Symposium-Nails-Part II

Role of nail biopsy as a diagnostic tool

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ABSTRACT

Nail biopsy (NB) is an investigation that is not routinely resorted to by most of the dermatologists. The commonly cited reasons are the complexity of the procedure, risk of scarring and the reluctance of the patient. However, in cases with isolated nail psoriasis, isolated nail lichen planus, onychomycosis not confirmed on direct microscopy and culture, or longitudinal melanonychia, the treating dermatologist is left with no choice but to resort to this procedure. Nail as a unit, is capable of projecting only a limited number of clinical manifestations. This is responsible for the more or less similar clinical presentation of many different nail disorders. Hence, a practical knowledge of the indications, appropriate patient selection, procedural details and histopathological interpretation of a NB is a must-have for any practicing dermatologist. The risk of scarring is none to minimal if appropriate type of biopsy is performed, not to mention the wealth of histopathological data that can be retrieved from the nail unit. This article aims to explore the various practical do's and don'ts for the NB and tells us what to expect from of the procedure.

Key words: Diagnosis, histopathology, nail biopsy

INTRODUCTION

The nail biopsy (NB) is a useful technique to obtain a diagnosis of a clinically ambiguous nail condition that is not diagnosable by history, clinical appearance and routine mycology.[1] It is an investigation that not only provides etiologic, diagnostic and prognostic information but also aids in understanding the pathogenesis of nail diseases.[2] No doubt it is of great academic value, but the question addressed in this manuscript is the practical utility of NB in our day to day dermatologic practice. This article is not aimed at teaching the NB techniques in great detail but at putting forth practical tips, do's and don'ts with respect to a NB.

For years, NB has been shunned as a difficult and scarring procedure, which is seldom required in day to day practice.[2] Only a few studies with a limited number of patients have been carried out to assess the utility of NB in dermatology,[2-5] while some others have focussed on histopathology of specific nail diseases, e.g. onychomycosis,[6,7] psoriasis,[4,8] melanonychia,[9,10] etc. Apart from these attempts, NB and nail histopathology have not been in much vogue either in the literature or in practice due to various factors. The objective of a NB is to arrive at a precise diagnosis of nail pathology with a simple, safe surgical procedure, simultaneously avoiding pain or permanent nail dystrophy.[1] Not every patient needs to undergo NB but, when required, there are certain essential prerequisites to be fulfilled.

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PREREQUISITES FOR A NAIL BIOPSY

Knowledge of nail anatomy

A precise understanding of the nail anatomy is an essential prerequisite, and one can refer to standard texts on this subject as it is out of scope of the present communication.[1,11] While operating, the nail unit anatomy should be thoroughly respected. The essential structures like the ventral and proximal nail matrix (responsible for nail plate surface), the

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distal nail matrix (responsible for nail plate structure and adherence to nail bed), and the extensor tendons (responsible for normal movement and function) of the digit should be safeguarded. Because of the absence of any subcutaneous tissue in the nail unit, any biopsy of the nail unit needs to be taken down to the periosteum.

Patient selection

Patient selection is important as NB needs to be performed only for a patient in whom the diagnosis has not been forthcoming due to the absence of typical skin lesions or histopathology and the nail condition does not yield adequate information on routine investigations like direct microscopy or culture. An ideal candidate for NB should be the one in whom either there are no skin lesions or they are not contributing towards a diagnosis, as skin biopsy is always a safer and easier procedure than NB. Patients with diabetes, peripheral vascular disease, or arterial insufficiency should not be subjected to NB.[12] An informed written consent should be taken as with all other surgical procedures.

Surgical technique

Exsanguination followed by a digital tourniquet is also an essential prerequisite for any fruitful procedure, as the nail bed is a highly vascular structure that may bleed profusely when manipulated. It is important to note that the tourniquet should not be kept on for more than 15 min at a stretch.[1] Commonly used nail unit anesthesia techniques include the proximal "ring block" (infiltration of anesthetic solution at the base of the digit) or the distal "wing block" (infiltration in the proximal and lateral nail folds).[1]

Instrumentation

Appropriate instruments make life easy for any nail surgeon. The nail spatula/elevator, nail splitter, and sharp biopsy punches (3 mm and 4 mm) are absolute must haves for a nail surgeon. Skin hook, fine-tipped, curved atraumatic forceps and scissors are valuable add-ons [Figure 1].

Histopathology

A competent dermatopathologist who is familiar with the basic histopathologic features of the nail is also an essential prerequisite. It is important to note that there are basic differences in nail histopathology in health as well as in disease, as compared to that of the skin, and these need to be understood and appreciated.[13] Proper embedding and sectioning of the NB specimen is essential prior to this.

