

Penile melanoma diagnosis aided by in vivo confocal microscopy



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Key words: aggregates; blue-white veil; circumcision; clusters; nests; cobblestone; confocal microscopy; DEJ; depigmentation; dermo-epidermal junction; epidermal expansion; foreskin; full skin exam; full skin examination; genital; genitalia; glans penis; globules; honeycomb; intraepidermal spread; IVCM; junctional melanoma; lesion; malignancy; melanoma in situ; nonedged papillae; nucleated; pagetoid spread; penectomy; penile melanoma; pigmented macules; pigmented papules; pleomorphic; prepuce; regression; RCM; reticulated; scarring.

CLINICAL PRESENTATION

A 76-year-old male, previously well, was referred by his general practitioner with an asymptomatic pigmented lesion on his uncircumcised penis, noted 10 days prior. The lesion, measuring 22 × 7 mm, was located on the prepuce of the distal mid-dorsal aspect of the penis and was non-tender, ill-defined, irregular, and pigmented in appearance, with a patch of central scarring (Fig 1).

DERMATOSCOPIC APPEARANCE

Dermatoscopy findings revealed that the lesion had scar-like depigmentation centrally, darkly pigmented dots and globules peripherally, and a blue-white veil (Fig 2).

CONFOCAL MICROSCOPY APPEARANCE

In the spinous-granular layer, the typical architecture of the normal-appearing skin was disrupted, demonstrating an irregular honeycomb pattern (Fig 3). Further, the keratinocytes had lost their uniformity of size, shape, and brightness of outlines (Fig 3). Pagetoid spread of atypical melanocytic cells was visible. Round pleomorphic cells with bright cytoplasm spread in an upward fashion were noted in the epidermis. Dense, irregular nests of atypical cells appeared in the

Abbreviation used:

IVCM: in vivo confocal microscopy

basal layer as plump bright aggregates of nucleated cells (Fig 4).

Nonedged papillae of variable size and shapes were visible. These papillae had lost their ringed pattern of brightly contrasted cells, and there was a disarray of the interpapillary crests (Fig 5). This plane partially intersected the basal layer, where an irregular cobblestone pattern was visible, interweaving among the papillae.

HISTOLOGIC DIAGNOSIS

The patient underwent an incisional biopsy. Histological findings revealed an expansion of the epidermis by a junctional melanocytic lesion composed of multiple nests of melanocytes and single cells (Fig 6).

There was an abundance of single melanocytes with cytological atypia as well as nests of melanocytic cells (Fig 7) at the junctional level. Architectural atypia comprised prominent intraepidermal (pagetoid) spread centrally and confluent growth of melanocytes. Overall, these features indicated melanoma in situ involving the radial margins.

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Funding sources: None.

Patient consent: The patient has given consent for this report to be published.

IRB approval status: Not applicable.

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JAAD Case Reports 2024;44:30-3.

2352-5126

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<https://doi.org/10.1016/j.jidcr.2023.07.017>



Fig 1. Clinical appearance: Brown patch with irregular borders and pigmentation, located on the prepuce of the penis.

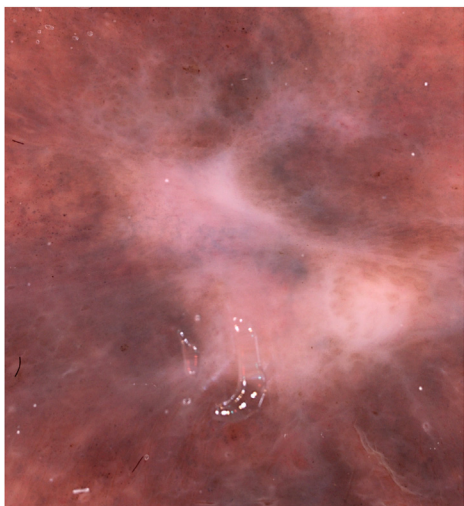


Fig 2. Dermatoscopic appearance: Scar-like depigmentation centrally, darkly pigmented dots and globules peripherally, and a blue-white veil.

The patient underwent wider excision of the lesion in the form of circumcision.

