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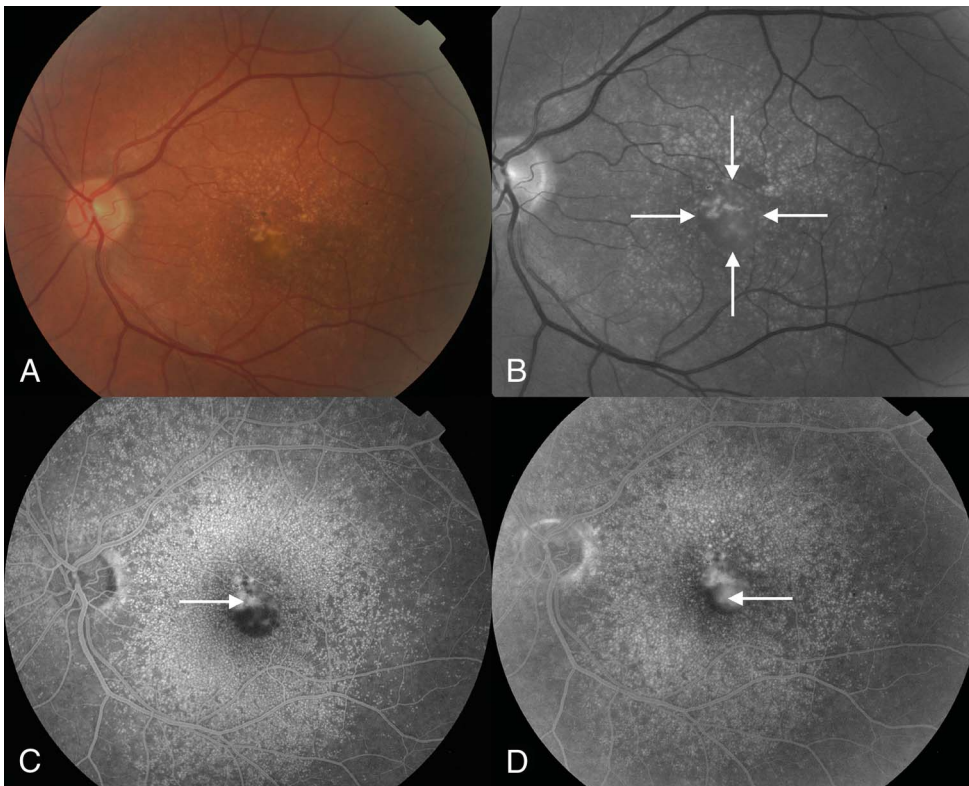
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## High-Resolution Fourier-Domain Optical Coherence Tomography Findings in Vitelliform Detachment Associated with Basal Lamellar Drusen



**Fig. 1.** Fundus photographs and FA images of the left eye of the patient with vitelliform detachment associated with BLD. **A.** Color fundus photograph showing BLD seen as yellow subretinal lesions scattered over the macula and a foveal detachment. **B.** Red-free fundus photograph showing the area of foveal detachment (area within the arrows). **C.** Early transit view of FA image showing hyperfluorescence of the upper portion of the detachment (arrow) with background stars-in-the-sky appearance from pinpoint hyperfluorescence of BLD. **D.** Late transit view of FA image showing hyperfluorescence extending to the lower portion of the detachment (arrow). BLD, basal lamellar drusen; FA, fluorescein angiography.

**W**e illustrate the morphologic features of a 70-year-old white male with basal lamellar drusen in both eyes and vitelliform detachment in

the left eye (OS), visual acuity of 20/40 OS (Figure 1). The patient was imaged using a research-grade high-resolution Fourier-domain optical coherence tomography system developed at the University of California, Davis, with an axial resolution of 4.5  $\mu\text{m}$  and a broadband light of 852 nm central wavelength and 78-nm bandwidth<sup>1</sup> and a commercial Fourier-domain optical coherence tomography system (Cirrus; Zeiss Meditec, Inc, Dublin, CA).

