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# Dermoscopic study of Nails Lesions in Various Dermatoses

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## Abstract:

Background: Nail involvement is frequently observed in various dermatoses and can serve as an important clinical clue to underlying systemic or dermatological conditions. Dermoscopy (onychoscopy) enhances visualization of subtle nail changes that may not be evident on clinical examination alone.

Objectives:To evaluate dermoscopic features of nail lesions in different dermatoses and correlate them with clinical and demographic profiles.

Materials and Methods: A cross-sectional observational study was conducted on 53 patients presenting with nail changes associated with dermatoses. A detailed history, clinical examination, and dermoscopic evaluation were performed using a polarized handheld dermoscope. Findings were recorded and analyzed in terms of dermatoses type, nail changes, dermoscopic patterns, associated symptoms, and disease duration.

Results:The most common dermatoses were systemic lupus erythematosus (22.6%), alopecia areata (18.9%), eczema (15.1%), and psoriasis (13.2%). Nail pitting (24.5%) was the most frequent dermoscopic finding, followed by splinter hemorrhages (20.8%) and red lunula (18.9%). Brittle nails (34%) and thickening (32.1%) were the predominant gross nail changes. Notably, 60.4% of patients had dermatoses lasting more than 2 years, and 30.2% reported no associated nail symptoms.

Conclusion:Dermoscopy is a valuable non-invasive diagnostic tool for identifying nail involvement in various dermatoses, often detecting subclinical changes. Early dermoscopic evaluation can aid in prompt diagnosis and better management of underlying dermatological conditions.

## Keywords:
Dermatoses, Dermoscopy, Nail lesions, Onychoscopy, Autoimmune skin diseases, Chronic dermatoses

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## Introduction

The human nail unit, composed of the nail plate, matrix, bed, and surrounding tissues, often reflects a spectrum of systemic and cutaneous diseases, serving as a clinical window to internal and dermatological pathology. Nail involvement is commonly observed in various dermatoses, including psoriasis, lichen planus, alopecia areata, and fungal infections, with changes ranging from

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pitting and onycholysis to melanonychia and splinter hemorrhages. Accurate assessment of nail alterations can aid in early diagnosis, disease monitoring, and prognosis.

Dermoscopy (also called onychoscopy when used for nails) is a non-invasive, in vivo imaging technique that has significantly advanced the evaluation of nail disorders. It allows for magnified visualization of subsurface features not detectable by the naked eye, improving diagnostic accuracy and enabling differentiation between similar-appearing conditions. For instance, dermoscopic patterns such as red dots, salmon patches, and splinter hemorrhages can strongly suggest psoriatic nail changes, while longitudinal ridging and trachyonychia are more typical of lichen planus and alopecia areata respectively [1,2].

Recent studies have demonstrated the utility of dermoscopy in distinguishing benign from malignant lesions, evaluating pigment distribution, and identifying early signs of nail matrix or bed involvement. It also plays a crucial role in differentiating fungal infections from inflammatory nail disorders, which may have overlapping clinical presentations [3,4]. Despite its growing application, there remains a need to systematically study the dermoscopic features of nail lesions across a wide spectrum of dermatoses in different populations to enhance diagnostic reliability and clinical decision-making.

This study aims to evaluate the dermoscopic features of nail lesions in various dermatoses, identify common patterns associated with specific conditions, and contribute to the existing diagnostic algorithms in nail dermatology.

## Materials and Method

This was a hospital-based cross-sectional observational study conducted in the Department of Dermatology at a Ashwini Rural Medical college, Hospital and Research Centre, a tertiary care centre in Solapur, Maharashtra.

Patients of all age groups and both sexes presenting with nail changes associated with various dermatoses attending the dermatology outpatient department were included in the study. Informed written consent was obtained from all participants (and from guardians in the case of minors).

**Inclusion Criteria:**

- Patients diagnosed clinically with dermatoses showing nail involvement (e.g., psoriasis, lichen planus, alopecia areata, eczema, fungal infections, etc.).
- Willing to participate and provide informed consent.

**Exclusion Criteria:**

- Patients with traumatic nail disorders.
- Patients with congenital nail abnormalities.
- Those who had received treatment for the underlying dermatosis in the last four weeks.
- Patients unwilling to provide consent.

**Sample size** : A total of 53 patients were included in the study based on convenience sampling during the study period.

## Method

**Clinical Evaluation :**
A detailed clinical history was recorded, including age, sex, duration of dermatosis, nail changes, associated symptoms, and past medical history. Complete dermatological and systemic examination was performed to confirm the diagnosis of dermatoses.

**Dermoscopic Examination :**
Dermoscopic evaluation of nails (onychoscopic examination) was performed using a handheld polarized dermoscope (e.g., DermLite DL4, 10× magnification). Immersion fluid (alcohol or gel) was used when required. Both fingernails and toenails were examined, and dermoscopic findings were documented in terms of color, pattern, vascular structures, surface changes, and specific dermoscopic features.

