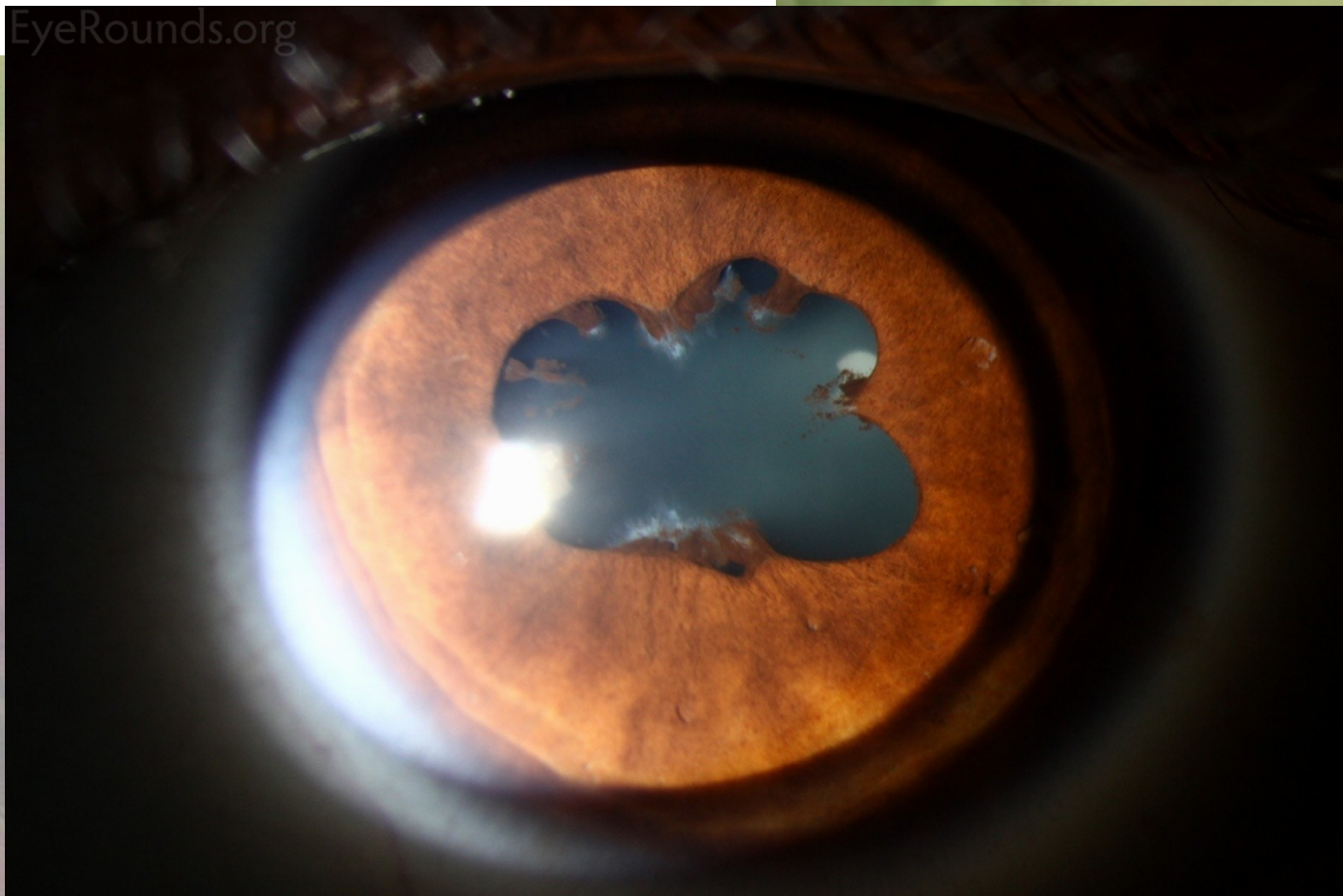
IV. Anterior segment examination

- Slit lamp biomicroscopy



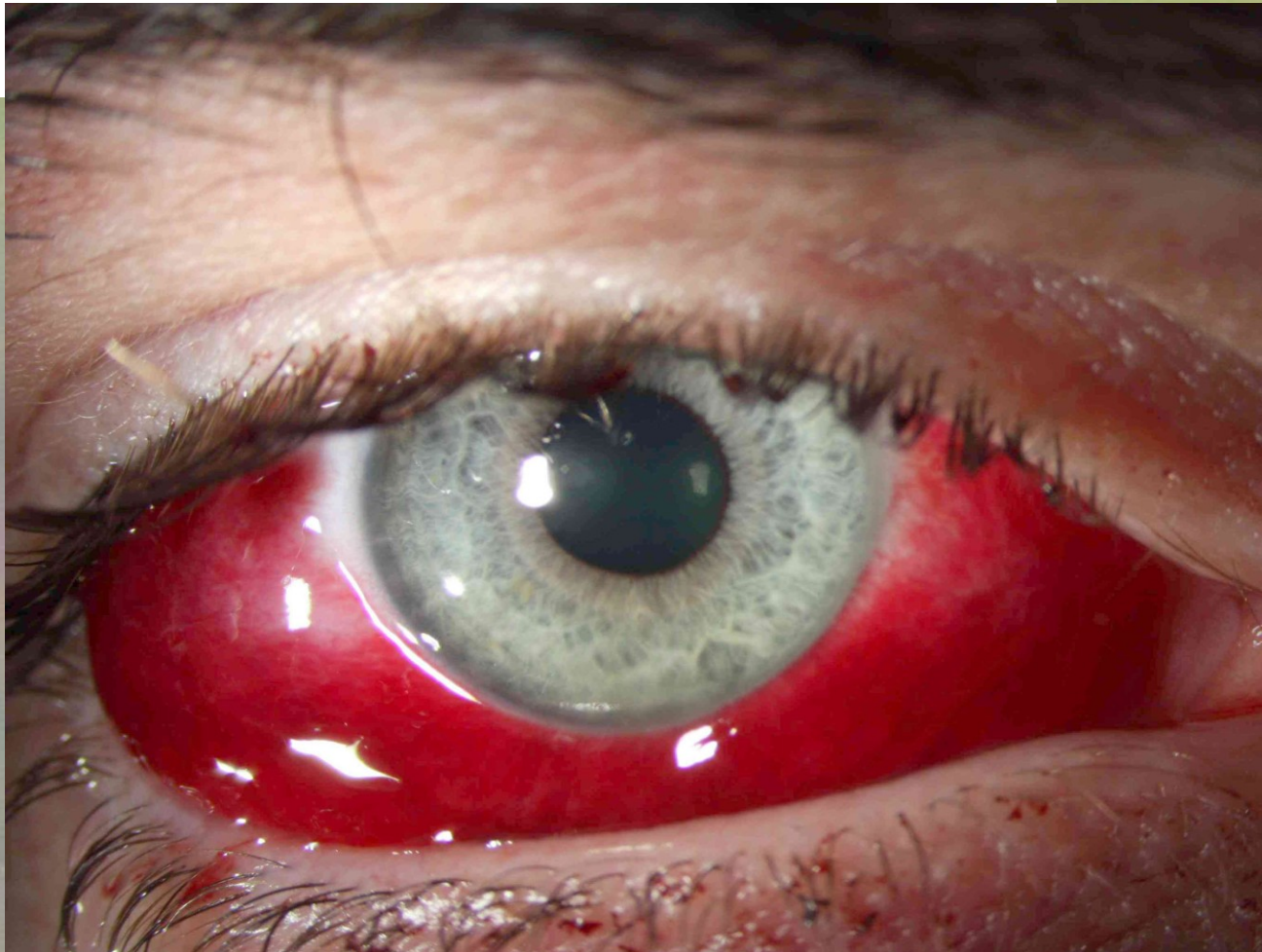
IV. Anterior segment examination

