ORAL CAVITY AND SYSTEMIC DISEASES – GASTROESOPHAGEAL REFLUX DISEASE

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ABSTRACT
Several gastrointestinal disorders affect the oral cavity, and also the tissues around the mouth in the maxillo-facial region. In some cases, oral signs may be present in the absence of obvious gastrointestinal complaints or signs and also may suggest the disease. In this review we summarize some oral abnormalities in patients affected by the gastro-oesophageal reflux disease.


Keywords: gastroesophageal reflux disease, oral cavity signs, dental recommendations

Oral Manifestations of Gastroesophageal Reflux Disease (GERD)
Several gastrointestinal disorders affect the oral cavity, within tissues in or around the mouth (12, 13). Gastroesophageal reflux disease, or GERD, is a relatively common pathology. The gastric acid juice refluxes usually through the lower esophageal sphincter in the lower part of the esophagus or up to the oral cavity. It may cause different oral symptoms and signs.

The common symptoms of GERD are belching, heartburn, acid regurgitation, difficulty swallowing (dysphagia) and unexplained sour taste (1, 24). Other gastric atypical symptoms include posterior laryngitis, respiratory symptoms, noncardiac chest pain (24).

In silent GERD, however, the usual characteristic symptoms do not occur, and oral signs and symptoms may be the first clinical manifestation of GERD. So it is important that dental professionals can identify such patients and recommend appropriate measures to protect the long-term health of the dentition. Furthermore, dental professionals have the opportunity to recognize these pathologies (12, 13, 24).

The oral manifestations of GERD are:

Tooth erosion
The most frequent oral manifestation of GERD is erosion of tooth enamel (2, 3, 19, 23). The pH of the gastric acid is much lower than the critical pH of enamel dissolution, therefore, reflux of stomach contents into the oral cavity over an extended period of time can cause severe loss of tooth structure (15, 16). Enamel erosion (Fig. 1 and Fig. 2) by gastric acids also occurs in other reflux abnormalities: patients with hiatal hernia, wine drinking, chronic alcoholism and bulimia (5, 12, 13, 15, 16, 17).

Fig. 1. Enamel erosion in patients with GERD.

Fig. 2. Enamel erosion in patients with GERD.

The typical localisation of enamel erosion distinguishes the chemical erosions and erosions by reflux disease. The typical chemical erosion is observed usually on the vestibular tooth surfaces contrary to the erosions due to the gastric acid, which are localized often on the palatal surfaces of the maxillary dentition (12, 13). It is postulated that the dental expertise may be essential in distinguishing between differential diagnoses such as bulimia, attrition and abrasion (1, 15, 16).

Enamel erosions result in exposure of the underlying dentin, which is a softer, more yellow, material. The extent of erosion depends on the frequency and the quantity of acid exposure along with the duration of disease (24).
Low pH in the oral cavity
Regurgitation of gastric contents (pH 1-2) reduces the pH of the oral cavity below 5.5. Oral pH has been noted to be significantly lower in patients with GERD (22).

Low salivary buffer capacity
Gudmundsson et al. (11) found that the patients with GERD had low salivary buffer capacity.

Oral mucosa lesions
In patients with GERD oral erythema on the soft and hard palate mucosa has been found (9) (Fig. 3 and Fig. 4). This erythema and mucosal atrophy may be present as a result of chronic exposure of tissues to acid (5).

Oral complaints
GERD patients often mention other oral complaints such as sensitation of burning or heat in the mouth, halitosis, xerostomia, dysgeusia – foul taste, and dental sensitivity related to hot or cold drinks or foods due to the erosions (5, 9, 18, 20).

Temporomandibular disorders
Increased temporomandibular disorders have been found in patients with GERD by Gharibeh et al. (10). Other study mentions that patients with masticatory dysfunction have a higher incidence of gastrointestinal disorders including gastroesophageal reflux disease (21).

Dental Recommendations
Tooth erosion, oral pH and salivary buffer capacity – practical dental recommendations

Analysis
The first step is to recognise eventual medical circumstances that increase the risks of tooth wear. These include diseases that affect the salivary glands or some medications that decrease the salivary function.

Remineralization procedure
Remineralization therapy can be administered professionally and recommended as a part of a patient’s self-care routine. Not only will these treatments help patients with erosion due to acid reflux, but they will also help to control damage to the enamel from other demineralization factors, such as excessive ingestion of acidic foods and beverages (e.g., soda pop, sports drinks, tomato based products and citrus foods and drinks) (24).

The dentist can apply/recommend topical fluoride through varnish, rinses, and one-minute topical gel/foam for use in a disposable tray after completion of the prophylaxis (24).

Restorative procedure (4, 6, 7, 24)
- Restorative options of the enamel erosion will depend on the degree of tooth surface loss.
- In early erosion, restorative options include use of dentin bonding agents to protect exposed dentin, resin restorations retained with adhesive agents in surfaces not susceptible to heavy loads, and veneer restorations.
- In advanced erosion, which involves a large amount of dentin exposure and loss of vertical dimension, orthodontic extrusion and full coverage restorations may be necessary.

Other recommendations (8, 24)
- Using toothpaste, preferably a low-abrasive formula;
- Use of a protective occlusal guard if attrition due to bruxism is present;
- Use of a neutralizing agent such as sugar-free antacids held in the mouth after acid exposure;
- Oral health education and drink and food guidance should be strengthened. The amount and frequency of intake of acidic food and drink should be reduced to promote oral health.

Oral complaints – practical dental recommendations

Halitosis, dysgeusia (5, 6, 12, 13).
- Wash your teeth twice a day – at least three minutes;
- Use teeth floss;
- Clean your tongue – thus reducing the number of dead cells and bacteria;
- Use a mouthwash;
- Take probiotics – oral and systemic;
- Chew gum, mint, cloves or fennel;
- Mild baking soda mouthrinses are recommended to minimize dysgeusia caused by acid reflux.

Xerostomia (14)
- At least 2 liters of liquids intake a day (patient can hold ice chips in his or her mouth to provide moisture to the mouth).
and possibly alleviate symptoms);  
- Products promoting salivary gland secretions – cholinergic drugs such as pilocarpin, lemon juice, chewing gum;  
- When conventional medical interventions do not provide satisfactory relief, it is recommended saliva substitutes and oral lubricants to be administered. The volume of stimulated and unstimulated saliva could also be measured.

Conclusions
One way that dental professionals can be proactive in preserving and protecting the dental health of their patients is to be aware of any factors that may affect the dentition. Recognized oral manifestations (oral signs and symptoms) of gastrointestinal disease may be useful to the gastroenterologist in the diagnostic process for patients with gastrointestinal complaints. Good dental care, early recognition and patient education is the most effective behavior with these patients.

REFERENCES