Module 3-2012

DIABETIC RETINOPATHY

MOH Diabetic Retinopathy
Screening Team
2012

Scope of presentations

- Pathogenesis
- Classification Of Diabetic Retinopathy and Maculopathy
- Follow-up and treatment

NORMAL STRUCTURE

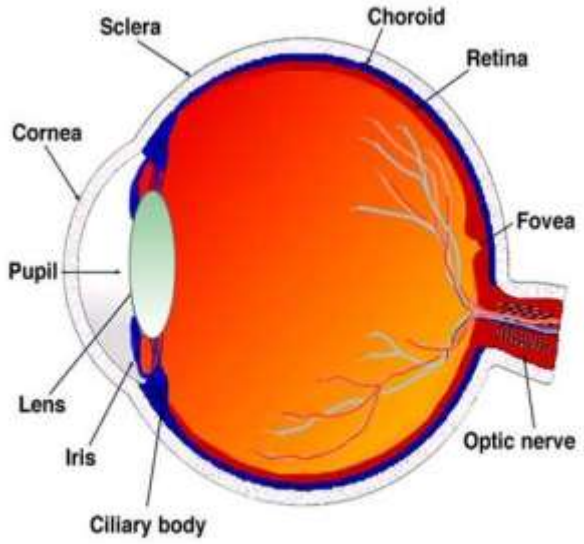
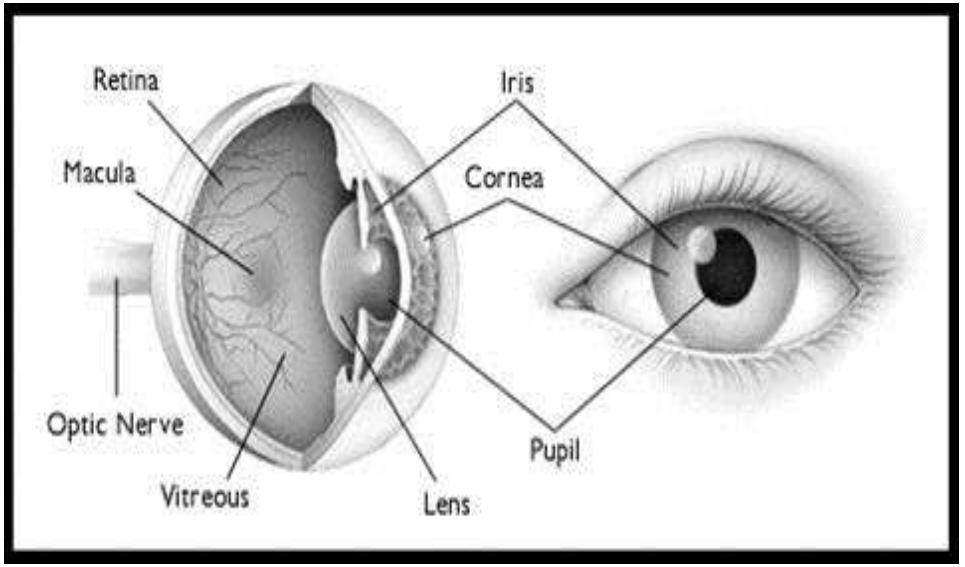
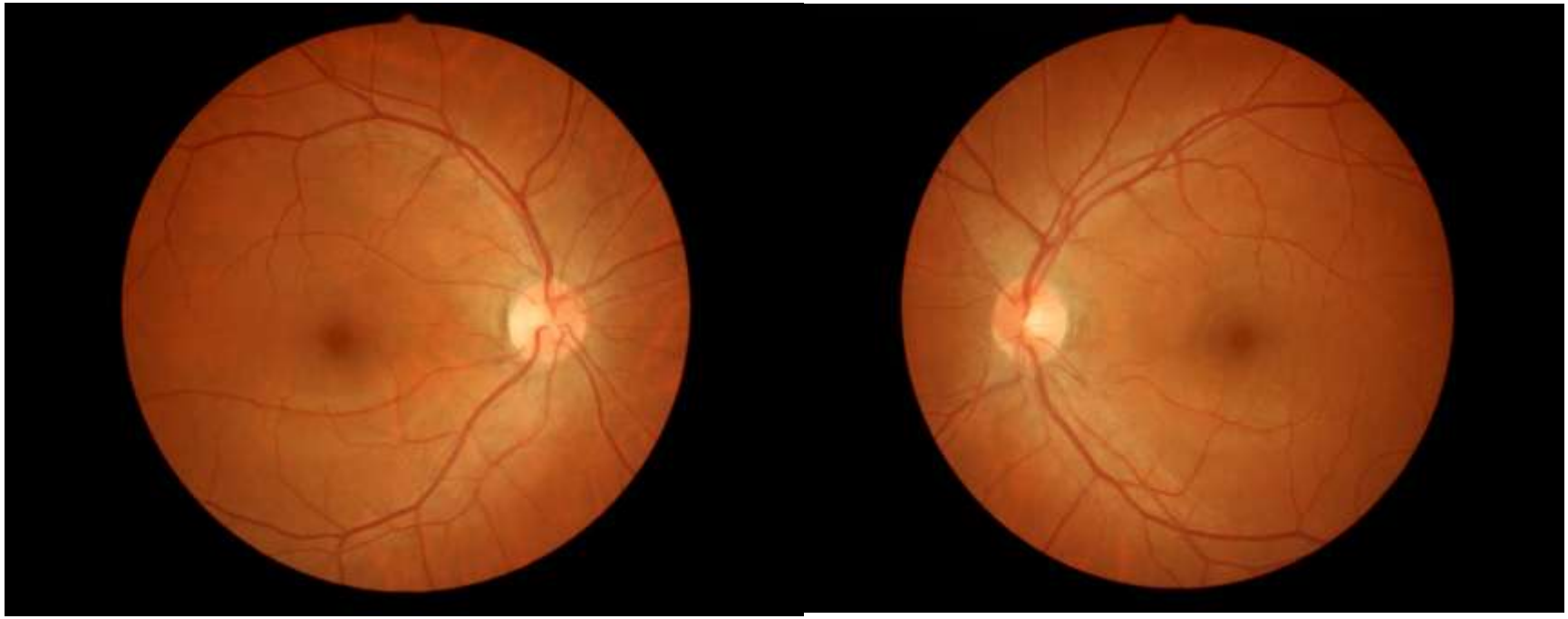


Fig. 6. Vertical sagittal section of the adult human eye.



FUNDUS : NORMAL



Right eye

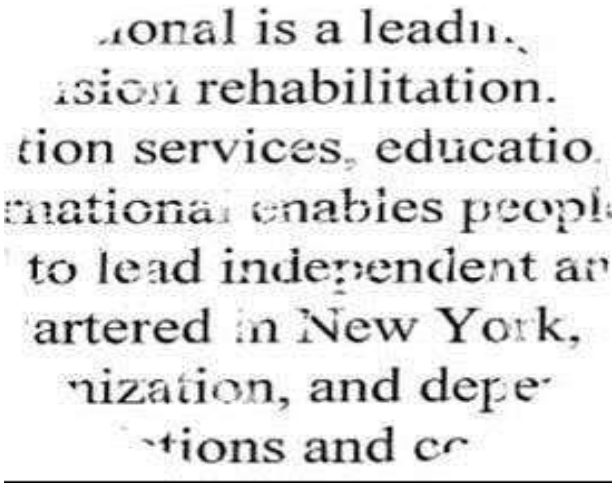
Left eye

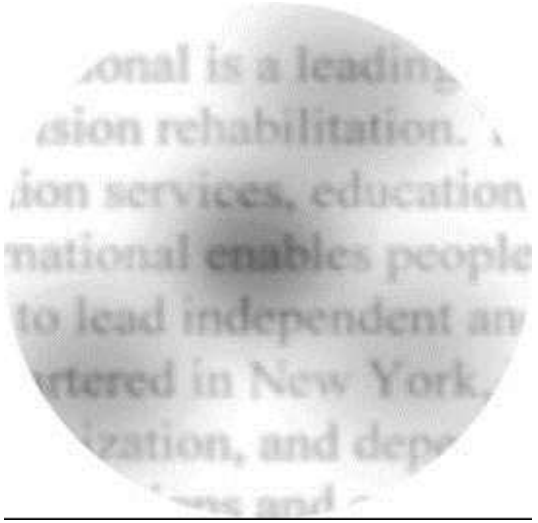
SIGN & SYMPTOMS

- Early stage - asymptomatic
- Gradual or sudden blurring of vision
- ‘Floaters’- black spots / web-like spots in the visual field
- Problems in reading books or signage
- Diplopia
- Pain
- Red eyes
- Increase intraocular pressure in the eye
- Metamorphopsia (distortion of straight lines)

