RETİNA VEN TIKANIKLIKLARI

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Retinal Vascular Occlusions

- Ocular ischemic sydrome (OIS)
- Ophthalmic artery occlusion (RAO)
- Central RAO
  - * Branched RAO
  - * CRAO + cilioretinal artery sparing
  - * Cilioretinal artery occlusion
  - * CRAO + CRVO
- Cotton wool spots
- Purtscher's retinopathy
- Diabetic macular ischemia
- Central retinal vein occlusion (CRVO)
- Radiation retinopathy

Retina ven tıkanıklıkları

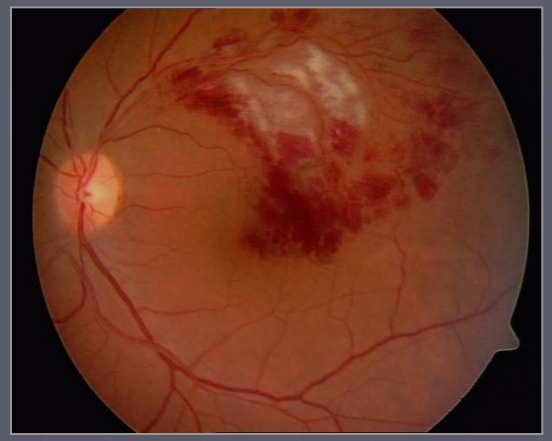
Retina damar hastalıklarının 2. en sık nedeni
40 yaş üstü populasyonda % 1.6 etkilenme
50 yaş altı nadir, yaş ile sıkı korelasyon gösterir

- Santral retina ven tıkanıklığı (% 75 – 80 noniskemik, % 20-25 iskemik)
- Retinal ven dal tıkanıklığı (SRVO' dan 3 - 8 defa daha fazla görülür)
- Maküler ven dalcık tıkanıklığı
- Santral retina arter + santral retina ven tıkanıklığı
- Juvenil santral retina ven tıkanıklığı
- Hemi-sentral RVO

Akut ven tıkanıklığı: 3 ay' dan erken
Kronik ven tıkanıklığı: 1 yıl' dan fazla

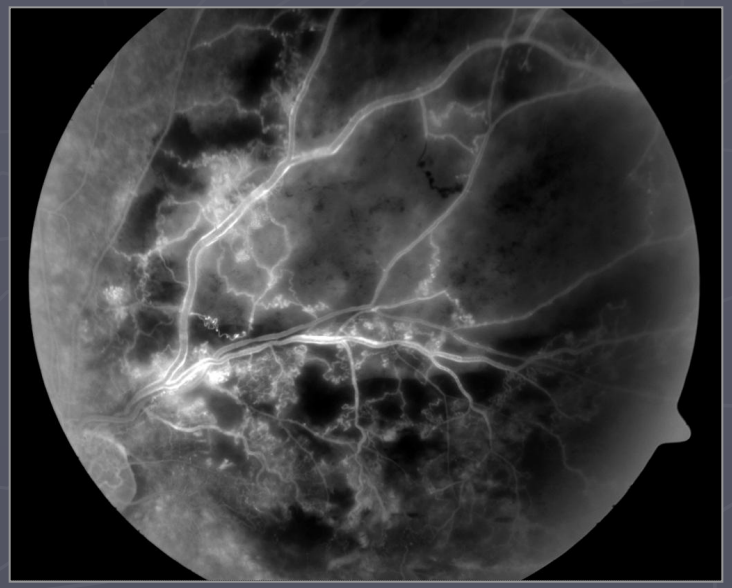
İskemik / non-iskemik ayırımı

- FFA: Non-perfüzyon alanı 10 DD
- Oftalmoskopi (yumuşak eksuda)
- VA (aniden çok azalma), APD
- Görme alanı, ERG



Hayreh:
VA 0,1 altı olması, RAPD bulunması iskemik SRVO için en hassas göstergeler

Kötü prognoz bulguları:
* 5.5 DD üstü non –perfüzyon
* 0,1 altı görme keskinliği
* Venöz doluş zamanı 30 sn üstü
* Perifoveal kapiller ağda bozulma (maküler iskemi)
* Yoğun kanama varlığı



Classification of CRVO Subtypes

Consensus Document
Ophthalmologica 2011: 226-4-28

- CRVO:

  * Non-ischemic: VA ≥ 0.5
    VA 0.2-0.4

  * Ischemic: VA ≤ 0.1

    - Macula perfused
    - Macular ischemia
    - Neovascularization

- BRVO:

  * Periphery perfused:

    - Normal VA
    - Symptomatic VA decrease

  * Periphery non-perfused:

    - Macula perfused
    - Macular ischemia
    - Neovascularization

Santral Retina Ven Tıkanıklığı
Klinik pratik yaklaşım - 1

- 50 -55 yaş altı (iyi prognoz): rutin sistemik değerlendirme

  * inflamasyon: ESR, cRP artışı
  * hematolojik inceleme
  * HT, glukoz tolerans, lipit, Hb A1C
  * Kardiovasküler sistem, karotis dopler
  * SPEP, FTA-ABS, ANA, ACE, lupus antikoagülant
  * Trombofili: Homosistein, antikardiolipin antikor, Faktör 5 Leiden mutasyon, Protein C,S krioglobulinemia , protrombin G20210 A gen mutasyonu
  * Glokom, PEX

- 50- 55 yaş üstü (kötü prognoz): gerekiyorsa sistemik inceleme

  Görme kaybı önemli, iskemiye gitme sık

Santral Retina Ven Tıkanıklığı
Klinik pratik yaklaşım - 2

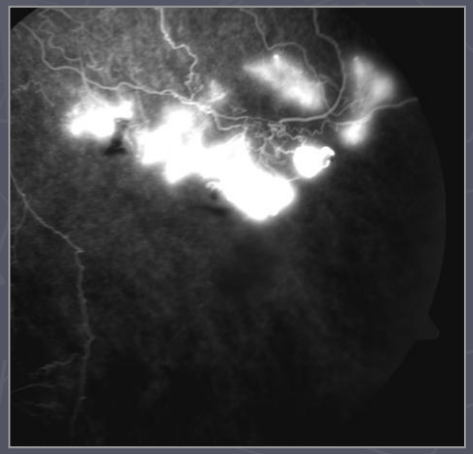
- İlk görme keskinliği (perfüze, iskemik)
  * 0.1 – altı : önce medikal tedavi, PPV ? ±
  * 0.2 – 0.4 : MÖ varsa tedavi
  * 0.5 – üstü: 1., 2., 3. ay; 2 ayda bir 1 yıl takip

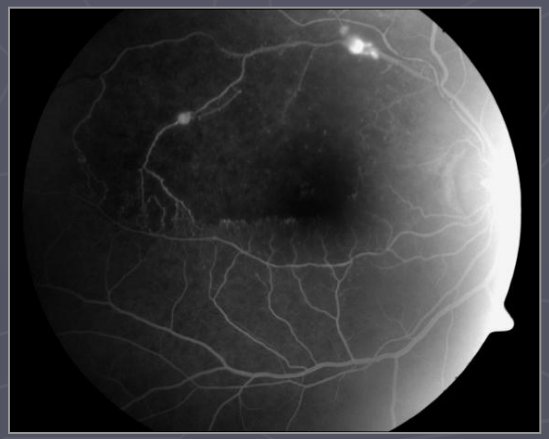
  % 34 noniskemik ------ 3 yılda iskemik olur

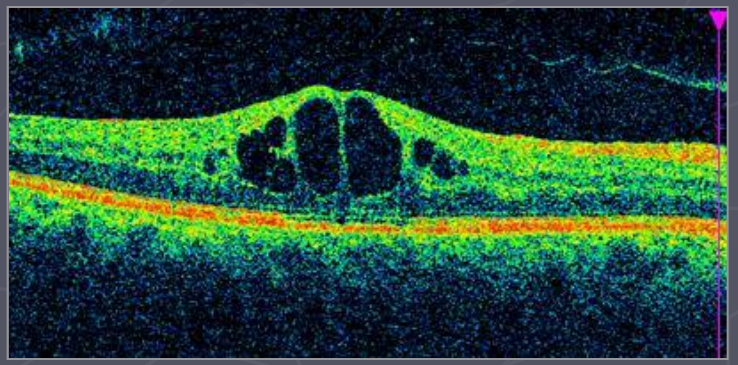
- İris / açıda neovaskülarizasyon
- Retina / disk neovaskülarizasyonu

  Enjeksiyon --- PRF (aylık, 6 ay takip)

- Maküla ödemi (iskemik, perfüze): enjeksiyon (steroid, anti-VEGF)







Santral Retina Ven Tıkanıklığı
Klinik pratik yaklaşım - 3

PPV endikasyonu

- VA: 0,1 ve altı ise:
  * Anti-VEGF, steroid dene, başarısız olursa: PPV + hiyaloid / İLM soyma
  (ödem, kan, non-perfüzyonla olan kalıcı hasardan kaçınma)

Arka vitreus yapışıklığı bulunması:

- Traksiyon, inflamatuar mediatörlerini ve VEGF salımını artırır
- Yapışıklık yerinde VEGF birikir
- İnterface' de oksijen basıncı azalır
- PPV: bunları düzeltir

Santral Retina Ven Tıkanıklığı
Klinik pratik yaklaşım - 4

Laser endikasyonu:

- 2 saat kadranı NVI, açıda NVA varlığı, retinal NV
- Proflaktik PRF yok, nv gelişimini engellemez
- Nonperfüze: 10 D alanı üstü, takibe gelemeyecekse laser
- Maküla ödemi için grid laser yapılmaz (artış yok)
- Laserin etkisi: 2-3 yılda yavaş düzelme, stabilizasyon

Micropulse laser:

* Termal laserin yan etkileri yok
* Aynı derecede fayda
* Enjeksiyon sıklığında azalma

Retina Ven Dal Tıkanıklığı

- VA, bio, OCT, Geniş açılı FFA ile periferik ve maküler iskemiye bak
- NVI-NVA / Vitreus kanaması
- İlk görme keskinliği:
  * 0.1 ve altı: enjeksiyon ----- PPV ? ±
  * 0.2 – 0.5 : 3. ayda FFA----- noniskemik: grid / enjeksiyon
    iskemik, kan varsa: enjeksiyon
  * 0.5 üstü: 4 ayda bir kontrol (nv gelişimi ?)
- Perifer perfüze:
  * VA normal (MÖ için takip ------- 1,2,3, 2 ayda bir 1 yıl)
  * Semptomatik VA azalması: ödem varsa 3 ay içinde enjeksiyon, takipde uygun cevap olmasa laser
- Perifer non-perfüze:
  * Nv: enjeksiyon -------- laser
- Maküla ödemi (perfüze / iskemi): 3 ay içinde enj. + perifer iskemiye laser

Retina Ven Dal Tıkanıklığı
Laser

- Perfüze (non-iskemik) maküla ödeminde: grid laser
  (3. yılda ortalama 1,3 sıra artış, etkinin geç/yavaş oluşması, spot genişlemesi, görme alanı defekti)

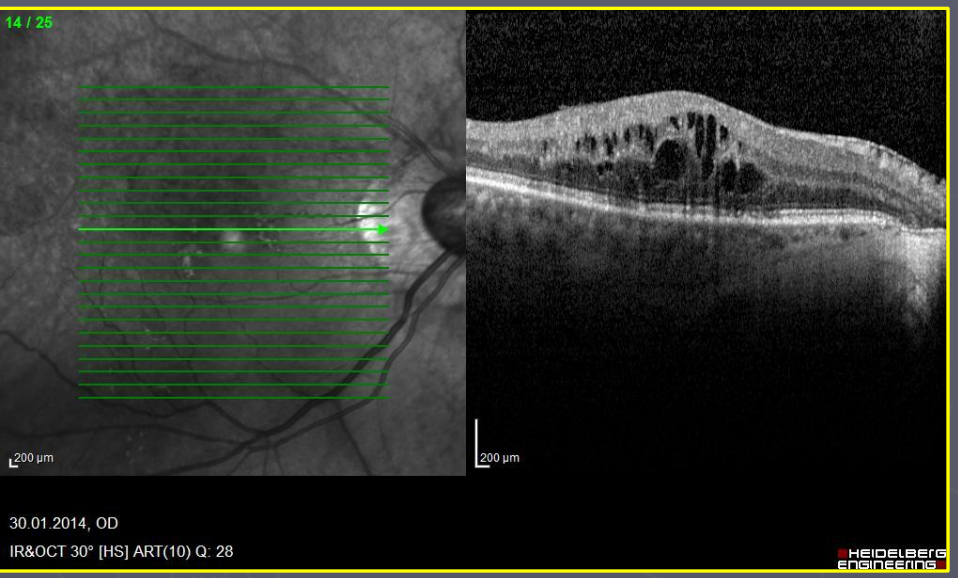
  * Oluşumdan sonra 3 ay geçmeli (kanın emilmesi)
  * 3 ay sonra VA: 0.2 - 0.5 ise FFA yap ----- perfüze ödem varsa
  * Birkaç enjeksiyona rağmen ödemin sebat etmesi
  * 1 yılı geçmemeli ve VA 0.1 altı olmamalı

- İskemik (non-perfüze) scatter laser: (5, 5 D alanı üstü)
  * NVE / NVD (scatter ile vit. hem. % 50 azalır)
  * Vitreus kanaması
  * NVI
  * Ciddi retinal iskemi var, takibe gelemeyenler

Micropulse / Multispot (pattern) laser stimulation

- Power
- Duration: 200 ms
- Spot size: 100 mikron
- Duty Cycle: % 5
- Various pattern choice

S. S., 71 yaş, OD, BRVO

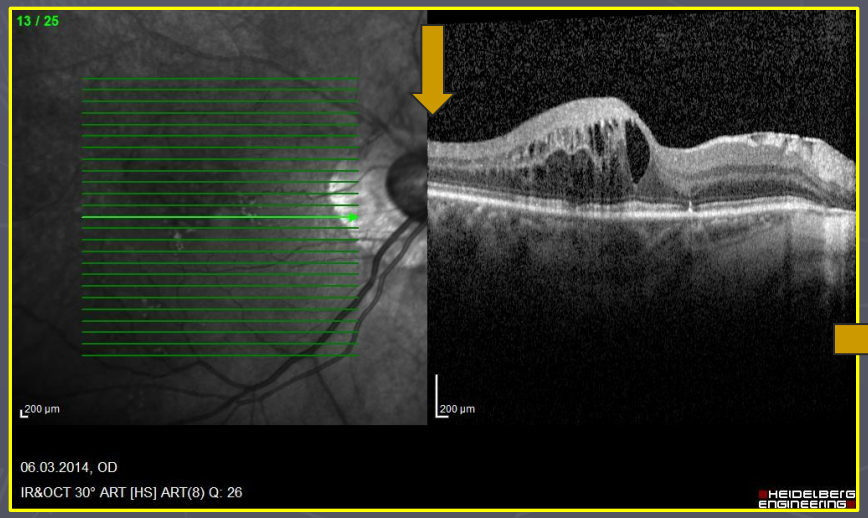


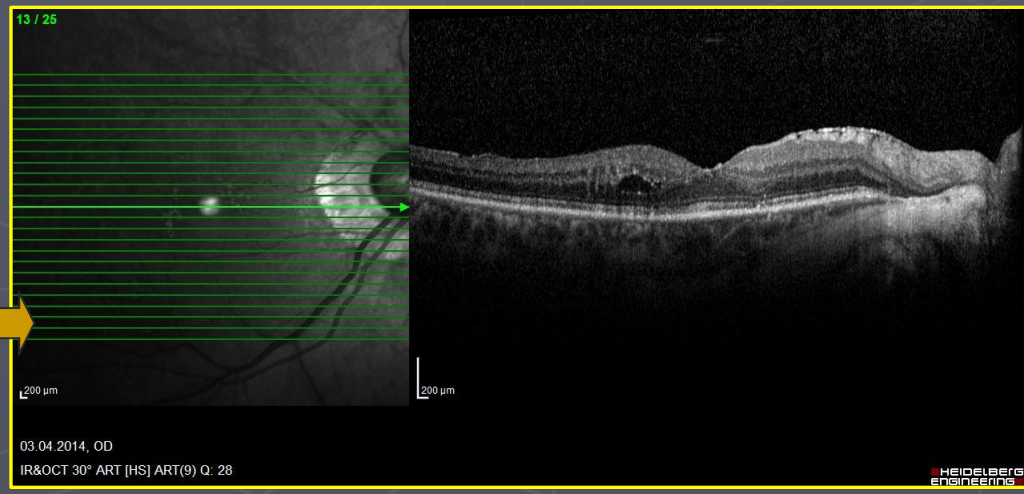
İşlem sonrası

2 . hafta CMT:465 µm

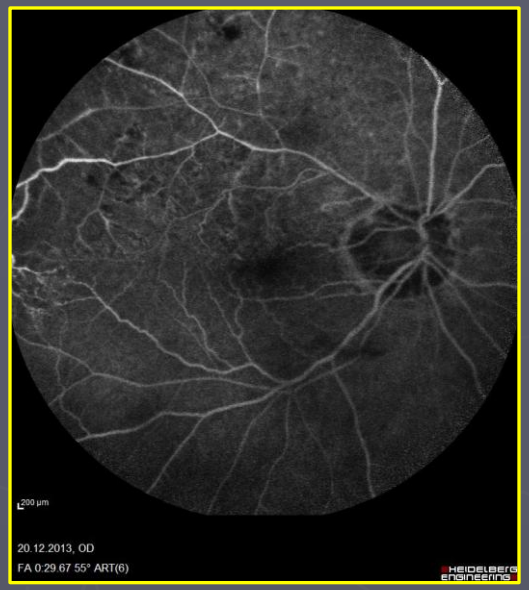
2 . ay CMT:535 µm

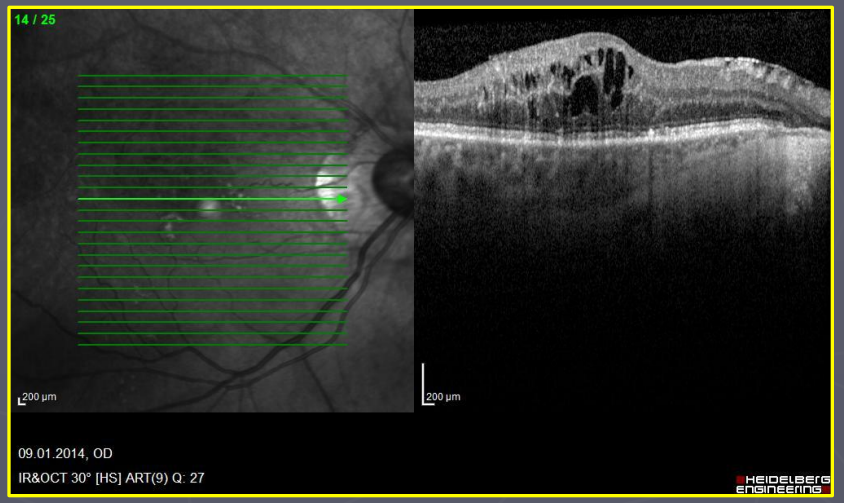
3 . ay CMT: 272 µm





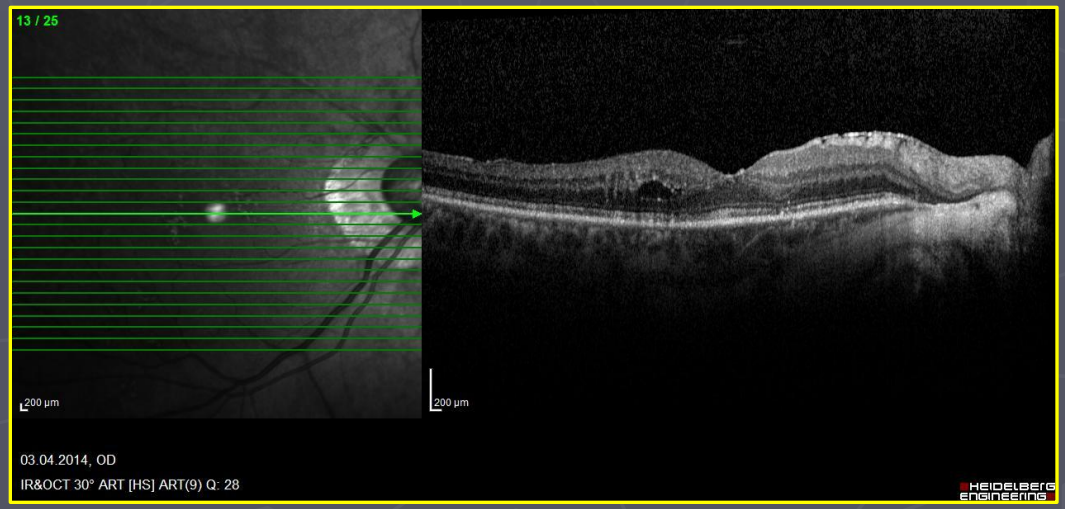
S. S., 71 yaş, OD, BRVO





Preop BCVA: 0.6 CMT:483 µm

Lucentis x 1 +
Micropulse/ multispot / sarı dalga boyu



3 ay sonra BCVA: Tam CMT: 272 µm

Hemi-sentral RVO

- BRVO gibi ele alınır
- NVI / NVA oranı daha fazladır (BRVO' dan).
  Erken nv oluşana kadar bekle ---------- PRF + anti -VEGF
- Maküler ödem:
  * Perfüze maküla ödemi: VA 0.5 - altı ise: 3 ay grid laserden önce bekle

    - Laserden önce anti-VEGF yapılabilir
    - 4 ay sonra grid laseri tekrarla (persistan MÖ var ve VA azalmasından sorumlu ise)

  * Maküler non-perfüzyon: laser yok, enjeksiyon

Retina ven tıkanıklıklarında takip
Yeniden tedavi

- Takip: Düzeltilmiş görme keskinliği, GİB, bio, fundus, OCT, ± FFA
- Takip aralığı: Steroid: 1. hafta, 2. ay, 4. ay, 6. ay

  Anti-VEGF: ilk 3 ay aylık, 1. yılda 3 ayda bir, 2. yılda 6 ayda bir
- Hangi tip olursa olsun, VA normal ise, kriterlere göre takip
- Semptomatik VA azalması var, OCT' de ödem var:

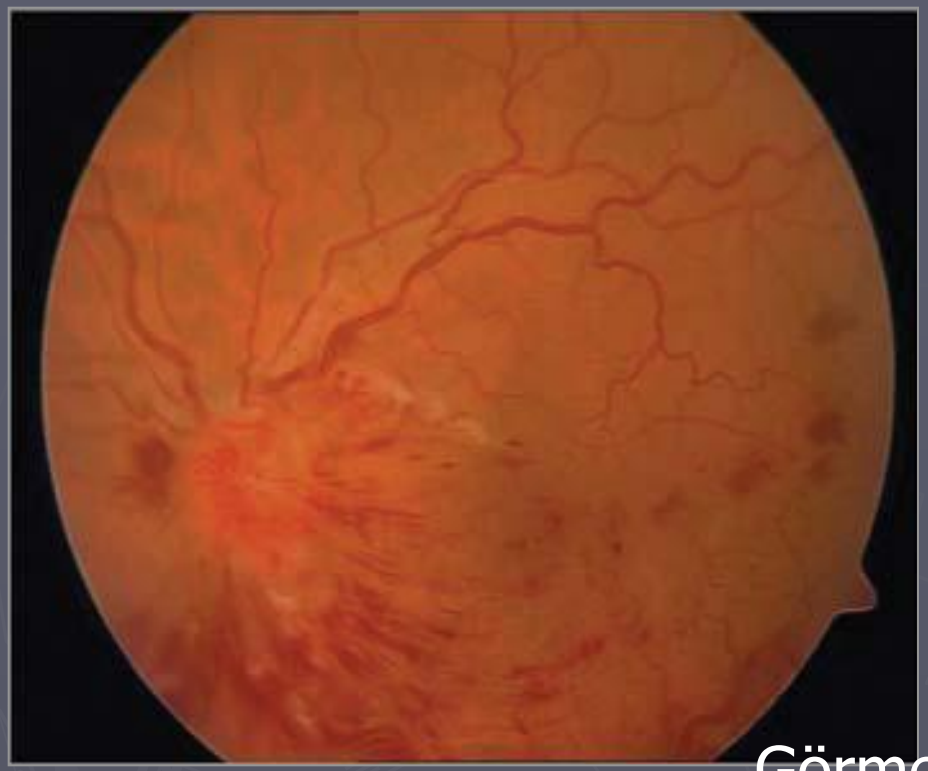
  * 1. steroidden 3 ay sonra ise: 2. steroid
  * 1. steroidden 3 ay önce ise: anti-VEGF
- Laser:

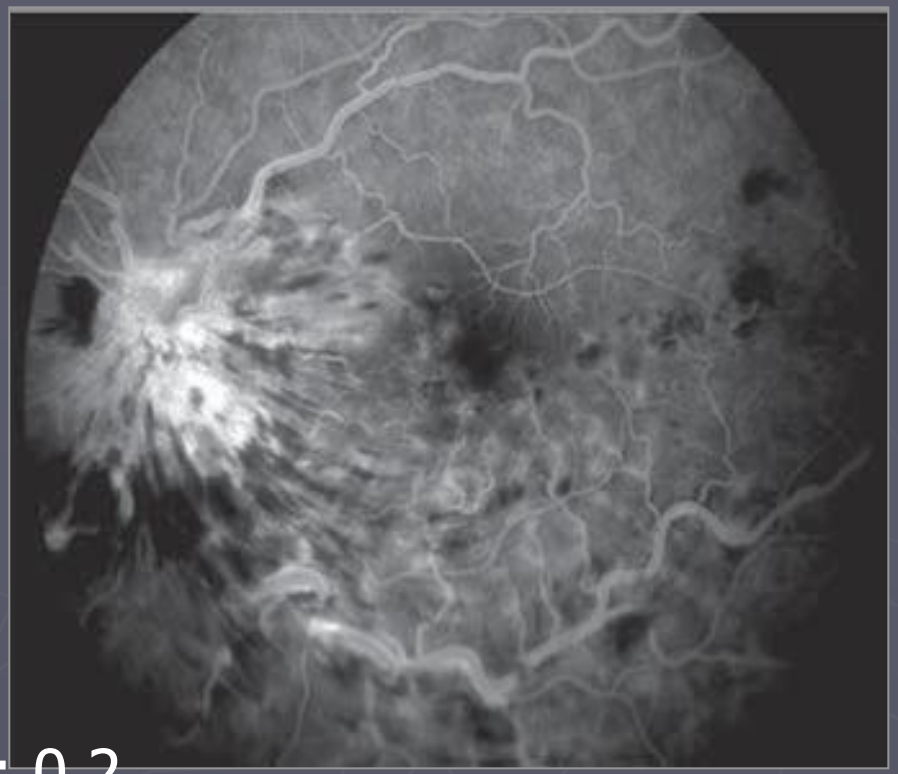
  * Residüel perfüze maküla ödemi
  * Periferde yaygın non-perfüzyon alanları
  * Neovaskülarizasyon varlığı
- Göz içi basınç takibi: 1-2. ay arasında ölçüm

