

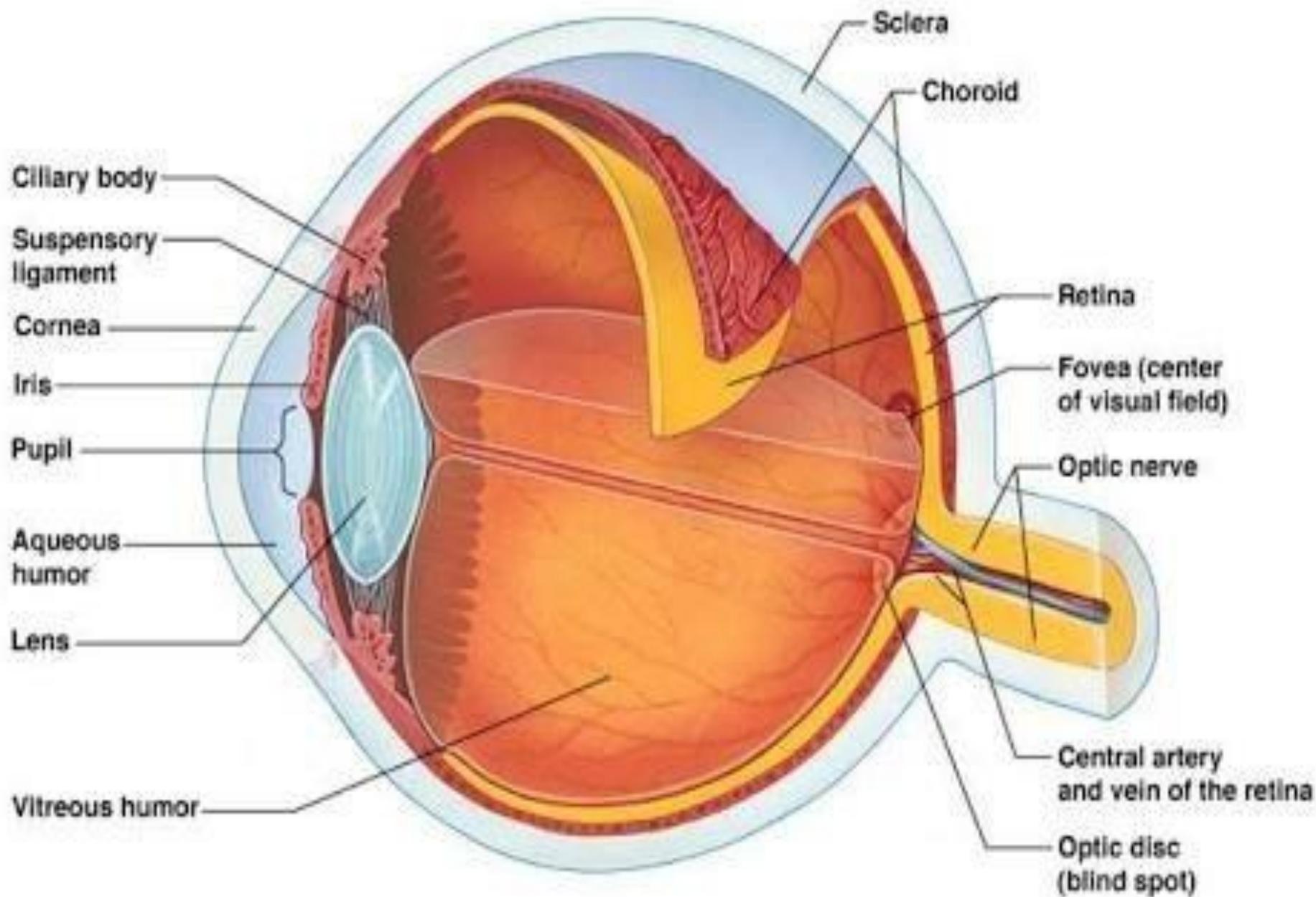
Retina & Choroid

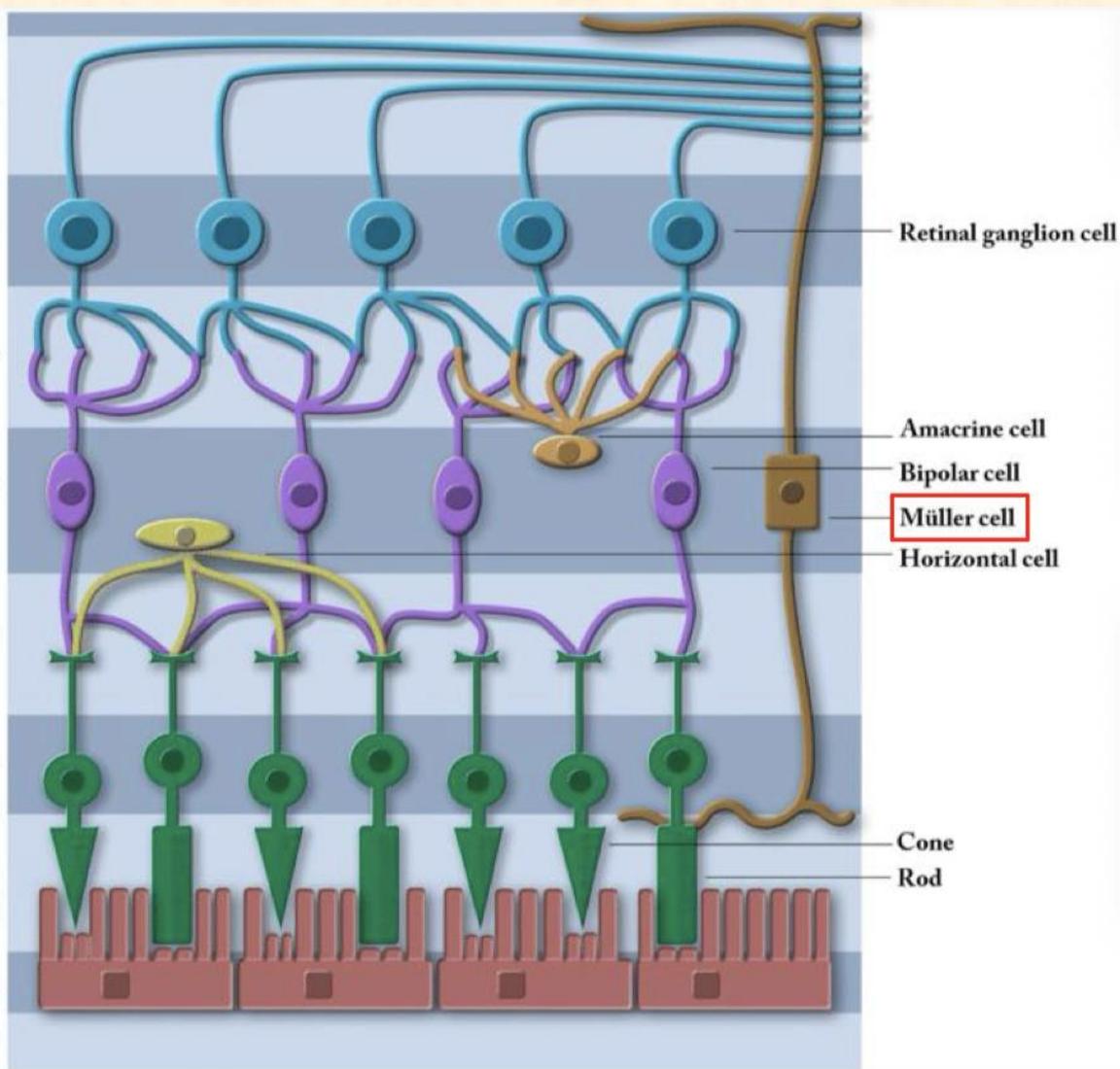
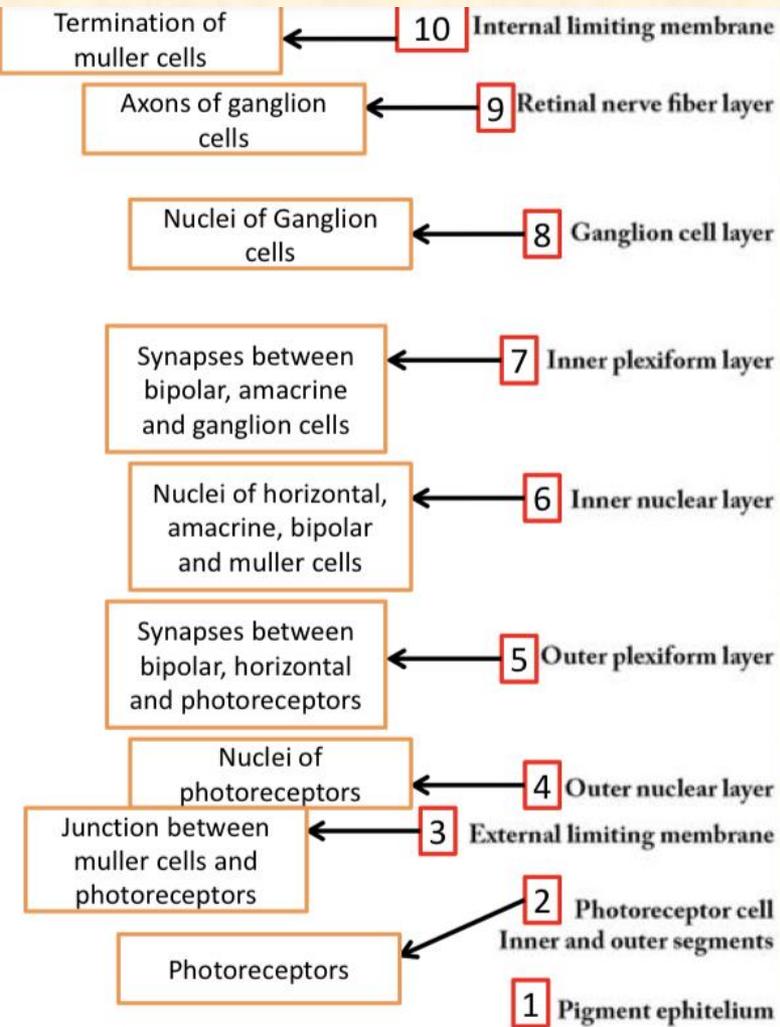
Dr. Khalid Alzoubi

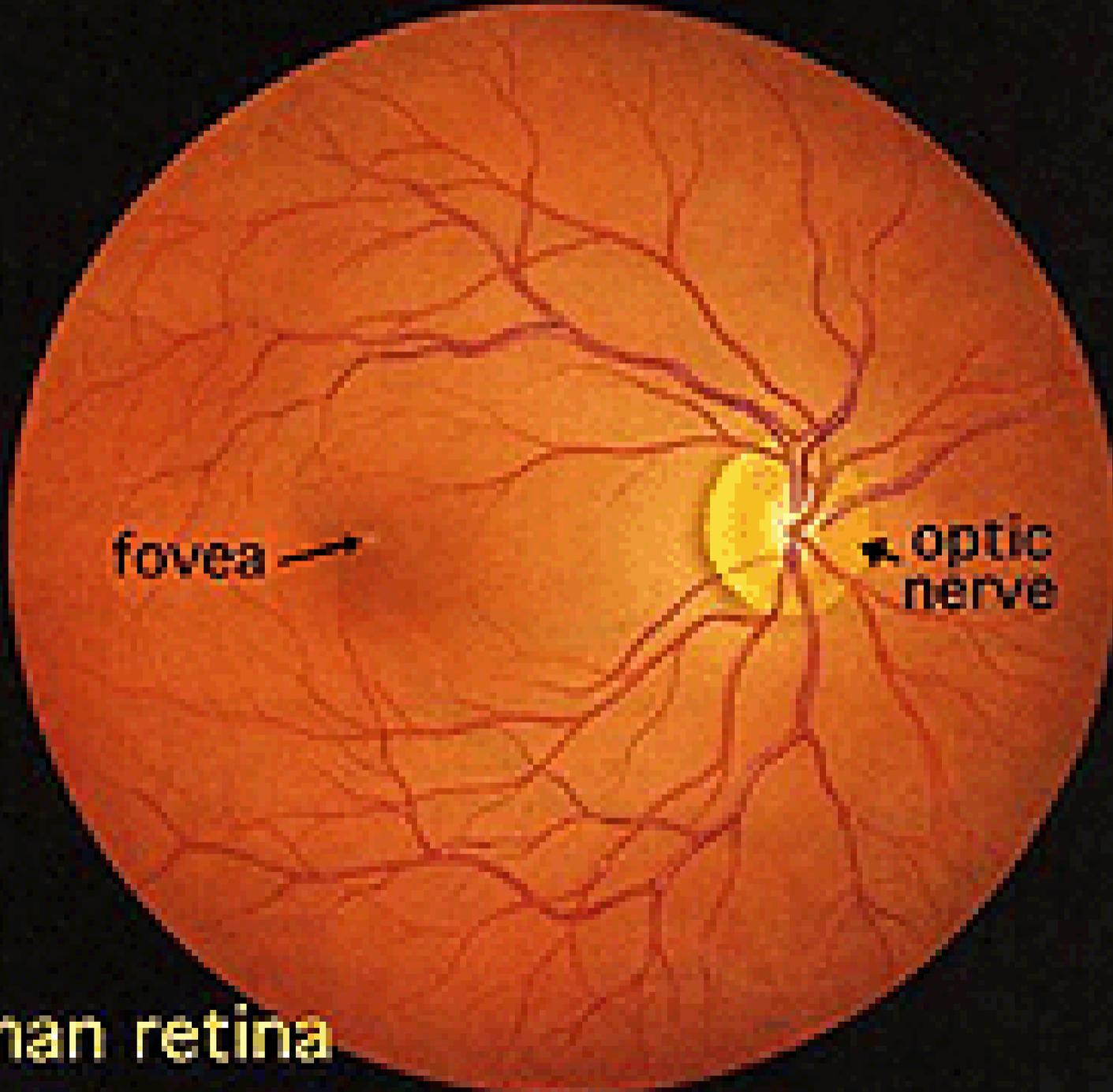
Done by:

Omar Abu Alsoud

Yousef Hindi







Human retina

Anatomy

The neurosensory and retinal pigment epithelial layer

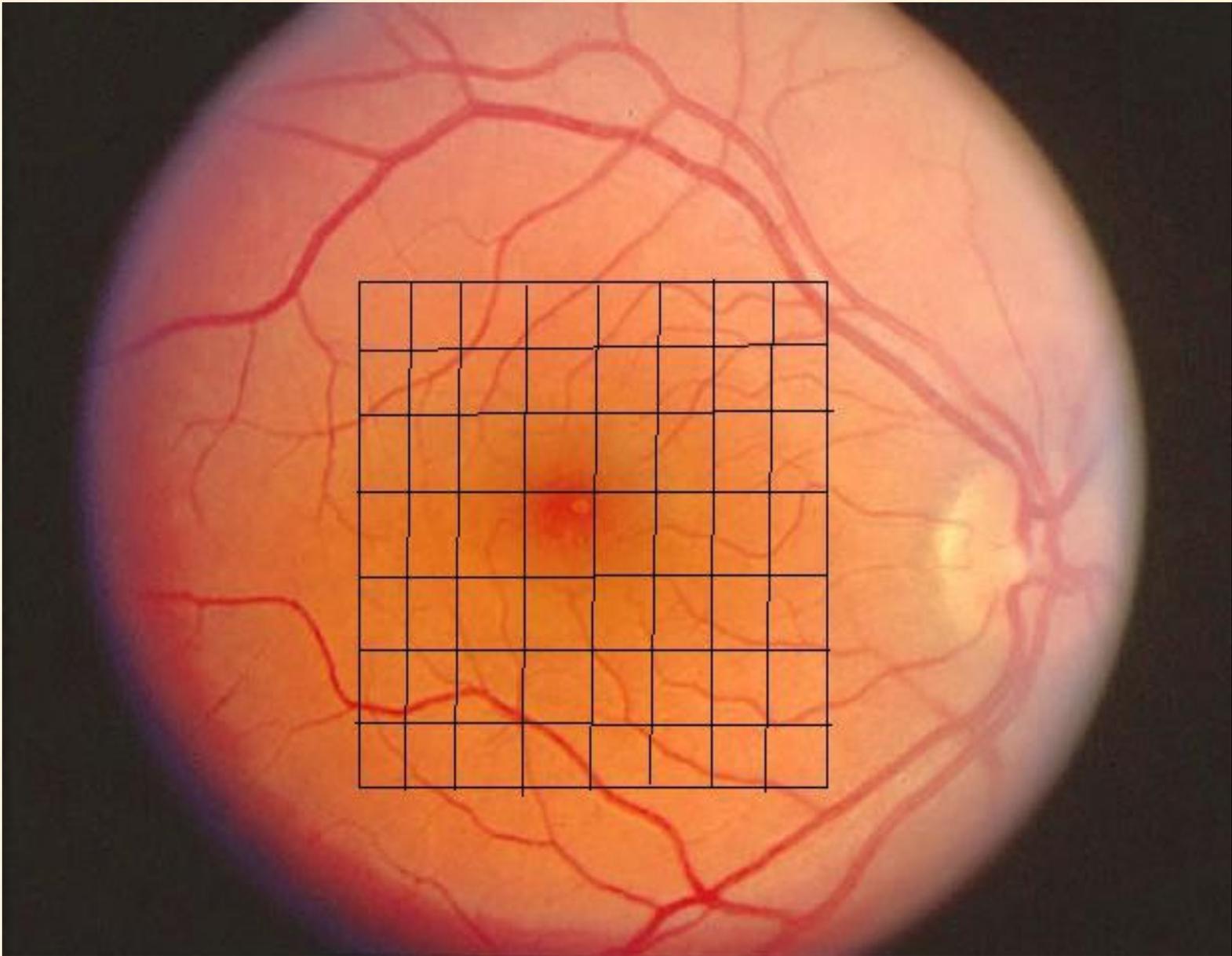
Macula , fovea and optic nerve head .

