

Adults with Dental Erosion - Could This Be a Clinical Sign of Anorexia or Bulimia Nervosa? How is a Patient with Eating Disorders Approached?

SUMMARY

Rhythms, requirements and standards of modern life have made the anxiety a common feature of most people. Along with stress, several other psychological problems increasingly appear and, unfortunately, critically affect young ages. 2 of the most common chronic mental disorders are anorexia nervosa and bulimia nervosa. Dentists are uniquely positioned because in their area of examination, signs of these diseases can be seen and then their symptoms can be discussed with patients. Nowadays, despite the fact that these diseases are on the rise, dentists do not know enough about them. Often, even if the knowledge is enough to diagnose the disease, they avoid doing it, because they try not to make their patients feel uncomfortable and lose them.

The purpose of this review is to highlight the main and secondary signs and symptoms of these diseases, giving each clinical general dentist a more global view and a motivation to include eating disorders in everyday clinical practice.

Keywords: Adolescents; Anorexia Nervosa; Bulimia; Dental Erosion

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Introduction

Mental diseases in adolescents and young adults are more common than most people believe. These include eating disorders, 2 of which are anorexia nervosa and bulimia nervosa. Nowadays, the connection of a slim figure with the beauty stereotypes, the emotional and the professional success, has enhanced the development of eating disorders, particularly affecting young people. This situation has caused lifestyle changes, even bringing eating disorders in the third most common chronic illnesses among adolescent girls. Eating disorders are associated with the highest morbidity and mortality rates of mental disorders¹⁻³. A dentist may be the first to suspect or diagnose an eating disorder. However, even proper training is required for the treatment of people with eating disorders⁴ and studies have shown that hygienists know better than dentists about the clinical signs of anorexia and bulimia nervosa⁵. The purpose of this review is to

highlight the main and secondary signs and symptoms of these diseases, giving each clinical general dentist a more global view and a motivation to include eating disorders in everyday clinical practice.

Anorexia Nervosa

The term *anorexia nervosa* implies that a person has lost his/her appetite due to “neural” or psychological reasons. It is defined as “inability to maintain body weight, through the intentional restriction of food and drink, combined with increased physical activity”⁶. Anorexia appears mainly between the ages of 15 and 19 years, but can affect people of all ages and although it is considered as a female problem, approximately 10% of treated patients are men⁷. Aetiology is complicated and not fully understood. It is believed, that there is a genetic background and a disruption in the serotonin pathways relating to anxiety, behavioural inhibition and body image distortions⁶.

Anorexia nervosa is divided into 2 types, the restricting type and the bingeing or purging type. In the first one, the restriction of food intake is the only behaviour, while in the second type this restriction is accompanied by bulimic episodes and/or use of laxatives. Latter category may include self-induced vomiting, strenuous exercise and abuse of laxatives, diuretics or enemas⁸. Anorexia nervosa takes an average of 6 years, indicating increased mortality rates (4-20%) due to drug complications and suicides⁹.

Bulimia Nervosa

Bulimia nervosa seems to be more common than anorexia nervosa⁶. Both have several similar clinical signs but bulimia nervosa often remains undetected for a longer period, as persons suffering from this disease remain in a normal weight and as a result the presence of bulimia is revealed to an average age of about 25 years. But, there is a clinical sign, which is a characteristic of this disease. Its name is Russell's sign and it is the existence of calluses on the back of hand or fingers, appearing after repeated use of the hand for self-induced vomiting⁸. Bulimia nervosa, like anorexia, has a mean duration of 6 years but much less mortality⁹.

Diagnosis

The diagnosis of eating disorder is often difficult, as people with such a disease tend to be secretive about their problem. If the disease is detected, it is very likely that the patient will deny it, because of guilt, shame or general self-denial or refuse to treat¹⁰. The dentist has a very important position on diagnosis of eating disorders, because lesions of teeth, caused by self-induced vomiting, are a very common sign of these disorders^{11,12}. So, in the case of presence of the disease, the dentist has a very important and vital position to motivate the patient for psychiatric help and dental care seeking¹³. Instead of this, however, there are only a few dentists who take the responsibility of tackling an eating disorder and the most of them are women¹⁴.