Normal vision

Vision due to diabetic retinopathy





DIABETES MAY CAUSE …

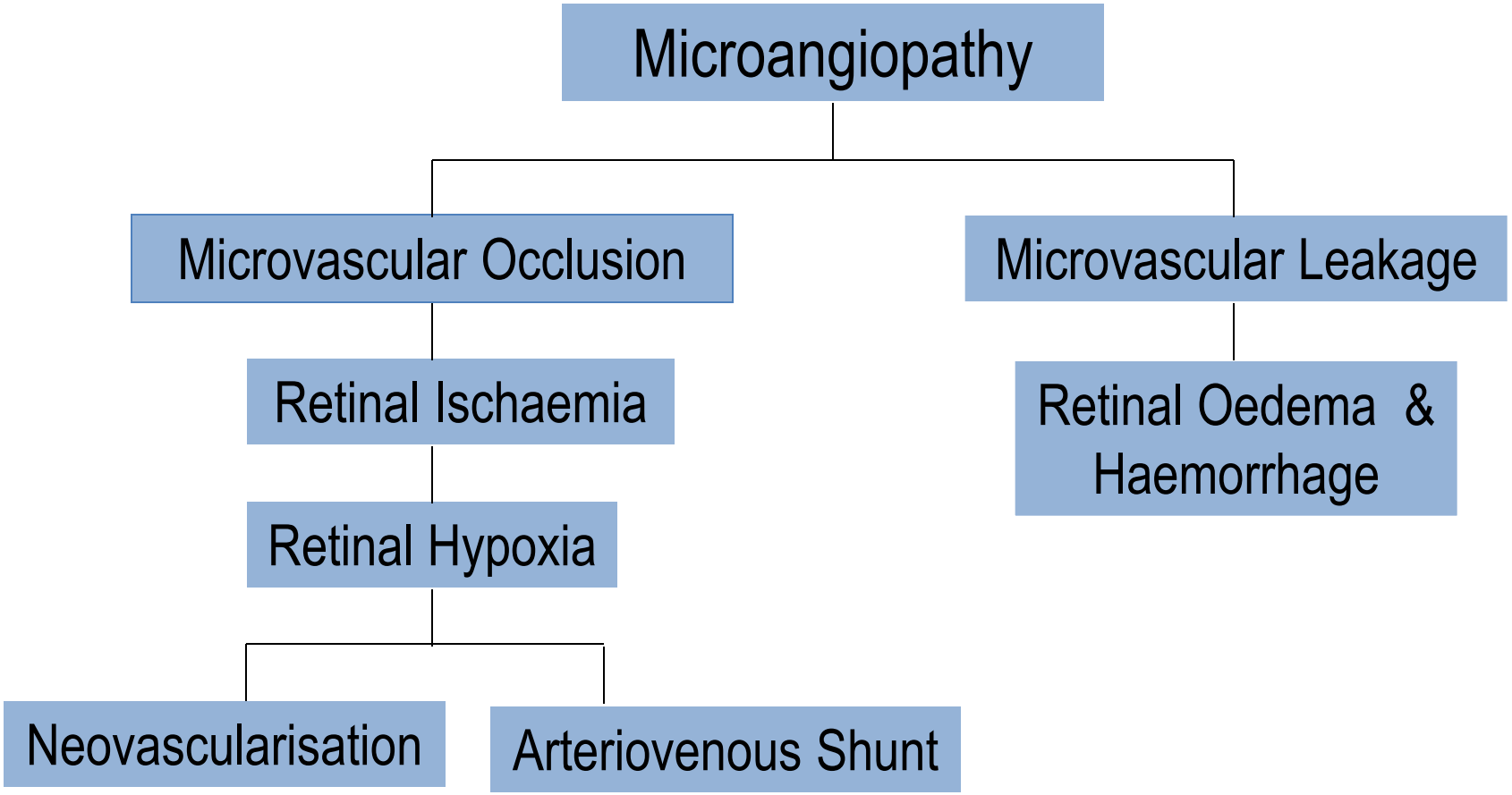
- Refractive error : (short / long sightedness)
- Corneal erosion
- Cataract
- Glaucoma
- Oculomotor muscles paresis : squint / diplopia
- Ischemic optic neuropathy
- **Diabetic retinopathy** : visual disturbances / visual impairment / permanent blindness

DIABETIC RETINOPATHY

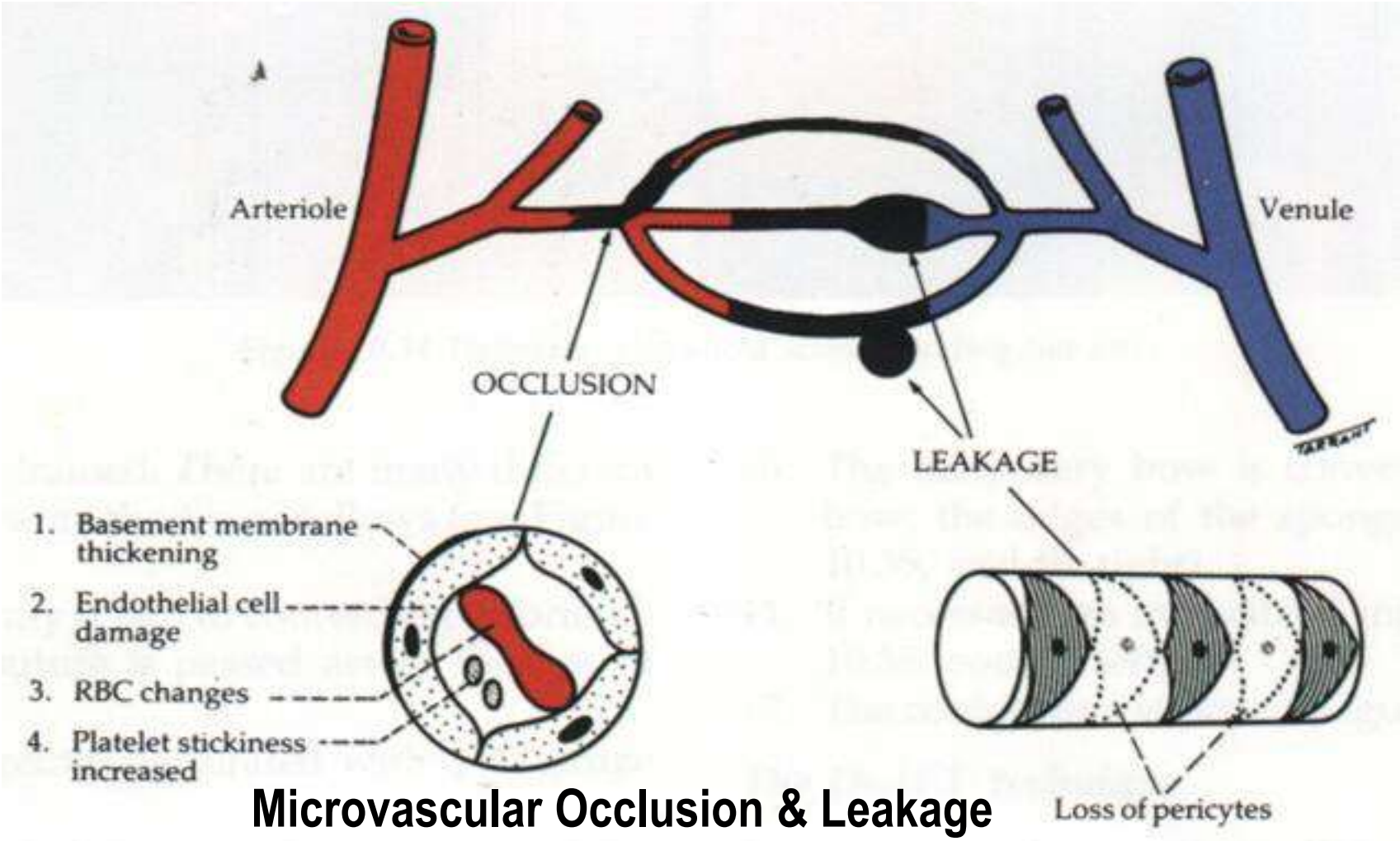
DEFINITION

Diabetic retinopathy is a disorder of the retinal vasculature that eventually develops to some degree in nearly all patients with long-standing diabetes mellitus.

