

# Trichotillomania

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“Ms. G” is a 22-year-old single woman who pulls hair from the crown of her head on a daily basis. She began pulling at her eyebrows at age 14, but the pulling shifted to her head and became a daily routine during the past 3 years. Ms. G tends to pull her hair during times of stress, but only on approximately 50% of occasions is she aware that she is doing it. The rest of the time, she reports, she pulls “automatically” and then notices a pile of hair on the floor or on her desk after she has “snapped out of it.” Ms. G often pulls her hair for 1–2 hours each day. The urge to pull immediately precedes or is simultaneous with touching the hair, and she reports that she is generally unable to resist this urge. The pulling episode usually ends when she feels the “right” tugging sensation and then sees a “good” root. She then plays with the hair, caressing her lips with the hair

shaft and the root and then ingesting the hair. The feeling of accomplishment from the pulling quickly turns into shame and embarrassment. Because of the alopecia from pulling, Ms. G does not date, and she limits her social activities to only a few friends. She had never sought help for her pulling before finding information about it on a web site.

On examination, Ms. G has a 3-inch-diameter area of alopecia on the crown of her head. Although she sometimes swallows hairs, there is no evidence of gastrointestinal problems. Ms. G meets the diagnostic criteria for trichotillomania, and over the course of the next several weeks, she undergoes 12 sessions of habit reversal therapy as well as treatment with *N*-acetylcysteine. Ms. G is able to reduce her pulling to only 5–10 minutes every several days, which she has generally maintained for over a year.

Trichotillomania is an often debilitating psychiatric condition characterized by recurrent pulling out of one’s own hair, leading to hair loss and marked functional impairment (1, 2). Although discussed in the medical literature for over a century (3), trichotillomania was not officially included as a mental disorder in DSM until 1987, when it was classified as an impulse control disorder not elsewhere classified in DSM-III-R. In DSM-5, trichotillomania was included in the chapter on obsessive-compulsive and related disorders, along with obsessive-compulsive disorder (OCD), excoriation disorder, body dysmorphic disorder, and hoarding disorder. The DSM-5 diagnostic criteria for trichotillomania are listed in Figure 1.

## EPIDEMIOLOGY

Nationwide epidemiological studies of trichotillomania are lacking, but the prevalence of the disorder has been explored in smaller studies, mostly in college settings. In the United States, individual studies based on questionnaires administered to college students have estimated the lifetime prevalence of trichotillomania to be around 0.6% (1) and the point prevalence in the range of 0.0%–3.9% (4, 5). The sample sizes of these studies ranged from 200 to some 2,500 participants. A study that examined 832 people who were visiting U.S. re-

tail stores in a college city identified trichotillomania in five individuals (0.6%) (6). There have been a handful of studies in non-U.S. settings. King and colleagues (7) explored hair pulling using questionnaires and interviews in 794 Israeli 17-year-olds during a preinduction assessment for military service. The lifetime prevalence of hair pulling was estimated at 1%, but none of the subjects met DSM-III-R criteria for trichotillomania. In a cross-sectional study conducted in 210 students at medical colleges in Karachi, Pakistan, probable trichotillomania (measured using a “habit” questionnaire) was evident in 13.3% of the sample (8). Collectively, prevalence estimates appear higher when using more recently formulated DSM criteria, which are less strict. It should be borne in mind too that people with trichotillomania are often ashamed of and embarrassed about their condition, so these data may constitute underestimates of the true population prevalence.

In adults, trichotillomania appears to have a large female preponderance, with a female-to-male ratio of 4:1, which is uniquely high among psychiatric disorders. In childhood, the sex distribution has been found to be equal (7, 9). Studies further demonstrate that as a behavior, hair pulling appears to be quite common and often presents along a continuum from mild to severe. When hair pulling meets criteria for trichotillomania, as in the case vignette, interventions should be considered.