Basic clinical signs that can be detected are dental erosion, hypertrophy of parotid and saliva changes¹⁵. There are conflicting elements about dental caries and its correlation with eating disorders¹⁵. Studies have correlated dental erosion with eating disorders, but regarding dental caries the results were statistically non significant^{3,16}.

Dental Erosion

Dental erosion is the basic dental implication of eating disorders. It is mainly the result of self-induced vomiting, but may be caused by a diet rich in fruits, often used for its laxative properties. Corrosive lesions

appear on palatal and labial surfaces of the upper teeth, due to vomiting, regurgitation and reflux. The occlusal surfaces can also be affected. Surprisingly, there is no correlation between the severity of dental erosion and the duration or frequency of vomiting, or the cause of it (frequent vomiting or diet rich in fruits)⁶. It is argued, that the distribution of dental erosions in the mouth is the same, whether the cause is gastric acid or diet acid⁶. This view has been significantly challenged, when was proved that patients with bulimia nervosa had more areas with erosive enamel and more severe erosive lesions¹⁷. Erosion, associated with repeated vomiting, often leads to thinning and fracture of cutting edges of incisors, reduction of vertical dimension, compensatory teeth over-eruption and increased temperature sensitivity¹⁸. Exposed dentin, due to erosion, can be painful and thus is 1 of the symptoms presented. Moreover, dental erosive lesions are common on dental surfaces without dental plaque^{19,20}.

Parotid Hypertrophy

Parotid hypertrophy is commonly observed in patients with anorexia and bulimia nervosa²¹ and can also be used for diagnosis of these diseases in the absence of any other clinical sign²². Anorexia and bulimia nervosa have also been associated with sialadenitis of the minor salivary glands of the palate, which is presented as a bilateral, symmetrical and painless, mild swelling of the hard palate²³.

Changes in Saliva

There are no differences in stimulated salivary flow in patients with eating disorders. However, dry mouth and reduced un-stimulated salivary flow are mentioned as common symptoms and signs in patients with bulimia nervosa. The concentration of bicarbonate ions in saliva is decreased and as a result its buffer capacity is lower. The above was found in individuals with bulimia nervosa with and without erosive lesions, thus was impossible to be part of aetiology. Viscosity of saliva was increased only in patients with bulimia nervosa and could be a part of aetiology⁸. In many cases, hypo-salivation and dry mouth is a side effect of some medication, such as antidepressants that are often prescribed in bulimia nervosa²⁴. Medication for bulimia nervosa seems to reduce both stimulated and un-stimulated salivary flow²⁵. Results about, bulimic patients which are not under medication and their stimulated salivary flow, are conflicting²⁶⁻³⁰. Dynesen et al²⁵ have shown an increased calcium concentration in saliva, while older studies hadn't shown any differences^{31,32}.

Other Manifestations

Repeated self-induced vomiting may cause mobility at one or more teeth, as well as orthodontic disorders, the most frequent of which is open bite³³. If the patient

uses, apart from fingers, other things to induce vomiting, lesions like those caused by intubation in general anaesthesia, can be observed³⁴. Eating disorder-patients often experience insomnia, tension and compression, which could cause or enhance bruxism³⁵. It is mentioned that bruxism in combination with erosion, due to acids, has a detrimental effect against dental tissues³⁶. According to Emodi-Perlman et al³⁷, patients suffering from eating disorders are very sensitive to palpation of the masticatory muscles, although facial pain, in general, is a controversial issue. Frequent and repeated vomiting is considered like a micro-trauma, and is accompanied by intense, sudden and abnormal mouth opening³⁷. Some people believe that it can be part of aetiology of temporomandibular joint disorders³⁸.

Management by the Dentist

Medical history should be taken with great understanding, non-judgemental style and absolute confidentiality⁶, and all these must be very obvious to the patient. Good cooperation between dentist and patient is very important, as a patient with eating disorders has much more dental anxiety compared with general population, explaining why these individuals visit the dentist only when symptoms are there³⁹.