Pathogenesis

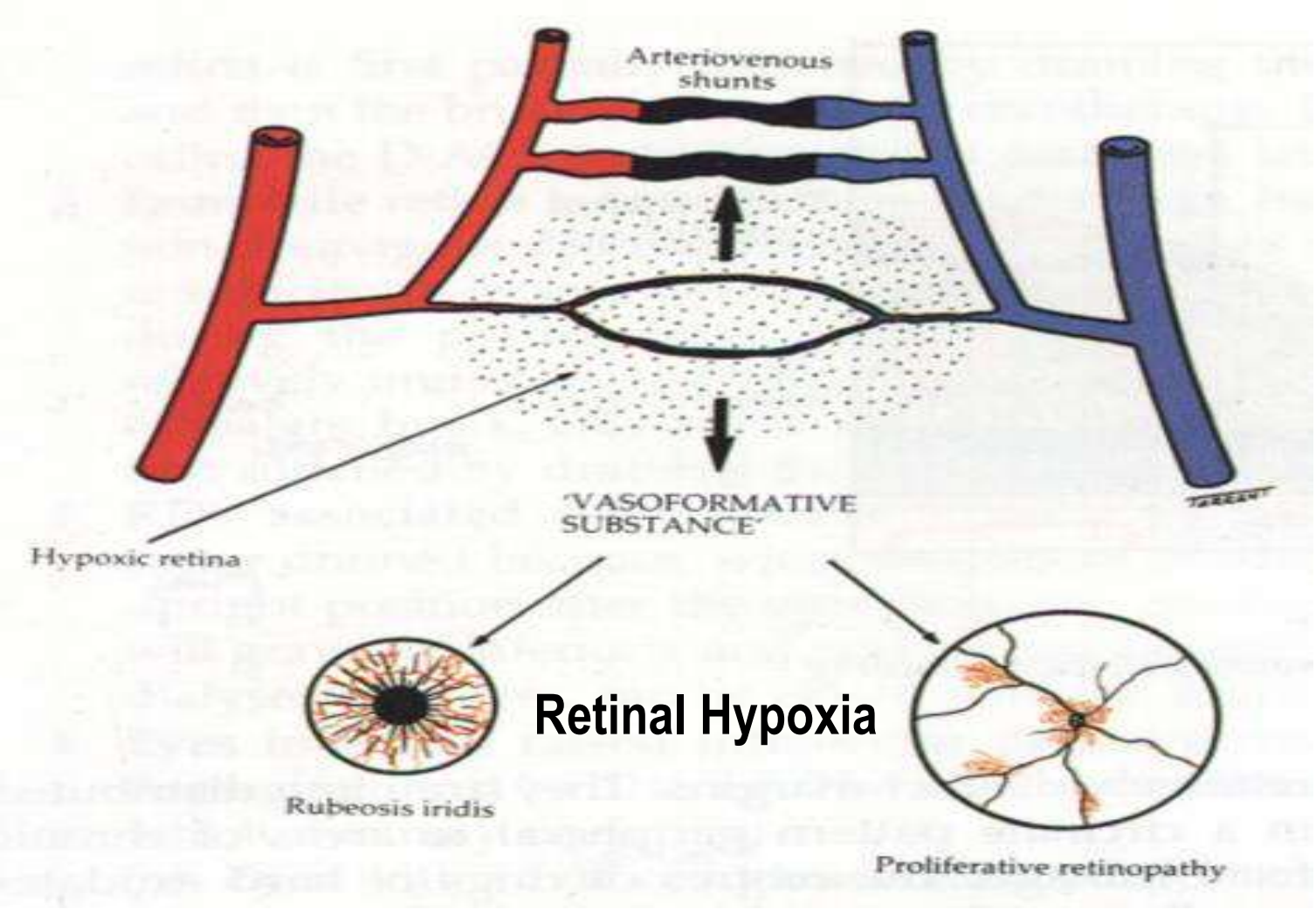


Pathogenesis

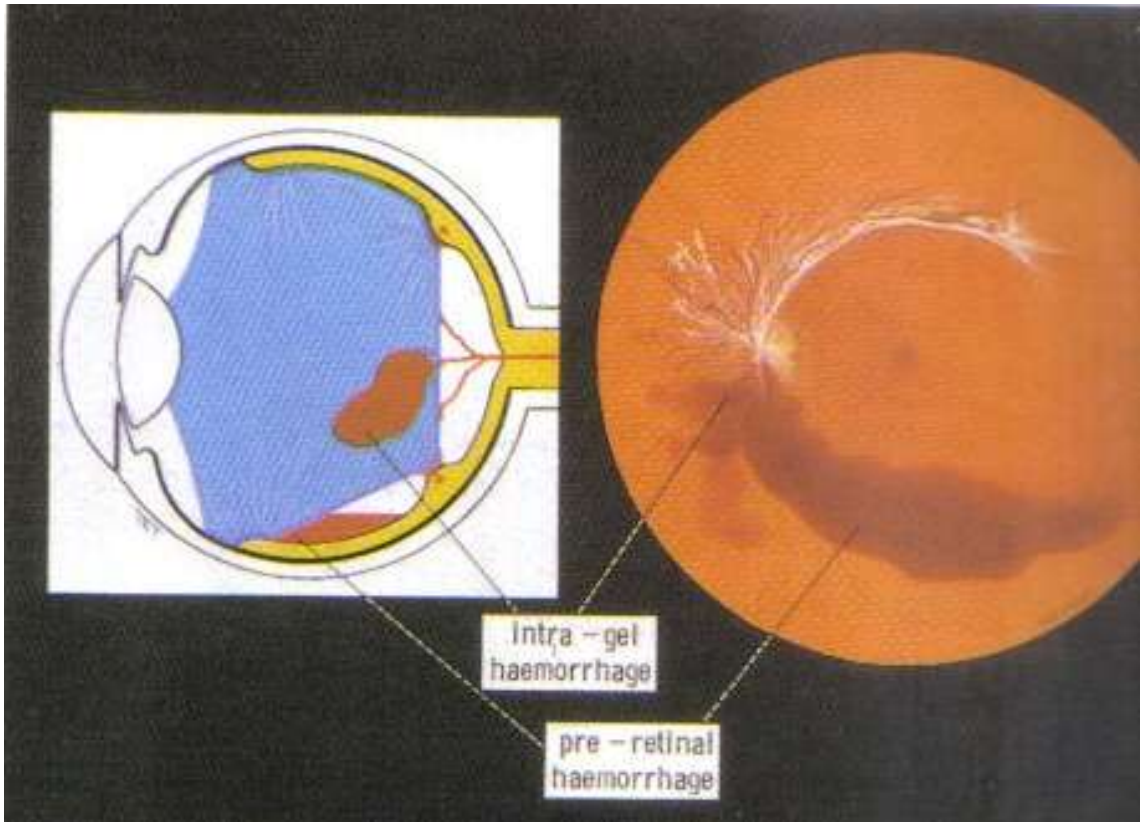


Microvascular Occlusion & Leakage

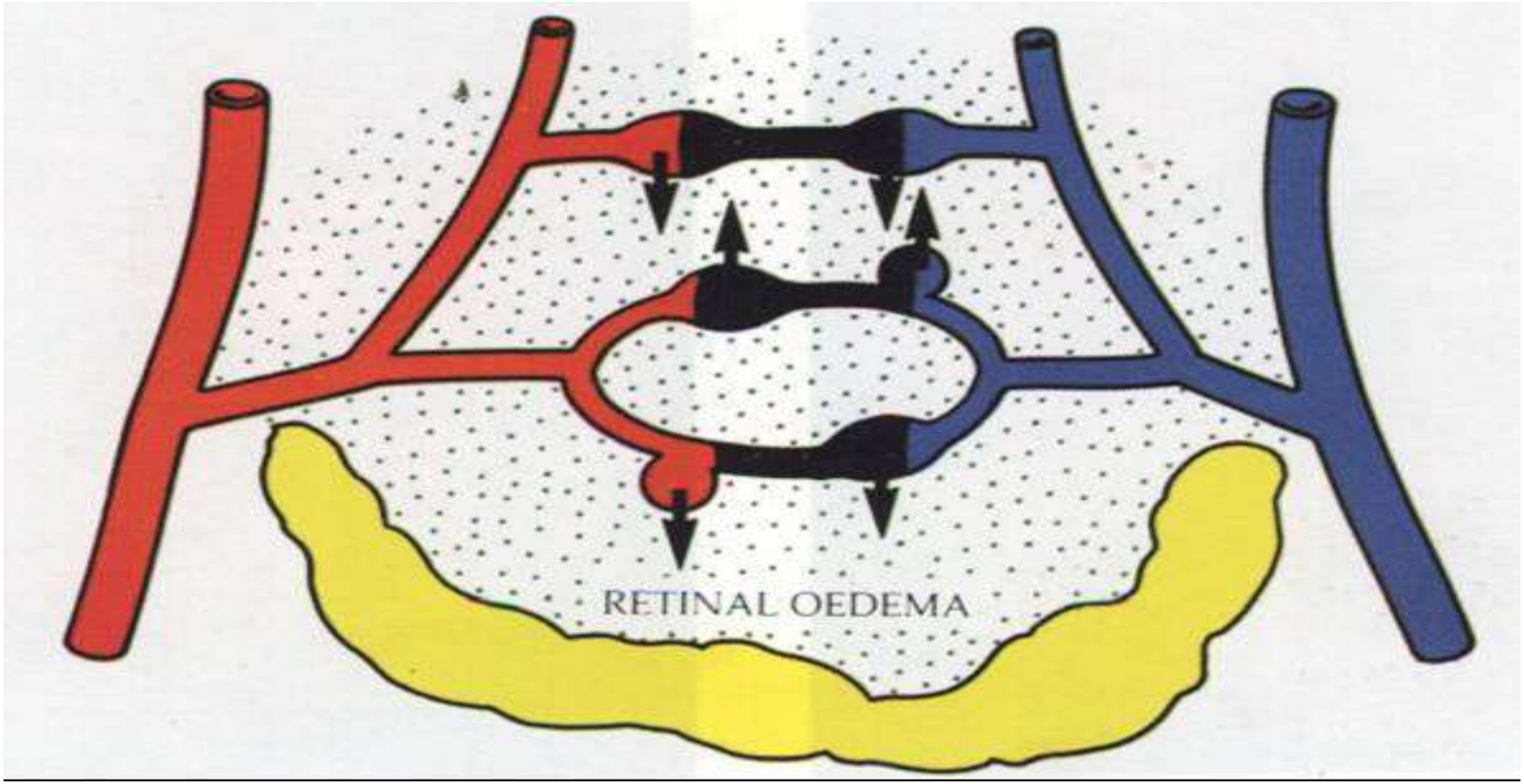
Pathogenesis



Neovascularisation



Pathogenesis- Leakage



Retinal Edema

Leakage - Maculopathy

International Clinical Diabetic Retinopathy Disease Severity Scale

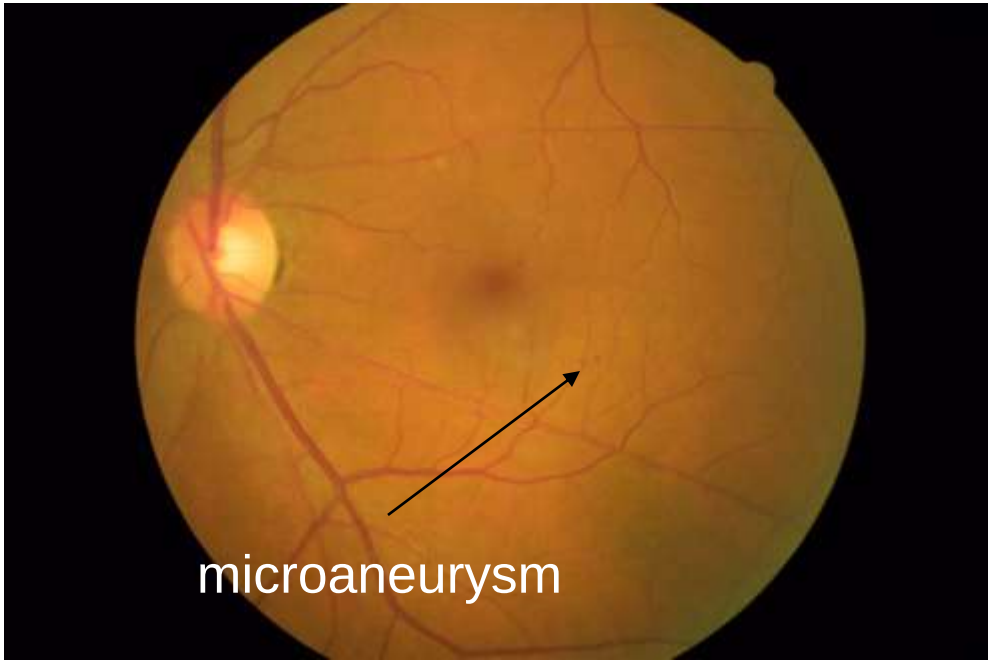
RETINOPATHY STAGE	FINDINGS ON OPHTHALMOSCOPY
No apparent retinopathy	No abnormalities
Mild nonproliferative diabetic retinopathy	Microaneurysms only
Moderate nonproliferative diabetic retinopathy	More than just microaneurysms but less than severe NPDR
Severe nonproliferative diabetic retinopathy	Any of the following: 1. More than 20 intraretinal hemorrhages in each of four quadrant 2. Definite venous beading in two or more quadrants 3. Prominent IRMA in one or more quadrants AND no signs of proliferative retinopathy
Proliferative diabetic retinopathy	One or both of the following: 1. Neovascularisation 2. Vitreous/ preretinal haemorrhage

Con't

RETINOPATHY STAGE	FINDINGS ON OPHTHALMOSCOPY
Advanced diabetic eye disease (ADED)	One of the following: 1. Formation of fibrovascular tissue proliferation 2. Tractional retinal detachment due to formation of posterior vitreous detachment 3. Dragging of the retinal/ distortion 4. Rhegmatogenous retinal detachment

