

Imagerie Multimodale de la DMLA Les DEPs

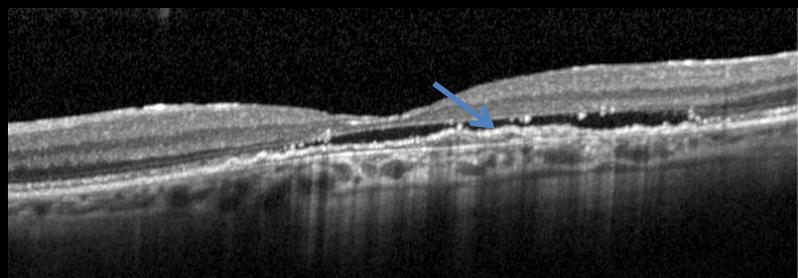
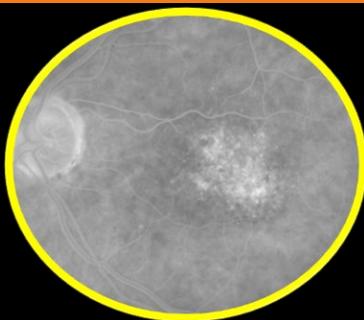
Sarah Mrejen

Décollements de l'EPR

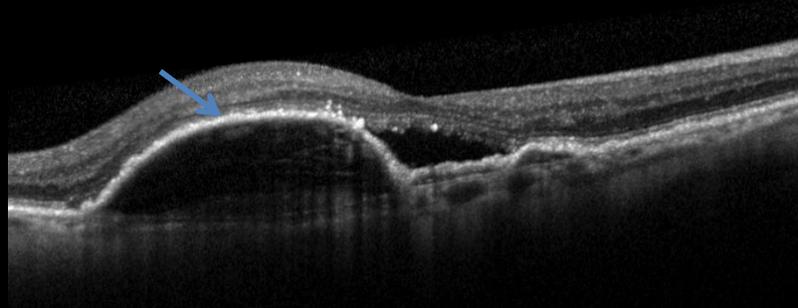
- **Plusieurs étiologies possibles**
 - DMLA
 - Vasculopathie polypoïdale
 - CRSC
 - Néoplasiques, Inflammatoires, Iatrogènes
- **Plusieurs phénotypes**
 - Drusénoïdes
 - Séreux
 - Vascularisés

Les différents phénotypes néovasculaires associés aux DEPs

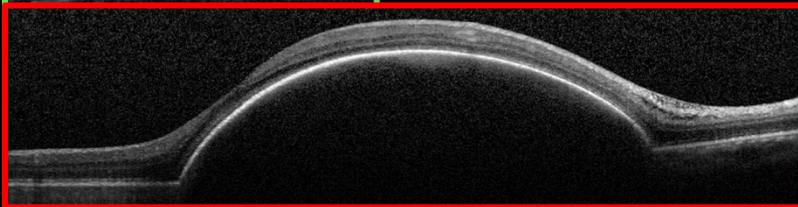
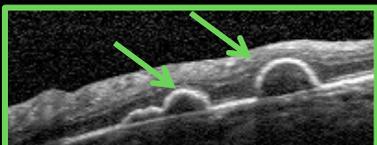
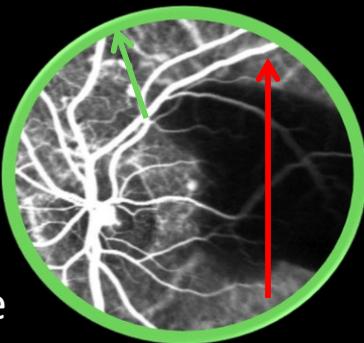
**NÉOVAISSEAUX
OCCULTES**



DEP VASCULARISÉ

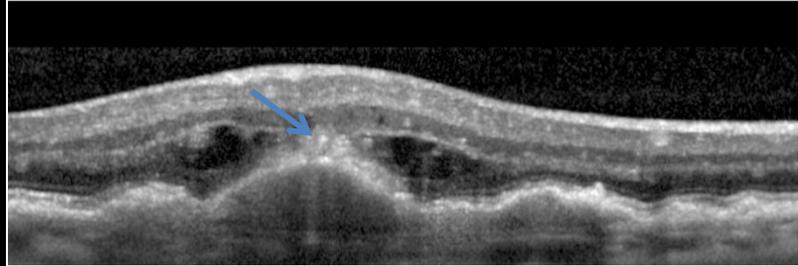
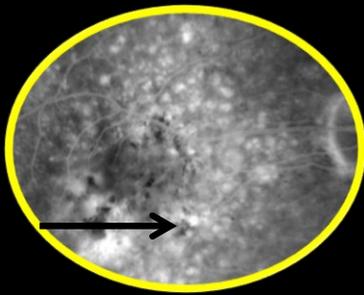


**VASCULOPATHIE
POLYPOÏDALE**



Polypes vus en angiographie ICG
et en OCT avec DEP hémorragique

**ANASTOMOSE
RÉTINO-CHOROÏDIENNE**



- Distinction entre:
 - **Facteurs morphologiques** qui sont des signes d'imagerie (DEP, DSR, OMC)
 - **Phénotypes néovasculaires** qui peuvent associer plusieurs de ces signes d'imagerie

Facteurs morphologiques en OCT

Décollement de l'Épithélium Pigmentaire (DEP)

- +/- associés à un mauvais pronostic visuel selon les études ⁽²⁾
- Mauvais pronostic seulement si associé à OMC et DSR ⁽¹⁾

Décollement Séreux Rétinien (DSR)

- Pas associé au pronostic visuel ⁽²⁾
- Facteur non corrélé à l'atrophie ⁽³⁾

Œdème Maculaire Cystoïde (OMC)

- Associé à un mauvais pronostic visuel ^(1,2)

Phénotypes néovasculaires

Néovaisseaux de type 1, sous-épithéliaux

- NVC occultes et DEPs vascularisés
- Habituellement: DEP et DSR

Néovaisseaux de type 2, pré-épithéliaux

- NVC classiques
- Habituellement: OMC

Anastomoses chorio-rétiniennes (ou RAP)

Habituellement: DEP et OMC

Vasculopathies polypoïdale

DEP, DSR, OMC

1. Schmidt-Erfurth U, Waldstein SM, Deak GG, Kundi M, Simader C. Pigment Epithelial Detachment Followed by Retinal Cystoid Degeneration Leads to Vision Loss in Treatment of Neovascular Age-Related Macular Degeneration (2015). *Ophthalmology*.
2. Simader C, Ritter M, Bolz M, et al. Morphologic parameters relevant for visual outcome during anti-angiogenic therapy of neovascular age-related macular degeneration (2014). *Ophthalmology* 121:1237-1245.
3. Grunwald JE, Daniel E, Huang J, et al. Risk of geographic atrophy in the comparison of age-related macular degeneration treatments trials (2014). *Ophthalmology* 121:150-161.

Pigment Epithelial Detachment Followed by Retinal Cystoid Degeneration Leads to Vision Loss in Treatment of Neovascular Age-Related Macular Degeneration

Ophthalmology Volume ■, Number ■, Month 2015

Ursula Schmidt-Erfurth, MD,^{1,2} Sebastian M. Waldstein, MD,^{1,2} Gabor-Gyorgy Deak, MD,^{1,2} Michael Kundi, MD, PhD,³ Christian Simader, MD^{1,2}

Methods: Participants received intravitreal ranibizumab or aflibercept. A fixed regimen was used for 48 weeks followed by a flexible regimen until week 96. At monthly intervals, best-corrected visual acuity (BCVA) was measured and retinal morphology was assessed by standardized OCT, including intraretinal cysts (IRCs), subretinal fluid (SRF), and pigment epithelial detachment (PED) (OCTOBER 2015), presenting with a width $\geq 400 \mu\text{m}$ or a height of $\geq 200 \mu\text{m}$. Results were correlated for each regimen, feature, and time.

Factors Influencing the Treatment Response of Pigment Epithelium Detachment in Age-Related Macular Degeneration



ALI DIRANI, AUDE AMBRESIN, LAETITIA MARCHIONNO, DORIS DECUGIS, AND IRMELA MANTON

METHODS: This study included 102 patients (n = 115 eyes) with treatment-naïve neovascular AMD and PED ($> 150 \mu\text{m}$), who were treated with either ranibizumab (n = 68 eyes) or aflibercept (n = 47 eyes). A multivariate analysis using stepwise linear regression was performed in order to assess factors influencing visual acuity improvement, as well as treatment response of PED height after 3 monthly injections.

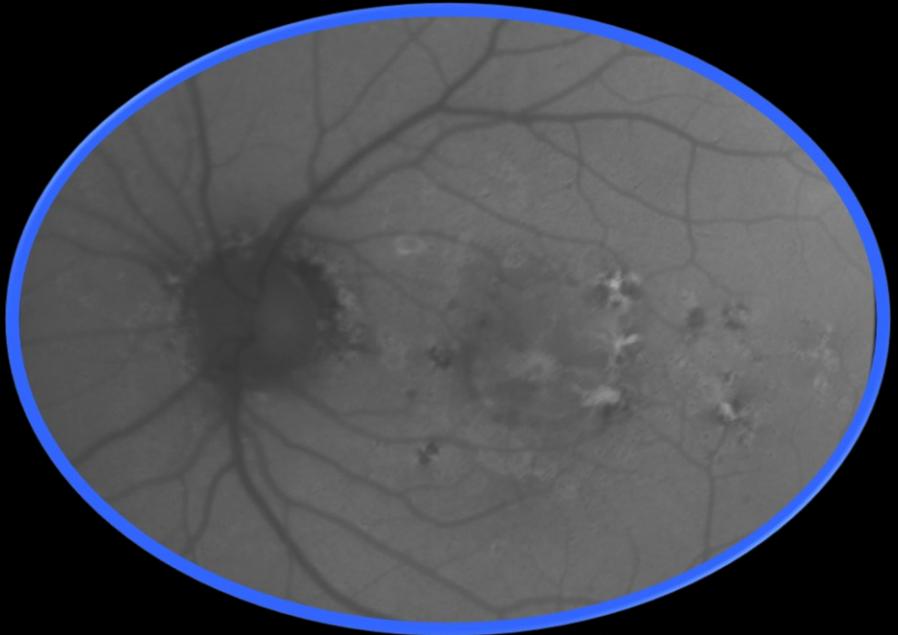
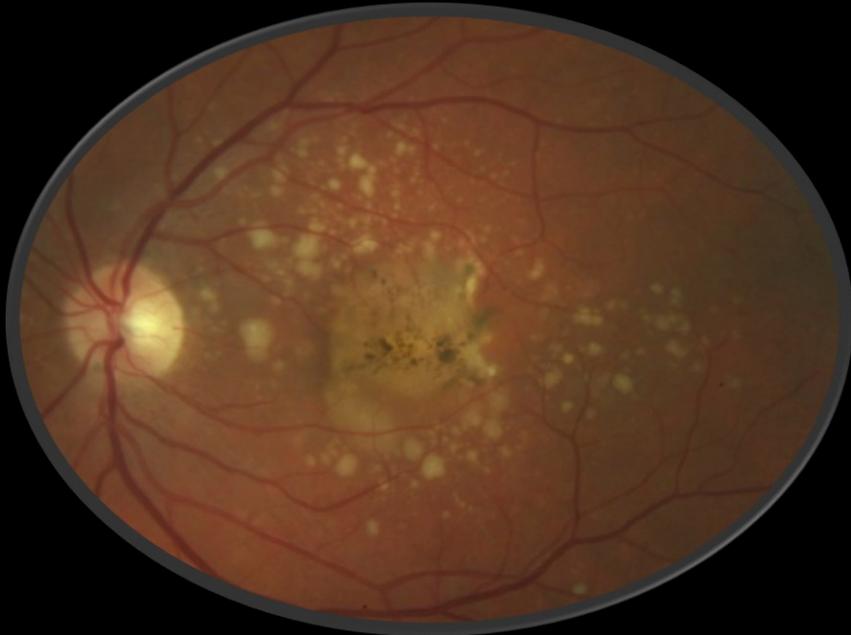
Pas de critère diagnostique strict de hauteur
Critères variables selon les études

AMERICAN JOURNAL OF OPHTHALMOLOGY

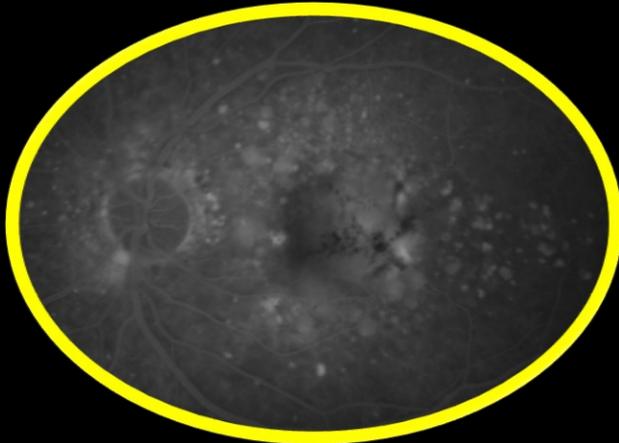
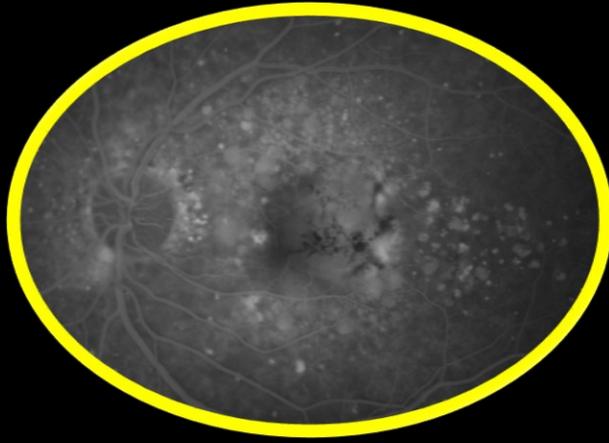
OCTOBER 2015

Cas Clinique N°1

Homme 60 ans, 7/10

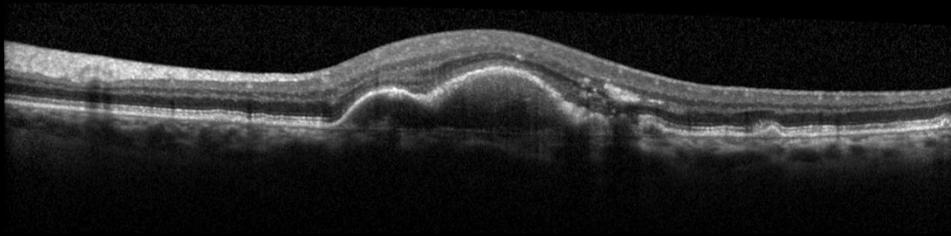
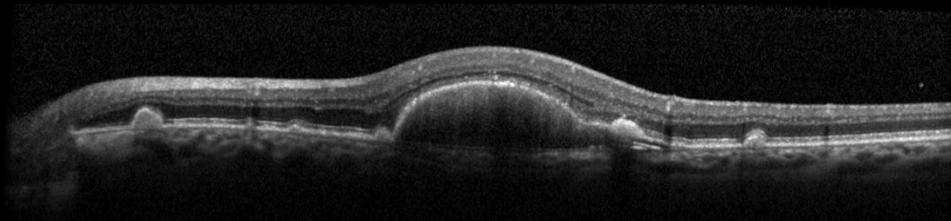
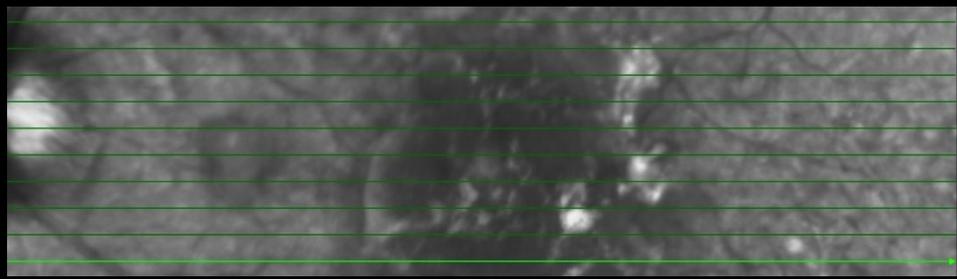
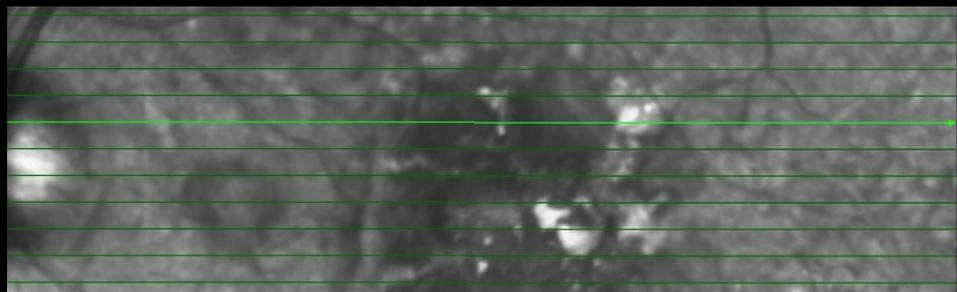
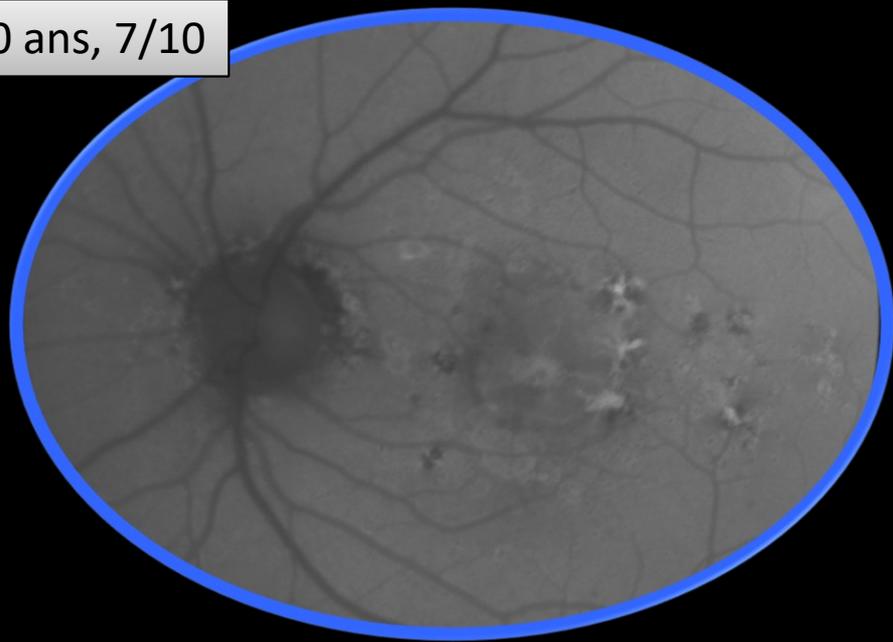
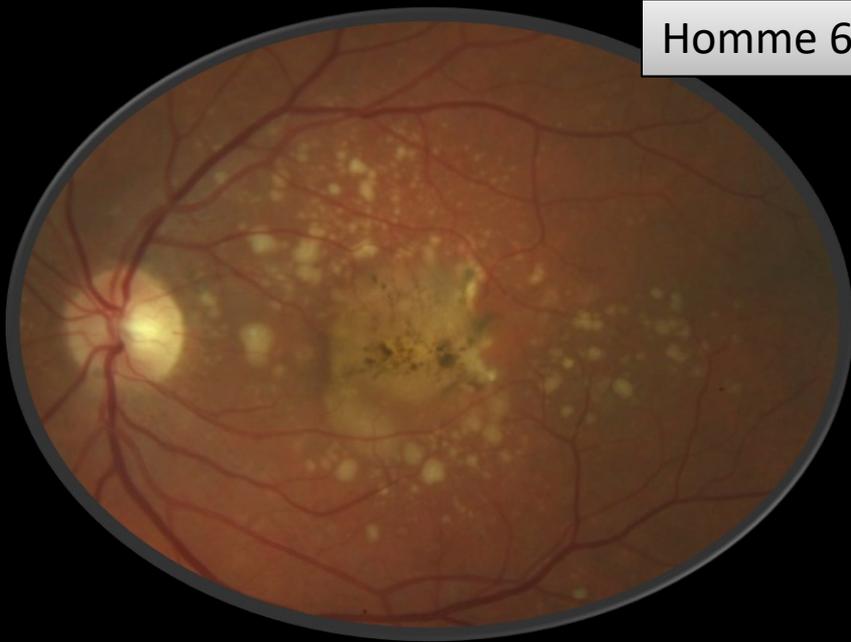


autofluorescence

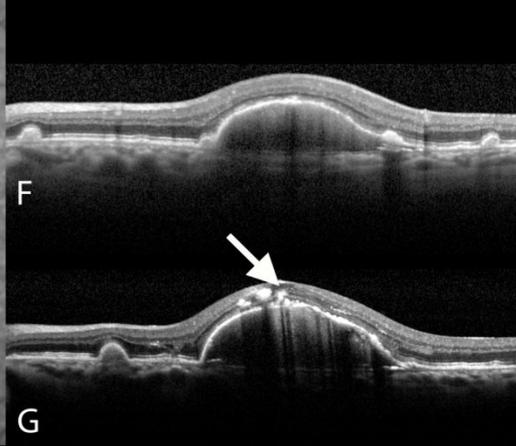
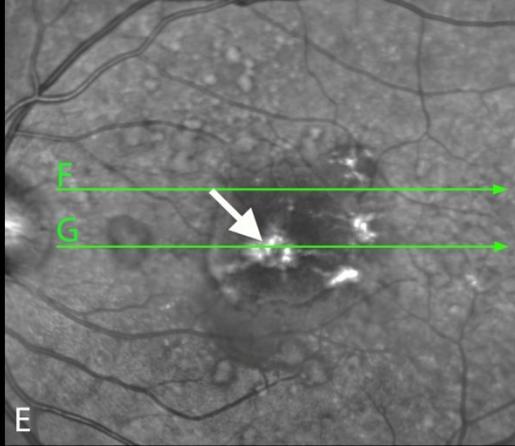
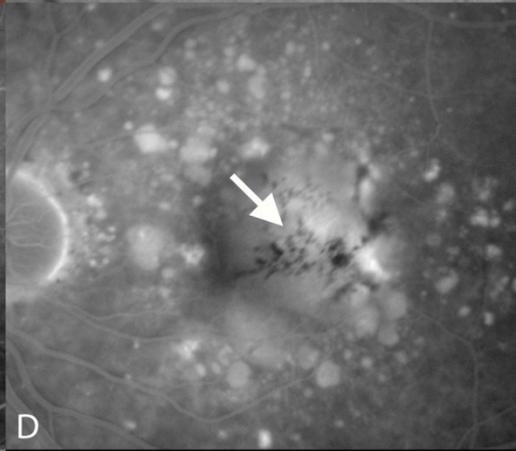
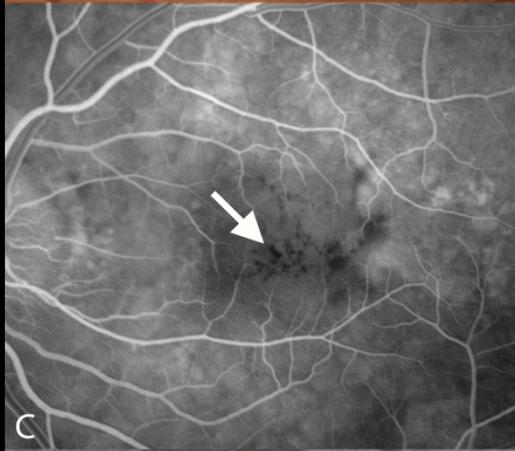
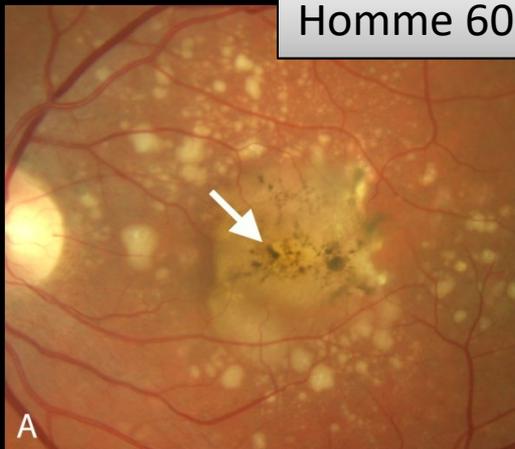


Angiographie fluorescéine

Homme 60 ans, 7/10



Homme 60 ans, 7/10



DEPs drusenoïdes

- **Coalescence de drusen séreux**
- **Diamètre supérieur à 350 μm (AREDS rapport 28)**
- **DMLA, Malattia Leventinese, drusen cuticulaires, GNMP type II, naevus choroidien**

Natural History of Drusenoid Pigment Epithelial Detachment in Age-Related Macular Degeneration: AREDS Report Number 28

DEPs drusenoïdes

Evolution

Published in final edited form as:

Ophthalmology. 2010 March ; 117(3): 489–499. doi:10.1016/j.ophtha.2009.12.002.

Natural History of Drusenoid Pigment Epithelial Detachment in
Age-Related Macular Degeneration: AREDS Report Number 28

311 yeux (355 patients)

282 yeux pas de forme avancée de DMLA lors du diagnostic

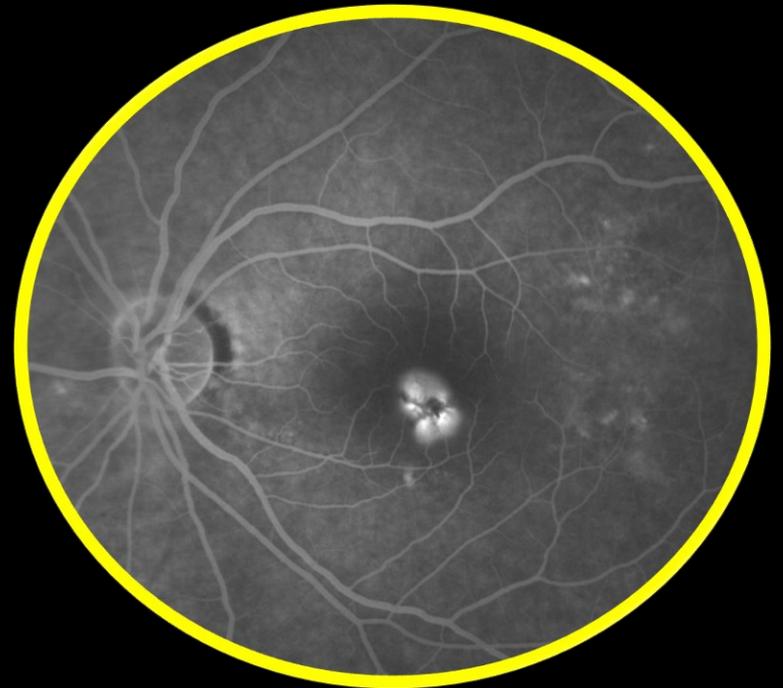
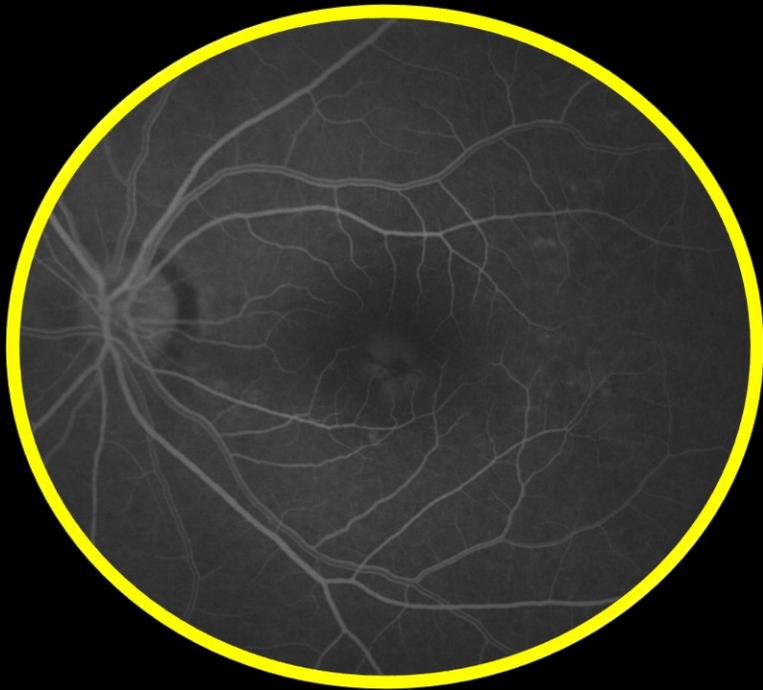
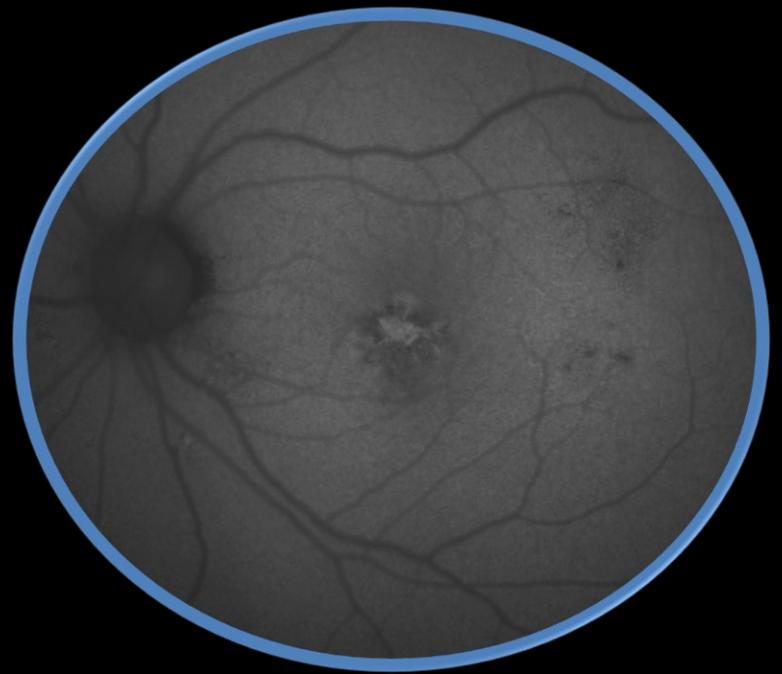
42% ont évolué vers une DMLA avancée à 5 ans

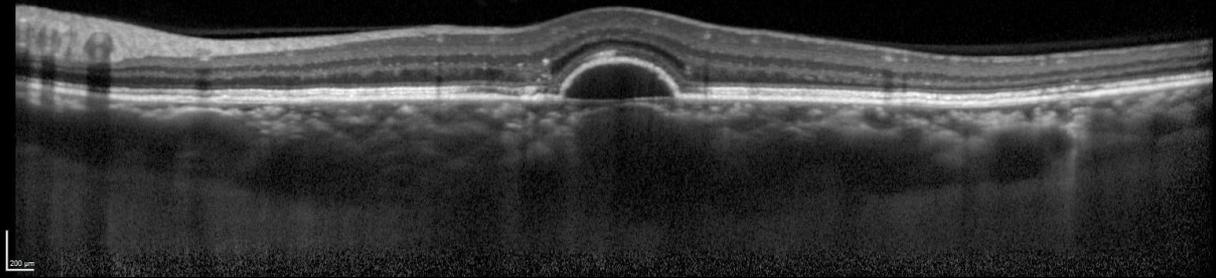
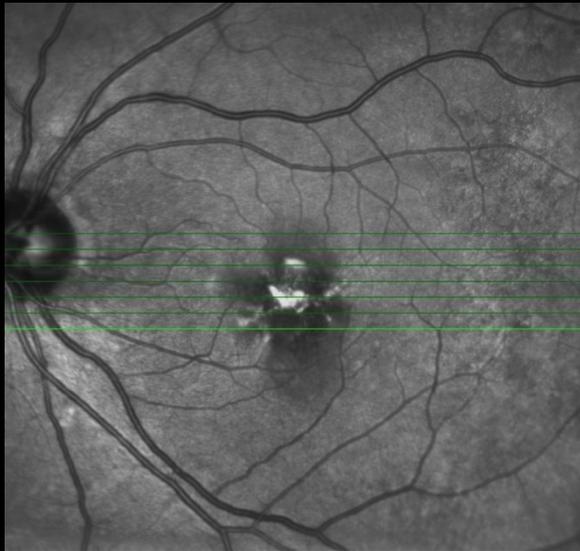
19% atrophie géographique centrale

23% néovaisseaux

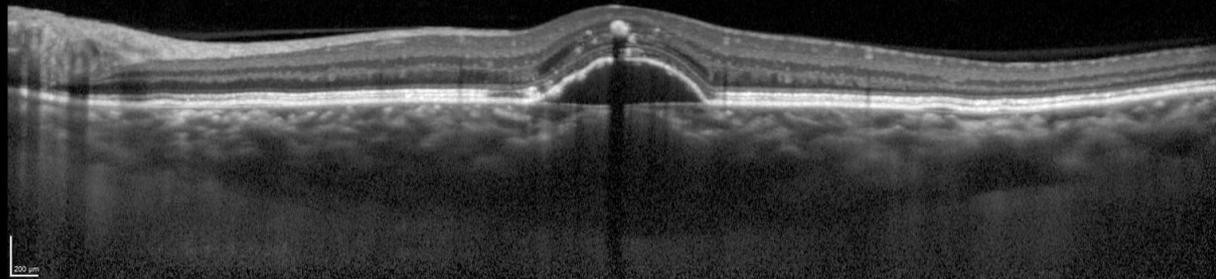
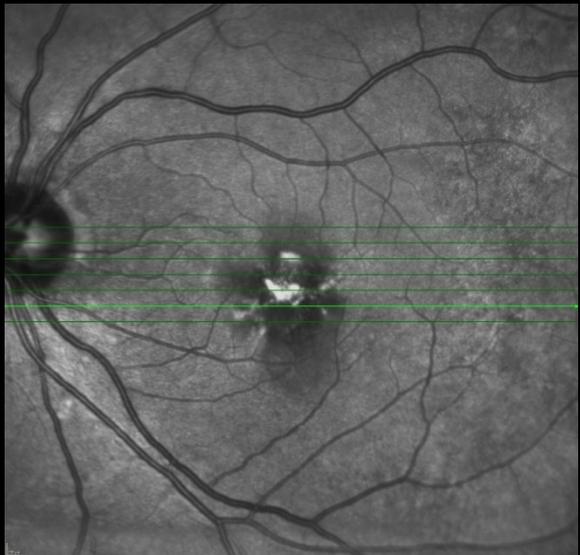
40% BAV à 5 ans de plus de 15 lettres

Cas Clinique N°2



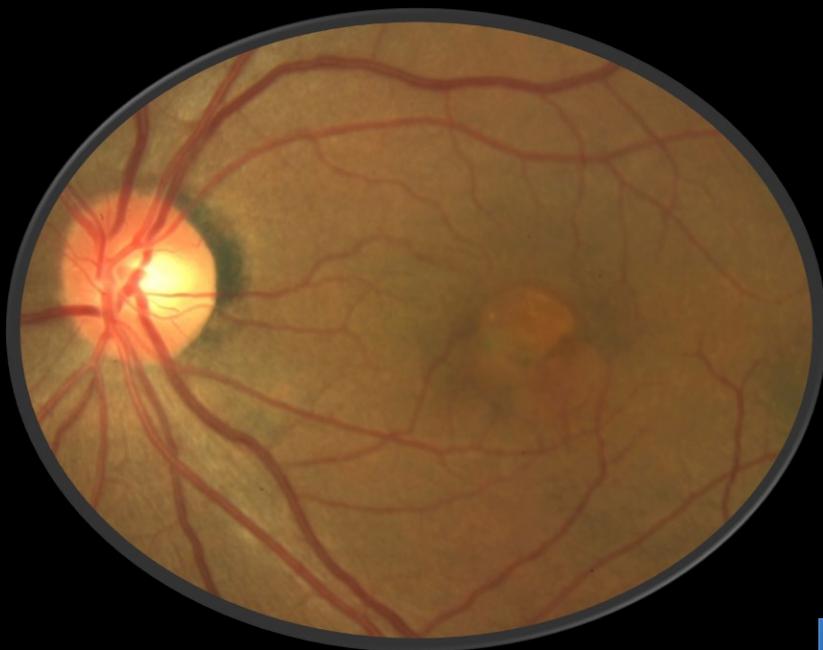


EDI-OCT

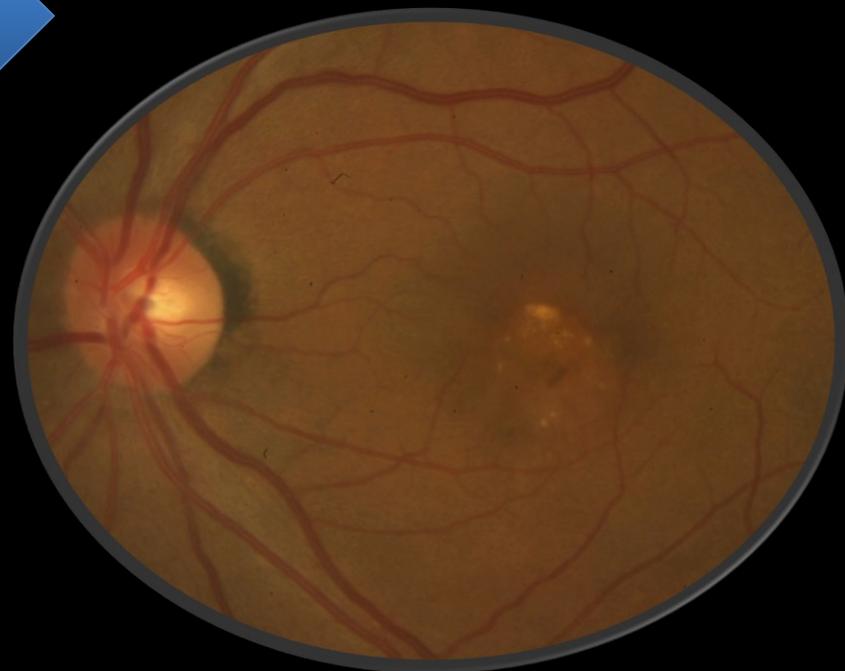
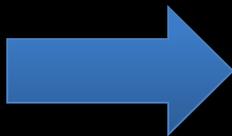


EDI-OCT

Serous PED



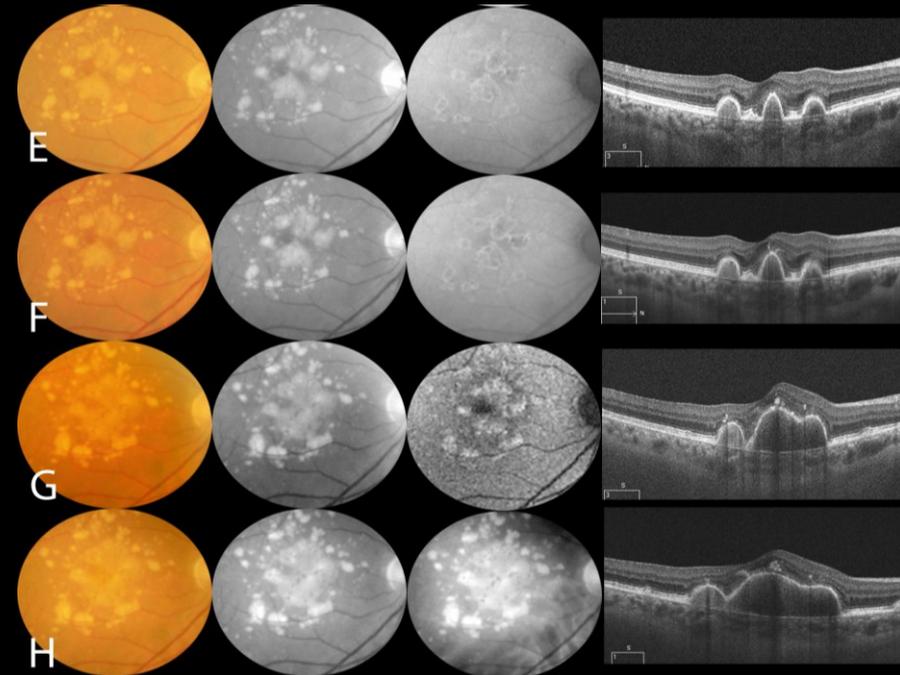
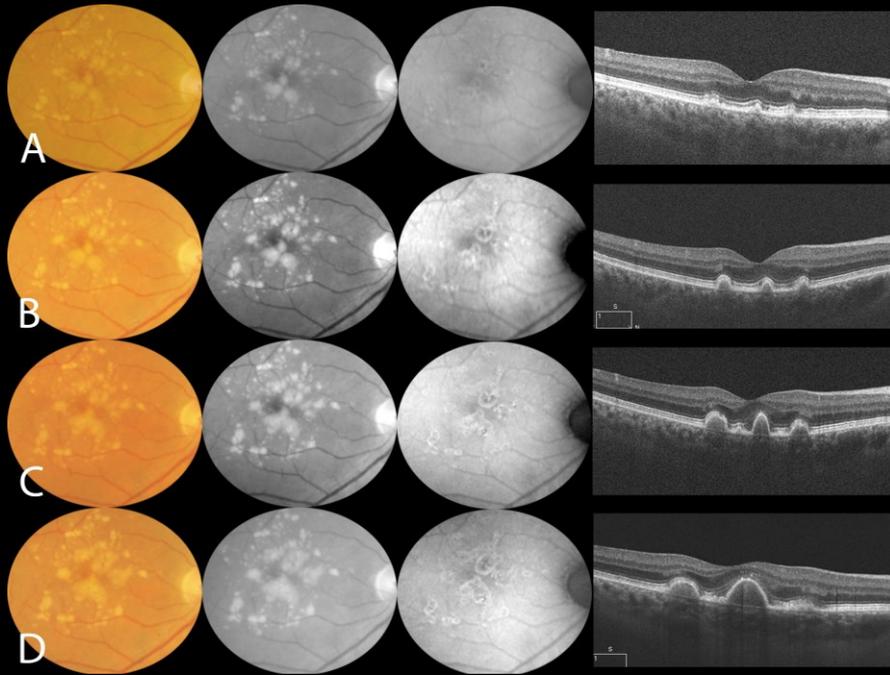
5 yrs



