

المؤتمر السنوي الدولي للجمعية المصرية
INTERNATIONAL CONGRESS OF THE

EGYPTIAN OPHTHALMOLOGICAL SOCIETY

EOS 2023



Novel OCT signs

By:

Reham M. Abdalla, MD

Assistant lecturer, Assiut University



No financial disclosures

A Consent was given to use those cases and related images for educational purposes.

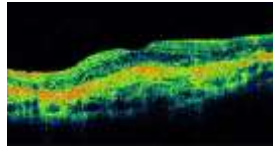


OCT technology evolution

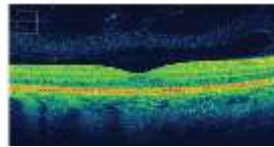
- ✓ Speed
- ✓ Penetration
- ✓ Resolution
- ✓ More details



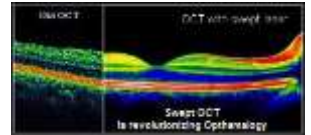
James Fujimoto



TD - OCT



SD - OCT



SS - OCT



Dictionary

Definitions from [Oxford Languages](#) · [Learn more](#)

 **bacillary**

adjective **BIOLOGY**

adjective: **bacillary**

shaped like or consisting of a rod or rods.
"bacillary organisms"

- (of a disease) caused by **bacilli**.
"acute bacillary dysentery"

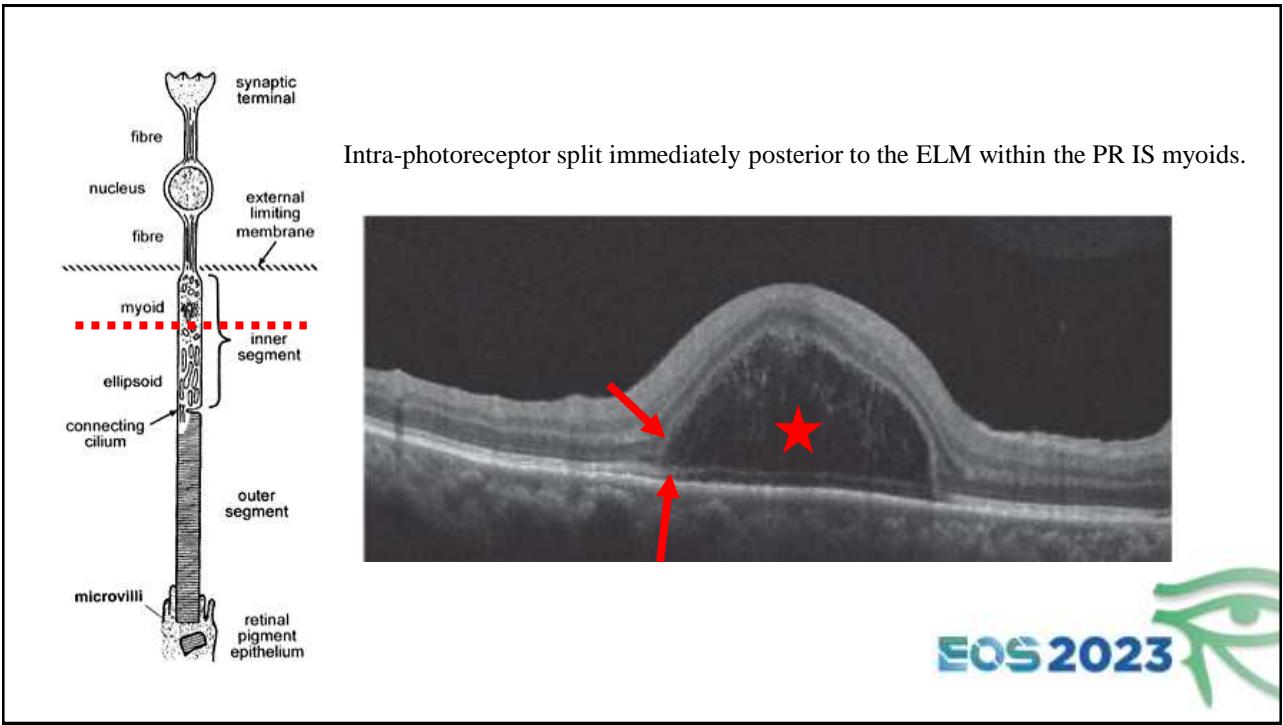
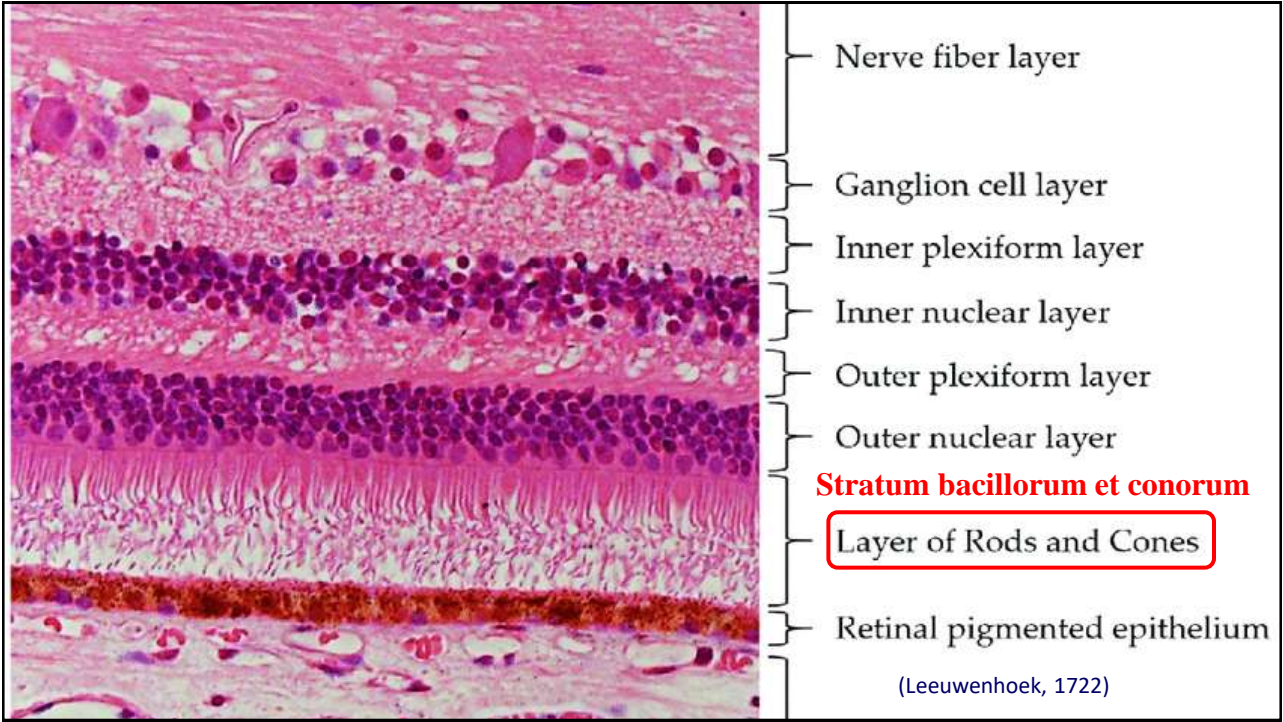
BALAD

