

# Alopecia in an Ophiasis Pattern: Traction Alopecia Versus Alopecia Areata

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*We present a case series of 3 black women who presented with alopecia along the anterior and posterior hairline on physical examination. The initial clinical suspicion was traction alopecia from tension placed on the hair and traumatic removal of hairweaves. Two cases were supported histologically as traction alopecia, while the remaining case was alopecia areata in an ophiasis pattern. Interestingly, the case of alopecia areata was associated with the mildly traumatic removal of a weave. Traction alopecia may present in an ophiasis pattern from hair care practices. Although clinical history and physical examination may suggest traction alopecia, alopecia areata must be ruled out. The cases of interest are presented in addition to a brief review of hairweaving practices and hairweave removal techniques.*

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**T**raction alopecia occurs most commonly, yet not exclusively, in black individuals. The frequent occurrence in black individuals may represent an interplay between the unique intrinsic properties of the textured hair and commonly used cultural hair care practices. In contrast, alopecia areata, an autoimmune disease, occurs in all ethnicities with a sudden appearance of alopecia regardless of hair care practices. We present a case series of 3 black women with alopecia in an ophiasis pattern.

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One woman had true alopecia areata, while the other 2 women had traction alopecia. Traction alopecia may masquerade as alopecia areata in an ophiasis pattern.

## Case Reports

**Patient 1**—A 41-year-old black woman presented with hair loss of several months' duration. Her hair care practices included a 10-year history of braids and/or extensions applied monthly, chemical straightening hair relaxers used every 6 to 8 weeks for 10 years, and a most recent 2-year history of sewn-in and glue-bonded weaves applied monthly. Alopecia became more evident after each weave removal. Physical examination revealed moderate alopecia occurring in the vertex and marked alopecia of the bitemporal scalp with a band encompassing the occipital scalp (Figure 1). In the areas of alopecia, the scalp was shiny, smooth, and nonerythematous.

Results of a scalp biopsy from the temporal scalp revealed 10 follicles (4 terminal anagen; 6 vellus anagen), prominent follicular scarring, mild perifollicular inflammation, no fungal organisms, and



**Figure 1.** Patient 1 with moderate alopecia of the vertex and marked alopecia of the bitemporal scalp with extension in a band encompassing the occipital scalp.

markedly reduced terminal to miniaturized hairs in a 1:1.5 ratio with preservation of vellus follicles. Biopsy results from the vertex revealed 8 follicles (2 terminal telogen; 2 indeterminate anagen; 4 vellus anagen), focal follicular scarring, sebaceous gland prominence suggestive of an element of androgenic alopecia, and an increased number of vellus anagen follicles. In summary, the biopsies were consistent with traction alopecia.

Treatment of the inflammatory component of the traction alopecia included prescribing doxycycline 100 mg as well as fluocinonide cream 0.1% and mupirocin ointment twice daily for 1 month. The patient was lost to follow-up.

*Patient 2*—A 20-year-old black woman presented with hair loss of 10 months' duration. Although she had an 11-year history of using chemical straightening relaxers every 8 to 10 weeks, she discontinued chemical relaxers 2 years prior to her initial evaluation. She wore sewn-in weaves for the last 5 years that were changed every 2 months. During the 3 months prior to presentation, glue-bond weaves were applied to her hair every 3 weeks. A gel substance was placed on her wet hair followed by stretchable absorbent paper strips, and her head was placed under a hooded dryer. Then the weave was adhered with hair glue without removing the paper. After the removal of her most recent glue-bonded weave, there was marked bitemporal scalp alopecia and occipital scalp alopecia in an ophiasis pattern (Figure 2).

Results of a biopsy were consistent with early scarring alopecia, most likely due to traction alopecia. Two 4-mm punch biopsy specimens demonstrated decreased density of hair follicles, dermal fibrosis, loss of adnexa, and a sparse dermal infiltrate with lymphocytes and histiocytes.



**Figure 2.** Patient 2 at presentation with marked temporal scalp alopecia and occipital alopecia in an ophiasis pattern noted after a long history of sewn-in and glue-bonded weaves.

Doxycycline 100 mg as well as fluocinonide cream 0.1% and mupirocin ointment were prescribed twice daily for 1 month. Mild hair regrowth was noted during the 1-month follow-up visit. At that time, minoxidil solution 5% was initiated twice daily for 2 months. The patient then discontinued the minoxidil solution 5% due to facial hair growth. However, minoxidil solution 5% was restarted and continued for 7 months with successful scalp hair regrowth. Hair regrowth was noted on subsequent visits at 8 months and 11 months (Figure 3).

*Patient 3*—A 27-year-old black woman presented with sudden hair loss following the removal of a glue-bonded weave. For the last year, her hairstyle consisted of a new weave every 2 weeks. A flat iron previously was used to straighten her hair every 2 weeks for the last 6 months. On physical examination, alopecia was present on the temporal and occipital scalp in an ophiasis band pattern on the posterior scalp (Figure 4). In the affected alopecia areas, there was complete hair loss and the scalp had a smooth texture.



**Figure 3.** Patient 2 demonstrating hair regrowth after 8 months (A) and 11 months of treatment (B).



**Figure 4.** Patient 3 with alopecia of the temporal and occipital scalp in an ophiasis band pattern on the posterior scalp noted after a traumatic weave removal.

Results of the scalp biopsy revealed alopecia areata. One biopsy specimen demonstrated 8 follicles (6 terminal anagen; 2 vellus anagen), no scarring, 1 vellus follicle with lymphocytic inflammation, and no fungal organisms. The second 4-mm punch biopsy specimen demonstrated approximately 10 follicles (7 terminal anagen; 2 vellus anagen; 1 telogen), 1 vellus follicle with lymphocytic inflammation, 1 terminal anagen follicle with features of trichomalacia, no scarring, no fungal organisms, and 1 deformed hair shaft with a possible indication of some form of follicular trauma.