Side-effects

The risks associated with the NB procedure should be explained and consent of the patient must be obtained beforehand. These include the possibility of permanent nail dystrophy, possibility of not achieving a diagnosis even after NB, more time required for regrowth of the nail, bleeding, and risk of infection as with any other surgery.

TECHNIQUES/TYPES

NB could be taken as an excision biopsy, punch biopsy, or longitudinal biopsy. A punch or an excision biopsy can be applied to any individual anatomical part of the nail unit, like the nail bed, nail plate, nail fold, or matrix. A longitudinal NB gives maximum histopathological information, but it is not routinely resorted to due to its scarring potential. Nail as a unit is capable of producing a very limited set of clinical reaction patterns, e.g. onycholysis can be a manifestation of onychomycosis, nail psoriasis, or even nail lichen planus. Hence, finding a histopathologic cause is generally required prior to initiating specific therapy. The trick lies in choosing the area to be biopsied, i.e. the area that will show the histopathological diagnostic changes, and Table 1 can serve as a guide in this regard. As is well known, the changes in nail plate occur as a result of the pathology of the nail matrix; hence, the histopathological features of disorders like melanonychia, erythronychia, pitting, etc. are best represented in a nail matrix biopsy. However, for features like onycholysis, subungual hyperkeratosis, salmon patch, etc. one would need to take a nail bed biopsy.

Based on the site from where it is being taken, NB can be classified as follows [Figure 2]:

1. Nail plate biopsy (NPB) is the easiest and the least-scarring technique, wherein a part of the nail plate (onycholysed or not) is separated and sent for histopathologic analysis.[7] It gives limited histopathological data but is useful in suspected cases of onychomycosis (demonstrates nail plate fungal invasion),[7] warts (adherent epithelium will show koilocytes[2]) [Figure 3], and also nail psoriasis (nail plate neutrophilic infiltration, serum crusts, and parakeratosis can be easily seen). The utility of NPB in systemic disease has also been explored extensively.[14]
2. Nail bed biopsy (NBB) is generally performed

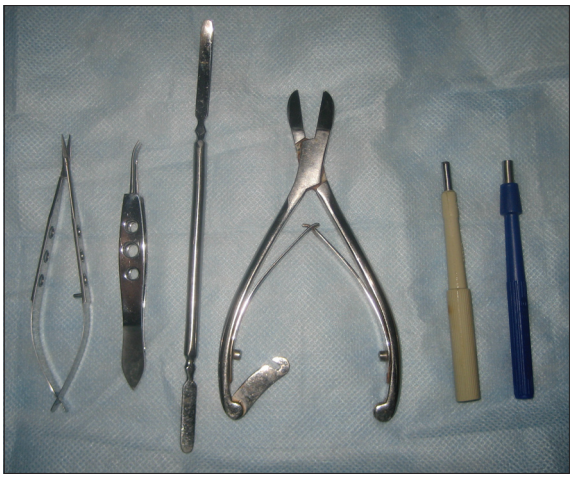

Figure 1: Instruments required for a nail biopsy. Shown are fine curved (Castro Veijo's) scissors, fine curved (Jeweller's) forceps, nail spatula, nail splitter, and disposable biopsy punches (3 mm and 4 mm)

