Section: Dermatology

Original Research Article

A CROSS SECTIONAL STUDY ON DERMOSCOPIC FEATURES OF HAIR AND SCALP DISORDERS AMONG PATIENTS ATTENDING DERMATOLOGY OPD IN A TERTIARY CARE CENTER

Amudha R[1], Sri Vishnu Prasath T[2], Karthick M. K[3], Karthikeyan S[4]

[1-4]Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur, India.

Received : 10/05/2026
Received in revised form : 22/06/2026
Accepted : 05/07/2026

Keywords:
Trichoscopy, Dermoscopy, Hair disorders, Alopecia, Androgenetic alopecia, Alopecia areata, Scalp disorders, Dermoscopy of scalp.

Corresponding Author:
Dr. Sri Vishnu Prasath T,
Email: spacemansri3@gmail.com

DOI: 10.47009/jamp.2026.8.4.101

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2026; 8 (4); 581-594

ABSTRACT

Background: Hair and scalp disorders constitute a significant proportion of dermatology outpatient visits and often pose diagnostic challenges because of overlapping clinical features. Trichoscopy (dermoscopy of the hair and scalp) is a rapid, non-invasive diagnostic modality that improves diagnostic accuracy by allowing visualization of follicular, perifollicular, vascular, and hair shaft abnormalities. Although trichoscopy has become an indispensable tool in clinical dermatology, studies evaluating its diagnostic utility in the Indian population remain limited. **Objective:** To evaluate the trichoscopic features of various hair and scalp disorders and assess the usefulness of trichoscopy as a non-invasive diagnostic tool in routine dermatological practice. **Materials and Methods:** A hospital-based cross-sectional observational study was conducted among 120 consecutive patients presenting with hair and scalp disorders to the Dermatology Outpatient Department of Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur, Tamil Nadu, over a period of 18 months. Patients fulfilling the inclusion criteria underwent detailed clinical examination followed by trichoscopic evaluation using a dermoscope. Relevant laboratory investigations were performed whenever necessary for confirmation of diagnosis. Data were analysed using SPSS software, and descriptive as well as inferential statistics were applied. **Results:** The mean age of participants was **28.5 ± 11.9 years**, with males constituting **53.3%** of the study population. Androgenetic alopecia was the most common diagnosis (24.2%), followed by alopecia areata (20%), female pattern hair loss (10.8%), seborrheic dermatitis (7.5%), telogen effluvium (7.5%), and scalp psoriasis (5%). Yellow dots, hair diameter diversity, short vellus hairs, black dots, broken hairs, exclamation mark hairs, arborizing vessels, glomerular vessels, peripilar sign, and honeycomb pigment network were among the characteristic trichoscopic findings. A significant association was observed between androgenetic alopecia and positive family history ($p<0.001$), while telogen effluvium showed a significant female predominance ($p<0.001$). Scalp psoriasis demonstrated a significant association with increasing age ($p<0.001$). **Conclusion:** Trichoscopy is a valuable, rapid, and non-invasive diagnostic modality that enables accurate diagnosis of both alopecias and inflammatory scalp disorders. Characteristic trichoscopic patterns facilitate early diagnosis, reduce the need for invasive scalp biopsy, and aid in appropriate therapeutic decision-making. Routine incorporation of trichoscopy into dermatological practice can substantially improve diagnostic confidence and patient management.

INTRODUCTION

Hair disorders constitute a major proportion of dermatological consultations and have a substantial impact on patients' psychological well-being, self-esteem, and quality of life. Although most hair and scalp disorders are not life-threatening, they often result in significant cosmetic concerns and emotional distress, necessitating prompt diagnosis and appropriate management. Clinical examination alone may not always differentiate between various causes of alopecia and scalp diseases because several disorders share overlapping morphological features. Consequently, the availability of a rapid, reliable, and non-invasive diagnostic technique is of considerable importance in routine dermatological practice.

Dermoscopy, originally developed for the evaluation of pigmented skin lesions, has evolved into an

indispensable diagnostic tool in general dermatology. Its applications have expanded considerably beyond cutaneous tumors to include inflammatory dermatoses (inflammoscopy), infections and infestations (entomodermoscopy), nail disorders (onychoscopy), and hair and scalp disorders (trichoscopy). Trichoscopy refers to dermoscopic examination of the hair and scalp using either a handheld dermoscope or videodermoscope, enabling magnified visualization of hair shafts, follicular openings, perifollicular structures, vascular patterns, pigmentation, and scaling that are not appreciable with the naked eye.

The introduction of trichoscopy has significantly improved the diagnostic approach to both scarring and non-scarring alopecias. Characteristic trichoscopic features such as yellow dots, black dots, exclamation mark hairs, broken hairs, short vellus hairs, peripilar sign, hair diameter diversity, glomerular vessels, perifollicular scaling, follicular plugging, arborizing vessels, and honeycomb pigmentation provide valuable diagnostic clues and frequently eliminate the need for invasive scalp biopsy. In addition to facilitating diagnosis, trichoscopy enables assessment of disease activity, evaluation of severity, monitoring of therapeutic response, and prediction of prognosis in several hair disorders.

A wide spectrum of disorders can be effectively evaluated using trichoscopy. Non-scarring alopecias including androgenetic alopecia, female pattern hair loss, alopecia areata, telogen effluvium, trichotillomania, and congenital triangular alopecia demonstrate distinct dermoscopic patterns. Similarly, inflammatory and infectious scalp disorders such as seborrheic dermatitis, scalp psoriasis, discoid lupus erythematosus, lichen planopilaris, folliculitis decalvans, dissecting cellulitis, tinea capitis, and pediculosis capitis possess characteristic trichoscopic findings that aid early recognition and differentiation from clinically similar conditions.

The diagnostic value of trichoscopy has been validated in numerous international studies. In androgenetic alopecia, hair shaft diameter diversity, miniaturized hairs, increased single-hair follicular units, yellow dots, and peripilar sign have consistently been reported as hallmark features. Alopecia areata is characterized by black dots, broken hairs, exclamation mark hairs, coudability hairs, zigzag hairs, and short regrowing vellus hairs. Likewise, arborizing vessels with yellow scales are typical of seborrheic dermatitis, whereas regularly distributed glomerular vessels and diffuse erythema are characteristic of scalp psoriasis. Recognition of these reproducible patterns substantially increases diagnostic confidence and facilitates early institution of disease-specific therapy.

Despite the growing global acceptance of trichoscopy, studies evaluating its clinical utility in the Indian population remain relatively limited. Ethnic differences in hair characteristics, scalp pigmentation, environmental factors, and disease prevalence may influence trichoscopic appearance, emphasizing the need for region-specific data. Furthermore, most available Indian studies have focused on individual disorders rather than comprehensively evaluating the spectrum of hair and scalp diseases encountered in routine clinical practice.

The present study was therefore undertaken to systematically evaluate the trichoscopic features of various hair and scalp disorders in patients attending the Dermatology Outpatient Department of a tertiary care teaching hospital. In addition to documenting the characteristic dermoscopic findings, the study sought to determine the frequency of different disorders, analyse their clinicodemographic profile, and assess the utility of trichoscopy as a reliable, rapid, and non-invasive diagnostic tool. By correlating clinical diagnosis with trichoscopic findings, this study aims to reinforce the role of trichoscopy in everyday dermatological practice and contribute to the existing body of evidence regarding hair and scalp disorders in the Indian population.

Aim

To evaluate the trichoscopic features of various hair and scalp disorders and determine the usefulness of trichoscopy as a non-invasive diagnostic tool in routine dermatological practice.

Objectives

1. To study the trichoscopic patterns observed in different hair and scalp disorders.
2. To correlate trichoscopic findings with clinical diagnosis.
3. To assess the utility of trichoscopy in differentiating various hair and scalp disorders.
4. To evaluate the demographic and clinical profile of patients presenting with hair and scalp disorders.
5. To determine whether trichoscopy can reduce the need for invasive diagnostic procedures such as scalp biopsy.

MATERIALS AND METHODS

Study Design

A hospital-based, cross-sectional observational study was conducted to evaluate the trichoscopic features of patients presenting with various hair and scalp disorders attending the Dermatology Outpatient Department of a tertiary care teaching hospital.

Study Setting

The study was carried out in the Department of Dermatology, Dhanalakshmi Srinivasan Medical College and Hospital (DSMCH), Siruvachur, Perambalur, Tamil Nadu, India, a tertiary care referral centre catering to patients from both urban and rural populations.

Study Duration

The study was conducted over **18 months**.

