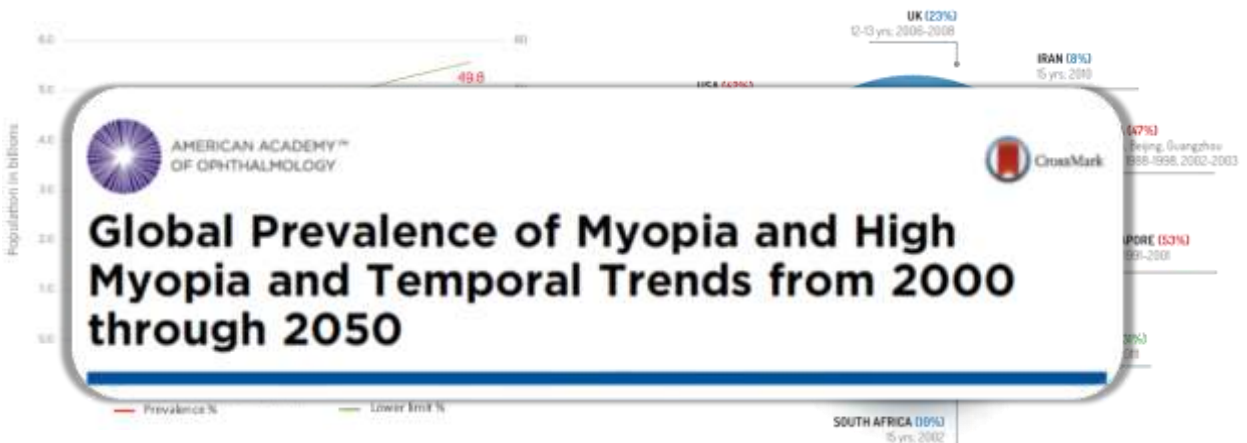


المؤتمر السنوي الدولي للجمعية الرمدية المصرية
INTERNATIONAL CONGRESS OF THE
EGYPTIAN OPHTHALMOLOGICAL SOCIETY
EQS 2023

High Myopia ;
Diagnostic Challenges
Role of multi-modal Imaging










Karim A. Raafat MD.
Professor in Ophthalmology
Cairo University




Globally : 2020 17% visual impairment associated with myopic macular complications
2050 : up to 58 %

PREVALENCE

Evidence is mounting that myopia is growing around the world, with a recent study estimating that on average, 30% of the world is currently myopic and by 2050, almost 50% will be myopic, that's a staggering 5 billion people.¹ The hot spots of myopia are East and South East Asia where countries such as South Korea,⁵ Taiwan,⁶ Singapore,⁷ China⁸ and Japan⁹ have a prevalence of myopia of 80 to 90 %. But myopia prevalence is rising and the USA has reported a prevalence of 42%, almost doubling in three decades.¹⁰

	Optic Nerve Crescent		Chorio-retinal atrophy
	Fuchs' Spot		Lacquer Cracks
	Macular Hole		Macular Hemorrhage

EOS 2023 

But Wait...
THERE'S MORE!

EOS 2023 

Myopic Maculopathy : Practical Guide

Myopic maculopathy: Current status and proposal for a new classification and grading system (ATN)

Jorge Ruiz-Medrano^{1,2}, Javier A. Montero^{3,4,5,6}, Ignacio Flores-Moreno^{7,8}, Luis Arias^{9,1},
Alfredo García-Layana^{10,11}, José M. Ruiz-Moreno^{12,13,14} Prog Retin Eye Res 2019

Trichotomous Approach (ATN)

The 4th most common cause of irreversible blindness (color fundus imaging, FAF).

2- Traction (OCT).

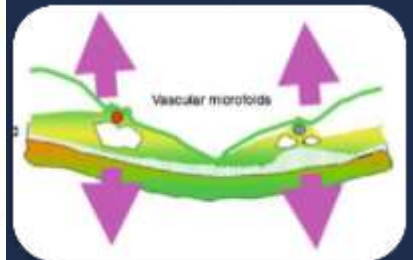
3- Neovascularization (FFA, OCTA, OCT).



The Game of Forces



Inflexibility of retinal vessels & Non-compliance of stiff ILM.



- Posterior staphyloma.
- Weak RPE-PR adherence (RPE pump failure and Choroidal atrophy)

EOS 2023

Myopic Traction Maculopathy

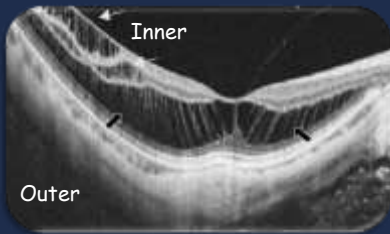
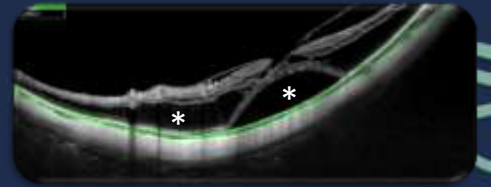
Panozzo 2014 , 30% of pathologic myopia + posterior staphyloma.

