

OCT u Optometrijskoj praksi

M.Sc. Jaka Kukovič

What is OCT?

- Optical coherence tomography (OCT) is a non-invasive imaging test that uses light waves to take cross-section pictures

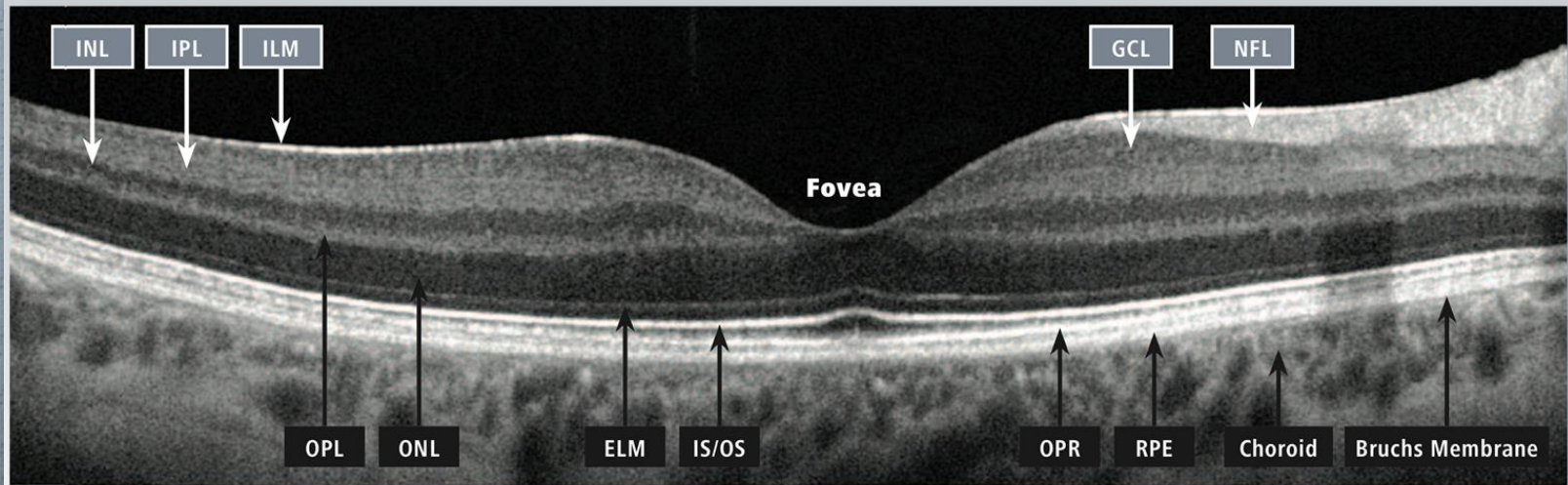
Benefits of OCT

- Record keeping
- Non-invasive
- Cross section view of the retina
- Comparison with normative database

Drawbacks of OCT

- False sense of security with wrong interpretation (due to unskilled observer)
- Vascular diseases
- Periphery

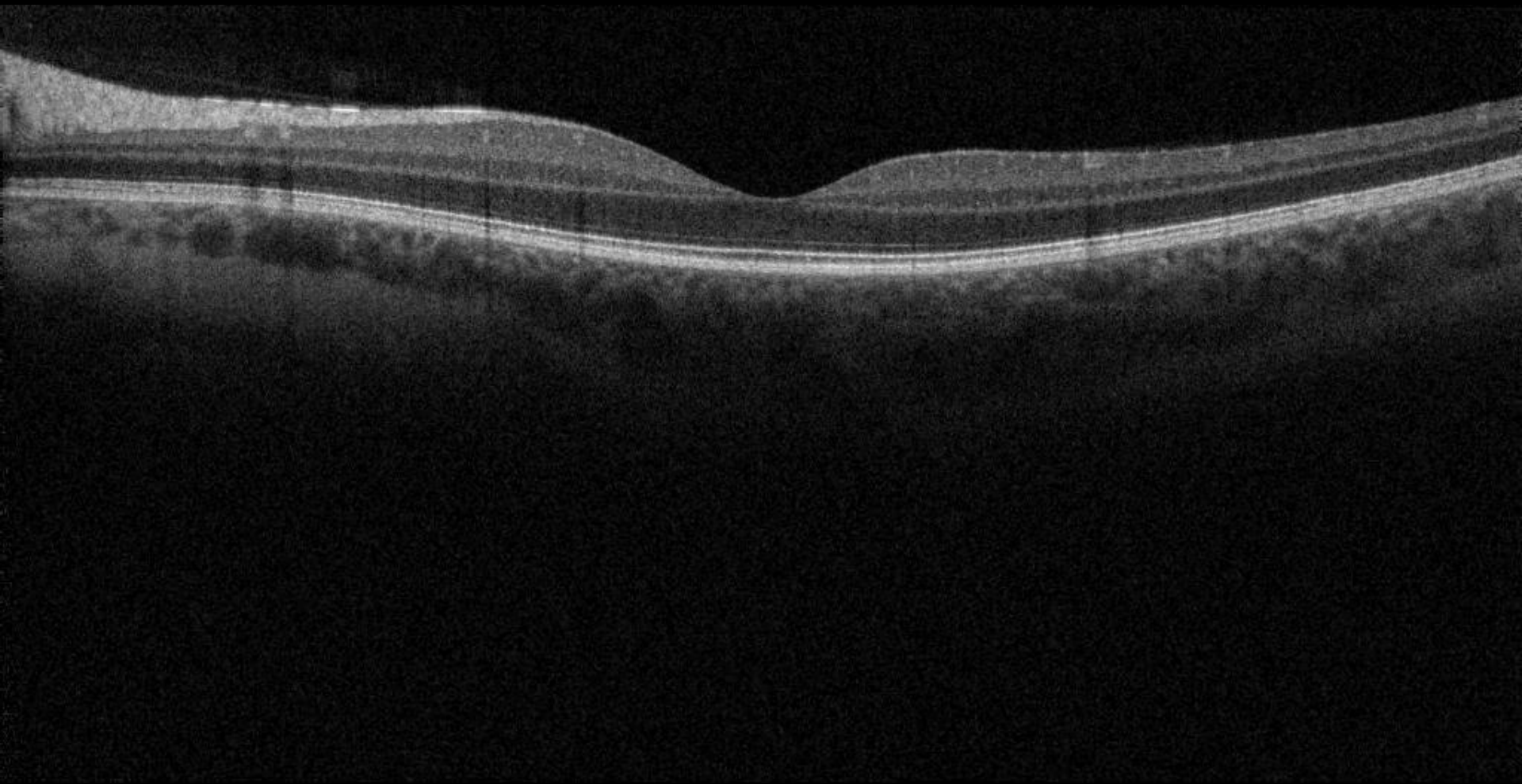
Normal retina

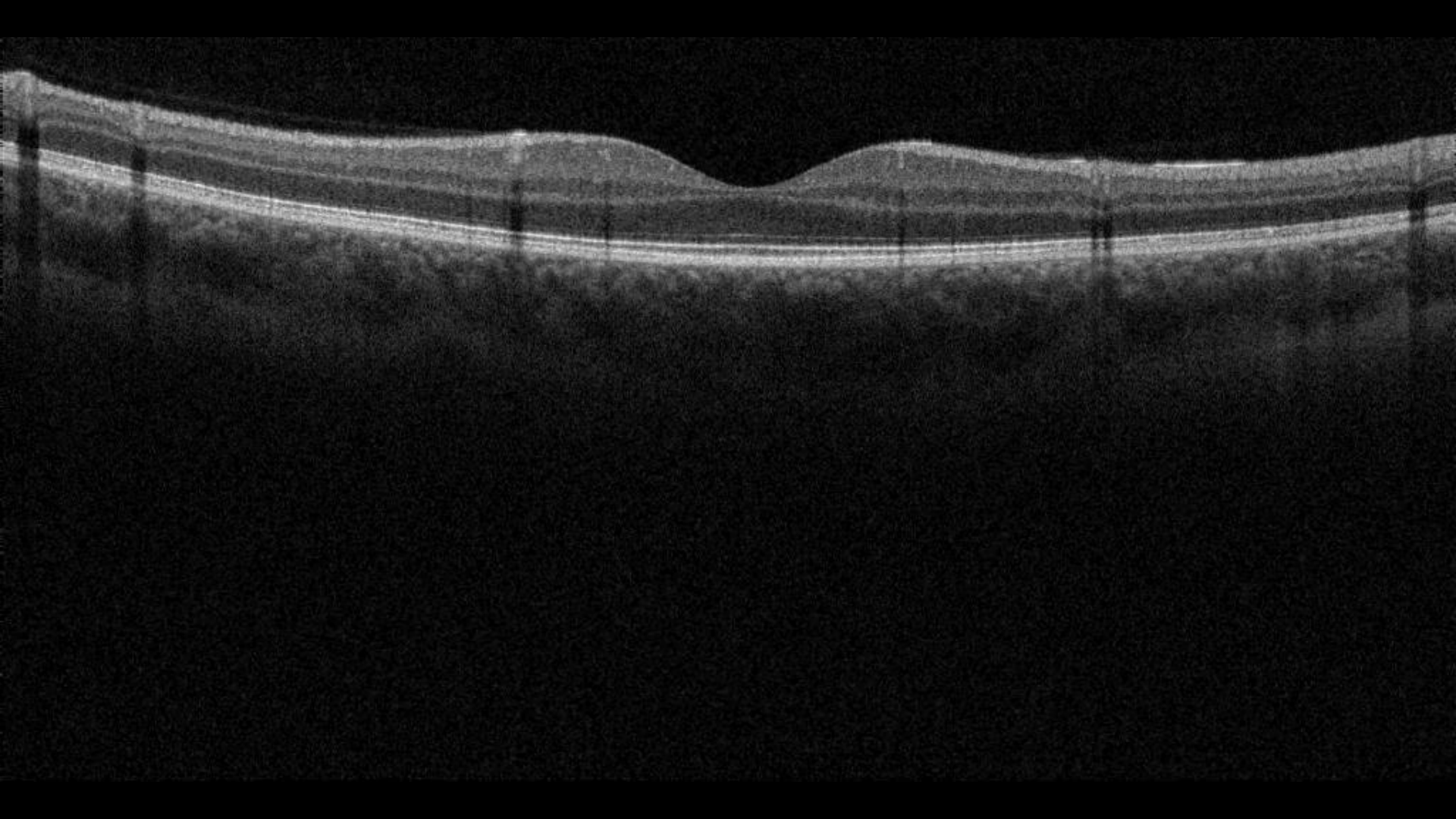


ILM: Inner limiting membrane
IPL: Inner plexiform layer
INL: Inner nuclear layer
OPL: Outer plexiform layer
ONL: Outer nuclear layer

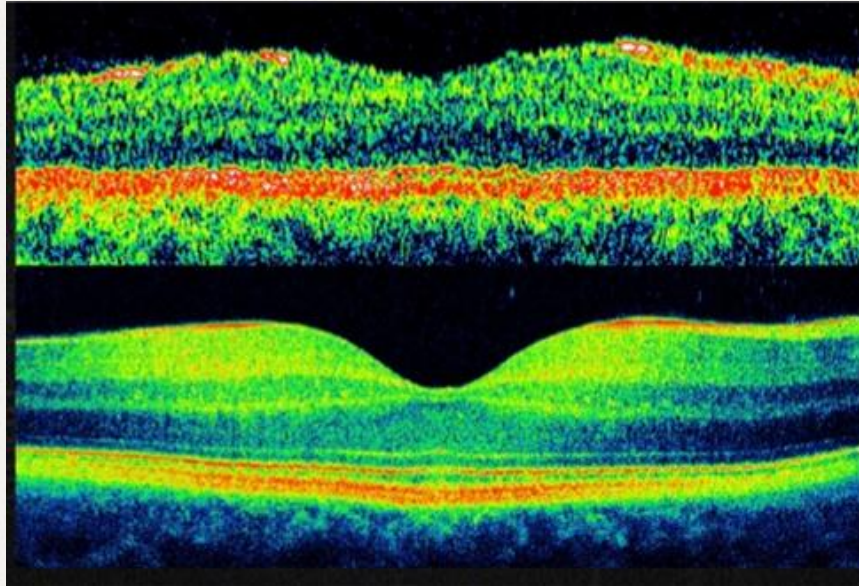
ELM: External limiting membrane
IS/OS: Junction of inner and outer
photoreceptor segments
OPR: Outer segment PR/RPE complex

NFL: Nerve fiber layer
GCL: Ganglion cell layer
RPE: Retinal pigment epithelium
+ Bruch's Membrane





