



Northwestern University Feinberg School of Medicine

MacTel- what have we learned from OCTA

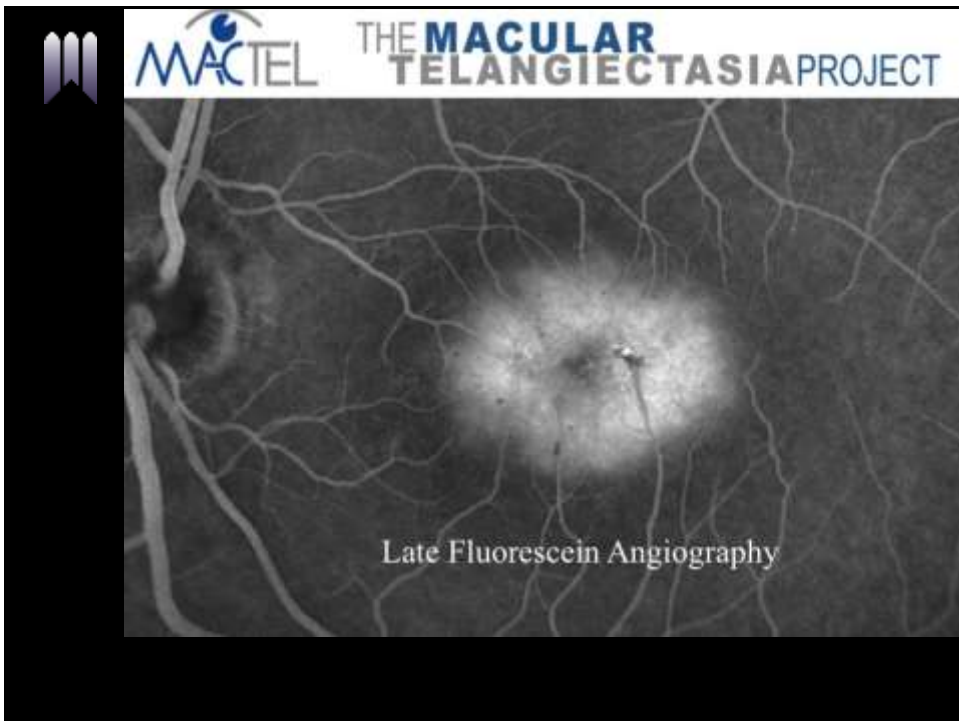
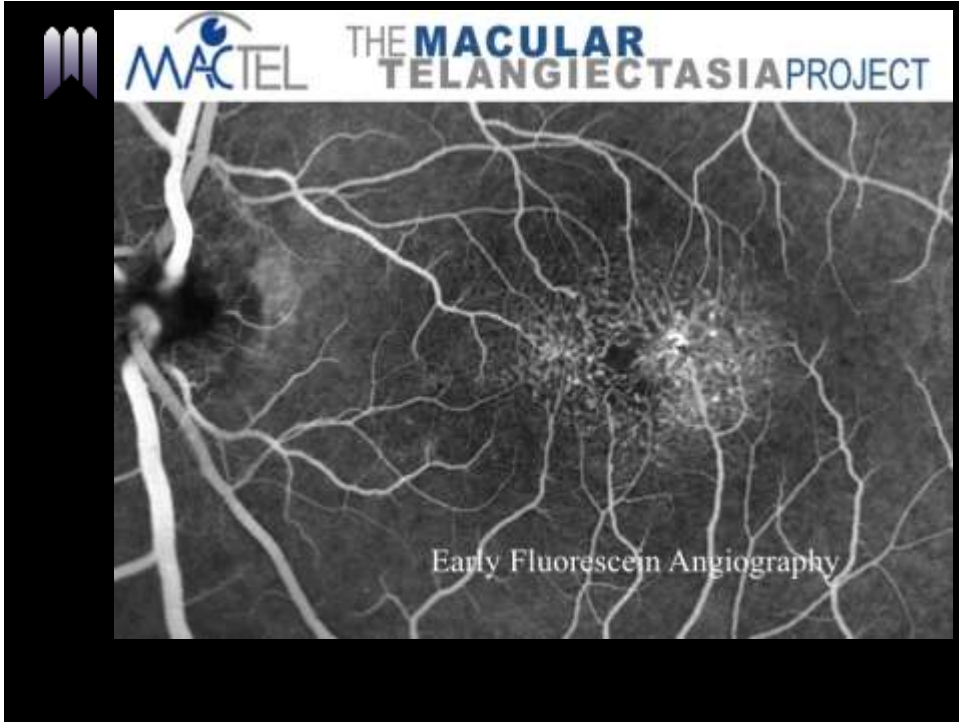
Amani A. Fawzi, MD