Cas Clinique N°3

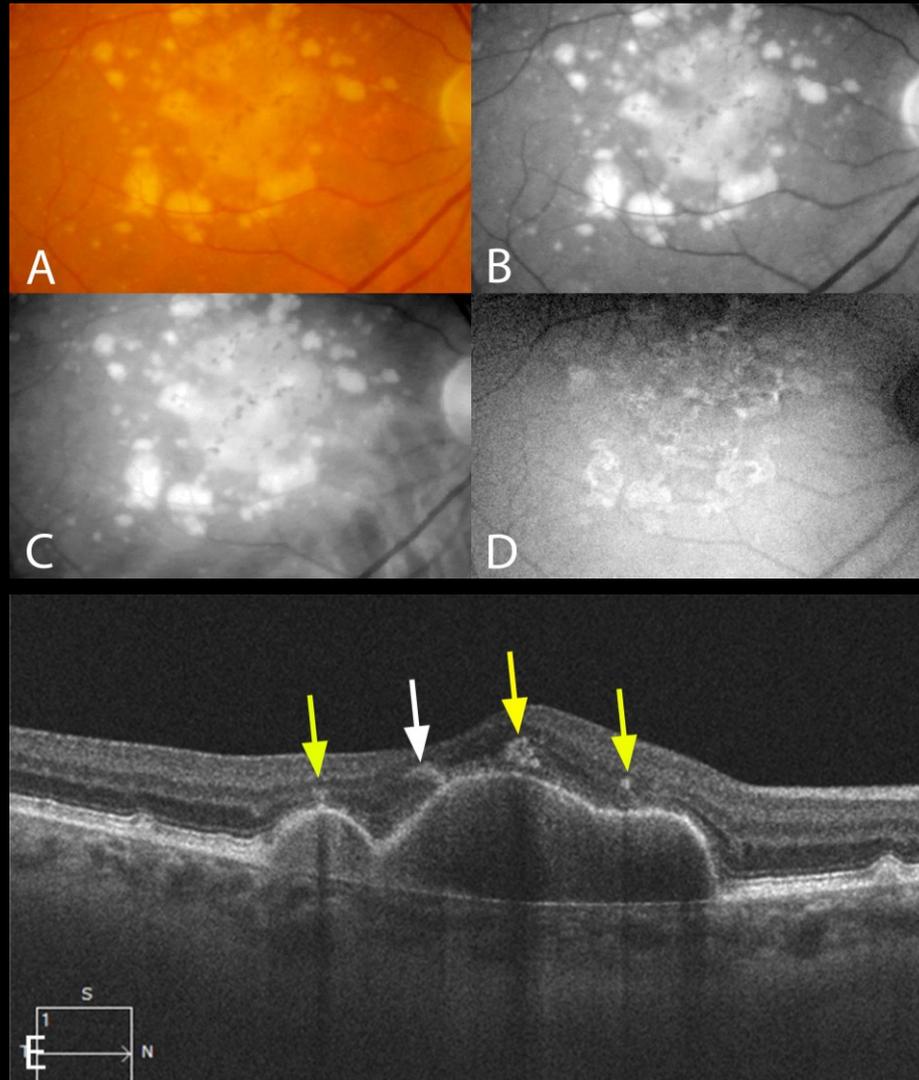
DEP

Évolution sur 10 ans

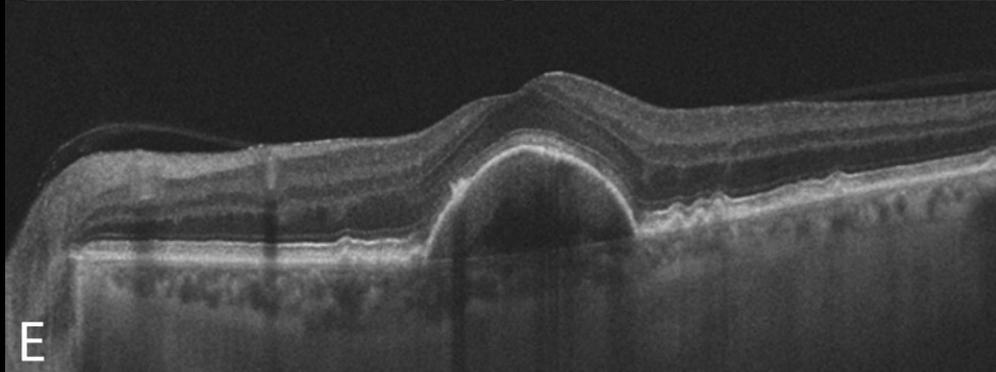
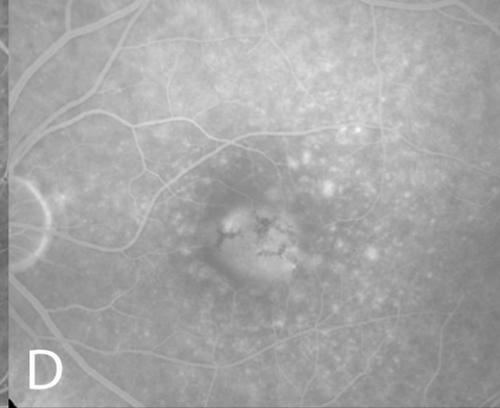
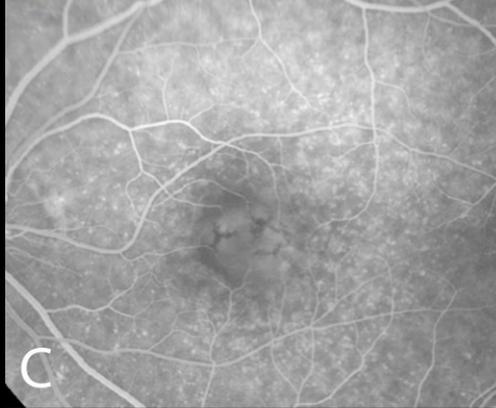
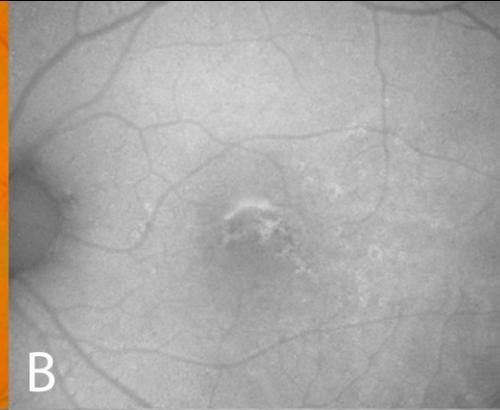
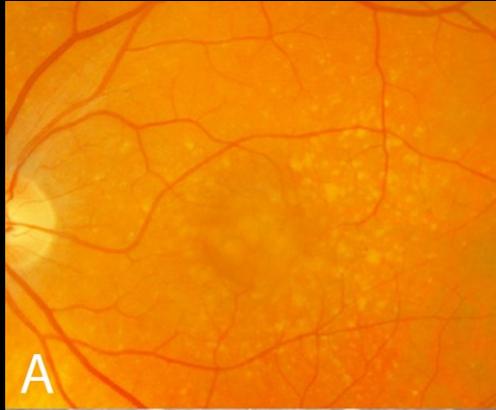


DEP drusénoïde

Migrations pigmentaires



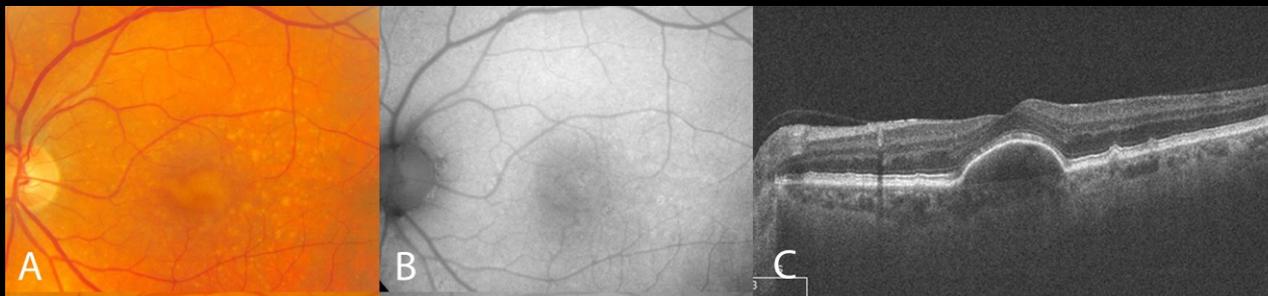
Cas Clinique N°4



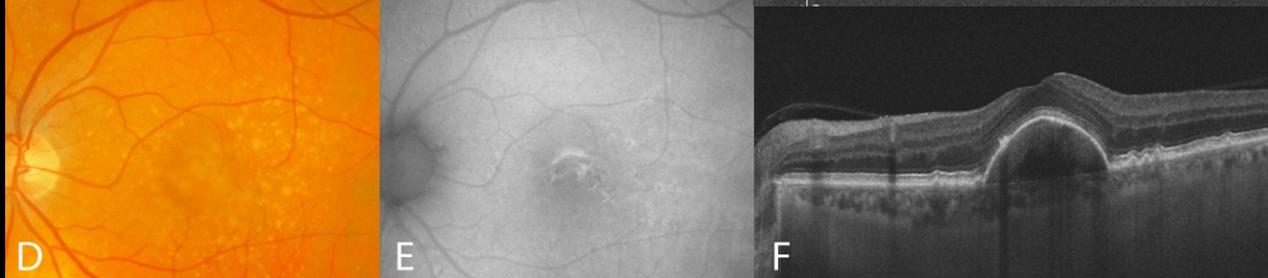
DEP drusénoïde

Migrations pigmentaires et évolution atrophique

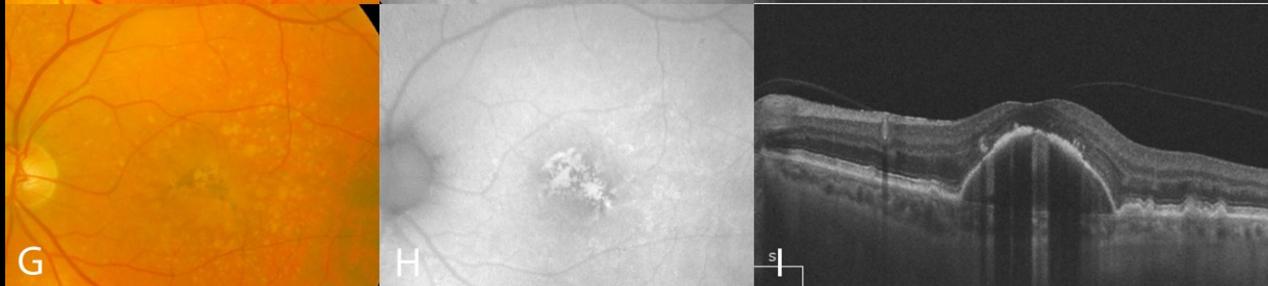
2013



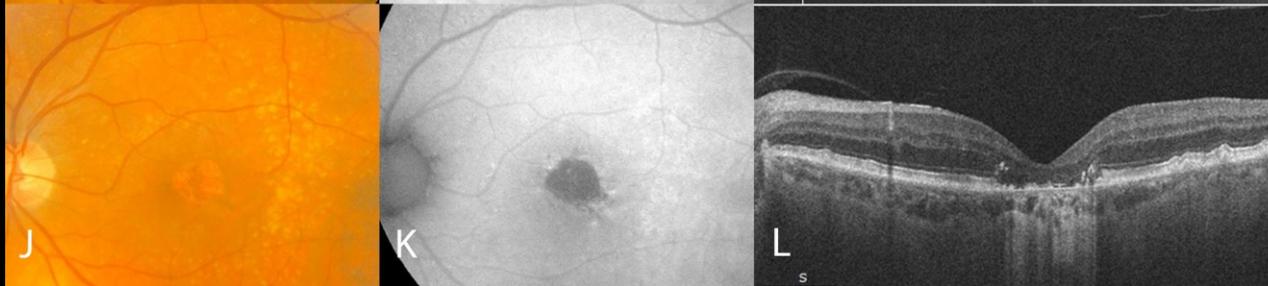
2015



2017

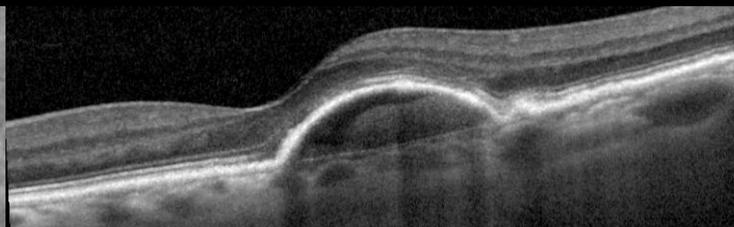
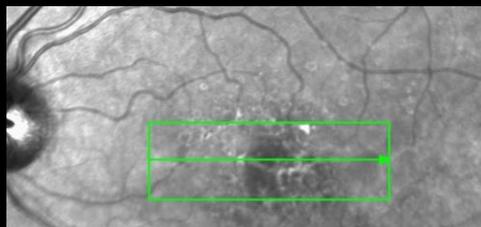


2018



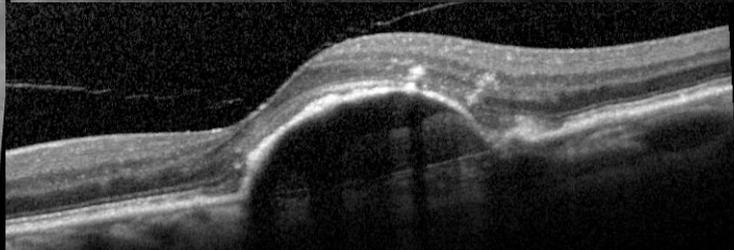
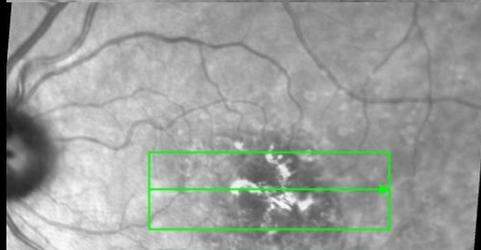
Cas Clinique N°5

Juil 2016



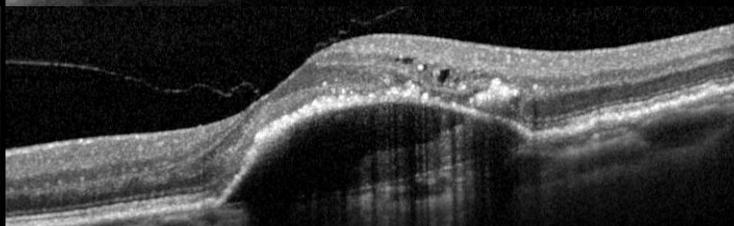
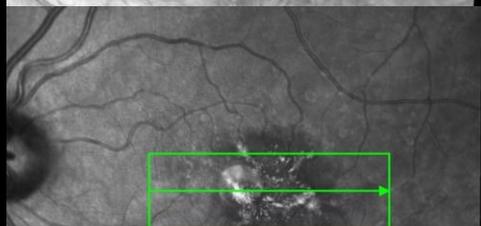
7/10

Avril 2017



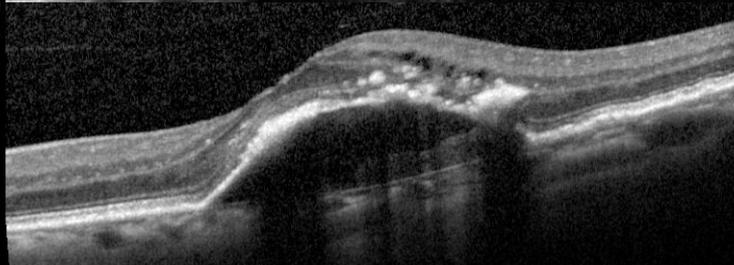
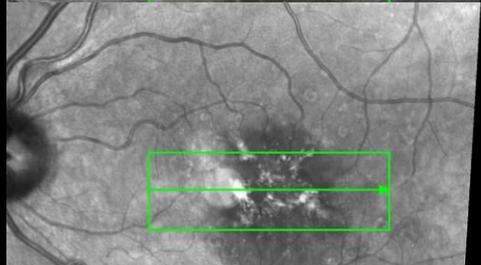
7/10

Mars 2018



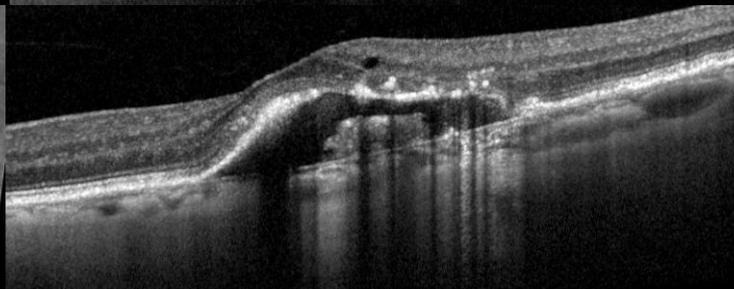
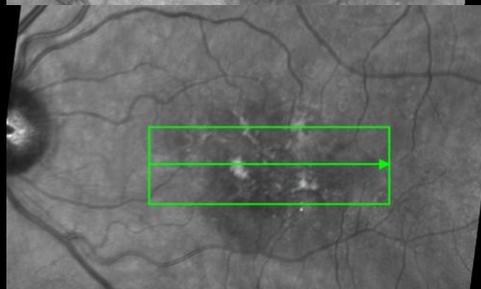
6/10, MP+

Mai 2018



6/10, MP+

Sept 2018

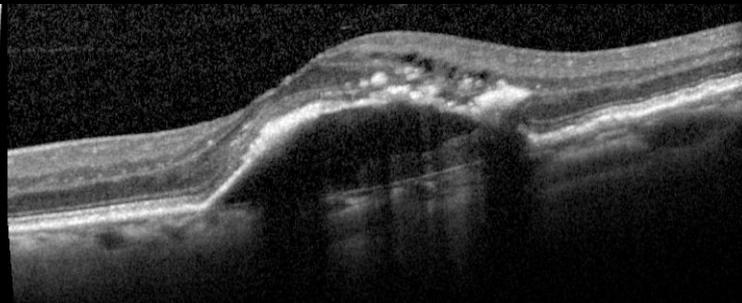
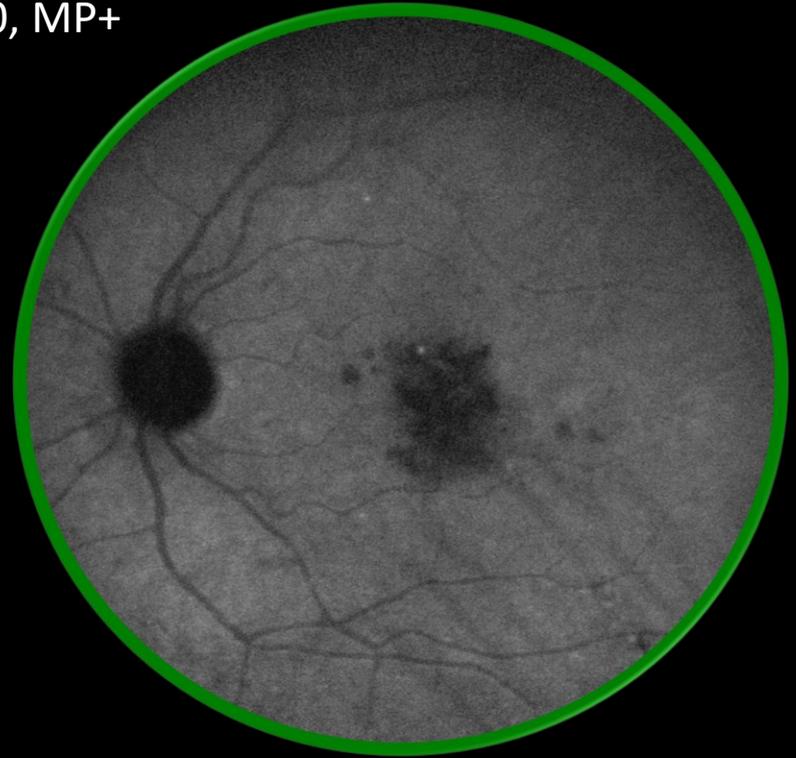
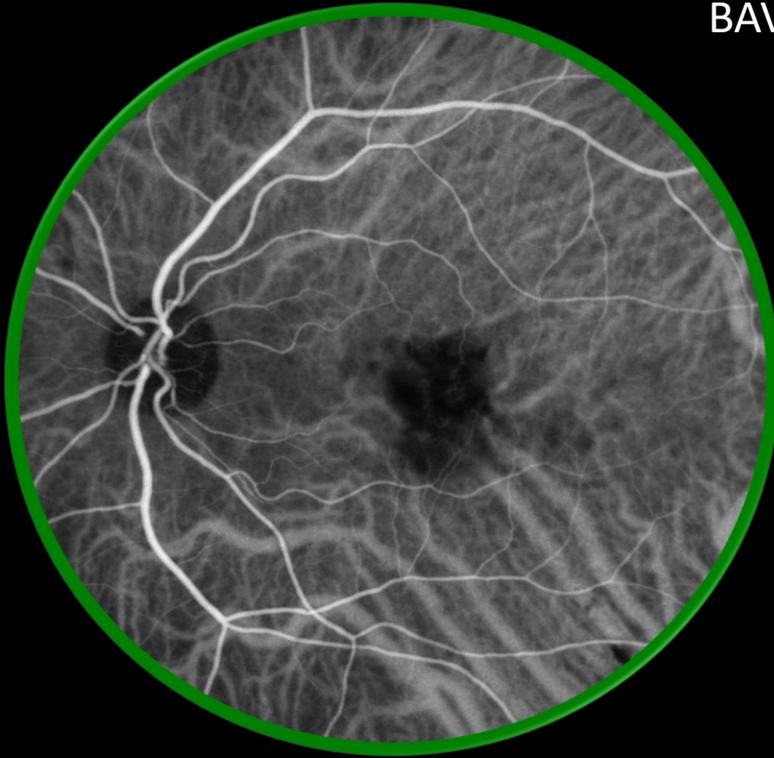


6/10, MP+

DEP drusénoïde

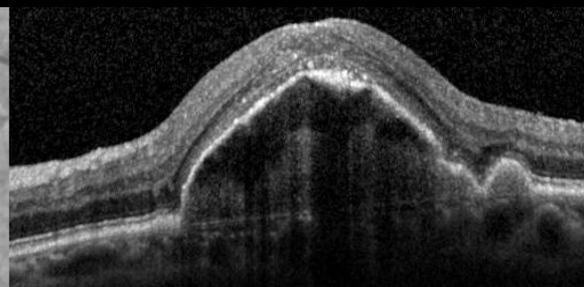
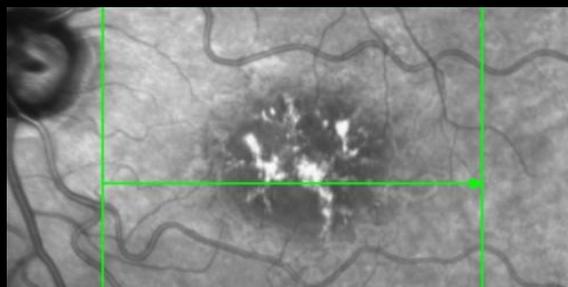
Contenu mixte drusénoïde et séreux sans Néovaisseaux

BAV 6/10, MP+



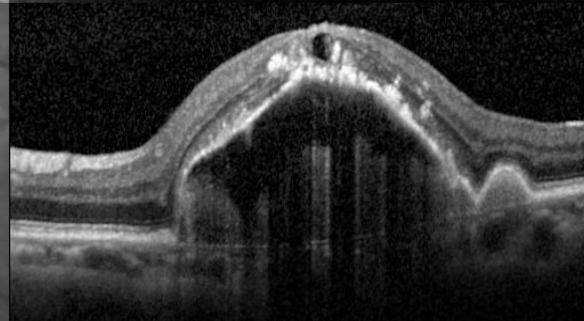
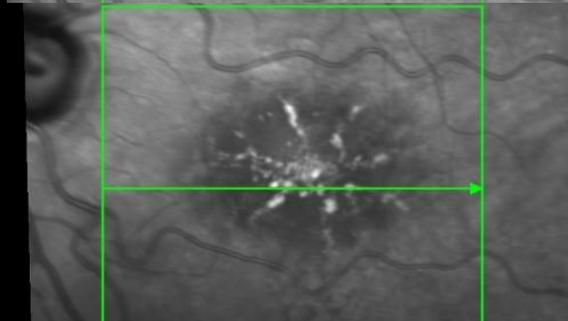
Cas Clinique N°6

Avril 2016



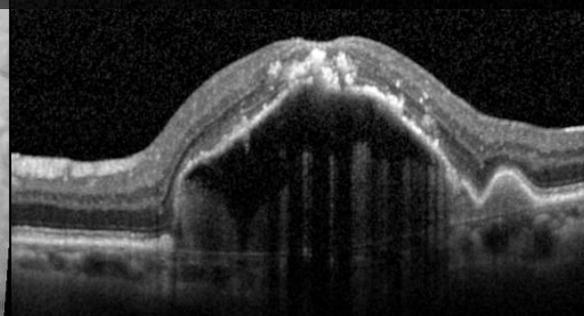
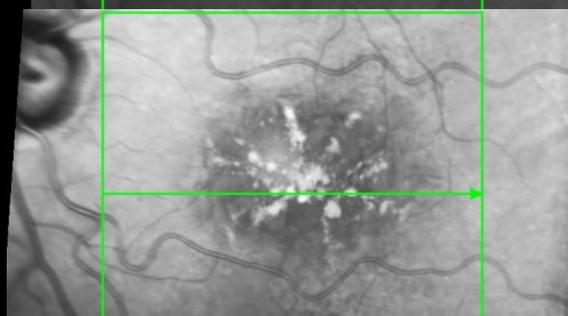
5/10

Nov 2017



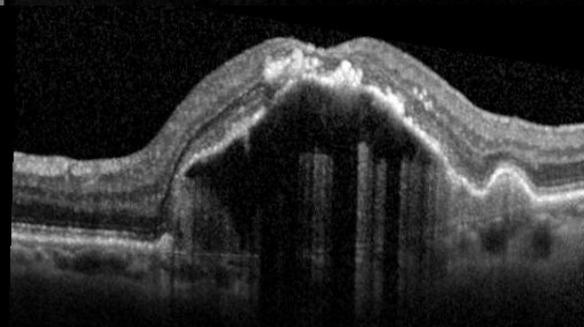
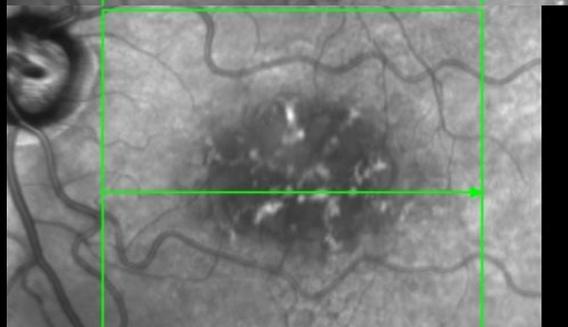
4/10, MP+

Mai 2018



4/10, MP+

Sept 2018

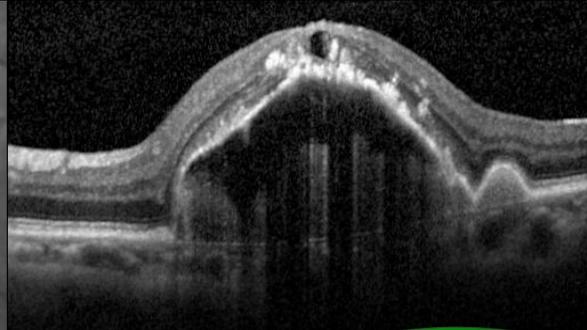
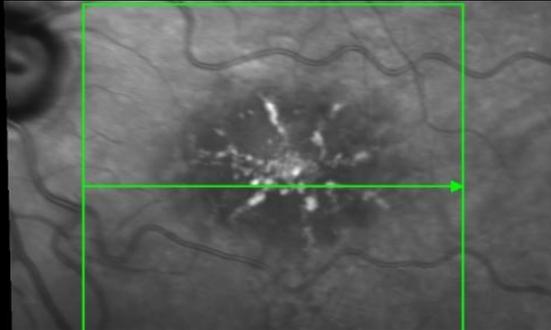


4/10, MP+

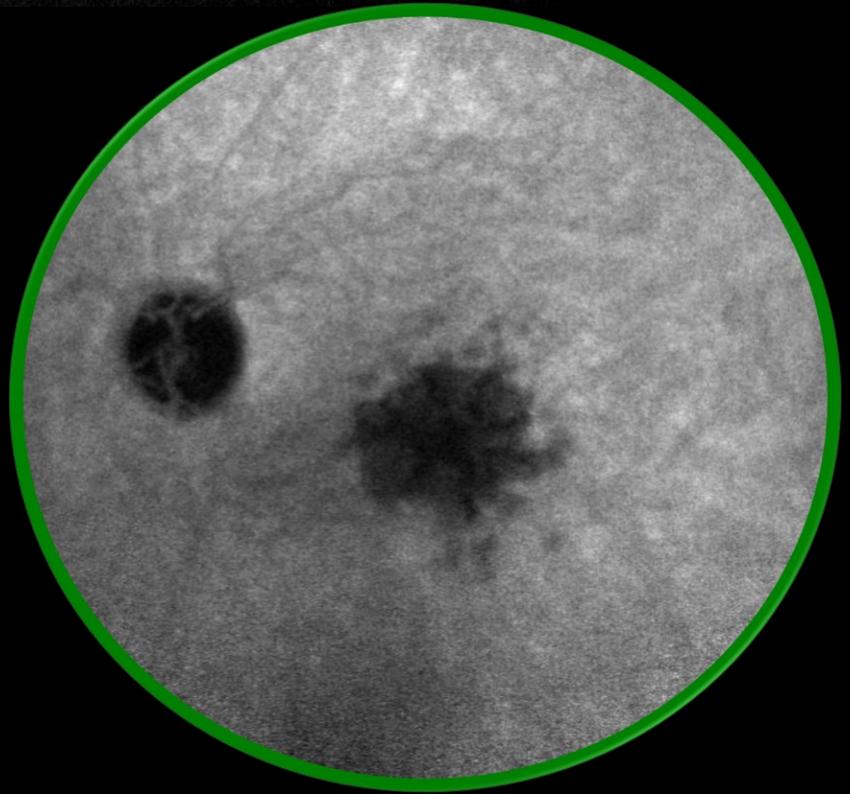
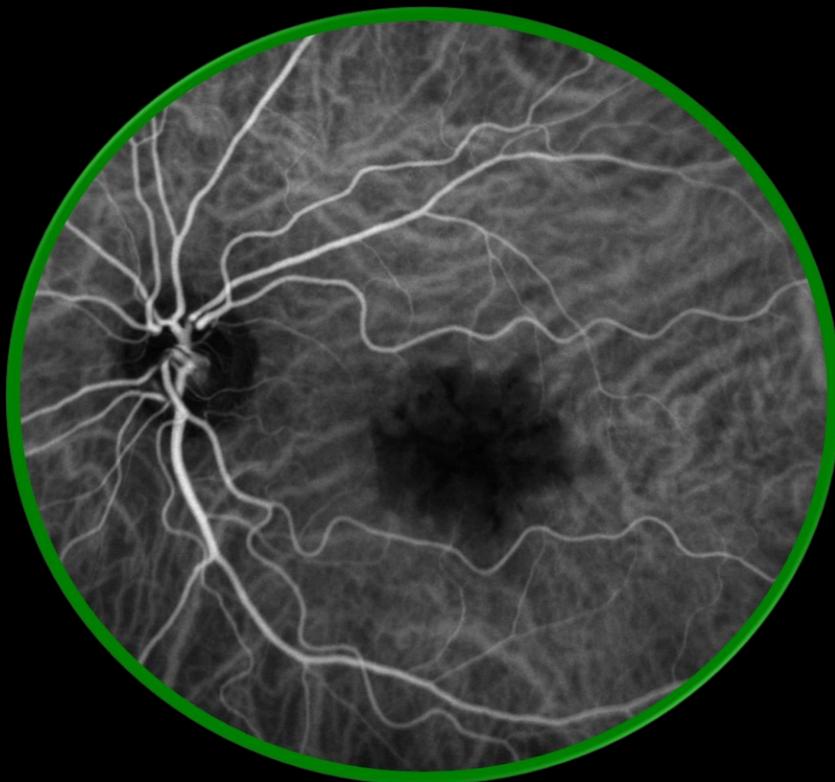
DEP drusénoïde

Contenu mixte drusénoïde et séreux sans Néovaisseaux

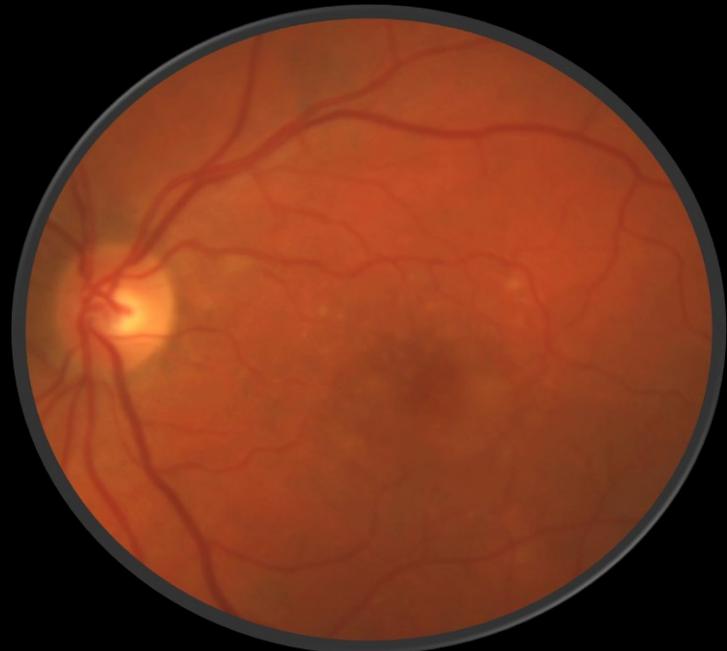
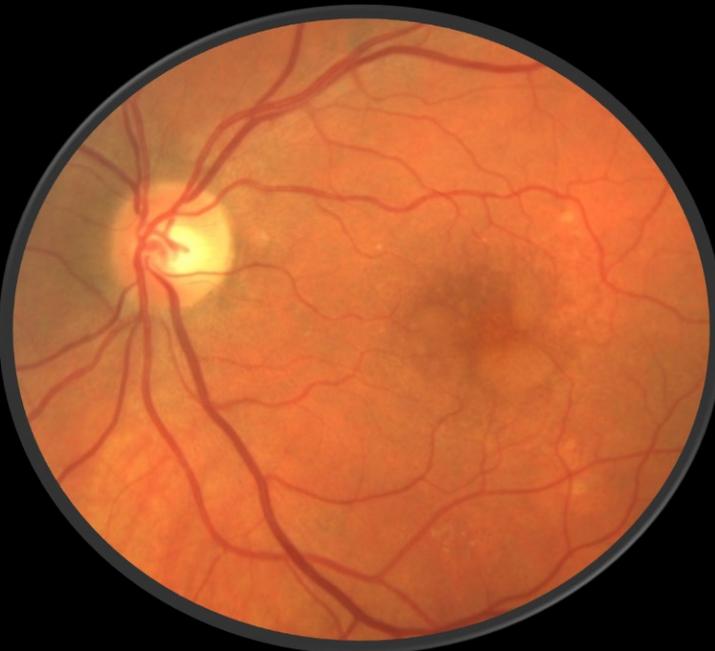
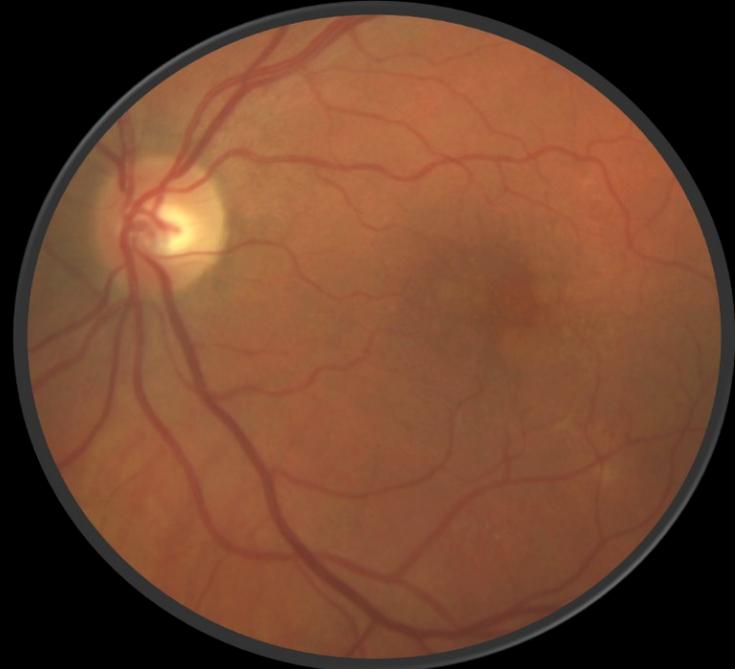
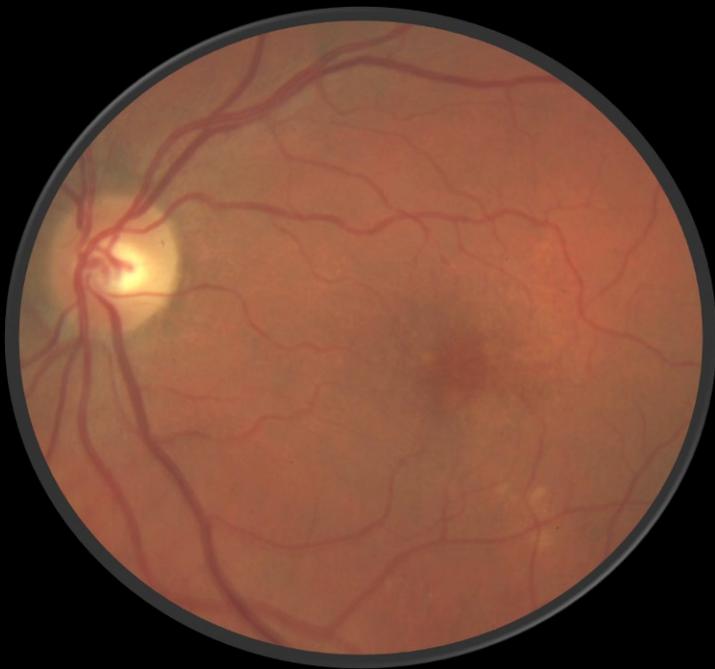
Nov 2017



