

**TRICHOTILLOMANIA: A HAIR PULLING DISORDER**

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**ABSTRACT**

Trichotillomania is a psychiatric condition in which an individual has an uncontrollable desire to pull out his own body hair. Common areas for hair to be pulled out are the scalp, eyelashes, eyebrows, legs, arms, hands, nose and the pubic areas. It is generally considered to be an impulse control disorder but is sometimes classified as subtype of obsessive-compulsive disorder (OCD). It is characterized by the compulsive urge to pull out one's hair, leading to hair loss and balding, distress, and social or functional impairment. It is mental and behavioural disorders, and is often chronic and difficult to treat. Research indicates that about 2 in 50 people experience

trichotillomania in their lifetime. It usually begins in late childhood/early puberty. In childhood it occurs about equally in boys and girls. By adulthood, 80-90% of reported cases are women. Hair pulling varies greatly in its severity, location on the body, and response to treatment. Without treatment, trichotillomania tends to be a chronic condition, that may come and go throughout a lifetime. There is no clear cause of trichotillomania, but there are psychoanalytical, behavioral, or biological theories for this disorder. Some of the more commonly accepted theories for trichotillomania are: childhood trauma, stressful events, neurochemical imbalance. Hence this review article provides the comprehensive information on the trichotillomania in terms of epidemiology Introduction, etiology, diagnostic criteria, prognosis, and various pharmacological treatments of trichotillomania.

**KEYWORDS:** Trichotillomania, Hair pulling disorder, obsessive-compulsive disorder.

## INTRODUCTION

Trichotillomania is the Greek word derived from thrix (hair), tillein (to pull) and mania (madness). It was recognized as a distinct disorder by the American Psychiatric Association in 1987.<sup>[1]</sup>

Trichotillomania (TTM) or hair pulling disorder as per DSM-5 is characterised by repetitive pulling out of one's hair, which result in noticeable hair loss along with repeated attempts to decrease or stop hair pulling.<sup>[2]</sup> In International Classification Disease-10th Edition (by WHO), trichotillomania is classified as an impulse control disorder wherein the urge to pull out hair accompanied by an increasing sense of tension immediately before pulling out hair or attempting to resist and pleasure, gratification, or relief when pulling out the hair.<sup>[3]</sup> From individual to individual the locations and methods of pulling show great variation. Hair may be pulled from any region. At a time one hair pulled, from the scalp, lashes, and brows. The individual with trichotillomania will have bald spots on the head or missing eyelashes or eyebrows.

TTM is associated with distress as well as social and occupational impairment. It is common for individuals with this disorder to deny their behavior and attempt to hide their hair loss. The hair loss may be hidden by wearing wigs, hats, scarves or hair clips, or by applying make-up or even by tattooing. The hair pulling does not occur in the presence of another, except for close family members. Because of this fact, social detachment is common in trichotillomania.

The individual either may focus intensely on the hair pulling or the pulling may be done unconsciously. Immediately before pulling hair, the individual with trichotillomania feels a increasing tension. This tension is relieved as a hair root is successfully pulled. Since a abnormal sensation is felt upon successfully pulling a hair follicle completely from its root, a neurodermatologic connection may reinforce hair pulling as a means of tension relief. When the hair root remains intact and the hair shaft is broken, this sensation is not felt and the patient may repetitively pull hairs until successful. After pulling the hair, patient may carefully examine the hair root, and the hair bulb may be rubbed along the lips for further stimulation. The hairs may be ingested by some patients.

Due to deliberate hair pulling, the hair growth may be irreversibly damaged. Although the most notable consequence is hair loss, but recurrent pulling can also produce follicle