When the desired cooperation is achieved, the next target is to maintain the existing teeth and avoid further dental erosion. Regarding the proper time for restorative therapy, there are 2 opinions. The first one supports that this time is when therapy of eating disorder is completed and the patient has a stable prognosis¹². The opposing view argues that, especially since restorative treatment helps to improve appearance and self-esteem, it must be done immediately, as it may be the motive needed to seek medical help. If restorative therapy is decided, especially in a young patient with severe erosive lesions, an atraumatic restorative therapy with adhesive materials is proposed¹². Apart from restorative therapy, very important for these patients is preventive therapy, including dietary and dental hygiene advices, rich in fluoride. Regarding time of tooth-brushing, a very common dental advice is: "Avoid brushing your teeth just after an acidic food intake", or here after vomiting, as it is considered that decalcified dentin is more sensitive to the abrasion caused by a toothbrush⁴⁰. At this point, it is worth mentioning a study, where statistically non-significant difference was found concerning severity of abrasion among individuals brushing immediately after vomiting and those that delay⁴⁰.

However, another survey of 1203 people 15-18 years old showed that 75% of participants with erosions had the habit of brushing their teeth immediately after eating⁴¹. The use of dental casts and images as well as the

implementation of a re-examination system are of critical importance for the monitoring of these patients through the observation of tooth decay, as patients with eating disorders very often tend to recur after cure⁴². Dentists and other health professionals tend to cover suspicions about eating disorders due to their fear of losing their patient, or insufficient reliance on the clinical signs they notice⁴³. A dentist, whatever final attitude he/she may decide to have, must offer prevention tips to avoid further damage such as those involving the use of fluoride, xylitol, soda, soft toothbrush and non-abrasive pastes.

Risk Factors

Only 1 study in the literature seems to have dealt with the normal population, the risk factor per person with respect to the occurrence of eating disorders and related oral manifestations. According to BITE (Bulimic Investigatory Test of Edinburgh), 6% of the population showed a high probability to meet the diagnostic criteria for bulimia nervosa, 15% had sub-clinical bulimia, while 20% had abnormal eating habits. Further analysis of the results showed that adolescents with high risk of eating disorder had increased chances of developing dental erosion⁴¹. Of course, today, the risk of dental erosion is particularly high in the general population because of changing eating habits, which are rich in consumption of products containing acids⁴⁴⁻⁴⁶. Finally, the clinical sign of dental erosion is particularly important because even if it does not lead along with other signs and symptoms to the diagnosis of an eating disorder, it includes the patient in a high risk - list of displaying disturbed nutritional behaviour⁴¹.

Reported Symptoms by the Patient Himself

According to a survey of eating disorders in a clinic in Sweden, the mentioning of dental problems was more common in patients with eating disorders compared to healthy patients. Also, clinical signs particularly frequent in patients with eating disorders were dry lips and swelling of the parotid, which are results of frequent evoked vomiting and dehydration. It was also found that these patients often reported a burning feeling of the tongue, night thirst and facial pain. It was stressed⁴⁷ that particular attention should be given by dentists at the latter signs, because these are the ones indicating whether the disease is active at the time of examination. Otherwise, only the presence of erosive lesions may be a clinical sign of an already cured disease.

Radiographic Findings

There is research relating the width of the cortex of the mandible shown in a panoramic radiography with the measurements of a special radiographic examination DXA (Dual-energy X-ray Absorptiometry)⁴⁸. Another research leads to positive, but weak, correlation between them⁴⁹.

Approaching the Patient

The approach to a patient with an eating disorder could start from the waiting room of a dental practice, with the apparent distribution of leaflets exhibiting in a simple and understandable way these disorders and their management⁵⁰. For a dentist, it is not sufficient to lead only to the diagnosis of the disease, but he/she should be able afterwards to guide for its treatment. To make this possible, he/she should be aware of specialists in his/her area, psychologists, nutritionists, clinics and hospitals able to handle such a case⁵⁰. Typically, a patient suffering from an eating disorder does not immediately admit it. Burkhart et al⁵⁰, concerning the approach of a patient suspected for an eating disorder, propose the following steps:

