Examination techniques in ophthalmology

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Basic examination techniques

- Visual acuity (natural, best corrected)
- Measurement of intraocular pressure
- Slit lamp examination
- Fundus examination

Visual acuity

- Visual acuity (natural, best corrected)

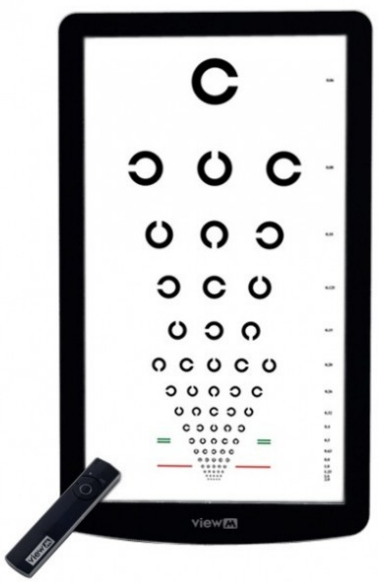
- Distance vision
- Near vision

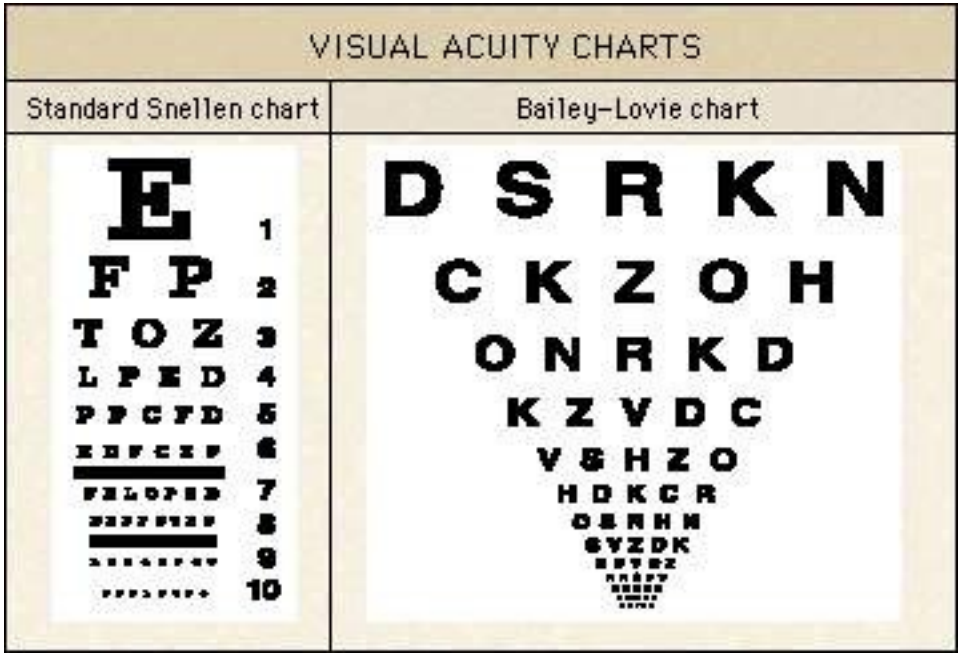
- **Charts**

- Snellen
- Landolt ring
- Pictures
- ETDRS

Charts


Bert complete




VISUAL ACUITY CHARTS
Standard Snellen chart
Bailey-Lovie chart
E
F P
T O Z
L P E D
P E C F D
F E L O P E D
D S R K N
C K Z O H
O N R K D
K Z V D C
V S H Z O
H D K C R
1
2
3
4
5
6
7
8
9
10

Near vision

Jaeger chart

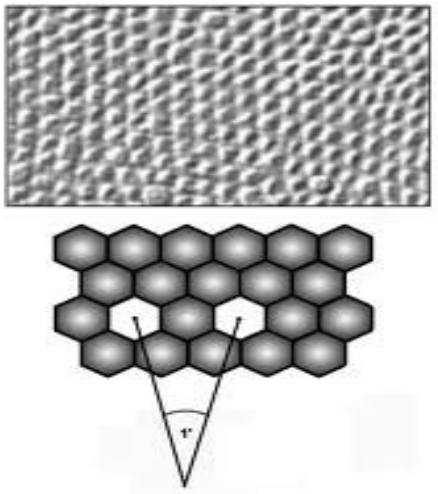
Visual acuity

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

Visual Acuity

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

- Minimum separabile – minimum angle of resolution

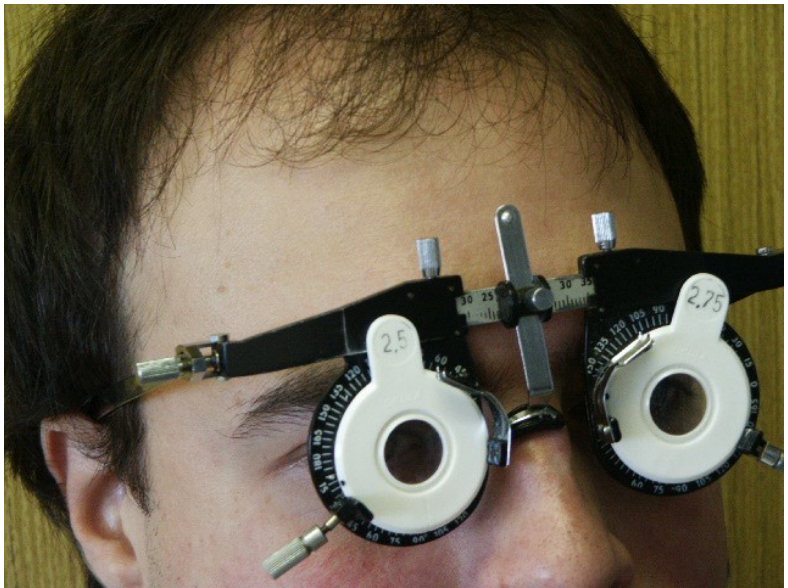


Refraction

- 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**

Visual acuity

- Frame
- Lenses



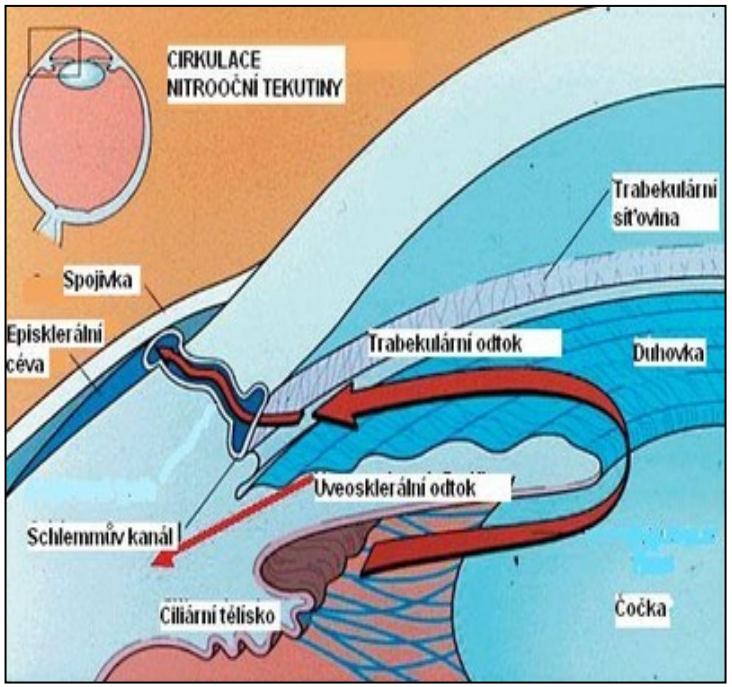
Tonometry

Contact techniques

- Schiötz tonometry
- Goldmann applanation tonometry

Non contact techniques

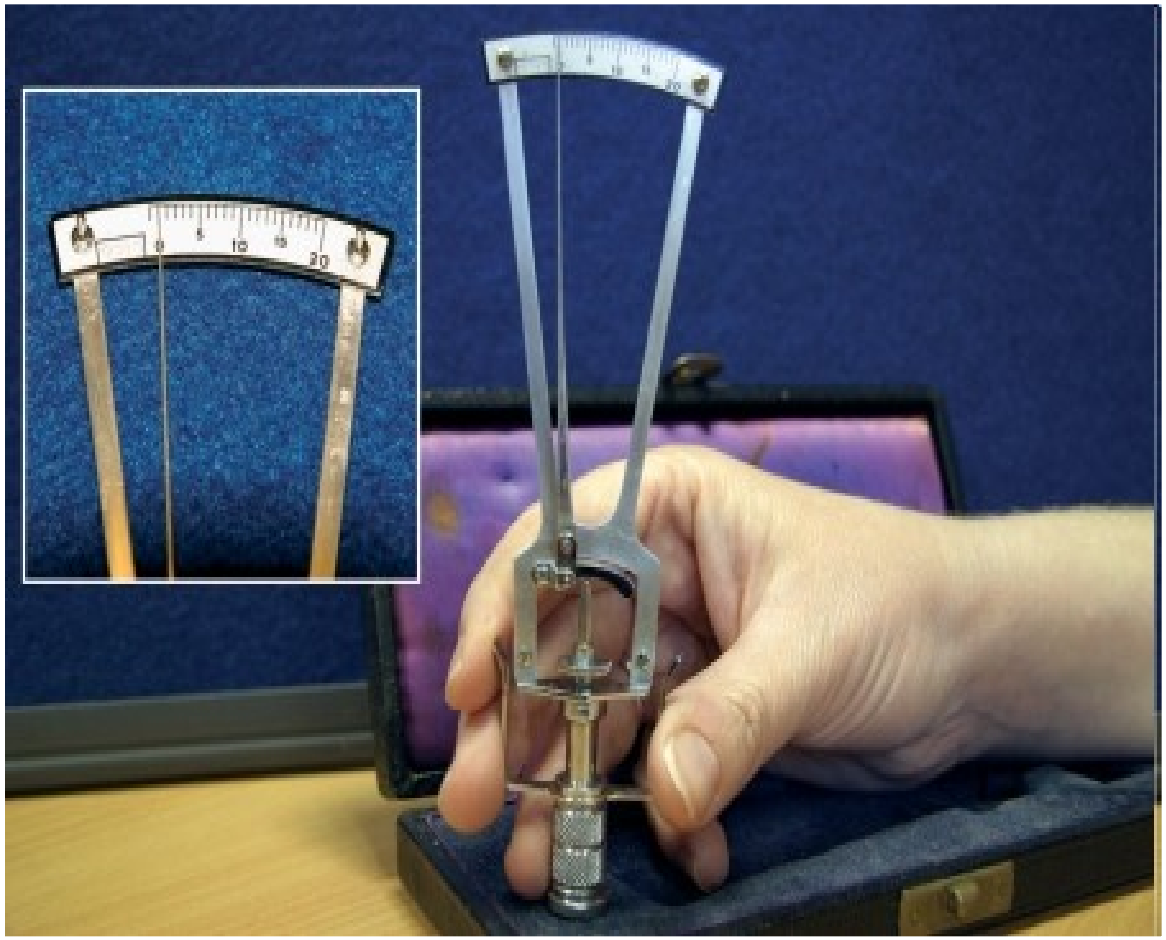
- Jet air (air puff)



