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LONGITUDINAL NAIL BIOPSY IN THE DIAGNOSIS OF NAIL PSORIASIS

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ABSTRAK

Psoriasis kuku dapat secara klinis menyerupai onikomikosis dan *nail lichen planus*, terutama pada pasien dengan onikodistrofi luas, sehingga diagnosis definitif menjadi sulit ketika terdapat tumpang tindih manifestasi klinis. Biopsi kuku dapat memberikan bukti histopatologis untuk membedakan *psoriasis kuku* dari penyebab distrofi kuku lainnya ketika temuan klinis, dermoskopi, dan mikologi belum memadai. Laporan kasus ini bertujuan menggambarkan peran biopsi kuku longitudinal dalam menegakkan diagnosis *psoriasis kuku* pada pasien dengan manifestasi klinis yang tumpang tindih. Laporan kasus deskriptif dilakukan pada laki-laki berusia 76 tahun dengan keluhan kuku tangan dan kaki rapuh, kasar, serta berubah warna selama dua bulan. Pemeriksaan meliputi evaluasi klinis, dermoskopi kuku, pemeriksaan kalium hidroksida (KOH), kultur jamur, serta biopsi kuku longitudinal dengan pemeriksaan histopatologi. Pemeriksaan klinis menunjukkan onikodistrofi, onikolisis, onikodiskromia, dan onikoreksis pada seluruh kuku tangan dan kaki. Dermoskopi kuku jari kedua tangan kanan menunjukkan onikolisis, *salmon patches*, dan *leukonychic appearance*. Pemeriksaan KOH dan kultur jamur negatif. Histopatologi biopsi longitudinal menunjukkan *rete ridges* memanjang pada matriks dan dasar kuku serta fokus stratum granulosum tanpa abses Munro, yang mendukung diagnosis *psoriasis kuku*. Diagnosis ditegakkan melalui korelasi temuan klinis, dermoskopi, mikologi, dan histopatologi. Kasus ini menunjukkan bahwa biopsi kuku longitudinal memiliki nilai diagnostik penting pada onikodistrofi dengan manifestasi klinis yang tumpang tindih, dengan penyembuhan luka yang baik dan prognosis *dubia ad bonam*.
Kata kunci: *Psoriasis Kuku, Biopsi Kuku Longitudina, Dermoskopi Kuku, Onikodistrofi, Histopatologi*

ABSTRACT

Nail psoriasis can clinically mimic onychomycosis and nail lichen planus, particularly in patients with extensive onychodystrophy, making definitive diagnosis challenging when clinical manifestations overlap. Nail biopsy may provide histopathological evidence to distinguish nail psoriasis from other causes of nail dystrophy when clinical, dermoscopic, and mycological findings are inconclusive. This case report aimed to describe the diagnostic role of longitudinal nail biopsy in establishing the diagnosis of nail psoriasis in a patient with overlapping clinical manifestations. A descriptive case report was conducted in a 76-year-old male presenting with brittle, rough, and discolored fingernails and toenails for two months. Clinical examination, nail dermoscopy, potassium hydroxide (KOH) examination, fungal culture, and longitudinal nail biopsy with histopathological evaluation were performed. Clinical examination revealed onychodystrophy, onycholysis, onychodyschromia, and onychorrhexis

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involving all fingernails and toenails. Dermoscopy of the second fingernail of the right hand showed onycholysis, salmon patches, and a leukonychic appearance. KOH examination and fungal culture were negative. Histopathological examination of the longitudinal nail biopsy demonstrated elongated rete ridges in the nail matrix and nail bed with focal stratum granulosum and no Munro microabscesses, supporting the diagnosis of nail psoriasis. The diagnosis was established through correlation of clinical, dermoscopic, mycological, and histopathological findings. This case demonstrates that longitudinal nail biopsy provides important diagnostic support in patients with onychodystrophy and overlapping clinical manifestations, with good wound healing and a *dubia ad bonam* prognosis.
Keywords: *Nail Psoriasis, Longitudinal Nail Biopsy, Nail Dermoscopy, Onychodystrophy.*

INTRODUCTION

Nail disorders encompass a broad spectrum of inflammatory, infectious, traumatic, and neoplastic conditions that may present with overlapping clinical features. Nail biopsy is not routinely required for every nail disorder but may be indicated when clinical examination and ancillary investigations are insufficient to establish a definitive diagnosis. Histopathological examination can provide additional information for differentiating conditions with similar clinical manifestations, including fungal infection, nail psoriasis, lichen planus, onycholysis, and traumatic nail changes (Baltz & Jellinek, 2021; Haneke, 2025). Therefore, nail biopsy should be considered a diagnostic procedure selected according to the suspected pathology and the anatomical component of the nail unit involved.

Several biopsy techniques can be used depending on the location and clinical characteristics of the nail abnormality. These include nail plate, nail bed, nail matrix, and longitudinal biopsies, with each technique providing different diagnostic information and carrying different risks of postoperative nail dystrophy or scarring (Baltz & Jellinek, 2021; Ríos-Viñuela et al., 2021). Among these approaches, longitudinal biopsy is particularly relevant when the underlying pathology may involve multiple components of the nail unit because it can provide a broader representation of the nail matrix, nail bed, and surrounding structures in a single specimen. Consequently, appropriate selection of the biopsy technique is important not only for obtaining adequate tissue but also for maximizing the diagnostic value while minimizing permanent nail damage (Ricardo & Lipner, 2023; Lim et al., 2025).