Indirect Ophthalmosce & Biomicroscopy :
Extremely limited value.
 Retinal transparency ,
 Choroidal thinning
 Low contrast



Myopic Traction Maculopathy

- Outer retino-schisis
- Inner LMH
- Foveal detachment



Foveoschisis / Maculoschisis / Retinoschisis



Foveal Detachment / Inner RS / Outer RS



Retinal Detachment / Inner RS / Outer RS / Outer LMH



Lamellar Macular hole
Outer RS

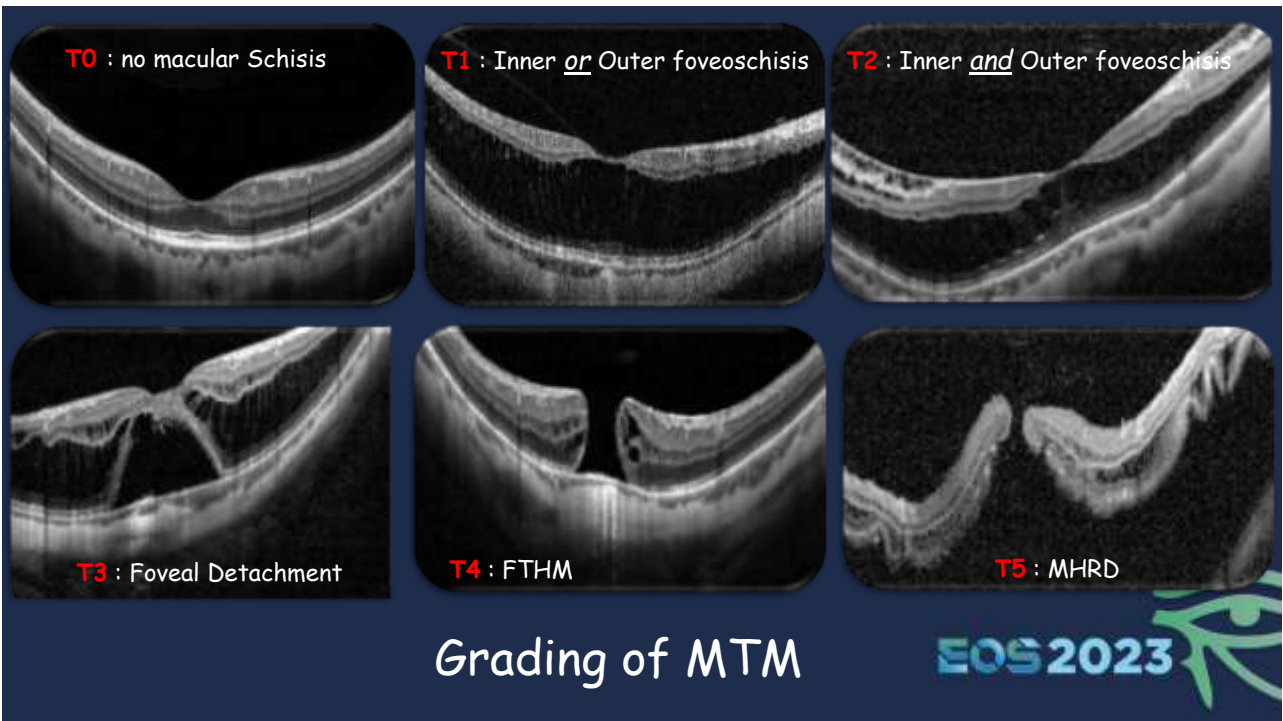
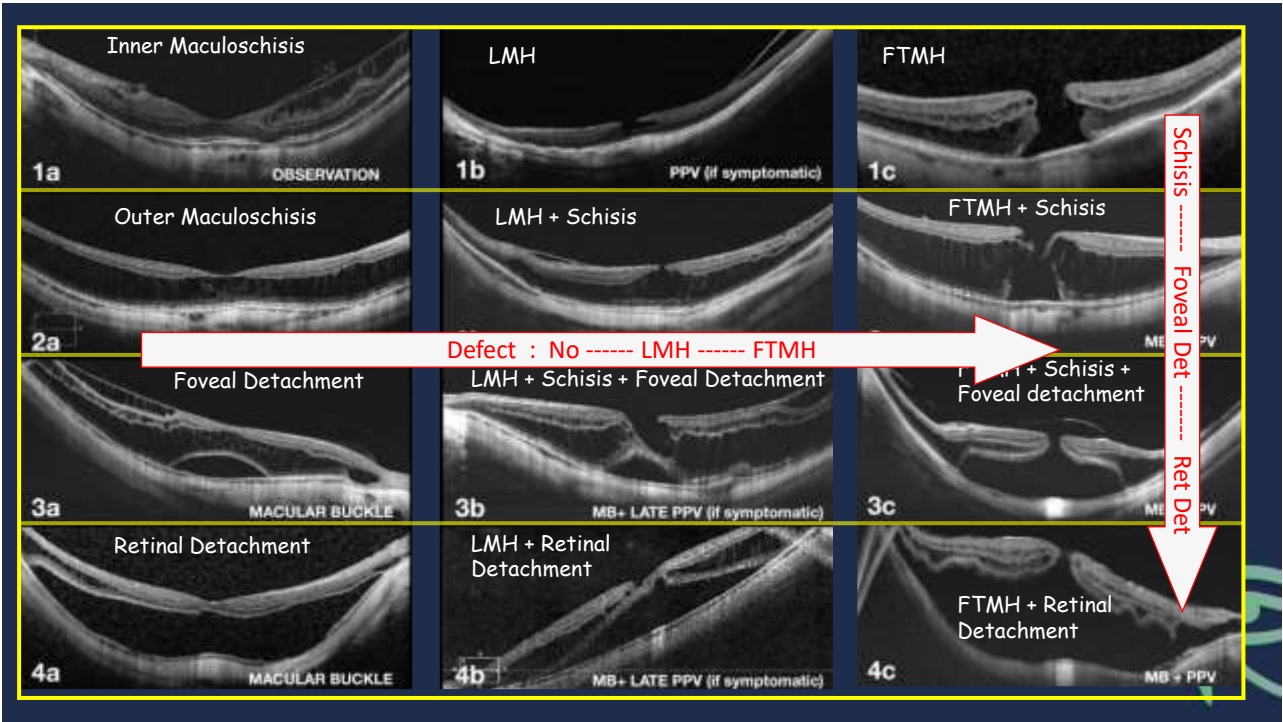