Study Population

The study included patients of all age groups and both sexes presenting with clinically suspected hair and

ISSN (O): 2687-5365; ISSN (P): 2753-6556

scalp disorders who attended the dermatology outpatient department during the study period and provided informed consent for participation.

Sample Size

A total of **120 patients** were enrolled.

The sample size was calculated using the formula:

$$n = \frac{Z^2 pq}{d^2}$$

where

- **p** = 61.5% (prevalence reported by Ross et al.)
- **q** = 38.5%
- **d** = 15% relative precision

The calculated sample size was 106. After adding a 10% non-response rate, the final sample size was rounded to **120 participants**.

Sampling Technique

A purposive sampling technique was employed. Consecutive patients satisfying the eligibility criteria were recruited until the required sample size was achieved.

Eligibility Criteria

Inclusion Criteria

Patients were included if they fulfilled any of the following criteria:

- Patients of any age and either sex presenting with hair and scalp disorders.
- Patients willing to provide written informed consent.
- In the case of minors, written consent was obtained from parents or legal guardians.

Exclusion Criteria

Patients were excluded if they:

- Declined to participate or refused informed consent.
- Had received topical or systemic treatment for hair or scalp disorders before presentation.
- Had used home remedies that could alter dermoscopic findings.
- Had secondary bacterial infection involving scalp lesions.

Study Procedure

After obtaining Institutional Ethics Committee approval, eligible participants were recruited from the dermatology outpatient department. Written informed consent was obtained before enrolment. Demographic details, presenting complaints, duration of illness, age at onset, family history, associated systemic illnesses, history of atopy, and previous treatment history were recorded using a predesigned case record form.

A detailed clinical examination of the scalp and hair was subsequently performed. Scalp examination included assessment for erythema, scaling, follicular plugging, pustules, crusting, and scarring. Hair examination included evaluation of hair density, shaft morphology, fragility, distribution, and hair pull test findings.

Trichoscopic Examination

Trichoscopic examination was performed in all study participants using a handheld dermoscope under polarized illumination.

The following dermoscopic parameters were systematically evaluated:

Follicular Findings

- Yellow dots
- Black dots
- White dots
- Red dots
- Blue-grey dots
- Empty follicular openings
- Follicular plugging
- Loss of follicular openings
- Single-hair follicular units

Hair Shaft Findings

- Hair diameter diversity
- Short vellus hairs
- Thin hairs
- Miniaturized hairs
- Exclamation mark hairs
- Broken hairs
- Zigzag hairs
- Comma hairs
- Corkscrew hairs
- Morse-code hairs
- Block hairs
- Flame hairs
- Tulip hairs
- Coudability hairs
- Tapered hairs
- Pigtail hairs
- "V" hairs
- "i" hairs
- Straight regrowing hairs

Perifollicular Findings

- Peripilar sign
- Perifollicular scaling
- Peripilar casts
- Perifollicular pigmentation
- Perifollicular erythema
- Perifollicular pustules
- Perifollicular waxy areas

Interfollicular Findings

- Honeycomb pigment network
- Arborizing vessels
- Glomerular vessels
- Telangiectasia
- Interfollicular scaling
- Tubular scaling

Other Findings

- Yellow amorphous areas
- White structureless areas
- Violaceous background
- Cicatricial white patches
- Blood extravasation
- White rail lines
- White collarette

ISSN (O): 2687-5365; ISSN (P): 2753-6556

- Large red globules
- Cobblestone appearance
- Comedo-like openings
- Cerebriform pattern
- Tufted hairs

These findings were documented photographically whenever required.

Ancillary Investigations

Wherever clinically indicated, trichoscopic findings were correlated with appropriate laboratory investigations, including:

- Potassium hydroxide (KOH) mount
- Gram stain
- Tzanck smear
- Wood's lamp examination
- Diascopy
- Routine hematological investigations

These investigations were performed to establish or confirm the final diagnosis in doubtful cases.

Outcome Measures

The primary outcome was the identification of characteristic trichoscopic features associated with various hair and scalp disorders.

Secondary outcomes included:

- Distribution of hair and scalp disorders
- Frequency of individual trichoscopic signs
- Association between demographic variables and specific disorders
- Correlation between clinical diagnosis and trichoscopic diagnosis

Statistical Analysis

Data were entered into Microsoft Excel and analysed using the Statistical Package for the Social Sciences (SPSS) software.

Continuous variables were expressed as **mean ± standard deviation (SD)**, whereas categorical variables were presented as **frequency and percentage**. Associations between categorical variables were analysed using the Chi-square test or Fisher's exact test, wherever appropriate. A **p-value <0.05** was considered statistically significant. Results were presented using tables, bar diagrams, and pie charts.

Ethical Considerations

The study protocol received approval from the Institutional Ethics Committee of Dhanalakshmi Srinivasan Medical College and Hospital before commencement. Written informed consent was obtained from all adult participants and from parents or legal guardians of minors. Confidentiality and anonymity of patient information were maintained throughout the study in accordance with the ethical principles of the Declaration of Helsinki.

RESULTS

Participant Characteristics

A total of 120 patients with clinically diagnosed hair and scalp disorders were enrolled during the study period. The mean age of the study population was 28.5 ± 11.9 years (range: 4–62 years). The majority of participants belonged to the 20–29-year age group (38.3%), followed by the 30–39-year age group (28.3%). Males constituted 53.3% (n=64) of the study population, while females accounted for 46.7% (n=56), yielding a male-to-female ratio of 1.14:1.

The mean age at onset of hair and scalp disorders was 27.4 ± 11.3 years, with most patients reporting disease onset between 21 and 30 years (37.5%). The average disease duration was 1.39 ± 0.8 years, and more than half of the participants (52.5%) had symptoms for less than one year. Family history of similar disorders was present in 15.8% of patients, whereas 27.5% had a history of atopy. Approximately 71.7% of participants had no associated systemic illness, while hypothyroidism was the commonest comorbidity (24.2%). Hair pull test was positive in 18.1% of patients.

Spectrum of Hair and Scalp Disorders

The most common diagnosis established by trichoscopy was androgenetic alopecia (24.2%), followed by alopecia areata (20%), female pattern hair loss (10.8%), seborrheic dermatitis (7.5%), telogen effluvium (7.5%), and scalp psoriasis (5%). Less frequently encountered disorders included discoid lupus erythematosus, trichotillomania, pediculosis capitis, tinea capitis, lichen planopilaris, pseudopelade of Brocq, dissecting cellulitis, folliculitis decalvans, congenital triangular alopecia, acne keloidalis nuchae, seborrheic keratosis, pyogenic granuloma, actinic lichen planus, and naevus sebaceous.

Table 1: Distribution of Hair and Scalp Disorders

Diagnosis	n (%)
Androgenetic alopecia	29 (24.2)
Alopecia areata	24 (20.0)
Female pattern hair loss	13 (10.8)
Seborrheic dermatitis	9 (7.5)
Telogen effluvium	9 (7.5)
Scalp psoriasis	6 (5.0)
Discoid lupus erythematosus	5 (4.2)
Trichotillomania	5 (4.2)
Pediculosis capitis	4 (3.3)
Tinea capitis	3 (2.5)
Others	13 (10.8)

ISSN (O): 2687-5365; ISSN (P): 2753-6556

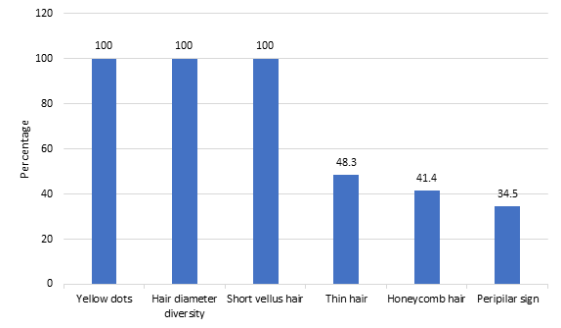
Others include lichen planopilaris, pseudopelade of Brocq, dissecting cellulitis, folliculitis decalvans, congenital triangular alopecia, seborrheic keratosis, pyogenic granuloma, acne keloidalis nuchae, actinic lichen planus and naevus sebaceous.

Trichoscopic Findings in Common Disorders

Androgenetic Alopecia

Among the 29 patients with androgenetic alopecia, yellow dots, hair diameter diversity, short vellus hairs, and single-hair follicular units were observed in 100% of cases. Thin hairs were present in 48.3%, honeycomb pigmentation in 41.4%, and peripilar sign in 34.5%. A statistically significant association was observed between androgenetic alopecia and age ($p<0.001$), with the highest prevalence occurring in individuals aged 20–39 years. A positive family history was also significantly associated with androgenetic alopecia ($p<0.001$).