Schiötz tonometry

- 7/7,5
- Topical anestesia

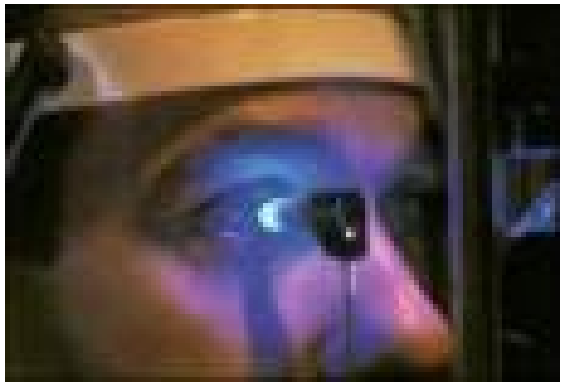
Schiötz tonometry



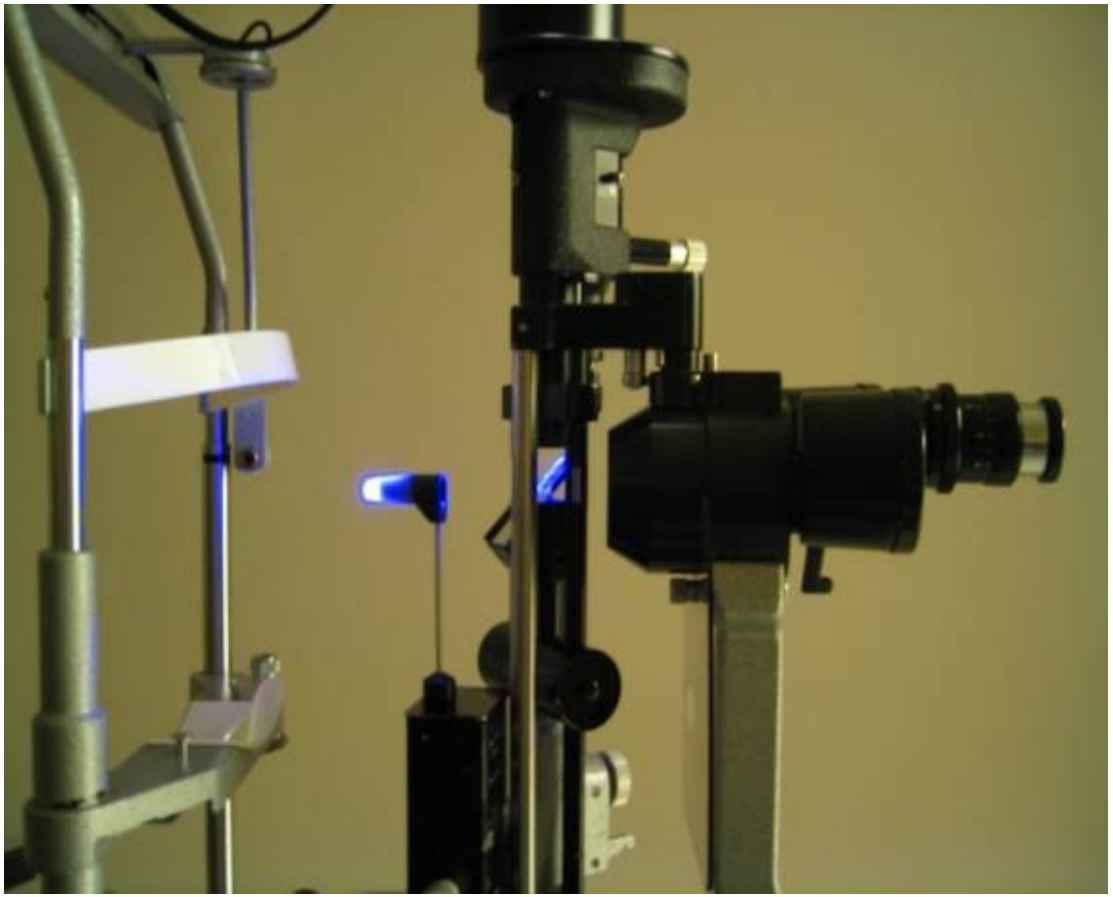
Goldmann tonometry

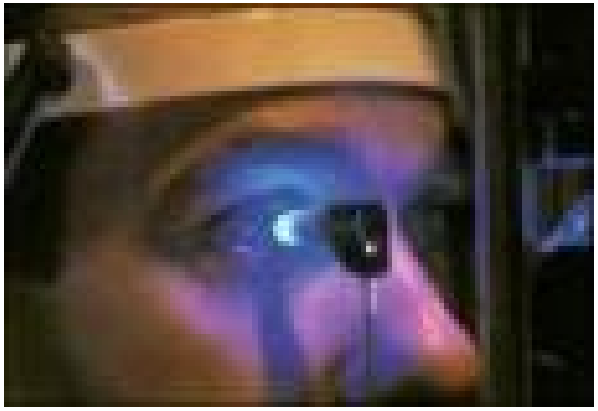
- The normal range is 10-21 mmHg

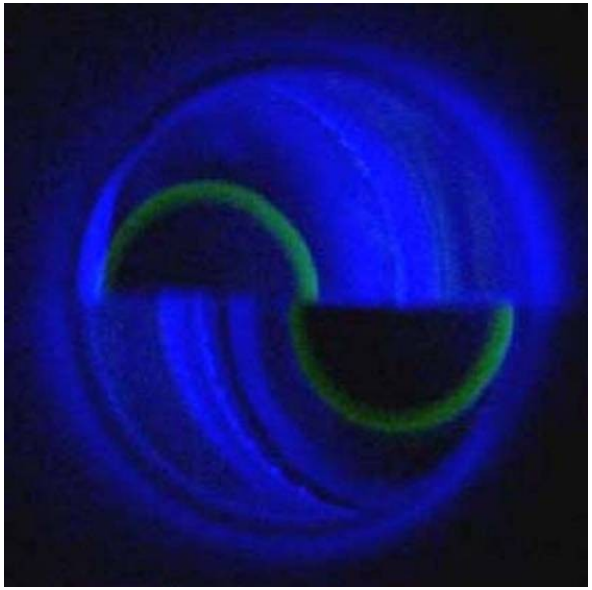
- Topical anestesia, fluorescein
- Force required to flatten the cornae



Goldmann tonometry







Non contact tonometry

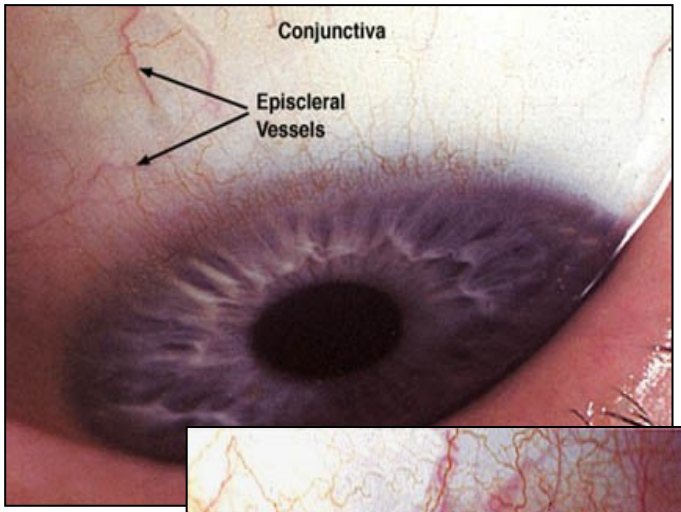
Examination of anterior segment

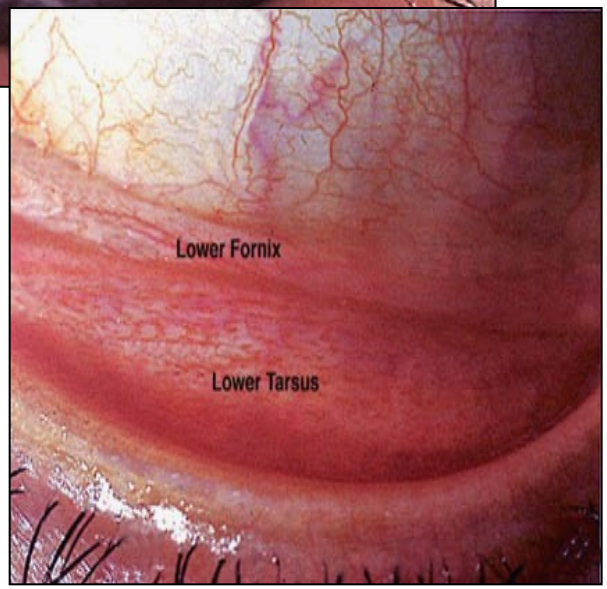
- Aspection

Slit lamp biomicroscopy

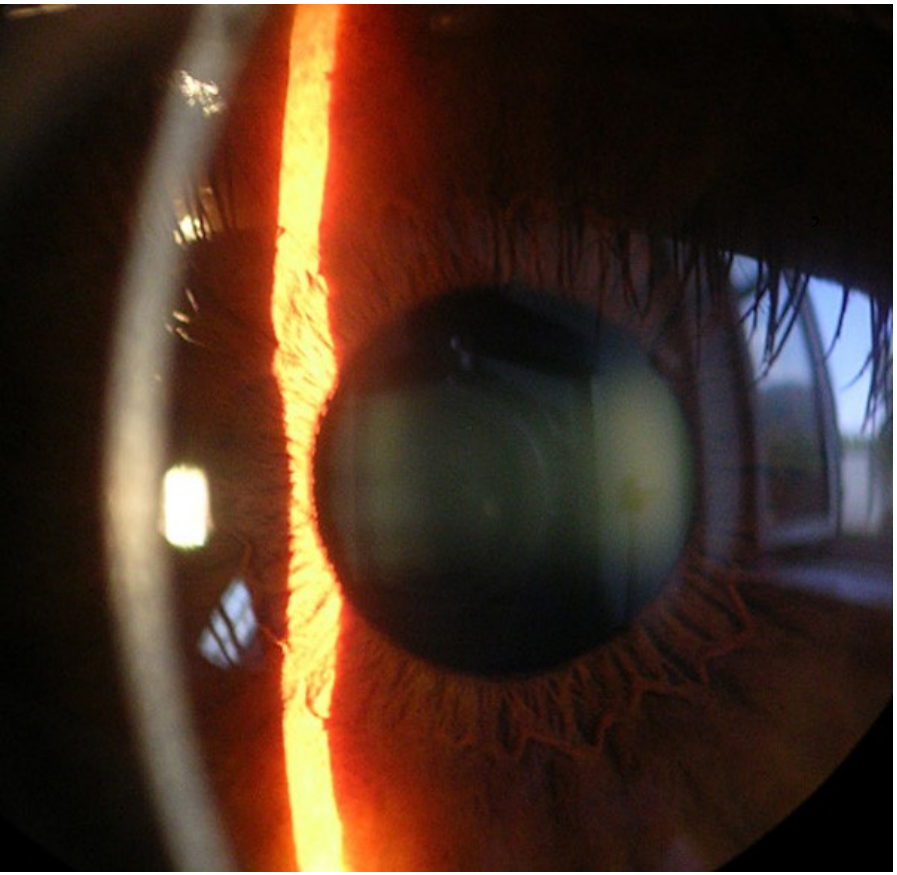
- table mounted microscope with a special adjustable illumination source attached