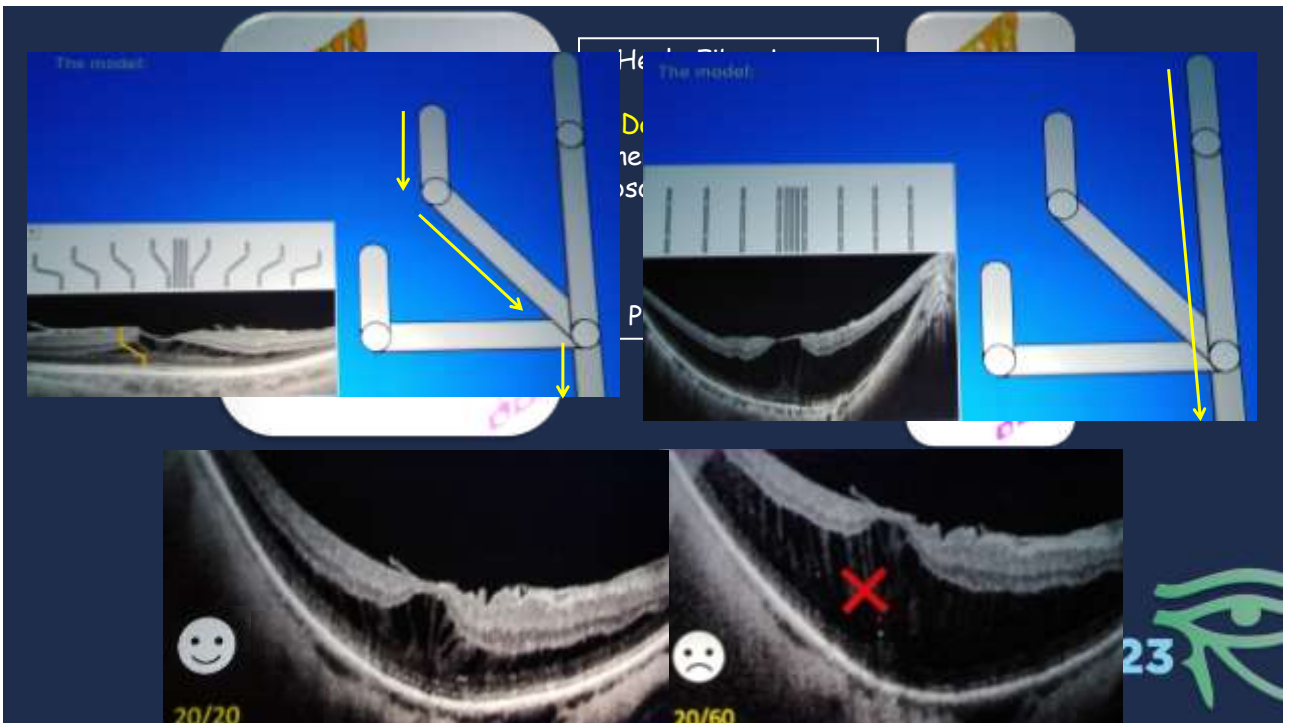
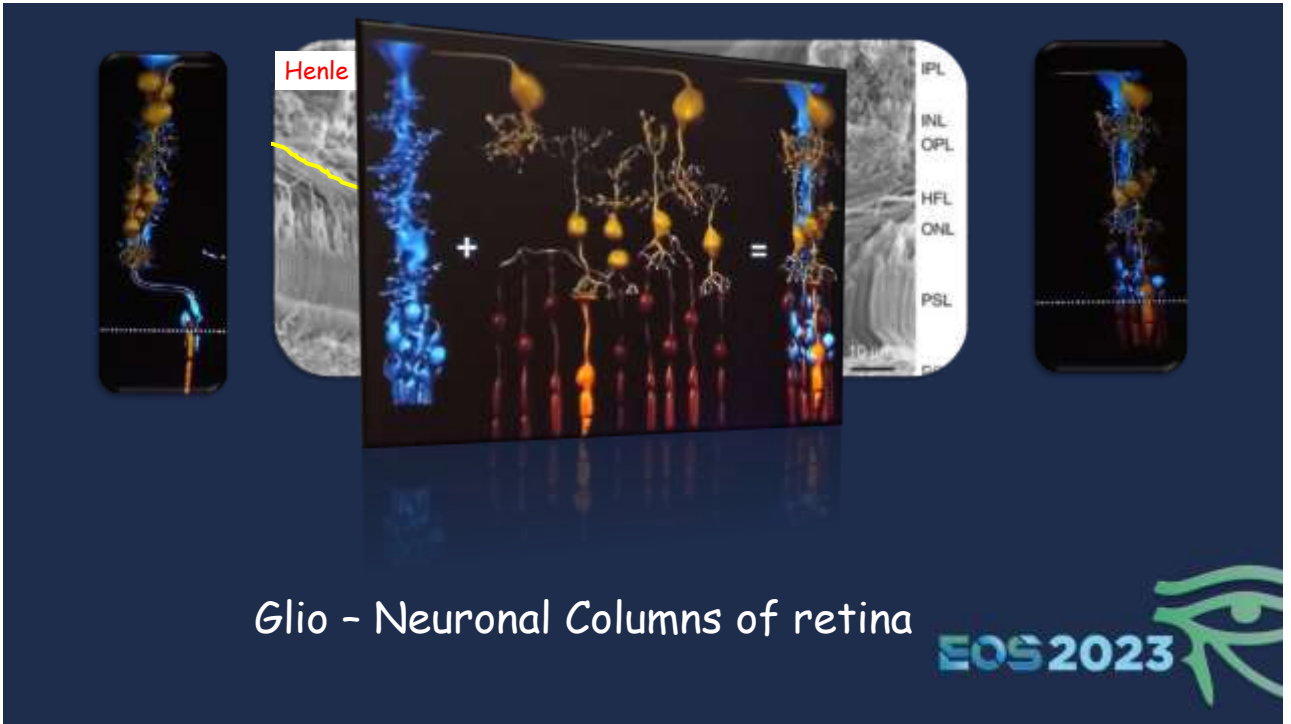
Full-thickness Macular hole
Outer RS



