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Review Article

**ORAL HYGIENE AND GINGIVAL STATUS IN ORTHODONTIC
PATIENTS: A SYSTEMATIC REVIEW**

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Abstract:

The main aim of this study was to identify periodontal problems before orthodontic treatment, determine the correct treatment plan to ameliorate these problems, and sequence the orthodontic and periodontal therapy correctly to enhance the patient's periodontal health. This article describes the responsibilities of orthodontists for diagnosing periodontal problems and discusses the interdisciplinary management of several periodontal problems requiring orthodontic intervention. The aim of this article is to review oral care products to maintain oral health during orthodontic treatment.

The proper selection of hygiene products is one of the most important questions. Nowadays, the amount of hygiene products is extremely large. Annually, dental companies present new products of oral hygiene. The main tool for removing plaque is a toothbrush. Manual, electric, ultrasonic brushes allow cleaning even «hard-to-reach» tooth surfaces. Fabricant E.G. [15] found that the use of a toothbrush with the small working part (width of 10 mm and a length of 22 mm) allows achieving the highest level of oral hygiene.

Key words: *orthodontic and periodontal therapy, Floss*

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INTRODUCTION:

Most orthodontic patients with fixed appliances are adolescents. . Except unusual situations, younger patients generally have a healthy periodontal tissue. Some uncooperative patients may develop gingival inflammation, though the majority of children and adolescents do not experience alveolar bone loss during orthodontics, because of currently, orthodontists are treating more adult patients. The percentage of adults in some orthodontic offices is more than 40%. Many of these patients have underlying periodontal problems that could become worse during orthodontic therapy. It is important for orthodontists to identify periodontal problems before orthodontic treatment, determine the correct treatment plan to ameliorate these problems, and sequence the orthodontic and periodontal therapy correctly to enhance the patient's periodontal health. This article describes the responsibilities of orthodontists for diagnosing periodontal problems and discusses the interdisciplinary management of several periodontal problems requiring orthodontic intervention.

As malocclusion has been shown to affect periodontal health[1] and so one of the objectives of orthodontic treatment is to promote better dental health. Treatment contributes to better oral hygiene by correcting dental irregularities and reduces (or eliminates) occlusal trauma. Due to these reasons, it seems that orthodontic treatment improves periodontal status as straighter teeth are easier to clean, and perhaps having all teeth in right position a healthier periodontium.[2]

The effects following the insertion of orthodontic appliances on the tooth's surfaces can contribute to chronic infection, inflammatory hyperplasia, irreversible loss of attachment (permanent bone loss), and gingival recession. Although an association between orthodontic tooth movement and gingival recession has been mentioned in both the orthodontic and the periodontal literature, many of these studies are relevant to mandibular incisor teeth. Some investigators have shown gingival recession to be associated with labial movement of the mandibular incisors and have therefore considered this movement as a risk factor for gingival recession,[6,7] while others have found no such association between orthodontic tooth movement and gingival recession.[8,9,] Moreover, it is argued that preexisting mucogingival problems can be exacerbated with orthodontic force application.[6,9]

Materials and methods

Toothbrushes

According to Leus PA [12], the main affordable and effective method of prevention of periodontal disease is regular and accurate individual oral hygiene, the purpose of which should be the maximum mechanical removal of dental plaque and prevention of formation of dental calculus.

The aim of this article is to review oral care products to maintain oral health during orthodontic treatment. The proper selection of hygiene products is one of the most important questions. Nowadays, the amount of hygiene products is extremely large. Annually, dental companies present new products of oral hygiene. The main tool for removing plaque is a toothbrush. Manual, electric, ultrasonic brushes allow cleaning even «hard-to-reach» tooth surfaces. Fabricant E.G. [15] found that the use of a toothbrush with the small working part (width of 10 mm and a length of 22 mm) allows to achieve the highest level of oral hygiene.

Ulitsky SB., Smirnov S.S.[13], Ulitsky SB., Kalinina OI[11]reported a higher cleaning efficiency of the electric toothbrush compared to manual. Regarding to this, the use of electric toothbrush leads to decrease of inflammation in periodontal tissues in comparison to brushing teeth with a manual toothbrush. [10]

According to Bazan SV.[14], the use of an ultrasonic toothbrush "Ultrasonex" reduces gingival bleeding up to 60% and reduces the degree of inflammation of the gums up to 28%. Stanford CM. et al. [16] said ultrasonic toothbrush capable to remove more than 70% of plaque when the bristles are located at 2-3 mm from the sample surface. This type of brushes remove plaque from the visible surfaces of teeth up to 40% more efficiently and cleans approximal surfaces 82% better than a manual brush, that reverse gingivitis (Kugel G., Boghosian AA,)[17]. The use of an ultrasonic toothbrush is particularly effective in patients with dental implants and bracket systems (Costa M.R. et al,).[18]

Floss

The effectiveness of the prevention of periodontal disease significantly increases by using of interdental hygiene. According to Polyanskaya L.N. [19], the use of dental floss reduced gum inflammation in the area of the contact surfaces of teeth by 28.3%. Rational oral hygiene using a toothbrush and toothpaste is an integral part of oral hygiene, however, in the treatment of non-removable

Orthodontic appliances using only mechanical methods, it is often not always possible to remove the plaque and the microorganisms contained in it completely. As an available method of improving the hygienic condition of the oral cavity, along with the mechanical removal of dental plaque, solutions for rinsing the oral cavity are widely used.

Mouthwash

Mouth rinses are considered as an addition to the mechanical cleaning of the oral cavity from plaque. The rinse has a liquid consistency, which allows it to easily penetrate into hard-to-reach surfaces of the oral cavity.

It has been established that oral rinses increase the efficiency of dental plaque removal, have an antiseptic and anti-inflammatory effect. At the moment, a variety of mouth rinses is very large.

The mouthwash should perform a variety of functions: improve the cleaning of tooth surfaces, prevent the formation of plaque, deodorize the oral cavity, have a pleasant, non-irritating taste, be safe to use, contain active ingredients that contribute to the prevention and treatment of hard dental tissues and periodontal tissues.

In clinical practice, as a prophylaxis and treatment of inflammatory diseases of periodontal tissues, antiseptic rinses are used in the treatment of dental anomalies with fixed orthodontic appliances. The active components of antiseptic solutions are chlorhexidine, triclosan, phenolic essential oils, and cetylpyridine chloride.

Virtually all available conditioners used for the prevention and treatment of inflammatory diseases of periodontal tissues contain alcohols or active ingredients, the use of which is limited in time, the accidental ingestion of which is strictly contraindicated. These aspects lead researchers to search for new mouthwash that will have no contraindications to use and time use restrictions.

A good way is mouthwash based on natural ingredients. This type of mouth rinse aids can be used by children, pregnant women and diabetics and good alternative for patients with fixed orthodontic appliances, as they can be used continuously throughout the entire orthodontic treatment.

CONCLUSIONS:

Average visible plaque and inflammation values increase during orthodontic treatment. Therefore, before receiving orthodontic treatment, the periodontal health of the patient should be the

highest possible level and this has to be maintained during the treatment.

The intensity and prevalence of inflammation in periodontal tissues in patients with fixed braces is quite high. Literary data indicates a variety of methods in prevention and local treatment of inflammatory periodontal diseases, affecting different parts of their pathogenesis. However, the problem of preventive dentistry is to control the formation of plaque - the main etiological factor of the development of inflammation in periodontal tissue - via designing restrict recommendations which of oral hygiene products to use.

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