



# DIAGNOSTIC & THERAPEUTIC APPROACHES IN OPHTHALMOLOGY

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## Chapter 9

### Skills 65-75

- Vitreous
- Retina

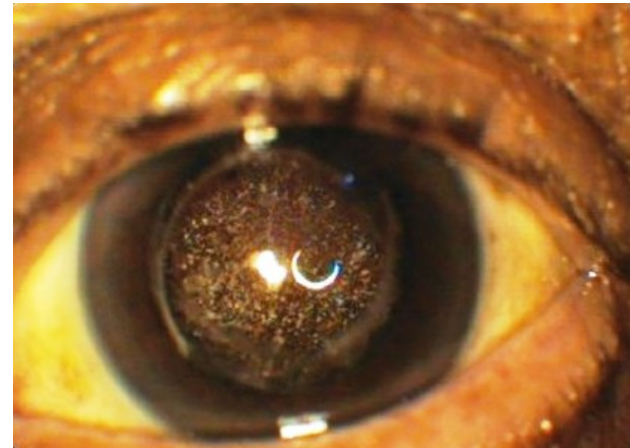
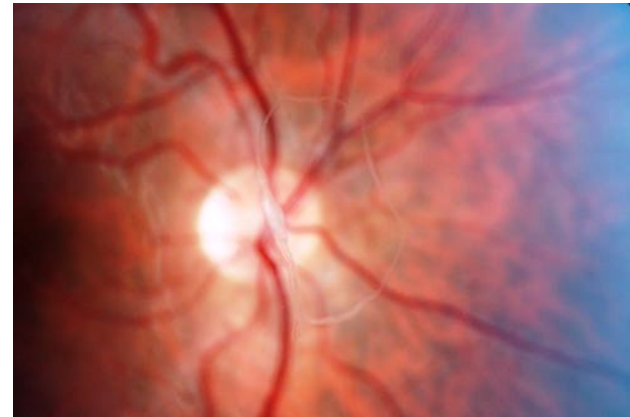
# TS 65 : Floaters

- Floaters= Movable Vitreous condensations
- Flashes: Due to posterior vitreous traction
- Caution:  
Traction can lead to RD!

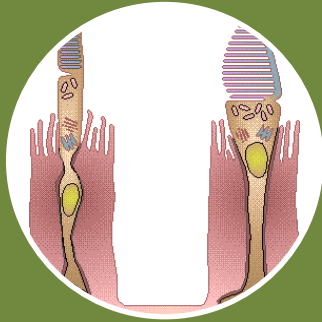


# TS 66 : Vitreous blurring

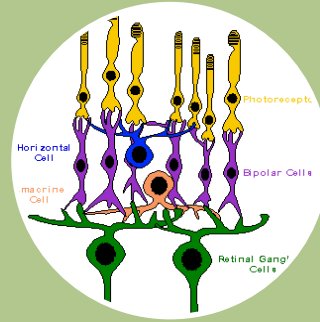
- Causes:
  - i. Posterior vitreous detachment
  - ii. Vitreous hemorrhage
  - iii. Synchysis scintillans
- Lesions moving along with head movement