Nail psoriasis is a common manifestation of psoriasis and may occur in a substantial proportion of patients with cutaneous psoriasis, with reported prevalence increasing among individuals with psoriatic arthritis (Hadeler et al., 2021). The clinical manifestations may include pitting, onycholysis, subungual hyperkeratosis, nail plate discoloration, and other structural abnormalities. These findings may overlap with other nail disorders, particularly onychomycosis and nail lichen planus, making clinical diagnosis challenging in some cases (Hwang et al., 2024; Nenoff et al., 2023). The clinical similarity between nail psoriasis and other nail diseases creates an important diagnostic gap when characteristic findings are absent, incomplete, or insufficient to establish a definitive diagnosis.

Onychomycosis represents one of the most important differential diagnoses because fungal infection can produce nail plate discoloration, thickening, subungual hyperkeratosis, and dystrophy that resemble nail psoriasis. Conversely, the presence of nail abnormalities in a patient with psoriasis does not automatically establish a diagnosis of nail psoriasis, particularly when microbiological findings and clinical characteristics are inconclusive (Nenoff et al., 2023). Histopathological examination can therefore provide valuable supplementary evidence when the clinical presentation does not allow a clear distinction between inflammatory and

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infectious nail disorders. Recent literature has specifically highlighted the diagnostic challenge of distinguishing nail psoriasis from onychomycosis and the potential contribution of biopsy-based histopathological evaluation in difficult cases (Bertanha et al., 2024; Haneke, 2025).

Although several publications have described nail biopsy techniques and the histopathological characteristics of nail psoriasis, the practical diagnostic value of longitudinal nail biopsy in a patient with extensive and clinically overlapping nail abnormalities remains insufficiently illustrated. In particular, the diagnostic challenge is greater when onychodystrophy, onycholysis, onychodyschromia, and onychorrhexis occur simultaneously and may resemble infectious or other inflammatory nail disorders. In such circumstances, clinical examination alone may not be sufficient to establish a definitive diagnosis, while mycological examination may exclude onychomycosis without identifying the underlying inflammatory disorder. The selection of an appropriate biopsy technique is therefore important because the diagnostic objective is not simply to obtain nail tissue, but to obtain a representative specimen from the anatomical structures suspected to be involved while limiting procedural morbidity (Baltz & Jellinek, 2021; Ríos-Viñuela et al., 2021).

The novelty of this case lies in demonstrating the practical diagnostic contribution of longitudinal nail biopsy in a patient with clinically extensive and diagnostically overlapping nail abnormalities, in which negative mycological examinations did not by themselves establish the underlying diagnosis. The case specifically illustrates how a longitudinal specimen encompassing relevant components of the nail unit can provide histopathological findings that, when correlated with clinical and dermoscopic features, support the diagnosis of nail psoriasis. This diagnostic pathway provides a more clinically focused perspective than descriptions that discuss nail biopsy primarily in terms of procedural technique. Accurate identification of nail psoriasis is clinically important because it must be distinguished from infectious and other inflammatory nail disorders that may require different therapeutic approaches (Hwang et al., 2024; Bertanha et al., 2024). Accordingly, this case report aims to describe the diagnostic role of longitudinal nail biopsy in establishing nail psoriasis in a patient with overlapping clinical manifestations and to demonstrate the contribution of histopathological findings to the final diagnosis.

Accordingly, this case report aims to describe the diagnostic role of longitudinal nail biopsy in establishing the diagnosis of nail psoriasis in a patient with overlapping clinical manifestations. The report focuses on how histopathological findings obtained through longitudinal biopsy complement clinical, dermoscopic, and mycological examinations in supporting the final diagnosis. By presenting the diagnostic process and pathological findings, this case illustrates the practical contribution of longitudinal nail biopsy when clinical manifestations are difficult to distinguish from other nail disorders. The case therefore provides clinically relevant insight into the use of a targeted biopsy approach to support definitive diagnosis in patients with ambiguous nail abnormalities.

METHODS

This study used a descriptive case report design to describe the diagnostic and therapeutic approach in a 76-year-old male patient with nail abnormalities suspected of onychomycosis and ultimately diagnosed with nail psoriasis. The case was managed and evaluated at the Dermatology and Venereology Polyclinic of Prof. Dr. I.G.N.G. Ngoerah General Hospital, Bali, Indonesia, in January 2025. The patient presented with brittle, rough, and discolored fingernails and toenails. Data were collected through clinical history, comprehensive dermatological examination, nail dermoscopy, potassium hydroxide (KOH)

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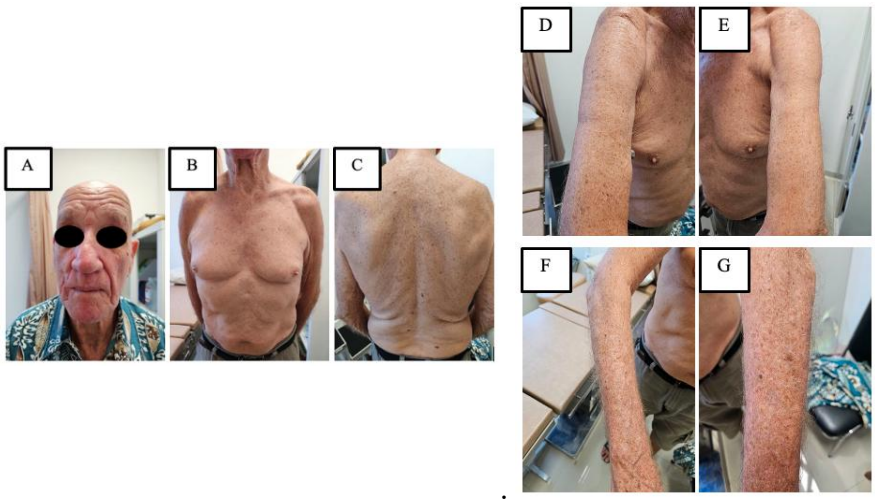
examination, fungal culture, longitudinal nail biopsy, histopathological examination, and clinical follow-up. Clinical assessment included evaluation of nail morphology and associated cutaneous lesions, while dermoscopy was performed to identify characteristic nail changes. KOH examination and fungal culture were conducted to evaluate onychomycosis as the principal differential diagnosis. Disease severity was assessed using the Nail Psoriasis Severity Index (NAPSI). Because the clinical and mycological findings were insufficient to distinguish nail psoriasis from other nail disorders, particularly nail lichen planus, a longitudinal nail biopsy was performed on the second fingernail of the right hand.