damage, changes in the structure and appearance of regrown hair, scalp irritation, enamel erosion and gingivitis (from hair mouthing). Swallowing of hair may lead to complications like gastrointestinal obstruction, trichobezoar, trichophytobezoar and gastric perforation. Less common medical complications include digit purpura, musculoskeletal injuries (carpal tunnel syndrome; back, shoulder and neck pain) and blepharitis. TTM is also often accompanied by other comorbid psychiatric disorders e.g. major depressive disorder, excoriation (skin-picking) disorder, anxiety disorder and developmental problems. A number of biological hypotheses put forward to explain TTM include dysregulation of the serotonin and dopamine systems, endogenous opiate activity, significantly reduced left putamen and left ventricular volumes, increased right superior parietal activity, decreased activity of frontal-parietal and left caudate regions. The environmental factors which act as triggering events include specific features of the hair, emotional experiences, particular settings, negative cognition about appearance, fear of being negatively evaluated, shame related cognitions, emotional states, boredom, frustration, loneliness etc. The hair pulling may occur either when the individual is relaxed or under stress. For some individuals with trichotillomania, certain situations, such as studying, watching TV, lying in bed, driving, or talking on the phone, will trigger the behavior. Family history and cultural factors are also important. The hair pulling behaviour is maintained. Either by positive or negative reinforcers. The amount of time each day that the patient engages in hair pulling may consist of either several brief periods, or a longer intense period. The typical trichotillomania patient will spend one to three hours daily pulling hairs. The urge to pull can be so intense that the individual with trichotillomania cannot think of anything except hair pulling. Thus, social life and work production often suffer with trichotillomania.

The act of hair pulling in trichotillomania is often ritualistic. The necessary implements, such as tweezers, are collected, the location where this is to be performed is determined, the preferred texture or color to be pulled may be planned as well as disposal of the hairs.

Rarely, the individual with trichotillomania may attempt to pull the hairs of others. The hairs of a pet or doll or the fibers of an inanimate object, such as sweater, may be pulled as well. In addition to hair pulling, the hair may be bitten off or twisted or twirled.

Co-existing psychiatric diagnoses such as anxiety, depression and addictive disorders are common in trichotillomania. Tics, borderline personality disorders and OCD are all more prevalent in trichotillomania than in the general population.<sup>[10]</sup> The hair pulling in

trichotillomania can be differentiated from that in OCD in that the hair pulling in trichotillomania is an impulse behavior where in OCD it is a repetitive act performed as part of an obsession. The individual with OCD is aware of his or her actions, while the individual with trichotillomania is not always conscious that he or she is pulling hairs.

Trichotillomania is not the underlying cause of hair pulling if there is a medical reason for the hair loss or if another co-existing psychiatric disorder such as hallucination provokes the hair pulling.<sup>[4]</sup>

### **EPIDEMIOLOGY**

Although no broad-based population epidemiologic studies had been conducted as of 2009, the lifetime prevalence of trichotillomania is estimated to be between 0.6% and 4.0% of the overall population.<sup>[5]</sup> With a 1% prevalence rate, 2.5 million people in the U.S. may have trichotillomania at some time during their lifetimes.<sup>[6]</sup> Trichotillomania is diagnosed in all age groups; Trichotillomania usually begins in the preteens but has been reported in children from one year old to adults over 50 years old. Patients in their seventies may suffer from trichotillomania. Among preschool children the genders are equally represented; there appears to be a female predominance among preadolescents to young adults, with between 70% and 93% of patients being female. Onset is more common during preadolescence and young adulthood, with mean age of onset between 9 and 13 years of age.<sup>[7]</sup> and a notable peak at 12–13.<sup>[8]</sup> The mean age of onset is 12 years of age in girls and eight years of age in boys. This condition is seven times more common in children than in adults.<sup>[9-10-11]</sup> But among adults, it is reported up to 10 times more often in females than in males. This may be skewed because females are more likely to seek attention for a medical problem.<sup>[12]</sup> It is easier for males to disguise their compulsions, e.g. by shaving or because of social acceptance of male pattern hair loss.

The total number of Americans who pull their own hair at some point in their lifetime may be as high as 11 million. The prevalence of trichotillomania has been estimated to be as high as 2 percent of the general population. "Automatic" pulling occurs in approximately three-quarters of adult patients with trichotillomania. Among college students surveyed, more than 10 percent of college students pull their hair at some point, although only 1 percent meets the criteria for trichotillomania.<sup>[13-14]</sup>

## CLASSIFICATION

For people with trichotillomania, hair pulling can be:

### Focused

Some people pull their hair intentionally to relieve tension or distress—for example, pulling hair out to get relief from the overwhelming urge to pull hair. Some people may develop elaborate rituals for pulling hair, such as finding just the right hair or biting pulled hairs.