The 10 layer constituents

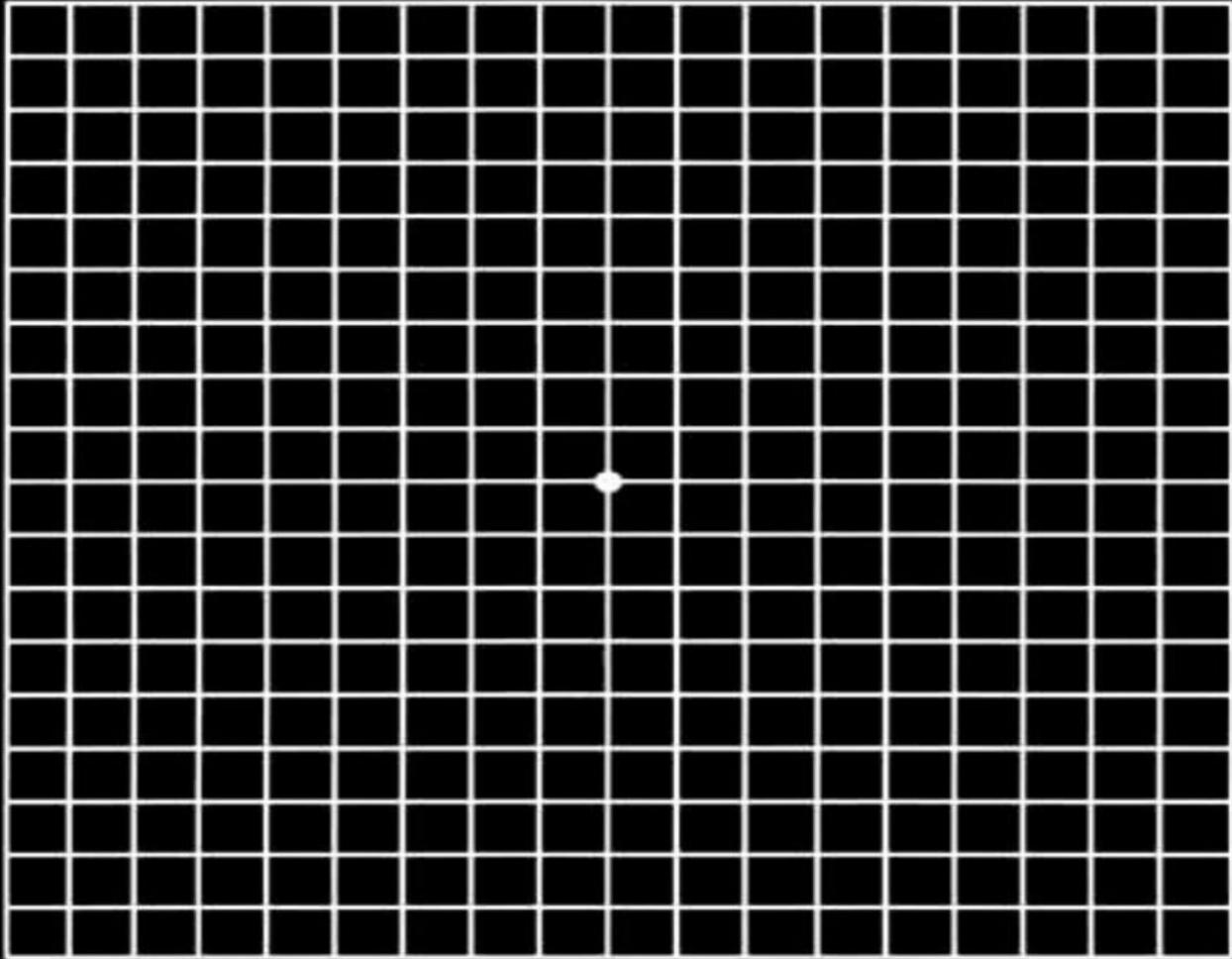
Symptoms of retinal diseases

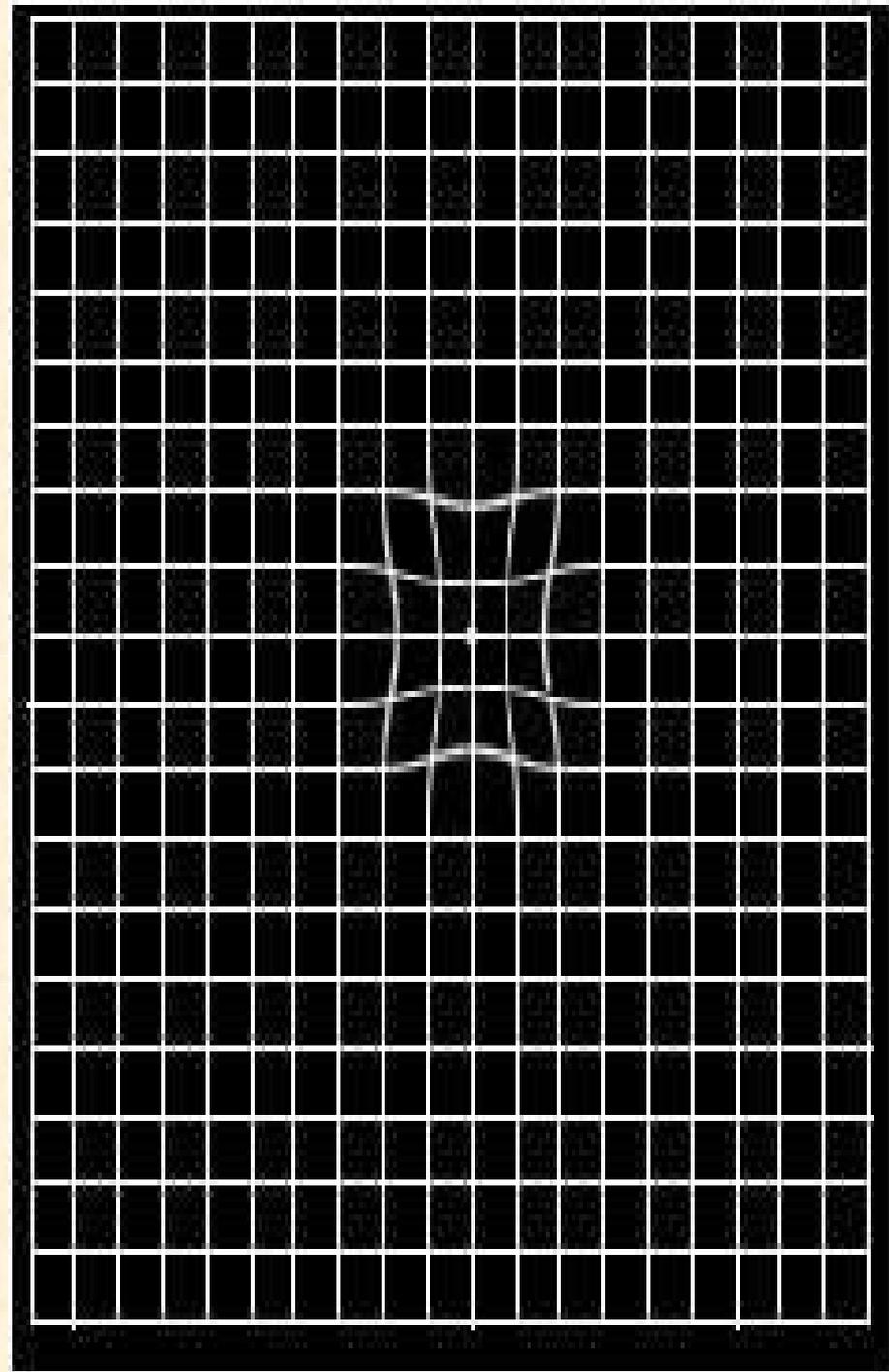
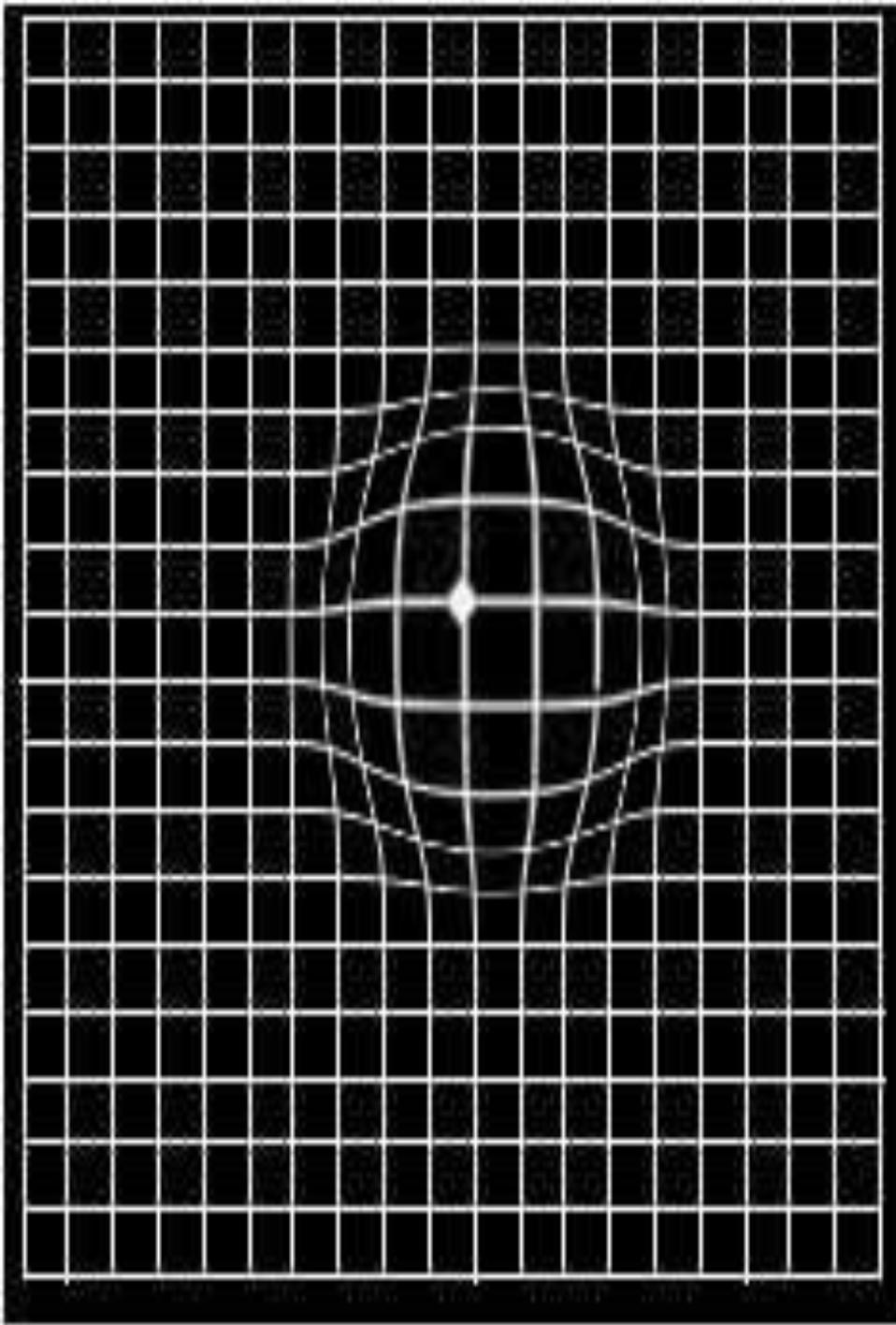
Macular dysfunction

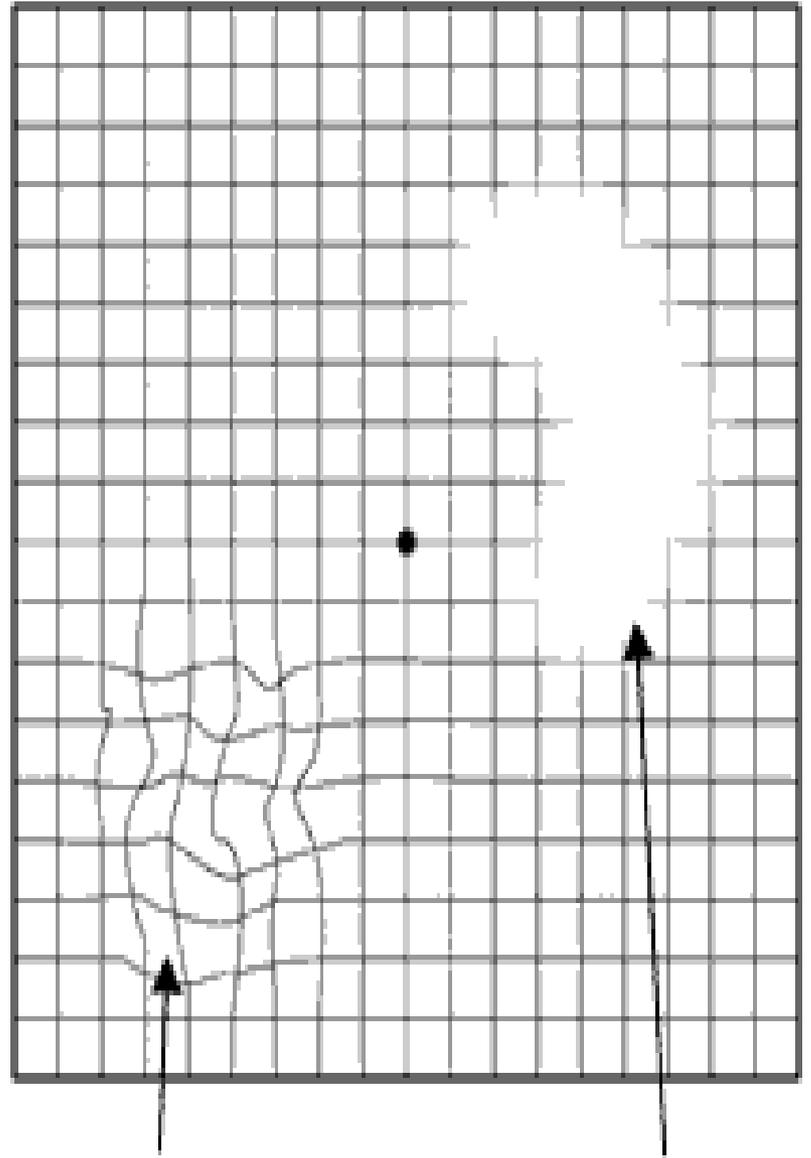
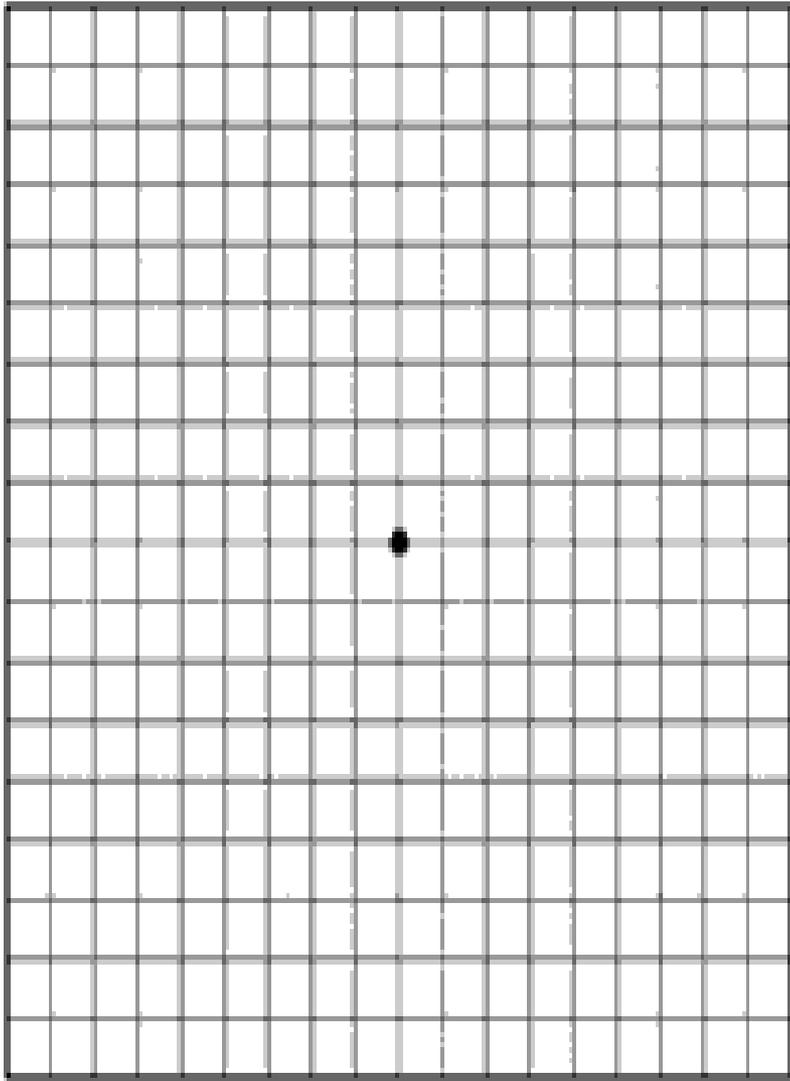
- The fovea is responsible for the fine resolution ,so any damage to this small area may result in a profound loss of vision.
- The patient may complain of:
 - Blurred central vision .
 - Distorted vision (metamorphopsia)
 - Macro ,micropsia & distortion
 - central scotomas



Amsler test







METAMORPHOPSIA
(DISTORTION)

SCOTOMA
(BLIND SPOT)

Peripheral retinal dysfunction

Visual field losses ,specially when profound damage happens

This can be absolute or relative

Nyctalopia (night blindness) specially if affecting the rod photoreceptors

Acquired macular diseases

Age related macular degeneration

Macular holes & membranes

Central serous retinopathy

Macular edema

Toxic maculopathies

Age related macular degeneration

Is the commonest cause of relatively irreversible loss of vision in the developed world .