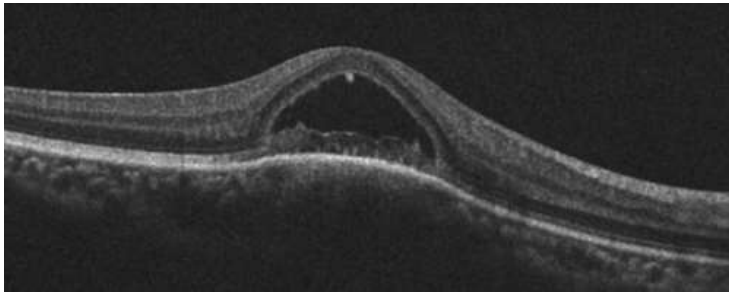
Bacillary Layer Detachment

(Mehta et al, 2018)

A New Terminology

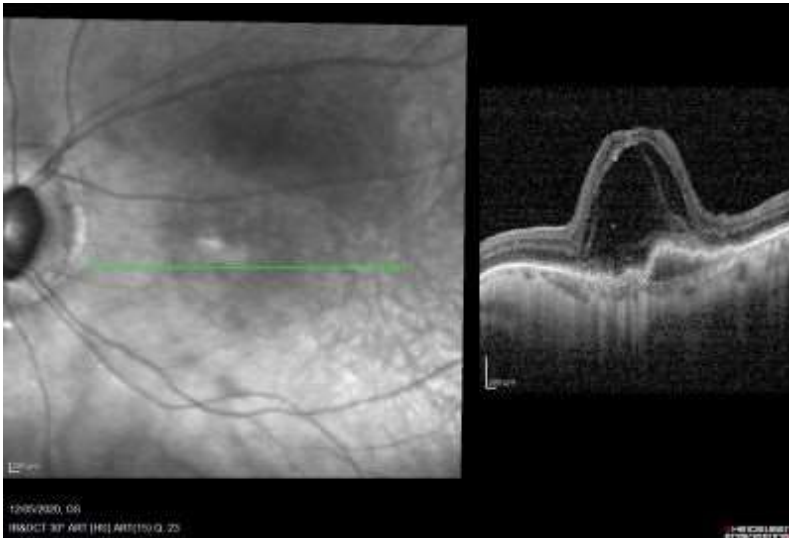
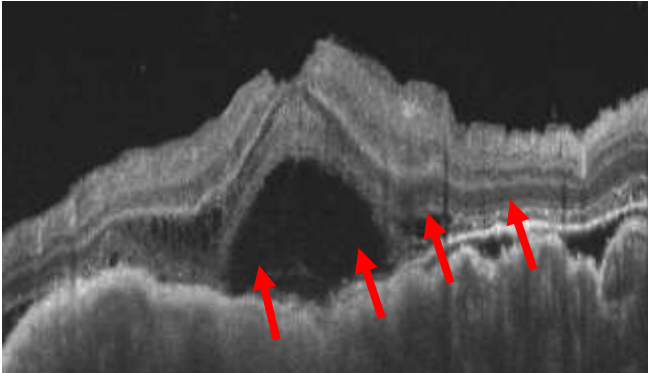






(Mehta et al, 2018)

- ✓ Hydrostatic force (eg., Retinal acute fluid accumulation (RAFA))
- ✓ Choroidal ischemia.



(Engin et al, 2020)

- ✓ Shearing forces by subretinal hyperreflective material in nAMD

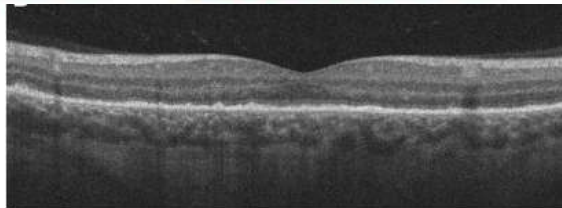
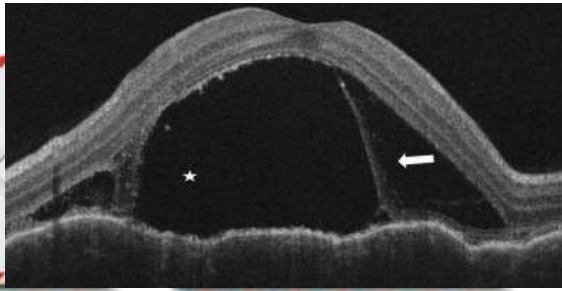


Clinical Significance of BALAD

1

Visual recovery is associated with resolution of BALAD.

(Yordi et al., 2022)



After

VA 20/30

EOS2023

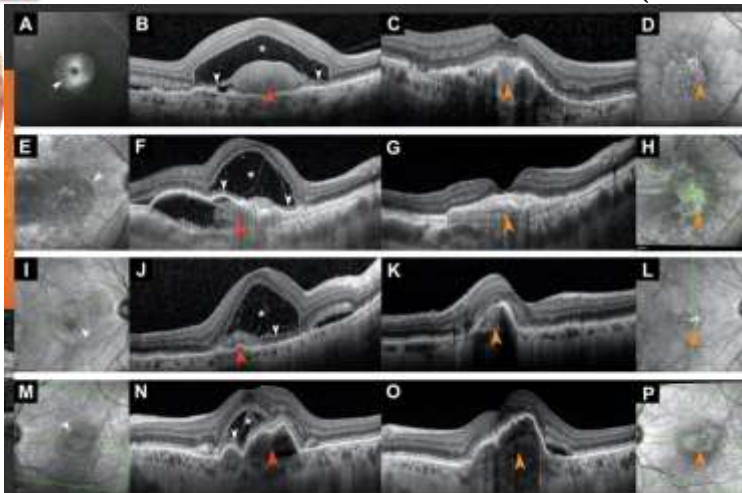


Clinical Significance of BALAD

2

Hemorrhagic BALAD and SHRM are risks for development of subretinal fibrosis.

(Ramtohum et al., 2022)



EOS2023

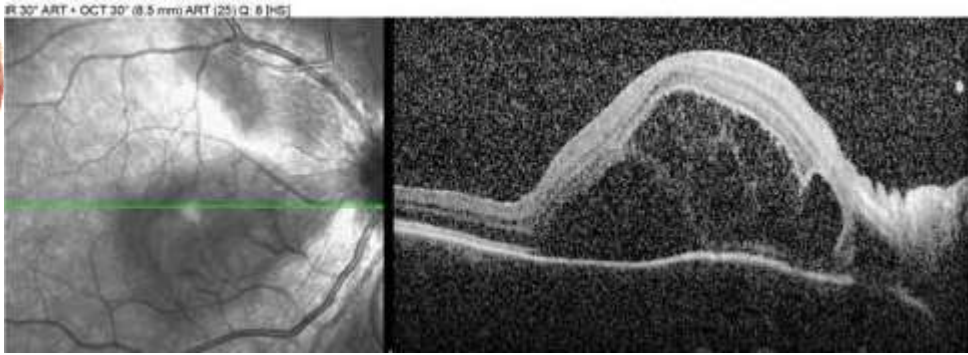


Clinical Significance of BALAD

3

BALAD can be a biomarker for poor visual prognosis in VKH.