### Automatic

Some people pull their hair without even realizing they're doing it, such as when they're bored, reading or watching TV.

The same person may do both focused and automatic hair pulling, depending on the situation and mood. Certain positions or rituals may trigger hair pulling, such as resting your head on your hand or brushing your hair.

Trichotillomania is a long-term (chronic) disorder. Without treatment, symptoms can vary in severity over time. For example, the hormonal changes of menstruation can worsen symptoms in women. For some people, if not treated, symptoms can come and go for weeks, months or years at a time. Rarely, hair pulling ends within a few years of starting.<sup>[15]</sup>

## ETIOLOGY

The exact cause of trichotillomania is not known, both environmental and genetic causes may be exit for the etiology of it. The onset and maintenance of the hair-pulling behavior include the following:

Coping mechanism for anxiety or stressful events.

A benign habit that developed from a sensory event (eg, itchy eyelash) or another event and resulted in trichotillomania.

Co-occurring with another habitual behavior (ie, thumbsucking) in young children.<sup>[16]</sup>

Serotonin deficiency - A deficiency of the neurotransmitter serotonin (5- hydroxytryptamine [5-HT]) may leads to trichotillomania; the hypothesized connection between the two is based on the success of selective serotonin reuptake inhibitors (SSRIs) in treating some people with trichotillomania.

Structural brain abnormalities - Magnetic resonance imaging (MRI) studies have demonstrated that some individuals with trichotillomania have abnormalities of the lenticulate.

Abnormal brain metabolism - Positron emission tomography (PET) scans have revealed that some individuals with trichotillomania have a high metabolic glucose rate in the global, bilateral, cerebellar, and right superior parietal areas.

Genetic susceptibility - trichotillomania occurs more frequently in people with obsessive-compulsive disorder (OCD) and their first-degree relatives.<sup>[17]</sup>

Psychological factors - Several psychological theories (eg, psychodynamic, behavioral, and ethologic) have attempted to explain trichotillomania in children; such theories have included stress reduction, emotional regulation, and sensory stimulation.<sup>[18]</sup>

Disordered reward processing - Preliminary data suggest that trichotillomania may represent a disorder of altered reward processing within the central nervous system; a study by White et al regarding reward processing in trichotillomania patients demonstrated altered nucleus accumbens activations and a decreased functional connection between the dorsal anterior cingulate and nucleus accumbens and basolateral amygdala and reward network; input was through glutamatergic projections, identifying a possible intervention point with agents that modulate glutamate.<sup>[19]</sup>

Neurodegenerating disease associations - Reports also suggest a possible association between neurodegenerating diseases, such as Parkinson disease and dementia.<sup>[20]</sup>

## CLINICAL FEATURES

The method by which individuals remove the hair differs between individuals. Most commonly, the hands, particularly the thumb and forefinger, are used to remove the hair. However, tweezers and other cosmetic devices are sometimes used. Typically, one or two hairs are pulled at a time, and multiple hairs can be pulled out during a pulling episode. The most common site from which pulling occurs is the scalp, followed by the eyebrows/eyelashes. Pubic hair, once believed to be a relatively rare site of pulling, is now understood to be common in those with TTM. Many people report specific emotional states

(e.g., stress or anxiety), a sense of tension, or an urge to pull that precedes an episode, which in turn is alleviated after pulling.<sup>[21]</sup>

Rituals and behavioral patterns often precede pulling, such as combing through the hair, feeling individual hairs, tugging at hairs, and visually searching the scalp and hairline. Hairs may not be pulled at random, but can be chosen based on specific characteristics (e.g., hairs with certain lengths, colors, textures, placement on the hairline).

