

Multicolor imaging features of dissociated optic nerve fiber layer after internal limiting membrane peeling

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Dissociated optic nerve fiber layer (DONFL) is an after effect of internal limiting membrane (ILM) peeling for macular hole repair.^[1] It is thought as a result of damage of Muller cell processes, exposing the retinal nerve fiber layers.^[2] Multicolor (MC) imaging available on spectralis spectral domain optical coherence tomography (SDOCT) platform uses three laser lights to provide topographic image of the retina.^[3] We herein report the MC imaging characteristics of DONFL.

A 15-year-old boy underwent full-thickness macular hole repair for traumatic macular hole following blunt trauma with cricket ball. Vitrectomy with ILM peeling and C3F8 gas tamponade was performed following which the best-corrected visual acuity improved from 20/60 to 20/30 at 1-month follow-up. The SDOCT of right eye revealed closing macular hole along with irregular depressions in retinal contour due to thinning of ganglion cell layer

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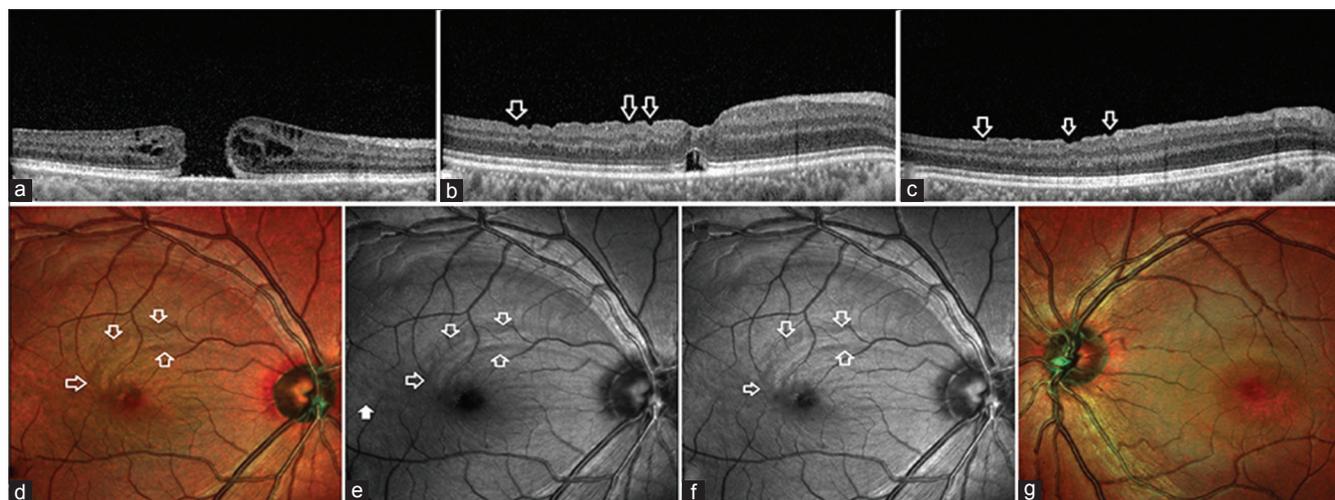


Figure 1: (a) Preoperative line scan spectral domain optical coherence tomography image through fovea shows full thickness macular hole. (b) Postoperative spectral domain optical coherence tomography line scan across fovea shows dissociated optic nerve fiber layer as irregular depressions in the retinal contour (white blank arrows) due to focal thinning of ganglion cell layer and hyporeflectivity of retinal nerve fiber layer. (c) Spectral domain optical coherence tomography line scan superior to fovea also shows depressions in the retinal contour (white blank arrows) suggestive of dissociated optic nerve fiber layer. (d) Multicolor image of right eye shows closed macular hole with darker arcuate zone superior and temporal to fovea (white blank arrows) suggestive of dissociated optic nerve fiber layer defects. (e) Blue channel image (blue reflectance) shows arcuate zone of dissociated optic nerve fiber layer (white blank arrows). Discrete dissociated optic nerve fiber layer lesion is noted temporal to fovea (white solid arrow) which is not visible on multicolor image. (f) Green channel image (green reflectance) shows arcuate zone of dissociated optic nerve fiber layer (white blank arrows). Discrete dissociated optic nerve fiber layer lesion noted temporal to fovea in (e) is not visible in this green reflectance image. (g) Multicolor image of normal left eye of patient shows normal greenish hue which is uniform across around fovea

and hyporeflectivity of overlying retinal nerve fiber layer suggestive of DONFL [Fig. 1a-c].

MC of the right eye revealed DONFL as darker arcuate zones over and temporal to fovea [Fig. 1d]. Blue reflectance image (BR) and green reflectance image (GR) of MC showed the arcuate zones overlying fovea [Fig. 1e and f]. BR image delineated the DONFL better than GR. BR image is created from blue laser channel using 488 nm wavelength, whereas GR image is created with green laser channel using 515 nm wavelength. By virtue of using shorter wavelength laser light, BR was able to depict the superficial DONFL better than GR.^[4] The MC image of the fellow eye of the patient shows the normal macula for comparison [Fig. 1g].

DONFL is essentially a SDOCT diagnosis. It can also be picked up by MC imaging, particularly by BR and GR channels which were able to pick subtle changes of DONFL.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published

and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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