

## Reflectance Confocal Microscopy and LC-OCT for Noninvasive Evaluation of Clonal Seborrheic Keratosis in Dark Skin Individuals

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### Introduction

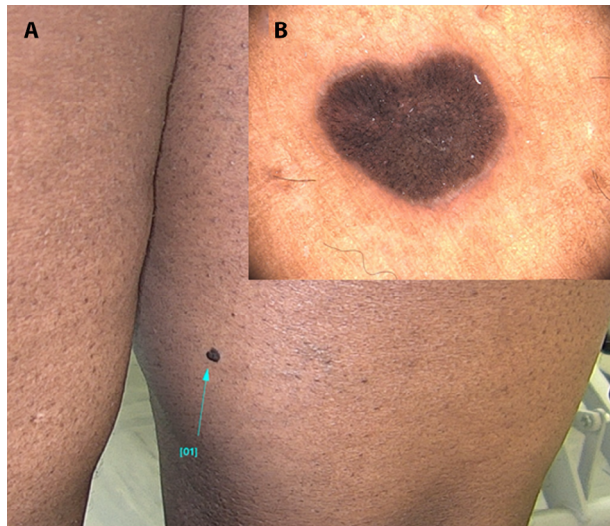
Line-field confocal optical coherence tomography (LC-OCT) is an advanced, non-invasive imaging modality that combines the principles of optical coherence tomography (OCT) with reflectance confocal microscopy (RCM) to provide high-resolution images of the skin at both the epidermal and superficial dermal levels. This technique enables real-time visualization of cellular and architectural details, allowing for improved diagnostic accuracy in various dermatological conditions [1-3]. LC-OCT has been widely applied for the non-invasive diagnosis of infectious, inflammatory, and neoplastic skin diseases, including cutaneous larva migrans, scabies, genital warts, and hypomelanotic melanoma [4]. Among the numerous cutaneous lesions evaluated with LC-OCT, seborrheic keratoses (SKs) represent a common benign epidermal tumor with various histopathological subtypes, including the clonal variant. Clonal seborrheic keratoses (CSKs) are characterized histologically by intraepidermal nests of basaloid or squamous cells and may exhibit features

overlapping with other pigmented lesions, such as clear cell acanthoma and melanoma [5].

### Case Presentation

A black patient presented to our dermatology clinic for the appearance of a rapidly growing nodular skin lesion on the thigh (Figure 1 A). The growth was interpreted as a nodular melanoma by the general practitioner. On clinical examination, the growth appeared nodular with a homogeneous color pattern. On dermoscopy, the lesion had a pseudoreticulum that could appear to be a melanocytic lesion (Figure 1 B). Under reflectance confocal microscopy (RCM), it showed well-defined, hyperreflective nests in the epidermis, with regular cell architecture. The cell clusters observed are not groups of melanocytes, as seen in nevus, but components of seborrheic keratosis. The basal layer exhibited acanthosis and papillomatosis, while the dermoepidermal junction appeared irregular, without atypical or invasive features (Figure 2 A and B). LC-OCT showed well-defined,

hyper-reflective epidermal nests with regular cell structure. The epidermis was thickened, and the dermoepidermal junction appeared irregular, but no invasive or atypical features were present, distinguishing it from malignant lesions (Figure 2 C, D and E). Histological examination revealed clonal seborrheic keratosis.