Post-pulling behavior is also clinically relevant and idiosyncratic. While some individuals simply discard pulled hairs, others may play with the hair between their fingers, inspect the hair, bite the hair between the teeth, or ingest all or parts of the hair. Ingesting hairs can result in undigested masses of hair called trichobezoars, which can potentially cause gastrointestinal injuries. Clinicians should carefully assess whether clients eat pulled hairs and seek referral to a gastroenterologist if symptoms such as abdominal pain, nausea, vomiting and constipation are present. If left untreated, trichobezoars can cause bowel obstruction, intestinal bleeding, acute pancreatitis, obstructive jaundice, or a perforated bowel.<sup>[22]</sup> The environmental and affective context surrounding pulling should also be noted. Situational variables that often increase pulling include watching television, reading a book, doing homework, or grooming in front of the mirror.<sup>[23]</sup>

Recent research has illuminated several distinct pulling styles of TTM, which may correspond to specific triggering factors.<sup>[24]</sup> A small percentage of people with TTM pulled either completely outside of their awareness or while completely focused on pulling, but most (80%) engaged in both styles of pulling at different times. The two pulling styles as “automatic” and “focused”.<sup>[25]</sup> “Automatic” pulling is performed out of conscious awareness; often while engaged in a sedentary task. Individuals engaged in “automatic” pulling sometimes do not become aware of it until they later notice the consequences (e.g., a pile of hairs on the ground, a new bald spot). Conversely, focused pulling appears to be a purposeful process. Examples of focused pulling include doing so because pulling feels pleasurable, reduces stress, removes hairs that look “out of place,” or removes hairs deemed by some physical characteristic to be good for pulling. It has been suggested that focused pulling may constitute an attempt to regulate affect and/or aversive cognitions.<sup>[26]</sup>

Sometimes pulling hairs from pets or dolls or from materials, such as clothes or blankets, may be a sign. Most people with trichotillomania pull hair in private and generally try to hide the disorder from others.

## DIAGNOSIS

Trichotillomania (Hair Pulling Disorder) is listed in the Diagnostic and Statistical Manual of Mental Disorders under the new category of Obsessive-Compulsive and Related Disorders. Additionally, two criteria were removed in the new edition. DSM-IV-TR required that those with TTM experience a preceding urge to pull hair that is subsequently relieved after pulling or have increased tension while attempting to refrain from pulling.<sup>[27]</sup> However, in the DSM-5 revision process, it was argued that these criteria excluded many with significant hair pulling related issues.<sup>[28]</sup> The current diagnostic system for TTM requires five criteria.

### Criterion A

Requires that the person purposefully remove hair from any region of the body. Pulling may be associated with one or multiple sites. Although some may pull hairs in a concentrated area, resulting in easily identifiable bald spots, others may distribute their pulling over a larger area, causing thinning of the hair. The latter is more difficult to identify, and sometimes a distributed pattern of pulling is done purposefully in order to conceal hair loss.

### Criteria B and C

Require the individual to have attempted to decrease or stop pulling and that the pulling causes significant distress or impairment in at least one important area of functioning, respectively. It is important to note that many individuals pluck hair for cosmetic purposes, so TTM should not be diagnosed if attempts to stop have not been made and if the behavior does not cause significant distress or functional problems.

### Criteria D and E

Are used to differentiate the main features of trichotillomania with other medical and psychological conditions that might explain hair pulling or alopecia. These will also be discussed later in the section on differential diagnosis.

The diagnosis of trichotillomania is made by history and interview, along with histological examination of the hairs in the area of hair loss as well as skin tissue in the area. All other medical causes of hair loss must be eliminated. Since patients are adept at



disguising and denying the symptoms of trichotillomania, the condition may go on for years without detection or treatment. Most patients are embarrassed to admit to hair pulling and the resultant sequelae, and elicitation of this behavior is difficult. The patient will not usually report pain. All of this makes the diagnosis of trichotillomania difficult. The patient must be made to feel comfortable admitting to and then discussing the behavior.

According to the American Psychiatric Association there are five criteria which must be met in order for trichotillomania to be diagnosed. They are as follows:

The hair pulling is recurrent and a noticeable pattern of hair loss is observed. The patient feels increased tension prior to the hair pulling.

This tension is relieved upon pulling hairs.

The pulling is not associated with another mental condition, and there is no medical cause for the hair pulling.

The behavior interferes with or disrupts the patient's social and work activities.