Trichoscopic findings	Number of participants	Percentage
Yellow dots	29	100
Hair diameter diversity	29	100
Short vellus hair	29	100
Thin hair	14	48.3
Honeycomb hair	12	41.4
Peripilar sign	10	34.5
Single hair follicular unit	29	100



Alopecia Areata

Among the 24 patients diagnosed with alopecia areata, black dots (87.5%), short vellus hairs (83.3%), exclamation mark hairs (79.2%), broken hairs (75%), white dots (75%), and zigzag hairs (66.7%) were the predominant findings. Pigtail hairs, straight regrowing hairs, coudability hairs, tulip hairs, and V hairs were encountered less frequently. No statistically significant association was found between alopecia areata and age, gender, or family history ($p>0.05$).

Female Pattern Hair Loss

Hair diameter diversity, short vellus hairs, and single-hair follicular units were present in all patients with female pattern hair loss. Peripilar sign was observed in 76.9%, honeycomb pigmentation in 69.2%, and thin hairs in 53.8%. Female pattern hair loss showed a significant association with age ($p=0.018$), but not with family history.

Telogen Effluvium

All patients with telogen effluvium demonstrated yellow dots and single-hair follicular units. Hair diameter diversity was observed in 77.8%, short vellus hairs in 66.7%, and straight regrowing hairs in 55.6%. Telogen effluvium occurred exclusively in females (16.1%), representing a statistically significant gender association ($p<0.001$).

Seborrheic Dermatitis

The characteristic trichoscopic findings included yellow scales (100%), arborizing vessels (88.9%), and trichoptilosis (11.1%). No significant association was observed with age, gender, or family history.

Scalp Psoriasis

All patients with scalp psoriasis demonstrated glomerular vessels, diffuse scalp erythema, and fine interfollicular scaling. Blood extravasation was present in 66.7% of cases. Patients aged over 40 years had a significantly higher prevalence of scalp psoriasis compared with younger individuals ($p<0.001$).

Discoid Lupus Erythematosus

The most frequent findings included scattered brown pigmentation (100%), arborizing vessels (80%), loss of follicular openings (60%), fine interfollicular scaling (60%), and white structureless areas (60%). Red dots, telangiectasia, and follicular plugging were observed less commonly. No significant demographic associations were identified.

Trichotillomania

All patients with trichotillomania demonstrated a characteristic combination of broken hairs, flame hairs, tulip hairs, V hairs, trichoptilosis, and blood extravasation, each occurring in 100% of cases. No significant association was observed with age, gender, or family history.

Less Common Disorders

Distinctive trichoscopic patterns were also documented in less frequently encountered disorders:

- **Lichen planopilaris:** Peripilar casts, tubular scaling, cicatricial white patches, white areas, violaceous background, and double-ring appearance.
- **Pediculosis capitis:** Viable nits and live lice were observed in all patients.
- **Pseudopelade of Brocq:** White areas and perifollicular pigmentation predominated.
- **Tinea capitis:** Black dots, comma hairs, Morse code hairs, block hairs, perifollicular waxy areas, and yellow amorphous areas were characteristic.

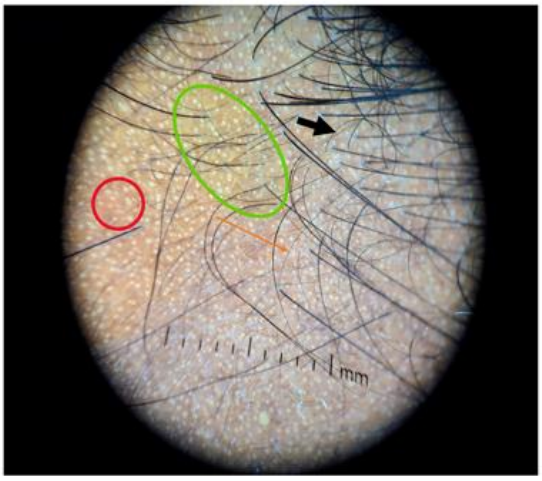
ISSN (O): 2687-5365; ISSN (P): 2753-6556

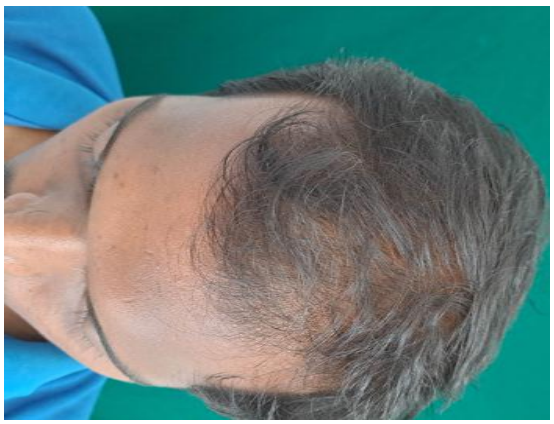
- **Dissecting cellulitis:** Yellow dots, black dots, perifollicular pustules, and yellow structureless areas were consistently observed.
- **Acne keloidalis nuchae:** Tufted hairs, perifollicular pustules, and perifollicular whitish halos were identified.
- **Pyogenic granuloma:** White rail lines, red structureless areas, and a white collarette were seen in the single case.

Summary of Major Trichoscopic Patterns

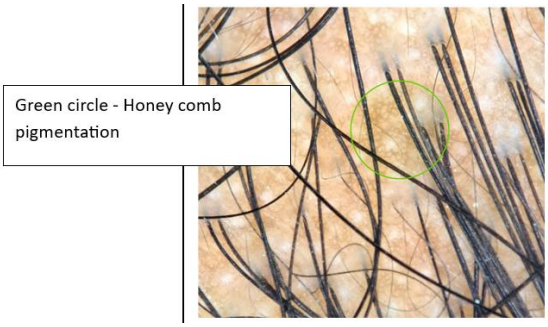
Across all disorders, the most frequently encountered trichoscopic signs included short vellus hairs, yellow dots, hair diameter diversity, single-hair follicular units, peripilar sign, honeycomb pigment network, black dots, broken hairs, arborizing vessels, and glomerular vessels. These findings enabled reliable differentiation between non-scarring alopecias, cicatricial alopecias, inflammatory scalp disorders, and infectious conditions without the routine need for invasive scalp biopsy.

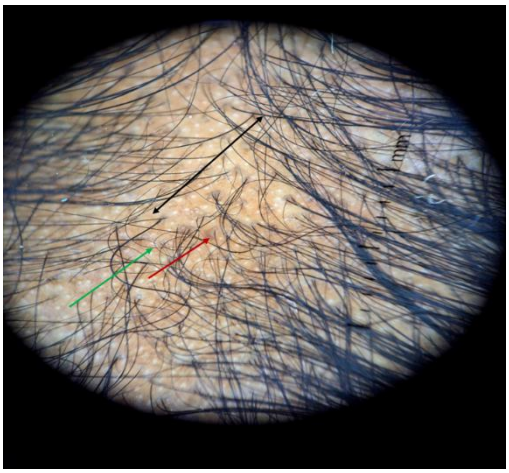
Androgenetic alopecia





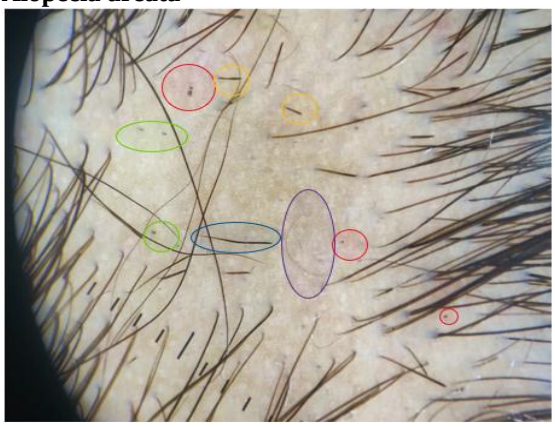
Red circle – Yellow dots
Short black broad arrow – Vellus hair
Orange arrow – Thin hair
Green oval circle – Predominance of single hair follicular unit





Green arrow – Wavy hair
Red arrow – Perifollicular pigmentation/Peipilar sign
Black double head arrow – Hair diameter heterogenicity

