



# **Hair & Scalp Analysis Masterclass**

**RESOURCE GUIDE**

## ABOUT THE INSTRUCTOR

### Kendra Timmons

- Licensed Hair Designer
- Certified Trichologist
- Certified Holistic Health Practitioner
- Certified Medical Hair Loss Specialist
- Certified Non-Surgical Hair Replacement Specialist
- CEO of The Hair Recovery Center
- Founder/Director of HRC Institute of Trichology Studies
- Founder/Director of Hair Loss Business Bootcamp
- Author
- Radio Host
- Educator
- Entrepreneur
- Featured on FOX 26 (Houston), WFAA (Channel 8 – Dallas/FW), K104, 105.7 (Dallas/FW), Cosmopolitan Magazine, Dallas Weekly, River City LIVE - WJXT4 (Jacksonville, FL), Dr. Phil's Morning on Merit Street TV Show
- Mom of 2 boys (17 & 20)

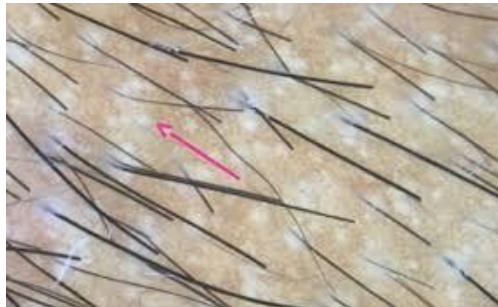


## Hair Follicle Openings: Dots



The term *dots* refers to hair follicle openings seen from the perspective of a dermoscope.

- Black dots are residues of pigmented hairs broken or destroyed at scalp level.
- Yellow dots are follicular ostium filled with keratotic material and/or sebum.
- White dots may appear as fibrotic white dots or pinpoint white dots representing areas of perifollicular fibrosis.



- The follicular red dot pattern is a specific feature of scalp lesions of active lupus erythematosus of the scalp.
- Pink to pink-brown dots are a characteristic finding in the eyebrow area of patients with frontal fibrosing alopecia.
- No dots are to be considered the possibility of cicatricial alopecia

All diseases that also involve the epidermis outside of the hair follicle will have findings between these bigger dots.

## Interfollicular Patterns

### Vascular patterns

Various vascular patterns are associated with unaffected and affected scalp. The characteristic patterns described are:

- *Interfollicular simple red loops:* These are seen in normal scalp and most of the inflammatory conditions and appear as multiple regularly spaced hairpin like structures. Absent loops indicate epidermal atrophy.



- *Interfollicular twisted loops:* These appear as twisted coils and are best seen with the probe placed tangentially to the scalp surface. Conditions such as psoriasis and folliculitis decalvans show this pattern.



- *Arborizing red lines*: These are seen as lines that underlie the loops in normal and affected scalp. These are best seen at higher magnifications and are believed to represent the sub-papillary plexus.



The vascular patterns described are readily visualized in white skinned individuals, but in the pigmented skin types these are overlapped by a more pronounced pigment pattern.

### **Pigment pattern**

A diffuse honeycomb pigment pattern is classically seen in normal scalp and is more pronounced in individuals with darker skin shades. Bald areas and areas with sparse hair, as seen in men with advanced AGA, have a darker pigment network which corresponds to tanning due to excessive sun exposure.

This pattern is characterized by grid (irregular lines) and holes.



When scoping, consider clinical scenario in which the trichoscopic features present. Always know client history, clinical features of lesion.

Isolated findings are normally not enough for us to make a diagnosis. Consider all.

## Follicular openings



Dermoscopic image of noncicatricial alopecia areata presenting with small, uniform, regularly distributed follicular yellow dots.



Dermoscopic image of lichen planopilaris presenting with irregularly distributed follicular openings (red arrows) denoting scarring (cicatricial) alopecia

## Normal Scalp



Follicular units in normal scalp contain 2-4 terminal hairs and 1 or 2 vellus hairs inside. A homogenous pigment pattern is usually present

## Normal Dark-Skinned Scalp



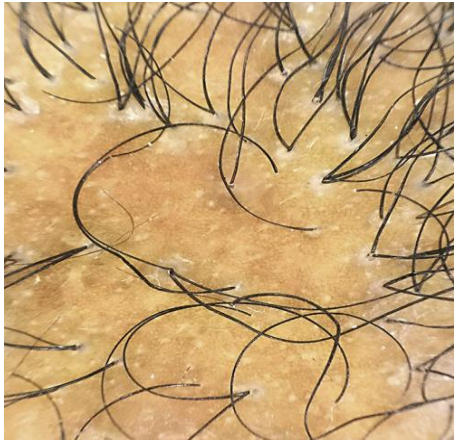
Perifollicular (*relating to the tissues surrounding a follicle*) pigmented network or honeycomb pattern (pigmented lines that surround hypochromic (*less color than normal*) areas).



Normal dark-skinned scalp. Trichoscopy shows pinpoint white dots, regularly distributed between the follicular units.

## Nonscarring vs Scarring Alopecias

In nonscarring alopecias, the pinpoint white dots' distribution is very regular, and the dots often contain miniaturized or broken hair shafts. In scarring alopecias, the pinpoint white dots have an irregular distribution, and the scalp between the dots contains irregular white patches (follicular scars).



Scarring alopecia. Trichoscopy shows pinpoint white dots with an irregular distribution, and irregular white patches.

## **Nonscarring Alopecias** **Androgenetic Alopecia**



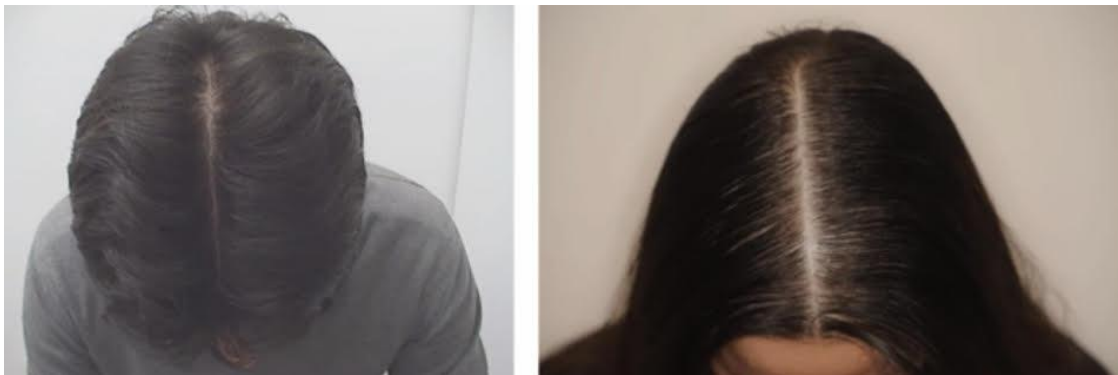
A variability in the hair shaft diameter of more than 20% of hair shafts is diagnostic of androgenetic alopecia.

## AGA Diagnostic Features

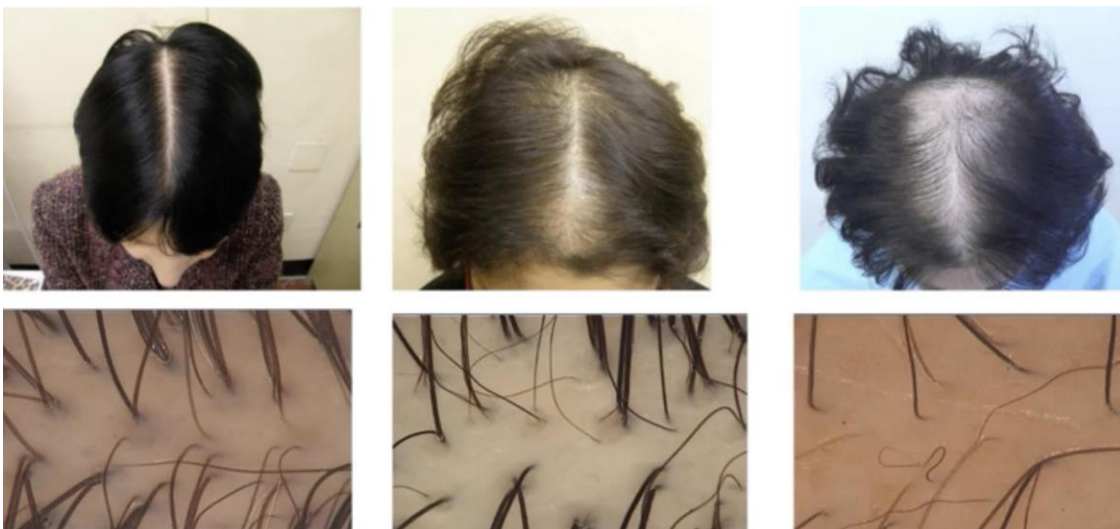
Male and female pattern hair loss share similar trichoscopic features, such as:

- Hair shaft diameter diversity
- Yellow dots
- White dots
- Honeycomb pigmentation
- Increased proportion of vellus hairs
- Increased proportion of follicular units with only 1 emerging hair shaft instead of 2-4 hair shafts
- In early AGA, multi-hair follicular units more than follicular units with only 1 hair shaft

In more advanced and severe stages of AGA, trichoscopy shows the presence of empty follicular openings, YD, brown dots and a honeycomb-like pigmented network in bald sun-exposed areas.