There is a subgroup of hair-pullers who do not meet the second and third criteria listed above. These individuals are less likely to hide their behavior and do not suffer from low self-esteem as frequently as those who meet all of the above criteria. There is some debate about whether these people have trichotillomania and about whether these criteria for diagnosis of trichotillomania are too restrictive.

Histological examination of hair follicles and skin biopsies also help in the diagnosis of trichotillomania. In the areas of hair loss in trichotillomania there will be a mixture of short and longer hairs in the area of hair loss. Trichomalacia or distortion of the hair follicles is often present in trichotillomania.

Trichotillomania must be differentiated from medical causes of hair loss and these include: skin conditions such as psoriasis; trauma, such as that from radiation; endocrine disorders such as hypothyroidism; infectious diseases such as herpes zoster; inflammation such that of the lids margins, called blepharitis; and tinea capitis, a fungal infection of the scalp. Other psychiatric disorders, such as schizophrenia, must also be ruled out.<sup>[29]</sup>

The clinician may use rating scales to assist in the diagnosis of trichotillomania and to assess the degree to which a patient has trichotillomania. These scales include the Psychiatric Institute Trichotillomania Scale, National Institute of Mental Health-Trichotillomania Severity Scale, Yale-Brown Obsessive Scale modified for Trichotillomania, the National Institute of Mental Health-Trichotillomania Impairment Scale, and the Minnesota Trichotillomania Assessment Inventory.<sup>[30]</sup>

### **Clinician Rating Scales**

#### **National Institute of Mental Health (NIMH) Trichotillomania Scale**

This semi-structured clinical interview is composed of two separate clinical indices: the NIMH (National Institute of Mental Health) Trichotillomania Severity Scale (NIMH-TSS) and the NIMH Trichotillomania Impairment Scale (NIMH-TIS). The NIMH-TSS asks five questions regarding several key features of TTM: time spent pulling in the past week, time spent pulling the previous day, degree of resistance to pulling urges, distress associated with pulling, and functional impairment. Each question has scores ranging from 0–5, resulting in a total score of 0–25, with greater scores reflecting a greater level of symptom severity. The NIMH-TSS has demonstrated adequate psychometric properties in adults and acceptable reliability in children. The NIMH-TIS scale consists of one item and has scores ranging from 0–10, with greater scores reflecting greater impairment. It has demonstrated good inter-rater reliability and convergent validity in adult samples

#### **Yale-Brown Obsessive-Compulsive Scale-Trichotillomania**

The Y-BOCS-TM is a 10-item clinician-rated scale that is based upon the Y-BOCS and measures hair pulling severity. Scores on the individual items range from 0–5, resulting in a total severity score ranging from 0–50. There are two subscales: intrusive thoughts regarding hair pulling and actual pulling behaviors. The Y-BOCS-TM has demonstrated variable psychometrics in adult samples, as evidenced by low internal consistency, fair to excellent inter-rater reliability, adequate test-retest reliability, and mixed convergent validity. Despite the moderately acceptable psychometric properties, the Y-BOCS-TM has been successfully used to assess progress in treatment outcome studies.

#### **The Psychiatric Institute Trichotillomania Scale**

The PITS is a semi-structured clinician administered scale that measures the number of body sites used for pulling, extent of hair loss, time spent pulling hair, resistance to urges, negative affect, and functional impairment. It has 6 items that are scored on a 0–7 scale,

resulting in possible scores from 0 to 42. The psychometric data are mixed, with low internal consistency, good inter-rater reliability, and acceptable convergent validity. There are no published data on test-retest reliability or discriminant validity.

### **Patient Rating Scales**

#### **Massachusetts General Hospital Hairpulling Scale**

The MGH-HPS is one of the most widely used self-report measures of TTM, possessing satisfactory psychometric properties. It consists of two factors: “Severity” and “Resistance and Control”. The MGH-HPS consists of 7 items that are scored on 5-point Likert scale, with higher scores indicating greater symptom severity. The scale is particularly useful in documenting change in symptoms throughout treatment.