The longitudinal nail biopsy was performed under aseptic conditions and local anesthesia using a distal nerve block with 2% lidocaine. After the biopsy area was marked, a tourniquet was applied, followed by a longitudinal incision through the nail plate and nail bed within the predetermined area. The nail plate and nail bed specimens were obtained separately, placed in 10% buffered formalin, and submitted for histopathological examination. The biopsy wound was closed with 4-0 nylon using a simple interrupted suturing technique and covered with a sterile dressing after application of topical fusidic acid. Follow-up assessment included evaluation of wound healing and nail abnormalities after the procedure. The KOH and fungal culture results were interpreted to determine the presence or absence of fungal infection, while histopathological findings were correlated with the clinical and dermoscopic findings to establish the final diagnosis. The data were analyzed descriptively by integrating the clinical, dermoscopic, mycological, and histopathological findings to support the diagnosis of nail psoriasis and evaluate the post-procedural outcome. Because this report involved a single patient, no inferential statistical analysis was performed.

RESULTS AND DISCUSSION

Result

The initial dermatological examination was performed to characterize the cutaneous lesions accompanying the patient's nail abnormalities. Figure 1 illustrates the distribution and morphology of the cutaneous lesions observed during the initial examination. Multiple erythematous macules and patches were identified on the anterior chest, bilateral upper arms, and bilateral lower legs. The lesions had indistinct borders, a geographic configuration, and were covered with white scales, without associated pruritus or pain. These findings were documented to assess the possibility of an underlying inflammatory dermatosis, particularly psoriasis, which could provide an important clinical context for the patient's nail



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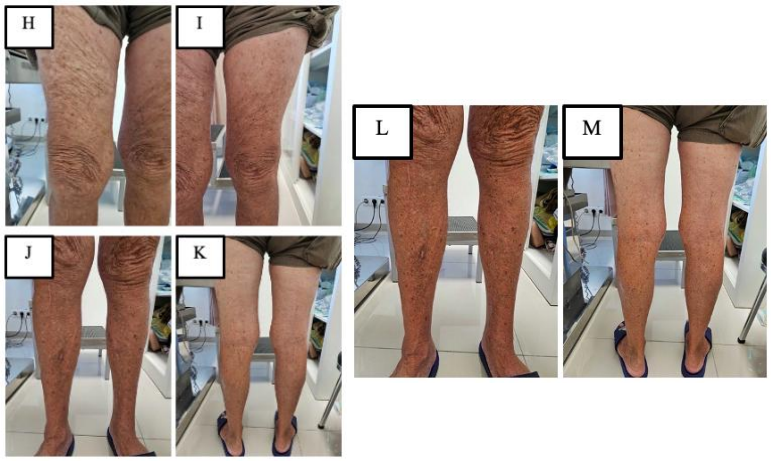

Figures 1. On the anterior chest, right and left upper arms, and right and left lower legs, there are rashes consisting of multiple erythematous macules and patches with indistinct borders and a geographic pattern, ranging in size from 0.3 × 0.5 cm to 1 × 1.2 cm, scattered discretely, generalized, and covered with white scales on the surface.

As shown in Figure 1, the cutaneous lesions were generalized and discretely distributed over the trunk and extremities. The presence of erythematous, scaly lesions supported the consideration of an inflammatory dermatosis in addition to the initial suspicion of a fungal infection. The absence of pruritus and pain did not exclude psoriasis, as cutaneous psoriasis may present with minimal or no subjective symptoms. These clinical findings subsequently contributed to the consideration of nail psoriasis as an important differential diagnosis.

A detailed examination of all fingernails and toenails was subsequently performed to determine the extent and pattern of nail involvement. Figure 2 presents the clinical appearance of the affected fingernails and toenails. Abnormalities were observed across the first through fifth fingernails of both hands and the first through fifth toenails of both feet. The observed changes included onychodystrophy, onycholysis, onychodyschromia, and onychorrhexis. The extensive involvement of multiple nails and the coexistence of cutaneous lesions raised the possibility of nail psoriasis, although onychomycosis remained an important differential diagnosis.

