Untreated trichophagia secondary to trichotillomania is a potentially life-threatening condition. Taking a thorough family and social history, most notably with the aid of a genogram or family tree, can aid in including this disorder in the differential diagnosis. This case presentation describes a unique occurrence of untreated trichotillomania in a female adolescent that led to formation of a trichobezoar requiring emergent surgical intervention and follow-up psychiatric treatment. This case highlights osteopathic medicine’s fundamental concept of treating the whole person rather than just symptoms by considering factors such as genetic influences in understanding disease.

The American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)\(^1\) includes trichotillomania (TTM) in the category of a diverse group of impulse-control disorders that are not classified elsewhere. The essential features of this disorder include recurrent pulling out of one’s hair resulting in noticeable hair loss, increasing sense of tension immediately preceding or when resisting hair pulling, and pleasure or relief when pulling out the hair. In addition, the symptoms of TTM cannot be better accounted for by another psychiatric or medical disorder (eg, schizophrenia, dermatitis) and must also cause clinically significant distress or impaired social or occupational functioning.\(^1\) The site from which hair is most frequently pulled is the scalp, but hair may be pulled from eyelashes, eyebrows, the pubic region, or other parts of the body.\(^2\)

Many patients meet all the criteria for TTM except tension before or relief after pulling out hair. The patient described here had neither criterion and did not meet DSM-IV-TR criteria for TTM, even though she had a long history of both disfiguring hair pulling and trichophagia (ingesting the pulled out hair). In one study of adults with TTM, 17% did not describe tension before or relief after pulling out their hair\(^2\) and therefore did not meet DSM-IV-TR criteria for the diagnosis. Thus, the current diagnostic criteria may exclude patients with clinically significant symptoms of TTM.

**Epidemiology and Presentation**

Although TTM is a relatively rare condition with estimates ranging from less than 1% to as high as 4% of the US population, the number of patients with TTM seen in physicians’ offices is considerable. If even 1% of the US population has TTM, there would be 25 million people with TTM in the United States.\(^3\)

The clinical presentation of TTM may be confusing. Patients with TTM are markedly embarrassed and ashamed, so they may deny their hair-pulling behavior. The patient described in this report was rejected from participation in a research study of TTM because she denied such behavior when she was screened in a telephone interview. Before diagnosing TTM, physicians must first rule out hair loss that is related to dermatologic conditions or other systemic disorders. They must also exclude it as an act of another person’s abuse of a youth.\(^4\) Hair pulling also has been reported in association with cocaine use.\(^5\)

Trichotillomania may be an unconscious or intentional action.\(^6\) In 5% to 18% of patients, TTM may include trichophagia, which in turn leads to the potentially serious complication of a trichobezoar (hair ball).\(^7\) It is estimated that more than a third of those who ingest hair may form a trichobezoar.\(^7\)

Trichobezoars are more common in children and adolescents.\(^8\) When first seen by a physician, a patient with a trichobezoar may have gastrointestinal obstruction with nausea and vomiting, acute pancreatic necrosis, obstructive jaundice, hypochromic anemia, vitamin B\(_{12}\) deficiency, weight loss, an abdominal mass, or other serious problems. Emergent surgical intervention may be required.\(^8\)

The diagnosis of a trichobezoar is made through careful history taking, a thorough physical examination, and radiologic evidence. Physicians should be aware that a trichobezoar may be present even in patients who show no signs of hair loss.\(^9\)

It is essential that primary care physicians, emergency department physicians, and surgeons consider a trichobezoar...
when examining patients with symptoms of gastrointestinal obstruction or any of the possible emergent presentations of this disorder. Early intervention may prevent potentially fatal outcomes.8

**Etiology**

Explanations of the cause of TTM parallel some of the major theoretic orientations in the study of human behavior. Psychoanalytic explanations for hair pulling center on the behavior as being related to unconscious conflicts. The teenager described in this report pulled out her hair in the evening when she was alone in her bedroom and when she was tense and worried. She had been through a difficult separation of her parents when she entered adolescence, though her TTM symptoms began when she was 3 years old. She was anxious, fearful, and ashamed about her hair pulling, feelings that intensified the urges to pull her hair.

Biologic explanations emphasize TTM as a familial disorder or part of the spectrum of an obsessive-compulsive disorder. The evidence is not robust, however, for TTM as an obsessive-compulsive–related disorder, and convincing evidence for a hereditary basis is lacking.

Positron emission tomographic scans of patients with TTM show increased metabolic activity in the cerebellar and parietal cortex,11 while magnetic resonance imaging studies have found decreased volume in the left side of the putamen.12 These studies, though fascinating in that they document biologic differences between patients with TTM and healthy control subjects, are not useful for diagnosing TTM, nor do they assist in developing an effective treatment strategy.