Two main types :

Dry ARMD (more common)

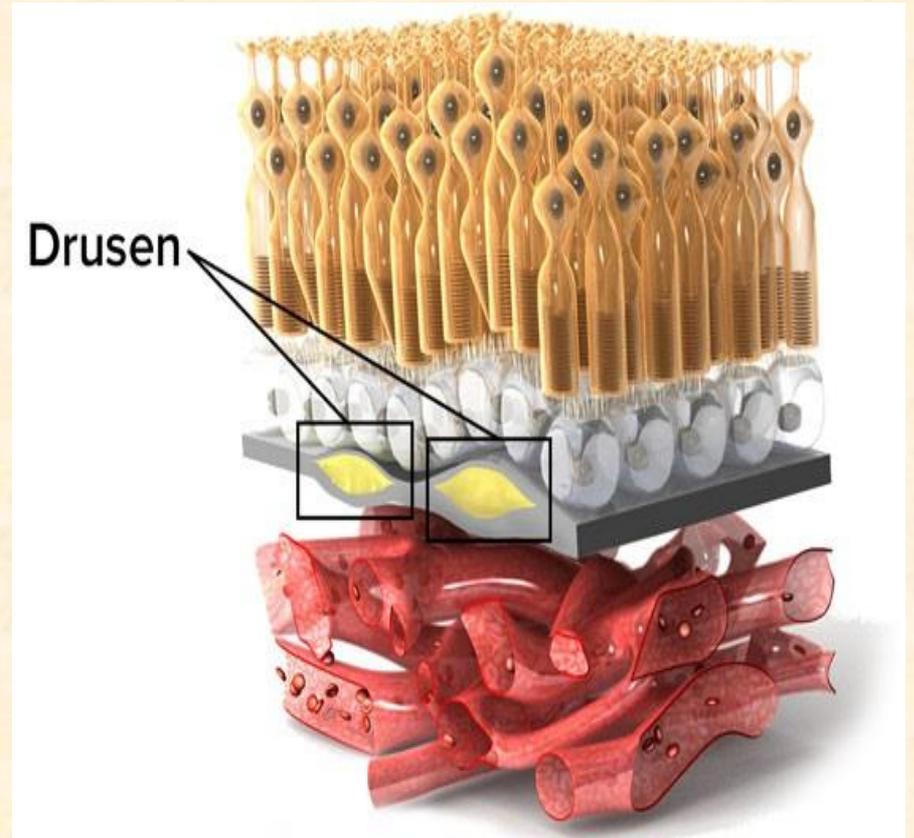
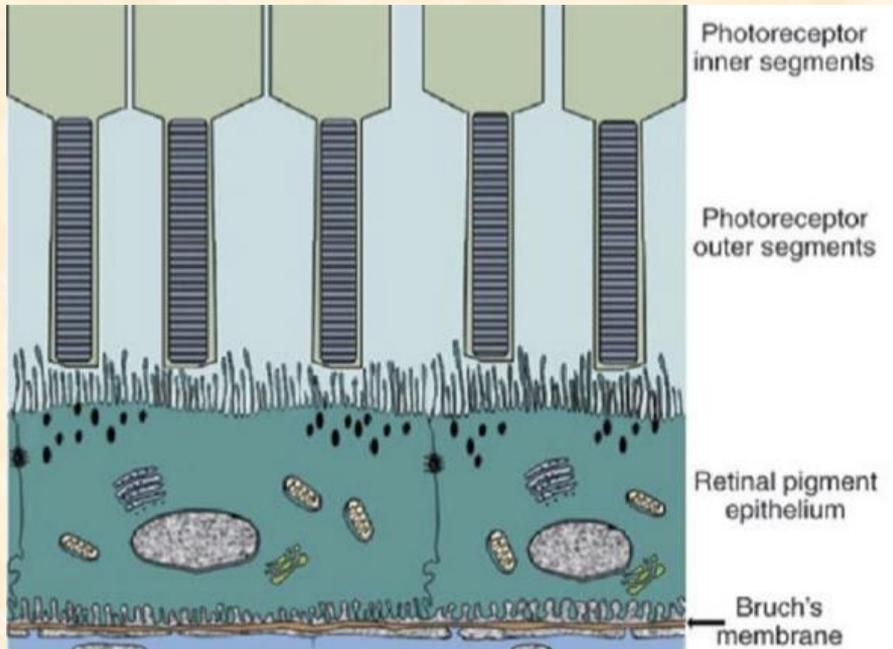
Wet ARMD , neoVascular (less common)

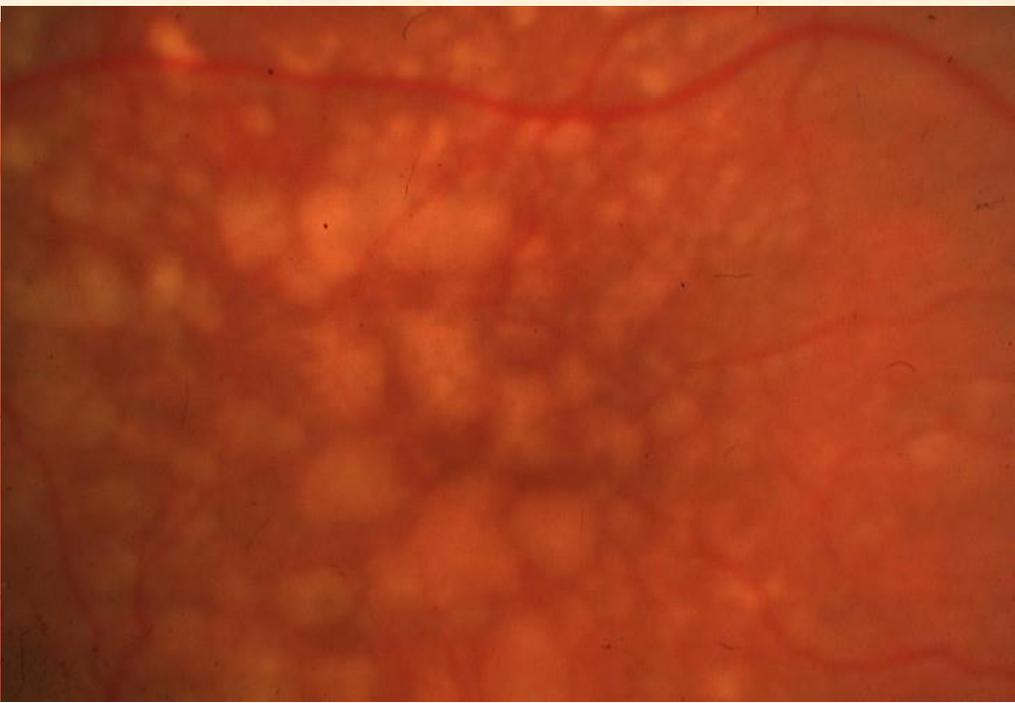
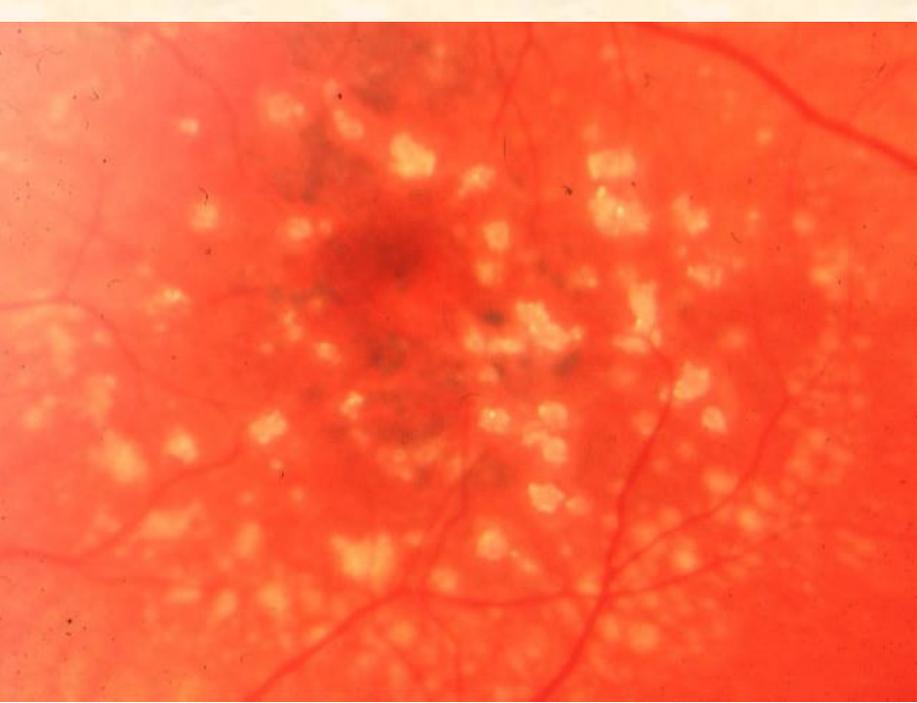
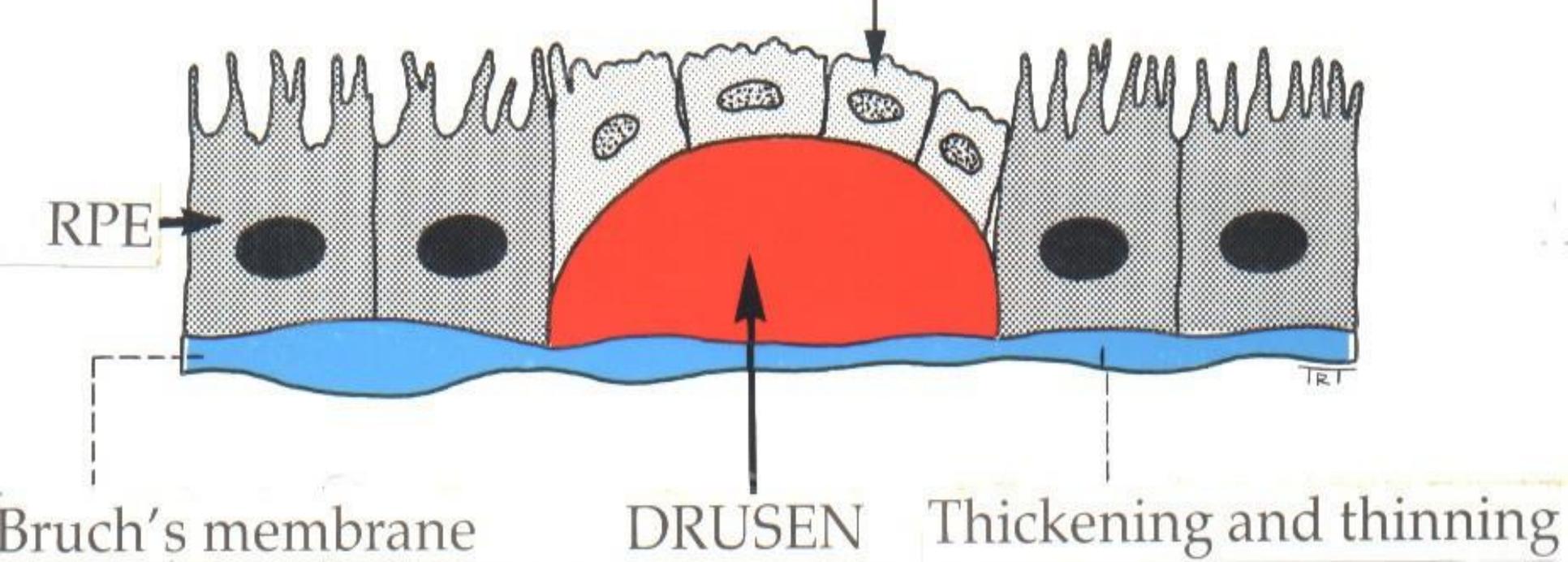
Age related macular degeneration pathogenesis

Normally the RPE metabolizes the outer segment of the photoreceptors and get rid of the lipofucin and other metabolites resulting from its damage

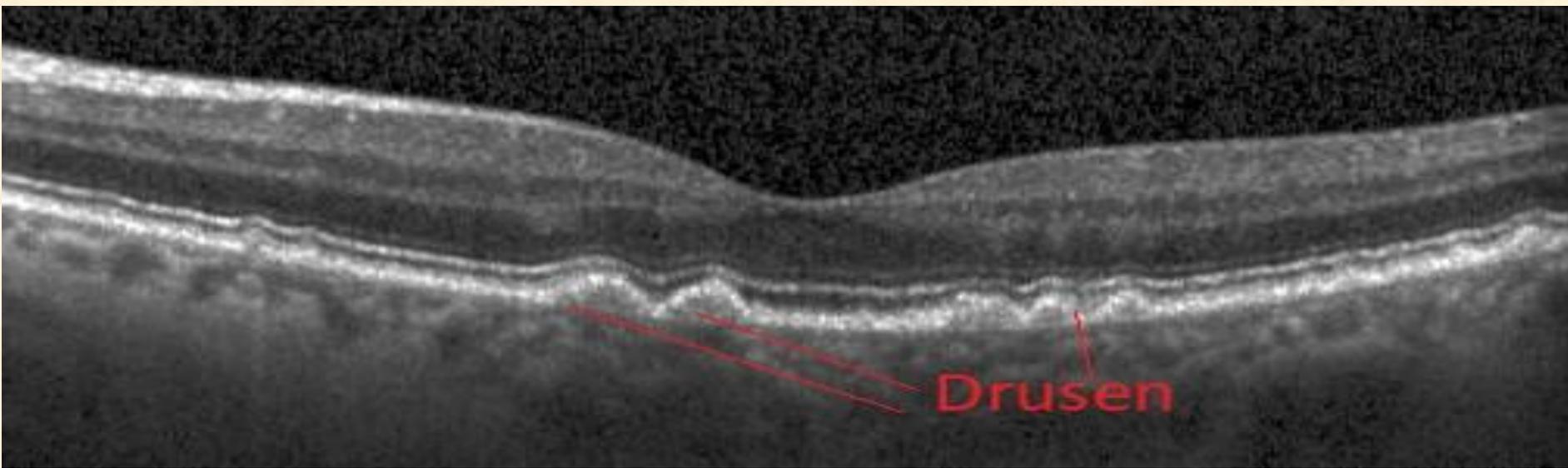
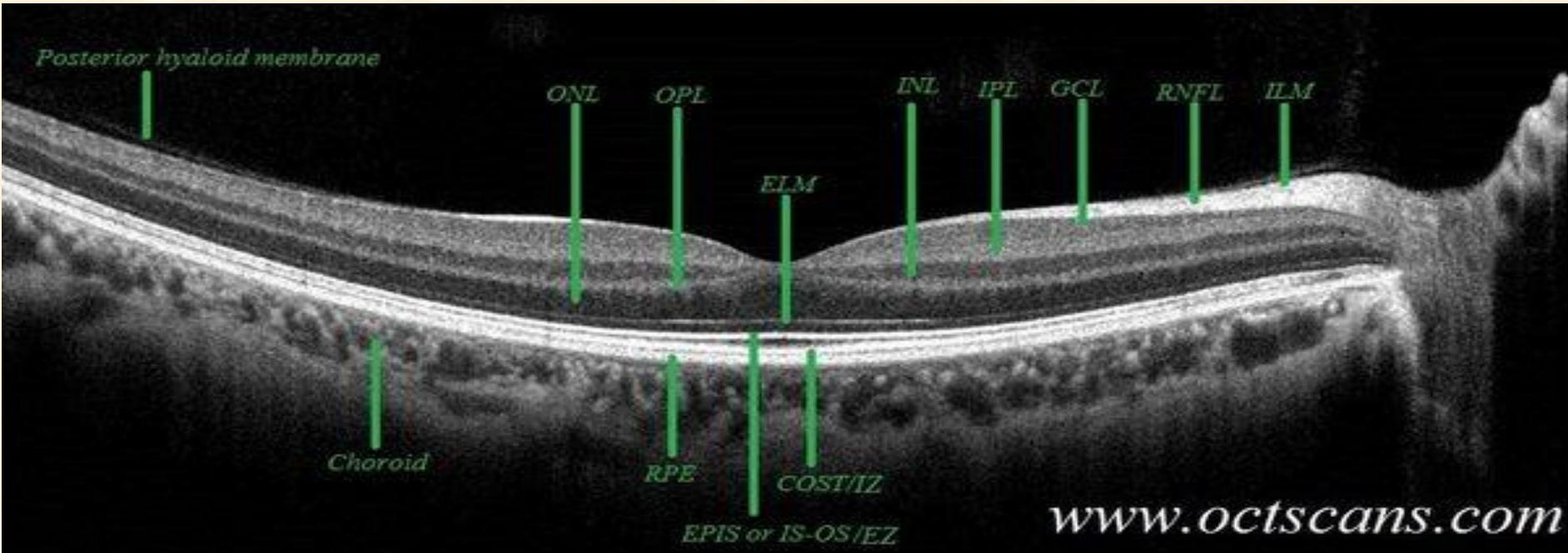
With age this function decreases and these metabolites start to accumulate between the choriocapillaris and the RPE .in the Bruch's membrane .

The hall mark changes are drusens







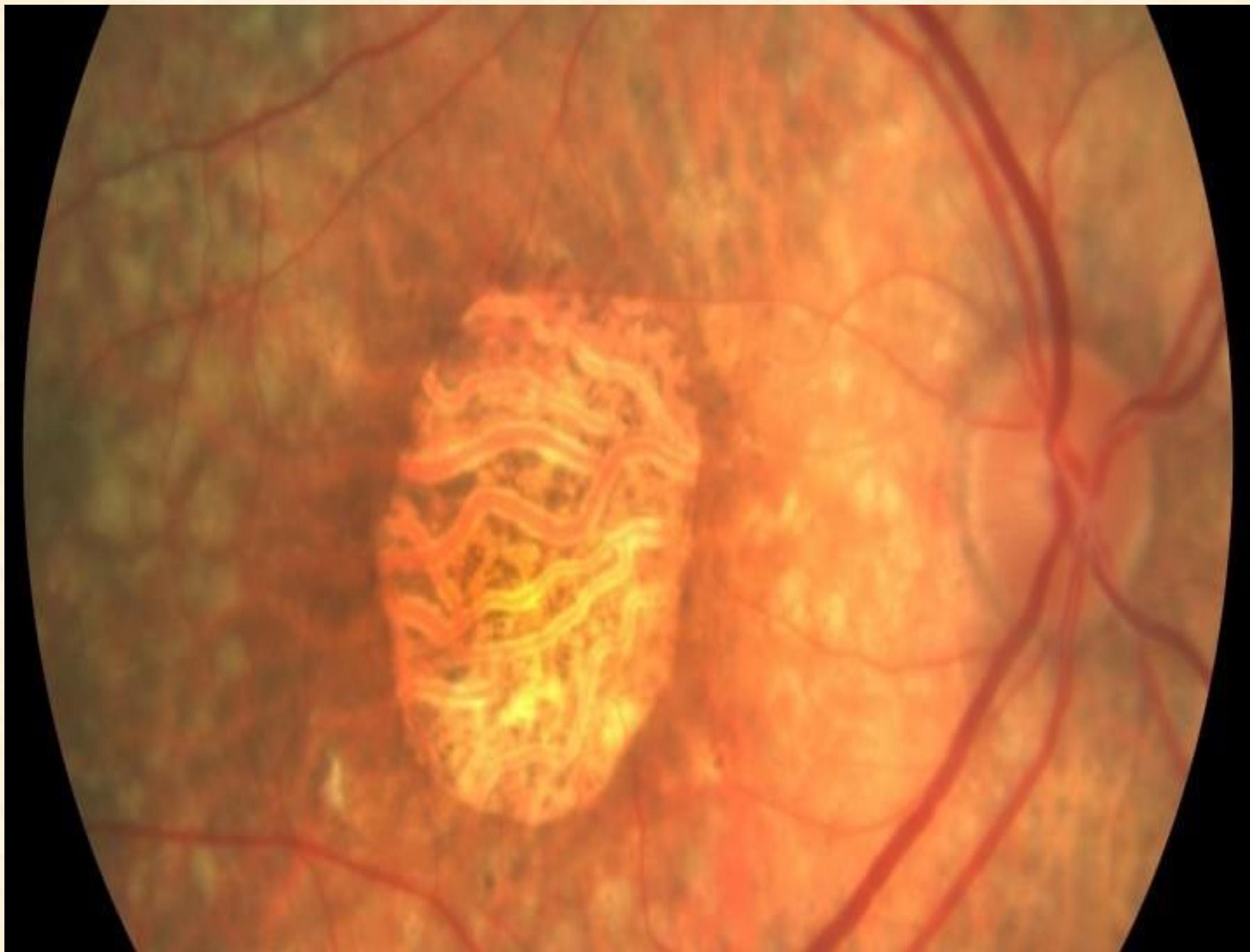


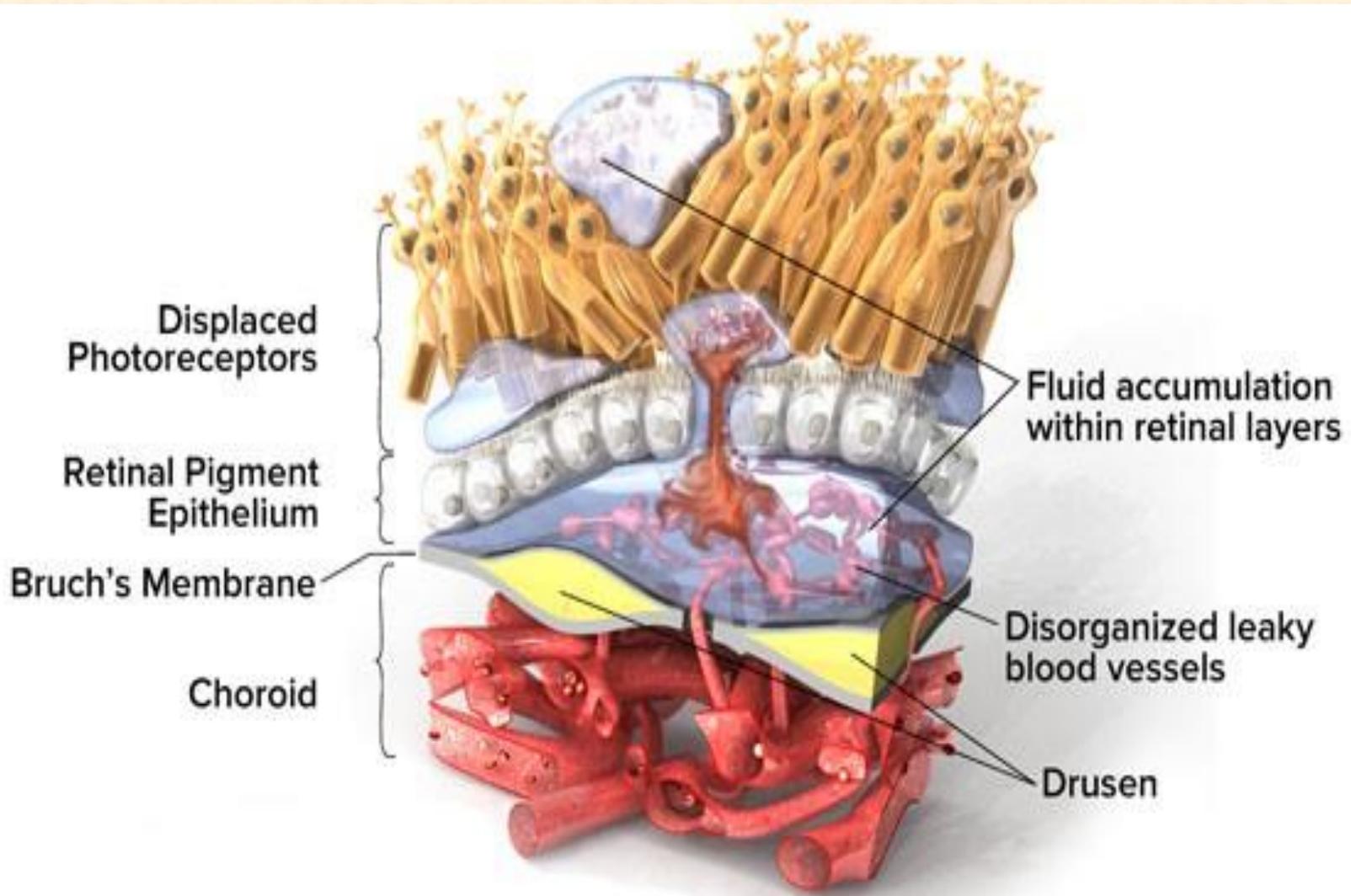
Pathogenesis Wet AMD

There is a new blood vessels growing from the choroid invading the Bruch's membrane and growing under the retina .

