KAROLÍNA SKORKOVSKÁ

VISUAL LOSS

- CENTRAL RETINAL ARTERY OCCLUSION
- CENTRAL RETINAL VEIN OCCLUSION
- RETINAL DETACHMENT
- VITREOUS HAEMORRHAGE
- OPTIC NEURITIS
- AION

VISUAL LOSS - PATIENT´S HISTORY

- UNILATERAL / BILATERAL
- SUDDEN / SLOWLY PROGRESSIVE
- PAIN
- COMPLAINTS (FOGGY VISION, FLOATERS, CURTAIN…)
- OTHER SYMPTOMS (FEVER, WEIGHT LOSS, REFRACTIVE CHANGE, …)

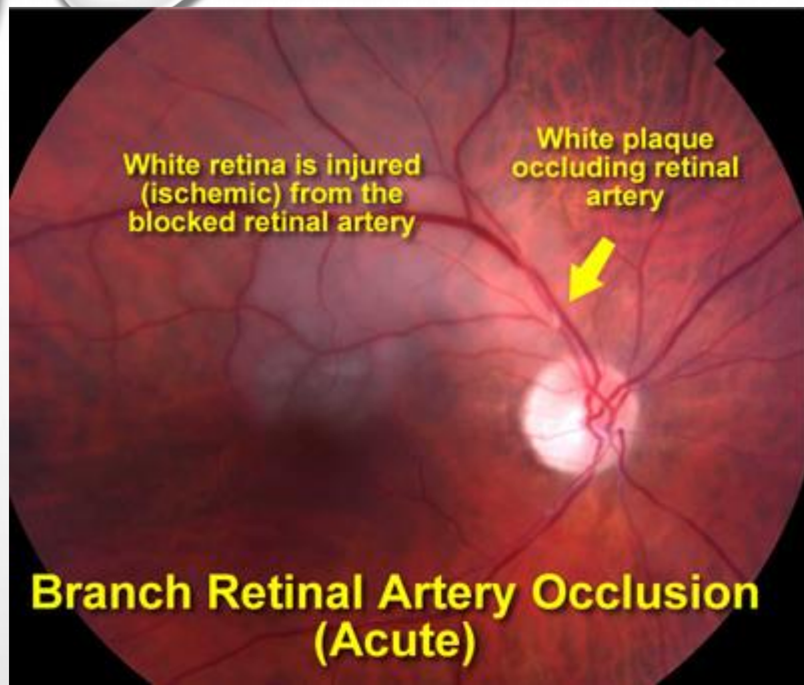
CATARACT

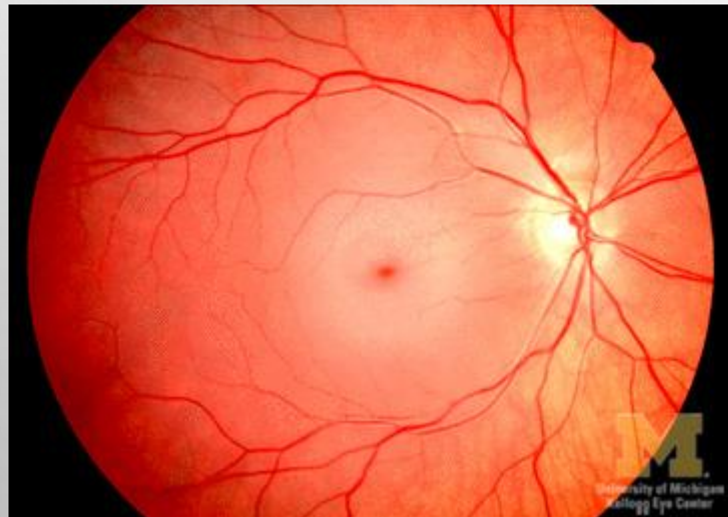
- SLOWLY PROGRESSIVE VISUAL LOSS
- FOGGY VISION
- CHANGE IN REFRACTIVE ERROR (INDEX MYOPIA)
- CATARACT VISIBLE ON SLIT LAMP
- THERAPY: CATARACT EXTRACTION

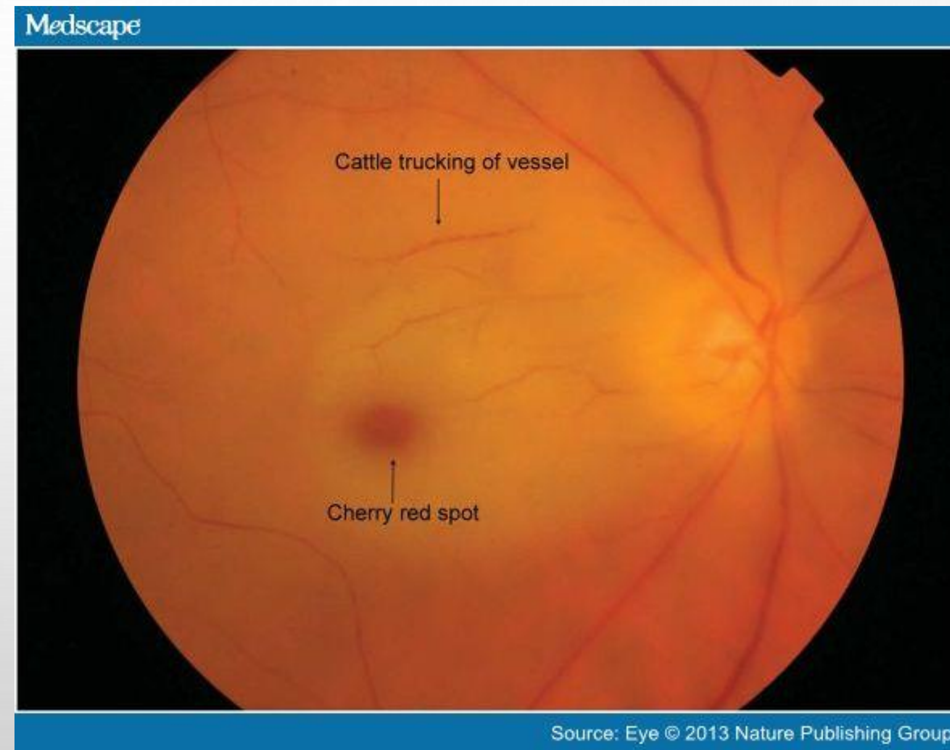
RETINAL ARTERY OCCLUSION

- SUDDEN, UNILATERAL, PAINLESS LOSS OF VISION
- VISUAL ACUITY MAY BE „NO LIGHT PERCEPTION“
- BRANCH / CENTRAL RETINAL ARTERY OCCLUSION
- RETINAL ISCHEMIA WITH CHERRY RED SPOT
- IMPORTANT IS THE TIME PERIOD FROM THE EVENT
- THERAPY IS REASONABLE IF THE PATIENT IS TREATED WITHIN THE FIRST 6 HOURS

Retinal Artery Occlusion


White retina is injured (ischemic) from the blocked retinal artery
White plaque occluding retinal artery
Branch Retinal Artery Occlusion (Acute)




Medscape
Cattle trucking of vessel
Cherry red spot
Source: Eye © 2013 Nature Publishing Group

RETINAL ARTERY OCCLUSION - COMPLICATIONS

- POOR PROGNOSIS
- PERMANENT LOSS OF VISION
- OPTIC DISC ATROPHY
- NEOVASCULARISATION GLAUCOMA

RETINAL ARTERY OCCLUSION - THERAPY

- LOWERING OF INTRAOCULAR PRESSURE
- RETROBULBAR INJECTION OF VASODILATORS
- PARACENTHESIS
- SYSTEMIC TROMBOLYSIS (DEPARTMENT OF INTERNAL MEDICINE)
- CHECK-UP OF RISK FACTORS OF ISCHEMIA / TROMBOSIS