  * Basınç artışı 10 – 25 mm Hg arasında ise aylık takip
  * Basınç artışı 25 mmHg' den fazla ise, medikal tedavi

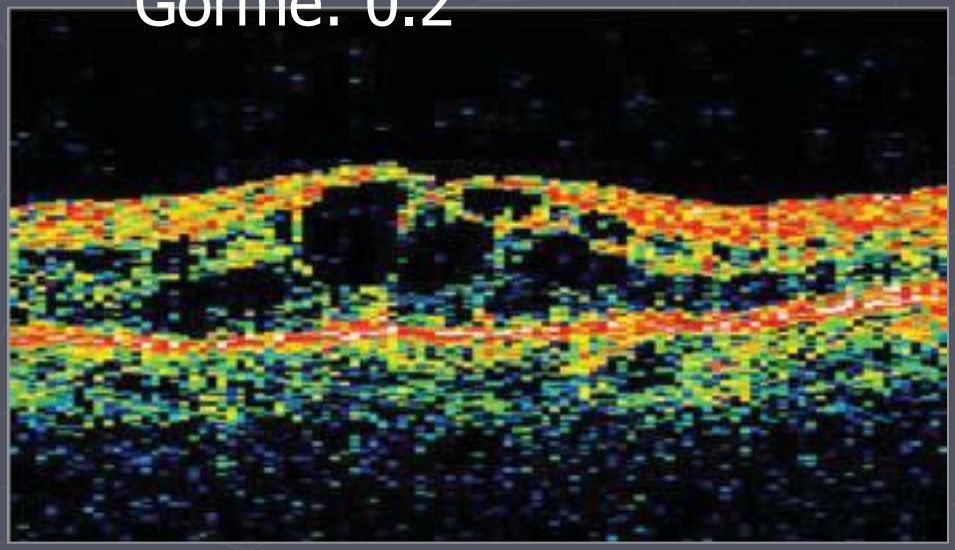
Non-iskemik
retina ven kök tıkanıklığı

Z.A. , 62 yaş kadın: Non-iskemik RVKT



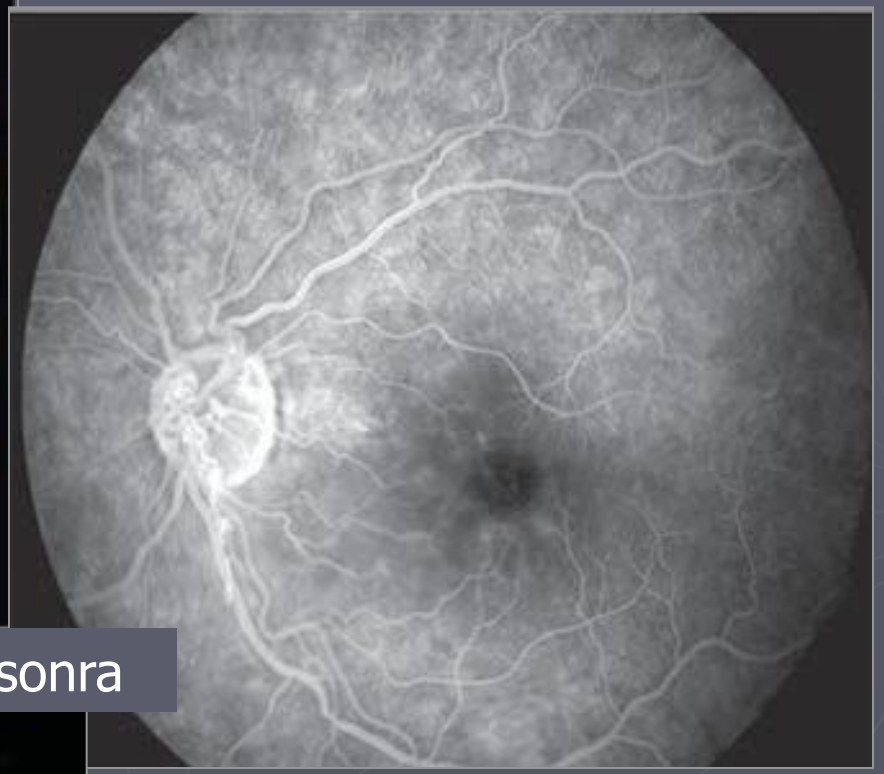


Görme: 0.2

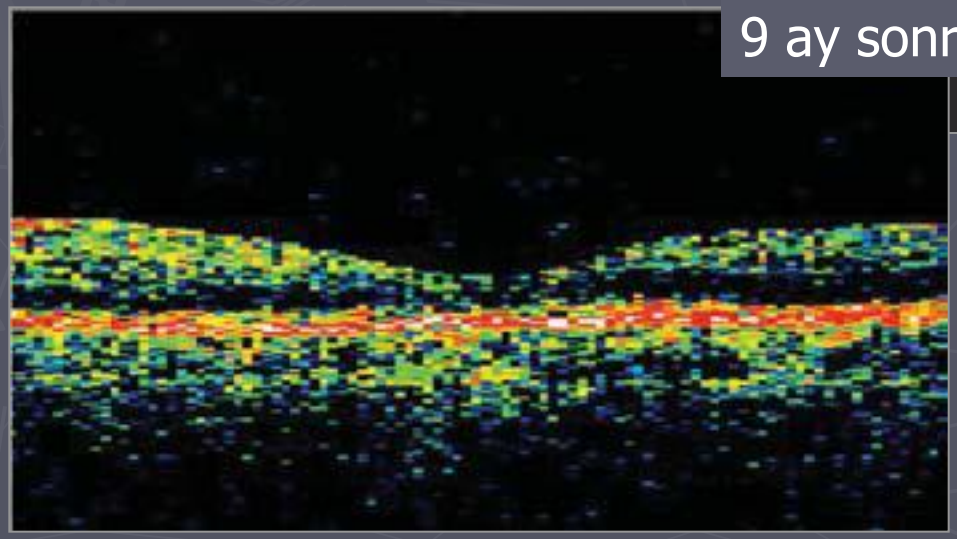


2x Anti – VEGF (3 ay ara ile)
Hipertansiyon kontrolü

Z.A., 62 yaş kadın: Non-iskemik RVKT

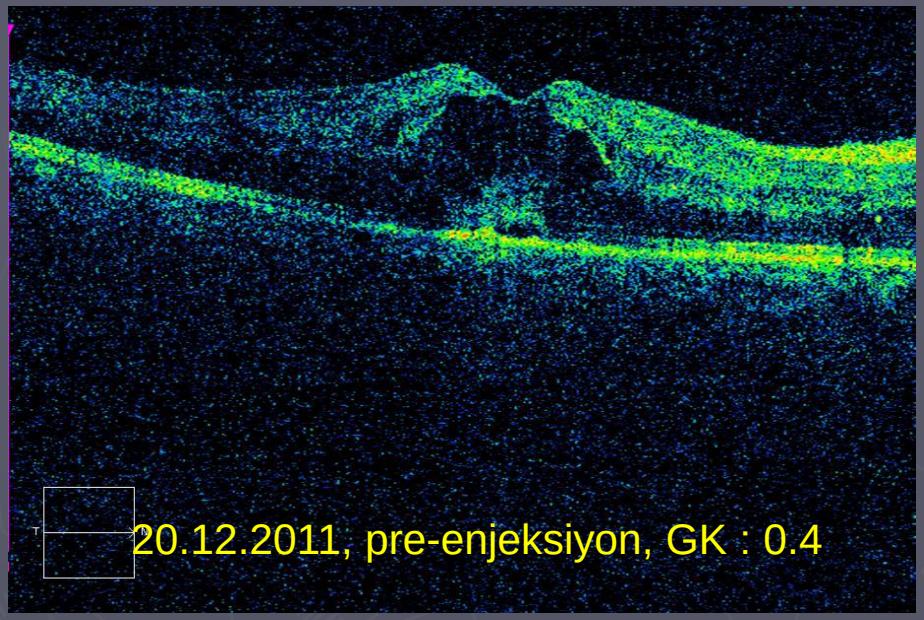


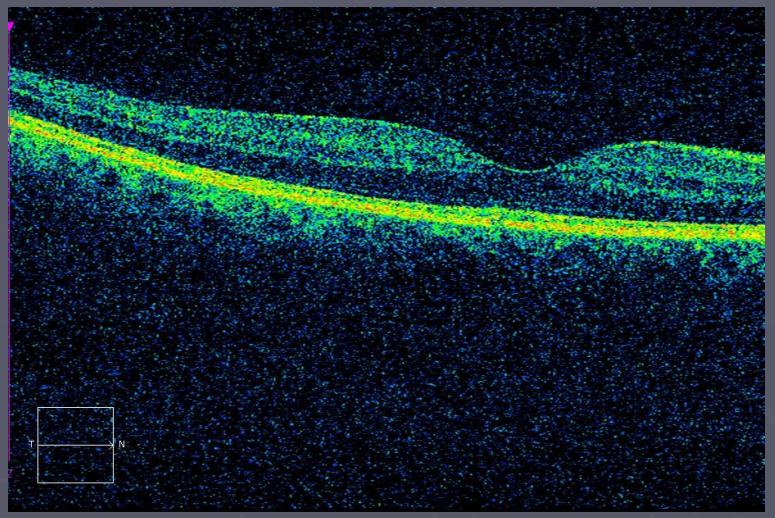
9 ay sonra



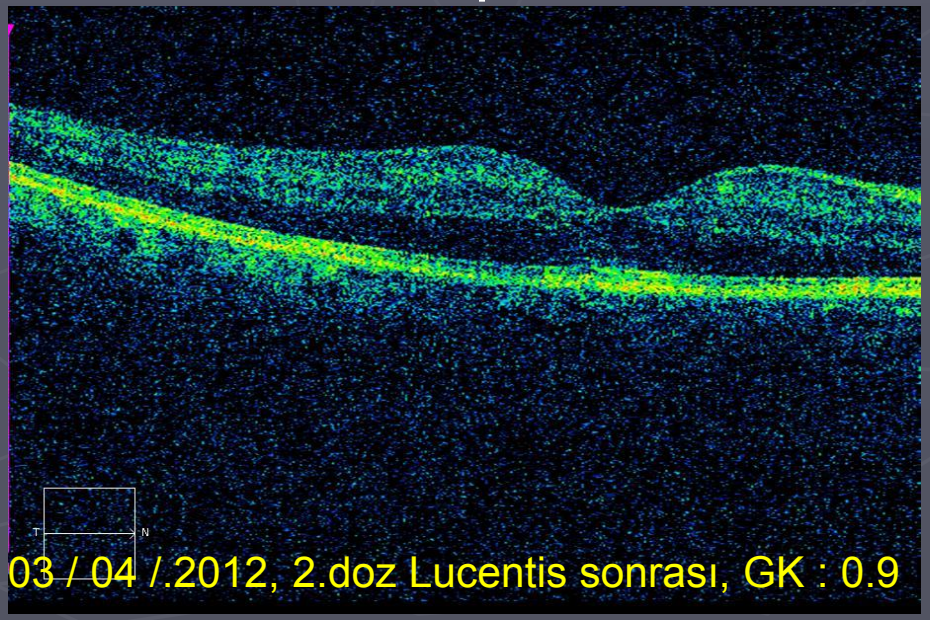
Görme: 0,5
Foveal atrofi
(6. ayda tedaviye geç başlanması)

M.B., 59 yaş, non-iskemik RVKT, OD



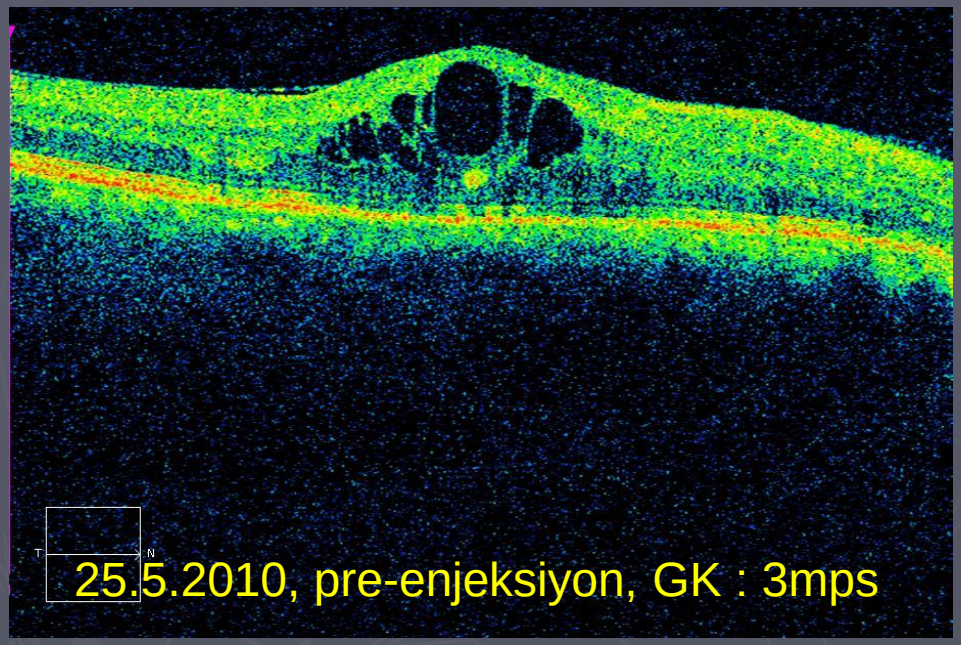


18.1.2012…2 x lucentis
(1 ay ara ile)



TEDAVİYE ERKEN BAŞLAMAK
FOVEAL KON KONUSU NORMAL

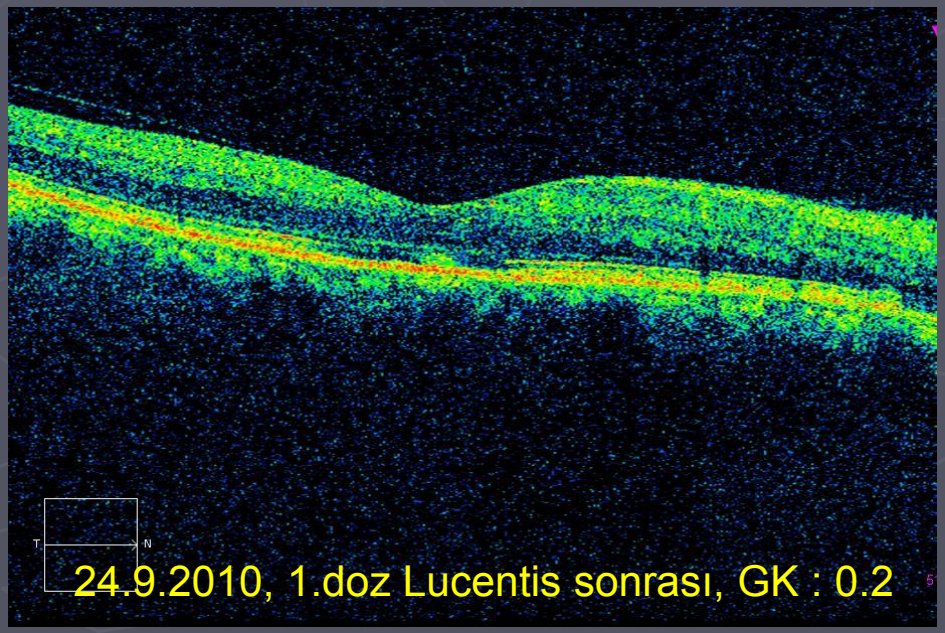
H.O., 64 yaş, non – iskemik RVKT, OD



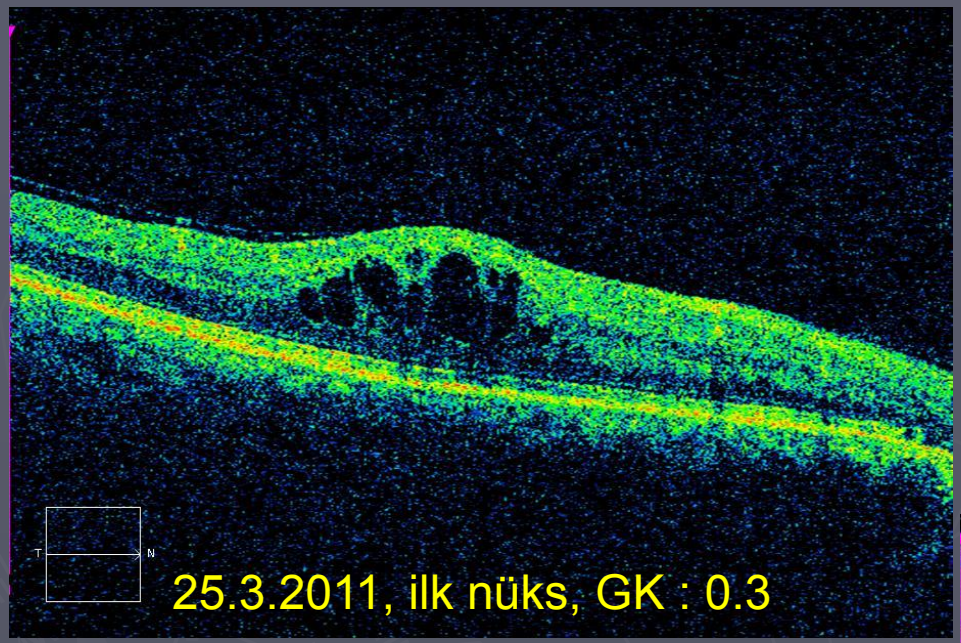
55 yaş üstü
İlk görmenin 3 mps olması
KÖTÜ PROGNOZ

Tedaviye erken başlama

11.8.2010…ilk doz Lucentis

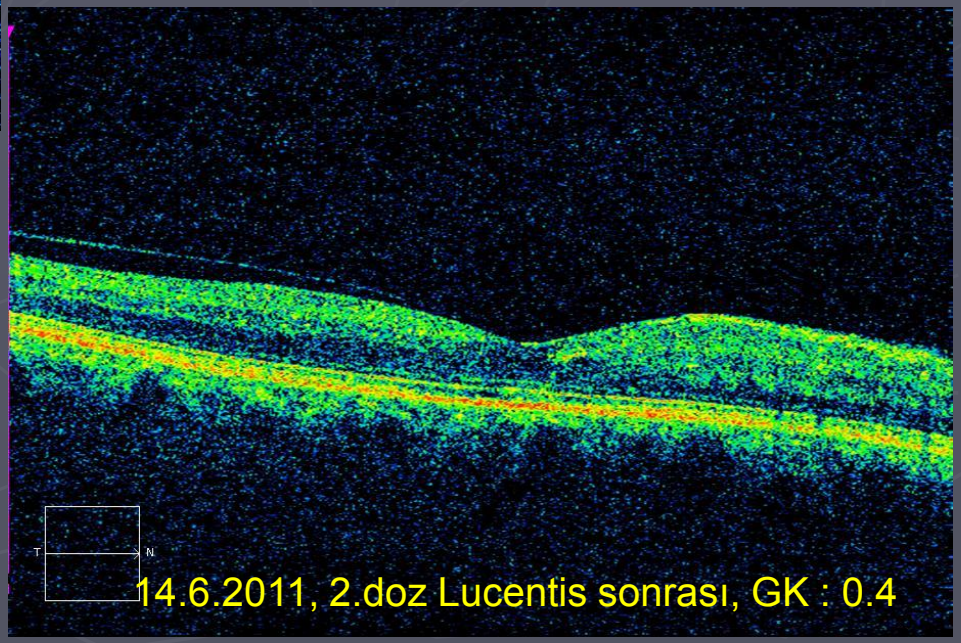


H.O., 64 yaş, non – iskemik (?) RVKT, OD



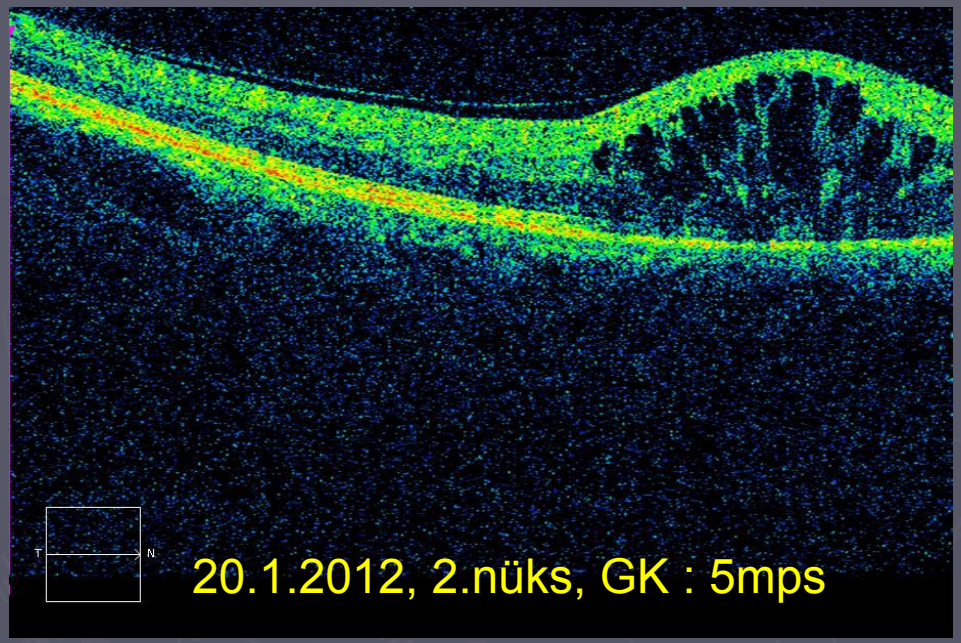
25.3.2011, ilk nüks, GK : 0.3

27.4.2011…2.doz Lucentis



14.6.2011, 2.doz Lucentis sonrası, GK : 0.4

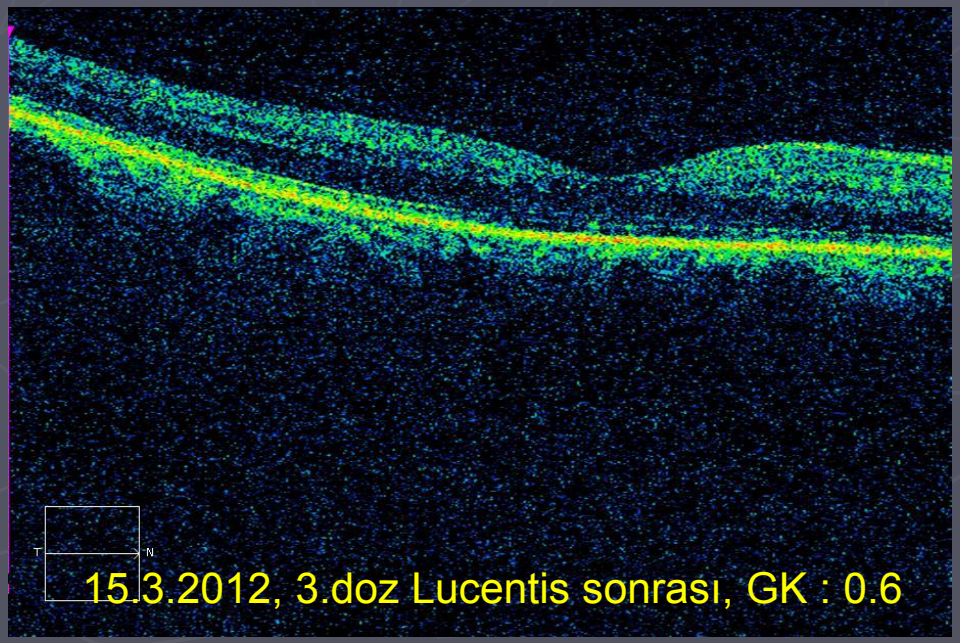
H.O., 64 yaş, RVKT, OD



20.1.2012, 2.nüks, GK : 5mps

Tedaviye erken başlama ile,
Kötü düşünülen prognozda iyi sonuç

25.1.2012…3.doz Lucentis

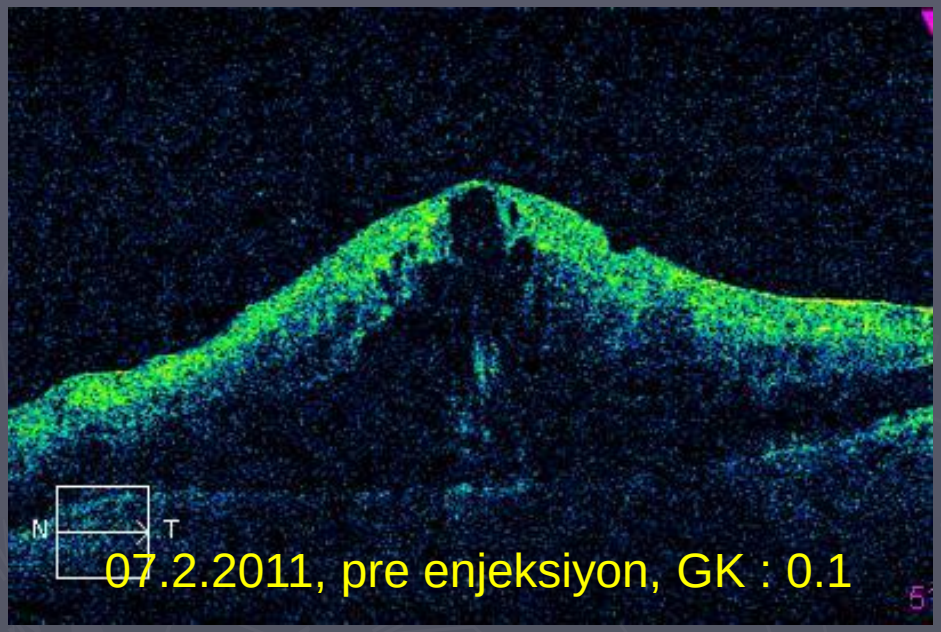


15.3.2012, 3.doz Lucentis sonrası, GK : 0.6

İskemik
Retina Ven Kök Tıkanıklığı

M.İ., 65yaş, iskemik-RVKT, OS

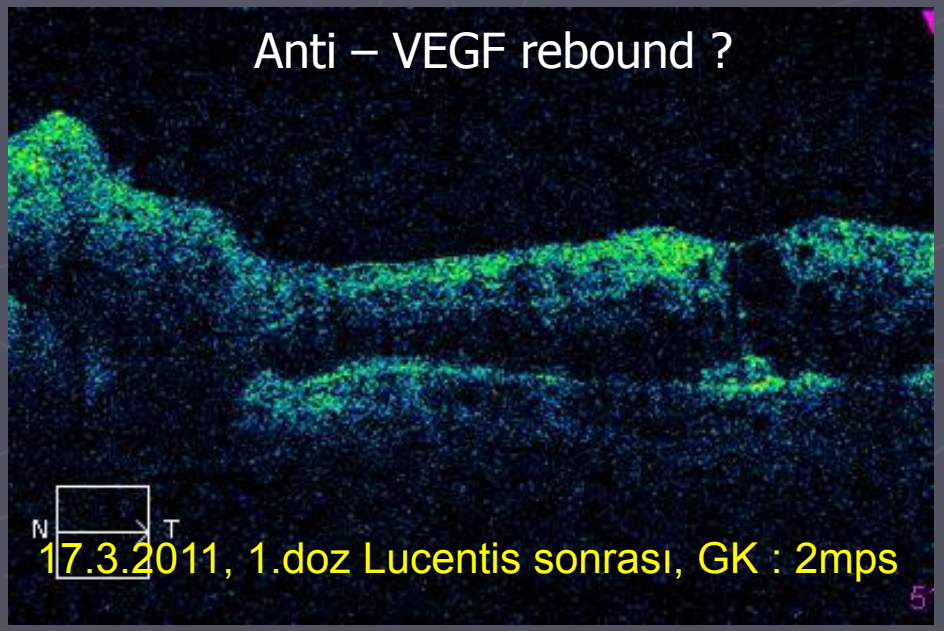
Görme: 0.1
10 DD üstü iskemi
Subretinal fibrin, parlak noktalar ?
KÖTÜ PROGNOZ



07.2.2011, pre enjeksiyon, GK : 0.1

11.2.2011…1. doz Lucentis

Anti – VEGF rebound ?