(Missaka et al., 2022)



EOS2023



MacTel 2

The Macular Telangiectasia Project

Macular Telangiectasia type 2

EOS2023

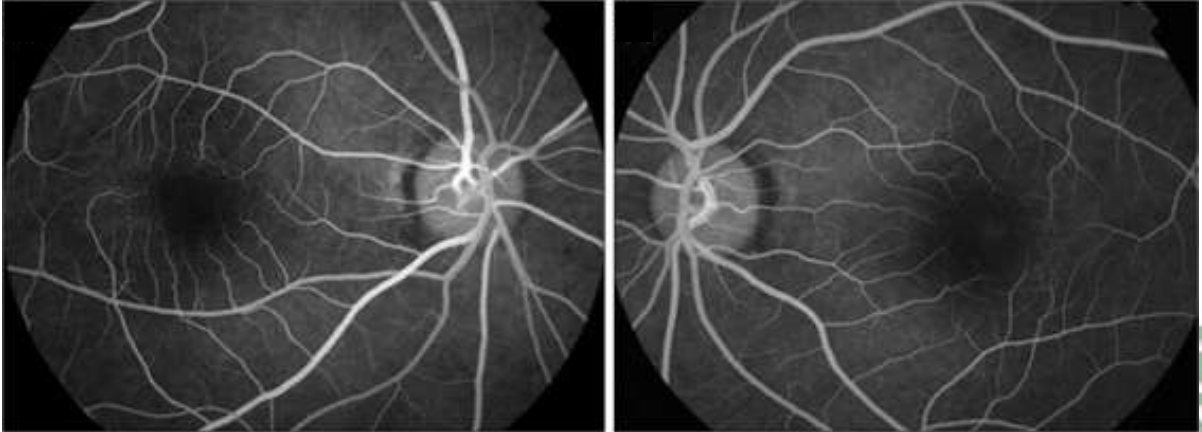


A 52-year-old female presented with history of reduced vision in both eyes for the past one month. BCVA is 0.7 (OU).

Bilateral

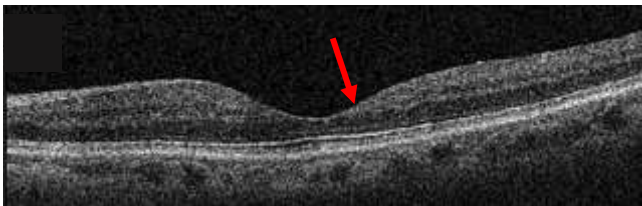
Symmertical

Temporal



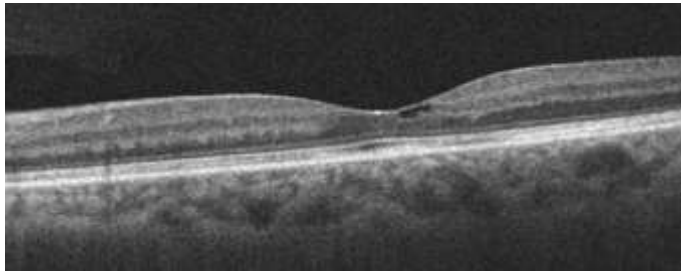
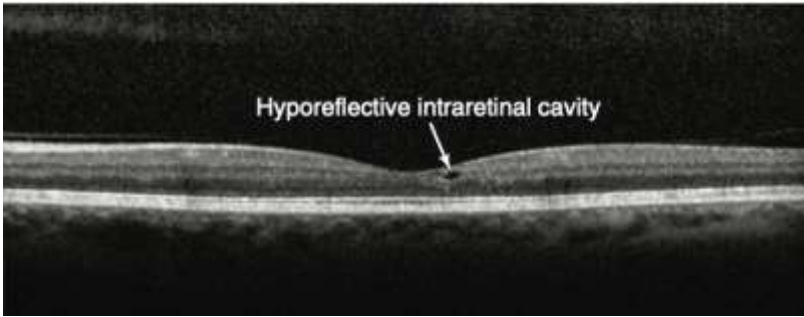
✓ **Temporal enlargement of the foveal pit**

(Gillies et al., 2009).

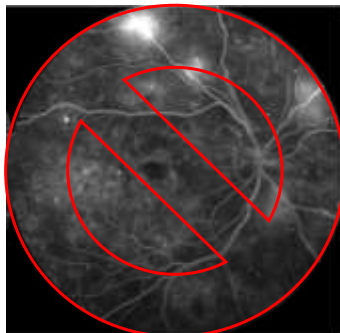
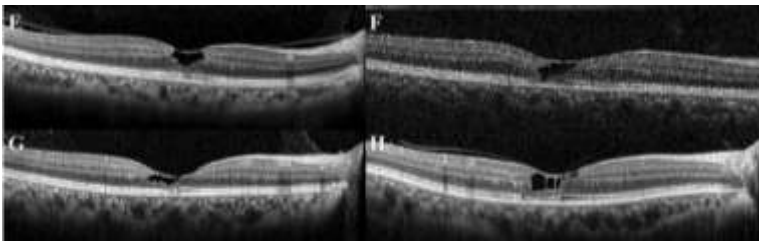


EOS2023

✓ **Hyporeflective cavities within the inner retina** (Koizumi et al., 2006)



✓ **Hyporeflective cavities within the inner retina** (Koizumi et al., 2006)

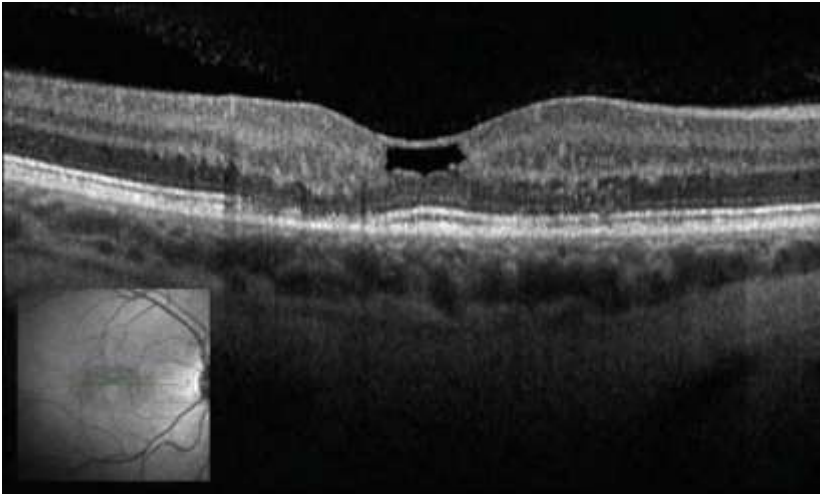
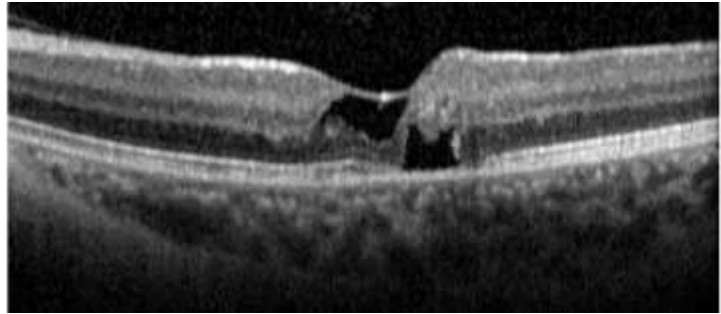


✓ **Foveolar neurosensory retina detachment from the ILM**

(Charbel Issa et al., 2012)