Time domain vs spectral domain



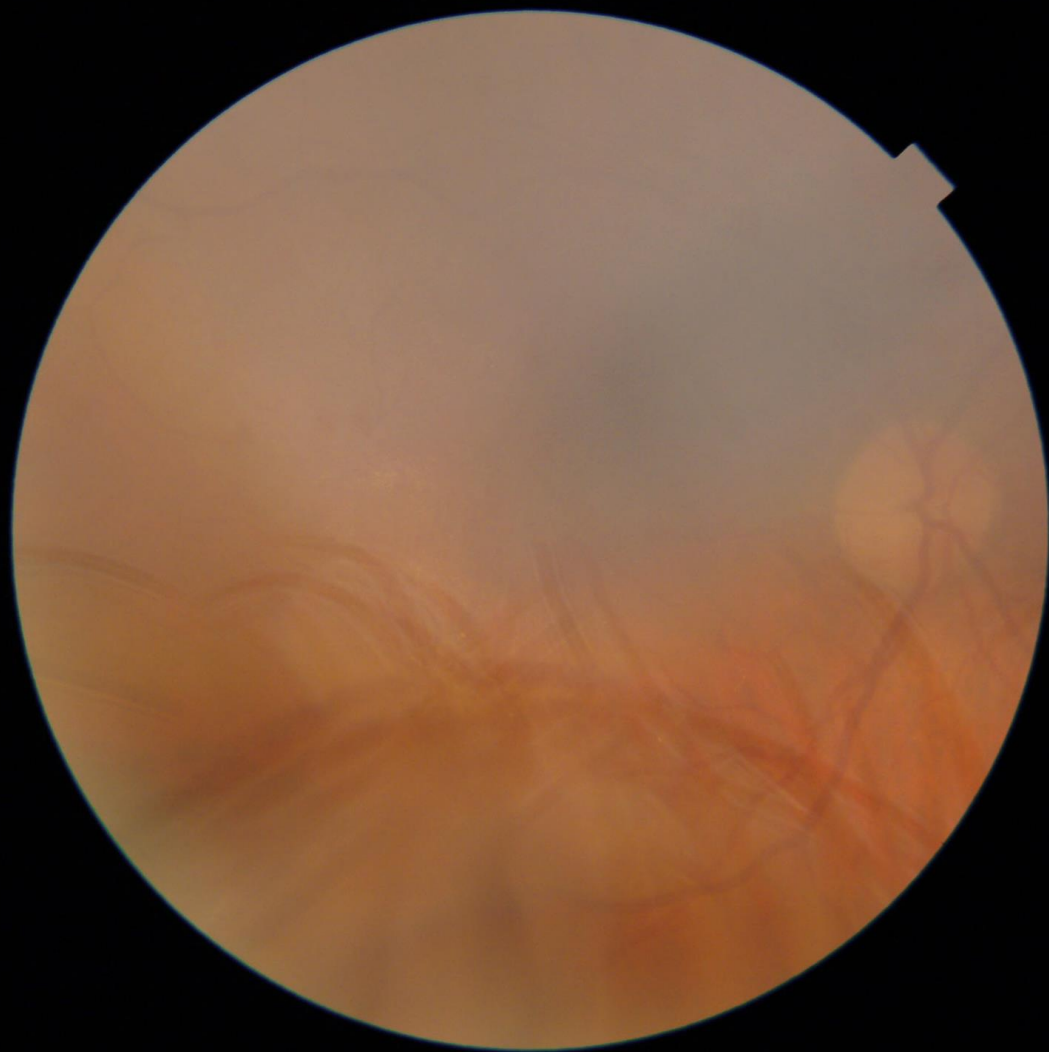
Case 1

69 year old male

History of glaucoma in his family

Has troubles with rifle shooting

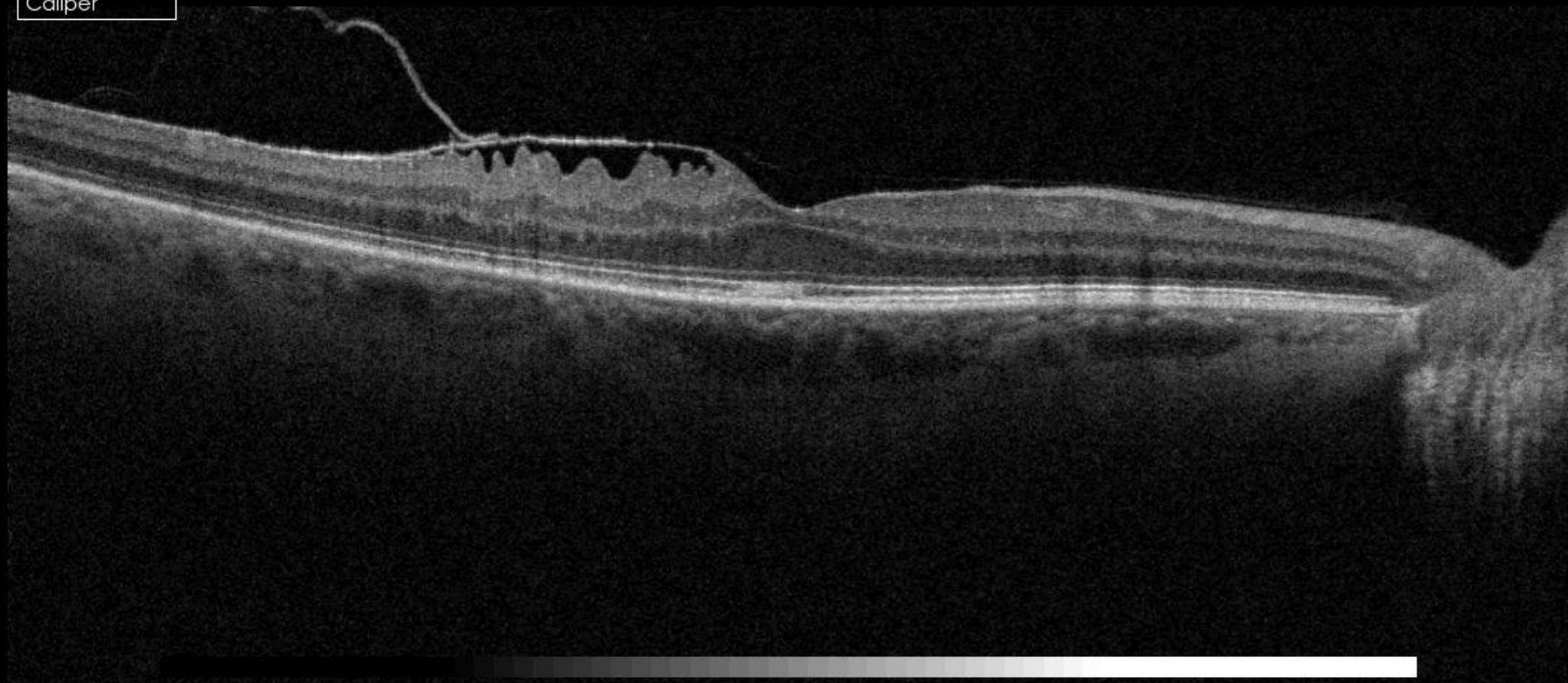
VA 1,0 / 1,0



ILM
IS/OS
OS/RPE
BM
Caliper

Averaging success rate 4/4

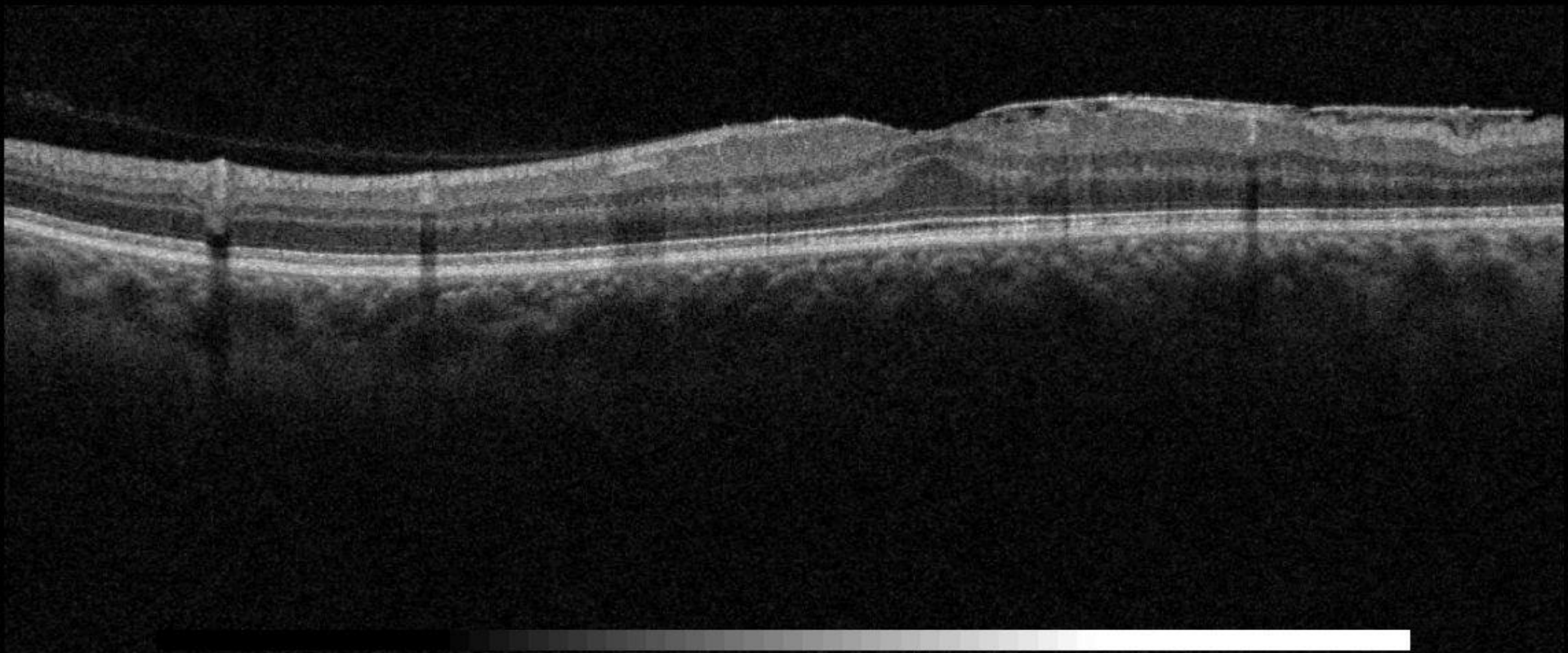
← 3



ILM
IS/OS
OS/RPE
BM
Caliper

7 →

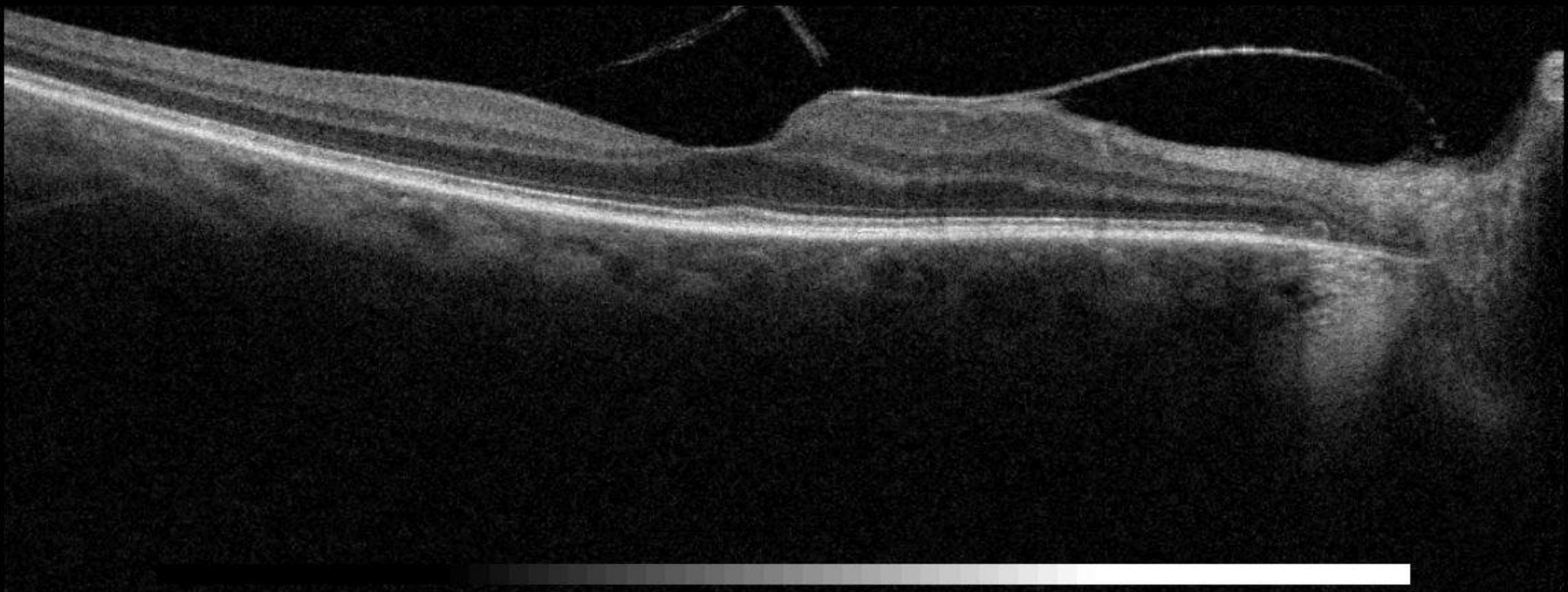
Averaging success rate 4/4



ILM
IS/OS
OS/RPE
BM
Caliper

Averaging success rate 4/4

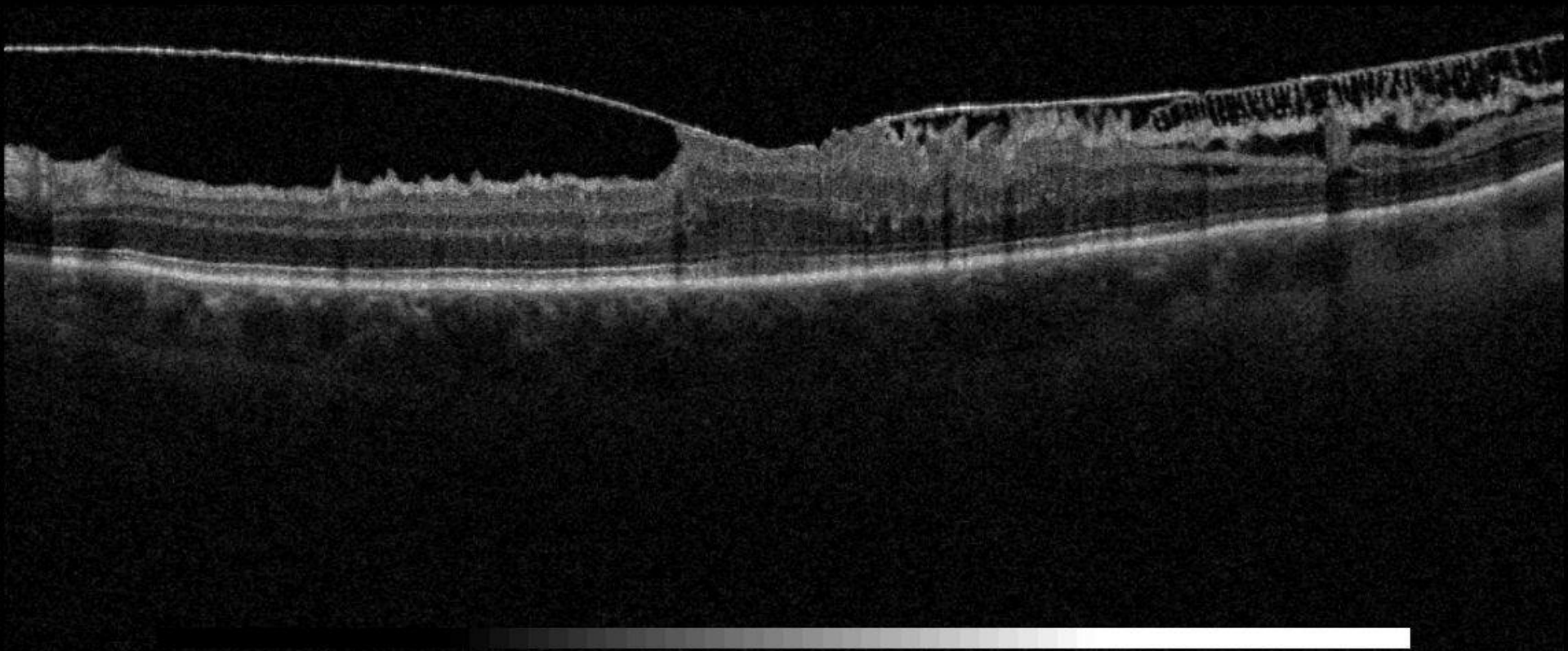
← 3



ILM
IS/OS
OS/RPE
BM
Caliper

7 →

Averaging success rate 4/4

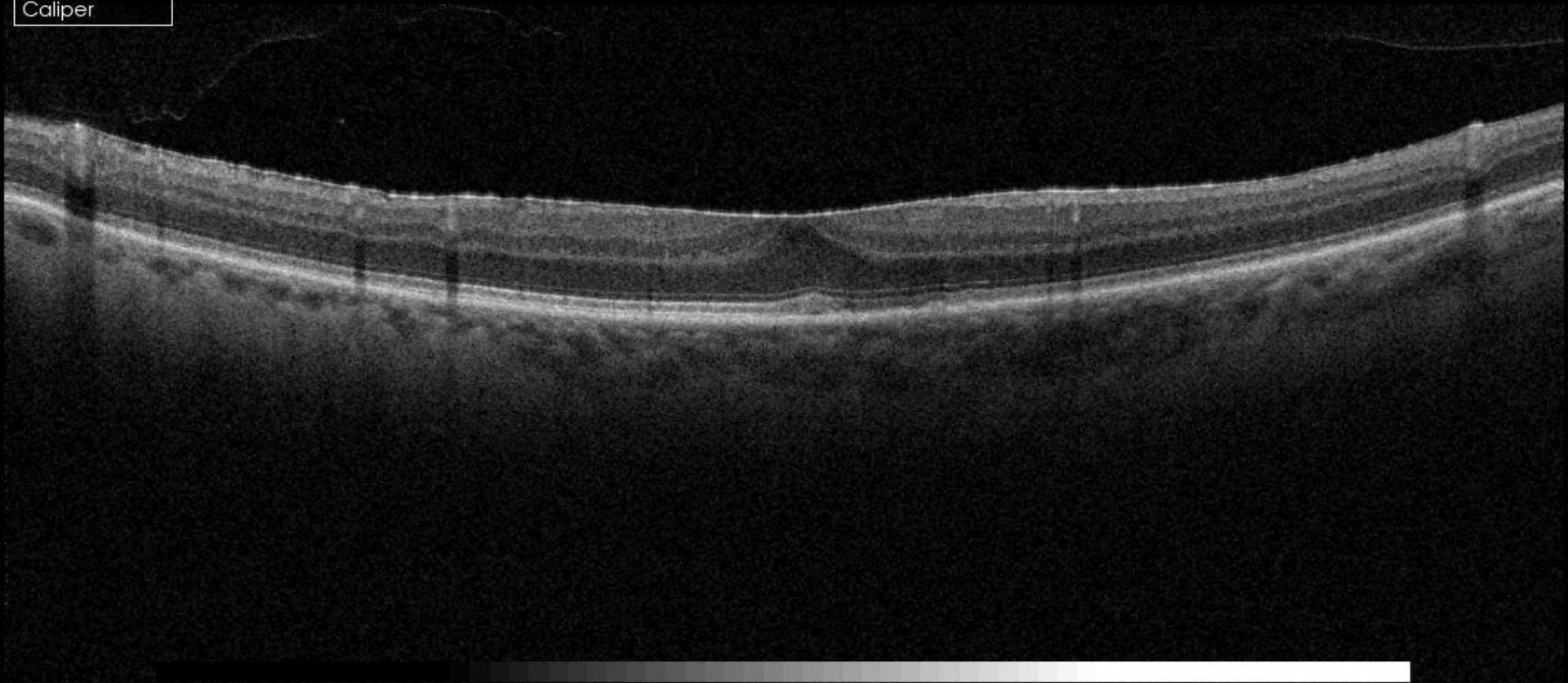


ILM
IS/OS
OS/RPE
BM
Caliper

8