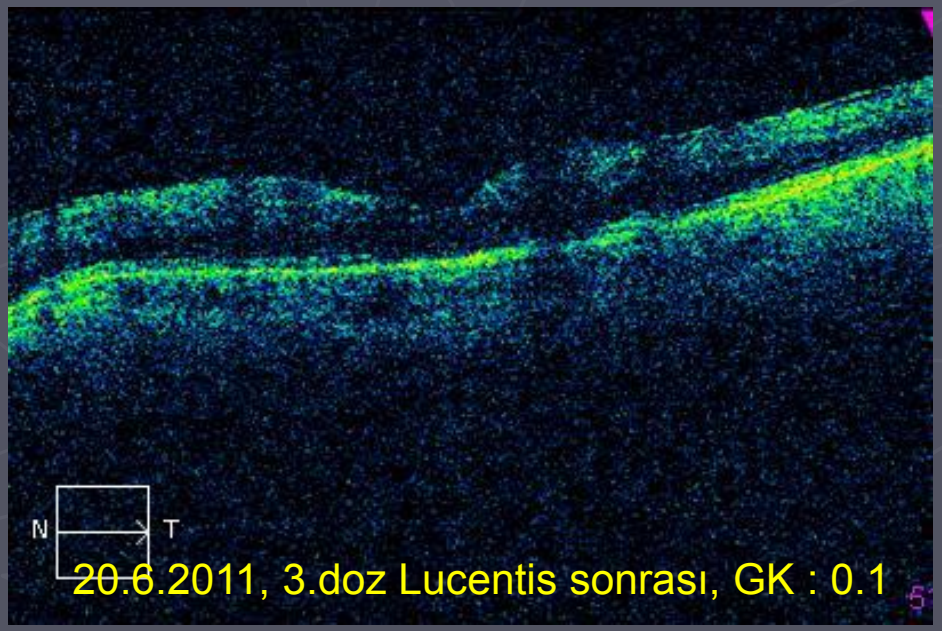
17.3.2011, 1.doz Lucentis sonrası, GK : 2mps

M.İ., 65yaş, RVKT, OS

29.4.2011, 2.doz Lucentis sonrası, GK : 4mps

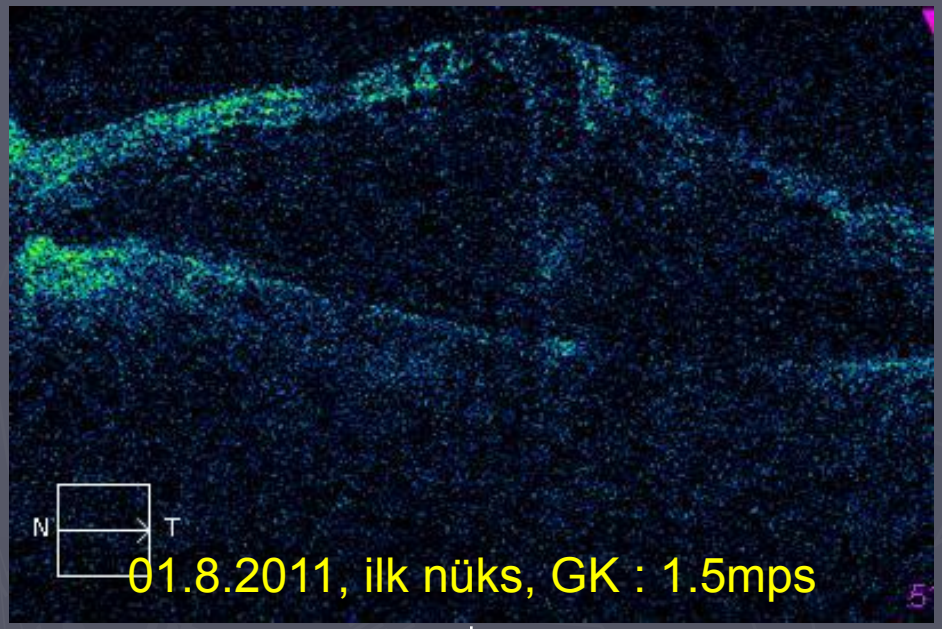
← Scatter laser ilavesi

18.5.2011…3.doz Lucentis



20.6.2011, 3.doz Lucentis sonrası, GK : 0.1

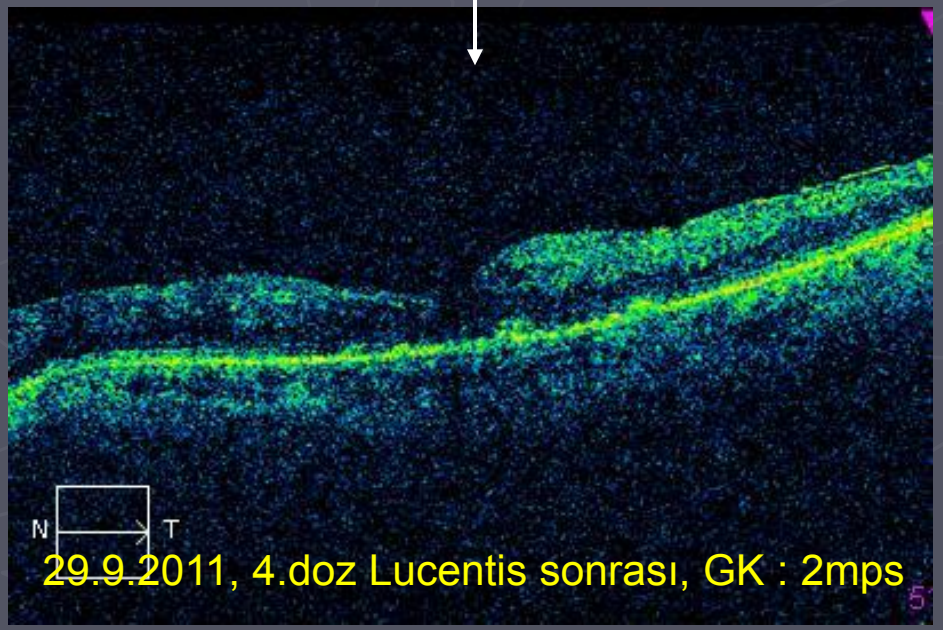
M.İ., 65yaş, RVKT, OS



01.8.2011, ilk nüks, GK : 1.5mps

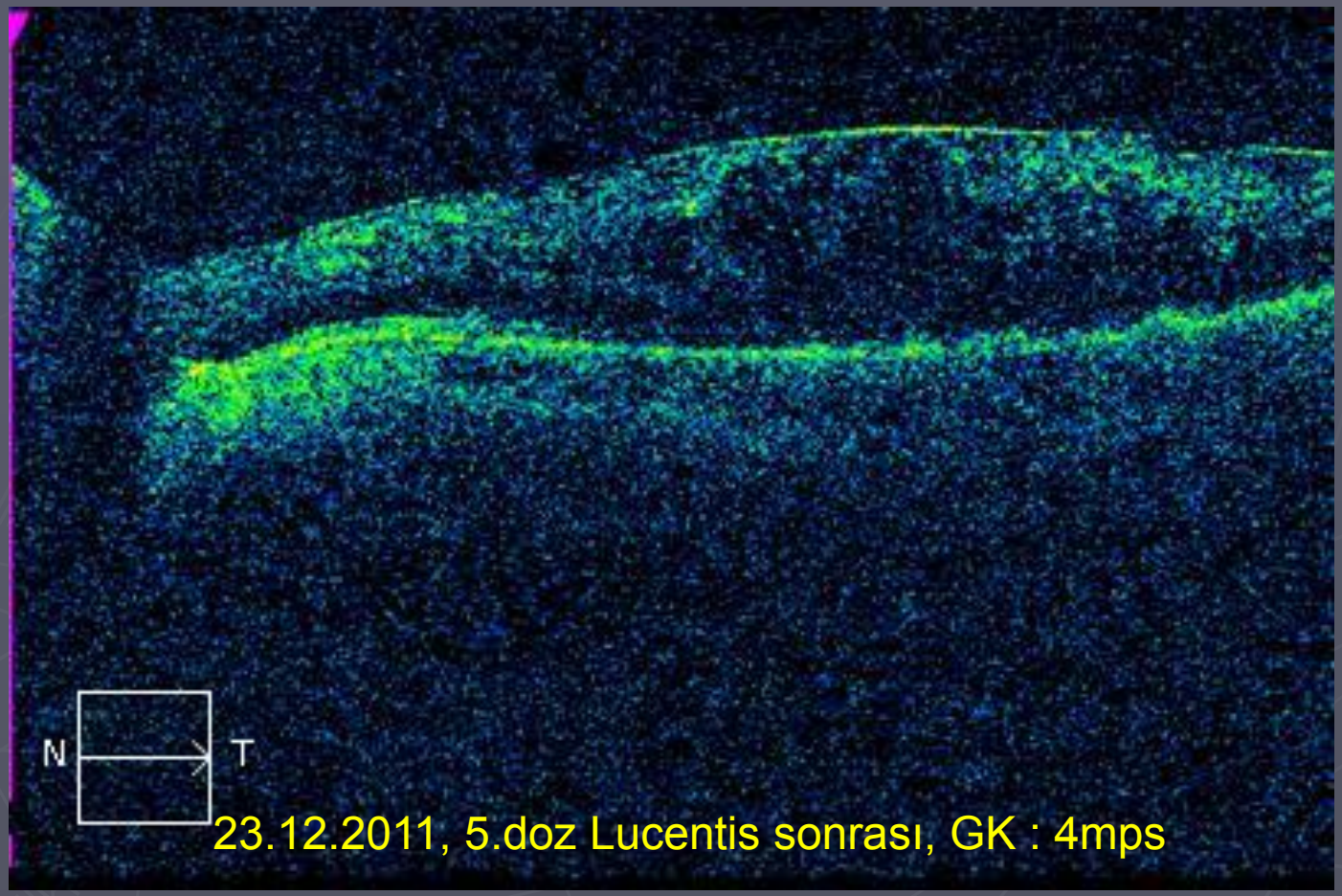
17.8.2011…4.doz Lucentis

Laser ilavesi



29.9.2011, 4.doz Lucentis sonrası, GK : 2mps

M.İ., 65yaş, RVKT, OS

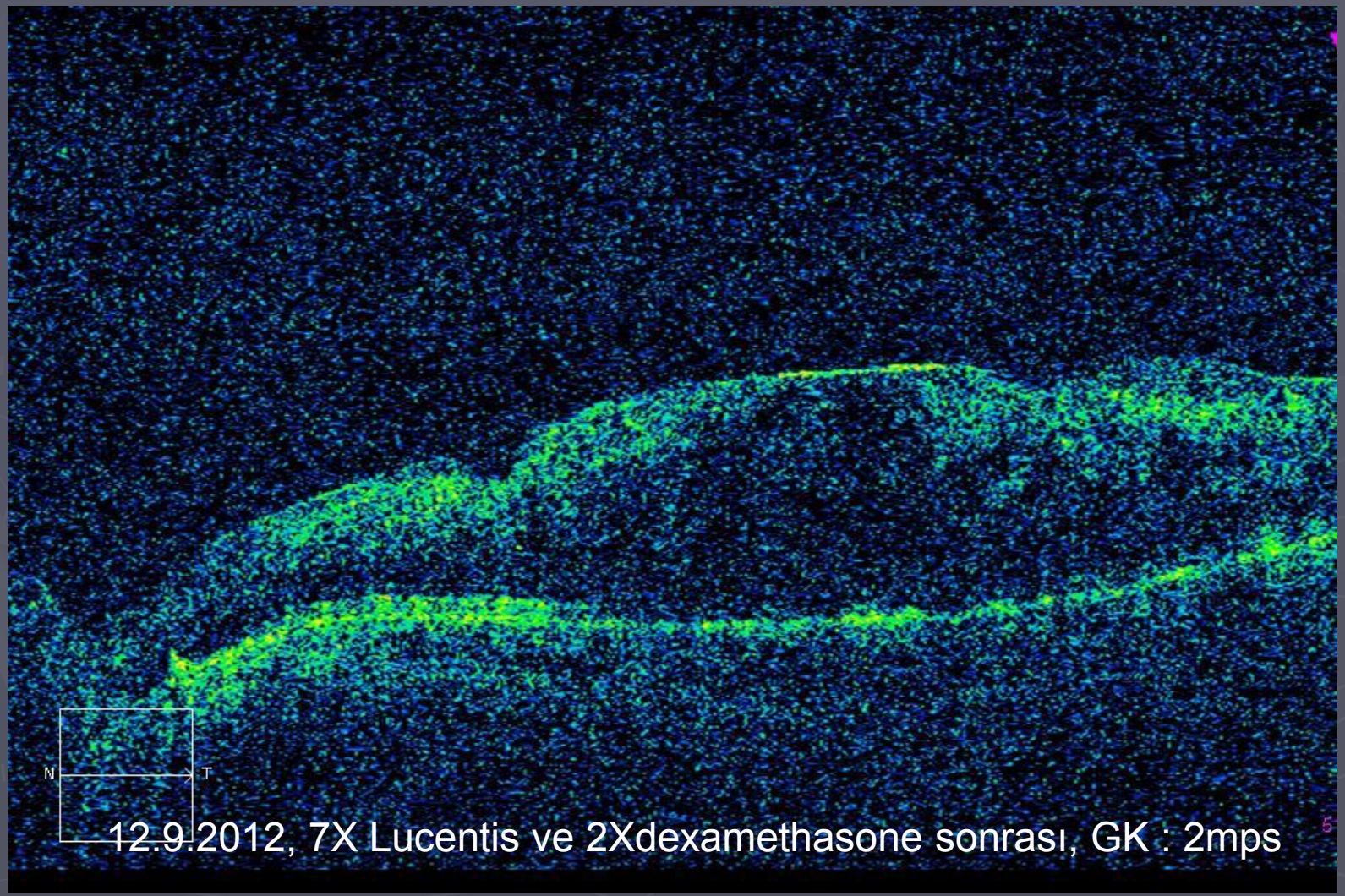


28.12.2011…ilk doz Dexamethasone

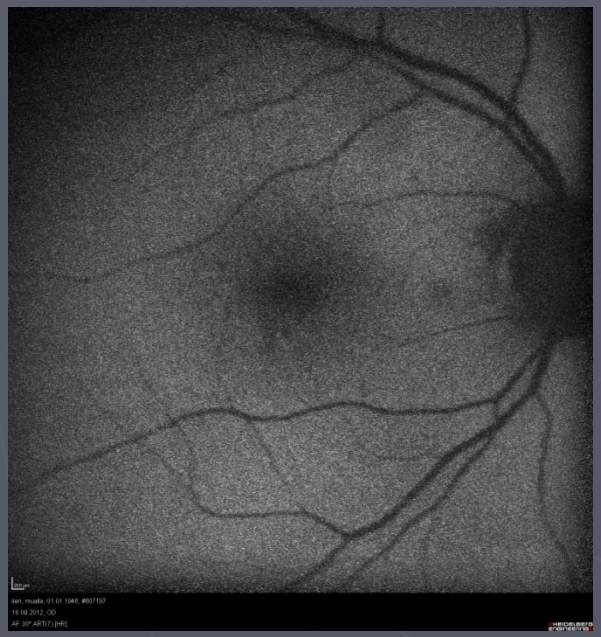
DİRENÇLİ OLGUDA İLAÇLARIN DEĞİŞTİRİLMESİ

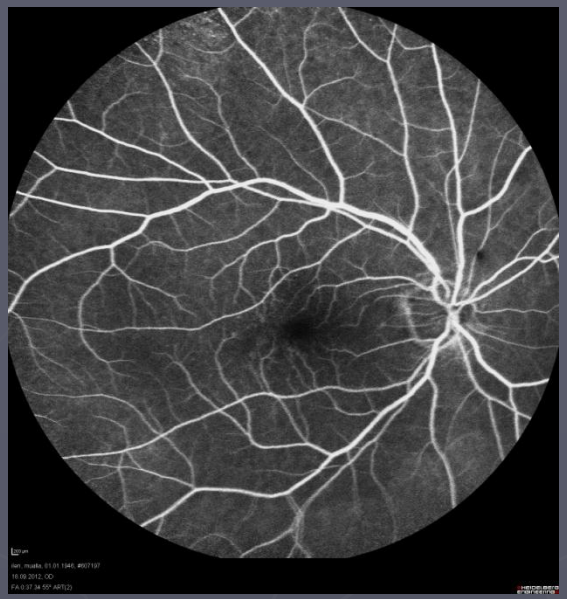
M.İ., 65yaş, RVKT, OS

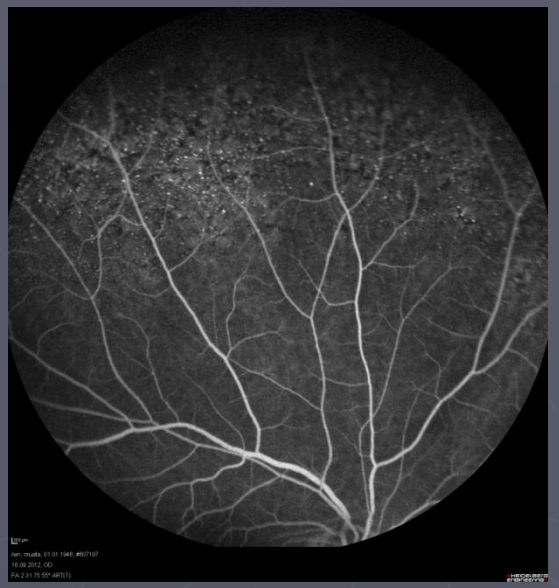
Kontrollerde GK ve SMK'da fazla bir değişiklik olmadı.
Laser ilavesi, PPV kararı

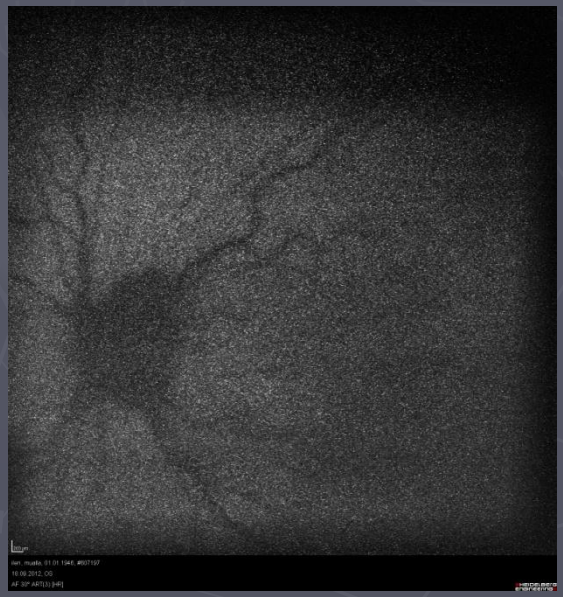


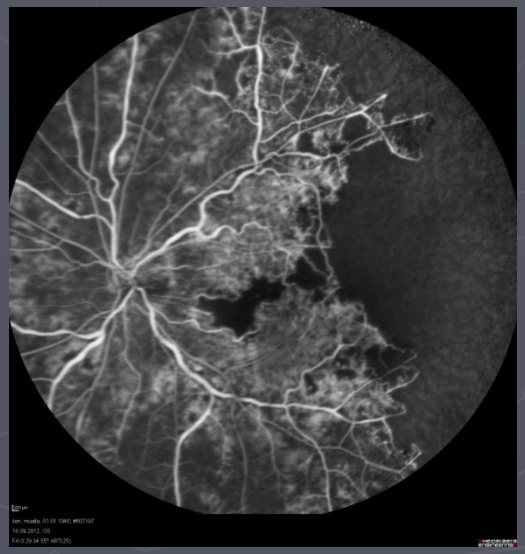
M.İ., 65yaş, RVKT, OS

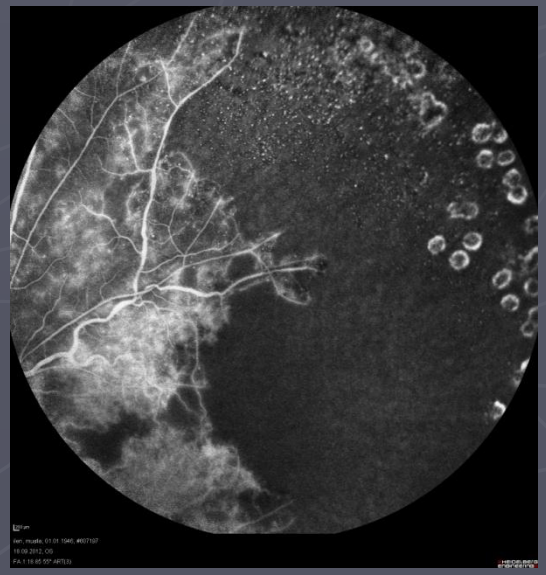






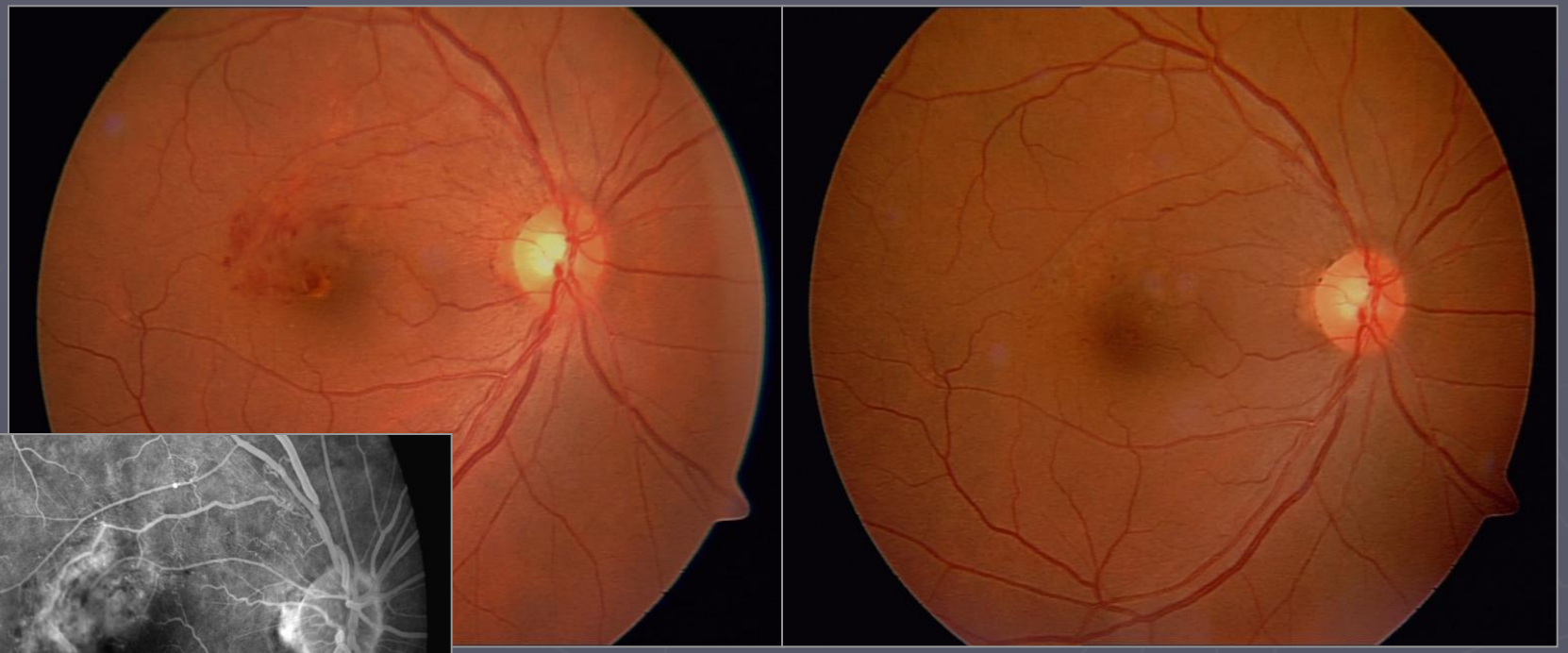


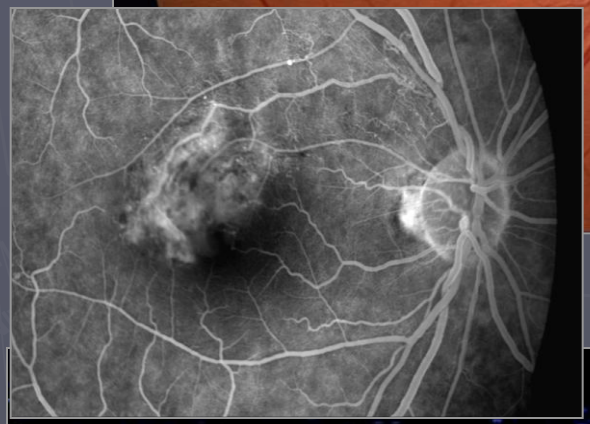




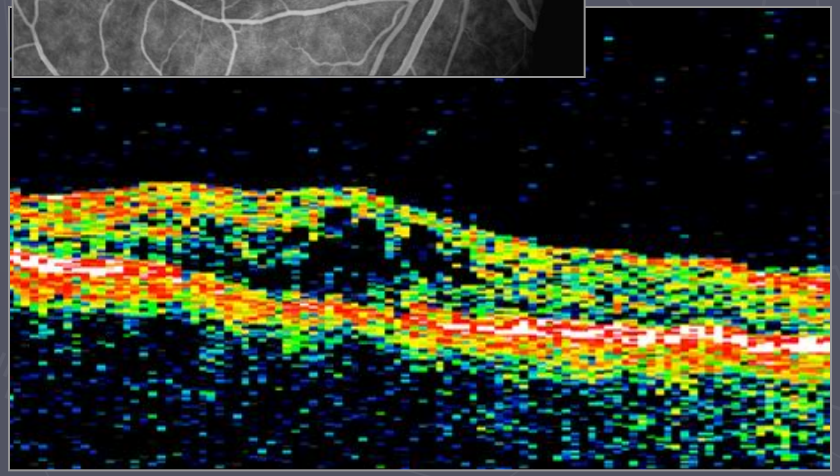
Retina Ven Dal Tıkanıklıkları

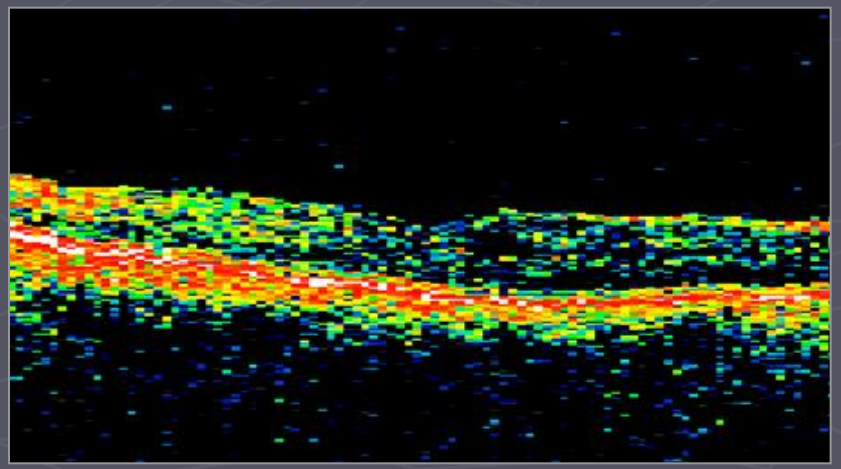
MAKÜLER VEN DALCIK TIKANIKLIĞI





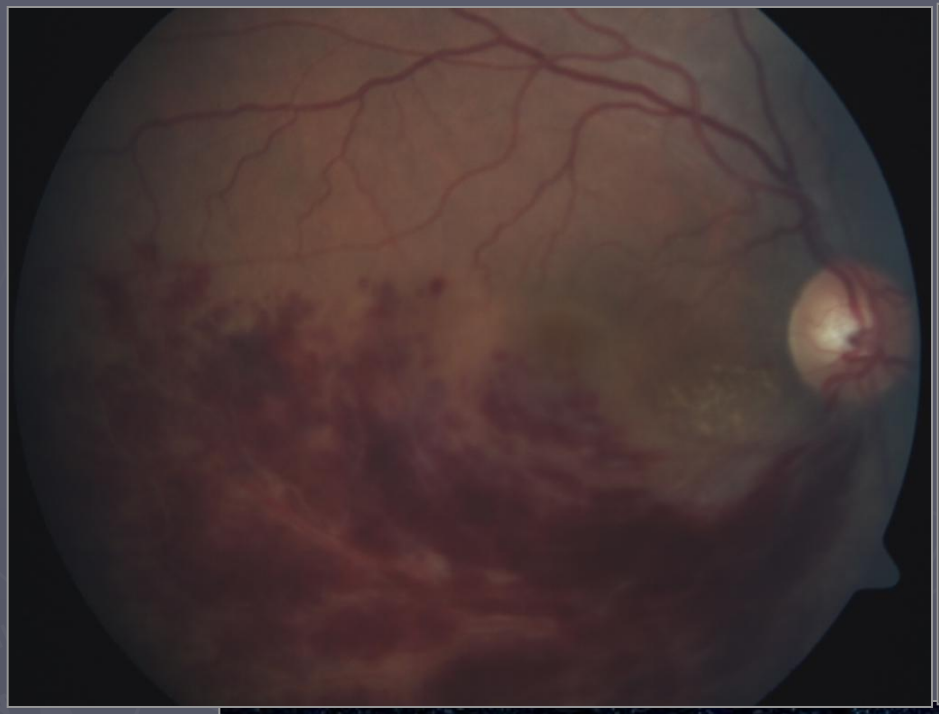
İskemi yok, Görme: 0,6 / 4 ay sonra spontan düzelme