Full-thickness Macular hole +
Retinal Detachment
Outer RS



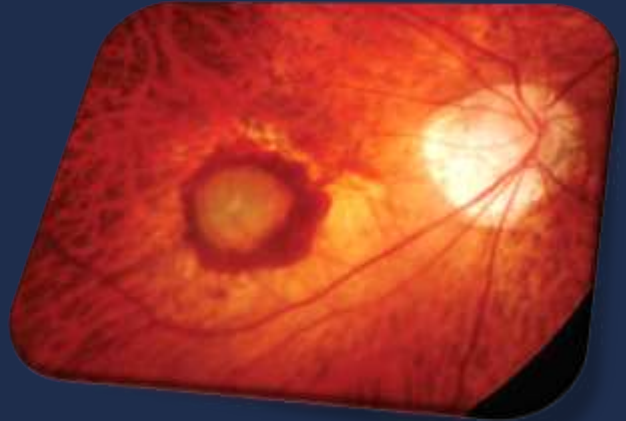




Myopic CNV



Type 2 CNV , above RPE



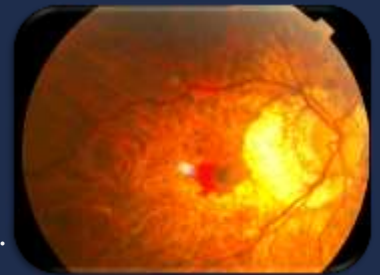
- ▶ Better response to Anti-VEGF , fewer injections , less recurrences.
- ▶ With treatment : better long-term visual prognosis.

EOS2023



Myopic CNV : Epidemiology

- Second most common cause of CNV (after AMD).
- Most sight-threatening complication of pathologic myopia.
- Prevalence **4 % to 11 %** in eyes with pathologic myopia.
- Most common cause of CNV in age group 50 years and younger (62% of CNV cases).
- Bilateral : about **15-30 %** of cases.
- **Female** predominance.
- If left untreated : poor visual outcome. **VA \leq 6/60 in 89%** (5 years), 96% (10 years).



