CONDITION

# Trichorrhexis nodosa

Trichorrhexis nodosa is a hair-shaft condition that causes weak points, fraying, and repeated hair breakage.

**WHAT IT IS**
Hair-shaft weakness causing fraying and breakage

**BODY SYSTEM**
Hair and skin

**MAIN SYMPTOMS**
White nodes, brittle hair, uneven length, repeated breakage

**WHAT CAUSES IT**
Usually hair damage; rarely inherited

**HOW IT IS DIAGNOSED**
Hair examination with microscopy or trichoscopy

**MAIN TREATMENT**
Gentle hair care and treating underlying conditions

**CAN IT BE CURED?**
Sometimes - acquired damage improves as hair regrows

**IS IT AN EMERGENCY?**
No, hair-shaft breakage itself is not urgent

**LONG-TERM OUTLOOK**
Usually manageable without permanent follicle damage

## Overview

Trichorrhexis nodosa is a condition that affects the hair shaft, the visible strand of hair above the skin. Weak points develop along the shaft. At these points, the outer protective layer is damaged and the inner fibres spread apart. The hair may look as if two small brushes have been pushed together.

These weak areas can appear as tiny white or pale nodes. The hair breaks easily at or near a node, leaving short strands of different lengths.

Trichorrhexis nodosa usually results from repeated physical, chemical, or heat damage. Examples include frequent bleaching, chemical straightening, vigorous brushing, and high-temperature styling. Less often, it is inherited or occurs as part of another medical condition.

The condition affects the hair shaft rather than the follicle, which is the structure in the skin that grows hair. This means it does not usually destroy the follicle or cause permanent baldness. However, repeated breakage can make the hair look thin or prevent it from reaching its expected length.

## Symptoms

The main symptom is hair that breaks more easily than expected. Breakage may affect a small area or much of the scalp. Occasionally, eyebrows, eyelashes, or body hair are involved.

You may notice:

The nodes can sometimes be mistaken for dandruff, head-lice eggs, or residue from hair products. Unlike loose flakes, a node is part of the hair shaft and does not brush away.

Trichorrhexis nodosa does not usually cause scalp pain, redness, or itching by itself. Those symptoms may suggest a separate scalp condition that is contributing to rubbing or scratching.

Breakage is different from shedding. With shedding, an entire hair comes out from the root, often with a small bulb at one end. With trichorrhexis nodosa, the strand snaps somewhere along its length.

- Small white, grey, or pale nodes along individual hairs
- Short hairs of uneven length
- Dry, rough, or dull-looking hair
- Frayed or brush-like ends
- Hair that seems unable to grow long
- Breakage during washing, combing, or styling

## Causes and risk factors

Most cases are acquired, meaning the hair was initially formed normally but became damaged after it grew. Hair shafts do not repair themselves once injured because the visible hair is not living tissue.

Common sources of damage include:

Hair that is naturally tightly curled may be more vulnerable to certain types of mechanical damage because oils travel less easily along the shaft and bends in the hair create points of

stress. This does not mean the hair is unhealthy. Grooming methods, chemical exposure, heat, and friction remain important factors.

Rarely, trichorrhexis nodosa is inherited or linked to a genetic condition. It may be present from infancy or early childhood and can affect several types of body hair. It has been described with disorders affecting how the body processes certain proteins or handles nutrients such as copper. One example is argininosuccinic aciduria, a rare condition in which the body cannot properly remove nitrogen waste.

Having visible nodes does not by itself mean that you have an inherited or metabolic disorder. Acquired damage is much more likely, especially when breakage follows styling or chemical treatment.

- Bleaching, highlighting, permanent colouring, or chemical straightening
- Perms and other chemical treatments
- Flat irons, curling irons, or very hot blow-drying
- Forceful brushing, backcombing, or repeated teasing
- Tight hairstyles and repeated pulling
- Rough towel drying or frequent friction
- Prolonged exposure to sun, wind, or salt water
- Scratching or rubbing caused by an itchy scalp condition

## Diagnosis

A healthcare professional will ask when the breakage began, which areas are affected, and how the hair is washed, styled, and chemically treated. They may also ask about childhood hair problems, family history, medicines, nutrition, and other symptoms.

The scalp and hair are examined closely. A dermatologist may use trichoscopy, which is examination with a magnifying device and light. Several hairs can also be viewed under a microscope.

At a node, microscopy shows the outer layer of the hair missing and the inner fibres separating. The two sides often have a brush-like appearance. This finding confirms the hair-shaft abnormality and helps distinguish it from split ends, head-lice eggs, fungal infection, and other hair-shaft conditions.

A scalp biopsy is not usually required because the problem is visible in the hair shaft.

Blood or urine tests are not needed for every person. They may be considered when breakage

began in infancy, affects several body areas, runs in the family, or occurs with concerns such as poor growth, developmental differences, unusual neurological symptoms, or repeated unexplained illness. Testing is selected according to the suspected underlying condition rather than using one standard panel.

## Treatment and management

Treatment focuses on preventing further injury while undamaged hair grows. A damaged node cannot be permanently fused back together. Conditioners and styling products may make hair smoother and reduce friction, but they do not rebuild the shaft.

Helpful hair-care changes may include:

You do not necessarily need to stop every form of styling. The aim is to identify which practices are causing repeated damage and make them less frequent or less intense. A dermatologist or hair-care professional familiar with your hair type may help you adapt a routine without making it impractical.