Imaging studies are not clinically indicated for TTM, and they were not done in our patient.

The patient described here neither met the diagnostic DSM-IV-TR criteria for obsessive-compulsive disorder or tics, nor did she have a reported family history of these disorders. The family history and genogram (Figure) revealed that she had a cousin with TTM and other family members who had an anxiety disorder, alcohol dependence, or attention deficit hyperactivity disorder (ADHD) and multiple family members who had had a “nervous breakdown.”

Behavioral theories emphasize modeling and conditioning as factors that establish and maintain hair pulling as a habit.3 Some behavioral modes of therapy, including habit-reversal therapy, are derived from this theoretic explanation.13 Elements of habit-reversal therapy13 were used to treat our patient.

**Treatment**

No clear evidence-based practice guidelines for the treatment of patients with TTM are available, and more research is needed. Behavioral techniques and selective serotonin reuptake inhibitors (SSRIs) are the most commonly used treatment modalities, having the most evidence for efficacy. The behavioral approaches, including habit-reversal therapy, have been shown to be effective.14

In habit-reversal therapy, patients learn to be aware of the times, cues, and situations in which they pull their hair. They practice movements such as those in knitting, crochet, and needlepoint that redirect their urges to pull their hair. Thus they learn to “substitute a different and more adaptive behavior”14 and receive social approval for efforts to interrupt the hair pulling.13 Other approaches such as cognitive-behavioral treatment, negative practice, and variations of these interventions have been tried.3

One of the authors (J.R.C.) used elements of habit-reversal therapy to help the patient become more aware of the internal and external cues that triggered her hair pulling. He instructed her to wear a rubber band on her wrist and to pull it when she felt the impulse to pull her hair. He also worked with the patient and her mother to counteract the criticism and negativity that had developed around the hair pulling.

The SSRIs are the pharmacologic agents used most frequently in the treatment of patients with TTM. Other psychotropic agents that have been used for treating patients with TTM include the tricyclic antidepressants, the antipsychotic medications, and mood-stabilizing (anticonvulsant) medications. Clomipramine hydrochloride and fluoxetine hydrochloride have been used successfully.15

In addition to cognitive-behavioral therapy, the patient received SSRI therapy because of her long history of hair pulling with its serious consequences and her recurring hair-pulling impulses after surgical removal of a trichobezoar. This combination treatment was effective initially.

The use of hypnosis for the treatment of patients with TTM has been reported,16 but hypnosis was not used in our patient. Books, information, and support groups for patients with TTM and their families are available through the Trichotillomania Learning Center, Inc, in Santa Cruz, Calif (see http://www.trich.org). Our patient was referred to the latter resource, and she and her family found it helpful.

**Illustrative Case Presentation**

A 16-year-old Latino girl in good general health was seen in the emergency department because of a several-day history of intractable nausea, vomiting, and diarrhea that she attributed to a Fourth of July picnic. She was in mild distress and afebrile with stable vital signs; she did not have a toxic appearance. After receiving intravenous hydration, she returned home.

Two days later, the patient returned to the emergency department with the same complaints. At physical examination, the abdomen was soft and diffusely tender, without...
Deceased, male
Alcohol dependent, male
Identified patient, 16-year-old

1

Brother 2 years younger than the identified patient; had diagnosed attention deficit hyperactivity disorder

2

Father lives in state adjacent to Pennsylvania since 1998; has anxiety disorder, according to former spouse (patient's mother)
School graduated
Identified patient was 11 years old, she had lived with her mother in the continental United States, but returned from Philadelphia, Pa, to Puerto Rico after high-school graduation

3

Identified patient

4

History of "nervous breakdowns," hypercholesterolemia, diabetes, hypertension, coronary artery disease with bypass grafting, stroke

5

Paternal grandfather whom patient especially loved and misses

6

Aunt has systemic lupus erythematosus, hyperthyroidism with history of treatment for goiter; trichotillomania recently diagnosed in daughter
Maternal grandfather lives in Philadelphia, near identified patient, who loves him greatly

7

Identified patient's mother lives in Philadelphia, Pa, near identified patient, who must forgo contact with identified patient recently diagnosed in daughter

8

Anxiety, depression, hypertension with history of treat-

9

Married, related
Unmarried
Divorced (date shown when available)
Marrying related

10

38 39 37 35 30 22 21

NA NA
rebound or peritoneal signs but with a vague epigastric mass. Rectal examination revealed a positive screening fecal occult blood test and loose stool in the vault, but no masses. Laboratory tests revealed a white blood cell count of 9900/µL with no left shift, electrolyte derangement consistent with metabolic alkalosis, and serum amylase and lipase levels within the reference range.