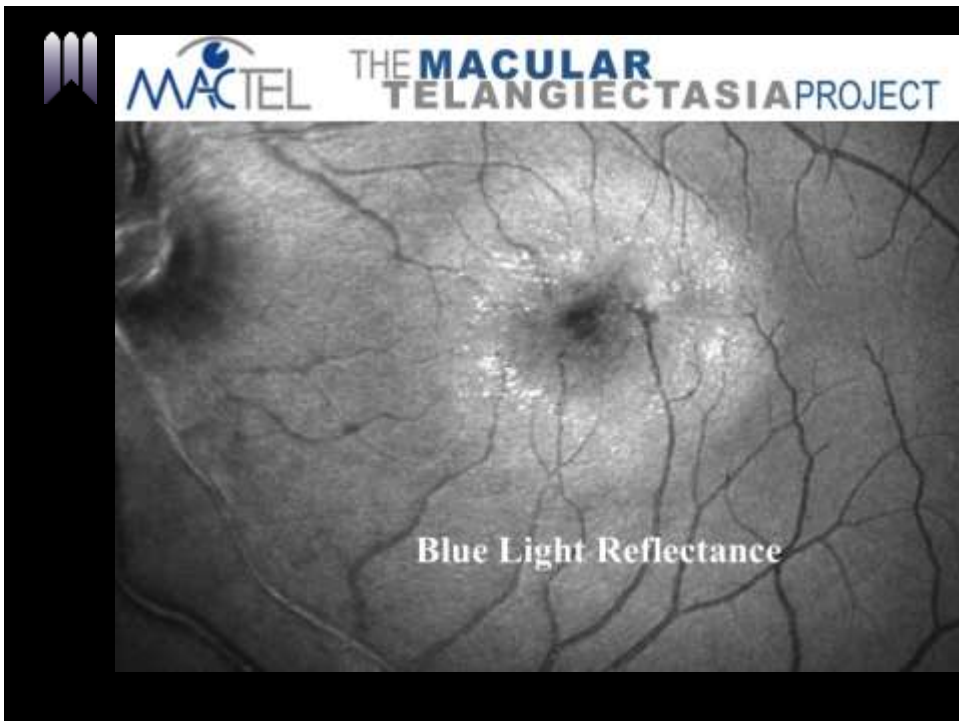
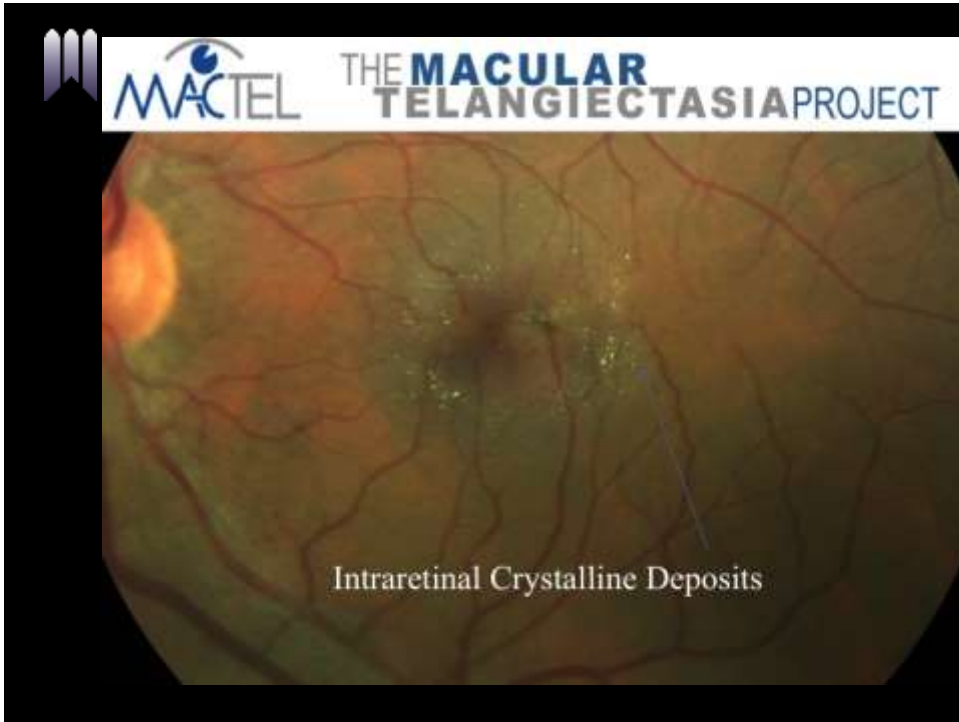
*Cyrus Tang and Lee Jampol Professor of Ophthalmology
Northwestern University*