Mild NPDR

- Microaneurysms only

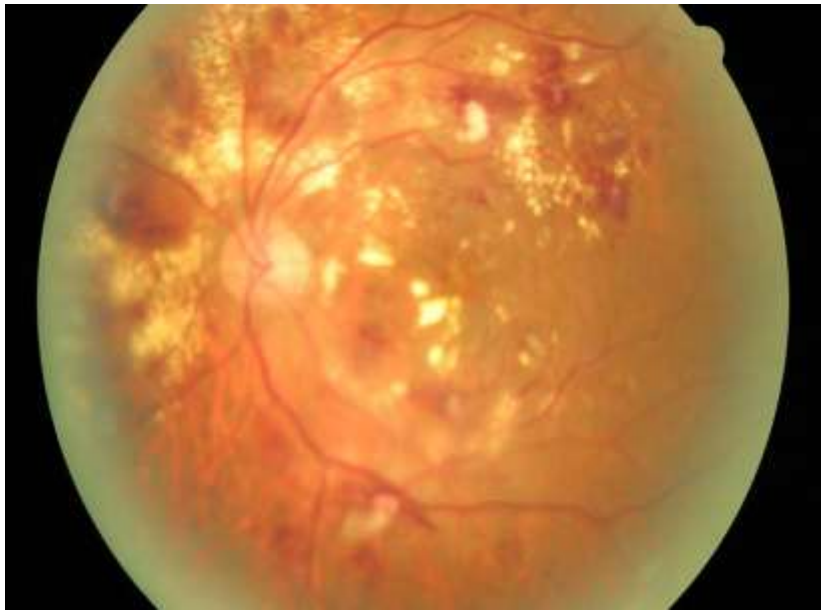


Moderate NPDR

- More than just microaneurysms but less than severe NPDR

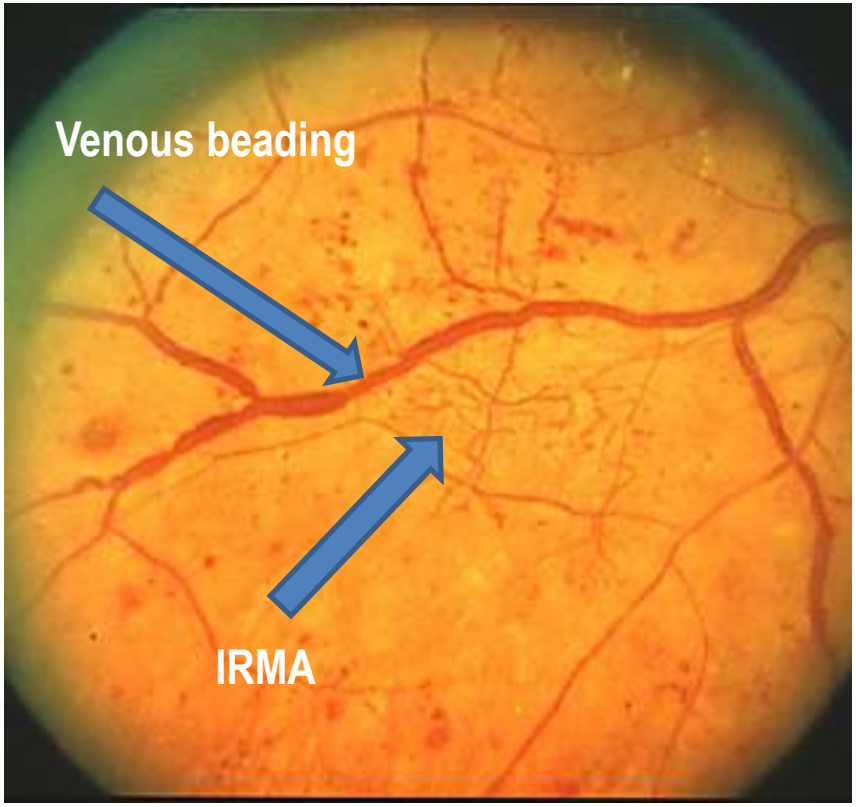
Severe NPDR

1. More than 20 intraretinal hemorrhages in each of 4 quadrants



Severe NPDR

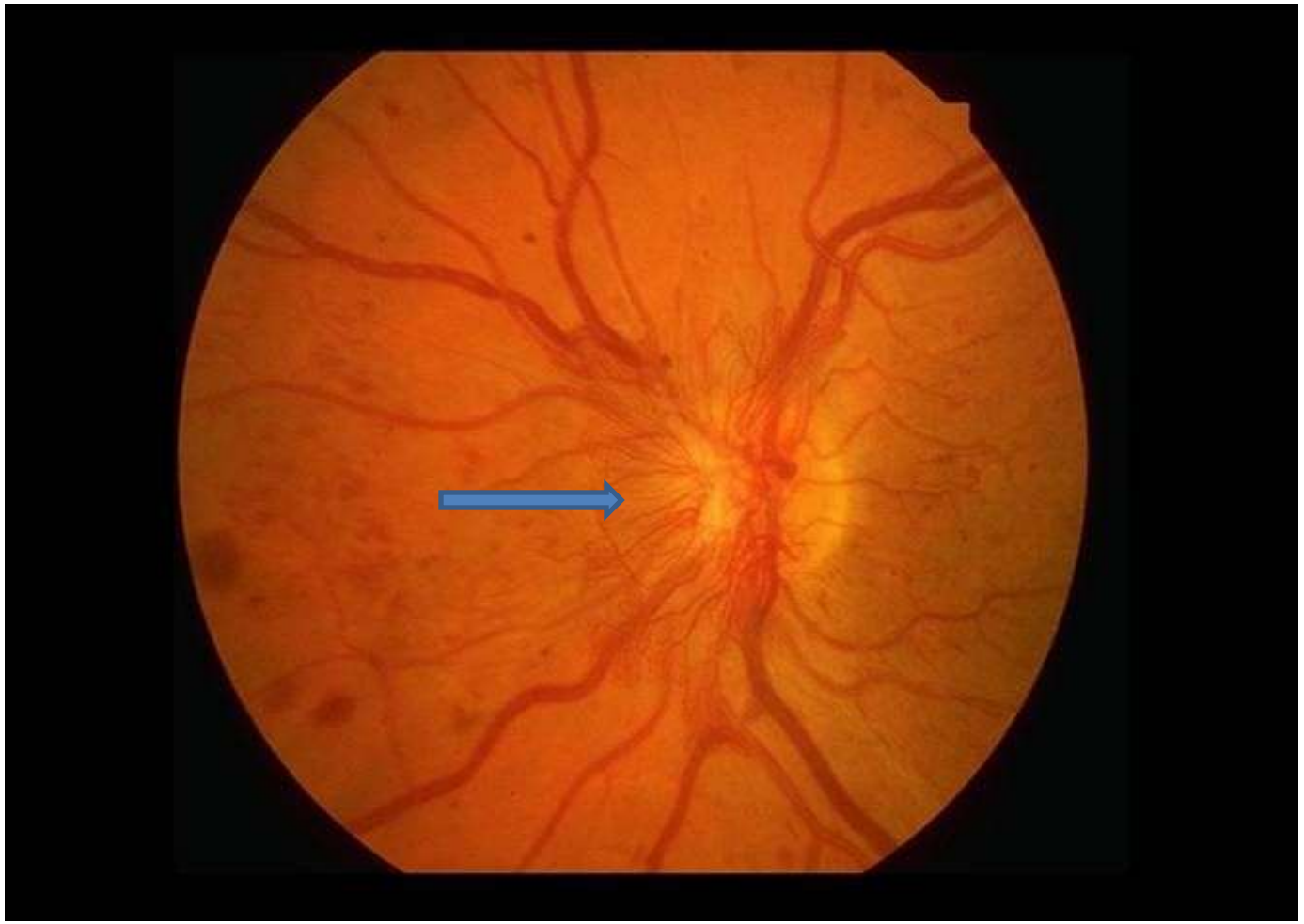
2. Definite venous beading in 2 or more quadrants