Averaging success rate 4/4



Case 2

50 year old male
Dry eyes

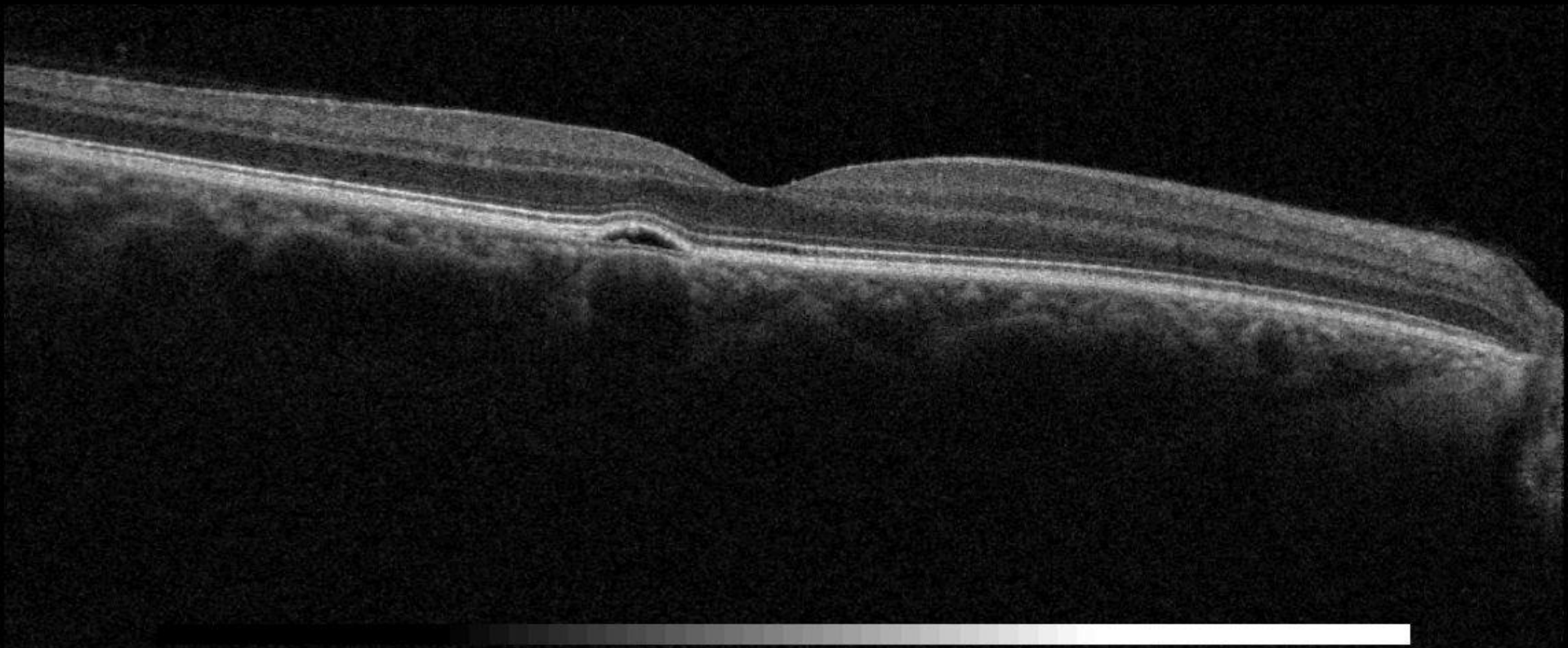
VA: 1,0 / 1,0



ILM
IS/OS
OS/RPE
BM
Caliper

Averaging success rate 4/4

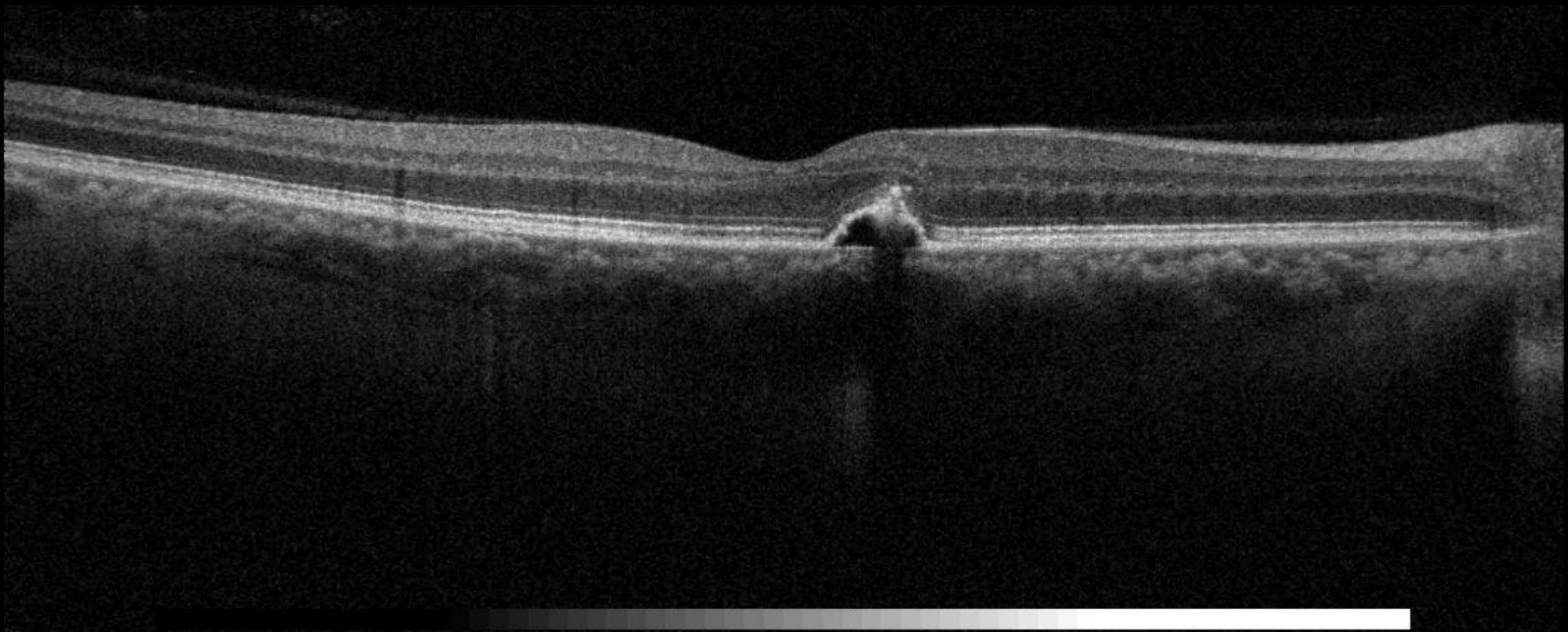
← 3



ILM
IS/OS
OS/RPE
BM
Caliper

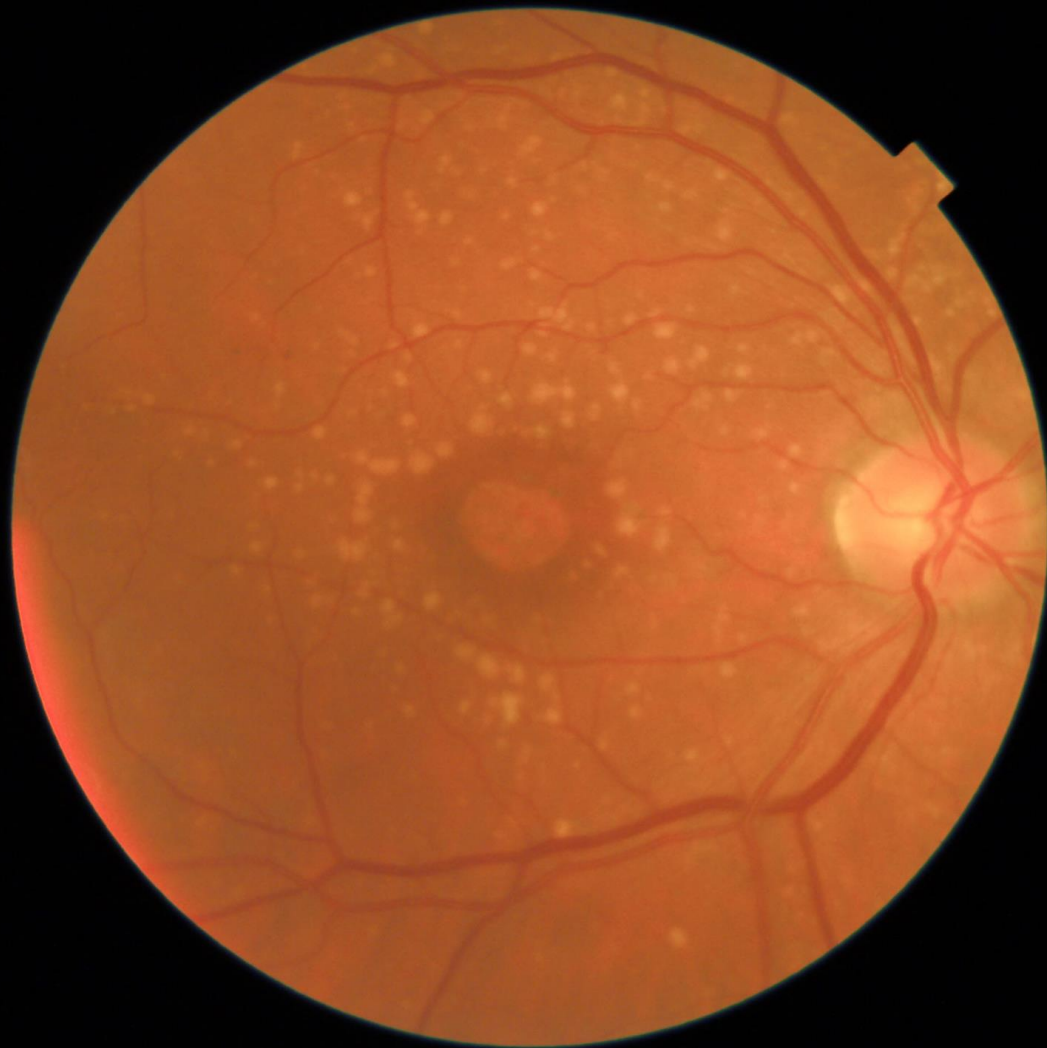
Averaging success rate 4/4

← 5



Case 3

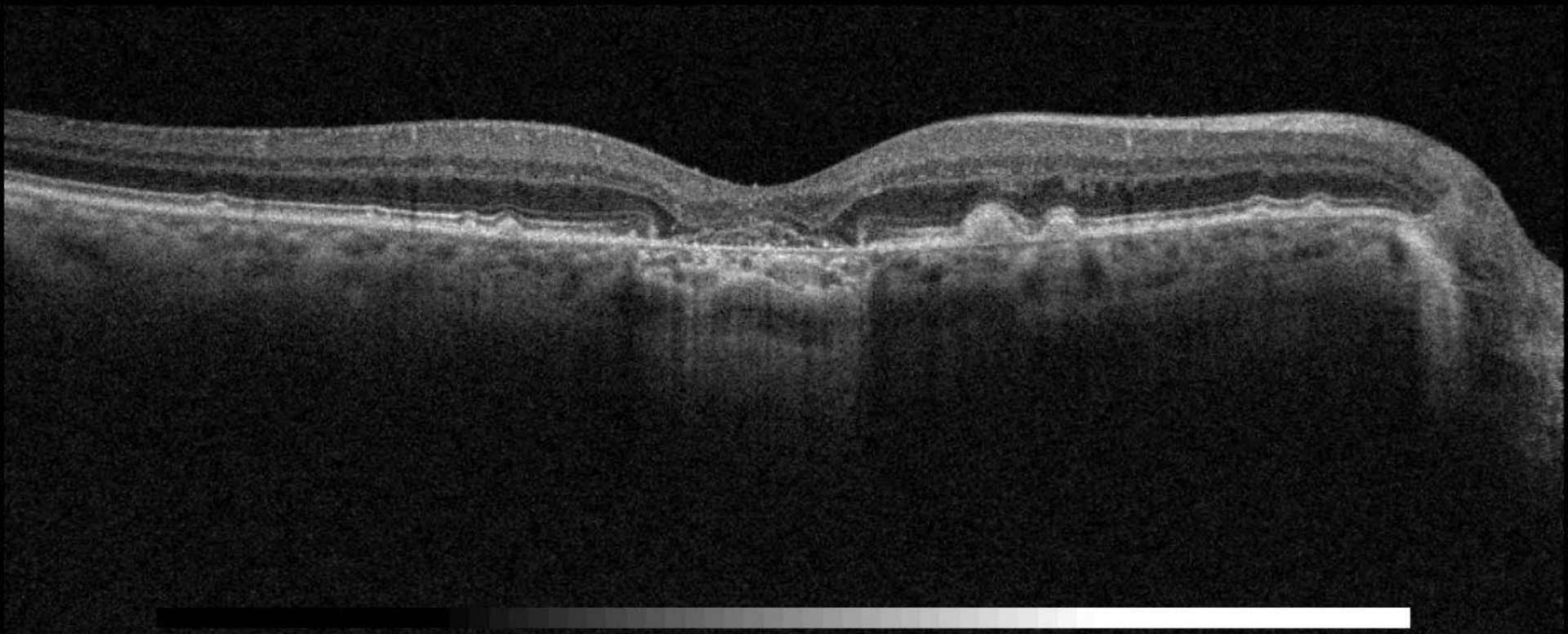
79 year old male
Dry AMD OD



ILM
IS/OS
OS/RPE
BM
Caliper

Averaging success rate 4/4

← 3

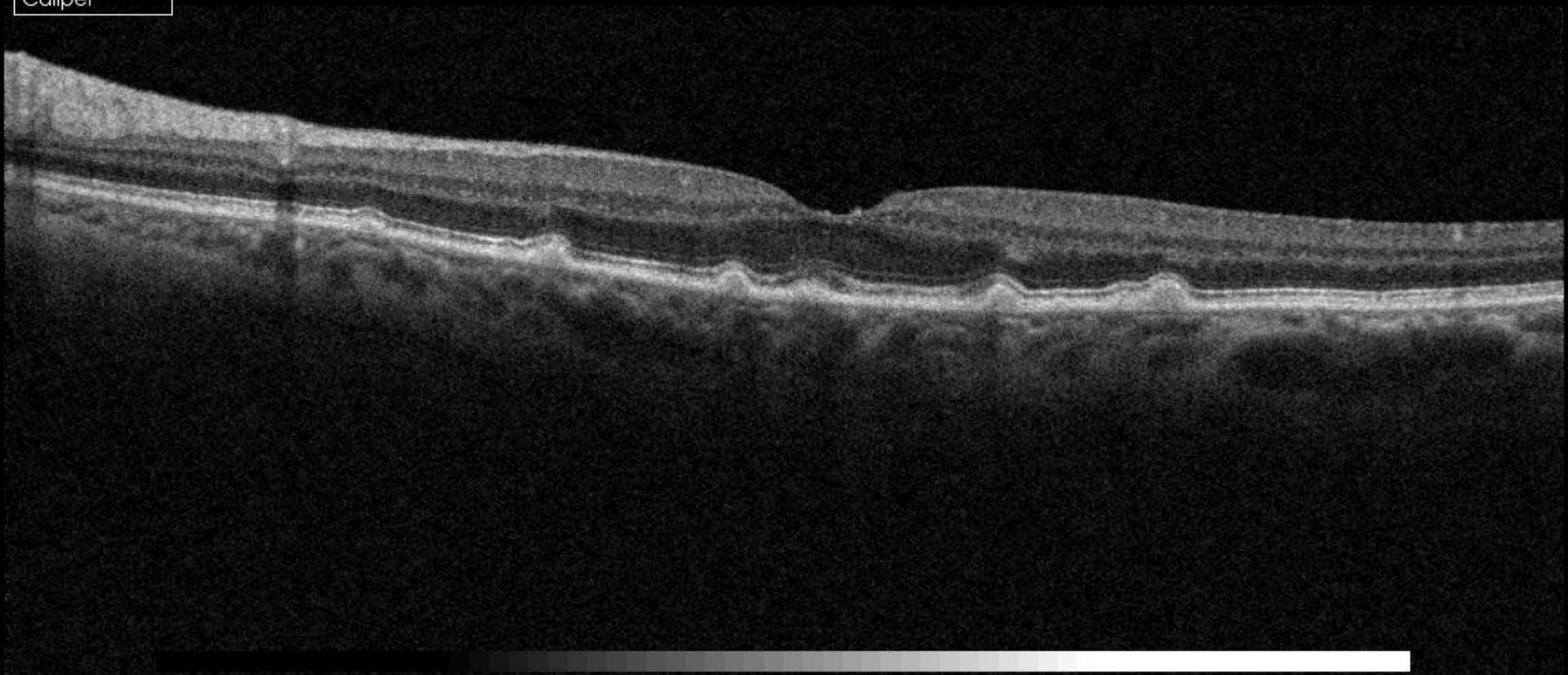




ILM
IS/OS
OS/RPE
BM
Caliper

3 →

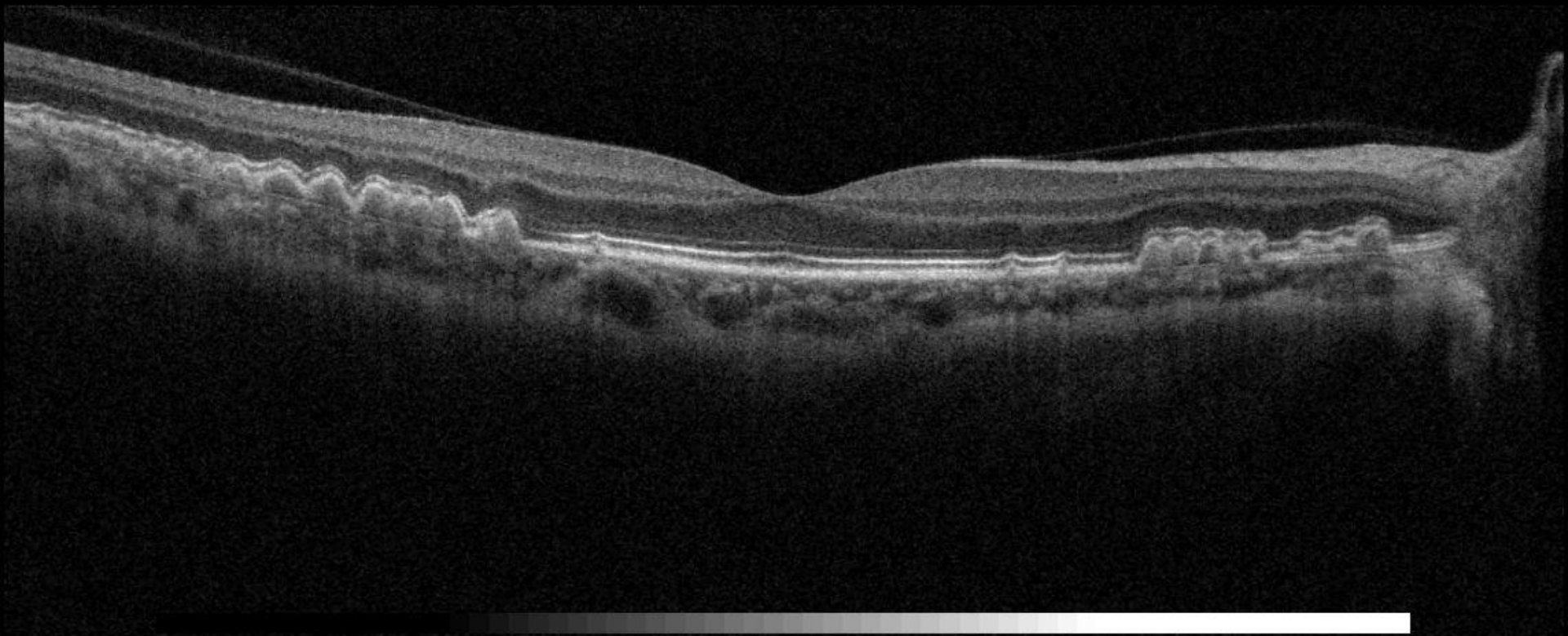
Averaging success rate 4/4



ILM
IS/OS
OS/RPE
BM
Caliper

Averaging success rate 4/4