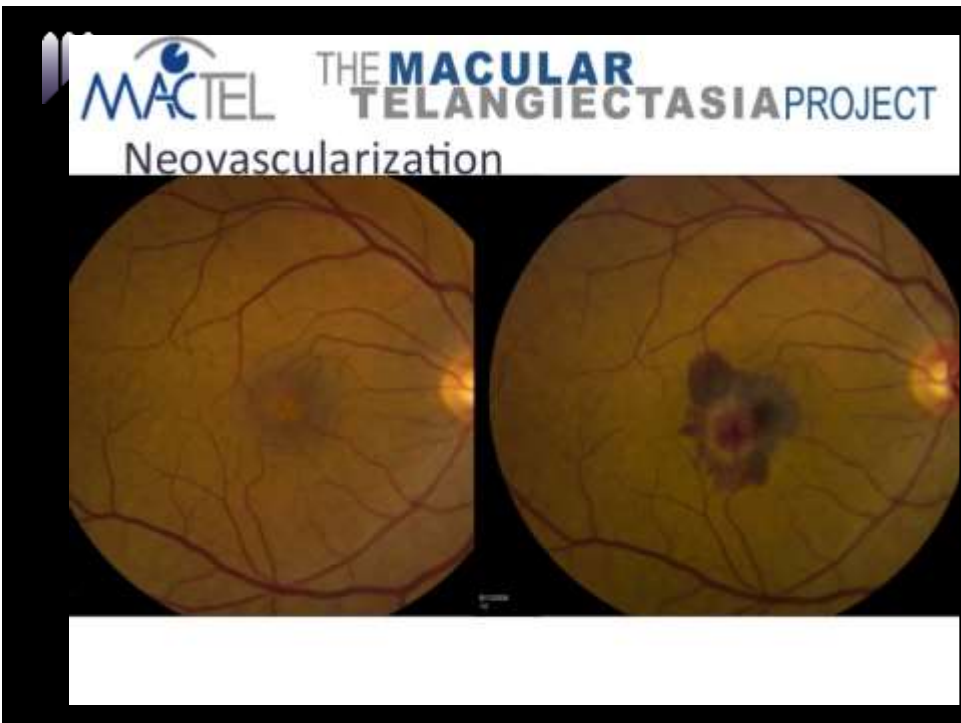
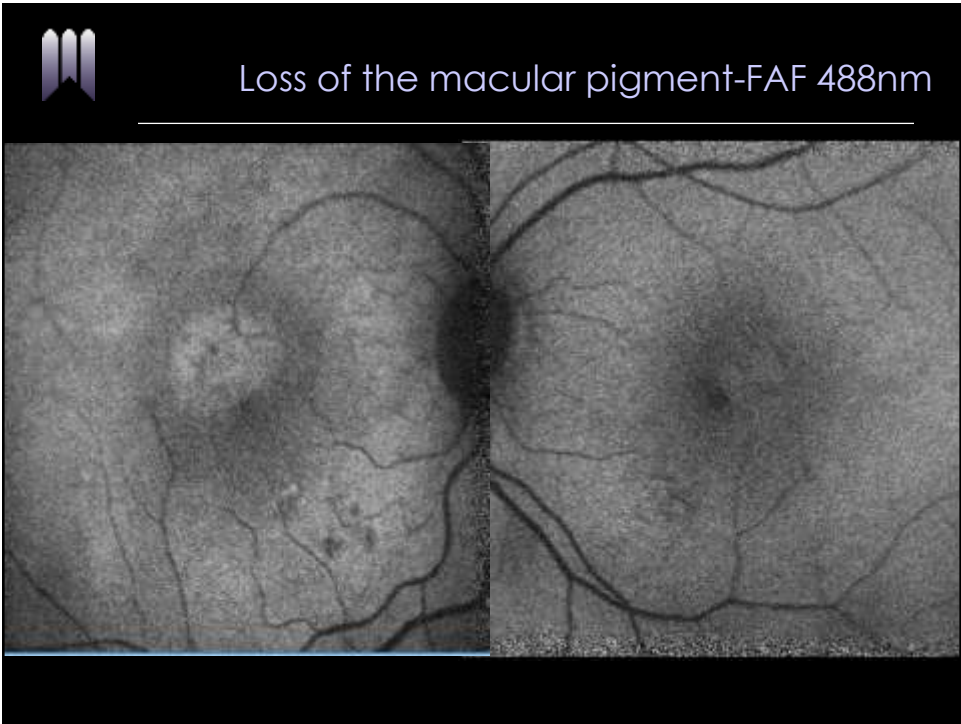


