How superficial does optic disc drusen need to be for detection on fundus autofluorescence?

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Background: Optic disc drusen (ODD) are frequently confused for true papilloedema. Fundus autofluorescence (FAF) is a useful diagnostic tool in identifying ODD but is insufficient at detecting deeply buried ODD. Optical coherence tomography (OCT) is another readily available tool which can visualise ODD. In this study, we aim to correlate the depth of ODD with autofluorescence on FAF.

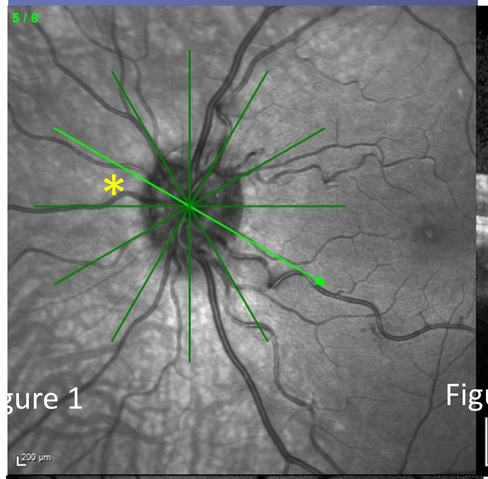
Methods: A retrospective study was conducted. All subjects were diagnosed with ODD following ophthalmic examination and multimodal imaging. ODD were identified on OCT based on recommendations by the ODD Studies Consortium. All included ODD have hyporeflective cores. Measurements of the vertical distance between ODD and the superior border of the retinal nerve fibre layer (RNFL) were made. Measurements of the shortest distance between ODD and the RNFL were also taken. The area of the ODD cross-sections were measured. FAF images were reviewed for autofluorescence of each ODD.

Results: Eighty-nine drusen from 19 subjects were identified on OCT. All ODD were above the Bruch's membrane. The mean vertical distance between ODD and RNFL was 341.22 µm (range 60-611). The mean shortest distance between ODD and RNFL was 300.80 µm (range 60-541). The mean ODD area was 0.086 mm2. All 89 drusen demonstrated autofluorescence. We also identified 13 eyes with ODD visible on B-scan ultrasonography but ODD were not demonstrable on OCT and FAF.

Conclusion: From our study, all ODD above the Bruch's membrane demonstrated autofluorescence. **The deepest ODD was 611 µm under the RNFL.** This study suggests that patients suspected of having ODD despite absence of autofluorescence should undergo additional imaging like B-scan ultrasonography and enhanced depth imaging OCT of sufficient quality.

The Royal College of Ophthalmologists Annual Congress
The ROYAL COLLEGE of OPHTHALMOLOGISTS
24–27 May 2021

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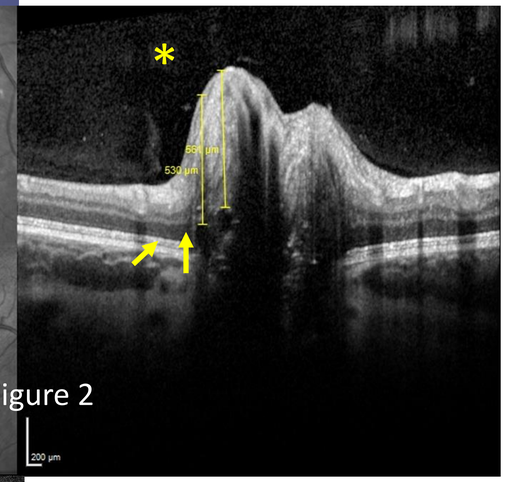
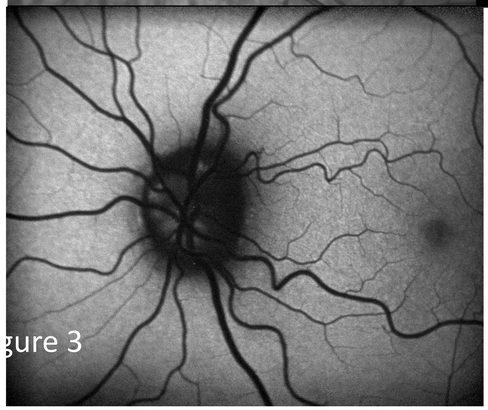


Figure 2



gure 3

Figure 1 and 2: Two optic disc drusen (ODD) (arrowheads) visible on enhanced depth imaging optical coherence tomography (EDI-OCT) in a 21-year old female. The asterisks indicate the location of the ODD on the optic nerve head. The ODD are 530 µm and 561 µm under the retinal nerve fibre layer respectively.

Figure 3: Optic nerve head autofluorescence in the same patient confirming ODD in the location marked by the asterisks in figure 1 and 2.