3. Prominent Intraretinal Microvascular Abnormalities (IRMA) in 1 or more quadrants AND no signs of proliferative retinopathy



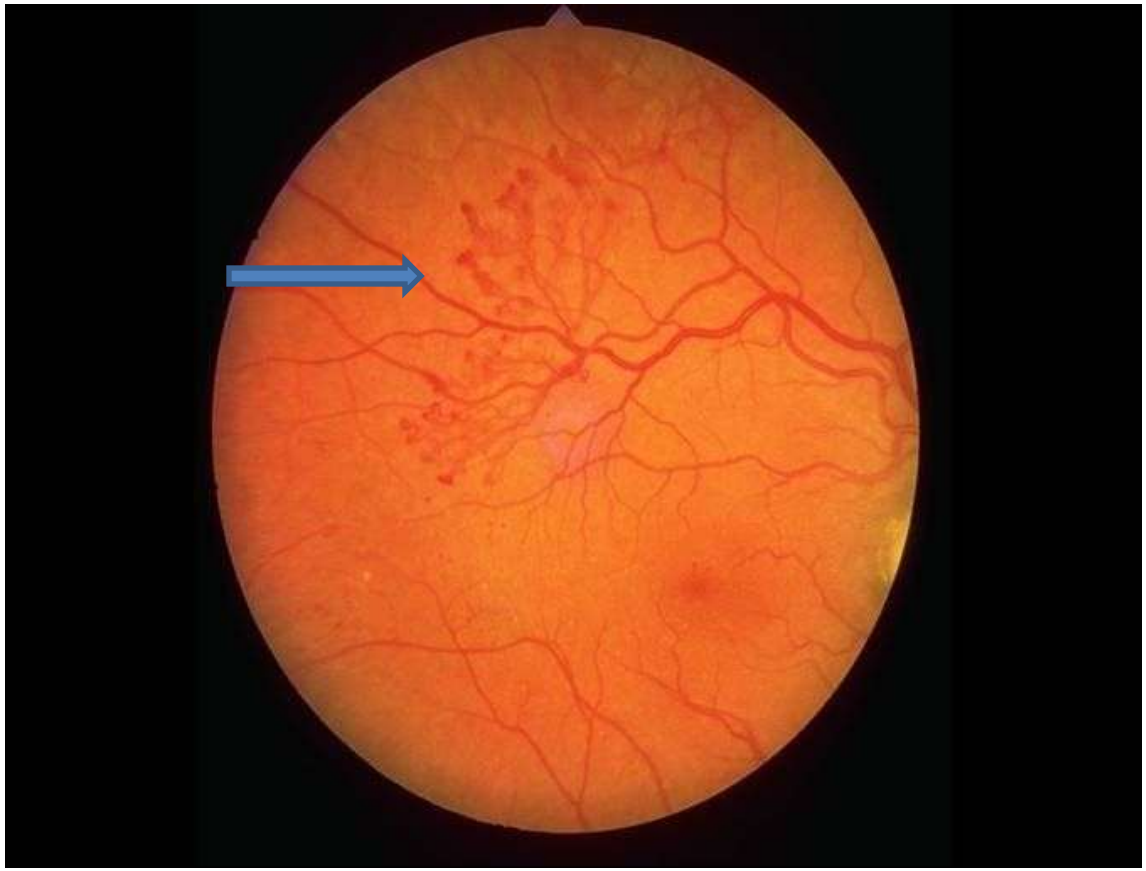
Proliferative Diabetic Retinopathy (PDR)

- New vessels at disc
- New vessels elsewhere
- Preretinal or vitreous haemorrhages

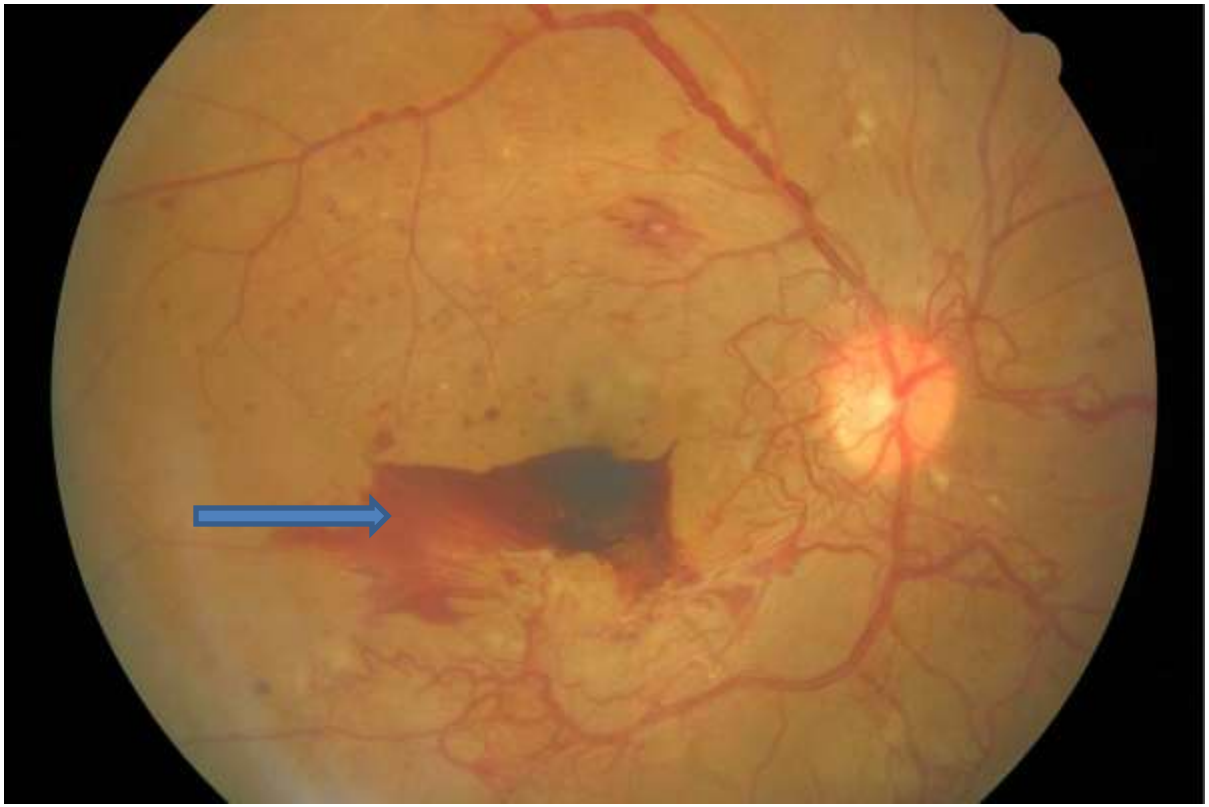
NeoVascularisation at the Disc (NVD)