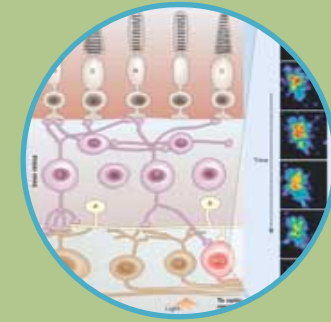
# TS 67 : Retinal physiology



Photoreceptors



Bipolar cells

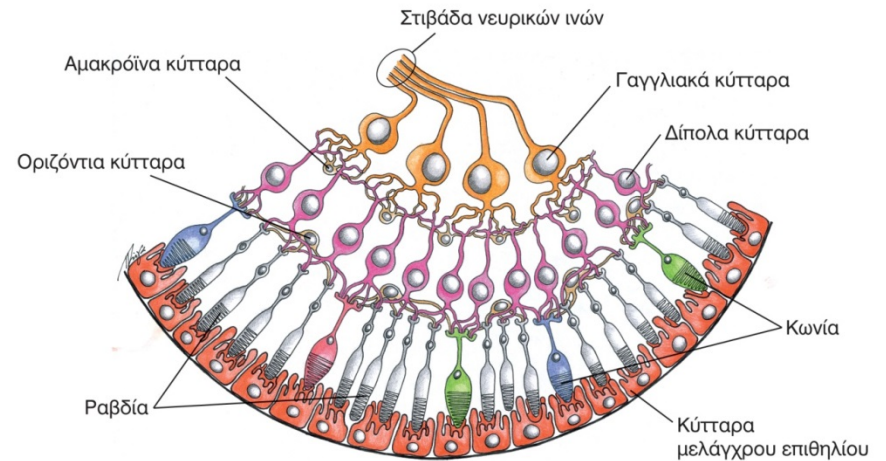


Ganglion cell

**RECEPTIVE FIELD**

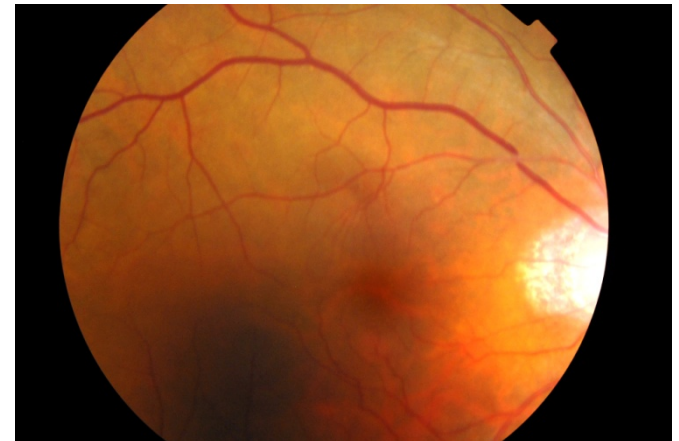
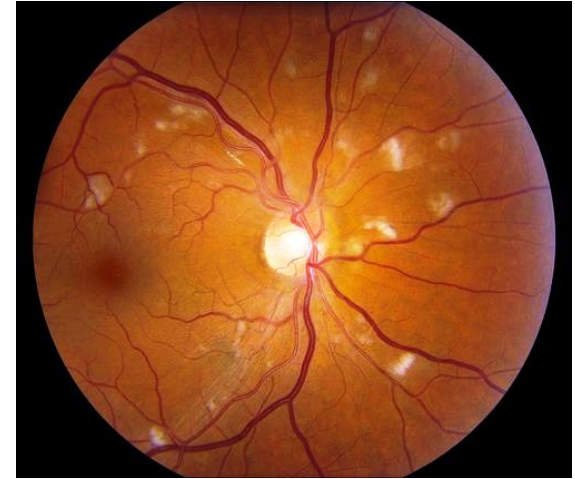
# Retinal physiology

- **Macula area:** offers maximal resolution due to:
  - Maximal cones density
  - Photoreceptor : Ganglion cells ratio= 1:1 (undisturbed signal)



# TS 68 : Vascular disorders - Atherosclerosis

- Vascular sheathing (loss of wall transparency)
- Changes in light reflex. Increase in brightness and width. “Copper wire” arteries and “Silver wire” arteries
- Arterial stenosis
- Arterio-venous crossings (Salus & Gunn)



# TS 68 : Vascular disorders

- B.P.
  - Tortuosity of vessels, more evident near macula
- Venous stasis
  - Engorged veins, dot and flame-shaped haemorrhages