← 3



Case 4

74 year old female
Higher blood pressure
Cataract OS>OD

VA: <0.05 / 0.5

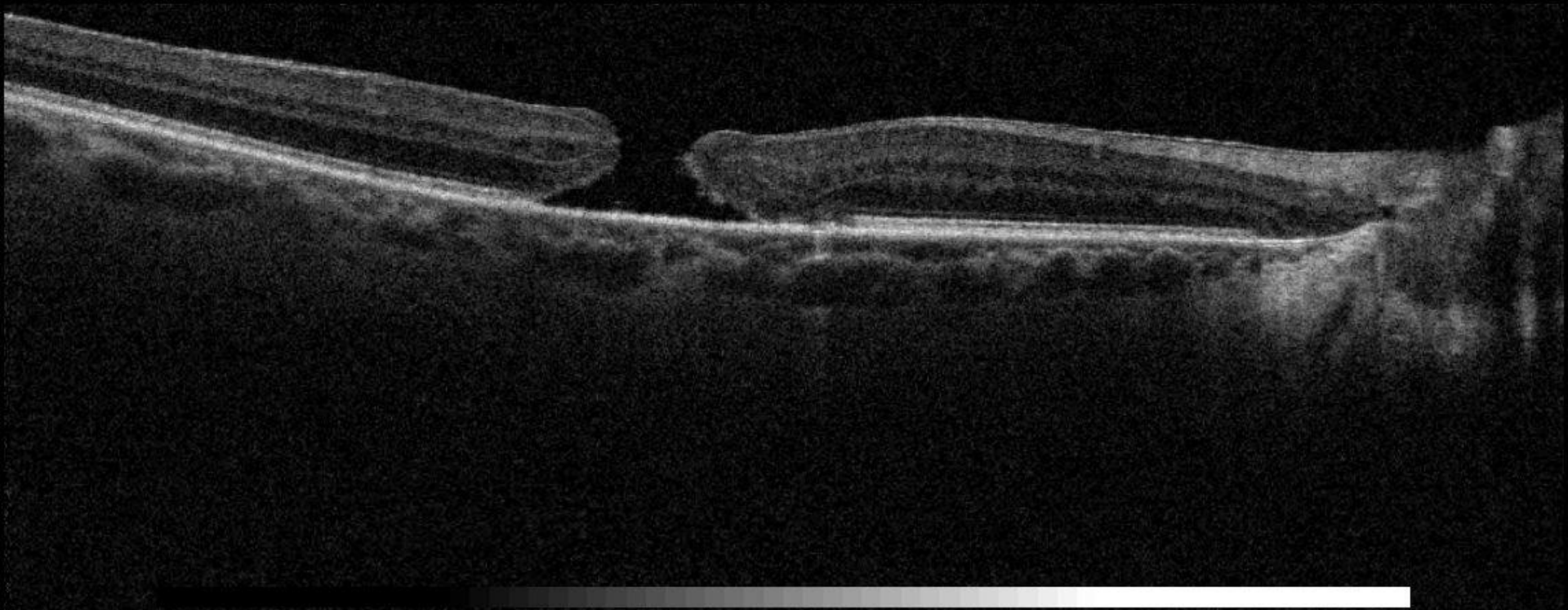


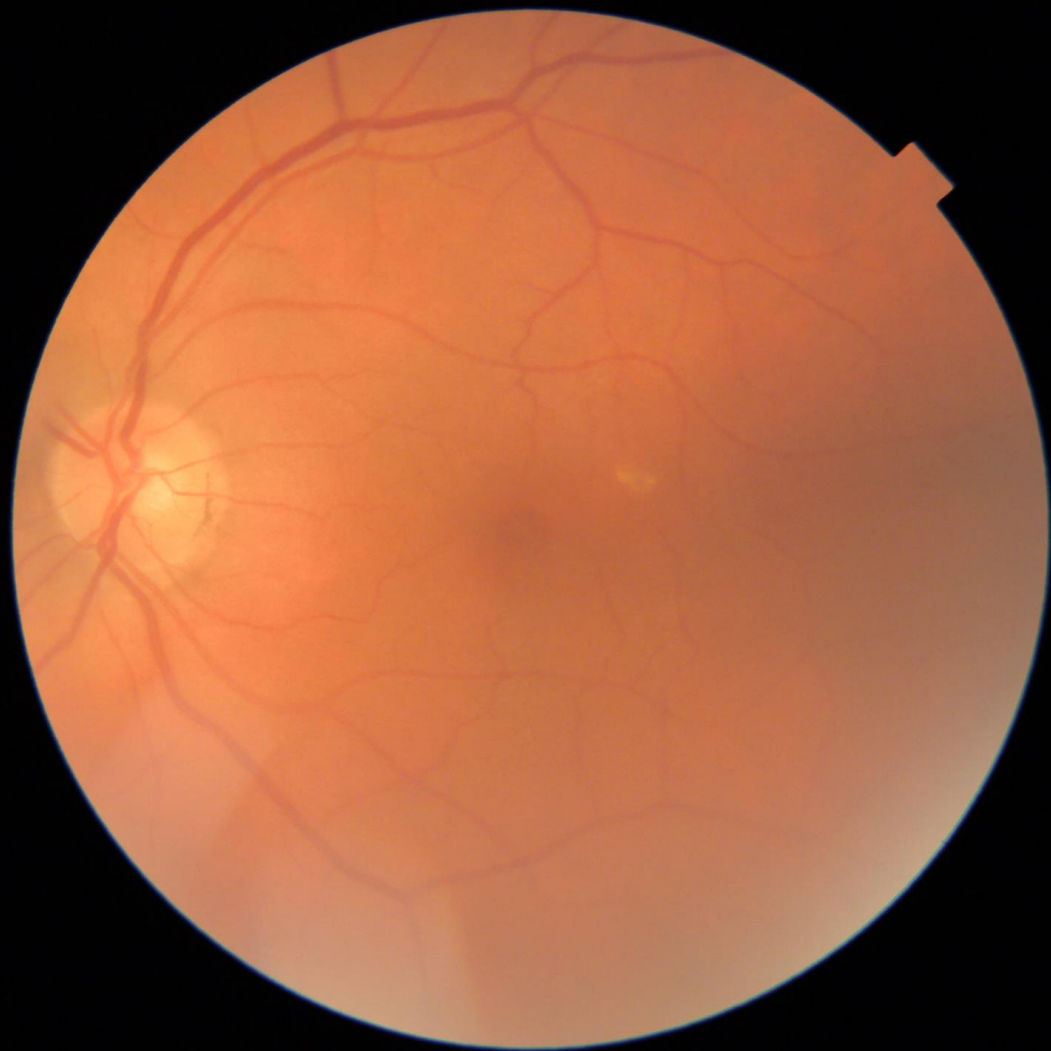


ILM
IS/OS
OS/RPE
BM
Caliper

Averaging success rate 4/4

← 3



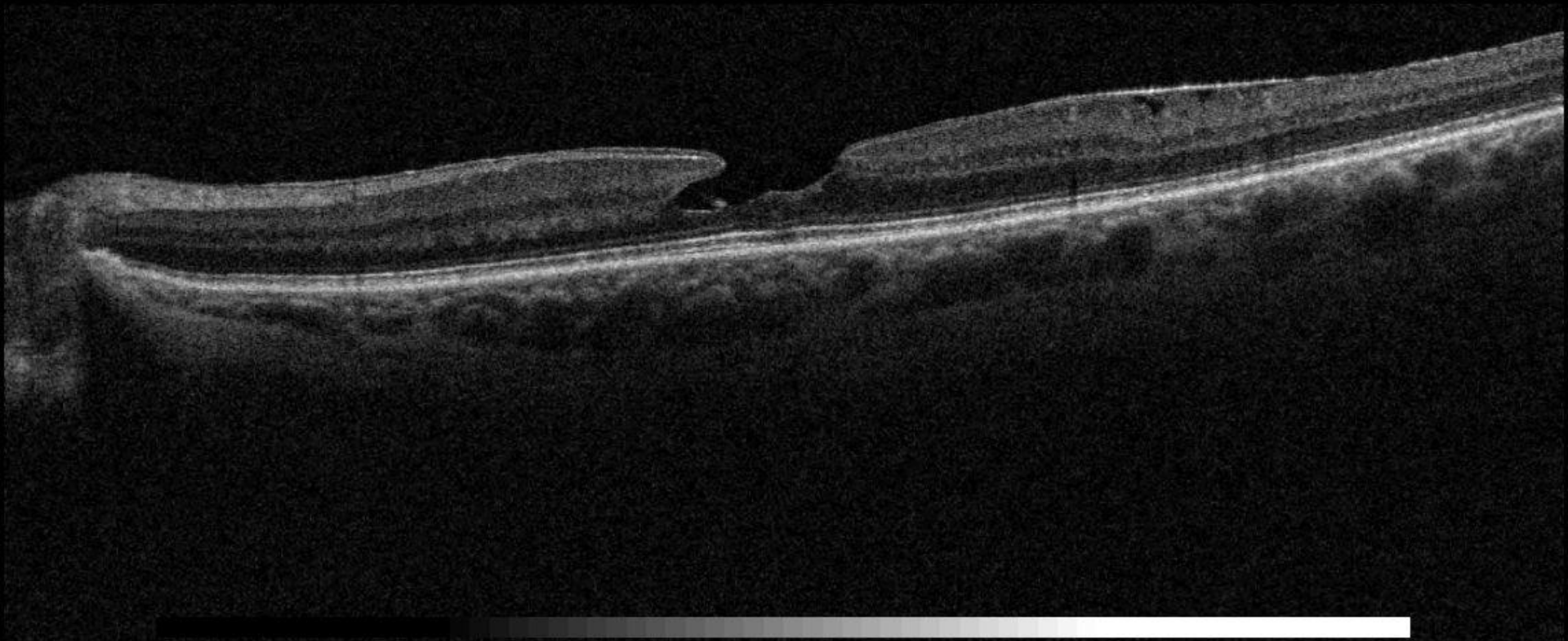


ILM
IS/OS
OS/RPE
BM
Caliper

3



Averaging success rate 4/4



Case 5

50+ years old female

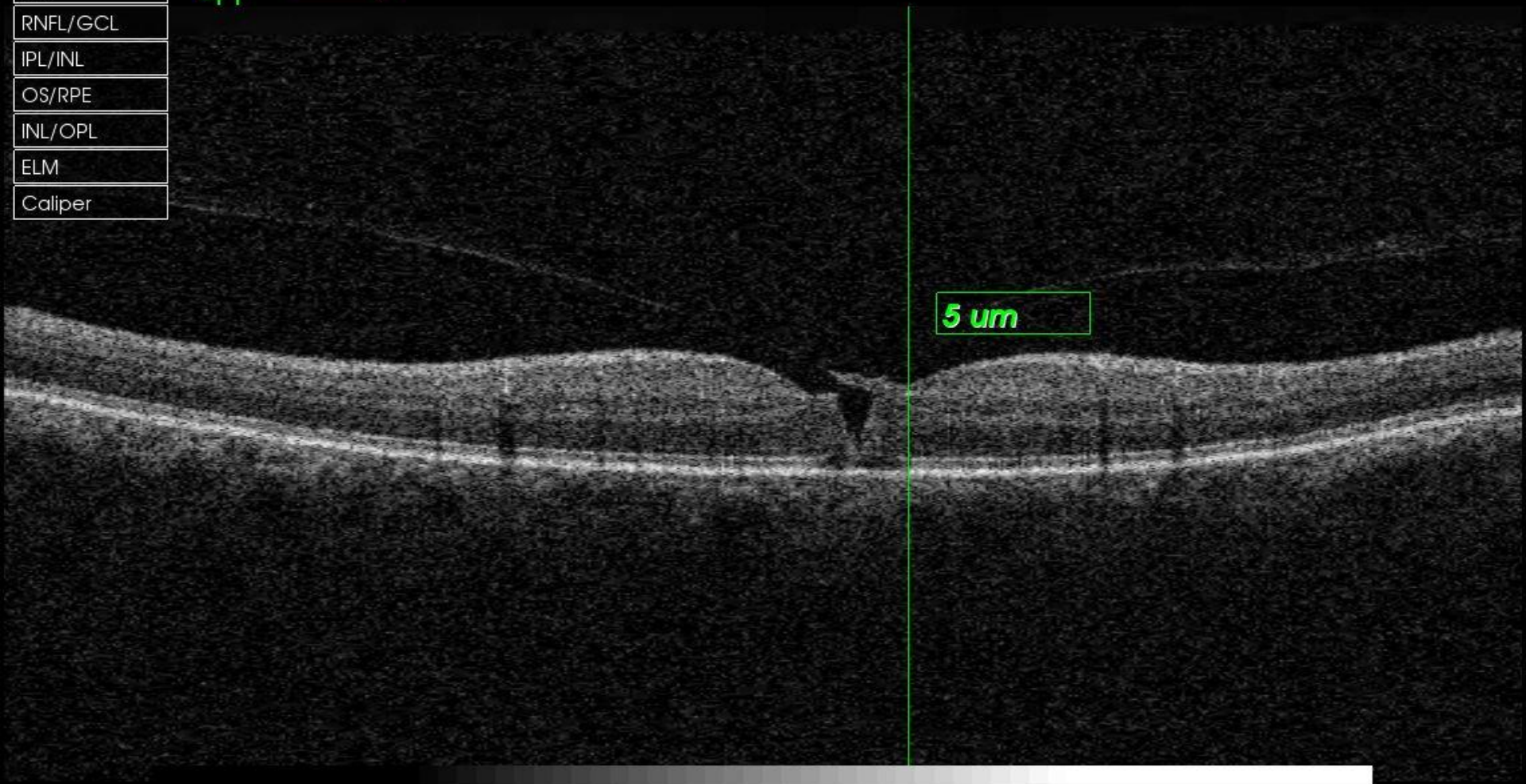
Noticed decrease of vision OD for the last few weeks



ILM
RNFL/GCL
IPL/INL
OS/RPE
INL/OPL
ELM
Caliper

41 →

5 um



Case 6

63 year old male

Diabetes type II

Proliferative DR + macular edema

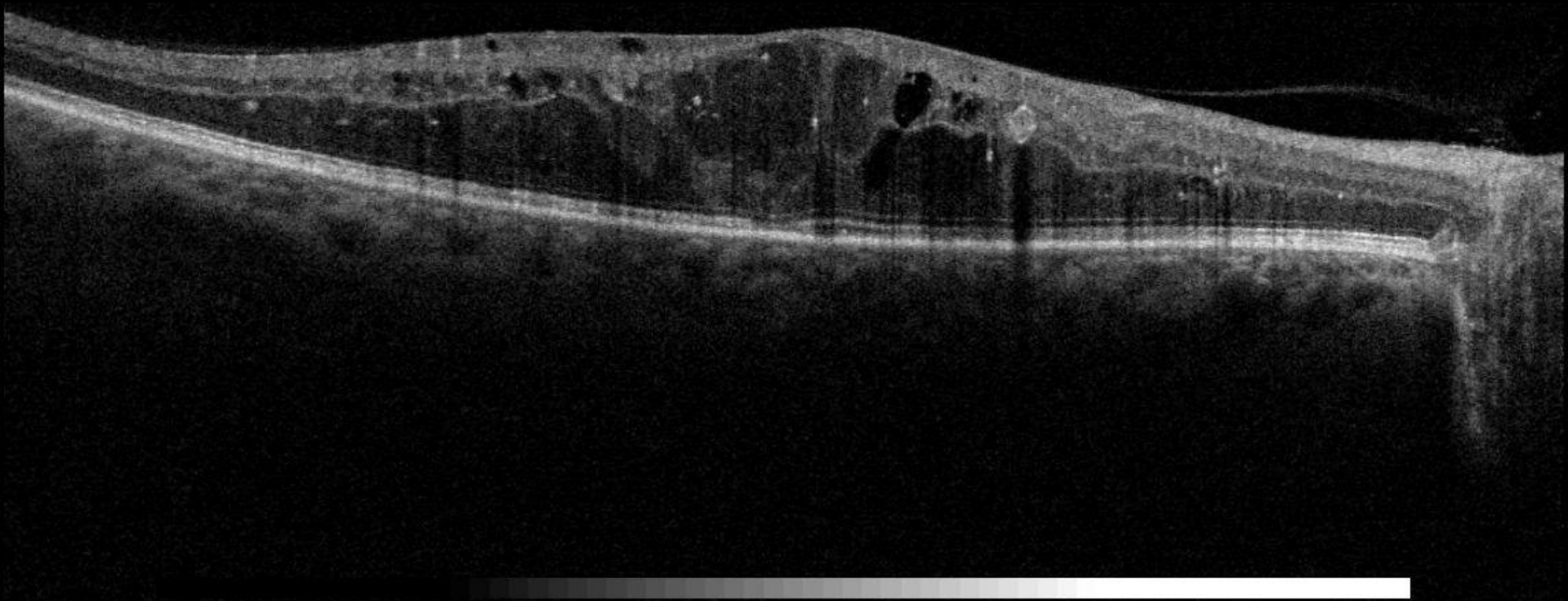
Currently receiving anti-VEGF injections

