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KEYWORDS	

INTRODUCTION

Dermoscopy is a non-invasive diagnostic technique that allows recognition of structures which are not visible by naked eye. Trichoscopy (dermoscopy of hair and scalp) is visualising the hair and scalp under magnification and analysing the patterns and structures so as to aid in the diagnosis of various hair and scalp diseases. Alopecia is the most common hair problem and an early diagnosis of the type of alopecia is very important as it has a great psychological impact in an individual. This novel diagnostic technique has clear-cut advantages over the conventional investigative modalities like hair pull test, trichogram (semi-invasive tests) and scalp biopsy (invasive test). Thus, with the advent of trichoscopy, the number of unnecessary scalp biopsies has been greatly reduced.

Trichoscopy is a simple, quick, handy and a reliable technique used to visualize hair disorders under good light and magnification. It is a valuable diagnostic and prognostic tool and also helps in monitoring treatment response on follow ups .We, herein, describe various trichoscopic patterns of both common and rare hair disorders that we came across complemented with our original photographs taken by Heine Delta dermo-scope with 20x magnification.



The structures to be focused on trichoscopy include hair shaft, follicular openings, interfollicular areas and perifollicular areas. Apart from these, the number of hairs per follicular unit and the relative proportion of vellus and terminal hairs hold due importance in diagnosing alopecias.

Trichoscopy of normal scalp shows 2-4 terminal hairs and 1-2 vellus hairs per follicular unit along with a diffuse brownish honey comb pattern in interfollicular areas.



Figure 1: NORMAL SCALP: 2-4 terminal hair and 1-2 vellus hairs / follicular unit

Each follicular pattern (yellow, black and white dots) has its own diagnostic significance. Yellow dots are due to distended follicular infundibulum with sebum (in AGA) and degenerating keratinocytes (in alopecia areata).

White dots are seen in cicatricial alopecias that spare interfollicular epidermis (like LPP or folliculitis decalvans). Black dots represent cadaverized hairs.

Similar clinical presentations as in early androgenetic alopecia and telogen effluvium or as in alopecia areata and tinea capitis create diagnostic dilemmas. In such cases, trichoscopy, being a very simple and most importantly a non-invasive procedure is of great help with characteristic trichoscopic features in each of these diseases as follows.

**Androgenetic Alopecia:** Hair shaft diameter variability > 20% and increased proportion of vellus hair representing miniaturization of the hair follicle along with perifollicular hyperpigmentation and variable number of yellow dots ( intact sebaceous glands ) are common trichoscopic features in androgenetic alopecia including female pattern hair loss. The changes are more prominent in frontal area as compared to the occipital area. Sinclair Scale (Collins et al 2006; Yip and Sinclair 2006).

Grade 1: is normal. This pattern is found in all girls prior to puberty but in only forty-five percent of women aged eighty or over.

Grade 2: shows a widening of the central part.

Grade 3: shows a widening of the central part and thinning of the hair on either side of the central part.

Grade 4: reveals the emergence of a diffuse hair loss over the top of the scalp.

Grade 5: indicates advanced hair loss.

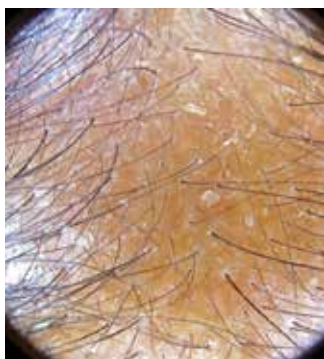
(HDD : Hair diameter diversity)



Figure 2: FPHL Sinclair grade 1: HDD with >20% vellus hair, brown peripilar sign



**Figure 3: FPHL Sinclair grade 2: HDD with >20% vellus hair, white peripilar sign**



**Figure 4 : FPHL Sinclair grade 3 with scaling**



**Figure 5 : FPHL Sinclair grade 5 Areas of focal atrichia**

**Telogen effluvium:** Decreased hair density with predominance of only one hair per follicle or even empty follicles is the only feature seen in telogen effluvium. So it is mainly a diagnosis of exclusion.

**Alopecia Areata :** Focal non-cicatricial alopecia in AA and tinea capitis can be confused clinically. So here again trichoscopy helps. Trichoscopic features of alopecia areata are: exclamation mark hairs, tapered hairs, black dots, vellus hairs and broken hairs. Black dots and exclamation mark hairs are marker of high disease activity, whereas yellow dots predominate in long-lasting alopecia. **Coudability sign** is the kinking of the terminal hair towards the proximal end when pushed perpendicular to the skin.<sup>iii</sup>

**Tinea capitis:** Trichoscopy features are different in inflammatory and non-inflammatory types. Comma hairs are a char-

acteristic finding, seen as stubs of near the scalp surface. Non-inflammatory/ black dot tinea shows black dots which are actually the broken hair shafts. Inflammatory tinea capitis is characterized by blotchy pigmentation, erythema, scaling, pustules and follicular scale-crust formation. Also, UV light enhanced trichoscopy helps in diagnosing microsporum tinea.