In response to retinal ischemia and variable factors as VEGF

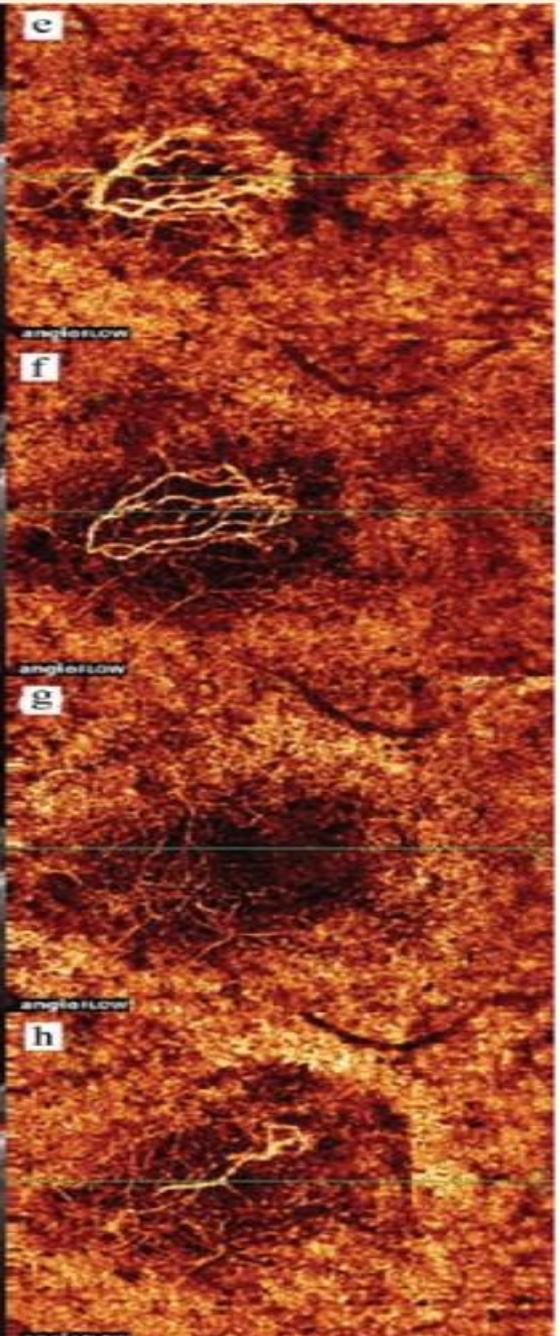
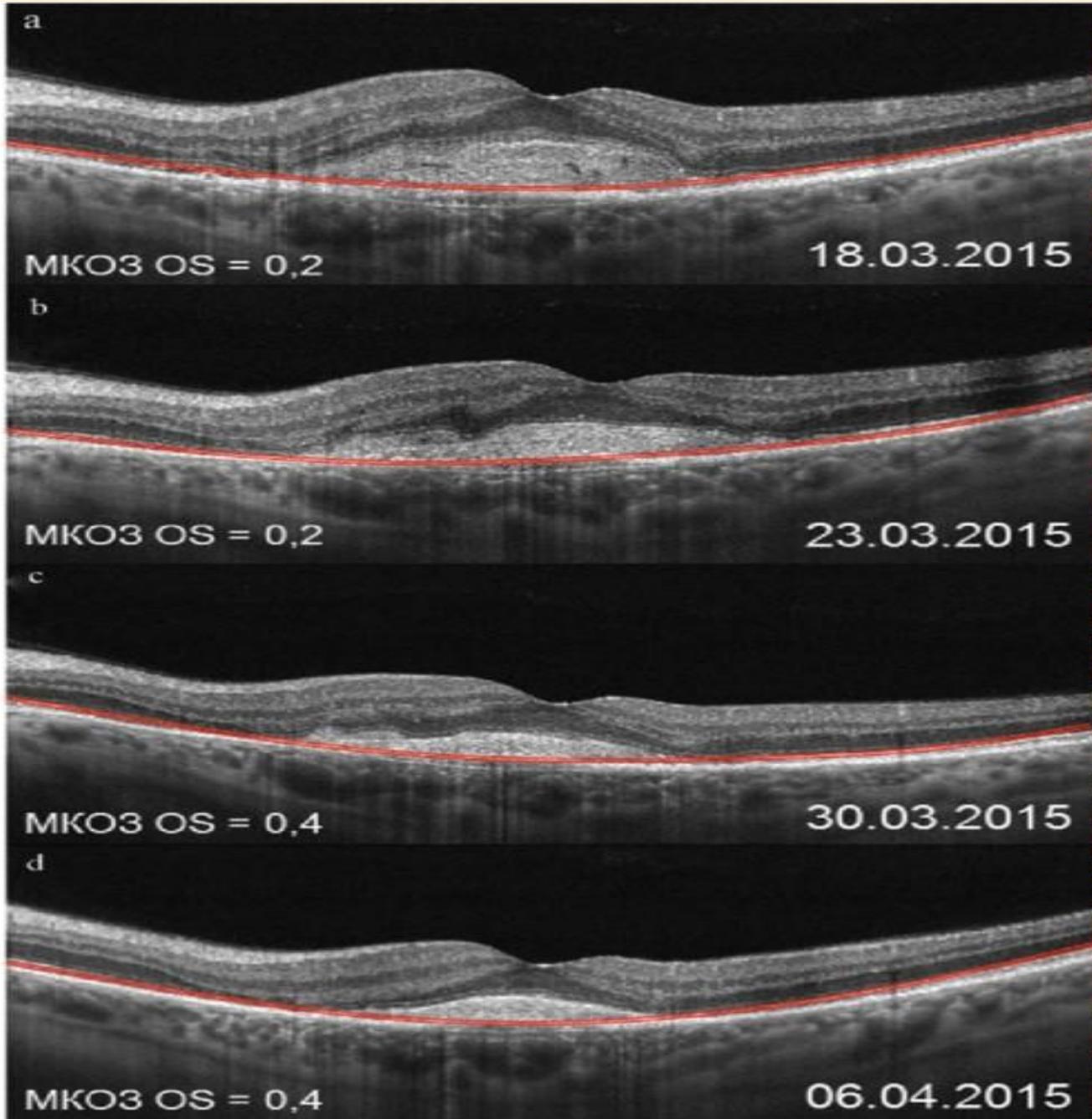
This will lead to subsequent hemorrhages , scaring and foveal detachment











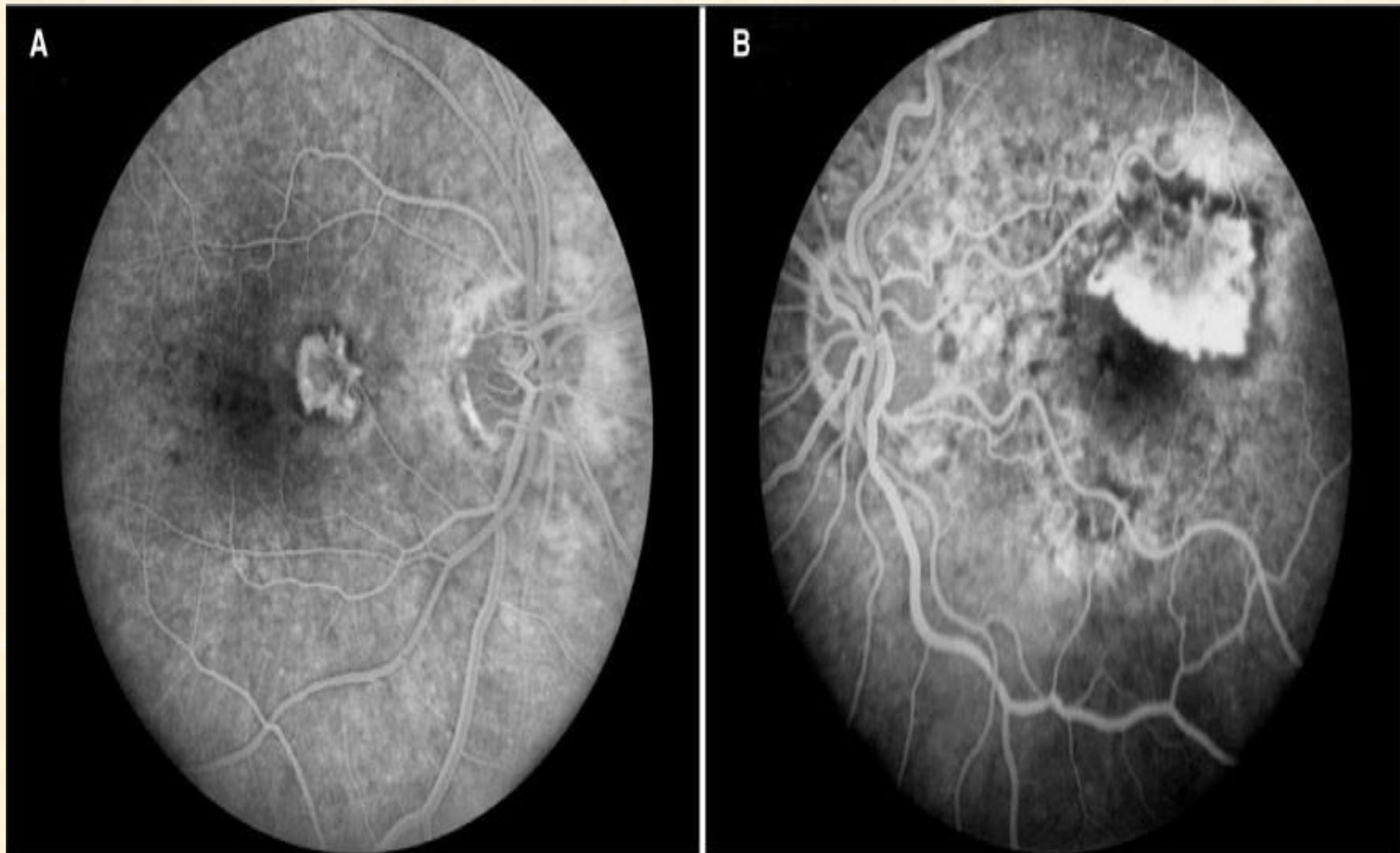


Figure 1 - (A) Extrafoveal CNV, patient number 6; (B) Juxtafoveal CNV, patient number 13



AMD presentation

- Symptoms of macular dysfunction .
- Loss of foveal reflex
- Drusens
- Sub retinal or pre-retinal hemorrhages
- Choroidal neovasculariation
- Hypo or hyperpigmented areas
- Foveal elevation

AMD investigations

- Optical Coherence Tomography (OCT)
- Fluorescein angiography delineate the lesion borders and the amenability for treatment .

AMD treatment

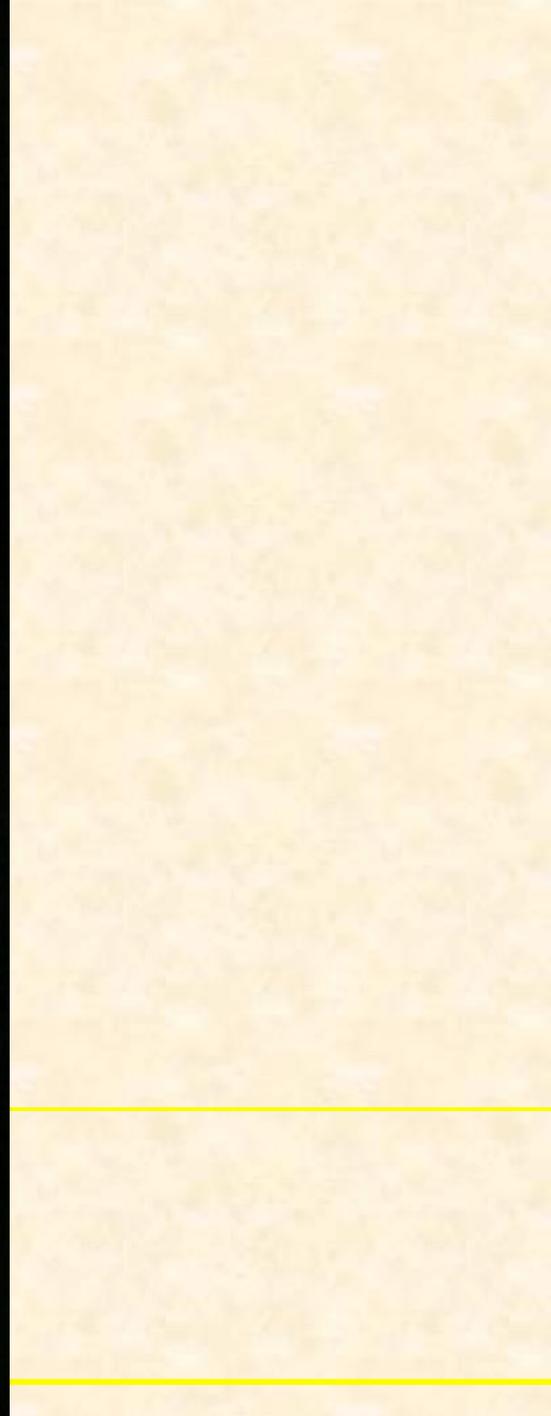
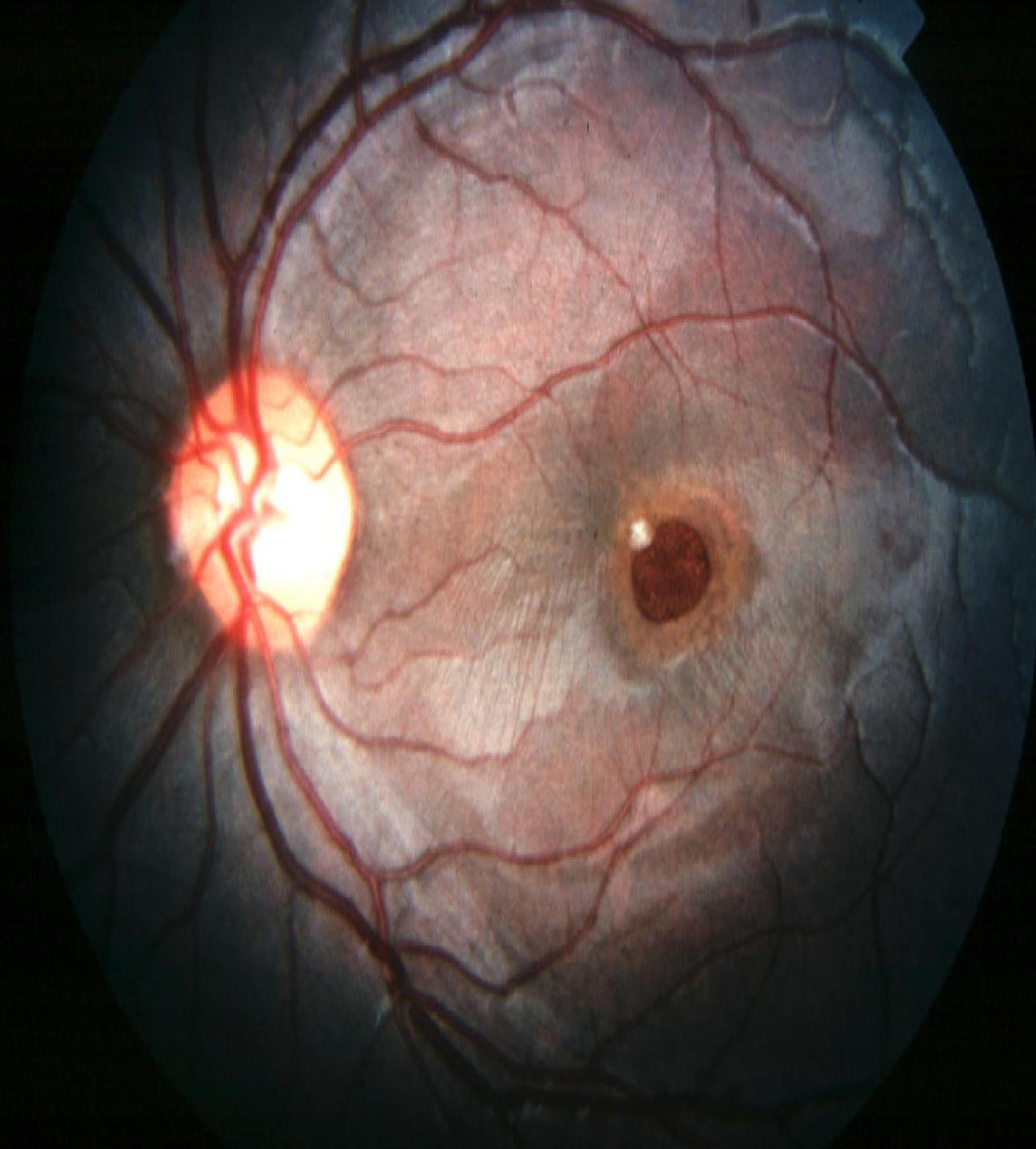
- **Non-exudative (dry) AMD** no treatment
- Low vision aids can be offered
- Assurance that the patient will keep to have his peripheral vision and he will not go to complete darkness .
- Antioxidants & Multivitamines +Minerals
- **The exudative (wet) AMD :**
Anti VEGF intravitreal injections
 - If FFA shows eccentric lesion Argon laser may be used .
 - subfoveal lesion may benefit from PDT
What is PDT ???