ILM drape sign

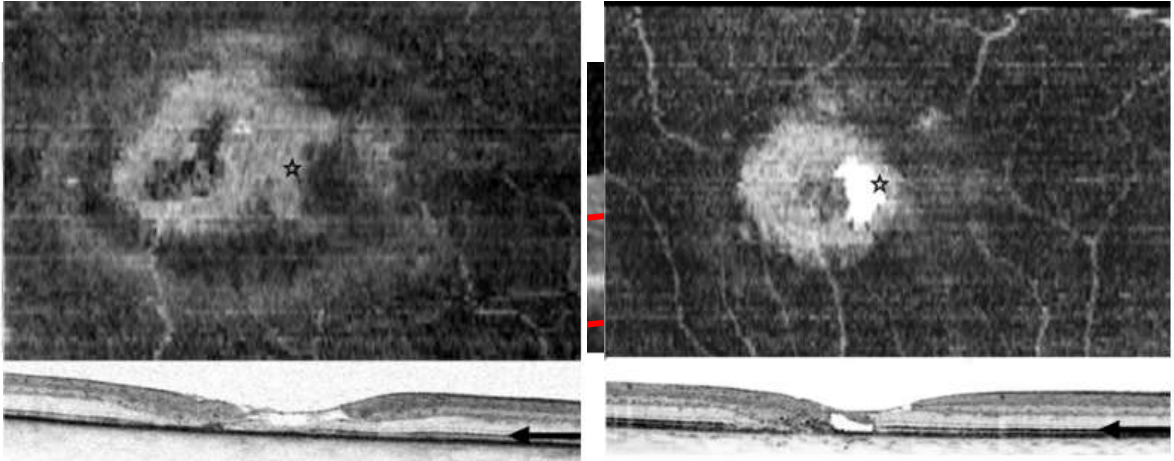


ILM drape sign

✓ **Disruption of the IS/OS junction line.**

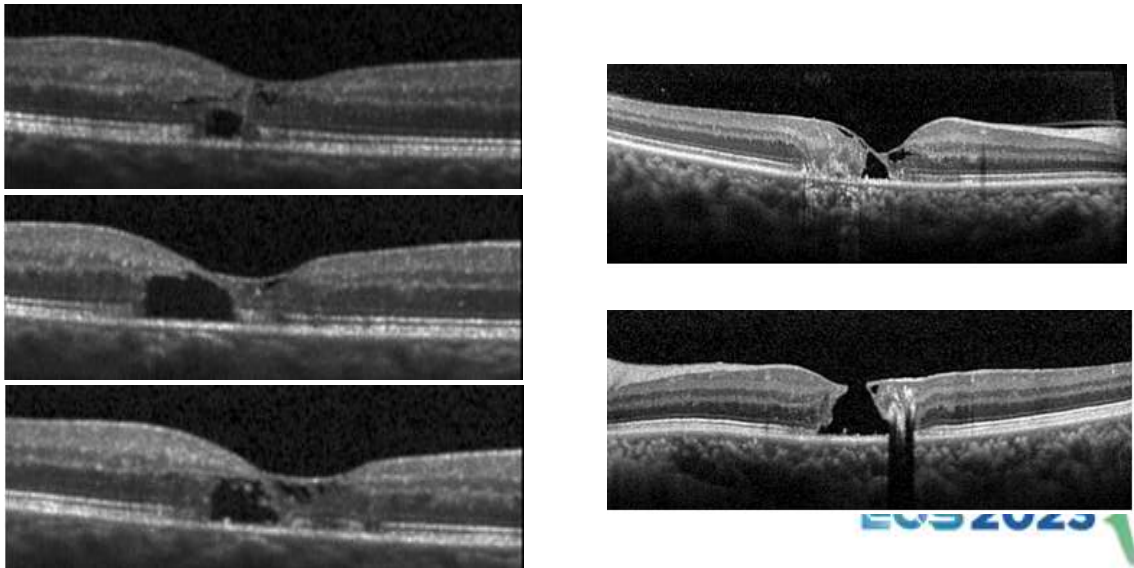
(Charbel Issa et al., 2012)

Ellipsoid zone loss

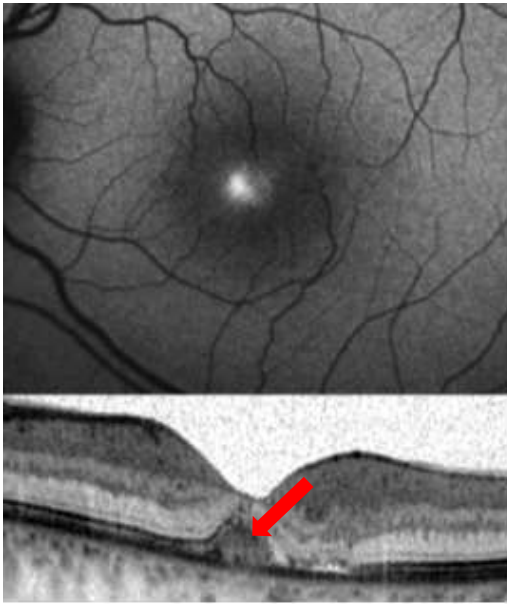


✓ **Hyporeflective cavities within the outer retina**

(Koizumi et al., 2006)

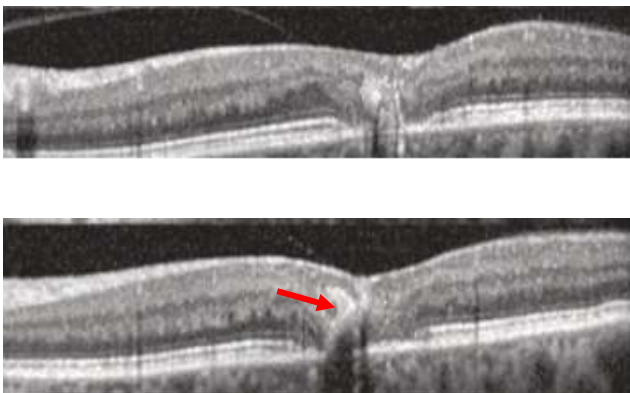


✓ **Subretinal debris** (Margalit et al., 2002)



EOS 2023

✓ **Hyper-reflective intraretinal lesions** (Jaisle et al., 2010).