Alopecia areata



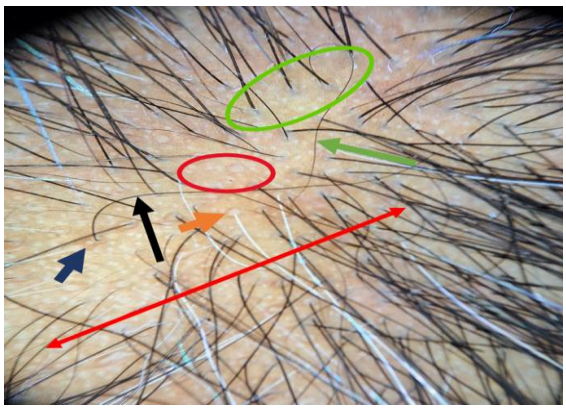
Red circle—black dot
Yellow circle— exclamation mark hair
Green circle—broken hair
Purple oval—vellus hair
Blue oval—straight regrowing hair

Green circle—zig zag hair
Blue oval—monilethrix like hair
Yellow oval—straight regrowing hair

Yellow circle – pigtail hair

Female androgenetic alopecia

ISSN (O): 2687-5365; ISSN (P): 2753-6556



RED OVAL—YELLOW DOTS

BROAD SHORT ORANGE ARROW—PERIPILAR SIGN/PERIFOLLICULAR PIGMENTATION

GREEN OVAL—SINGLE FOLLICULAR HAIR UNIT

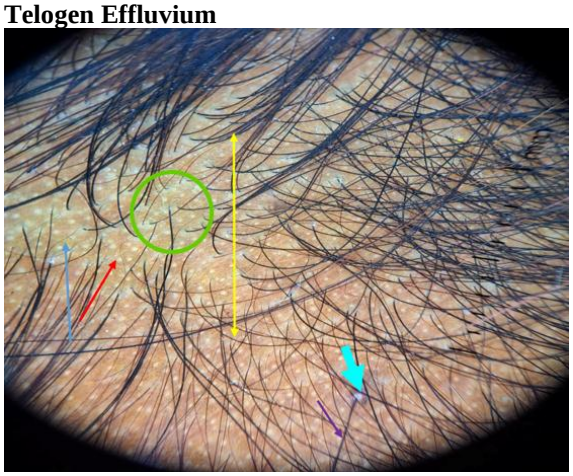
PURPLE SHORT ARROW—HONEYCOMB PIGMENTATION

RED DOUBLE ARROWHEAD—HAIR DIAMETER HETEROGENICITY

BLACK ARROW—THIN HAIR

GREEN ARROW—VELLUS HAIR

Telogen Effluvium



GREEN CIRCLE—PREDOMINANCE OF SINGLE HAIR FOLLICULAR UNIT

RED ARROW—YELLOW DOTS

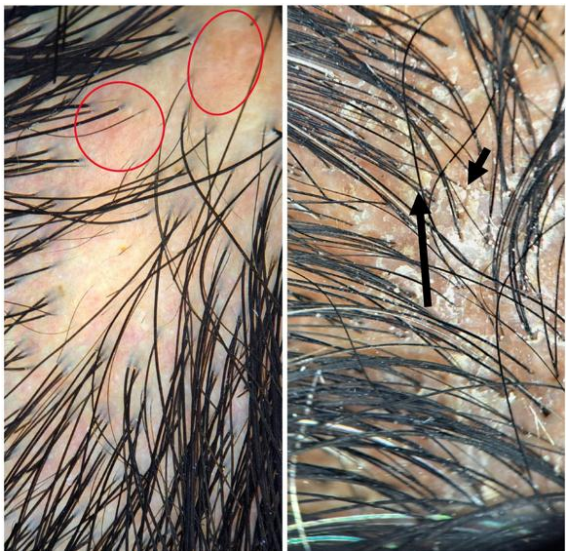
YELLOW DOUBLE ARROW—HAIR THICKNESS HETEROGENECITY

BLUE ARROW—VELLUS HAIR

PURPLE ARROW—UPGROWING STRAIGHT HAIR

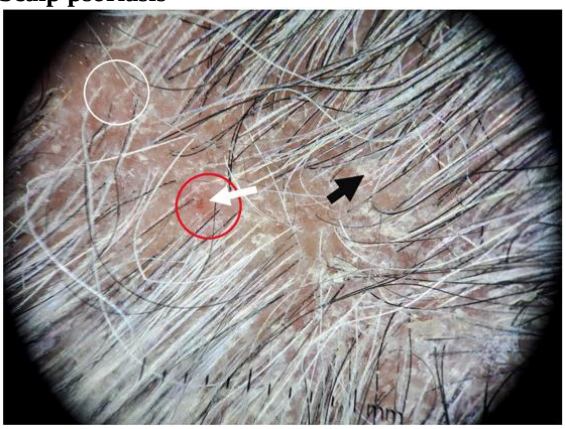
SHORT LIGHT BLUE BROAD ARROW—PERIPILAR SIGN/PERIFOLLICULAR PIGMENTATION

Seborrheic dermatitis



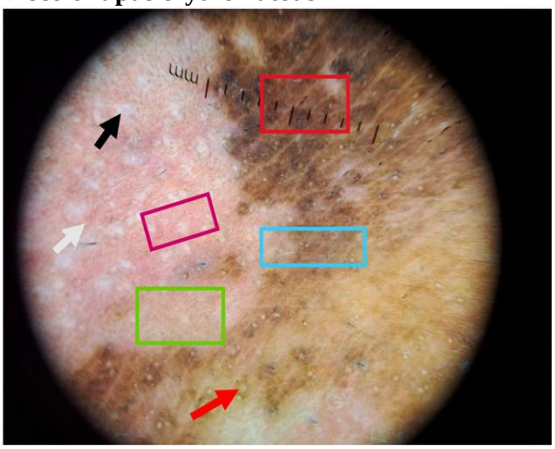
Red circle – Thin arborizing vessels
Black arrow – Yellow scales

Scalp psoriasis



White circle – Erythematous background
Red circle – Glomerular loops
Black arrow – Interfollicular scaling
White arrow – Blood extravasation

Discoid lupus erythematous



ISSN (O): 2687-5365; ISSN (P): 2753-6556

BLACK ARROW—WHITE AREAS

RED ARROW—LARGE YELLOW DOTS(FOLLICULAR KERATIN PLUGS)