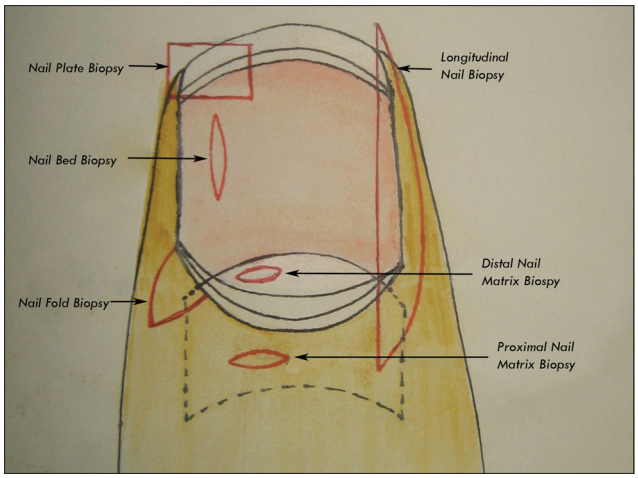

Figure 2: Different types of nail biopsy. The incision lines are shown in red

Table 1: Site and technique of nail biopsy for common nail disorders

Clinical feature	Area to be biopsied	Technique of biopsy
Pitting, onychorrhexis, Beau's lines	Proximal matrix	NMB (punch or excision) with retraction of PNF
Leukonychia	Intermediate matrix	NMB (punch or excision) with retraction of PNF
Focal onycholysis, thinned nail plate, erythema of the lunula	Distal matrix	NMB (punch or excision) without retraction of PNF
Longitudinal melanonychia	Point of origin in the matrix	Punch biopsy or tangential excision of the matrix origin
"Oil drop" sign or "salmon patch," subungual hyperkeratosis, onycholysis, splinter hemorrhages	Nail bed	NBB (punch or excision)
Subungual hyperkeratosis, onycholysis	Hyponychium	NBB (punch or excision)
Crumbling and destruction plus other changes secondary to the specific site	Nail plate	Partial nail plate avulsion or NBB
Suspected onychomycosis (DLSO or TDO)	Onycholysed nail plate	NPB
Any dermatoses over nail folds	Proximal and lateral nail folds	Punch or excision biopsy

NB: Nail biopsy, NMB: Nail matrix biopsy, PNF: Proximal nail fold, NBB: Nail bed biopsy, DLSO: Distal and lateral subungual onychomycosis, TDO: Total dystrophic onychomycosis, NPB: Nail plate biopsy

to distinguish between two or more conditions with a similar clinical pattern, like onycholysis or subungual hyperkeratosis, cases with discoloration of the nail bed, or any painful nail bed lesion. It can be an elliptical excision (longitudinally oriented) or a punch biopsy [Figure 4]. Prior nail avulsion may or may not be required. If required, then partial avulsion to expose the area to be biopsied is preferred to total avulsion. Nail bed defects up to 3 mm can be left unsutured.[1,12] Postoperative healing of the nail bed is generally uneventful, and the incidence of scarring and onycholysis is low. NBB is of therapeutic utility in cases with nail bed tumors, like glomus tumor.

3. Nail fold biopsy (NFB) can be done from the proximal (PNF) or lateral nail fold (LNF), and is indicated for paronychial dermatoses, inflammation, or nail fold tumors (benign or malignant). It can be shave biopsy, elliptical excision, punch, or *en bloc* excision (for PNF).[15] Prior to any excision over the nail folds, it is wise to insert a nail spatula underneath the concerned fold to prevent any inadvertent damage to the underlying nail bed or matrix.
4. Nail matrix biopsy (NMB) is resorted to for the exploration of matrix origin of longitudinal pigmented bands, benign lesions of the nail matrix (glomus tumor), malignant lesions (melanoma), or acquired nail plate defects like punctate leukonychia, onychorrhexis, or pitting. The techniques employed are elliptical excision (horizontally oriented), punch excision (≤3 mm), and tangential (shave) excision. A proximal nail fold-lunula double-punch technique has also been described.[16] Whenever possible, the distal matrix should be biopsied rather than the proximal matrix, and the lunular margin should not be compromised to minimize scarring. If a biopsy is to be taken from the proximal matrix, lateral release incisions at the junction of proximal and lateral nail folds

along with stay sutures (as shown) help in exposing the proximal matrix area [Figure 5].

5. Longitudinal nail biopsy (LNB) is performed when it is desirable to sample the entire nail unit.[17,18] The resultant defect needs to be sutured to ensure proper healing [Figure 6]. It is a very useful technique for the treatment of larger lesions placed asymmetrically over the affected nail. This technique samples the representative areas of each part of the nail unit, and has been of immense academic help. However, being a potentially scarring procedure, its utility in day to day clinical practice is low.

Nail plate specimens when taken as a part of biopsy need to be softened before processing. For this purpose, various agents have been recommended, which include 3% phenol, cedar wood oil, and chitin-softening solutions composed of mercuric chloride, chromic acid, acetic acid, and 95% alcohol.[2]

Complications expected with the NB include bleeding, secondary infection, scarring of nail bed, onycholysis, and reduction in nail width, malalignment of the axis of the regrowing nail, or growth of nail spicules.[12] The last three are almost exclusively seen with LNB.

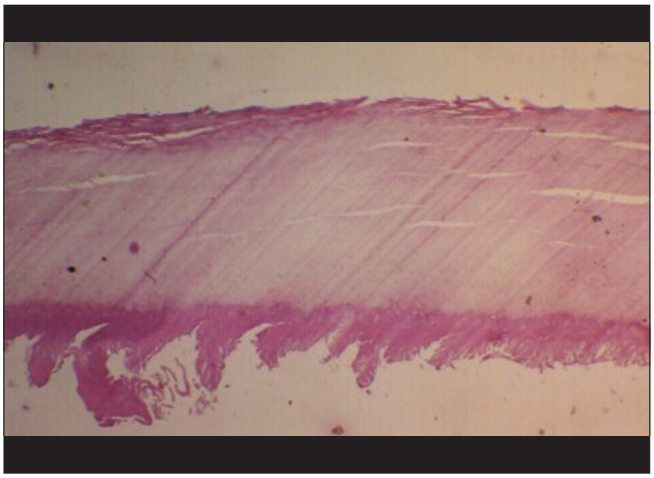

Figure 3: Nail plate biopsy with adherent nail plate epithelium showing evidence of a subungual wart. Note the marked papillomatosis of the nail bed epithelium (H and E, ×60)