EOS2023

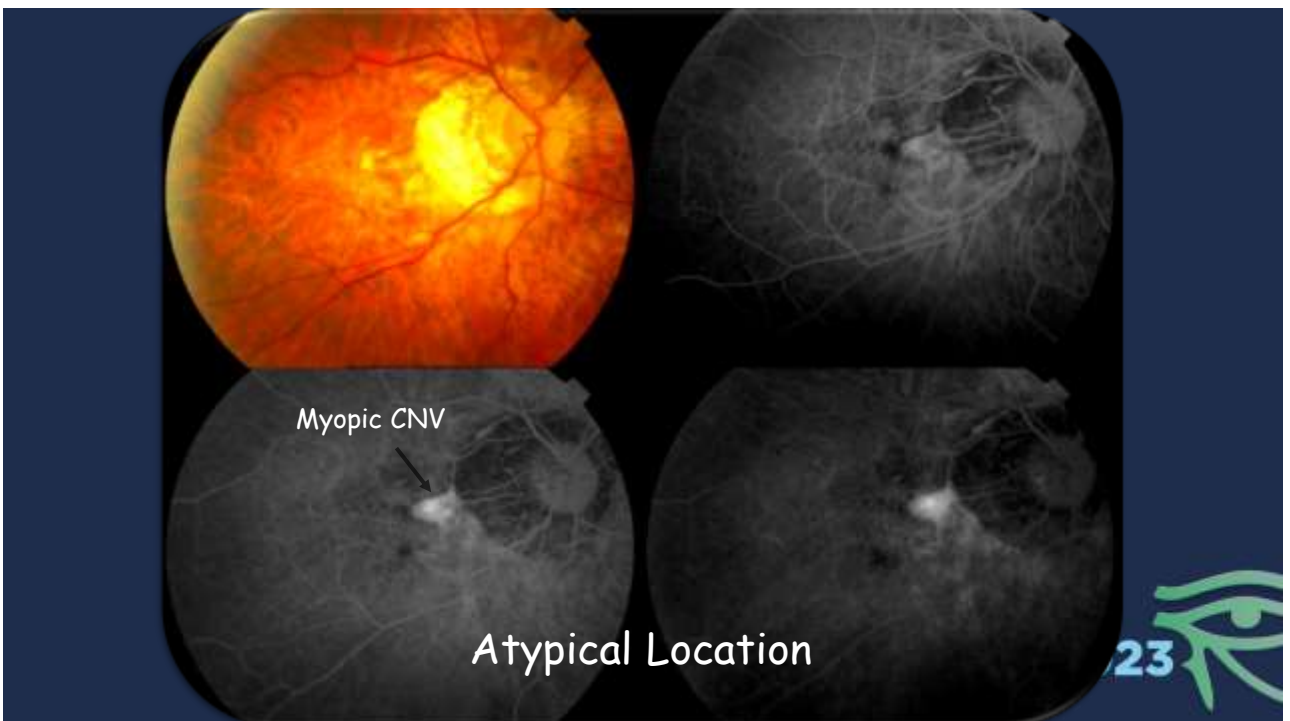


Myopic CNV : diagnostic Challenges

- Small size.
- May be **clinically** missed (poor contrast).
RPE changes , myopic chorio-retinal degeneration.
- **FFA** : Minimal leakage.
- **OCT** : noteless IRF & SRF.



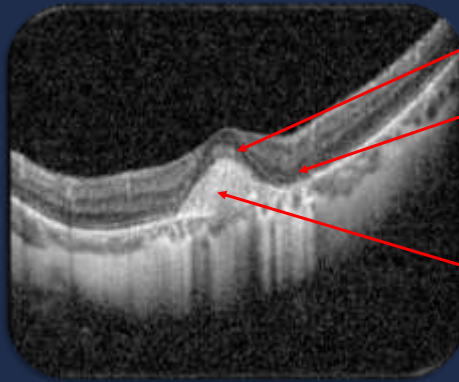
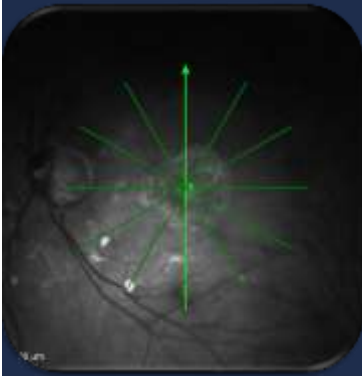
EOS 2023



23

MYOPIC CNV IMAGING : OCT CHALLENGES

OCT Interpretation



Subretinal Hyperreflective Exudation (SHE)

Minimal IRF / SRF

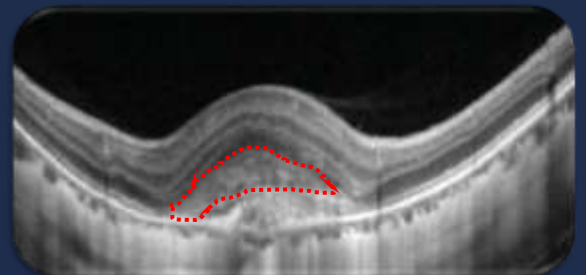
Type 2 CNV



SHE : OCT Biomarkers

Subretinal Hyper-reflective Exudation (SHE)

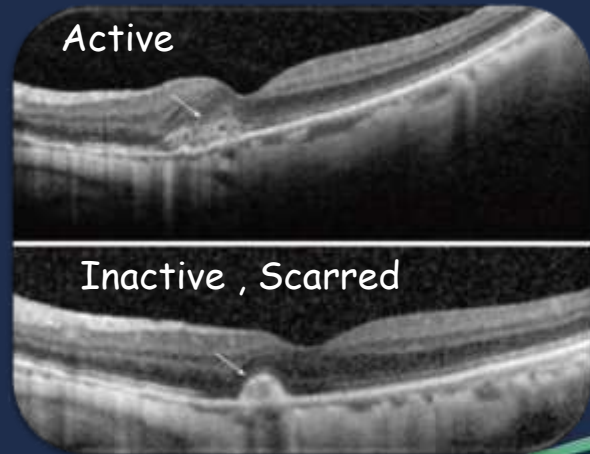
- Active CNV.
- More Anti-VEGF injections.
- Better visual improvement.
- Higher rate of CNV recurrence.