Part the hair and evaluate/take pictures from the vertex, mid and frontal scalp at 40-50x magnification





Androgenetic alopecia. Sparse follicles with significant hair shaft diameter variation and predominance of single hair-bearing follicles



Pearly white dots due to the presence of hypertrophied (enlarged) sebaceous units, a consequence of androgen sensitivity.

## Telogen Effluvium





This picture shows a typical trichoscopic appearance of someone with a "TE." Numerous short pointy hairs, known as "upright regrowing hairs (URH)" can be seen.



Not many specific findings in clients with telogen effluvium although many upright regrowing hairs (URH) may be seen along with hair follicles containing only a single hair follicle.

## Alopecia Areata



### AA Diagnostic Features:

- Preservation of the honeycomb-like pigmented network in affected and unaffected scalp.
- yellow dots
- exclamation mark hairs
- broken/fractured hairs
- black dots
- circle hairs
- coudability (long hair with proximal hair shaft tapering)

Trichochscopy in AA allows us to classify our clients according to disease activity and grouped according to stage: Active disease, Stable Disease, Hair Regrowth

### Active:

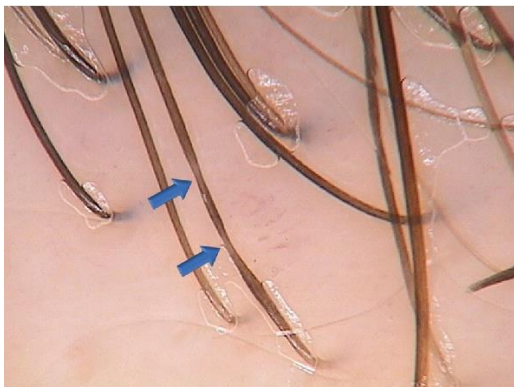
1. Constrictions along hair shafts
2. Broken hairs
3. Black dots
4. Exclamation hairs
5. Short thin hairs

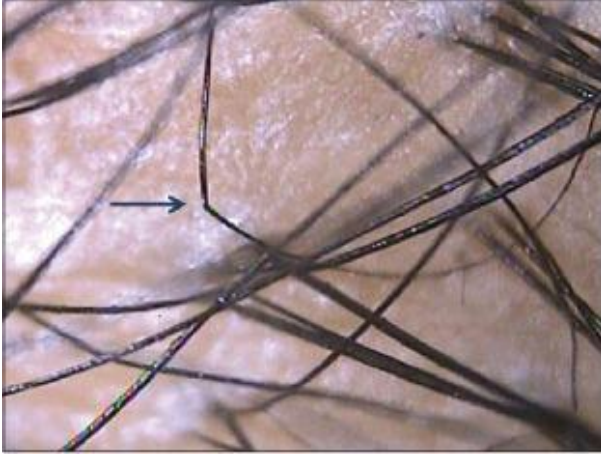
### Stable:

- Not losing hair but aren't regrowing hair either.

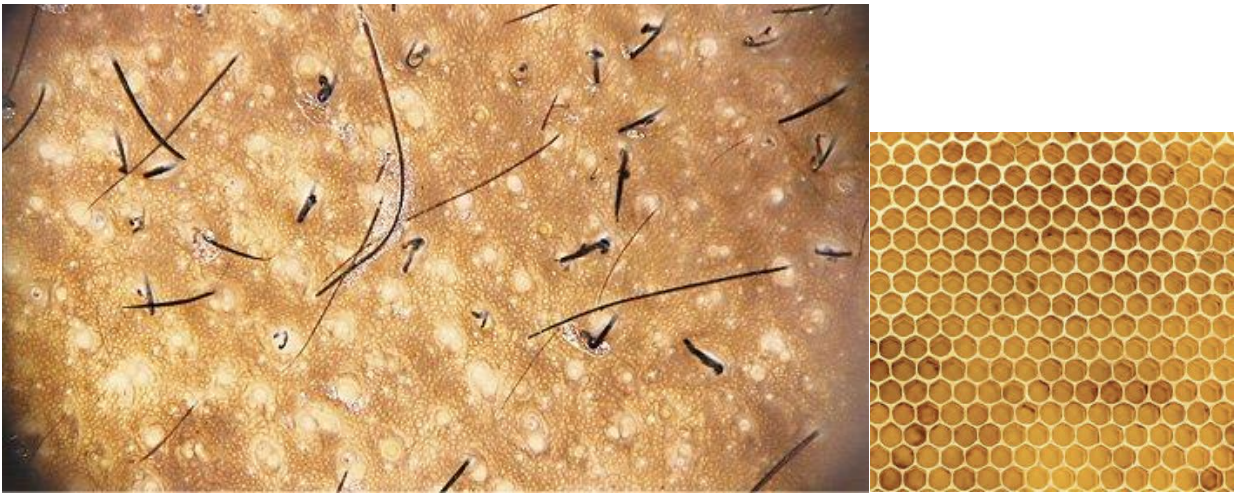
### Hair Regrowth:

- When treatments start to work, we'll see signs of regrowth.
- Circle hairs and pigtail hairs





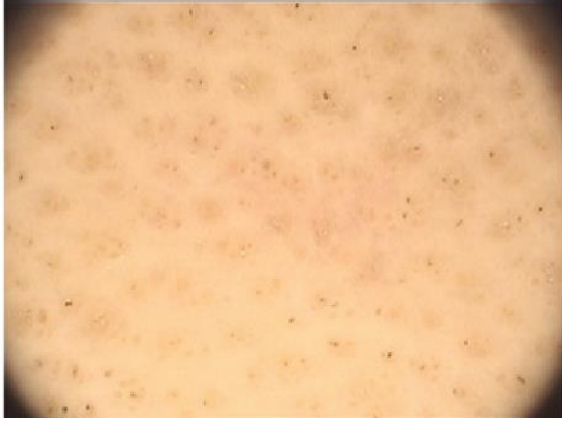
Constrictions along hair shafts



Alopecia areata. Trichoscopy shows preservation of the honeycomb-like pigmented network, numerous white dots, exclamation mark hairs, broken hairs, and black dots.



Alopecia areata. Dermoscopy shows Exclamation mark hairs, Black dots and fractured hair shafts



Alopecia areata. Black dots are observed inside the yellow dots and represent hairs that are broken before emergence from scalp.