- **Posterior synechiae**



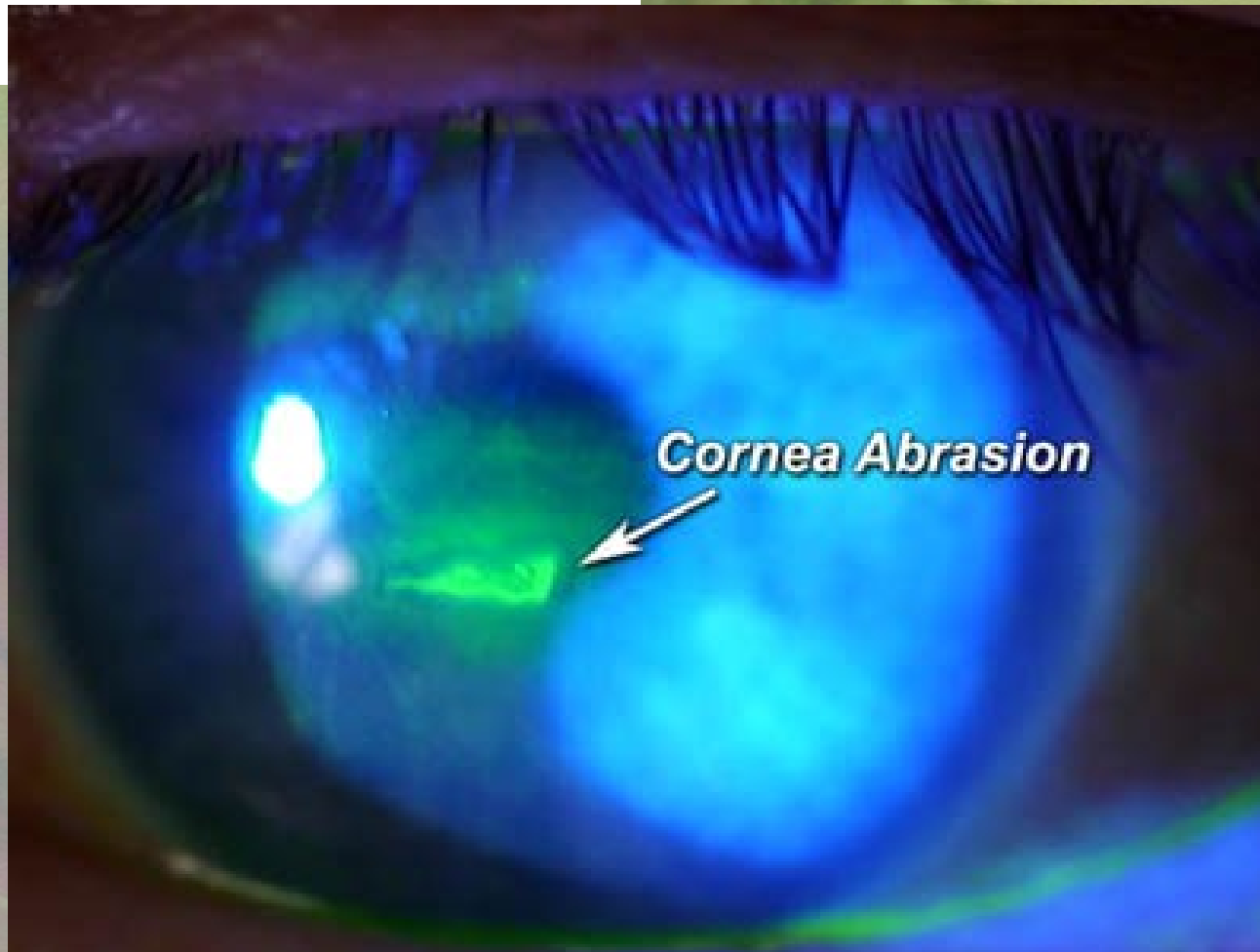
IV. Anterior segment examination

- Subconjunctival haemorrhage



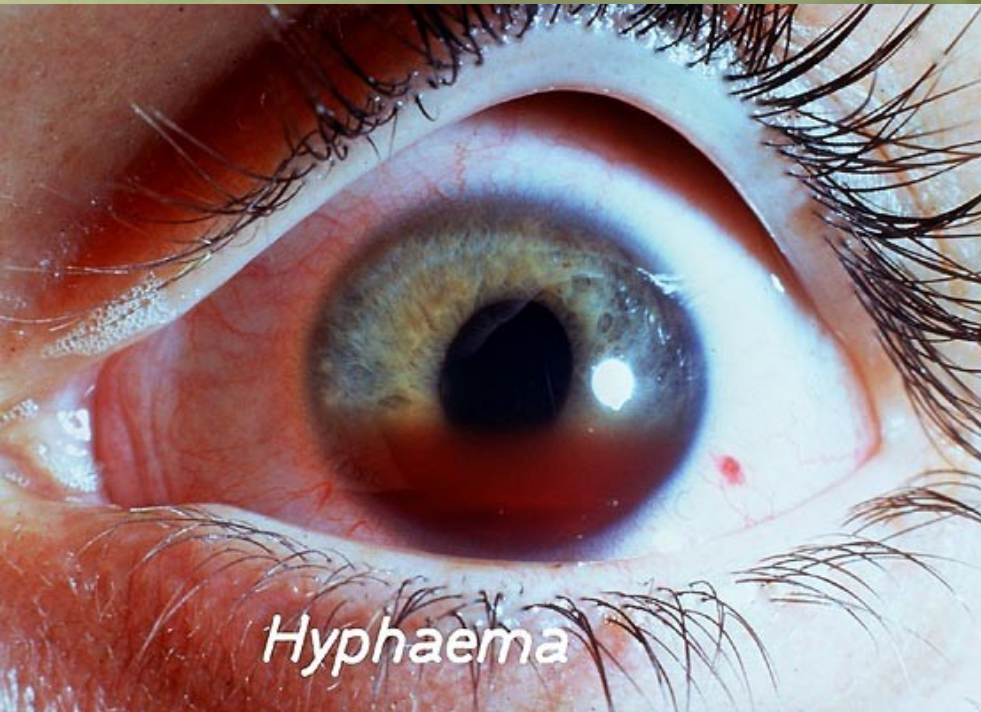