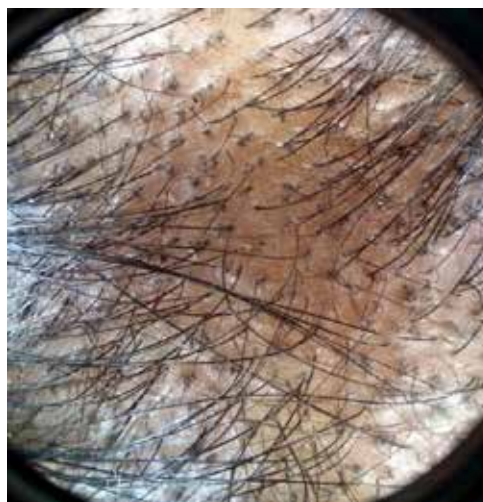


**Figure 6: Alopecia areata: exclamation mark hairs**



**Figure 7: Tinea capitis : Black dots, broken hair**

**Trichotillomania:** It presents with irregular patches of alopecia with ill-defined borders. Dermoscopy shows hair shafts of variable lengths with many broken/fractures hairs and even coiled hairs due to traction.



**Figure 8: Trichotillomania: Hair length variability, Curled hairs**

**Lichen planopilaris (LPP):** It is the most common cause of cicatricial alopecia. The patches of LPP and DLE over scalp are close differential diagnoses and need to be differentiated. LPP is far more common entity than DLE. But if DLE is present only over scalp, trichoscopy easily differentiates the two. There is

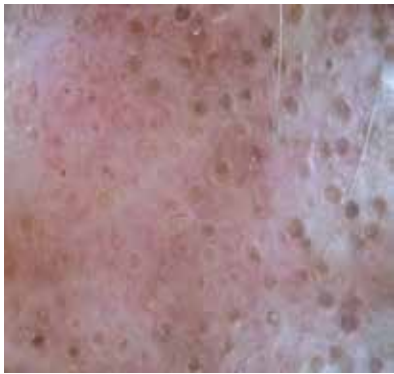


selective involvement of follicles with characteristic sparing of interfollicular areas. Inflammation around the hair follicle leads to formation of peripilar casts. Perifollicular target 'blue grey' dots represent pigment incontinence.

**Discoid lupus erythematosus (DLE):** The affected area shows loss of follicular openings with atrophic patch. Large yellow dots with radial, thin arborizing vessels arising from the dot appearing like a "red spider in yellow dot" are considered characteristic for DLE.



**Figure 9: LPP : Interfollicular sparing Peripilar cast**



**Figure 10 : DLE: Atrophic patch Loss of follicular openings**

**Nits and Pseudonits:** Pseudonits are often misdiagnosed as nits. Simple diagnostic procedure like trichoscopy can easily differentiate between the two totally different diseases and it is very important so as to eliminate the unnecessary psychological trauma and embarrassment in a patient of pseudonits diagnosed as having nits. Nits are tiny yellow, brown or tan dots present on the hair shaft close to the scalp. Dermoscopy in a patient with pediculosis capitis shows brown ovoid structure attached to the hair with a convex end suggestive of a vital nit whereas the translucent one with a planar end is a hatched nit. On the other hand, pseudonits are firm shiny white movable tubular structures over the shaft and look like white bizarrely shaped amorphous structures encircling the hair shaft. It is the peripilar keratin or 'hair cast'.



**Figure 11 & 12 : PEDICULOSIS CAPITIS : Nits-whitish ovoid bodies adherent to hair shaft**



**Figure 12: Pseudonits / Hair casts**

**Psoriasis and seborrheic dermatitis :** The differentiation of these two closely resembling entities is very difficult clinically but trichoscopically possible. Scaling is seen commonly in both diseases. Scalp psoriasis shows red dots and globules, twisted red loops, and glomerular vessels. Seborrheic dermatitis is characterized by presence of thin arborizing vessels and atypical red vessels. The scales are silver-white in psoriasis and yellowish in seborrheic dermatitis. This is another feature, which differentiates these two diseases trichoscopically.

**Monilethrix :** Trichoscopy shows uniform elliptical nodes and intermittent constrictions of the hair shaft (beading) with variations in hair shaft thickness.



**Figure 13: Monilethrix : Beading of hair shafts**

**Netherton's syndrome:** Trichorhexis invaginata (bamboo hair) hair shaft telescopes into itself (invaginates) at several points along the shaft. Under a dermoscope, this may appear as nodular structures located along the hair shaft. When the hair fractures at the site of invagination, the proximal end will appear cupped. This type of fractured hairs are also called "golf-tee hairs".



**Figure 13: Netherton's syndrome : Bamboo hair/Trichorhexis invaginata**

## CONCLUSION

In cases of diagnostic dilemmas with multiple differential diagnoses in hair and scalp diseases, trichoscopy is a very helpful, handy, non-invasive and reliable diagnostic tool in the present day scenario. A keen observation along with a basic knowledge of trichoscopy is the prerequisite to master the technique because they say 'The eyes do not see what the mind doesn't know'.

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