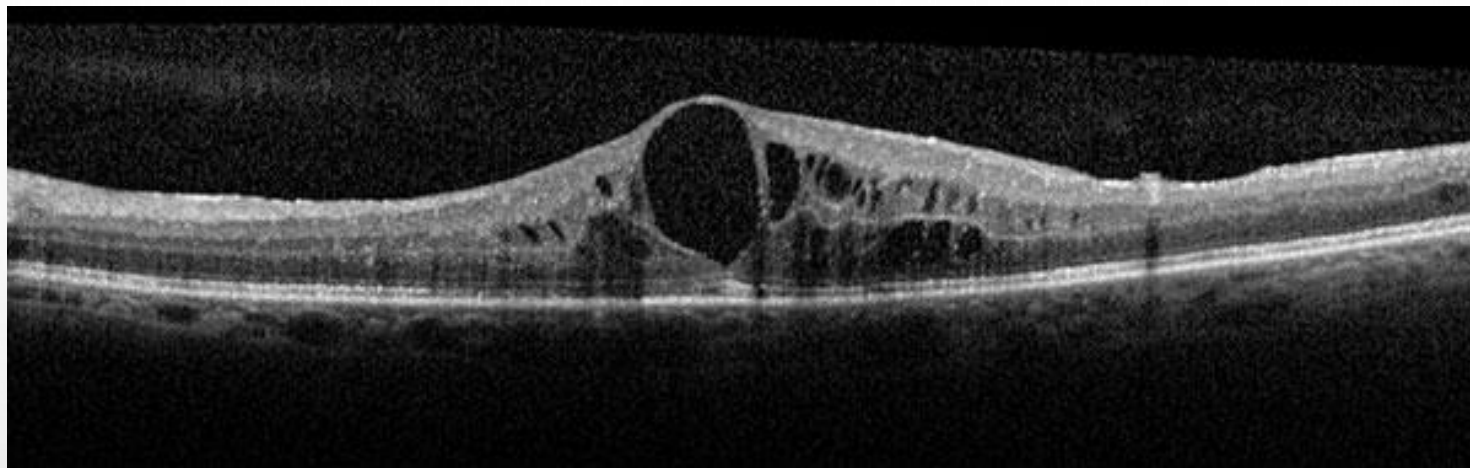
RETINAL VEIN OCCLUSION

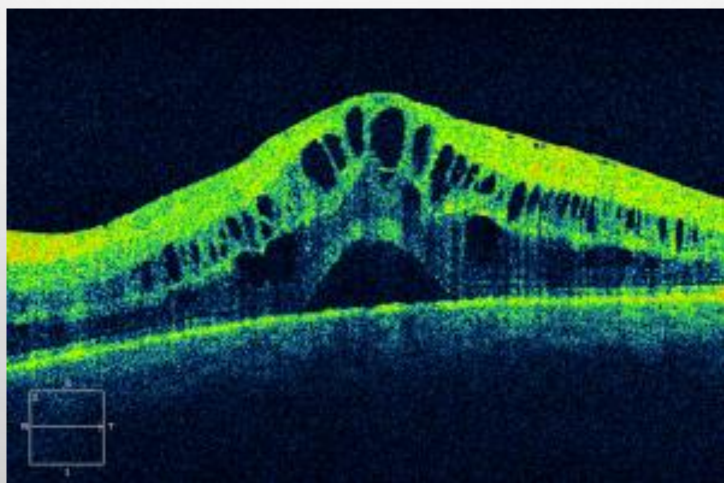
- SUDDEN, PAINLESS, UNILATERAL VISUAL LOSS
- VISUAL ACUITY USUALLY NOT AS MUCH AFFECTED AS IN CRAO
- BRANCH / CENTRAL RETINAL VEIN OCCLUSION
- OFTEN CARDIOVASCULAR RISK FACTORS (HYPERTENSION, DIABETES, HYPERLIPIDEMIA, ISCHEMIC HEART DISEASE,…)
- RETINAL HAEMORHAGES, OPTIC NERVE HEAD OEDEMA, RETINAL SWELLING

Edward S. Harkness Eye Institute
Columbia University

RETINAL VEIN OCCLUSION - COMPLICATIONS

- MACULAR OEDEMA
- NEOVASCULARISATIONS (RETINA, ANTERIOR CHAMBER ANGLE)
- SECONDARY GLAUCOMA





RETINAL VEIN OCCLUSION - THERAPY

- LASER PHOTOCOAGULATION
- ANTI-VEGF (INTRAVITREAL APPLICATION)
- TREATMENT OF SECONDARY GLAUCOMA
- BETTER CONTROL OF CARDIOVASCULAR RISK FACTORS

NEOVASCULAR GLAUCOMA

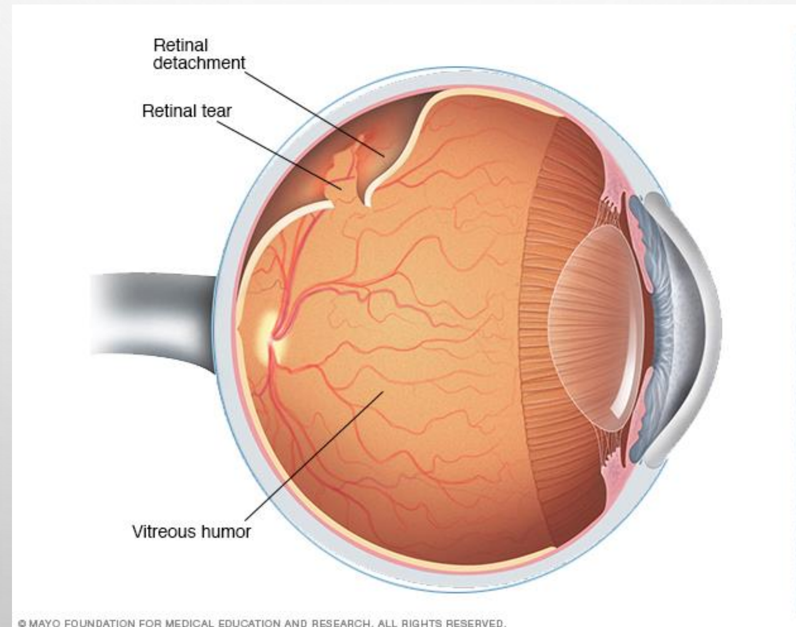
- ANTERIOR CHAMBER ANGLE IS CLOSED BY A FOBROVASCULAR MEMBRANE
- SECONDARY ANGLE CLOSURE GLAUCOMA
- OFTEN IS PAINFUL
- TREATMENT – ANTIGLAUCOMA MEDICATION, ANTI-VEGF, CYCLODESTRUCTION,…

RETINAL DETACHMENT

- UNILATERAL, SUDDEN AND PAINLESS LOSS OF VISION
- HISTORY: FLOATERS, FLASHES OF LIGHT (PHOTOPSIA), BLACK CURTAIN
- OPHTHALMOSCOPY REVEALS DETEACHED RETINA AND RETINAL BREAK
- EMERGENCY – SHOULD BE OPERATED SOON

RETINAL DETACHMENT

- SEPARATION OF THE NEUROSENSORY RETINA FROM THE PIGMENTED EPITHELIUM



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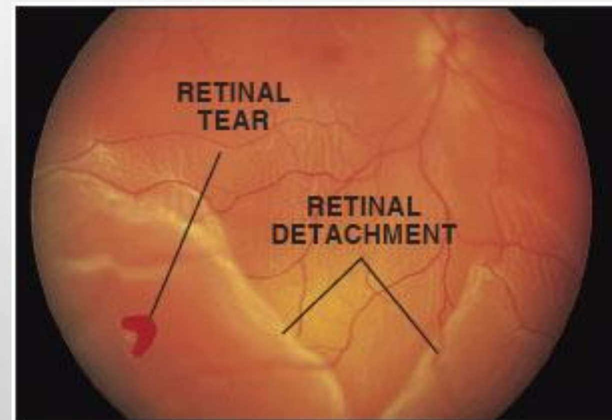
RETINAL DETACHMENT - CLASSIFICATION

- RHEGMATOGENOUS (PRIMARY)
- TRACTIONAL
- EXUDATIVE

RHEGMATOGENOUS RETINAL DETACHMENT

- USUALLY ASSOCIATED WITH RETINAL BREAK THROUGH WHICH SUB-RETINAL FLUID SEEPS AND SEPARATES THE SENSORY RETINA FROM THE PIGMENTARY EPITHELIUM