VA: 0,2 / 0,7

ILM
IS/OS
OS/RPE
BM
Caliper

Averaging success rate 4/4

← 3

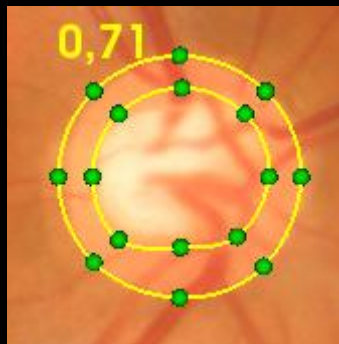


Case 7

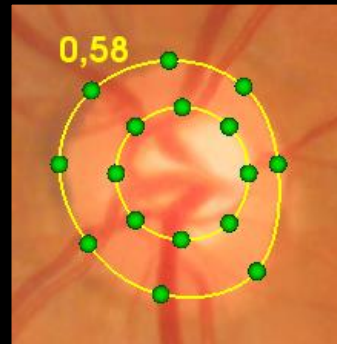
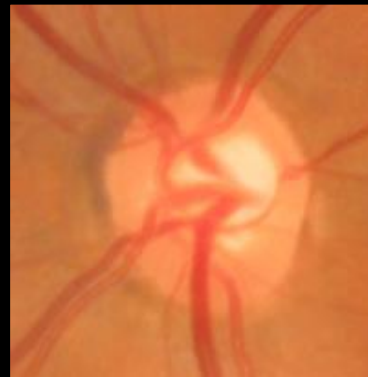
59 year old female

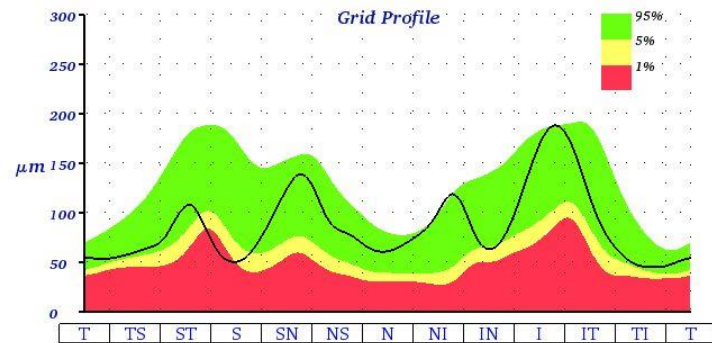
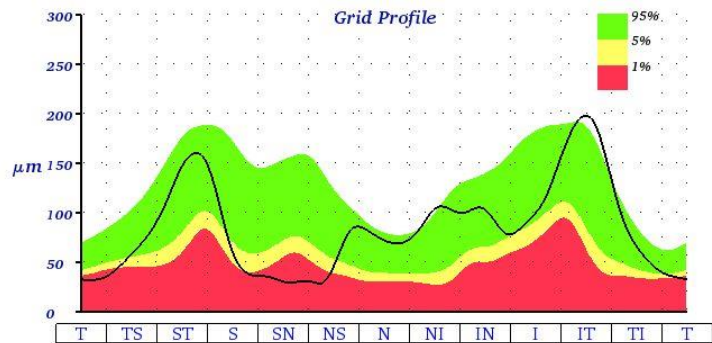
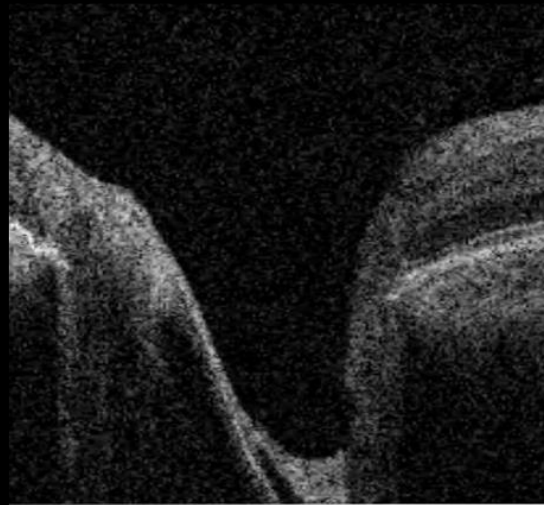
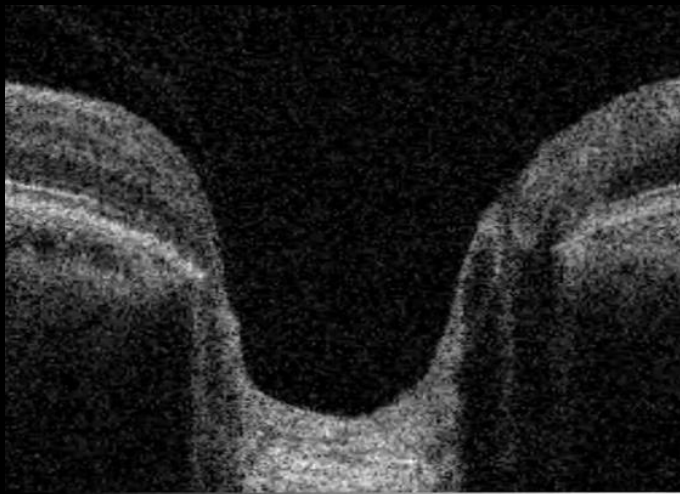
VA: 1,0 / 1,0--

CD ratio 0,63



CD ratio 0,69

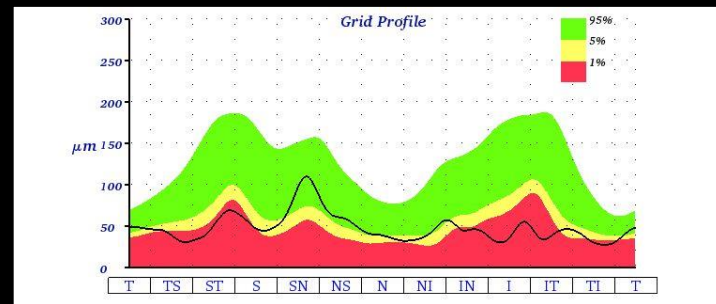
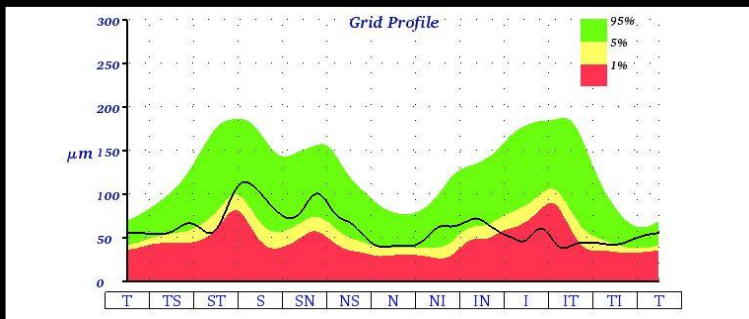
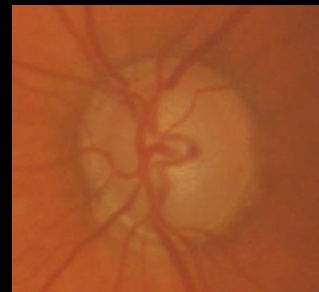
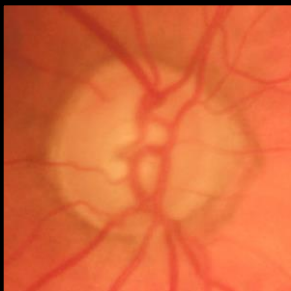




Case 7

69 year old female
Uzima Xalatan

VA: ??