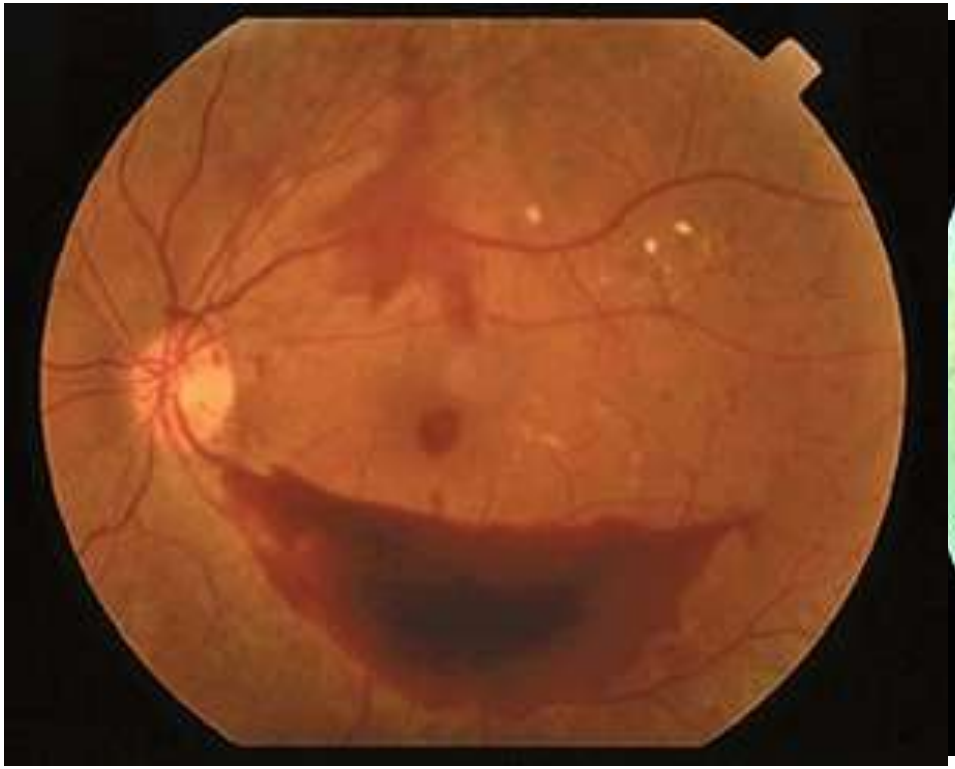
NeoVascularisation Elsewhere (NVE)



NeoVascularisation with pre-retinal haemorrhage

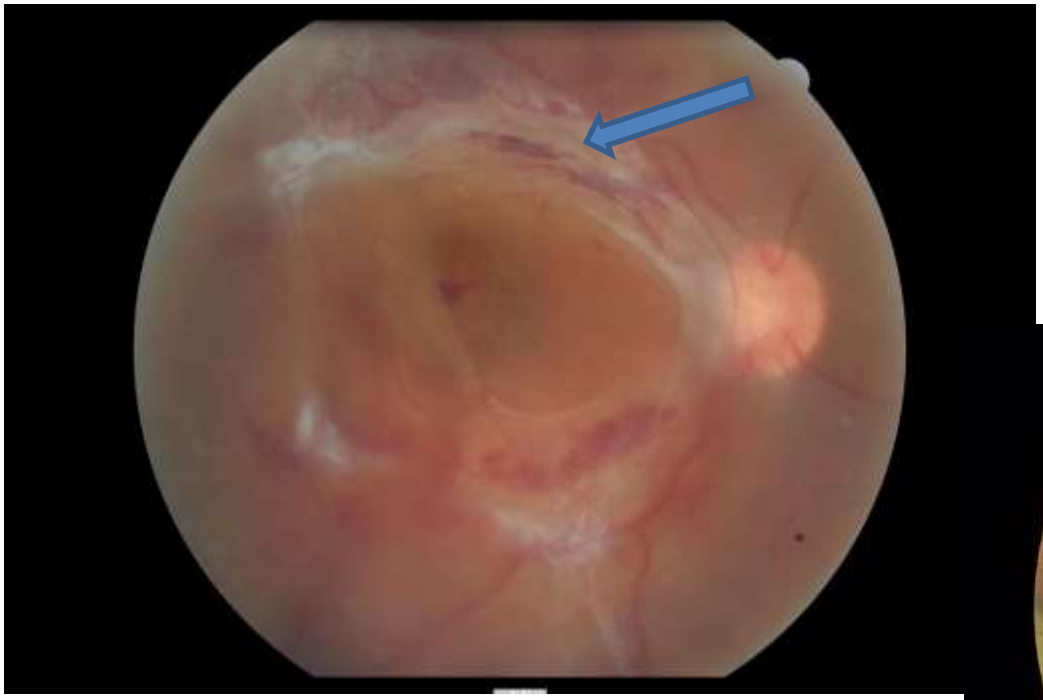


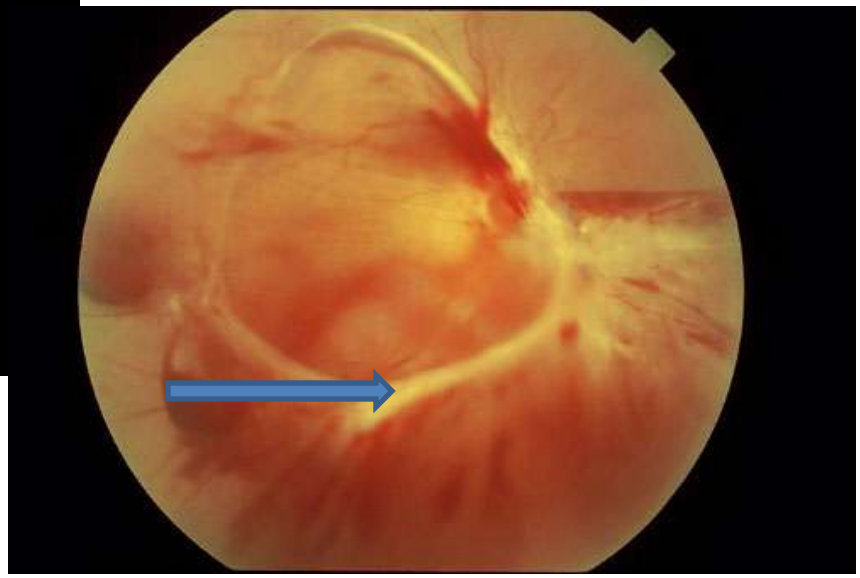
PDR with Pre-retinal Hemorrhage



PDR with Vitreous Hemorrhage

Advanced Diabetic Eye Disease – Fibrovascular Tissue Proliferation





International Clinical Diabetic Macula oedema disease severity scale

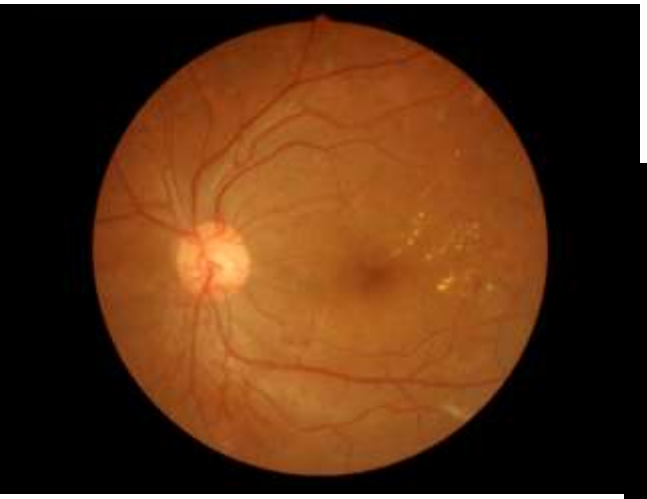
ABSENT	No retinal thickening or hard exudates in posterior pole
PRESENT	●*Mild* - some retinal thickening or hard exudates in posterior pole but distant from center of macula --- ●*Moderate* - Retinal thickening or hard exudates approaching the center of the macula but not involving the center --- ●*Severe* - Retinal thickening or hard exudates involving the center of the macula

Diabetic Maculopathy

Affect visual function through 2 mechanisms:

- Macular ischemia
- ↑ retinal vascular permeability resulting in macular edema

Diabetic Maculopathy



Mild

Moderate

Severe

FIRST SCREENING FOR DIABETIC RETINOPATHY

Type of DM	First examination
Adult Type 1	Up to 3 years after diagnosis
Adult Type 2	At time of diagnosis

FIRST SCREENING FOR DIABETIC RETINOPATHY

Pregnant women with DM	First examination
Pre-existing DM	Prior to planned pregnancy
Gestational DM – diagnosed in the first trimester (otherwise not required)	At the time of diagnosis

FIRST SCREENING FOR DIABETIC RETINOPATHY

Children with DM	First examination
Type 1	1. At age 9 years with 5 years of DM duration 2. At age 11 years with 2 years of DM duration
Type 2	At time of diagnosis