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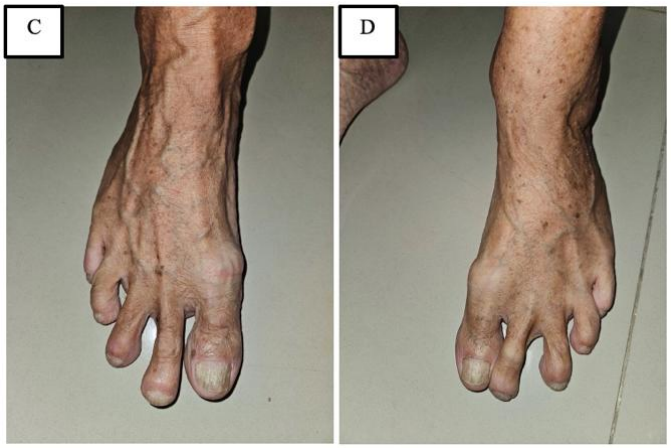

Figures 2a–d. On the first, second, third, fourth, and fifth fingers of the right and left hands and the first, second, third, fourth, and fifth toes of the right and left feet, the following nail abnormalities were observed: onychodystrophy (+), onycholysis (+), onychodyschromia (+), and onychorrhexis (+).

As demonstrated in Figure 2, the patient exhibited extensive involvement of both the fingernails and toenails. The combination of onychodystrophy, onycholysis, onychodyschromia, and onychorrhexis indicated substantial structural alteration of the nail unit. The Hand NAPSI and Foot NAPSI scores were both 40, reflecting considerable nail involvement. However, these clinical findings alone were insufficient to establish a definitive diagnosis because similar abnormalities may occur in fungal and other inflammatory nail disorders.

Dermoscopy was performed to further characterize the cutaneous lesions and identify findings that could support the clinical assessment. Figure 3 shows the dermoscopic appearance of the lesion on the right brachialis. Dermoscopic examination demonstrated the presence of prominent white scales on the surface of the lesion. The finding was evaluated together with the clinical morphology and distribution of the cutaneous lesions. This examination provided additional clinical information before proceeding to the invasive diagnostic procedure.

Figure 3. Dermoscopy shows the presence of white scales (+).

As shown in Figure 3, dermoscopic examination of the right brachialis demonstrated the presence of white scales. This finding corresponded with the scaly morphology observed during the clinical examination. Although dermoscopy provided additional information regarding the cutaneous lesions, it was not sufficient to establish the etiology of the nail

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abnormalities. Therefore, further diagnostic evaluation was required to distinguish nail psoriasis from onychomycosis and nail lichen planus.

Dermoscopy of the second fingernail of the right hand was performed to further evaluate the structural abnormalities of the affected nail unit. Figure 4 demonstrates the dermoscopic findings of the affected nail before the biopsy procedure. The examination revealed onycholysis, salmon patches, and a leukonychic appearance. These findings increased the clinical suspicion of nail psoriasis but remained insufficient to exclude other causes of nail dystrophy, particularly fungal infection. Consequently, a longitudinal nail biopsy was planned to obtain representative tissue for histopathological examination.

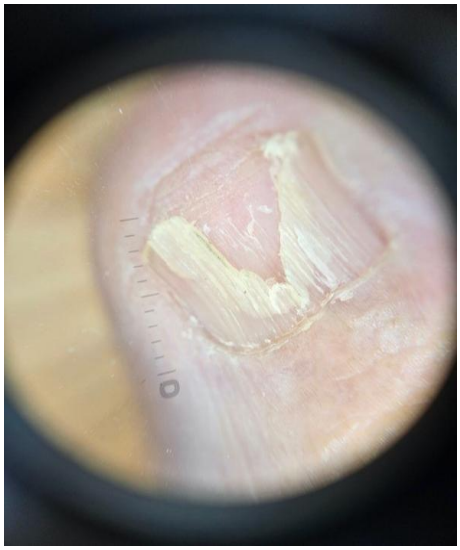

Figure 4. Dermoscopy shows the presence of onycholysis, salmon patches, and a leukonychic appearance

As demonstrated in Figure 4, the affected nail showed onycholysis, salmon patches, and a leukonychic appearance on dermoscopic examination. These findings provided supportive clinical evidence for nail psoriasis but were not considered diagnostic in isolation. Because of the overlapping clinical manifestations of nail psoriasis and onychomycosis, tissue sampling was required for definitive evaluation. The longitudinal biopsy was therefore performed to obtain representative specimens from the affected components of the nail unit.

Following local anesthesia and aseptic preparation of the operative field, a longitudinal nail biopsy was performed on the second fingernail of the right hand. Figure 5 presents the specimens obtained during the longitudinal nail biopsy procedure. The procedure was performed to obtain representative tissue from the affected nail structures for histopathological evaluation. The nail plate and nail bed specimens were collected separately and immediately placed in 10% buffered formalin. Separating the specimens allowed the histopathological characteristics of different components of the nail unit to be evaluated individually.