### Comment

Traction alopecia results from mechanical or tensile stress from hair care practices such as braids, weaves, ponytails, and tight curlers that cause unintentional damage to the hair follicles.<sup>1,2</sup> The population most affected by traction alopecia in the United States is black women, though not exclusively.<sup>1-3</sup> The frequent occurrence in black individuals may represent an interplay between the unique intrinsic properties of textured hair and commonly used damaging cultural hair care practices.

Traction alopecia usually involves the frontal, temporal, and periauricular scalp areas, in addition to the areas between braids or sources of mechanical stress.<sup>2,3</sup> Physical examination reveals a paucity of terminal hair but an abundance of vellus hair.<sup>2</sup> The scalp of someone with tightly braided hair may reveal folliculitis as well as traction alopecia.<sup>1</sup>

Histologic features of traction alopecia can be similar to trichotillomania. Shared features include a mild reduction in the total number of hairs, while the terminal catagen and telogen hairs may increase.<sup>2</sup> Infrequently, traction alopecia hairs may demonstrate trichomalacia. In late-stage traction alopecia, vellus hairs outnumber terminal hairs, and fibrous tissue may be present.<sup>2</sup>

Alopecia areata is a form of nonscarring, autoimmune, inflammatory alopecia, usually with the presence of telogen hairs that appear as pencil points on the scalp.<sup>2</sup> The histologic features of alopecia areata include increased numbers of catagen and telogen follicles with a lymphocytic infiltrate surrounding the hair bulb.<sup>4</sup> Although more than one type of alopecia may exist in a patient, it is quite unusual to have traumatic or traction alopecia uncover true alopecia areata in an ophiasis pattern.

Our case series emphasizes the importance of a complete hair history. Although dermatologists are trained to recognize specific patterns of alopecia based on physical examination, the patient history may provide clues to the true underlying diagnosis. Occipital scalp alopecia prompted the inclusion of alopecia ophiasis in the differential diagnosis. However, due to common hair care practices among black women, band patterns of hair loss may be accentuated. Among the cases presented, biopsies from patient 1 and patient 2 represented traction alopecia, while patient 3 revealed true alopecia areata in an ophiasis pattern. We believe that traction and trauma from the patient's weave removal likely accelerated the clinical appearance of the ophiasis.

When scalp biopsies are reviewed, the parameter for a normal number of follicles on the human scalp is approximately 30 to 40 follicles per 4-mm punch area. However, research demonstrates that the density of hair follicles in black individuals is decreased.<sup>3</sup> Sperling<sup>3</sup> reported that black patients had a lower hair follicle density compared to white patients (a 3:5 ratio). The significance of these findings directly impacts the histologic diagnosis of traction alopecia, which depends on an abnormally low number of terminal hairs. They also challenged the previously set norm for expected numbers of hair follicles, which did not previously account for ethnic background.<sup>3</sup>

Black patients are at risk for being overdiagnosed with traction alopecia if the normal number of terminal hairs is not recognized as 18 follicles per 4-mm punch area compared to the normal parameter of 30 follicles in white patients. Patient 1 represented in our case series true histologic traction alopecia because of the 4 terminal hair follicles found on the temporal scalp biopsy and undisturbed dermal architecture. The laboratory used to perform the histology in patient 2 commented on a decreased density of hair follicles without specifying the exact number. Each of the 3 patients shared similar clinical histories despite differences in histology.

Using hair extensions is a common practice in black females. Although people of all races use hair extensions, this population uses them at a higher rate based on our anecdotal findings. Weaves and extensions

can be taxing on any hair type. Although there are differences in hair texture among various populations, the inherent chemical structure (the amino acid composition and distribution of cysteine-rich proteins) is the same.<sup>5-8</sup> Therefore, African hair is not inherently fragile, but in the chemically unprocessed state, the tightly curled hair shaft is prone to mechanical fracture during grooming practices such as combing, braiding for weave extensions, and removal of weave glue.<sup>5-7,9,10</sup>

Hairweaving describes the process of adding hair, which may be synthetic or human hair, to one's own natural hair.<sup>11</sup> There are different techniques including braided extensions, hairpieces sewn onto cornrowed hair (sewn in), or bonding (gluing) hair to natural hair.<sup>11</sup>

When sewn-in weaves are removed, hair loss may be revealed due to the heavy weight of the hair pulling on the natural hair, improperly secured hair, too infrequent washing, or leaving the weave in too long. When glue-bonded hair is removed, natural hair often is inadvertently removed too.<sup>11</sup>

As demonstrated in our case series, the hairweave removal process can be detrimental and result in traumatic alopecia. Although on physical examination the pattern of hair loss in all 3 patients suggested ophiasis, the history of recent weave removal was helpful to favor the diagnosis of traumatic or traction alopecia following a traumatic hair removal technique.

Unlike cicatricial marginal alopecia, a bandlike alopecia, all of our patients had hair care histories that put them at risk for traction alopecia and they had histologic evidence of inflammation.<sup>12</sup> The pattern of hair loss was similar in all 3 patients, and each clinical presentation included the recent removal of the weave. Uniquely, patient 3 may have accelerated previously nonclinically apparent alopecia areata by the traumatic removal of a weave. In addition, the complete loss of hair exhibited in patient 3 also should have raised concern for alopecia areata and prompted a scalp biopsy. Our case series reiterates the usefulness of a complete hair history but highlights the importance of histologic diagnosis for alopecia.

## Conclusion

Traction alopecia may present in an ophiasis pattern. Although clinical history and physical examination may suggest traction alopecia, alopecia areata also must be ruled out.

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