

# A Case of Trichotillomania (TTM) and Bulimia Nervosa (BN) in a Patient with Adult-Onset Attention-Deficit/Hyperactivity Disorder (ADHD)

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### **ABSTRACT**

Trichotillomania (TTM) is frequently considered an isolated disorder; nevertheless, emerging evidence suggests that other psychiatric conditions including obsessive-compulsive disorder (OCD); eating disorders (EDs); and attention-deficit/hyperactivity disorder (ADHD) are often found to coexist. Several studies showed that EDs, such as bulimia nervosa (BN), were found in chronic hair-pullers, whilst OCD was considered a factor in predicting the prevalence of EDs, as well as the severity of TTM in the populations. While the relationship between TTM with OCD has been quite well-documented, the evidence of its association with BN and ADHD remains limited.

**Keywords: Trichotillomania, Bulimia nervosa, ADHD**

### **INTRODUCTION:**

Trichotillomania (TTM) is a condition characterized by repetitive hair pulling those results in hair loss, distress and disability in daily functioning [1]. This condition has a global prevalence of 1-2% in the general population [2,3]. Although TTM is typically considered an isolated disorder, emerging evidence suggests that it may be associated with other psychiatric conditions, including obsessive-compulsive disorder (OCD), eating disorders (EDs), major depressive disorder (MDD), anxiety disorders, substance use disorder and attention-deficit/hyperactivity disorder (ADHD) [2–5].

In a recent study predictor of having an OCD in a TTM population were examined and it was discovered that having an eating disorder diagnosis was linked to a higher risk for OCD depending on how severe the ED was [6]. It also suggests that OCD might be a factor in predicting the prevalence of an eating disorder in TTM populations [7].

Attention-deficit/hyperactivity disorder (ADHD) is also commonly comorbid with other psychiatric conditions, with up to 75% of adults with ADHD meeting diagnostic criteria for at least one more psychiatric disorder [8]. It is a condition that affects the development of the brain, identified by signs of inattentiveness, hyperactivity, and impulsivity. In approximately 60% of cases, these symptoms can continue into adulthood [9]. Despite this growing body of evidence, the relationship between trichotillomania, bulimia nervosa and ADHD remains poorly understood. In light of the limited research on this topic, this case report aims to provide a detailed description of a TTM patient with comorbid BN, MDD and ADHD.

### **CASE REPORT:**

The index case is a 25-year-old graduate who was brought to the outpatient department (OPD) by her mother with involuntary hair-pulling of one-year duration. On examination, she had patches of baldness over her head, mainly over the crown region (Figure 1). She would pull strands of hair as she felt restless

and began pacing around the room. Initially it occurred 3-4 times daily, later progressed to 8-10 episodes for the past 2 months due to exam stress. Other than scalp hair, this behavior did not involve the eyebrows, armpits or pubic area.



**Figure 1. Physical examination of patient’s scalp showed patches of baldness over the head, mainly over the crown region.**

She has also been having intermittent binge eating attacks with excessive exercising for 4 months and currently has a BMI of 20.7 kg/m<sup>2</sup>. She binged mainly on junk food and each episode lasted 45 minutes to an hour. She consumed around 7000-8000 kilocalories per binge. She tends to exercise excessively in order to compensate for the excessive eating. She has an intense fear of gaining weight and is constantly preoccupied with thoughts of weight loss despite the bingeing. She demonstrates no emesis, diuresis or diarrhea. She has no knuckle calluses/ parotid swelling/dental erosion/pharyngeal tears. The patient is amenorrhoeic and has not had her menstrual cycles for six months. Prior to this, she had irregular cycles (40-45 days). Medical causes for amenorrhea were ruled out and it was attributed to excessive exercise. Results of the routine lab investigations performed are mentioned in Table 1.

She was diagnosed with attention deficit hyperactivity disorder (ADHD) at the age of fifteen and has been demonstrating symptoms congruent with ADHD for approximately one and a half years. The patient had been absent-minded and distracted during classes. Her academic performance had been sub-optimal with especially poor results in mathematics. Her teachers believed that her mediocre academic performance was not due to inadequate effort or modest intellect but rather due to a lack of concentration. She was often fidgety and found it hard to stay still. Substance abuse was ruled out as a differential diagnosis considering the age and symptom profile. The diagnosis of ADHD was made by a team consisting of a pediatrician, a psychiatrist and a counselor. The treatment plan was also devised by the aforementioned team. She was prescribed methylphenidate 10 mg daily and was compliant with her medication. She had periods of remission in between and had considerable improvement in several symptoms. The patient was lost to follow-up after about two years.

At the age of 22, she was diagnosed with major depressive disorder (MDD). She had come in with symptoms of feelings of worthlessness, insomnia and weight loss. The symptoms had been present for around four months. She had multiple psychosocial stressors including academic stress and personal relationship issues.