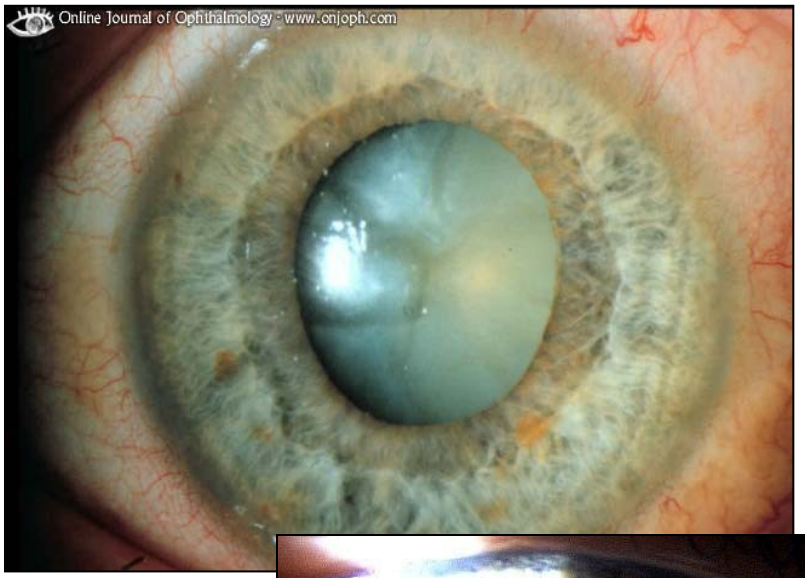
Slit lamp biomicroscopy

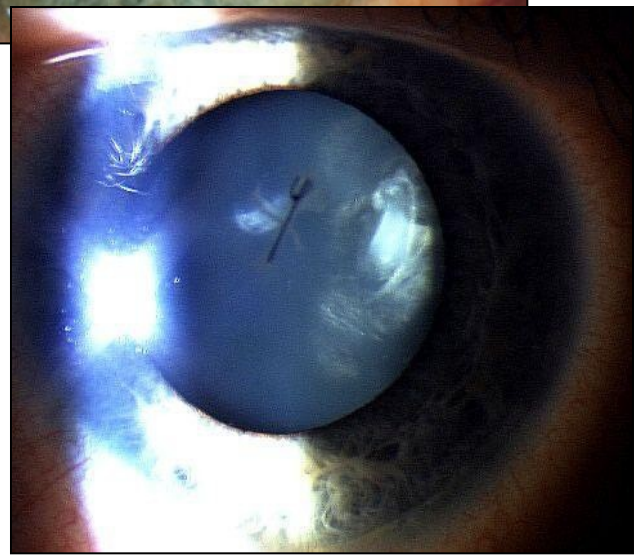




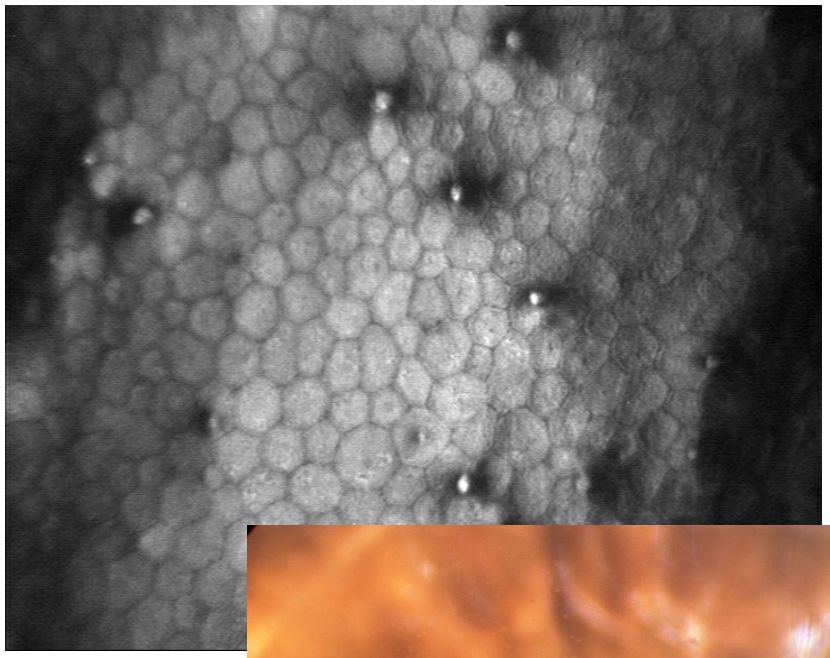
Slit lamp biomicroscopy

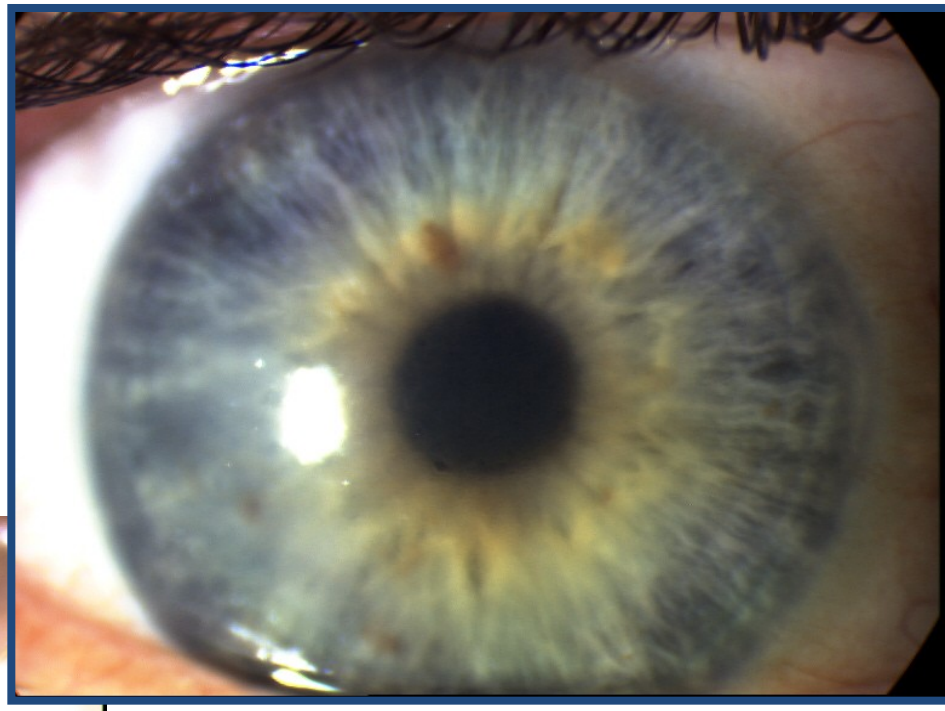


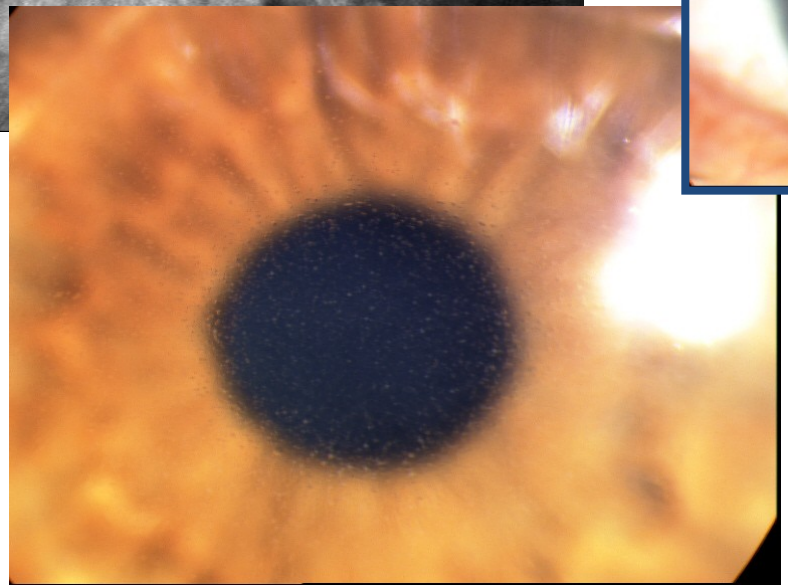




Fuchs endotelial dystrophy

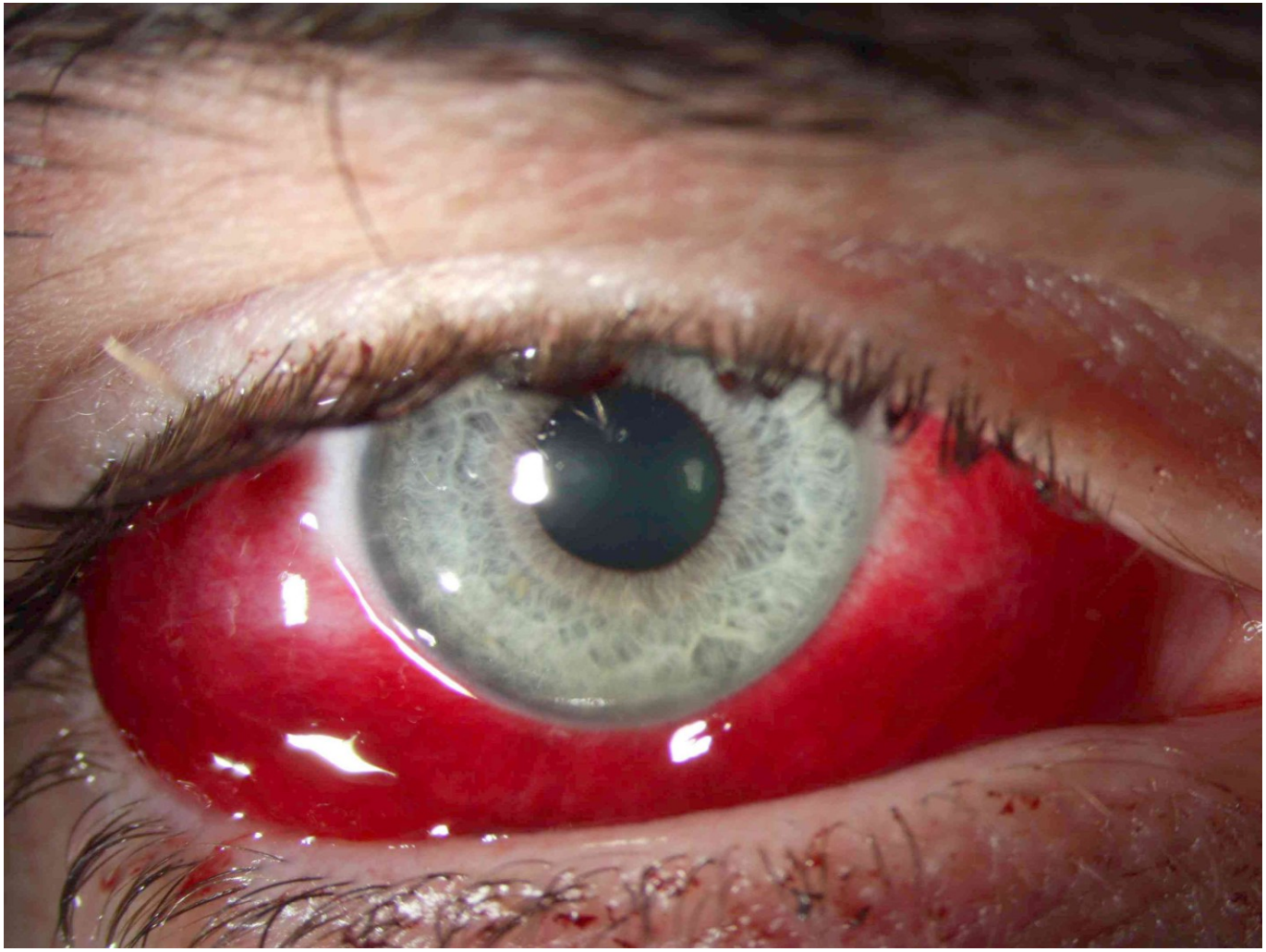




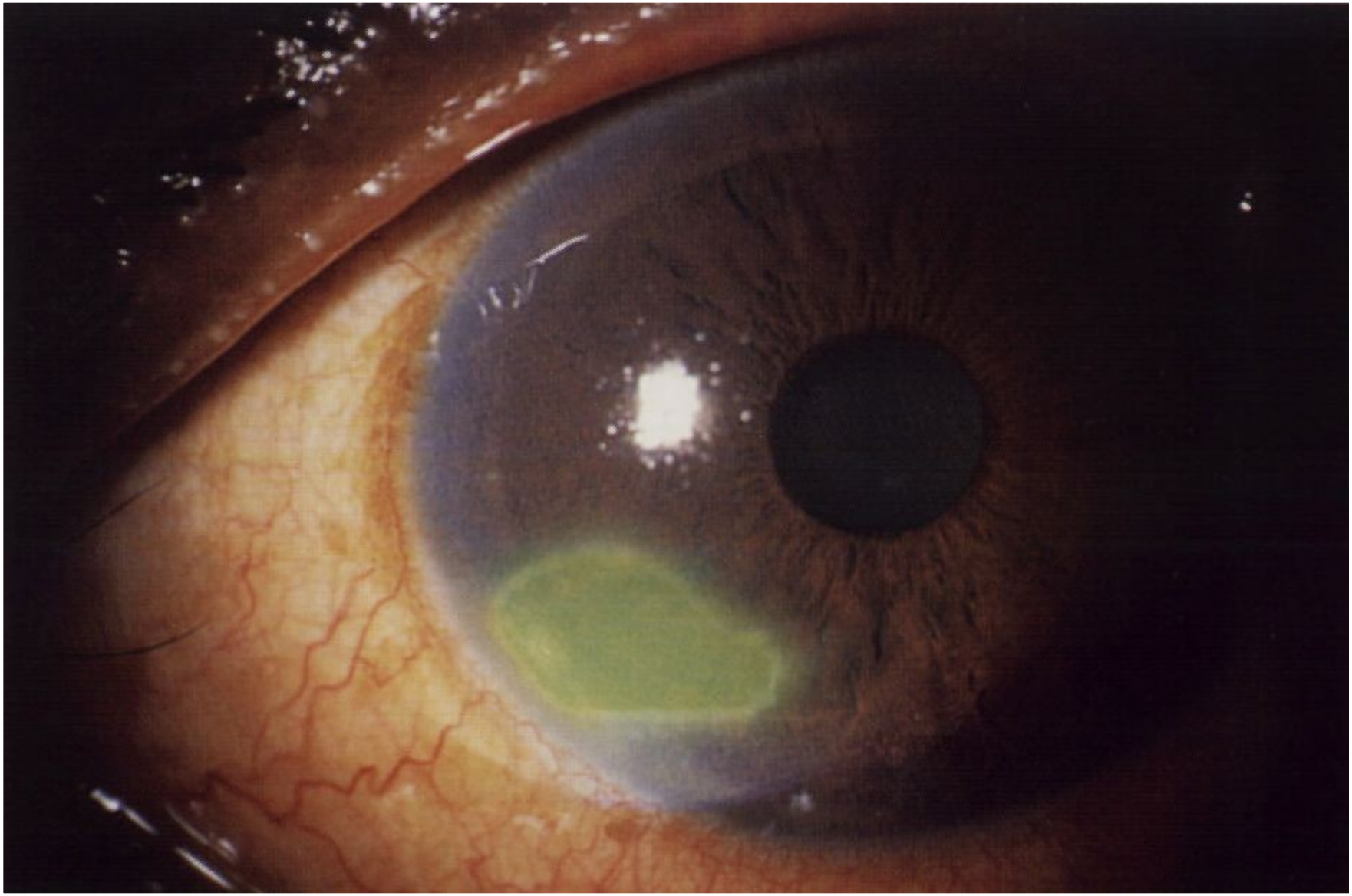


Synechiae posterior

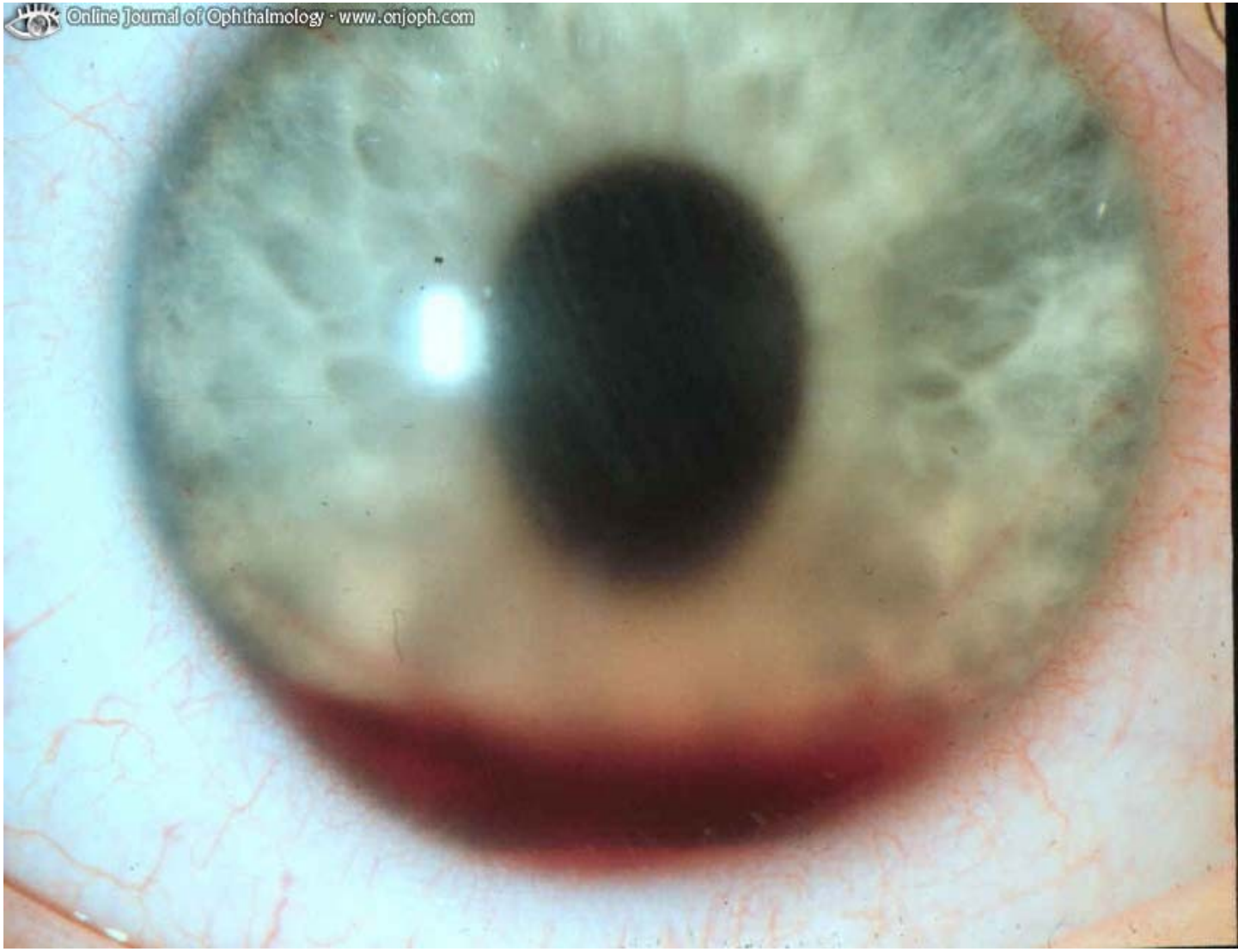
