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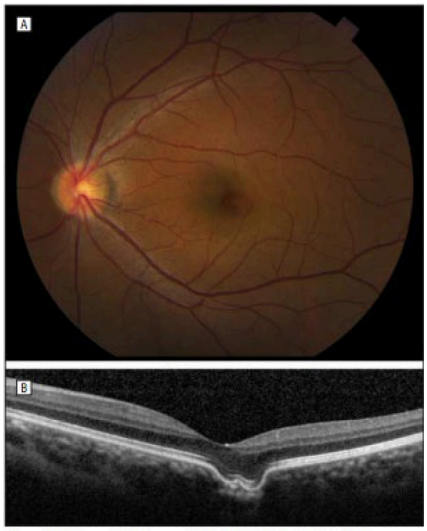
Focal Choroidal Excavation (FCE)

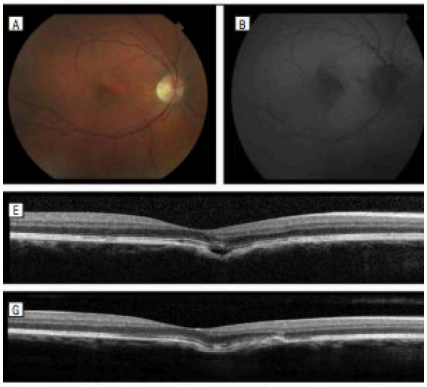
Focal choroidal excavation (FCE) is a macular outpouching of the choroid, retinal pigment epithelium (RPE), and overlying retina without involvement of the sclera. This lesion is often incidentally noted on clinical examination. FCE was first reported by Jampol and colleagues in 2006 in a patient with good visual acuity and normal appearance of the overlying retina.[1] This clinical entity is important to be aware of because despite its dramatic appearance, the prognosis is often favorable.

In 2011, Margolis and colleagues described a series of 13 eyes in 12 patients with FCE through clinical assessment and multimodal imaging.[2] Patient demographics showed a mean age at presentation of 45 years (range, 22-62 years), 67% female predominance, and unilateral involvement in 92% of patients. The mean best corrected visual acuity was 20/30 (range, 20/20 to 20/100), and mean refractive error was -3.5 diopters (range, 6.00 to −8.00 D). Symptomatic patients reported metamorphopsia or blurred vision prior to presentation. Clinical examination showed subfoveal or perifoveal punctate hyperpigmentation and hypopigmentary changes or yellowish spot consistent with a vitelliform lesion in the choroidal concavity. The presence of choroidal excavation could not be determined on fundoscopic exam. Choroidal neovascularization and serous detachments were reported but rare complications.

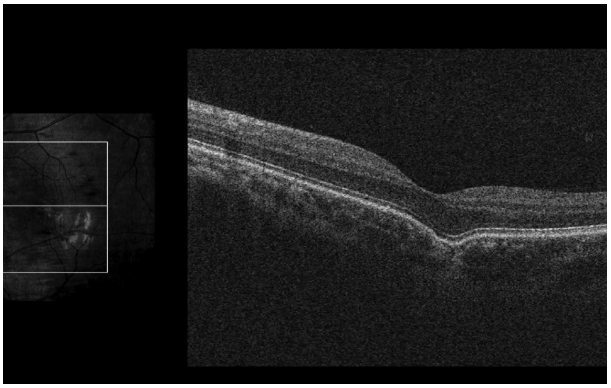
Ancillary imaging is vital to the correct diagnosis. Optical coherence tomography (OCT) shows the retinal pigment epithelial band following the contour of the choroidal excavation with no evidence of RPE detachment.[2] OCT further differentiates the lesions into type 1 (conforming FCE) and type 2 (nonconforming FCE) forms. In type 1 (Figure 1), there is no separation of the retinal photoreceptor layers from the RPE, while in type 2 (Figure 2) the photoreceptor tips appear to be detached from the underlying RPE with an intervening hyporeflective space presumably secondary to subretinal fluid. The signals corresponding to the RPE and



Figures 1:
Type 1: Conforming FCE[2]



Figures 2:
Type 2: Nonconforming FCE[2]



Figures 3:
Congenital FCE: 26 yo F with moderate myopia, asymptomatic

the ellipsoid layers may be disrupted. It is possible that type 1 lesions transition to type 2 lesions with time. Fundus autofluorescence shows hyper and hypoautofluorescence corresponding to the pigmentary changes noted clinically. Fluorescein angiography shows a range of hyperfluorescence and hypofluorescence secondary to RPE alterations with rare leakage from choroidal neovascularization or pooling from serous detachment. Indocyanine green shows relative hypofluorescence related to the lesion.

The etiology of FCE remains unclear. The leading hypothesis is a likely congenital posterior segment malformation (Figure 3). With time, the normal choroid has been shown to become thinner allowing this pre-existing defect to enlarge with age. This is thought to lead to further ischemia of the overlying retina, atrophic changes, and visual disturbances. This may be supported by a large series of 1697 eyes which showed only 3 eyes with FCE in patients under 40 years of age.[4] Acquired FCEs have also been reported in the literature following inflammation, infection, choroidal neovascularization, or retinal detachment (Figure 4). FCE is thought to occur more in myopic patients, as well as in the pachychoroid spectrum including central serous chorioretinopathy (CSCR) and polypoidal choroidal vasculopathy.

The differential diagnosis of FCE includes posterior staphyloma though the latter is associated with scleral and choroidal thinning. Clinically, FCE may appear like vitreomacular traction, impending macular hole, macular pseudohole, central serous choroidopathy, or myopic schisis. Ancillary testing with OCT, can quickly differentiate between these conditions.