KEY MESSAGE

Penile melanoma is a rare condition, accounting for less than 1% of primary penile cancers. It occurs most frequently on the glans penis (55%), prepuce (28%), penile shaft (9%), and urethral meatus (8%),

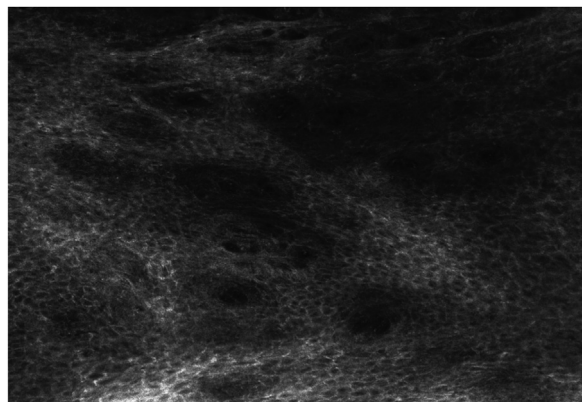


Fig 3. Confocal appearance at the level of the spinous layer showing an irregular honeycomb pattern.

presenting as pigmented macules or papules with an irregular border, often ulcerated at presentation.¹

Advanced stage diagnosis can have significant implications on treatment options, including circumcision, wide local excision, and partial or total penectomy.^{2,3}

Of note and relevance to daily practice, in order to carry out a full skin examination of an uncircumcised man, the foreskin must be retracted. A complete full skin examination includes the entire skin surface (including mucous membranes) and the mouth and genital areas. This is often not implemented in practice, with genitalia potentially being neglected during screening.⁴

When presented with an atypically pigmented lesion of the genitalia, differential diagnosis includes pigmented lichen sclerosus or pigmented Bowen disease. These conditions often mimic the appearance of melanoma with shared dermatoscopic features, such as a blue-white veil, structureless areas of hypopigmentation, irregular dark pigmented networks, and brown-gray globules. In the present case, the utility of in vivo confocal microscopy (IVCM) was highlighted in the diagnosis of penile melanoma, where IVCM features of the melanoma were present and those of pigmented lichen sclerosus and pigmented Bowen disease were absent (ie, there were no fiber-like structures representing the sclerosis in lichen sclerosus and no evidence of nucleated cells with a targetoid appearance in epidermis suggestive of Bowen disease).

As demonstrated in this case, in cases where clinical uncertainty exists in the diagnosis, IVCM has a potential role to help differentiate between benign and malignant lesions.⁵ This is an important case to demonstrate the utility of confocal microscopy to aid the diagnosis of penile melanoma.

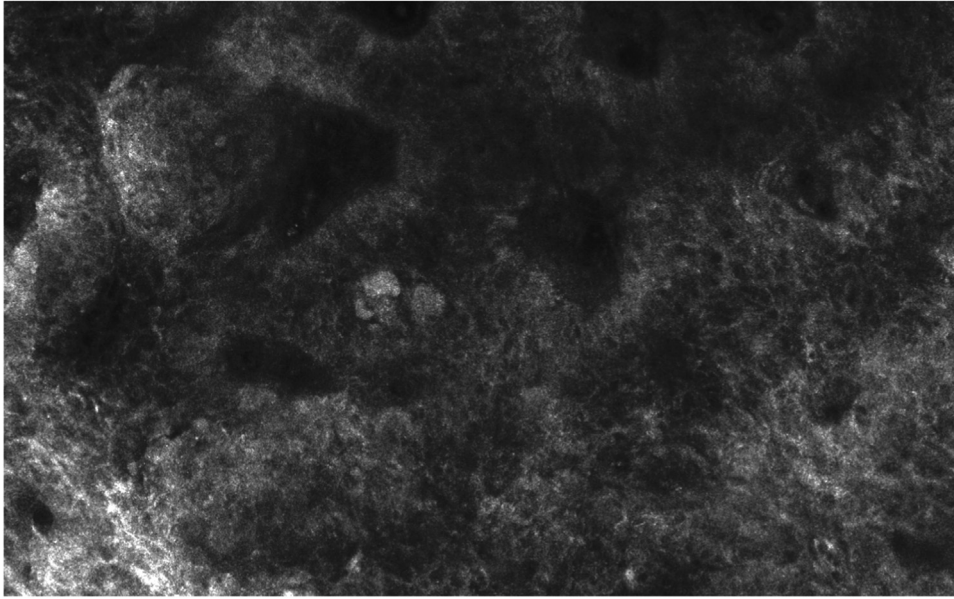


Fig 4. Confocal appearance at the level of the basal layer showing a melanocytic cluster at the center of the image.