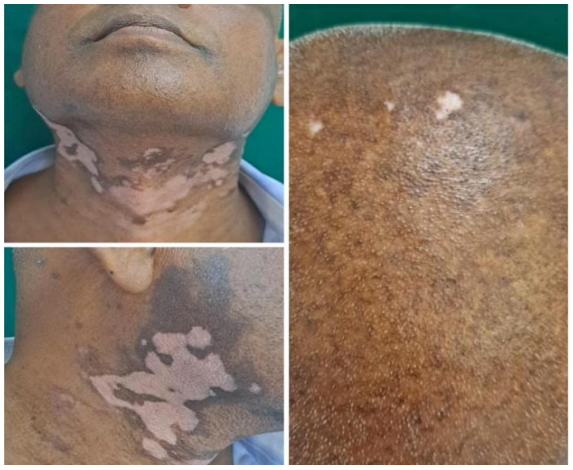
WHITE ARROW—RED DOTS

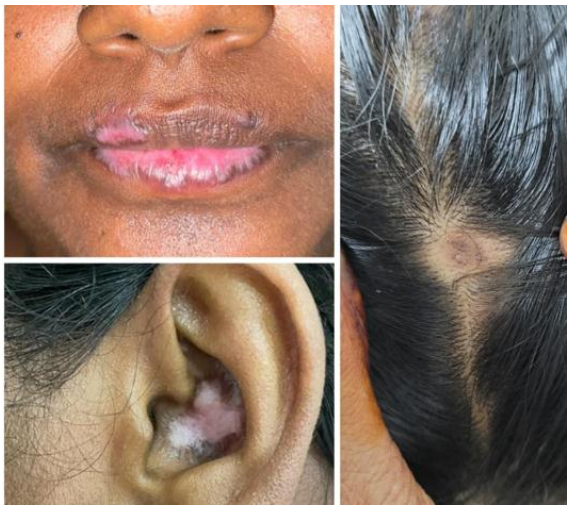
RED BOX—SCATTERED BROWN PIGMENTATION

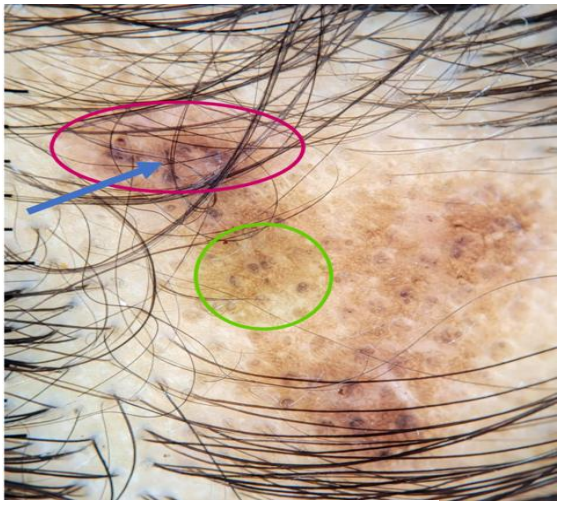
BLUE BOX—LOSS OF FOLLICULAR OPENING

GREEN BOX—PINK AREAS

PINK BOX—ARBORIZING VESSELS





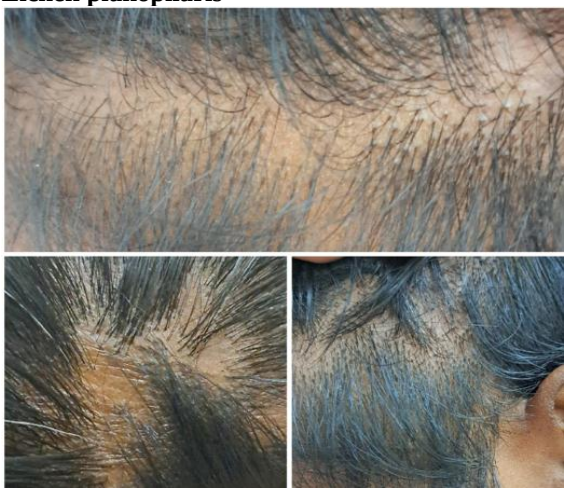


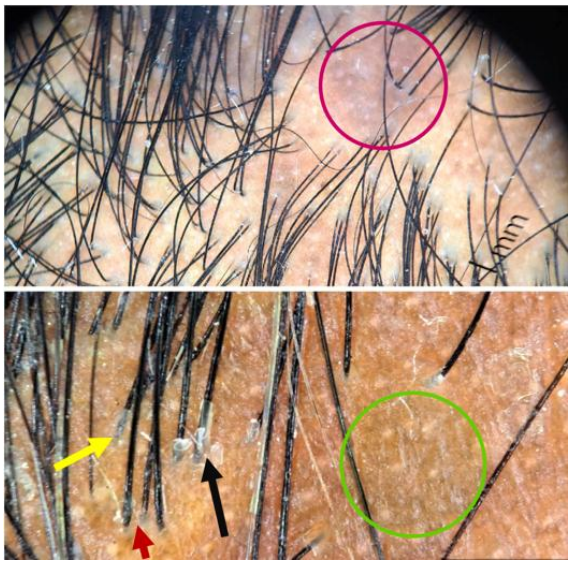
PINK OVAL—FINE INTERFOLLICULAR SCALING

BLUE ARROW—THIN ARBORRIZING VESSELS

GREEN CIRCLE—SCATTERED BROWN PIGMENTATION

Lichen planopilaris





YELLOW ARROW—THUBULAR SCALING

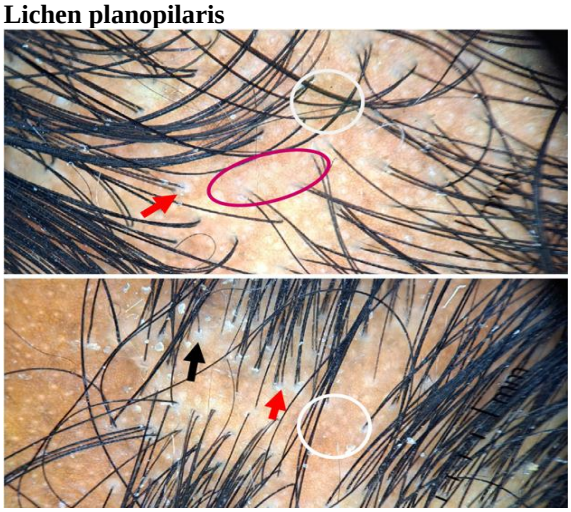
RED ARROW—PERIFOLLICULAR SCALING

BLACK ARROW—TUBULAR CAST

GREEN CIRCLE—LOSS OF FOLLICLES

RED CIRCLE—VIOLACEOUS AREA

Lichen planopilaris



ISSN (O): 2687-5365; ISSN (P): 2753-6556

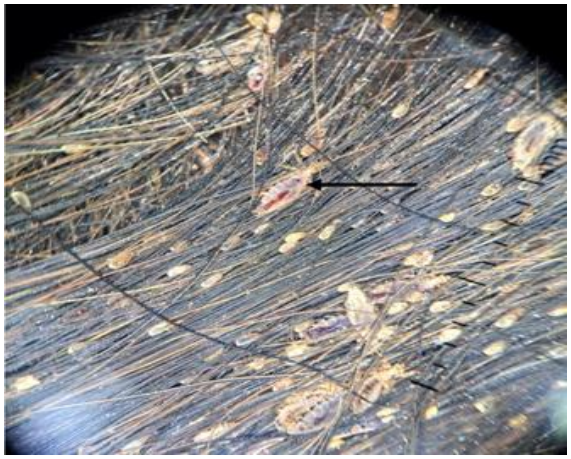
RED ARROW—DOUBLE RING SIGN

PINK OVAL—WHITE AREAS

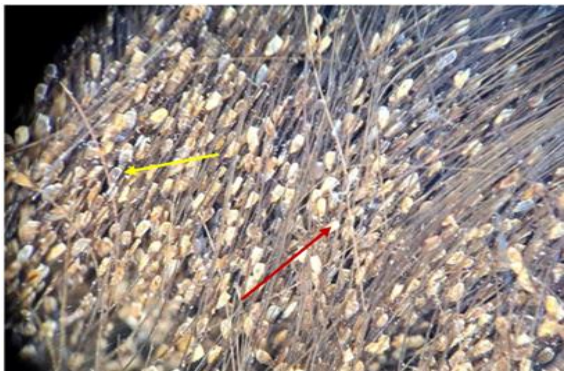
WHITE CIRCLE—MILKY RED AREAS

BLACK ARROW—FIBROTIC WHITE DOTS

Pediculosis capitis

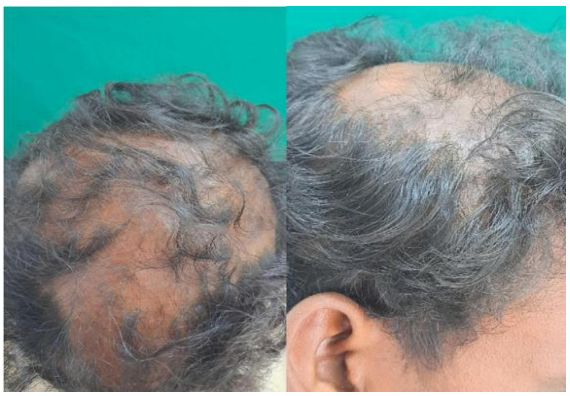


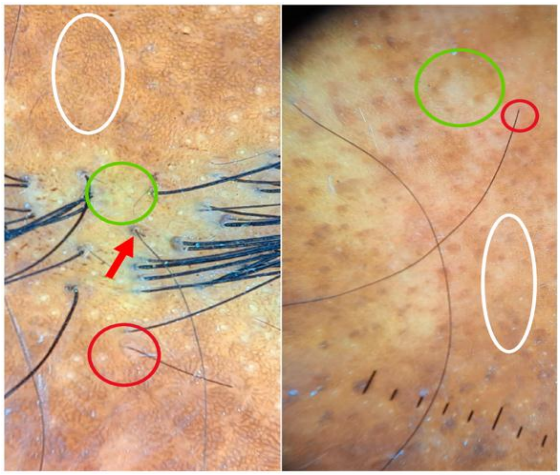
