

Diagnostic Applications of Nail Clippings



Sasha Stephen, MD^a, Antonella Tosti, MD^{d,*}, Adam I. Rubin, MD^{a,b,c}

KEYWORDS

- Nail clipping • Nail pathology • Onychomycosis • Melanonychia • Onychomatricoma
- Subungual hematoma • Nail psoriasis • Nail cosmetics

KEY POINTS

- There is substantial overlap in the histologic features of nail unit psoriasis and onychomycosis in a nail clipping specimen, therefore a fungal stain is essential to diagnose onychomycosis.
- Use of nail softening agents in the preparation of nail clippings can substantially improve the tissue quality and histologic evaluation.
- Diaminobenzidine staining is useful in confirming the presence of hemorrhage in a nail clipping specimen.
- Fontana staining of a nail clipping can be helpful in localizing the origin of pigmentation within the nail matrix in cases of melanonychia.
- Nail clipping specimens can be used for perpetrator DNA and heavy metal poisoning evaluation in forensics.

INTRODUCTION

Nail clipping is one of the simplest diagnostic techniques performed in medicine, but it is often underused in the diagnosis of disease. Compared with many other tests in medicine, both patients and physicians have an instant familiarity with the procedure, because nail clippings are performed as part of routine grooming procedures. The benefits of performing nail clipping for diagnostic purposes are numerous, including minimal risk to the patient, increased diagnostic information about a nail disorder, rapid completion in the office, and in some cases the preparation of permanent glass slides that can be referred to in the future for further diagnostic study.

Dermatoses affecting the nail unit can be difficult to diagnose. Infectious, inflammatory, and neoplastic disorders of the nail unit can mimic

each other on clinical examination.¹ Histopathology is helpful, and often necessary, to establish a specific diagnosis and to distinguish such similar-appearing entities. However, the need for tissue diagnosis can lead to unease, because clinicians are often reluctant to obtain a soft tissue biopsy specimen from the nail unit. Barriers to obtaining a soft tissue specimen from the nail unit include concern for a subsequent permanent nail unit dystrophy, lack of prior training in nail unit surgery, and the perceived technical difficulty of a nail unit biopsy.²

As opposed to obtaining a soft tissue specimen from the nail unit, obtaining a nail clipping does not require any specialized training, and can be used to evaluate a wide range of nail disorders. This article describes a variety of uses of nail clippings to help diagnose dermatoses of the nail unit, as well as best practices in order to obtain the

Conflicts of interest: None.

^a Department of Dermatology, Hospital of the University of Pennsylvania, 3600 Spruce Street, 2 Maloney, Philadelphia, PA 19104, USA; ^b The Children's Hospital of Philadelphia, Philadelphia, PA 19104, USA;

^c Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA 19104, USA;

^d Department of Dermatology and Cutaneous Surgery, Miller School of Medicine, University of Miami, 1600 Northwest 10th Avenue, RMSB 2023A, Locator Code R-250 Miami, FL 33136, USA

* Corresponding author.

E-mail address: Atosti@med.miami.edu

Dermatol Clin 33 (2015) 289–301

<http://dx.doi.org/10.1016/j.det.2014.12.011>

0733-8635/15/\$ – see front matter © 2015 Elsevier Inc. All rights reserved.

specimen, and correlate the findings within the specific clinical context. This article covers the use of nail clippings for the diagnosis of onychomycosis, nail unit psoriasis, subungual hematoma, and onychomatricoma (OM), and for forensics, surgical planning for nail unit biopsy of melanonychia, as well as distinguishing nail cosmetics from other dermatoses.

BEST PRACTICES FOR OBTAINING A NAIL CLIPPING FOR HISTOPATHOLOGIC EXAMINATION

In order to maximize diagnostic yield from a nail clipping, it is important to obtain a sample that is at least 4 mm in length. A common error is collecting a sample that is too small. If a very small sample is submitted, the nail plate tissue that is examined may not be representative of the overall pathologic process in the nail unit. In addition, a tiny sample may be damaged during routine laboratory processing procedures, and not survive the process. If a patient's nail is not long enough to obtain a sufficient sample, the patient should allow the nail to grow, and return to have a nail clipping at a later date. It may be useful to have the office staff explain to patients who are being evaluated for a nail problem, either verbally or in preprepared paperwork that is mailed to patients before their visits, that they should allow their nails to grow to a sufficient length and, in particular, should not clip their own nails before evaluation.

