

# Longitudinal Melanonychia Biopsy: What Not to Do

Jorge Ocampo-Garza MD,<sup>a</sup> Joana Mendes Bretas MD,<sup>b</sup> Daiane Matana MD,<sup>c</sup> Paula Jacomini Sobral MD,<sup>c</sup>  
Curtis T. Thompson MD,<sup>d</sup> Martin Zaiac MD,<sup>e</sup> and Antonella Tosti MD<sup>f</sup>

<sup>a</sup>University Hospital “Dr. José Eleuterio González”, Universidad Autónoma de Nuevo León, Monterrey, México

<sup>b</sup>Clinica Dermatológica Joana Mendes Bretas. Belo Horizonte, Brazil

<sup>c</sup>Dermatology Department, Universidade Federal do Rio de Janeiro. Rio de Janeiro, Brazil

<sup>d</sup>CTA Lab, Tigard, OR; Departments of Dermatology, Pathology and Biomedical Engineering, Oregon Health and Science University, Portland, OR

<sup>e</sup>Mount Sinai Medical Center, Miami Beach, FL

<sup>f</sup>University of Miami, Miami, FL

## ABSTRACT

The nail matrix biopsy is an important technique in confirming or excluding a diagnosis of melanoma in a patient with longitudinal melanonychia. Dermatologists are the first-line diagnosticians for these pigmented lesions of the nail unit, however, for different reasons, some are reluctant to perform a nail biopsy. This case demonstrates how a poor biopsy technique resulted in a misdiagnosis in a patient with melanoma in situ.

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The nail matrix biopsy is an important technique in confirming or excluding a diagnosis of melanoma in a patient with longitudinal melanonychia.<sup>1</sup> Due to lack of experience, many dermatologists are reluctant to perform a nail biopsy, viewing the procedure as painful, with a chance of permanent nail dystrophy.<sup>2</sup> An improper biopsy may result in an inadequate specimen, and therefore, an insufficient or incorrect histopathological diagnosis.<sup>2</sup> The following case demonstrates how a poor biopsy technique resulted in a misdiagnosis in a patient with melanoma in situ.

A 29-year-old male patient with Fitzpatrick skin type III presented with a band of longitudinal melanonychia affecting his right thumb. The lesion had been biopsied 4 weeks before, and he was told that histopathology showed a benign lesion (reported as a benign melanonychia). He was concerned because the proximal nail was still pigmented after the biopsy.

Physical examination revealed a 2mm band of longitudinal melanonychia in the central part of the right thumb. The nail plate had a 3mm hole from the prior biopsy, 5 mm distal to the proximal nail fold, with an associated half-moon shaped scar. The scar and the hole resulting prior punch biopsy, which had been taken through the proximal nail fold, nail plate, and directly to the matrix with the same punch, and which did not include the entire width of band (Figure 1a). Dermoscopy showed a triangular-shaped dark brown band with irregular lines, dots, and globules (Figure 1b). The patient had pictures of his thumb immediately before and after the biopsy showing a triangular-shaped band and the subsequent proximal nail fold scar (Figure 2a, b). At this point, the pigmented lesion was

completely excised. After reflecting the nail plate, allowing a direct visualization of the band and more precise sampling, a tangential biopsy of the entire pigmented band in the nail matrix was performed. Histopathology in this second biopsy showed definitive melanoma in situ.

Different techniques have been described for the biopsy of longitudinal melanonychia, depending upon several factors, such as the degree of suspicion of malignancy, the presence of periungual pigmentation or a Hutchinson's sign, the exact location of the origin of the band (ie, proximal or distal matrix), and the width of the band.<sup>2,3</sup> A double punch biopsy technique has been recommended in cases where the pigmented band is less than 3 mm in width.<sup>2</sup> However, with this method, retraction of the proximal nail fold must be performed,<sup>3</sup> exposing the origin of the band (direct visualization) and allowing more precise sampling. Zaiac et al<sup>4</sup> described a technique, termed “submarine hatch,” in which a double punch biopsy is performed, but the nail plate is retained. They reported excellent long-term aesthetic and functional results. In our patient, the clinical findings of triangular-shaped longitudinal melanonychia and dots and globules in the nail plate on dermoscopy increased our clinical suspicion of melanoma. These features have been described by Inoue et al<sup>5</sup> as suspicious of melanoma.

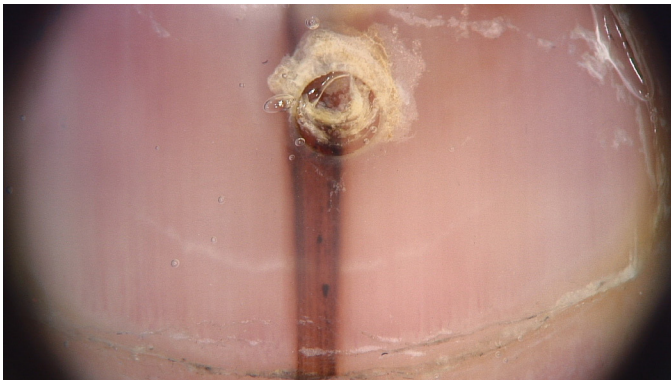
Proper submission of the specimen for histopathological analysis is also important, since a delicate and small nail matrix biopsy may be damaged if it is simply submitted in a bottle of formalin. An easy technique in which the specimen is submitted on paper inside a tissue cassette has been described

**FIGURE 1. (A)** Longitudinal melanonychia with a 3mm hole approximately 5 mm from the proximal nail fold that presented a half moon shaped scar in correspondence of the band. The scar and the hole resulting from previous punch taken through the proximal nail fold did not include the whole band. **(B)** Dermoscopy showing a triangular shaped dark brown band with irregular lines and dots and globules.

(A)



(B)



by Reing et al.<sup>6</sup> Level sections and special stains should also be performed in the laboratory with the initial sections, since refacing the tissue block often results in a significant loss of tissue with a small biopsy.

In summary, nail unit assessment to rule-out melanoma requires a close clinical evaluation, including dermoscopy, and a carefully-planned biopsy technique, which may vary depending upon the location of the pigmented lesion. Though dermatologists may not feel confident in this treatment, they remain the first-line diagnosticians for these pigmented lesions of the nail unit, and, thus, should strive for competence.

## DISCLOSURES

The authors have no conflicts of interest to report.

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**FIGURE 2. (A)** Right thumb before the first biopsy showing a triangular band and **(B)** after the first biopsy showing a proximal nail fold scar.

(A)



(B)



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## AUTHOR CORRESPONDENCE

**Jorge Ocampo-Garza MD**

E-mail:..... dr.jorgeocampogarza@gmail.com