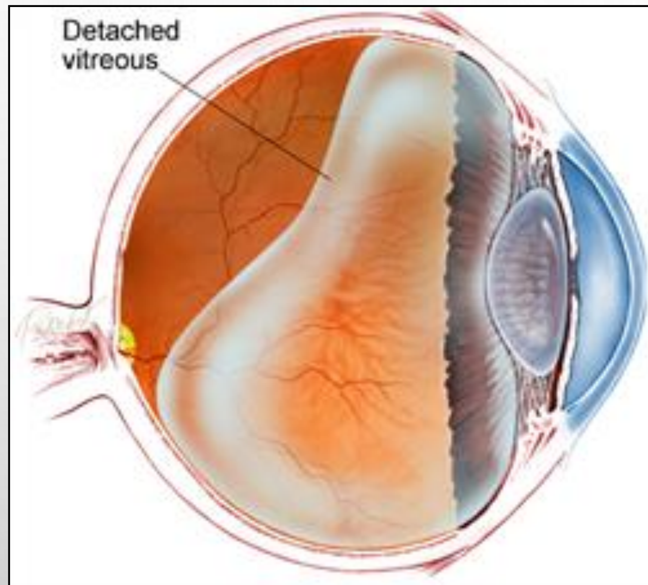
RETINAL DETACHMENT - PATHOPHYSIOLOGY

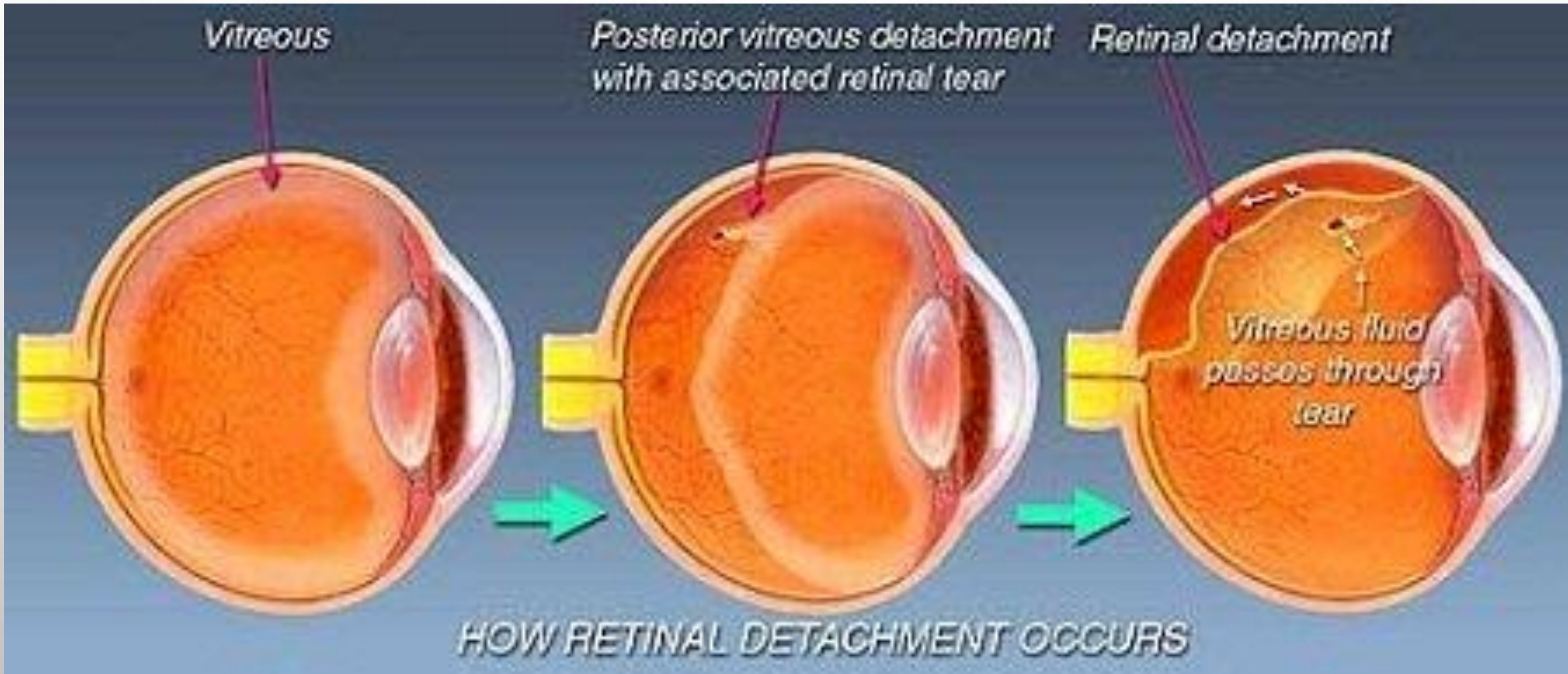
- USUALLY, THE VITREOUS MOVES AWAY FROM THE RETINA WITHOUT CAUSING PROBLEMS
- BUT SOMETIMES THE VITREOUS PULLS HARD ENOUGH TO TEAR THE RETINA IN ONE OR MORE PLACES
- FLUID MAY PASS THROUGH A RETINAL TEAR, LIFTING THE RETINA OFF THE BACK OF THE EYE — MUCH AS WALLPAPER CAN PEEL OFF A WALL
- THE RETINA DOES NOT WORK WHEN IT IS DETACHED AND VISION BECOMES BLURRY

RHEGMATOGENOUS RETINAL DETACHMENT

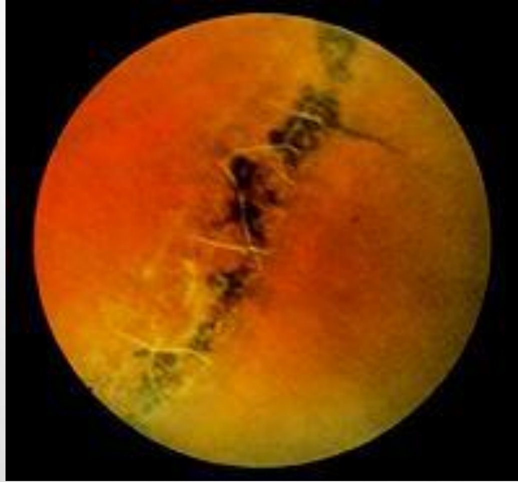
- RISK FACTORS:
  - AGE (40-60)
  - MYOPIA
  - APHAKIA
  - PREVIOUS CATARACT, GLAUCOMA OR OTHER EYE SURGERY
  - RETINAL DEGENERATION
  - TRAUMA
  - SENILE POSTERIOR VITREOUS DETACHMENT
  - FAMILY HISTORY OF RETINAL DETACHMENT

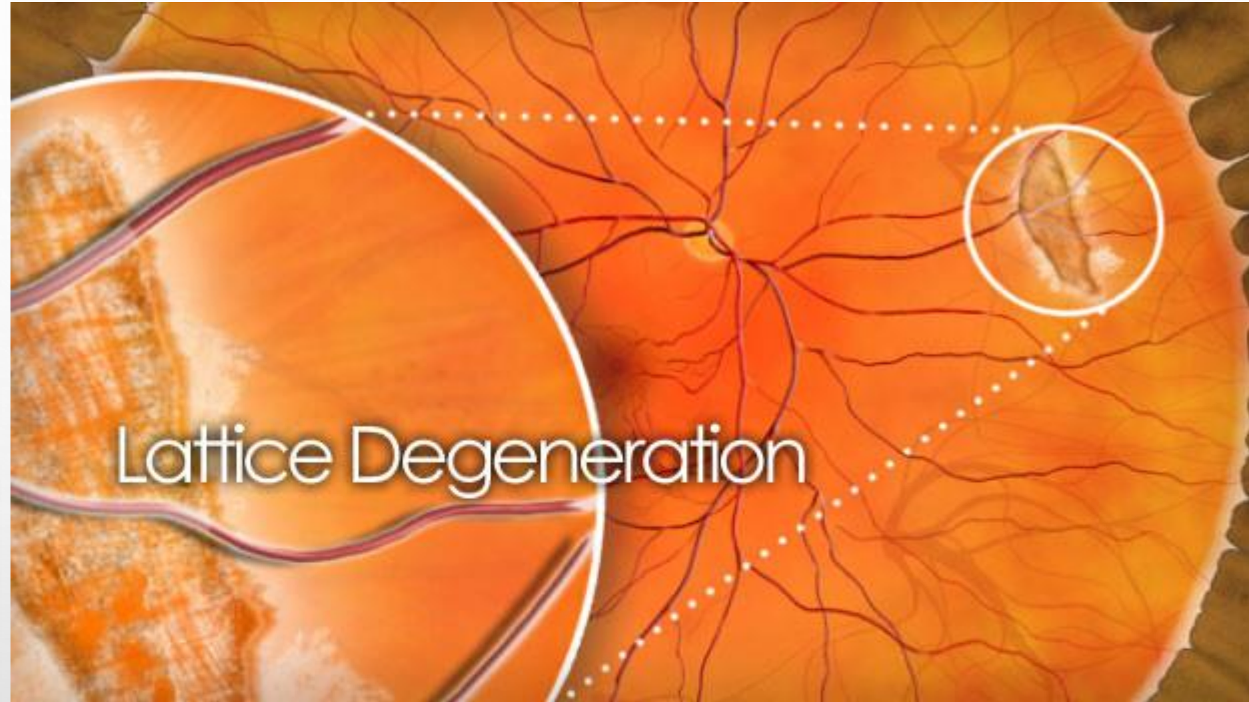
POSTERIOR VITREOUS DETACHMENT





Vitreous
Posterior vitreous detachment
with associated retinal tear
Retinal detachment
Vitreous fluid
passes through
tear
HOW RETINAL DETACHMENT OCCURS




