

Case Studies > Dermatology

Cases of Bald Spots After Regular Use of Detangling Hairbrushes

— A report of three cases of trichomalacia in young women

by [Kate Kneisel](#), Contributing Writer, MedPage Today

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What caused three women in their 20s and 30s to have significant diffuse hair loss? That's the mystery that was solved by taking a complete patient history, as Woo Chiao Tay, MBBS, of the National Skin Centre in Singapore, and colleagues reported in *JAMA Dermatology*.

Physical assessment of each patient's scalp showed diffuse alopecia with damaged, distorted hair shafts (trichomalacia). Trichoscopic examination revealed the presence of corkscrew hairs in all three cases. When asked about their hair care and grooming practices, each of the three women reported using a detangling hairbrush for 6 months or longer.

"Detangling hairbrushes have flexible bristles of varying lengths and rounded tips to control unruly hair without excessive force on hair shafts," Tay and team explained.

Correct!

Which of the following best reflects a normal anagen:telogen ratio?

- 13% ●
~45%:55%
- 36% ●
~73%:27%
- 43% ✓
- ~90%:10%
- 8% ●
~52%:70%

Case 1

The first patient was a woman in her 20s who presented with patchy baldness involving her entire scalp. She noted having used a detangling hairbrush for about 6 months.

Trichoscopy revealed diffuse areas of broken hairs interspersed with coiled and corkscrew hairs. Tay and colleagues performed a scalp biopsy, which revealed hair loss with no evidence of scarring (i.e.,

cicatricial alopecia), "with 35% of hair follicles with trichomalacia and a mildly decreased anagen:telogen ratio (76%:24%)."

The team advised the patient to stop using the detangling hairbrush, and she complied. However, they observed that "distorted hair follicles and corkscrew hairs were still appreciated 12 months later."

Case 2

The second patient was also a woman in her 20s who presented with diffuse hair loss and thinning that had started about 1 year previously. On trichoscopy, Tay and co-authors noted numerous broken hairs interspersed with several corkscrew hairs. A biopsy of the patient's scalp showed noncicatricial alopecia with a normal anagen:telogen ratio of 94%:6%, although about 32% of hair follicles had evidence of trichomalacia. The patient subsequently reported that she had used a detangling hairbrush the year before, for a period of 6 months.

Your Results

100%
2 out of 2 questions answered correctly
Participants to date
78
High score
100%
Average score
27%

How You Compare

Correct!

1

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Which of the following best reflects a normal anagen:telogen ratio?

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~45%:55%
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~73%:27%
 - 43% ✓
 - ~90%:10%
 - 8% ●
~52%:70%
-

Correct!

2.

Which of the following conditions is best predicted by presence of corkscrew hairs?

- 28% ●
Trichotillomania
- 7% ✓
- Tinea capitis
- 58% ●
Traction alopecia
- 8% ●
Hypotrichosis

Case 3

A third patient, a woman in her mid-30s, also presented with diffuse baldness; she reported that for over a year, she had been using a detangling hairbrush. Findings of the trichoscopic examination and the biopsy were similar to those of the previous patients. There was evidence of hair shaft abnormalities affecting about 14% of her hair follicles, and results of biopsy showed a normal anagen:telogen ratio of 89%:11%.

In all three cases, results of the hair pull test, microscopy, and fungal element culture were all negative, the group reported. Histology revealed no inflammation around the hair follicles.

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Tay and colleagues noted that all three patients had used detangling hairbrushes for at least 6 months before developing diffuse alopecia with acquired trichomalacia. Scalp biopsy findings included non-scarring and non-inflammatory baldness, "with hair follicles exhibiting features of trichomalacia (formation of a distorted hair shaft) in the absence of collapsed and obliterated follicular canals and relatively preserved anagen:telogen ratios."

Trichomalacia may be associated with both [trichotillomania](#), patchy baldness usually due to a compulsive urge to pull the hair, and acute traction alopecia. However, he pointed out that there was no evidence of "collapsed inner root sheaths obliterating follicular canals," which is characteristic of trichotillomania.

Furthermore, trichotillomania usually presents with decreased anagen:telogen ratios, and these remained normal in two of these patients, Tay and team noted. "Diffuse alopecia distribution and

absence of [trichoscopic features](#) such as hair casts, empty follicles, and loss of follicular openings pointed against a traction alopecia diagnosis."

They proposed that this form of alopecia be called acquired diffuse trichomalacia, suggesting that traction from regular use of a detangling hairbrush "may cause unique tensile stresses on hair shafts and follicles, resulting in uneven transmission of mechanical forces through hair shafts, distortion of hair follicle matrix, interference with keratin deposition, and trichomalacia."

Since the entire scalp was exposed to hairbrush use, the observed defects were diffuse. That the baldness was slow to resolve after the patients stopped using their detangling hairbrushes may be related to "the low-grade nature of the tensile stresses being insufficient to push hair into catagen to reset the hair cycle," Tay and colleagues explained. "Hence, the hair follicle remains in anagen and continues to produce a coiled, distorted hair shaft that breaks easily."

They noted that the presence of corkscrew hairs in these cases was an interesting finding, since this has not been reported as a feature of trichotillomania or traction alopecia. One [systematic review](#) found that corkscrew hairs had "a 100% specificity and 98% positive predictive value for tinea capitis," they wrote.

Thus, they suggested, acquired diffuse trichomalacia could be considered in diagnosing patients who present with diffuse corkscrew hairs and have a negative fungal workup.

Management of this condition "may be contingent on stopping culprit brush use," Tay and colleagues noted. However, they cautioned that hair shaft defects and trichoscopic findings persisted in these three patients at 2 to 12 months of follow-up, despite

hairbrush cessation. This suggests that "acquired diffuse trichomalacia may only resolve after passage of an entire hair cycle," they wrote. "Limitations of our study include small case numbers and lack of longitudinal data."



Kate Kneisel is a freelance medical journalist based in Belleville, Ontario.

Disclosures

The authors reported no conflicts of interest.

Primary Source

JAMA Dermatology

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