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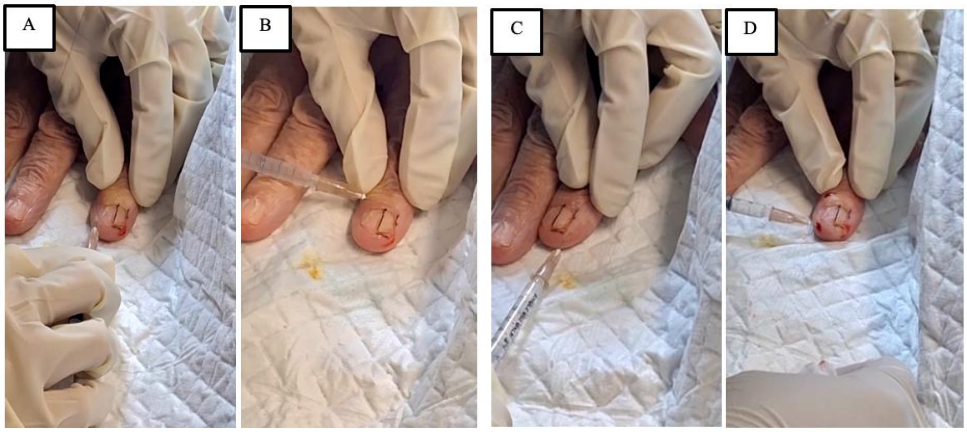
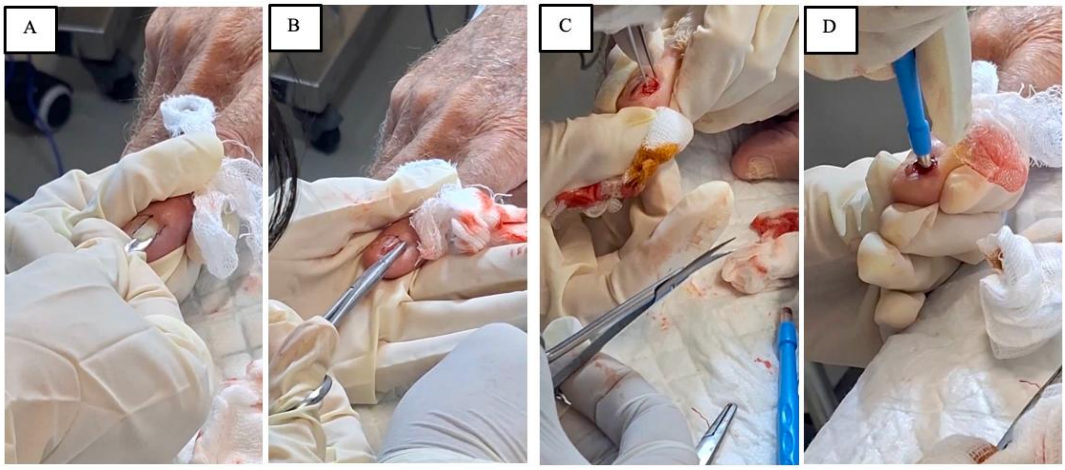


Figures 5a–d. Distal block anesthesia of the median nerve in the hand region

As shown in Figure 5, the biopsy specimens consisted of tissue obtained from the nail plate and nail bed. The specimens were adequately preserved in 10% buffered formalin before being submitted for histopathological examination. Obtaining tissue from different components of the nail unit was important because nail psoriasis may demonstrate pathological alterations involving the nail matrix and nail bed. The specimens therefore provided the basis for determining the underlying pathological process when clinical and microbiological examinations were inconclusive

After completion of the biopsy, the surgical wound was managed to achieve adequate hemostasis and promote uncomplicated healing. Figure 6 illustrates the wound closure performed after completion of the longitudinal nail biopsy. The wound was cleaned using povidone-iodine and 0.9% sodium chloride before topical fusidic acid was applied. The incision was subsequently closed using 4-0 nylon with a simple interrupted suturing technique. Appropriate wound closure was performed to protect the biopsy site and facilitate subsequent follow-up assessment.



Figures 6a–d. Longitudinal nail biopsy following the mapped area

As demonstrated in Figure 6, the biopsy wound was closed using three simple interrupted nylon sutures. The wound was covered with a sterile dressing following application of topical fusidic acid. Post-procedural management was directed toward maintaining wound

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cleanliness and preventing local complications. The surgical site was subsequently monitored during follow-up to evaluate wound healing and identify any postoperative abnormalities.

Following tissue removal, the biopsy specimens were measured and prepared for histopathological examination. Figure 7 shows the specimens obtained from the nail plate and nail bed. Each specimen was placed in a separate container containing 10% buffered formalin to preserve the tissue architecture. The specimens were subsequently submitted for pathological evaluation. Separating the specimens facilitated assessment of the histological characteristics of the different components of the nail unit.

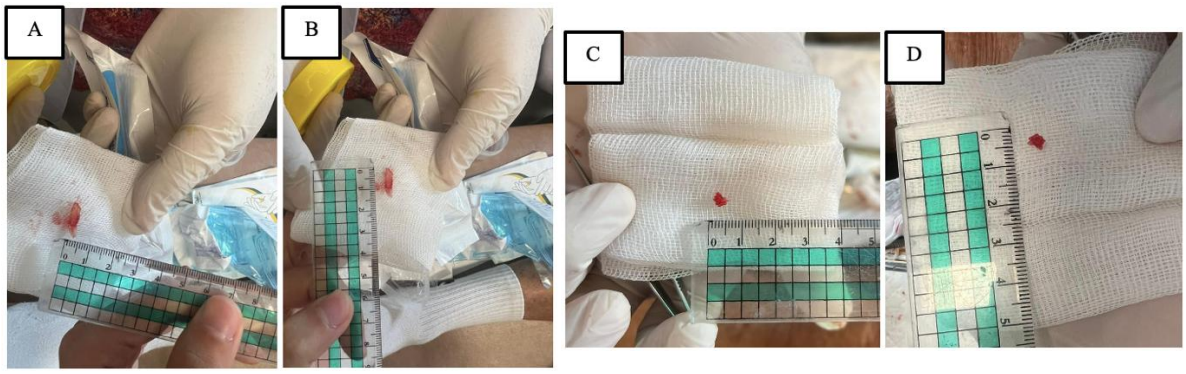

Figure 7a–b. Results of a nail biopsy taken from the nail plate for biopsy examination
Figure c–d. Results of a nail biopsy taken from the nail bed for biopsy examination

As shown in Figure 7, separate specimens were obtained from the nail plate and nail bed. The specimens were adequately preserved in 10% buffered formalin before histopathological processing. Evaluation of these different components was important because nail psoriasis may produce morphological changes in more than one part of the nail unit. The specimens therefore provided the material required to establish the histopathological diagnosis.