Takeaways

- Overlap between photoreceptor loss and telangiectasia increases with progression of MacTel
- Complete overlap occurs in eyes with neovascularization
- Hyperreflective foci reflect **the presence** and **depth** of neovascularization in MacTel







Accepted Manuscript

Effect of Ciliary Neurotrophic Factor on Retinal Neurodegeneration in Patients with Macular Telangiectasia Type 2: A Randomized Clinical Trial

Emily Y. Chew, MD, Traci E. Clemons, PhD, Glenn J. Jaffe, MD, Charles A. Johnson, MD, Sina Farsiu, PhD, Eleonora M. Lad, MD, PhD, Robyn Guymer, MD, PhD, Philip Rosenfeld, MD, PhD, Jean-Pierre Hubschman, MD, Ian Constable, MD, Henry Wiley, MD, Lawrence J. Singeman, MD, Mark Gillies, MD, PhD, Grant Comer, MD, Barbara Blodi, MD, Dean Elliott, MD, Jiong Yan, MD, Alan Bird, MD, Martin Friedlander, MD, PhD

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Reference: OPHTHA 10497

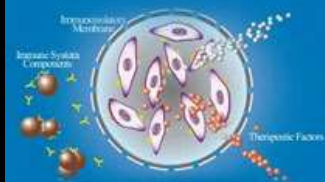


Conclusions: In participants with macular telangiectasia type 2, a surgical implant that released CNTF into the vitreous cavity, compared with a sham procedure, slowed the progression of retinal degeneration. Further research is needed to assess longer-term clinical outcomes and safety.