Yellow dots



Pigtail/Circle hairs

## Tinea Capitis

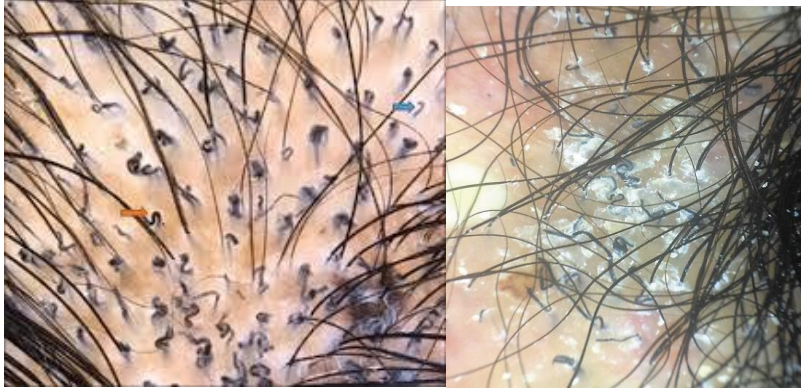


### Diagnostic Features:

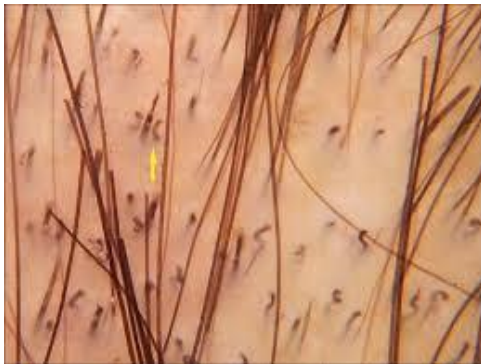
- Corkscrew hairs
- Comma hairs
- Zig zag hairs
- Black dots
- Broken hairs
- Question mark hairs
- Morse code – shaped hair
- Lesions can be scaly



Black dots with scaling and blotchy pigmentation patterns are visible



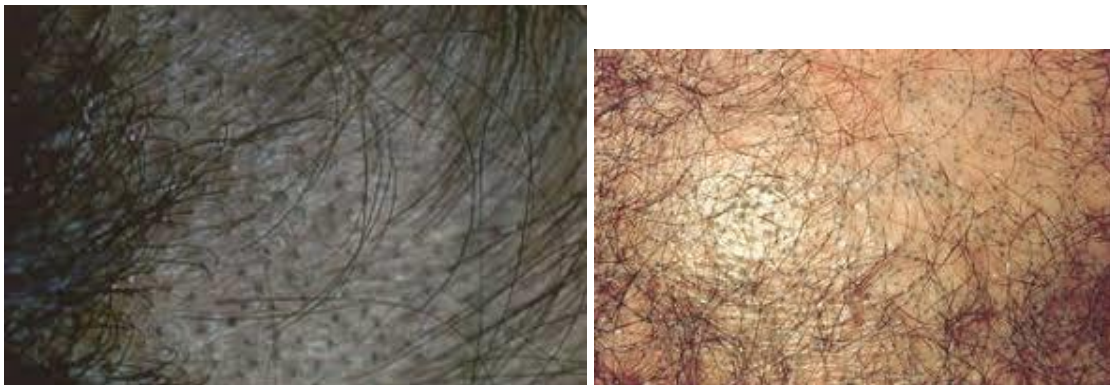
Corkscrew Hairs & Broken Hairs



Comma Hairs & Question Mark Hairs



Zig Zag Hairs



Black Dots



Morse Code

## Trichotillomania



### Diagnostic Features

- broken hairs of different lengths
- short hairs with trichoptilosis
- black dots
- irregular coiled hairs

- upright regrowing hairs
- question mark hairs
- flame hairs
- the “V” sign
- tulip hairs, and
- hair powder

Mild TTM with multiple black dots as well as broken and irregular length hairs



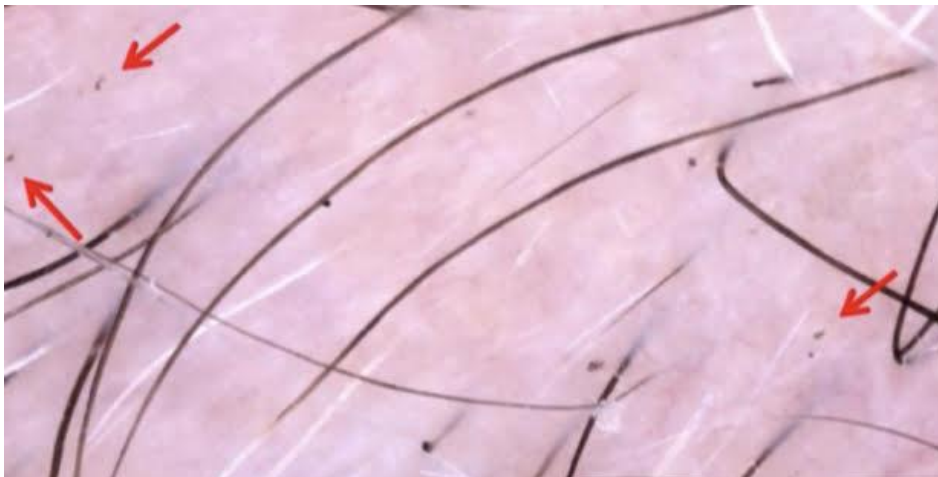
Black Dots



Coiled Hairs



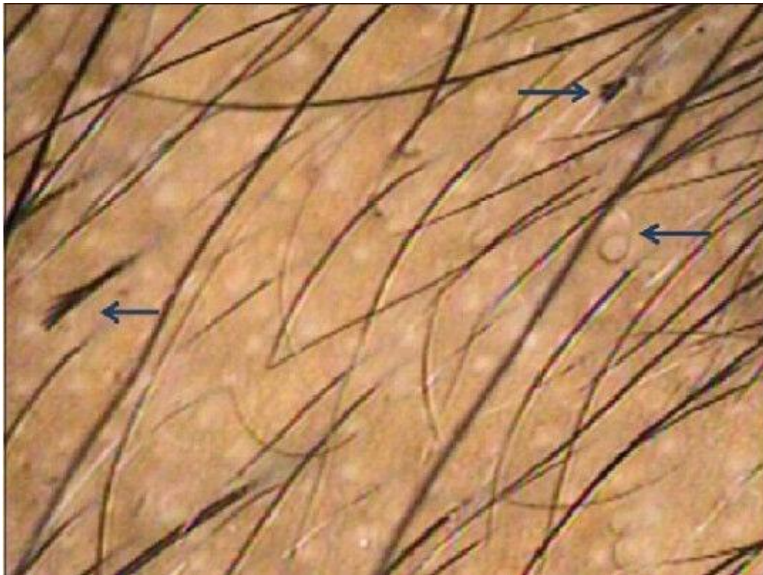
Flame Hairs



Hair Powder. Residual hairs on surface of the scalp



Exclamation-Like



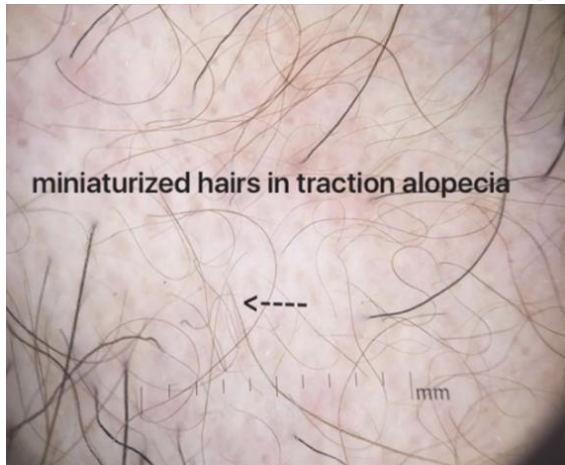
Hair shafts of variable length seen in TTM. Signs of excessive traction like longitudinal splitting of hair shafts and coiling of hairs are seen

## Traction Alopecia

### Diagnostic Features:

- loss of follicular openings
- yellow dots
- broken hairs
- black dots
- hair casts
- circular hairs
- arborizing red lines





Miniaturization can be seen in many conditions including traction alopecia (shown here), alopecia areata as well as androgenetic alopecia.



Trichoscopy of alopecic patch in traction alopecia shows only individual hairs with preserved marking of follicular openings outlined in brown as a subtle brown depressed halo, seen in early stages and reflects perifollicular micro inflammation.



Trichoscopy of acute traction alopecia demonstrates black dots and broken hairs at different length. In this example, the patient is presented with marginal hair loss after removal of a glued wig.



Trichoscopy of traction alopecia demonstrates cylindrical hair casts along several hair shafts.