Recommended follow-up schedule

Stage Of Retinopathy	Follow-up
No DR	12-24 months
Mild NPDR without maculopathy	9 -12 months
Moderate NPDR without maculopathy	6 months
Mild/moderate NPDR with maculopathy	Refer to Ophthalmologist
Severe NPDR without maculopathy	
Any maculopathy	

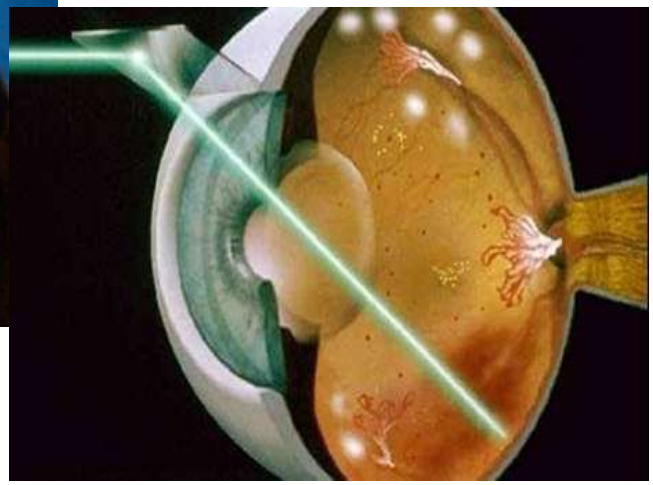
Recommended follow-up schedule

Stage of Retinopathy	Follow-up
Proliferative DR	Refer urgently to Ophthalmologist
Advanced Diabetic Eye Disease	
No DR to mild NPDR in pregnant women	Every 3 months
Moderate NPDR or worse in pregnant women	Refer to Ophthalmologist

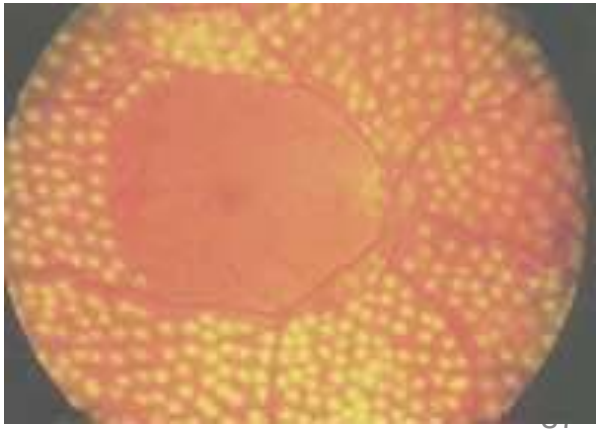
Summary of treatment for Diabetic Retinopathy

Stage Of DR	Mode of treatment
DME	• Laser – focal/grid • Intraocular steroids • Intraocular anti-vascular endothelial growth factor (anti-VEGF)
Severe NPDR	• Laser – scattered pan-retinal photocoagulation (PRP)
PDR	• Laser PRP
ADED	• Intraocular steroids • Anti-VEGF • Vitrectomy

Laser Photocoagulation Therapy



- Laser
  - effective in early stage
- PDR
  - **NV regressed in 80% patient**
- Maculopathy
  - **improve VA :** 50-60%



Laser Photocoagulation Therapy

- **PDR**
  - photocoagulate retina
  - reduce metabolic demand
  - abolish NV
- **Macular edema**
  - Stimulate fluid absorbtion
  - reduce edema
  - visual improvement in 50-60% patients with maculopathy

Laser Photocoagulation Therapy

- Painless/Discomfort
- Clinic
- Time : 10 minutes – 1 hour / session

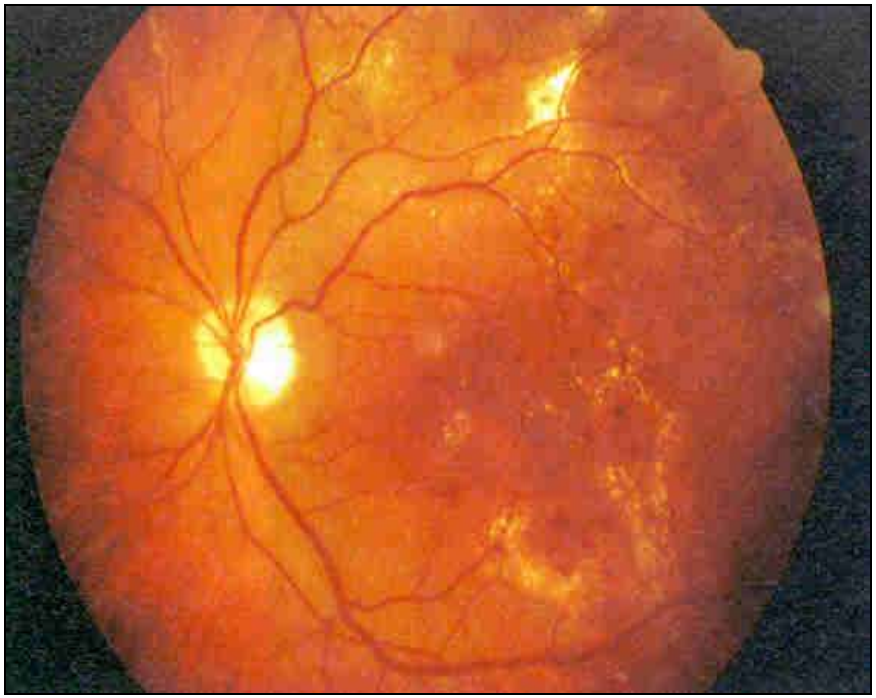
  (3 - 4 sessions)
- Objective : maintain existing vision

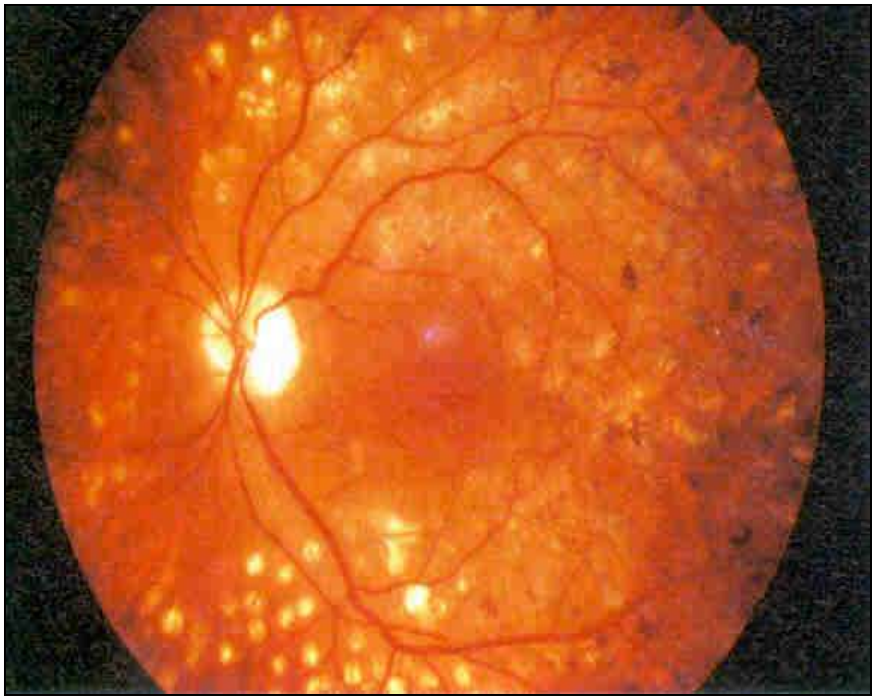
Laser Photocoagulation Therapy - effect

- Not for visual rehabilitation
- Visual quality may be affected :
  - ❖ Problem in differentiating colours
  - ❖ Constricted visual field
  - ❖ Difficulty seeing in darkened surroundings
  - ❖ Scintillations (kilatan dalam mata)

Post-Laser Therapy (PRP)