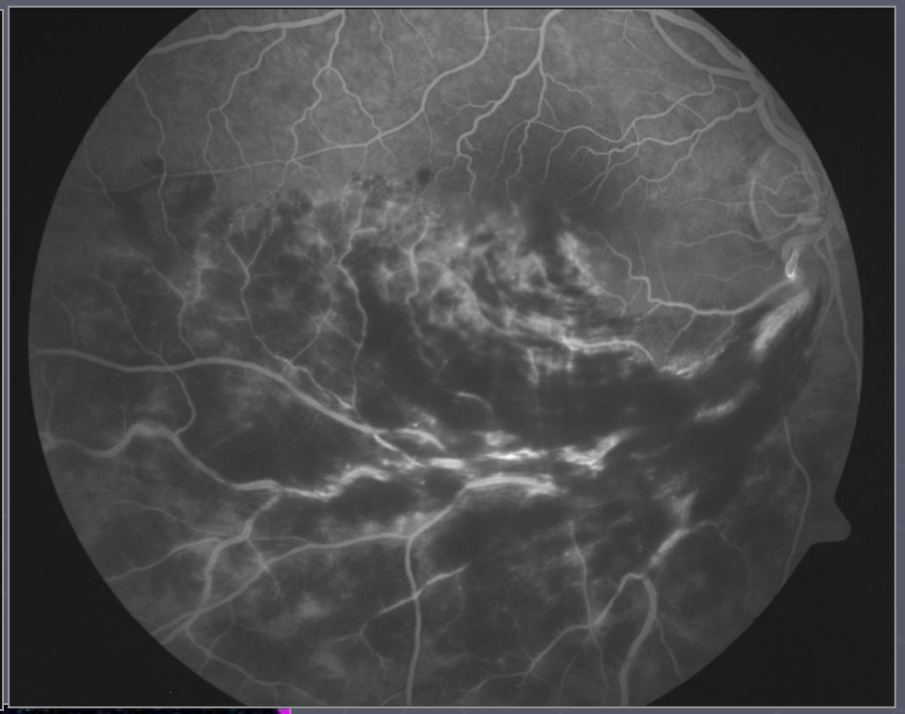


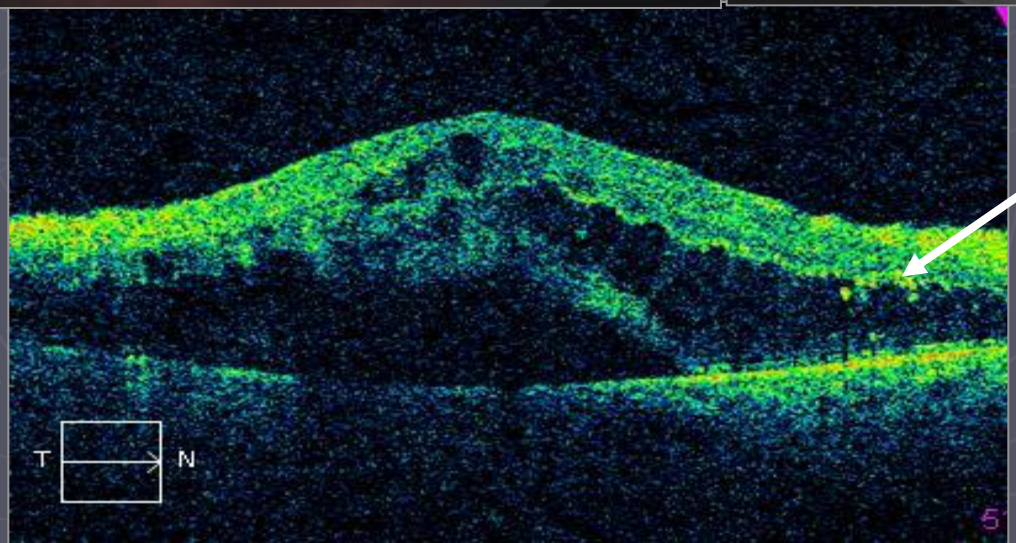


51 yaş, kadın

Alt temporal ven dal tıkanıklığı, non-iskemik







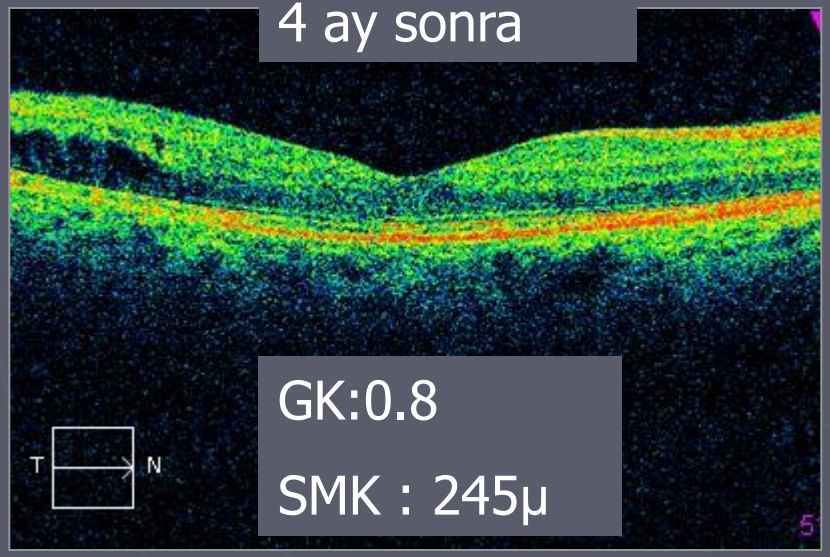
Parlak noktalar?, fibrin ?
STEROİD?

GK:0.1

SMK : 749µ

X3 lucentis

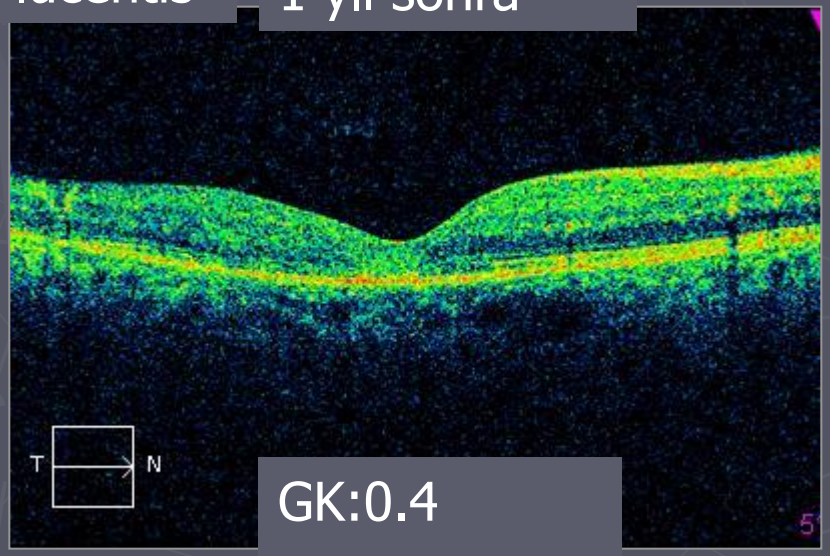
4 ay sonra



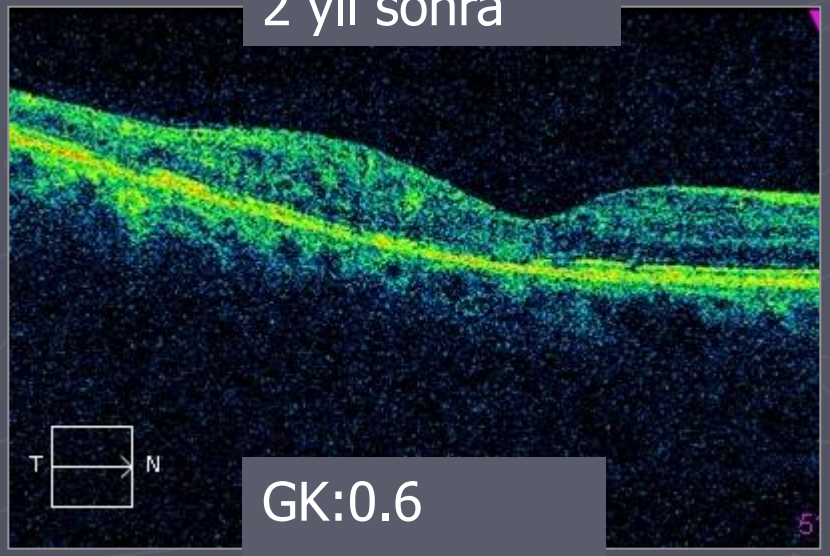
7 ay sonra

X3 lucentis

1 yıl sonra



2 yıl sonra

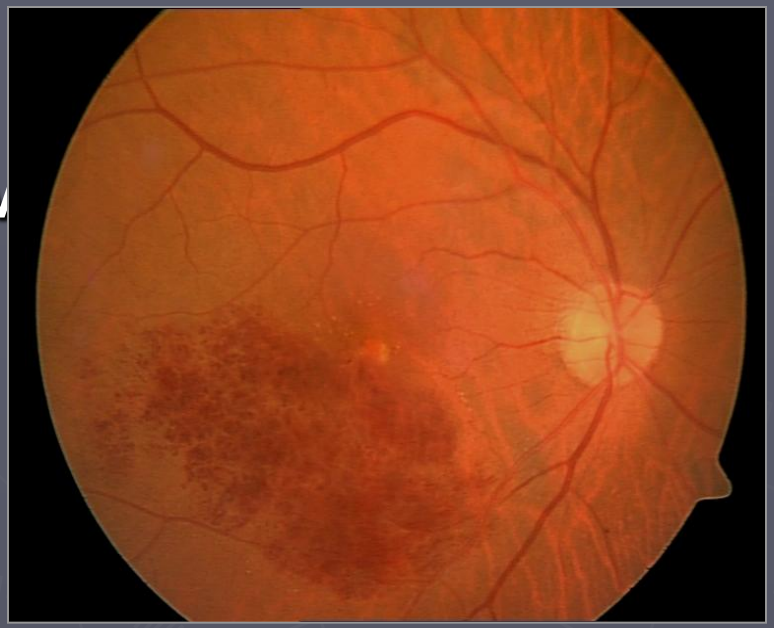


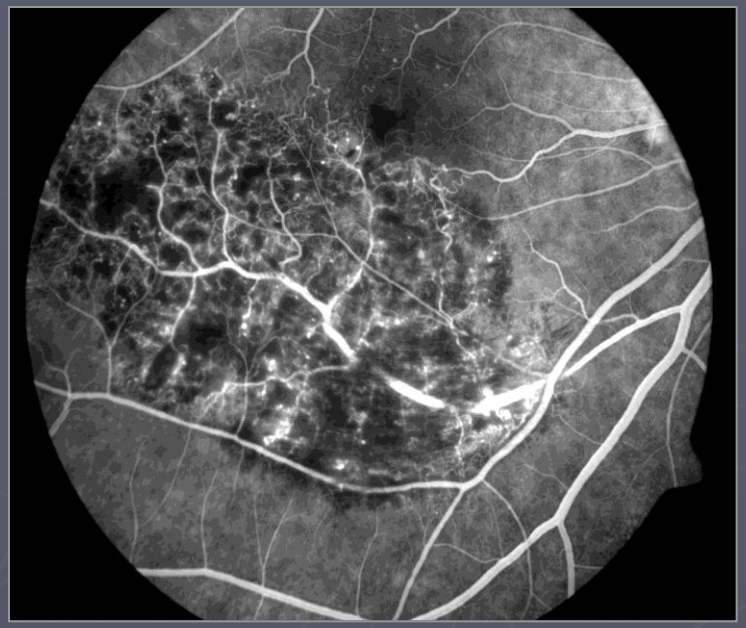
37 yaş, kadın

Alt temporal ven dal tıkanıklığı, non-iskemik

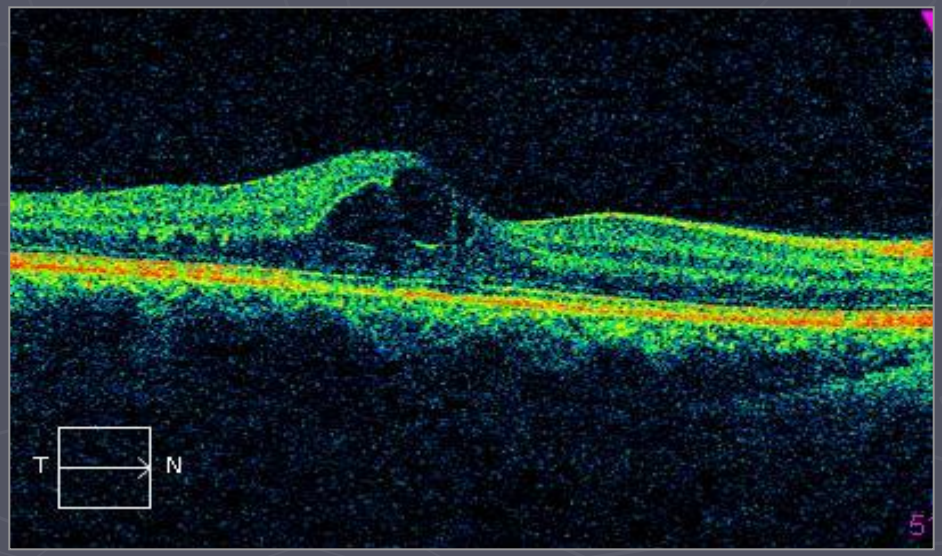
İyi prognoz kriterleri

- V





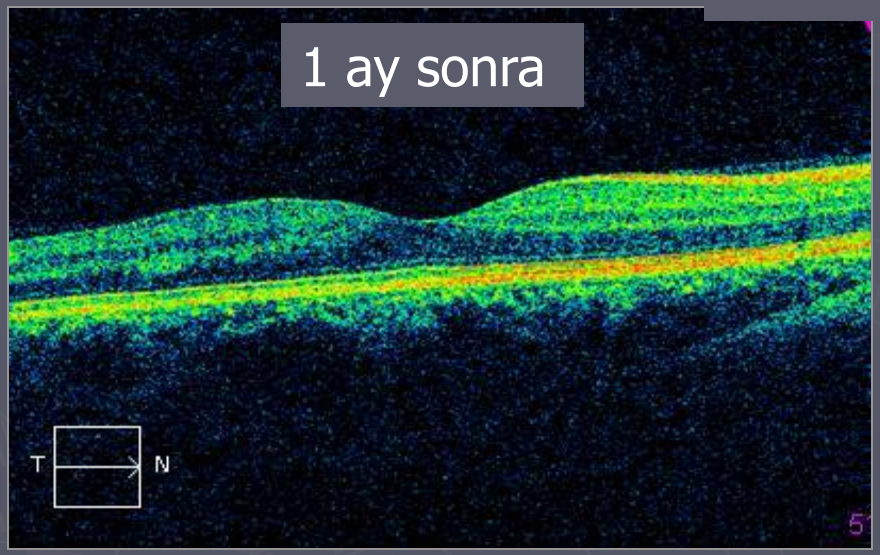
VA: 0.6 Bekleme ?
Erken Tedavi ?