If the clinician is interested in performing a fungal culture in addition to the nail clipping, the target nail should be cleansed either with an alcohol swab or soap and water before clipping the nail, but this step is not required for histologic assessment alone. Cleansing the nail helps to remove the presence of any contaminating bacteria. There are a variety of nail instruments that can be used to obtain the nail clipping. A dual-action nail nipper is particularly helpful because of its hinged shape, and can create a large force at the point of clipping, making the clipping easier, especially of thick nails (**Fig. 1A**). A heavy-duty nail nipper may be used as well. Routine nail clippers, as are used by laypersons at home, are not recommended to obtain nail clippings in the medical office setting because of their inferiority compared with the aforementioned instruments.

When performing the nail clipping, the nail should be clipped as far back as possible without causing pain or bleeding. This method ensures that a sufficient sample is obtained and, in the case of onychomycosis, that the active area of infection is included. In the case of onychomycosis, if only a small distal sample of the nail plate is obtained, it may provide a false-negative result because of a sampling error. If onycholysis is present, the nail should be clipped back to the most proximal attachment of the nail plate to the nail bed. It is helpful to pathologists evaluating specimens to be provided with sufficient clinical context, as well as any special requests for

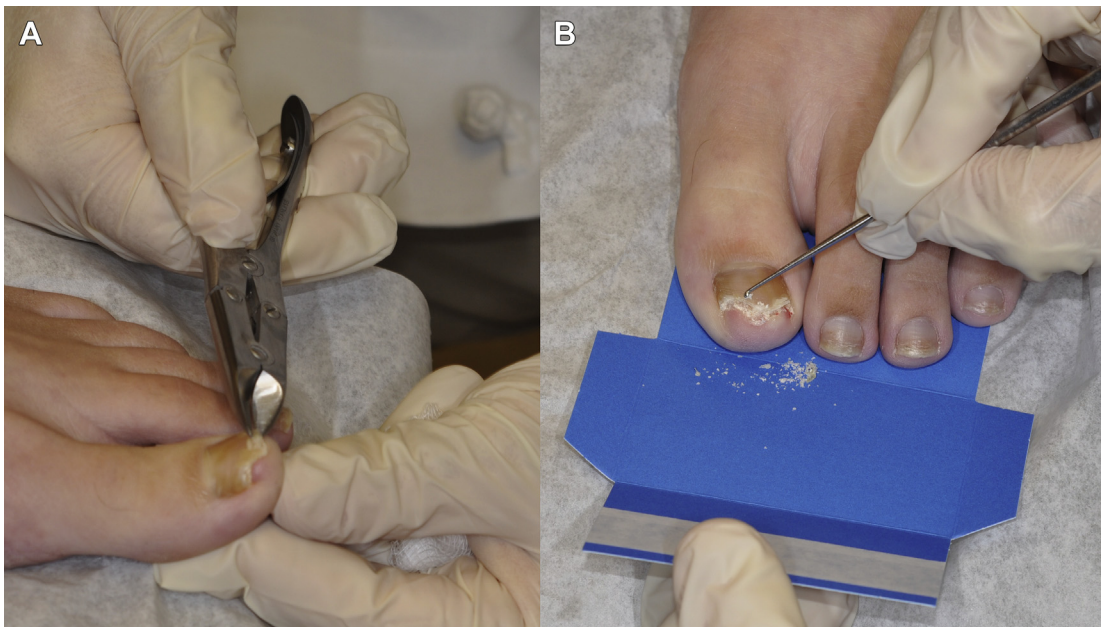


Fig. 1. Optimal sampling of a nail clipping. (A) The nail is clipped back with a double-action nail nipper. (B) Subungual debris is removed with a small curette and placed on a Dermapack.

Download English Version:

<https://daneshyari.com/en/article/3195406>

Download Persian Version:

<https://daneshyari.com/article/3195406>

[Daneshyari.com](https://daneshyari.com)