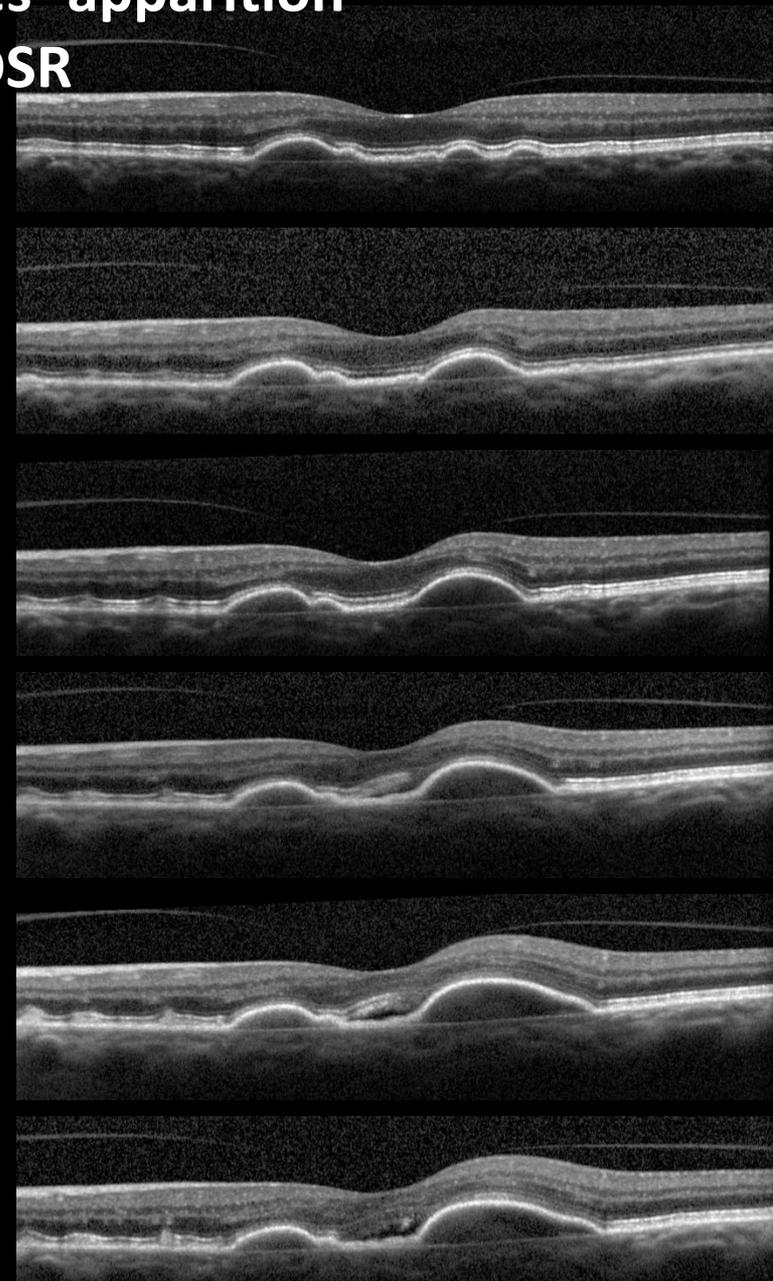
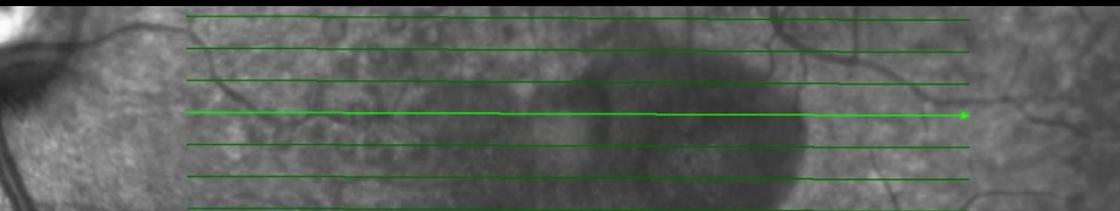
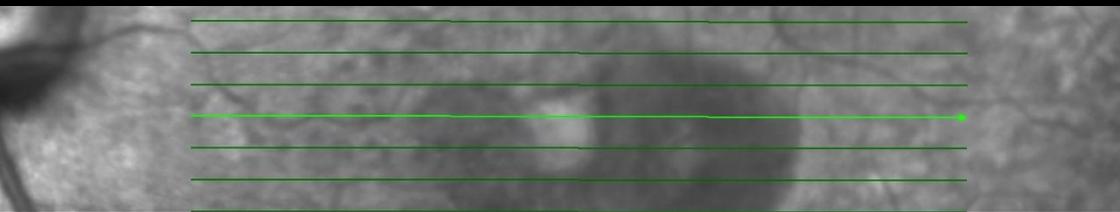
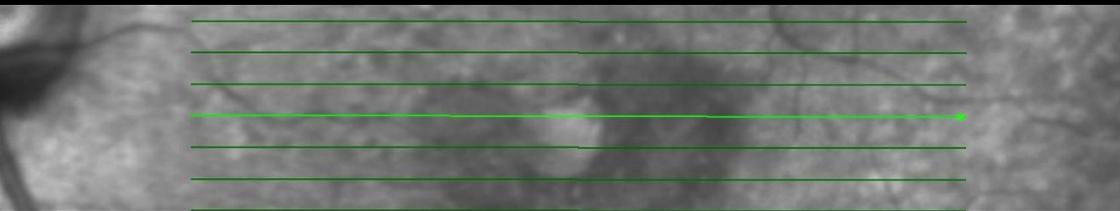
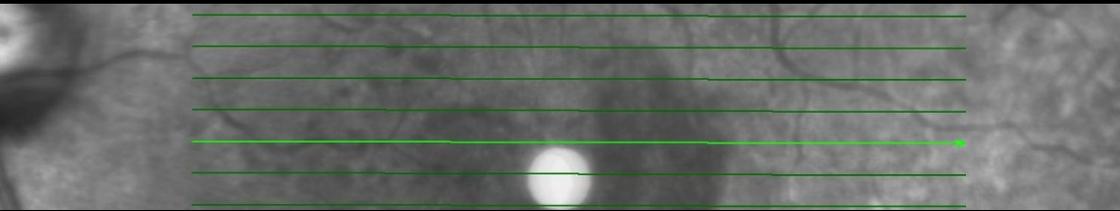
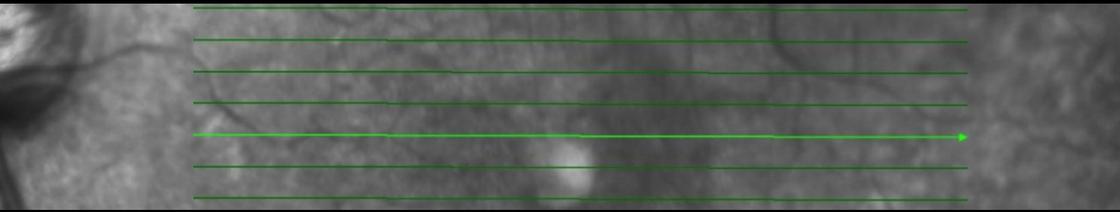
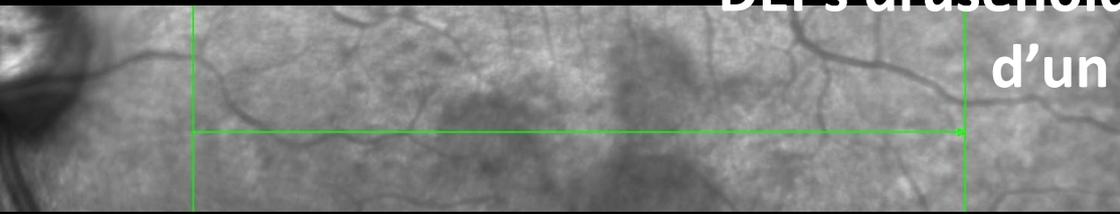
4/10, MP+



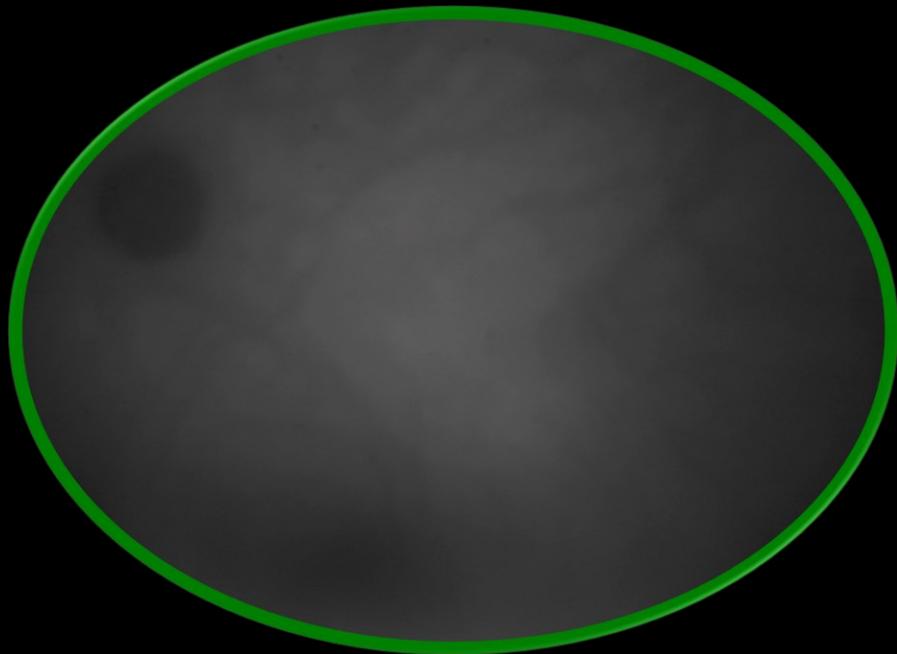
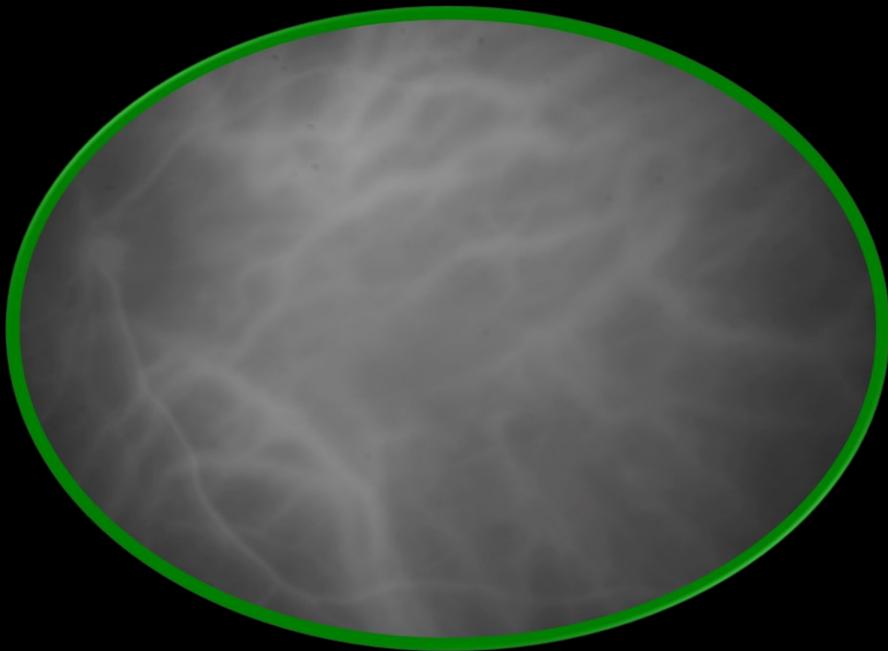
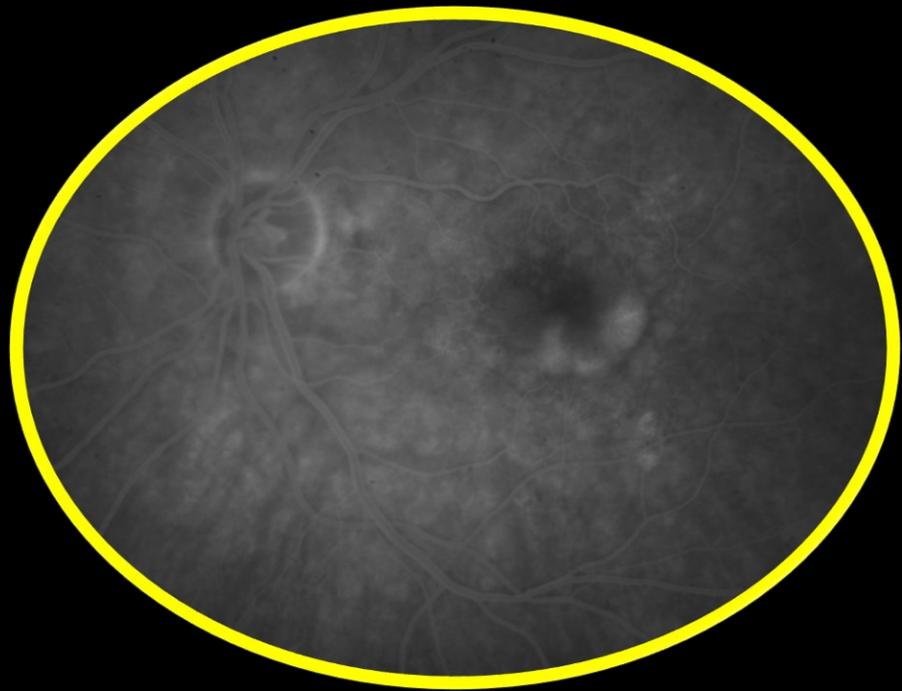
Cas Clinique N°7



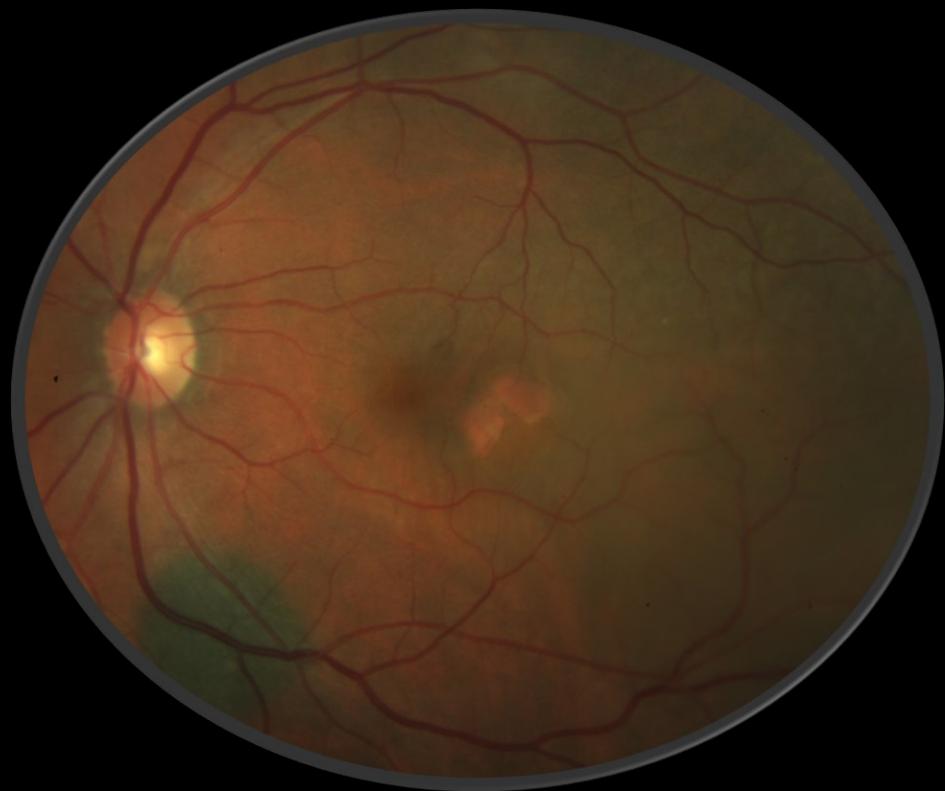
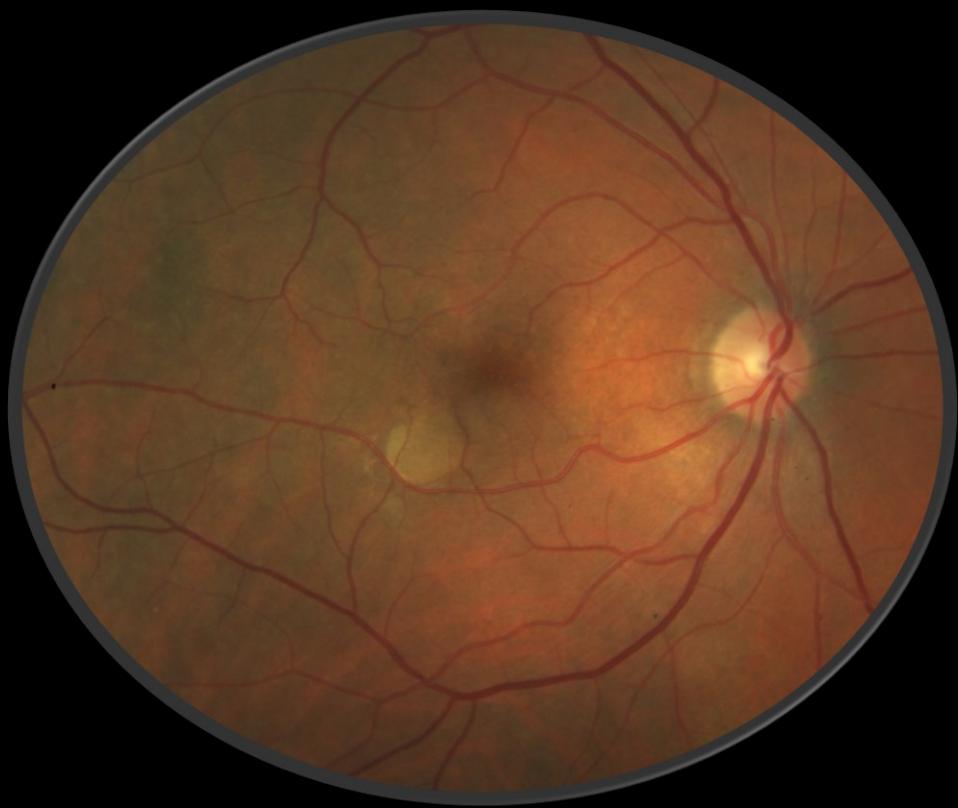
DEPs drusenoides- apparition d'un DSR

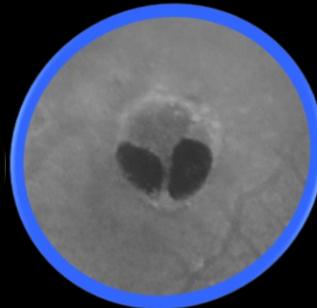
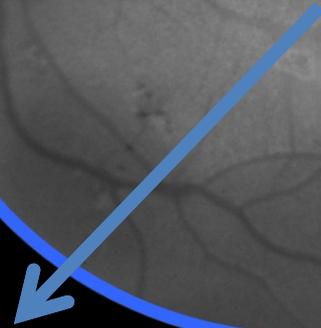
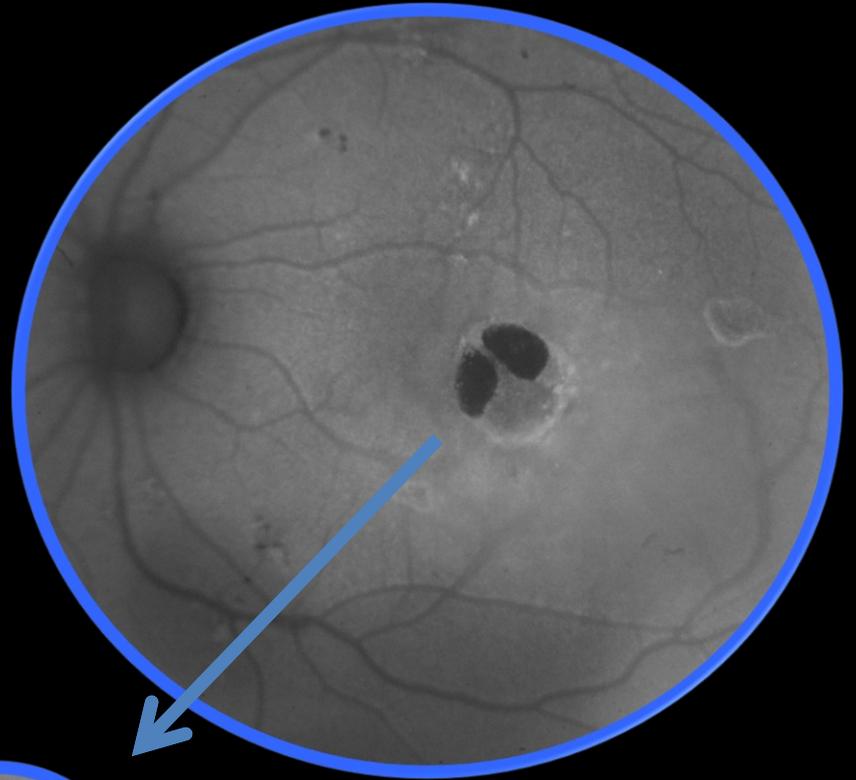
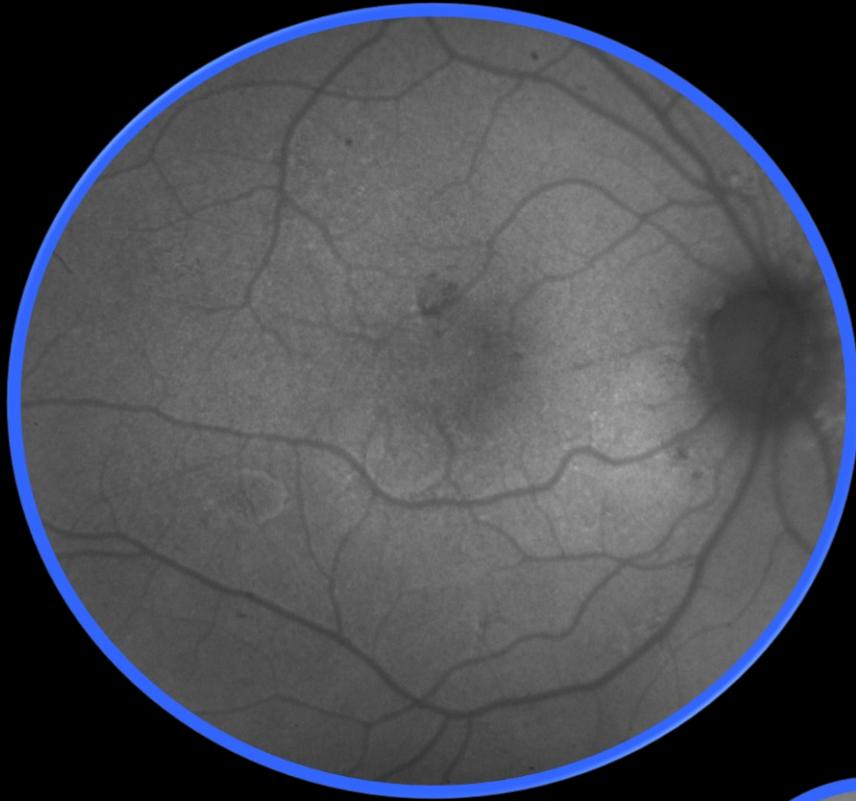


DMLA exsudative? Anti-VEGF?

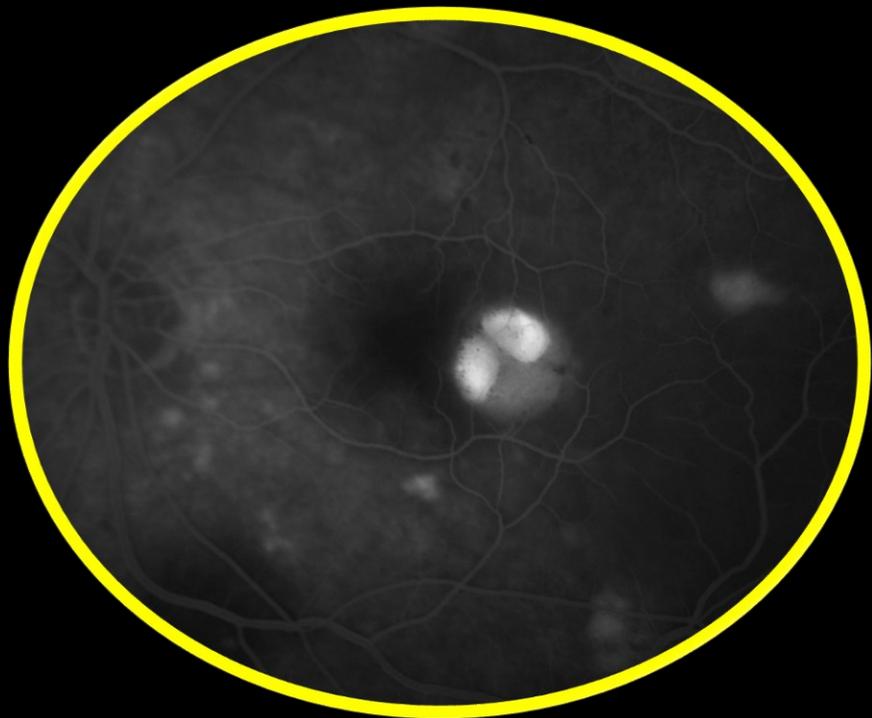


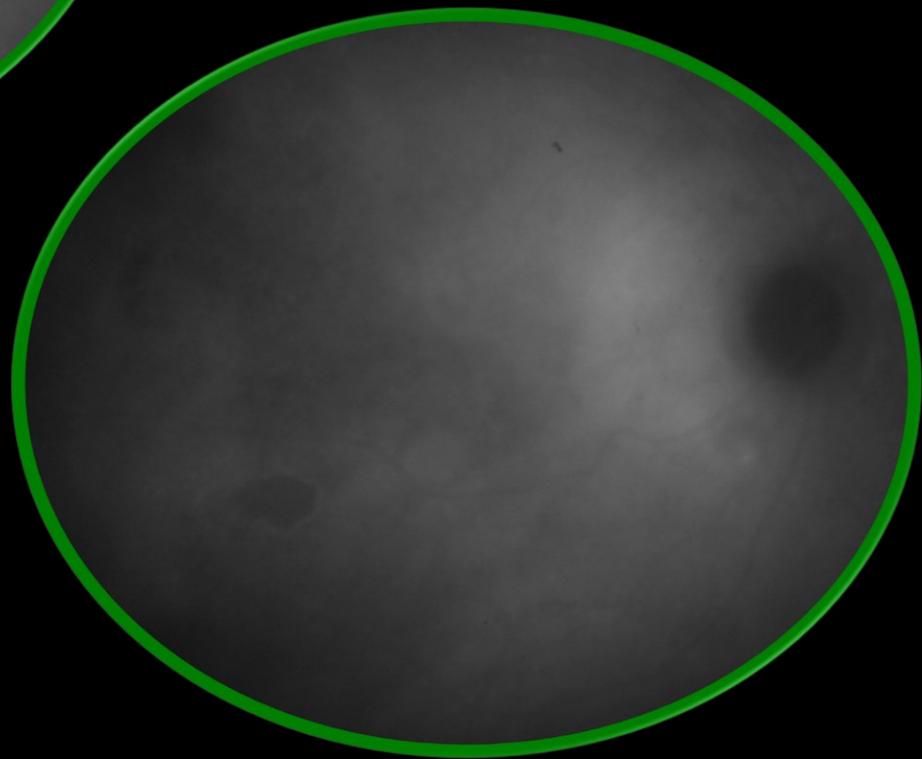
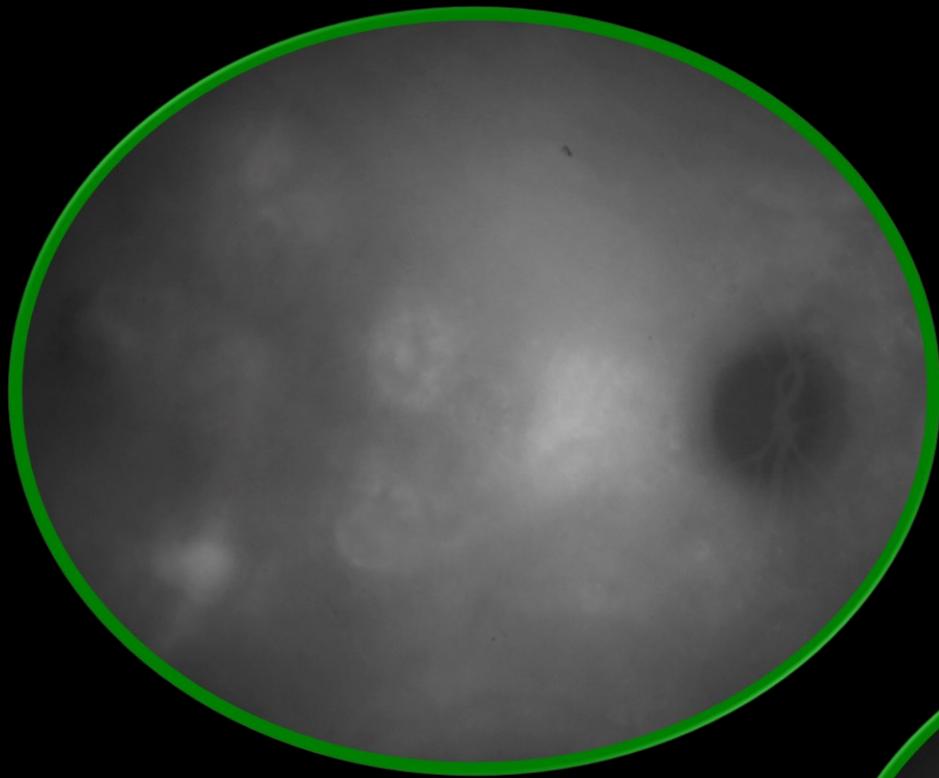
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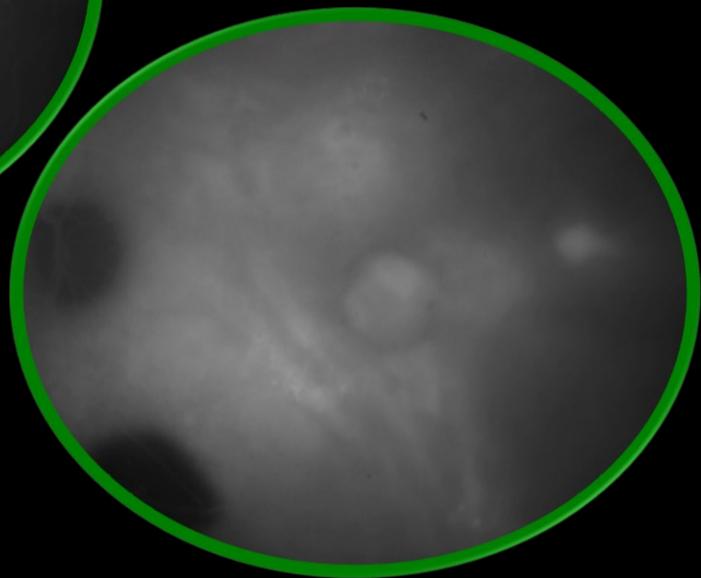
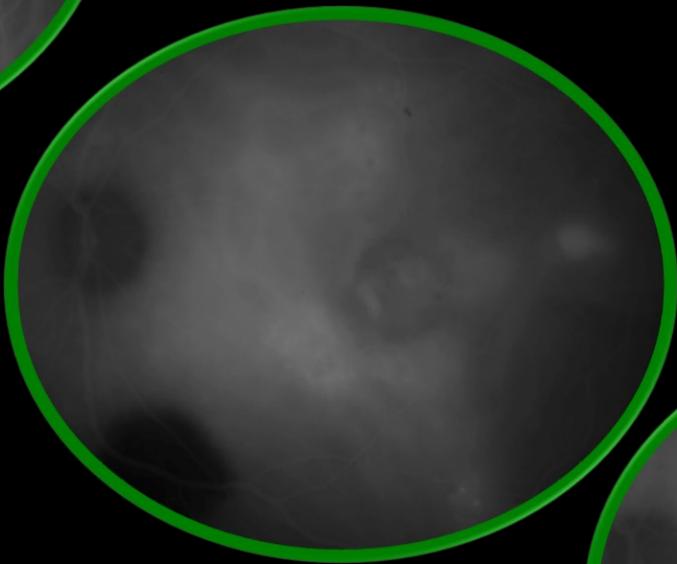
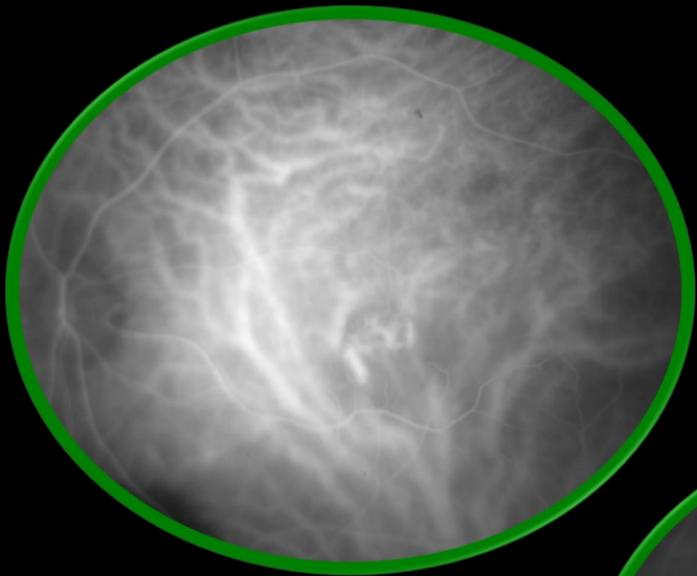




"Alien sign"

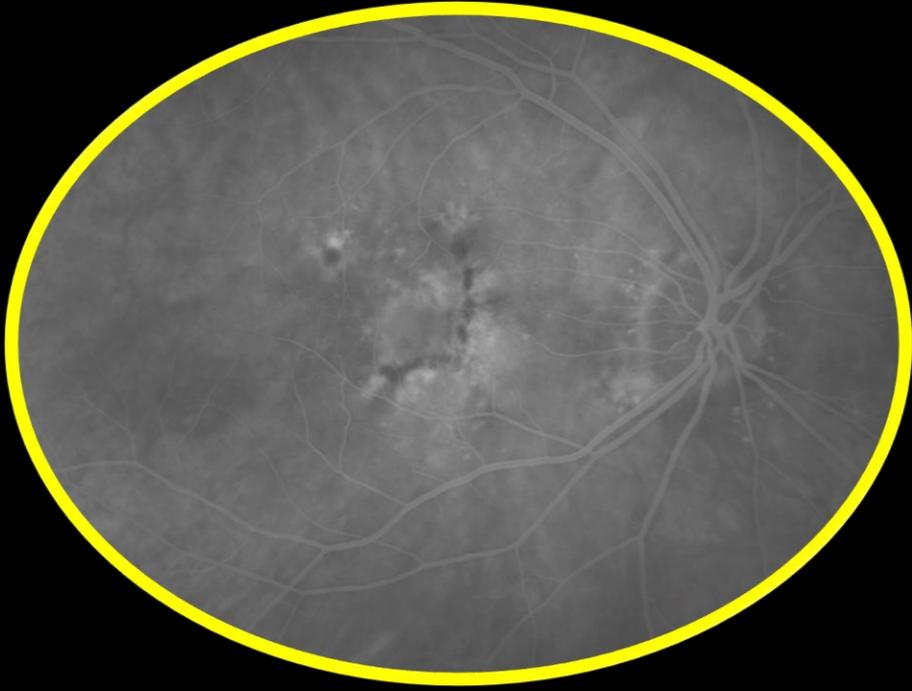
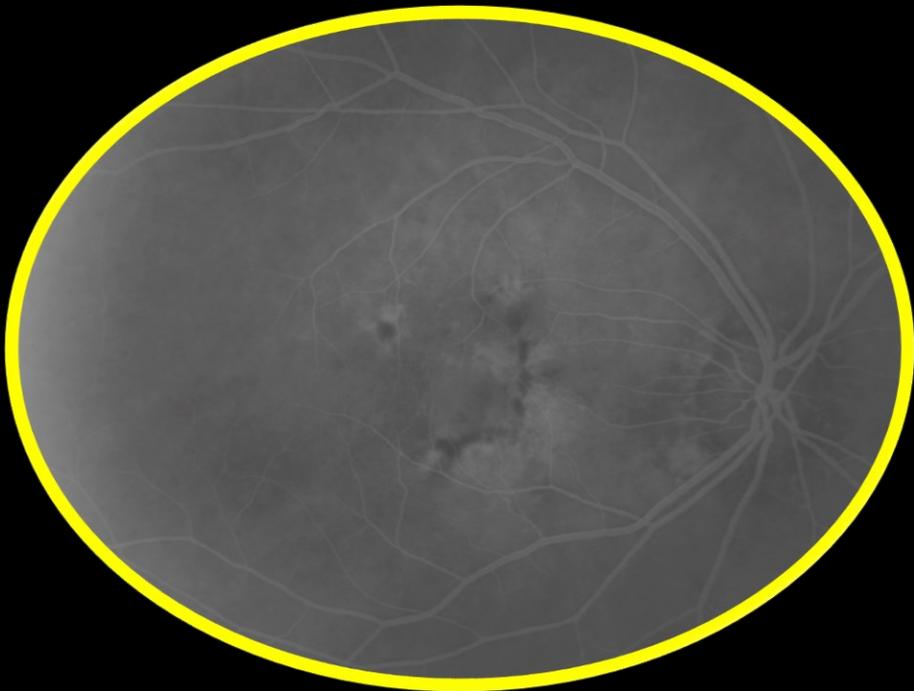


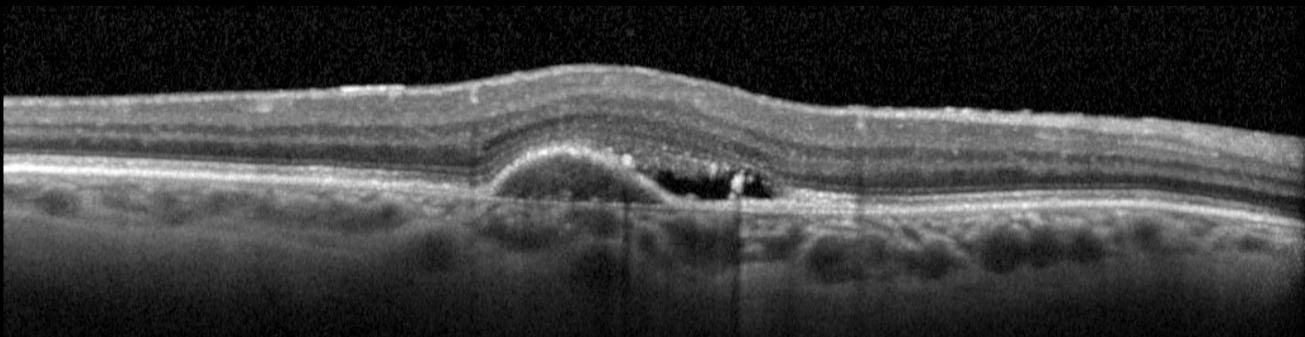
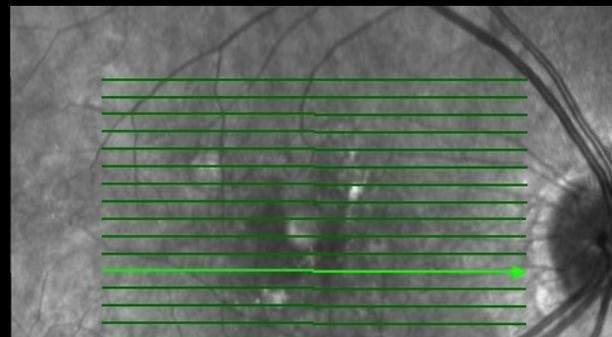
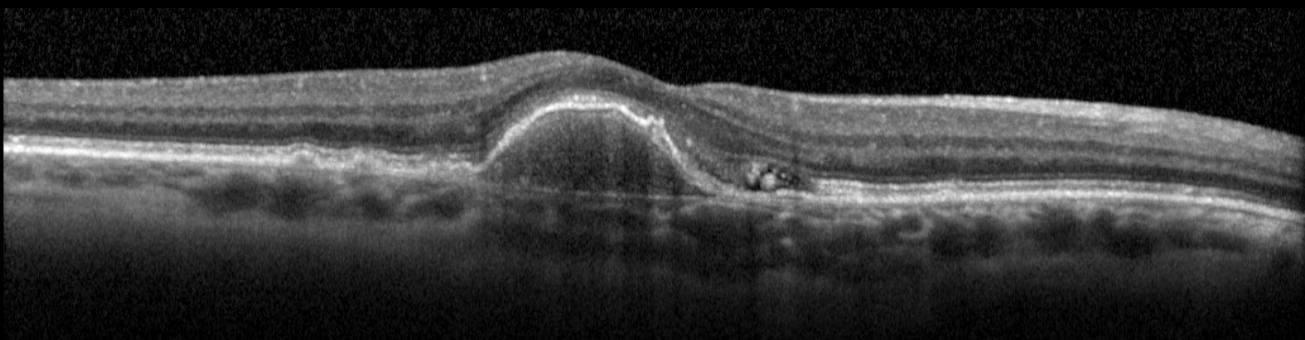
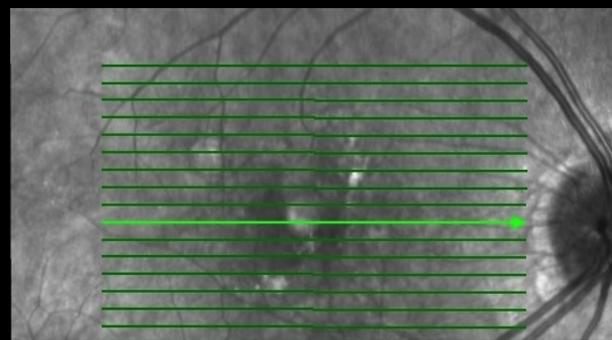
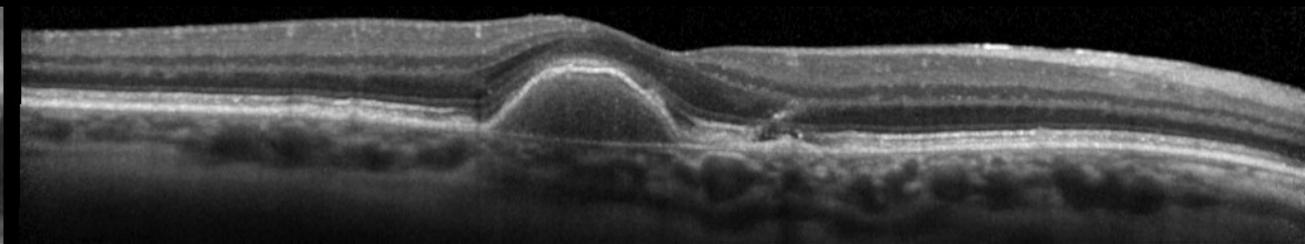
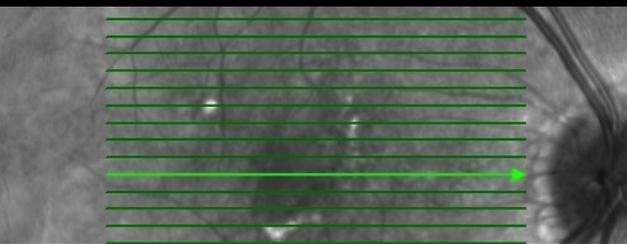