Findings of the ultrasound examination of the right upper quadrant were negative for cholecystitis. Abdominal flat plates showed no free air, no air-fluid levels, and an apparent unusual gas pattern in the upper right quadrant with a rim of air inside. On placement of a nasogastric tube (NGT) and suction, a few strands of hair were found. After placement of the NGT, a large mass was palpated in the epigastric region.

Computed tomography scans revealed a grossly distended stomach containing a large quantity of undigested material and some edematous loops of bowel with a small amount of free fluid in the pelvis. A trichobezoar was diagnosed, and the patient was taken to the operating room, where she underwent exploratory laparotomy.

Her stomach was distended and pale, and the mass within it extended from the antrum to the gastroesophageal junction. After incision, a trichobezoar weighing 1350 g (3 pounds) was removed.

Postoperatively, the child and adolescent psychiatric service evaluated the patient in consultation. The patient was anxious and ashamed. She indicated that she was aware that swallowing hair could lead to medical problems and reported that she had attempted to stop the hair pulling on her own, but she was unable to do so. She admitted, “I was scared when I knew it could get worse if nothing was done.” She had seen a television documentary film “a long time ago” on the topic of TTM and immediately worried that her hair pulling was the cause of her initial complaints. She spontaneously said, “I’ll never do that again.” She said that she pulled her scalp hair only when alone, especially at bedtime. She did not pull her hair at school or when she was in the presence of others. She ate approximately half of the hair that she pulled out.

The patient’s Spanish-speaking mother, interviewed via an interpreter, reported an uncomplicated developmental history. At 3 years of age, with no known clinically significant psychosocial stressors, the patient began twisting two or three strands of hair around a finger and swallowing them. Bald spots appeared on the patient’s head shortly thereafter. It was noted that the patient sucked a finger, a habit that continued to the present. The mother reported that when the patient was 11 years old, she took her to a psychologist in Puerto Rico. The psychologist referred the child back to her pediatrician after one visit and without any recommendation for treatment. The pediatrician recommended that the patient try gloving with nylon stockings and putting on a swim cap at bedtime. After a few failed attempts to comply, the patient abandoned this intervention.

The patient and her family had heightened concerns when she noticed that the patient sucked a finger, a habit that continued to the present. The mother reported that when the patient was 11 years old, she took her to a psychologist in Puerto Rico. The psychologist referred the child back to her pediatrician after one visit and without any recommendation for treatment. The pediatrician recommended that the patient try gloving with nylon stockings and putting on a swim cap at bedtime. After a few failed attempts to comply, the patient abandoned this intervention.

The patient and her family had heightened concerns when a relative, a registered nurse, warned both the patient and her mother that continued hair pulling and eating the hair could result in serious medical and surgical consequences. This information increased familial conflict and concern over hair pulling, but it did not decrease the patient’s behavior. The increased anxiety of the patient and her family escalated the impulses to pull hair.

Both the patient and her mother reported that the patient was “neat and orderly” in her habits and that she would become upset if her room was not “in order.” At the time of hospital admission, the patient was an honor student in a public high school serving a disadvantaged population. Although her family was not affluent and she lived in a predominantly minority inner-city neighborhood, the patient hoped to attend college after high school graduation.

Family history revealed that the 39-year-old mother and the 38-year-old father separated when the patient was 11 years old (Figure). Family psychiatric history includes ADHD in a brother who was 2 years younger than the patient. The paternal grandmother and the paternal great-grandmother were reported to have a history of “nervous breakdowns that required many medications,” notably alprazolam. Furthermore, the patient’s mother reported that her ex-husband’s family had a clinically significant psychiatric history of anxiety disorders. The paternal grandfather, now deceased, had a strong alcohol dependence disorder. The patient especially loved and missed him.

The patient’s mother was the oldest of six children. A maternal aunt of the patient had a 3-year-old daughter who had recently begun to pull her hair. This child had no contact with the patient, as all the patient’s maternal family was reared in Puerto Rico. The patient’s mother reported feeling stressed as a single parent rearing two troubled teens.

When the patient was seen in the child and adolescent psychiatry department, she appeared as an attractive Latino teenager who looked her stated age. She had facial acne that was not severe and extremely short hair. She appeared to be in mild discomfort from the NGT.

The patient reported that she had recently cut her hair short in an attempt to reduce her hair pulling behavior. No areas of thinned hair were noted. Her mood was depressed and her affect blunted. The patient denied having thoughts of suicide or hallucinations and delusions. She was oriented and appeared to be of above-average intelligence.