After completion of the biopsy and specimen collection, the surgical wound was managed to promote uncomplicated healing. Figure 8 illustrates the closure of the biopsy wound using the simple interrupted suturing technique. The wound was cleaned with povidone-iodine and 0.9% sodium chloride before topical fusidic acid was applied. Three 4-0 nylon sutures were used to approximate the wound edges. The wound was subsequently covered with sterile gauze.

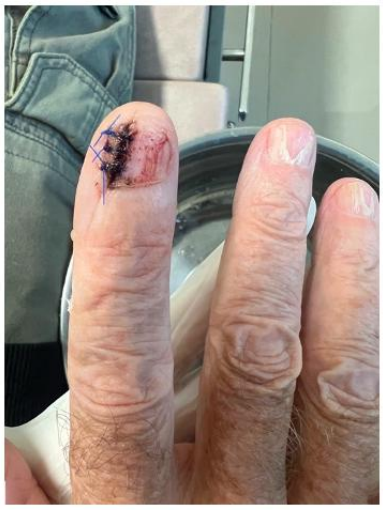

Figure 8. Wound closure using the simple interrupted suture technique with three stitches

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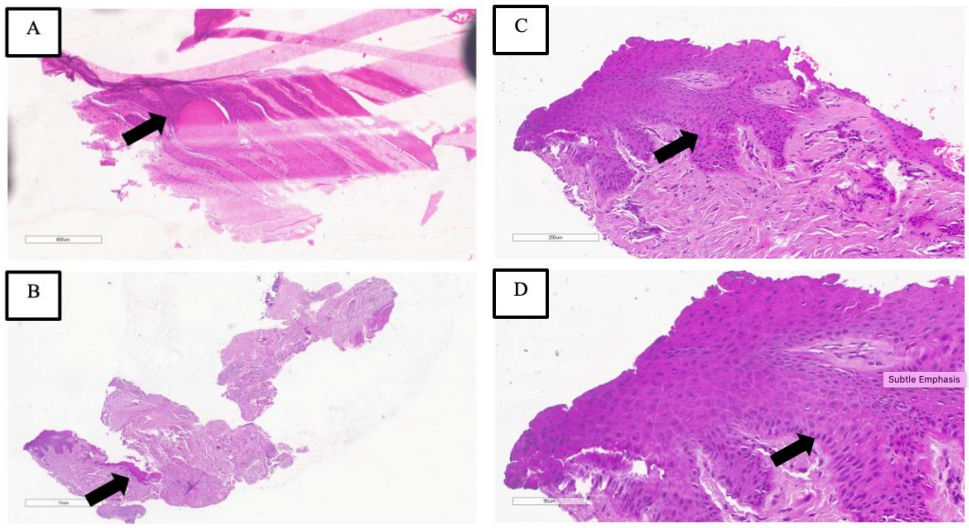
As demonstrated in Figure 8, the biopsy wound was successfully closed using three simple interrupted nylon sutures. Topical fusidic acid was applied after wound cleansing, followed by sterile dressing. The patient was instructed to maintain the wound clean and dry during the postoperative period. The surgical site was subsequently evaluated during follow-up to assess wound healing and postoperative complications.

Histopathological examination was performed to establish the definitive diagnosis after clinical, dermoscopic, and microbiological evaluations had been completed. Figure 9 presents the histopathological findings obtained from the nail biopsy specimens. The specimens were evaluated according to their respective anatomical components, including the nail matrix and nail bed. Particular attention was given to epithelial architecture and histological features associated with psoriasis. The histopathological findings were subsequently correlated with the clinical presentation and the results of fungal investigations.



Figures 9a–d. Results of nail biopsies of tissue I and tissue II

As shown in Figure 9, the nail matrix demonstrated stratified squamous epithelium with elongated rete ridges and focal preservation of the stratum granulosum, while the nail bed also showed elongated rete ridges. No Munro's abscesses were identified in either specimen. These morphological findings were consistent with psoriasis when interpreted together with the clinical presentation. Furthermore, the absence of fungal elements on KOH examination and the negative fungal culture supported the exclusion of onychomycosis and strengthened the final diagnosis of nail psoriasis.

DISCUSSION

A nail biopsy is not routinely required for every nail disorder, but it becomes valuable when the clinical findings and noninvasive investigations are insufficient to establish a definitive diagnosis. In the present case, the indication for biopsy was based on the specific diagnostic problem encountered in the patient rather than on the presence of nail abnormalities alone. The 76-year-old patient presented with widespread onychodystrophy, onycholysis, onychodyschromia, and onychorrhexis involving all fingernails and toenails, accompanied by erythematous scaly cutaneous lesions. These findings initially suggested onychomycosis, but the associated cutaneous lesions and dermoscopic features raised the possibility of an

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inflammatory nail disorder, particularly nail psoriasis. The persistence of the nail abnormalities despite previous antifungal treatment and the need to distinguish onychomycosis from nail psoriasis provided the principal indication for tissue sampling in this case. The negative KOH examination and fungal culture further reduced the likelihood of a fungal etiology but did not, by themselves, establish nail psoriasis. This diagnostic gap between the clinical suspicion and the available noninvasive evidence justified the use of biopsy to obtain direct tissue information. Clinical examination alone may be insufficient because several nail disorders produce overlapping morphological changes, making histopathological confirmation particularly useful when the diagnosis remains uncertain (Lee & Lipner, 2022; Dalave et al., 2024).