Clinical trials update encapsulated cell technology-neurotech

ECT Principles



ENCAPSULATED CELL TECHNOLOGY

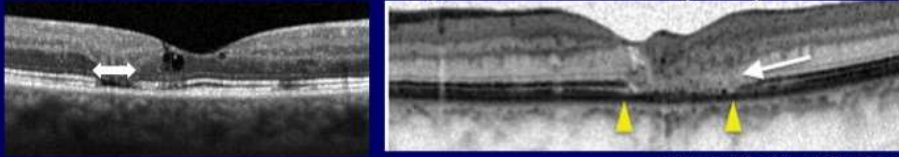


Total Length is 6 mm

ECT Implantation

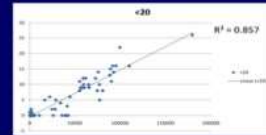


Outcome Measures for MacTel Clinical Trials IS/OS Break—Ellipsoid Zone (EZ) Loss



From Gaudric, et al., 2016, Retina

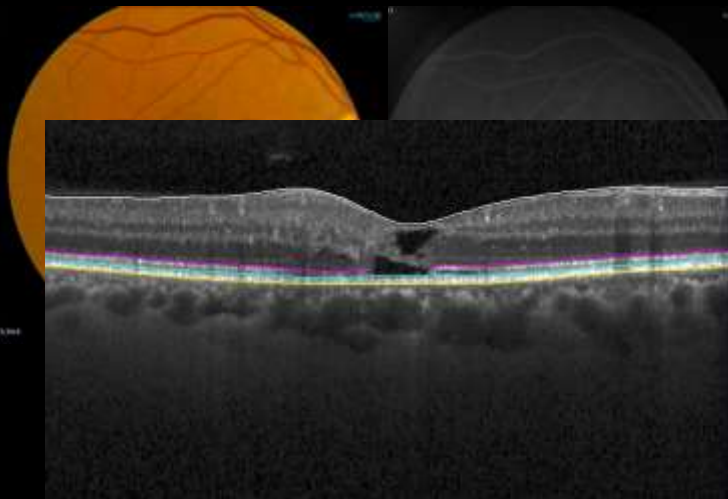
IS/OS break area correlates well
with functional loss in MacTel



- Sallo, et al., (2012) IOVS: Both IS/OS break area and rate of enlargement correlate with aggregate retinal sensitivity loss in type 2 MacTel. En face OCT imaging of the IS/OS layer provides a functionally relevant method for documenting disease progression in type 2 MacTel.
- Gaudric, et al., (2016) Retina: Optical coherence tomography angiography shows capillary proliferation in the outer retina corresponding to areas of EZ loss, which could be a useful marker to monitor the efficacy of possible treatments in MacTel-2 disease
- Lad, et al., (2016) ARVO abstract: We describe a novel method of registration of "en face" SD-OCT images of the EZ with microperimetry data that is semi-automated, robust and highly accurate. This method conclusively demonstrates that EZ loss on SD-OCT is a surrogate marker and early predictor of photoreceptor functional loss in type 2 MacTel.



Primary Outcome Results: Change in EZ area





Eyes with hyperreflectivity did not benefit in phase 2 study

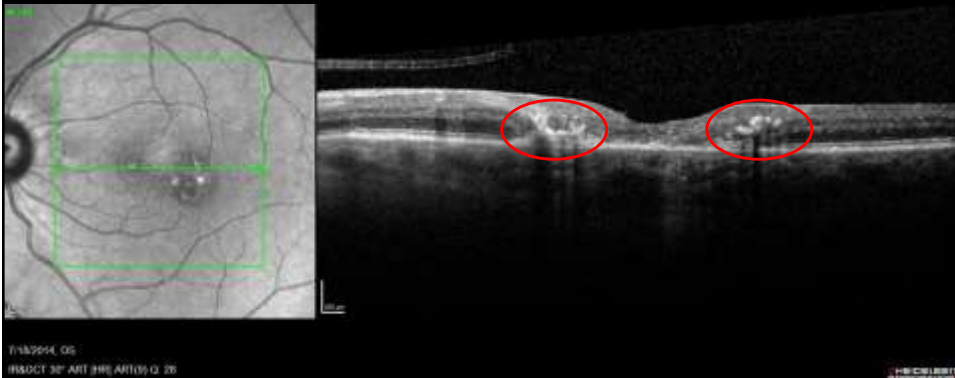
Treatment Group-With OCT-Hyper-reflectivity for per protocol analyses

(excluded those with protocol violations & exudative NV)