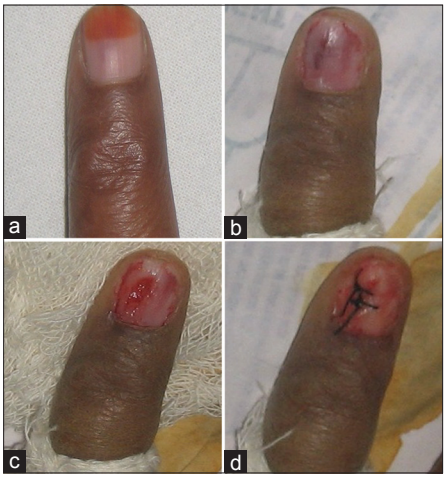

Figure 4: Procedure of a nail bed biopsy. (a) Suspected nail bed glomus tumor. (b) Subungual glomus tumor seen as a bluish mass after nail plate avulsion. (c) Excision of the tumor done. Note that the nail bed incisions are oriented longitudinally. (d) Defect >3 mm in width needs to be sutured

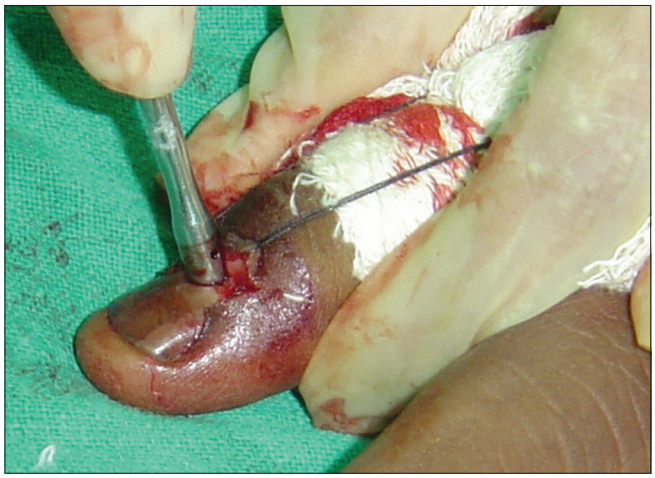

Figure 5: Procedure of nail matrix biopsy. For adequate exposure of the proximal matrix, lateral incisions are made at the junction of the proximal and lateral nail folds. The proximal nail fold is then lifted up and retracted with the help of stay sutures. An adequate-sized punch is then driven down up to the periosteum and the punch biopsy specimen is lifted up

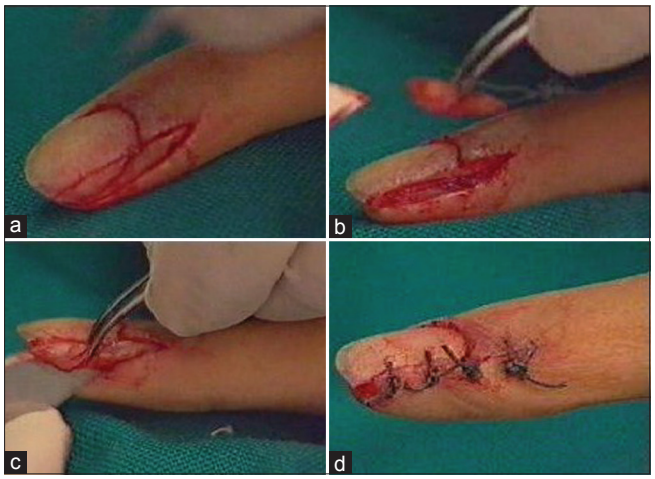

Figure 6: Procedure of longitudinal nail biopsy. (a) The area to be excised is outlined. The incision is linear medially and curved laterally. (b) The incision is carried down to the periosteum and the tissue is lifted up with sharp dissection. (c) The separated specimen for histopathologic examination. (d) The defect is sutured back

HISTOPATHOLOGY

The nail unit has few histopathological features distinct from the normal skin[13] [Figure 7]. Nail fold epithelium lacks any pilosebaceous units, and rete ridges are also minimal to absent. Nail matrix epithelium has broad, club-shaped rete ridges pointing proximally. It is devoid of a granular layer and undergoes onychokeratinisation to produce the nail plate. There is a high density of melanocytes seen even in layers above the basal layer. Nail plate is composed of cornified cells without nuclei, arranged in lamellae that stain strongly with acid fast stains. Nail bed epithelium is only two to three layers thick, devoid of a granular layer, and lacks rete ridges in a sagittal section. The granular layer reappears in the epithelium of the hyponychium. The dermis is highly vascular, containing numerous nerve endings, specialized nerve structures, and glomus bodies.