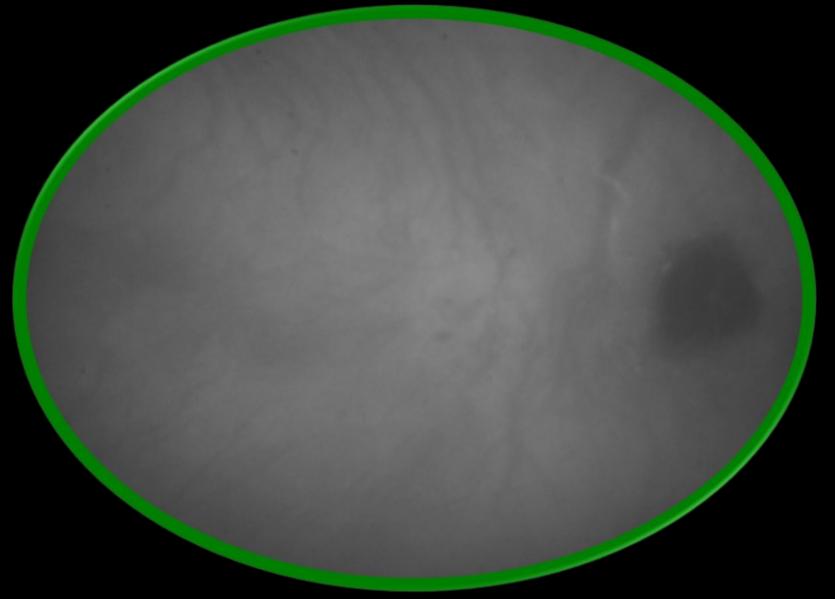
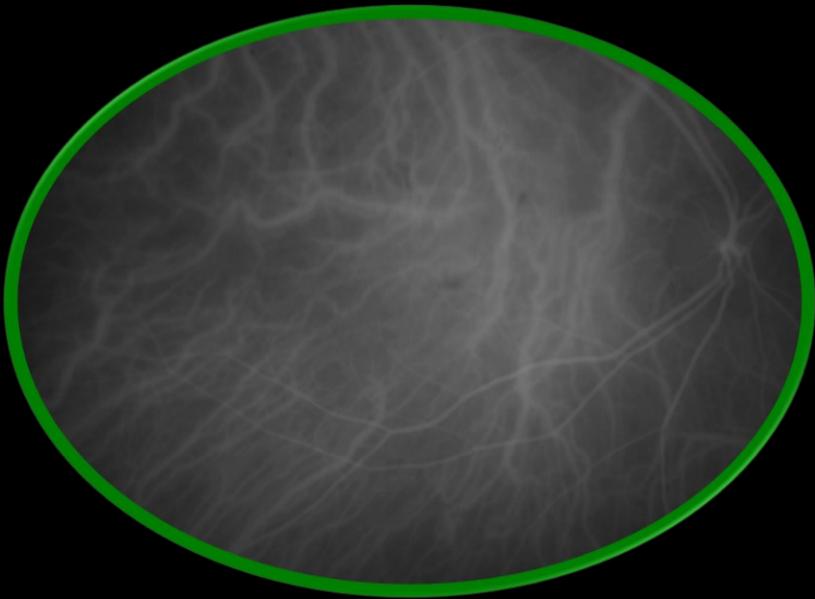
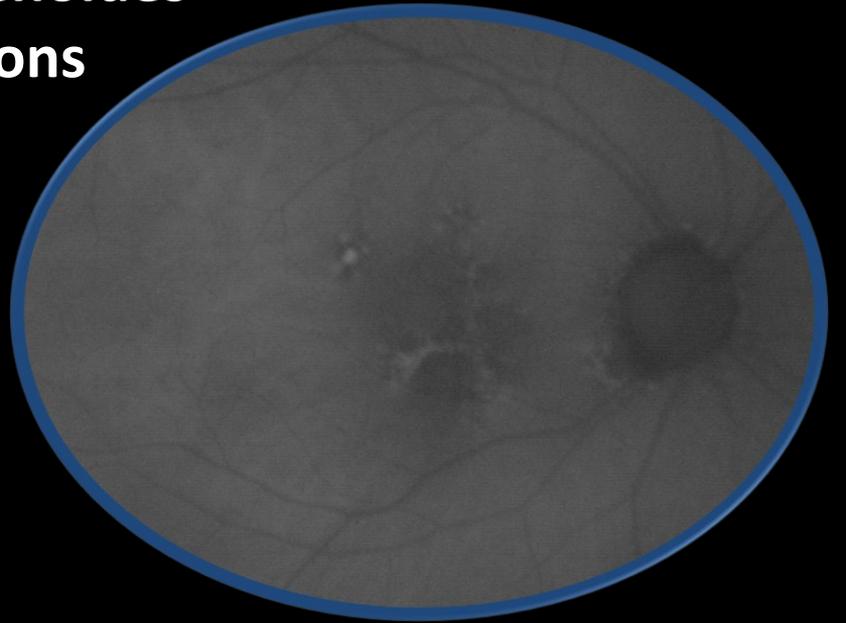
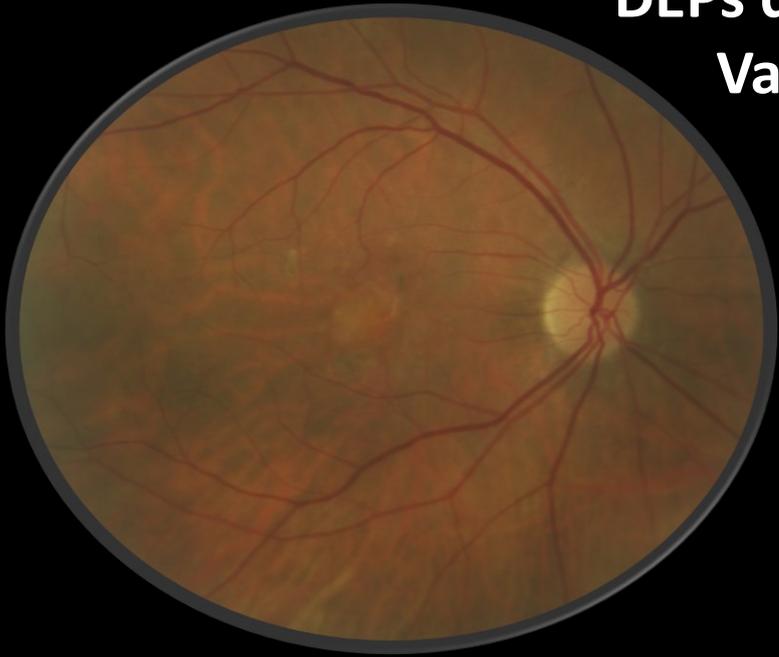
Serous PED

Cas Clinique N°9

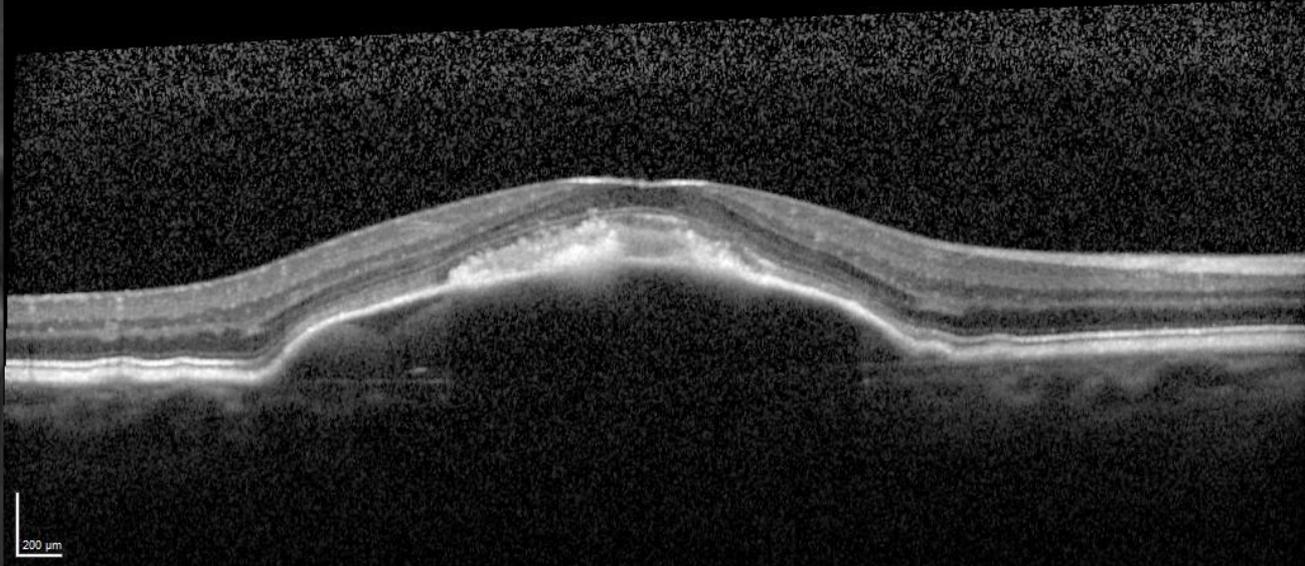
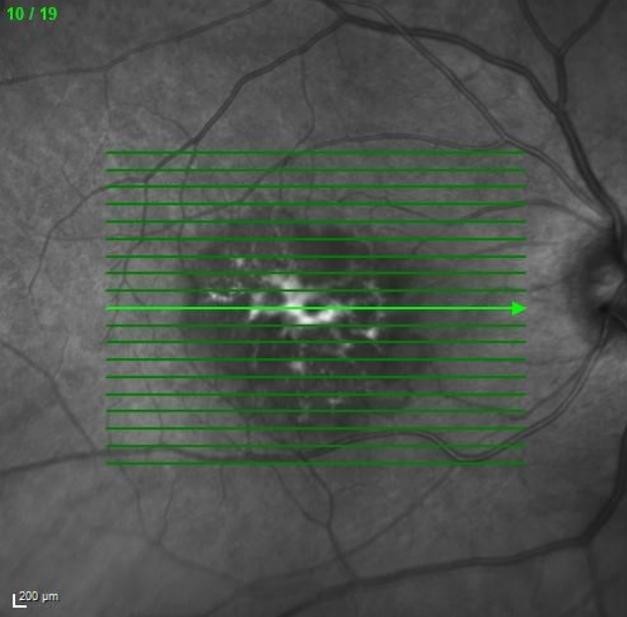
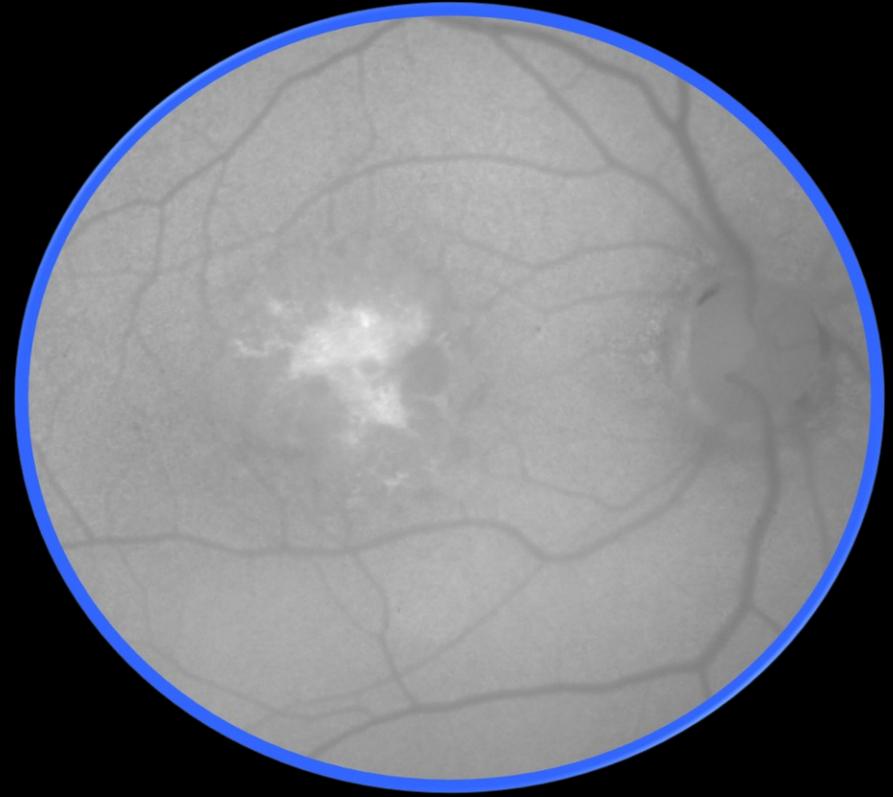
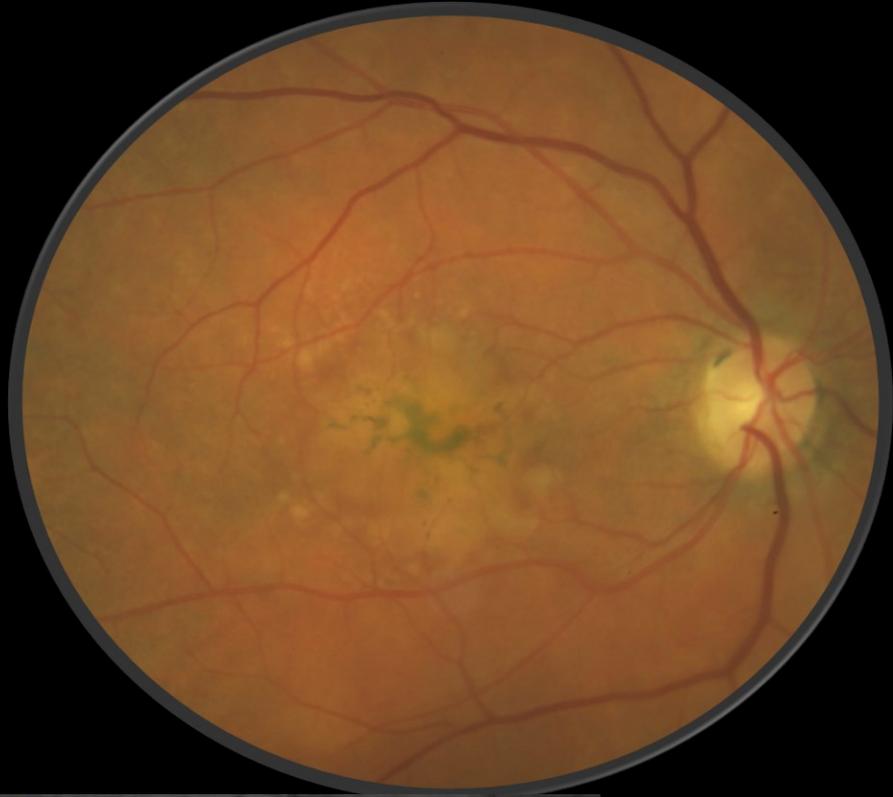


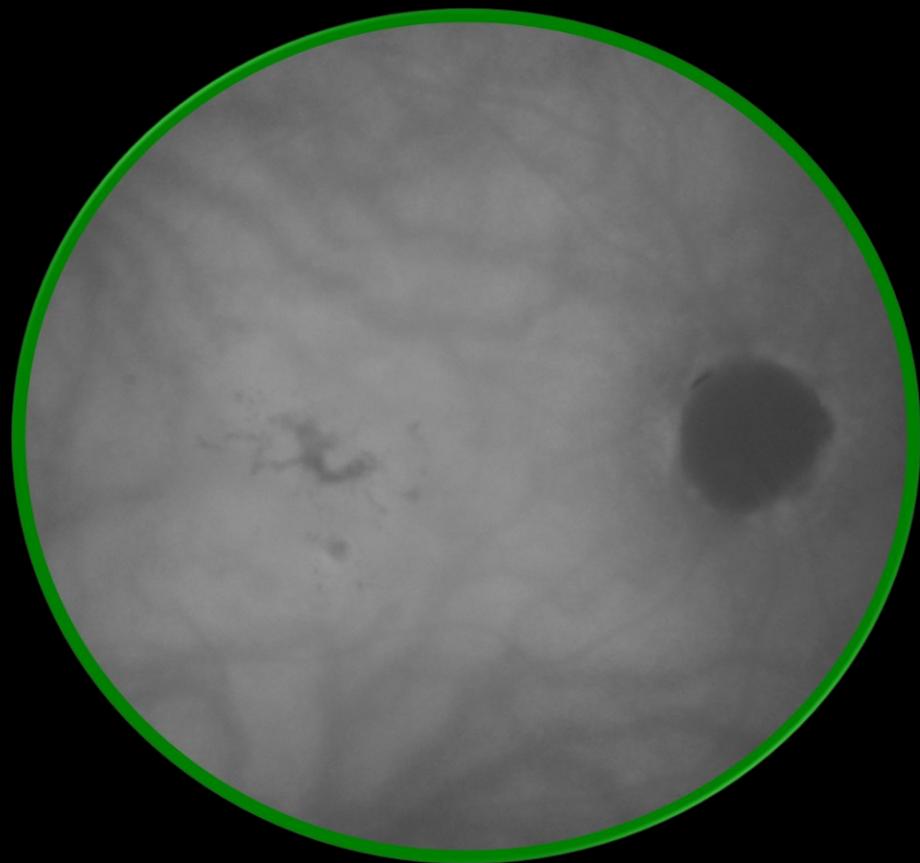


**DEPs drusenoides
Variations**



Cas Clinique N°10





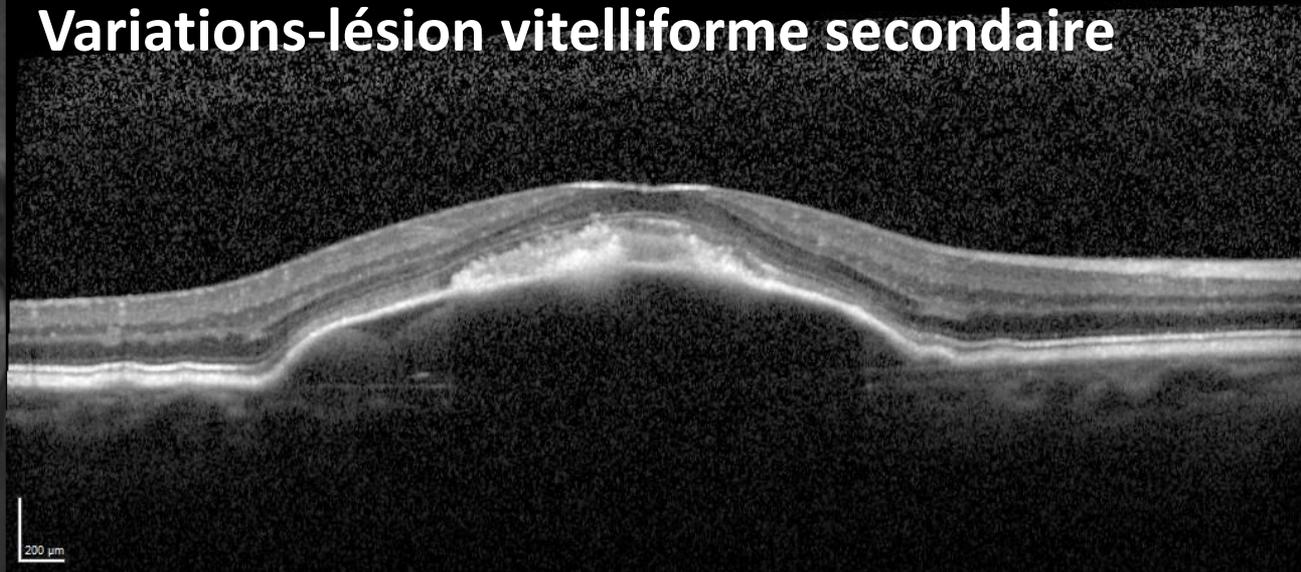
Rétinographe

SLO



DEPs drusenoïdes

Variations-lésion vitelliforme secondaire

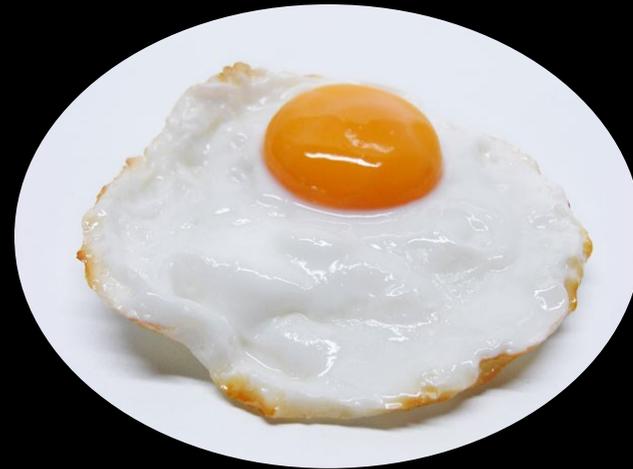


Review

MULTIMODAL IMAGING OF PIGMENT EPITHELIAL DETACHMENT

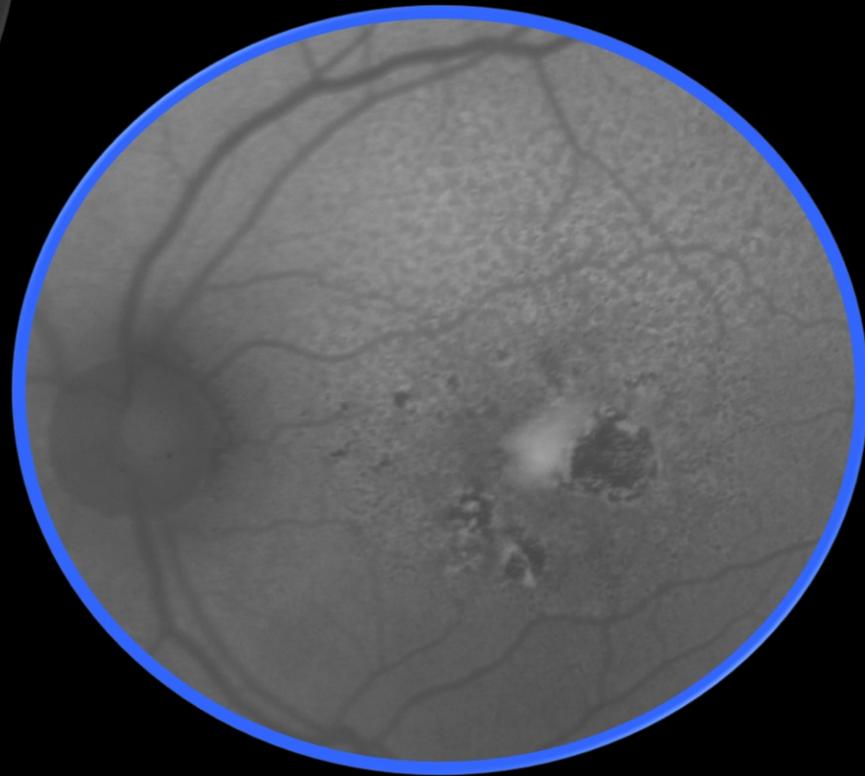
A Guide to Evaluation

SARAH MREJEN, MD,*† DAVID SARRAF, MD,‡§ SRI KRISHNA MUKKAMALA, MD,*†
K. BAILEY FREUND, MD*†



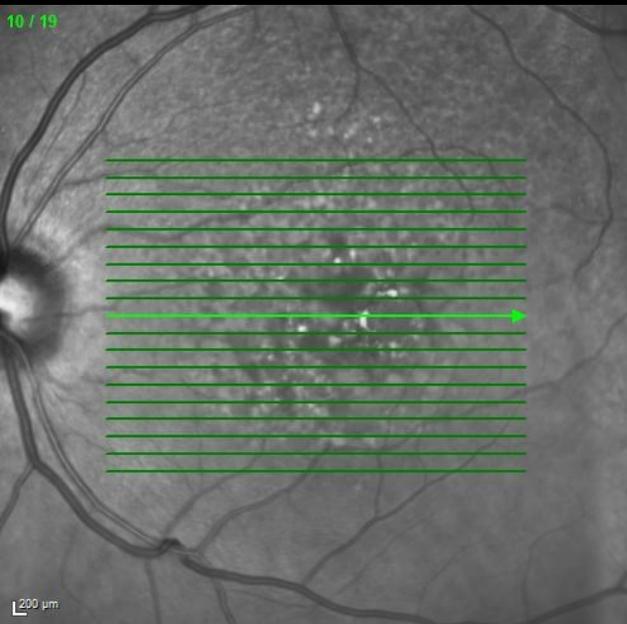
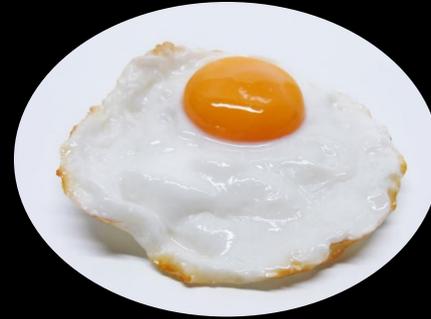
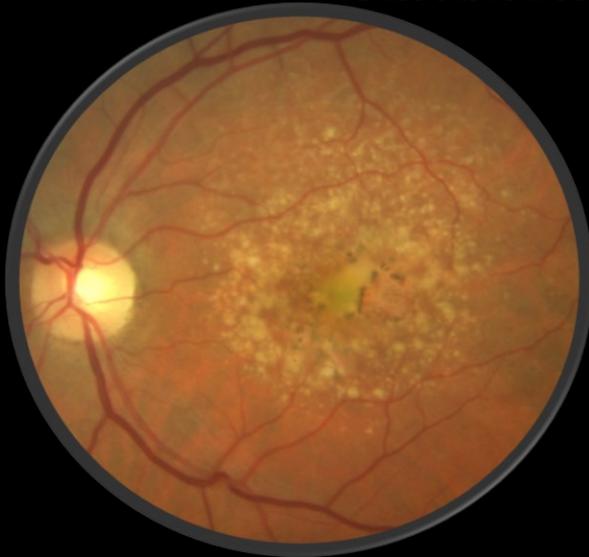
The “sunny-side up” ... “l’oeuf au plat”

Cas Clinique N°11

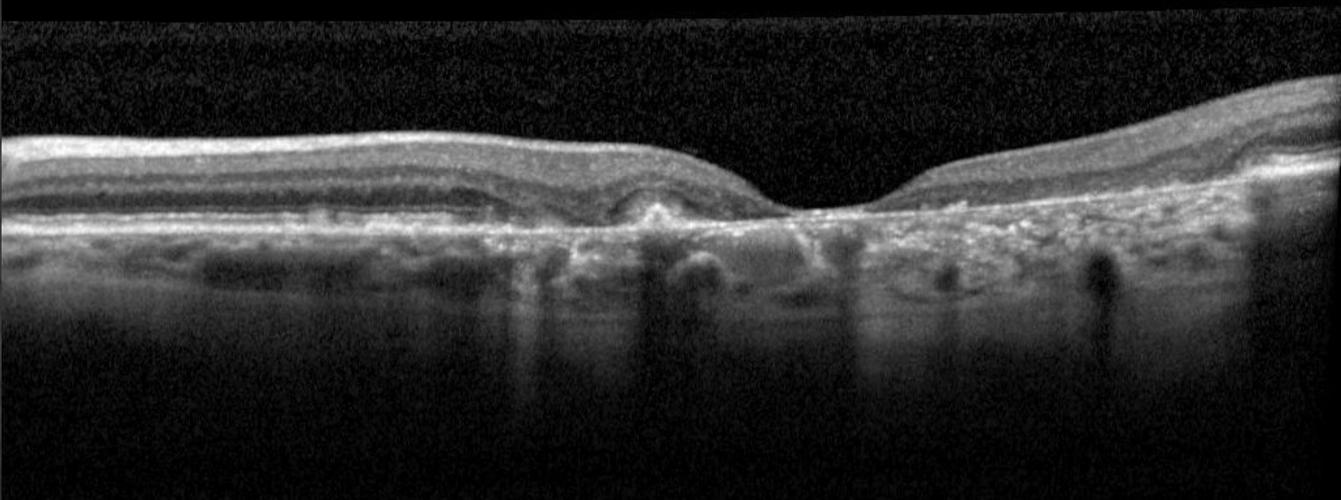
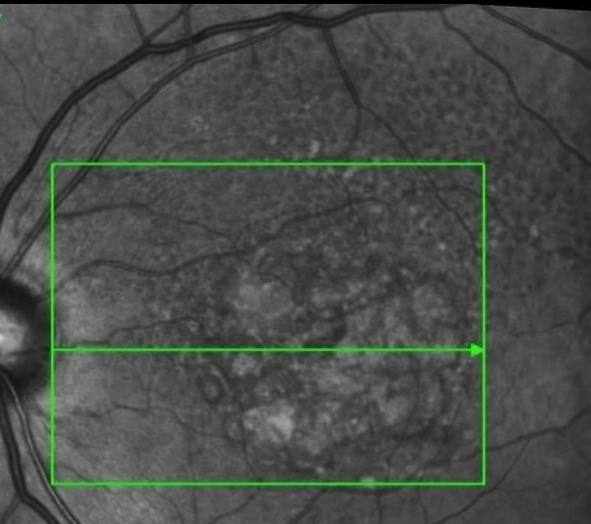
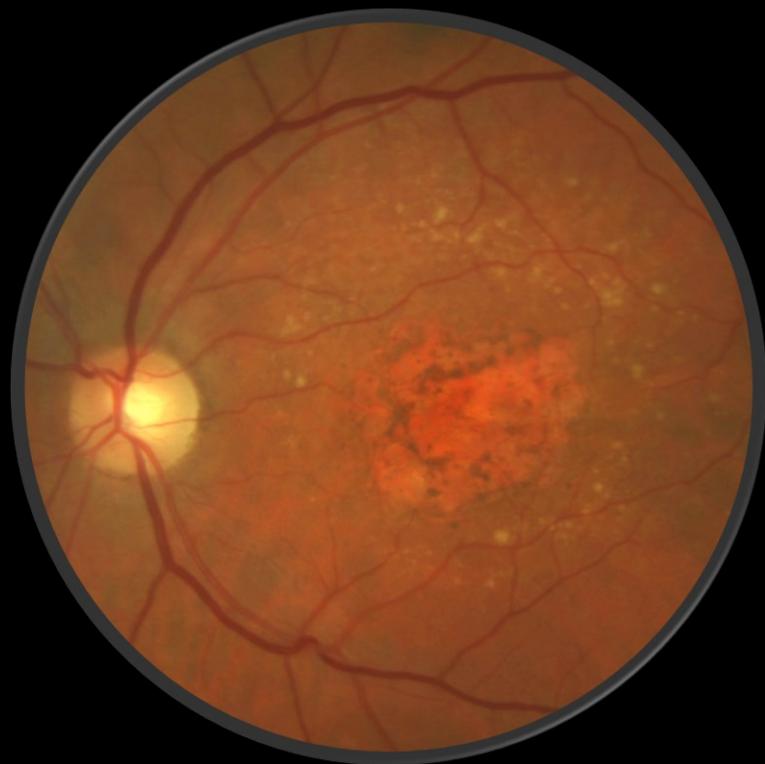
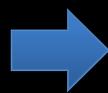


DEPs drusenoïdes

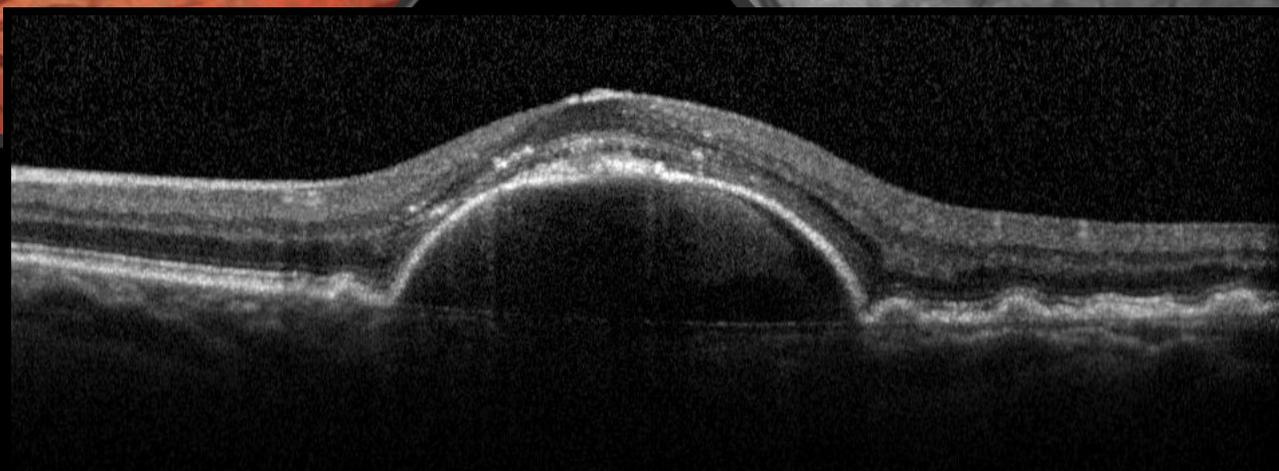
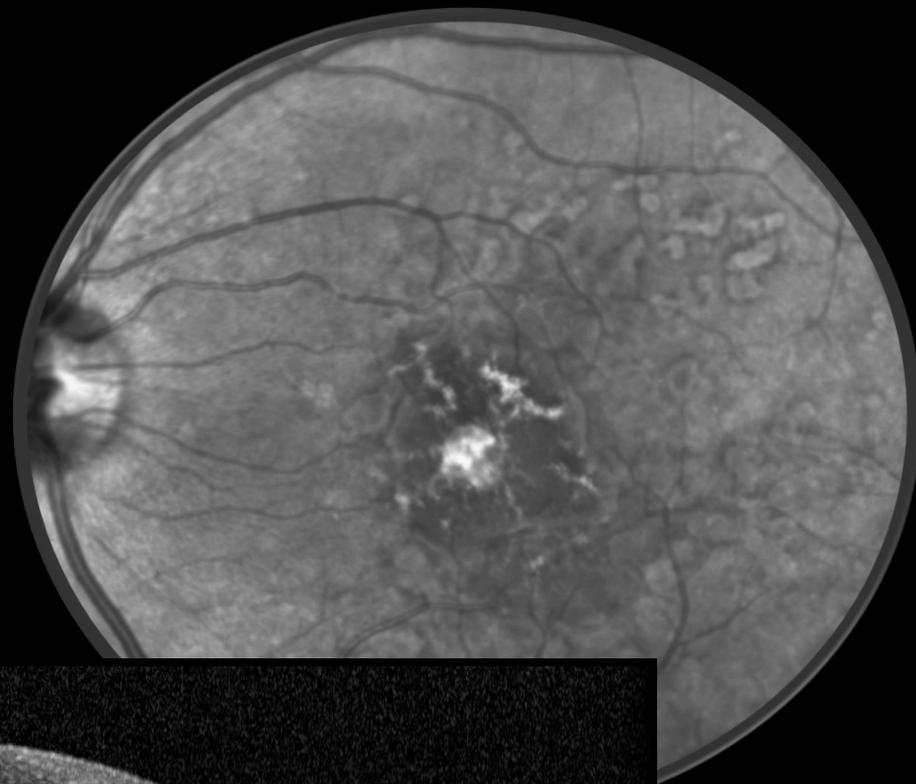
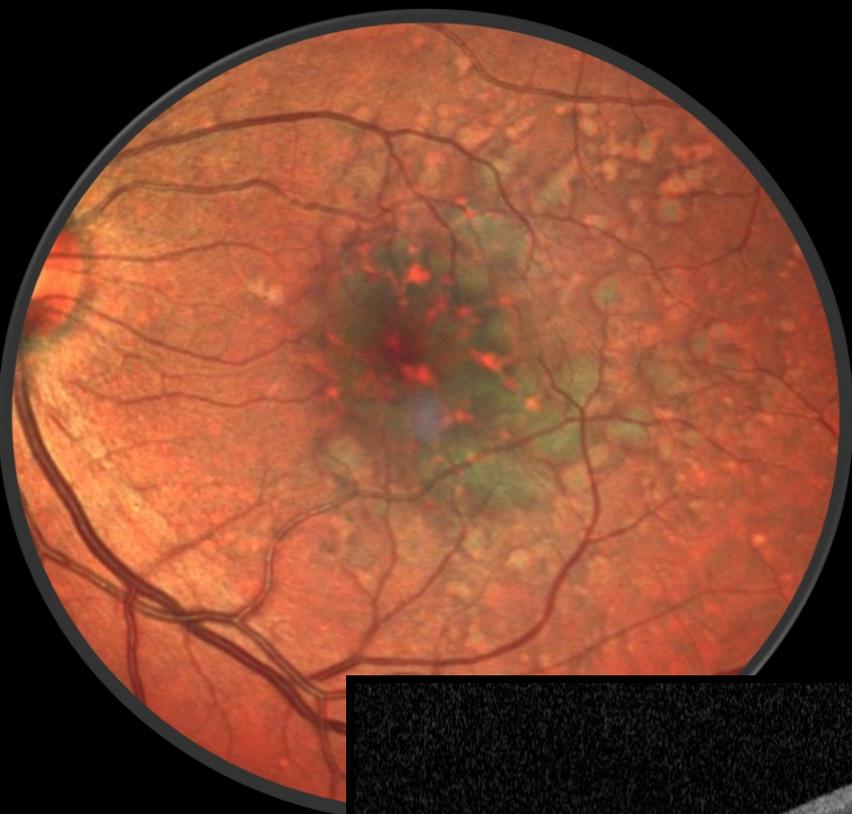
Variations-lésion vitelliforme secondaire