**Classification of Findings :**
Findings were grouped based on the underlying dermatosis, and characteristic dermoscopic features were tabulated. Multiple nail changes in a single patient were recorded separately.

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**Statistical Analysis :** Data were entered in Microsoft Excel and analyzed using SPSS version 25. Descriptive statistics were used to express categorical variables as frequencies and percentages.

## Observation and Results

### *Table 1 : Demographic distribution and past medical history among study population*

| Parameters | Frequency | Percentage |
|---|---|---|
| **Age** | | |
| **<18 Years** | **8** | **15.1** |
| **18-30 Years** | **13** | **24.5** |
| **31-45 Years** | **11** | **20.8** |
| **46-60 Years** | **12** | **22.6** |
| **>60 Years** | **9** | **17** |
| **Gender** | | |
| **Female** | **27** | **50.9** |
| **Male** | **26** | **49.1** |
| **Past Medical History** | | |
| **Hypertension** | **17** | **32.1** |
| **None** | **17** | **32.1** |
| **Diabetes** | **10** | **18.9** |
| **Thyroid disorder** | **9** | **17** |

This table shows the distribution of age, gender, and past medical history in the study population (n=53). The age group most represented was 18–30 years (24.5%), followed by 46–60 years (22.6%). Gender distribution was nearly equal with females at 50.9% and males at 49.1%. Among comorbidities, hypertension and "none" were each reported by 32.1% of the population, followed by diabetes (18.9%) and thyroid disorders (17%). This reflects a fairly diverse population with a notable burden of chronic illnesses.

Below table highlights the types of dermatoses diagnosed and their duration. Systemic Lupus Erythematosus (22.6%) was the most common condition, followed by Alopecia Areata (18.9%), Eczema (15.1%), and Psoriasis (13.2%). Rare conditions included Pityriasis Rubra Pilaris and Onychomycosis (9.4% each). Regarding duration, most cases (60.4%) had dermatoses persisting for more than two years, indicating a chronic disease pattern.

### *Table 2 : Type of Dermatoses and duration among study population*

| Parameters | Frequency | Percentage |
|---|---|---|
| **Dermatoses** | | |
| **Systemic Lupus Erythematosus** | **12** | **22.6** |

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| | | |
|---|---|---|
| **Alopecia Areata** | **10** | **18.9** |
| **Eczema** | **8** | **15.1** |
| **Psoriasis** | **7** | **13.2** |
| **Lichen Planus** | **6** | **11.3** |
| **Pityriasis Rubra Pilaris** | **5** | **9.4** |
| **Onychomycosis** | **5** | **9.4** |
| **Duration of Dermatoses** | | |
| **<6 months** | **3** | **5.7** |
| **6-12 months** | **9** | **17** |
| **1-2 years** | **8** | **15.1** |
| **>2 years** | **32** | **60.4** |

*Table 3 : Dermoscopic findings among study population*

| Dermoscopic Finding | Frequency | Percentage |
|---|---|---|
| **Pitting** | **13** | **24.5** |
| **Splinter Haemorrhages** | **11** | **20.8** |
| **Red lunula** | **10** | **18.9** |
| **Longitudinal ridging** | **8** | **15.1** |
| **Trachyonychia** | **8** | **15.1** |
| **Onycholysis** | **8** | **15.1** |
| **Rough surface** | **6** | **11.3** |
| **Capillary telangiectasia** | **6** | **11.3** |
| **Nail thickening** | **5** | **9.4** |
| **Yellowish discoloration** | **5** | **9.4** |
| **Beau's lines** | **5** | **9.4** |
| **Lateral nail dystrophy** | **5** | **9.4** |
| **Thinning** | **3** | **5.7** |
| **Salmon patch** | **3** | **5.7** |
| **White discoloration** | **3** | **5.7** |
| **Subungual hyperkeratosis** | **3** | **5.7** |
| **Matte surface** | **2** | **3.8** |
| **Pterygium** | **2** | **3.8** |