Fourier-domain optical coherence tomography B-scans showed multiple, small, nodular to sawtooth elevations of the retinal pigment epithelial/Bruch membrane (BM) layer (Figures 2 and 3), corresponding

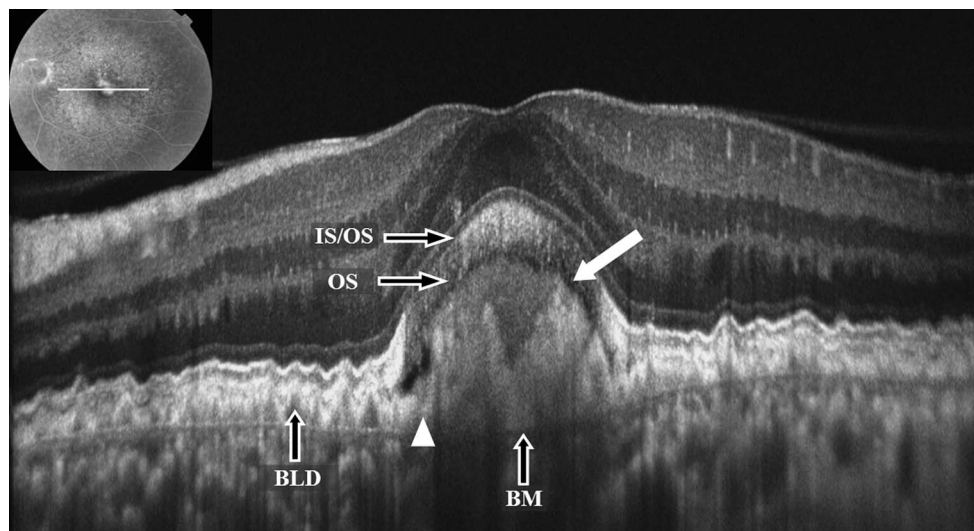
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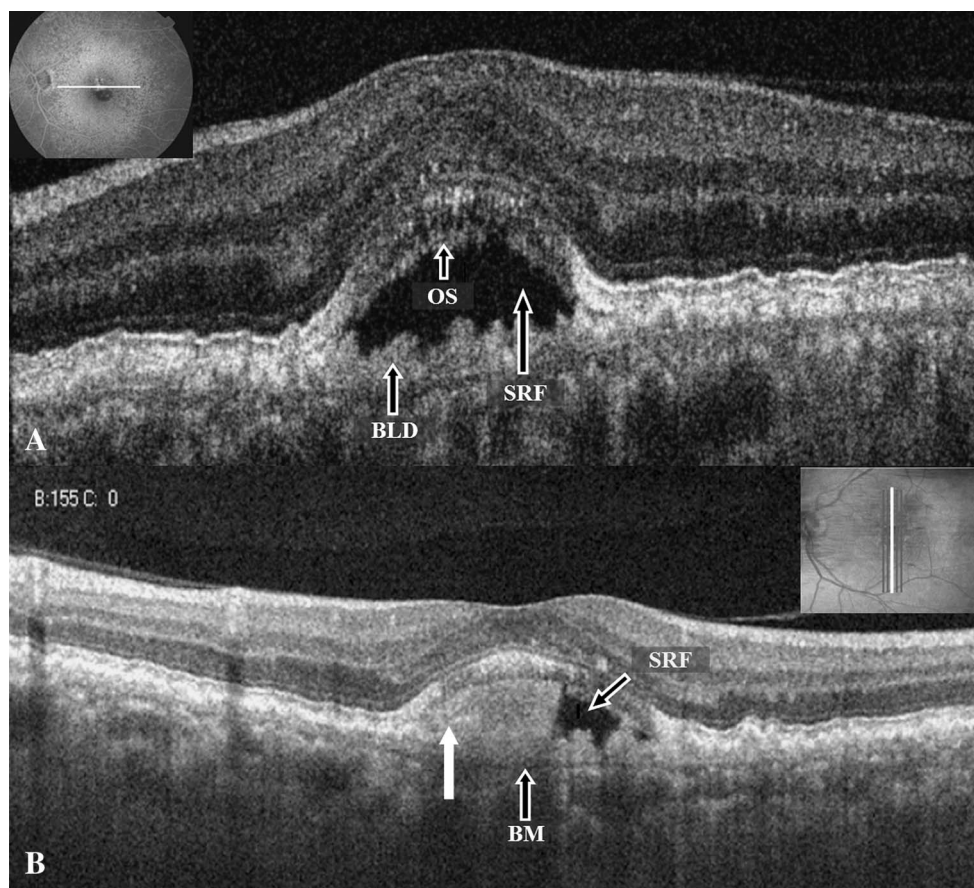
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**Fig. 2.** Averaged research-grade high-resolution FD-OCT B-scan of the fovea OS. An averaged B-scan was obtained by taking multiple B-scans (40 B-scans) over the same retinal location and coregistering and averaging the images to remove speckle noise and improve the signal-to-noise ratio. The location of the B-scan image is indicated by the white line on the fluorescein angiography image (insert). The B-scan image shows the dome-shaped elevation with moderate-to-highly reflective subretinal material contiguous with RPE/BM (solid white arrowhead). A discernable separation is noted between the subretinal material and the overlying photoreceptor layer (solid white arrow). The photoreceptor IS/OS junction appears intact overlying the lesion, but the OS layer appears thickened in the region of the detachment. The BLD is seen as nodular to sawtooth elevations of the RPE/BM. The BM is seen intact throughout the scan, although seen faintly underlying the subretinal material. BLD, basal laminar drusen; FD-OCT, Fourier-domain optical coherence tomography; RPE, retinal pigment epithelium; IS/OS, inner segment–outer segment junction; OS, outer segment; BM, Bruch membrane.