	SHAM Mean(SE)	NT-501 Mean(SE)	Difference Mean(SE)	P-value
Baseline	0.757 (0.094)	0.792 (0.085)	-0.035 (0.121)	0.773
Month 12	8.902 (4.123)	8.831 (3.920)	0.070 (4.131)	0.493
Month 24	18.874 (5.615)	21.022 (5.093)	-2.148 (6.366)	0.370
Month 36	23.427 (6.418)	25.616 (5.780)	-2.189 (8.351)	0.398



OCT hyper-reflectivity in phase 2




Eyes without hyper-reflectivity had significant benefit

Treatment Group-Without OCT-Hyper-reflectivity for Per Protocol Analyses
(excluded those with protocol violations & exudative NV)


	SHAM Mean(SE)	NT-501 Mean(SE)	Difference Mean(SE)	P-value
Baseline	0.779 (0.104)	0.545 (0.125)	0.235 (0.134)	0.091
Month 12	15.361 (6.010)	0.627 (6.965)	14.734 (10.118)	0.078
Month 24	52.450 (9.191)	34.924 (10.880)	17.527 (10.151)	0.047
Month 36	54.633 (11.415)	13.142 (13.764)	41.491 (18.818)	0.018

Relationship between Hyperreflectivity and Neovascularization in MacTel on OCTA


- 38 subjects diagnosed with MacTel
- 10 eyes with intraretinal neovascularization
- 8 eyes with subretinal neovascularization



Alaa Fayed, MD


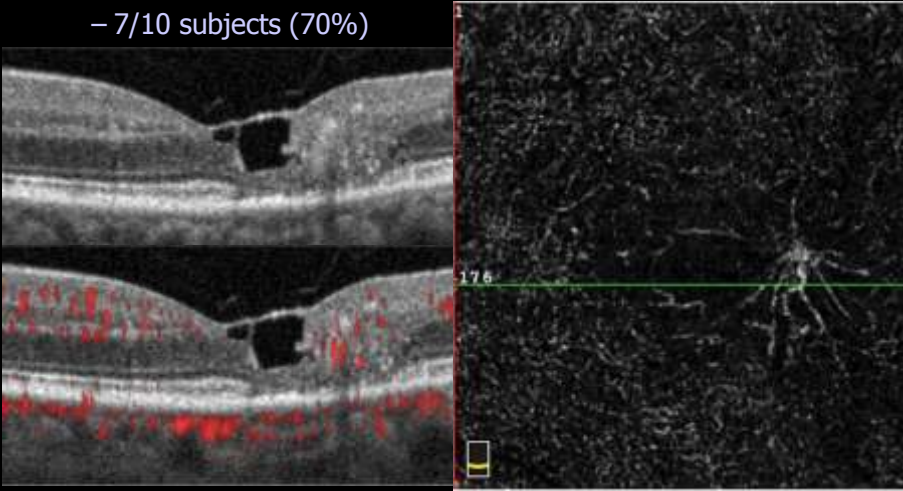


Paul Micevych



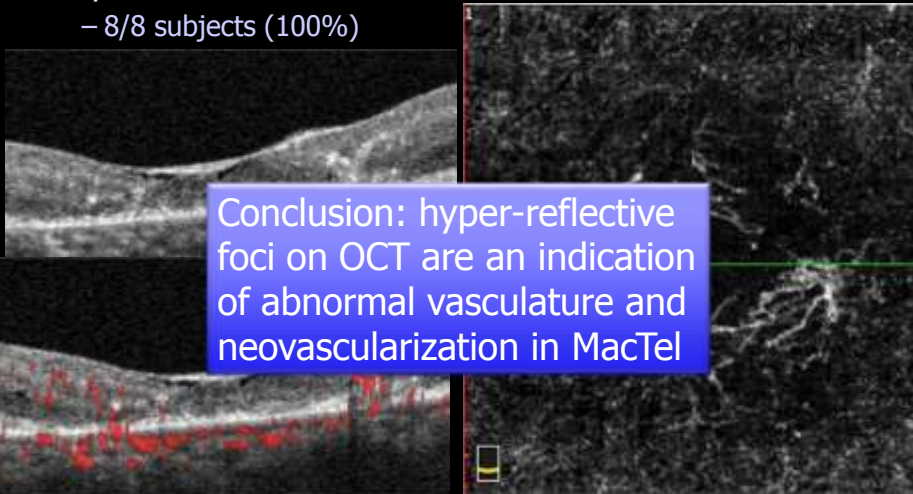
Hyperreflectivity and Neovascularization in MacTel OCTA