## Scarring Alopecias

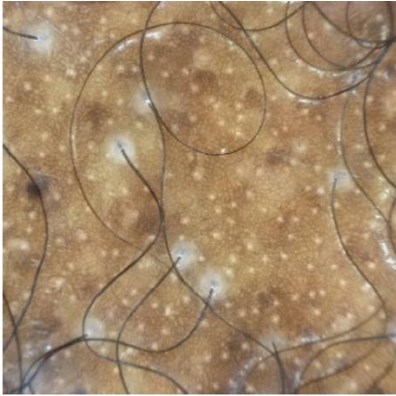
### CCCA

#### Diagnostic Features:

- Reduced follicular density
- Peripilar gray/white halo
- Preservation of the honeycomb-pigmented network
- Pinpoint white dots with an irregular distribution
- Hair shaft variability
- Scattered white patches that represent follicular dropout and follicular scarring
- Perifollicular erythema
- Broken hairs as black dots inside the follicular opening or as short broken shafts
- Interfollicular-pigmented asterisk-like or stellate brown macules



What is your observation of the diagnostic features in images below.



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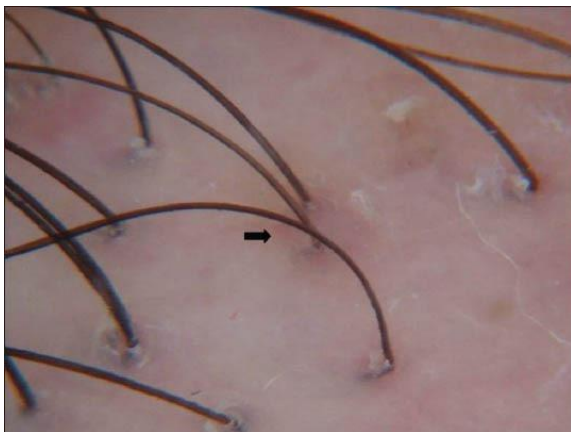
## Frontal Fibrosing Alopecia

### Diagnostic Features:

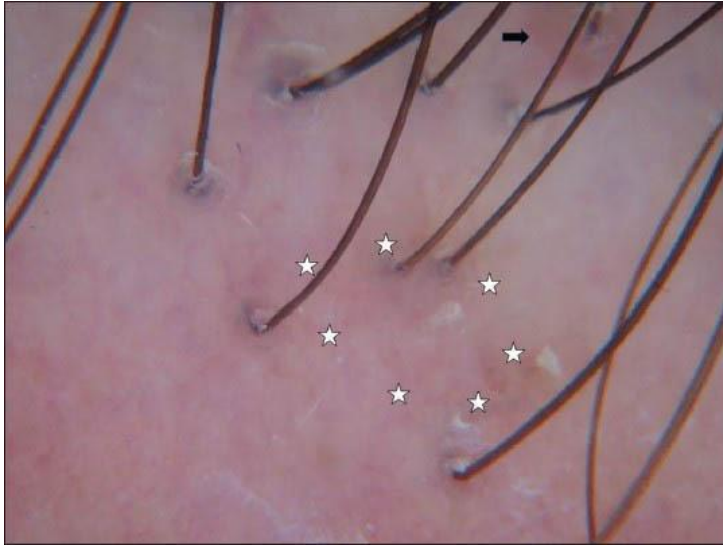
- absence of vellus hairs
- presence of terminal hairs with peripilar casts
- Black dots
- pili torti (flattened hair shafts that twist 180° at irregular intervals)
- follicular hyperpigmentation
- broken hairs can also be seen
- irregularly arranged pinpoint white dots and white patches



Absence of follicular openings (star), Perifollicular hyperkeratosis (white arrow) and perifollicular erythema (black arrow). Broken hair shafts and pili torti can be seen occasionally.



Perifollicular erythema (black arrow)



Perifollicular erythema (black arrow) is not always evident when scoping since it is an evolutive sign that is followed by interfollicular erythema (area with white stars)



## Discoid Lupus Erythematosus



### Diagnostic Features

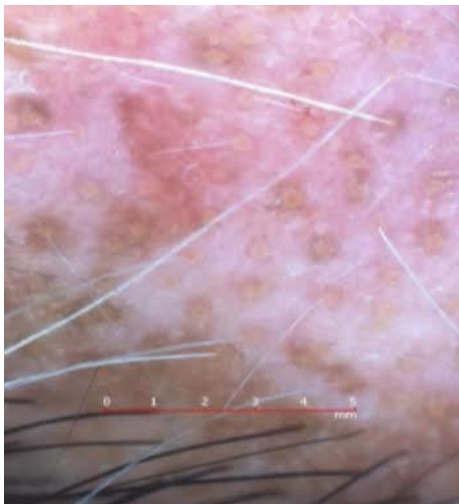
- Loss of pinpoint white dots
- Loss of pigmented network
- Follicular keratotic plugs
- Red dots
- Enlarged branching vessels
- Blue-grey dots in a specified pattern



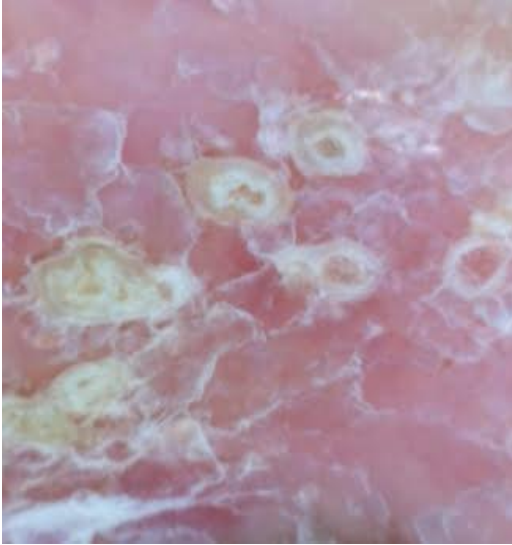
Early lesions of DLE show perifollicular whitish halos around hairs, white scales and follicular plugging.



Absence/reduction of pin-point white dots



Loss of pigmented network (dark scalp)

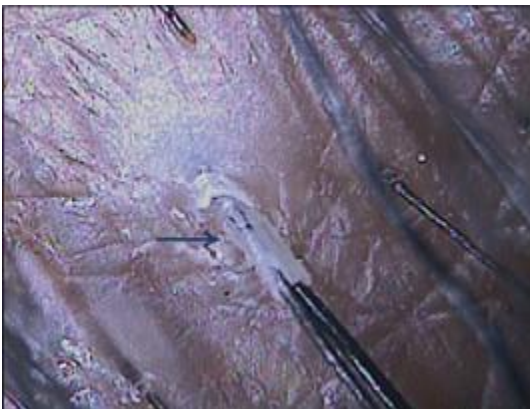


Follicular keratotic plugs

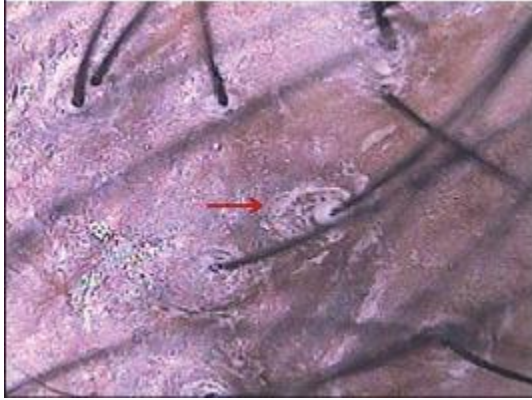


Red dots

## Lichen Planopilaris



Peripilar tubular casts (scales) with pigment incontinence seen (target 'blue-grey dots')



The spared interfollicular skin shows the honeycomb pigment pattern and some spared follicles bearing terminal hairs. Pulled hairs reveal anagen roots with preserved hair sheaths.



Perifollicular erythema and hyperkeratosis is well appreciated in this case, as well as discrete pigmented network. Absence of follicular ostia and terminal hair follicles are also evident inside the alopecic plaque.

## Other Cicatricial Alopecias

### Dissecting cellulitis



Early stage of dissecting cellulitis, with trichoscopy findings on alopecia areata. A, black dots; B, yellow dots; C, broken hair.