The choice of a longitudinal biopsy was based on the need to evaluate more than one anatomical component of the affected nail unit. Nail abnormalities may originate from the nail plate, nail bed, nail matrix, or combinations of these structures, and the biopsy technique should therefore be selected according to the suspected disease and the location of the pathological process (Queirós et al., 2022; Erdem & Göktay, 2023). In this patient, the clinical findings could not clearly identify whether the principal pathological process was confined to the nail plate, nail bed, or matrix because abnormalities were present across multiple nail structures. The longitudinal approach was therefore selected to obtain representative tissue from the nail unit and to allow histopathological assessment of both the nail matrix and nail bed. This was particularly relevant to the final diagnosis because the histopathological examination subsequently demonstrated elongated rete ridges involving the matrix and nail bed, providing pathological evidence that complemented the clinical suspicion of nail psoriasis. This approach enabled tissue from different components of the nail unit to be examined and increased the opportunity to identify characteristic pathological changes. Thus, the biopsy was not performed merely as an invasive diagnostic procedure, but as a targeted strategy to resolve the diagnostic uncertainty between infectious and inflammatory nail disease. The findings in this case support the practical value of selecting the biopsy orientation according to the anatomical structures suspected to be involved, consistent with recommendations that biopsy technique should be tailored to the location and nature of the suspected nail pathology (Queirós et al., 2022; Erdem & Göktay, 2023).

Adequate anesthesia is an important component of nail surgery because the nail unit is highly innervated and procedural pain can affect patient tolerance. Digital nerve block techniques provide effective regional anesthesia while avoiding direct infiltration into the operative field, thereby facilitating nail procedures (Borbón et al., 2022). In the present case, a distal nerve block with 2% lidocaine provided local anesthesia before the longitudinal biopsy of the right second fingernail, allowing tissue sampling to be performed under controlled conditions. The use of regional anesthesia was particularly appropriate for this procedure because it permitted manipulation of the nail unit without requiring direct anesthetic infiltration into the biopsy site. The detailed sequence of needle positioning and anesthetic administration is less clinically important than achieving adequate anesthesia and selecting a technique appropriate for the operative site. Recent literature also describes modifications of nerve block techniques for nail surgery to improve procedural comfort and anesthetic effectiveness (Park & Choi, 2024). The uncomplicated performance of the biopsy in this patient suggests that adequate regional anesthesia contributed to procedural tolerance and facilitated acquisition of the required specimens. Therefore, the anesthesia approach in this case was primarily intended to provide sufficient analgesia while allowing safe acquisition of representative nail tissue.

The clinical and dermoscopic findings provided important evidence supporting nail psoriasis but were not considered diagnostic in isolation. In this patient, onycholysis, salmon

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patches, and leukonychic appearance were observed on dermoscopy of the second fingernail of the right hand. Among these findings, the salmon patches were particularly supportive of nail psoriasis, while the presence of onycholysis provided additional but less specific evidence. The accompanying erythematous scaly cutaneous lesions further strengthened the clinical suspicion of psoriasis by demonstrating a compatible cutaneous inflammatory process. The presence of onycholysis and salmon patches on dermoscopy is compatible with nail psoriasis, while leukonychia and other nail changes may occur in several nail disorders (Rachadi & Chiheb, 2024). This interpretation is consistent with Yorulmaz and Aksoy (2022), who emphasized the diagnostic relevance of characteristic dermoscopic patterns in nail psoriasis and demonstrated that dermoscopy can reveal findings that support clinical suspicion of the disease. Similarly, Gharaei Nejad et al. (2024) reported that the correspondence between clinical examination and dermoscopic findings varies across nail manifestations, supporting the use of dermoscopy as a complementary rather than isolated diagnostic method. Nevertheless, onychomycosis remained an important differential diagnosis because fungal infection may produce similar nail dystrophy and discoloration. The KOH examination and fungal culture in this case were both negative, providing concordant mycological evidence against active fungal infection. However, because negative mycological findings do not directly identify the alternative inflammatory diagnosis, histopathological examination remained necessary to clarify the nature of the nail abnormality. The negative potassium hydroxide examination and fungal culture subsequently reduced the likelihood of fungal infection, but histopathological examination was still important to establish the nature of the nail abnormality and support the final diagnosis (Hwang et al., 2024; Lee & Lipner, 2022).

Histopathological examination demonstrated elongated rete ridges and focal preservation of the stratum granulosum in the nail matrix, accompanied by elongated rete ridges in the nail bed. These were the principal pathological findings obtained from the longitudinal biopsy and became an important component of the final diagnostic interpretation. The involvement of both the nail matrix and nail bed was compatible with the clinical observation of extensive nail abnormalities and supported the interpretation that the disorder involved the nail unit rather than representing an isolated superficial nail plate abnormality. Although Munro microabscesses were not identified, their absence did not negate the diagnosis because the final interpretation was based on the overall clinicopathological correlation rather than on a single histopathological feature. These findings were interpreted in conjunction with the clinical and microbiological results and were consistent with nail psoriasis. The importance of interpreting histopathology together with other diagnostic modalities is also supported by Abu El-Hamd et al. (2022), who demonstrated the complementary value of clinical, dermoscopic, and histopathological evaluation in the assessment of nail disorders. The absence of fungal elements on potassium hydroxide examination and the absence of fungal growth on culture further strengthened the interpretation that the nail changes were related to psoriasis rather than onychomycosis. Histopathological assessment is particularly useful in difficult cases because the morphological characteristics of nail psoriasis may overlap with those of other inflammatory or infectious nail disorders (Haneke, 2025). Previous immunohistological research has also demonstrated that pathological changes in the nail unit can reflect the inflammatory processes associated with psoriasis, supporting the value of tissue examination when clinical findings are equivocal (Perrin, 2023). Thus, the histopathological findings in this case did not replace the clinical and dermoscopic assessment; rather, they provided additional evidence that resolved the uncertainty remaining after noninvasive evaluation.