Sunconjunctival haemorrhage



Corneal abrasion



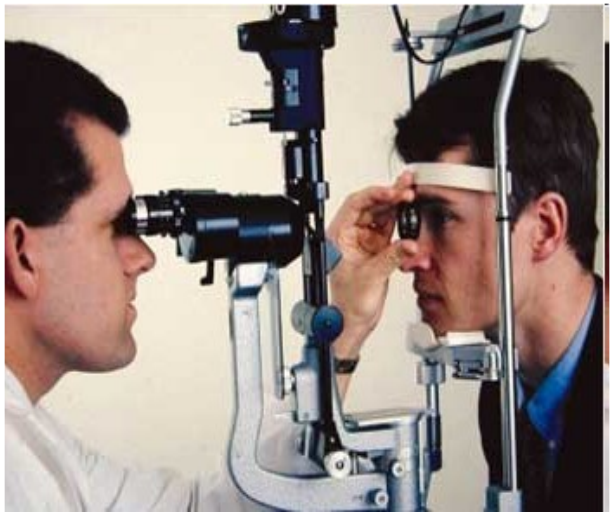
Hyphema

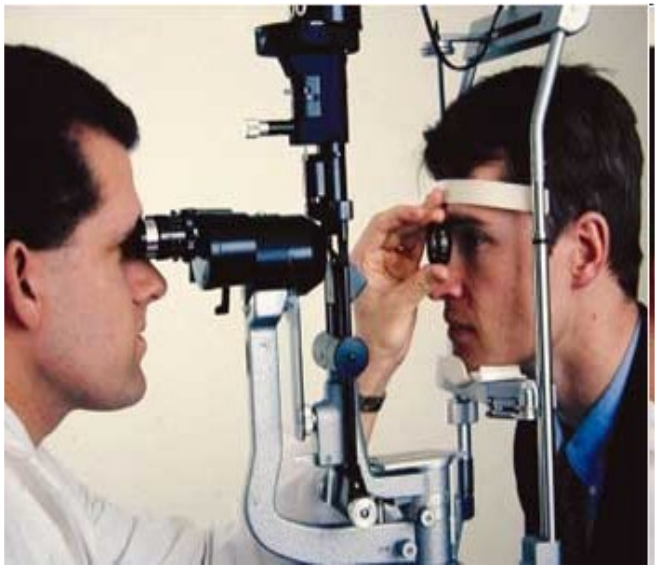


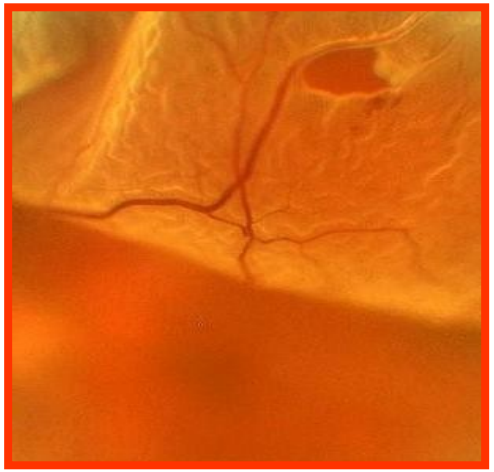
Hypopyon

Examination of fundus

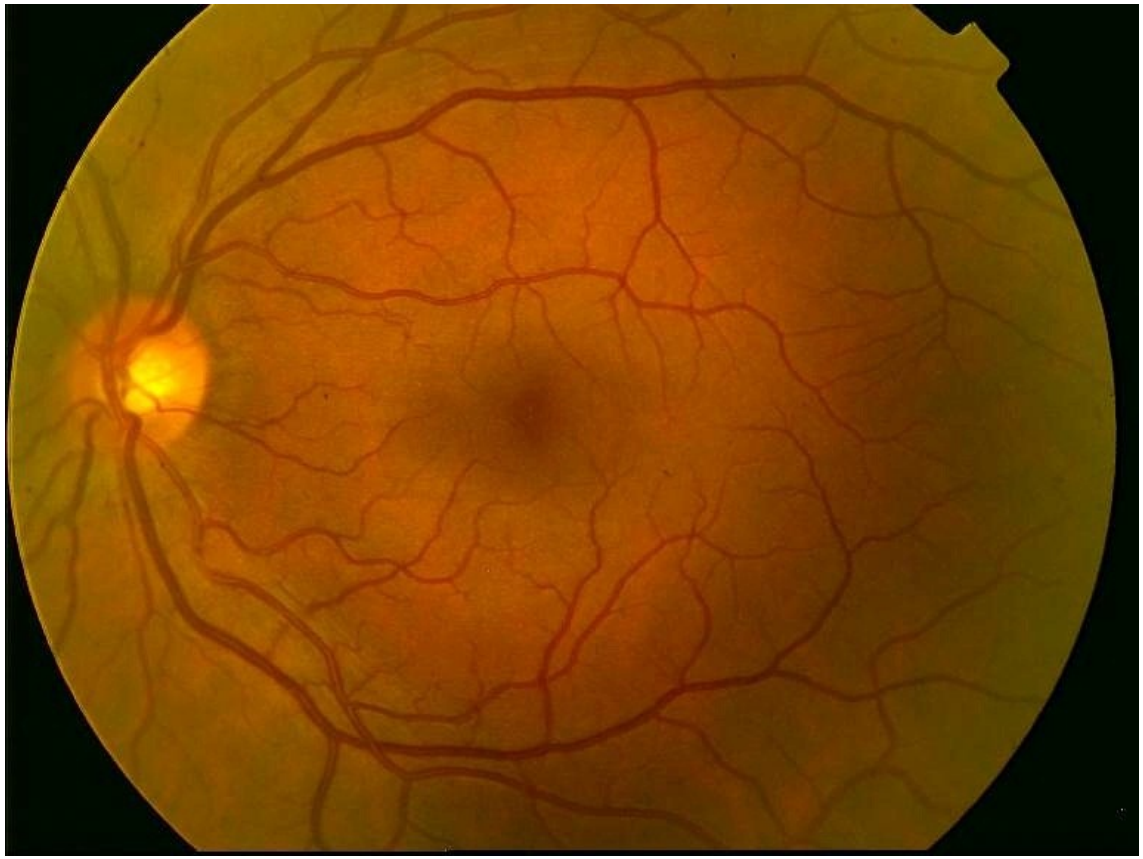
- **Ophthalmoscopy - direct**
  - indirect
- **Slit lamp biomicrocsopy**
  (high power convex lens, the image is vertically inverted and laterally reversed)