Lattice Degeneration

RETINAL DETACHMENT - SYMPTOMS

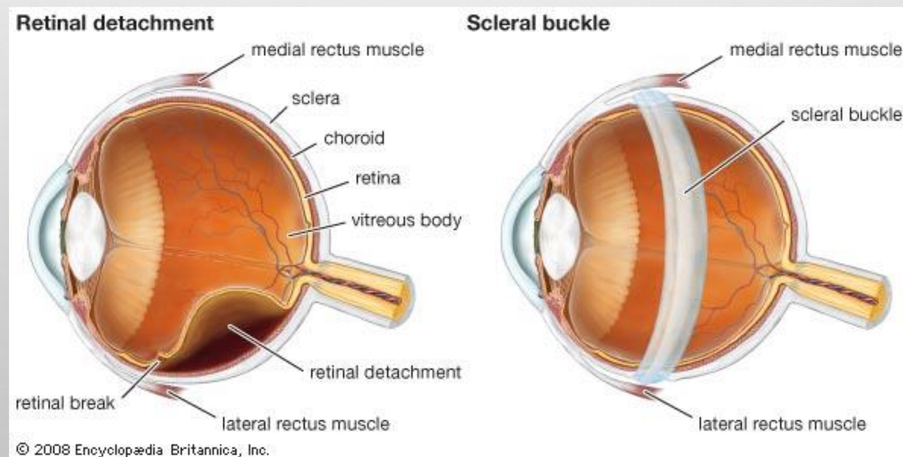
- A SUDDEN INCREASE IN SIZE AND NUMBER OF FLOATERS, INDICATING A RETINAL TEAR MAY BE OCCURRING
- A SUDDEN APPEARANCE OF FLASHES, WHICH COULD BE THE FIRST STAGE OF A RETINAL TEAR OR DETACHMENT
- HAVING A SHADOW APPEAR IN THE PERIPHERY (SIDE) OF THE FIELD OF VISION
- SEEING A GRAY CURTAIN MOVING ACROSS THE FIELD OF VISION
- A SUDDEN DECREASE IN VISION

RETINAL DETACHMENT - TREATMENT

- SEALING OF RETINAL BREAKS BY CRYOCOAGULATION, PHOTOCOAGULATION OR DIATHERMY

RETINAL DETACHMENT - TREATMENT

- **SCLERAL BUCKLE** - PLACING A FLEXIBLE BAND (SCLERAL BUCKLE) AROUND THE EYE TO COUNTERACT THE FORCE PULLING THE RETINA OUT OF PLACE. THE OPHTHALMOLOGIST OFTEN DRAINS THE FLUID UNDER THE DETACHED RETINA, ALLOWING THE RETINA TO SETTLE BACK INTO ITS NORMAL POSITION AGAINST THE BACK WALL OF THE EYE

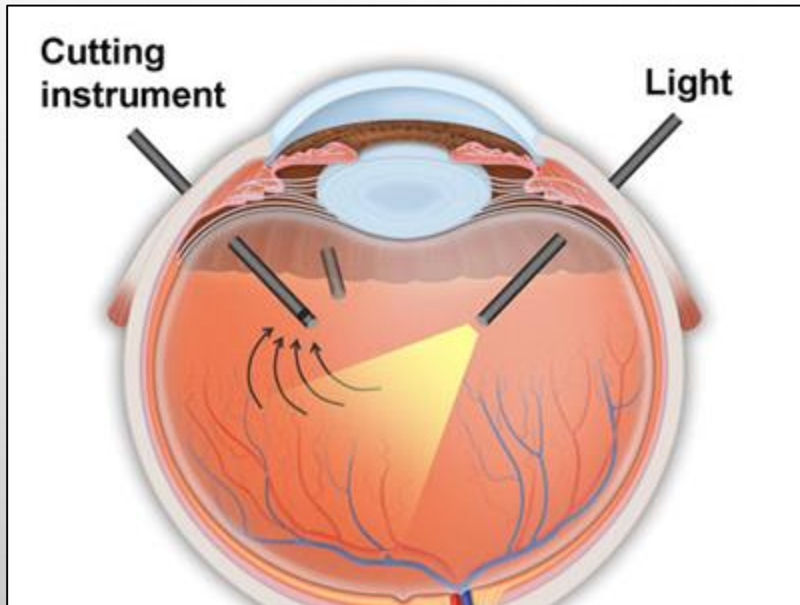


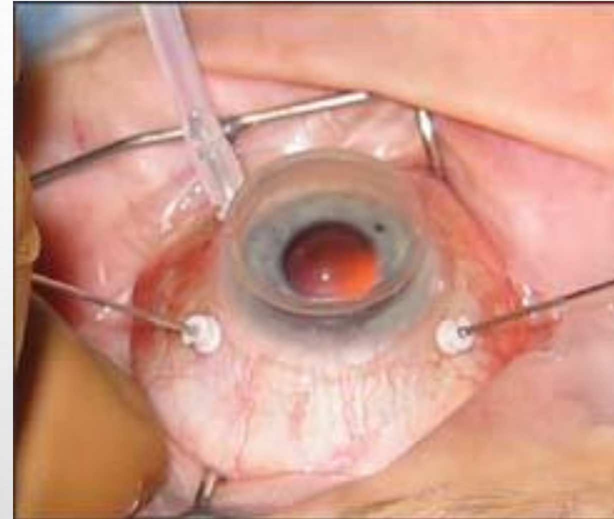
RETINAL DETACHMENT - TREATMENT

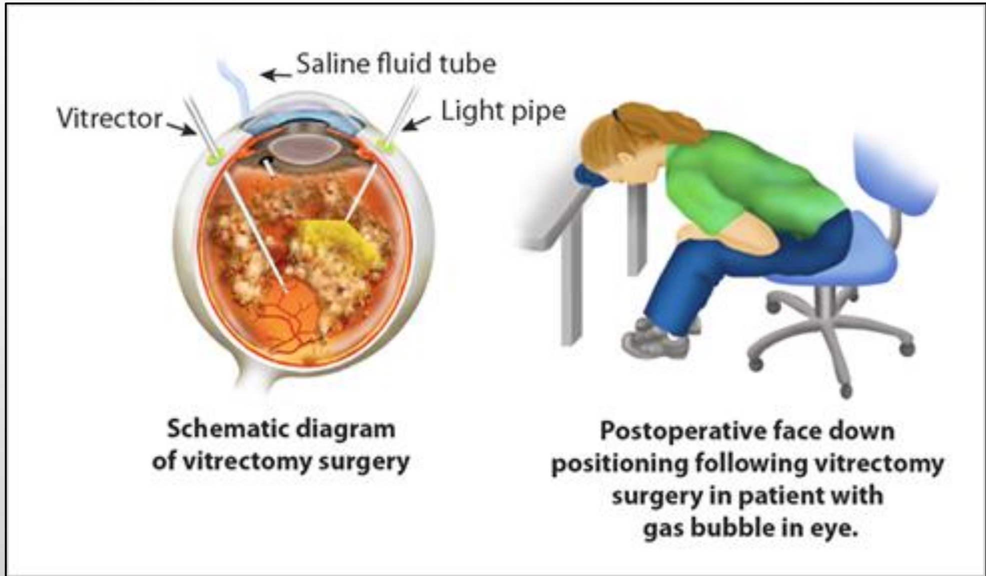
- **PARS PLANA VITRECTOMY** - THE VITREOUS GEL, WHICH IS PULLING ON THE RETINA, IS REMOVED FROM THE EYE AND USUALLY REPLACED WITH A GAS OR OIL BUBBLE
- SOMETIMES VITRECTOMY IS COMBINED WITH A SCLERAL BUCKLE
- IF A GAS BUBBLE WAS PLACED IN THE EYE, IT IS RECOMMENDED TO KEEP THE HEAD IN SPECIAL POSITIONS FOR A TIME, NOT TO FLY IN AN AIRPLANE OR TRAVEL AT HIGH ALTITUDES UNTIL THE GAS BUBBLE IS GONE. A RAPID INCREASE IN ALTITUDE CAN CAUSE A DANGEROUS RISE IN EYE PRESSURE. WITH AN OIL BUBBLE, IT IS SAFE TO FLY ON AN AIRPLANE

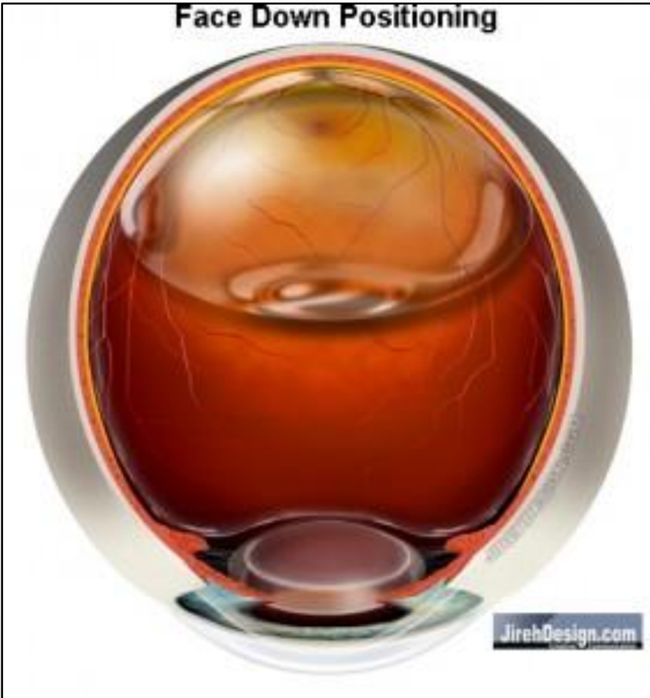
- Three port pars plana vitrectomy

PPV (VITRECTOMY)






Saline fluid tube
Vitrector
Light pipe
Schematic diagram
of vitrectomy surgery
Postoperative face down
positioning following vitrectomy
surgery in patient with
gas bubble in eye.


