DENTAL EROSIONS IN PATIENTS WITH ANOREXIA AND BULIMIA NERVOSA

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ABSTRACT

Bulimia nervosa and anorexia are among the most common chronic, psychosocial pathological eating disorders. Fear of obesity is the main element in both diseases. Restricted food intake associated with extreme weight loss is characteristic of anorexia. Bulimia nervosa is characterized by repeated episodes of uncontrolled and unrestricted eating followed by starvation, self-induced vomiting, or intake of laxatives.

Eating disorders have severe consequences for the cardiovascular system, the gastrointestinal system, the skeletal system, and reproductive health. In addition to having the potential to impair physical and psychoemotional health, these diseases also affect the oral cavity. Eating disorders are serious and potentially dangerous conditions leading to a number of disturbances in the body, some of which are reversible, but those that affect the hard dental tissues do not undergo reverse development.

Keywords: *anorexia nervosa, bulimia nervosa, erosion*

INTRODUCTION

Eating disorders are mental disorders defined as persistent eating disorders or eating-related behaviors that manifest in altered food consumption and absorption that significantly impair mental and physical health (1). In addition to the severe consequences for the general physical condition of the body, eating disorders have serious consequences in the oral cavity.

MATERIALS AND METHODS

After reviewing materials, research, and publications on the subject, we tried to present and systematize the main dental problems and complications to which anorexia and bulimia lead.

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RESULTS AND DISCUSSION

According to the 2019 World Health Organization Eleventh Revision of the International Classification of Diseases and Related Health Problems, there are four main types of disorders (2):

- disorder related to overeating (binge eating disorders—BED);
- avoidant/restrictive food intake disorder (ARFID);
- anorexia nervosa (AN);
- bulimia nervosa (BN).

The diagnostic criteria for anorexia and bulimia nervosa have been updated in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), published by the American Psychiatric Association (2015).

According to data from a national survey conducted in Bulgaria in 2010/2011, 20% of girls and 8% of boys between the ages of 10 and 19 are at risk of developing some type of eating disorder. According to unconfirmed data, since exact statistics are lacking, the number of patients in Bulgaria suffering from anorexia and bulimia neurosis alone is at least 300,000.

Globally, it is estimated that at least one in a hundred adolescent girls is affected by an eating disorder. Eating disorders predominantly affect females in adolescence (1,2,3).

Dental and oral complications are due to micronutrient deficiencies and chronic exposure to stomach acid altering the pH in the oral cavity. The most common effects on hard dental tissues are erosions, characterized by irreversible demineralization of tooth enamel, as well as an increased frequency of carious lesions. These changes are related not only to chronic acid exposure due to repeated self-induced vomiting, but also to unhealthy dietary and oral hygiene habits (4,5,6).

A leading risk factor affecting the teeth in individuals suffering from bulimia nervosa and some forms of anorexia is repeated vomiting. Stomach contents, whose pH is around 1 (7,8), repeatedly reach the oral cavity, which in turn lowers the oral pH. On analysis, the average pH in patients with bulimia is about 3.8 (9), which is also due to reduced salivary secretion. It is a consequence of parotid gland dysfunction (10,11), intake of antidepressants (12) or a combination of both. The chronic action of these processes leads to irreversible and destructive changes in hard dental tissues (13).

It is known that medium and moderately severe tooth erosion can cause both hypersensitivity—hyperesthesia, and vertical loss of hard dental tissues (14).

Dental erosion is a complex and multifactorial condition characterized by demineralization and subsequent progressive and irreversible loss of hard tooth structures, due to a chemical process, without bacterial involvement. Clinically, there is thinning of enamel, mainly on the palatal and lingual surfaces of the front teeth, furrowing of the incisal edges and exposure of dentin, depending on the progress of the process (15,16).

In 1939, the term "perimolysis" was coined to describe the loss of enamel on the palatal surfaces, a secondary reaction resulting from vomiting, gastric reflux, regurgitation, and lack of protective salivary function seen in patients with eating disorders (17).