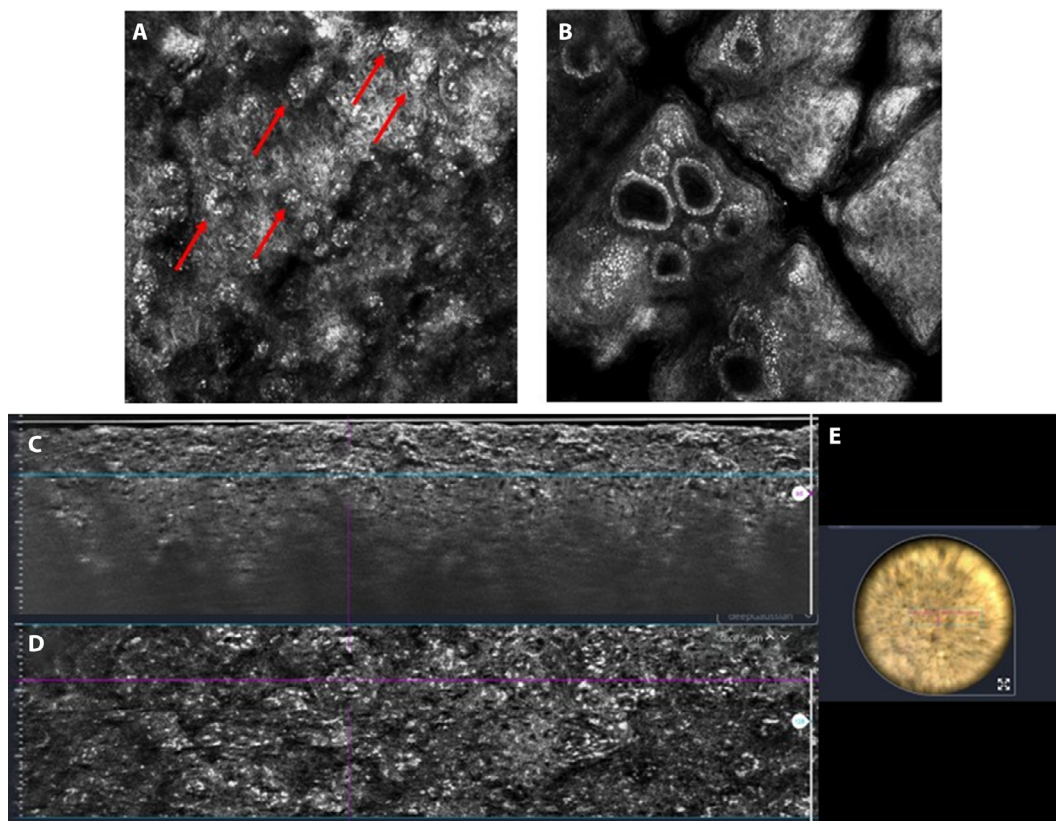
**Figure 1.** Seborrheic keratosis on the right thigh of the patient (A). Dermoscopic 40x view (B).

## Discussion

Accurate diagnosis of CSKs is crucial to avoiding unnecessary excisions and misinterpretations. Recent studies have demonstrated the utility of LC-OCT in differentiating CSKs from other skin neoplasms. This technology provides valuable morphological details, such as well-demarcated exophytic growth, intraepidermal pseudocysts, and the presence of polycyclic and cerebriform structures, which are highly characteristic of SKs. Furthermore, LC-OCT can distinguish between CSKs and other benign and malignant lesions based on their distinctive reflectance patterns and architectural arrangements [4]. The integration of LC-OCT with other non-invasive imaging modalities, such as dermoscopy and RCM, enhances diagnostic precision and facilitates better lesion characterization. By improving early and accurate diagnosis, LC-OCT reduces the need for invasive biopsies and optimizes patient management [6].

## Conclusion

In conclusion, RCM and LC-OCT represents a promising advancement in dermatological imaging, providing high-resolution in vivo-histology-like images that aid in the



**Figure 2.** RCM shows hyperreflective nests in the epidermis composed by homogeneous cell clusters observed (red narrows) (A). Acanthosis and papillomatosis of the basal layer (B). Vertical LC-OCT view (C) and horizontal LC-OCT view (D). Analyzed spatial reference of the lesion (E).

diagnosis of various skin conditions, including CSKs. Further research and technological advancements will continue to refine its diagnostic capabilities and expand its clinical applications.

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