Not surprisingly, the nail unit histopathology features in disease are also quite different, e.g. in contrast to skin psoriasis, nail psoriasis is characterized by hypergranulosis. The salient features of nail histopathology in selected diseases are outlined in Table 2.[2,4,13] One fact to be borne in mind is that the thin nail bed epithelium is tightly adherent to the nail plate and tends to get avulsed along with it. Hence, a NBB performed after avulsing the nail plate may not give adequate histopathological information, especially in case of inflammatory nail pathology (personal observation) [Figure 3].

INDICATIONS

Earlier studies have described varying degrees of success in establishing a diagnosis with NB. Hanno *et al.* studied predominantly inflammatory nail pathologies and found diagnostic features in 40% of their cases.[4] In the series by de Berker *et al.* comprising mainly of tumors, 93.93% biopsies were diagnostic.[5] Grover *et al.* evaluated 60 nail biopsies of infective as well as noninfective disorders, and found diagnostic histopathology in 64% cases.[2] NB was reported especially useful for definitive diagnosis in nail tumors and infections.[2,4,5] All these studies have documented a low risk of side-effects to NB and demonstrated it to be a simple and safe procedure.[2,7,12] A skillfully performed adequate NB, handled, processed, and interpreted properly, can be an important part of the dermatologist's armamentarium in providing excellent, comprehensive patient care.[19]

The utility of various types of NB has been studied extensively for various common and uncommon nail disorders.

Onychomycosis

This has been an area of active research,[6,7,20,21] and NB with PAS staining has been reported to be the most sensitive method for diagnosis[6] [Figure 8]. Routine histological examination with PAS staining before initiating antifungal therapy was recommended initially.[21] However, in later studies, histopathologic examination has been proposed as a useful complimentary test, indicated if results of other methods are negative and clinical suspicion is high.[6,7]

Twenty nail dystrophy

NB has revealed that the disorder Twenty nail dystrophy (TND) is multifactorial in origin as it may show histopathologic features of nail psoriasis, lichen planus, or spongisosis.[18,22-24] NB has a definite diagnostic utility in cases with TND, where the clinical diagnosis is obscure because of the absence of cutaneous associations. However, it cannot be recommended for the routine evaluation of this otherwise benign disorder, especially because the further treatment options are generally not altered.[25]

Nail psoriasis

NB for nail psoriasis has been an area of interest, especially because 1–5% of the cases with psoriasis may present with purely nail manifestations only.[8] Hanno *et al.* proposed diagnostic criteria of nail psoriasis in the form of presence of neutrophils in the nail bed epithelium (major criterion), hyperkeratosis with parakeratosis, serum exudates, focal hypergranulosis, and nail bed epithelium hyperplasia (minor criteria)[4] [Figure 9]. As onychomycosis may show similar features, Grover *et al.* suggested that PAS negativity for fungal hyphae should be included as a major criterion for the diagnosis of nail psoriasis.[8]

Nail lichen planus

Isolated nail lichen planus (LP) comprises 1–10% cases of LP. As nail LP is potentially scarring and the changes may be irreversible, an effective management of the condition requires that the diagnosis be confirmed on histopathology. The diagnostic features of nail LP have been described on NB.[4,26,27] Peluso *et al.* reported the utility of NB in confirming the diagnosis of LP in an 11-year-old boy, which enabled successful treatment of the case[27] [Figure 10].

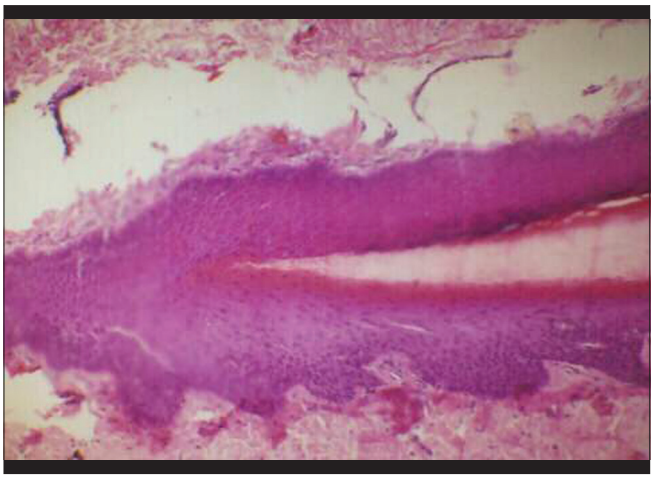

Figure 7: Normal nail unit histopathology showing the nail matrix area. The nail plate is seen arising over the nail matrix area. The characteristic absence of granular layer in the nail matrix epithelium can be noted (H and E, ×160)