Myopic CNV : OCT Activity assessment

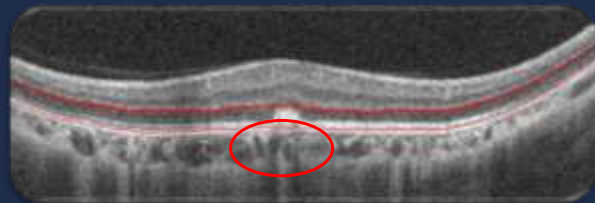
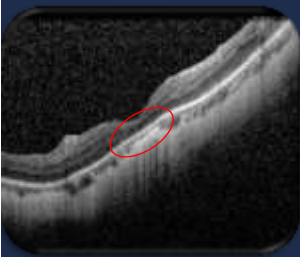
- Type 2 , above RPE
- IRF , Minimal exudation
- Moderate reflectivity (SHE)
- Ill-defined outline, fuzzy borders

- ▶ No IRF
- ▶ Increased reflectivity
- ▶ Well-defined borders
- ▶ Decreased size

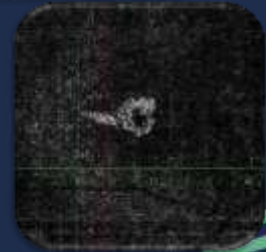


EOS 2023

Myopic CNV : Choroidal thickness

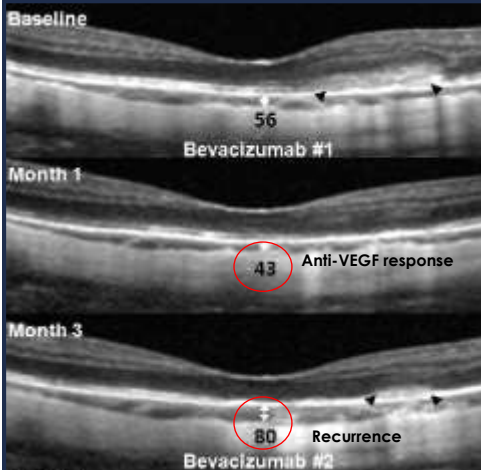


Active myopic CNV , associated with *relatively thick choroid*
"for myopic eye"



EOS 2023

Myopic CNV : Choroidal thickness



Subfoveal Choroidal Thickness Changes Following Anti-Vascular Endothelial Growth Factor Therapy in Myopic Choroidal Neovascularization

Seong Joon Ahn,^{1,2} Kyu Hyung Park,¹ and Se Joon Woo¹

CONCLUSIONS: Subfoveal choroidal thickness significantly decreased following anti-VEGF therapy in myopic CNV, but showed a subsequent increase in recurrence. Subfoveal choroidal thickness may reflect disease activity and aid decision making regarding retreatment in myopic CNV for recurrent cases.

choroidal neovascularization. *Invest Ophthalmol Vis Sci.* 2015;56:5794-

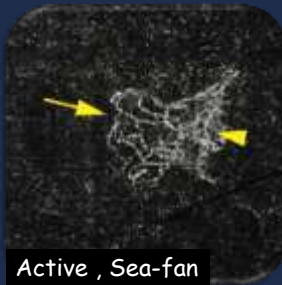


Myopic CNV : OCT Angio

- High-flow neovascular network .
- 90% sensitivity .
- Outer retina segmentation .
- Manual Focusing.
- Better with Manual Segmentation (30 μ from BM).
- 3X3 mm.



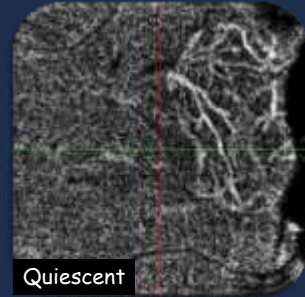
Myopic CNV : OCTA Activity assessment



Active , Sea-fan



Medusa



Quiescent

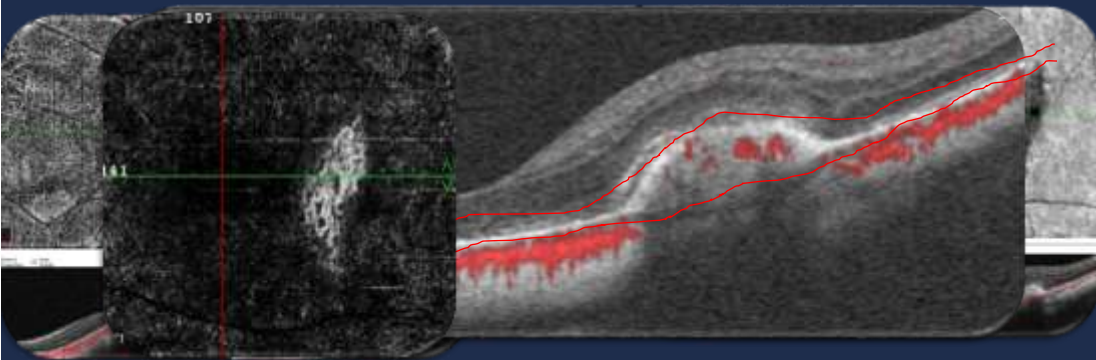
Well-defines shape , medusa / sea fan
 Numerous tiny branching capillaries
 Anastomoses and loops
"Tight net"

