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).  

Dermal and compound nevi represent extremely frequent benign tumours; if their clinical/dermoscopic appearance is not typical, 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.

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.

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, sebaceous hyperplasia and other entities. Further studies are needed to validate this hypothesis.