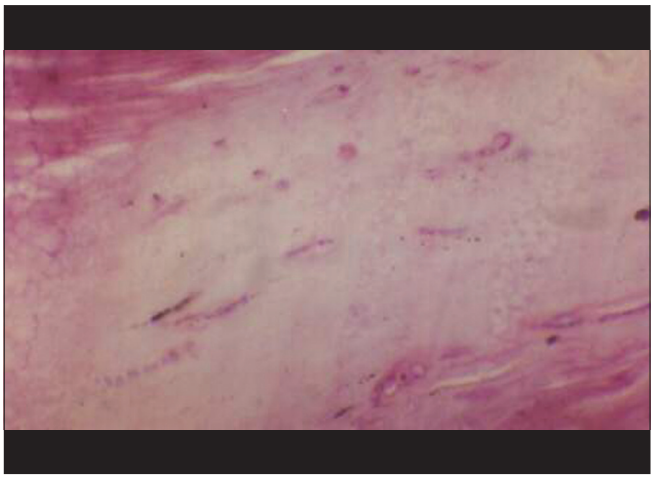

Figure 8: Fungal pseudohyphae seen in a nail plate biopsy (H and E, ×400)

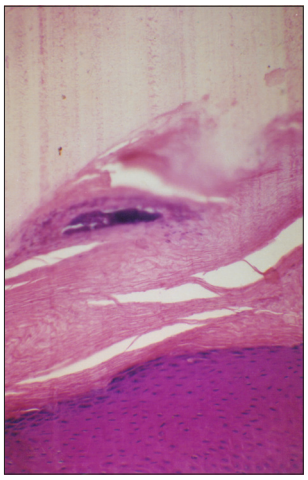

Figure 9: Nail unit biopsy showing psoriasis. Hypergranulosis, parakeratosis, parakeratotic abscess, and serum crusting can be appreciated (H and E, ×160)

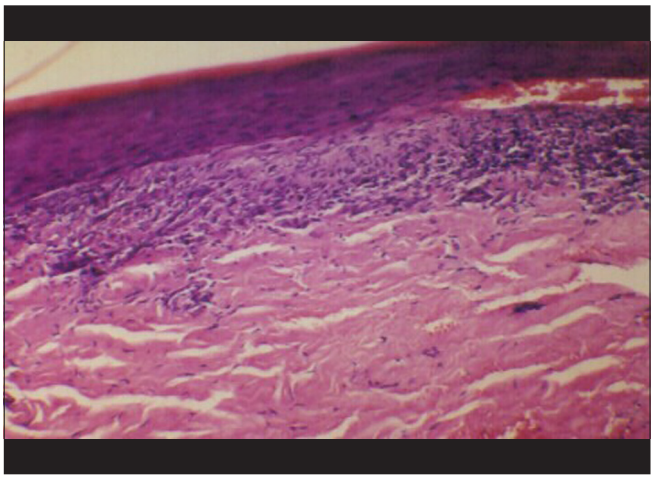

Figure 10: Nail bed epithelium showing changes suggestive of lichen planus. Basal layer dissolution and a band-like infiltrate hugging the epidermis can be seen (H and E, ×160)

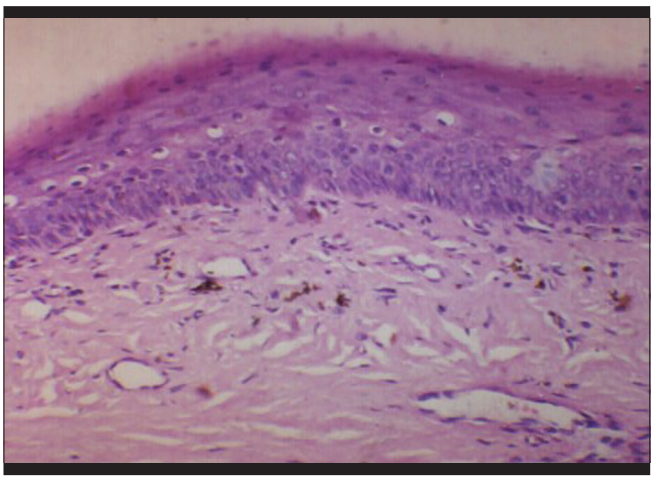

Figure 11: Nail matrix biopsy from the case shown in Figure 5, showing pigment-laden cells in dermis–melanocyte activation (H and E, ×250)