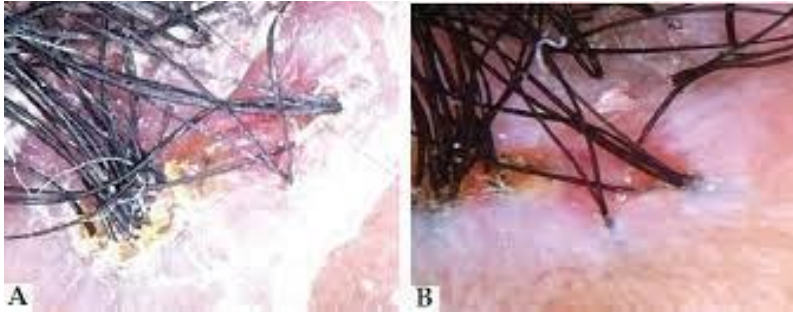
Fibrotic stage of dissecting cellulitis. A, lack of follicular openings; B, cutaneous clefts with emerging hairs.

### Pseudopelade of Brocq



In contrast to lichen planopilaris, there is little to no scale around hair follicles. The areas may be pink-colored when active. There are loss of follicular openings and porcelain-white areas are seen.

## Folliculitis decalvans



A - Trichoscopic exam without interface liquid showing the crusts and scales. B - Trichoscopic exam with interface liquid showing erythema and fibrosis

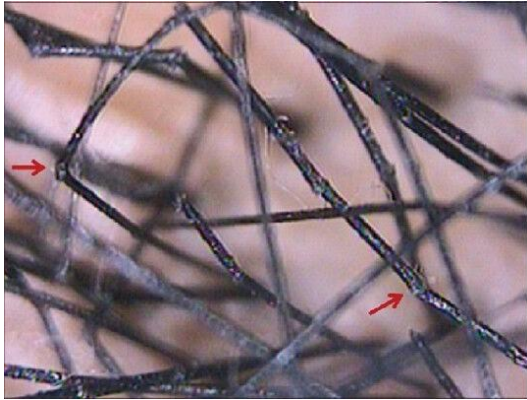


Perifollicular crusts, diffuse erythema and Polytrichia

## Hair Shaft Disorders



Monilethrix. Beaded hair shaft with regularly spaced nodes and internodes ('regularly bended ribbon' sign) are seen



Trichorrhexis nodosa. Dermoscopy shows brush like fractures and fraying at nodes.



Pili torti shows twisted hair shafts



Bubble Hair has a characteristic of bubble-like deformity visible under microscopy



In Bamboo Hair several nodules are visible unlike the smooth surface of a normal hair strand

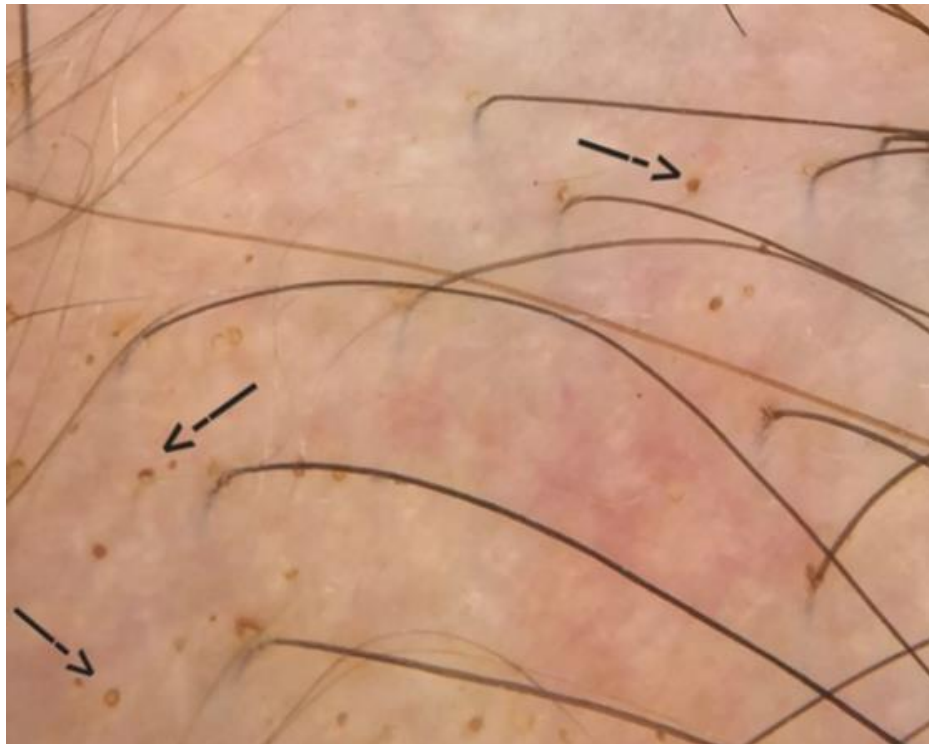
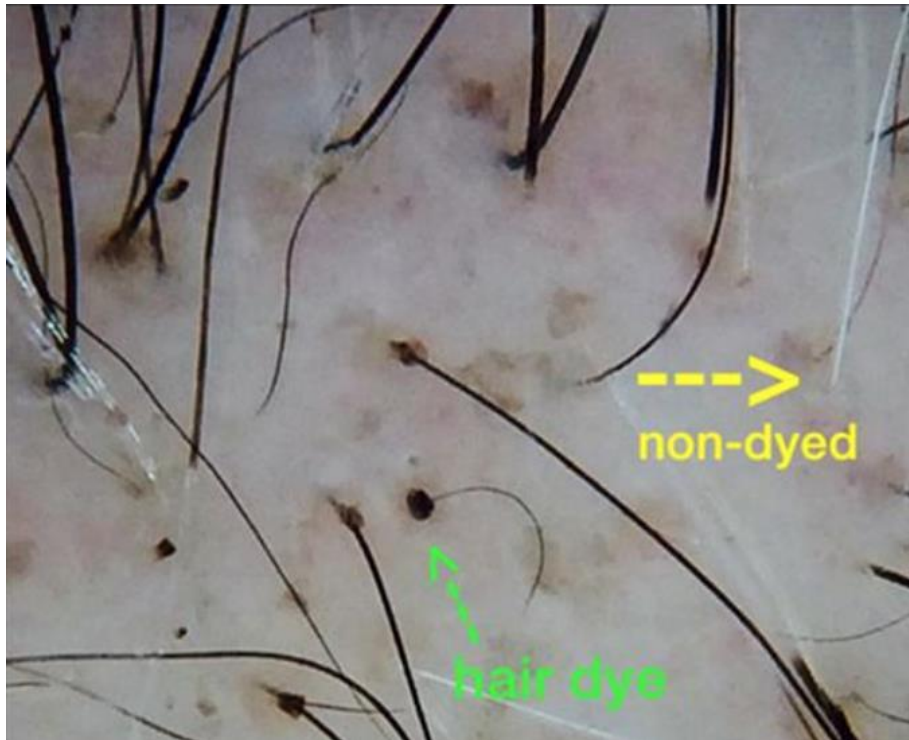
## Other Trichoscopic Signs and Patterns

### Focal Atricia

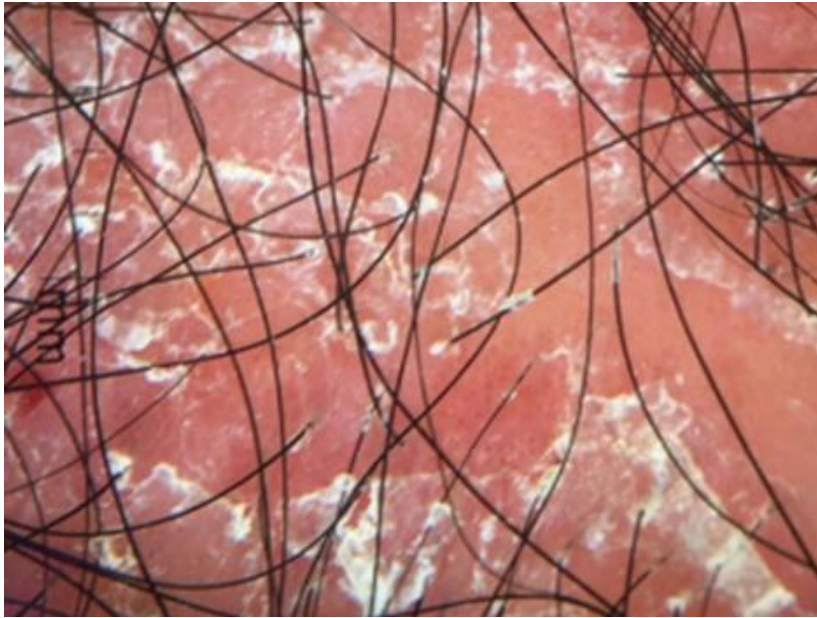
“Focal Atricia” (FA) refers to the absence of hairs in defined areas on the scalp. It is a feature generally seen in Androgenetic Alopecia whereby small circular areas with no hair are seen. These areas are typically the size of a pencil eraser and sometimes bigger. Biopsies of these areas in AGA show accumulation of vellus hairs.