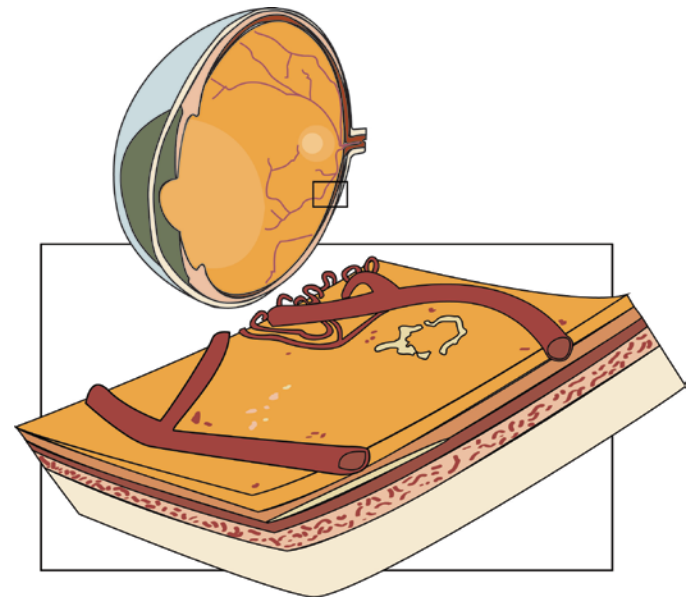


# TS 68 : Vascular disorders – DM

- Endothelial damage
- Loss of pericytes
- Thickening of basal membrane

- Findings

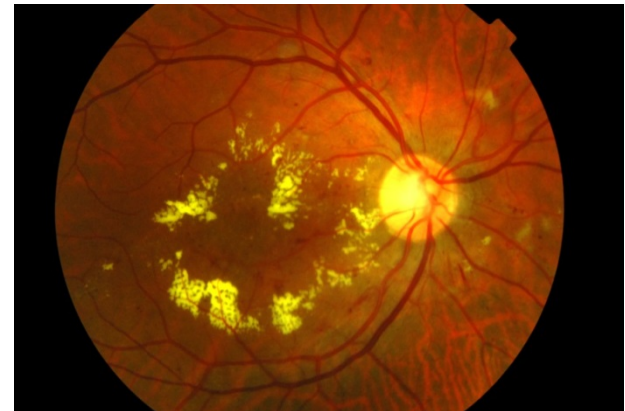
- Non-perfusion-Chronic ischaemia
- Microaneurysms
- Exudates
- Oedema
- Haemorrhages





# TS 69 : Hard exudates

- Solid, yellowish residues formed by lipoproteins and lipids after initial oedema is absorbed
- At the edges of previous retinal oedema
- They form the so-called macular star around the macular area due to their radial orientation

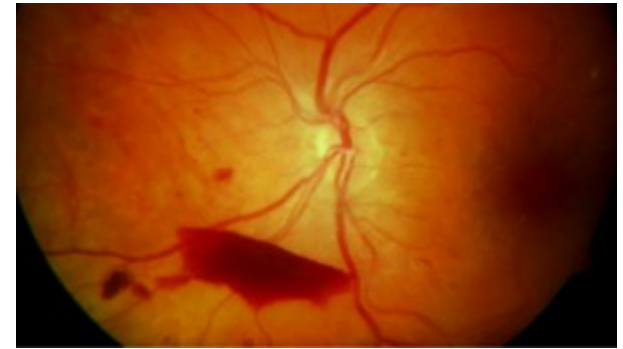


# TS 69 : Retinal hemorrhages

- Increased vascular permeability

- Vitreous haemorrhage

- Proliferative diabetic retinopathy
- Retinal tears



- Retinal

- Flame-shaped, Dot & blot haem.
- Roth's spots in anaemia, blood dyscrasias



- Subretinal

- Age Related Macular Degeneration
- Choroidal rapture

# TS 70 : Vascular occlusions

## CRAO

- Sudden, painless, dramatic drop of VA
- VA: CF to PL
- Unfavourable prognosis

## CRVO

- Sudden, painless, decrease in VA
- VA → 1/10 to CF
- Prognosis depends on severity

# TS 70 : Vascular occlusions

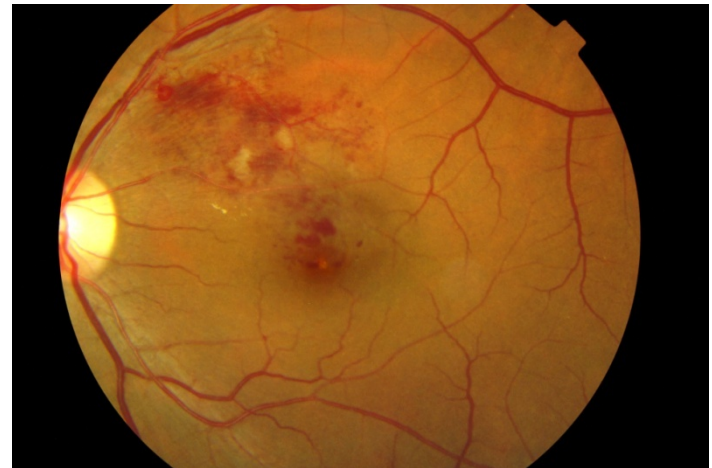
## CRAO

- Ischaemia (cherry-red spot)
- Retinal oedema
- Art. Stenosis-Emboli



## CRVO

- Optic disk congestion
- Retinal oedema
- Flame-shaped haemorrhages
- Cotton-wool spots



