

DENTAL EROSION AS A MANIFESTATION OF SJOGREN'S SYNDROME

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ABSTRACT

INTRODUCTION: Dental erosion is the loss of dental hard tissue by a chemical process not involving bacteria. It has a multifactorial origin and could be observed as a manifestation of different diseases such as Sjogren's syndrome.

MATERIALS AND METHODS: The article reports a clinical case of a 57-year-old patient with erosive defects on the entire dentition and problems with saliva secretion.

Diagnosis was made by using ultrasound examination and chairside test for evaluation of saliva properties.

RESULTS: The results from the chairside test revealed poor quality of the stimulated and resting saliva. The ultrasound examination showed a total change in the structure of the tissues of all salivary glands.

CONCLUSION: Dental health should not be treated as an isolated body condition – it is part of the whole organism. The intraoral examination can be essential for the discovery of some systemic diseases.

Keywords: *tooth erosion, Sjogren's syndrome, salivary flow*

INTRODUCTION

Dental substance loss due to erosion is an increasing problem for many patient groups (1-3).

Tooth erosion is the loss of tooth substance by chemical processes, as result of dental surface exposure to acids of extrinsic or intrinsic origins, without the involvement of bacteria (4). This erosive wear is a multifactorial condition, and this is important to evaluate the potential factors which could lead to identification of persons at risk (5).

The increased acidity which harms the tooth surfaces is sometimes related to the lifestyle but sometimes it is a result of different diseases, which affect the quality and quantity of the saliva.

Saliva is considered the most important biological factor preventing dental erosion (6). It protects against dental erosion due to its many properties, which include dilution and clearance of an erosive agent from the mouth; neutralization and buffering of dietary acids; formation of the acquired pellicle that protects the enamel surface from demineralization by dietary acids; and provision of calcium, phosphate and possibly fluoride, which are necessary for remineralization (7).

The intraoral symptoms and signs of Sjogren's syndrome are not specific to it, being shared with other conditions in which salivary function is diminished. The decrease in saliva causes chronic oral discomfort and functional problems and predisposes patients to dental caries (8) and tooth wear.

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Received: May 10, 2017

Accepted: June 13, 2017

A case of a patient suffering from Sjogren's syndrome with significant loss of dental structure is reported.

MATERIALS AND METHODS

A case of a 57-year-old woman with multiple defects on almost all vestibular surfaces of the teeth is reported. The patient complained of poor esthetics, dry mouth and burning sensation of the mucous.

Examination findings

During the extraoral examination a mild swelling in the area of the right parotid gland was palpable.

The intraoral examination revealed facial defects on the entire dentition, with a width visibly exceeding their depth (Fig. 1, 2, 3). The process that affected the teeth was non-carious and destructive.



Fig. 1. Tooth erosion on the vestibular surfaces of the upper incisors



Fig. 2. Lower teeth affected on the right side

The amount of the saliva in the oral cavity was scarce, with frothy bubbly appearance. Tooth wear due to erosion was the possible diagnosis and problems with the salivary glands were suspected.

Confirmation of the diagnosis requires a detailed anamnesis and a complex of studies.



Fig. 3. Lower teeth affected on the left side

A detailed questionnaire was given to the patient, including questions about her eating and drinking habits.

By using GC Saliva-Check BUFFER kit (GC Europe) we examined the saliva quality, pH and buffering capacity. This is a simple in-office test for evaluating how well saliva protects the teeth. Saliva testing involves both the stimulated and unstimulated saliva. By evaluating both, the test results become very useful diagnostic and powerful communication tools (9).

The saliva test consists of the following five steps:

- ◆ Step 1 - resting saliva hydration
- ◆ Step 2 - resting saliva viscosity
- ◆ Step 3 - resting saliva pH
- ◆ Step 4 - stimulated saliva quantity
- ◆ Step 5 - stimulated saliva buffering capacity (quality)

Because it was suspected that the patient had problems with the salivary glands, she was sent for ultrasound examination.

All the results indicated a diagnosis of tooth wear due to erosion.

