



# 47-Year-Old Female with Alopecia on the Frontal and Temporal Scalp

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## Abstract

Traction alopecia (TA) is a commonly encountered cause of hair loss that results from repetitive pulling forces on the hair root. TA may present in both adults and children. Hair styling behavior that induces traction results in mechanical damage to the hair follicle and dermal papilla. The initial presentation of patients afflicted with TA involves hair loss in the areas subjected to increased tension with retained hair along the frontotemporal area. TA may be diagnosed clinically or upon histological analysis. When addressed at the early onset of disease, TA may be reversible. However, chronic TA as evidenced by scarring and fibrosis is typically irreversible. Early diagnosis and treatment are imperative, as treatment is dependent upon the stage of disease. The histological findings of early-stage TA may display hair follicle loosening with evidence of inflammation and folliculitis. Additional clinical findings may include trichomalacia and increased number of telogen and catagen hairs. Preventive education involving the avoidance of behaviors increasing tension on the hair should accompany pharmacotherapy. Educational interventions may include counseling on the avoidance of hairstyles causing pain as well as promoting hairstyles that will reduce traction. Patients should be counseled on avoiding brushing, chemicals, or heat, as these practices can increase the risk of hair follicle damage. The goal of treatment in TA is to reduce inflammation and promote hair regrowth. The mainstay of

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treatment in the pediatric population is education and prevention. Adults in the early stages of TA may be treated with regimens including topical or injectable corticosteroids. Potential side effects include dyschromia and hypopigmentation. Topical minoxidil use may also be considered in the adult population. If pustules or folliculitis is evident, topical antibiotics such as topical or systemic antimicrobial therapy may be considered. Later stage TA management includes surgical options, hair transplantation, or camouflaging techniques. Investigational therapies include topical alpha-antagonist, platelet-rich plasma, and laser-assisted drug therapies.

### Keywords

Traction alopecia · Fringe sign · Trichomalacia · Tension hairstyles

A 47-year-old female complained of hair loss along the frontal scalp line. She reported occasional itching in the area and admitted to wearing her hair in braids over the past 15 years. She denied hair loss in the eyebrows or eyelashes.

On physical examination, there was hair loss noted along the frontal and temporal scalp (Fig. 7.1). Eyelashes and eyebrows were intact. Fingernails were normal in appearance.

Based on the clinical case description, what is the most likely diagnosis?

1. Traction alopecia.
2. Frontal fibrosing alopecia.
3. Trichotillomania.
4. Central centrifugal cicatricial alopecia.

**Fig. 7.1** Hair loss present along the frontal and temporal scalp



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## Diagnosis

Traction alopecia.

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## Discussion

TA is a common and preventable condition in children and adults where hair loss occurs due to repetitive pulling forces on the hair root. TA occurs in individuals with hair practices that induce strain on the hair for long periods of time. Higher prevalence has been reported in ballerinas and Sikh Indian males [1, 2]. However, TA affects one-third of women of African American descent due to cultural hairstyle practices that induce mechanical damage [3].

The consensus of recent literature determines that traction alopecia is caused by the hairstyle or practice rather than the hair type [4]. Hairstyles that can increase tension are ponytails, knots or buns, turban, braids, cornrows, extensions or weaves, twists, and dreadlocks. Hair practices such as chemical and thermal treatments can also increase the risk of TA [5]. Strain from pulling can mechanically damage the hair follicle and dermal papilla. The early form of TA, beginning in childhood or upon early identification in adulthood, can be reversible [5]. Clinically, patients with TA will present with patches of hair loss in the areas subjected to increased tension along with retained hair in the frontotemporal area of the scalp, known as the “fringe sign” [6]. Broken hairs and pustules may also be present and are the earliest clinical sign of TA [7]. The histopathology in the early stages shows hair follicle loosening with inflammation and folliculitis. Tension on the hair follicle can pull the root sheath to the surface represented by white hair casts on the hair shaft [8]. Other findings may include trichomalacia and an increased number of telogen and catagen hairs.

If tension-creating practices are not modified, a chronic form of TA develops resulting in scarring hair loss which may be irreversible [9]. An important identifier of late-stage TA is sclerosis and fibrosis. A common indication is the absence of hair with preserved follicular openings outlined in brown in the periphery of the affected patch on the scalp, corresponding to the pigmented basal cell layer of the follicular infundibulum that can be seen on histology [9]. The histopathology of later stages shows diminished hair density and areas with absent hair follicles or loss of follicular openings [7].

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## Treatment

Management of traction alopecia is dependent upon the stage at diagnosis. Chronic stages are refractory to treatment; therefore, diagnosis at early stages is imperative. Preventative education can help children and adults from developing TA and

should focus on avoidance of hairstyles causing pain as well as promoting hairstyles that will reduce traction such as looser braids and ponytails [10]. Patients should be counseled on avoiding brushing and refraining from chemicals or heat, as discontinuing these practices can decrease the risk of hair follicle damage [11]. However, hair practices can be of cultural importance and care should be taken when discussing with patients. The Skin of Color Society recommends a “Compliment, Discuss, and Suggest” culturally sensitive communication model for approaching TA [12].