Black arrow – Lice



Yellow arrow – Pseudonits
Red arrow – Nits

Pseudopelade of brocq





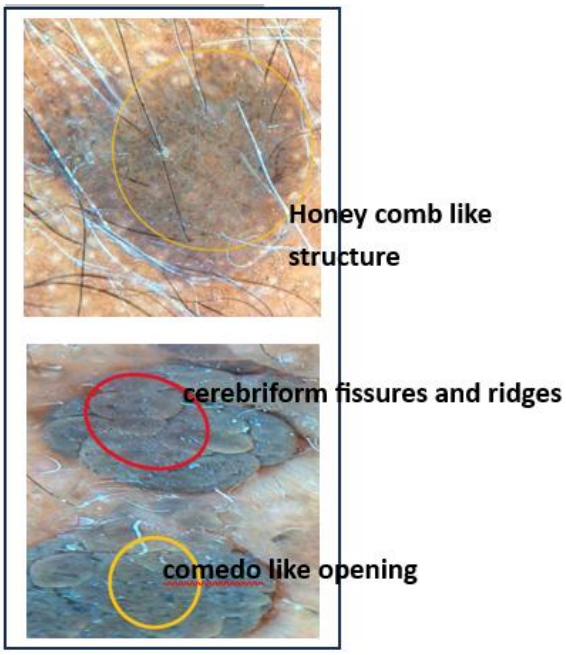
RED ARROW—PERIFOLLICULAR PIGMENTATION

GREEN CIRCLE—SMOOTH WHITE STRUCTURELESS AREA

WHITE OVAL—LOSS OF HAIR FOLLICLE

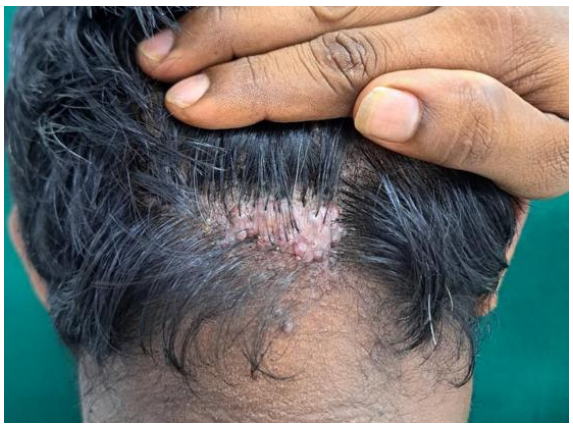
RED CIRCLE—DYSTROPHIC HAIR AT PERIPHERY OF LESION

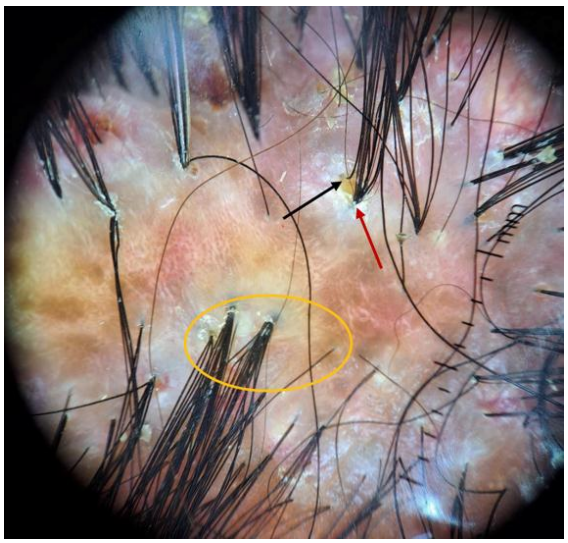
Seborrheic keratosis



Acne keloidalis nuchae

ISSN (O): 2687-5365; ISSN (P): 2753-6556



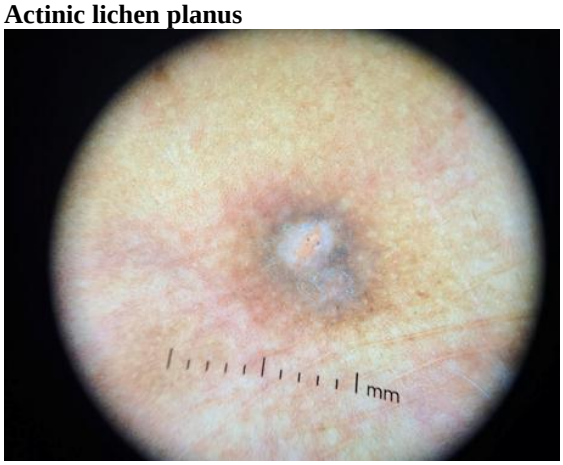


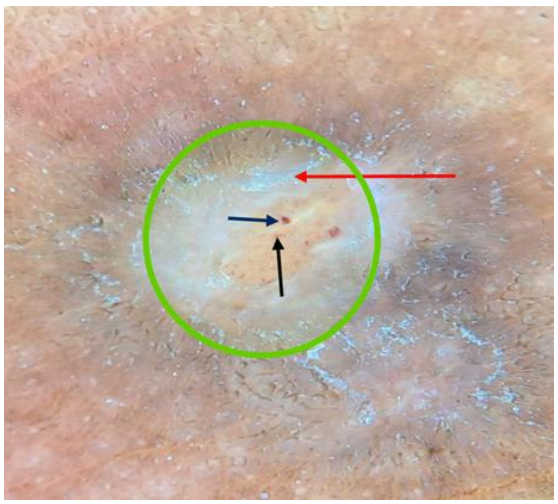
YELLOW CIRCLE—TUFTED HAIRS

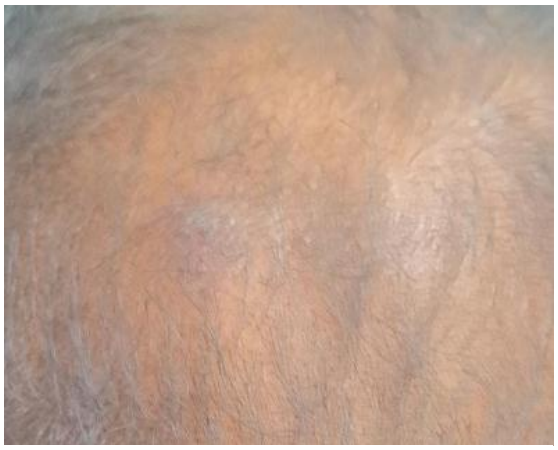
BLACK ARROW—PERIFOLLICULAR PUSTULES

RED ARROW—PERIFOLLICULAR WHITE AREA

Actinic lichen planus







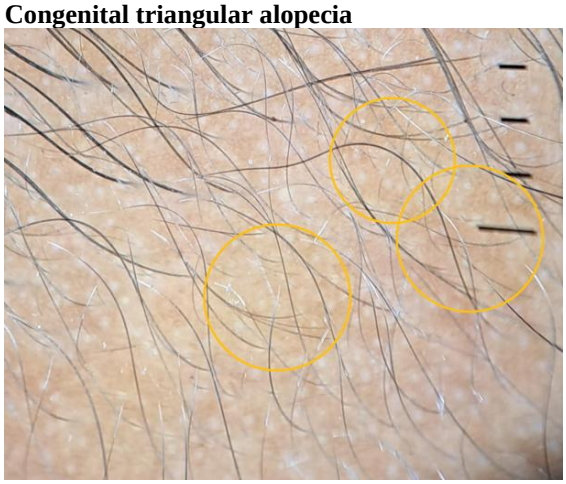
GREEN CIRCLE--- VIOLACEOUS BACKGROUND

BLACK ARROW--- RED DOTS

RED ARROW--- WICKHAMS STRIAE

PURPLE ARROW--- RED GLOBULES

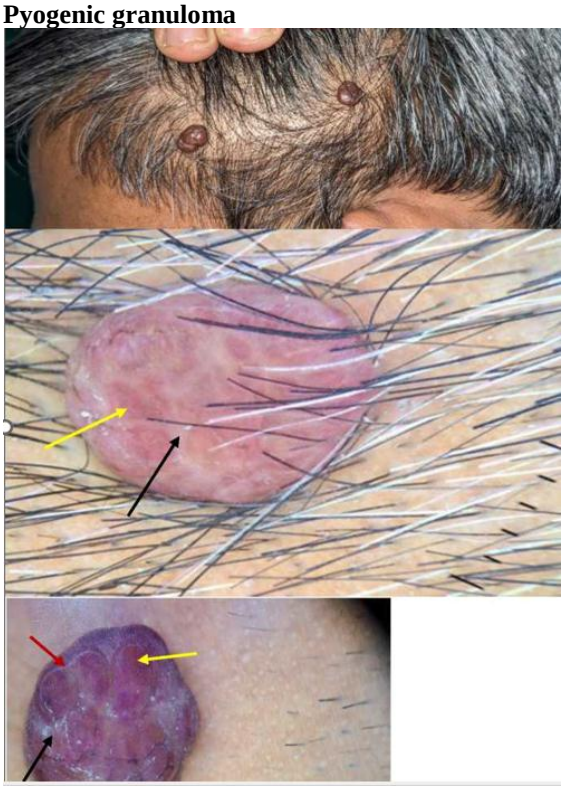
Congenital triangular alopecia



Short vellus hair

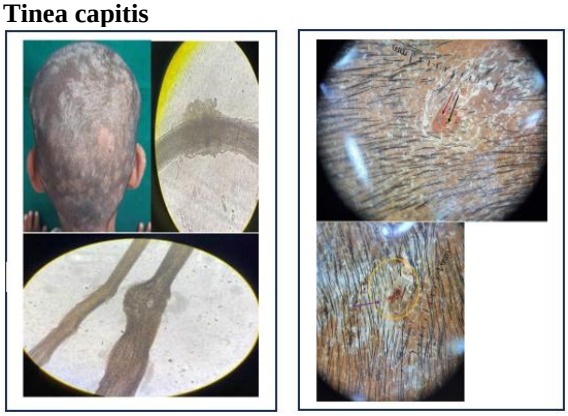
ISSN (O): 2687-5365; ISSN (P): 2753-6556