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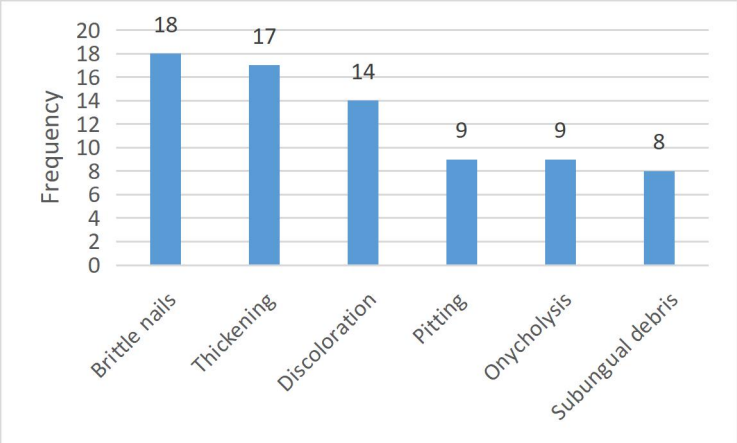
This table documents the nail features observed under dermoscopy. The most common findings were pitting (24.5%), splinter hemorrhages (20.8%), and red lunula (18.9%). Other notable features included longitudinal ridging, trachyonychia, and onycholysis (each around 15.1%). Less frequent findings like matte surface and pterygium were present in only 3.8% of cases. This variety of findings reflects the utility of dermoscopy in distinguishing subtle nail changes across dermatoses.

### *Image 1 : Distribution of nails changes among study population*




Above figure describes the gross nail changes noted clinically. Brittle nails (34%) and thickening (32.1%) were the predominant observations, followed by discoloration (26.4%), pitting, and onycholysis (17% each). Subungual debris was reported in 15.1% of the population. These findings correlate with chronic dermatological and systemic conditions.

### *Table 4 : Distribution of associated symptoms among study population*

| Associated Symptom | Frequency | Percentage |
|---|---|---|
| **Discomfort** | **19** | **35.8** |
| **Pain** | **10** | **18.9** |
| **Itching** | **8** | **15.1** |
| **None** | **16** | **30.2** |

This table outlines symptoms experienced by patients. Discomfort (35.8%) was the most reported symptom, followed by pain (18.9%), and itching (15.1%), while 30.2% had no associated symptoms, indicating that nail involvement may often be subclinical or overlooked unless specifically examined.

### *Image 2 : Distribution of associated symptoms among study population*

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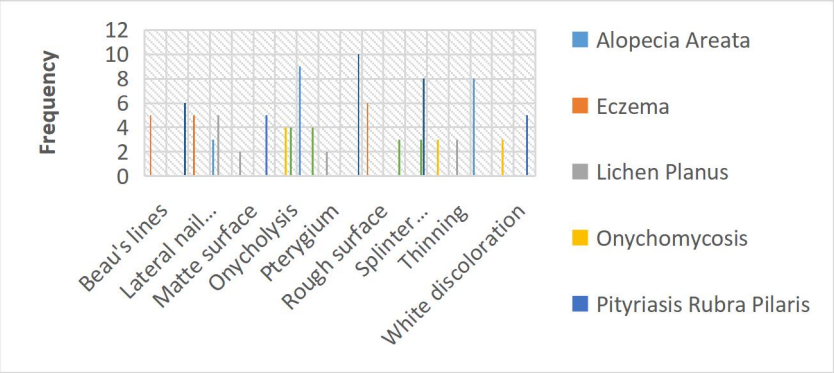
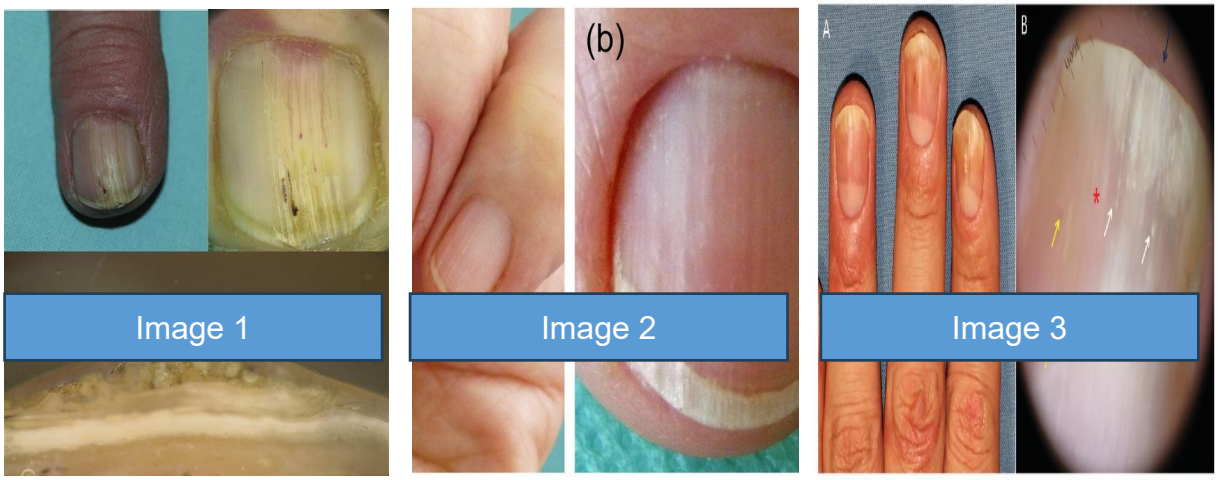