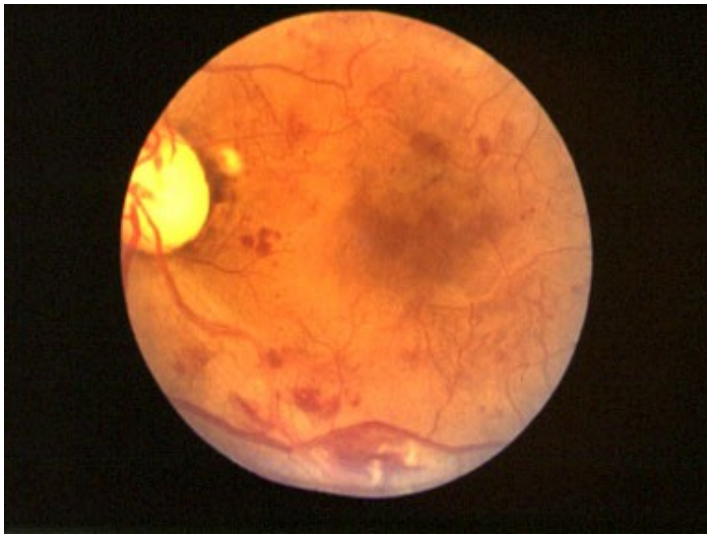






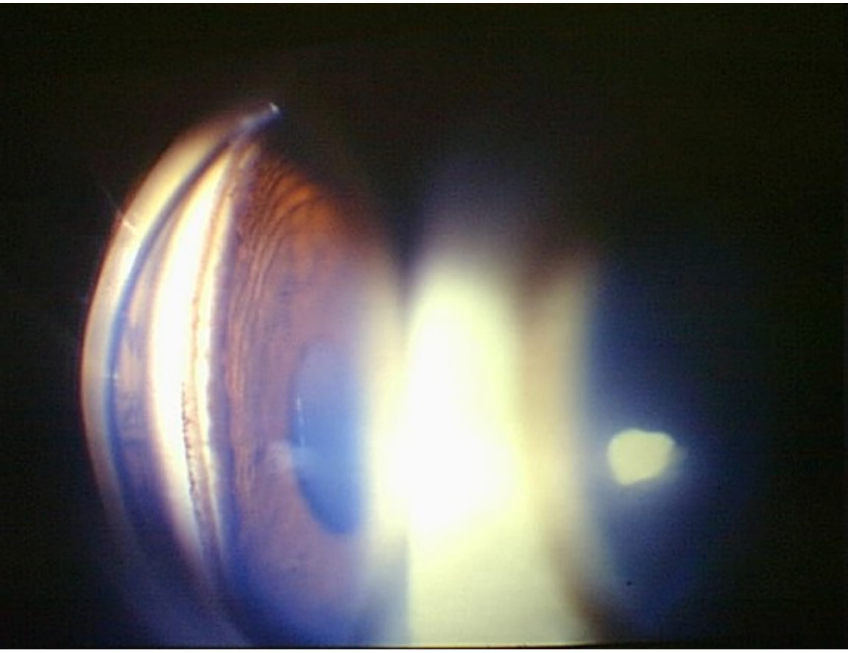
Ocular fundus





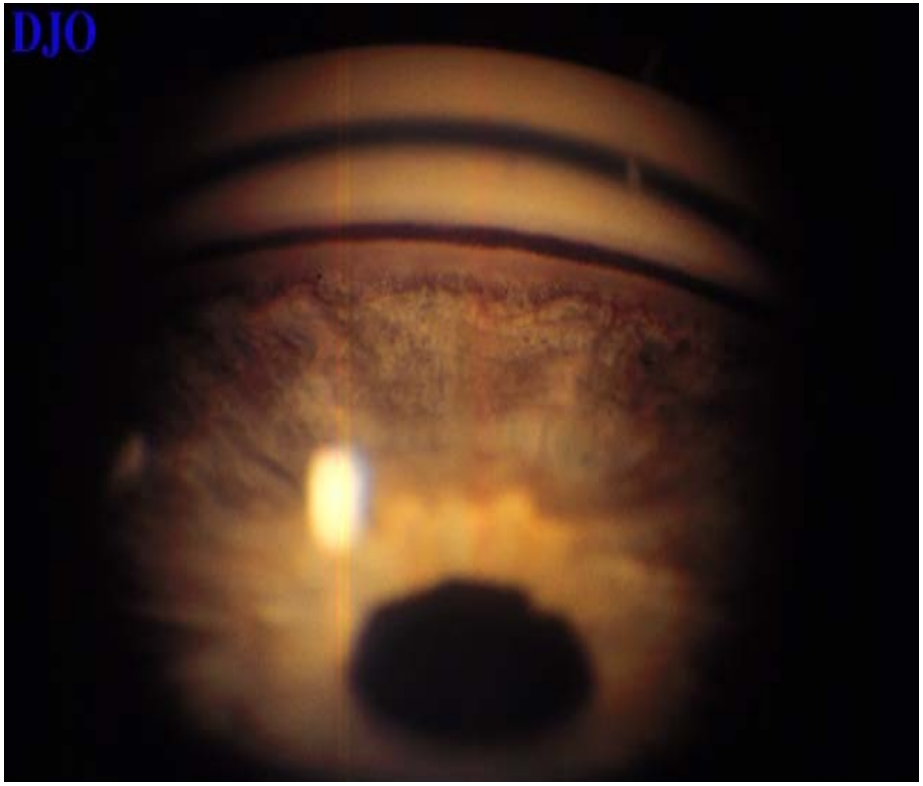
Special examination techniques

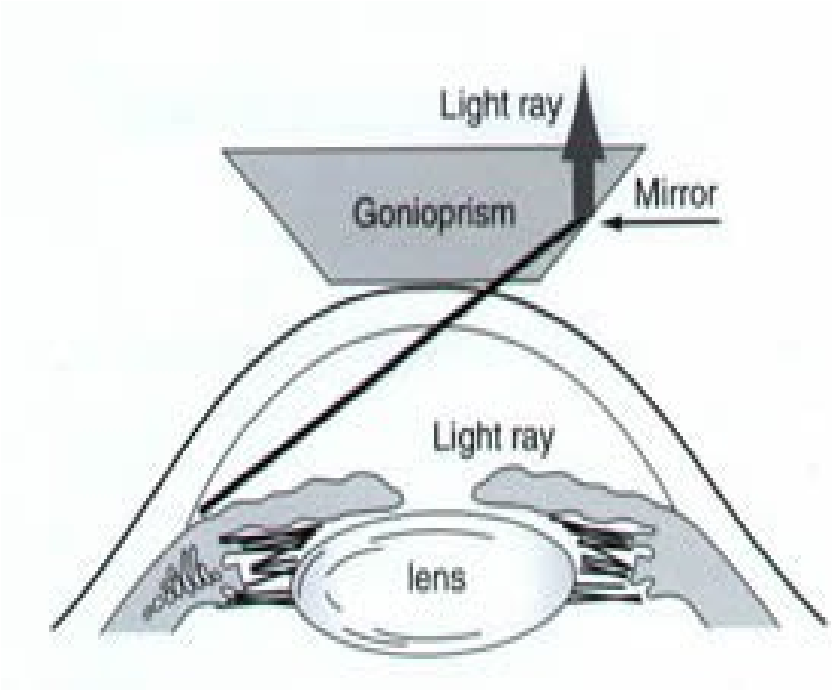
Gonioscopy

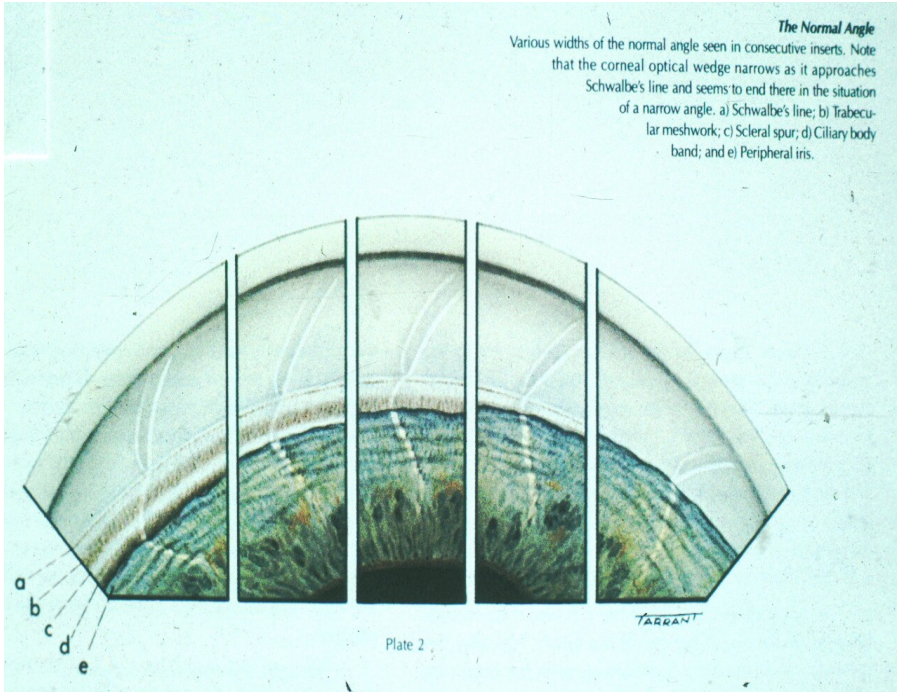


- Gonio lens (mirrors)

- Angle structures
- Fundus examination


DJO


Light ray
Gonioprism
Mirror
Light ray
lens

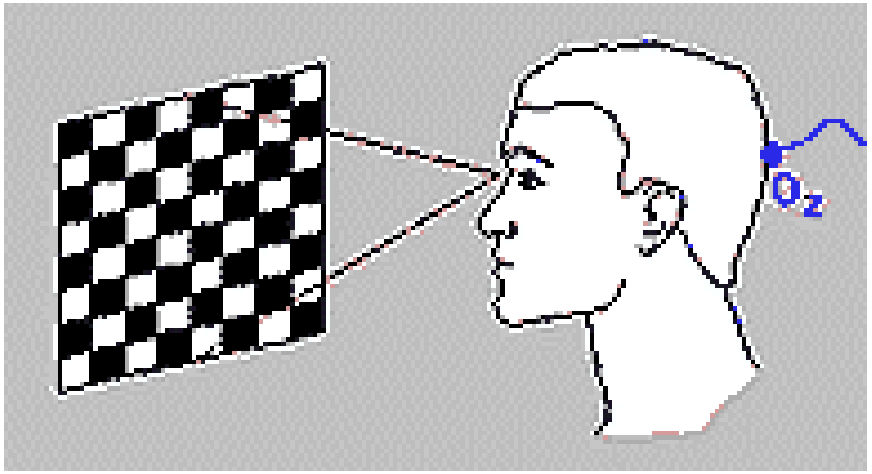

The Normal Angle
Various widths of the normal angle seen in consecutive inserts. Note that the corneal optical wedge narrows as