Dermatology Practical & Conceptual

Line-Field Confocal Optical Coherence Tomography Unmasks Eyelid Hidrocystoma from Basal Cell Carcinoma in a Monocular Patient

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Introduction

Periocular lesions include a broad spectrum of benign entities such as epidermoid cysts, dermatofibromas, and blue nevi as well as malignant tumors like basal cell carcinoma (BCC) [1]. Although clinical assessment remains essential, overlapping features often complicate the differential diagnosis. Accurate identification is especially important in the eyelid region, where surgery may pose considerable functional and aesthetic risks.

Line-field optical coherence tomography (LC-OCT) has become an important noninvasive imaging technique for skin lesion evaluation, providing real-time, high-resolution three-dimensional images in both vertical and horizontal planes [2]. By improving visualization of skin architecture, LC-OCT enhances diagnostic precision, enabling clearer differentiation between benign and malignant lesions [3]. In periocular settings, it offers a safe and effective alternative that supports accurate diagnosis and guides conservative management when appropriate.

Case Presentation

An 85-year-old monocular female was referred to the Dermatology Department of the University of Siena with a solitary, slowly growing, translucent pink papule on the right lower eyelid, present for one year (Figure 1A). Due to its clinical appearance and location, BCC was initially suspected.

Dermoscopy revealed a violaceous-blue hue, a pale-white halo, and scattered fine telangiectasias (Figure 1B). LC-OCT imaging showed a well-demarcated, hyporeflective, dome-shaped structure with a bright, thick upper border and internal hyporeflective material (Figure 1C), consistent with a hidrocystoma.

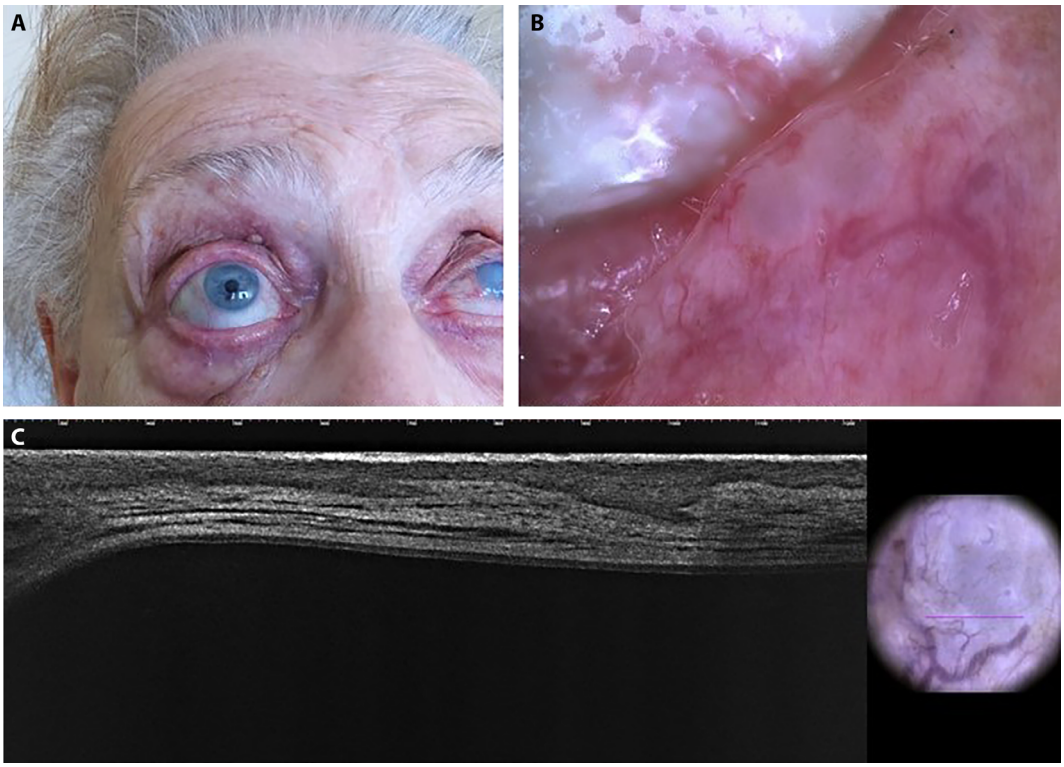

Figure 1. A) Clinical, B) dermoscopic, and C) LC-OCT features of hidrocystoma.

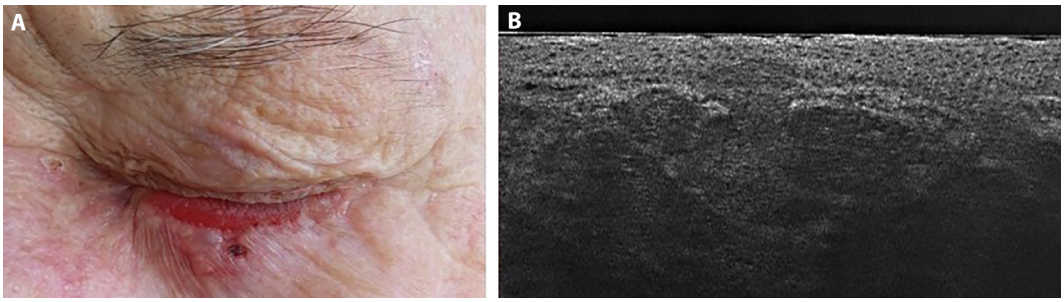

Figure 2. A) Clinical and B) LC-OCT features of basal cell carcinoma.

Given the benign diagnosis and the patient's monocular status, a noninvasive approach with clinical monitoring was chosen. At six-month follow-up, the lesion remained unchanged in size, color, and morphology.

Conclusion

While hidrocystomas are benign and usually treated for cosmetic reasons, BCC remains the most common periocular malignancy, typically presenting as a pearly, translucent papule with surface erosion (Figure 2A). BCC displays characteristic features such as branched lobules in a millefeuille pattern, peripheral clefting, and a dark peripheral rim (Figure 2B), all of which were absent in our case, reinforcing the benign nature of the lesion [4].

This case highlights the utility of LC-OCT in differentiating hidrocystomas from BCC by revealing their distinct morphological features. Especially in delicate anatomical areas like the eyelid, LC-OCT provides near-histological resolution that improves diagnostic confidence and can help avoid unnecessary surgical procedures.

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