#### **Trichotillomania Scale for Children**

The TSC is a self-report questionnaire that measures clinical features of hair pulling in children and adolescents. There are child and parent versions, both containing 15 items that are evenly divided into three subscales: severity, distress, and impairment. Items are scored on a 0–2 scale with higher numbers reflecting more severe symptoms. Two independent studies have shown promising psychometric properties

#### **The Milwaukee Inventory for Styles of Trichotillomania – Adult and Child Versions**

The MIST-A and MIST-C were developed to assess different pulling styles in both adults and children. The authors labeled these pulling styles “focused” and “automatic.” Exploratory factor analysis on the MIST-A revealed a two-factor solution, including a “focused” factor and an “automatic” factor. Similar analyses on the MIST-C showed the same factor structure. Both scales demonstrated adequate internal consistency and good construct and discriminant validity. Further research revealed significant differences between pulling styles, such as high automatic pulling being associated with greater stress and high focused pulling being associated with higher TTM severity, depression and functional impact.

### **TREATMENT**

Management of trichotillomania is challenging. A number of treatment modalities have been used including psychotherapy, hypnotherapy and pharmacotherapy; though treatment response is variable and relapses are frequent. Therapy to change your hair-pulling behaviour is the most effective method of treating trichotillomania. This should be combined with a

network of emotional support. Medications used to treat other psychological health conditions, such as depression and obsessive compulsive disorder (OCD), are sometimes also used in cases of trichotillomania. However, there's no evidence to suggest that any type of medication is effective in treating trichotillomania.

### **Psychotherapy**

Psychotherapy is a talking therapy often used to treat emotional problems and mental health conditions. You or your child can discuss emotional issues with a specially trained therapist.

Cognitive behavioural therapy (CBT) is a type of psychotherapy that may be recommended. It can help you address your thoughts about yourself, your relationships with others and how you relate to the world around you.

CBT may also involve behavioural therapy, which aims to help you change the way you behave—for example, reducing your hair-pulling behaviour. It's also known as habit-reversal therapy, and could include:

Educating you about your condition and how it's treated.

Making you more aware of when and why you pull your hair out – for example, you may pull your hair out when you're stressed.

Learning a new response to carry out when you feel the urge to pull your hair out – for example, clenching your hand into a fist.

Creating barriers that prevent you from pulling your hair out – for example, wearing a hat if you usually pull hair from your scalp.

Involving your parents or partner in your treatment – for example, they could praise and encourage you when you don't pull your hair out.

Dialectical behavior therapy enhanced habit reversal treatment offers significant promise for improved long-term treatment benefits in trichotillomania. In a recent study, it is reported significant improvement from baseline at 3-and 6-month follow-up on all measures of hair pulling severity and emotion regulation following dialectical behavior therapy enhanced habit reversal therapy.

**Emotional support**

If you have trichotillomania, it's likely you're experiencing emotional distress, such as feelings of self-loathing and guilt. It's important you receive emotional support to help you cope with these feelings. This may be from family, friends or a self-help group.

In the UK, there are a number of regional trichotillomania support groups you can contact.

**Family therapy**

Trichotillomania can be particularly distressing for families of children and young adults who pull their hair out. Pulling your hair out may be a way of communicating distress to your family, but they may feel powerless to help you. In this situation, family therapy may be suggested.

A therapist will meet the whole family to explore their views and relationships, and understand any problems the family may be having. It helps family members communicate better with each other. Family therapy can be particularly useful when a child or young person has a serious problem, such as trichotillomania, that's affecting the rest of the family.

The family can work together to address the issue that's causing you to pull your hair out and seek support for any distress caused to other family members.

**Parental Concerns**

Parents must realize that the earlier the treatment for trichotillomania is begun, the more likely that the hair pulling can be controlled. When trichotillomania strikes the adolescent it is especially important that the behavior be addressed and treated promptly. Adolescence is a time when self-esteem and independence are developing. If the adolescent does not have a positive body image, then fear or ridicule from family and peers can affect his or her ability to interact with others. Development of normal healthy relationships as an adult may be impaired if the family and such support mechanisms as therapy are not in place.

Since often the family dynamics provoke this behavior, parental involvement in therapy is essential. If necessary, the parents must be open to establishing new boundaries within the parent-child relationship.