Pyogenic granuloma



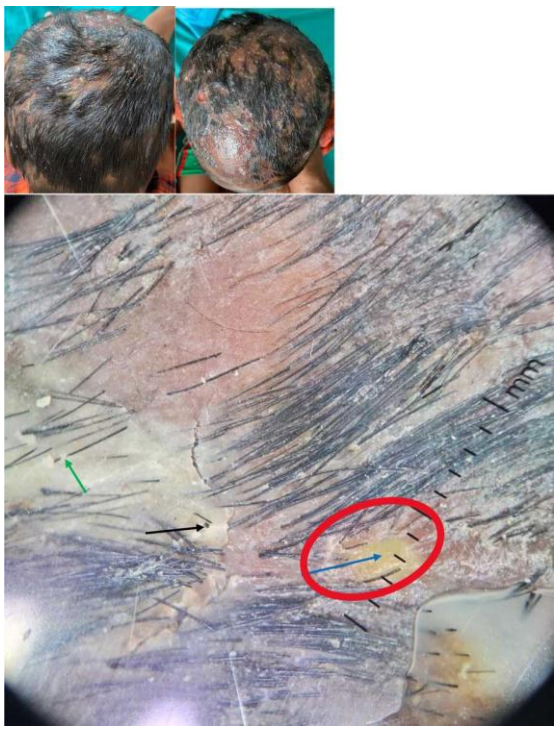
Black arrow-white rail lines
Red arrow—white collarette
Yellow arrow—large structureless red globules

Tinea capitis



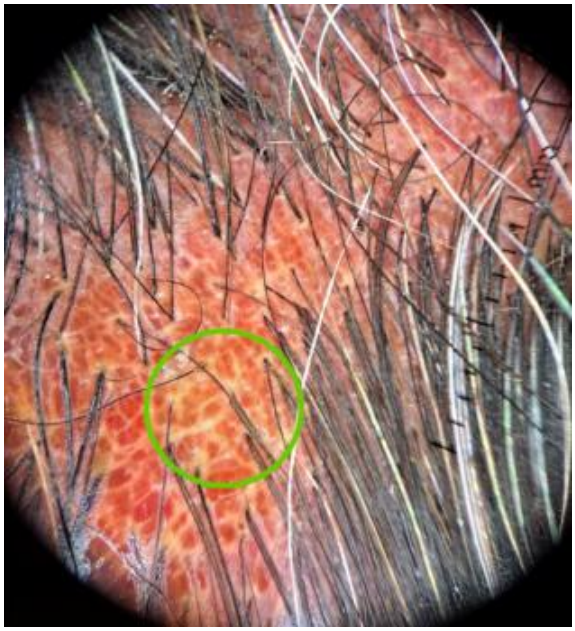
Red arrow-comma hair
Black arrow-block hair
Purple arrow-morse code hair
Yellow circle- perifollicular white area

Tinea capitis (kerion)



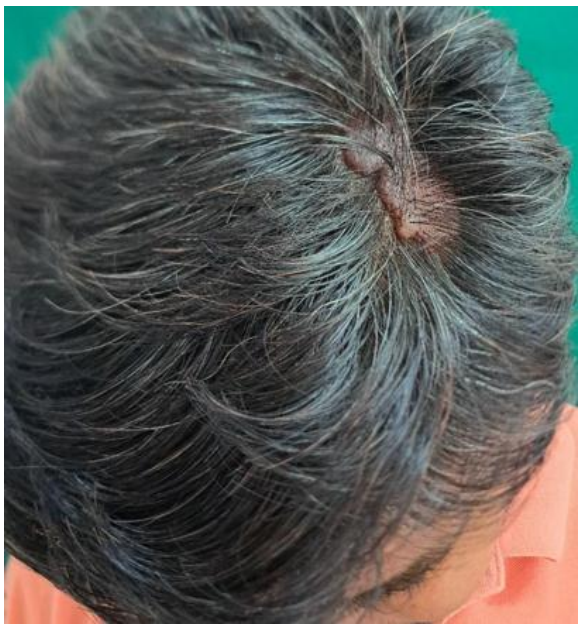
Green arrow—i hair
Black arrow—black dot
Blue arrow—pustules
Red circle—yellow amorphous area

Naevus sebaceous



Cobblestone appearance

ISSN (O): 2687-5365; ISSN (P): 2753-6556



DISCUSSION

The present hospital-based cross-sectional study evaluated the trichoscopic features of 120 patients with a wide spectrum of hair and scalp disorders attending a tertiary care dermatology center. The study demonstrated that trichoscopy is a rapid, reliable, and non-invasive diagnostic modality capable of identifying characteristic morphologic patterns in both non-scarring and cicatricial alopecias as well as inflammatory and infectious scalp disorders. The findings support the increasing role of trichoscopy as an indispensable extension of clinical examination and reaffirm its usefulness in reducing the need for invasive scalp biopsy in routine dermatological practice.

The mean age of the study population was 28.5 ± 11.9 years, with most patients belonging to the 20–39-year age group. Similar age distributions have been reported by Bhat et al. and Mani et al., where young adults constituted the majority of patients presenting with hair disorders. This predominance probably reflects the greater cosmetic concern, social awareness, and healthcare-seeking behaviour among younger individuals. The slight male predominance observed in the present study (male:female ratio 1.14:1) is also consistent with previous Indian studies evaluating trichoscopic patterns.

Androgenetic alopecia (AGA) was the commonest disorder encountered, accounting for 24.2% of all cases. Similar observations have been reported by Bhat et al. and Mani et al., who identified androgenetic alopecia as the predominant indication for trichoscopic evaluation. The higher prevalence of AGA reflects its increasing occurrence among young adults and emphasizes the importance of early diagnosis to initiate timely therapeutic interventions before irreversible follicular miniaturization occurs.

In patients with androgenetic alopecia, yellow dots, hair diameter diversity, short vellus hairs, and single-hair follicular units were observed in all cases, making them the most consistent trichoscopic markers in our cohort. Hair shaft diameter diversity is widely accepted as one of the earliest dermoscopic indicators of follicular miniaturization and has been emphasized by Inui et al. as a hallmark of androgenetic alopecia in Asian populations. Similarly, Kasumagic-Halilovic et al. demonstrated hair diameter diversity in nearly all affected individuals, supporting our observations. Although yellow dots have been reported with variable frequency in previous studies, they were present in every patient in the present series, suggesting that they may be a particularly useful diagnostic feature in our study population. Peripilar sign, observed in approximately one-third of patients, was less frequent than reported by Inui et al., possibly reflecting differences in ethnicity, disease stage, or patient selection. Furthermore, the significant association between positive family history and androgenetic alopecia in the present study reinforces the well-established genetic basis of this disorder.

Alopecia areata represented the second most common diagnosis (20%). The characteristic trichoscopic findings comprised black dots, short vellus hairs, exclamation mark hairs, broken hairs, white dots, and zigzag hairs, findings that closely parallel those described in the systematic review by Waśkiel et al. Black dots were the most frequent marker in our study and are considered indicators of active disease resulting from destruction of pigmented hairs at the scalp surface. Exclamation mark hairs and broken hairs similarly represent disease activity, whereas short vellus hairs and pigtail hairs indicate early regrowth. Interestingly, although female patients showed a higher prevalence of alopecia areata in our study, the difference was not statistically significant. These findings highlight the ability of trichoscopy not only to establish diagnosis but also to distinguish active disease from regrowth, thereby influencing therapeutic decisions and follow-up strategies.

Female pattern hair loss accounted for 10.8% of cases. Uniform presence of hair diameter diversity, short vellus hairs, and single-hair follicular units confirms these as reliable trichoscopic indicators of female androgenetic alopecia. Peripilar sign and honeycomb pigmentation were also commonly observed, consistent with the reports of Chiramel et al. and Ramos et al. The significant association between increasing age and female pattern hair loss observed in the present study further supports the progressive nature of follicular miniaturization in affected women. Unlike androgenetic alopecia in males, family history did not show a statistically significant association, suggesting that additional hormonal and environmental factors may influence disease expression.