GK:0.63

SMK : 373µ

x1 lucentis



GK:tam

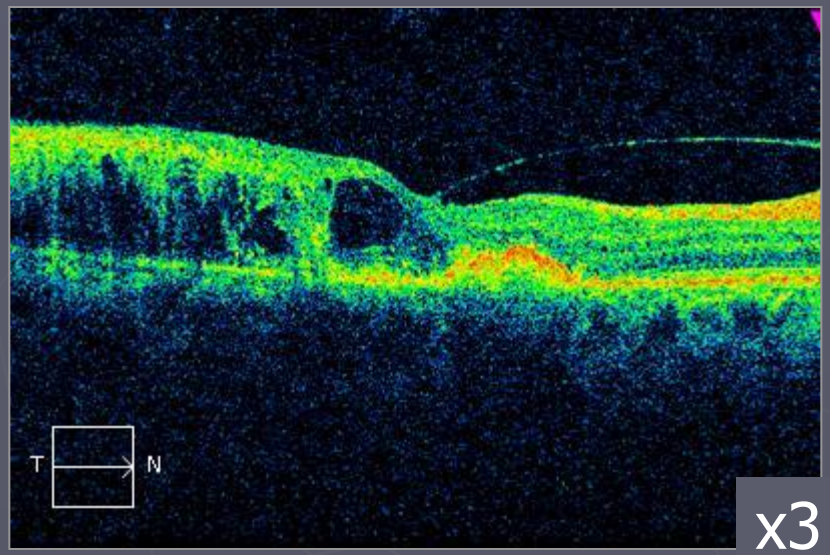
SMK : 180µ

GK:tam

SMK : 174µ

57 yaş, erkek

Kronik üst temporal ven dal tıkanıklığı, iskemik



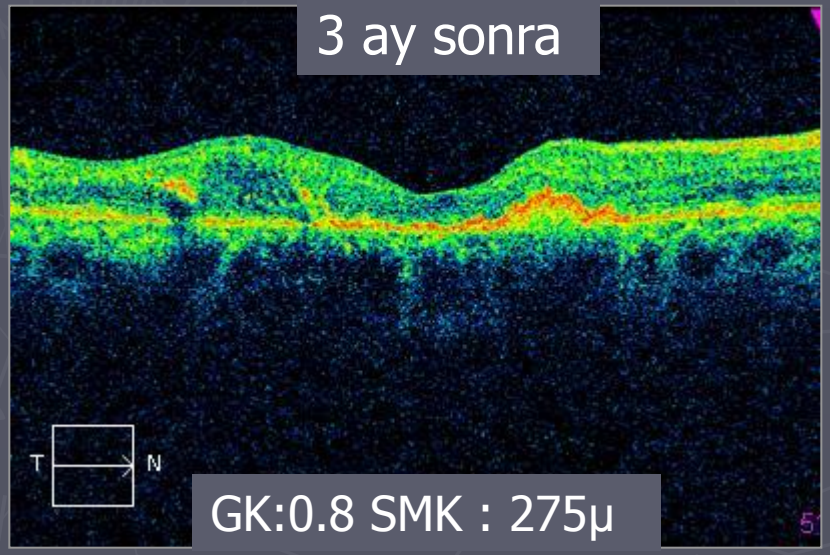
GK:0.1

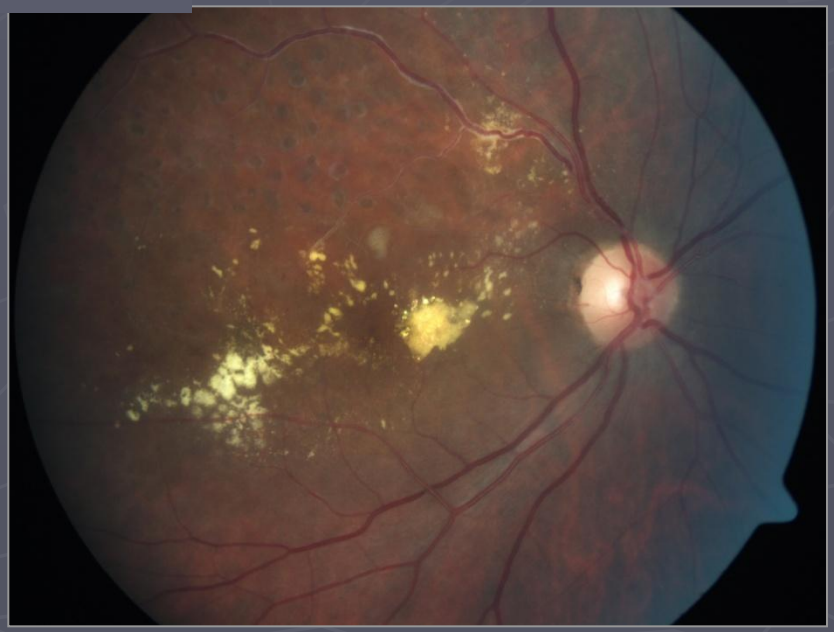
SMK : 349µ

Kötü prognoz

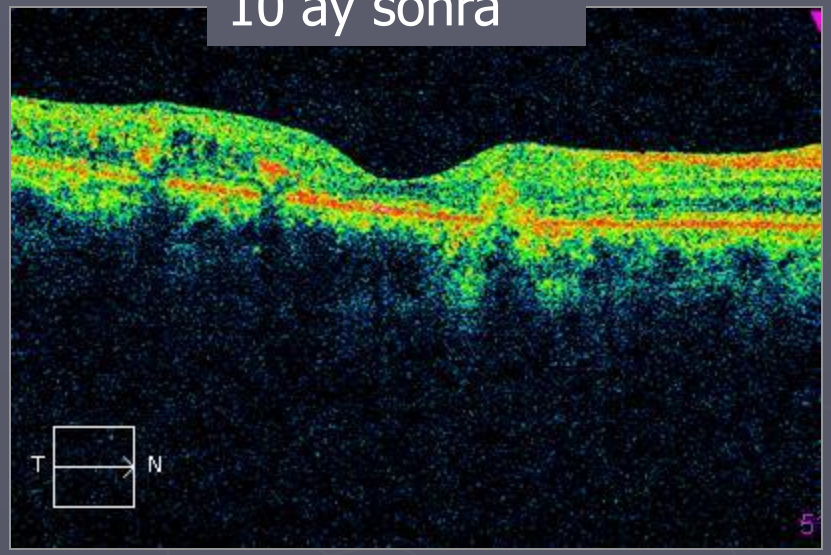
x3 lucentis

Laser fotokoagülasyon





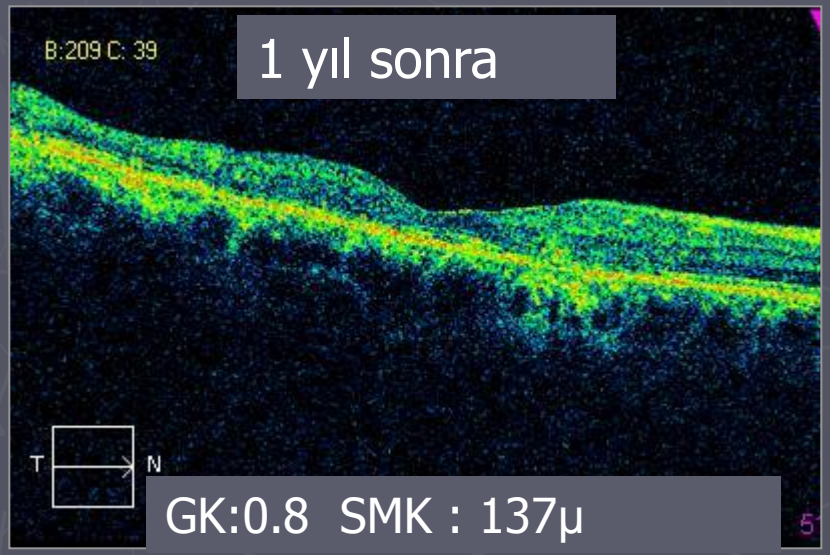
Vitreus yapışıklığında ayrılma



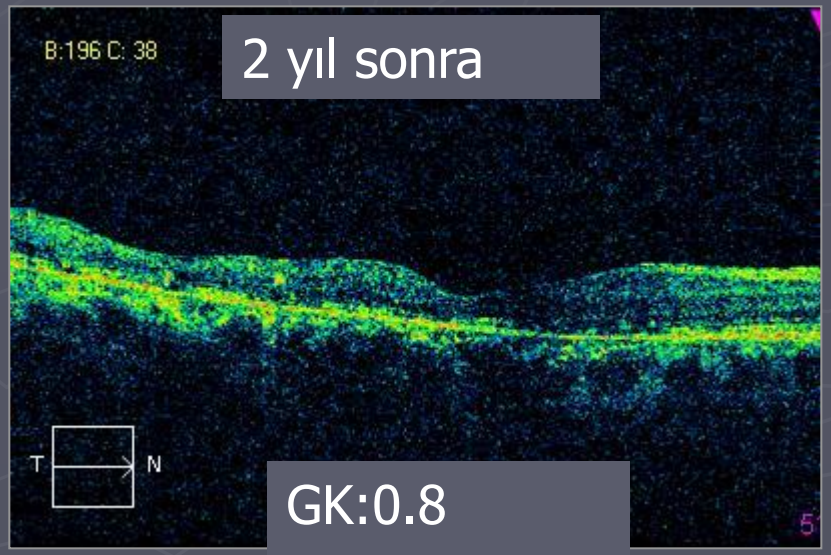
Kronik olguyu tedavi et

GK:0.8

SMK : 137µ



Drusenoid PED kaybolması

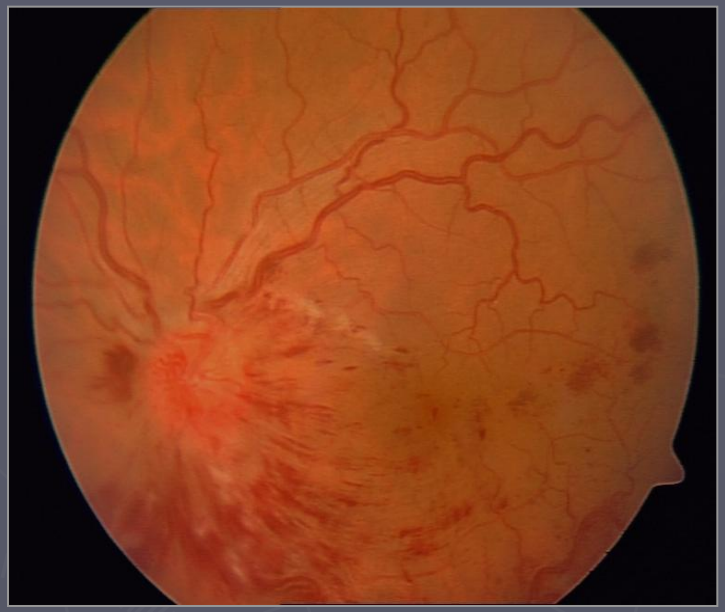


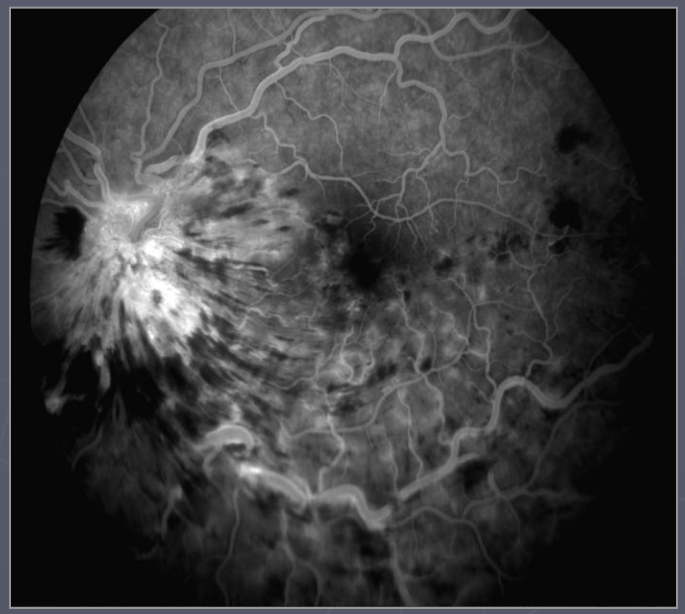
GK:0.8

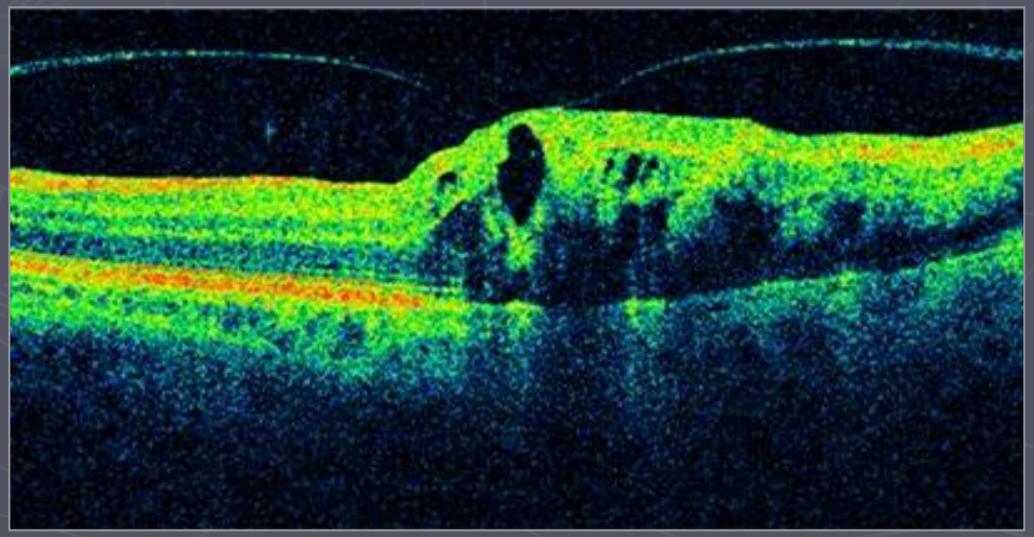
SMK : 110µ

54 yaş, kadın

Alt temporal ven dal tıkanıklığı, non-iskemik



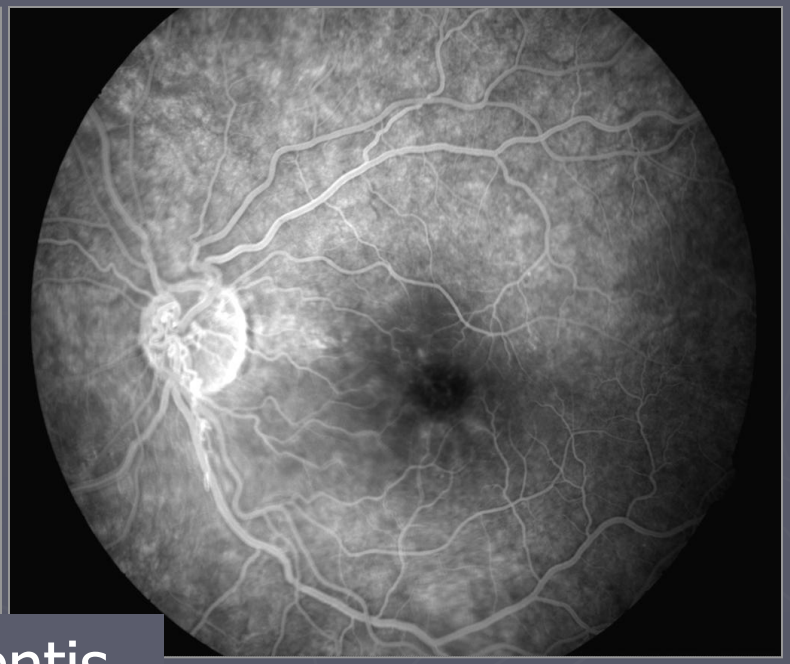




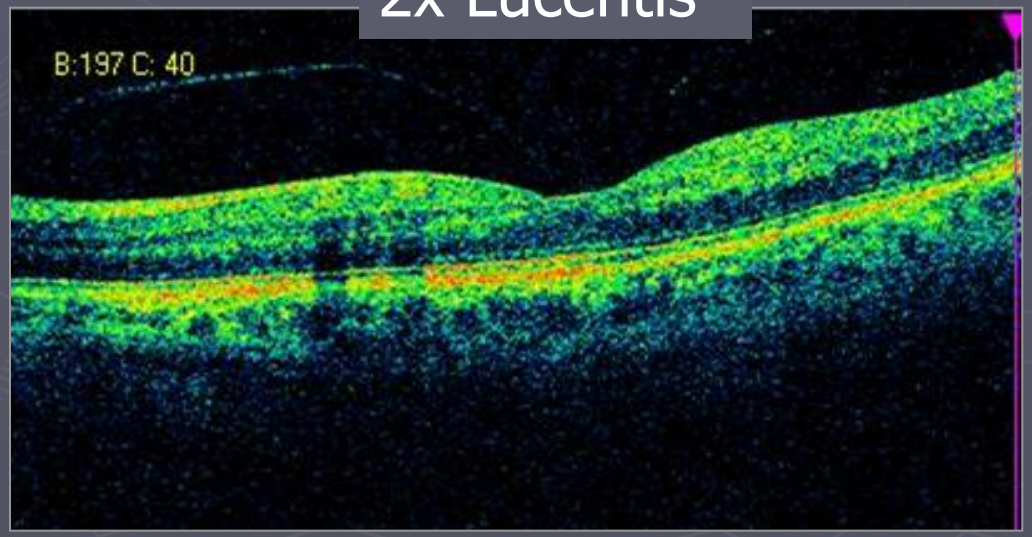
Vitreomaküler traksiyon
PPV?

GK:0.2

SMK : 452µ



2x Lucentis

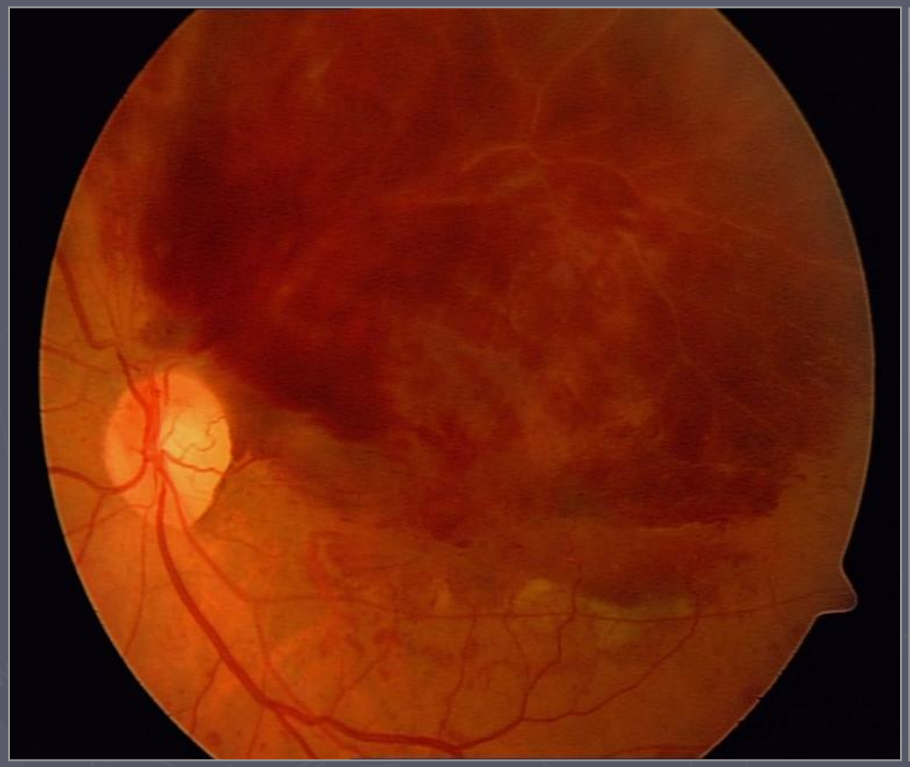


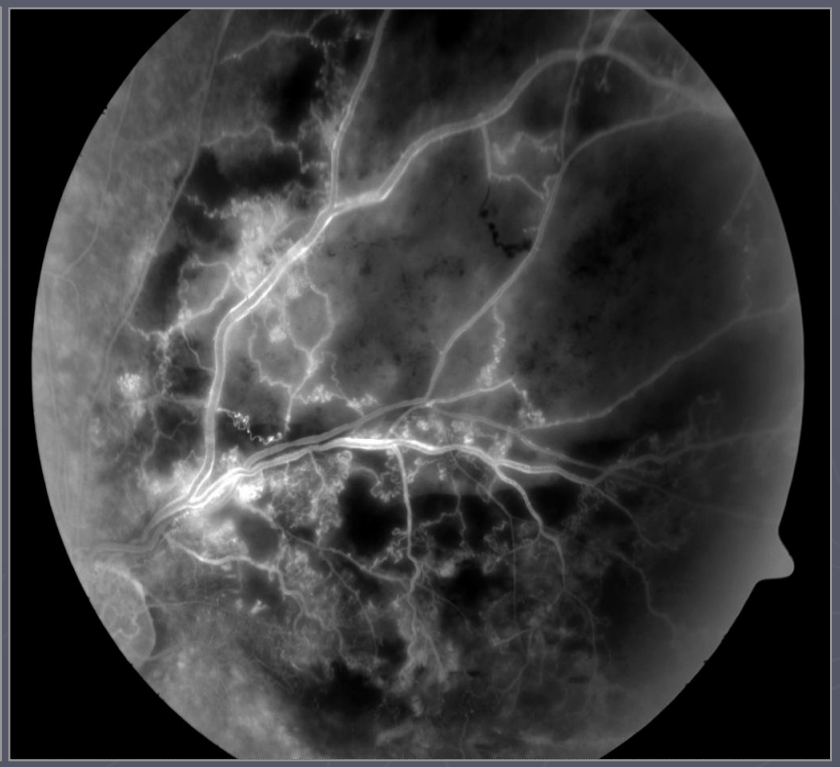
Etkin VMT yok
PPV gerekmedi

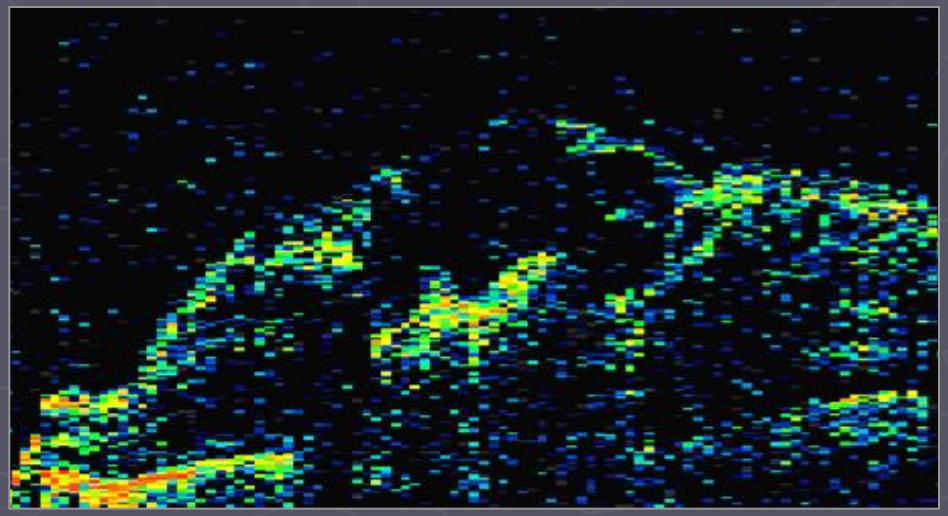
GK:tam

SMK : 178µ

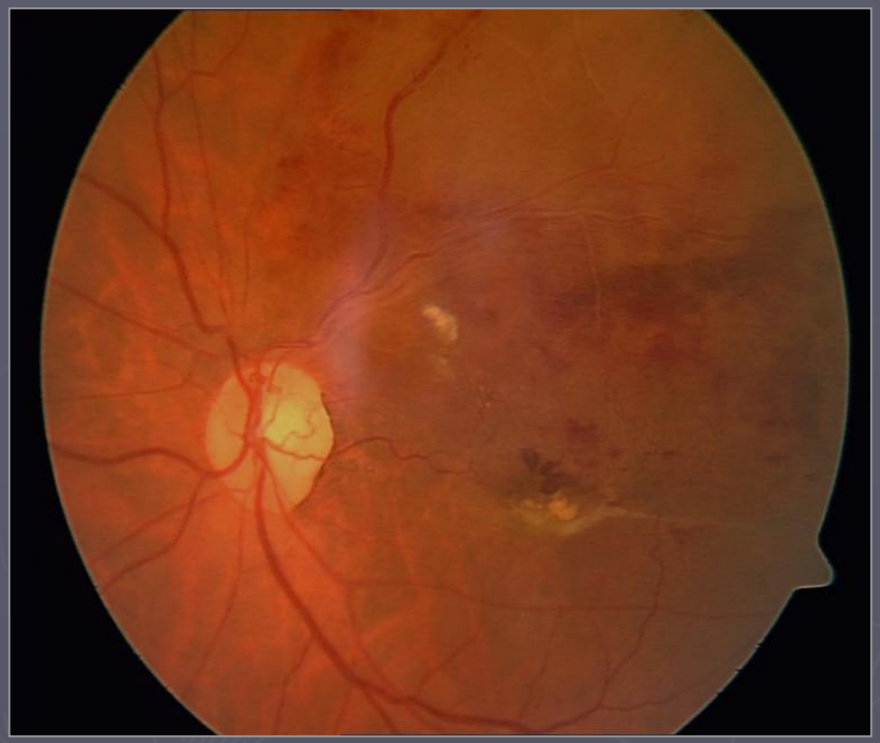
İskemik RVDT , Makülada kan / iskemik ödem

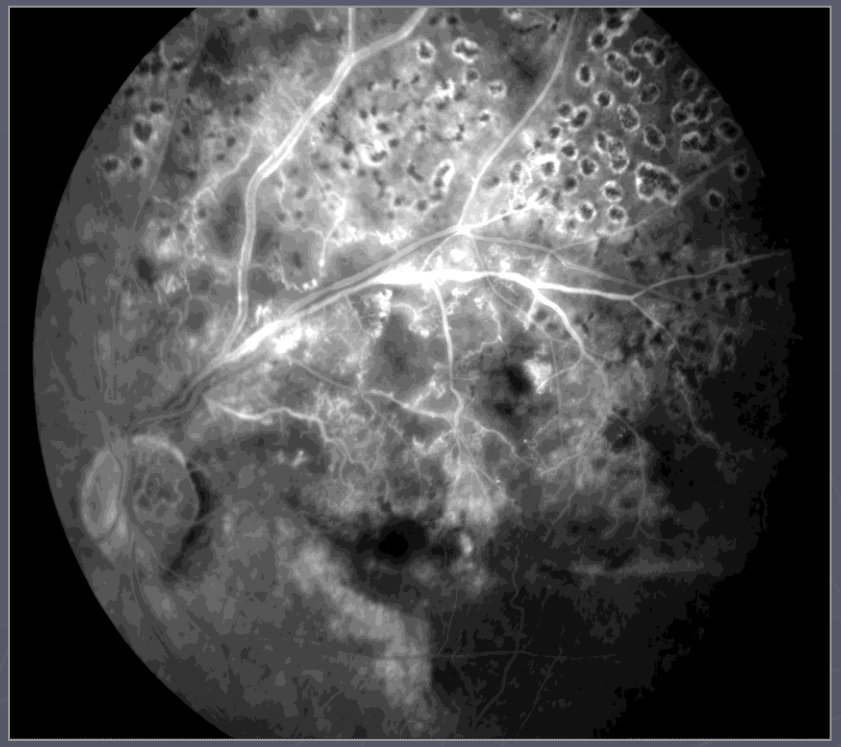




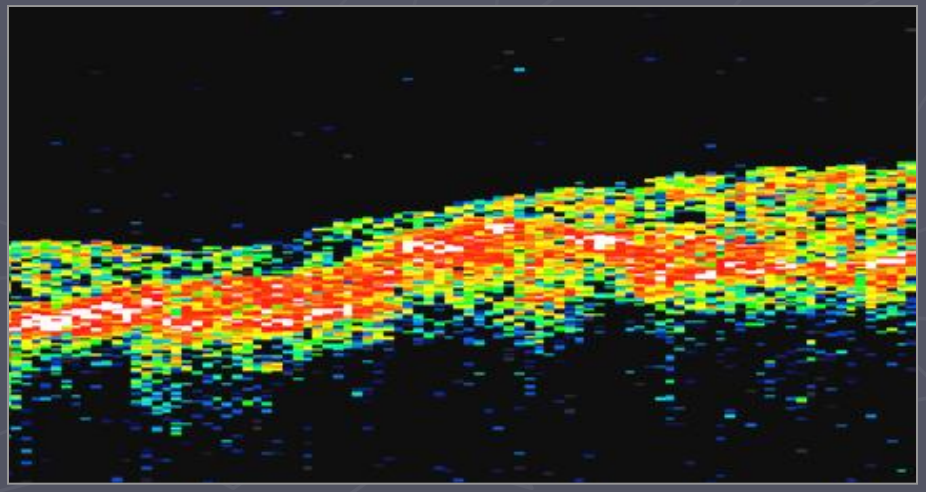


GÖRME: 1 MPS



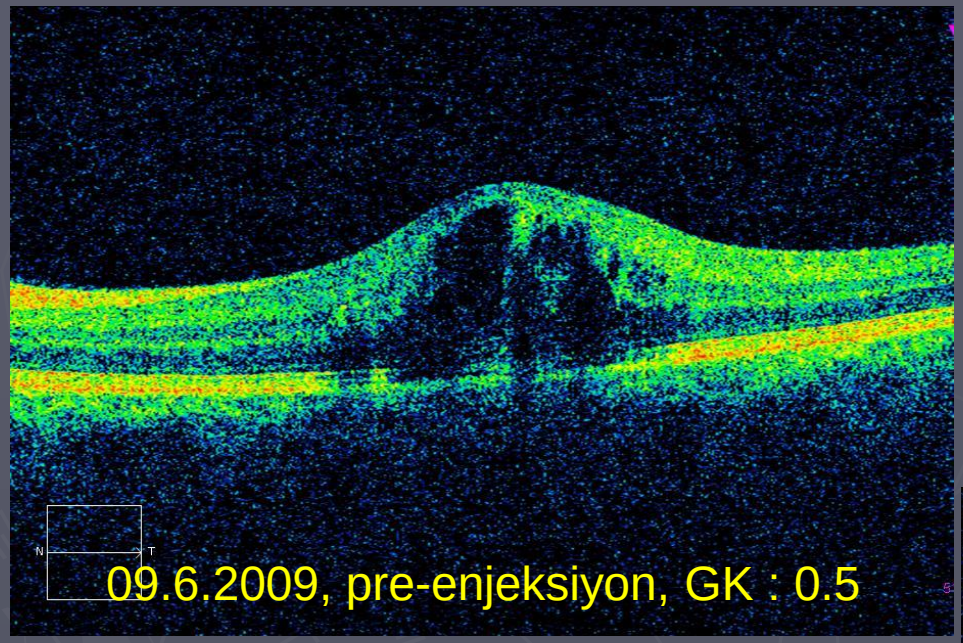


7 X Anti – VEGF
Periferik iskemiye laser
Maküla ödeminin kaybolması,
atrofik maküla



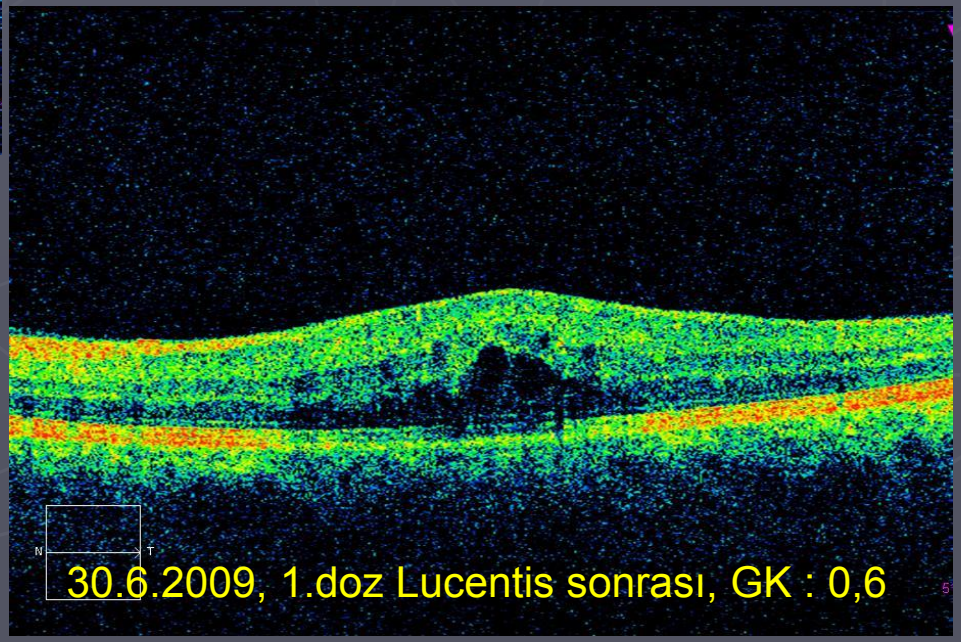
GÖRME: 5MPS

E.K., 51 yaş, non-iskemik ven dal tıkanıklığı, OS



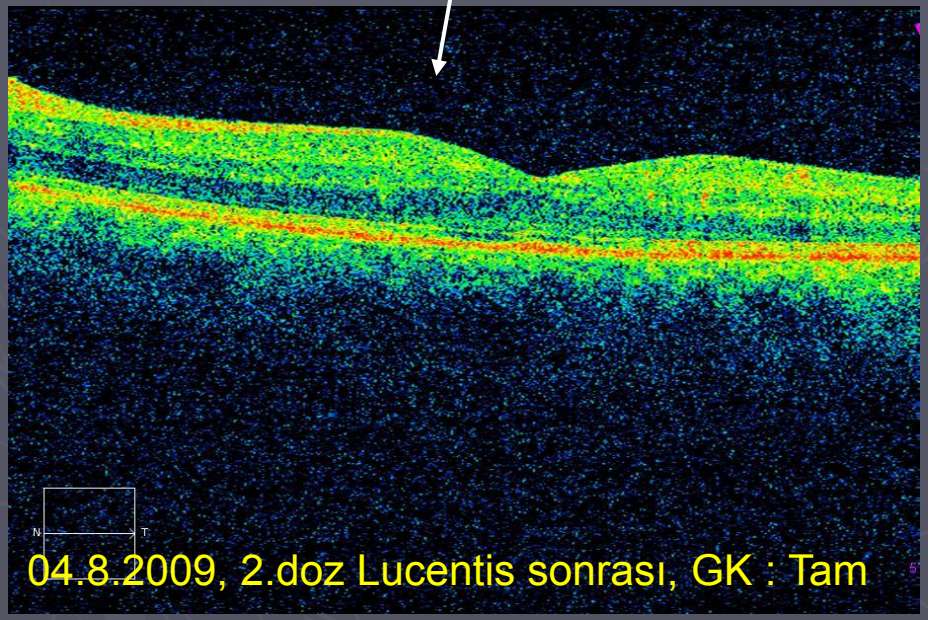
Gözlem ?
Anti – VEGF tedavi ?
Prognoz çok iyi ?