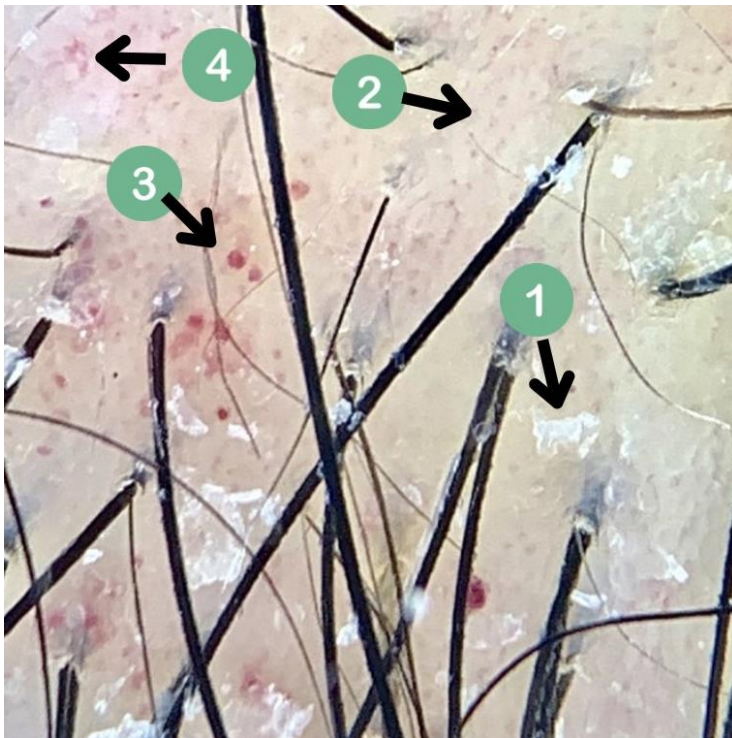
## Hair Dye



## Scalp Psoriasis



There are many variations in how scalp psoriasis appear. It can be red to pink and scaly white to scaly silver.



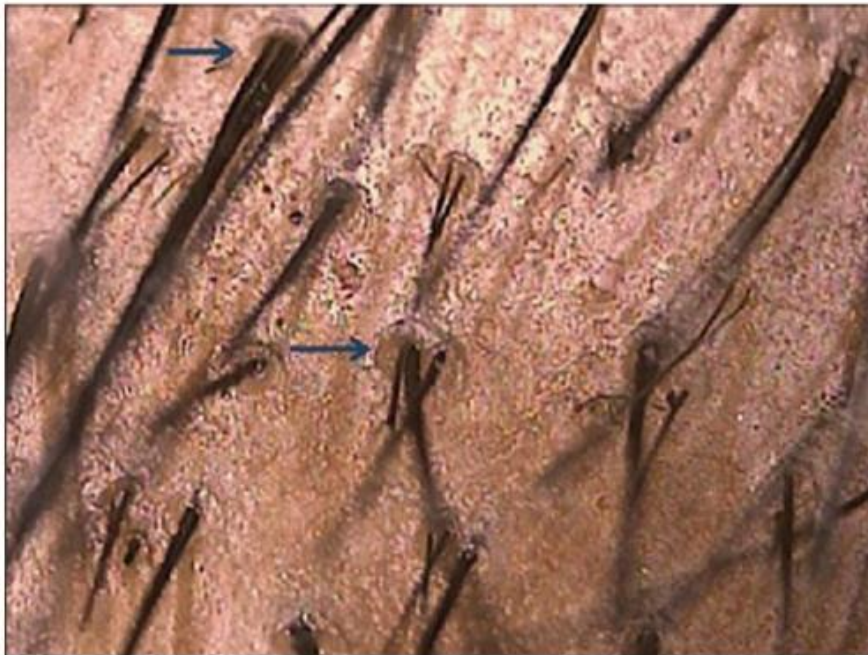
Common features of scalp psoriasis at low power magnification include: 1) white scaling 2) red dots, 3) red globules and 4) twisted and simple red loops.

## Seborrheic Dermatitis



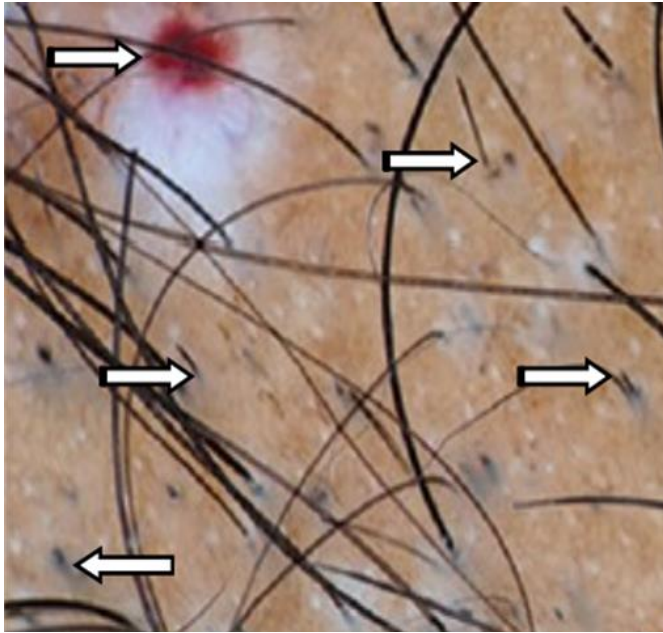
Inflammation, plaques, hair casts

## Peripilar Halo



Peripilar halo as brown depressions, seen in early signs of AGA as perifollicular inflammation.

## Blood Clot



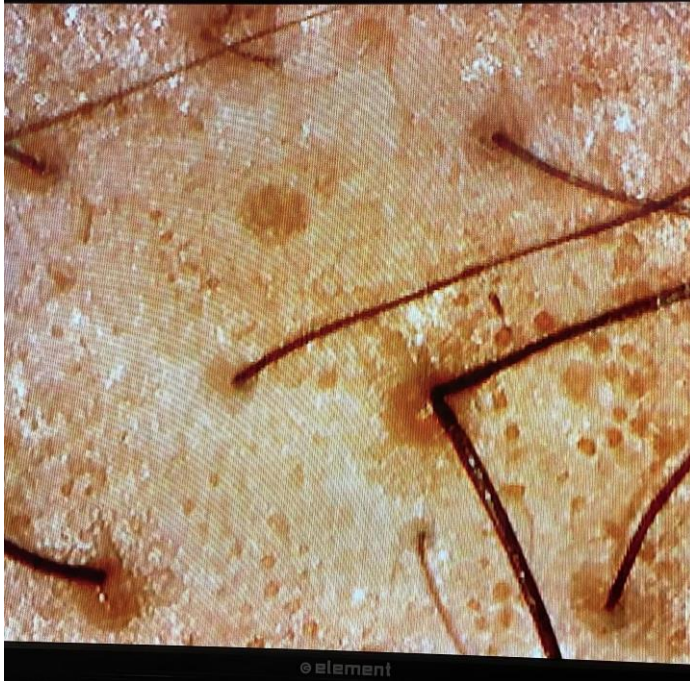
The follicular micro-hemorrhage has a diagnostic sign in Trichotillomania (TTM). It appears as a red dot corresponding follicular ostia that is swollen with the blood clot due to traumatic forceful hair plucking.