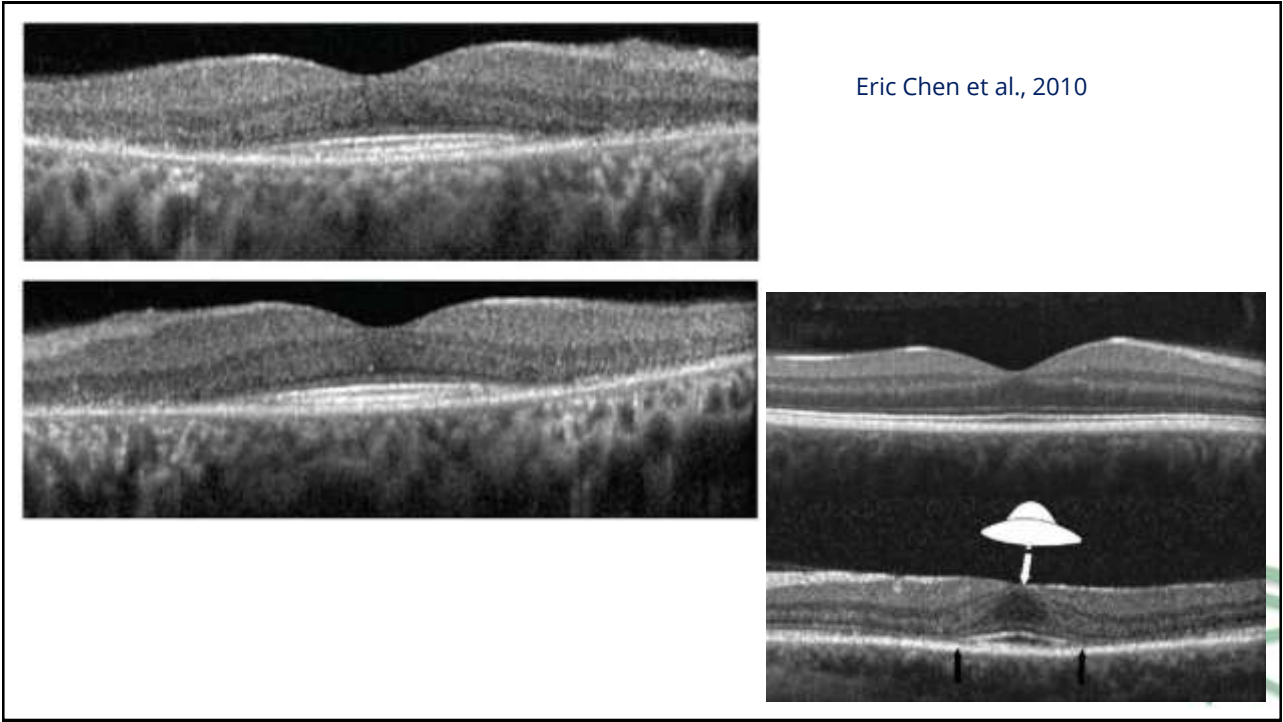
EOS 2023

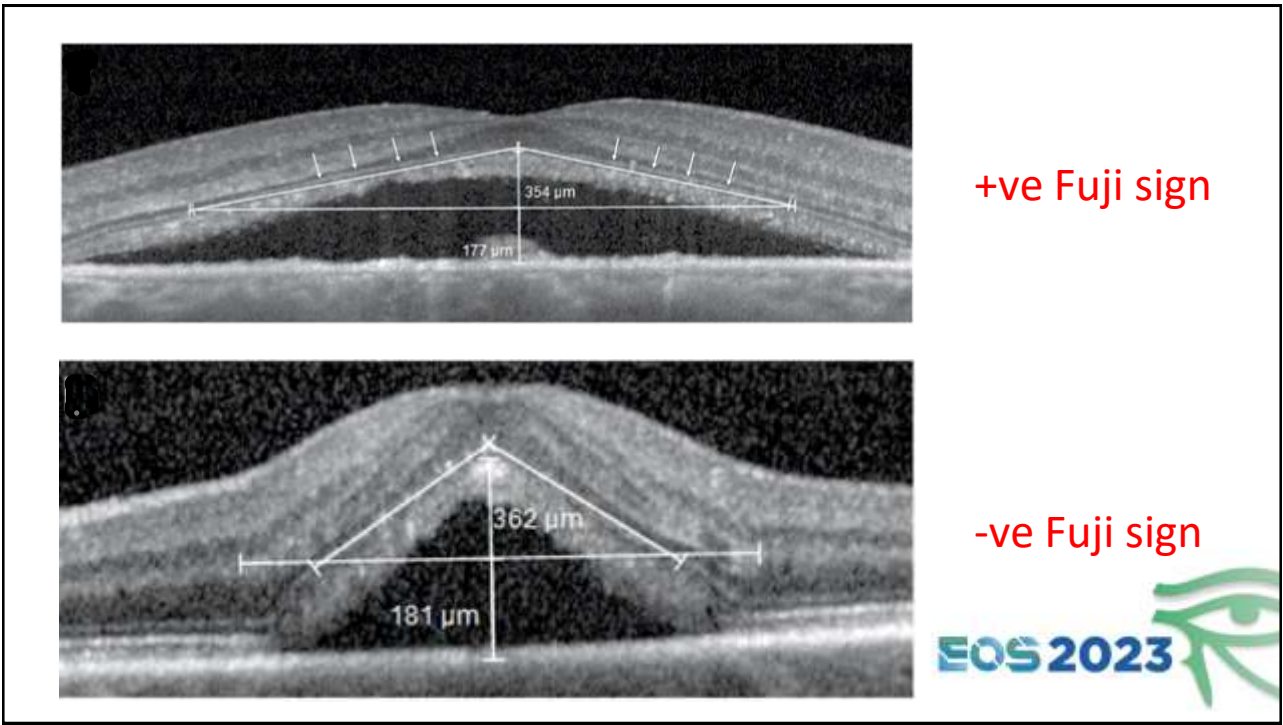


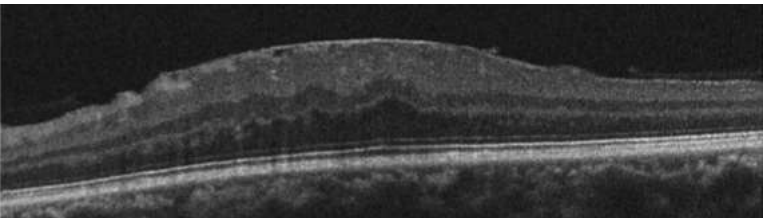
Flying saucer sign

Hydroxychloroquine toxicity

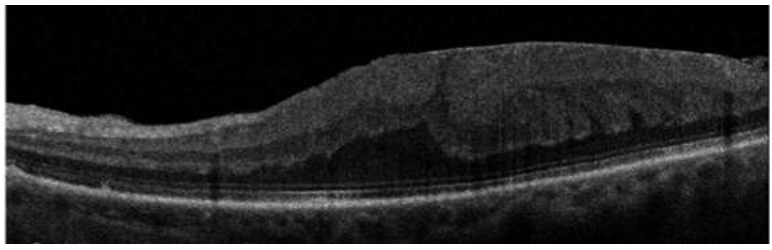








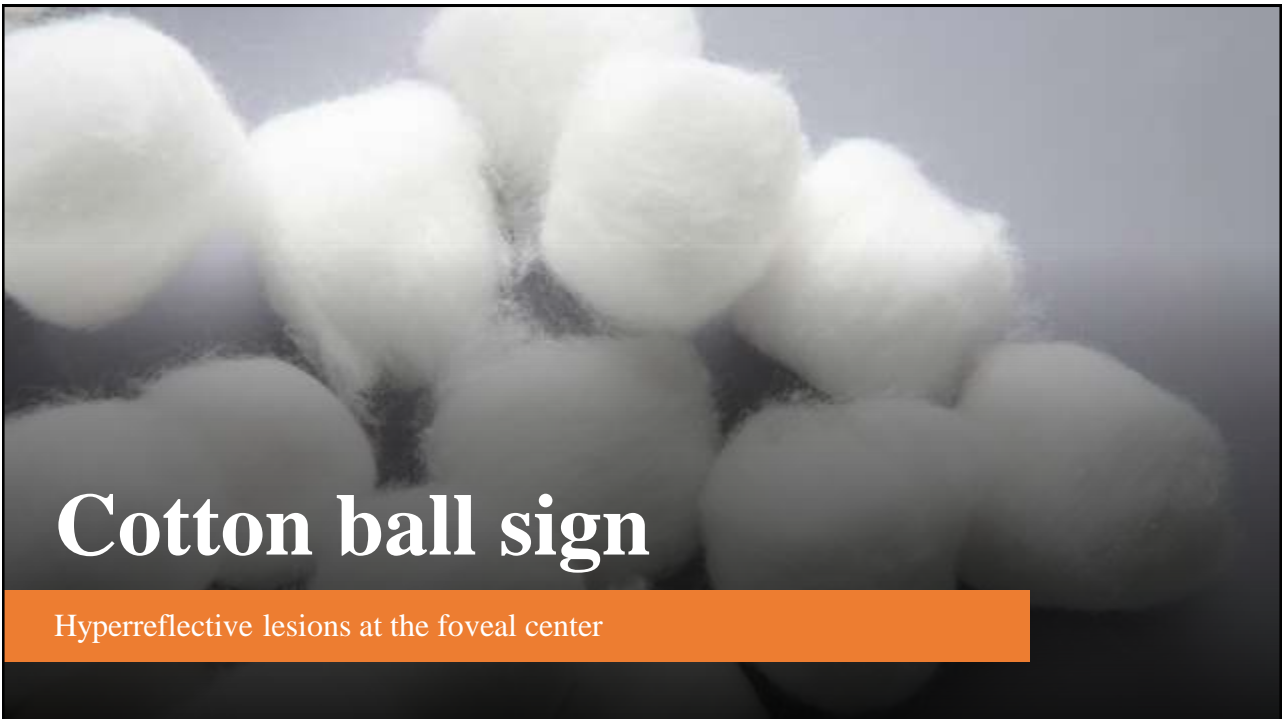