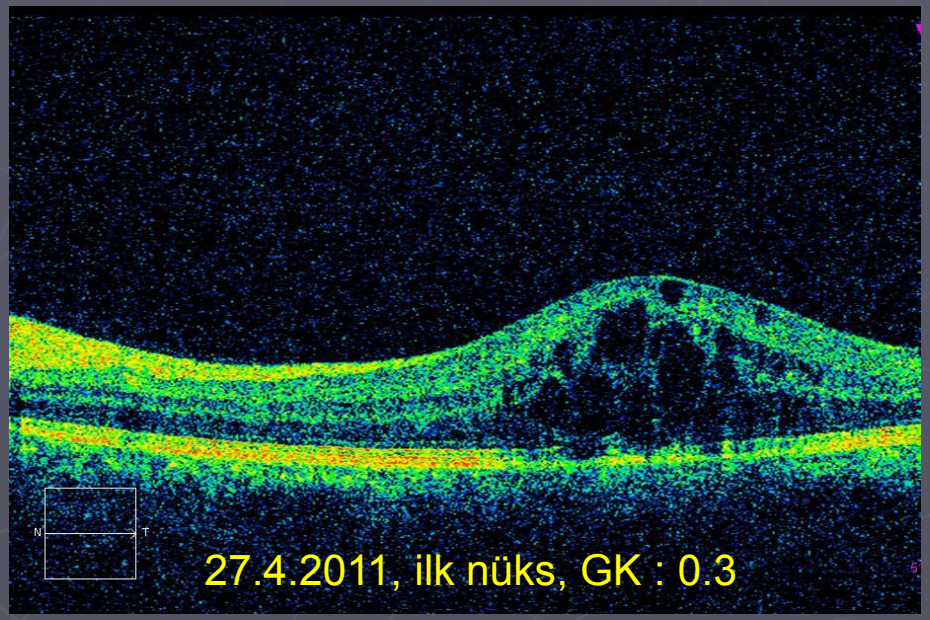
10.6.2009…1.doz Lucentis



E.K., 51 yaş, Ven Dal Tıkanıklığı, OS

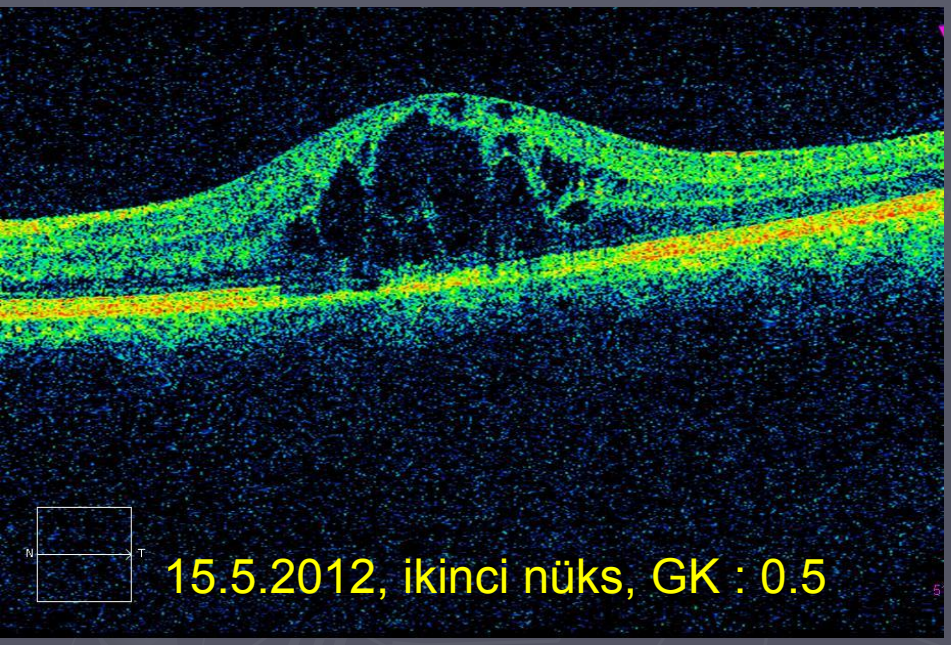
01.07.2009…2.doz Lucentis





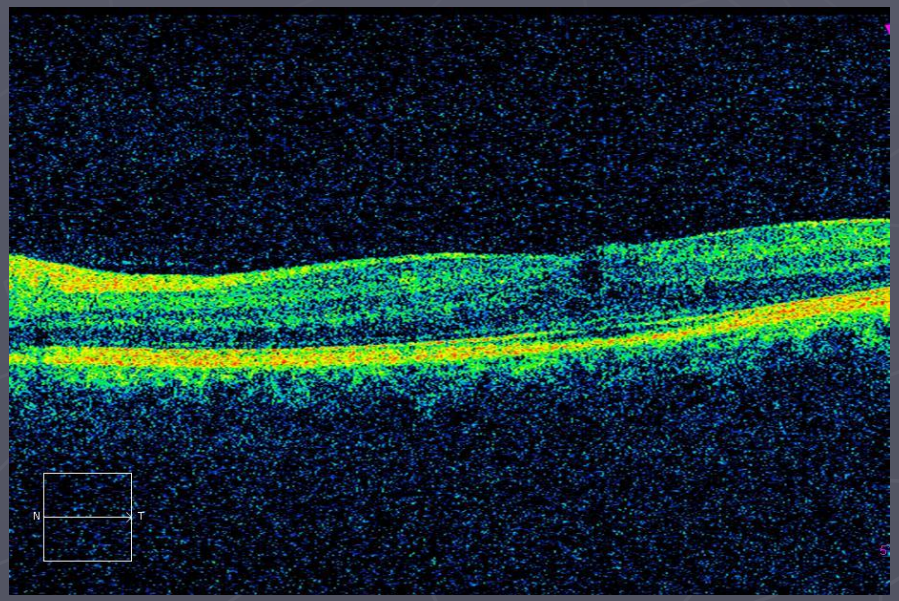
15.6.2011…3.doz Lucentis

E.K., 51 yaş, Ven Dal Tıkanıklığı, OS



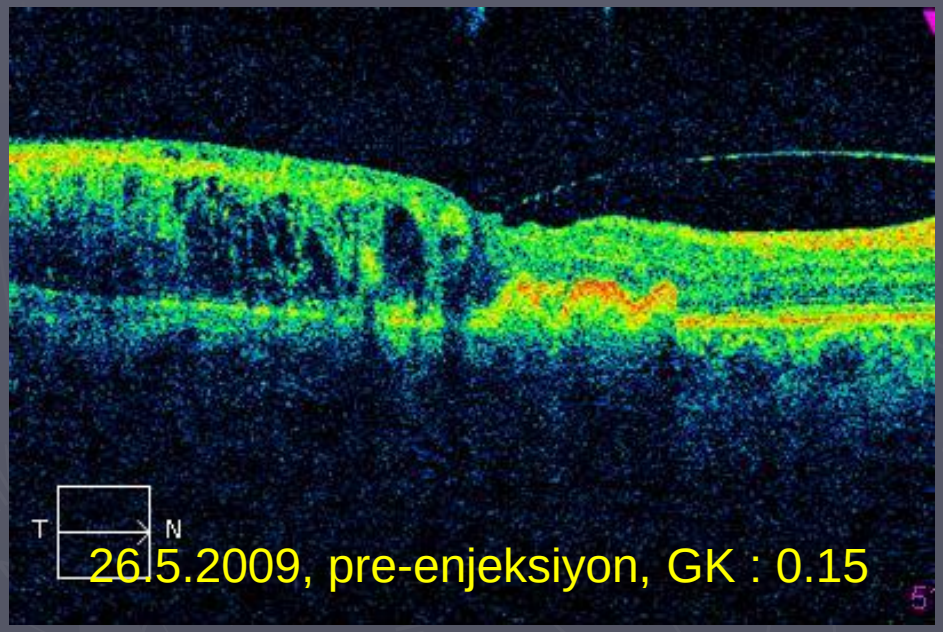
29.5.2012…4.doz Lucentis

Grid laser ilavesi



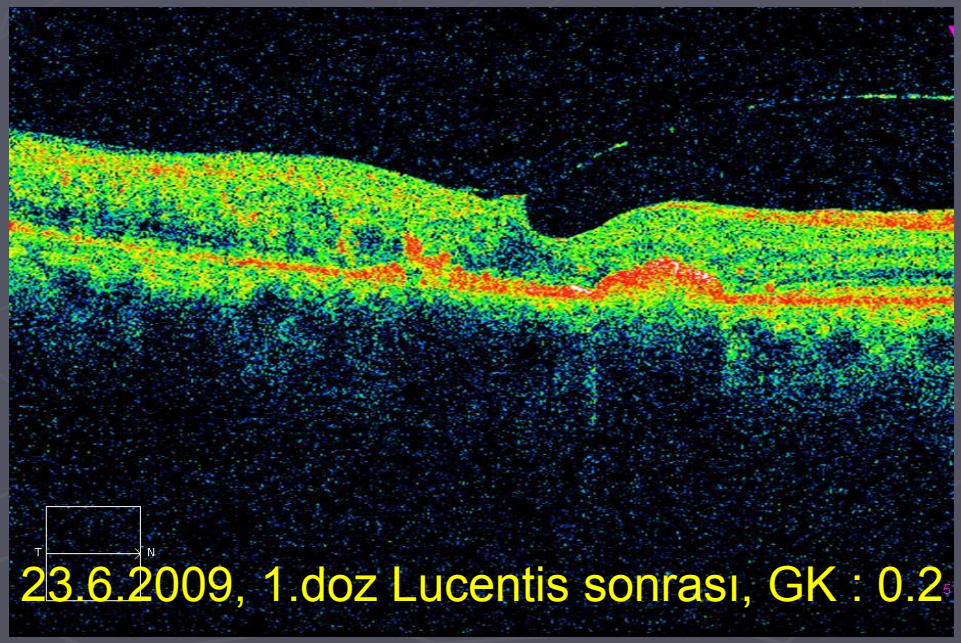
25.9.2012, son kontrol, GK : 0.8

F.Ö., 56 yaş, İskemik Ven Dal Tıkanıklığı, OD



Vitreomaküler traksiyon
Drusenoid PED
Kötü görme
Doğrudan PPV ?

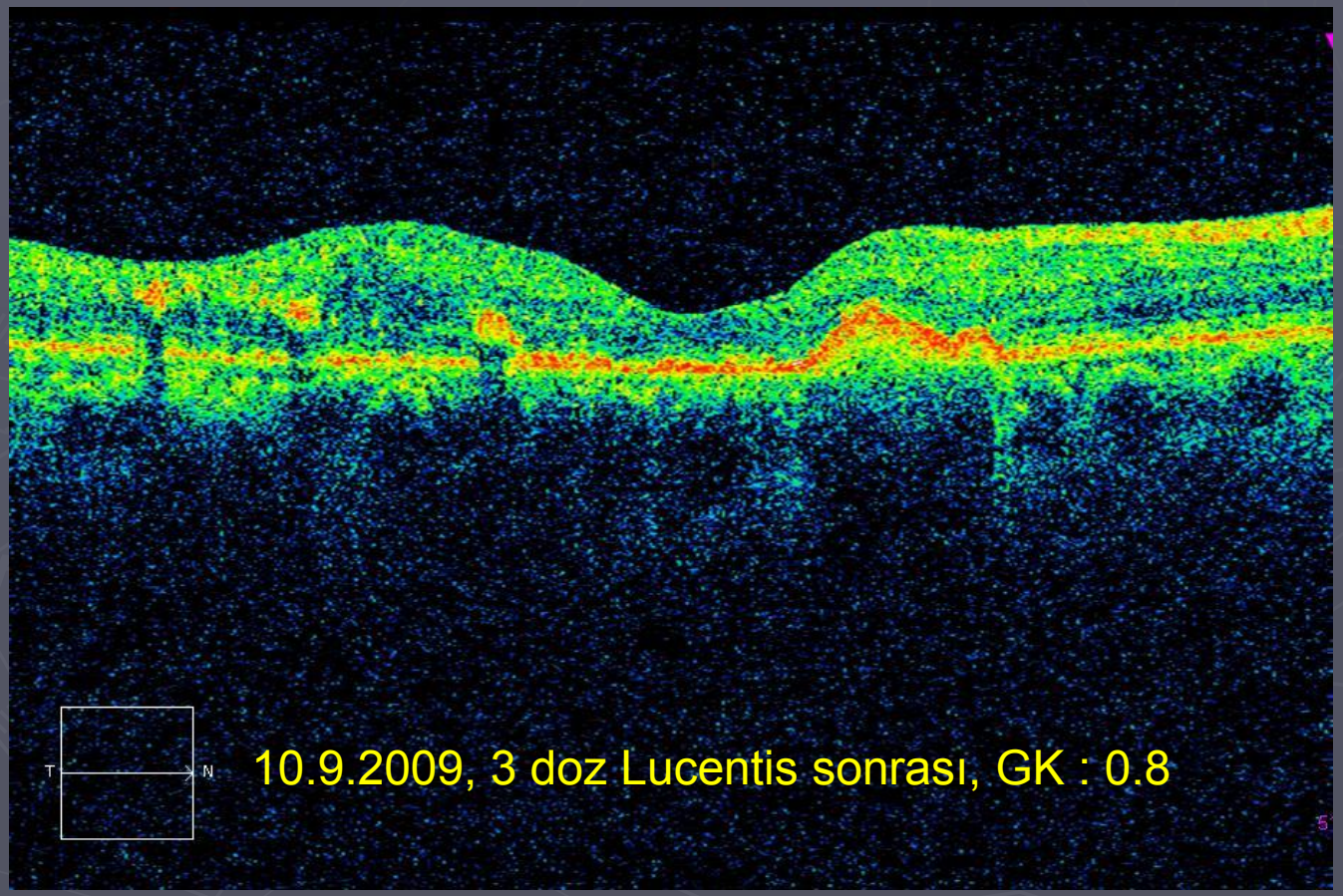
27.5.2009…1.doz Lucentis



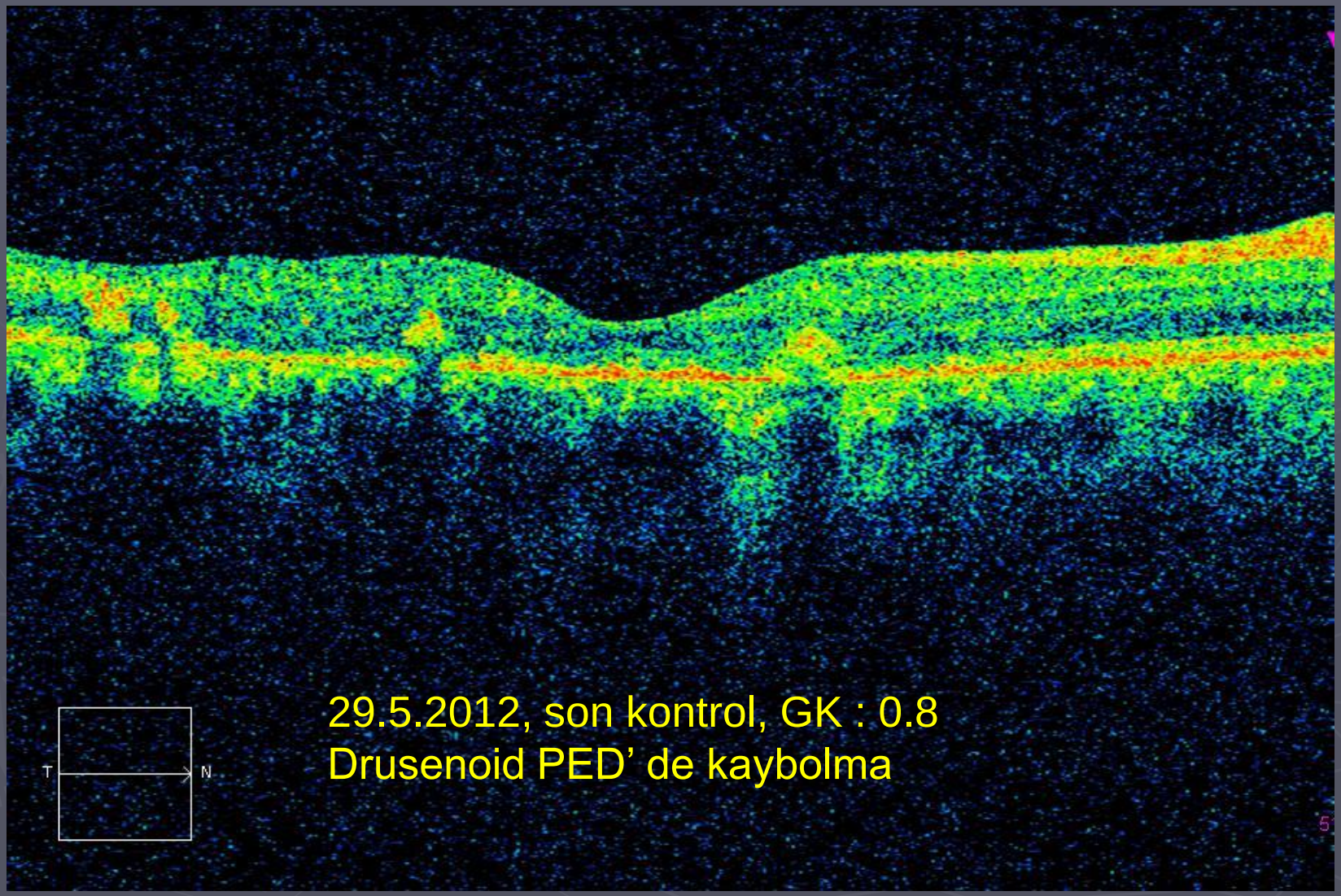
F.Ö., 56 yaş, Ven Dal Tıkanıklığı, OD

24.6.2009…2.doz Lucentis
05.8.2009…3.doz Lucentis

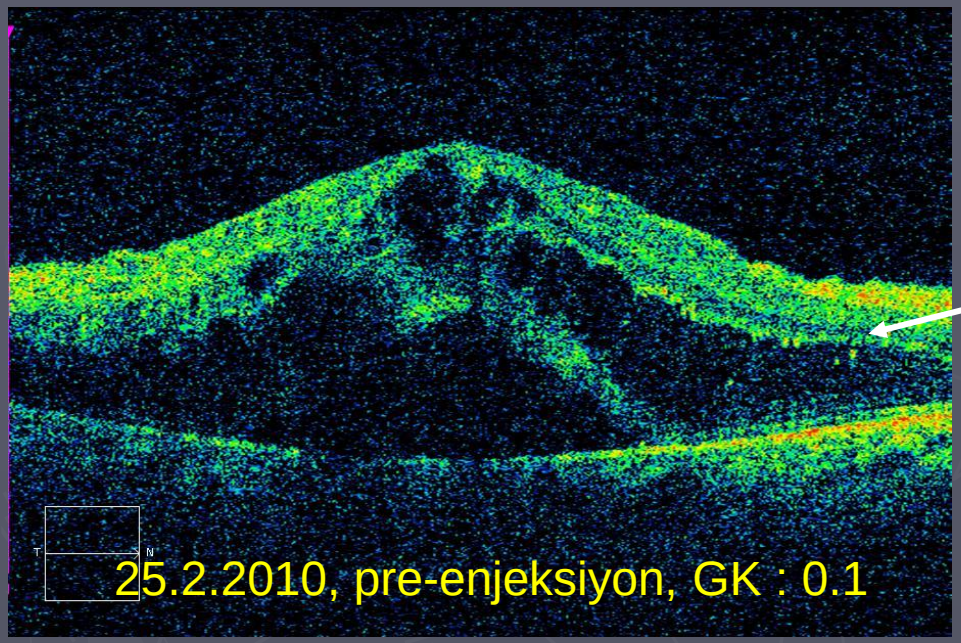
Vitreomaküler Traksiyonda ayrılma



F.Ö., 56 yaş, Ven Dal Tıkanıklığı, OD



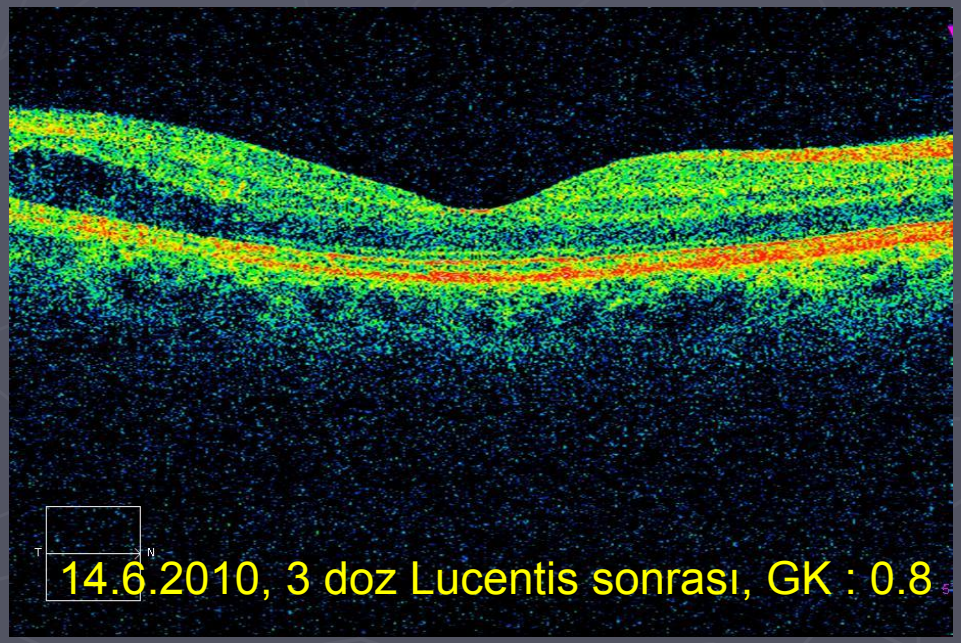
H.G., 49 yaş, İskemik Ven Dal Tıkanıklığı, OD



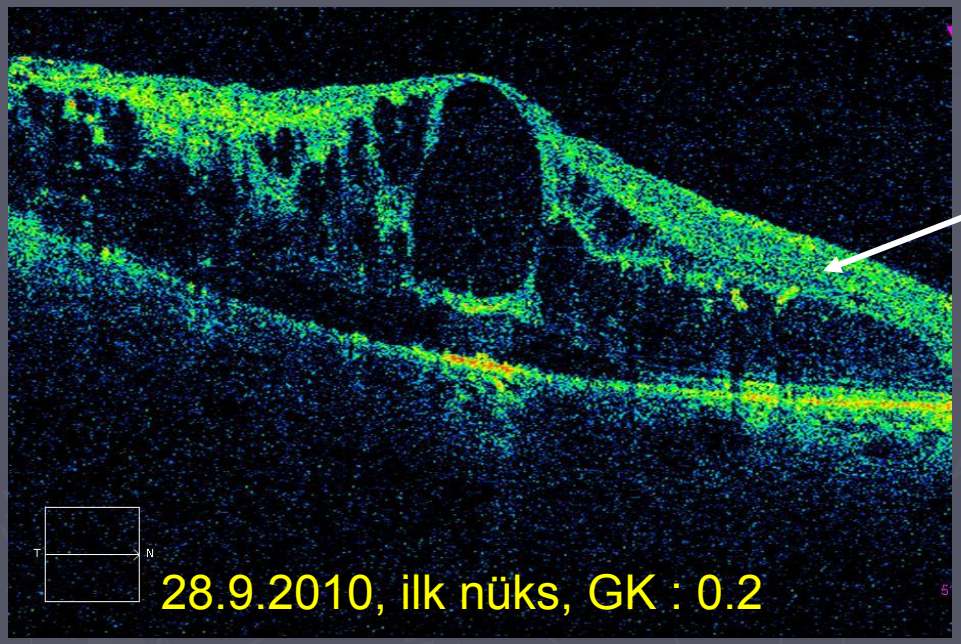
Steroid ? – daha etkin ?
Anti-VEGF ?

Fibrin? Parlak noktalar ?

Birer ay arayla ardışık 3 doz Lucentis



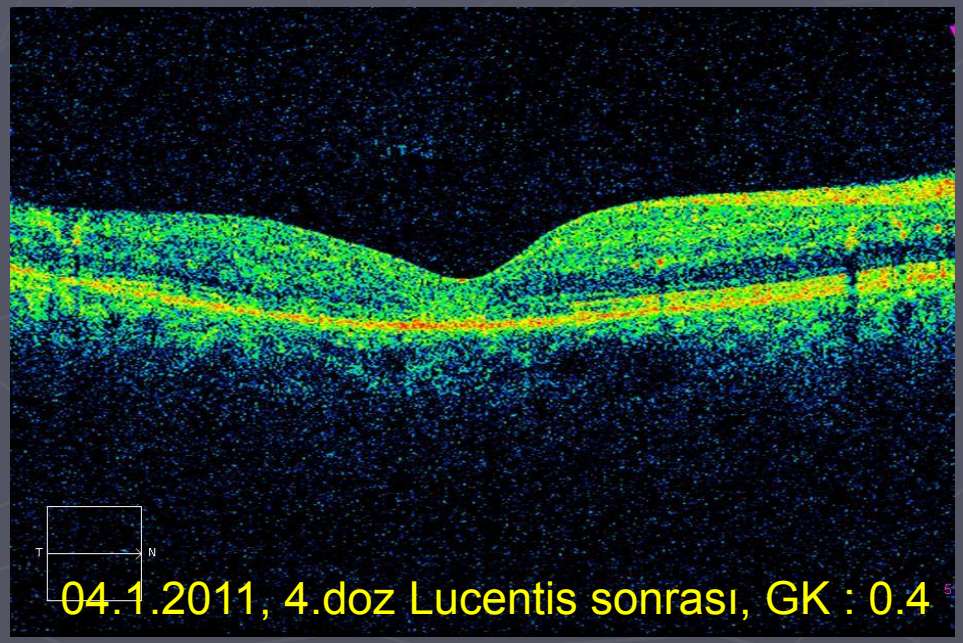
H.G., 49 yaş, Ven Dal Tıkanıklığı, OD



28.9.2010, ilk nüks, GK : 0.2

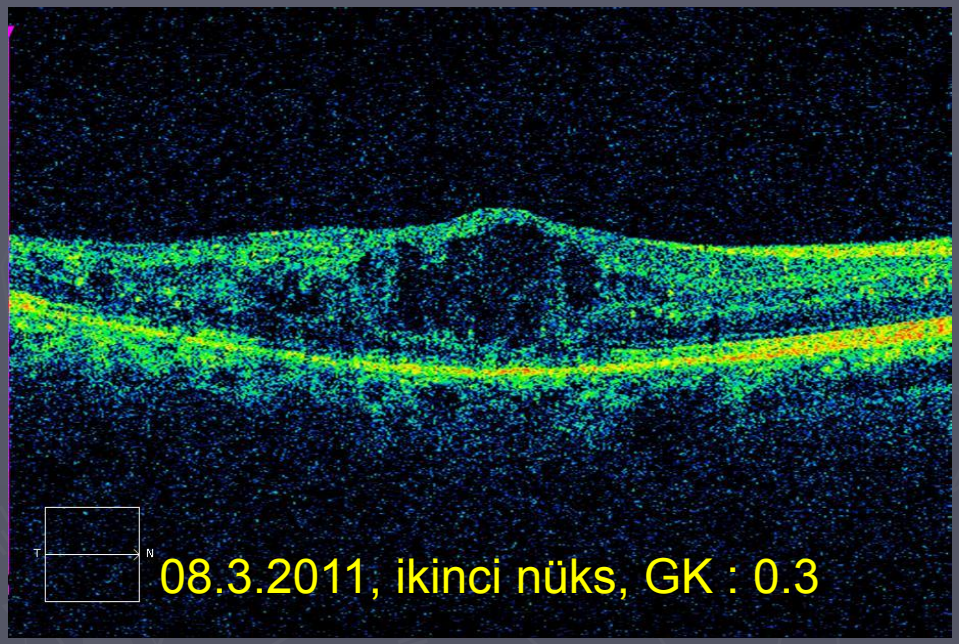
Steroide çevirme ?