it approaches Schwalbe's line and seems to end there in the situation of a narrow angle. a) Schwalbe's line; b) Trabecular meshwork; c) Scleral spur; d) Ciliary body band; and e) Peripheral iris.
a
b
c
d
e
TARRANT
Plate 2

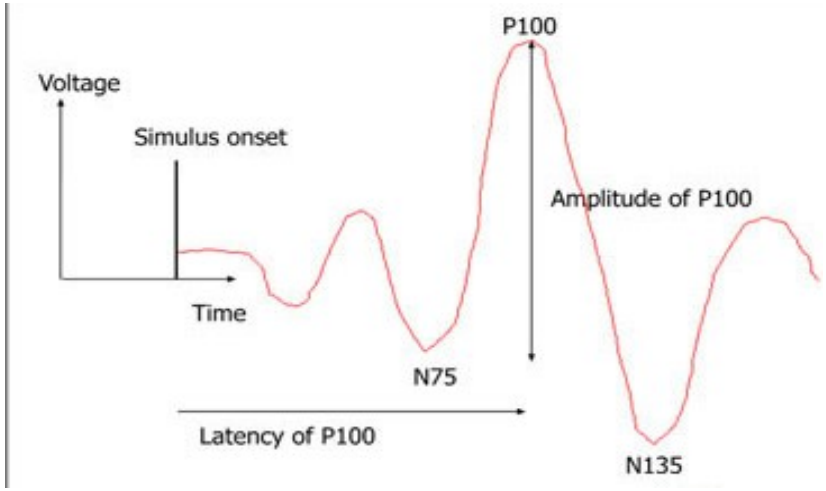
Electrophysical tests

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

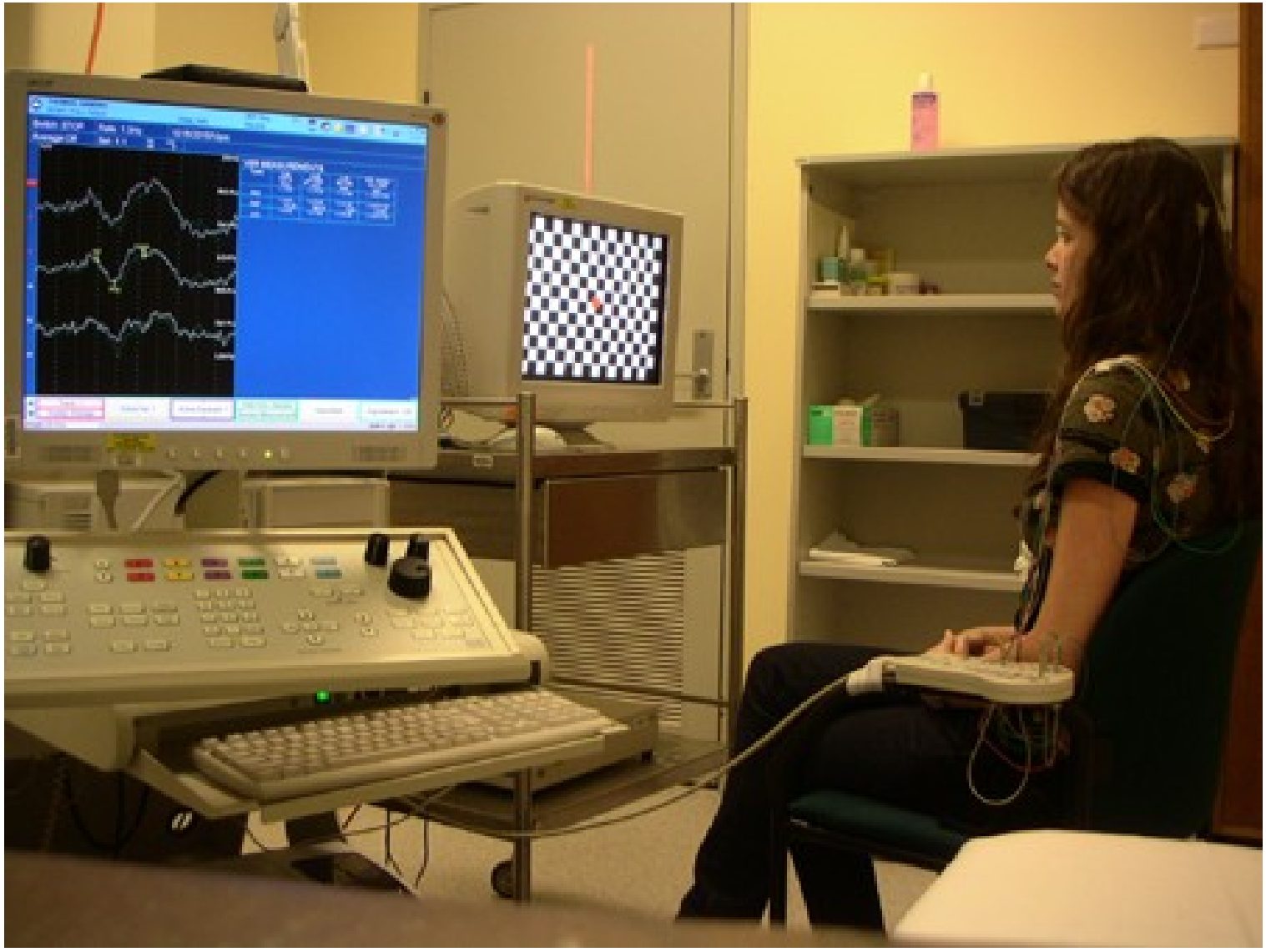
- **VEP (visual evoked potential)**
  -diagnosis of functional defects of visual pathways
- Record of electrical activity of the visual cortex created by stimulation of the retina