IV. Anterior segment examination

- Corneal abrasion



IV. Anterior segment examination

- Hyphaema and hypophyon



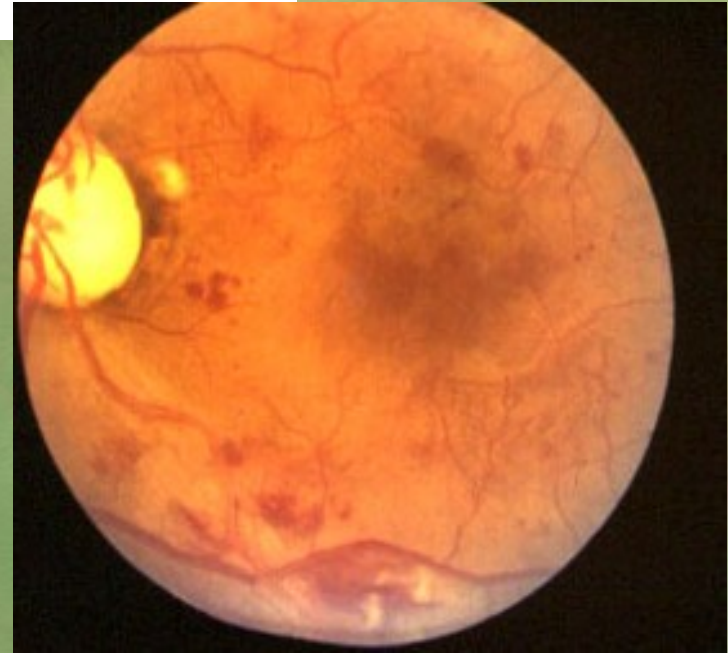
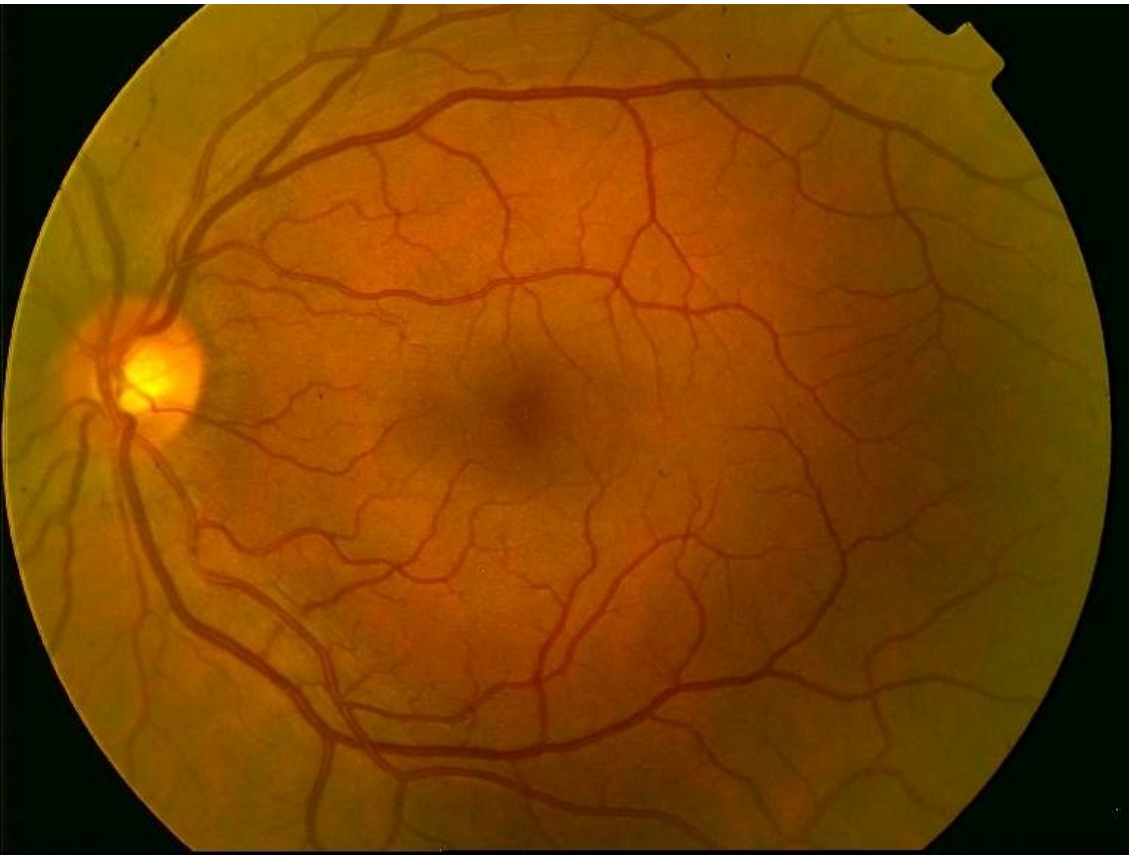
V. Posterior segment examination

- Ophthalmoscopy - direct
- - indirect
- Slit lamp biomicroscopy
(high power convex lens, the image is vertically inverted and laterally reversed)