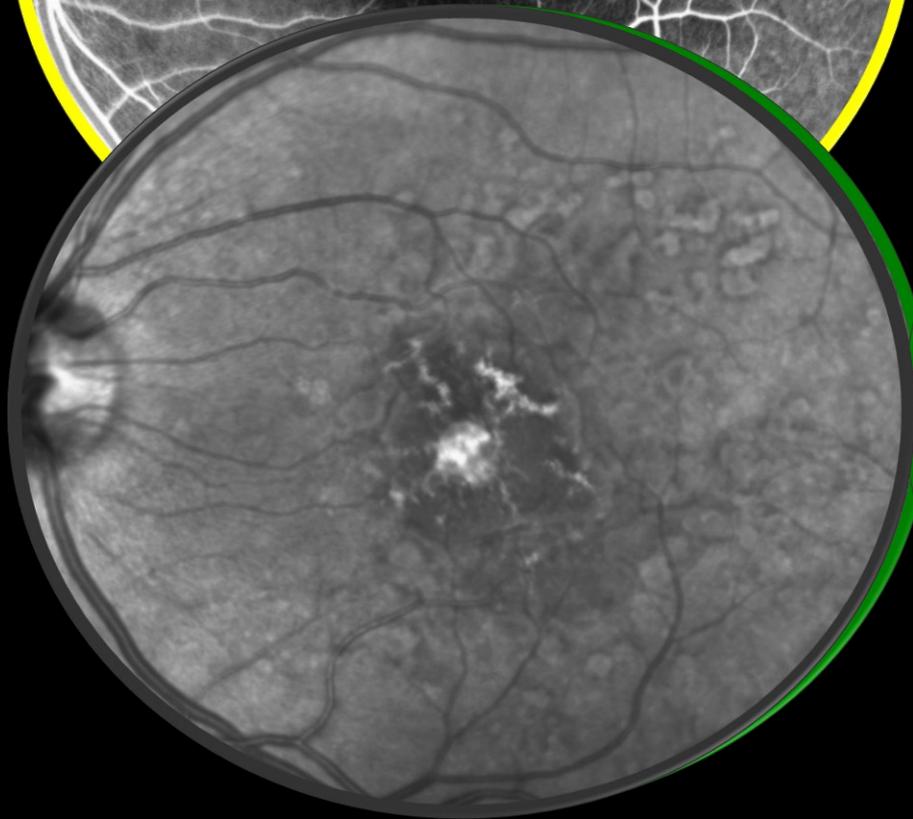
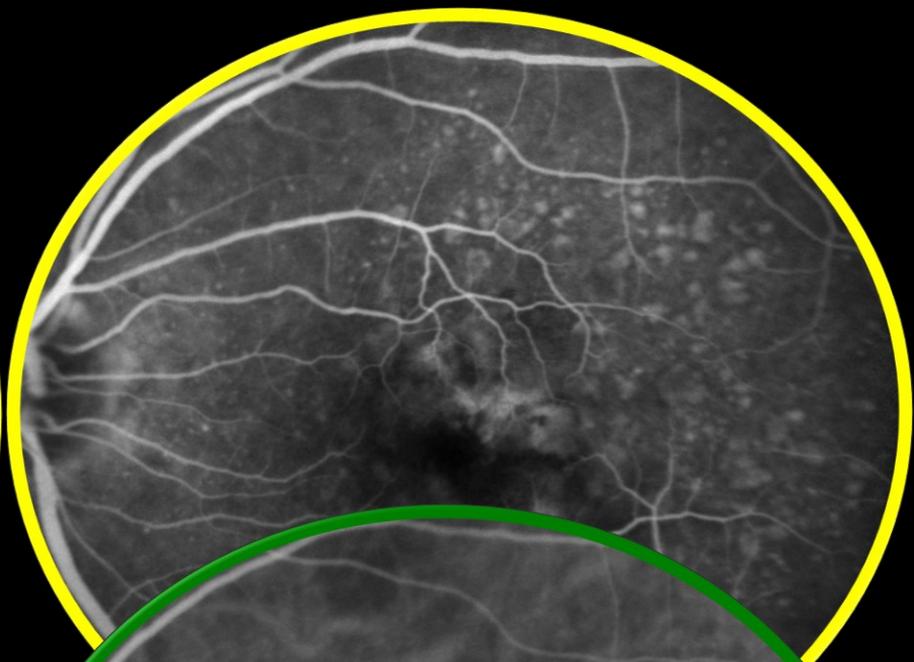
The "sunny-side up"



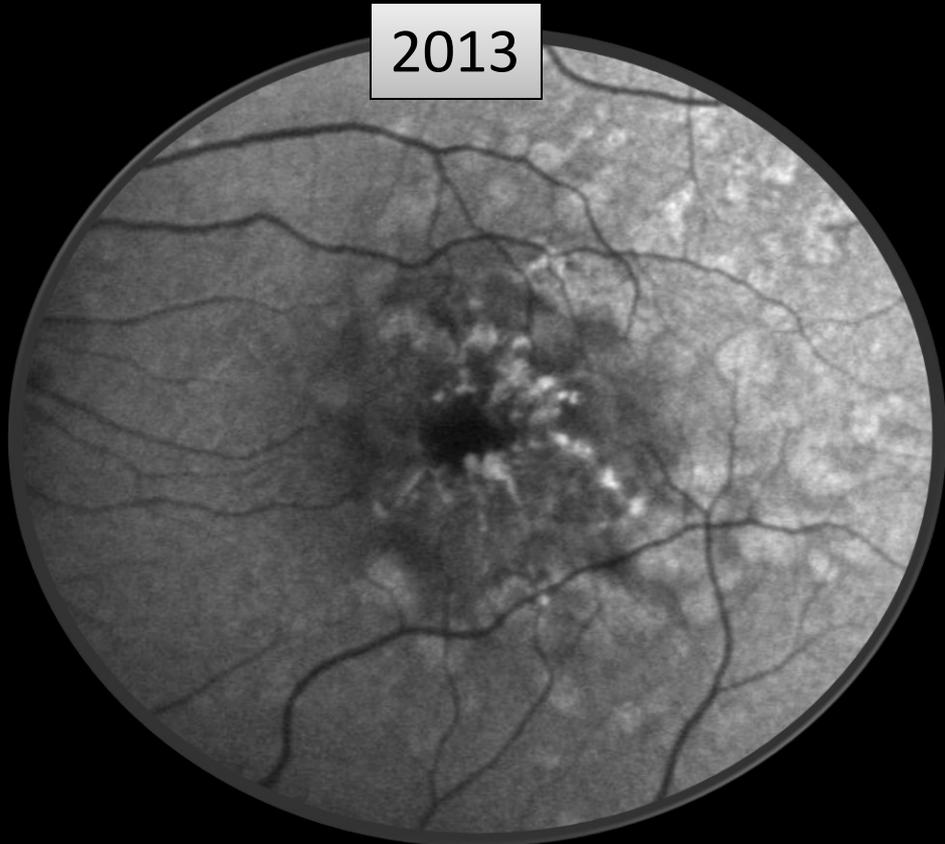
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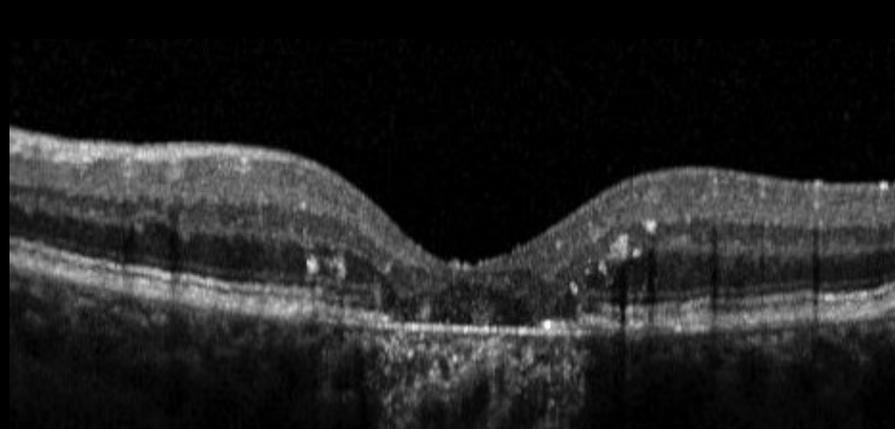
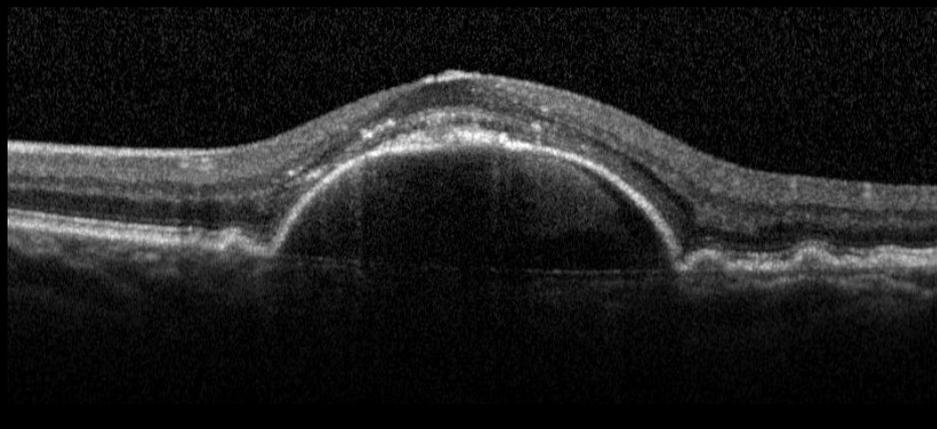
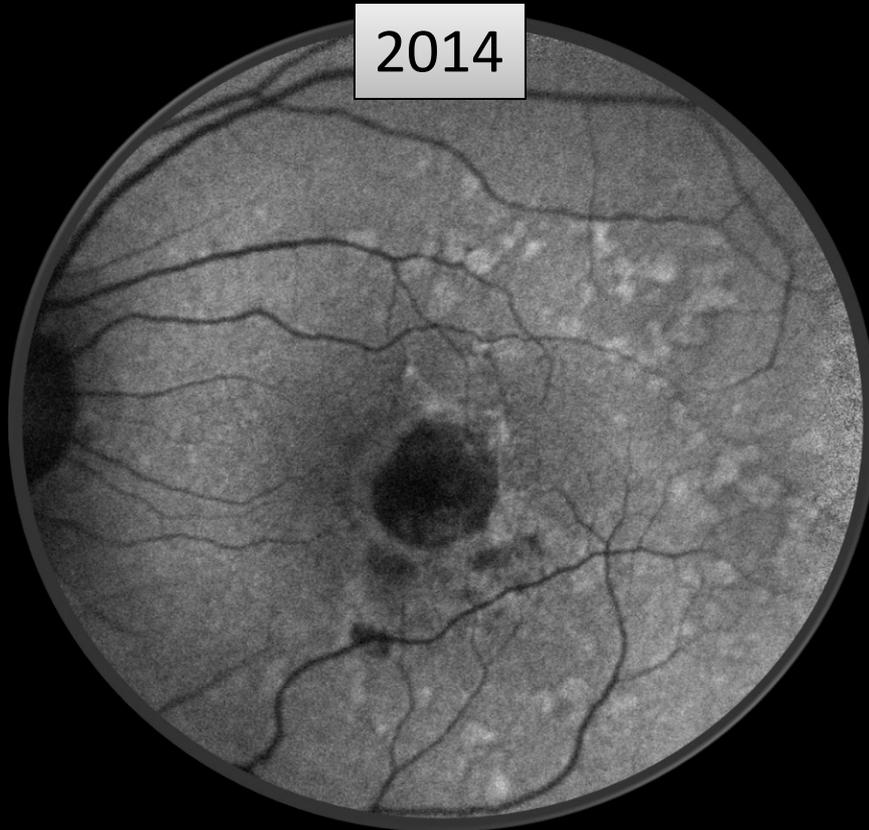
Caroline Coriat



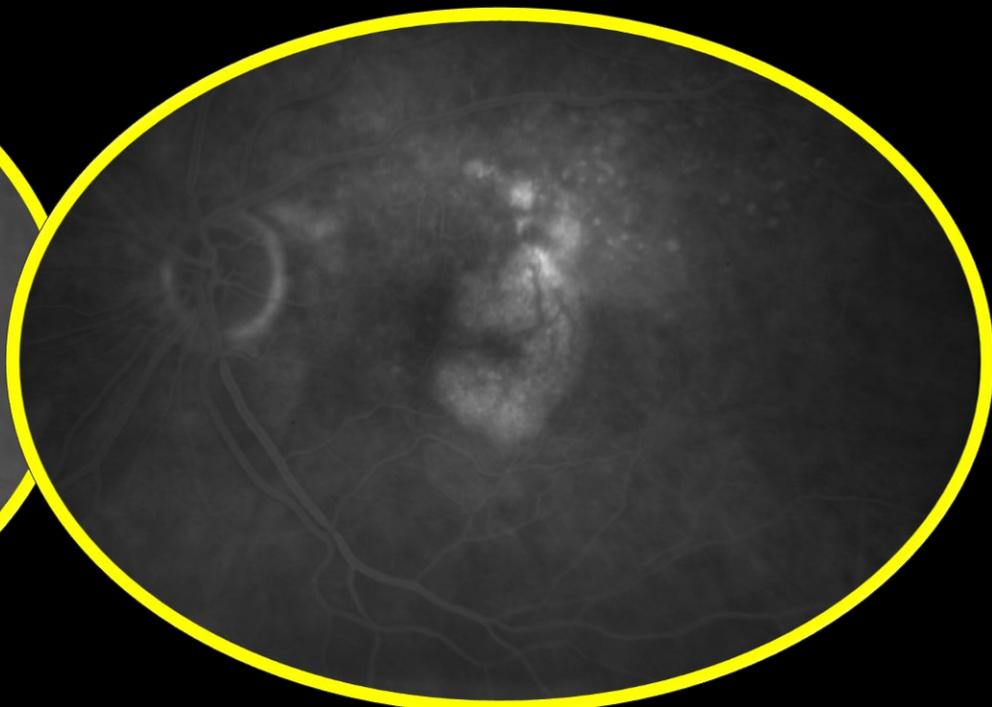
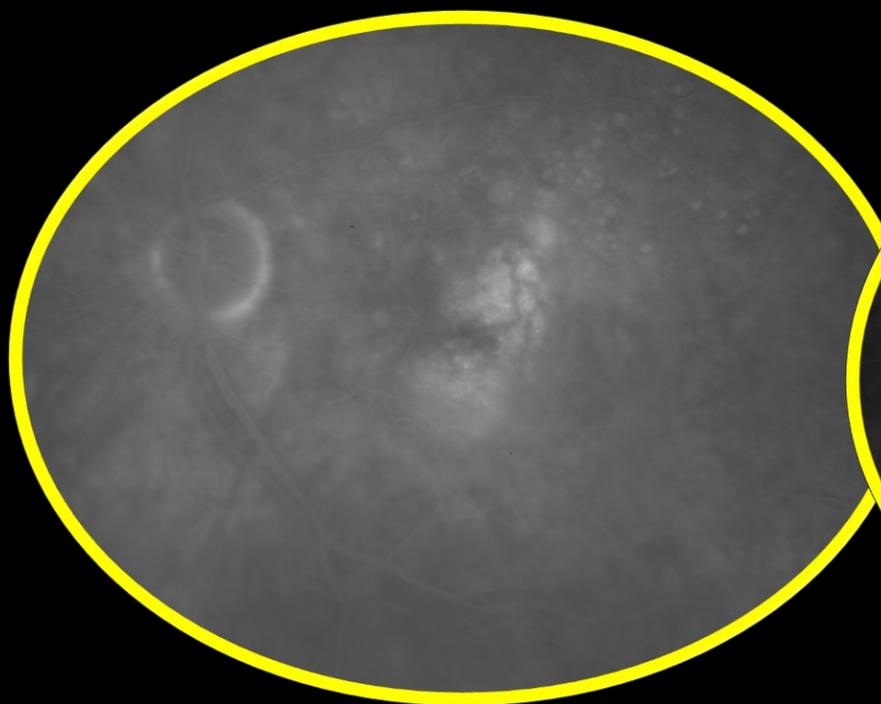
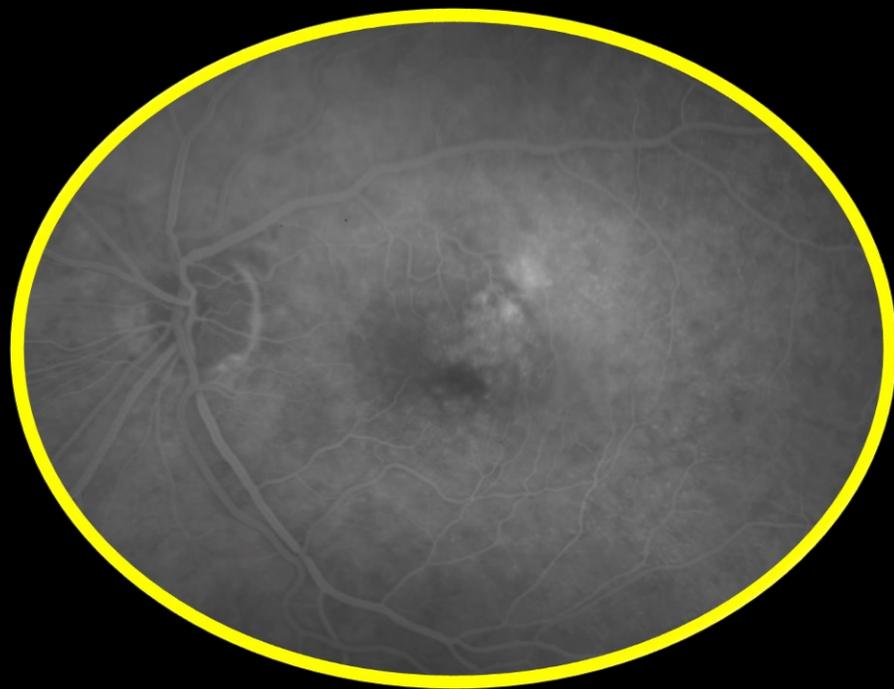
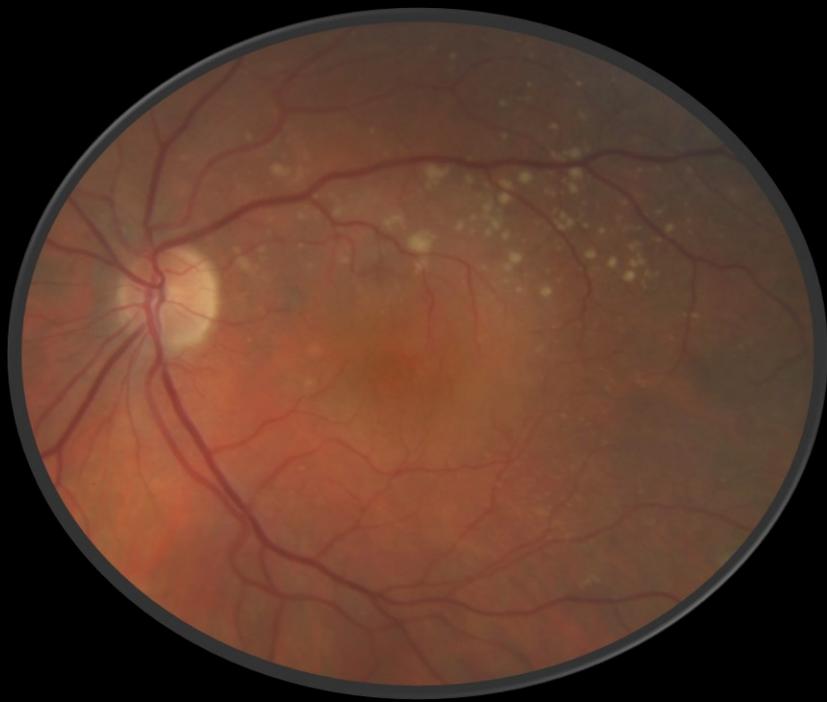
2013

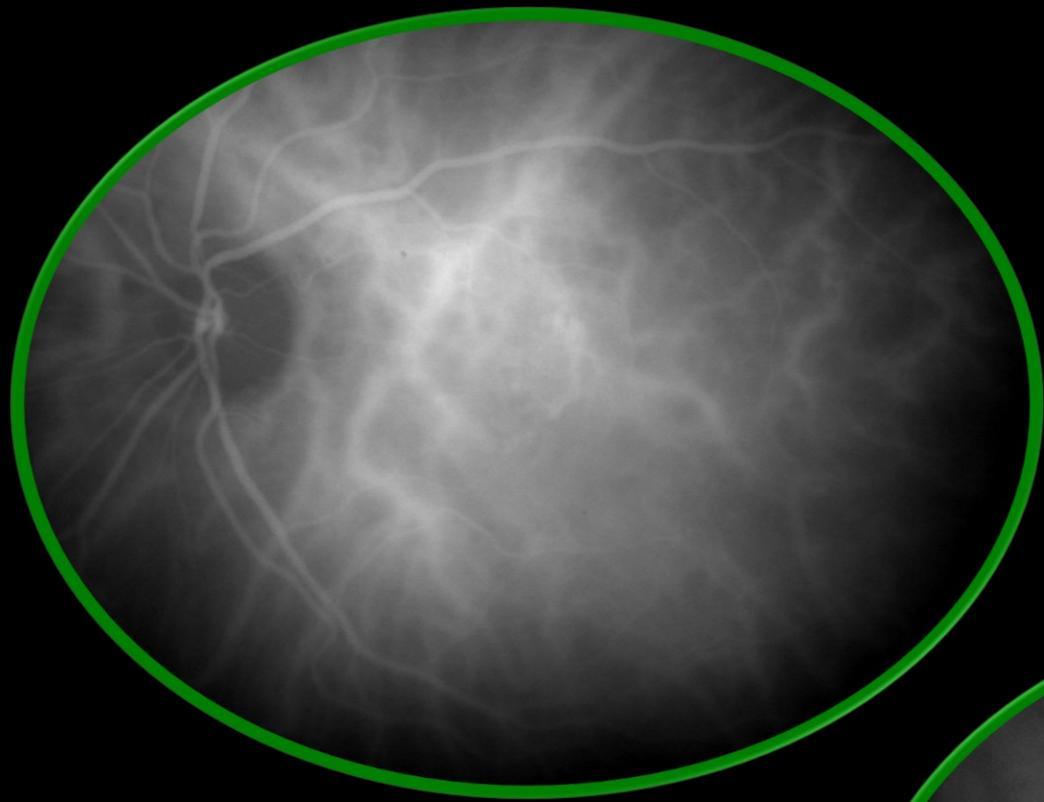


2014

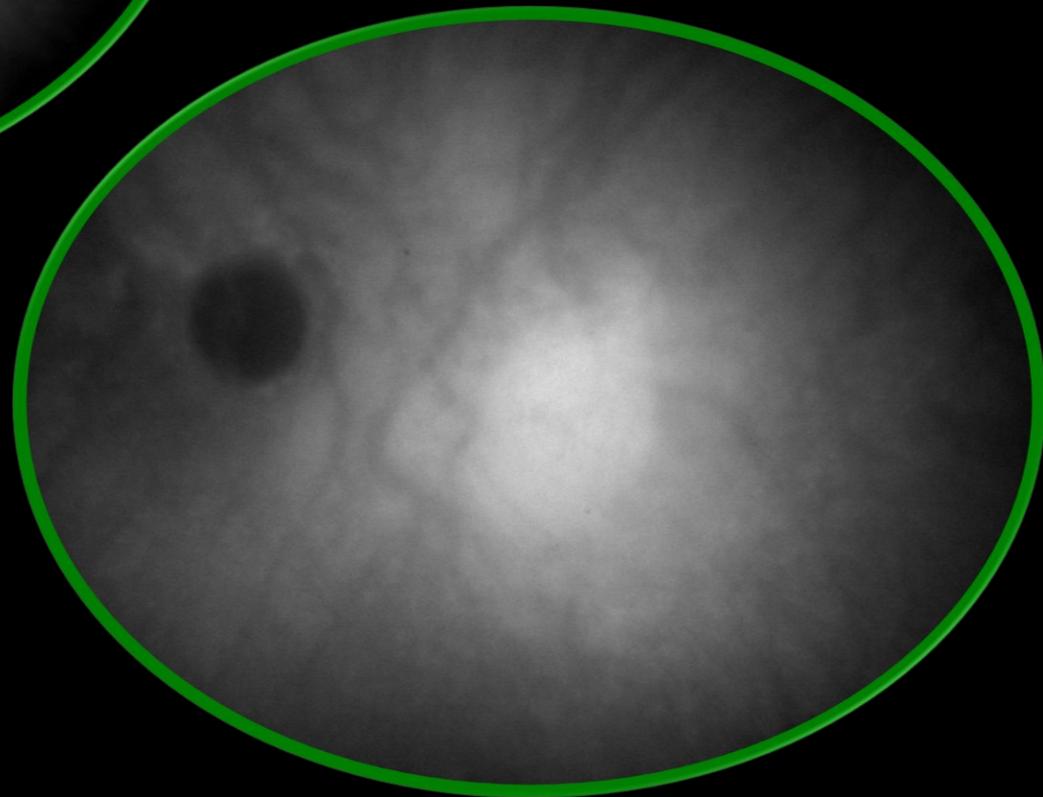


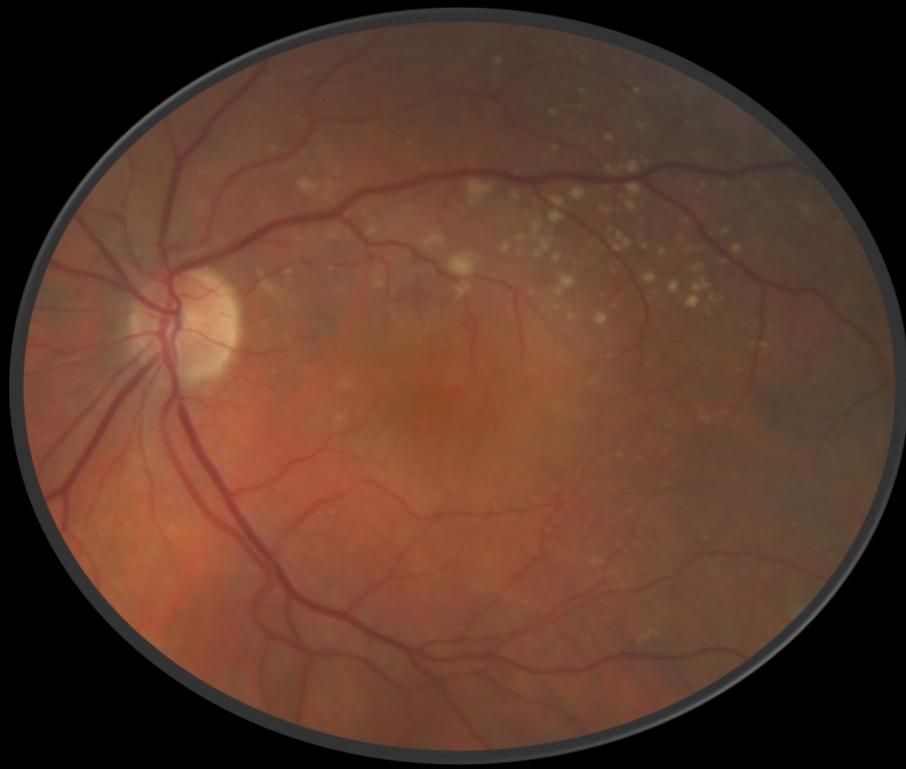
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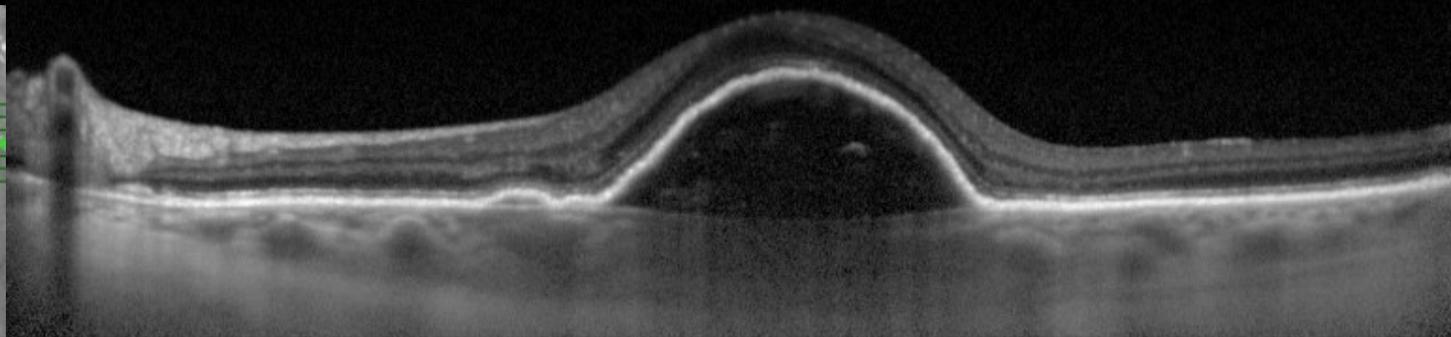
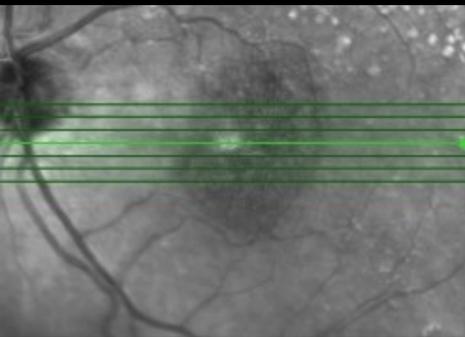


Rétinographe- ICG



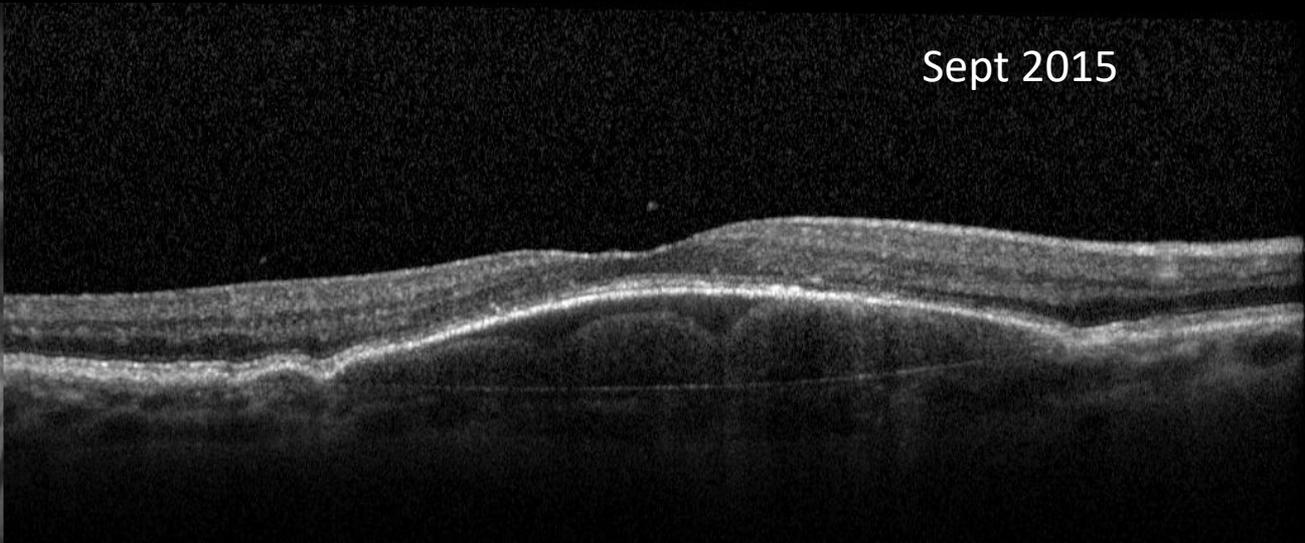
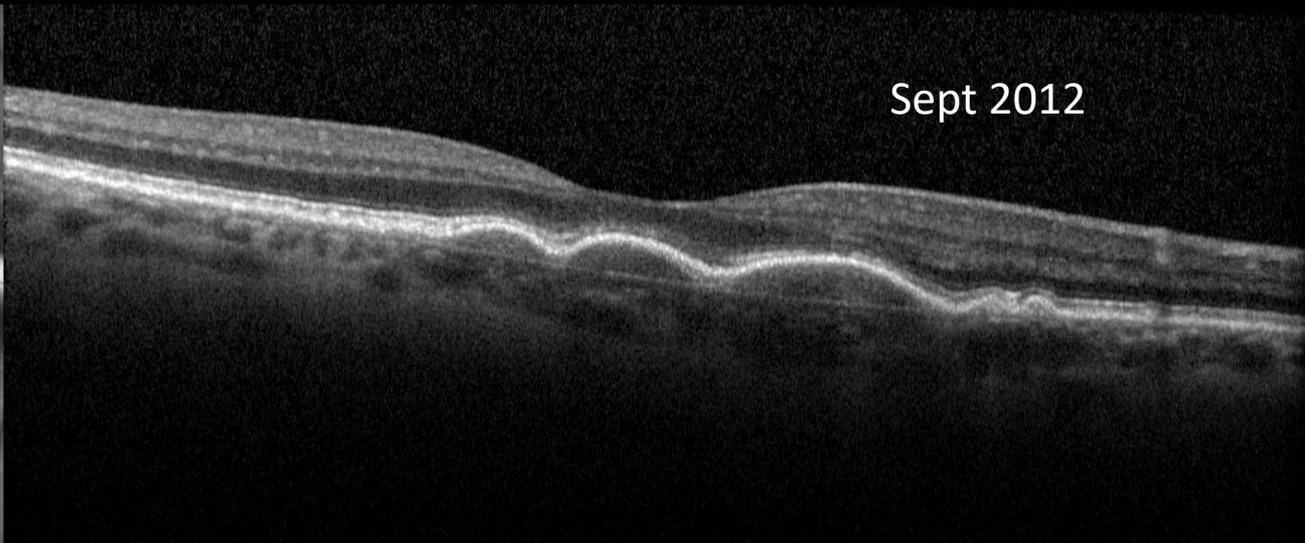


DEP vascularisé



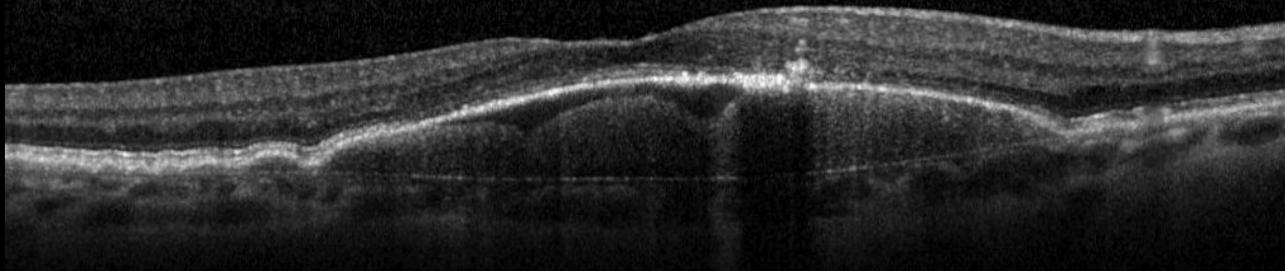
Cas Clinique N°14

Femme 73 ans, 7/10, métamorphopsies augmentent ++

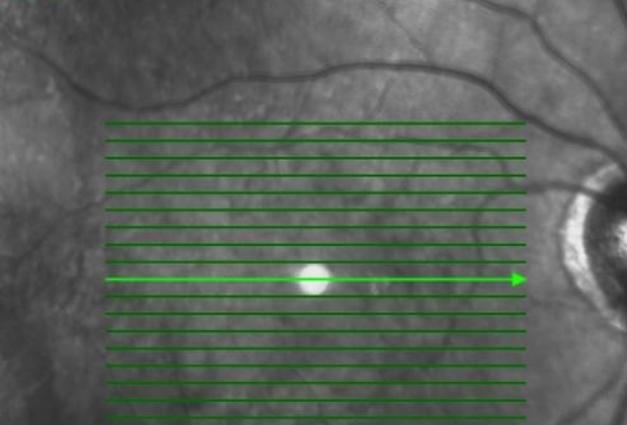


Dan Stopek

Femme 73 ans, 7/10, métamorphopsies augmentent ++

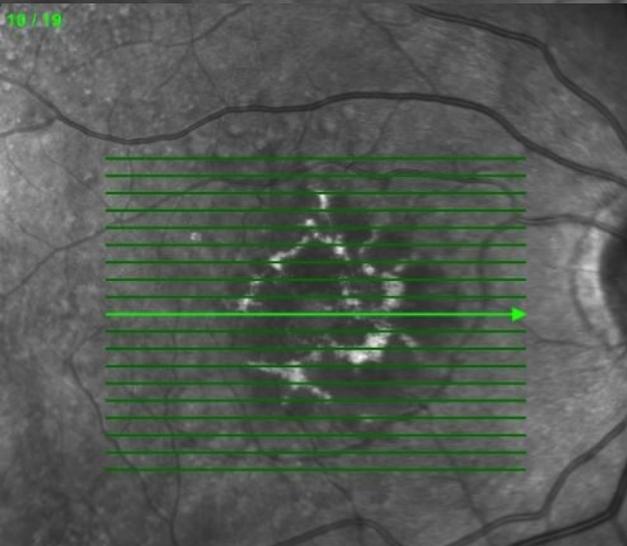
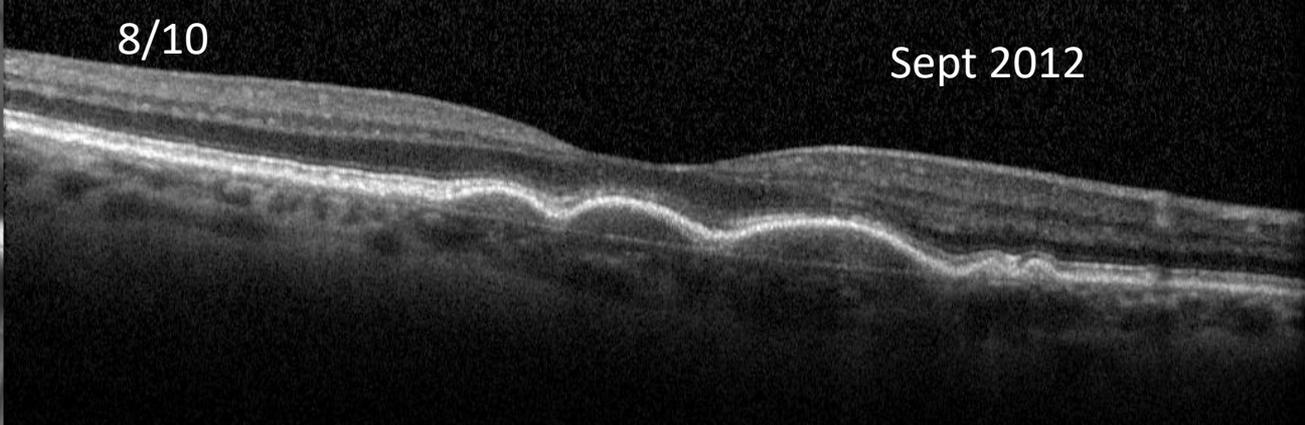


Dan Stopek



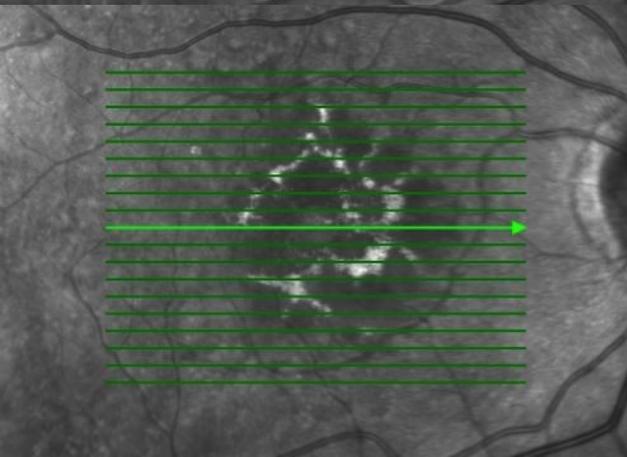
8/10

Sept 2012



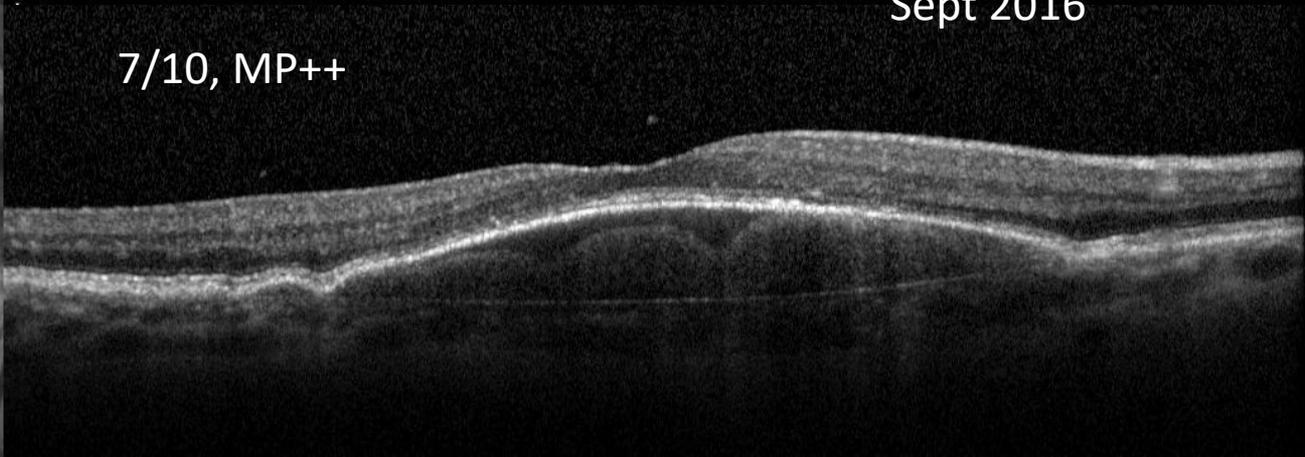
7/10, MP+

Sept 2015



7/10, MP++

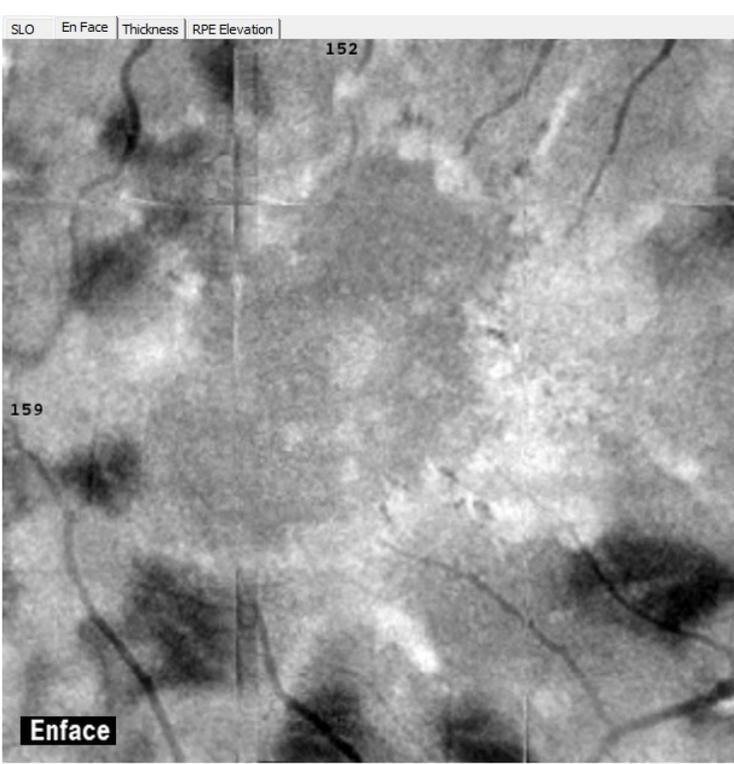
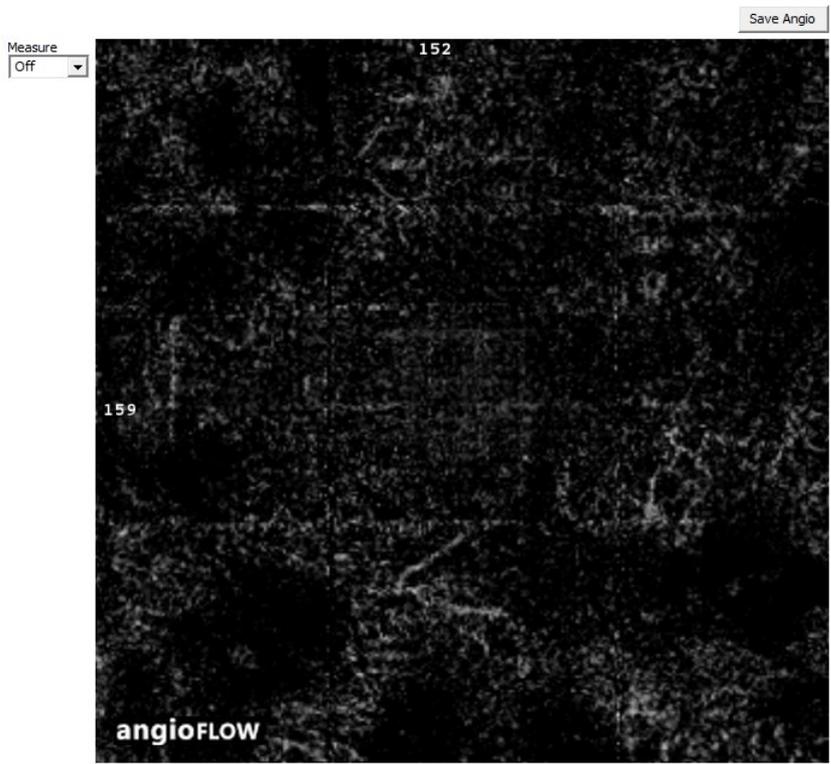
Sept 2016



Apports de l'OCT angiographie : DEPs non vascularisés ou vascularisés?