# TS 71 : Diabetic retinopathy

## Background

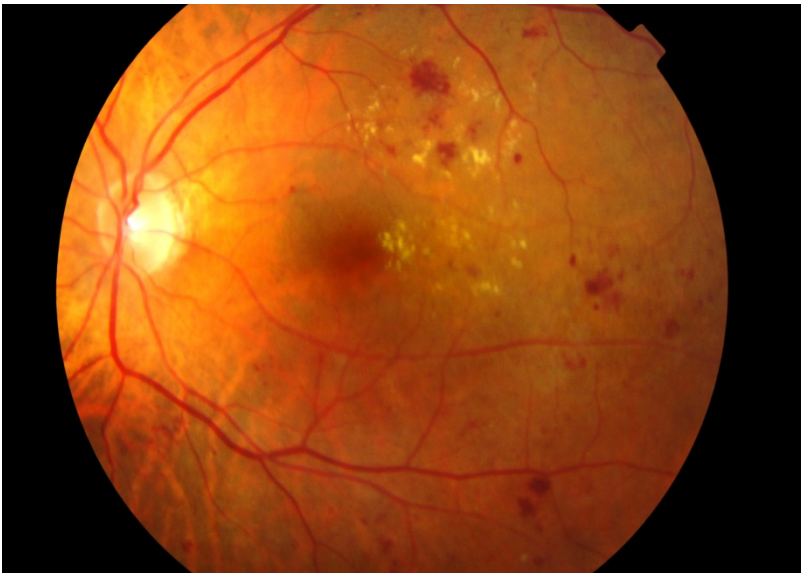
- No NV
- ✓ Mild/Moderate/Severe
- Micro-aneurysms
- Micro-haemorrhages
- Hard exudates/cotton wool spots
- Oedema
- Capillary ischaemia
- IRMA

## Proliferative

- NV
- Diabetes II
- ✓ Early/High risk/Advanced
- NV
- Fibrosis
- Haemorrhages
- Traction retinal detachments

# TS 71 : Diabetic retinopathy

Background



Proliferative



# TS 71 : Diabetic retinopathy

## Treatment

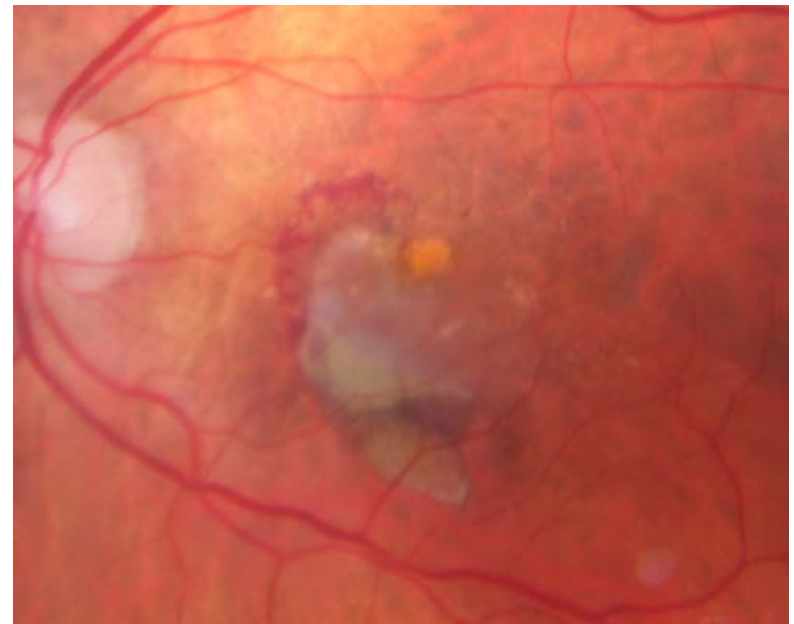
- Laser photocoagulation
- anti-VEGF
- Vitrectomy
- Control of diabetes, AH