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The histopathological findings in this patient should therefore be interpreted as part of a multimodal diagnostic process rather than as an isolated diagnostic criterion. The final diagnosis resulted from the convergence of four types of evidence: the presence of erythematous scaly cutaneous lesions and characteristic nail abnormalities on clinical examination, salmon patches and onycholysis on dermoscopy, negative KOH and fungal culture results, and compatible histopathological changes in the nail matrix and nail bed. No single finding was sufficient to establish the diagnosis independently. This multimodal interpretation is supported by Abu El-Hamd et al. (2022), who highlighted the complementary contribution of clinical, dermoscopic, and histopathological assessment in differentiating nail disorders. Furthermore, the findings of Gharaei Nejad et al. (2024) indicate that dermoscopic assessment may provide additional diagnostic information beyond conventional clinical examination, reinforcing the value of combining rather than substituting diagnostic modalities. The diagnosis was supported by the combination of cutaneous lesions compatible with psoriasis, dermoscopic findings suggestive of nail psoriasis, negative fungal investigations, and histopathological abnormalities involving the nail matrix and nail bed. This integrated approach was particularly important because neither the clinical examination nor the dermoscopic findings alone could reliably exclude onychomycosis or nail lichen planus. Contemporary approaches to nail psoriasis emphasize the importance of correlating clinical morphology, dermoscopy, microbiological testing, and histopathology when the diagnosis is uncertain (Hwang et al., 2024; Dalave et al., 2024). The present case provides a practical example of this diagnostic sequence: noninvasive examinations first narrowed the differential diagnosis, while longitudinal biopsy supplied tissue-based evidence that supported the final diagnosis of nail psoriasis. This strengthens the clinical relevance of the case because the value of the biopsy was demonstrated specifically in the context of an unresolved diagnostic problem rather than simply as a demonstration of biopsy technique.

Post-procedural management in this case focused primarily on wound protection, infection prevention, and monitoring of healing. The biopsy site was cleaned, treated with topical fusidic acid, covered with sterile gauze, and closed with simple interrupted sutures to facilitate healing. During follow-up, the patient demonstrated good wound healing without major postoperative complications. This finding is clinically relevant because nail biopsy involves manipulation of a highly specialized anatomical structure in which postoperative complications may affect both comfort and subsequent nail growth. The favorable healing observed in this patient suggests that appropriate wound closure, local care, and postoperative monitoring were sufficient to support uncomplicated recovery in this case. Although bleeding and secondary infection are recognized potential complications of nail surgery, no major postoperative complication was observed during follow-up, and the biopsy wound demonstrated appropriate healing. Routine postoperative care should be individualized according to the extent and location of the procedure, with attention to wound hygiene, hemostasis, and early recognition of infection (Queirós et al., 2022; Erdem & Göktay, 2023). Therefore, the outcome in this case not only supports the diagnostic usefulness of the procedure but also demonstrates that the selected biopsy approach was followed by satisfactory short-term wound healing.

The main clinical lesson from this case is that persistent and diagnostically ambiguous nail dystrophy should not automatically be attributed to onychomycosis, particularly when antifungal therapy fails and concomitant cutaneous lesions suggest an inflammatory dermatosis. In the present patient, the initial clinical suspicion of onychomycosis was revised after the absence of fungal elements on KOH examination and the absence of fungal growth on culture,

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while the cutaneous and dermoscopic findings increased suspicion for nail psoriasis. The subsequent longitudinal biopsy demonstrated pathological changes involving the nail matrix and nail bed that supported the clinical diagnosis. Thus, the diagnostic contribution of the biopsy was most evident in bridging the gap between nonspecific nail abnormalities and a disease-specific diagnosis. Longitudinal nail biopsy provided representative tissue from the affected nail structures and, when combined with negative fungal investigations and compatible clinical findings, contributed substantially to establishing the diagnosis of nail psoriasis. The value of the procedure therefore lies not simply in demonstrating histopathological abnormalities, but in resolving diagnostic uncertainty and enabling a more appropriate disease-specific management strategy. Overall, this case demonstrates that longitudinal nail biopsy can be particularly useful when extensive nail abnormalities involve potentially multiple anatomical structures and when clinical, dermoscopic, and mycological examinations do not provide sufficient diagnostic certainty. This case highlights the importance of integrating clinical examination, dermoscopy, microbiological testing, and targeted nail biopsy when evaluating complex nail disorders, particularly when the distinction between infectious and inflammatory conditions remains uncertain.

CONCLUSION

This case report demonstrated the use of longitudinal nail biopsy in a 76-year-old man with suspected nail psoriasis and clinically overlapping nail abnormalities. Histopathological examination of the nail matrix and nail bed obtained through the longitudinal biopsy provided important diagnostic support and, when correlated with the clinical, dermoscopic, and negative fungal examination findings, contributed to establishing the definitive diagnosis of nail psoriasis. The case highlights that longitudinal nail biopsy can be a useful targeted diagnostic approach when clinical and noninvasive examinations are insufficient to distinguish nail psoriasis from onychomycosis and other nail disorders. The patient showed good postoperative wound healing without major complications, and the overall prognosis was *dubia ad bonam*.

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