Other dermatoses

NB has been useful in establishing diagnosis in isolated nail lichen striatus[28] and sarcoidosis.[29] However, in PRP, the nail histopathological changes represent a nonspecific reaction pattern and are not diagnostic.[30] The ultrastructural studies of NPB have also been reported to be a useful diagnostic tool in distinguishing lamellar ichthyosis from other ichthyoses, with overlapping clinical features.[31]

Melanonychia

NB is of particular use in the evaluation of pigmented nails, especially longitudinal melanonychia.[9,10] Histopathologically, the matrix lesion responsible for pigmented nail bands may be of four types[9] [Table 2]. Epidermal hyperpigmentation represents melanocyte

Table 2: Salient histopathological features of common nail disorders

Disease	Histopathological features				
	Nail plate	Nail bed epithelium	Nail matrix	Hyponychium	Nail bed dermis
Onychomycosis	Hyphae or spores, scaly crusts, hyperkeratosis, parakeratosis, neutrophils	Papillomatous epidermal hyperplasia	Involved in proximal subungual type with similar changes	Hyphae or spores	Neutrophilic infiltrate, lymphocytes may be present, extravasated RBCs
Psoriasis	Hyperkeratosis, parakeratosis, serum crusts, neutrophils migrating into the epidermis, absence of fungal elements	Focal hypergranulosis, spongiosis, papillomatosis	Hypergranulosis (normally there is no granular layer)	Hypogranulosis (granular layer is normally present in this location)	Neutrophilic infiltrate and dilated vessels
Lichen planus	Compact orthokeratosis, focal parakeratosis, serum crusts	Diffuse hypergranulosis, colloid bodies (rare), sawtooth acanthosis, eosinophilia of keratinocytes	Similar changes	May have hyperkeratosis	Lichenoid infiltrate, marked fibrosis in papillary and reticular dermis
Pachyonychia congenita	Essentially normal but markedly thickened	Marked hyperkeratosis, papillomatosis, hypergranulosis	Hyperplasia of distal matrix	Marked hyperkeratosis	Perivascular lymphocytic infiltrate
Longitudinal pigmented bands	Melanin deposits in the area of the band	Matrix changes of four types • Epithelial hyperpigmentation – increased melanin in basal layer • Simple lentigine – increased number of melanocytes with increased basal layer melanin, no elongation of rete ridges • Junctional nevus – nests and solitary units of melanocytes at the dermoepidermal junction • Malignant melanoma – atypical melanocytes at all levels of the matrix			
Subungual hemorrhage	Homogenous eosinophilic or yellowish-brown mass within or below the nail plate				
Glomus tumor	Essentially normal nail plate, may have parakeratotic foci or areas of discoloration	Circumscribed lesion in the dermis with increased number of dilated vascular spaces lined by single layer of endothelial cells with an outer layer of glomus cells. May have edematous stroma. Unmyelinated neural elements may be present			
Koenen's tumor	Tumorous growth resting over the nail plate	Tumorous mass containing large fibroblasts, no elastic fibers, or neural elements			

activation due to inflammation, trauma, friction, or drugs [Figure 11]. Nail matrix may also have a simple lentigene or nail matrix nevus. However, the most ominous diagnosis is that of a malignant melanoma that can be effectively ruled out with a NB. Tosti *et al*. studied nail matrix nevi histologically in 22 patients and reported that a diagnosis of nail matrix nevus is impossible clinically and always requires histopathologic study. Further, nail matrix nevi resemble skin nevi histopathologically except for their architectural pattern, which reflects the peculiar anatomy of the nail unit.[9]

Tumors

Nail matrix is the most common site for Glomus tumor, and excision biopsy provides treatment, relief from pain, and histological diagnosis in one go[32] [Figure 4]. Periungual fibromas are benign tumors that are a cutaneous manifestation of tuberous sclerosis complex. They can bleed, cause pain, and distort the nail. Their histopathologic features have been studied in detail by Ma *et al*.[33] Squamous cell carcinoma is the other malignancy common in the nail bed that can be diagnosed easily with a NB.[34,35]

Systemic diseases

NB (especially NPB) has also been reported to be useful in the study of systemic diseases. Tirado-Gonzalez *et al*. proposed that fluids exude or transude into nail structures providing a kind of "nail window" into systemic hematologic or metabolic abnormalities.[14] Detection of urate crystals in the subungual horn of nails submitted for a suspected diagnosis of onychomycosis has been reported.[14] It is even proposed that gout may be monitored by means of the simple and noninvasive histological processing of nail clippings. However, for proper evaluation of the character of such crystals, nail plate specimens need to be submitted in alcohol rather than in formaldehyde. The presence of characteristic cytologic and histologic findings in a nail plate biopsy can expand the armamentarium of physicians to evaluate nail diseases and even systemic diseases in

a noninvasive manner.[14] Bolliger *et al*. determined the urea, ammonia, and uric acid content of toenails in 11 patients with varying types and degrees of renal impairment and found a markedly elevated content of uric acid in patients with chronic nephritis and with long-standing severe gout.[36]