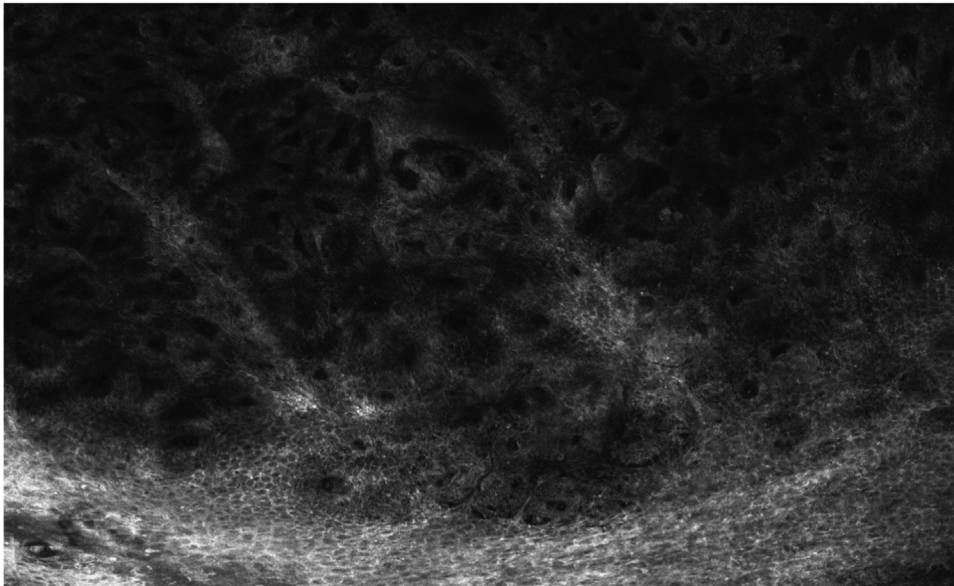


Fig 5. Confocal appearance at the level of the dermo-epidermal junction showing nonedged papillae and an irregular cobblestone pattern.

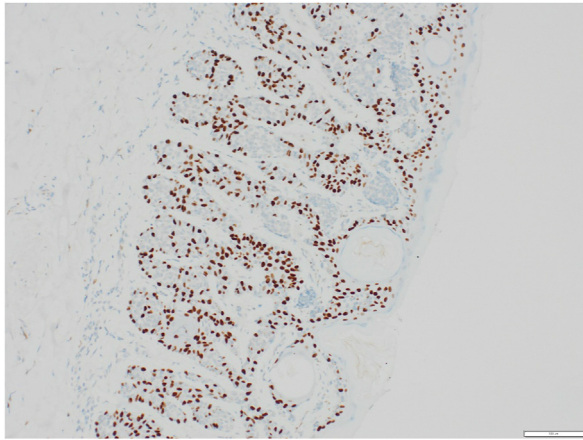


Fig 6. p63 Immunohistochemistry demonstrating the expansion of the epidermis and abundance of melanocytes.

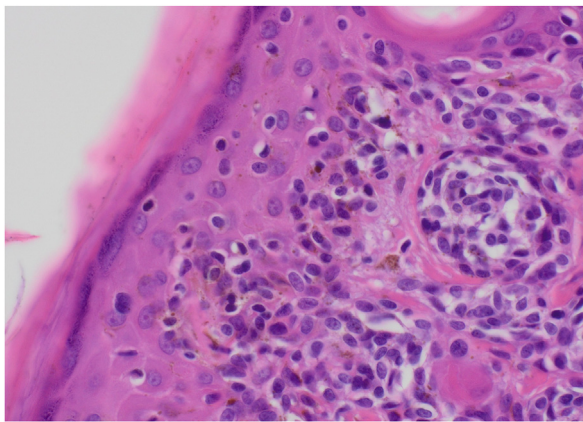


Fig 7. A high-resolution view of the lesion on hematoxylin and eosin stain demonstrating nests of melanocytic cells at the junctional level, and intraepidermal (pagetoid) spread.

Conflicts of interest

None disclosed.

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