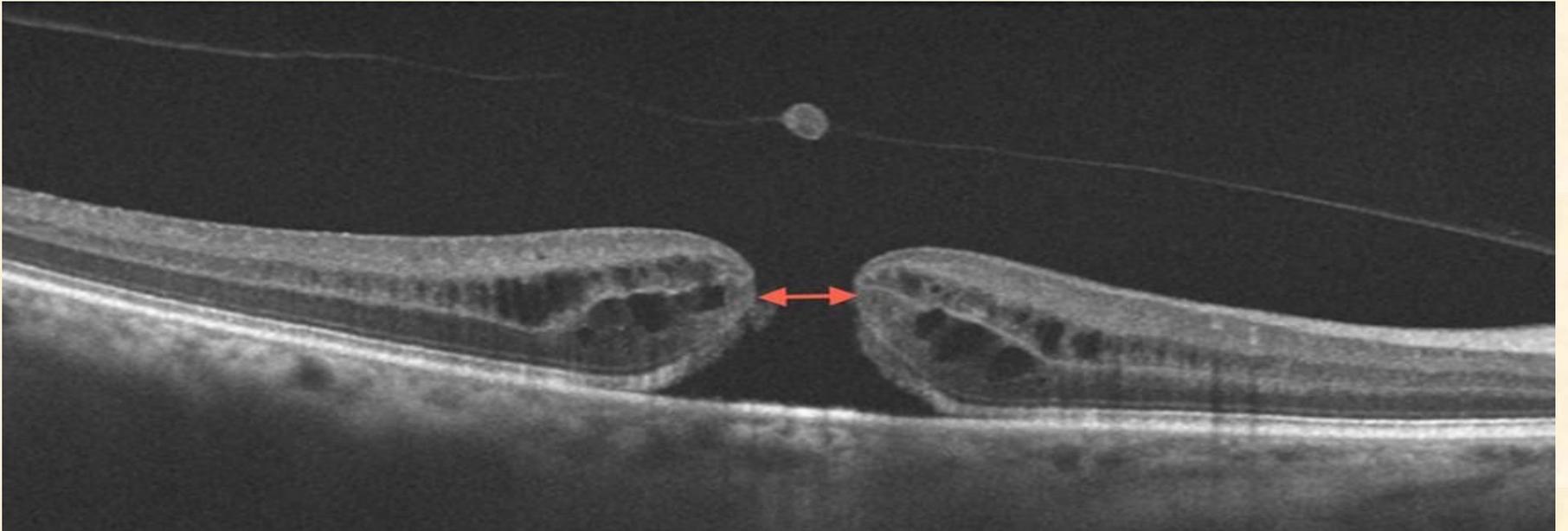
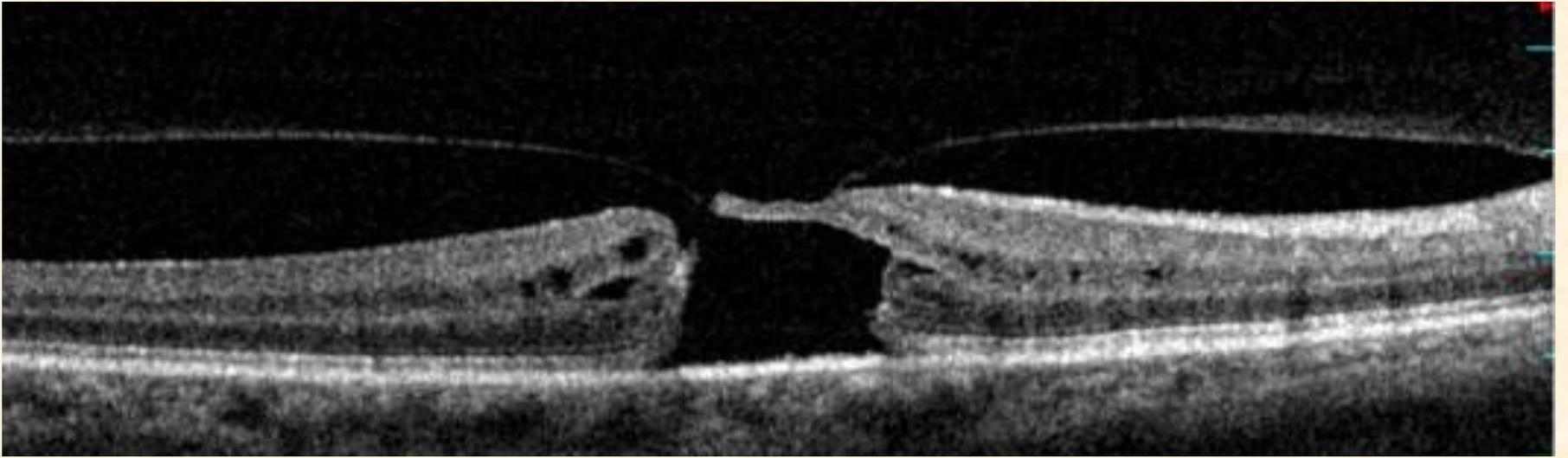
Other causes of choroidal neovascularisation

- High myopia and associated cracks
- Angioid streaks
- Other collagen diseases
- Trauma
- Infections
- CSCR

Macular holes

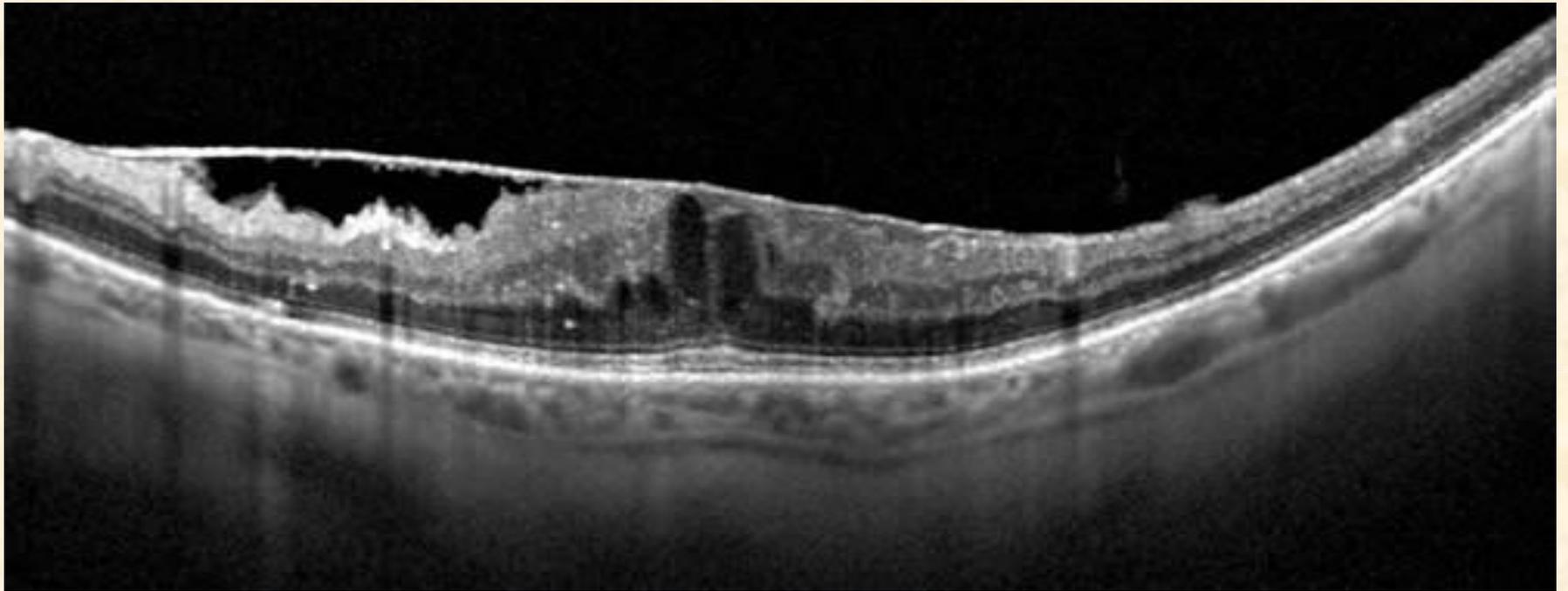
- Well circumscribed hole may form in the macular region
- It results from traction by the vitreous on the macular area .
- Can be : Idiopathic
Traumatic
- Causing a profound loss of central vision
- Treatment : Vitrectomy and removal of vitreous traction .





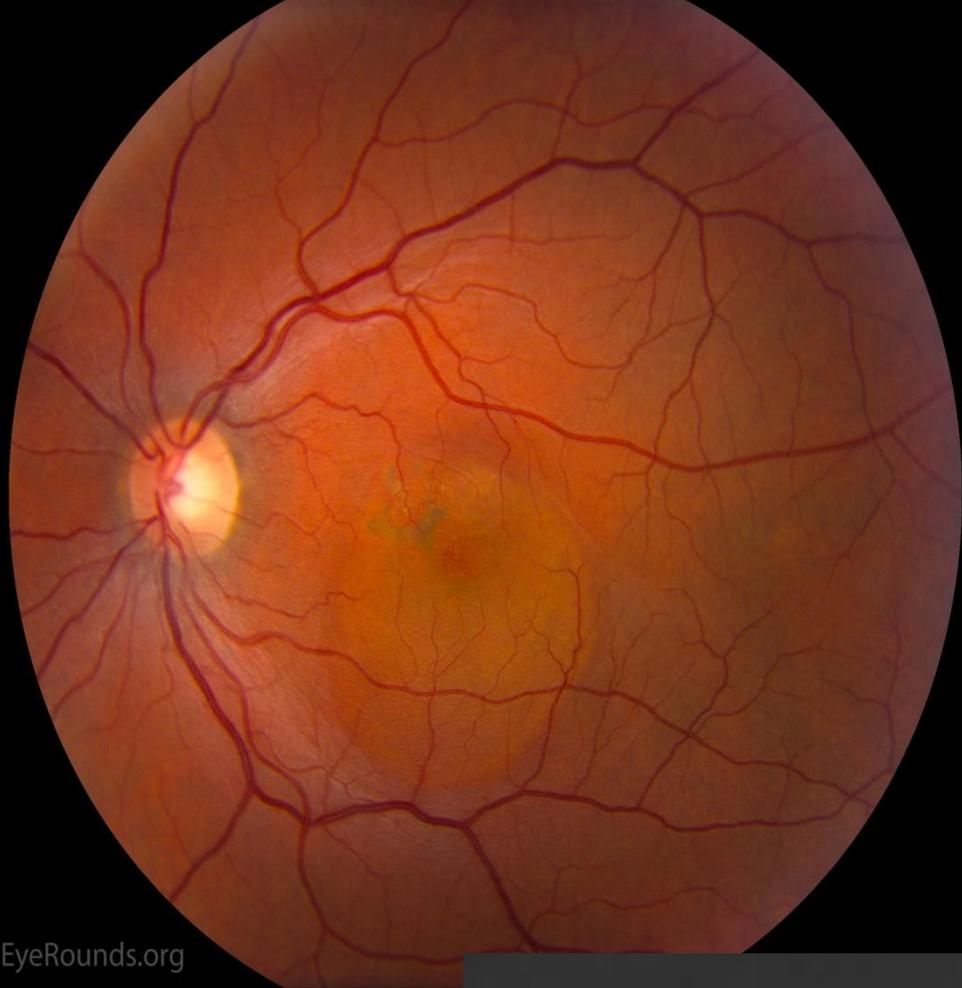
Macular membranes

- Resulting from pre-retinal glial membrane growth over the macular region .
- This will cause contraction and puckering of the fovea causing vision distortion .
- Treatment with vitrectomy and removal of these membranes

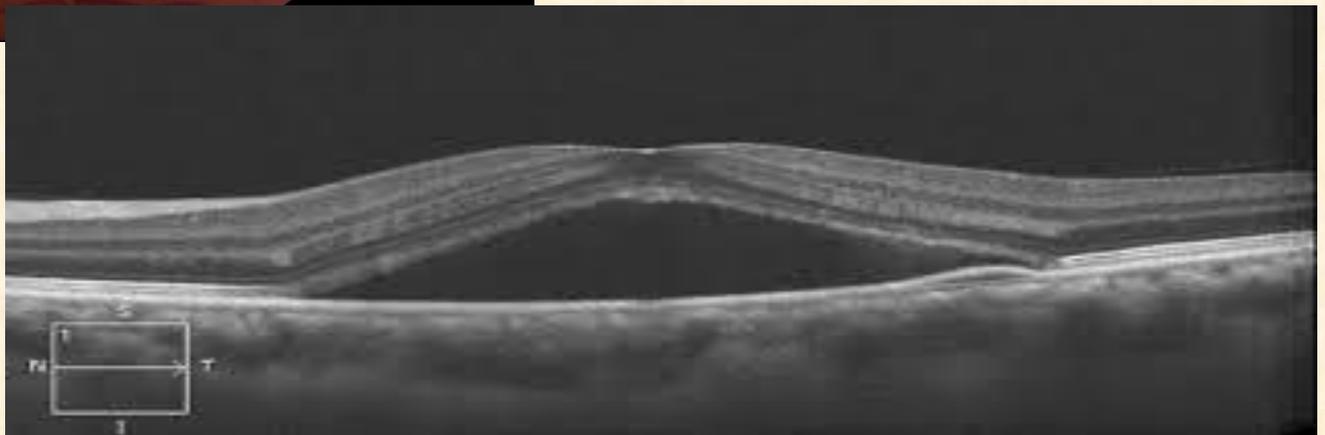


Central serous retinopathy (CSR)

- Due to localized RPE pump abnormality
- Failure of fluid drainage will lead to its accumulation under the fovea causing focal detachment
- This will lead to distortion
- A self limiting disease
- No treatment needed unless intractable it may need laser treatment or modalities
- FFA is typical



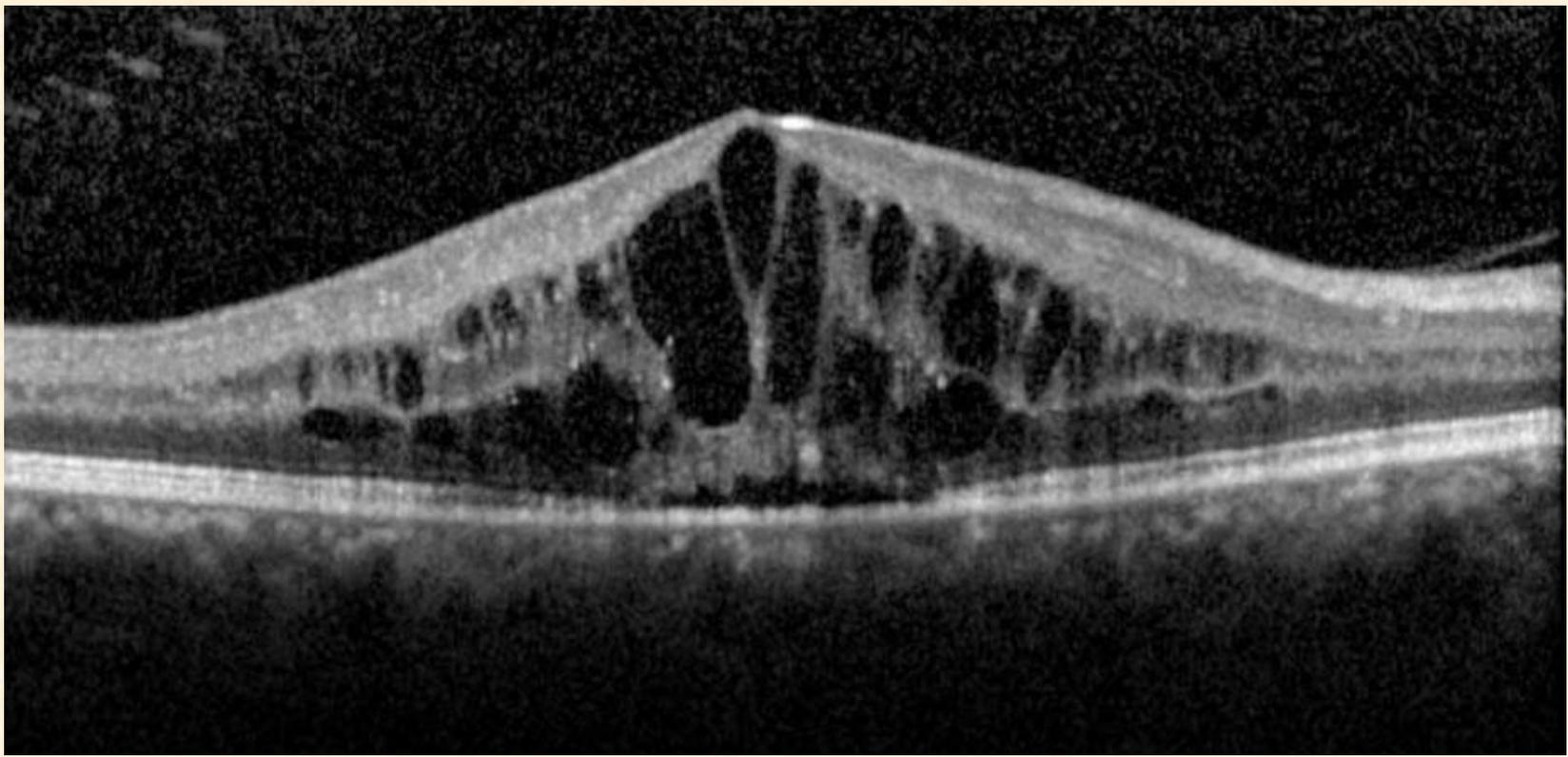
EyeRounds.org

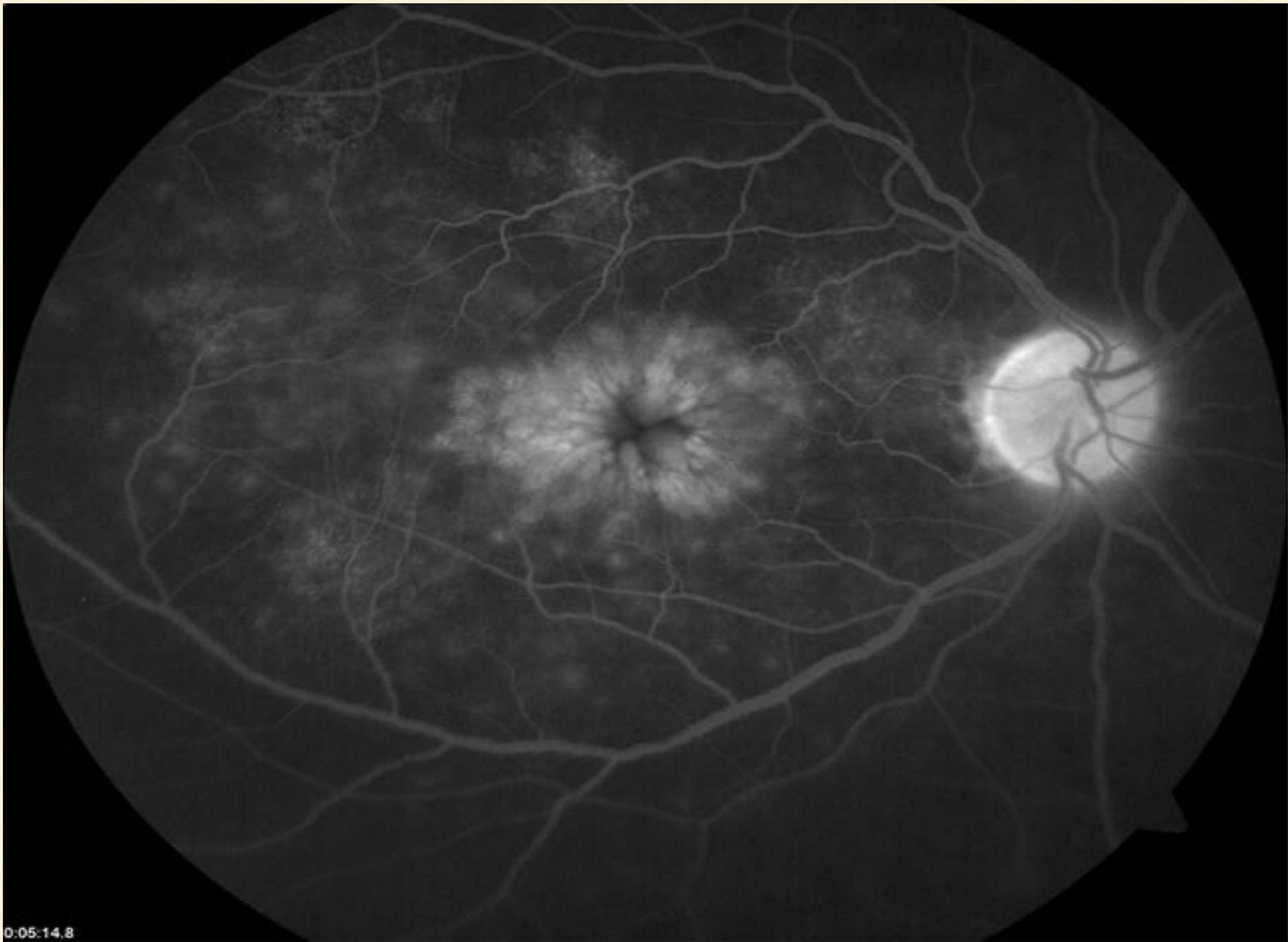




Macular edema

- Accumulation of fluids within the retina itself
- Loss of foveal reflex
- Cystic appearance of the fovea .
- OCT &FFA help in diagnosis