Early diagnosis can be imperative to reversing and preventing chronic TA. Treatment is focused on anti-inflammatory measures and hair regrowth. Topical minoxidil 5% once or twice daily is used in the early stages of TA, however, it has shown variable effectiveness [13]. Combination treatment of steroids and minoxidil can maximize outcomes. Uwakwe et al. showed that combined use of topical minoxidil 5% and 3 intralesional triamcinolone acetonide injections 5 mg/mL at 6–8-week intervals showed halted progression of TA [6]. Topical corticosteroids may be used if there is evidence of inflammation. Akintilo et al. reports the use of topical fluocinonide oil 0.01% for tighter curl patterns or topical fluocinonide 0.05% solution for looser curl patterns once or twice a day until improvement occurs [10]. Oil-based solutions are preferred for curly hair to prevent breakage. Intralesional corticosteroids such as triamcinolone may be used when there is evidence of scaling, erythema, or tenderness [10]. Dosing has not been well documented in the literature, however Akintilo et al. reports using 2.5 or 5.0 mg/cc for 3 cc total to the affected hairline once a month [10]. A maximum dose should be limited to 20 mg per month to limit potential side effects of dyschromia and hypopigmentation. If pustules or folliculitis are evident, topical antibiotics such as topical clindamycin (1%) once daily can be used. For systemic treatment, oral antibiotics include the use of tetracyclines with an initial dose of 100 mg twice a day [14]. Reassessment should be done at each visit and consideration taken to decrease the dose to 20 mg twice a day after 3–4 months [10]. Primary management of TA in the pediatric population is hairstyle education and prevention. Minoxidil use for TA in the pediatric population has not been studied [15]. Consideration should be taken with steroid treatment in pediatric cases to prevent systemic side effects including growth delay.

Later stage TA management includes hair transplantation or camouflaging techniques. Surgical treatment should be considered if the patient has failed medical therapies. Hair transplantation techniques that have proven successful include punch grafting, micro-grafting and mini-grafting, and follicular unit transplantation [14]. Patients often undergo multiple sessions to achieve desired outcomes.

Further investigation into the treatment of TA have focused on  $\alpha$ 1-adrenergic receptor agonist therapy. The arrector pili muscle expresses the  $\alpha$ 1-adrenergic receptor and the contraction is hypothesized to increase the amount of force needed to pull the hair from the follicle [16]. Topical phenylephrine was used to induce piloerection and resulted in decreased hair loss in 80% of the subjects [16]. Other modes of therapeutic consideration include platelet rich plasma (PRP) and laser-assisted drug therapies.

## Key Points

- Traction alopecia is mechanical damage to the hair follicle from hairstyles and hair practices that place tension on the follicular unit.
- Counseling and avoidance of specific hairstyles specifically in children are important first-line preventative measures for traction alopecia.
- Topical medications remain the current recommended clinical management for early reversible traction alopecia.
- Later stages of traction alopecia can be refractory to medical therapy but hair transplantation is a viable management option.
- Promising new therapeutic considerations include the use of topical  $\alpha 1$ -adrenergic receptor agonists to increase the amount of force needed to pull or damage the hair.

## References

1. James J, Saladi RN, Fox JL. Traction alopecia in Sikh male patients. *J Am Board Fam Med.* 2007;20(5):497–8.
2. Samrao A, Chen C, Zedek D, Price VH. Traction alopecia in a ballerina: clinicopathologic features. *Arch Dermatol.* 2010;146(8):930–1.
3. Loussouarn G, El Rawadi C, Genain G. Diversity of hair growth profiles. *Int J Dermatol.* 2005;44(Suppl 1):6–9.
4. Mayo TT, Callender VD. The art of prevention: It's too tight-loosen up and let your hair down. *Int J Womens Dermatol.* 2021;7(2):174–9.
5. Khumalo NP, Jessop S, Gumedze F, Ehrlich R. Determinants of marginal traction alopecia in African girls and women. *J Am Acad Dermatol.* 2008;59(3):432–8.
6. Uwakwe LN, De Souza B, Tovar-Garza A, McMichael AJ. Intralesional triamcinolone Acetonide in the treatment of traction alopecia. *J Drugs Dermatol.* 2020;19(2):128–30.
7. Heath CR, Taylor SC. Alopecia in an ophiasis pattern: traction alopecia versus alopecia areata. *Cutis.* 2012;89(5):213–6.
8. Afifi L, Oparaugo NC, Hogeling M. Review of traction alopecia in the pediatric patient: diagnosis, prevention, and management. *Pediatr Dermatol.* 2021;38:42–8.
9. Tosti A, Miteva M, Torres F, Vincenzi C, Romanelli P. Hair casts are a dermoscopic clue for the diagnosis of traction alopecia. *Br J Dermatol.* 2010;163(6):1353–5.
10. Akintilo L, Yin L, Svigos K, Kakpovbia E, Shapiro J, Sicco KL. Management of Traction Alopecia: our experience and a brief review of current literature recommendations. *J Drugs Dermatol.* 2021;20(5):578–9.
11. Mirmirani P, Khumalo NP. Traction alopecia: how to translate study data for public education-closing the KAP gap. *Dermatol Clin.* 2014;32(2):153–61.
12. Grayson C, Heath CR. Counseling about traction alopecia: a “compliment, discuss, and suggest” method. *Cutis.* 2021;108(1):20–2.
13. Billero V, Miteva M. Traction alopecia: the root of the problem. *Clin Cosmet Investig Dermatol.* 2018;11:149–59.
14. Lawson CN, Hollinger J, Sethi S, Rodney I, Sarkar R, Dlova N, et al. Updates in the understanding and treatments of skin & hair disorders in women of color. *Int J Womens Dermatol.* 2017;3(1 Suppl):S21–37.
15. Martín JM, Montesinos E, Cordero P, Gonzalez V, Ramon D. Trichoscopy features of trichotillomania. *Pediatr Dermatol.* 2019;36(2):265–7.
16. Goren A, Shapiro J, Sinclair R, Kovacevic M, McCoy J.  $\alpha 1$ -AR agonist induced piloerection protects against the development of traction alopecia. *Dermatol Ther.* 2016;29(3):160–3.