Cutting the most damaged length can improve appearance and reduce tangling, but it is optional. Cutting does not change the follicle or make hair grow faster.

If eczema, psoriasis, fungal infection, or another scalp problem is causing scratching, treating that condition may reduce further breakage. When trichorrhexis nodosa is linked to an inherited or metabolic disorder, management also includes care for that disorder. The hair changes may improve with treatment in some conditions, but the response is not the same for everyone.

Hair supplements are not a standard cure. Taking large amounts of vitamins or minerals without a confirmed deficiency may be unhelpful and can sometimes cause harm.

- Pausing or reducing bleaching, relaxing, perming, and permanent colouring
- Using lower heat and limiting contact with hot styling tools
- Applying conditioner to reduce tangling and friction
- Detangling gently, starting near the ends
- Using a wide-tooth comb or a brush suited to the hair type
- Avoiding repeated pulling, tight styles, and rough towel drying
- Protecting hair from excessive rubbing during sleep or sport

## Complications

The most common effect is ongoing breakage. Hair may remain short, look thinner, or have difficulty retaining length even though the follicles continue to produce new strands.

Changes in appearance can affect confidence, social activities, or willingness to wear the hair in a preferred style. These effects are valid reasons to seek care, even when there is no serious underlying illness.

Trichorrhexis nodosa itself does not usually scar the scalp. However, continued pulling, harsh chemicals, burns, or untreated inflammatory scalp disease can damage follicles independently of the hair-shaft condition. Scarring follicle damage can cause permanent hair loss.

When the condition is part of a rare inherited or metabolic disorder, other complications come from that underlying disorder rather than from the broken hair itself.

## Prevention

Inherited trichorrhexis nodosa cannot be prevented. Genetic changes affecting hair formation are not caused by anything a parent did during pregnancy or hair care.

Acquired trichorrhexis nodosa can often be prevented or reduced by limiting repeated damage. Use chemical treatments and heated tools cautiously, avoid combining several damaging processes close together, and stop if the hair becomes unusually rough or starts snapping.

Gentle detangling and regular conditioning can reduce friction. Protective styles should not be painful or place constant tension on the scalp. Managing an itchy scalp can also reduce damage from rubbing and scratching.

No routine supplement has been shown to prevent this condition in people who eat a balanced diet and have no identified deficiency.

## Living with it and what to expect

Improvement takes time because the damaged part of a hair does not heal. Progress becomes visible as new, less-damaged hair grows and the older fragile length is trimmed or breaks away. Changes are usually measured over months rather than days.

With acquired trichorrhexis nodosa, reducing the main source of damage often leads to stronger new growth. Breakage may return if the same heat, chemical, or mechanical stress is restarted. Some people can later reintroduce selected styling methods at a lower intensity or

frequency.

If the follicles are healthy, hair can continue to grow normally. The ends may still feel thin for a while because older strands are at different lengths.

Inherited forms tend to last longer and may need ongoing gentle care. The overall outlook then depends on whether the hair finding is isolated or part of another condition. People with an isolated hair-shaft problem can otherwise be healthy and lead their usual lives.

Taking photographs under similar lighting every few months may make gradual changes easier to see. Checking the hair every day can make normal fluctuations feel more concerning and may not show whether the care plan is working.

## When to get medical help

Arrange a routine appointment if hair breakage is persistent, widespread, or not improving after gentler care. Assessment is also appropriate if you are unsure whether the problem is breakage, shedding, or another form of hair loss.

Routine medical review is especially useful when:

Seek prompt medical advice if a child with unusual hair fragility also has poor growth, developmental concerns, repeated vomiting, marked weakness, or episodes of unusual sleepiness. These symptoms are not typical effects of trichorrhexis nodosa, but they can be clues to a separate underlying condition.

Call emergency services for a seizure, severe confusion, breathing difficulty, collapse, or difficulty waking someone. Hair breakage alone is not an emergency.

- Breakage started during infancy or early childhood
- Eyebrows, eyelashes, or body hair are also affected
- Several relatives have similar fragile hair
- The scalp is itchy, painful, inflamed, or scaly
- There are bald patches or signs of scarring
- Breakage occurs without an obvious source of damage

## Common questions

Is trichorrhexis nodosa the same as split ends?

No. Both involve damage to the hair shaft, but ordinary split ends usually begin at the tip.

Trichorrhexis nodosa creates weak nodes along the shaft where fibres fray and the hair can snap.

Will my hair grow back?

Usually, the follicles continue making hair because the condition affects the shaft above the skin. New hair may be stronger if the source of acquired damage is removed. Other causes of hair loss can occur at the same time, so persistent thinning should be assessed.

Can a conditioner repair the white nodes?

No product can permanently rebuild an already damaged hair shaft. Conditioner can smooth the surface, reduce friction, and help prevent additional breakage while new hair grows.

Is trichorrhexis nodosa contagious?

No. It cannot spread through touch, shared bedding, combs, or close contact. White nodes may resemble head-lice eggs, but they are structural changes within the hair.

Does it mean I have a genetic disorder?

Usually not. Most cases are related to acquired hair damage. An inherited or metabolic cause is considered more closely when the problem starts very early, affects different types of body hair, runs in the family, or occurs with other health concerns.

Will vitamins make my hair stronger?

Vitamins do not repair damaged nodes. Treating a confirmed nutritional deficiency may support normal hair growth, but taking extra supplements without a known deficiency is unlikely to cure the condition.

## Sources

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