See related features: **Clinical Guidance** (Table of Contents) and **AJP Audio** (online)

## CLINICAL DESCRIPTION

The typical age at onset of trichotillomania, usually 10–13 years, is remarkably consistent across studies (10–12). This characteristic age at onset appears to be consistent across different cultural settings (2, 13).

In trichotillomania, pulling can be undertaken at any bodily region with hair, but the scalp is the most common site (72.8%) followed by the eyebrows (56.4%) and the pubic region (50.7%) (2). Triggers to pull may be sensory (e.g., hair thickness, length, and location and physical sensations on scalp), emotional (e.g., feeling anxious, bored, tense, or angry), and cognitive (e.g., thoughts about hair and appearance, rigid thinking, and cognitive errors) (10). In our experience, most individuals report a variety of triggers, and which triggers are primary may change even within the same day. Many patients report not being fully aware of their pulling behaviors, at least some of the time—a phenomenon known as “automatic” pulling; “focused” pulling, in contrast, generally occurs when the patient sees or feels that a hair is “not right,” or that a hair feels coarse, irregular, or “out of place” (14).

Psychosocial dysfunction, low self-esteem, and social anxiety are all associated with trichotillomania, largely as a result of an inability to stop pulling and the resulting alopecia (9, 15). Individuals frequently report failure to pursue job advancement or avoidance of a job interview because of the pulling (2). Many avoid intimacy for fear that their partner may play with their hair and possibly expose areas of alopecia. Most individuals avoid swimming, for fear that it will draw attention to their alopecia. Nearly one-third of adults with trichotillomania report a low or very low quality of life (16).

Trichotillomania may result in unwanted medical consequences. Pulling of hair can lead to skin damage if sharp instruments, such as tweezers or scissors, are used. Over 20% of patients eat hair after pulling it out (trichophagia), a behavior they feel is even more embarrassing than the pulling. In fact, many people with trichotillomania do not divulge this fact until they feel greater trust in the clinician. The ingestion of hair can result in the formation of gastrointestinal hairballs (trichobezoars), which can cause obstructions that may require surgical intervention (17).

## SCREENING FOR TRICHOTILLOMANIA

Because hair pulling represents a relatively specific type of behavior, identification of trichotillomania is relatively straightforward, provided the clinician screens for it and provided that the patient is willing to divulge the symptoms. Although the course of illness may vary, when untreated, trichotillomania is commonly a chronic disorder with fluctuations in intensity over time (1). Two studies of adults with trichotillomania found a mean illness duration of 21.9 years (17, 18). Individuals report that the symptoms of their pulling, although waxing and waning in intensity over time, frequently persist without treatment.

Seeking help from a mental health clinician is uncommon among individuals with trichotillomania. In fact, one study

**FIGURE 1. DSM-5 Criteria for Trichotillomania<sup>a</sup>**

- A. Recurrent pulling out of one's hair, resulting in hair loss.
- B. Repeated attempts to decrease or stop hair pulling.
- C. The hair pulling causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- D. The hair pulling or hair loss is not attributable to another medical condition (e.g., a dermatological condition).
- E. The hair pulling is not better explained by the symptoms of another mental disorder (e.g., attempts to improve a perceived defect or flaw in appearance in body dysmorphic disorder).

<sup>a</sup> Reprinted from American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*, Arlington, Va., American Psychiatric Association, 2013, p. 251. Copyright 2013, American Psychiatric Association. Used with permission.

found that of 1,048 individuals who met criteria for the disorder, only 39.5% had sought treatment from a therapist and only 27.3% had sought treatment from a psychiatrist (2). One reason for this low rate of treatment seeking seems to be that the vast majority of individuals with trichotillomania (87%) feel that providers know little about the disorder. Other reasons for not seeking treatment can include feelings of shame and embarrassment, lack of awareness that hair pulling constitutes a recognized psychiatric condition, and fear of clinicians' reactions (2).