Irregular shape
 Large , linear mature vessels
 No anastomosis or loops
"Loose net"

EOS2023



OCT Angio : Segmentation Artifact

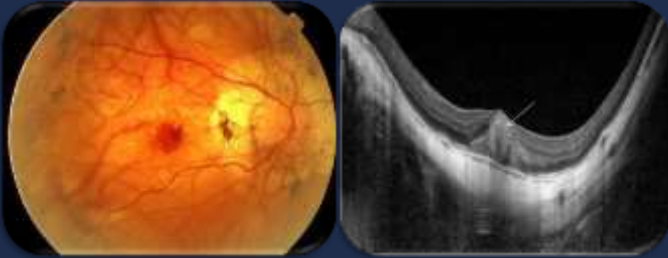


EOS2023

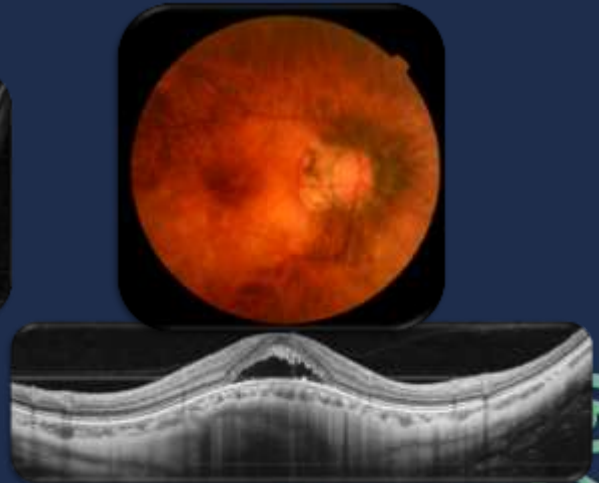


Myopic CNV : DD

Dome-shaped Macula
Serosus Retinal Detachment



Macular Hemorrhage
Lacquer Cracks



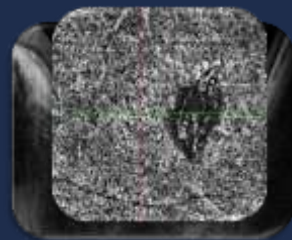
Macular Hemorrhage



Simple Hemorrhage
Close to lacquer crack

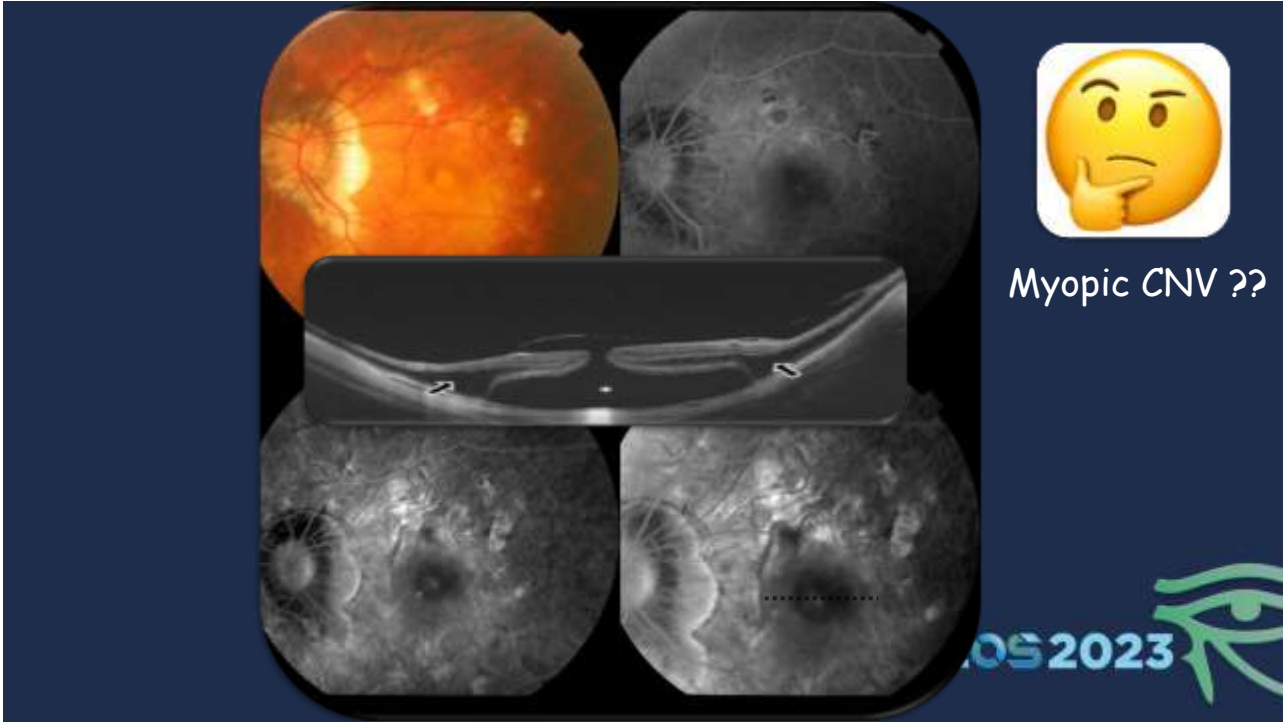


Secondary to myopic CNV



EOS 2023

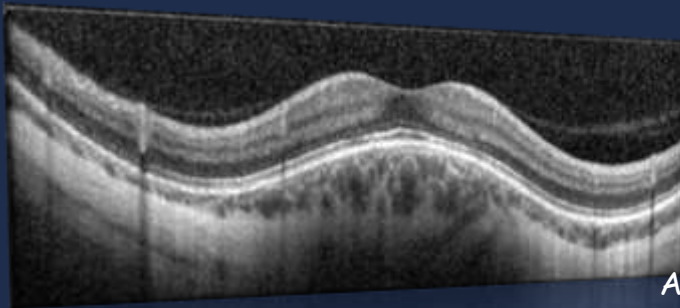




Myopic CNV ??



Dome -Shaped Macula (DSM)



Asymmetric Expansion of the globe
Regional difference of the Thickness and
Structural strength of the Sclera
Scleral in-folding