Angio Retina

Right / OD



3.00 x 3.00 Scan Size (mm)

3D Display

OverVue

Play

Save Settings

Restore Settings

Reference

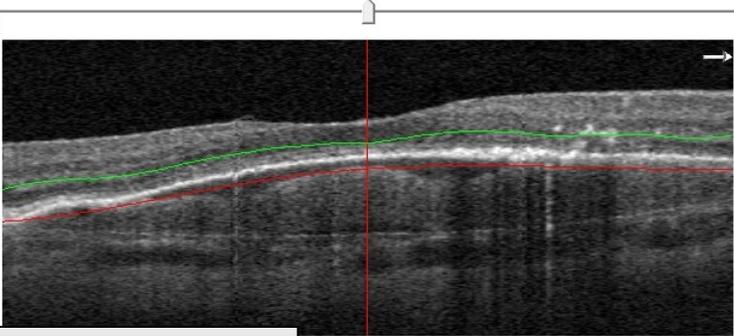
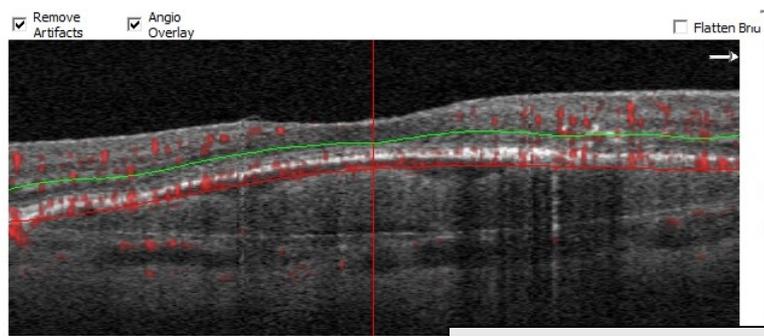
- Superficial
- Deep
- Outer Retina
- Choroid Cap

Upper - IPL Offset(um)

69 ...

Lower - RPE Ref Offset(um)

31 ...



Auto Zoom

Print

Pas d'image de néovaisseau

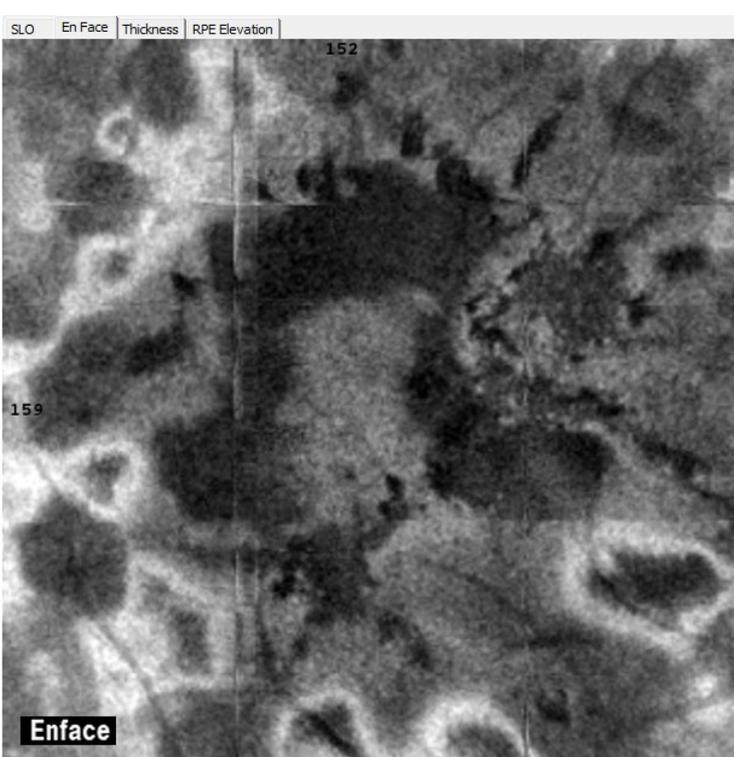
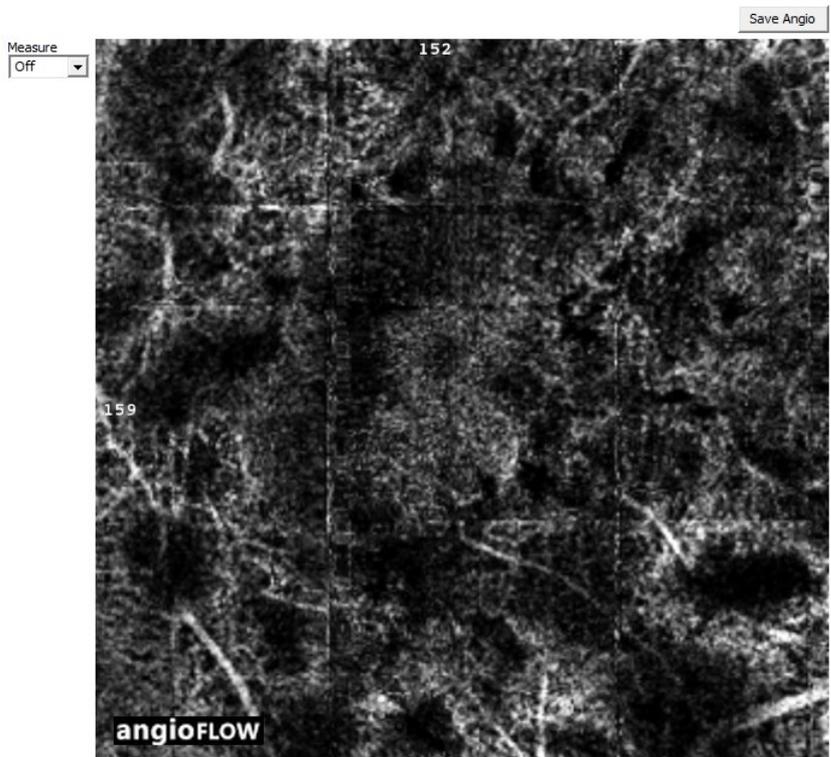
Comment



Apports de l'OCT angiographie : DEPs non vascularisés ou vascularisés?

Angio Retina

Right / OD



3.00 x 3.00 Scan Size (mm)

3D Display

OverVue

Play

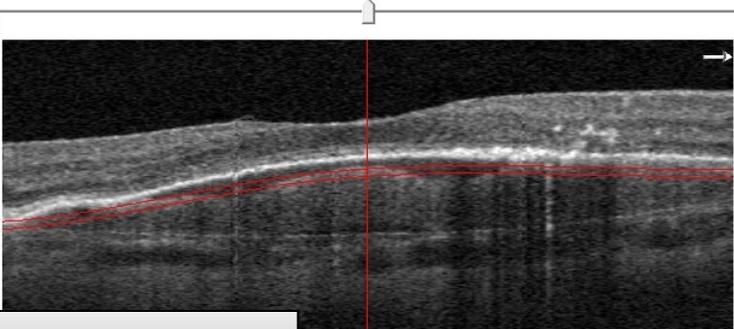
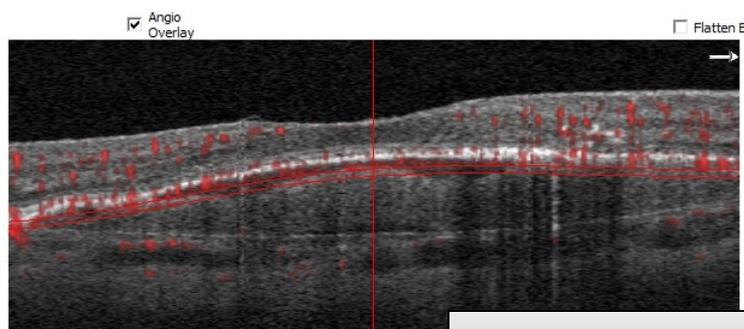
Reference

- Superficial
- Deep
- Outer Retina
- Choroid Cap

Upper - RPE Ref Offset(um)

Lower - RPE Ref Offset(um)

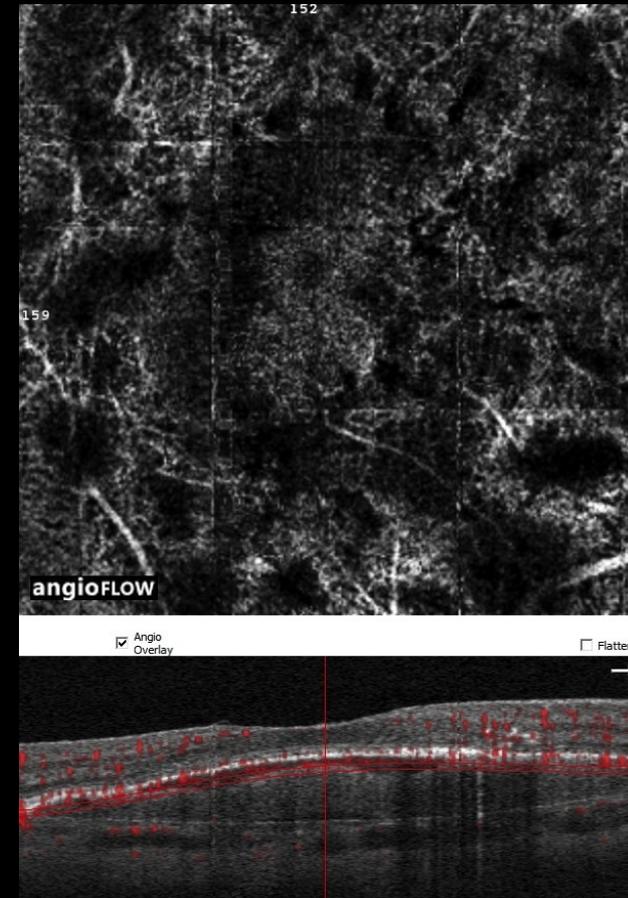
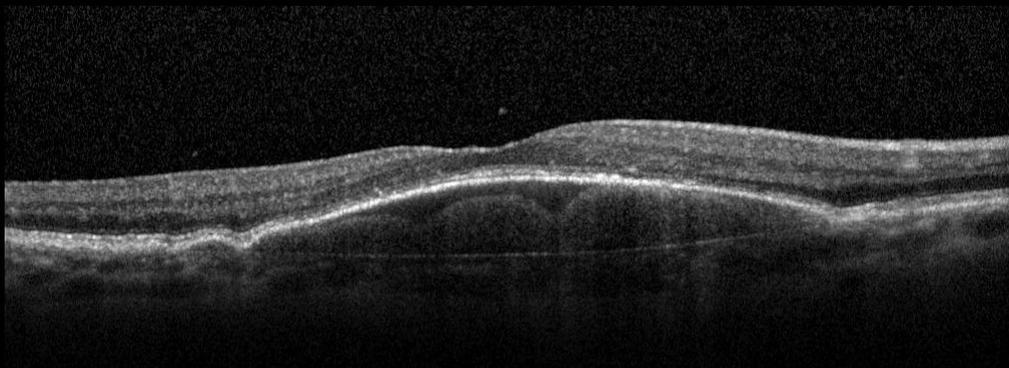
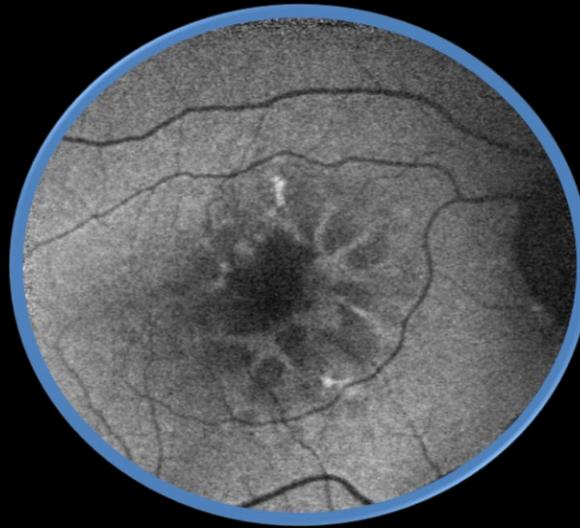
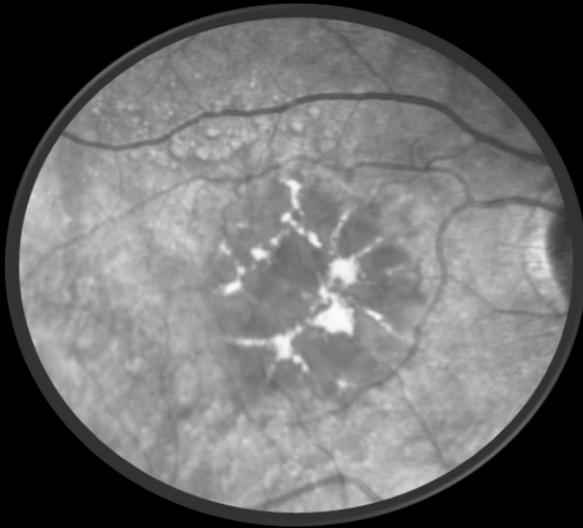
Auto Zoom



Pas d'image de néovaisseau

DEPs drusenoïdes

Evolution vers DEP mixte drusenoïde et séreux

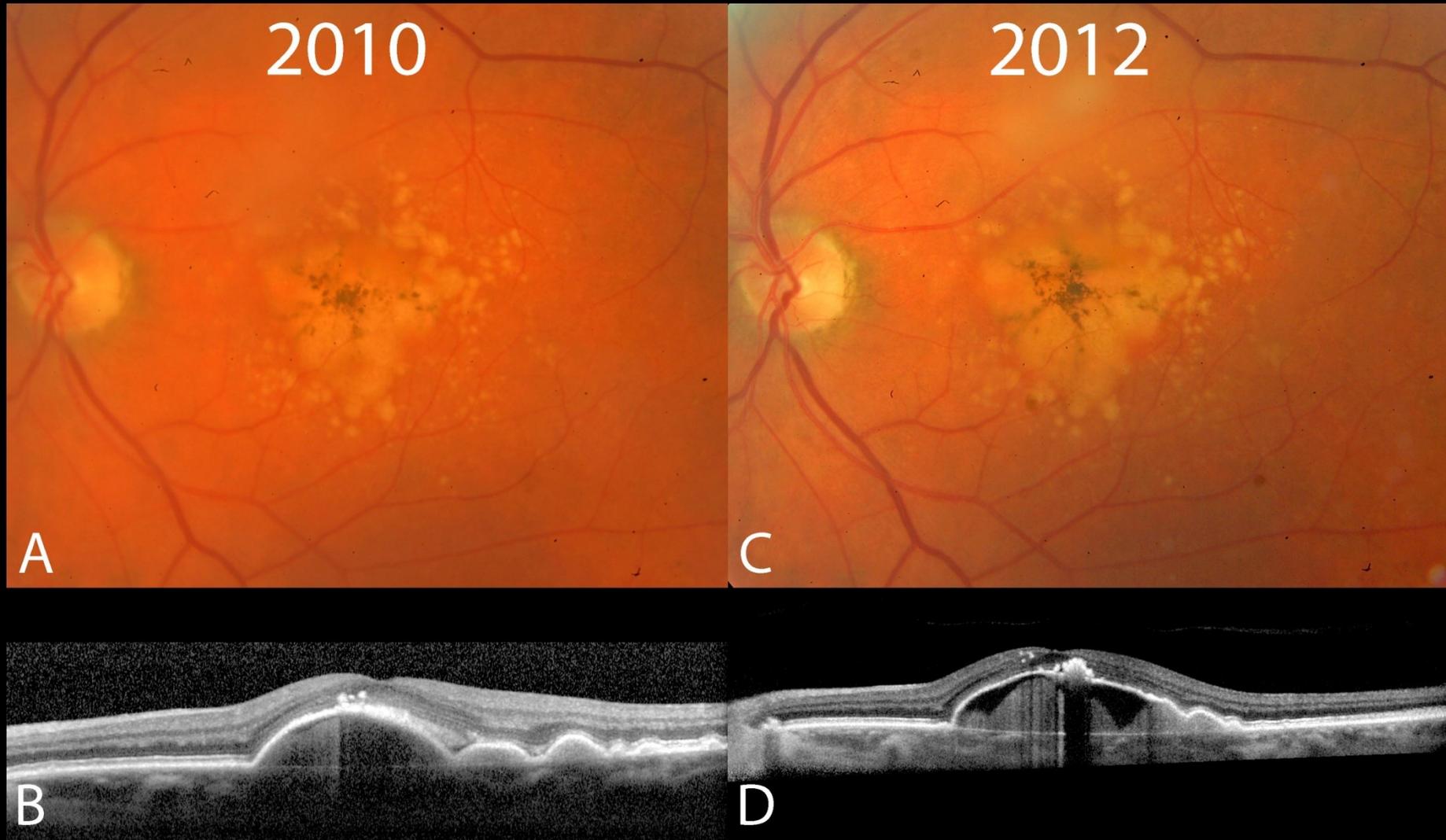


DEP avec dépôt de matériel
contenu mixte drusénoïde et séreux

Imagerie multimodale et OCT angiographie éliminent un néovaisseau

DEPs drusenoïdes

Evolution vers DEP mixte drusenoïde et séreux



DEPs drusenoïdes-résumé

- **Coalescence de drusen séreux**
- **Diamètre supérieur à 350 μm (AREDS rapport 28)**
- **DMLA, Malattia Leventinese, drusen cuticulaires, GNMP type II, naevus**
- **Lésion vitelliforme secondaire ou DSR possibles sans néovascularisation**
- **Composition mixte séreuse et drusénoïde possible sans néovascularization**
- **Bilan d'imagerie multimodale ICG et SD OCT +/- OCTA**
- **Si doute persiste, surveillance rapprochée ou 1 IVT anti-VEGF test**
- **Pronostic visuel réservé au long terme**
 - **42% évolution vers DMLA avancée à 5 ans**

Review

MULTIMODAL IMAGING OF PIGMENT EPITHELIAL DETACHMENT

A Guide to Evaluation

SARAH MREJEN, MD,*† DAVID SARRAF, MD,‡§ SRI KRISHNA MUKKAMALA, MD,*†
K. BAILEY FREUND, MD*†

DEP drusénoïde

Migrations de pigment

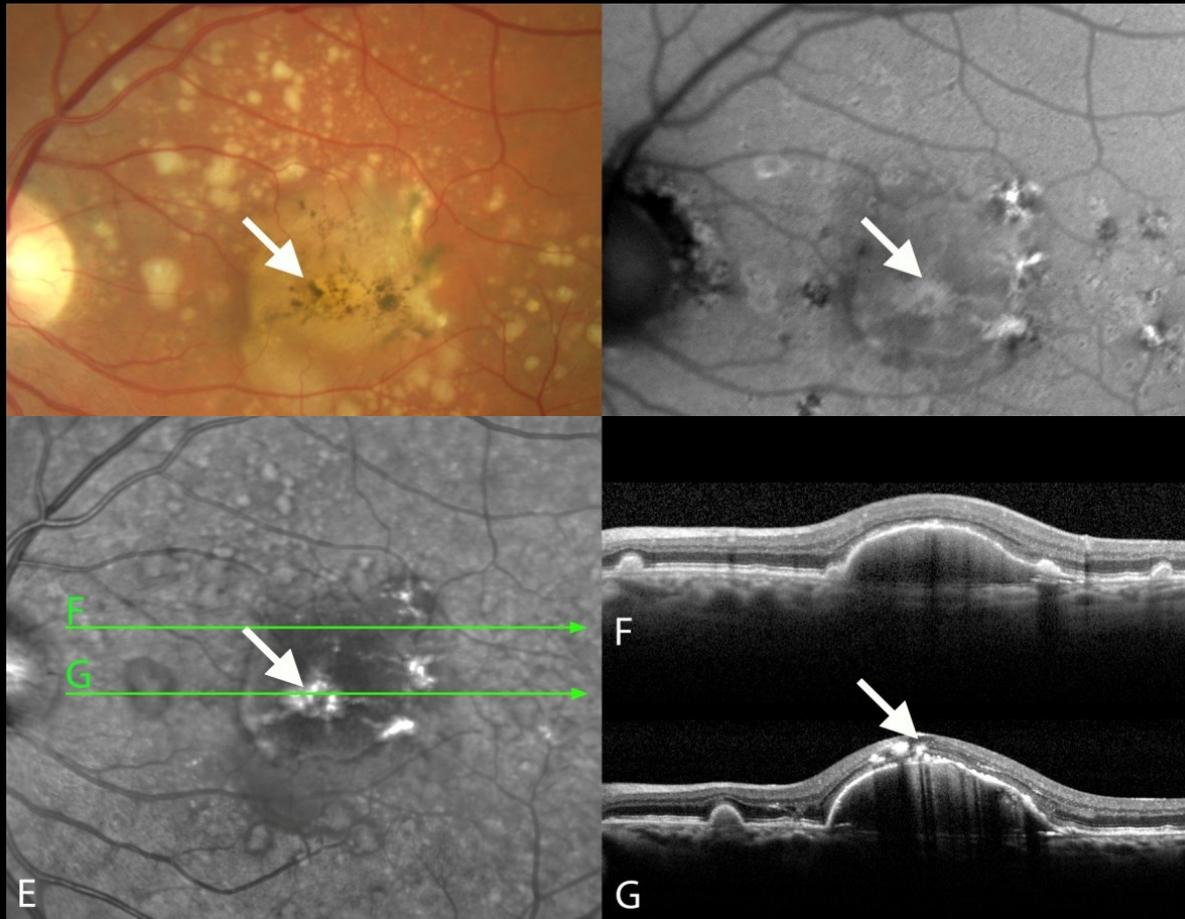


DEP drusénoïde

Migrations de pigment

SD OCT: Points hyperréflectifs intrarétiniens

“Intraretinal Hyperreflective foci”



DEP drusénoïde

Structure dynamique

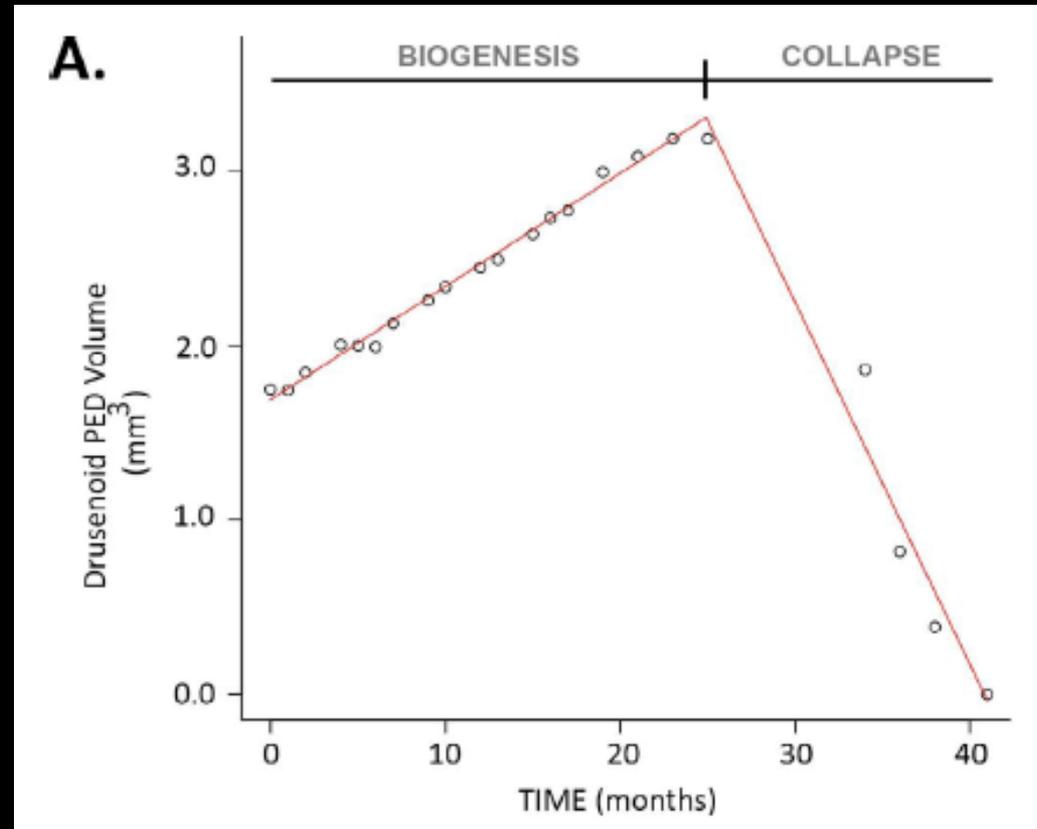
21 cas de DEP drusénoïde
Suivi moyen 4 ans

Structure dynamique

Phase de croissance lente

Phase de résorption rapide

Marqueurs d'évolution atrophique?



DEP drusénoïde

Biomarqueurs d'atrophie

21 cas de DEP drusénoïde
Suivi moyen 4 ans
Rythme de croissance puis résorption du DEP

Marqueurs d'évolution atrophique

Points hyperréfectifs intrarétiniens (100%)
Lésions vitelliformes (66%)

Précèdent la période de résorption du DEP
Concomitant de la discontinuité de l'EPR
Avant la phase de résorption du DEP



DEP drusénoïde

Biomarqueurs d'atrophie et corrélation histologique

Special Issue

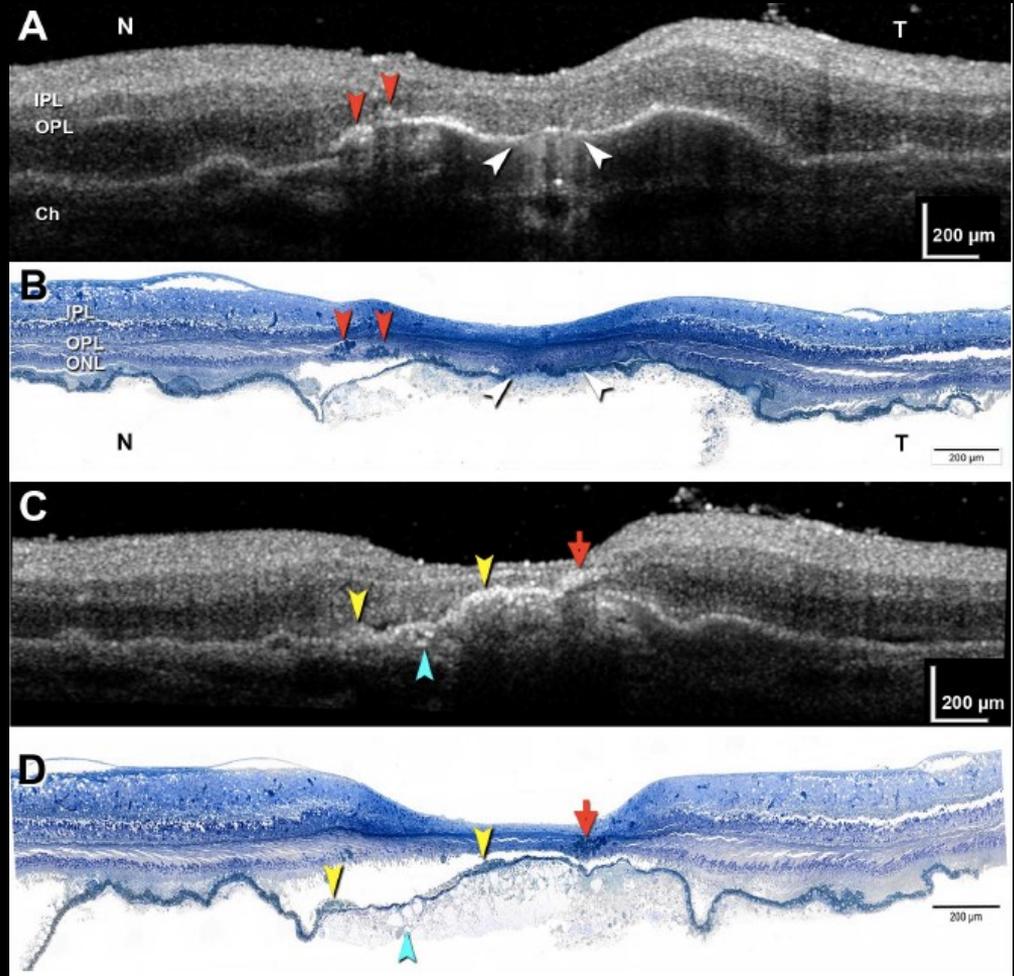
Activated Retinal Pigment Epithelium, an Optical Coherence Tomography Biomarker for Progression in Age-Related Macular Degeneration

Christine A. Curcio,¹ Emma C. Zanzottera,² Thomas Ach,³ Chandrakumar Balaratnasingam,^{4,5} and K. Bailey Freund⁶⁻⁸

IOVS, 2017



Christine Curcio



Points hyperréfectifs intrarétiniens au sommet DEPs

Migration antérieure de cellules de l'EPR activées

La mort de l'EPR bloque la sécrétion des composants du DEP et précède sa résorption

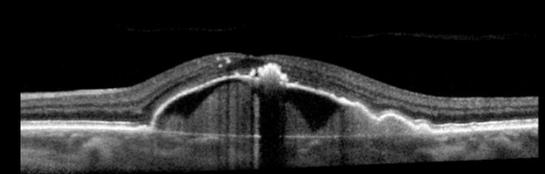
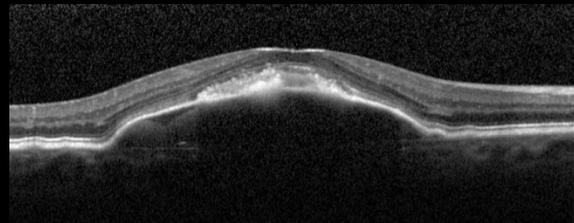
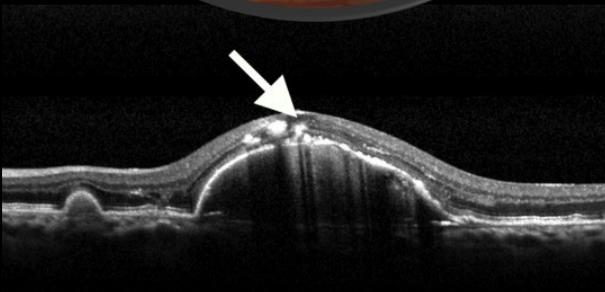
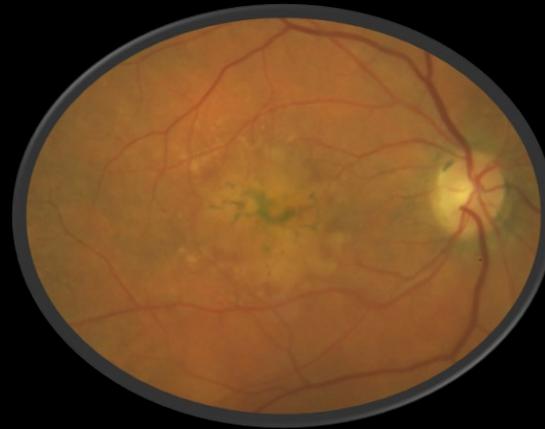
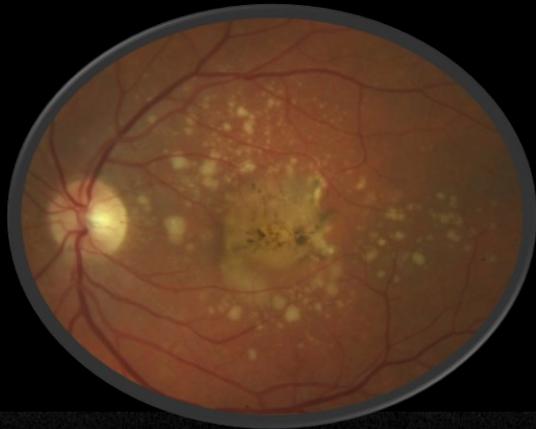
Drusenoid Lesions

Conclusions

Hyperreflective Foci
(HRF)

Acquired Vitelliform Lesion
(AVL)

Mixed content



Total drusen volume, HRF and AVL are imaging biomarkers of RPE loss

Histologic correlate of HRF may be

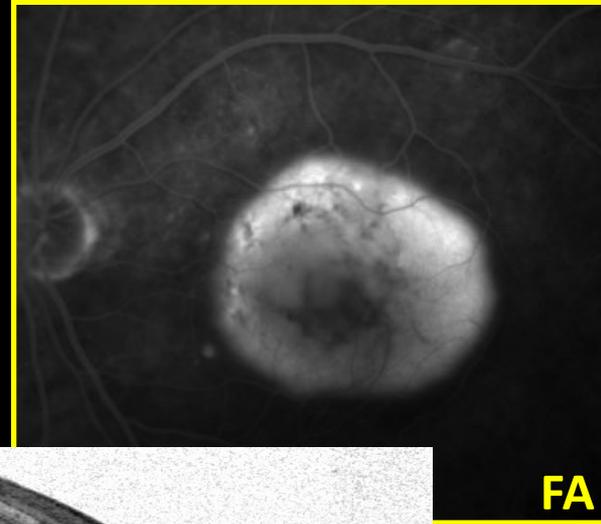
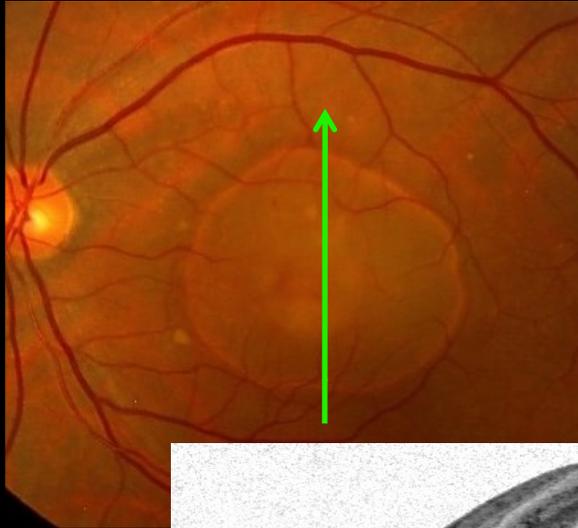
migrating RPE cells

macrophages/microglial cells

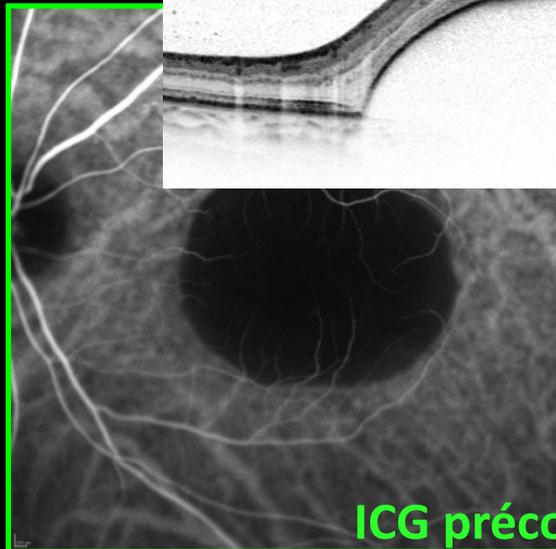
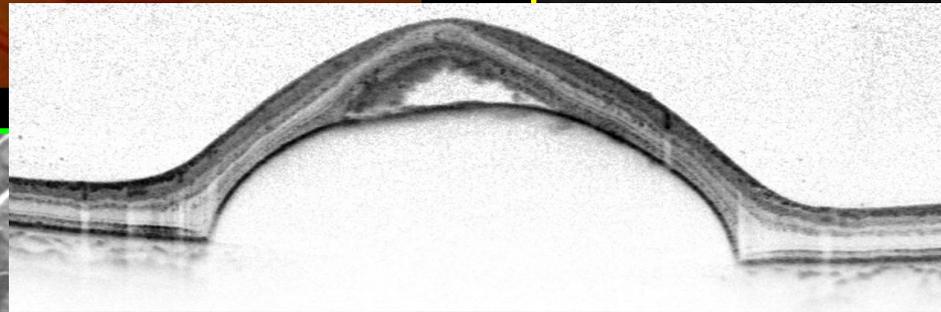
both

Cas Clinique N°15

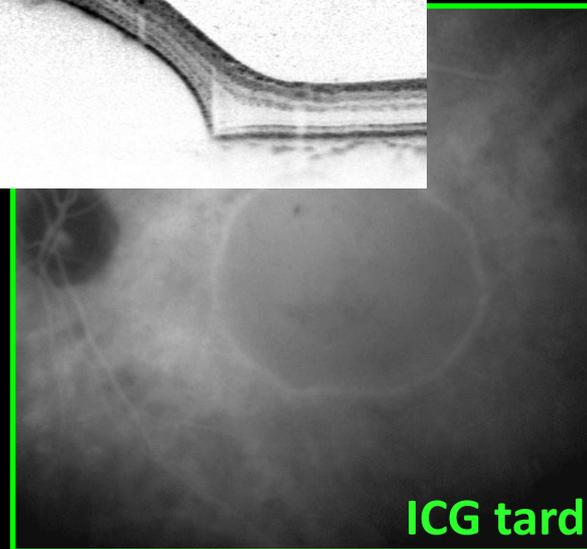
Homme, 74 ans



FA



ICG précoce



ICG tardif

DEP séreux et lésion vitelliforme secondaire

Clinical Findings of Acquired Vitelliform Lesions
Associated With Retinal Pigment Epithelial Detachments