3D Disc Report w/ Topography

ID : 9018200

Name :

OD(R)

TopQ Image Quality : 49 mode : Fine(2.0.7)
Capture Date : 11.04.2017

3D OCT-1(Ver.8.40)

Print Date : 11.04.2017

Ethnicity : Caucasian

Gender : Female

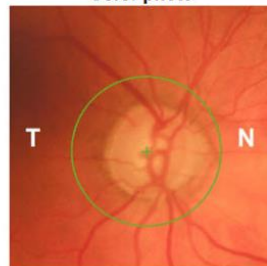
DOB : 04.06.1947 Age : 69

Technician :

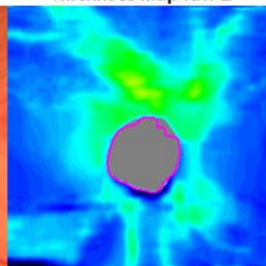
Fixation : OD(R) Disc

Scan : 3D(6,0 x 6,0mm - 512 x 128)

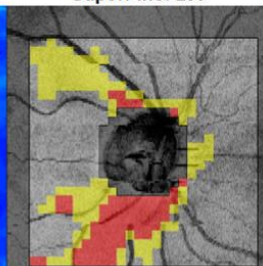
Color photo



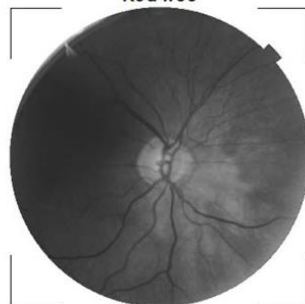
Thickness Map RNFL



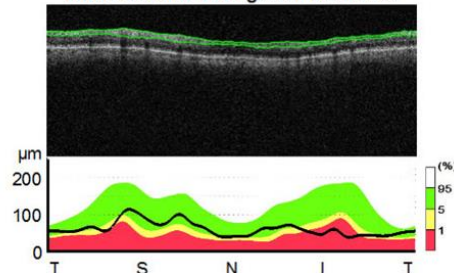
SuperPixel-200



Red-free

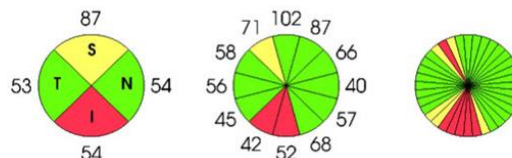


RNFL Circular Tomogram / Thickness



Average thickness RNFL(μm)

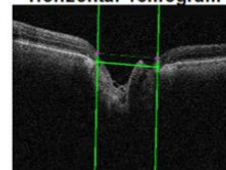
Total Thickness	62
Superior	87
Inferior	54



Disc Topography



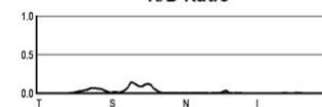
Horizontal Tomogram



Disc margin
Cup margin

Disc Area	(mm ²)	2,22
Cup Area	(mm ²)	2,06
Rim Area	(mm ²)	0,16
C/D Area Ratio		0,93
Linear CDR		0,96
Vertical CDR		1,00
Cup Volume	(mm ³)	0,47
Rim Volume	(mm ³)	0,01
Horizontal D.D	(mm)	1,68
Vertical D.D	(mm)	1,75

R/D Ratio



Disc parameters are determined at the reference plane height of 120 microns from the RPE plane in this version.

Comments :

Signature :

Date :

3D Disc Report w/ Topography

ID : 9018200

Name :

OS(L)

TopQ Image Quality : 38 mode : Fine(2.0.7)
Capture Date : 11.04.2017

3D OCT-1(Ver.8.40)

Print Date : 11.04.2017

Ethnicity : Caucasian

Gender : Female

DOB : 04.06.1947 Age : 69

Technician :

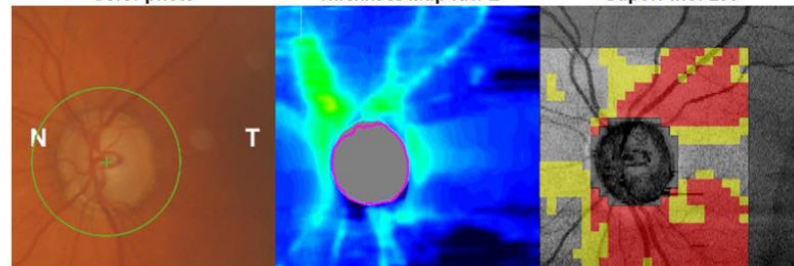
Fixation : OS(L) Disc

Scan : 3D(6,0 x 6,0mm - 512 x 128)

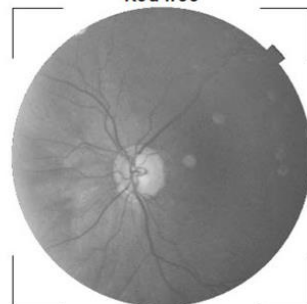
Color photo

Thickness Map RNFL

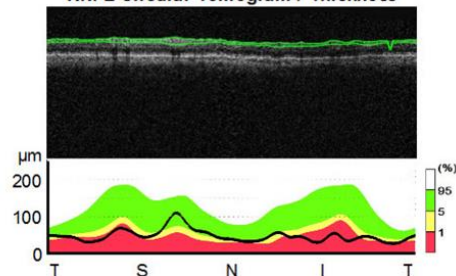
SuperPixel-200



Red-free

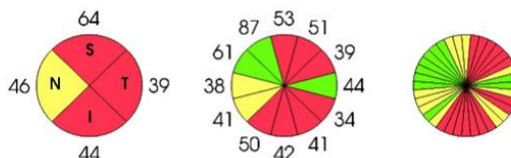


RNFL Circular Tomogram / Thickness



Average thickness RNFL(μm)

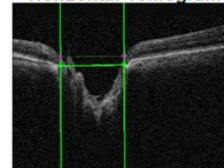
Total Thickness	48
Superior	64
Inferior	44



Disc Topography



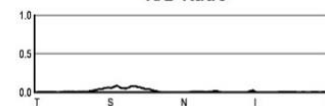
Horizontal Tomogram



Disc margin
Cup margin

Disc Area	(mm ²)	2,68
Cup Area	(mm ²)	2,53
Rim Area	(mm ²)	0,15
C/D Area Ratio		0,94
Linear CDR		0,97
Vertical CDR		0,97
Cup Volume	(mm ³)	0,81
Rim Volume	(mm ³)	0,01
Horizontal D.D	(mm)	1,75
Vertical D.D	(mm)	1,95

R/D Ratio



Disc parameters are determined at the reference plane height of 120 microns from the RPE plane in this version.

Comments :

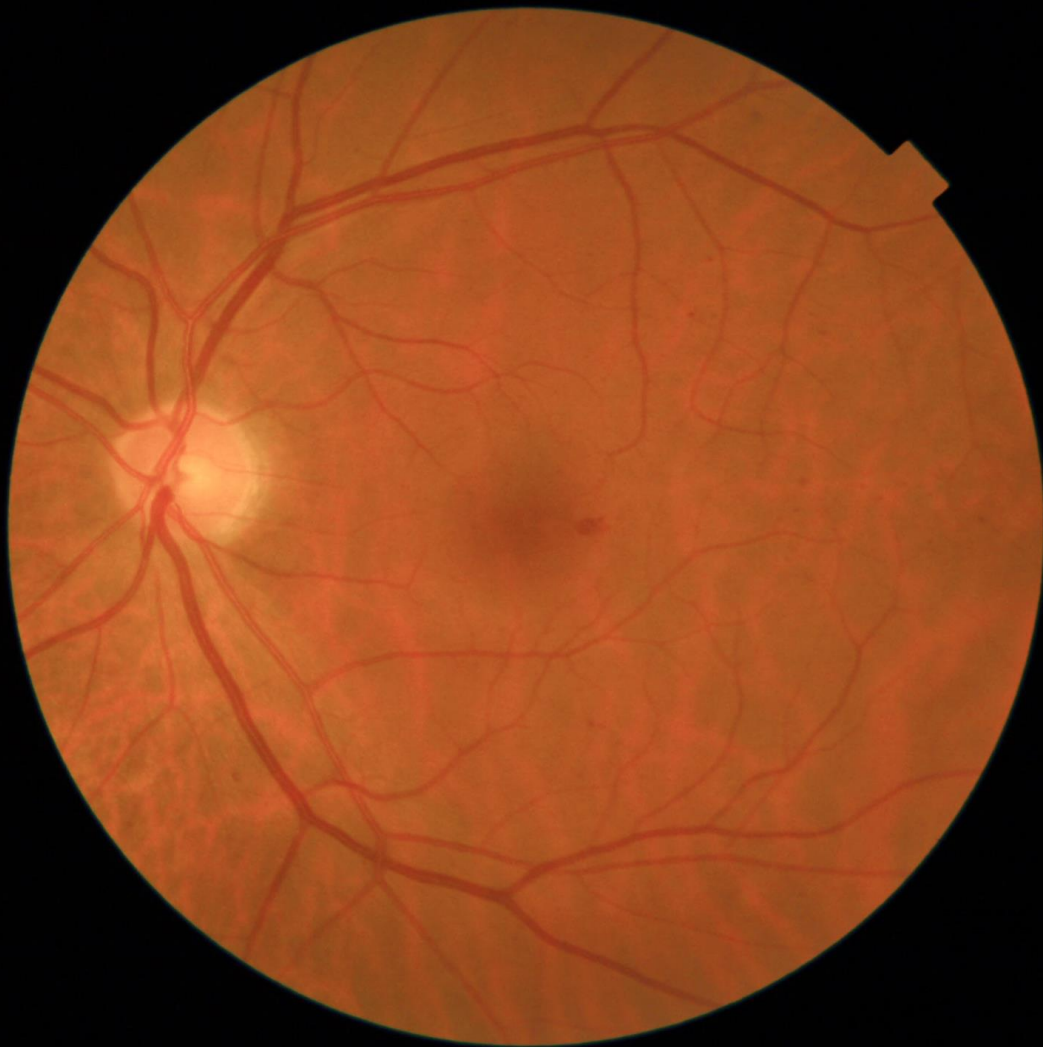
Signature :

Date :

Case 8

60 year old male
Type I diabetic

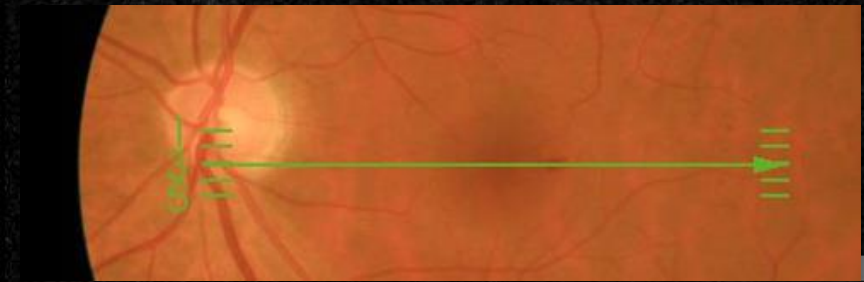
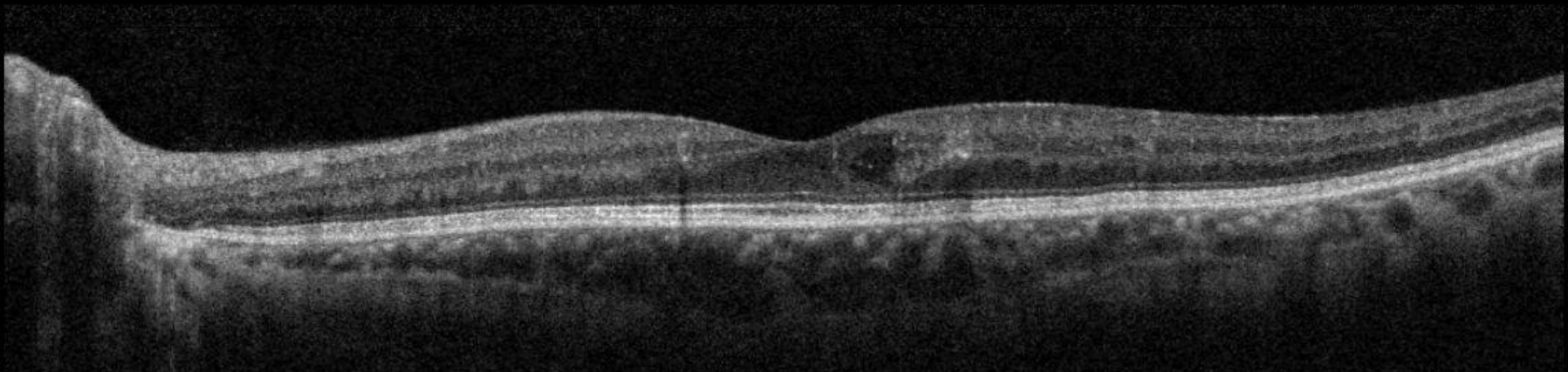
Referred for OCT