As a guide to clinical management we have used the Basic Erosive Wear Examination (BEWE) system. The most severely affected surface in each sextant was recorded with a four level score and the cumulative score was classified and matched to risk levels, which guide the management of the condition. The four-level score (Table 1) graded the appearance or severity of wear on the teeth from no surface loss (0), initial loss of enamel surface texture (1), distinct defect, hard tissue loss (dentin) less than 50% of the

Table 1. Criteria for grading erosive wear

Score	
0	No erosive tooth wear
1	Initial loss of surface texture
2*	Distinct defect, hard tissue loss <50% of the surface area
3*	Hard tissue loss ≥50% of the surface area

*in scores 2 and 3 dentine often is involved

surface area (2) or hard tissue loss more than 50% of the surface area (3). Buccal/facial, occlusal, and lingual/palatal surfaces were examined with the highest score recorded. The examination was repeated for all teeth in a sextant but only the surface with the highest score was recorded for each sextant (10). The sum of the scores was calculated and served to determine the severity of the condition. When transferred into risk levels it could be a possible guide towards management (10) (Table 2).

Table 2. Risk levels as a guide to clinical management

Risk level	Cumulative score of all sextants	Management
None	Less than or equal to 2a	Routine maintenance and observation Repeat at 3-year intervals
Low	Between 3 and 8a	Oral hygiene and dietary assessment, and advice, routine maintenance and observation Repeat at 2-year intervals
Medium	Between 9 and 13a	Oral hygiene and dietary assessment, and advice, identify the main aetiological factor(s) for tissue loss and develop strategies to eliminate respective impacts Consider fluoridation measures or other strategies to increase the resistance of tooth surfaces Ideally, avoid the placement of restorations and monitor erosive wear with study casts, photographs, or silicone impressions Repeat at 6–12-month intervals
High	14 and over	Oral hygiene and dietary assessment, and advice, identify the main etiological factor(s) for tissue loss and develop strategies to eliminate respective impacts Consider fluoridation measures or other strategies to increase the resistance of tooth surfaces Ideally, avoid restorations and monitor tooth wear with study casts, photographs, or silicone impressions Especially in cases of severe progression consider special care that may involve restorations Repeat at 6–12-month intervals

Because of the suspected problems with the parotid glands the patient was sent for ultrasound examination.

RESULTS

The outcomes from the Saliva-Check BUFFER kit revealed reduced salivary flow with low pH and low buffering capacity (Table 3).

A detailed questionnaire that included also dietary habits showed a long-standing excessive consumption of acidic fruits (for many years until noon every day the patient has consumed only fruits and mainly green apples).

All these examinations confirmed the diagnosis of tooth erosion.

As it was mentioned above as a guide to clinical management we have used BEWE, whereby we have assessed the risk level as high (Table 4).

The results from the ultrasound examination showed a total change in the structure of the tis-

Table 3. Patient results from the test

UNSTIMULATED SALIVA		STIMULATED SALIVA	
Resting Flow Rate (Visually assess the lower lip labial secretion)	>60 sec ● Low	Quantity - Stimulated Saliva (Volume of Saliva/Value)	< 3,5 mL ● Very low
Salivary Consistency (Visually assess the resting salivary consistency in the oral cavity)	● Frothy bubbly saliva ● Increased viscosity	pH - Stimulated Saliva	pH≈ 5,8 ● Highly acidic saliva
pH - Resting Saliva	● pH≈ 5,8 ● Highly acidic saliva	Buffering ability - Stimulated Saliva	● 4 Very low

Table 4. Assessing the risk level of the patient by using the BEWE system

Highest grade 1. Sextant (17-14)	2	Highest grade 2. Sextant (13-23)	3	Highest grade 3. Sextant (24-27)	2	
Highest grade 6. Sextant (44-47)	3	Highest grade 5. Sextant (33-43)	2	Highest grade 4. Sextant (37-34)	3	Total Score: 15
						Risk Level: ≥ 14 High

sues of all salivary glands and confirmed Sjogren's syndrome.

Treatment and Follow-up

Due to lack of finances the patient received direct resin composite restorations of only some of the teeth and guidelines for changing the dietary and hygiene habits. We explained to the patient that routine maintenance and observation, repeated at 6- to 12-month intervals, were needed.

Because of Sjogren's syndrome treatment with corticosteroids was initiated. After a two-year break the patient decided to continue her dental treatment, but many of the erosive defects showed a significant progress (Fig. 4, 5). She had not followed strictly our recommendations but in regard to the main disease



Fig. 4. After a two-year break

– the Sjogren's syndrome, she was conscientious and the treatment still continues.



Fig. 5. After two years the defects are even greater

CONCLUSION

The processes in the human body are interrelated. Usually damage to one organ or system reflects on others. Usually tooth erosion has a multifactorial etiology, and for its diagnosis an interdisciplinary approach is needed. Sometimes the treatment is long and complex, and its success is impossible without strict and systematic care both from patient and clinician.

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