Trichotillomania occurs with a variety of other disorders, such as major depressive disorder (39%–65%), anxiety disorders (27%–32%), and substance use disorders (15%–19%) (14, 19, 20). Where data regarding age at onset are available, trichotillomania generally predates these co-occurring disorders (21). A study of 894 individuals with trichotillomania found that 6.0% used illegal drugs, 17.7% used tobacco products, and 14.1% used alcohol to relieve negative feelings associated with pulling (2). Additionally, 83% of subjects reported anxiety and 70% reported depression due to pulling (2). Therefore, clinicians must screen for both trichotillomania and the secondary manifestations if treatment is to be successful.

## DIFFERENTIATING TRICHOTILLOMANIA FROM OTHER CONDITIONS

Trichotillomania is often misdiagnosed as OCD. Rates of OCD are significantly higher in individuals with trichotillomania (13%–27%) (14, 19, 20) than in community samples (1%–3%) (22, 23), and reported rates of trichotillomania among individuals with OCD have ranged from 4.9% to 6.9% (24, 25), markedly higher than the range of 0.5%–2.0% observed in the community. The repetitive motor symptoms of hair pulling have some similarity to the repetitive compulsive rituals in OCD (26). These findings raise the possibility of an underlying common neurobiological pathway, but several lines of evidence suggest that trichotillomania is distinct from OCD. Individuals with trichotillomania are more likely to be

**FIGURE 2. Zohar-Fineberg Obsessive-Compulsive Screen, Useful for Assessing for Comorbid Obsessive-Compulsive Disorder<sup>a</sup>**

1. Do you wash or clean a lot?
2. Do you check things a lot?
3. Is there any thought that keeps bothering you that you would like to get rid of but can't?
4. Do your daily activities take a long time to finish?
5. Are you concerned about orderliness or symmetry in general?

<sup>a</sup> A positive response to any item indicates that more detailed evaluation of possible obsessive-compulsive disorder symptoms is indicated. Reprinted from Fineberg et al. (29). Used with permission.

female, report higher rates of co-occurring body-focused repetitive behavior disorders such as skin picking or compulsive nail biting, and are more likely to have first-degree relatives with picking or nail biting (14). Additionally, compulsions in OCD are often driven by intrusive thoughts; by contrast, hair pulling is seldom driven by cognitive intrusions, and obsessional thoughts are not listed in the diagnostic criteria. Whereas trichotillomania symptoms typically begin in early adolescence, OCD symptoms usually begin in late adolescence (27). Treatment approaches also differ: exposure and response prevention is used for OCD and habit reversal for trichotillomania, and selective serotonin reuptake inhibitors (SSRIs) show efficacy in the treatment of OCD but not, generally, in trichotillomania (28). (Treatments are discussed in more detail below.)

When attempting to differentiate between trichotillomania and OCD, it is important to screen for repetitive hair pulling but also any other repetitive habits. The Zohar-Fineberg Obsessive-Compulsive Screen (29) (Figure 2) comprises five short questions, and a positive response to any question indicates that more detailed screening for OCD symptoms is indicated. When OCD is suspected on the basis of the clinical presentation or this screening tool, we recommend administering the Yale-Brown Obsessive Compulsive Scale (YBOCS), including the YBOCS symptom checklist (30).

Care should also be taken to rule out body dysmorphic disorder, which can mimic trichotillomania. There is a familial relationship between OCD, trichotillomania, and body dysmorphic disorder, so these conditions co-occur more commonly than would be expected by chance (31). Body dysmorphic disorder is characterized by obsessions about, or a preoccupation with, a perceived defect of one's physical appearance. Hair pulling can occur in body dysmorphic disorder, but the habit will be motivated by the aim of correcting a perceived physical defect (for example, pulling hair on one side of the head to "correct" what is perceived to be unattractive facial asymmetry), whereas in stand-alone trichotillomania, hair pulling is not undertaken with the aim of correcting a perceived physical defect.