It is important that parents to realize that trichotillomania is a complex and not completely understood behavior. But it is increasingly believed that trichotillomania has a biological

basis and thus parents must understand that they did not cause it and that they are not the only parents with a child who has trichotillomania. Support for trichotillomania may be found through the Trichotillomania Learning Center (available online at <[www.trich.org](http://www.trich.org)>). Many larger cities may have local support groups. Healthcare providers may help with location of such groups locally.

### **Medication**

Several medications have been used to treat trichotillomania, although there haven't been many large-scale clinical trials on them.

If the healthcare professional treating you recommends a particular medication, they should discuss the possible risks and benefits with you, including any side effects.

### **Selective serotonin reuptake inhibitors (SSRIs)**

In the past, selective serotonin reuptake inhibitors (SSRIs) have been used to treat trichotillomania, although there's some evidence to suggest they're not effective. SSRIs are often used to treat depression and anxiety disorders.

For children under the age of 18, the recommended SSRIs are sertraline and fluoxetine. These should only be used under the supervision of a mental health specialist, such as a specialist child and adolescent psychiatrist. This is a qualified medical doctor who's been trained in treating childhood mental health conditions.

### **Clomipramine**

Clomipramine is another medicine that may be recommended for trichotillomania. It's often used to treat depression and obsessional states. A child under 18 years of age being treated with clomipramine should be supervised by a specialist child and adolescent psychiatrist. Clomipramine has been tested as a treatment for trichotillomania and has been found to be effective at reducing hair-pulling behaviours.

### **Other medicines**

Small trials have been carried out for other medicines, but not enough is known about their effectiveness. In particular, there's a lack of research into medicines used to treat children with trichotillomania.

Hypnotherapy has also been reported to be effective in trichotillomania.<sup>[31]</sup>

Dronabinol is a cannabinoid agonist which is hypothesized to reduce the excitotoxic damage caused by glutamate release in the striatum. This medication offers a new promise in reducing compulsive behaviors. In a study, the use of dronabinol, at an average dose of 11.6 mg/day, decreased the Massachusetts General Hospital Hair Pulling Scale scores (MGH-HPS) from a mean of  $16.5 \pm 4.4$  at baseline to  $8.7 \pm 5.5$ . About 64% of patients responded with  $\geq 35\%$  reduction on the MGH-HPS and there was 'much or very much improvement' on the Clinical Global Impression (CGI) scale.<sup>[32]</sup>

N-acetylcysteine is a glutamate modulator which has shown some promise in treatment of compulsive behaviors. There clinical improvement of two patients of trichotillomania with N-acetylcysteine.<sup>[33]</sup> A large trial of 50 trichotillomania patients also reported significant improvement with this medication.<sup>[34]</sup> However, a recent randomized, double-blind, controlled trial of N-acetylcysteine in pediatric age group (8-17 years) failed to show a statistical benefit over placebo (response rate of 25 versus 21%, respectively).<sup>[35]</sup> This study stressed the importance of referring pediatric patients of trichotillomania to appropriate behavioral therapy before starting pharmacological interventions. In another important study, a second generation (atypical) antipsychotic (SGA), olanzapine at an average dose of 10.8 mg/day was used. The intervention showed significant improvement of trichotillomania responders as per Clinical Global Impressions-Improvement (CGI-I) scale. There was also a significant change from baseline to end point in the Yale-Brown Obsessive Compulsive Scale for Trichotillomania (TTM-YBOCS) and the Clinical Global Impressions-Severity of Illness (CGI-S) scale.<sup>[36]</sup> In addition, aripiprazole, another SGA, has also shown promise in treatment of trichotillomania.<sup>[37]</sup> Bimatoprost is a synthetic prostaglandin analogue used for glaucoma and ocular hypertension. It is recently reported successful treatment of eyelash madarosis (due to trichotillomania) in a female patient with use of bimatoprost 0.03% ophthalmic solution.<sup>[38]</sup> Treatment of trichotillomania with mood stabilizers, for example, lithium has also been suggested.<sup>[39]</sup>

Thus, starting with successful but relatively older pharmacotherapy options of clomipramine and selective serotonin reuptake inhibitors (SSRIs), there are now a number of new treatment modalities for this difficult to manage entity. Most of these require validation in controlled clinical trials. And still, the role of psychotherapeutic interventions in both pediatric as well as adult patients cannot be over-emphasized.