Images 1 : Dermoscopic view revealing multiple delicate splinter hemorrhages, often associated with psoriatic or vascular nail changes.
Image 2 : Distal V-shaped onycholysis. The base of the nail lifts in a V-configuration from the free edge.
Image 3 : Clinical photo with dermoscopic inset showing superimposed pitted depressionsindicated by subtle indentations




## Discussion

The present study offers valuable insights into the dermoscopic features of nail lesions associated with various dermatoses. The study included 53 participants with a nearly equal gender distribution (females 50.9%, males 49.1%). Most patients belonged to the 18–60 years age group, reflecting the common age of presentation of chronic dermatoses involving nails, in agreement with the findings of Grover et al., who noted increased nail changes among middle-aged adults due to prolonged disease duration and exposure to triggering factors like trauma or autoimmune activity [5].

The most common dermatoses associated with nail changes in our study were Systemic Lupus Erythematosus (22.6%), followed by Alopecia Areata (18.9%) and Eczema (15.1%). Nail involvement in autoimmune conditions such as SLE has been previously reported, often manifesting with vascular and pigmentary abnormalities. These findings are supported by a study by Uyar et al., where nailfold capillaroscopic changes were prominent in lupus patients, often correlating with disease activity [6]. A similar trend was observed in a study by Wanniang et al. from Northeast India, where connective tissue diseases and alopecia areata were among the leading causes of nail changes [7]. These findings reinforce the high

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burden of autoimmune and inflammatory conditions contributing to nail pathology in Indian populations.

Onychoscopic evaluation revealed that the most frequent dermoscopic findings were nail pitting (24.5%), splinter hemorrhages (20.8%), and red lunula (18.9%). Pitting is a well-established feature in diseases like Alopecia Areata and Psoriasis, consistent with findings by Tosti et al., who highlighted its diagnostic relevance in non-invasive screening for these disorders [8]. Similarly, splinter hemorrhages and red lunula are hallmark features of vascular involvement, frequently seen in connective tissue diseases and trauma-induced nail pathologies [9]. Also these findings are supported by Mahajan et al., who documented similar dermoscopic patterns in a cross-sectional study of 100 patients with psoriasis, where pitting and subungual hemorrhages were prominent [10].

Lesser-seen dermoscopic features like Beau's lines, matte surface, and pterygium were present in under 10% of participants. These are often late or severe manifestations, as seen in lichen planus or advanced scleroderma. Similar observations were made by Piraccini et al., who categorized these signs as indicative of longstanding or untreated disease progression [9]. In a study by Sharma et al., nail ridging and dystrophy were also reported in a significant proportion of patients with lichen planus and eczema, highlighting the diagnostic overlap of dermatoses based on dermoscopic features [11].

Clinically, brittle nails (34%) and thickened nails (32.1%) were common gross changes, aligning with studies by Baran and Haneke, which describe these changes as non-specific but frequently seen in chronic inflammatory dermatoses and fungal infections [12]. Onycholysis and discoloration were also notable, particularly in psoriasis and onychomycosis, respectively. Yadav et al. similarly found nail brittleness and discoloration as common findings in their observational study on nail changes in 120 Indian patients with chronic dermatoses [13].

An important aspect of the study was that 30.2% of patients reported no symptoms, underscoring the silent yet progressive nature of nail involvement in dermatological disorders. This emphasizes the role of dermoscopy in early detection. This finding resonates with the work of Wanniang et al., who noted that asymptomatic nail changes often go unnoticed in routine clinical exams unless examined dermoscopically [7]. Observation in this study underlines the subclinical involvement of nails in dermatological diseases, a point also emphasized by Tosti et al., who advocated routine nail examination for early diagnosis and management [8].

Our results further suggest that chronicity of the dermatosis plays a significant role in the severity and type of nail changes. In our cohort, more than 60% had dermatoses for over two years, possibly explaining the higher prevalence of structural changes like pitting, onycholysis, and trachyonychia. Chronicity is a key factor contributing to structural nail changes, as supported by Piraccini et al., who stated that prolonged inflammation leads to irreversible matrix damage [9].

## Conclusion

The present study demonstrates that dermoscopy is a valuable, non-invasive tool for identifying a wide spectrum of nail changes across various dermatoses. Common findings such as pitting, splinter hemorrhages, and red lunula were frequently observed, particularly in chronic autoimmune and inflammatory conditions like SLE, alopecia areata, and psoriasis. A significant proportion of patients were asymptomatic, underscoring the importance of routine onychoscopic examination. The correlation between chronic disease duration and nail changes further emphasizes the role of dermoscopy in early detection, diagnosis, and management of underlying dermatoses.

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