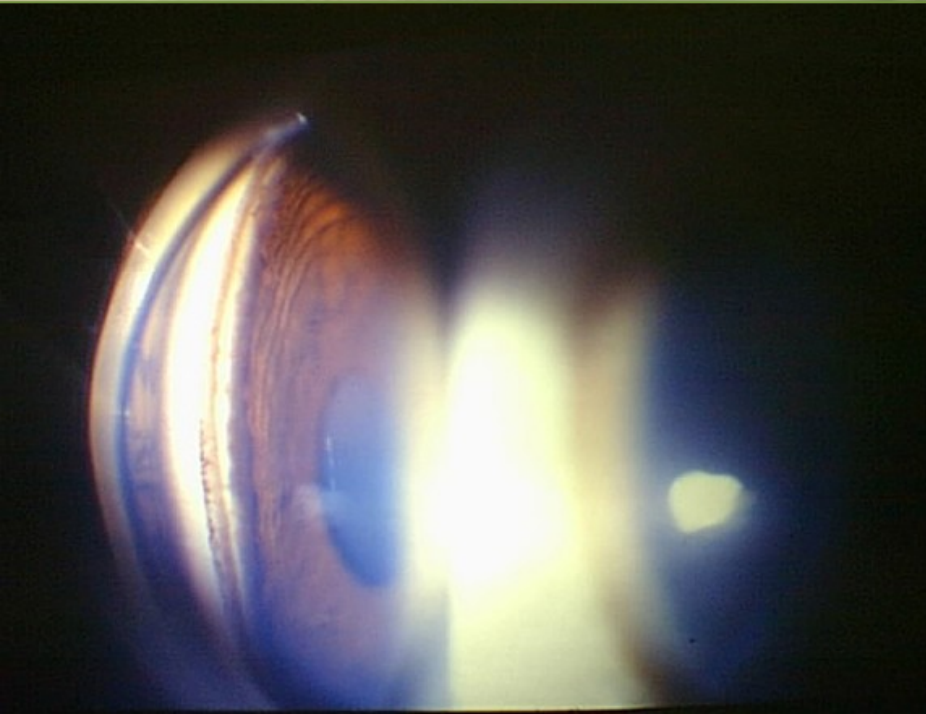
V. Posterior segment examination

- Ophthalmoscopy - ocular fundus



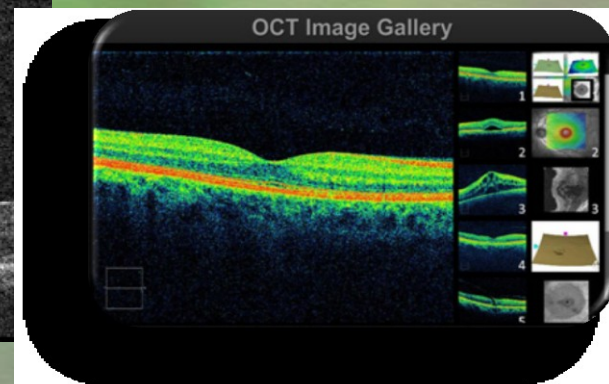
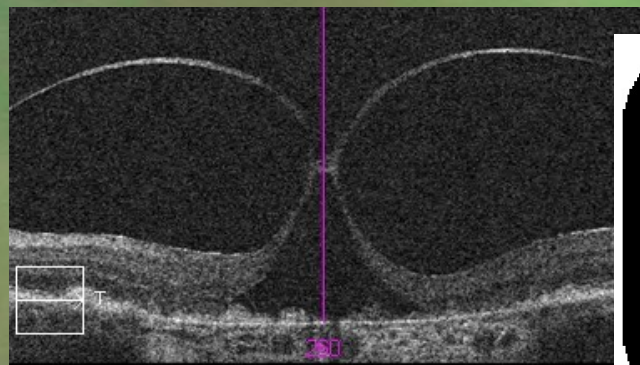
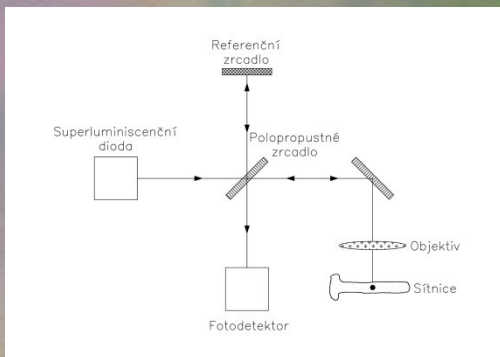
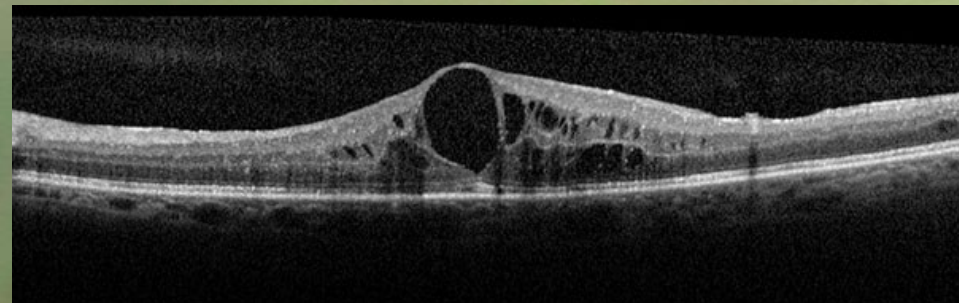
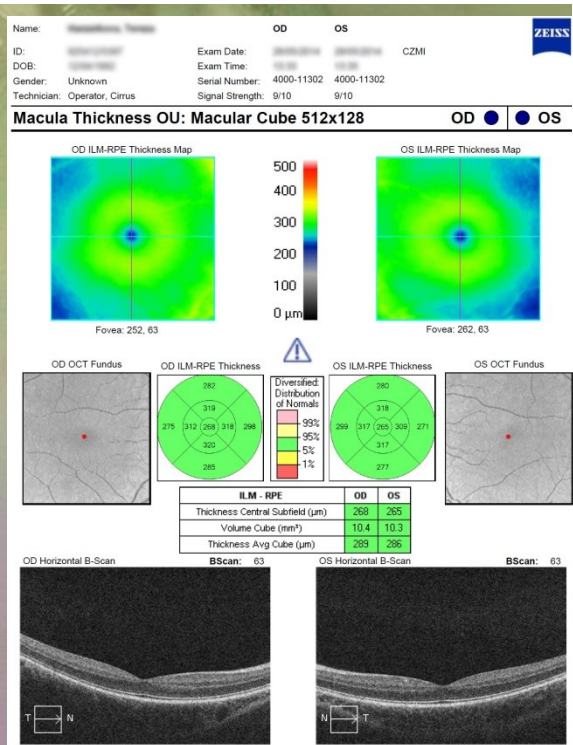
V. Special examination techniques