### Prognosis

When trichotillomania appears in early childhood, the duration of time during which the child is afflicted, is limited. The remission rate for children diagnosed before age six is high. For many children with trichotillomania, the condition resolves by adulthood.

The prognosis is much more difficult for those who develop trichotillomania after age 13. These children have a higher rate of other co-existing psychiatric disorders. Unfortunately, among those individuals who need long-term treatment for trichotillomania, as is the case when the initial presentation occurs in late childhood or as in **adolescence** or in adulthood, there is a high relapse rate in spite of intervention. A lack of definitive cause for trichotillomania makes treatment difficult, and the prognosis for a total recovery is poor, although the behavior may be satisfactorily controlled with therapy.

### CONCLUSION

Clinically, TTM is characterized by a bizarre shaped area of incomplete nonscarring hair loss with hairs of uneven length. The scalp is the most commonly affected site, although any site can be affected, including the eyebrows and eyelashes. On the scalp, children pull hair on the side of their dominant hand due to easy accessibility. Hence, the common sites affected on the scalp are temporal areas and the vertex. Onset is generally in childhood or adolescence, and a chronic course is typical. Depression and anxiety frequently accompany this disorder. An increased incidence of co-morbid obsessive- compulsive disorder (OCD) has been noted. The estimated lifetime prevalence is 1.5% for male and 3.4% for female college students. In very young patients, a more equal sex ratio is observed. On the whole, women show 5–10 times higher prevalence rates than men. The majority of the sufferers disguise their hair loss very well. Because of the secrecy and shame about their behaviour, many remain silent sufferers and treatment is often delayed. It is a chronic mental illness that imposes severe limitations on the patient's social, emotional, and occupational adjustment.

Although trichotillomania was reported to occur with many psychiatric disorders, the exact prevalence rate was not reported. Other comorbid conditions reported include dissociative experiences, dementia, Parkinson's disease, partial seizures and Prader- Willi syndrome. Possible hypothesized causes include a biological basis, as well as hair pulling in response to life stresses.



Diagnosis clearly starts with a thorough clinical interview and functional assessment. Building a comprehensive understanding of how hair pulling functions for the individual is paramount, particularly in consideration of the diverse phenomenology and behavioral heterogeneity of the disorder. Additionally, a physical examination of pulling sites and alopecia is recommended in order to differentiate TTM with unrelated dermatological and medical conditions. As discussed, there are several useful measures for diagnosing the disorder, determining the severity of the symptoms, assessing functioning impairment, and tracking treatment progress.

Diagnostic approaches to TTM must consider the phenomenological similarity of other psychological disorders, particularly OCD and BDD. Careful inquiries regarding the cognitions and environmental contexts associated with pulling should allow for the clinician to determine the proper diagnosis. Additionally, one should be careful to screen for other disorders that can either rule out or complicate a TTM diagnosis. The physical examination of hair loss should rule out any medical explanations and confirm TTM to be the cause.

Treatment of TTM differs in the two groups. Late-onset TTM is managed with cognitive behavioral therapy alone or in combination with drugs such as tricyclic antidepressants or selective serotonin reuptake inhibitors. Since the cognitive development of children is not complete, behavioral therapy guided towards exposure and risk factor prevention, is considered first line in the management of early-onset TTM.

These children responded to habit reversal, a type behavior therapy, which is quite different from exposure and response prevention (which is often used in OCD). These features suggest that trichotillomania is different from obsessive compulsive disorder and is more akin to anxiety or other impulse control disorders. Some of our patients had comorbid depression and showed response to antidepressants. The findings favour categorizing of trichotillomania on the spectrum of OCD or impulse control disorder as being close to the impulsive end than the compulsive end. Current treatment strategies involve a multimodal approach. Some of the SSRIs especially escitalopram, fluoxetine, and fluvoxamine are found to be effective. Antipsychotics like haloperidol were also suggested. In some cases, a combination of SSRI with a typical antipsychotic may be warranted. Recently, there was a report of resistant trichotillomania treated with risperidone augmented with fluvoxamine. This combination worked well without any exacerbation of psychotic symptoms.

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