## Empty Follicles w/ Yellow Dots (Sebum)



Perifollicular erythema, empty follicles (red dots, yellow dots), oil on scalp

## Follicular Erythema (Inflammation)



Perifollicular erythema, interfollicular inflammation, miniaturization, empty follicles (red dots - inflammation in the follicle) - scarring.

## Scarring Alopecia (CCCA)



Pigmented network being diminished, irregular white patches, loss of follicles openings, miniaturized hairs - scarring alopecia

## Hair Fibers, Product & Sebum Build-up (Need Detoxing)



Build up from products, hair fibers (can look like vellus hair), erythema (needs cleansing to see clearly)

## Oily Scalp From Oiling the Scalp



Oily scalp from products (scalp needs to be cleaned to see features clearly)

## Follicular Hyperkeratosis



Erythema on the scalp, product build-up, not shampooing regularly also appears to be hyperactive sebaceous activity, and follicular hyperkeratosis.

## Follicular Erythema (Redness) Around the Follicle



“Perifollicular redness” or “perifollicular erythema”. It usually indicates that there is inflammation somewhere in that hair follicle.

## Perifollicular Scale



Perifollicular Scale. The appearance of white colored scale around hair follicles is common. This can either be concerning - or not concerning. The white scale in the right picture is not concerning and represents a mild scale from normal epidermal turnover. The patient also has androgenetic alopecia. There is only one follicle affected and the scale is not tightly adherent to the hair follicle.

The image on the left is concerning. This scale is tightly adherent to the follicle and forms a circular shape all around the follicle. It is important to note the underlying redness and it is also important to note that all of the follicles in the photo are just single hairs. Scale that tightly encircles the hair follicle in this manner is known as "perifollicular scale." In this left sided picture, the patient has an underlying scarring alopecia known as lichen planopilaris.

## Follicular Hyperkeratosis = Perifollicular Scale (Scarring Alopecia)

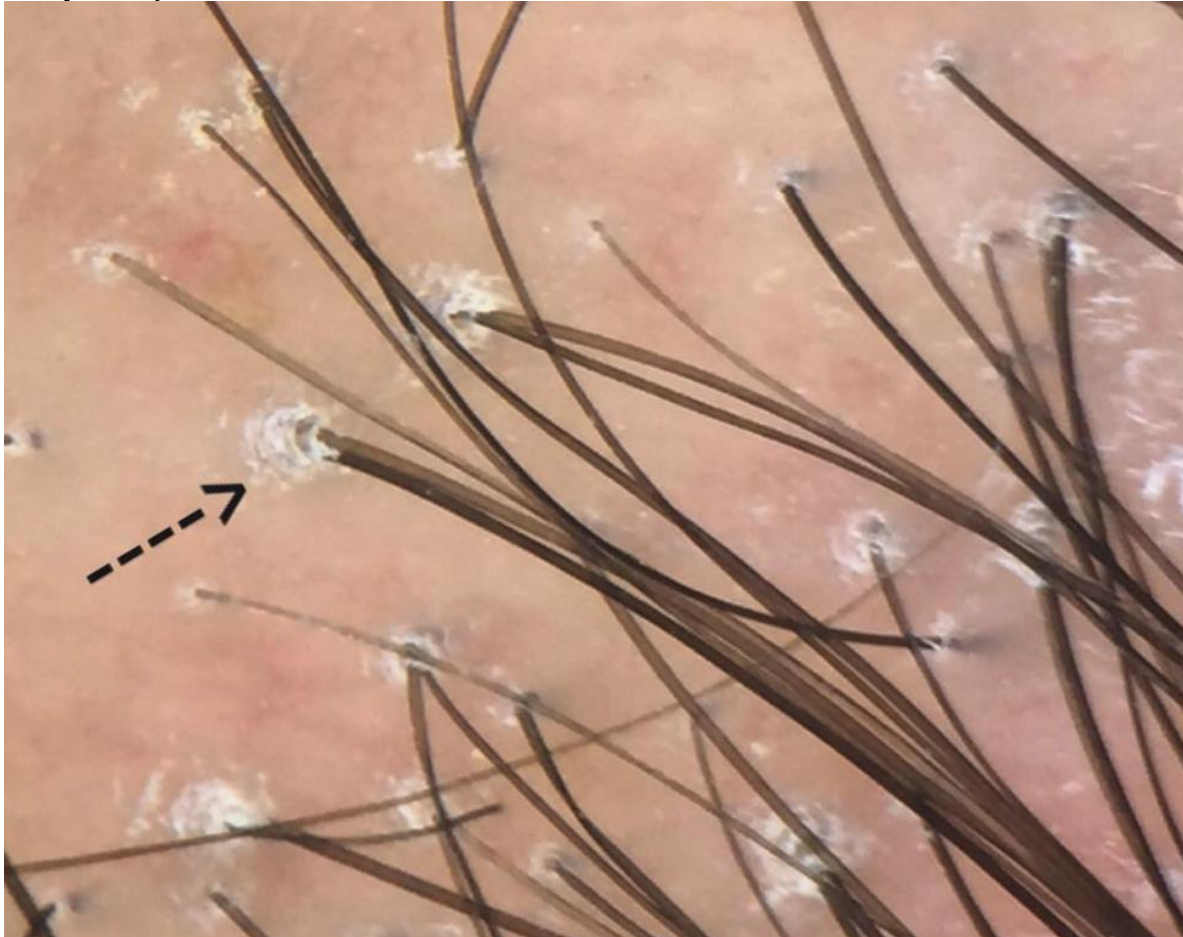
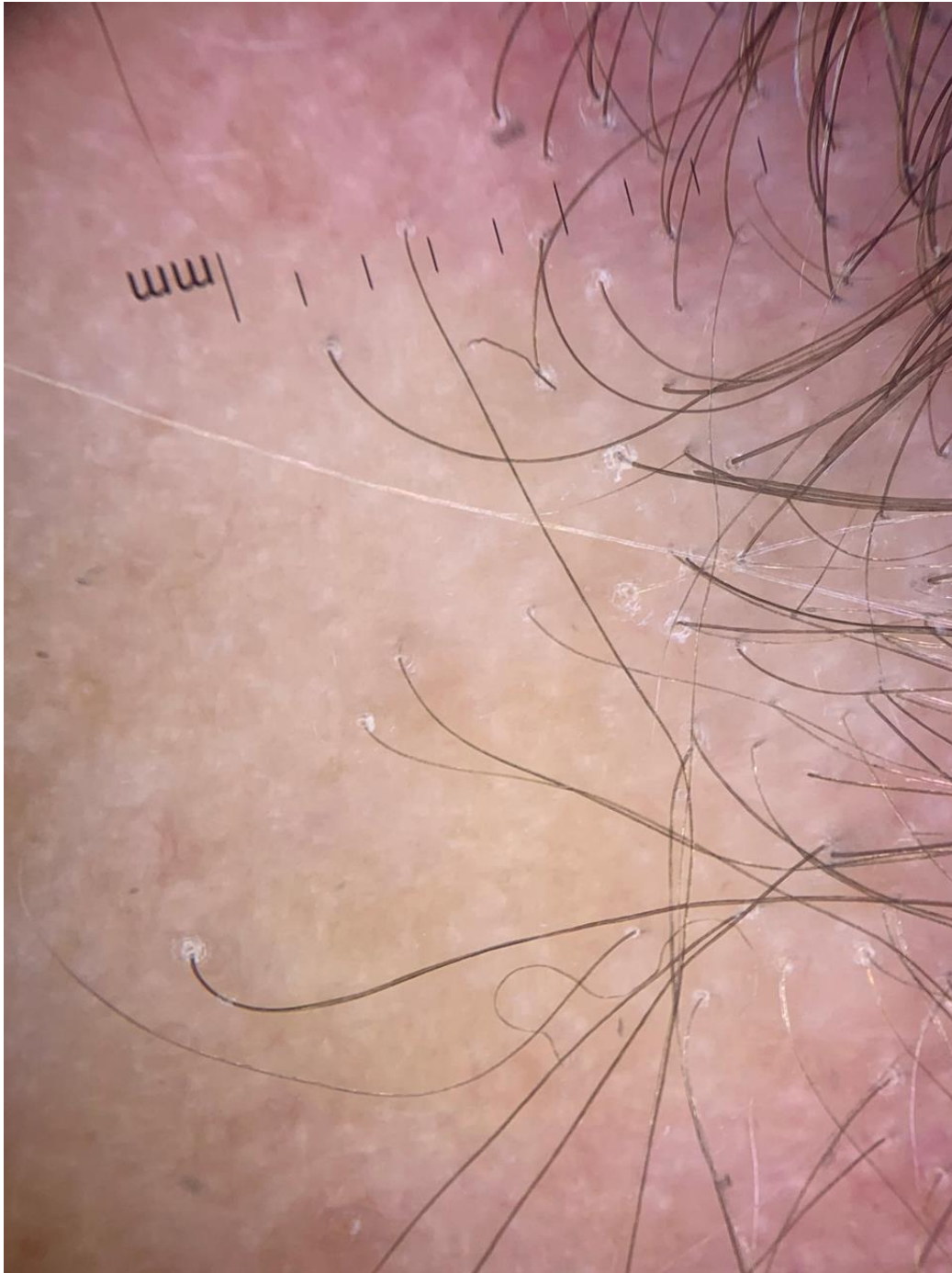