Electrophysical tests

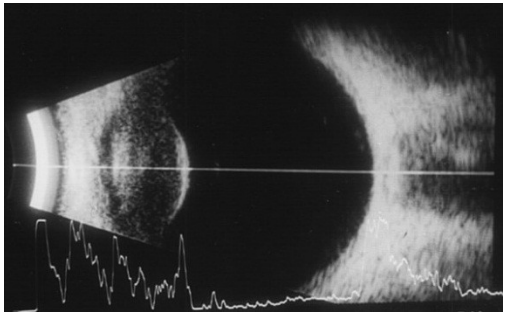




Electrophysical tests

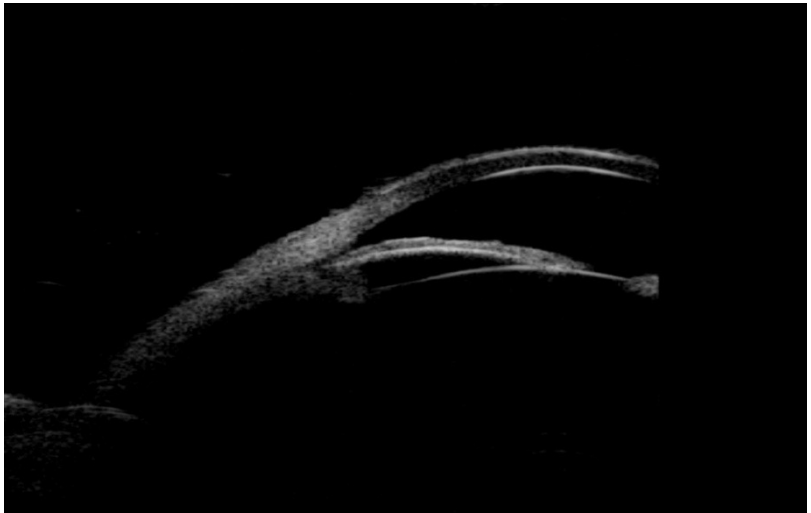


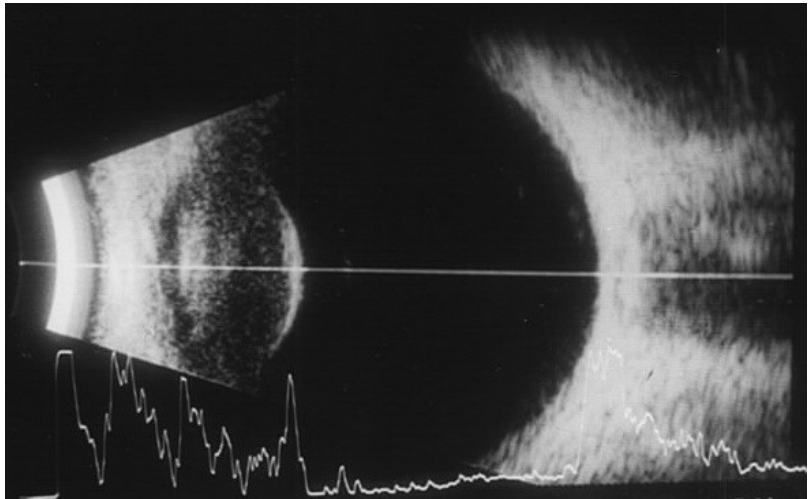
Ultrasound



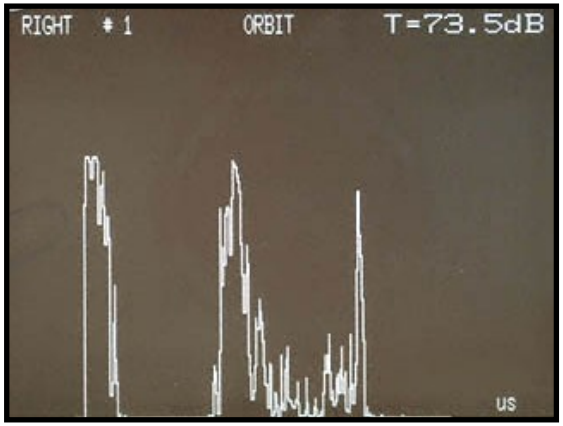
Ultrasound

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

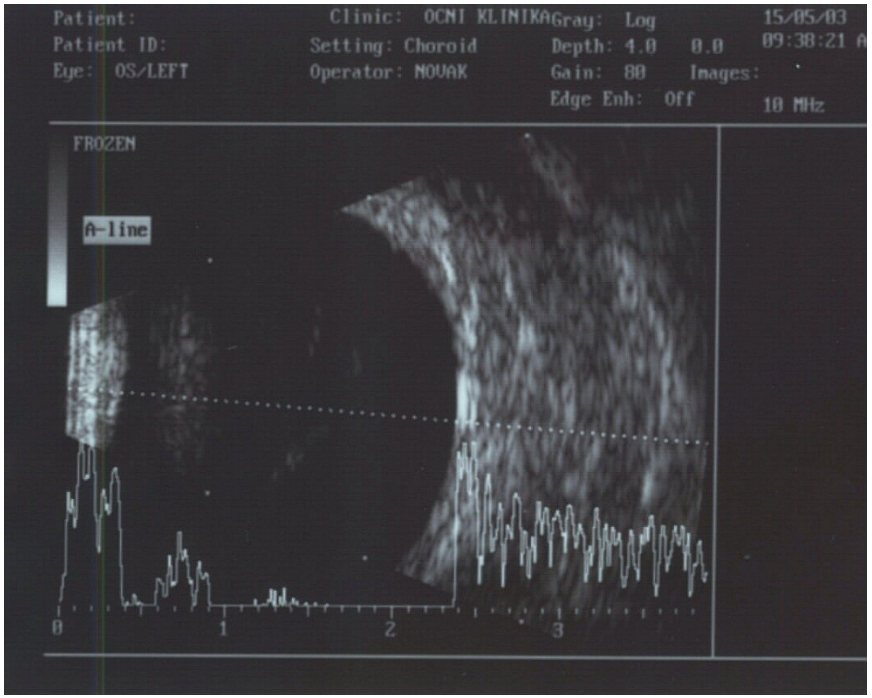




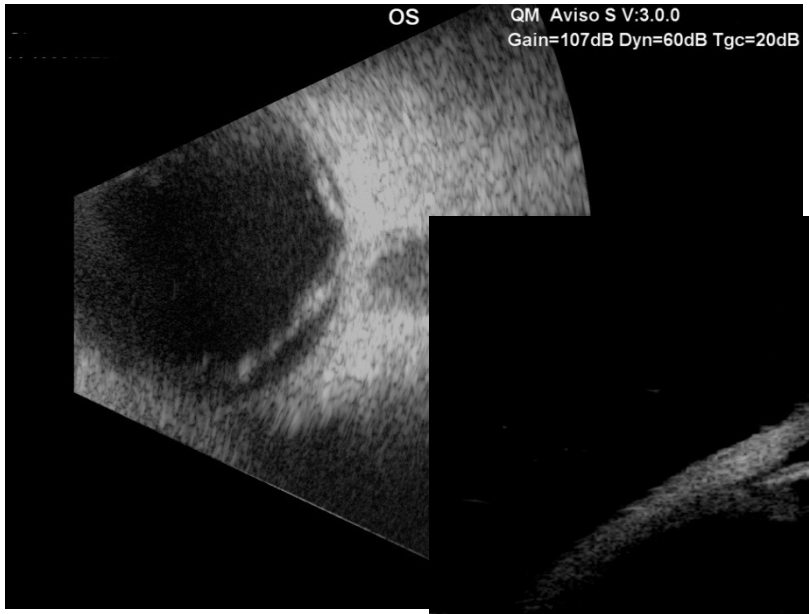
- **A scan (biometry)**