MASAAKI SAITO, TOMOHIRO IIDA, K. BAILEY FREUND, MARIKO KANO, AND LAWRENCE A. YANNUZZI

Etude rétrospective sur 32 yeux (24 patients)
DEPs séreux et lésions vitelliformes
7 yeux traités par anti-VEGF
aucune efficacité sur le DEP

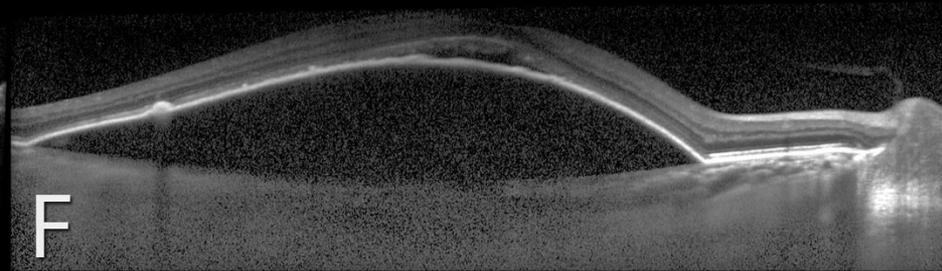
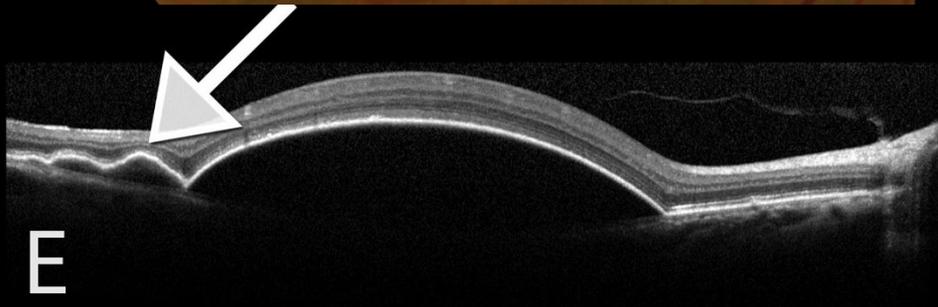
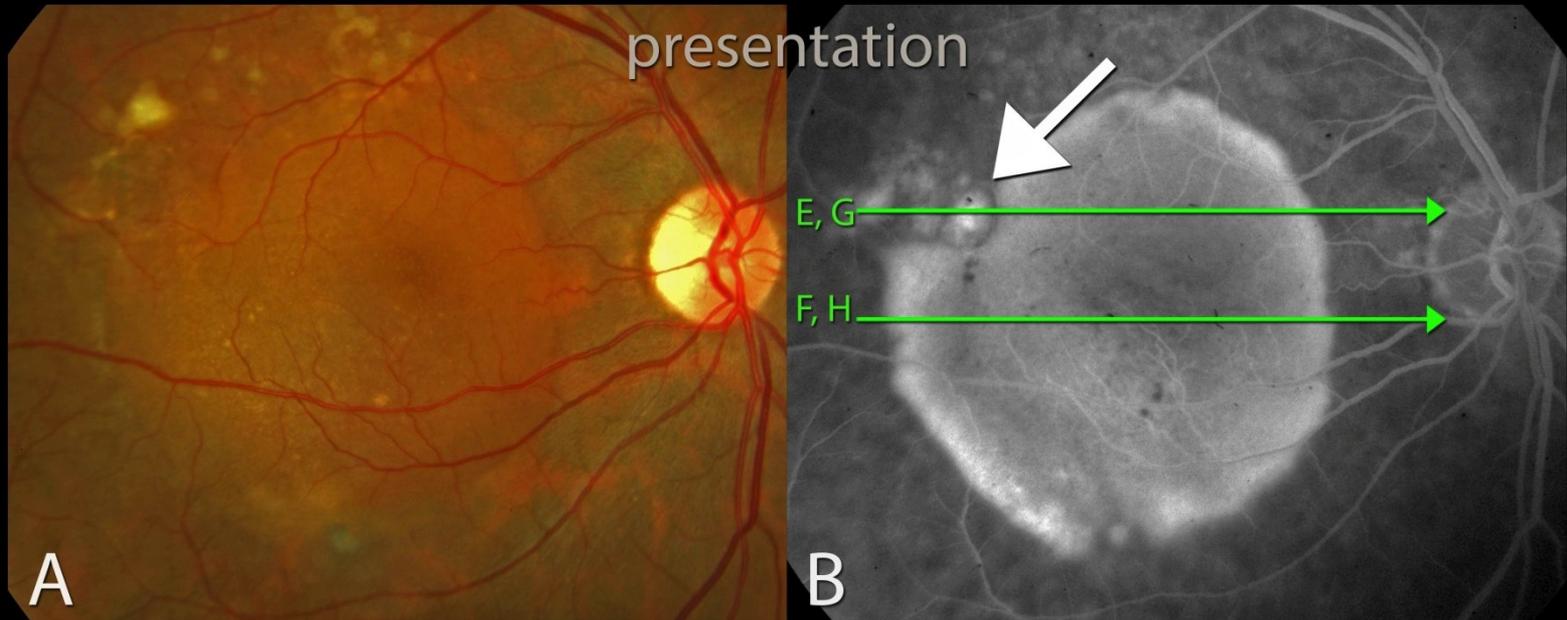


DEPs séreux

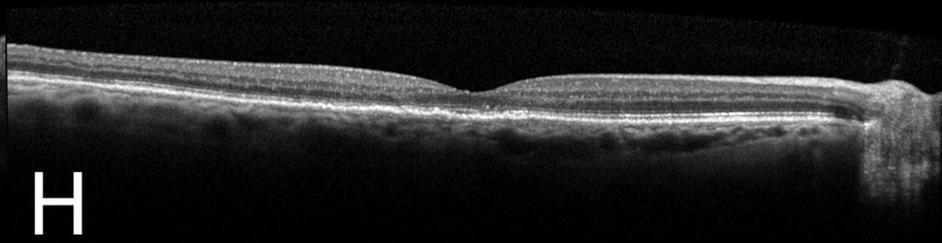
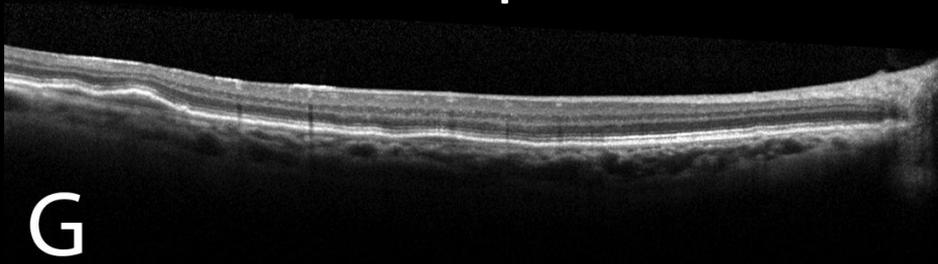
- DMLA
 - Épaississement et infiltration lipidique de Mb Bruch → hydrophobe
 - Exudation de néovaisseaux sous-épithéliaux
 - 10% de DEPS séreux > 2 dp ⁽¹⁾ DMLA exsudative
- Vasculopathie polypoïdale
 - 25% dans VPC ⁽¹⁾
- CRSC
 - Hyperperméabilité choroïdienne vasculaire
- Immunogammopathies / sd hyperviscosité

1. Yannuzzi LA, Wong DW, Sforzolini BS, et al. Polypoidal choroidal vasculopathy and neovascularized age-related macular degeneration. Arch Ophthalmol 99;117:1503–510.

DEP avec encoche



3 mois après traitement combiné PDT et IVT d'affibercept

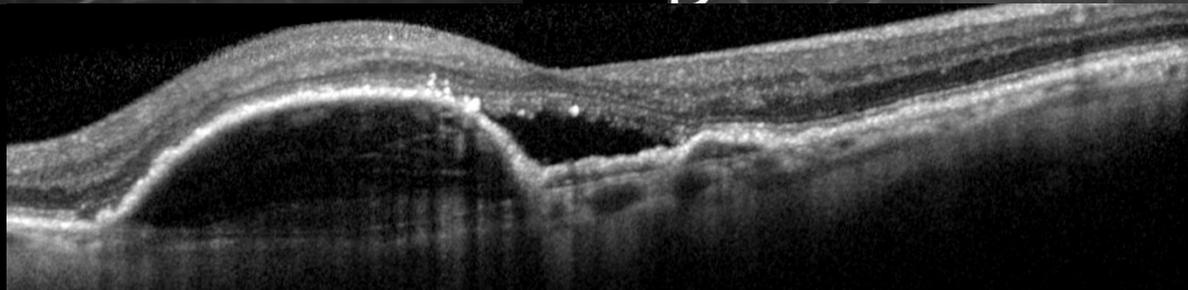
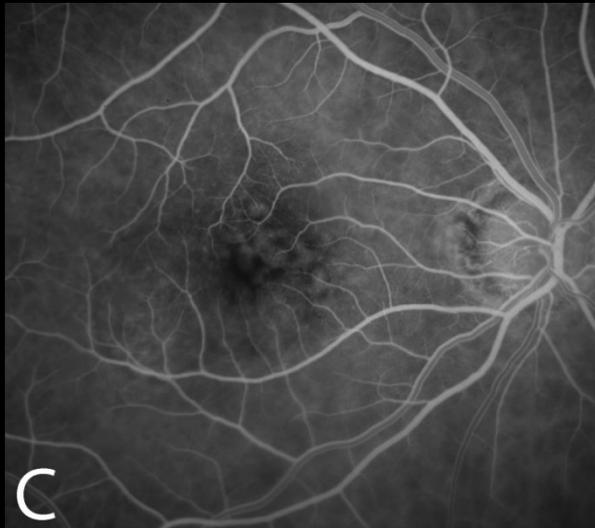
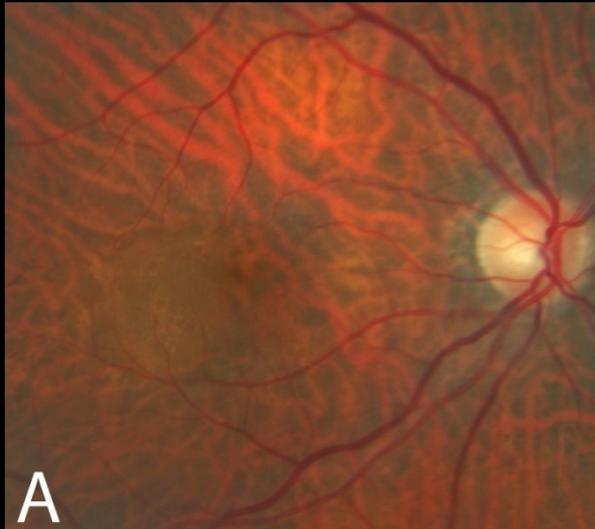


G

H

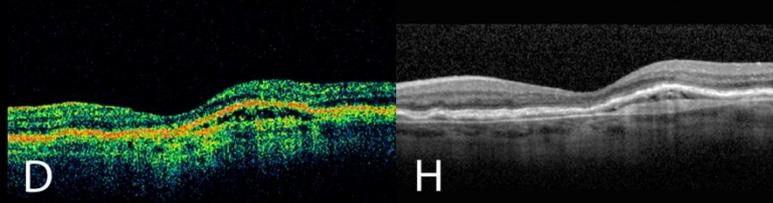
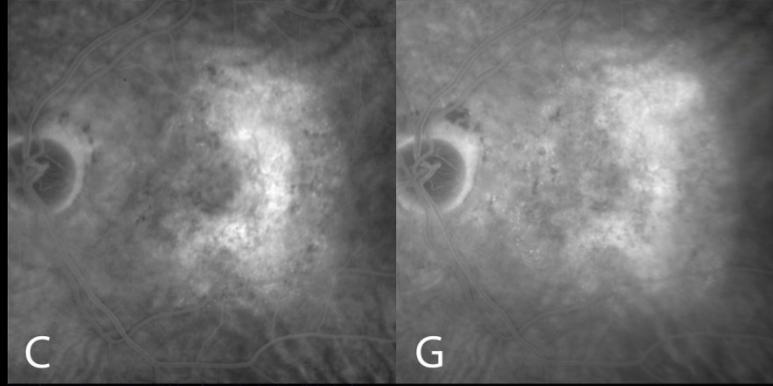
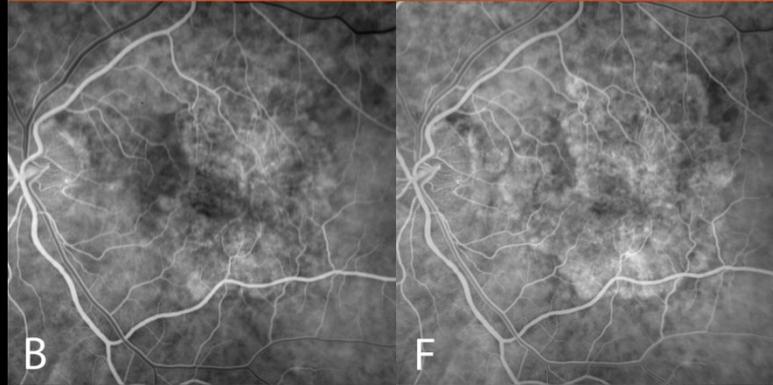
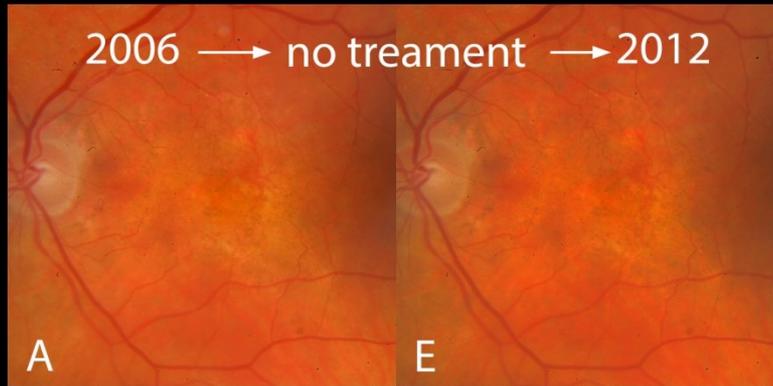
Cas Clinique N°16

DEP vascularisé



DEP vascularisé quiescent

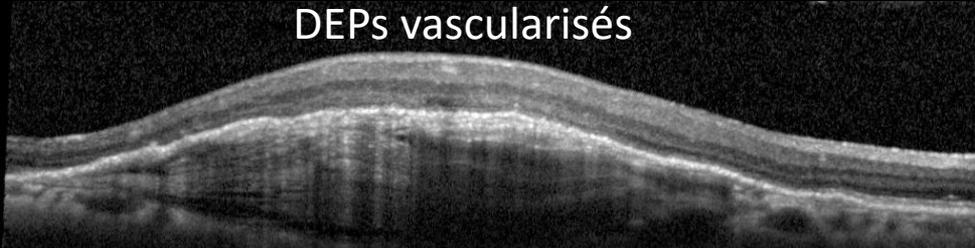
2006 → no treatment → 2012



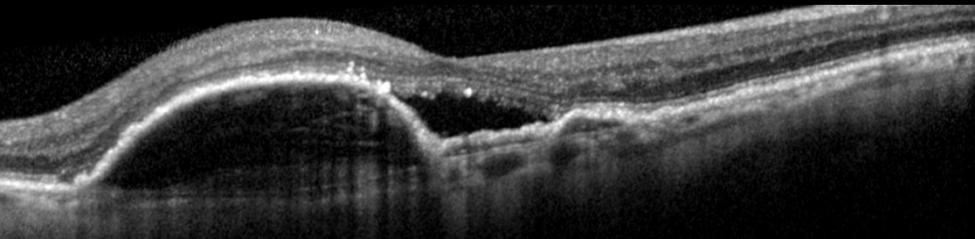
Femme 83 ans, 7/10
Aucun signe exsudatif
Aucun traitement

OCT SD structural en mode EDI Analyse du contenu du DEP

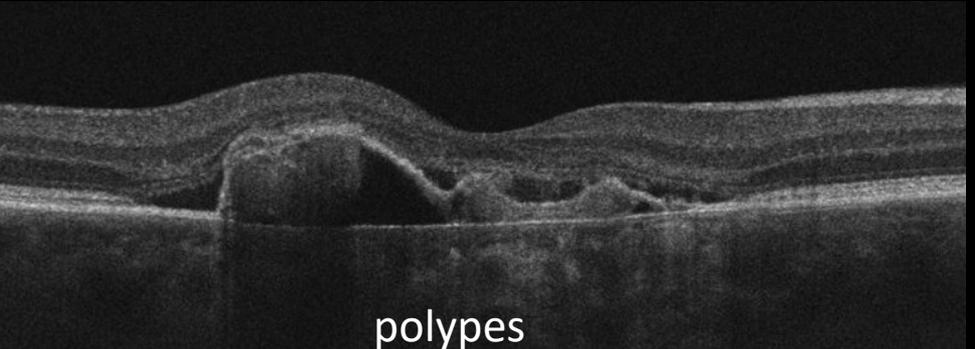
DEPs vascularisés



DEP vascularisé



DEP vascularisé



polypes

DEPs non vascularisés



DEP drusénoïde



DEP drusénoïde avec DSR

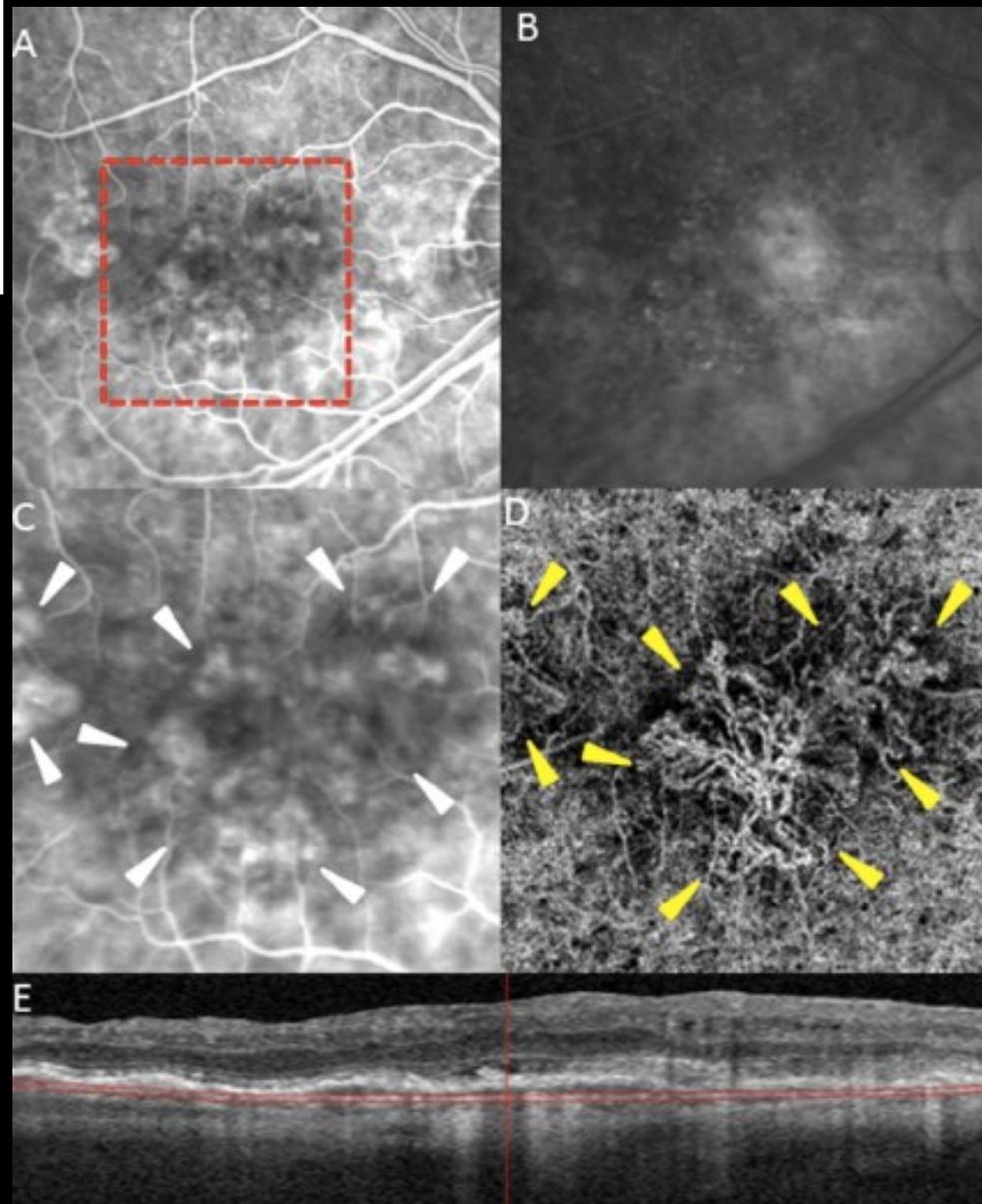


DEP mixte drusénoïde et séreux

A Comparison Between Optical Coherence Tomography Angiography and Fluorescein Angiography for the Imaging of Type 1 Neovascularization

Maiko Inoue,¹⁻³ Jesse J. Jung,^{1,2,4,5} Chandrakumar Balaratnasingam,^{1,2} Kunal K. Dansingani,^{1,2} Elona Dhrami-Gavazi,^{1,2,4} Mihoko Suzuki,^{1,2} Talisa E. de Carlo,^{6,7} Abtin Shahlaee,⁸ Michael A. Klufas,^{9,10} Adil El Maftouhi,¹¹ Jay S. Duker,⁶ Allen C. Ho,⁸ Maddalena Quaranta-El Maftouhi,¹¹ David Sarraf,^{9,10} and K. Bailey Freund^{1,2,12}; for the COFT-1 Study Group

IOVS, 2016



Sur 105 yeux, 85% de détection de NV Type 1 en combinant OCTA et OCT structurel
 Bonne corrélation entre l'image du NV en AGF et en OCTA
 Facteurs de non visualisation du NV: **hauteur du DEP**, trouble des milieux, patients naïfs

Etude pilote au CIL

- Déterminer la sensibilité de l'OCT-A pour détecter les NVX de Type 1 associés à un DEP significatif
- Analyse rétrospective de cas consécutifs de DEPs vascularisés en OCT-A
 - Segmentation automatique
 - Segmentation manuelle

Méthodes

- Etude monocentrique rétrospective de cas consécutifs de DEPs vascularisés, naïfs de ttt ou pas, sur une période de 2 mois
- Phénotype néovasculaire déterminé en imagerie multimodale avec AGF ou ICG lors du bilan initial
- Critères d'exclusion
 - NVX de Type 3 NV ou RAP, Polypes, NVX mixtes, Déchirure de l'EPR, Hémorragie > 50%, atrophie centrale, fibrose
- 2 groupes basés sur la hauteur du DEP
 - Hauteur > 250 microns
 - Hauteur < 250 microns

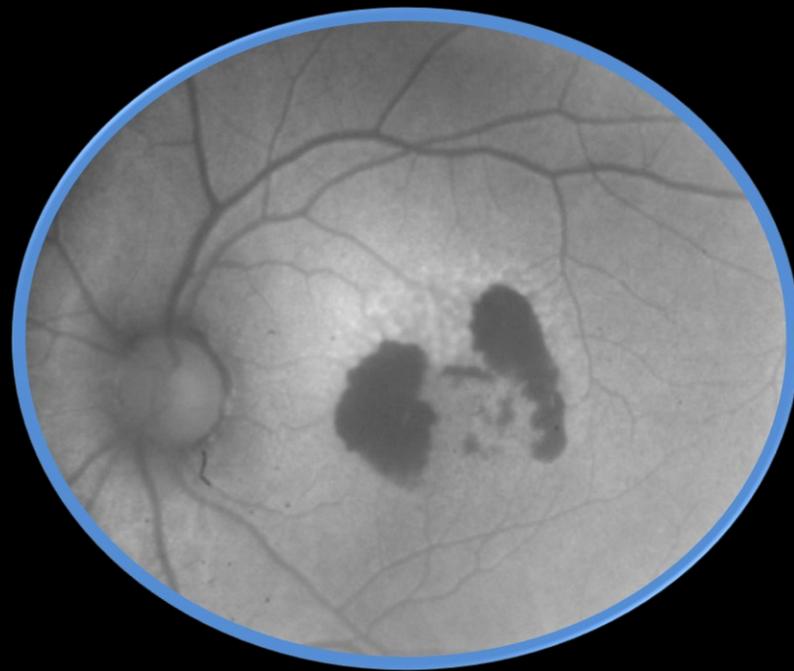
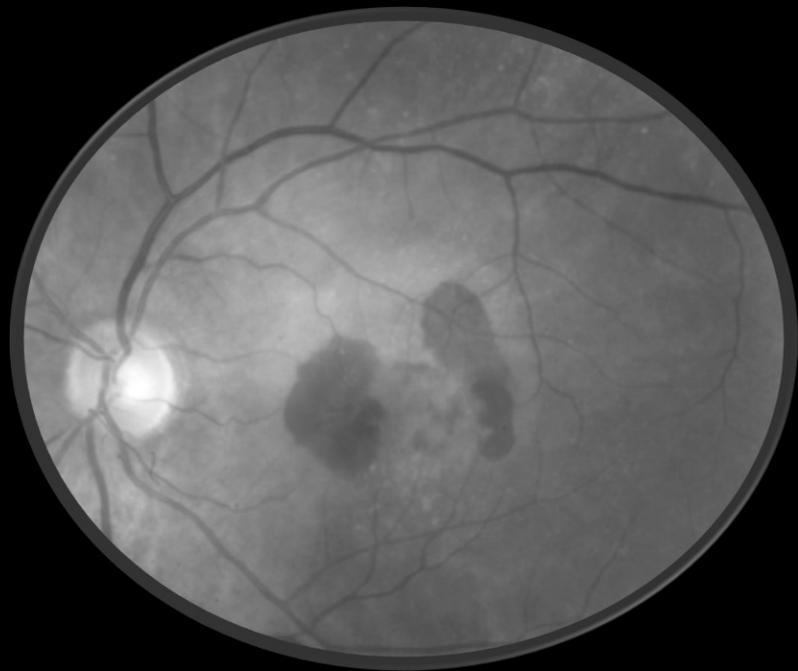
Méthodes

- OCT-SD et OCT-A sur l'Angioplex Zeiss
- 2 lecteurs indépendants
- 1^{er} lecteur analyse la segmentation automatique fournie par le logiciel
- 2^{ème} lecteur analyse le cube maculaire et possibilité de segmentation manuelle

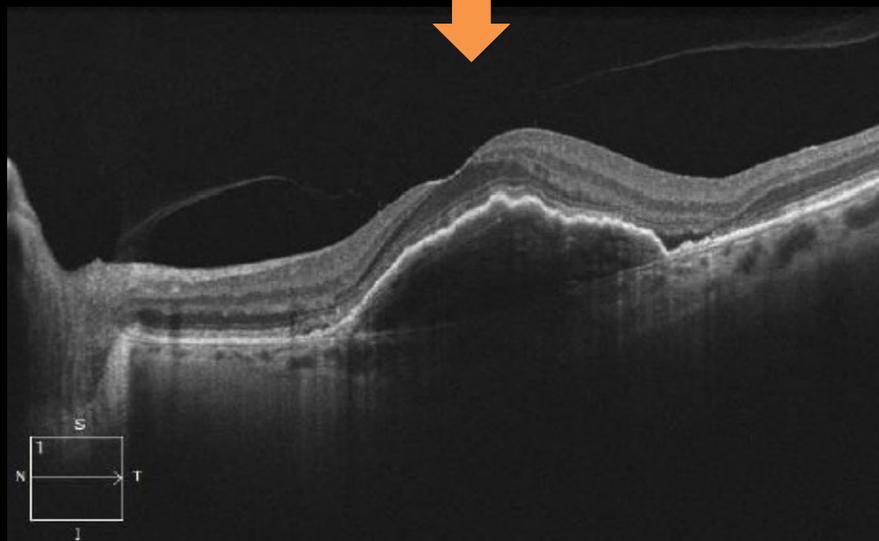
Résultats

- Analyse rétrospective de 94 yeux avec NVX de Type 1
 - Groupe d'intérêt : 57 yeux DEP > 250 microns
 - Groupe contrôle: 37 yeux DEP < 250 microns
- Yeux naïfs de traitement
 - Groupe d'intérêt: 30%
 - Groupe contrôle: 25%
- Groupe d'intérêt
 - 15 hommes, 42 femmes, âge moyen 87.5 ans
 - Hauteur moyenne du DEP: 437 microns (de 268 à 1188)

Femme de 77 ans avec DEP vascularisé



Après 12 mois de traitement par anti-VEGF

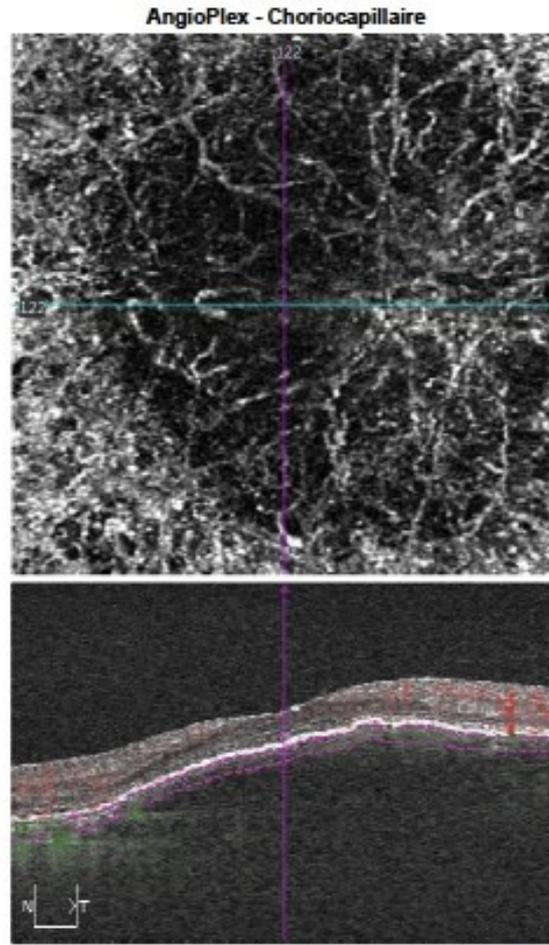
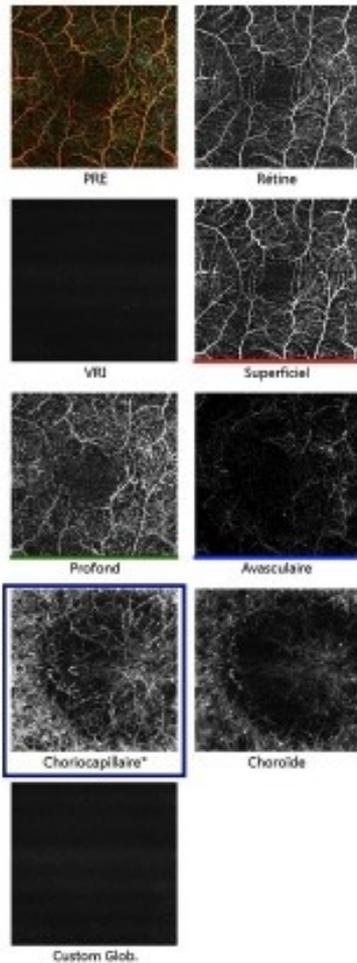


Femme de 77 ans, traitée par anti-VEGF depuis 12 mois

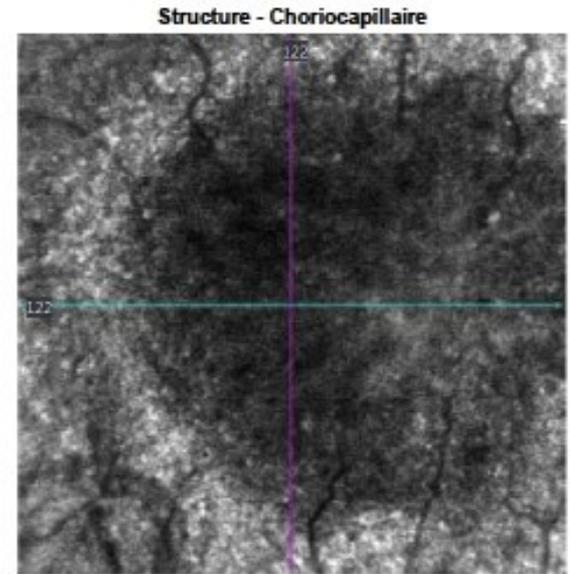
OCTA: SEGMENTATION AUTOMATIQUE POSITIVE

Analyse angiographique : Angiography 3x3 mm

OD OS



Coupe: 122 Haut: RPE+23µ Bas: RPE+100µ

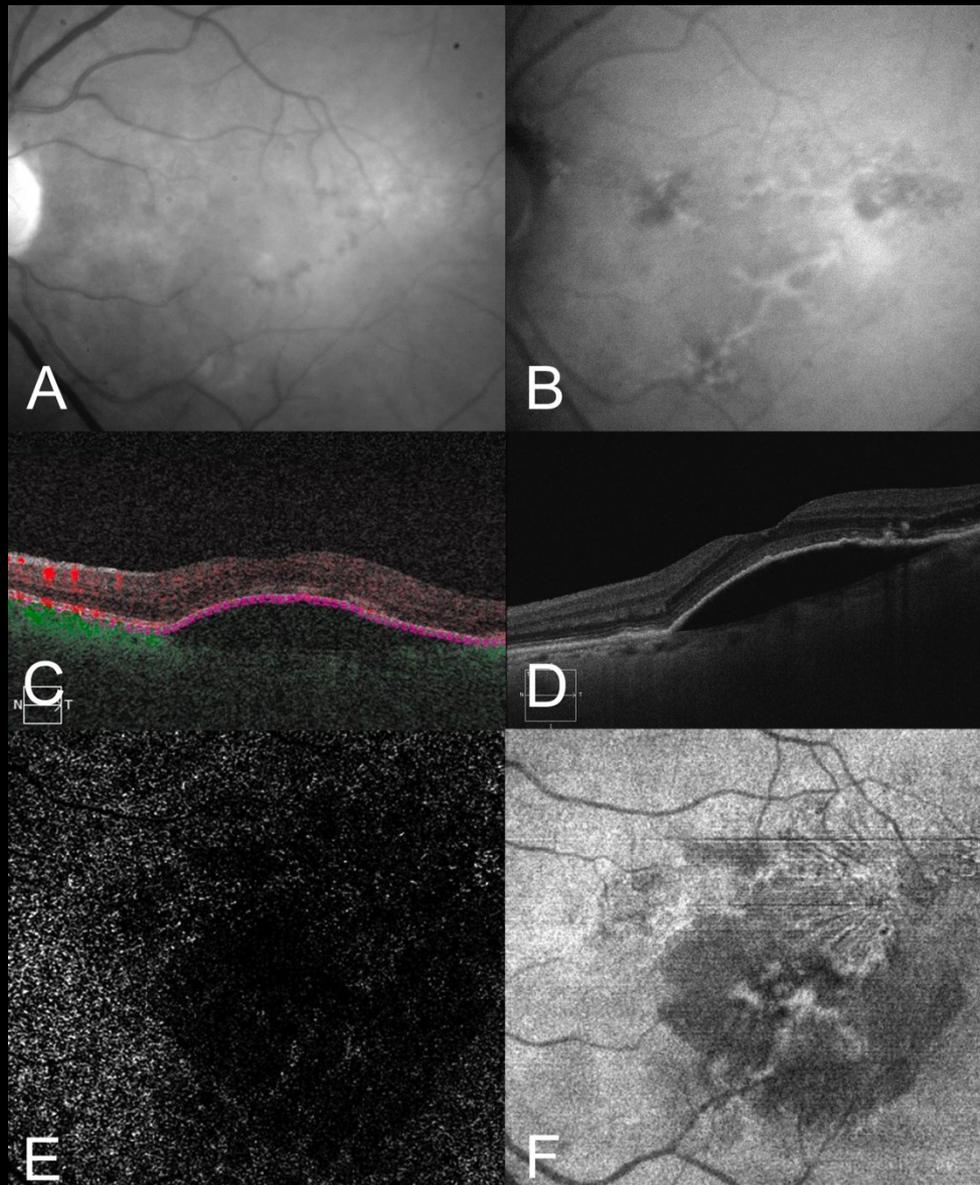


Calques
Structure - Aucun(e)
AngioPlex - Aucun(e)

Suivi pendant l'examen

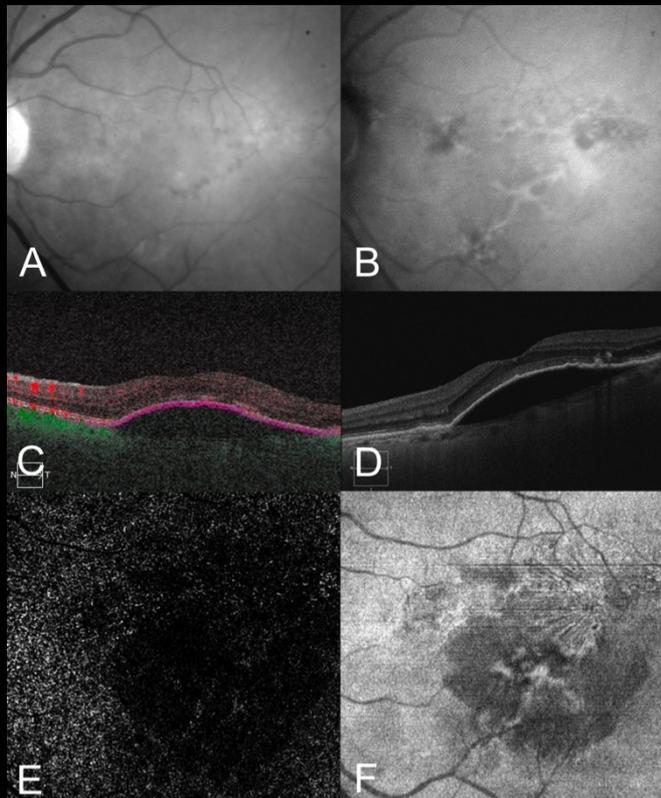
Femme de 85 ans, traitée par anti-VEGF depuis 12 mois