Additionally, the patient also had a worsening of her ADHD symptoms. She was put on bupropion sustained-release tablets. A satisfactory response was not seen. She seemed to have a slight improvement in depressive symptoms, however, ADHD symptoms did not improve. She was hence taken off bupropion and continued on methylphenidate. Additionally, escitalopram and clonazepam were added. The dosage of escitalopram was increased slowly to 10 mg, and thereby her symptoms slightly improved. The patient was on the same medication for 8 months and was subsequently changed to Lisdexamfetamine and escitalopram along with clonazepam which showed a better response after 4 months. Clonazepam was stopped after that. The antidepressants were gradually tapered after 7 months of treatment. However, for the last 2 months, due to increased stress about her exams, symptoms of involuntary hair pulling and bulimia worsened. So, she was restarted on escitalopram, which showed a good response to bulimia but an unsatisfactory response to impulsive hair-pulling. She is being followed up for further dose adjustments in medications and cognitive behavioral therapy (CBT) for habit reversal.

**Table 1. Laboratory and other investigation findings**

Parameter	Parameter	Results	Reference range
Hematology	Hemoglobin	8.7 g/dL	Male: 13.5-17.5 g/dL Female: 12.0-16.0 g/dL
	Leukocyte count	6,500/ mm <sup>3</sup>	4500-11,000/mm <sup>3</sup>
Blood, Plasma, Serum	Platelet count	210,000/mm <sup>3</sup>	150,000-400,000/mm <sup>3</sup>
	Thyroid-stimulating hormone (TSH)	3.2 µU/mL	0.4-4.0 µU/mL
	Free T3 (FT3)	3 pmol/L	2.0-7.0 pmol/L
	Free T4 (FT4)	9.9 pmol/L	7.9-14.4 pmol/L
	Estradiol	27 pg/mL	Pre-menopausal women: 30- 400 pg/mL Post-menopausal women: 0- 30 pg/mL Men: 10- 50 pg/mL
	Other findings	Ultrasound pelvis: within normal limits	Ultrasound pelvis: within normal limits

## DISCUSSION

Similar to our present study, TTM usually presents first during childhood or adolescence and has a chronic course, with a female predominance of over 4 times to that of males [10]. TTM typically manifests as isolated patches of hair loss, which are frequently observed over the scalp’s crown, occipital, and parietal areas. The eyelashes, brows, pubic or other body hair are other areas that are usually affected [11]. The involvement of scalp hair was seen in our patient with patches of baldness mainly over the crown region, which appears to be unique and correlates with the literature. Other than scalp hair, this behavior did not involve the eyebrows, armpits or pubic area.

According to the DSM-V, five outline criteria must be met for the diagnosis of TTM, which include [1,2]:

1. Recurrent pulling out one’s hair resulting in noticeable loss of hair
2. Increasing sudden feeling of tension before pulling hair out or while in attempt for resisting
3. Sense of pleasure, rewarding, or relief after behavior
4. The disturbance is neither accounted by another mental disorder nor due to other general medical condition
5. Causing clinically significant distress or impairment in social, occupational, or other important areas of function.

Patients frequently have a history or concurrent diagnosis of other psychiatric conditions, including anxiety

or depression, similar to OCD-related illnesses [12]. Although TTM and obsessive-compulsive disorder (OCD) share many characteristics, TTM is a distinct clinical condition with grave social repercussions and potentially fatal effects if there is also associated hair consumption. According to literature, eating disorders (EDs) should also be included in the spectrum of OCDs, just like TTM [13,14]. The existence of TTM usually indicates a more severe form of generalized impulse control disorder, which could involve various related conditions, including EDs. A subjective sense of compulsion and trouble controlling repetitive activities are two traits shared by OCD and EDs [6,15].

About 20% of chronic hair-pullers are found to have eating disorders [10]. Our case was identified to have intermittent binge eating attacks with compensatory behavior like excessive exercising along with TTM. In another study of smaller populations with trichotillomania, Houghton et al. reported a prevalence range of 2%-14% for bulimia nervosa [5]. TTM and EDs are both considered to belong to a limited subset of diseases that also exhibit impulsive and compulsive elements and have comparable pathophysiological causes, such as cortico-striatal dysfunction, in addition to having comparable phenomenology and functionality [14,16]. A recent study discovered that there is a 16-fold higher chance of developing bulimia nervosa in females than males with OCD, which is consistent with our patient's findings [17].

Studying the comorbidity of EDs and TTM is crucial for developing new therapeutic techniques to complement existing treatments like CBT. Innovative approaches could focus on addressing shared underlying vulnerabilities such as impulsivity or difficulties with emotional regulation. 79% of those who had TTM also had one or more mental health comorbidities, with anxiety/depressive disorders, OCD, PTSD, and ADHD being the most prevalent [12]. ADHD in general, is one of the most prevalent neurodevelopmental diseases in children. Both TTM and ADHD are difficult to define as both disorders share some common symptoms, in which, people with TTM may have a hard time resisting the urge to pull their hair, fidget or squirm in their seats, while similarly, people with ADHD also have trouble focusing and easily distracted or impulsive. The dysfunction of the reward system has been suggested as a potential factor in hair-pulling behavior, with the dopaminergic system also implicated in the pathophysiology of TTM [18]. Bhanji and Margolese reported a case study in which TTM was effectively treated with the dopamine/norepinephrine reuptake inhibitor, bupropion [19]. Nevertheless, in our patient, bupropion was found to be ineffective.