ILM
IS/OS
OS/RPE
BM
Caliper

3 →

Averaging success rate 4/4

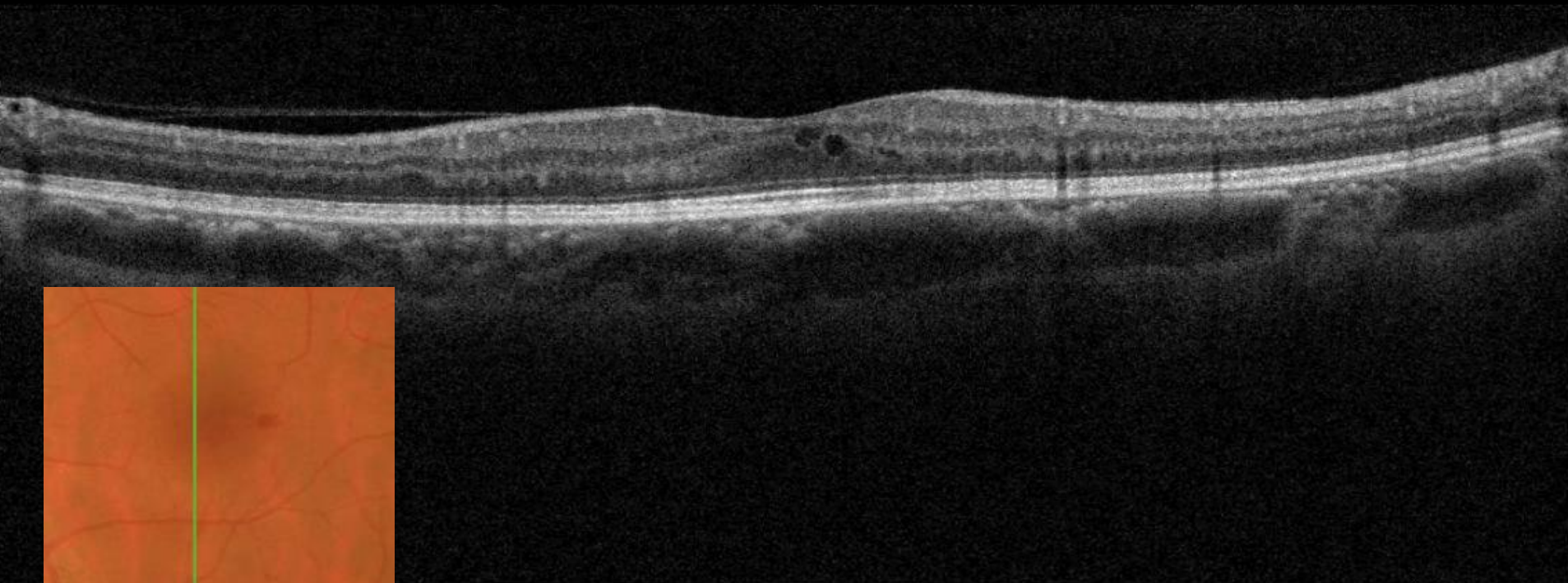


ILM
IS/OS
OS/RPE
BM
Caliper

7



Averaging success rate 4/4



Case 9

32 year old male

Noticed decreased vision OD since 1 week

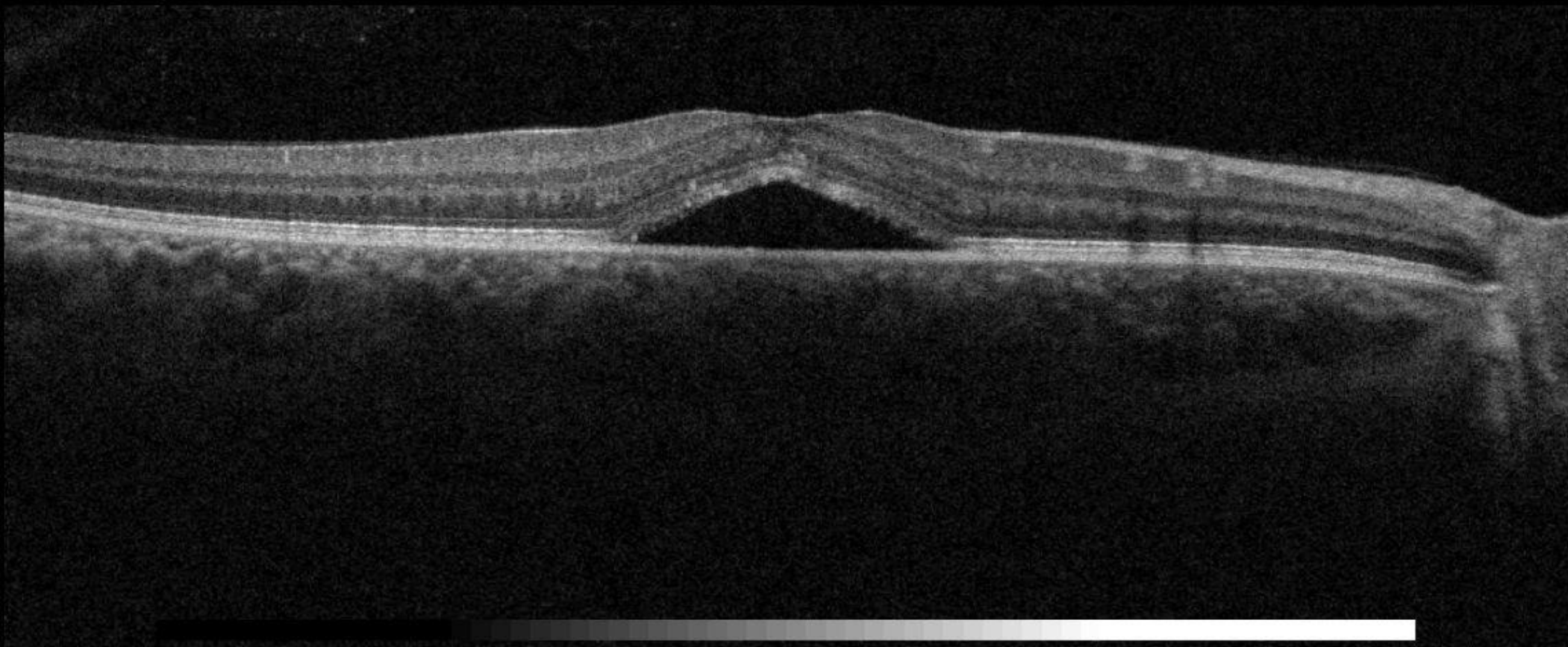
Dry eye



ILM
IS/OS
OS/RPE
BM
Caliper

Averaging success rate 4/4

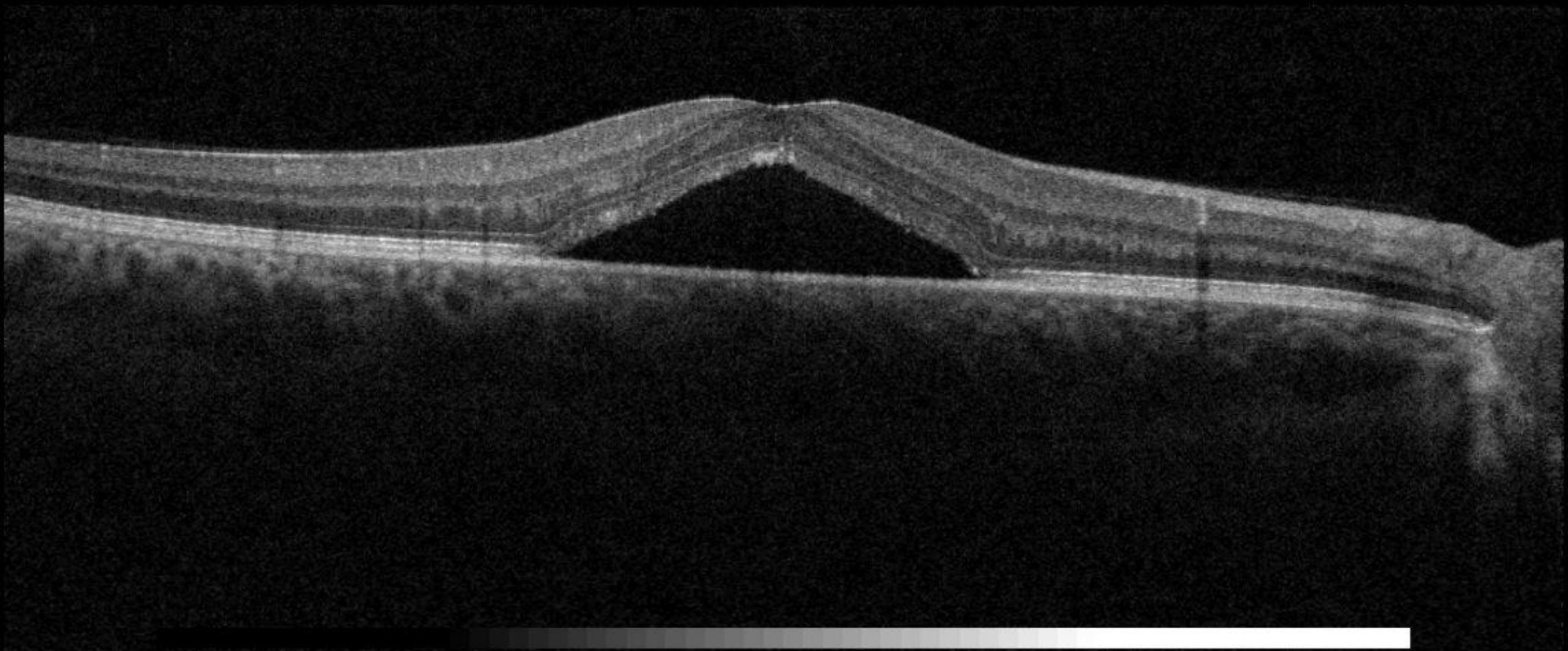
← 3



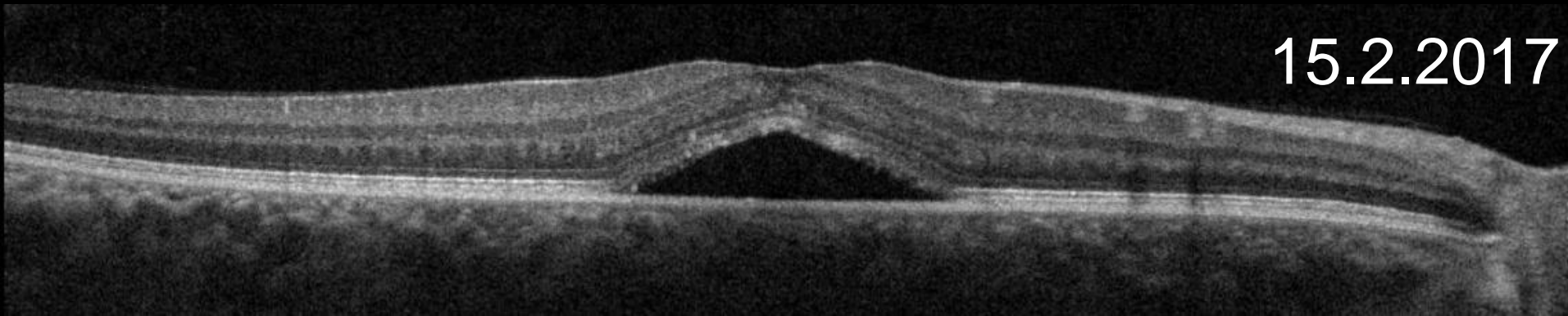
ILM
IS/OS
OS/RPE
BM
Caliper

Averaging success rate 4/4

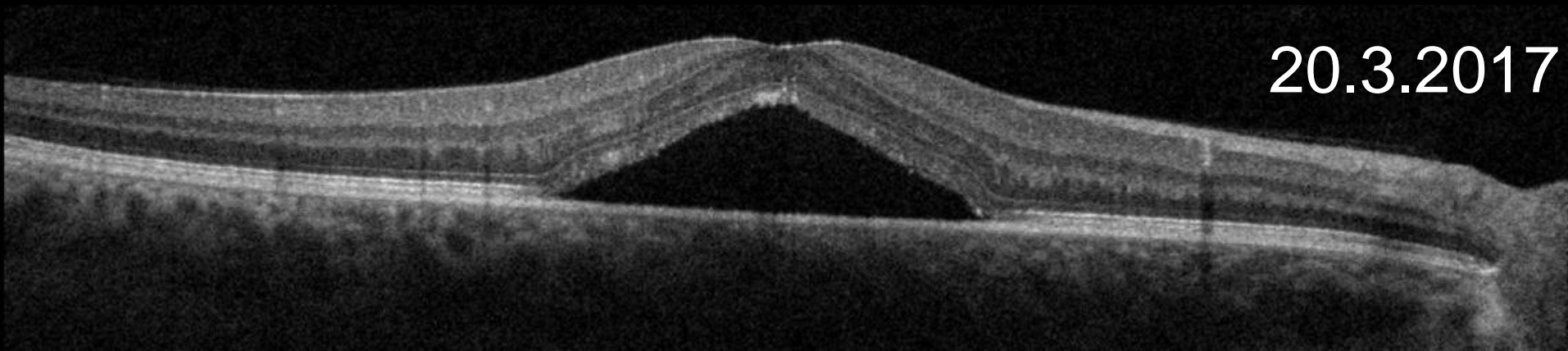
← 3



15.2.2017



20.3.2017



Case 10

64 year old male

AMD - receiving injections OD cca 15x / OS 5x

Glaucoma - Xalatan once per day

Vcc 0,4 / 0,9 - 2017

Vcc 0,9 / 1,0 - 2014

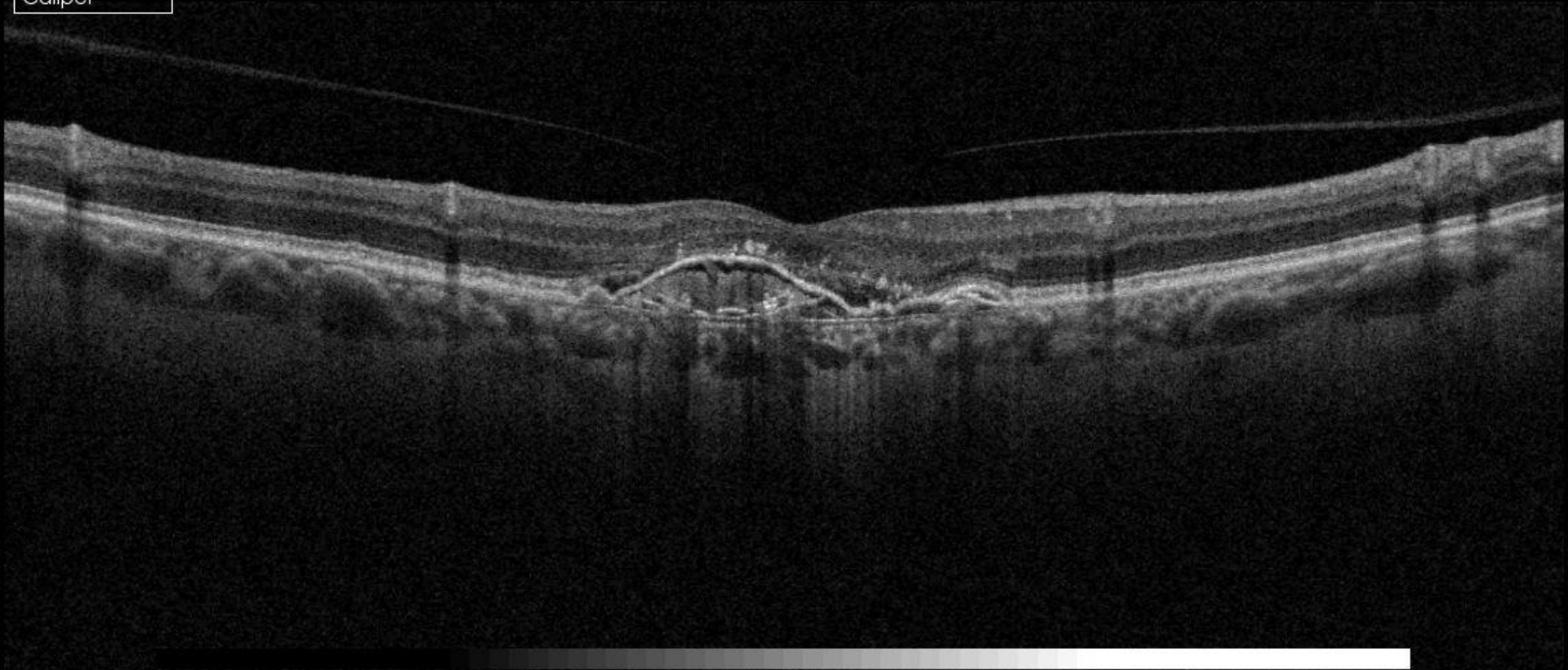


ILM
IS/OS
OS/RPE
BM
Caliper

9



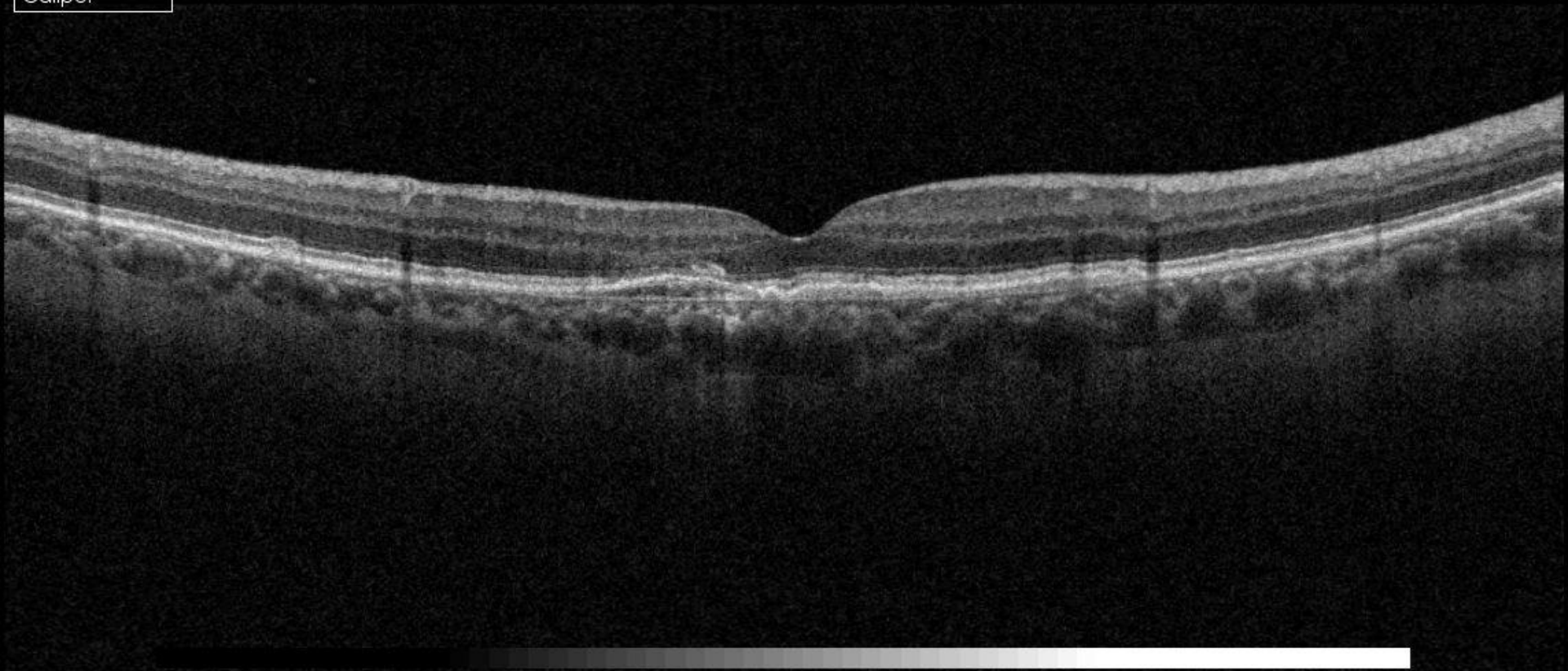
Averaging success rate 4/4



ILM
IS/OS
OS/RPE
BM
Caliper

8 →

Averaging success rate 4/4



