

ORIGINAL ARTICLE

A prospective study evaluating the utility of a 2-mm biopsy margin for complete removal of histologically atypical (dysplastic) nevi

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Background: Complete removal of individual dysplastic nevi (DN) is often accomplished by a second surgical procedure after the initial biopsy. The choice to perform the second procedure is strongly influenced by histopathologic margin status of the initial biopsy specimen.

Objective: To evaluate the clinical and histopathologic outcomes of in toto biopsy of DN using a predetermined margin of normal skin.

Methods: We conducted a prospective study of a saucerization method using a defined 2-mm margin in patients undergoing biopsy of a pigmented skin lesion.

Results: We performed 151 biopsies in 138 patients. Overall, 137 of 151 lesions subjected to biopsy (90.7%) were melanocytic: 86 DN (57.0%), 40 nevi without atypia (26.5%), and 11 melanomas (7.3%). Of 78 DN, 68 (87.2%) were removed with clear histopathologic margins (8 DN were excluded because of inadequate processing). There was no clinical evidence of recurrence at any of the biopsy sites that were simply observed (i.e., not re-excised) over a median of 16.9 months.

Limitations: There were few biopsies performed on the face.

Conclusions: The complete histopathologic removal of nearly 9 of 10 DN using a peripheral margin of 2 mm of normal skin and a depth at the dermis and subcutaneous fat junction has the potential to decrease second procedures at DN biopsy sites, thereby decreasing patient morbidity and saving health care dollars. (J Am Acad Dermatol <http://dx.doi.org/10.1016/j.jaad.2017.07.016>.)

Key words: atopic nevi; biopsy; dysplastic nevi; margin; melanoma; prospective; removal; saucerization.

Clinically atypical nevi identify patients at increased risk for melanoma,¹ and these lesions are often removed out of concern that they are melanomas and not nevi.² The evidence base supporting the removal method for clinically atypical or dysplastic nevi (DN) is limited primarily to retrospective studies and expert opinion.^{3,4} Oftentimes, DN are completely removed with a narrow margin or are subjected to a partial biopsy.

To render an accurate diagnosis, some pathologists recommend that a second surgical procedure be performed at sites of biopsy of DN with moderate and/or severe dysplasia to ensure complete removal of all melanocytic cells. Management of DN is strongly influenced by these comments.⁵⁻⁹ Initial biopsy sites are frequently excised if the biopsy report indicates that the lesions extend to the biopsy margins. However, there is poor interobserver

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agreement in the grading of histologic atypia among dermatopathologists,¹⁰ and some pathologists do not grade atypia at all, contributing to the variability in the clinical management of DN.

Taken together, the lack of prospective clinical trial evidence establishing guidelines for the removal of DN and the lack of agreement among dermatopathologists in grading DN propagate potentially unnecessary excisions of biopsy sites from which DN were completely removed clinically but not microscopically. One method to reduce health care costs and associated patient morbidity would be to eliminate the need for the second procedure by capturing the entire lesion and a sufficient margin of normal skin during the initial biopsy, making the second procedure unnecessary. To test this concept we conducted a prospective study to evaluate the clinical and histopathologic outcomes of biopsies of DN consisting of complete removal with a predetermined margin of 2 mm.

METHODS

Patients

We conducted a prospective study of the complete histologic removal of clinically atypical or dysplastic nevi by using a saucerization technique that included a 2-mm margin of clinically uninvolved, normal skin. A 2-mm margin was chosen because nevi typically have subclinical, microscopic extension. Eligible patients were age 18 years or older who presented with a pigmented skin lesion for which the differential diagnosis included a clinically atypical nevus. Patients were recruited and enrolled by 3 study dermatologists (S.K., J.S., and D.P.) during routine visits to the New York University (NYU) Department of Dermatology Faculty Practice (New York, NY) between March 2013 and December 2015. All patients consented to participation in this study. The study was approved by the NYU School of Medicine Institutional Review Board (study S12-03921).

Biopsy technique

The study physicians developed a saucerization technique by consensus agreement, and together they practiced the technique on pigs' feet before patient enrollment. The technique involved measuring and outlining a 2-mm margin of normal

skin with a gentian violet pen before injection with local anesthetic. The margin was scored with a No. 15 blade, and a tangential saucerization was performed to the deep dermal-subcutaneous junction.

Specimen processing

Biopsy specimens were processed at the NYU Dermatopathology Laboratory. Each specimen was bisected or trisected. For lesions identified as a histologically atypical or dysplastic nevus, step sections through the block were performed to thoroughly assess all margins. All diagnoses, including margin status and recommendations, were rendered by the study dermatopathologist (S.M.).

Patient management

Clinicians chose to observe or excise biopsy sites on the basis of their clinical judgment. In cases in which biopsy sites were excised, the excision specimens were examined by the study dermatopathologist. Biopsy sites selected for observation were evaluated for repigmentation at routine follow-up visits to detect possible neoplastic recurrence or inadequate nevus removal during initial biopsy.

Data collection and statistics

Patient demographics, clinical lesion size, body site, biopsy outcomes, and follow-up treatment were analyzed with descriptive statistics. Each biopsy site was considered a separate event. Outcome measures included proportion of DN removed with clear margins, proportion of DN re-excised, and proportion of biopsy sites at which repigmentation developed. Associations between margin positivity and demographic factors or lesion characteristics were analyzed using Fisher's exact test for categorical variables and Wilcoxon's rank sum test for continuous variables.

RESULTS

Patient and lesion clinical characteristics

We performed 151 biopsies on 138 patients (73 male [52.9%] and 65 female [47.1%] patients). The median age at the time of enrollment was 46.1 years. There were 54 patients (39.1%) with a personal history of melanoma, and 29 patients (21.0%) had a family history of melanoma (Table 1).

CAPSULE SUMMARY

- Biopsy sites of dysplastic nevi (DN) are frequently re-excised if margins are positive after the initial procedure.
- A saucerization biopsy with a 2-mm peripheral margin of normal skin completely removes nearly 9 of 10 DN.
- This technique may decrease second procedures at DN biopsy sites, thereby decreasing patient morbidity and saving health care dollars.

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