- ✓ Select the appropriate time for discussion
It may be early in the morning or later in the day when both the patient and the dentist will have plenty of time to express their concerns.
- ✓ Select the appropriate location
If the dentist and patient have never met outside the practice, then the most appropriate place is the dental practice with the patient sitting on the dental chair and the dentist nearby. It is also very important that they are not visible to other patients present at the clinic. This way, the person suffering from an eating disorder, can possibly not worry that their conversation is heard by third parties.
- ✓ Good knowledge and management of body language
It is very important for the dentist to be familiar with his body language. Thus, he can start the conversation in a non-judgmental way, e.g.: "I feel a little uncomfortable to ask you these questions, but I really care about you." Particular attention is needed so the patient does not feel the pressure for immediate answers. This is enhanced even by the distance kept by the dentist and the patient, which should leave a space of approximately 2.5 to 3.5 feet between them. The posture should be relaxed (e.g. not having his hands crossed) and their visual contact especially comfortable.
- ✓ Slow start
The dentist can start saying: "I noticed some changes in your mouth, such as ... (at this point he/she may state exactly what he/she sees). Are you thinking of something that could have caused these injuries?" If the answer is positive, explanation of the patient follows. If the patient answers "No", the dentist proceeds correspondingly.
- ✓ Suggestion for possible causes
The dentist may suggest some possible causes. "The changes I notice could be caused by many candies, reflux, many soft drinks and juices, strict diet, pregnancy or frequent vomiting. Is any of these connected to you?" If the answer is negative again the next step follows.
- ✓ Verification of the relationship of the patient with food
"One of our mouth's basic functions is to obtain food. From my experience, today there are many people who have a peculiar relationship with food. Of course, this is something very personal, so we usually have difficulty talking about it. I would like to ask you about your eating habits in order to better understand the changes I see. Are you okay with that? I do not intend to change or judge you. I only want to help with your oral health. Can I?"
- ✓ Pause and monitoring
This is one of the most important stages. The dentist should give the patient the time necessary to respond but at the same time he/she should understand whether the patient is ready to talk about his problem or not. If the dentist feels that he/she can continue, the next step follows.
- ✓ Verification of the image that the patient has for his body
The dentist should start with some informative questions like: "How do you feel about your weight?", "Do you want to lose weight?", "Have you ever eaten in secret?" There is the case the patient does not understand his situation yet and there have to follow many more questions.
- ✓ Verification of the nutritional behaviour of the patient
At this stage the dentist can use more direct questions. He/she can start by saying: "I want to make some specific questions about your diet. Your answers will help me understand why these lesions are in your mouth. If at any time you feel uncomfortable, feel free to tell me.", "Have you ever caused vomiting?", "Do you use laxatives or other pills or intense exercise to lose weight?", "Does anybody worry about how you eat? Who and why?", "Have you ever consulted a nutritionist, dietitian or psychologist?" If at this point the answer is still "No", another step follows.
- ✓ Summarizing and asking for the patient's permission for his monitoring
Now it's the right time for the dentist to appreciate the patient's willingness to discuss, whatever the result.

And the discussion may follow like: "I would like your doctor to know about some changes you have in your mouth because they are concerning. May I contact him?" If the authorization is given it is advisable to be in written form because confidentiality is very important. The clinician must give the patient some brochures and then ask him if he has any questions or wants to discuss something.

For all the above steps and at any time the patient can become very defensive towards the dentist. However, the dentist must be calm and highly supportive. If at any stage the patient states that they are aware of their condition, the dentist should praise them and point out that any time they are ready to start treatment he/she will be there to advise them. When the diagnosis involves a child, parents have the right to know and the situation must immediately be transferred to them⁵⁰.

Conclusions

In conclusion, it is stated that every patient with tooth abrasion, can be considered a candidate for eating disorders, but there certainly should be a careful investigation of all the possible coexisting factors. Thus, a more complete picture of our patient will lead to a safer conclusion and an appropriate treatment. For extensive and easily detectable tooth abrasions to occur from an eating disorder, it can be deduced that this disorder already existed and even for more than a year. Exploring further signs and symptoms, less obvious but related to eating disorders in daily dental practice, can place the dentist in a special position, making her/him able to offer help and cure to a large part of the young population, in which, as victims of nowadays stereotypes, eating disorders exist.

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