Macular edema

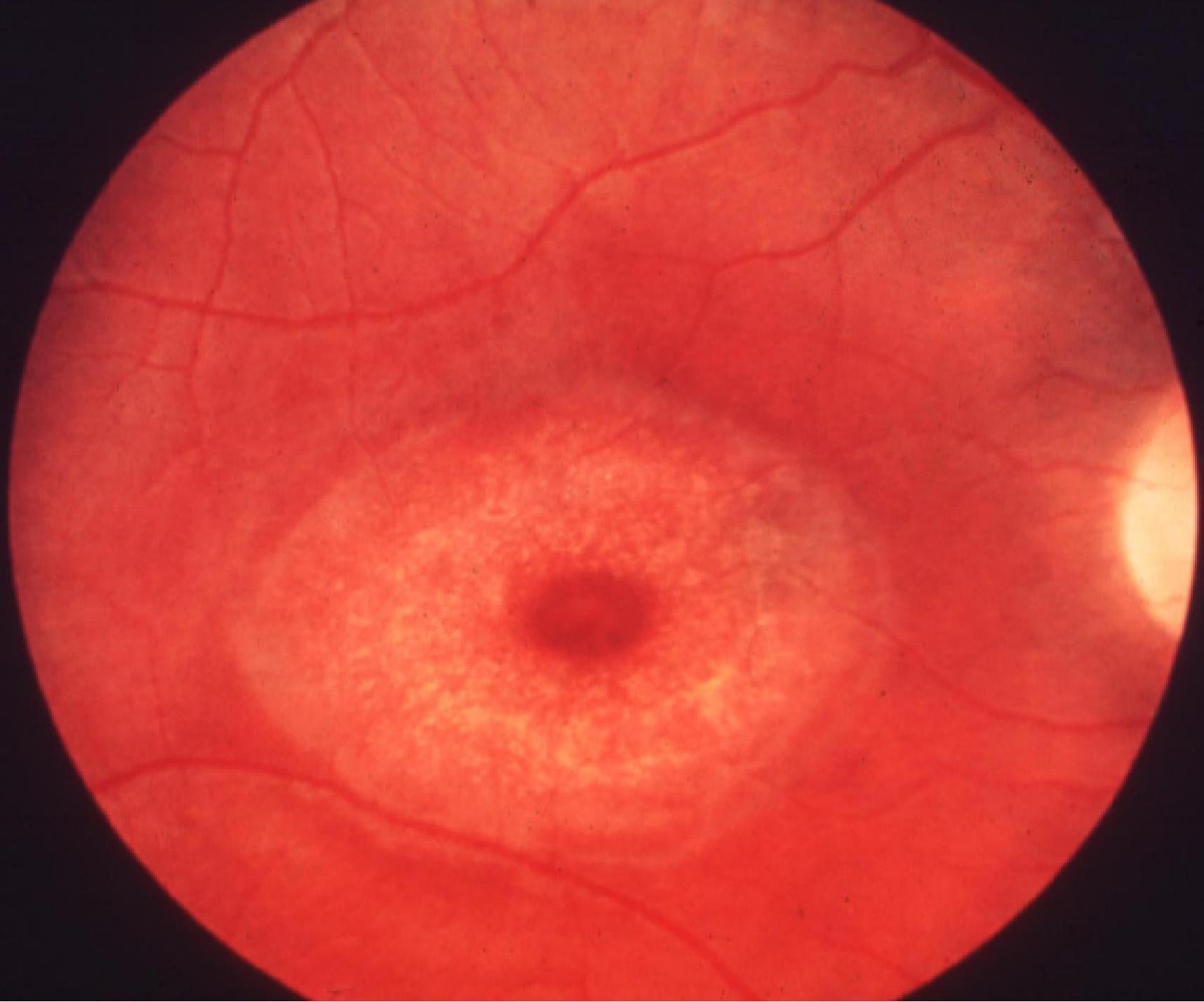
causes

- Intraocular surgeries
- Uveitis
- Retinal vascular disease (DM ,HTN)
- Retinitis pigmentosa
- Idiopathic

- Treatment according to the cause : steroids and acetazolamide
- Anti VEGF
- Prolonged edema may lead to lamellar hole formation

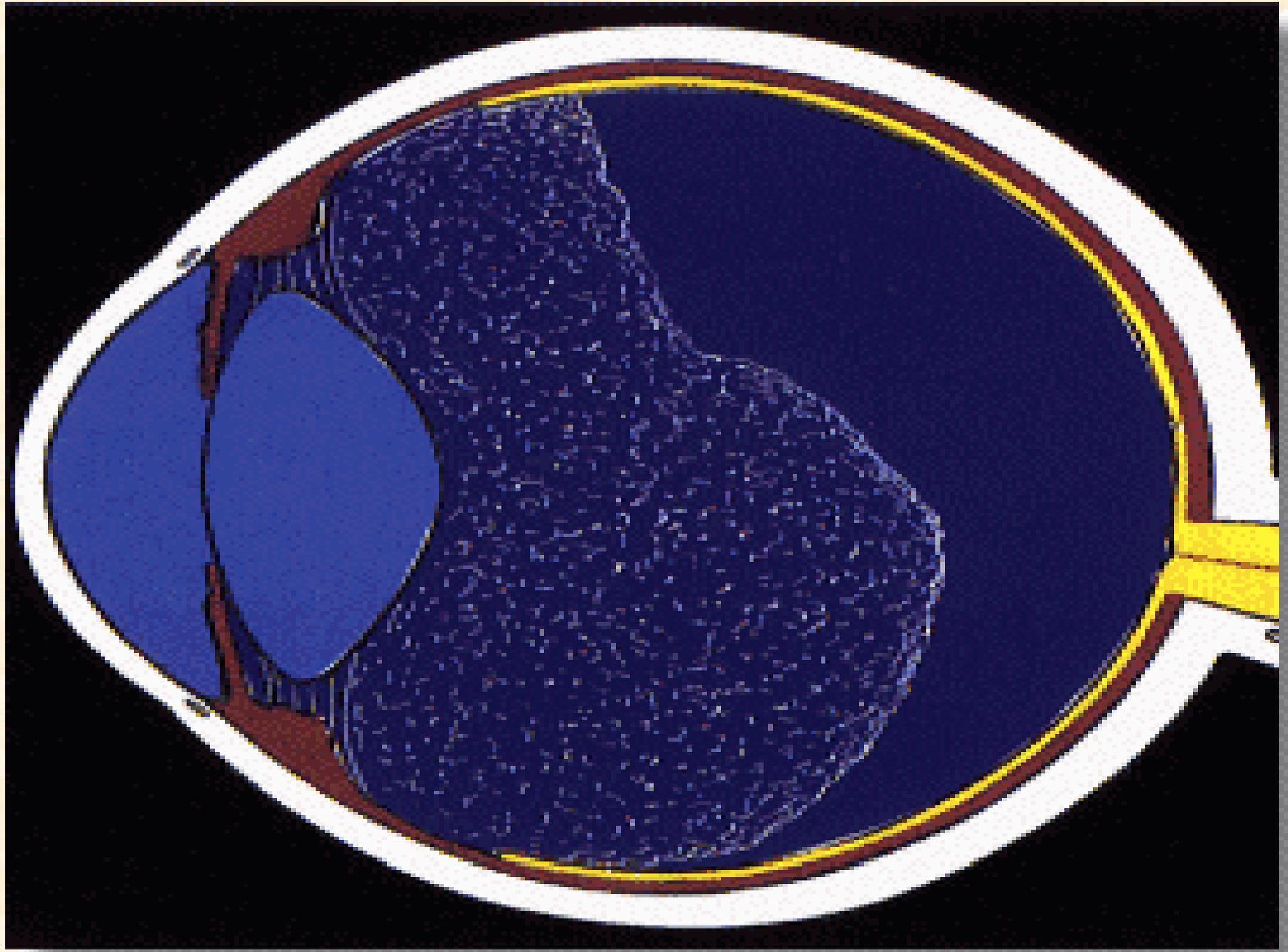
Toxic maculopathies

- Antimalarial : Chlorquine & hydroxychlorquine
- Phenothiasines
- Tamoxifen
- All can be deposited in the RPE causing visual loss due to maculopathy
- Early changes can be reversible while if pigmentary target lesions developed reversibility is in question



Posterior vitreous detachment

- With age vitreous undergoes degenerative changes leading to its detachment from the normally attachment areas to the retina .
- Normal attachment areas .

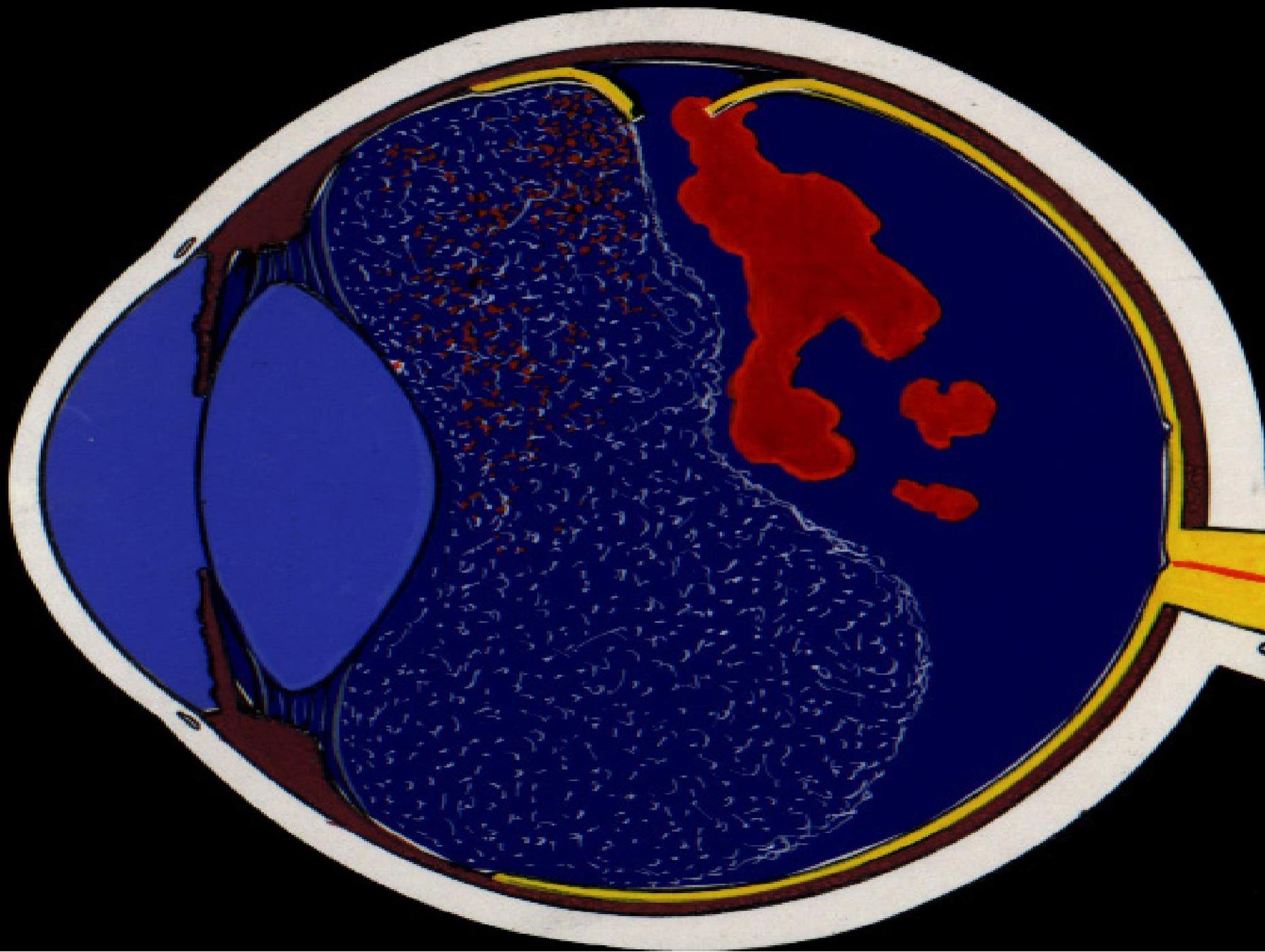


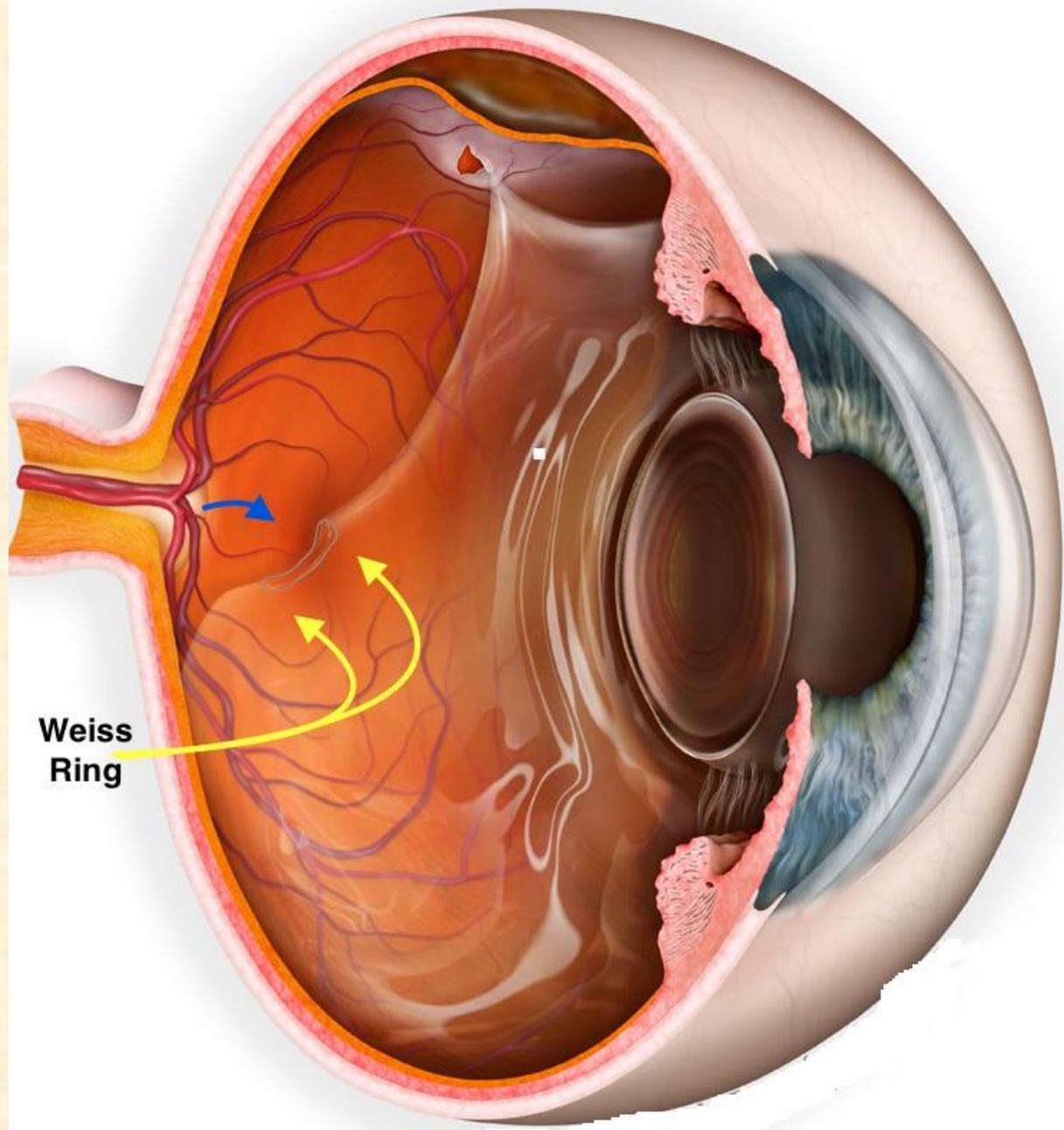
Posterior vitreous detachment

- This will cause floater due to the shadow cast falling over the retina .
- Other symptoms : Photopsia & shower of floater (causes)
- No treatment needed .