The most common localization of erosions is on the palatal and lingual surface of upper and lower front teeth, as well as the occlusal surface of molars. In some more severe cases, the erosions also affect the buccal surfaces of the chewing teeth. These erosive changes are particularly pronounced in patients with eating disorders in adolescence, which in turn is related to the eruption of the teeth—the maxillary incisors and the lower first molars, which erupt the earliest, are the most strongly affected. Frequent complaints in patients with erosions include sensitivity to thermal and chemical irritants, as well as xerostomia (18,19,20).

The typical "polished" appearance of the teeth is due to a combination of the chemical and mechanical action of stomach acid retained in the filiform papillae of the tongue, which for a short time serve as a reservoir, and tongue movements have an abrasive and erosive potential (21,22,23). This factor has the strongest influence on the palatal surface of the upper front teeth due to the position of the tongue (23).

Erosive changes start from the cingulum and, as a result of disease progression, gradually cover the entire palatal surface of the front teeth (24). The severity and development of erosive changes is directly related to the frequency of vomiting episodes (25). Dental hard tissues are subject to frequent acid attacks resulting from self-induced vomiting, which leads to their demineralization. This factor, combined with the subsequent post-vomiting episode, results in easier removal of tooth surfaces by mechanical brushing. In patients with eating disorders who also suffer from bruxism, the vicious cycle of tooth grinding is reinforced (26).

Degree of Loss of Hard Dental Tissues

A clinical index has been developed for the diagnosis and assessment of erosive changes in the hard dental tissues, which is easy to apply in daily practice as well as for research purposes (27).

With score 0, no erosive changes are observed; with score 1, the changes affect only the enamel; with scores 2 and 3, the dentin is affected.

The four sectors are examined, and the highest score is recorded for each. The cumulative score of all provides a level of risk, ranging from negligible to high.

Based on the studies conducted, with the application of the index, it was found that in patients with BN, the frequency of erosive changes is higher

Table 1. Clinical index for diagnosis and assessment of erosive changes in hard dental tissues.

Result	Evaluation Criteria
0	No erosive change
1	The enamel surface is affected
2	Loss of hard dental tissues < 50%
3	Loss of hard dental tissues > 50%

than in patients with AN, which is due to the episodes of self-induced vomiting characteristic of BN.

Treatment and Prevention

The main treatment for eating disorders is neurological. Early diagnosis and a healthy diet are extremely important to overcome the disease.

Depending on the severity of the disease and the degree of involvement of the hard dental tissues, different treatment is applied.

Topical treatment includes the application of fluoride varnish every six months. The use of toothpaste and mouthwash containing fluoride is also recommended. In cases where larger surfaces of hard tooth tissues have eroded leading to esthetic disturbance, hypersensitivity or pain, they can be restored with composite restorations, porcelain veneers or crowns.

Recommendations for routine oral hygiene in patients with eating disorders:

- delay brushing teeth after vomiting for at least 1 hour;
- rinse the mouth with an acid-neutralizing solution or water;
- limit brushing to three times a day;
- use a toothpaste containing fluoride (in combination with calcium ions);
- use an electric toothbrush with an overpressure monitoring system;
- use a tongue cleaner to remove acid residue as soon as possible after vomiting.

CONCLUSION

Anorexia and bulimia nervosa are serious neurological diseases that lead to a number of consequences throughout the organism. It is important to treat the underlying disease. To do that, we need a multidisciplinary approach. Including a neurologist is key in the treatment. Regular dental examinations are necessary to detect the first signs in the oral cavity and to avoid further manifestations and complications.

Dentists may be the only medical personnel who regularly examine patients with anorexia and bulimia nervosa and might be the first to identify and assess the consequences in the oral cavity, as well as to provide appropriate guidance. Secondary prevention of eating disorders reduces the rate of their future development through early identification, referral, and timely treatment.

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