

# Line-field confocal optical coherence tomography of benign dermal melanocytic proliferations: a case series



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## Introduction

**Line-field confocal optical coherence tomography (LC-OCT)** is a recently introduced in vivo non-invasive imaging technique able to combine the advantages of reflectance confocal microscopy and conventional OCT (high resolution and, respectively, high penetration and imaging in the vertical plane, as in histopathology).<sup>1</sup>

**Dermal and compound nevi** represent extremely frequent benign tumours; if their clinical/dermoscopic appearance is not typical,<sup>2</sup> they **could be mistaken** for other benign (e.g. soft fibroma, seborrheic keratosis, sebaceous hyperplasia) and malignant lesions [e.g. nodular basal cell carcinoma (nBCC)].

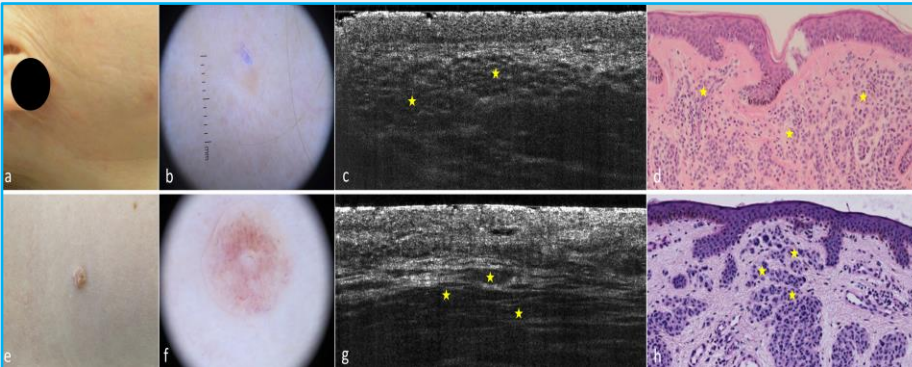
**Our goal then was to identify and describe LC-OCT criteria for benign dermal melanocytic proliferations.**

## Methods

LC-OCT images and histopathological slides of dermal/compound nevi imaged and excised in our department between January and September 2020 were retrospectively collected and evaluated by 3 observers with different experience in LC-OCT (any disagreement was solved by consensus between them). LC-OCT criteria were identified based on the existing OCT-based literature and the corresponding histopathological image.

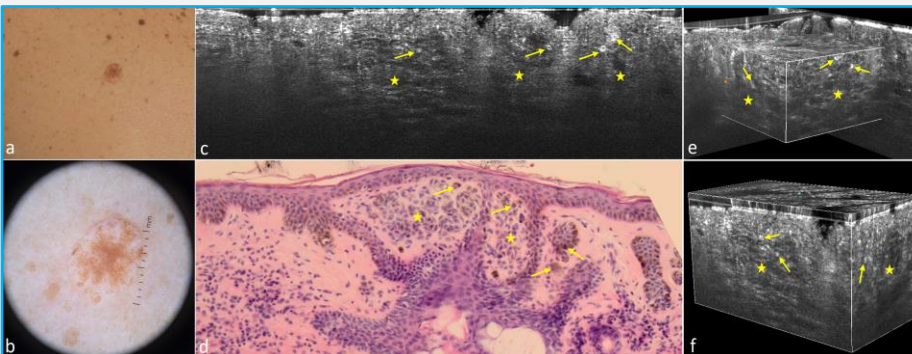
## Results

The following LC-OCT criteria were identified and observed in 7/7 (100%) histopathologically-proven dermal/compound nevi: (i) alternating undulated hyper/hypo-reflective lines corresponding to melanocytic strands/cords/nests in the dermis; they can be of variable size depending on the thickness of the melanocytic clusters (**small or large wave-like pattern**) and they are included in an ill-defined larger lobular structure corresponding to the mass of multiple melanocytic nests on histopathology (**Fig. 1-2**); (ii) well outlined dermal-epidermal junction; (iii) thinned layer of homogenous hyper-reflective material immediately below the dermal-epidermal junction corresponding to the upper papillary dermis (which is thinned by the deeper melanocytic proliferation); and (iv) absence of large, dendritic or pleomorphic, hyper-reflective cells in both the epidermis and dermis that would otherwise suggest an atypical melanocytic lesion.



**Figure 1. Small and large wave-like pattern characterizing dermal nevi upon LC-OCT examination.**

Top row displays a dermal nevus on the right mandibular angle of a 46 year-old woman (a, clinical and b, dermoscopic aspect): LC-OCT examination showed a small wave-like pattern (c), corresponding to small, round melanocytic nests on histopathology (d, yellow stars). Bottom row displays a dermal nevus on the thorax of a 57 year-old woman (e, clinical and f, dermoscopic aspect): LC-OCT examination showed a large wave-like pattern (g), corresponding to large, elongated melanocytic nests on histopathology (h, yellow stars).



**Figure 2. Wave-like pattern characterizing a dermal nevus upon LC-OCT examination**

Dermal nevus on the left scapula of a 60 year-old woman (a, clinical and b, dermoscopic aspect). LC-OCT examination showed the typical small wave-like pattern included in three ill-defined larger lobular structures (yellow stars) corresponding to the mass of multiple melanocytic nests in histopathology (d) and containing bright roundish cells correlated to the presence of highly pigmented melanocytes (yellow arrows). The bright cells are easier to visualize on the tridimensional LC-OCT mode (e, f).

## Conclusions

This is the **first report of LC-OCT criteria for benign dermal melanocytic proliferations**. The **wave-like pattern** could be particularly useful in differentiating dermal/compound nevi from nodular nBCC,<sup>3</sup> sebaceous hyperplasia<sup>4</sup> and other entities. **Further studies are needed to validate this hypothesis.**

## Références

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