OCTA: SEGMENTATION AUTOMATIQUE NEGATIVE

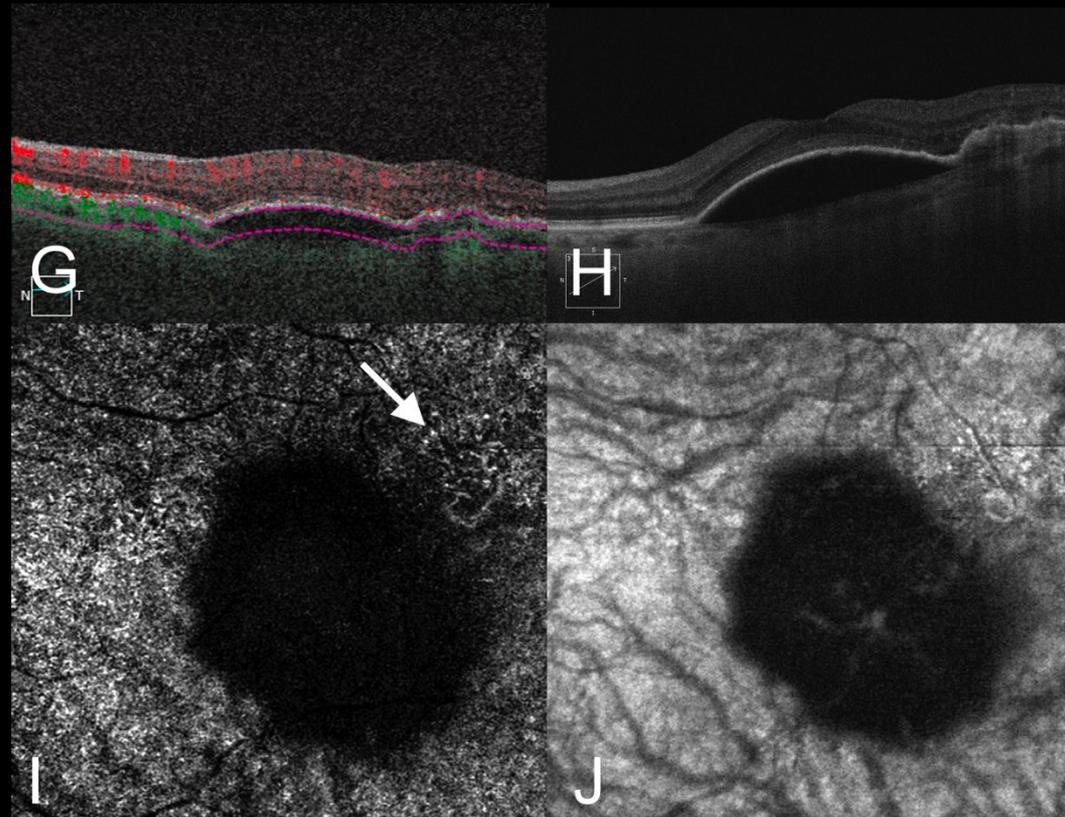


Femme de 85 ans, traitée par anti-VEGF depuis 12 mois
OCTA

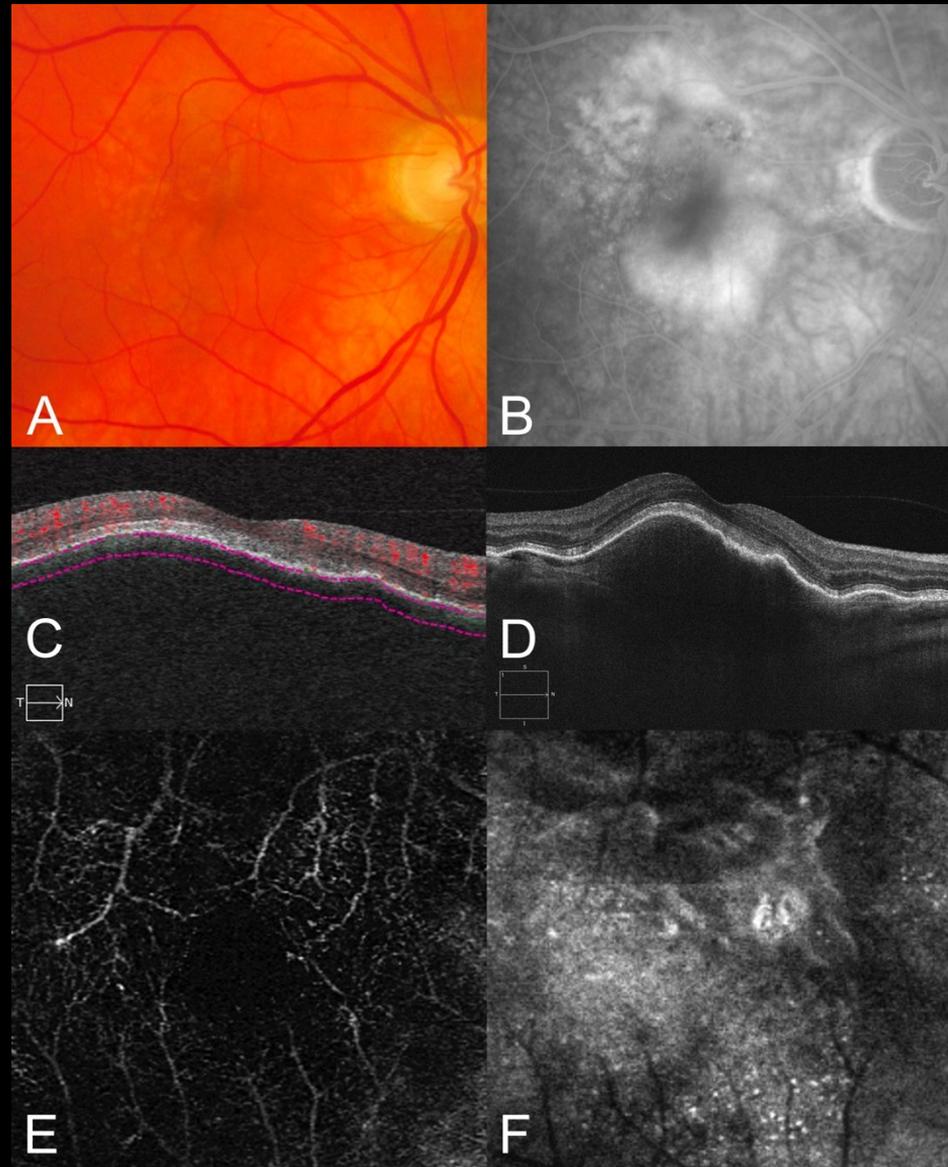
SEGMENTATION AUTOMATIQUE NEGATIVE



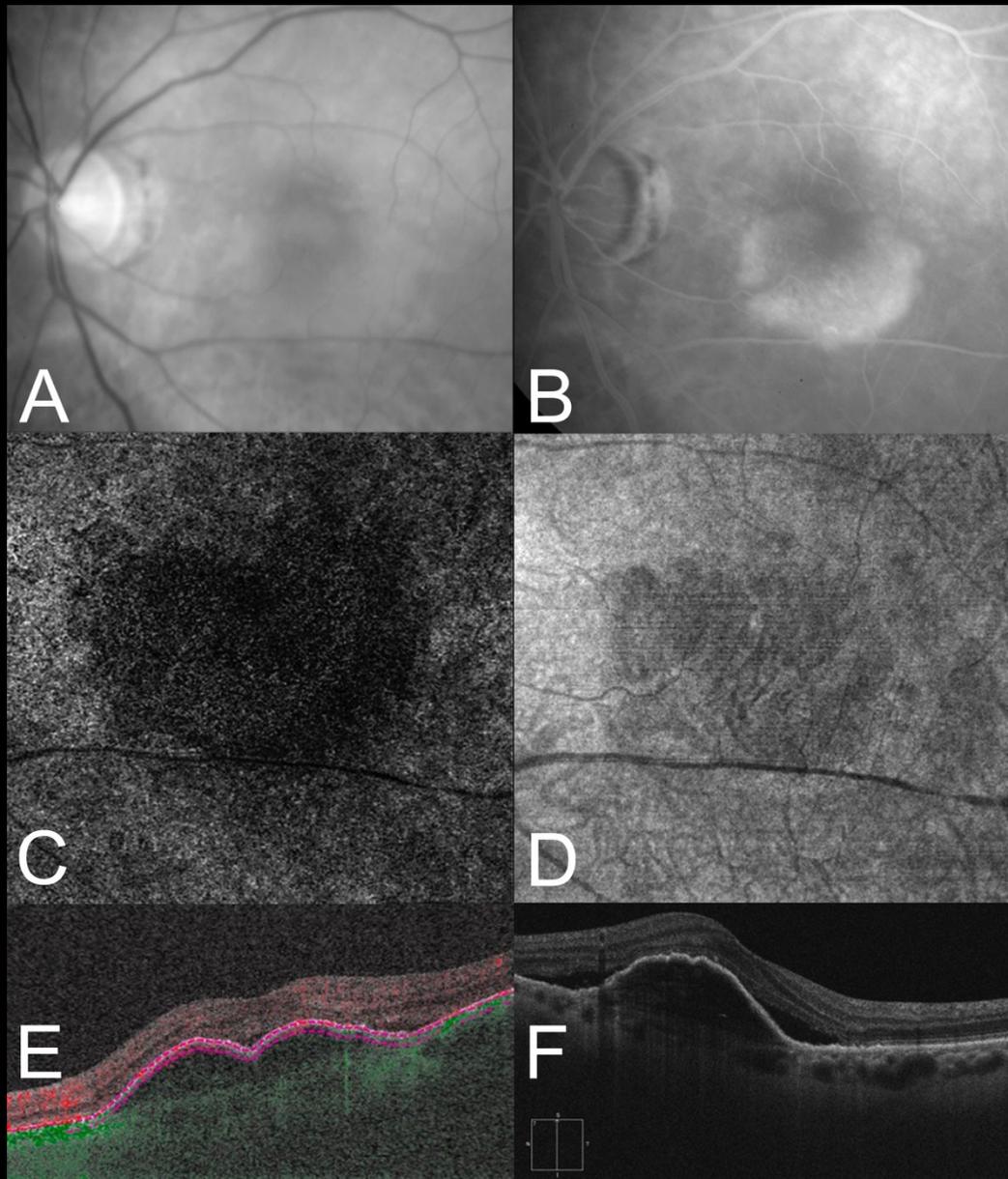
SEGMENTATION MANUELLE POSITIVE



Homme de 64 ans traité depuis 15 mois par anti-VEGF
OCTA: SEGMENTATIONS MANUELLE ET AUTOMATIQUE NEGATIVES



Femme de 77 ans traitée depuis 20 mois par anti-VEGF
OCTA: SEGMENTATIONS MANUELE ET AUTOMATIQUE NEGATIVES



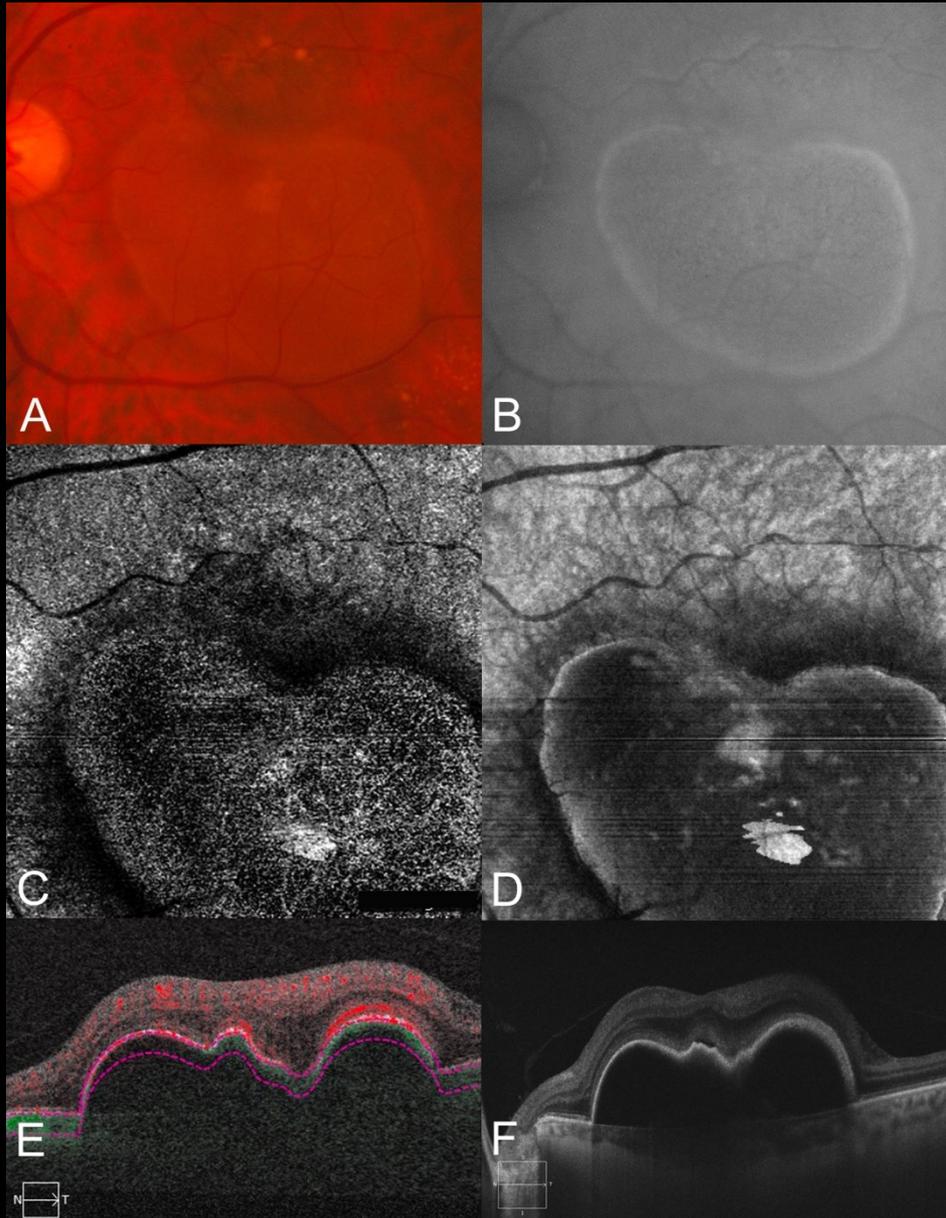
Résultats

- Sensibilité de l'OCTA pour détecter les NV Type 1 si $DEP < 250 \mu m$
 - Segmentation automatique: 89%
 - Segmentation manuelle: 100%
- Sensibilité de l'OCTA pour détecter les NV Type 1 si $DEP > 250 \mu m$
 - Segmentation automatique: 40%
 - Segmentation manuelle: 56%
- Différence très significative entre les 2 groupes du taux de détection de l'OCTA ($P < 0.0001$)

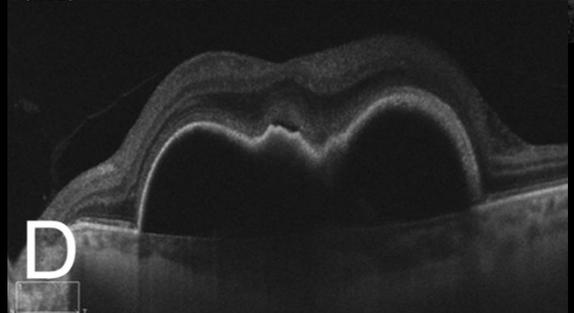
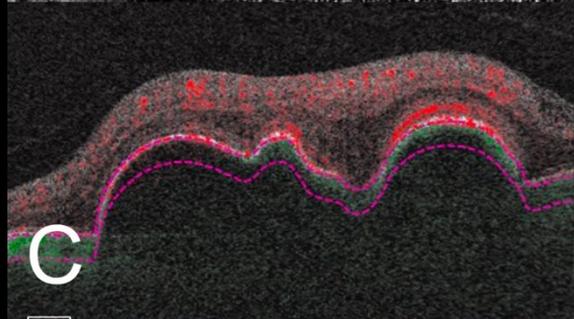
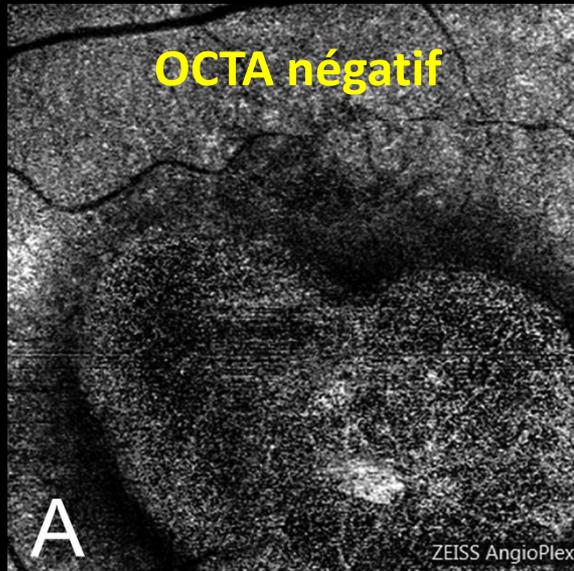
Résultats

- Sur les 25 yeux (44%) sans détection initiale des NVX en OCTA, 18 yeux > 6 mois de suivi
- Détection des NV de Type 1 devient positive au fil du suivi chez 9 / 18 yeux après un suivi moyen de 8,8 mois sous traitement par anti-VEGF

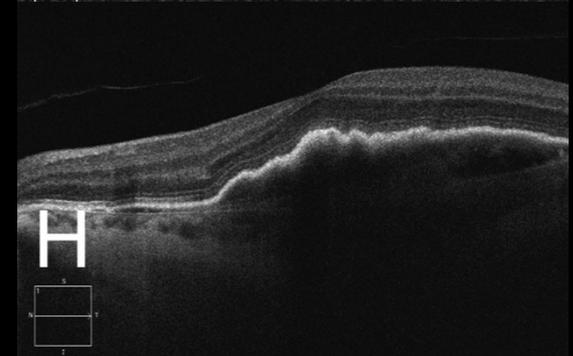
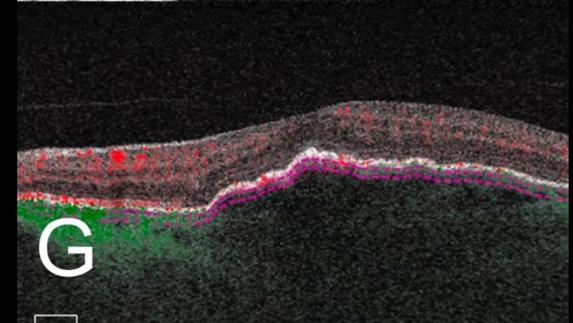
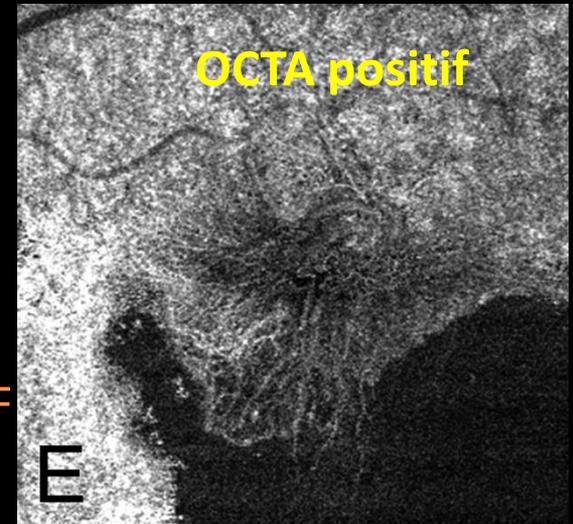
Femme de 78 ans, naïve de traitement, DEP avec encoche
OCTA: SEGMENTATIONS MANUELLE ET AUTOMATIQUE NEGATIVES



Femme de 78 ans, DEP avec encoche



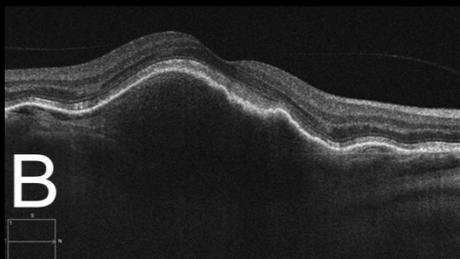
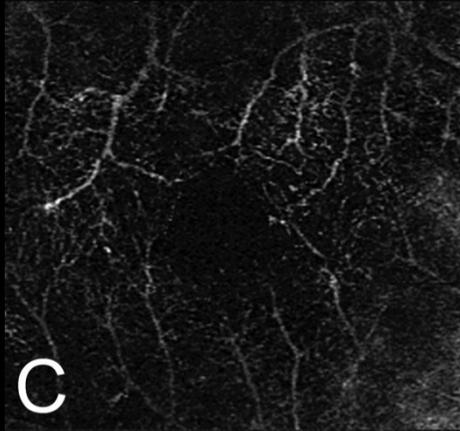
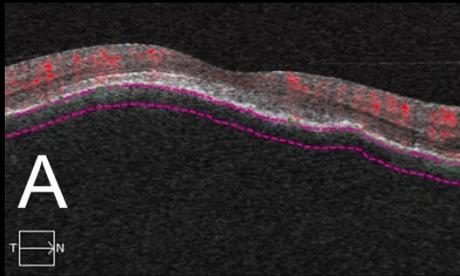
Après 10 mois sous anti-VEGF



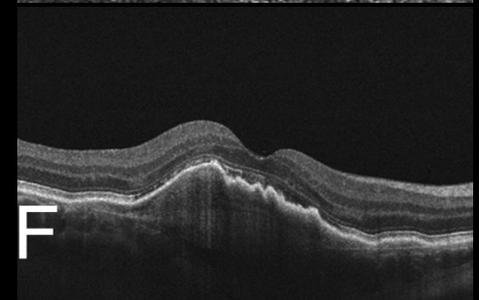
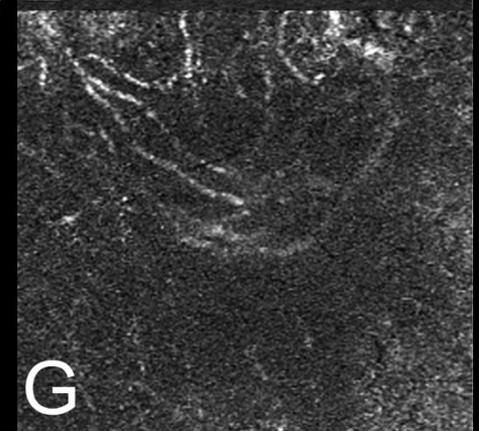
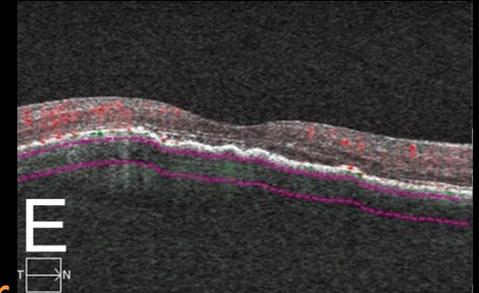
Homme de 64 ans traité depuis 15 mois par anti-VEGF

OCTA négatif

OCTA positif



Après 15 mois de traitement par anti-VEGF



OCT-A dans les DEPs vascularisés

Limites de cette étude pilote:

- Rétrospective
- Petit échantillon (57 yeux avec DEP > 250 microns)
- Inclusion de patients naïfs et non naïfs
- Hétérogénéité des DEPs vascularisés

OCT-A dans les DEPs vascularisés

Littérature récente: excellente sensibilité de l'OCT-A dans la DMLA néovasculaire: de 85 à 100%

DEPs vascularisés avec DEP > 250 microns, le taux de détection est nettement inférieur: 56%

- **Difficultés de segmentation** liées aux contours de l'EPR surélevé
- **Atténuation du signal liée au DEP** → OCT swept source ?
 - Pigment EPR
 - Composante séreuse du DEP
- Taux de détection plus bas sur les yeux naïfs de ttt → Maturation des NVX sous anti-VEGF

OCT-A dans les DEPs vascularisés

Malgré ses limites, cette étude pilote suggère que:

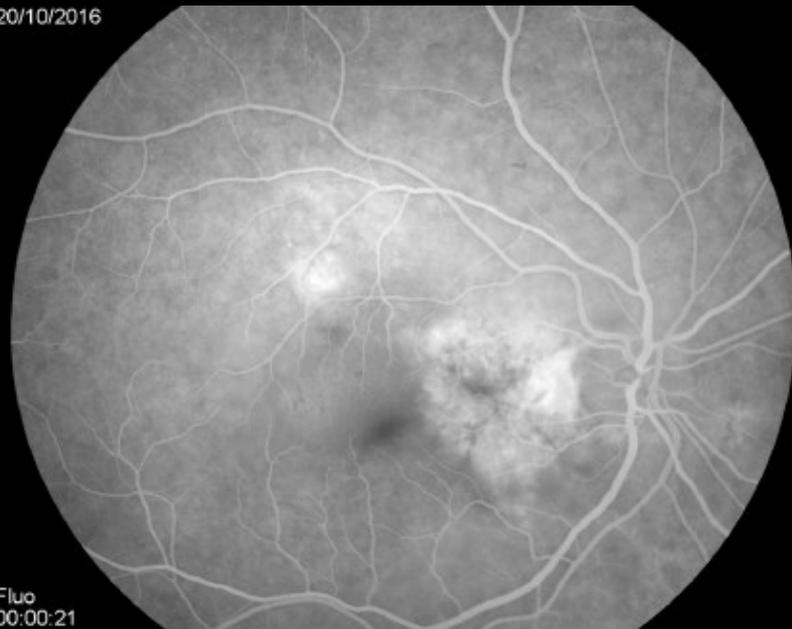
- La sensibilité de l'OCT-A pour détecter les NV dans les DEPs vascularisés est bien inférieure aux autres phénotypes néovasculaires (56% pour un lecteur expérimenté).
- Les images d'OCTA avec segmentation automatique doivent être interprétées avec prudence dans les DEPs vascularisés et l'absence de visualisation de lacis néovasculaire n'exclut pas leur présence.
- L'expertise de l'orthoptiste et de l'ophtalmologiste sont requises car les segmentations manuelles ont amélioré significativement le taux de détection de 40 à 56%.

/10/2016

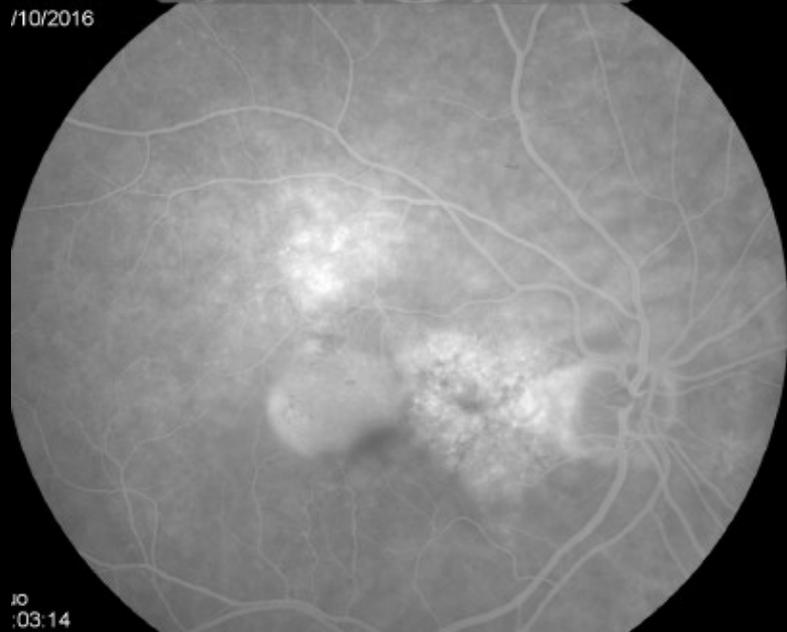


IO
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/10/2016

20/10/2016



Fluo
00:00:21

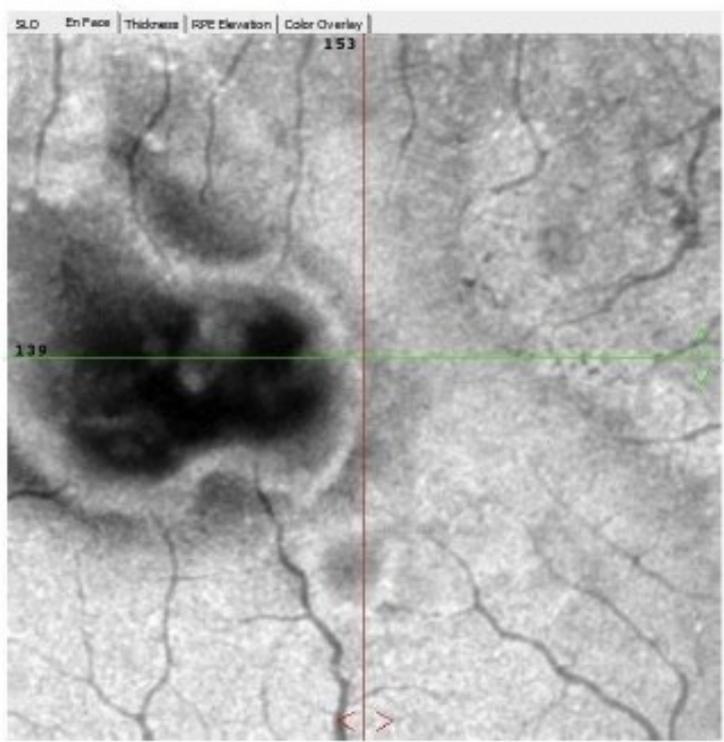
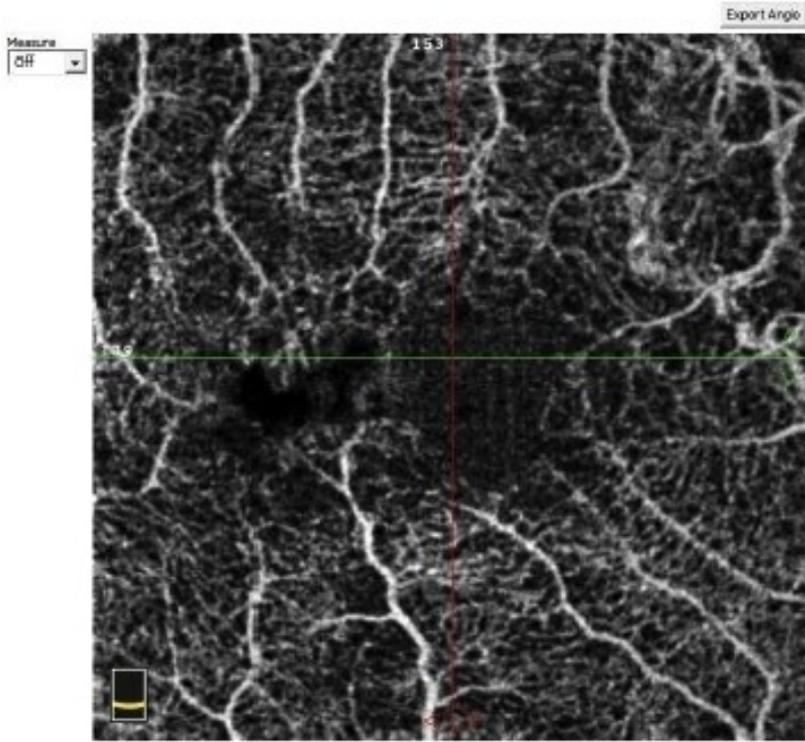


IO
:03:14

Angio Retina

Signal Strength Index 70

Right / OD



3.00 x 3.00 Scan Size (mm)

3D Display

Overview

Play

Save Settings

Restore Settings

Reference

- Superficial
- Deep
- Outer Retina
- Choroid Cap

Upper - RPE Ref Offset(um)

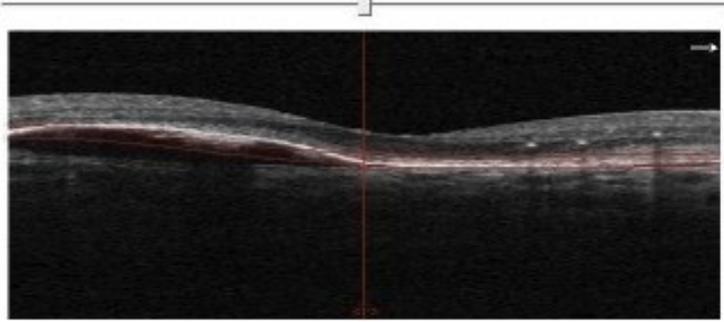
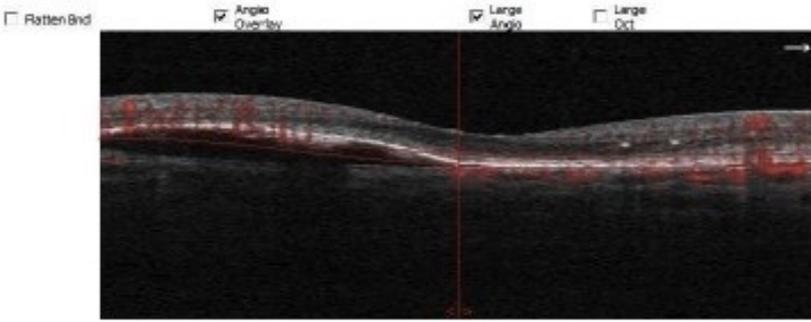
-53

Lower - RPE Ref Offset(um)

25

Color

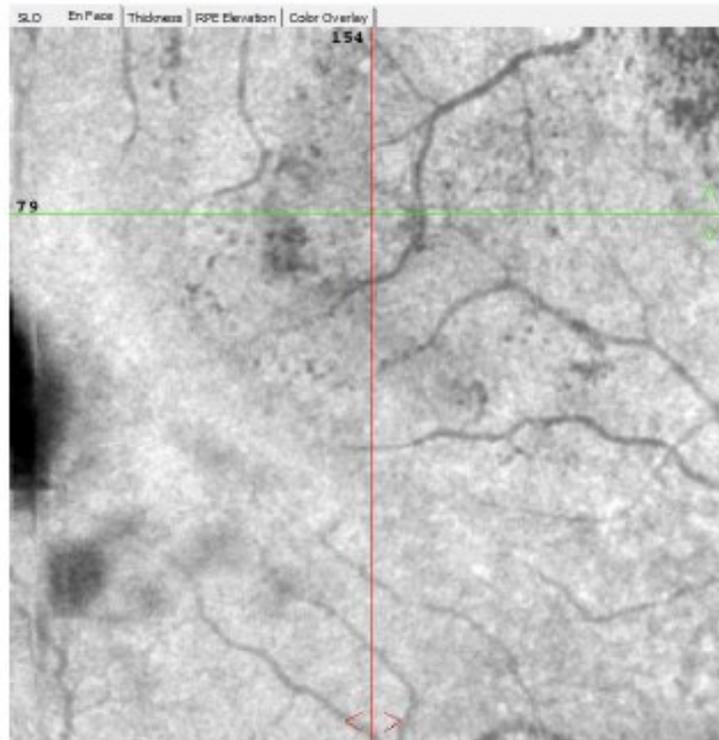
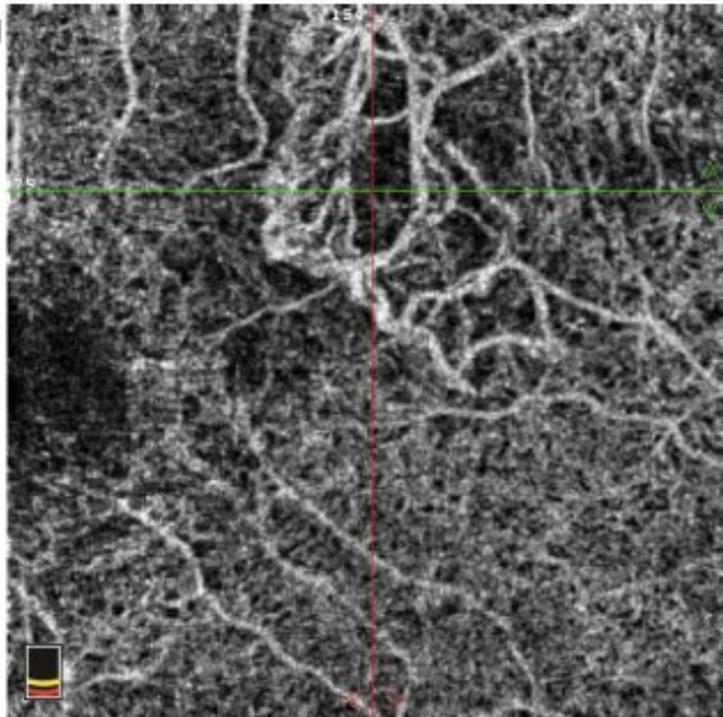
Show Line



Auto Zoom

Measure
Off

Export Angio



3.00 x 3.00 Scan Size (mm)



3D Display

Overview

Play

Save Settings

Restore Settings

Reference

Superficial

Deep

Outer Retina

Choroid Cap

Upper - RPE Ref

Offset(um)

-31

Lower - RPE Ref

Offset(um)

47

Show Bnd

No MCT

Color

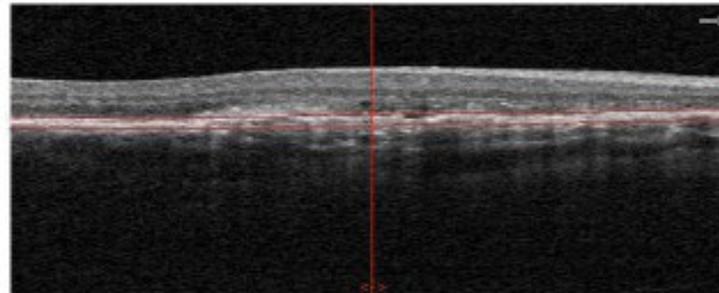
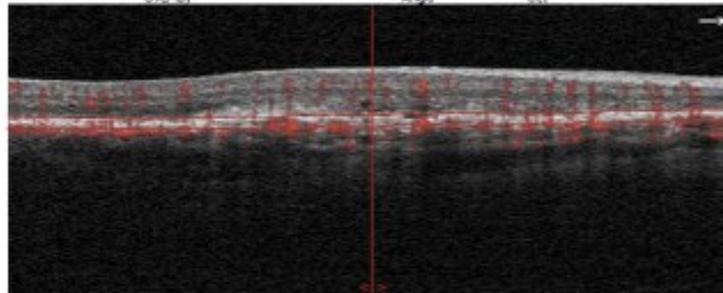
Show Line

Flatten Bnd

Angio Overlay

Large Angio

Large Oct

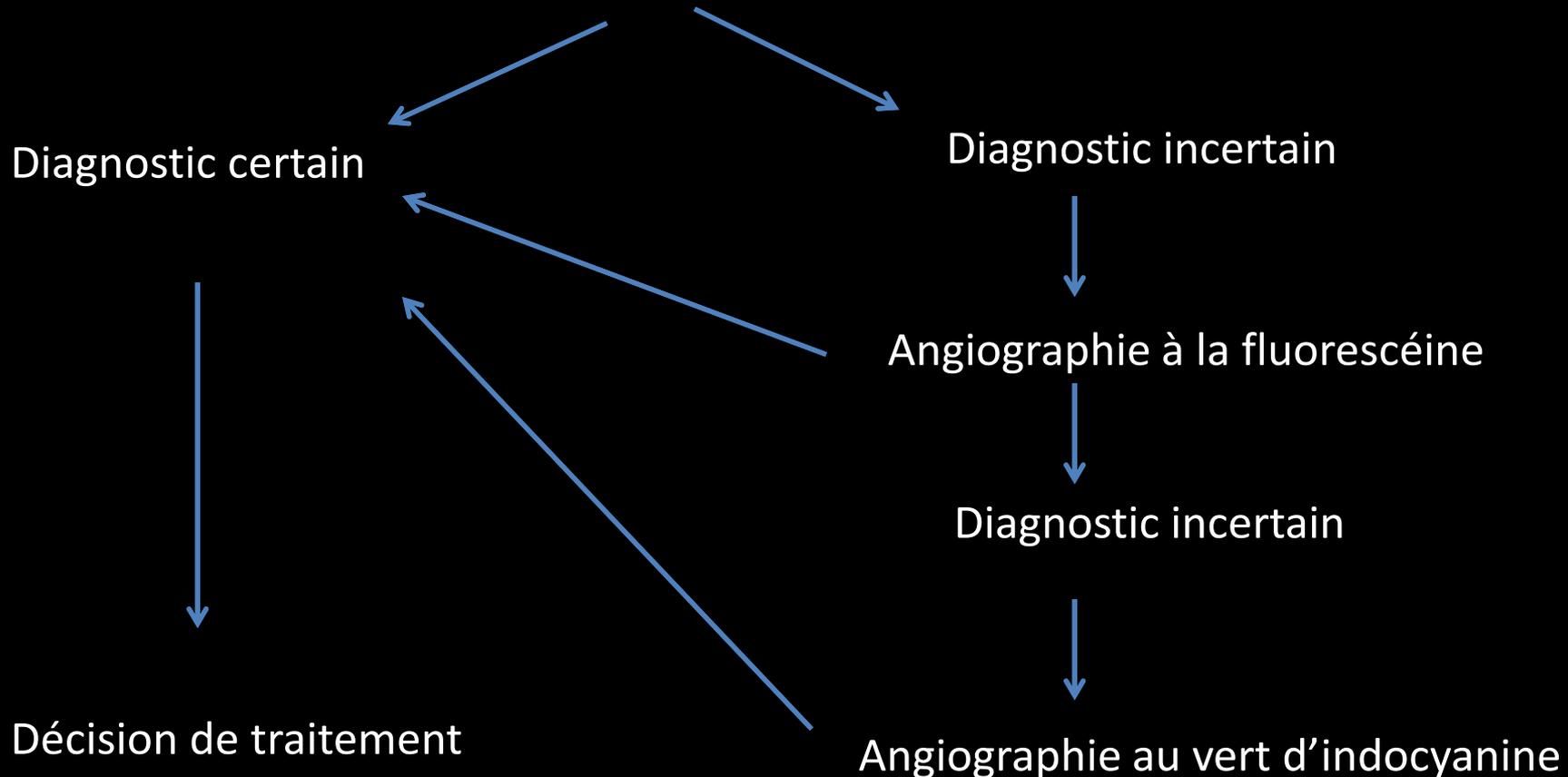


Auto Zoom



**Imaging of Exudative Age-Related Macular
Degeneration: Toward a Shift in the
Diagnostic Paradigm?**

Acuité visuelle + OCT SD structurel + OCT angiographie + FO ou rétinoscopes



DEP synthèse

- Bilan d'imagerie multimodale: ICG et OCT EDI
 - Plusieurs phénotypes néovasculaires
 - Anastomoses rétinochoroïdiennes
 - Vasculopathie polypoïdale
 - DEP vascularisé
- Dépôts de matériel ou DSR possibles en l'absence de NVC
 - Bilan imagerie multimodale: ICG et OCT EDI
 - Surveillance rapprochée
 - Si doute, 1 IVT anti-VEGF test
- NVC possibles en l'absence de signes exsudatifs → NVC quiescents
- OCT angiographie encore à évaluer dans les DEPs
 - Valeur prédictive positive
 - Si négatif, n'élimine pas la présence d'un NVC
 - Sensibilité varie en fonction de la hauteur du DEP, pigmentation EPR, degré d'atrophie EPR

Merci de votre attention