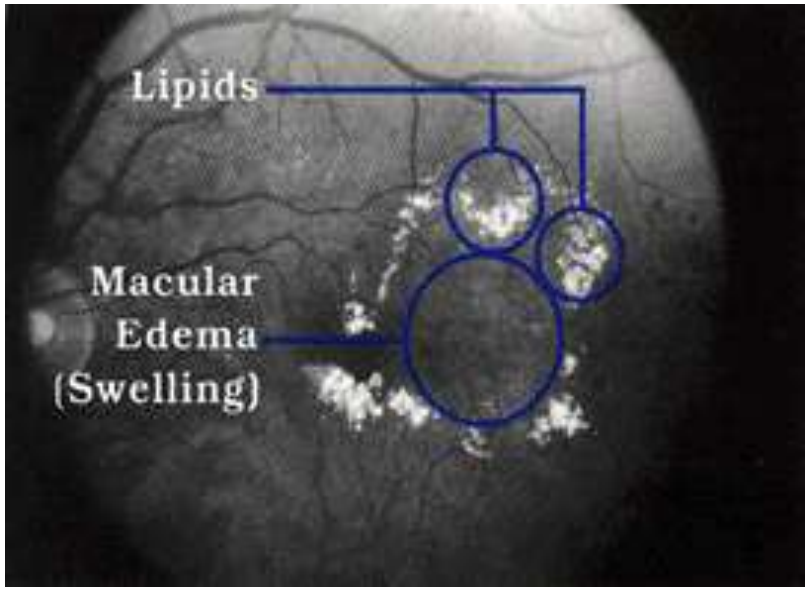
Before

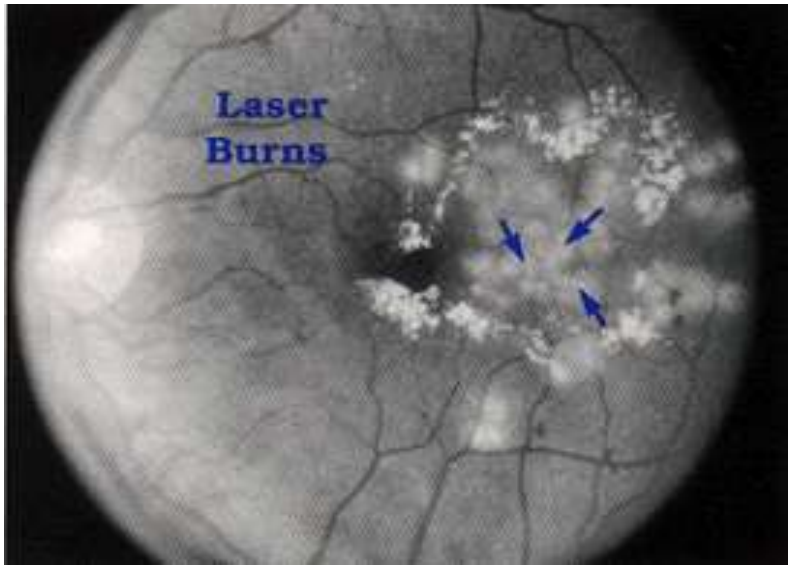




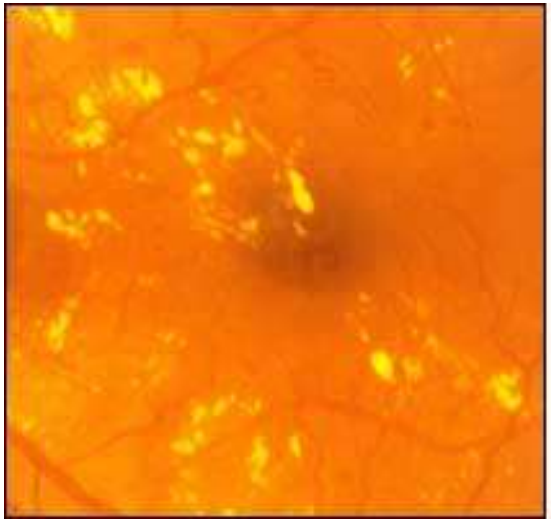
After

Post focal laser-CSME





Before



After

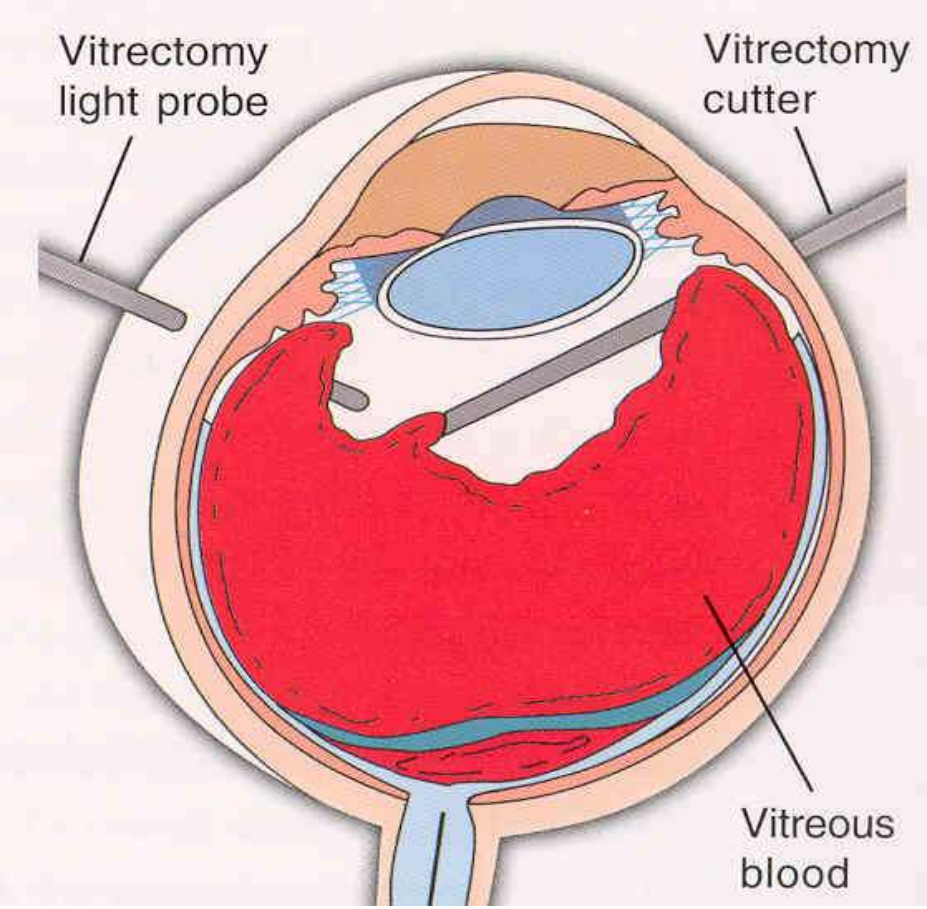
SURGICAL TREATMENT

Trans Pars Plana Vitrectomy

Indications:

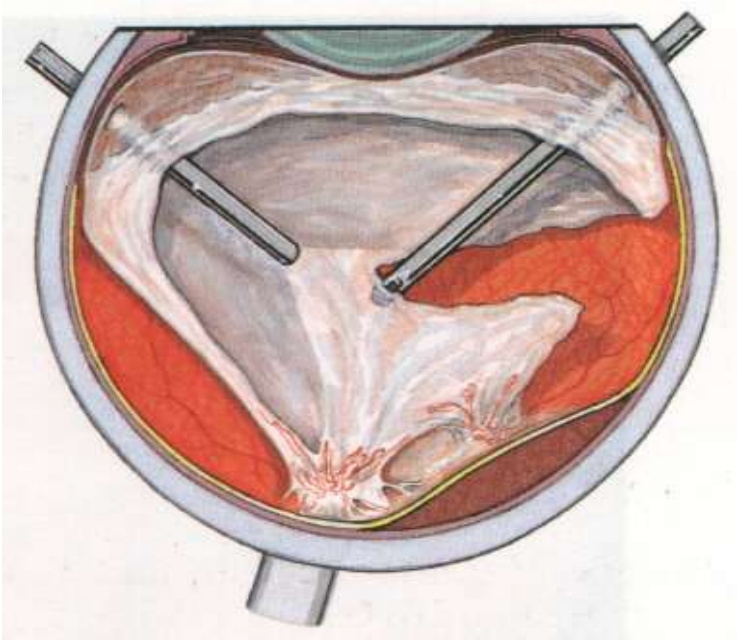
1.vitreous hemorrhage

2.retinal detachment

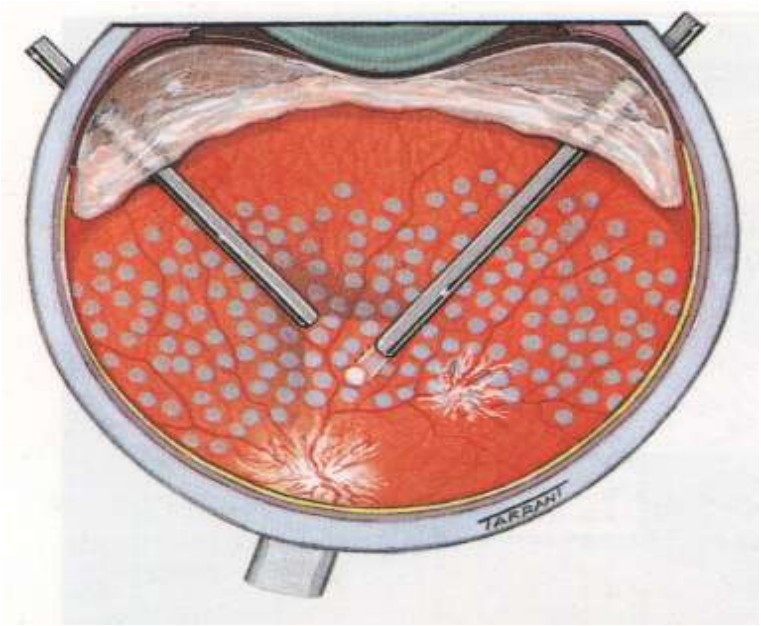


SURGICAL TREATMENT

Vitrectomy and membrane peeling



Endolaser



BEWARE !!!

Untreated Diabetic retinopathy can cause permanent blindness

Prevent blindness

- *Everyone's responsibility !*


Time for a check-up...
KLCC...
H
KM

Look into the eyes…


Save Your Patients' Sight


Thank you