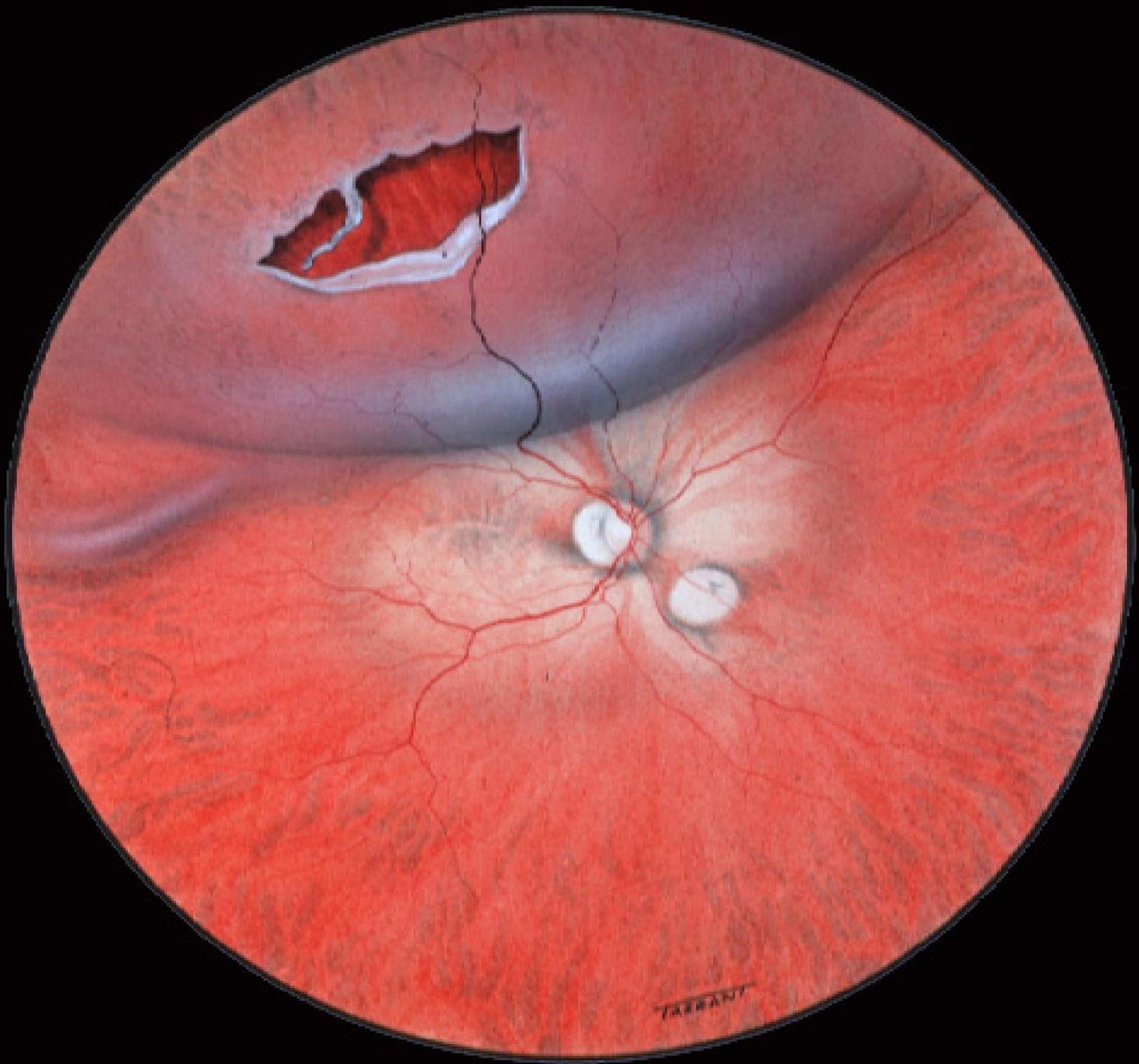
Retinal detachment

- Definition : detachment of the neurosensory retina from the underlying RPE .
- The presence of potential space .
- Types : Rhegmatogenous (Hole)
 Tractional (PDR & others)
 Exudative retinal detachment as in
 toxemia of pregnancy & malignancy



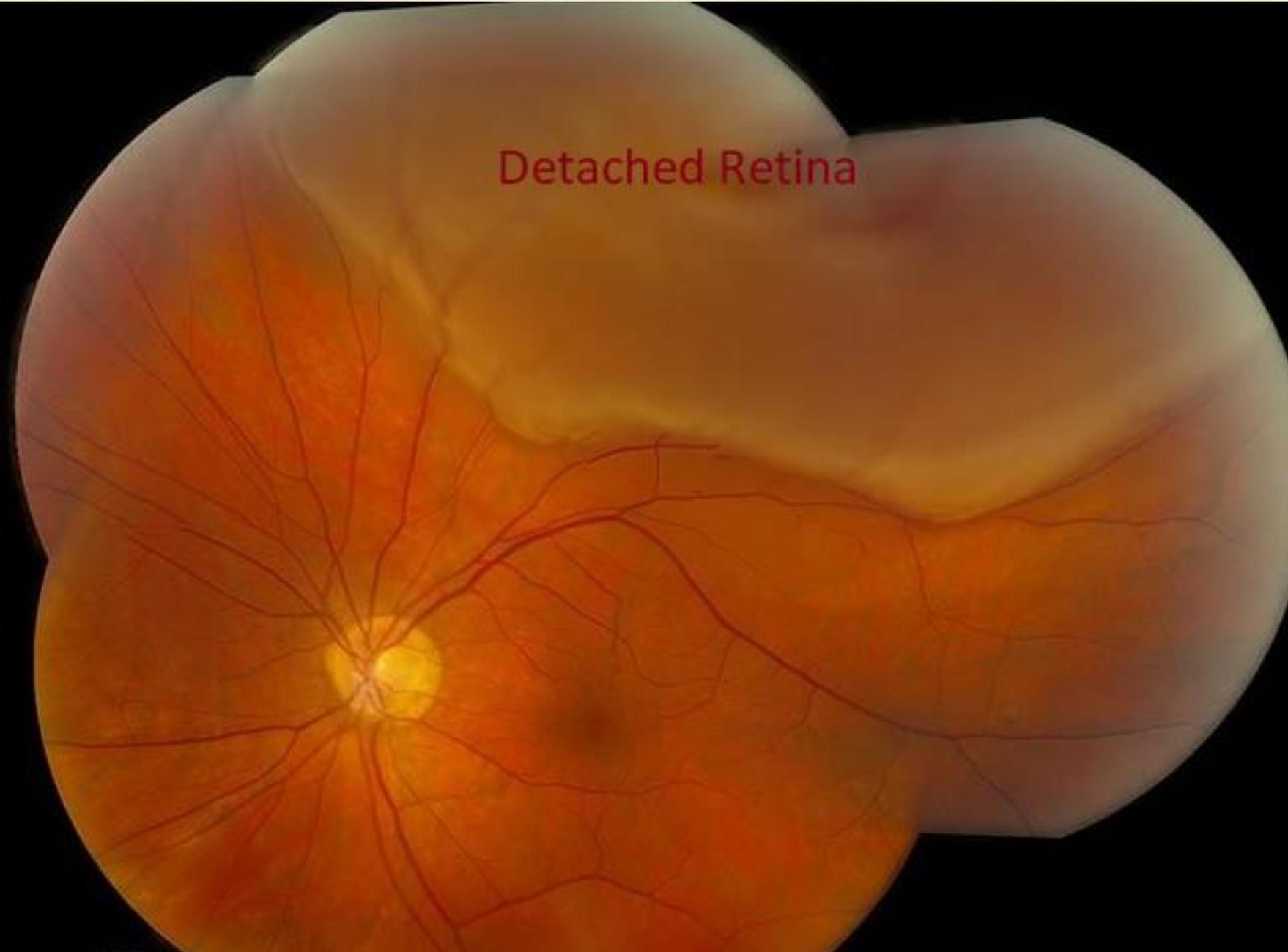


**Weiss
Ring**



TARRANT

Detached Retina



Rhegmatogenous RD

- Presence of tear in the retina will give the liquefied vitreous access to the sub retinal space, giving rise to RD .
- Risk factors : Weak retina (Lattice degeneration)
 - High myopia
 - Trauma (surgical or others)

Rhegmatogenous RD

- 1:10,000 of the normal population will suffer from RD

Rhegmatogenous RD presentation

- Symptoms of posterior vitreous detachment
- Photopsia
- Progressive visual field defect (curtain like)
- Marked fall in VA if macula involved
- History of trauma .
- History of RD in the fellow eye

Rhegmatogenous RD signs

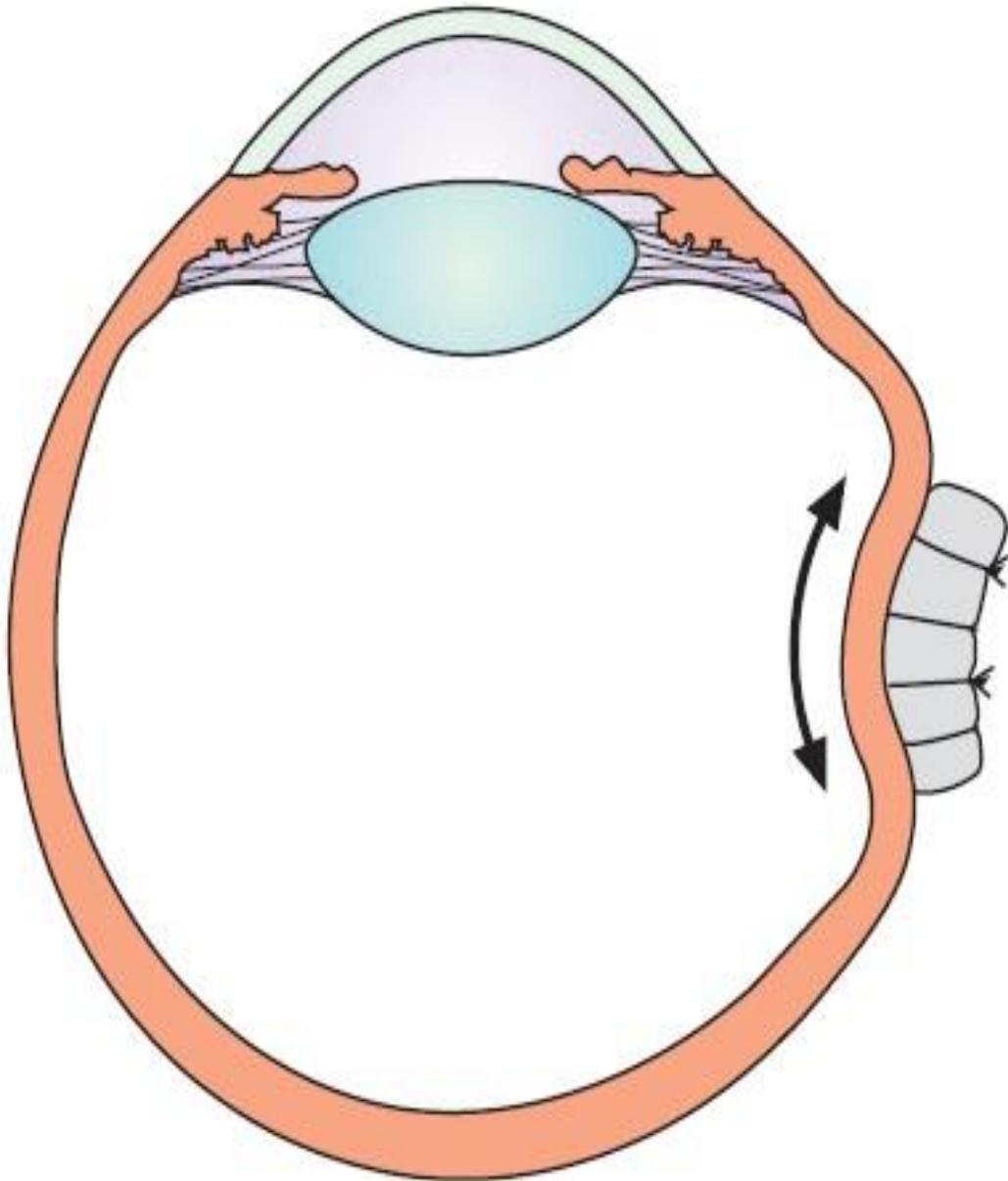
- Decreased VA
- Pinkish to gray retina due to the obscuration of the choroidal vascular details
- Movable ,detached retina .
- Retinal tear
- Hypotony
- Vitreous hemorrhage may be seen .

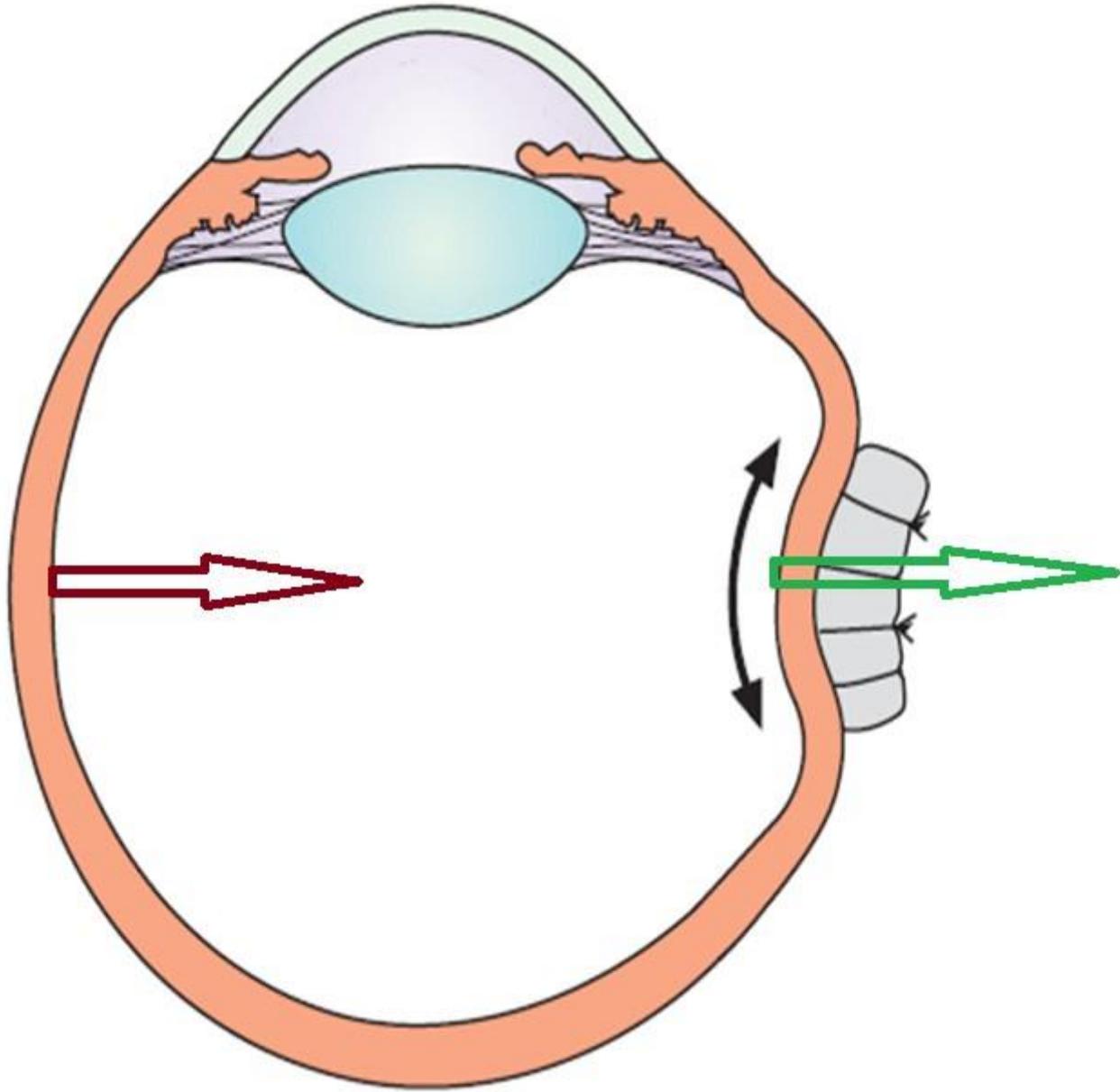
Rhegmatogenous RD management

- External (conventional) .
- Internal (vitrectomy surgery) .

RRD management external

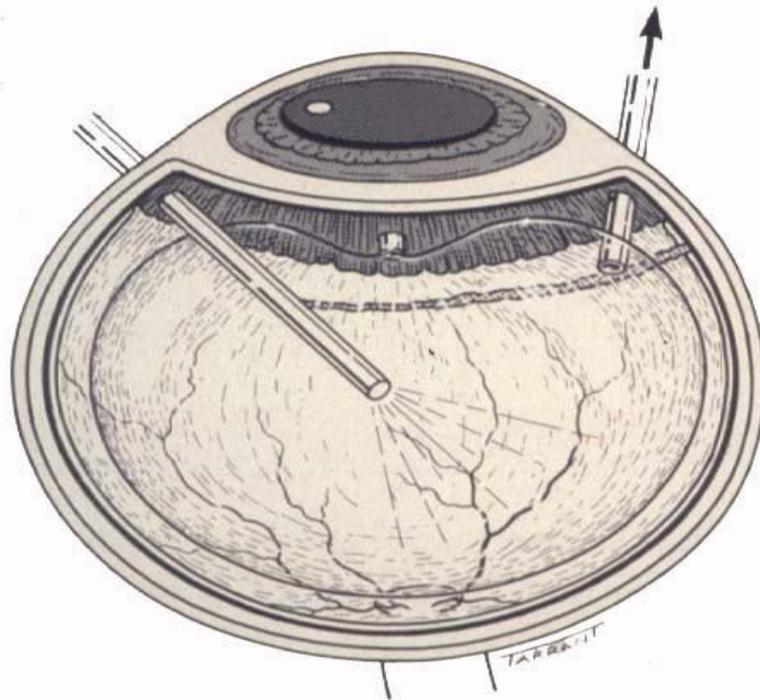
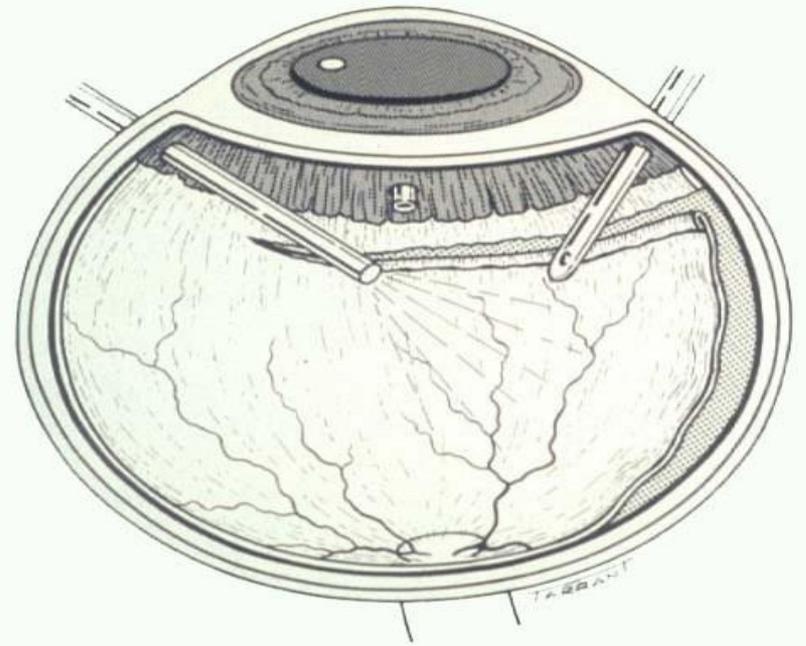
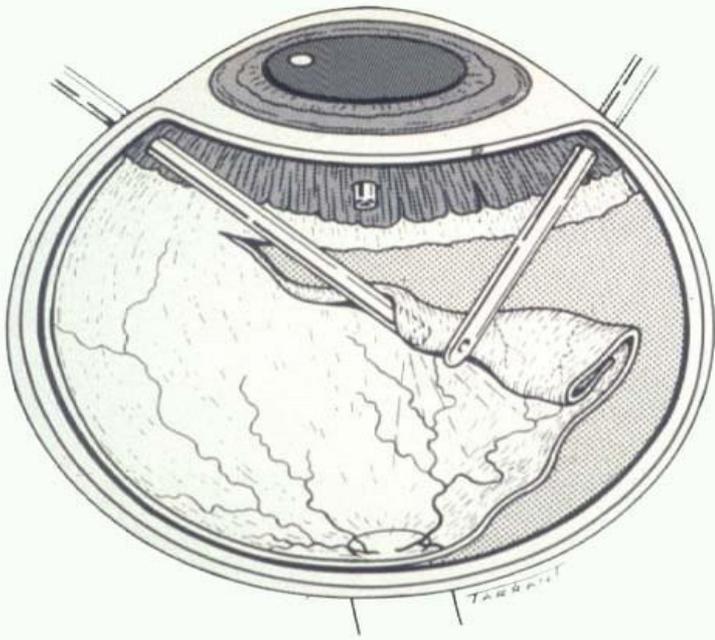
- Scleral indentation by silicon bellet
- Sub-retinal fluid aspiration
- Laser or cryo to induce adhesions and strength the bonds between the detached retina and the RPE