- **Gonioscopy**



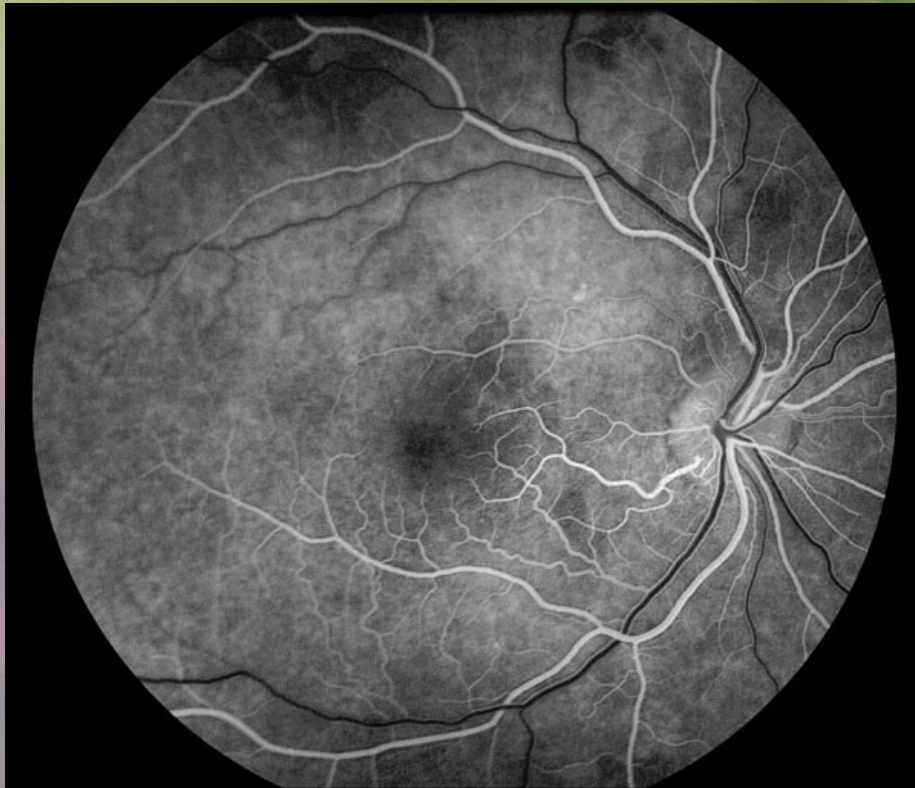
V. Special examination techniques

- Optical coherence tomography OCT



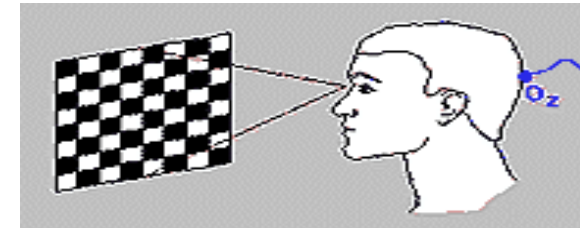
V. Special examination techniques

- **Fluorescein angiography - FAG**

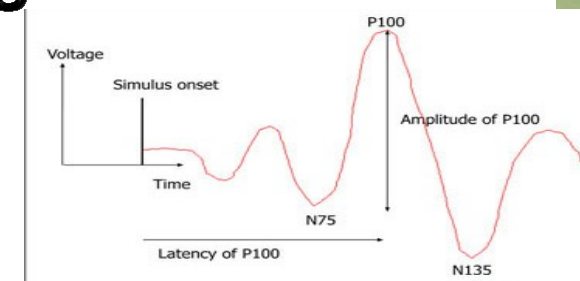


VI. Electrophysical tests

- **ERG (electroretinography)**
- diagnosis of functional defects of retina
- Record of an action potential produced by the retina when it is stimulated by light



- **VEP (visual evoked potential)**
- diagnosis of functional defects of visual pathways
- Record of electrical activity of the visual cortex created by stimulation of the retina



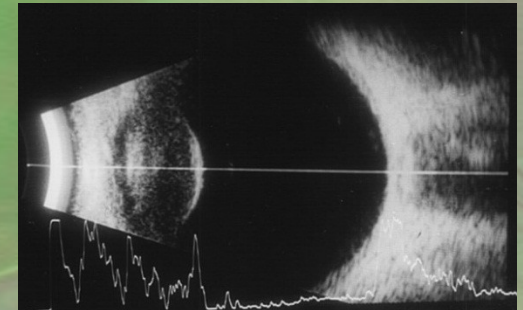
VI. Electrophysiological tests



VI. Electrophysical tests

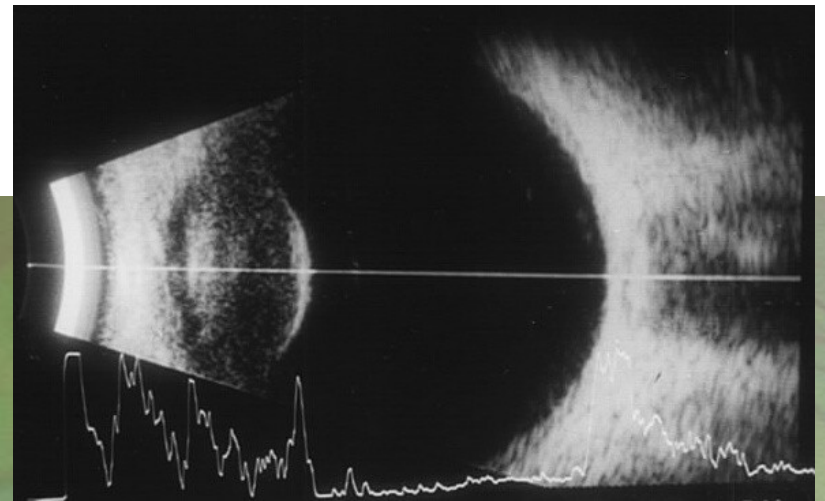
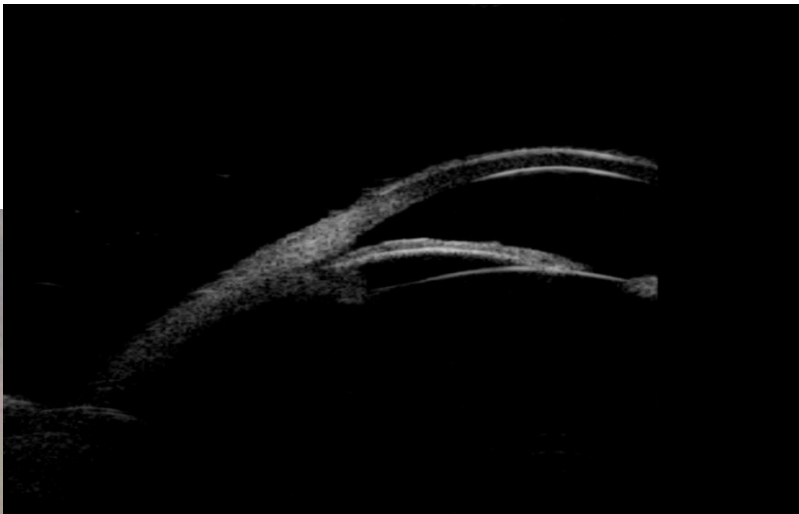