PROS AND CONS OF NAIL BIOPSY

From the aforementioned discussion, it is clear that NB offers certain special advantages. NB, especially NPB, is a relatively easy procedure, least traumatic, and can be done easily. It is seldom scarring except for the more radical LNB, which, anyhow, is not routinely resorted to by most of the dermatologists. NB is of utmost value in cases where no cutaneous changes are present, e.g. isolated nail psoriasis or nail lichen planus or other isolated nail dystrophies due to obscure dermatoses as described earlier. Hence, all of us need to train ourselves to be able to perform NB and reach a conclusion rather than initiating therapy on the basis of conjectures [Table 3].

NB provides a definitive diagnosis in onychomycosis as it reveals conclusive evidence of nail plate invasion by the fungus, besides effectively differentiating the cases with secondary contamination of subungual debris of dystrophic nails. The conventional techniques of direct microscopy and culture for mycotic elements may give a false-positive report in such cases, due to which unnecessary and unsuccessful treatment may be resorted to. NB is also the single most sensitive technique of these three procedures.[6] In addition, an expert dermatopathologist can also differentiate between dermatophytes and NDM on routine histopathology thus giving valuable information regarding the choice of appropriate drug.[37] Poor growth rates on fungal culture means that this information is generally not available to the treating dermatologist.

Table 3: Pros and cons of a nail biopsy

Why you should do it?
Seldom scarring, easy procedure
Most useful in isolated nail manifestations
Gives a definitive rather than a conjectural approach to treatment
Gives a definitive diagnosis of onychomycosis (OM)
Most useful in longitudinal melanonychia and suspected malignant melanoma
Therapeutic benefit in glomus tumors
Finer histopathological features and diagnostic criteria available in the literature
Why you should not?
Cases where a skin biopsy can easily be taken
Diagnosis confirmed on direct microscopy (with KOH) or fungal culture
Patient with DM, PVD, or arterial insufficiency
Cases in which nail histopathology is likely to be nonspecific or not alter the treatment thereafter
Lack of facilities for appropriate specimen sampling (softening, embedding, sectioning)
Lack of an aware dermatopathologist who knows the nuances of nail histopathology
Lack of very well-defined histopathological criteria for some nail diseases

In cases with melanonychia, NB is the only investigation that can give any answers, especially when melanoma is suspected. Excision NBB is of therapeutic benefit in nail tumors, especially the glomus tumor. In TND, NB is the only technique that can guide toward the underlying condition responsible.

However, there are certain inherent disadvantages as well. The procedure should not be attempted without a proper knowledge of nail unit anatomy, especially the matrix area. Attention to surgical technique, including proper anesthesia, is a must for achieving desirable outcomes. Experience goes a long way in improving the diagnostic yield and minimizing the associated procedural side-effects. The risk of long-term nail scarring if surgical technique is not proper and the risk of secondary infection, especially in a tropical country like ours, is to be taken care of. Also, one should be able to choose the representative area that will yield the best diagnostic information. An essential requirement is an efficient dermatopathologist well versed in the interpretation of normal and abnormal nail histology as there are many differences as compared with the normal and abnormal skin histology. A properly processed sample with a softened nail plate enables cutting of good sections under a microtome, minimizing any cutting artefacts.

Current knowledge about the histopathological details on nail specimens is limited, especially in relation to the uncommon nail disorders. The diagnostic criteria for some common diseases like nail psoriasis and lichen planus are constantly being improved upon. Perhaps, this could partly be due to the reluctance of dermatologists towards obtaining a NB for diagnostic purposes, thereby resulting in the scarcity of NB specimens reaching pathology laboratories and curtailing the experience of pathologists in the field of histological interpretation of NB.

CONCLUSION

A NB is not indicated for each and every disorder

manifesting in the nail unit. However, when it is indicated, it is often the only clue left to achieve a diagnosis. Hence, a practicing dermatologist cannot afford to be unaware of or untrained in the technique of obtaining NB. Further, pathologists need to be trained in interpreting nail specimens, as the histopathological outcome can only be improved with more familiarity, assessment of specimens, and refinement of diagnostic criteria. The more the specimens are seen, the more details and refinements will emerge. With increased detailing, proper orientation and sectioning, sophisticated microtomes, and staining procedures, a wealth of information awaits us in the humble nail.

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