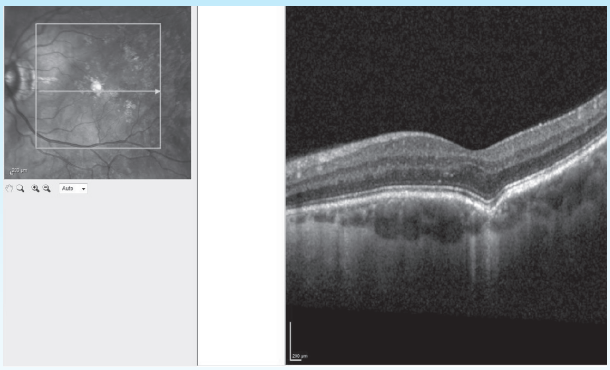


Figure 4:
Acquired FCE: 39 yo M, high myope following retinal detachment repair with a scleral buckle

Management of FCE is observation in asymptomatic cases as these lesions tend to be stable or minimally expand with time. If there is rapid progression of FCE, it is less likely to be congenital, and a workup for acquired causes should be considered. In rare case of choroidal neovascularization, anti-vascular endothelial growth factor treatment is indicated. Serous detachments may respond to photodynamic therapy.

In summary, FCE is a rare clinical entity that is often found incidentally. Patients should be counseled on its relatively stable course. Though infrequent, choroidal neovascularization and serous retinal detachment should be monitored for and managed as indicated.

References:

1. Jampol LM, Shankle J, Schroeder R, Tornambe P, Spaide RF, Hee MR. Diagnostic and therapeutic challenges. Retina. 2006;26(9):1072-107617151497
2. Margolis R, Mukkamala SK, Jampol LM, et al. The Expanded Spectrum of Focal Choroidal Excavation. Arch Ophthalmol. 2011;129(10):1320–1325. doi:10.1001/archophthalmol.2011.148
3. Margolis R, Spaide RF. A pilot study of enhanced depth imaging optical coherence tomography of the choroid in normal eyes. Am J Ophthalmol. 2009;147(5):811-81519232559
4. Park, K.-A. & Oh, S. Y. The absence of focal choroidal excavation in children and adolescents without retinal or choroidal disorders or ocular trauma. Eye 29, 841–842 (2015)

Anton Kolomeyer, M.D., Ph.D

NJRetina Welcomes
Anton Kolomeyer, M.D., Ph.D to our medical staff

Anton Kolomeyer, M.D., Ph.D is an ophthalmologist, retina specialist & vitreoretinal surgeon at NJRetina. Dr. Kolomeyer received his medical degree from Rutgers-New Jersey Medical School and completed a residency in Ophthalmology at University of Pittsburgh Medical Center-Eye & Ear Institute followed by a Fellowship in Vitreoretinal Surgery at the University of Pennsylvania-Scheie Eye Institute.

Dr. Kolomeyer has received numerous honors and awards, including Ronald G. Michels Fellowship Foundation Award, a Heed Ophthalmic Foundation Fellowship, National Eye Institute Grants, the ARVO Distinguished Service Award, The Cento Amici/Alfonse Cinotti Scholarship and is a Gold Humanism Honor Society Inductee. He has authored more than 80 publications in various peer-reviewed journals, authored several book chapters, and has presented at national meetings including the Association for Research and Vision (ARVO), Retina Society, Macula Society and the American Academy of Ophthalmology (AAO).

Dr. Kolomeyer is certified by the American Board of Ophthalmology (ABO) and a member of the American Society of Retina Specialists (ASRS), Association for Research and Vision in Ophthalmology (ARVO), American Medical Association (AMA) and the American Academy of Ophthalmology (AAO). Dr. Kolomeyer enjoys long-distance running, soccer, racquetball, and tennis when not caring for patients. Dr. Kolomeyer is available for consultations in our New Brunswick & Lawrenceville locations.

At the forefront of clinical research

NJRetina continuously conducts clinical trials at key locations. Our clinical research coordinators will be happy to discuss the inclusion/exclusion criteria or any other aspect of these studies with you or your patients. If you have any questions, please feel free to contact:

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Enrolling Studies:

Wet AMD

Edison

Opthea Coast: A Phase 3, Multicenter, Double-masked, Randomized Study to Evaluate the Efficacy and Safety of Intravitreal OPT-302 in Combination with Aflibercept, Compared with Aflibercept Alone, in Participants with Neovascular Age-related Macular Degeneration (nAMD)

Toms River

Opthea Shore: A Phase 3, Multicenter, Double-masked, Randomized Study to Evaluate the Efficacy and Safety of Intravitreal OPT-302 in Combination with Ranibizumab, Compared with Ranibizumab Alone, in Participants with Neovascular Age-related Macular Degeneration (nAMD)

Teaneck

Elevatum: A Phase IIIB/IV, Multicenter, Open-Label, Single-Arm Study to investigate Faricimab treatment in response to treatment-naïve, underrepresented patients with Diabetic Macular Edema.

Teaneck

Luna: A Multi-Center, Randomized, Double-Masked Phase 2 Study to Assess Safety and Efficacy of ADVM-022 (AAV.7m8-aflibercept) in Anti-VEGF Treatment Experienced Patients with Neovascular (Wet) Age[1]related Macular Degeneration

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NJ Retina's Clifton office is fully equipped and staffed to diagnose and treat all medical and surgical conditions of the vitreous and retina.

Akosua Nti, MD, and Luis A. Gonzalez, MD, MPH, are available for consultations and are happy to discuss with you the care of your patients.