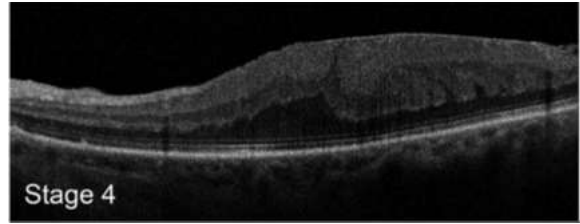
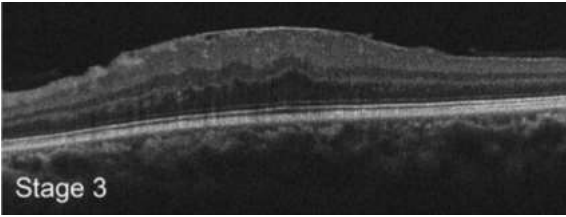
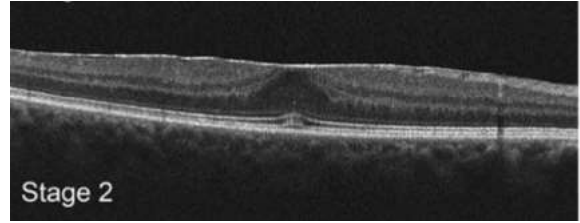
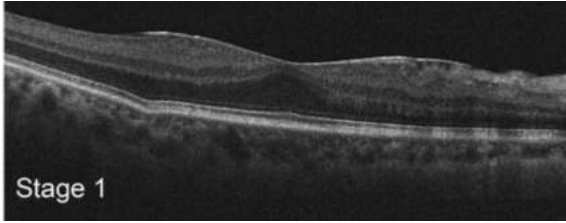
(Govetto et al, 2017)

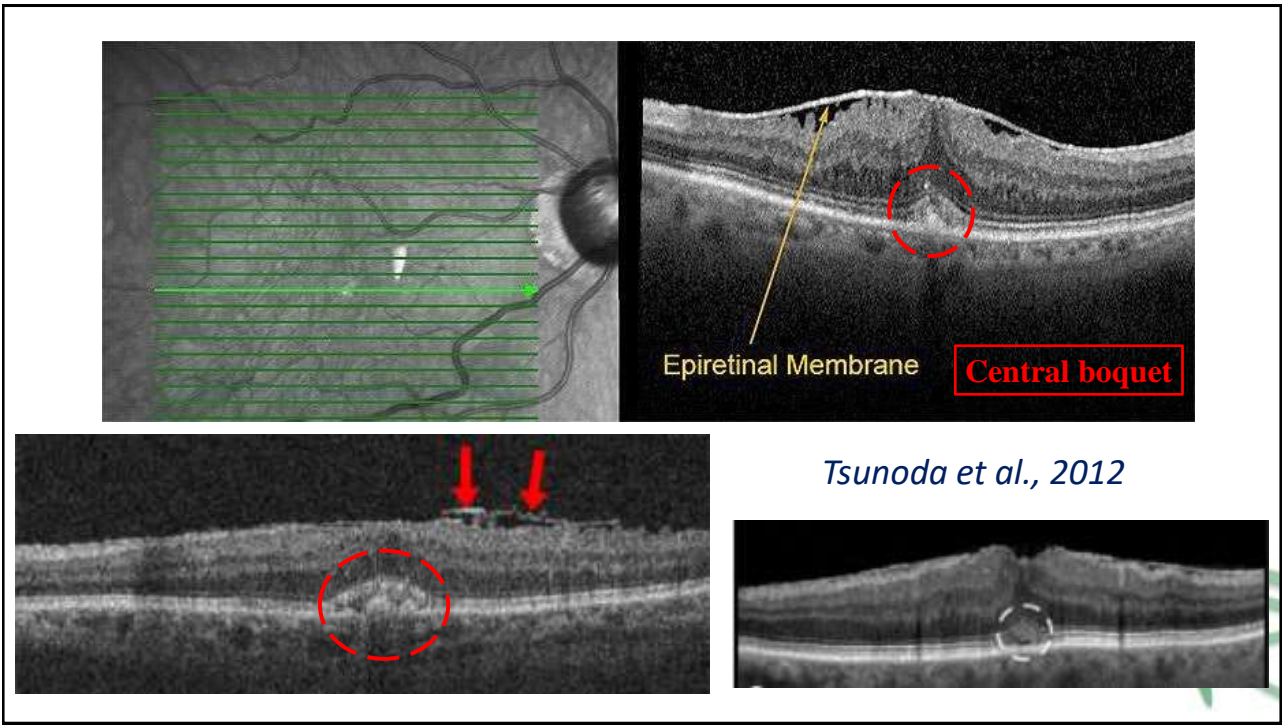
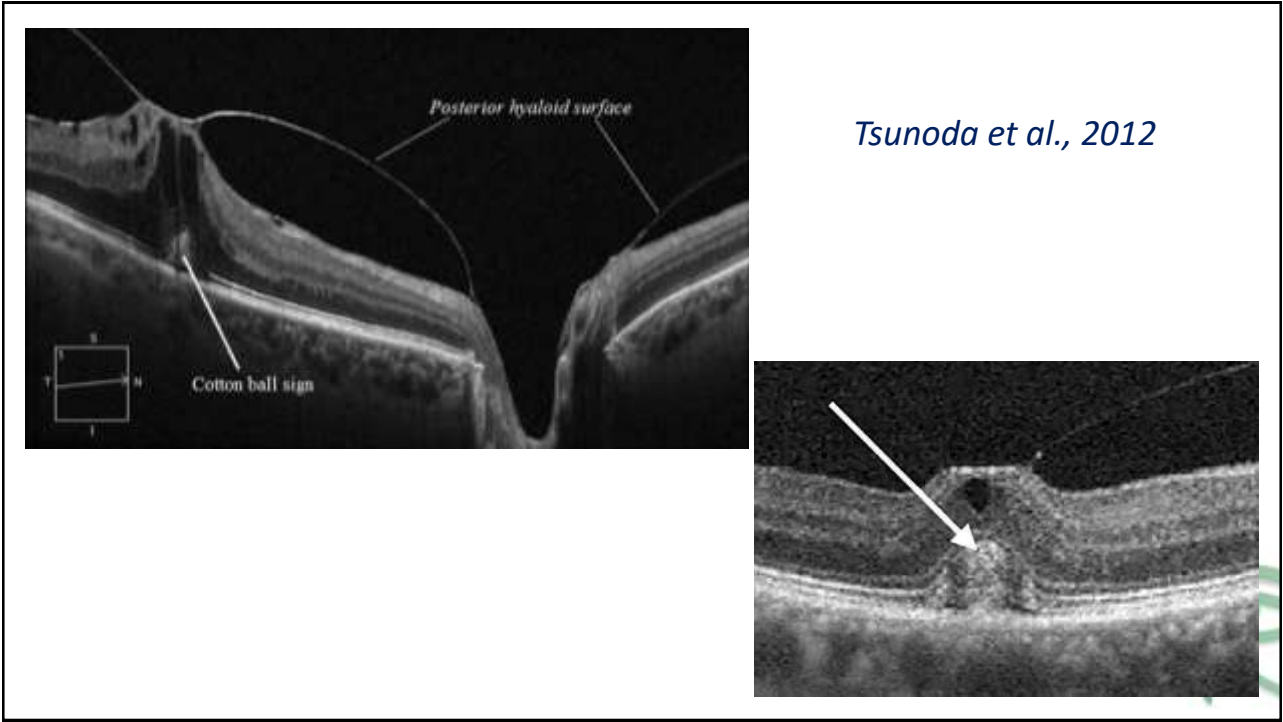