Image shows classic features including white scale around hairs in early stages. This scale is known as "perifollicular scale" or "follicular hyperkeratosis." This scale is often prominent in active stages of the disease. It can be reduced by treatment and even reduced to some extent by a good shampooing of the scalp.

## Single Hairs in Lichen Planopilaris: A Reflection of the Destructive Process



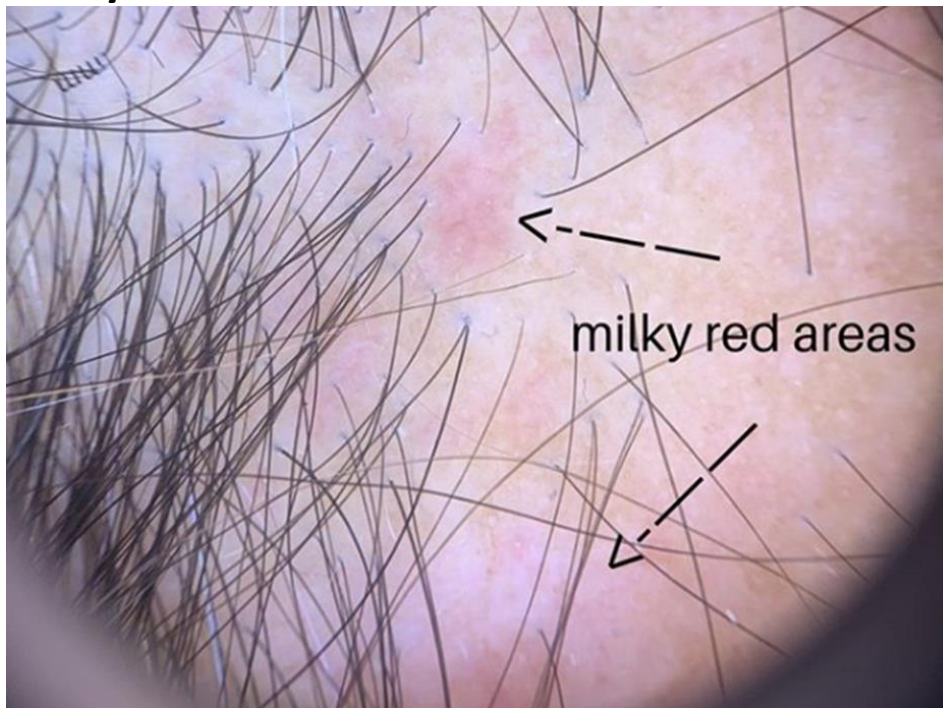
Lichen Planopilaris client with single hairs, perifollicular scaling and erythema in the scalp

## Perifollicular Scaling



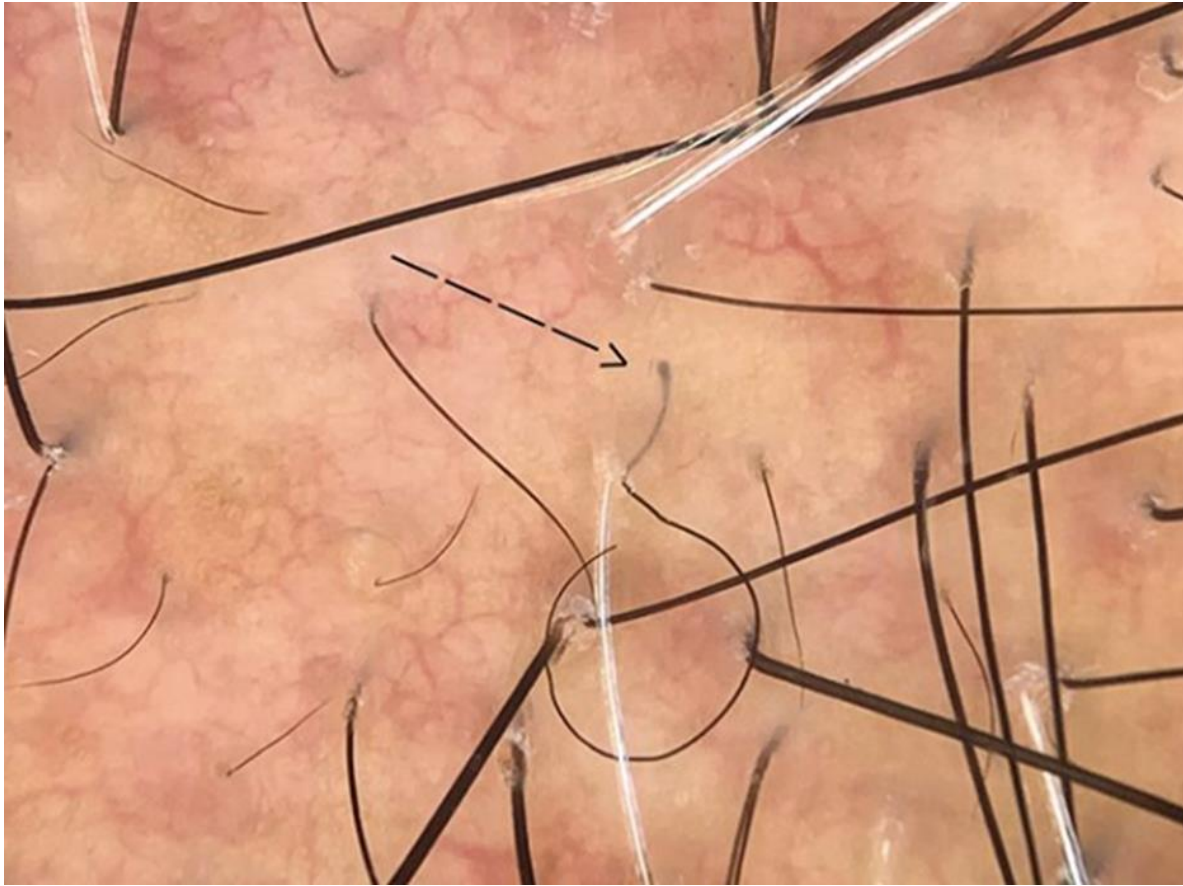
Lichen planopilaris showing typical scale around hairs (ie. perifollicular scale)

## Milky Red Areas



This photo shows the milky red areas of lichen planopilaris. These milky red areas correlate with disease activity. The more milky red areas that are seen the more activity the patient has.

## Steroid Atrophy



Trichoscopic image of the scalp showing visualization of the bulbs - a potential sign of atrophy

### Conclusion

In the absence of a definitive, non-invasive and reliable diagnostic technique for hair and scalp disorders, a trichoscope comes in as a handy and reliable tool especially when faced with diagnostic difficulties or cases where multiple conditions may coexist. The advantage of examining larger areas in a relatively short duration makes it a practical choice for a clinic set up.

Moreover, it is relatively easy to acquire the skill and expertise needed for trichoscopy as it can be mastered by all those with a keen eye to observe. Besides, easy record keeping, documentation and comparison with pre-treatment images help to evaluate therapeutic response and satisfy anxious clients.