Other mental disorders are also common in people with trichotillomania and should be screened for; comorbidity is the norm rather than the exception (32). In one study, more

than half of patients with trichotillomania reported the lifetime occurrence of an anxiety or mood disorder (32), and 22% reported a lifetime history of a substance use disorder. When a patient presents with trichotillomania and a substance use disorder, evaluate any possible relationships between the two. In our clinical experience, hair pulling and other types of excessive grooming behavior (skin picking especially) can occasionally be caused by, or worsened by, substance use, including use of stimulants.

## POSSIBLE PATHOPHYSIOLOGY OF TRICHOTILLOMANIA

Data regarding the pathophysiology of trichotillomania are limited, but there is a familial component. Several family studies have reported elevated rates of trichotillomania in first-degree relatives of probands with trichotillomania, along with elevated rates of mood and anxiety disorders (20). In a recent study, Keuthen and colleagues found that the relatives of probands with trichotillomania had higher recurrence risk estimates for hair pulling (33).

Animal models are a useful tool for investigating the pathophysiology of trichotillomania, particularly those that mimic the behavioral and clinical manifestations of the disorder. Markedly elevated grooming is exhibited in three models in particular: the Hoxb8 knockout mouse (34), the Sapap3 knockout mouse (35), and the Slitrk5 knockout mouse (36). The potential relevance of the SAPAP3 protein in particular to trichotillomania is reinforced by the finding that rare variations in the SAPAP3 gene are associated with human disorders such as hair pulling (37).

A few small neuroimaging studies have examined possible structural brain findings in trichotillomania, most of which have been region-of-interest studies. A study that measured caudate volumes in trichotillomania patients (N=13) and healthy comparison subjects (N=12) reported no significant between-group differences (38). Other studies found reduced left inferior frontal gyrus volumes and increased right cuneal volumes in patients with trichotillomania (N=10) compared with healthy subjects (N=10) (39), smaller left putamen volumes in trichotillomania patients (N=10) compared with healthy subjects (N=10) (40), and smaller cerebellar volumes in trichotillomania patients (N=14) compared with healthy subjects (N=12) (41). In a study examining changes across the whole brain, patients with trichotillomania (N=18) exhibited higher gray matter density in several brain regions involved in affect regulation, motor habits, and top-down cognition (left caudate/putamen, left amygdalo-hippocampal formation, left and right cingulate cortex, and right frontal cortex) compared with healthy subjects (N=19) (42). A separate study found reduced thickness of the right parahippocampal gyrus in patients with trichotillomania (N=17) compared with people with skin picking disorder (N=17) and healthy subjects (N=15) (43). Interestingly, one study found excess cortical thickness not only in patients with trichotillomania (N=12) but also in their clinically asymptomatic first-degree relatives (N=10) compared with healthy subjects with no known

family history of trichotillomania (N=14) (44). These pilot data hint at a possible familial or hereditary contribution to cortical abnormalities in trichotillomania.

Only two studies have examined whether trichotillomania is also associated with aberrant white matter tracts, using diffusion tensor imaging. In one study (45), individuals with trichotillomania (N=18), relative to healthy subjects (N=19), showed lower fractional anisotropy in white matter tracts associated with the left and right anterior cingulate cortex, the left and right orbitofrontal cortex, the presupplementary motor area, the left primary somatosensory cortex, and multiple temporal regions. The other study (46), in 16 people with trichotillomania and 13 healthy subjects, found no overall group differences in diffusion tensor imaging measures. Viewed collectively, white matter connectivity and gray matter volumetric results in these regions, reported in some but not all studies, implicate disorganization of neurocircuitry involved in motor habit generation and suppression, as well as in affective regulation, in the pathophysiology of trichotillomania.