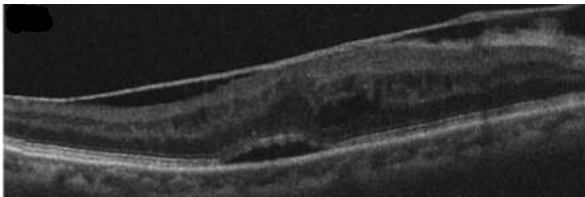
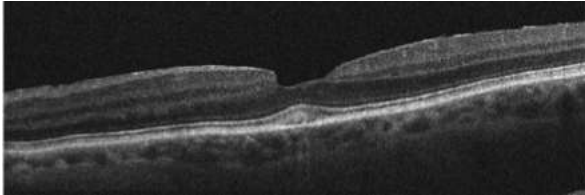
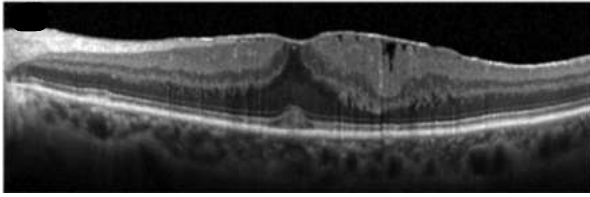
A continuous hypo- or hyper-reflective band extending from INL and IPL across the fovea.



(Govetto et al, 2017)







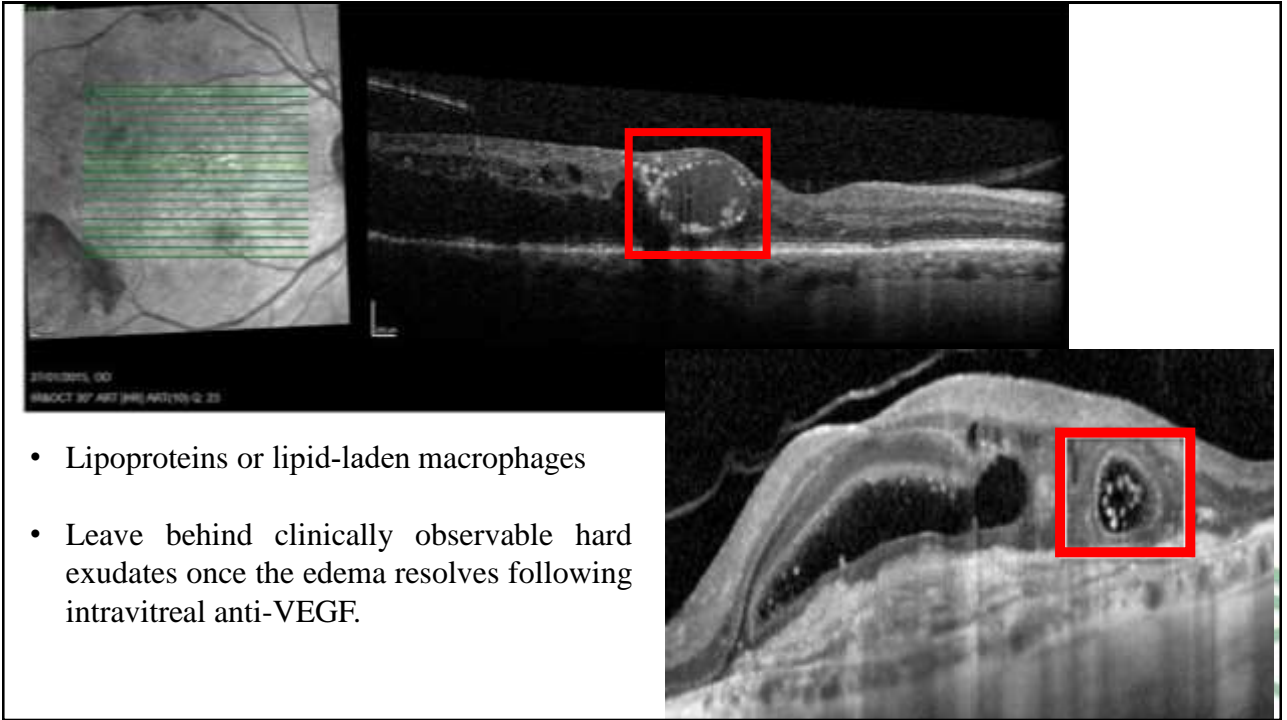
Central bouquet abnormalities

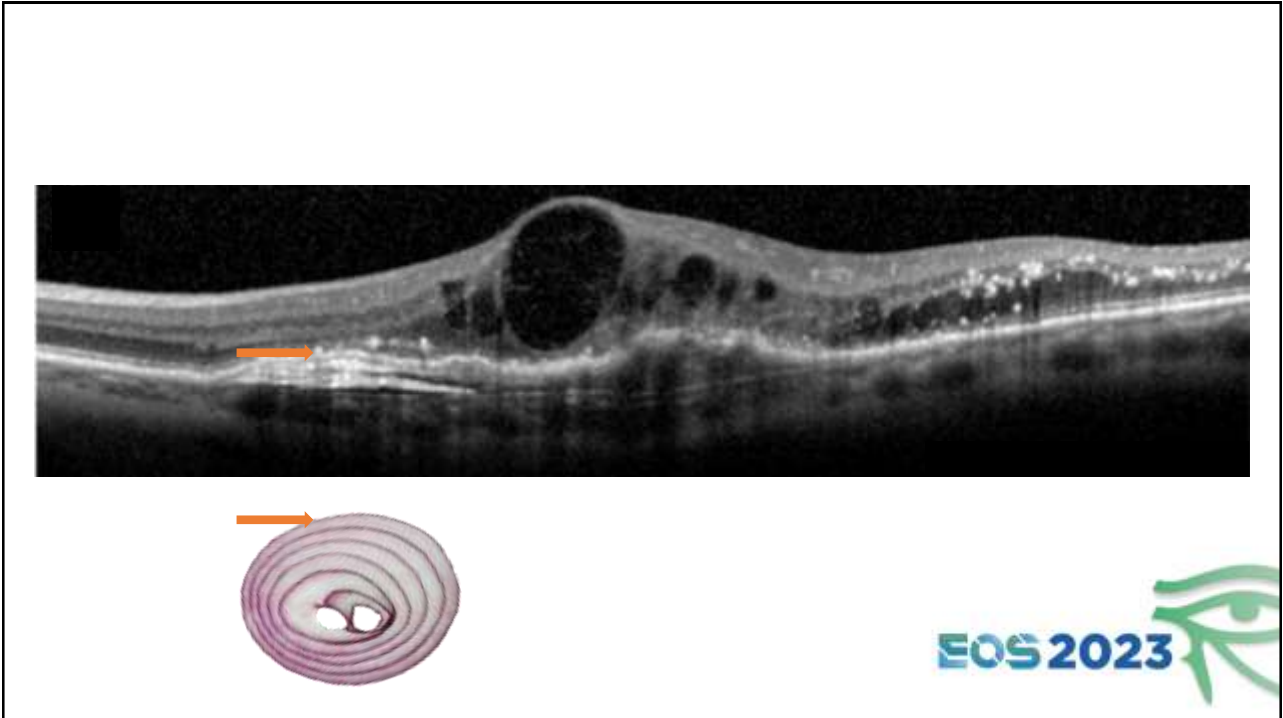
- ✓ Cotton ball sign
- ✓ Acquired vitelliform lesions
- ✓ Foveolar detachment