- Eyes with intra-retinal neovascularization
– 7/10 subjects (70%)

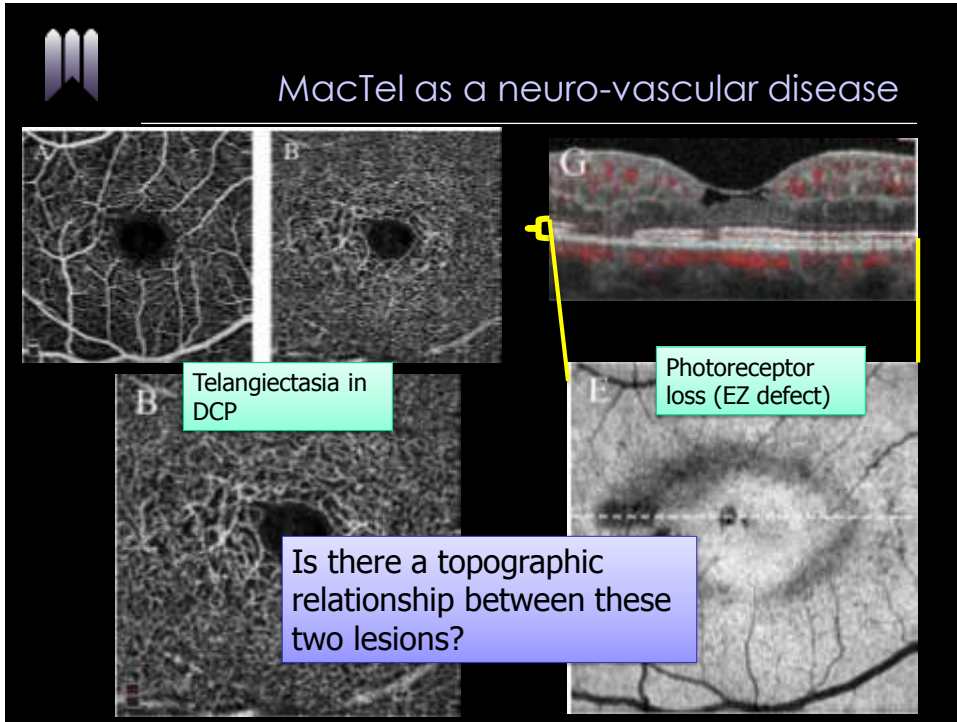


Hyperreflectivity in MacTEL

- Eyes with Subretinal neovascularization
– 8/8 subjects (100%)