There have been only three functional neuroimaging studies in people with trichotillomania. In the first study (47), functional MRI and the serial reaction time task were used to assess striatal and hippocampal activation during implicit sequence learning in participants with trichotillomania (N=10) compared with healthy subjects (N=10). The study failed to find any significant differences in implicit learning or in striatal or hippocampal activation, in contrast to positive findings in OCD. The second study (48) showed dampening of nucleus accumbens responses to reward anticipation (but relative hypersensitivity to gain and loss outcomes) in adults with trichotillomania (N=13) compared with healthy subjects (N=12). Finally, in the only study of children (ages 9–17 years) with trichotillomania (N=9), compared with healthy subjects (N=10), those with trichotillomania exhibited significantly greater activation in the left temporal cortex, the dorsal posterior cingulate gyrus, and the putamen during visual symptom provocation and greater activation in the precuneus and dorsal posterior cingulate gyrus during visual and tactile provocation (49).

In terms of psychological etiology, it has been suggested that hair pulling may regulate emotional states or stressful events. Hair pulling may function as a means of escaping from or avoiding aversive experiences, and temporary relief from these negative emotions may maintain the behavior through a negative reinforcement cycle (50). Studies that have measured emotional regulation in individuals with hair pulling found that these individuals have greater difficulty regulating negative affective states than do healthy comparison subjects (51). Boredom may also trigger pulling in some individuals. This has led some to hypothesize that pulling may similarly help modulate negative emotions brought on by a feeling of perfectionism characterized by unwillingness to relax (52). This theory suggests that perfectionism leads to feelings of frustration, impatience, and dissatisfaction when standards are not met, particularly when experiencing boredom because productivity is impossible. Hair pulling may therefore

function as a means of releasing tension generated by these emotions.

## EVALUATION AND TREATMENT

### Medical Assessment

Although the diagnosis of trichotillomania is fairly straightforward, a thorough examination is necessary, particularly when the patient admits to ingesting hair or when such behavior is suspected. Some 5%–20% of individuals with trichotillomania engage in trichophagia (1, 17, 20). How many individuals with trichophagia develop trichobezoars is unclear; some studies suggest that it is extremely rare, while others report frequent occurrences.

The question of when trichophagia requires immediate medical attention is unfortunately unclear. Many people with trichophagia do not develop trichobezoars. Those who do, however, are potentially at risk of severe complications or even death. Based on the available literature, we therefore recommend a high standard of physical investigation for anyone who eats their hair, but particularly those who present with any of the following symptoms: abdominal or epigastric pain, chest discomfort, change in stool color to dark green-to-black, vomiting, unexplained weight loss, or diarrhea or constipation. The evaluation should include an abdominal examination, particularly to check for left upper quadrant mass, a blood test to assess for anemia, and consideration of an abdominal CT scan, which is diagnostic in 97% of trichobezoar cases.

### Treatment Interventions

Individuals with trichotillomania rarely seek psychological or psychiatric treatment because of social embarrassment or a belief that their condition is just a “bad habit” or that it is untreatable. Without treatment, response rates in adults are low (approximately 14%) (2). When diagnosed early and appropriately treated, however, up to 50% of individuals may experience symptom reduction at least in the short term (53).

*Psychotherapy.* The evidence base for psychotherapy for trichotillomania is small but suggests that behavioral therapy may be the most promising approach. Behavioral therapy for trichotillomania has generally used habit reversal therapy and has sometimes included components of acceptance and commitment therapy and dialectical behavior therapy (54). There have been seven controlled studies of behavioral therapy, using habit reversal therapy alone or with other components, for trichotillomania.

Habit reversal therapy was first developed approximately 40 years ago for the treatment of nervous habits and tics. Typically sessions are conducted weekly, although at higher severity levels, more frequent sessions may be needed. Habit reversal therapy has shown benefit in many different frequency formats, and anywhere from 4–22 sessions (usually 60-minute sessions) may be helpful. The core aspects of habit reversal therapy include self-monitoring (i.e., asking the patient to track his or her hair pulling, picking, etc.), awareness

training, competing response training, and stimulus control procedures (i.e., modifying the environment to reduce cues for hair pulling or skin picking). In controlled studies, habit reversal therapy appears to be superior to a waiting list condition and a minimal-attention control condition. In addition, habit reversal therapy has shown benefit with the addition of components of acceptance and commitment therapy and dialectical behavior therapy (2, 55). Habit reversal therapy can be delivered in person, online using a self-help method, or in a group format (56). Acute treatment gains obtained from habit reversal therapy have been generally maintained from 3 to 6 months. Although in practice many clinicians use a combination of habit reversal therapy and more traditional cognitive therapy, the empirical data support habit reversal therapy as the first-line psychotherapy treatment for trichotillomania. In a systematic review of available randomized controlled clinical trials (28) (literature search conducted in 2006) quality scores for psychotherapy studies were in the moderate to good range.