Pearl necklace sign

Chronic exudative maculopathy





ARTICLE IN PRESS

 AMERICAN ACADEMY
OF OPHTHALMOLOGY
The Eye M.D. Association

The Onion Sign in Neovascular Age-Related Macular Degeneration Represents Cholesterol Crystals

Claudine E. Pang, MD,¹ Jeffrey D. Messinger, DC,³ Emma C. Zanzottera, MD,^{3,4} K. Bailey Freund, MD,^{1,2,5}
Christine A. Curcio, PhD³

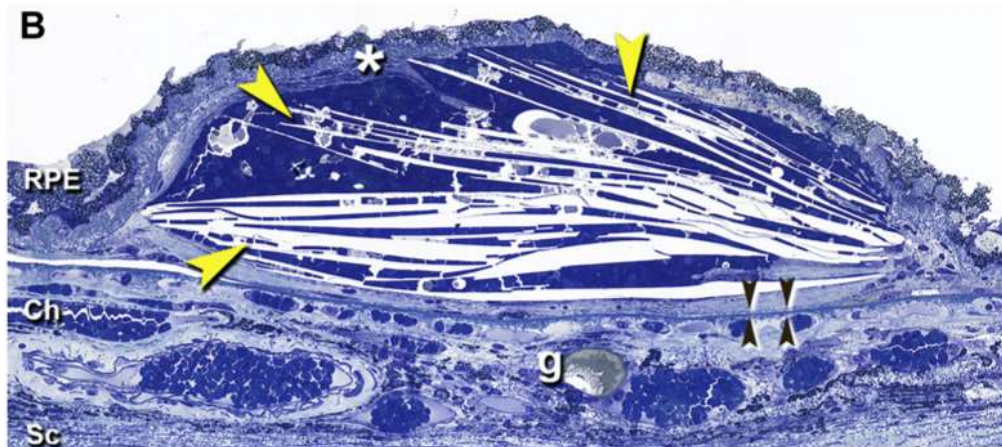
 EOS 2023

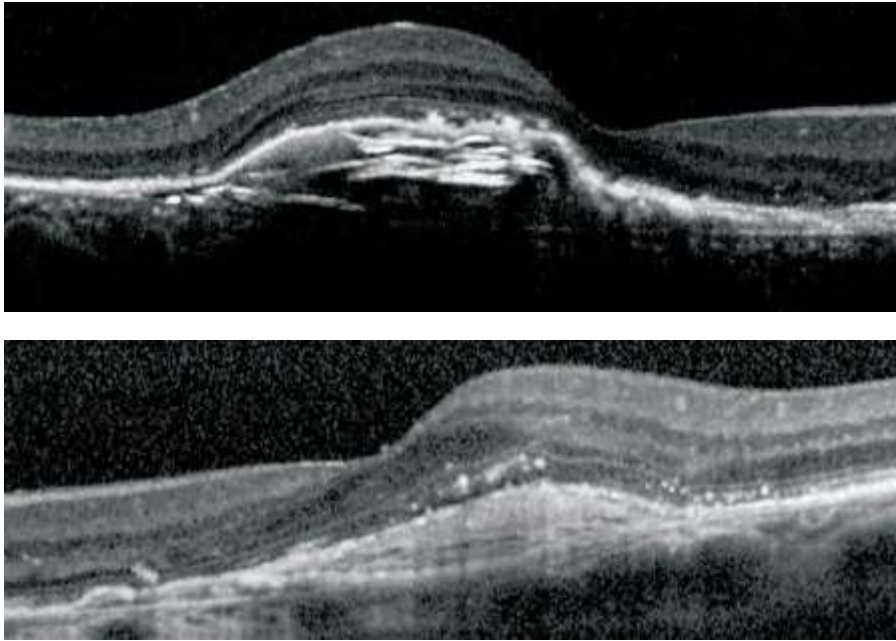
The onion sign was first described by Mukkamala et al¹ as a novel spectral-domain (SD) optical coherence tomography (OCT) finding of layered hyperreflective lines beneath the retinal pigment epithelium (RPE) (the sub-RPE space) usually associated with chronic exudation from type 1 neovascularization in patients with age-related macular degeneration (AMD). Typically associated with intense signal on near-infrared reflectance (NIR) scanning laser ophthalmoscopy (SLO), the onion sign was proposed by its discoverers to represent layers of precipitated lipid amidst chronic exudation^{1,2} after also considering collagen or fibrin.¹ Others authors suggested fibrovascular scarring,³ mechanical strain on Bruch's membrane, and dystrophic

hypercholesterolemia,^{20,21} where birefringence before processing and clefts after processing can be demonstrated directly (Supplemental material, available online at www.aaojournal.org). Our data thus support the original hypotheses that sub-RPE lipids are contributory¹ and that the contributing lipid has the chemical and physical form of crystalline cholesterol.⁶

Discussion

To our knowledge, this study is the first to report frequency, natural history, and histologic correlates of the onion sign in neovascular AMD. A long-lasting yet dynamic structure, the onion sign was visible in approximately 5% to 7% of neovascular AMD eyes and associated positively with intraretinal or subretinal hyperreflective foci and intraretinal fluid. A possible association between the onion sign and systemic hypercholesterolemia was suggested by a significantly higher use of cholesterol-lowering medications in cases compared with controls. Histologic analysis of 2 patients with RPE elevation and sub-RPE hemorrhage or fluid revealed that hyperreflective lines correlated with clefts created by the extraction of cholesterol crystals during tissue processing (Supplemental Fig 2, available online at www.aaojournal.org). Such crystals were reported in human eye pathologic settings^{11,19} and in experimental





ORIGINAL ARTICLE

Open Access

Findings of uncertain significance by optical coherence tomography (OCT) as prognostic factors in neovascular age-related macular degeneration (nAMD) treated with ranibizumab

Ricardo Hayashi-Mercado^{1*}, Carla Pérez-Montaña¹, Jaime Reyes-Sánchez² and Abel Ramírez-Estudillo³

Conclusions

The presence of the following findings was associated with lower visual gains post-treatment: prechoroïdal cleft, intraretinal and subretinal pseudocysts and choroïdal caverns. This could be attributed to a degenerative change that does not need treatment. Moreover, we found that the onion sign is related as a biomarker of good functional and anatomical prognosis. The onion sign could signify an active CNV that could be benefited of treatment, this could be due to chronic exudation trapped in tissue with abundant fibrosis.

OCT biomarkers are suitable to predict VA in patients with nAMD, and to guide the treatment and follow-up of the patients, improving quality of nAMD management. For this reason, continuing to explore new biomarkers that improve the management of nAMD is very important.

I'd like to express my deepest gratitude to my mentor,



Dr. Mohamed Sharaf
Associate professor of Ophthalmology,
Assiut University