Face Down Positioning
JirehDesign.com

RETINAL DETACHMENT - PROGNOSIS

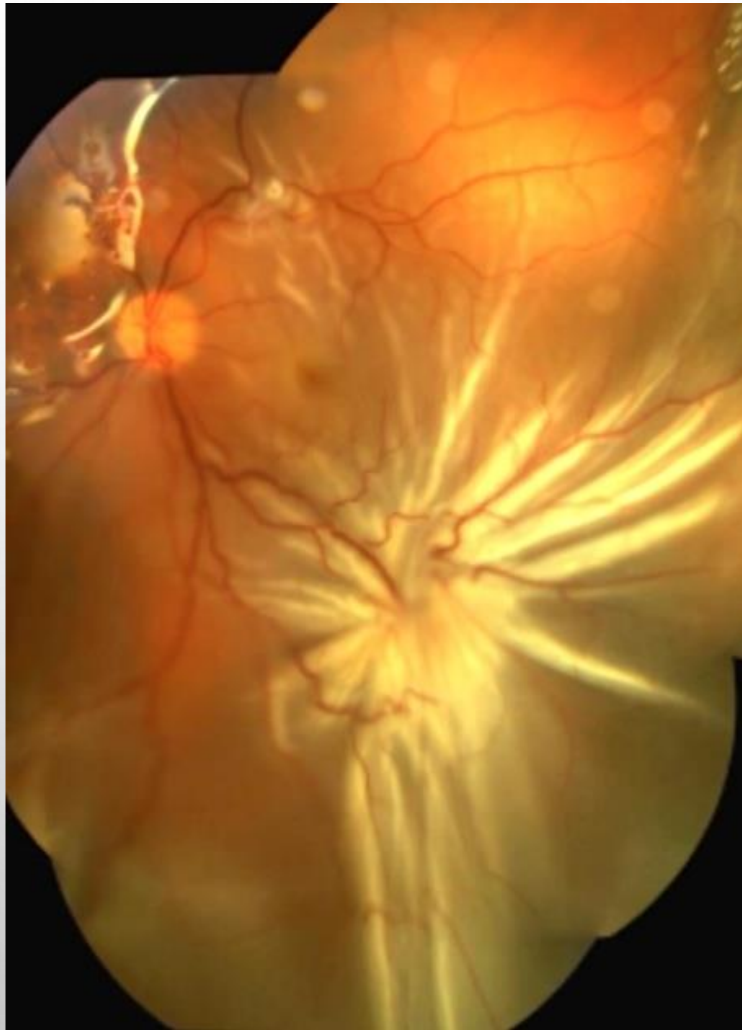
- MOST RETINAL DETACHMENT SURGERIES (80 TO 90 PERCENT) ARE SUCCESSFUL, ALTHOUGH A SECOND OPERATION IS SOMETIMES NEEDED
- SOME RETINAL DETACHMENTS CANNOT BE FIXED. THE DEVELOPMENT OF SCAR TISSUE IS THE USUAL REASON THAT A RETINA IS NOT ABLE TO BE FIXED. IF THE RETINA CANNOT BE REATTACHED, THE EYE WILL CONTINUE TO LOSE SIGHT AND ULTIMATELY BECOME BLIND
- AFTER SUCCESSFUL SURGERY FOR RETINAL DETACHMENT, VISION MAY TAKE MANY MONTHS TO IMPROVE AND, IN SOME CASES, MAY NEVER RETURN FULLY. UNFORTUNATELY, SOME PATIENTS DO NOT RECOVER ANY VISION.

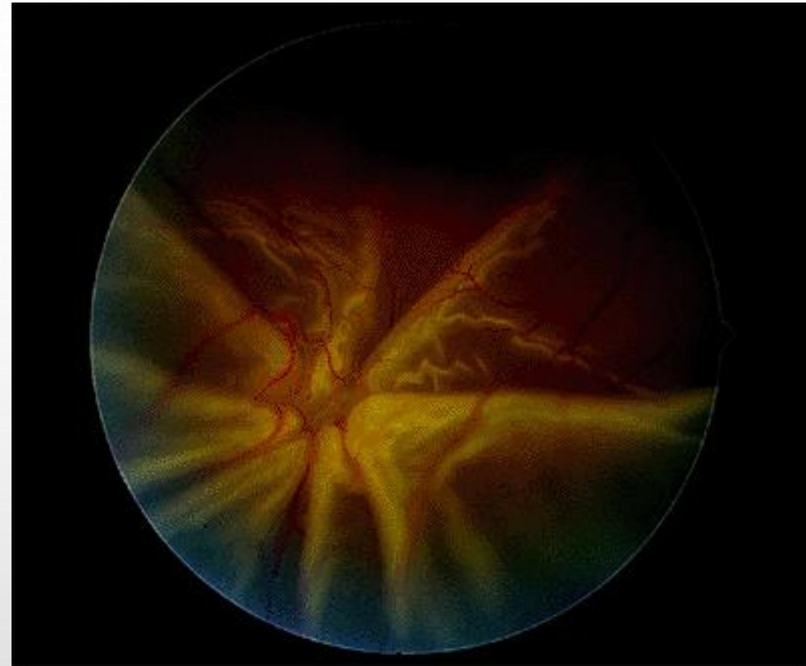
RD – COMPLICATIONS

- PROLIFERATIVE VITREORETINOPATHY
- COMPLICATED CATARACT
- UVEITIS
- PHTHESIS BULBI

PROLIFERATIVE VITREORETINOPATHY

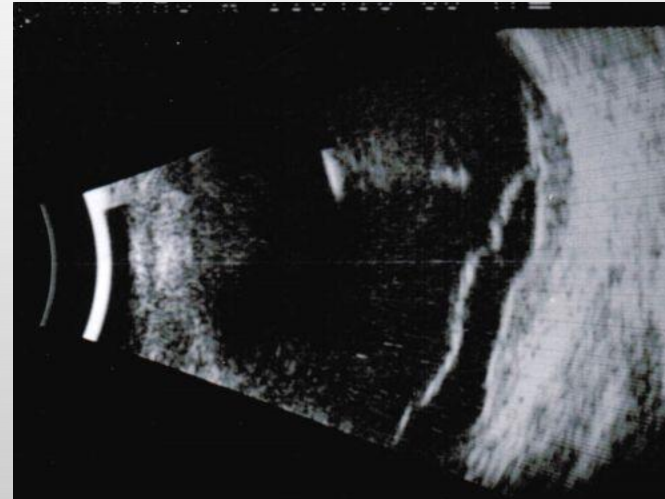
- OCCURS IN 10% OF ALL RDD
- MOST COMMON CAUSE OF FAILURE OF THE DETACHMENT SURGERY
- RISK FACTOR: EXTENSIVE RD, APHAKIA, PREOPERATIVE PVR, UVEITIS, EXCESSIVE CRYOTHERAPY, VITREOUS HAEMORRHAGE





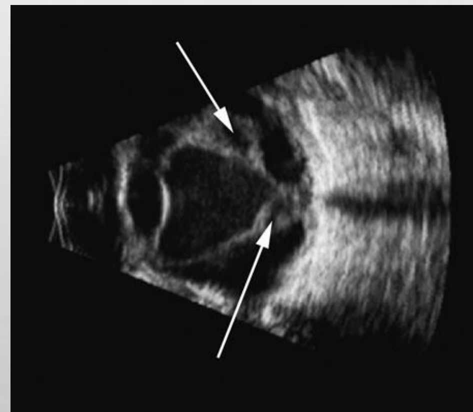
EXUDATIVE RETINAL DETACHMENT

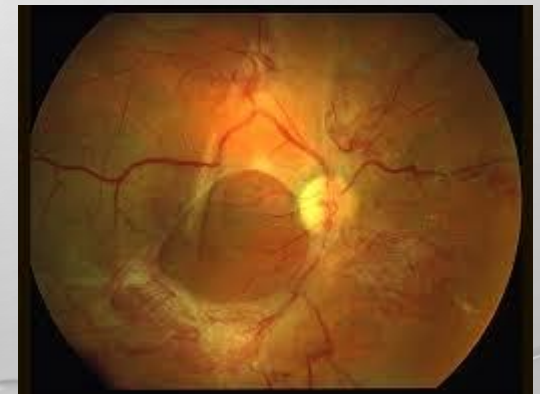
- OCCURS DUE TO RETINA BEING PUSHED AWAY BY A NEOPLASM OR ACCUMULATION OF FLUID BENEATH THE RETINA FOLLOWING INFLAMMATORY OR VASCULAR LESIONS
- E.G. MELANOMA OF THE CHOROID, VASCULAR DISEASES, INFLAMMATION
- TREATMENT OF THE UNDERLYING CAUSE



