



Clear Aligners Treatment and Periodontal Health: A Review Article

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ABSTRACT

Clear aligners treatment has been introduced in recently to satisfy the aesthetic and comfort requirements of orthodontic patients. However, similar to any other treatment, orthodontic procedures have complications. Periodontal issues are one of the most observed side-effects associated with orthodontics, increasing prevalence of orthodontic treatment in adults, clear aligner treatments are becoming more famous, orthodontic force applied to achieve movement of teeth may aggravate periodontitis in patients with poor oral hygiene. The application of clear aligner in the treatment of periodontal diseases has better results when compared to fixed appliance therapy.

Keywords: Clear aligners; Orthodontics; Orthodontic appliance; Periodontal health; Periodontal disease.

INTRODUCTION

Clear aligners, also know as invisible aligners, fix mal-aligned teeth. They are a virtually invisible and are removable alternatives to fixed metal braces designed for convenience and flexibility. The aligner trays are made of BPA-free plastic and are customized for every patient. Each tray slowly moves the teeth in tiny increments. Aligner trays are routinely swapped out every 2 to 3 weeks until the teeth are straight and aligned. The number of trays needed depends on the severity of called malocclusion. Some aligners do not touch gingiva at all. They are trimmed to comfortably sit along the gum line in a 'scalloped fashion.' This design makes the trays less irritating and even more 'invisible.' Depending on the brand, clear aligners can fix the following teeth alignment issues: Crowded teeth, Overbites, Underbites, Diastema, Open bites¹. Orthodontic treatment makes sure proper alignment of the teeth and improves the occlusal and jaw relationship. This not only aids in better mastication, speech, and facial aesthetics, but also contributes to general and oral hygiene. Similar like any other treatment ways, orthodontic treatment also has associated risks and complications. Periodontal health is an essential factor that can be used to assess the success of orthodontic therapy even the clean aligner therapy.

PERIODONTAL EFFECTS OF ORTHODONTIC THERAPY

The periodontal negative effects that might come along with orthodontic therapy mainly include gingivitis, periodontitis, gingival recession or hypertrophy, alveolar bone loss, dehiscence and fenestrations, interdental fold. Presence of microbial plaque is reported to be the most essential factor in the initiation, progression, and recurrence of periodontal disease in reduced periodontium. Both patient-related factors and the method of therapy are contributing factors in periodontal problems. Orthodontic treatment and the procedures are known to start both good and bad local soft-tissue reactions in the gingiva. The negative reaction is chiefly linked with gingivitis⁴. Orthodontic appliances also create additional retention surfaces and spaces for adhering of microorganisms and growth of biofilm. The accumulation of plaque on orthodontic brackets causes difficulty for patients to maintain their oral hygiene and leads to increase in pocket depth and worsens the periodontal status. Orthodontic treatment is known to alter the balance of the oral microbiota by increasing bacteria retention. Root resorption is a common negative feature associated with orthodontic treatment. Orthodontic brackets and elastics can interfere with the proper scraping of dental plaque, hence increasing the risk of periodontal diseases. Some kind of gingival activity is always visible in orthodontic treatment.

CLEAR ALIGNERS AND PERIODONTAL HEALTH

Clear aligner is a type of removable orthodontic appliance, which designed and manufactured using digital technology. Clear aligner treatments are rapidly becoming associated with the comprehensive treatment planning approach within orthodontic practices to help facilitate good periodontal health⁶. Clear aligner treatment in patients with moderate and mild periodontal diseases can achieve great result. however, there are risks in the clear aligner treatment in patients with severe periodontal diseases. The shape of the aligners is designed to reduce the gingival stimulation. Clear aligners can be an effective and suitable option to treat periodontal issues by means of proper 3D planning of dental movements. The main components are clear plastic splints that cover all of the teeth and the marginal aspects of the gingiva and slowly move the teeth into an ideal position. It has been reported that periodontal health is affected by this treatment, although the clear aligners cover the teeth and partially cover the keratinized gingiva. Because the aligners

are removable, maintaining good oral hygiene is not hampered. But most studies on clear aligner therapy were done in young patients with healthy periodontium. The studies by Low *et al.* and Levrini *et al.* regarding the quality and morphology of the oral biofilm of patients treated with clear aligners stated, that biofilm starts forming on the raised edges or textural surfaces of the aligners and that the types of bacteria included in the biofilm were associated to a low risk of periodontal diseases. Clear aligners seem to be a safe procedure for periodontal tissues when compared to fixed appliance therapy, with reference to the measure of possible plaque retention. This seems to be due to the removable type of aligners, easing oral hygiene procedures, and to the decreased amount of plaque retentive surfaces. Considering all these reviews, Clear aligners could also be indicated in the orthodontic therapy of patients with bad periodontal health.

CONCLUSION

According to studies Periodontal health, both quantity and quality of plaque, were better during clear aligners therapy than during fixed appliance therapy. The use of clear aligner therapy can positively impact a patient's overall health and the long-term effectiveness of the dental treatment. Aligners offer superior gingival conditions however, the crucial role of oral hygiene procedure, which is more important than the type of appliance chosen. Patients treated with clear aligners are less subject to plaque accumulation than those with fixed orthodontic appliances

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