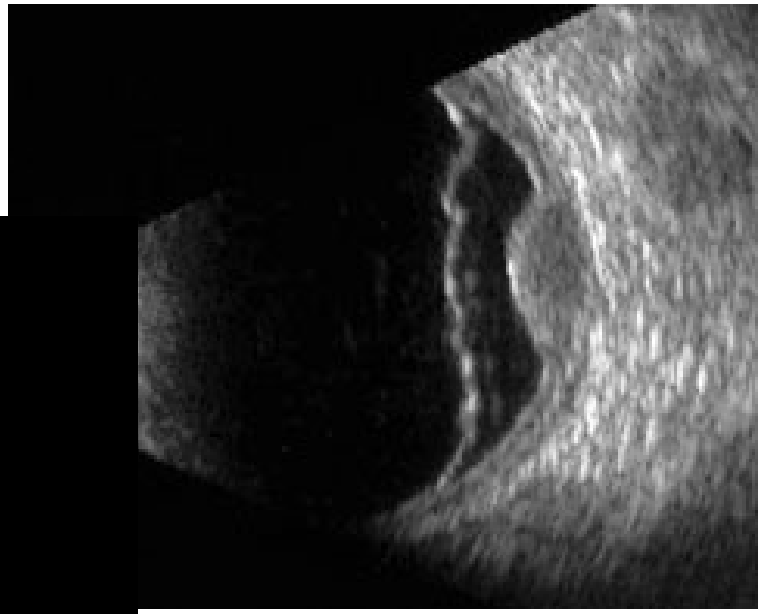


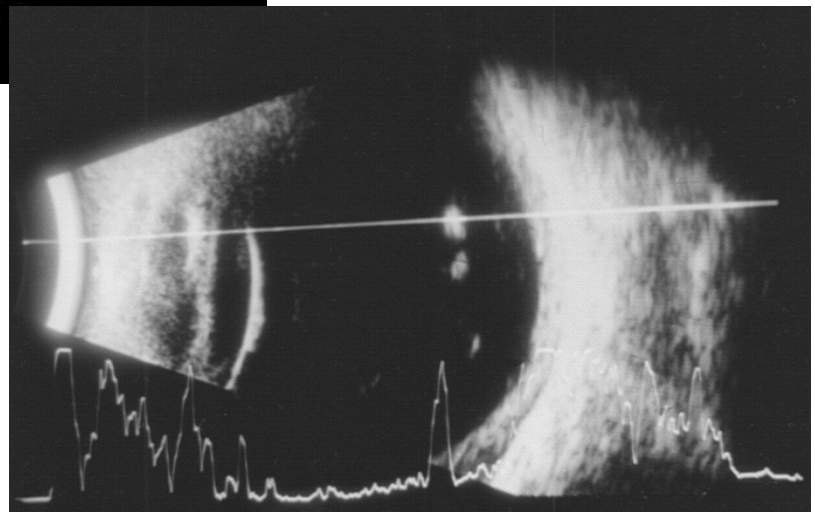
- **B scan**



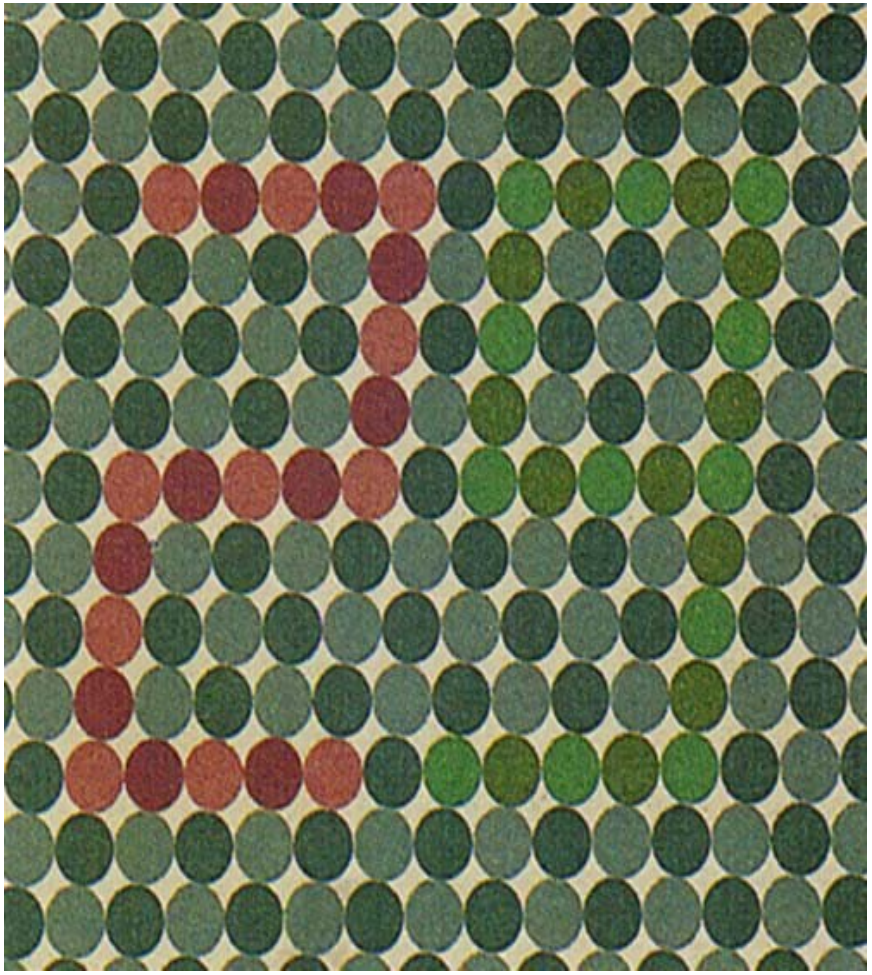
Ultrasound

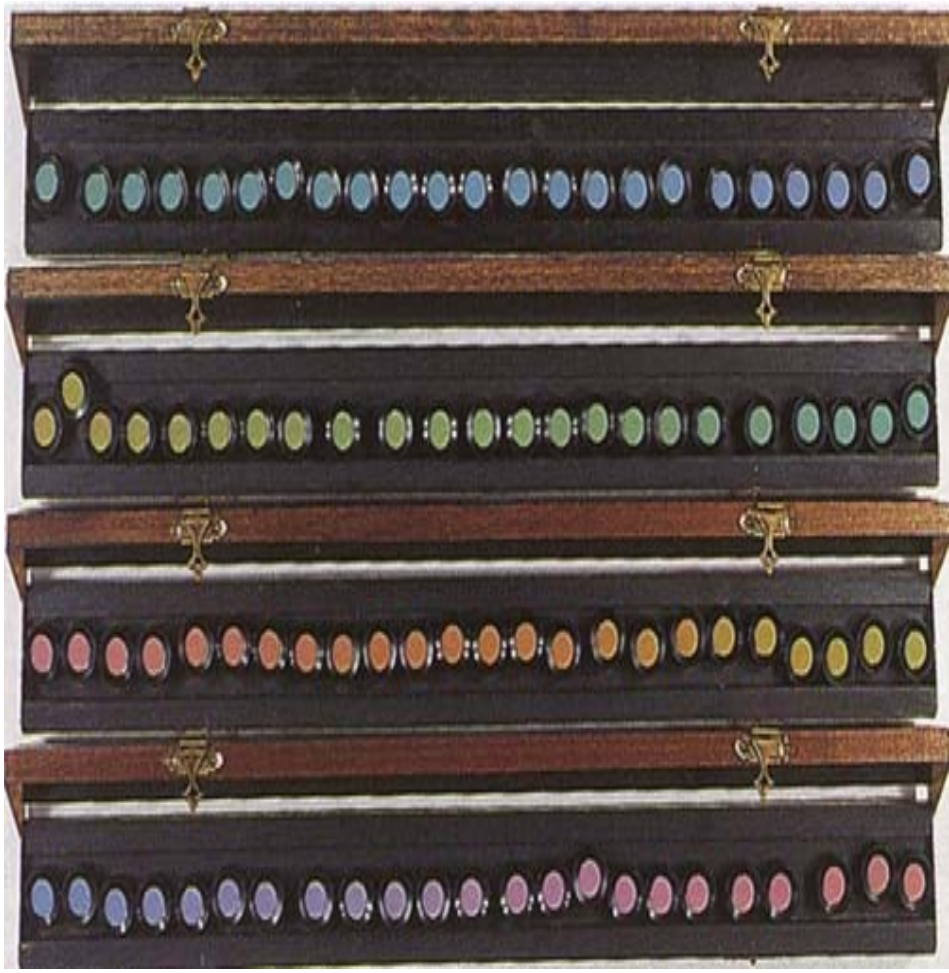




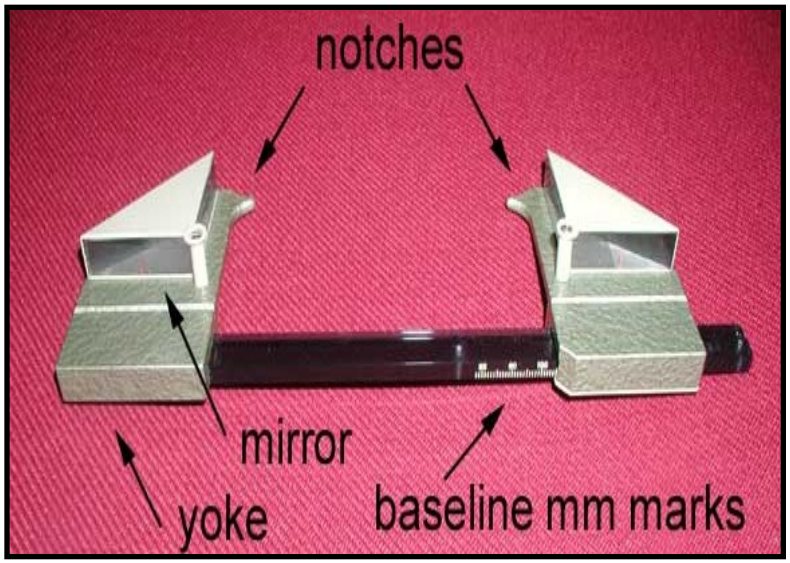


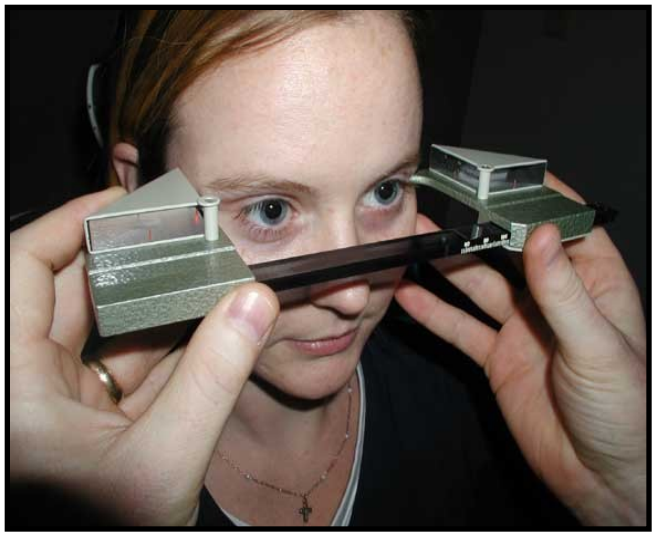
Color vision – HUE test

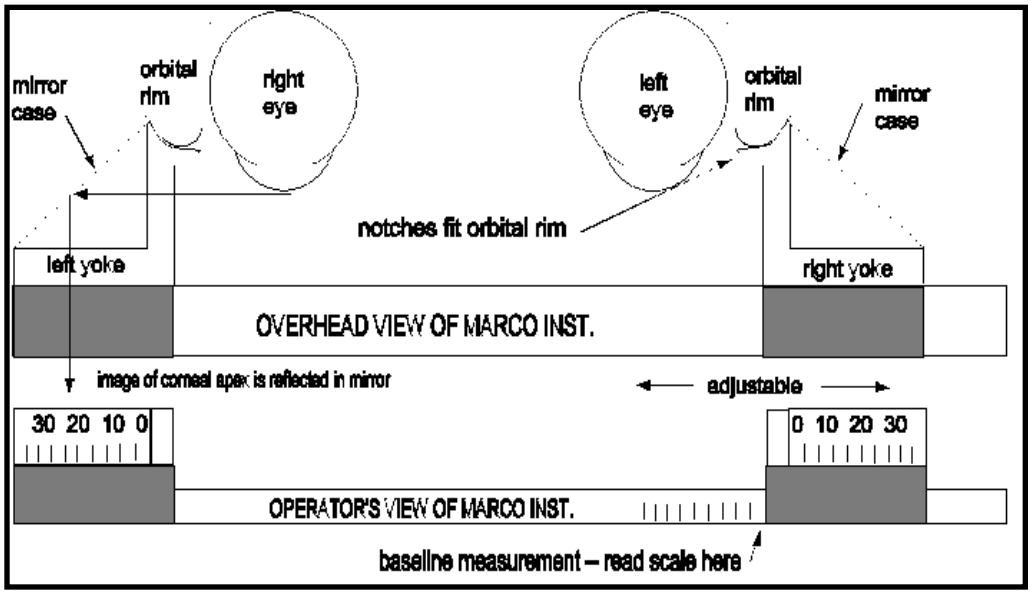




Hertl exoftalmometry







Děkuji za pozornost!