## Control

- No diabetic retinopathy
  - Every year
- Background retinopathy
  - Every 6-9 months
- Frequently in proliferative retinopathy

# TS 72 : Age-related Macula Degeneration (AMD)

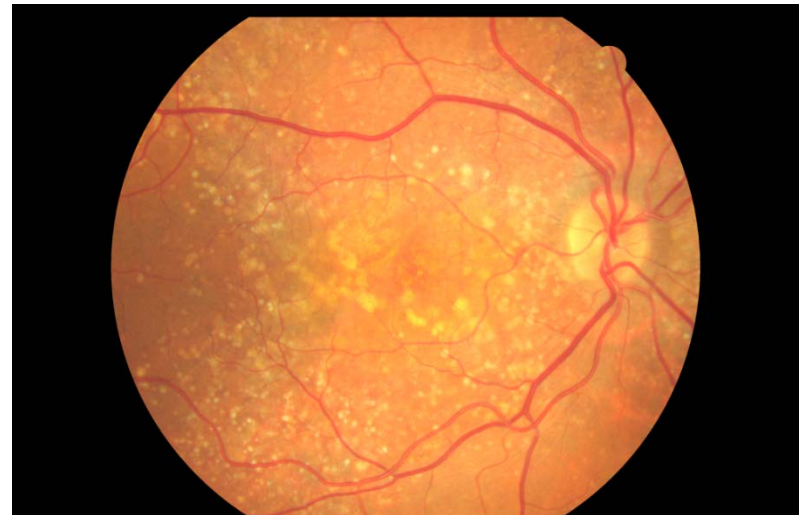
- Most common cause of central visual loss in developed world
- Mid and peripheral vision is usually spared
- In Greece, more than 60000/year are affected
- Due to senile changes in Bruch's membrane and RPE





# TS 72 : Dry AMD

- Slow, progressive
- Metamorphopsias – central scotoma
- Hyaline accumulations beneath RPE
- No efficient treatment
- Low vision aids are used in advanced cases



# TS 72 : Wet AMD

- Sudden visual loss
- Rapid and devastating
- Metamorphopsias-Scotoma
- In late stages: Subretinal fibrosis, permanent loss of vision (<1/10)
- New trends: Anti-VEGF agents

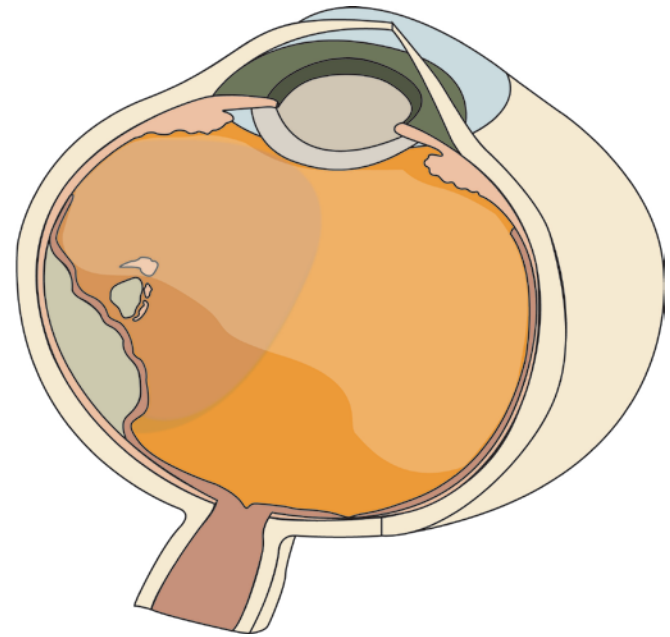


# TS 73 : Retinal detachment

- Separation between retina and RPE layer
  - **Emergency** before the macula becomes detached

## Types

- Rhegmatogenous
- Tractional
  - Diabetic retinopathy
- Exudative
  - Inflammation, tumors