TRACTIONAL RETINAL DETACHMENT

- OCCURS DUE TO THE RETINA BEING MECHANICALLY PULLED AWAY FROM ITS BED BY THE CONTRACTION OF THE FIBROUS TISSUE IN THE VITREOUS (TRACTION BANDS)
- E.G. PROLIFERATIVE DIABETIC RETINOPATHY, FOLLOWING PENETRATING INJURY, RETINAPATHY OF PREMATURITY, …
- CHARACTERISTIC TRUNCATED CONE PATTERN, WITH THE APEX OF THE CONE ATTACHED AT THE OPTIC NERVE
- TREATMENT: PPV
- PROGNOSIS IS NOT GOOD



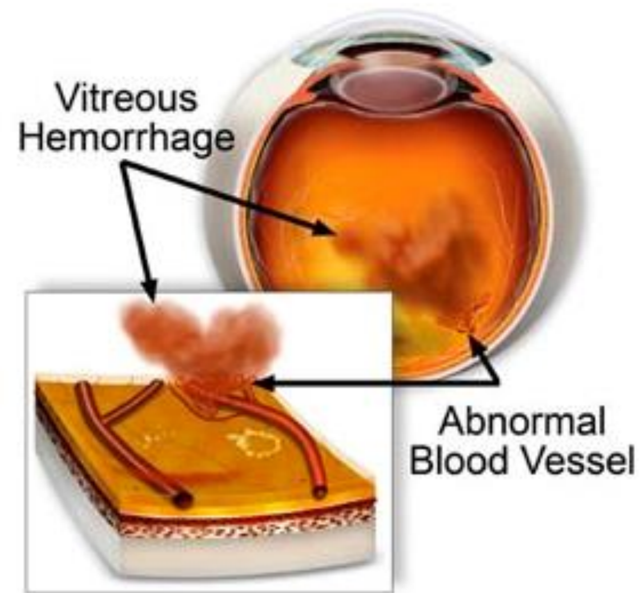


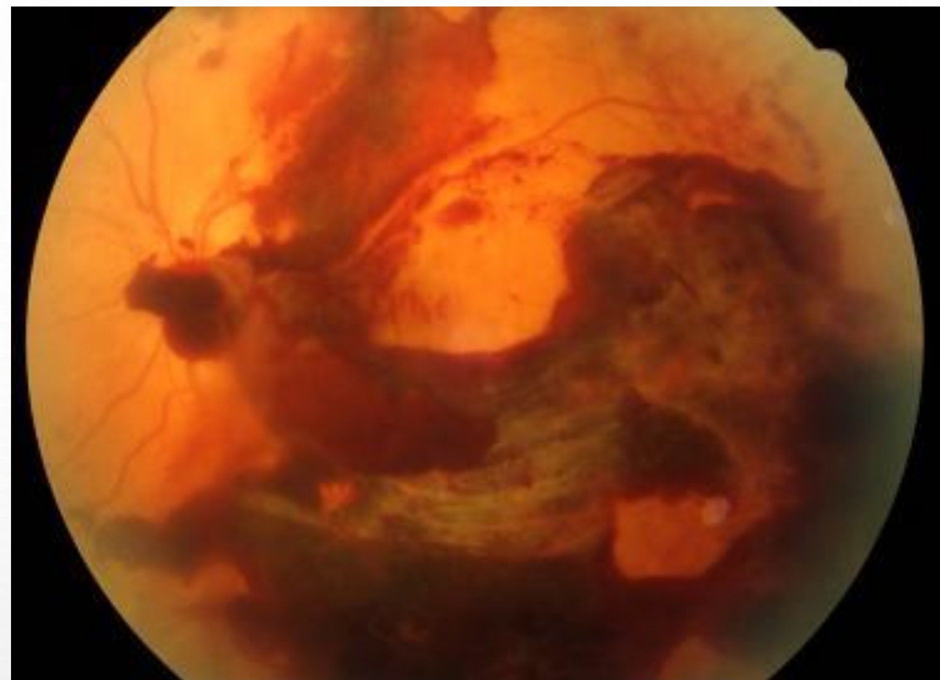
VITREOUS HEMORRHAGE – ETIOLOGY

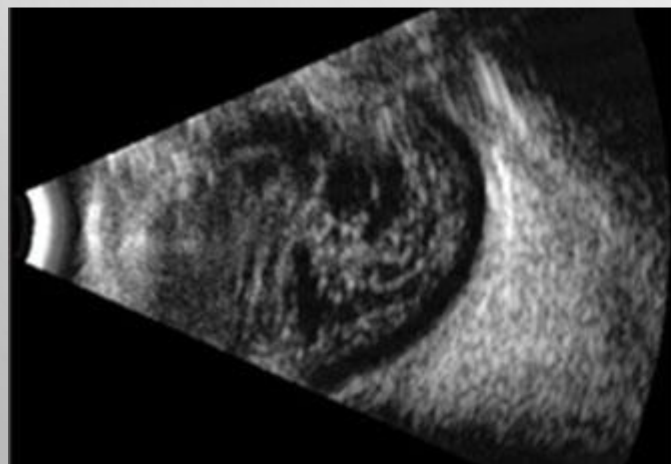
- PROLIFERATIVE DIABETIC RETINOPATHY
- POSTERIOR VITREOUS DETACHMENT
- OCULAR TRAUMA
- RETINAL VEIN OCCLUSION
- RETINAL MACROANEURYSM
- NEOVASCULAR AGE-RELATED MACULAR DEGENERATION
- SYSTEMIC ANTICOAGULATION THERAPY…

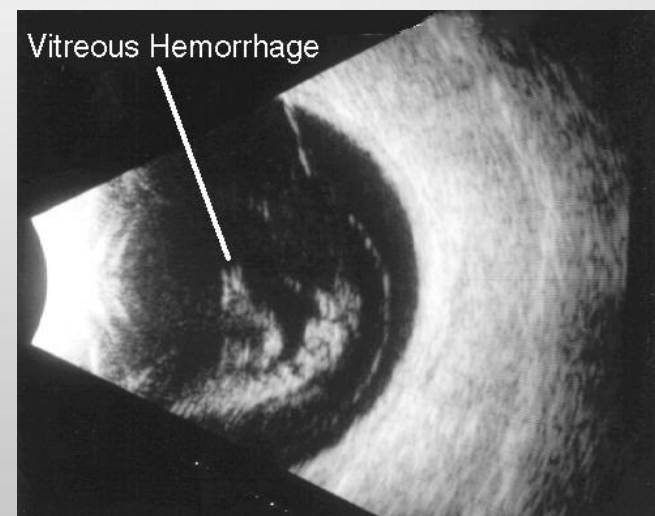
VITREOUS HEMORRHAGE - SYMTPOMS

- SUDDEN, PAINLESS VISUAL LOSS OR HAZE
- PATIENTS MAY DESCRIBE A RED HUE TO THEIR VISION
- PATIENTS MAY DESCRIBE NEW ONSET FLOATERS, SHADOWS, OR "COBWEBS„
- HISTORY OF DIABETES, HYPERTENSION, SICKLE CELL DISEASE, TRAUMA, PREVIOUS RETINAL CONDITIONS OR OCULAR SURGERY MAY HELP LEAD TO THE DIAGNOSIS


Proliferative Diabetic Retinopathy
Vitreous Hemorrhage
Abnormal Blood Vessel






Vitreous Hemorrhage

VITREOUS HEMORRHAGE - THERAPY

- TREAT THE UNDERLYING ETIOLOGY AS SOON AS POSSIBLE (PANRETINAL PHOTOCOAGULATION, CRYOPEXY ETC.)
- MINIMIZE STRENUOUS ACTIVITY
- HAEMOSTATIC AGENTS (DICYNONE INJECTIONS)
- INTRAVITREAL ANTI – VEGF
- PARS PLANA VITRECTOMY

OPTIC NEURITIS

- AUTOIMMUNE INFLAMMATION OF THE OPTIC NERVE
- IDIOPATHIC (POSTINFECTIOUS)
- MULTIPLE SCLEROSIS
- OTHER SYSTEMIS DISEASE (RARE) = ATYPICAL NEURITIS