**Fig. 3.** Research-grade high-resolution and Cirrus FD-OCT B-scan images of vitelliform detachment associated with BLD. **A.** B-scan image obtained using research-grade FD-OCT system.<sup>1</sup> The location of the B-scan is indicated by the white line passing through a superior portion of the foveal detachment on the fluorescein angiogram image (insert). The B-scan shows a thickened photoreceptor OS layer over the detachment with an underlying homogeneous hyporeflective space suggestive of SRF in the upper portion of the detachment. The RPE layer appeared irregular with small focal elevations suggestive of BLD within the foveal detachment. **B.** A vertical B-scan image obtained using the Cirrus FD-OCT system. The central white line of the fundus image insert shows the location of the B-scan. The B-scan vertical image of the center of the foveal detachment shows a sharp demarcation between the two types of subretinal material filling the subretinal space, the upper portion filled with hyporeflective material suggestive of SRF and the lower portion of the detachment filled with hyperreflective material contiguous with RPE/BM (solid white arrow). Here again, the BM is seen intact throughout the scan, although seen faintly underlying the subretinal material. BLD, basal laminar drusen; FD-OCT, Fourier-domain optical coherence tomography; RPE, retinal pigment epithelium; IS/OS, inner segment–outer segment junction; SRF, subretinal fluid; OS, outer segment; BM, Bruch membrane.





to the basal laminar drusen seen on fluorescein angiography (Figure 1, C and D).<sup>2,3</sup> The left central macula showed a dome-shaped elevation with an intact photoreceptor inner segment–outer segment junction and thickened photoreceptor outer segment layer in the area of the detachment (Figures 2 and 3). A B-scan through the upper part of the detachment showed homogeneous hyporeflective material suggestive of subretinal fluid and the retinal pigment epithelial layer appeared irregular and elevated, suggestive of basal laminar drusen within the vitelliform detachment (Figure 3). A B-scan through the fovea showed a heterogeneous moderate-to-highly reflective subretinal material contiguous with the retinal pigment epithelial/BM layer but with a discernible separation from the overlying photoreceptor outer segment layer (Figures 2 and 3B). The Bruch membrane appeared intact throughout the macula, although some variations in reflectivity were noted (Figures 2 and 3). A vertical B-scan through the lesion clearly demonstrates the presence of 2 distinct types of subretinal material with a sharp demarcation, the hyporeflective material filling the upper portion of vitelliform detachment and the hyperreflective material fluid filling the lower portion (Figure 3B).

On Fourier-domain optical coherence tomography, the hyperreflective subretinal material appears contiguous with retinal pigment epithelium/BM, and the BM layer appeared intact within the vitelliform detachment (Figures 2 and 3). This intact BM may explain why these lesions are rarely associated with choroidal neovascularization or severe vision loss. The late hyperfluorescence seen on fluorescein angiography likely represents slow late staining of the subretinal material rather than the window defect from underlying choroidal circulation as previously speculated (Figure 1D).<sup>4</sup> In conclusion, these high-resolution Fourier-domain optical coherence tomography images provide new morphologic insights

into the pathogenesis of this rather uncommon condition.

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