- **Ultrasound**



VI. Electrophysical tests

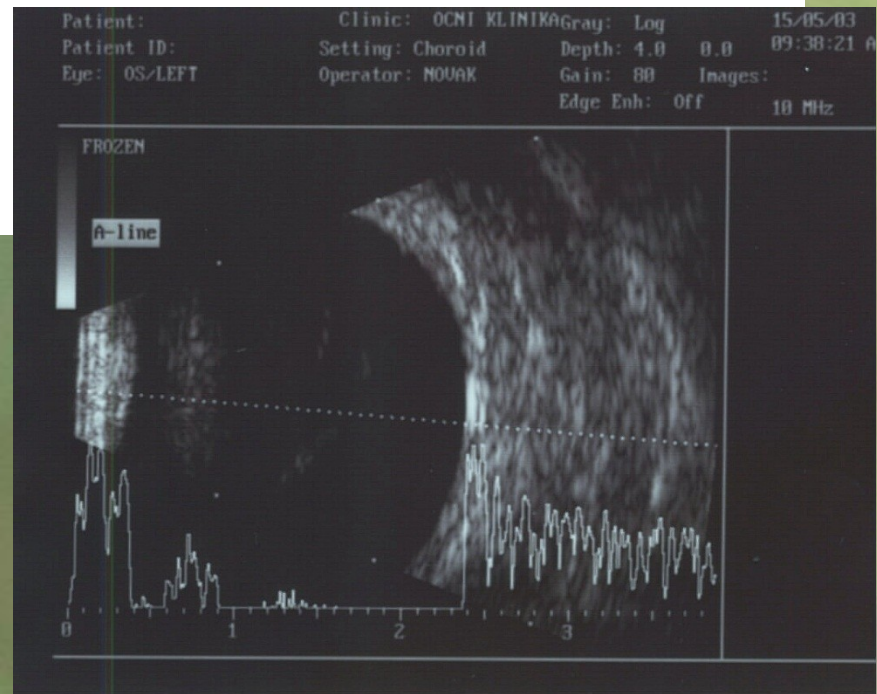
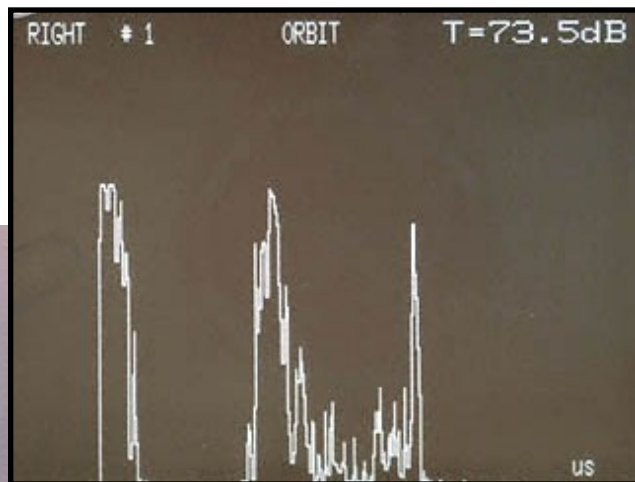
- **Ultrasound**
- **Non transparent optical media**
- **UBM- high frequency ultrasound – imaging of anterior segment**