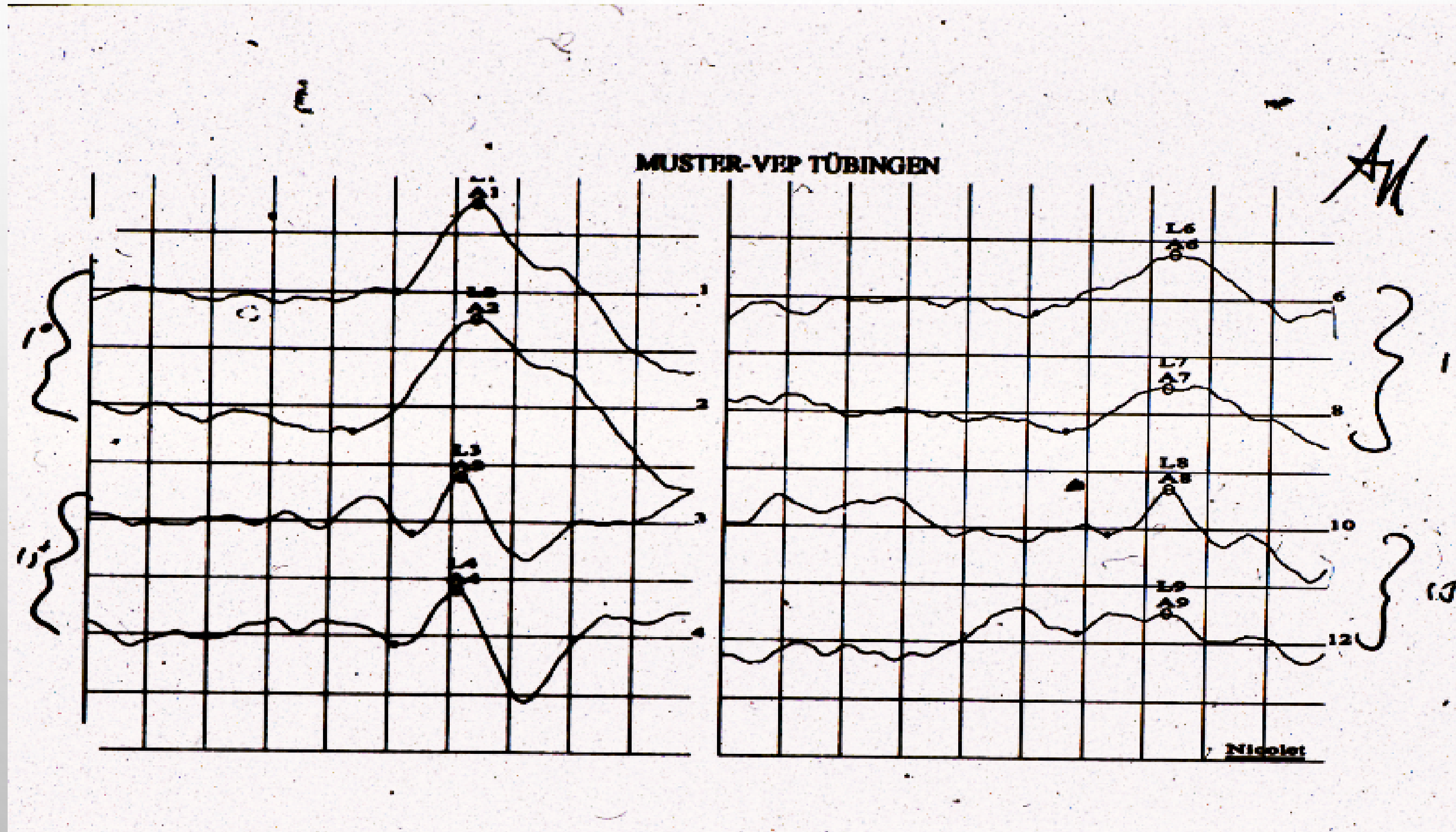
OPTIC NEURITIS - CHARACTERISTICS

- UNILATERAL
- ACUTE
- PATIENTS´ AGE: 18-45 YEARS
- PAINFUL EYE MOVEMENT
- CENTRAL SCOTOMA OR NERVE FIBER LAYER VISUAL FIELD DEFECT
- OPTIC NERVE HEAD NORMAL OR SWOLLEN
- TENDENCY TO RECOVER

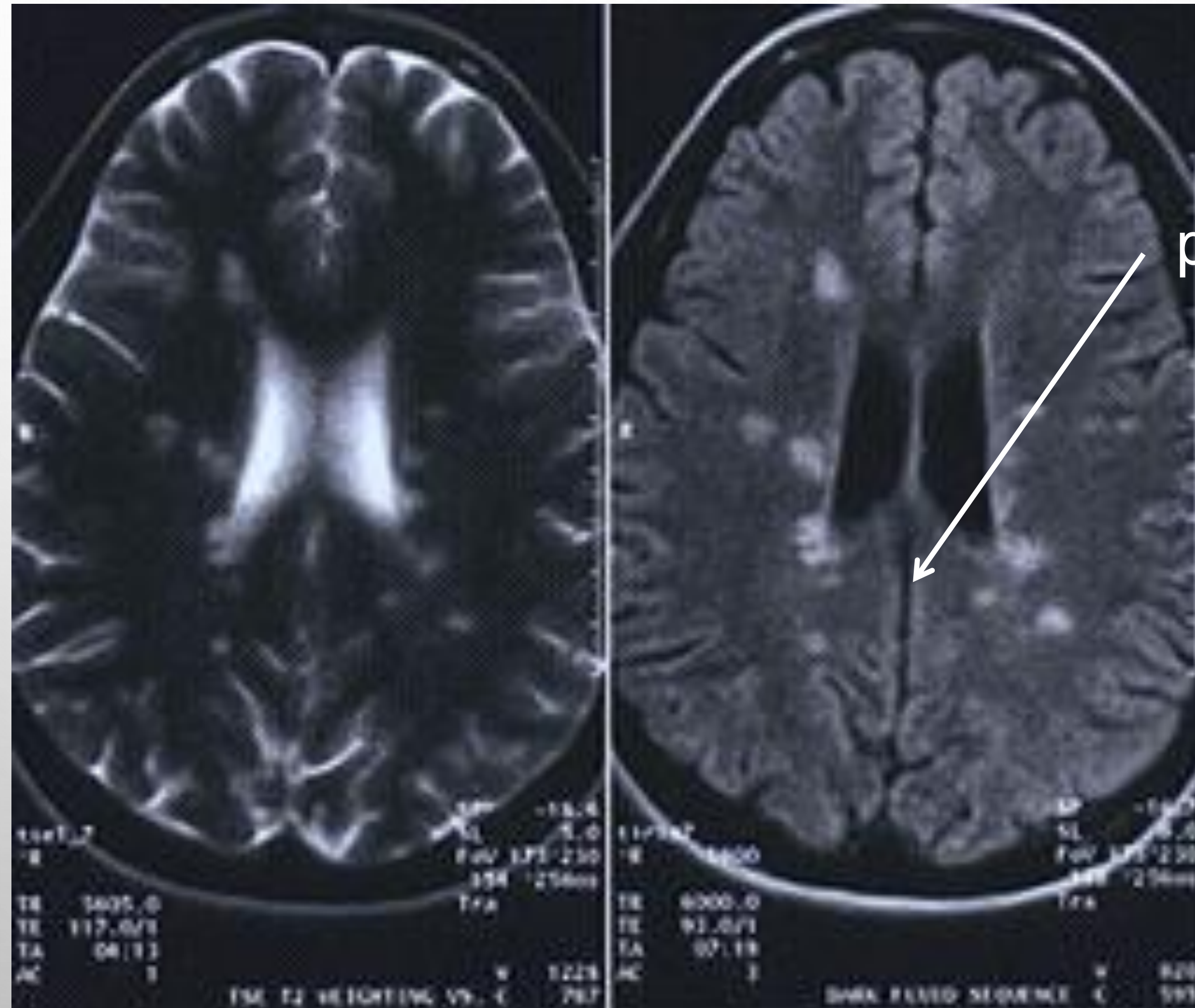
OPTIC NEURITIS - DIAGNOSIS

- CLINICAL EXAMINATION (VISUAL ACUITY, VISUAL FIELD, PUPIL…)
- VEP (VISUAL EVOKED POTENTIALS)
- MR
- LABORATORY (ONLY IN ATYPICAL NEURITIS)
- NEUROLOGICAL EXAMINATION

OPTIC NEURITIS - VEP



OPTIC NEURITIS – MR



plaque

OPTIC NEURITIS - TREATMENT

- SPONTANEOUS TENDENCY TO RECOVER
- TREATMENT ACCELERATES IMPROVEMENT AND DECREASES THE RISK OF RECURRENCE
- STEROID MEGADOSIS: 3 X 1000 MG METHYLPREDNISOLON I.V.
- 2 WEEKS PREDNISON ORALLY WITH TAPERING OF THE DOSIS
- IN ATYPICAL NNO ANTIBIOTICS OR ANTIVIROTIKA ACCORDING TO THE ORIGIN