06.10.2010…4.doz Lucentis



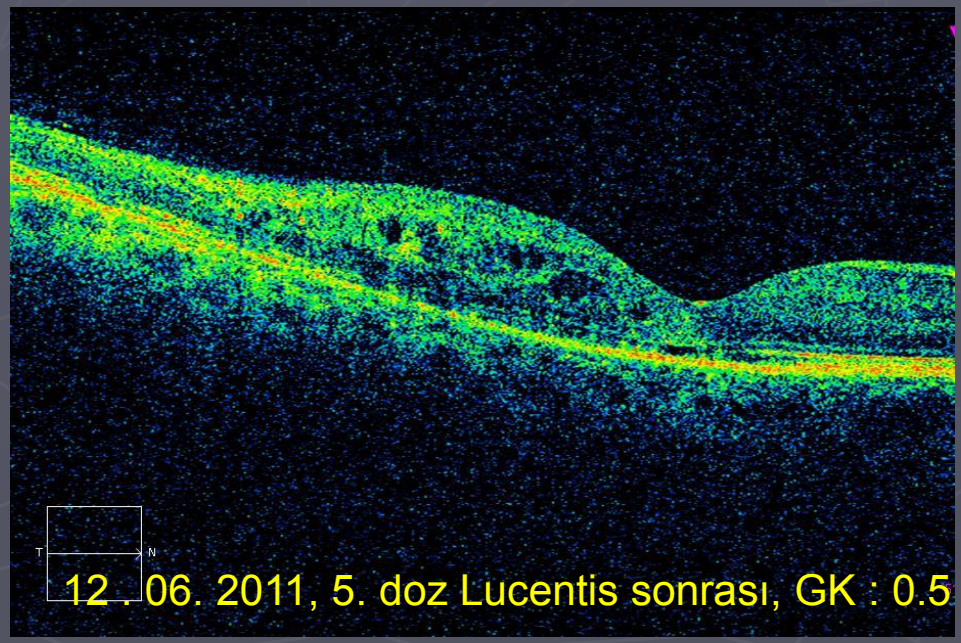
04.1.2011, 4.doz Lucentis sonrası, GK : 0.4

H.G., 49 yaş, Ven Dal Tıkanıklığı, OD



08.3.2011, ikinci nüks, GK : 0.3

16.3.2011…5.doz Lucentis



12 . 06. 2011, 5. doz Lucentis sonrası, GK : 0.5

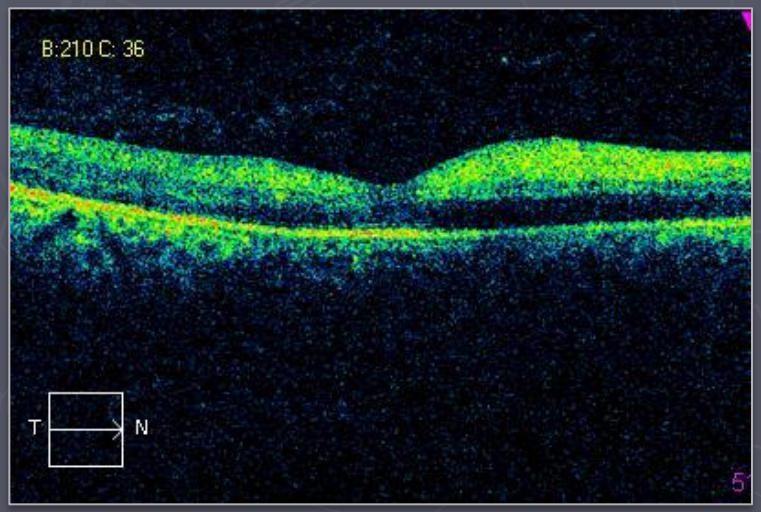
CRVO

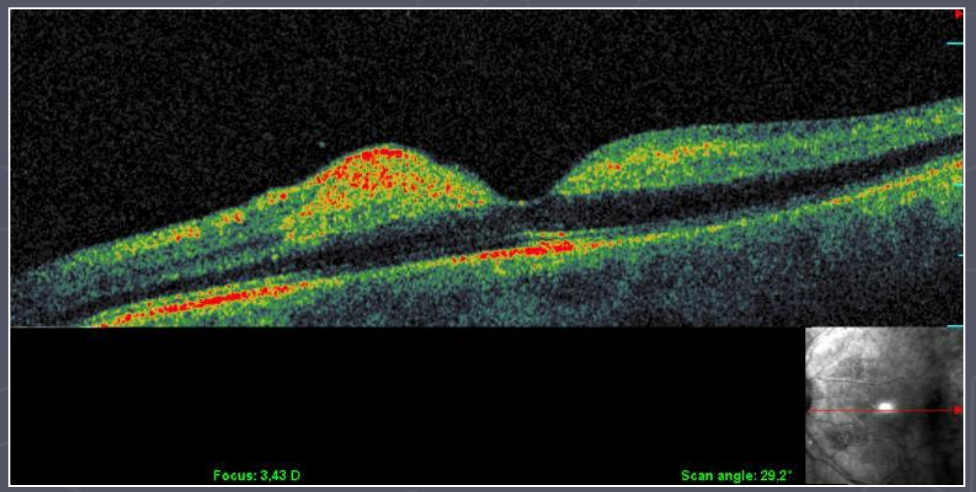
- Hypoxic retinal changes in ischemic CRVO are quite variable in each case
- Current OCT is not suitable for evaluation of peripheral nonperfusion area
- Detection of acute ischemic changes of the macula is possible on OCT, which is helpful in determining the extent of ischemic retinal damage
- Severe inner retinal atrophy with homogenous obliteration of different inner retinal layers in the corresponding capillary nonperfusion area
- Outer retinal atrophy is not uncommonly observed, especially in macular area
  * Accompanied choroidal perfusion insufficiency ?
  * Concomitant chronic macular edema ?

Sd- OCT findings in acute ischemic retina

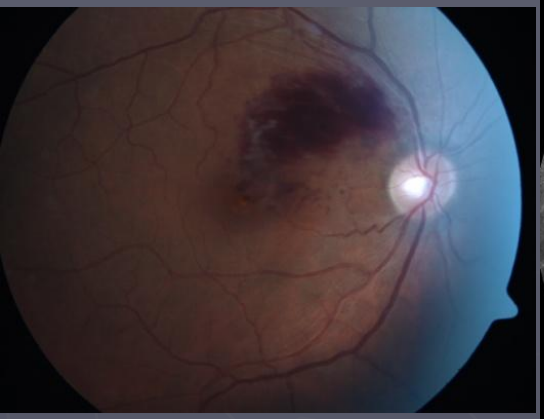
- Acute inner retinal ischemia:

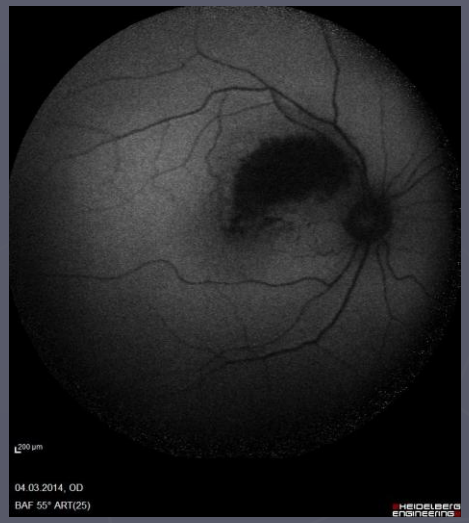
  * Increased reflectivity + mild thickening of inner retina (GCL, IPL, INL): an early sign of inner retinal ischemia
  * The outer retina shows hyporeflectivity, which is caused by shadowing from the abnormally hyperreflective inner retina
  * The outer retina seems to expand (this is not true expantion)
  * IS / OS junction and ONL thickness are maintained
  * Prominent MLM can be found within 1 month

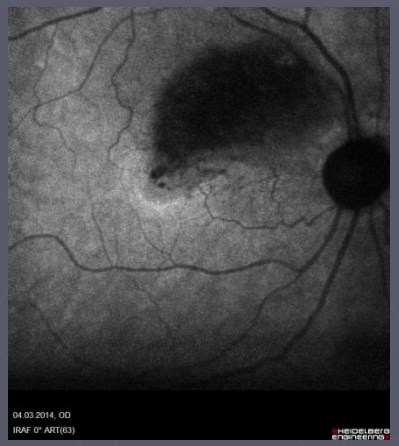


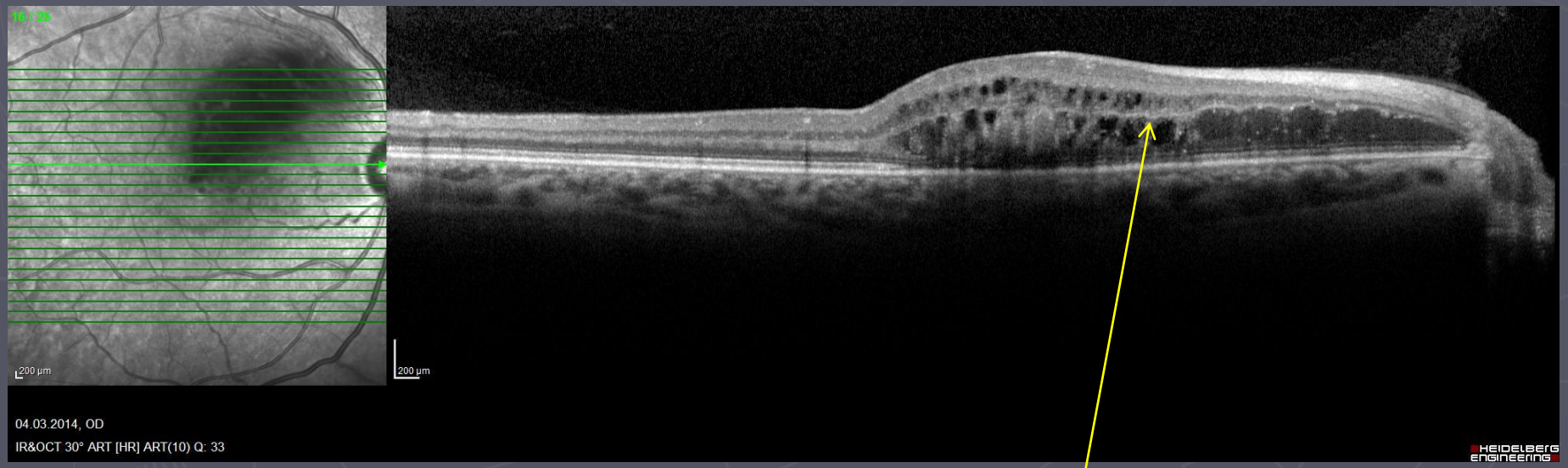


HÖ: Ischemic macular BRVO



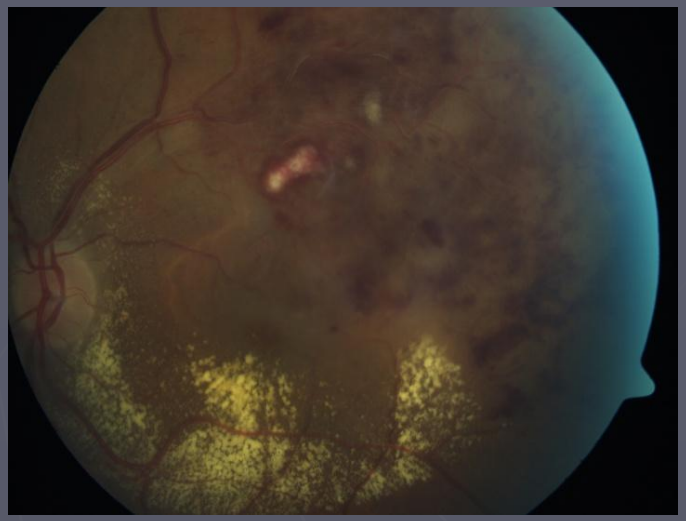


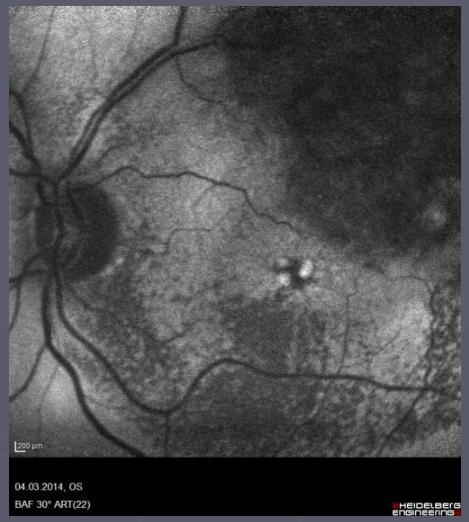


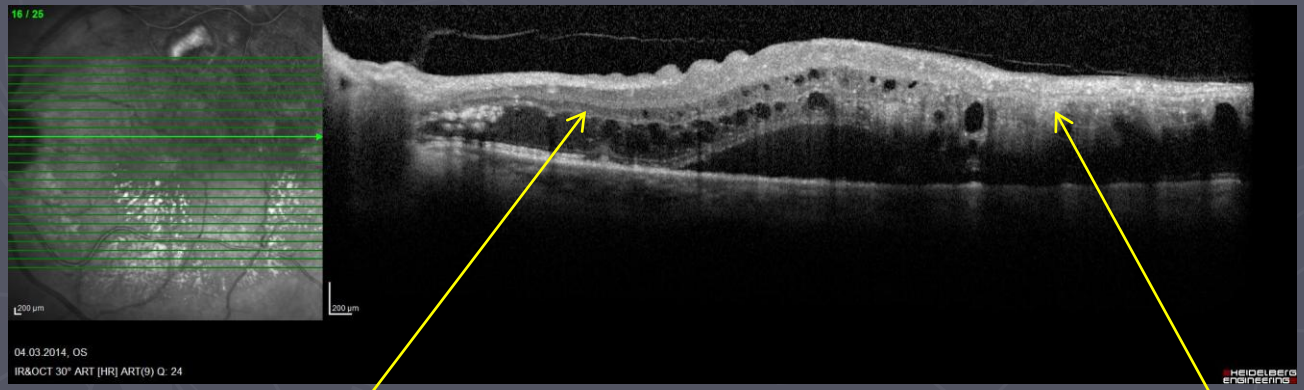


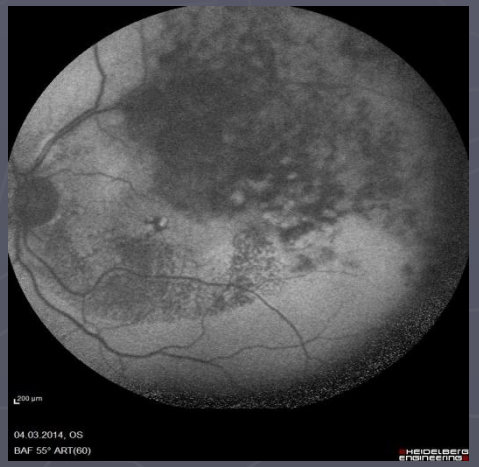
Prominent MLM indicating acute inner retinal ischemia
Retinal layers are definable

H Y: Ischemic BRVO







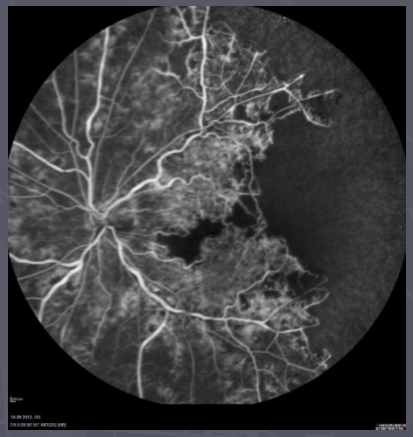


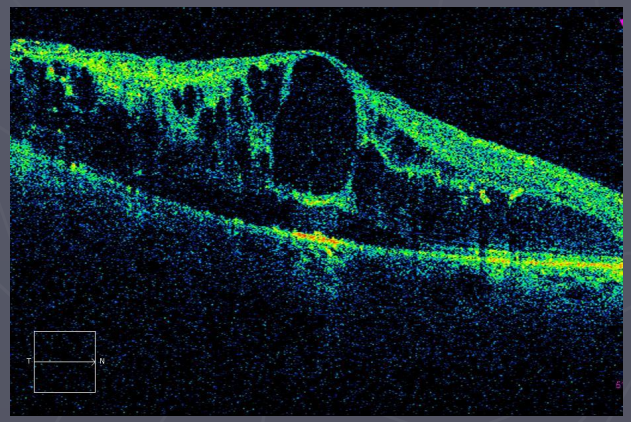
Prominent MLM

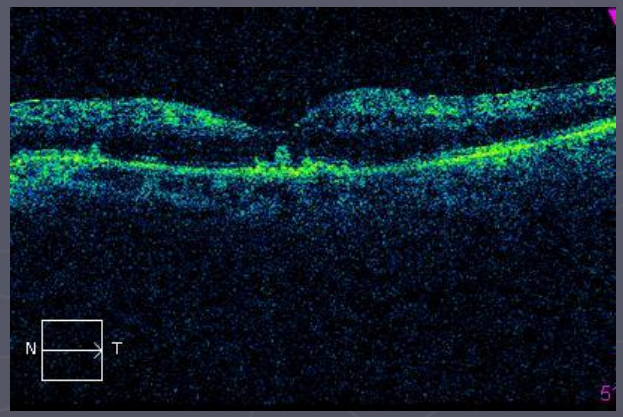
* Increased reflectivity + thickening of inner retina (GCL, IPL, INL)
* The outer retina shows hyporeflectivity, which is caused by shadowing from the abnormally hyperreflective inner retina
* Loss of intraretinal layers

Sd- OCT findings in acute ischemic retina

- Acute outer retinal ischemia:
  * Choroidal insufficiency or exudation from severe BRB damage
  * Highly refractive deposit between the OS and RPE
  * Disrupted choriocapillaris
  * Atrophic change of RPE
  * Outer retinal pigment clumping





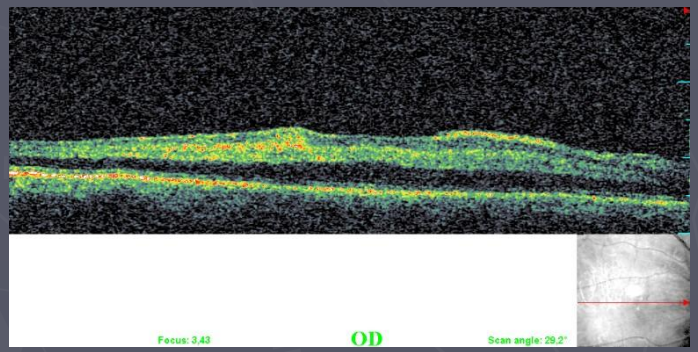


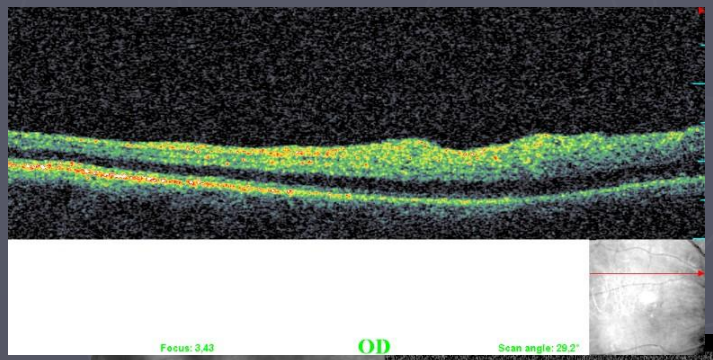
- Choroidal thickness itself cannot reflect the extent of choroidal ischemia
- Current EDI SD-OCT image is not so detailed enough to identify the ischemic choroidal changes

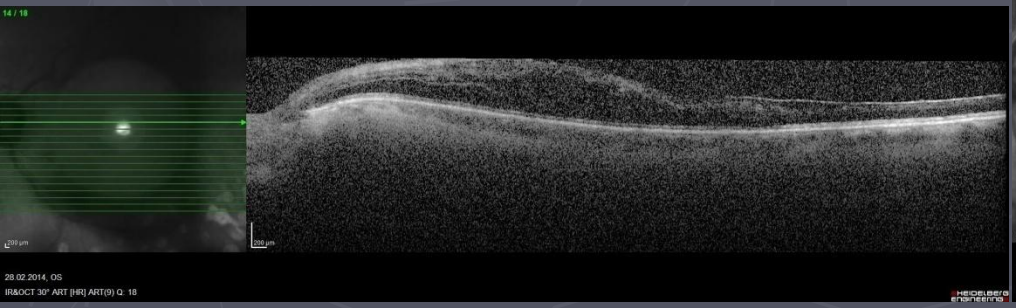
OCT findings in late change of ischemic damage:

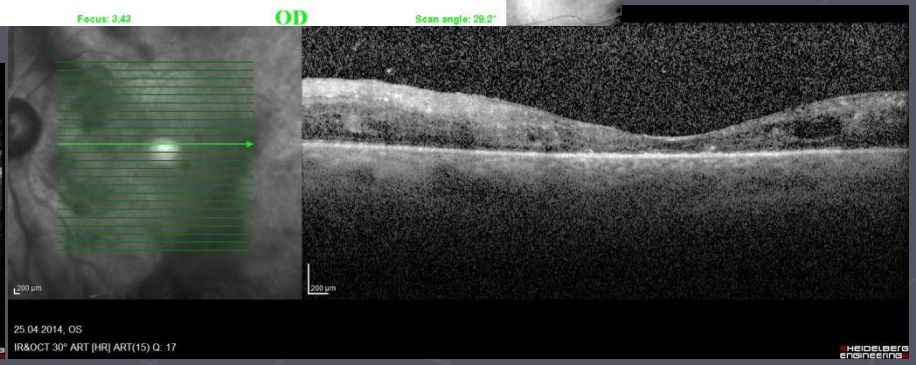
- Thinning with homogenized changes of the retina
- The boundaries among the different retinal layers in the inner half of the retina become obliterated
- Retinal thinning and loss of foveal depression from retinal atrophy:

  * In retinal vascular insufficiency : inner retinal thinning
  * In choroidal insufficiency : outer retinal thinning