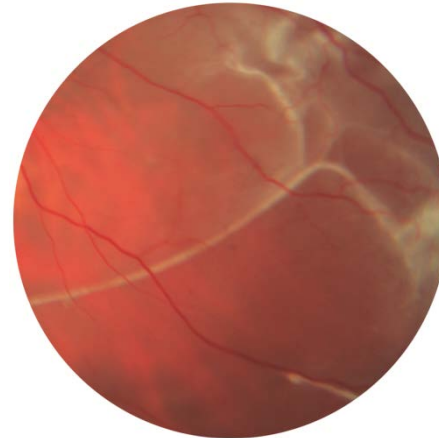


# TS 73 : Rhegmatogenous RD

- Due to **tears or holes** of retina

- **Fundoscopy**

- Bulging of tear edges
- Wrinkling of retina
- Whitening
- Moveable retina



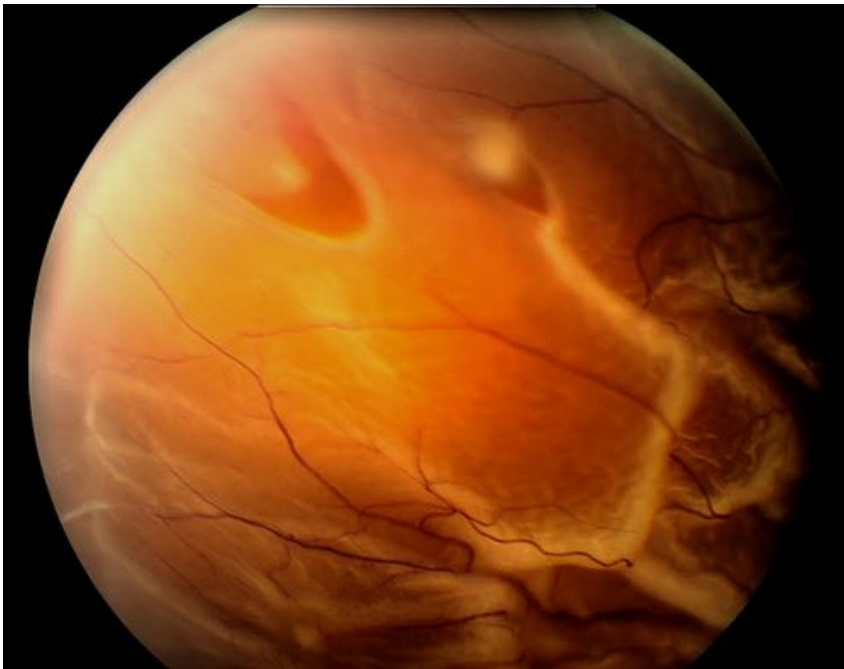
- **Predisposing factors**

- Myopia
- Aphakia - Pseudophakia
- Trauma
- Fam. History



# TS 74 : D/D RD-Vascular occlusion

Retinal Detachment



Branch vascular occlusion



# TS 75 : Retinoblastoma

- Most common malignant ocular tumor in newborns and babies
- 1:15000 newborns
- Early management saves lives and sight (90-95%)
- Bilateral in 25-35%
- Sporadic or inherited (15-25%)
- Leukokoria and strabismus in advanced cases
- Leukokoria must be referred to ophthalm. ASAP



# Electronic Referrals – 9<sup>th</sup> Chapter

1. [http://www.nlm.nih.gov/medlineplus/tutorials/flashsandfloaters/htm/\\_no\\_50\\_no\\_0.htm](http://www.nlm.nih.gov/medlineplus/tutorials/flashsandfloaters/htm/_no_50_no_0.htm)
2. [http://www.rnib.org.uk/eyehealth/eyeconditions/eyeconditionsoz/Pages/posterior\\_vitreous\\_detachment.aspx](http://www.rnib.org.uk/eyehealth/eyeconditions/eyeconditionsoz/Pages/posterior_vitreous_detachment.aspx)
3. [http://www.scholarpedia.org/article/Receptive\\_field](http://www.scholarpedia.org/article/Receptive_field)
4. <http://emedicine.medscape.com/article/1201779-overview>
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8. <http://emedicine.medscape.com/article/1226030-overview>
9. <http://emedicine.medscape.com/article/798501-overview>
10. [http://www.youtube.com/watch?v=GPAQIB\\_ojM](http://www.youtube.com/watch?v=GPAQIB_ojM)