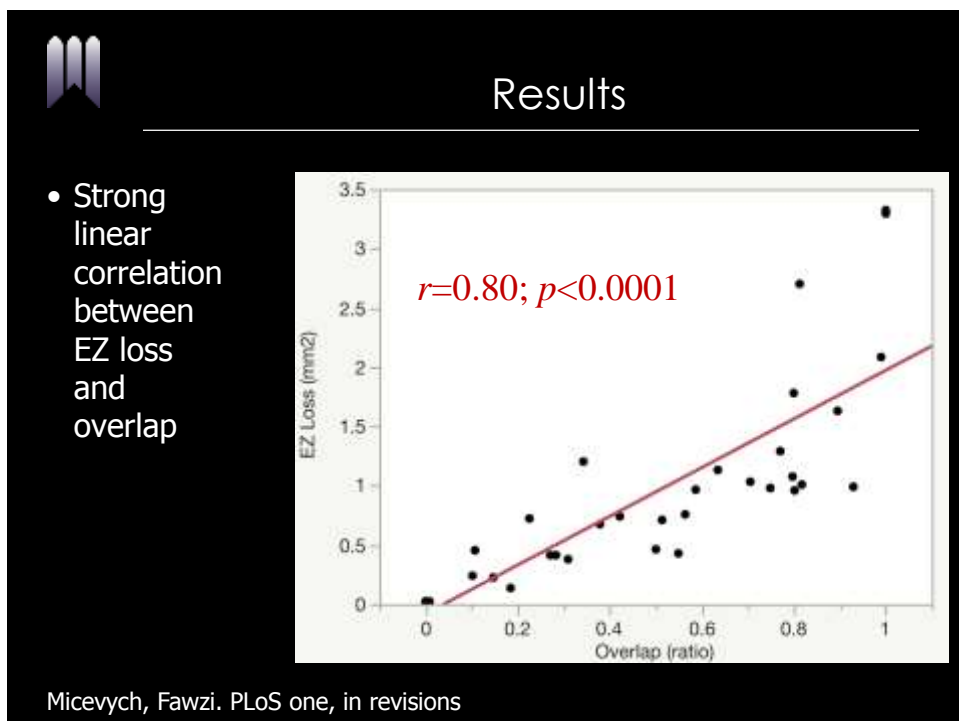
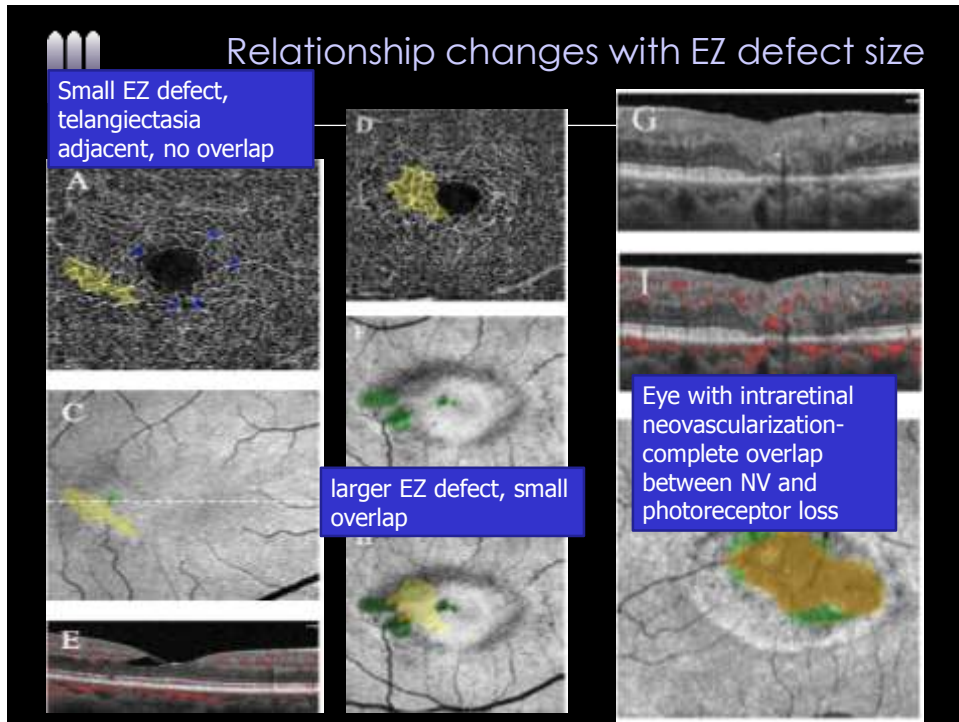


Conclusion: hyper-reflective foci on OCT are an indication of abnormal vasculature and neovascularization in MacTel



Methods

- 38 subjects diagnosed with MacTel
- Areas of DCP telangiectasia (yellow)
- areas of photoreceptor loss (green)
- superimposed to visualize overlap (orange)





Takeaways

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- Complete overlap occurs in eyes with neovascularization
- Hyperreflective foci reflect **the presence** and **depth** of neovascularization in MacTel



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Emily Chew, MD
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Alaa Fayed, MD

