The Disappearing Nail Bed: A Possible Outcome of Onycholysis

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Onycholysis is a separation of the nail plate from the underlying and/or lateral supporting structures (hyponychium, nail bed, lateral nail folds). It is a commonly seen disorder that is usually asymptomatic. We have observed a number of cases of onycholysis in which the distal nail bed appeared to shrink. The nail bed becomes keratinized and produces dermatoglyphics like the normal tip of a digit. This may explain why it is difficult to promote reattachment. If onycholysis persists, the condition is more likely to become irreversible and form the "disappearing nail bed." The best chance of resolving onycholysis is to try to identify the causative agent and institute early therapy.

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Figure 1. Nail bed lichen planus.

Distal onycholysis results from separation of the nail plate from the underlying supporting structures and, in most cases, is a consequence of pathologic conditions that affect the hyponychium.[1] A commonly seen disorder, distal onycholysis has many causes, including infections; contact irritants; trauma; systemic disease; drugs; and dermatologic, neoplastic, and inherited factors.[1] Distal onycholysis is usually asymptomatic, hence, the appearance of the nail is generally what leads the patient to consult a dermatologist.

We have observed a number of cases of onycholysis, usually of the great toenail, but occasionally of the nail of the thumb or index finger, in which the distal nail bed appears to shrink. In this condition, the area becomes keratinized and produces dermatoglyphics similar to those of the normal tip of a digit.[1,2] This development may explain why it is difficult to promote reattachment of the nail. It is generally assumed that the longer the disorder has been present, the less likely it is to resolve.[1-6] However, the chronicity of onycholysis has never been quantified or defined.

The nail bed epithelium is thin, consisting of 2 to 5 cell layers. Keratinization of the nail bed produces a thin horny layer that forms part of the ventral nail plate. In the formation of the

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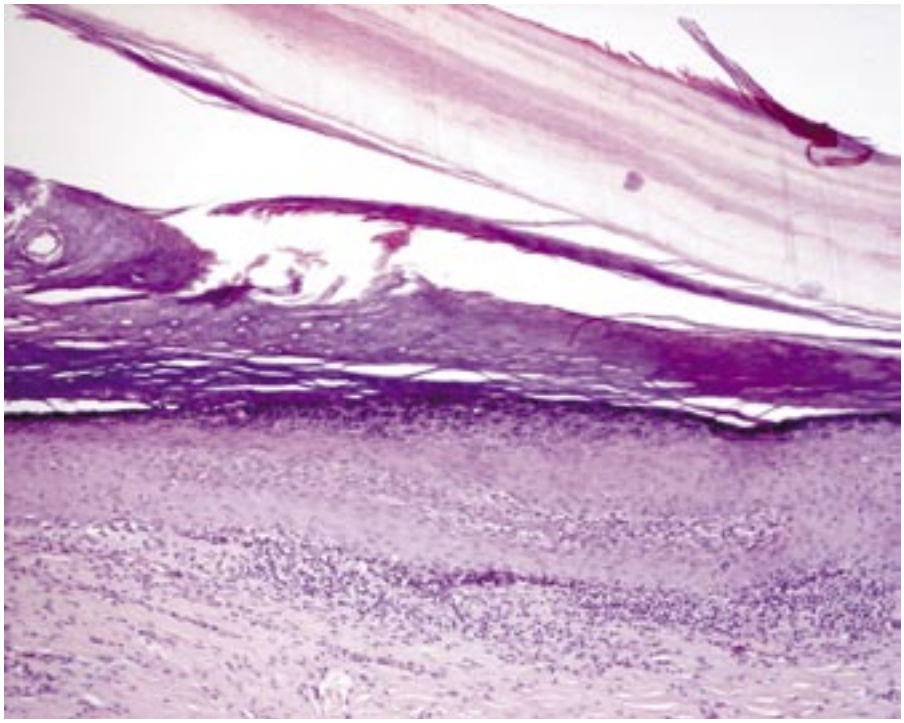

Figure 2. Nail bed lichen planus (H&E, original magnification ×80).

nail plate, the nail bed contributes to about 20% of the terminal nail thickness and mass. Normal nail bed keratinization is not associated with the formation of a granular layer.[7]

Keratinization of the nail bed with a granular layer causes the production of a soft ventral nail plate, which may not adequately adhere to the nail bed, causing onycholysis. This condition may occur even in the absence of clinical subungual hyperkeratosis. A soft, thin, and easily breakable nail plate also occurs when the nail matrix keratinizes with a granular layer. This formation of a soft nail plate may occur in the presence or absence of inflammation.[8]

Nail bed keratinization with a granular layer may occur in specific dermatologic conditions, such as nail lichen planus (Figures 1 and 2), or it may result from a variety of different stimuli. Therefore, nail bed hypergranulosis may represent a reaction to a variety of inflammatory and noninflammatory insults.

Persistent onycholysis is more likely to become irreversible and lead to the formation of the so-called disappearing nail bed (Figure 3). The term *disappearing nail bed* is similar to the term *disappearing digit,* which is an adverse effect of topical corticosteroids.[9] However, these 2 diagnoses are completely different clinical situations. Disappearing nail bed refers to a nail bed that becomes shorter and keratinized, producing dermatoglyphics; the shape

Figure 3. Disappearing nail bed in chronic nail trauma.

Recommendations for the Treatment of Onycholysis

- Keep the nails short. A long nail acts as a lever.
- Clip away the onycholytic nail plate, and repeat this procedure every 2 weeks until the nail plate grows attached.
- Dry the exposed nail bed carefully after each hand washing.
- Follow a strict irritant-avoidance regimen.
- Avoid nail cosmetics until the onycholysis has been resolved for at least one month.
- Wear cotton gloves under vinyl gloves when performing wet work and preparing foods.
- Consider the use of a broad-spectrum topical antifungal (0.77% ciclopiroxolamine lotion) twice a day.[6]
- Consider application of a topical antiseptic solution (4% thymol in chloroform) on the exposed nail bed.

of the digit remains normal. Disappearing digit is digital atrophy with bone resorption due to prolonged application of high-potency topical steroids. The affected digit shows a sharpened-pencil appearance with thinning, erythema, and scaling of the periungual skin.

To enhance resolution of onycholysis, it is important to identify the causative factors and minimize or eradicate them. We therefore suggest a prompt and complete evaluation of onycholysis with early institution of the recommendations outlined in the Table.

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