**Pharmacotherapy.** There are currently no pharmacotherapies that would be universally accepted as first-line treatment for trichotillomania. A recent Cochrane review of randomized controlled trials (57) (literature search undertaken in 2013) concluded that although the tricyclic antidepressant clomipramine has demonstrated some benefit for trichotillomania, there is no strong evidence of a treatment effect for the SSRIs. The quality of studies was not quantified numerically, but the authors noted there to be a limited number of studies in a limited number of participants, with high attrition rates and lack of intent-to-treat analyses in several of the trials (57).

Other agents that might be beneficial for trichotillomania include glutamatergic agents, antipsychotic medications, and cannabinoid agonists. Among the glutamatergic agents, *N*-acetylcysteine (NAC) has demonstrated benefit in a double-blind placebo-controlled study for trichotillomania using a dosage of 1200 mg twice a day and giving it approximately 9 weeks to work (58). Side effects with NAC are generally mild and usually only involve some bloated feelings and flatulence. Olanzapine, a second-generation antipsychotic, was studied in a small ( $N=23$ ) double-blind placebo-controlled trial. After 12 weeks at a mean dosage of 10.8 mg/day, olanzapine significantly reduced symptoms of trichotillomania (59). Olanzapine has been associated with metabolic syndrome, so the decision to use it in the treatment of trichotillomania needs to be tempered by its adverse side effect profile. In the aforementioned Cochrane review (57), the authors noted that these trials for NAC and olanzapine were of high quality and that they merit replication.

Finally, an open-label study of dronabinol, a cannabinoid agonist, demonstrated marked reductions in trichotillomania symptoms during a 12-week trial using a mean dosage of 11.6 mg/day (60). Dronabinol, a generally well-tolerated medication at these low dosages, with only slight sedation as a side effect, may be a promising option, but without a controlled trial, the results must be viewed tentatively.

## SUMMARY AND RECOMMENDATIONS

If untreated, trichotillomania is a chronic illness that often results in substantial psychosocial dysfunction and that can, in rare cases, lead to life-threatening medical problems. Control of the hair pulling is therefore critical for maintaining long-term health and quality of life. Based on our clinical experience and research findings, we suggest the following management strategies:

1. Begin with a thorough psychiatric assessment to establish an accurate diagnosis and to assess for co-occurring psychiatric disorders.
2. Conduct a thorough medical evaluation if the patient admits to ingesting hair, to assess for possible gastrointestinal blockage.
3. Provide education about the disorder, including its possible etiologies and the benefits and risks of treatment.
4. Psychotherapy: Provide habit reversal therapy to treat trichotillomania. Habit reversal therapy has demonstrated benefit, but finding someone trained in this therapy is essential for appropriate treatment outcomes. The TLC Foundation for Body-Focused Repetitive Behaviors offers a list of behavioral therapists by geographic region ([www.trich.org](http://www.trich.org)).
5. Pharmacotherapy: In our experience, and in a double-blind study regarded as being of high quality, *N*-acetylcysteine (NAC) at a dosage of 1200 mg twice a day has been helpful in reducing urges to pull. NAC generally appears to be safe and well tolerated. In our view, NAC should be considered as a treatment option and discussed with patients, but firm guidelines on its use are not available because of the limited evidence base. There is no overall evidence that SSRIs are beneficial for trichotillomania.
6. Since treatment response for trichotillomania is often only partial, attending to quality of life, long-term functioning, and other morbidities is critical.

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