The predominance of ADHD features in our patient mandated the management to mainly include stimulants such as Methylphenidate or Lisdexamfetamine. A study by Golubchik P et al. showed that Methylphenidate was effective in the management of 9 adolescents with trichotillomania and comorbid ADHD [20]. Methylphenidate showed improvement in ADHD features, but symptoms of trichotillomania were relatively resistant to management, which is consistent with the results of our present case.

Selective serotonin reuptake inhibitors (SSRIs) are commonly used for the management of both TTM and EDs, with effective results in the reduction of the symptoms of TTM, as seen in various literatures [21–23]. Since our patient also had co-morbid MDD, it was apt to add Escitalopram to the management. Despite being the first-line treatment option, studies indicate that while antidepressants may help alleviate depression and anxiety symptoms associated with trichotillomania, they do not produce consistent positive outcomes for the condition itself [24]. A study that analyzed the effectiveness of SSRIs in treating trichotillomania using randomized controlled trials reported a moderate level of improvement for all antidepressants utilized in the treatment [22].

Furthermore, it was seen that our patient did have an improvement in the symptoms on this management for a few months but subsequently worsened due to exam stress for the last 2 months. This was consistent with the findings of Golubchik et al., who noted that exposure to stressful life events was one of the key factors contributing to treatment-resistant TTM [20]. Thus, it appears that certain factors, such as stressful life events like exams or conflicts between parents and children, may have a substantial impact on the effectiveness of treatment for TTM. However, the vast majority of evidence indicates that the management of TTM is most effectively achieved by combining pharmacologic and non-pharmacologic treatment with ongoing follow-up and monitoring [22].

Case reports available in literature on trichotillomania with comorbid eating disorders:

Study; Country; Year	Demographic Features	Duration of Illness	Comorbid Conditions	Treatment Given	Result
A case of trichotillomania with binge eating Disorder; China; 2021 [25]	25 years old, Female	10 years	OCD, Depression, Anxiety Disorder, Binge-eating disorder	Fuvoxamine, Bupropion, N-Acetylcysteine	All symptoms resolved, on follow-up
Oxcarbazepine for the treatment of trichotilloma- nia; Italy; 2010 [26]	43-year-old Female	Since adolescence	Binge-eating disorder	Oxcarbazepine	All symptoms resolved
Trichotillomania and Anorexia Nervosa in an Adolescent Female; Canada; 1996 [27]	17 years old, Female	2 years	Anorexia Nervosa	Did not consent to treatment	Discontinued evaluation after diagnosis
Obsessive- compulsive disorder, trichotillomania, and anorexia nervosa; Kansas; 1994 [29]	18-year-old Female	6 years	Major Depression, Anorexia nervosa, OCD	Fluoxetine, cognitive behavioral and interpersonal psychotherapy.	Symptoms improved
Hypno- behavioral Treatment of Self-Destructive Behavior: Trichotillomania and Bulimia in the Same Patient; Texas; 1986 [28]	22-year-old Female	1 year	Bulimia Nervosa	Hypno- behavioral approach	All symptoms resolved

**CONCLUSION:**

Despite its infrequency, TTM can substantially have a negative impact on mental status, life quality and psychosocial function, leading towards patient behavioral aberrancies. Identifying any potential comorbidity is essential to implement a thorough treatment plan. By identifying and characterizing subgroups of individuals based on their unique clinical features and comorbidities, we can gain more insight into the underlying mechanisms of this condition and develop more refined biological, genetic, and therapeutic studies. In this study, we present a patient with a diagnosis of TTM and BN with ongoing adult onset of ADHD as well as a history of MDD. Pharmacological treatments were planned and prescribed according to existing comorbidities to approach the patient’s clinical condition effectively. Current evidence also supports the use of a multidisciplinary approach including dermatologists, psychiatrists, counselors, and even family mem-

bers to effectively support and treat the expanding and diverse patient group presenting with TTM and its multifaceted nature.

#### **CONFLICTS OF INTEREST:**

None declared.

#### **AUTHOR CONTRIBUTION:**

All the authors contributed equally in drafting, editing, revising and finalizing the case report.

#### **ETHICAL APPROVAL:**

Ethical approval was not required for the case report as per the country's guidelines.

#### **CONSENT:**

Written informed consent was obtained from the patient to publish this report.

#### **DATA AVAILABILITY STATEMENT:**

The data that support the findings of this article are available from the corresponding author upon reasonable request.

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