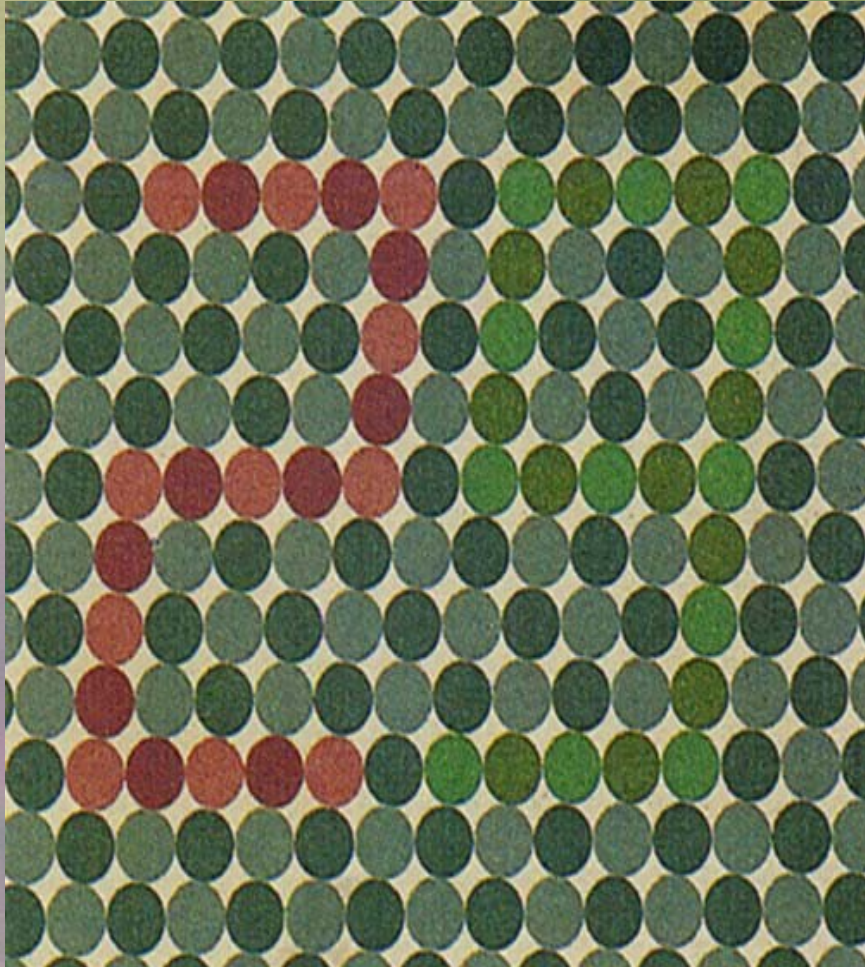
VI. Electrophysical tests

- Ultrasound
- A-scan

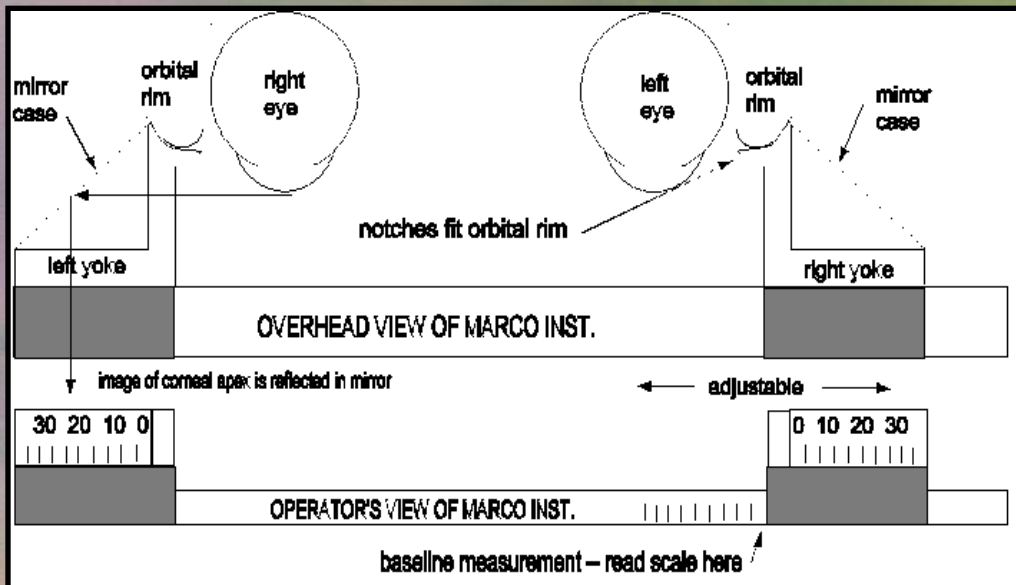
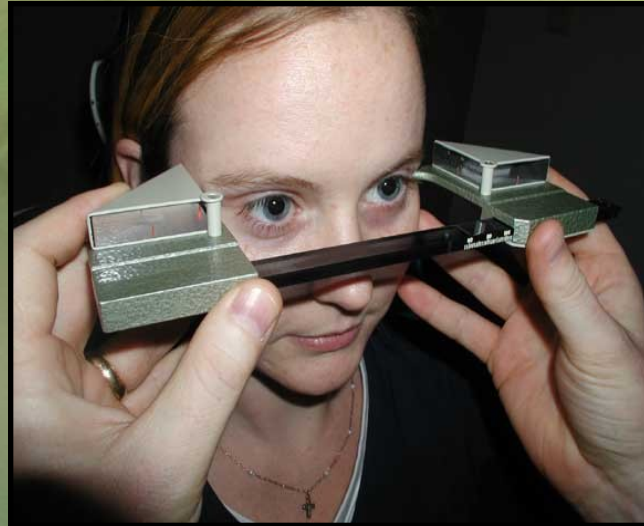
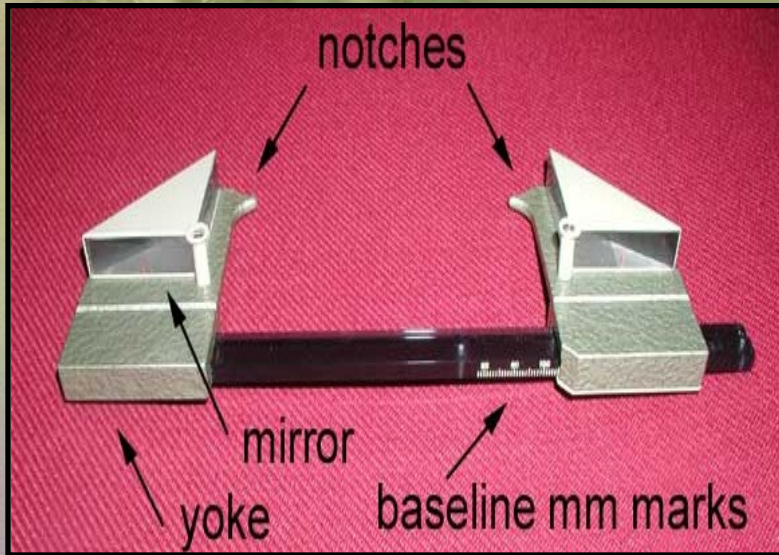
B-scan



VII. Color vision – HUE test



VII. Hertl exoftalmometry



Thank you for attention