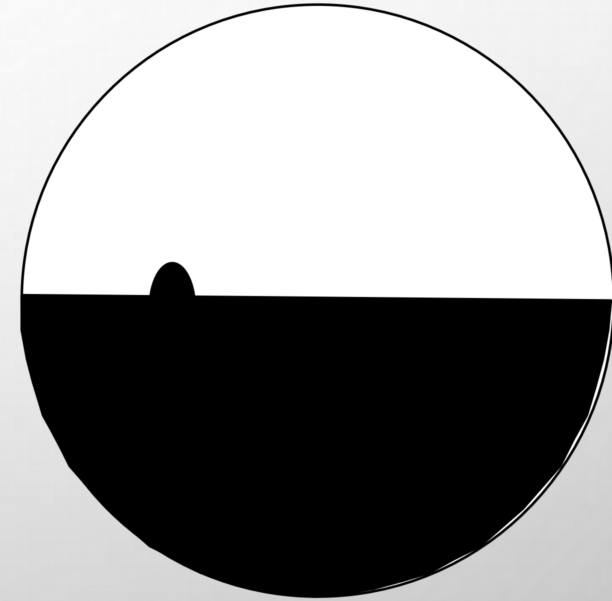
AION

- ANTERIOR ISCHEMIC OPTIC NEUROPATHY
- SUDDEN, PAINLESS DETERIORATION OF VISION
- OPTIC NERVE HEAD SWELLING
- NERVE FIBER LAYER VF DEFECT
- PATIENTS > 50 YEARS

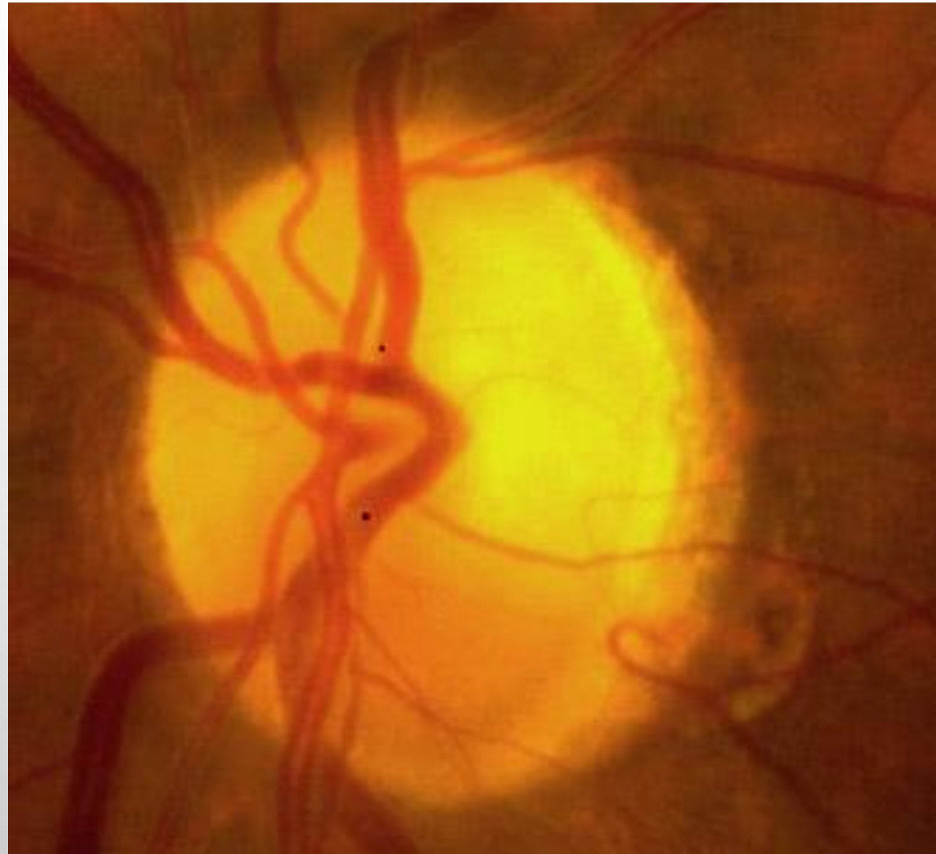
A) NON-ARTERITIC AION

B) ARTERIITIS TEMPORALIS

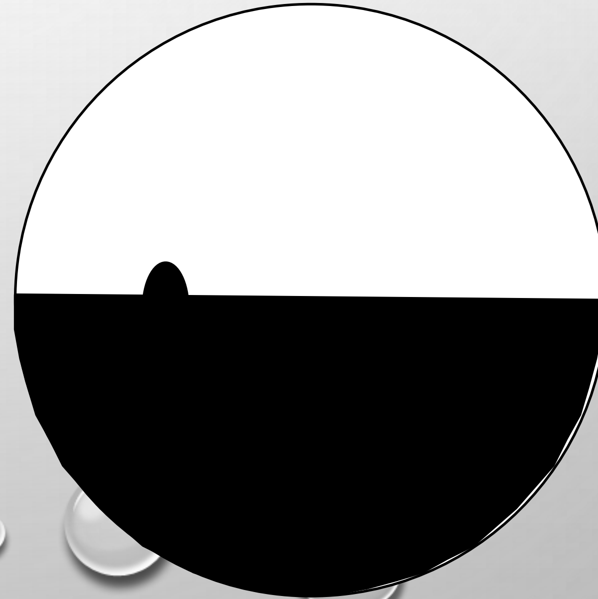
AION



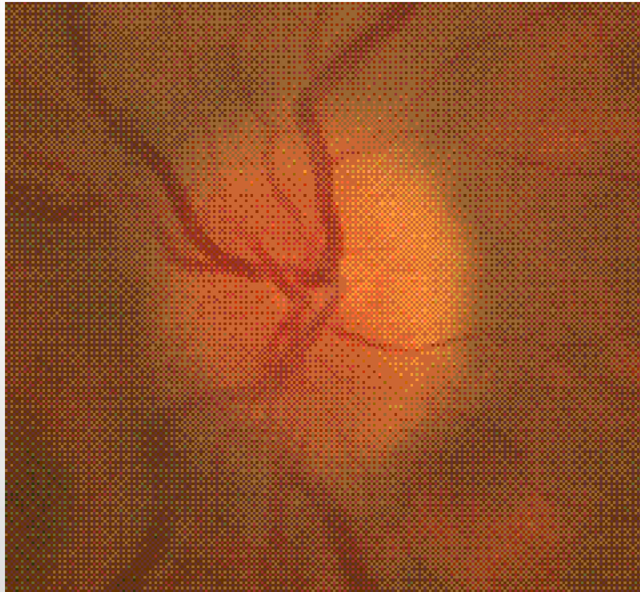
AION

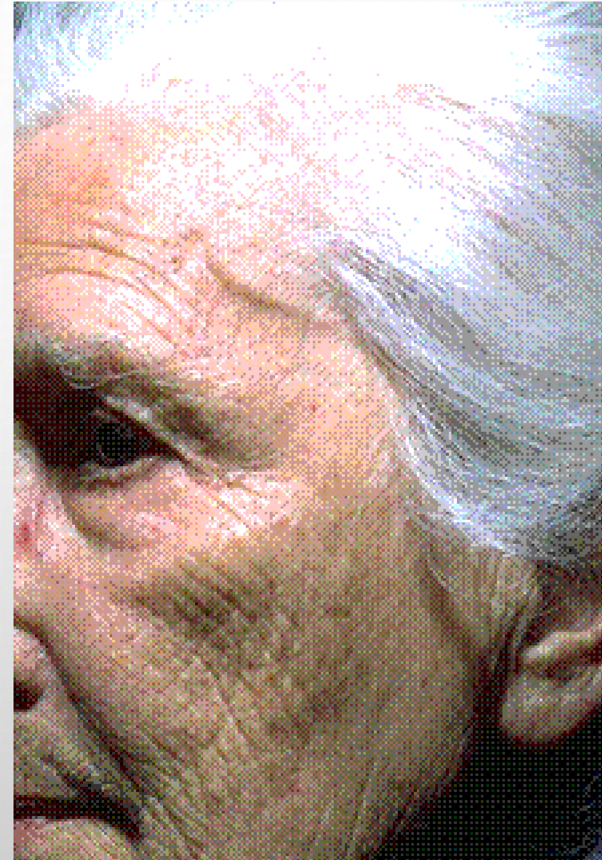


Risk factors
of ischemia !



ARTERIITIS TEMPORALIS (M. HORTON)





Therapy:
high doses of corticosteroids

Thank you for your attention