RRD management internal

- Sclertomies done
- Vitreous adhesions removed
- Retina re attached
- Laser & Cryo

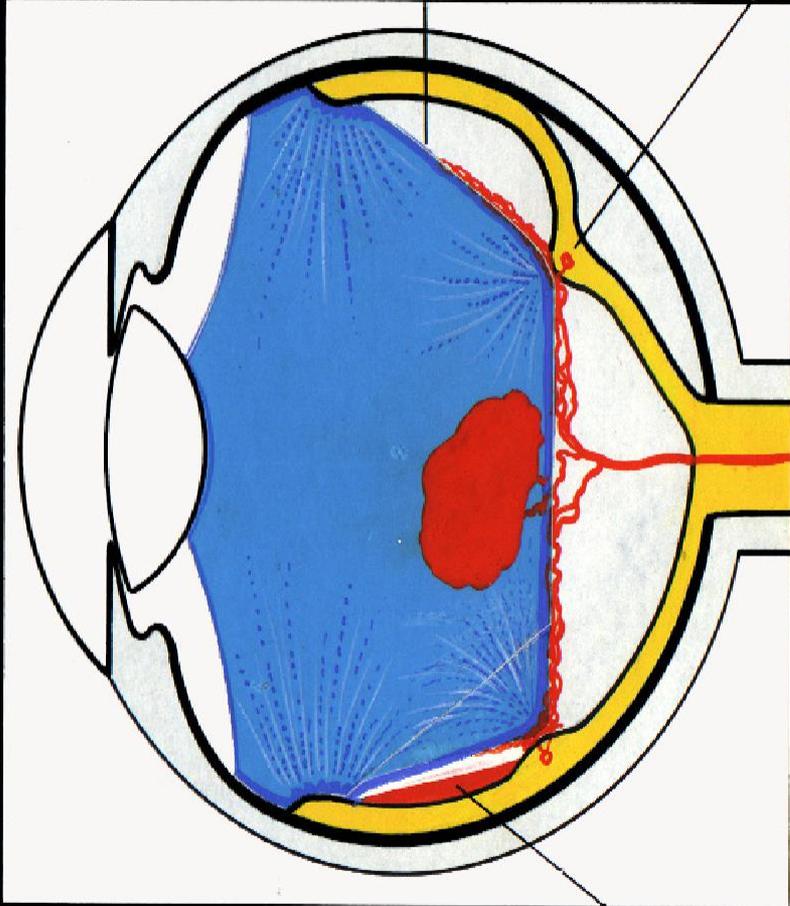


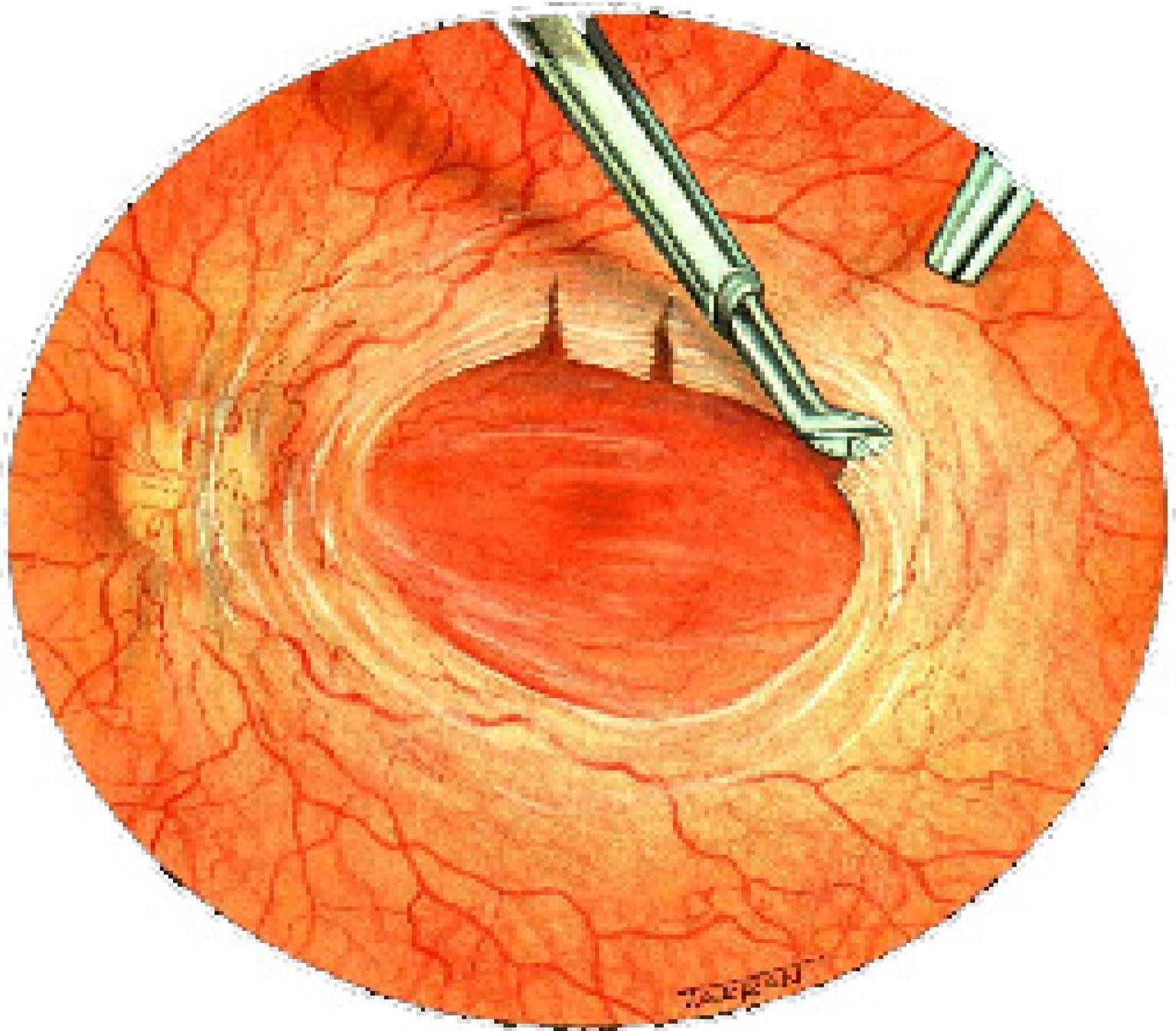
RRD prognosis

- Macula not involved good prognosis
- Macula detached > 24 hours prognosis less favorable

Tractional RD

- Due to proliferative diabetic retinopathy
- Management needs laser and vitrectomy
- Control blood sugar





Retinitis pigmentosa

- Inherited disorder of the photoreceptors .
- Many genotypic and phenotypic varieties .
- Can be isolated or associated with systemic disorders .

Pathogenesis

- Mostly affect the rod photoreceptors
- Can affect the cones to a less extent
- Inheritance can be : AD

AR

X-linked

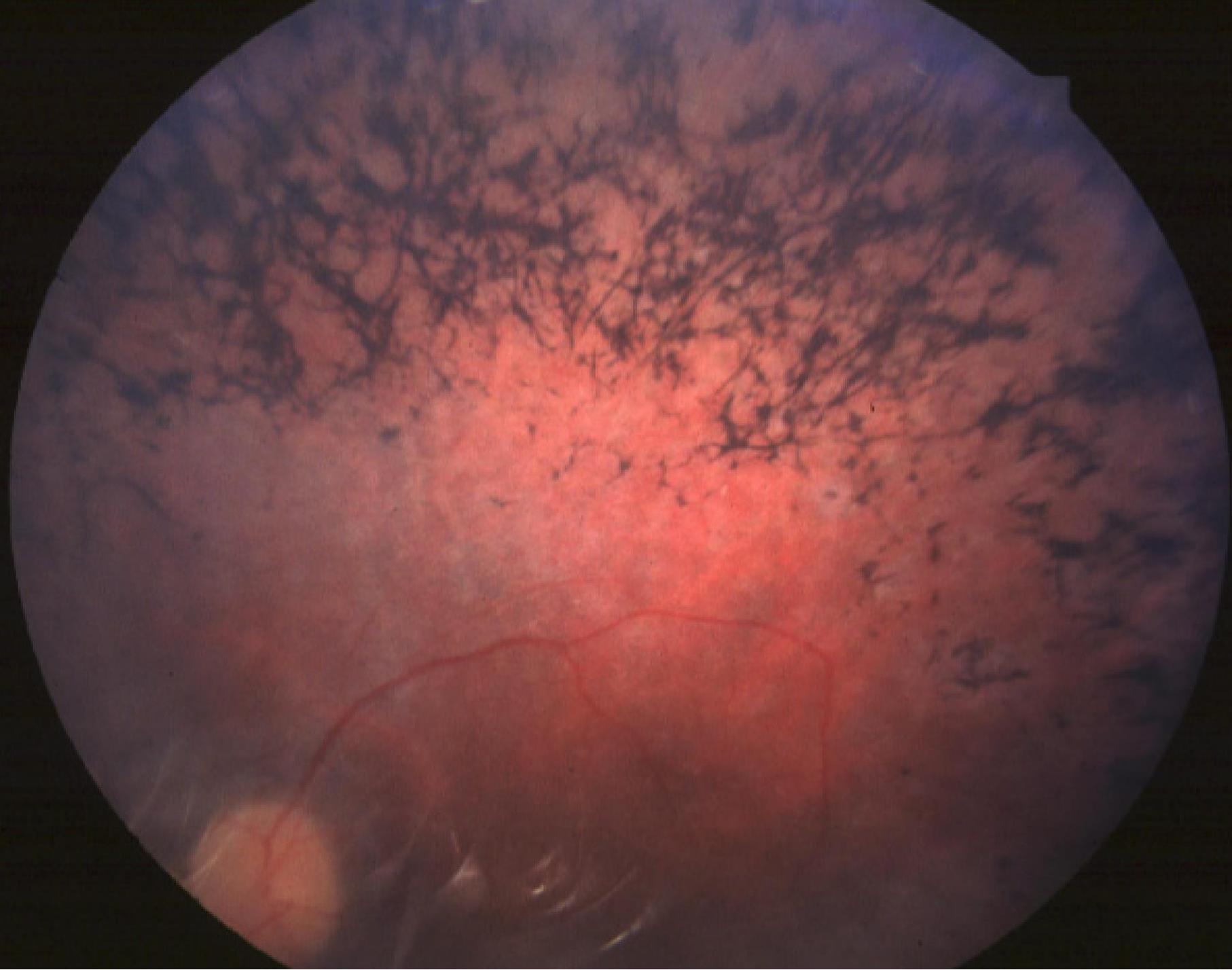
Prevalence 1:4000

Presentation

- Poor night vision
- Progressive loss of visual field
- At the end progressive drop in VA
- Progression and onset depend on inheritance mood where it is later and slower in the AD and earlier and severer in the X-linked

RP signs

- Bone –spicule : peripheral clumps of retinal pigmentation
- Retinal arteriols attenuation
- Pale Optic disc
- Macular edema
- Cataract



RP Investigation

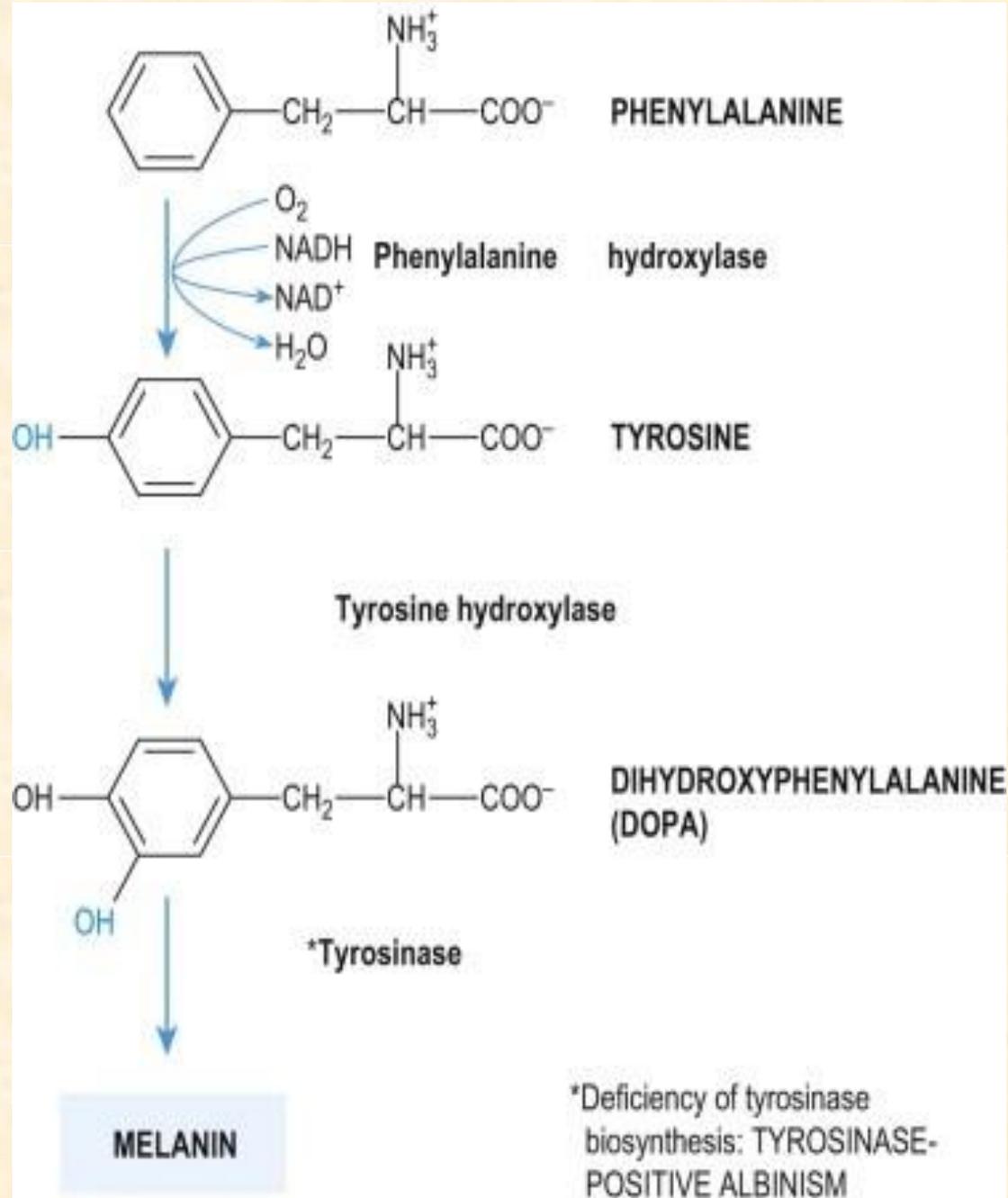
- Usually clinical picture is clear
- Electrophysiological studies ERG
- Genetic mapping

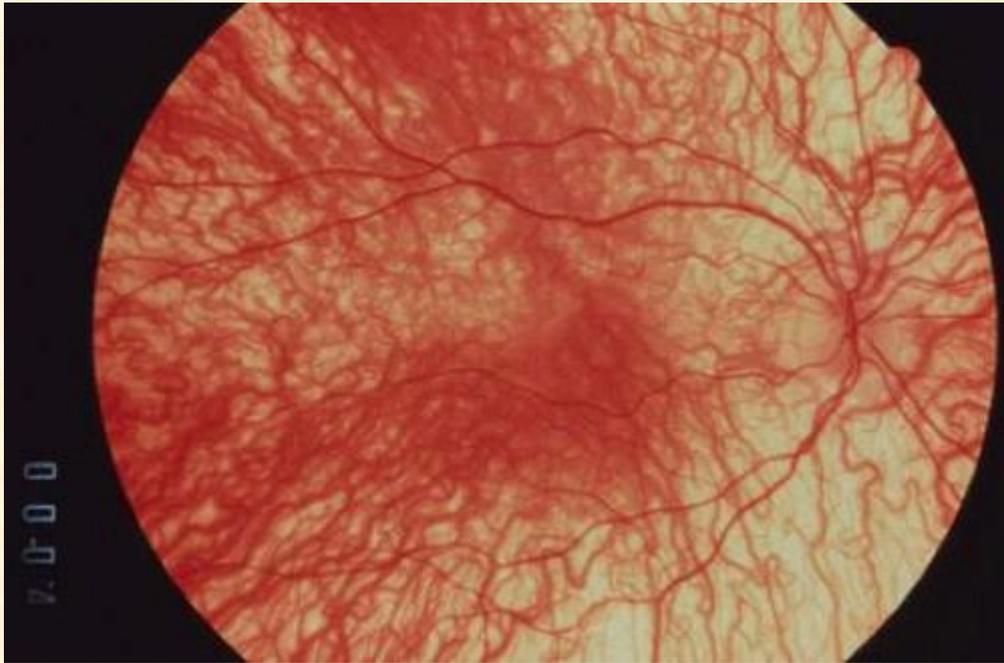
Management & Prognosis

- No available treatment
- If cataract develops treat
- Macular edema treatment
- Prognosis is best for the AD and worse for the X-linked
- By the age of 50 ,50% of the RP patient will have VA 6/60 or less

Albinism

- Ocular albinism
- Oculocutaneous albinism
- The enzyme defect responsible for OCA1-type albinism is tyrosine 3-monooxygenase (tyrosinase)
- Blue iris and decreased VA
- Abnormal choroidal vascularization
- Dull foveal reflex





Retinal tumours

- Retinoblastoma
- Astrocytoma
- Melanomas
- Metastatic tumours