The patient’s postoperative recovery was uncomplicated. She was discharged with recommendations to contact a TTM research program. On follow-up, it was discovered that the patient did not meet entry criteria for the study for the previously noted reasons and because she denied current hair pulling. One of the authors (J.R.C.) offered the patient outpatient psychiatric treatment, which she and her family accepted.

Outpatient therapy (with J.R.C.) began on a weekly basis. The patient reported having active social and romantic relationships as well as maintaining part-time employment tutoring.
youths. She reported more detail of current family stressors, including a feeling of responsibility for managing two younger cousins who had recently moved into her family’s home. She reported having anxiety about school achievement and concern about helping with her younger brother, who was undergoing outpatient treatment for ADHD. She also reported that her mother had difficulty coping with the overwhelming household and that she and her mother had conflicts over the hair pulling.

After three initial sessions, the patient reported a gradual return to thumb sucking and hair pulling. She was distressed about this regression and reported that she had attempted to interrupt the hair pulling on her own with competitive activities such as drawing, manipulating a braided wire, and learning to crochet. These activities failed to abate the urge to pull her hair.

Therapy included educating the patient about TTM. She was directed to the Trichotillomania Learning Center. Elements of habit-reversal therapy were used, and the patient was helped to identify in advance triggering external situations and internal feelings that led to the urges to pull her hair. She learned alternate activities that could substitute for hair pulling. Her mother was included in the therapy and learned about TTM, and she began to participate in helping the patient develop strategies to handle the urges to pull hair, as well as learning to praise her daughter for her efforts to handle the urges appropriately. Thus, the mother-daughter relationship improved.

The patient’s facial acne responded to the topical treatment provided by one of the authors (J.R.C.). This favorable response led to improvement in the patient’s self-esteem. She shared with her therapist her feelings about her parents’ divorce and the subsequent infrequent contacts she had with her father.

As the patient attended more therapy sessions, she developed a sense of understanding and mastery of TTM, and she and her mother spoke on the telephone to the patient’s aunt in Puerto Rico, educating her about the TTM that the patient’s 3-year-old cousin had developed. The patient and her mother became the “TTM experts” in the family.

Sertraline hydrochloride, starting at 50 mg/d and titrating up to 100 mg/d, was given to the patient to provide additional help in reducing her hair-pulling urges. After several months of weekly psychotherapy and pharmacotherapy, the patient reported no hair-pulling events, even when faced with academic or family stressors.

The sertraline therapy and weekly psychotherapy sessions were continued until after the patient graduated from high school. Then, the dose of sertraline was tapered. The patient was lost to office follow-up when she left the United States to attend college in Puerto Rico. A brief follow-up via telephone revealed that the patient could not find a therapist in Puerto Rico and she was not receiving sertraline. Thus, her urges to pull her hair recurred.

Comments
This interesting case highlights a number of important clinical issues.

Our young patient had a long history of physical and emotional problems that though accurately diagnosed early in the course of her illness, resulted in her needing emergent surgery. Thus, making the correct diagnosis is important but not sufficient to ensure a positive outcome. Accurate diagnosis is only the first step in successfully treating patients. Given this adolescent’s strong genetic loading for anxiety disorders and her well-documented hair-pulling behavior, trich-obezoar formation was predictable.

Treatment needed to include more than the use of mechanical constraints to the hair-pulling behavior. She needed a comprehensive biopsychosocial approach to the treatment strategy.

This case clearly demonstrates the importance of understanding patients in the context of their life situation (and life stressors). Not attending to our patient’s underlying stress and anxiety early in the course of her illness directly resulted in her near-fatal surgical emergency. The patient showed improved control of her urges to pull her hair in response to the psychiatric intervention after her surgery, but she was lost to follow-up and ultimately regressed.

It is necessary but not sufficient to merely diagnose a maladaptive behavior and instruct patients in how to overcome the behavior. Whether it is overeating by obese patients or hair pulling as in our patient, achieving a positive therapeutic outcome requires that physicians identify issues that contribute to the maladaptive behaviors and establish effective treatment interventions such as psychotherapy and medications. In addition, long-term follow-up is critical to reinforcing long-term compliance with treatment. As was seen in our patient, without follow-up, the likelihood of exacerbation of symptoms is high.

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References

(continued on the next page)
All Join Hands
The week of October 1–8, 2006, marked the first observance of National Trichotillomania Awareness Week, an effort to bring attention and awareness to this little known disorder of repetitive hair pulling. The Trichotillomania Learning Center sponsored this first national US observance, using the “All Join Hands” slogan “because when [we] join hands, we’re working together, we’re moving forward—and we’re not pulling.”

For more information, see http://www.trich.org.