Telogen effluvium was diagnosed in 7.5% of participants. The predominant findings included yellow dots, hair diameter diversity, short vellus hairs, and straight regrowing hairs. Although

ISSN (O): 2687-5365; ISSN (P): 2753-6556

trichoscopy in telogen effluvium is often regarded as nonspecific, the presence of numerous regrowing hairs together with preservation of follicular units provides valuable clues when interpreted in conjunction with clinical findings. An interesting observation in the present study was that telogen effluvium occurred exclusively in female patients, a finding that reached statistical significance. This observation may be attributed to nutritional deficiencies, postpartum physiological changes, thyroid dysfunction, and chronic psychological stress, all of which are more frequently encountered among women in clinical practice.

Among inflammatory scalp disorders, seborrheic dermatitis demonstrated yellow scales and arborizing vessels as the dominant trichoscopic features. Similar observations have been made by Gavvala et al. and Kang et al., who described yellow greasy scales accompanied by branching vascular structures as the most consistent dermoscopic findings. The presence of these features facilitates differentiation from scalp psoriasis, where vascular morphology differs considerably.

Patients with scalp psoriasis consistently demonstrated glomerular vessels, diffuse erythema, and fine interfollicular scaling, with blood extravasation observed in two-thirds of cases. These findings correspond closely with those reported by Kim et al. and Golińska et al., who identified glomerular vessels as one of the most specific dermoscopic markers of scalp psoriasis. The significant association between older age and scalp psoriasis observed in our study probably reflects the chronic relapsing course of the disease and cumulative inflammatory changes over time.

Discoid lupus erythematosus exhibited characteristic features of arborizing vessels, scattered brown pigmentation, white structureless areas, follicular loss, and fine scaling. White structureless areas and loss of follicular openings indicate irreversible fibrosis and permanent follicular destruction, whereas arborizing vessels reflect ongoing inflammatory activity. Comparable observations have been reported by Lallas et al. and in systematic reviews evaluating trichoscopic features of cicatricial alopecias. Recognition of these findings is clinically important because early diagnosis before extensive scarring may prevent irreversible hair loss.

All patients with trichotillomania demonstrated broken hairs, flame hairs, tulip hairs, V hairs, trichoptilosis, and blood extravasation, representing the characteristic dermoscopic signature of mechanically induced hair shaft damage. Similar observations have been described by Chiramel et al. and Ankad et al. Identification of these distinctive features allows confident differentiation of trichotillomania from alopecia areata, thereby preventing unnecessary investigations and inappropriate immunosuppressive therapy.

The study also documented characteristic trichoscopic findings in several less common disorders, including lichen planopilaris, pseudopelade of Brocq, dissecting cellulitis, folliculitis decalvans, pediculosis capitis, congenital triangular alopecia, tinea capitis, pyogenic granuloma, acne keloidalis nuchae, and naevus sebaceous. Although the number of patients in these categories was small, the observed patterns were highly consistent with previously published descriptions, emphasizing the broad applicability of trichoscopy across diverse dermatological conditions.

A major strength of the present study is the inclusion of a broad spectrum of hair and scalp disorders rather than restricting analysis to a single disease entity. The study provides comprehensive trichoscopic data representative of routine clinical practice in a tertiary care centre and contributes valuable information regarding the Indian population, where published evidence remains comparatively limited.

However, certain limitations should be acknowledged. The study was conducted at a single tertiary care centre with a relatively modest sample size, limiting the generalizability of the findings. Several uncommon disorders were represented by only one or two patients, precluding detailed statistical analysis. Histopathological confirmation was not performed routinely because the primary objective was to evaluate the diagnostic utility of trichoscopy as a non-invasive investigation. Future multicentric studies involving larger sample sizes and longitudinal follow-up would further validate these observations and allow assessment of trichoscopy in monitoring treatment response and predicting prognosis.

Overall, the findings of the present study reinforce the pivotal role of trichoscopy as an indispensable adjunct to clinical examination. The identification of disease-specific trichoscopic patterns enables rapid diagnosis, facilitates differentiation between clinically similar disorders, minimizes the need for invasive scalp biopsy, and assists clinicians in initiating timely and appropriate management. These observations support the routine incorporation of trichoscopy into everyday dermatological practice for the comprehensive evaluation of hair and scalp disorders.

CONCLUSION

The present study demonstrated that trichoscopy is a valuable, rapid, and non-invasive diagnostic tool for the evaluation of a wide spectrum of hair and scalp disorders. Characteristic trichoscopic patterns enabled accurate differentiation between non-scarring alopecias, cicatricial alopecias, inflammatory scalp disorders, and infectious conditions, thereby enhancing diagnostic confidence in routine clinical practice.

Androgenetic alopecia was the most common disorder encountered, followed by alopecia areata and female pattern hair loss. The most frequently observed trichoscopic findings included short vellus

ISSN (O): 2687-5365; ISSN (P): 2753-6556

hairs, yellow dots, hair diameter diversity, peripilar sign, and honeycomb pigment network. Distinctive dermoscopic features such as black dots and exclamation mark hairs in alopecia areata, glomerular vessels in scalp psoriasis, arborizing vessels in discoid lupus erythematosus, and broken hairs with flame hairs in trichotillomania facilitated early and accurate diagnosis.

The study further demonstrated significant associations between androgenetic alopecia and positive family history, female predominance in telogen effluvium, and increasing age in scalp psoriasis, emphasizing the importance of integrating clinical characteristics with trichoscopic findings during patient evaluation.

Routine incorporation of trichoscopy into dermatological practice can reduce the need for invasive scalp biopsy, facilitate early diagnosis, improve therapeutic decision-making, and enable objective monitoring of disease progression and treatment response. Larger multicentric prospective studies are recommended to validate these findings and further establish standardized trichoscopic criteria for various hair and scalp disorders.

Acknowledgments

The authors sincerely thank all the patients who willingly participated in this study. We express our gratitude to the faculty and staff of the Department of Dermatology, Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur, for their guidance, technical assistance, and continuous support throughout the study.

Funding

The authors received no external funding for this study.

Conflicts of Interest Statement

The authors declare no conflicts of interest.

Ethical Approval

The study was approved by the Institutional Ethics Committee of Dhanalakshmi Srinivasan Medical College and Hospital, Perambalur, before commencement of the study. Written informed consent was obtained from all adult participants and from the parents or legal guardians of minors prior to enrolment. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Informed Consent

Written informed consent was obtained from all participants included in the study.

REFERENCES

1. Ross EK, Vincenzi C, Tosti A. Videodermoscopy in the evaluation of hair and scalp disorders. J Am Acad Dermatol 2006; **55**:799–806.
2. Micali G, Lacarrubba F. Possible applications of videodermatoscopy beyond pigmented lesions. Int J Dermatol. 2003;42:430-433.
3. Lallas A, Zalaudek I, Argenziano G, et al. Dermoscopy in general dermatology. Dermatol Clin. 2013;31:679-694.
4. Zalaudek I, Giacomel J, Cabo H, et al. Entodermoscopy: a new tool for diagnosing skin infections and infestations. Dermatology. 2008;216:14-23
5. Rudnicka L, Olszewska M, Rakowska A, Slowinska M. Trichoscopy update 2011. J Dermatol Case Rep. 2011;5:82-88.
6. Piraccini BM, Balestri R, Starace M, Rech G. Nail digital dermoscopy (onychoscopy) in the diagnosis of onychomycosis. J Eur Acad Dermatol Venereol. 2013;27(4):509-513.
6. Lacarruba F, Dall"Oglio F, Nasca MR et al. Videodermatoscopy enhances diagnostic capability in some forms of hair loss. Am J Clin Dermatol 2004; 5: 205 - 208.
7. Tosti A, Duque-Estrada B. Dermoscopy in hair disorders. J Egypt Women Dermatol Soc 2010; **7**:1–4.
8. De Lacharrière O, Deloche C, Misciali C, Piraccini BM, Vincenzi C,Bastien P, *et al*. Hair diameter diversity: a clinical sign reflecting the follicle miniaturization. Arch Dermatol 2001; **137**:641–646.
9. Rudnicka L, Olszewska M, Rakowska A, Kowalska-Oledzka E, Slowinska M. Trichoscopy: a new method for diagnosing hair loss. J Drugs Dermatol 2008; **7**:651–654

ISSN (O): 2687-5365; ISSN (P): 2753-6556