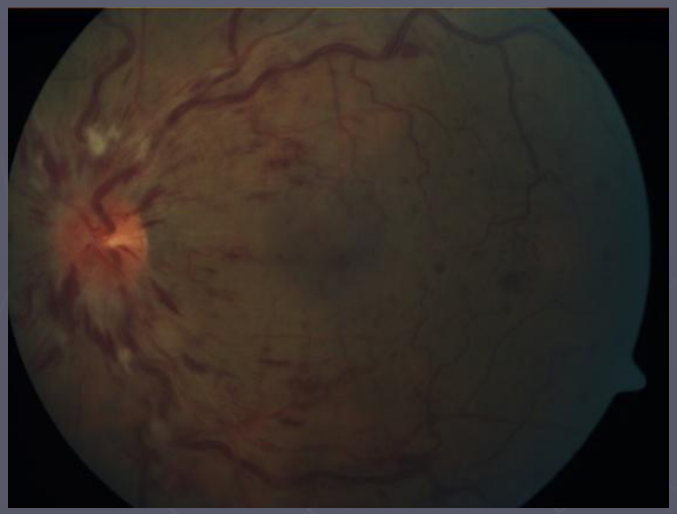


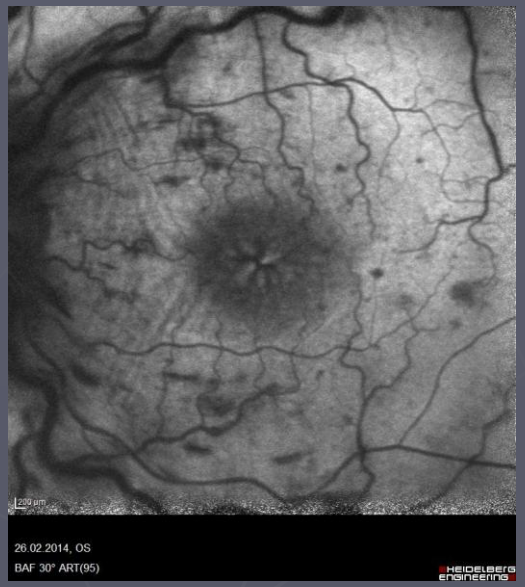


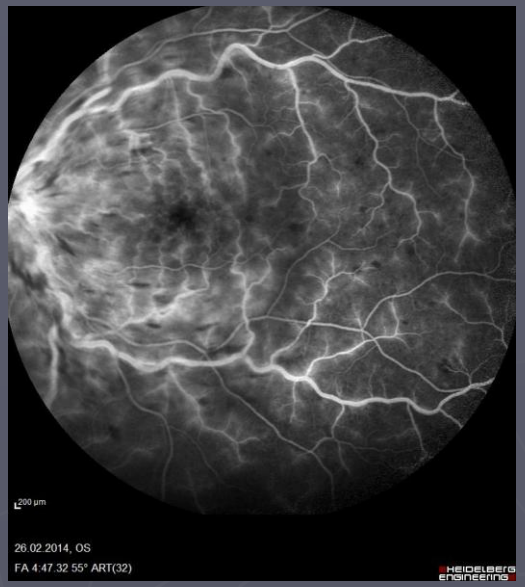


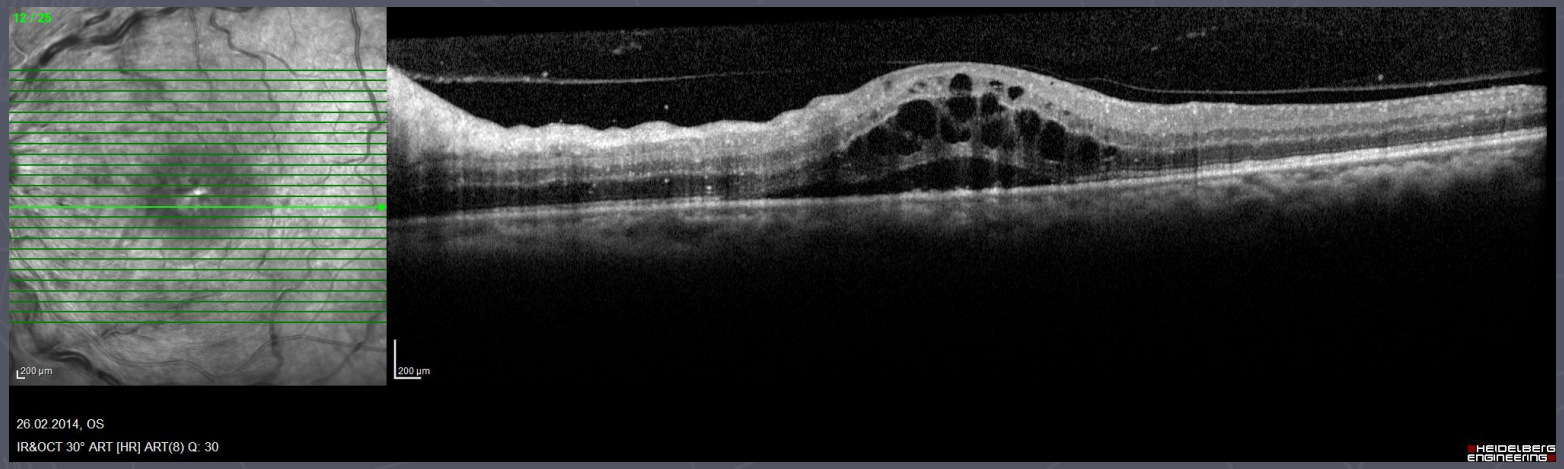


HÇ: non-ischemic CRVO



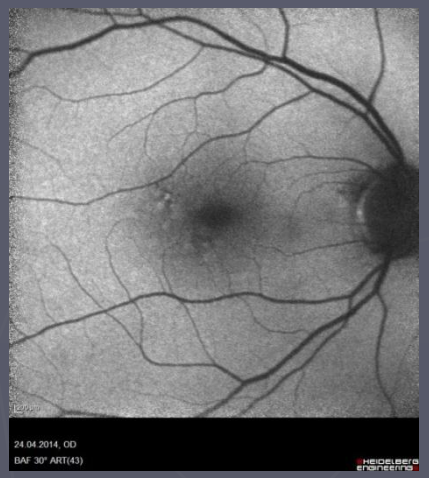


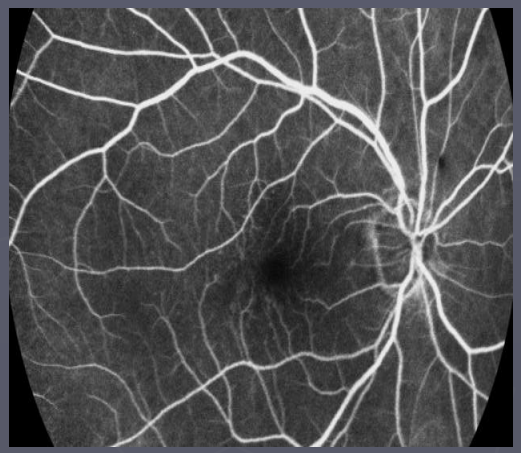


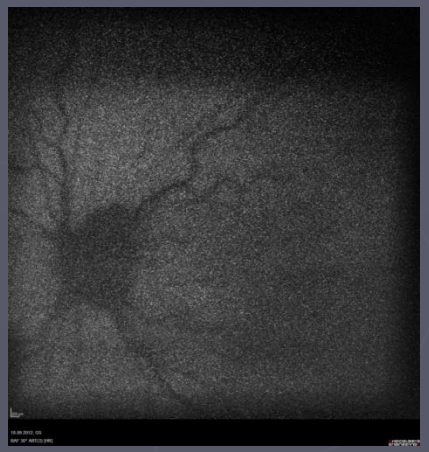


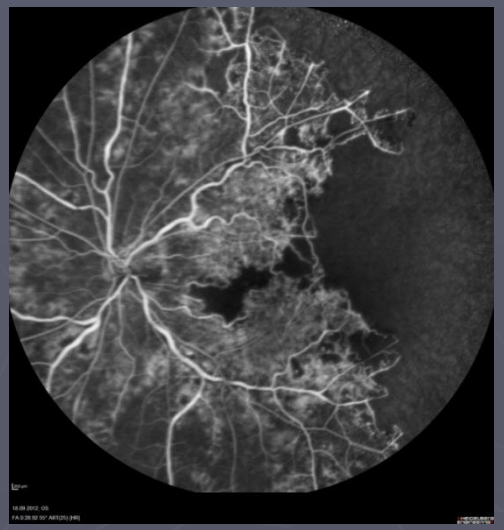
Intraretinal layers can be seen separetely since there is no inner ischemia

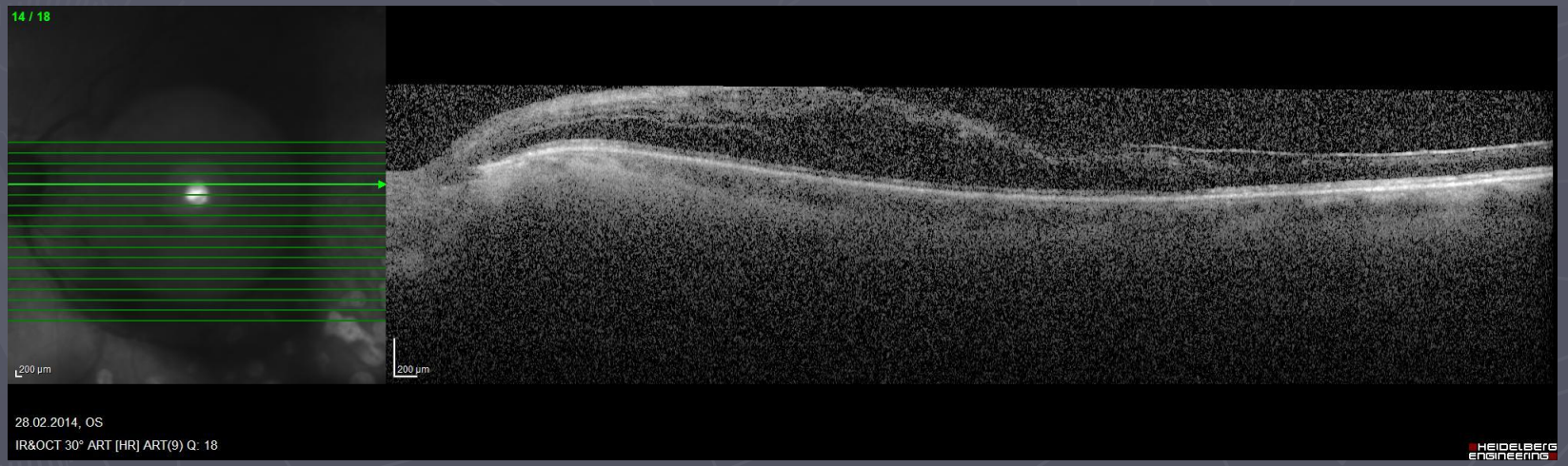
Mİ:Ischemic CRVO :





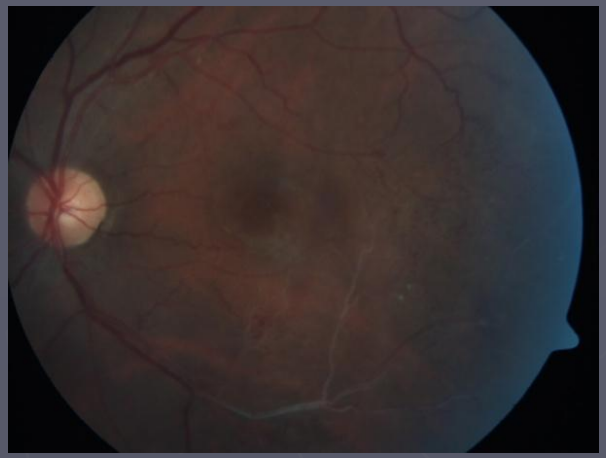


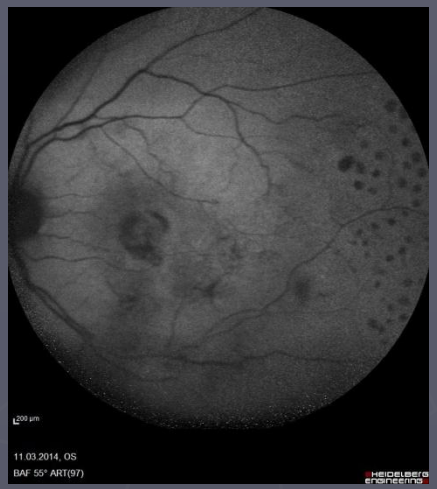


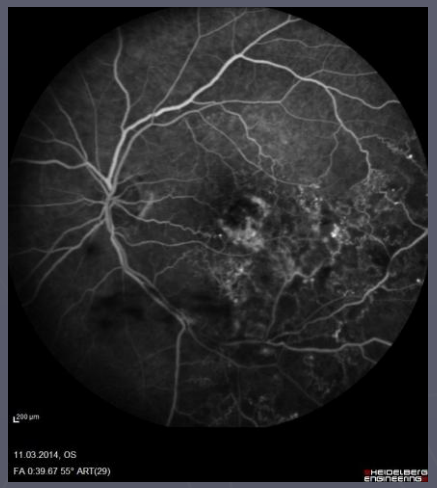


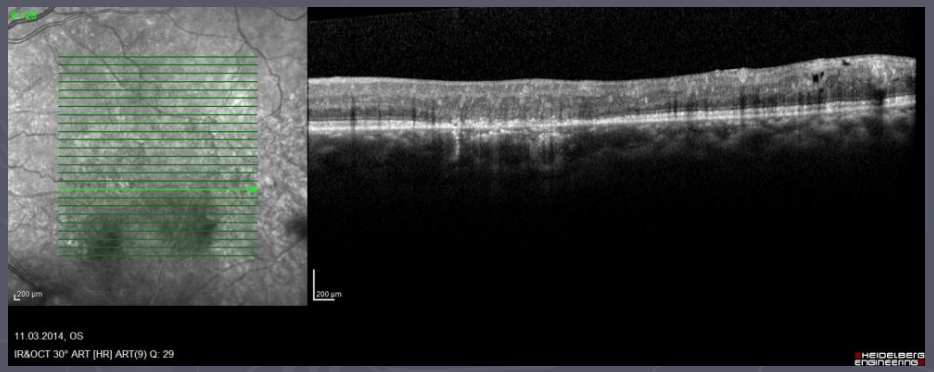
Thinning with homogenized changes of the retina

İP: Ischemic BRVO

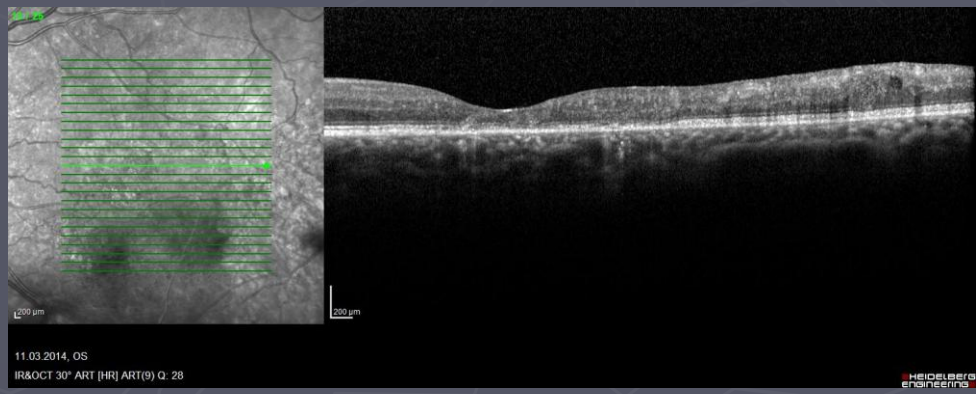






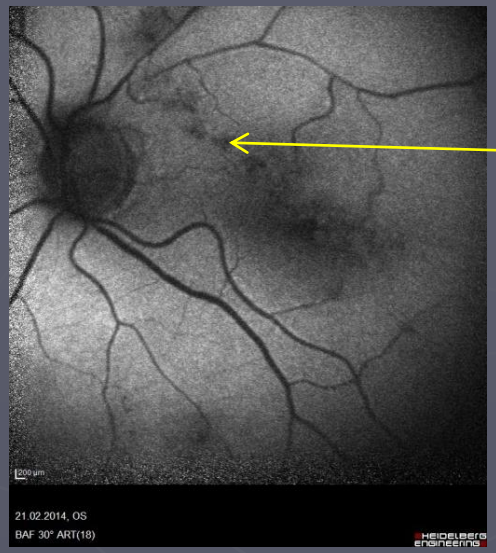


Thinned and homogenized ischemic retina



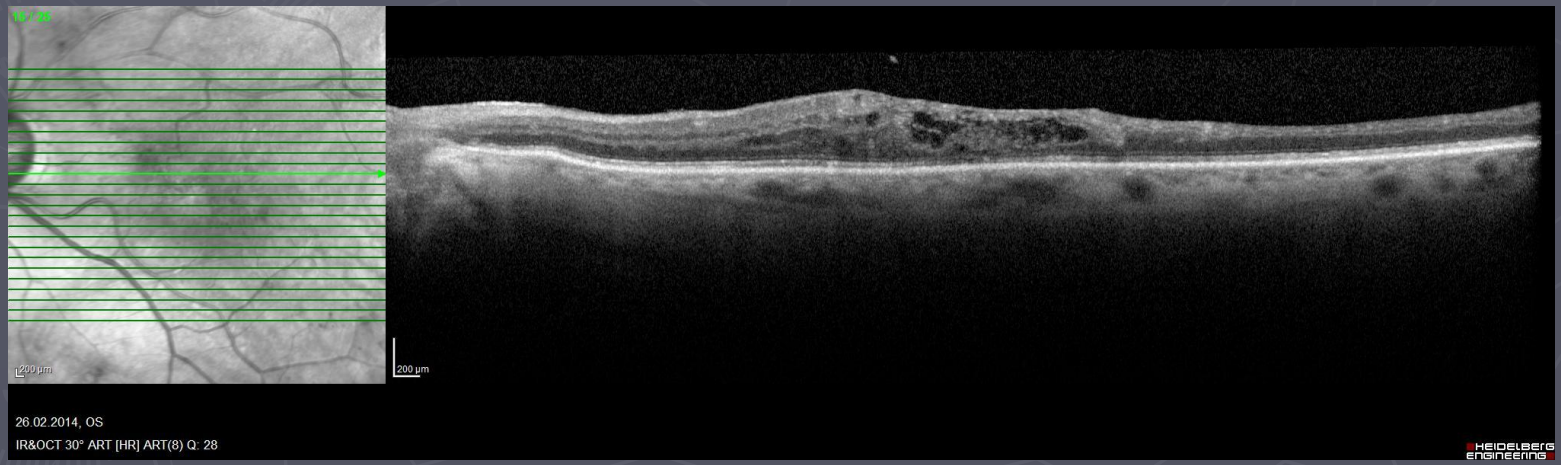
GCL damage and homogenized retina on temporal side

NE: Ischemic BRVO



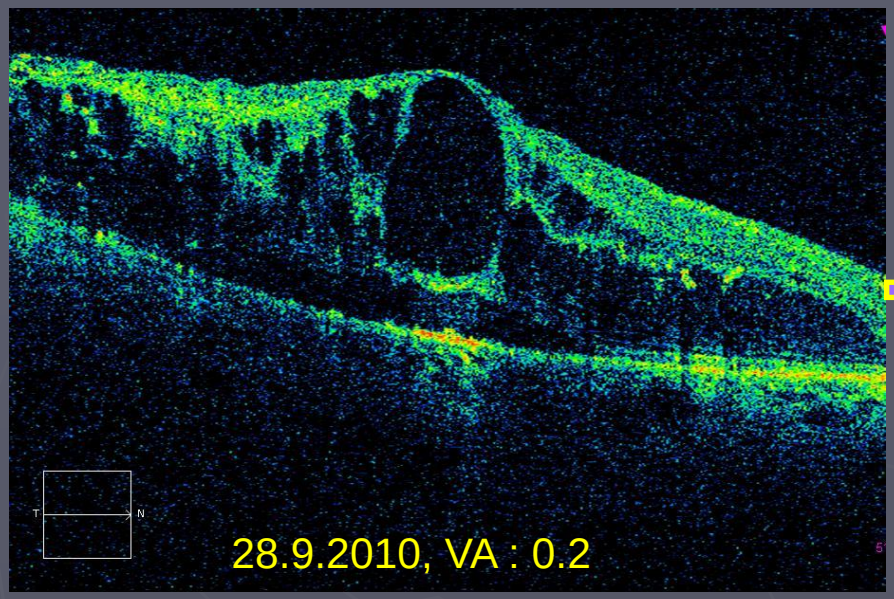
Is ischemic border
Defineable on FAF ?

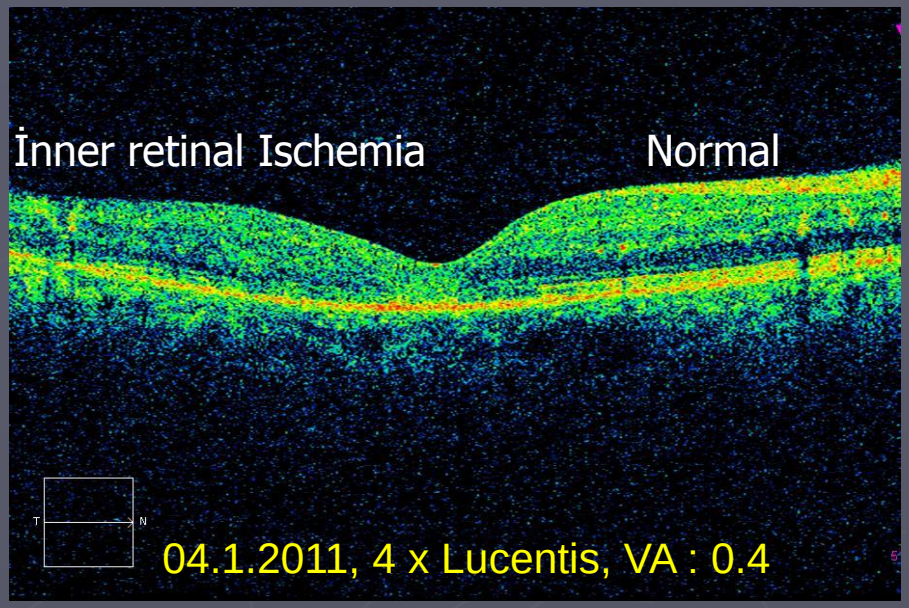
Retrograde fiiling of occluded vein



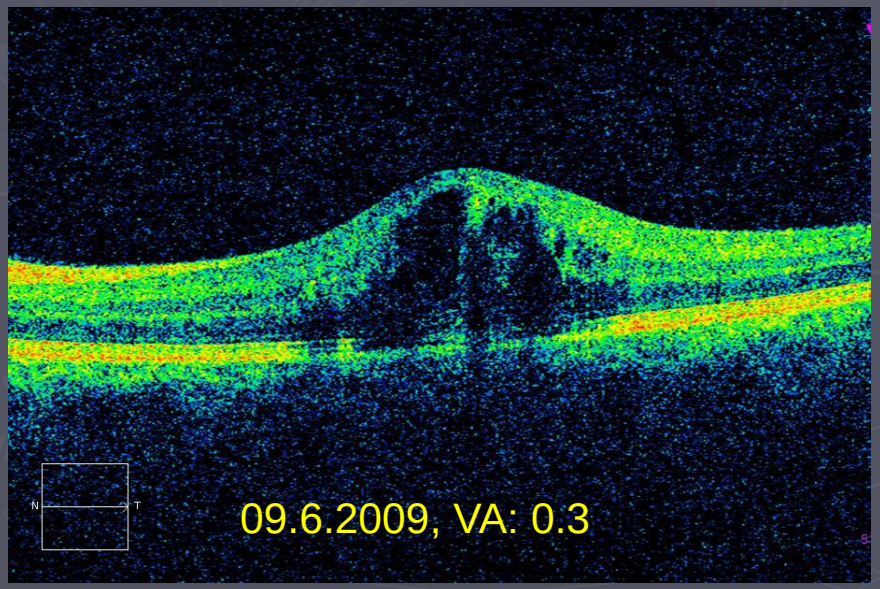
Thinning with homogenized changes of the temporal retina

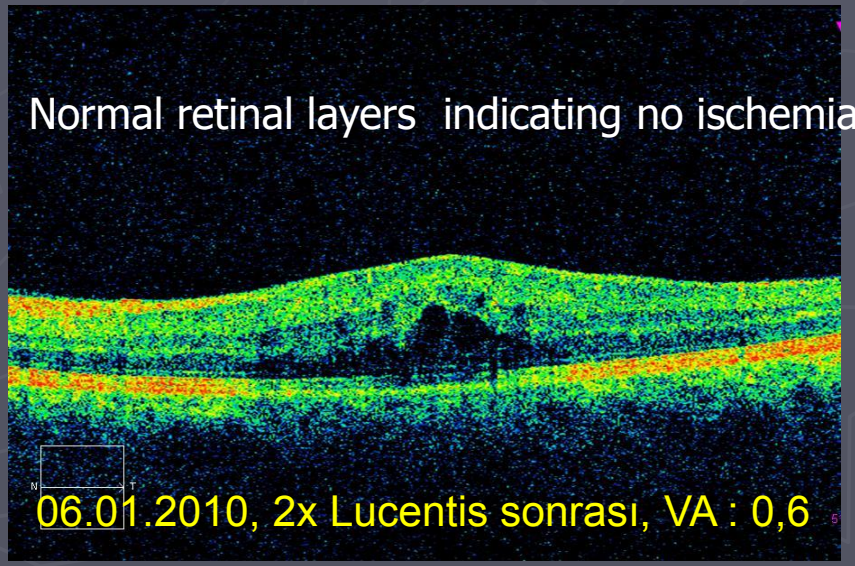
H.G:49 years old, ischemic BRVO, OD



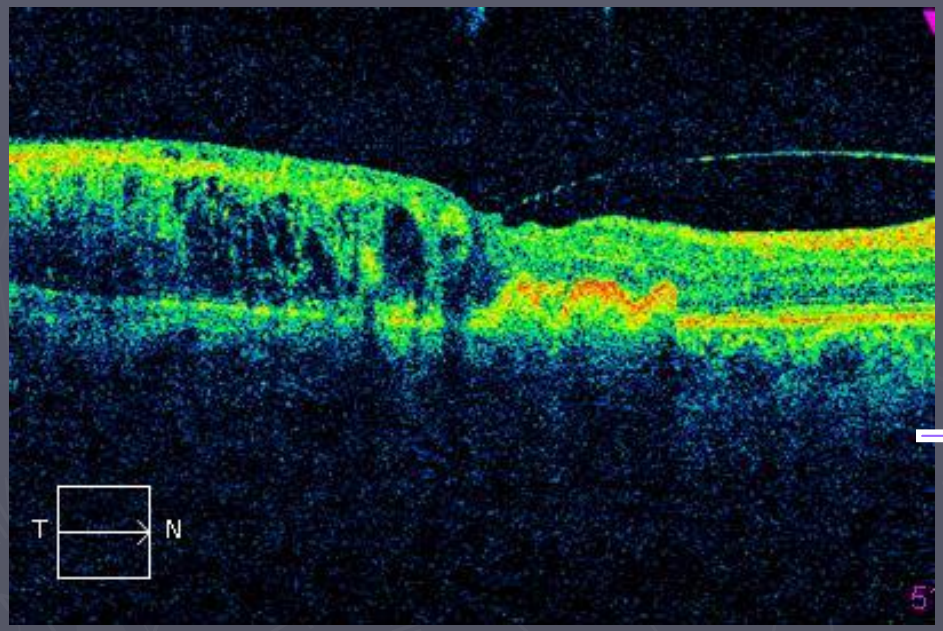


E.K., 51 years old, non-ischemic BRVO, OS

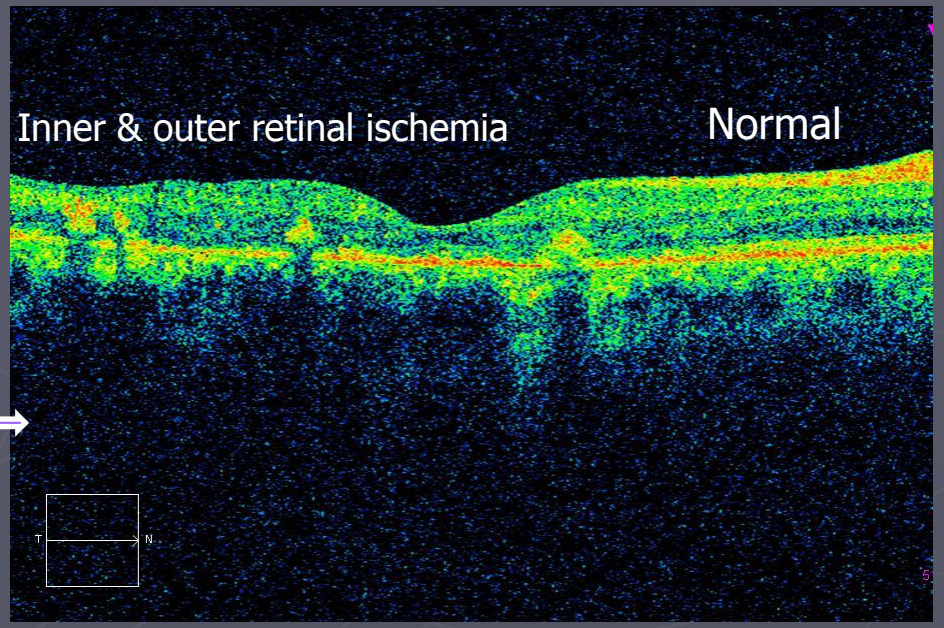




F.Ö: 56 years old, ischemic BRVO, OD



26.5.2009, VA : 0.15



29.5.2012, 4x Lucentis, VA : 0.8

Retina Ven Tıkanıklığı
Sonuç

- Algoritim daha iyi olmalı
- İskemik tipin ve neovaskülarizasyonun tedavisi hala açık değil
- İlaçların kafa kafaya mukayesesi (COMO)
- Lucentis' in iskemideki rolü ?
- Ultrawidefield FFA
- Tedaviye başlama, bitirme ?
- Laser: yardımcı? Monoterapi?
- İskemide ne yapmalı: maküler? Periferik?
- Uzun süreli tedavinin etkileri?
- Vitreomaküler traksiyonun rolü?
- Özel hasta durumuna göre tedavi ayarlanmalı:
  * Yaş, sistemik hastalık
  * Hastalığın süresi, VA
  * İskemi derecesi, lens durumu, glokom varlığı
  * Kontrole gelememe