Case 11

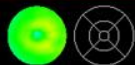
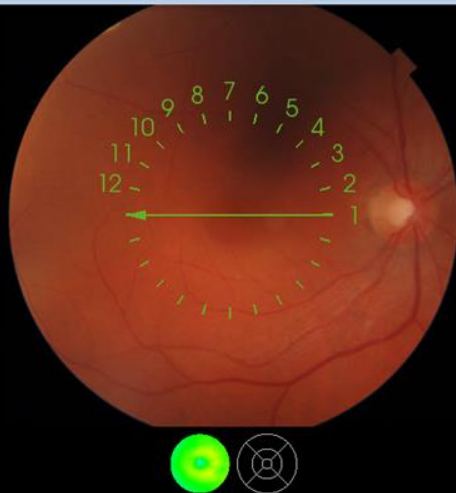
72 year old female

Macular edema after cataract surgery OD
Referred for OCT by ophthalmologist

OD(R) - Macula - 10.04.2017 - 1865.fda

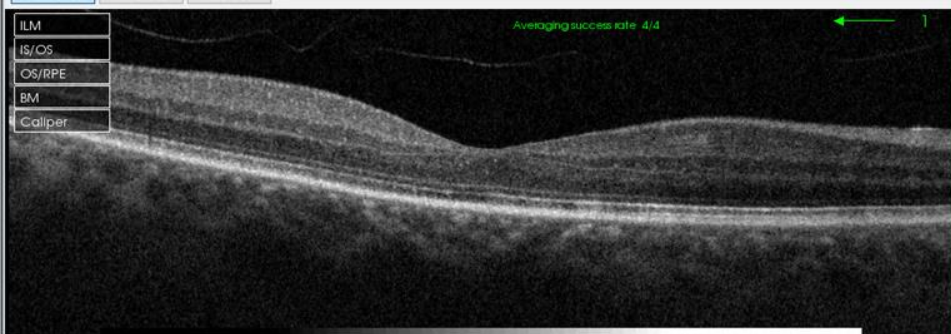
Overlay
Grid

OD(R)
10.04.2017



Color Fundus IR Fundus Red-free ☐

ILM
IS/OS
OS/RPE
BM
Caliper

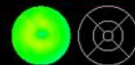
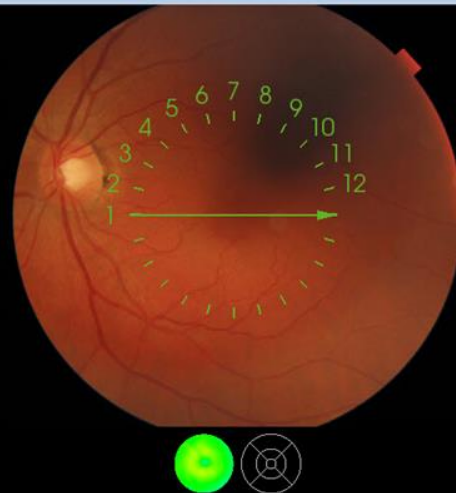


< >

OS(L) - Macula - 10.04.2017 - 1866.fda

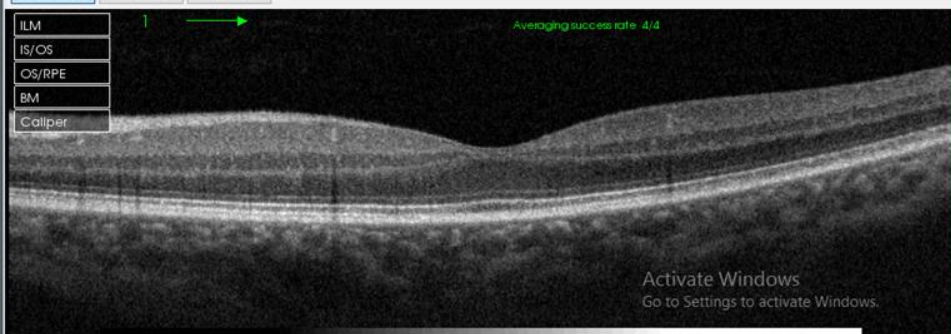
Overlay
Grid

OS(L)
10.04.2017



Color Fundus IR Fundus Red-free ☐

ILM
IS/OS
OS/RPE
BM
Caliper

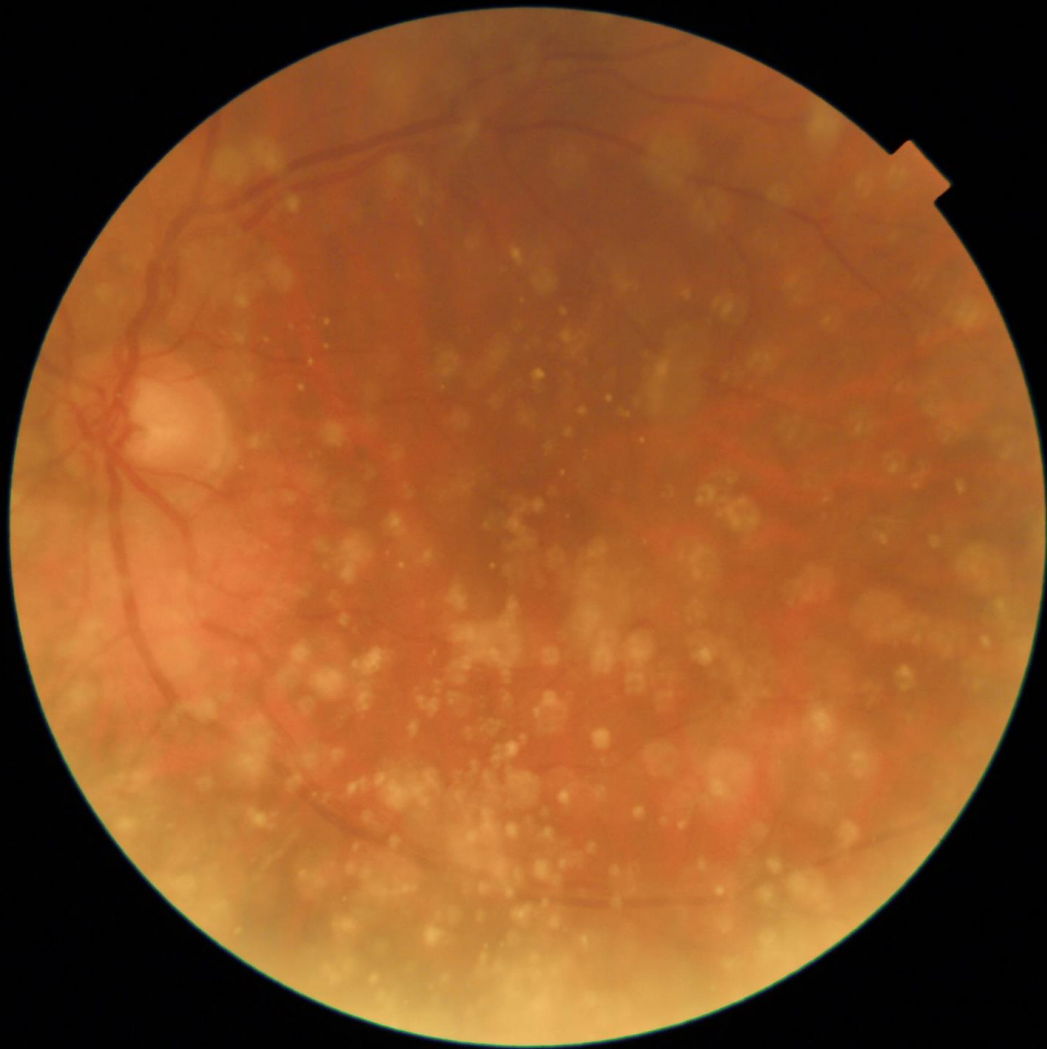


< >

Activate Windows
Go to Settings to activate Windows.



Bunch of pictures.....

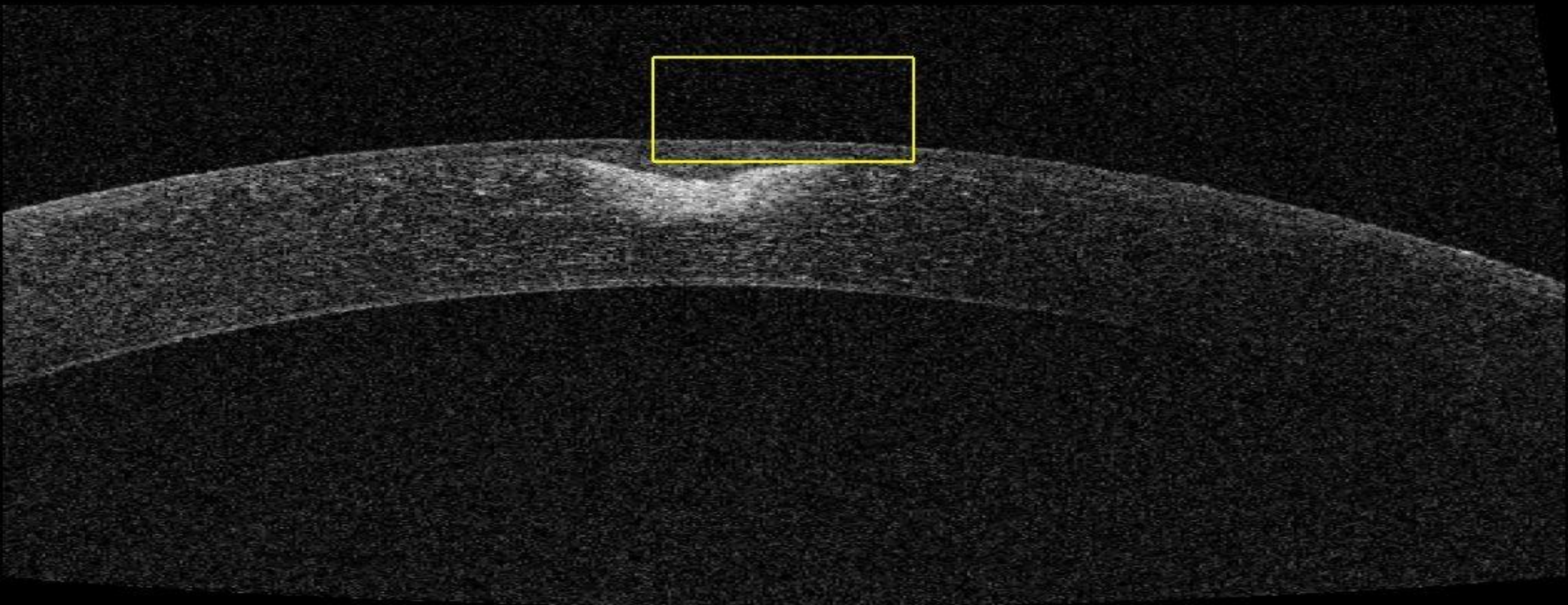


Epithelium
Bowman's
Endothelium
Caliper

1



Averaging success rate 2/4



Caliper
Angle



Averaging success rate 28/50