Serous Foveal Detachment (SFD)



Combined mechanical and vascular damage to the choroid

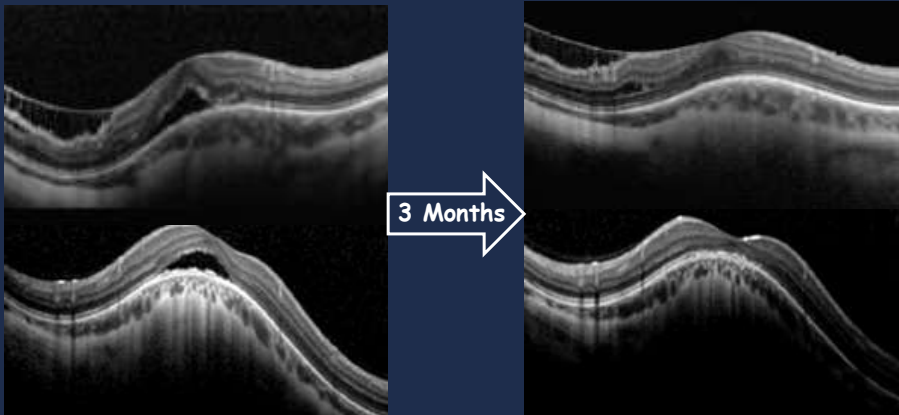
Not every SRF in Myopic Eye is due to mCNV

- Most common cause of SRF in DSM (1/3).
- Clinical and histologic similarity with chronic CSC !!
- Fluctuating course.
- Disappeared in 31% of eyes without treatment.

EOS 2023



Fluctuating Course : Spontaneous resolution and recurrences



No clearly defined treatment.

NO Role of Anti-VEGF.

Half-fluence PDT ? In persistent , quickly recurring
 Spironolactone (mineralocorticoid receptor antagonis) ?

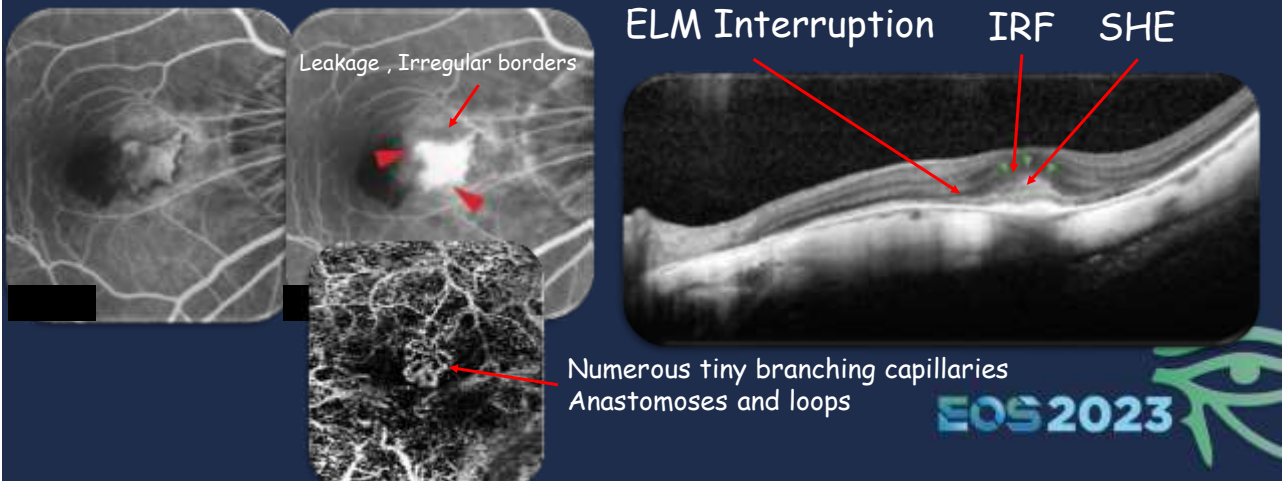
EOS 2023



Take Home Messages



Myopic CNV Activity : Multi-modal Imaging



**THANK
YOU!**



EOS 2023

