|| ISSN(online): 2589-8698 || ISSN(print): 2589-868X ||
International Journal of Medical and Biomedical Studies
Available Online at www.ijmbs.info
NLM (National Library of Medicine ID: 101738825)
Index Copernicus Value 2021: 70.61
Volume 7, Issue 4; April : 2023; Page No. 42-46

Review Article

Is it Safe to Undergo Orthodontic Therapy in Periodontitis Patient? A Review and a Case-Report

Dr. Shikha Parihar[1], Dr. Benny Budhwar[2], Dr. Viniti Goel[3], Dr. Deepak Grover[4], Dr. Jaspreet Kaur[5], Dr. Parul Sharma[6]

[1]Post Graduate Student*, [2]M.D.S. Orthodontics and Dentofacial Orthopaedics, [3]Professor & Head*, [4]Professor*, [5]Post Graduate Student*, [6]Private Practitioner*, [1,3,4,5] Periodontology & Oral Implantology,**

Bhojia Dental College & Hospital Department of Periodontology & Oral Implantology, Bhojia Dental College and Hospital Budh, Baddi, Dist. Solan, Himachal Pradesh.

Received: 27-02-2023 / Revised: 09-03-2023 / Accepted: 05-04-2023
DOI : https://doi.org/10.32553/ijmbs.v7i4.2691
Corresponding author: Dr. Shikha Parihar
Conflict of interest: No conflict of interest.

Abstract

The interdisciplinary relationship between periodontics and orthodontics is a highly demanding, complex clinical need of the time which requires meticulous diagnosis, treatment planning for successful long-term prognosis. The periodontal status of even young patients has been altered so it is of utmost importance that orthodontic patients has to be ruled out suffering from plaque induced gingivitis and compromised periodontal status. It is the role of the orthodontist to screen the disease, make provisional diagnosis and refer to a periodontist for immediate treatment as without periodontal therapy the severity and extent of the disease may progress. So, the orthodontist has a great role in bringing up awareness not only before starting the appliance therapy, but also during and after the active mechanotherapy. This paper has emphasized the potential of orthodontic therapy in improving or degrading periodontal health and so the relevance of periodontal planning prior and during orthodontic treatment.

Key Words: Interdisciplinary, Periodontics, Orthodontics, Plaque related gingivitis

Introduction

The demand for the orthodontic therapy increased many folds in recent decades that it has become a challenge for an orthodontist to educate and reinforce oral hygiene behavior in patient to prevent plaque accumulation and eventually periodontal disease as each patient is different and so require a specific treatment plan.[1] The etiopathogenesis of periodontal disease is multifactorial, showing a complex interaction between microorganisms and host response in which microbial dental biofilms are considered as the main etiological agents for the initiation of inflammation.[2] So, the meticulous control of periodontal pathologies before, during and even after orthodontic therapy, is very important to provide the marvelous results and deep-rooted stability.[1]

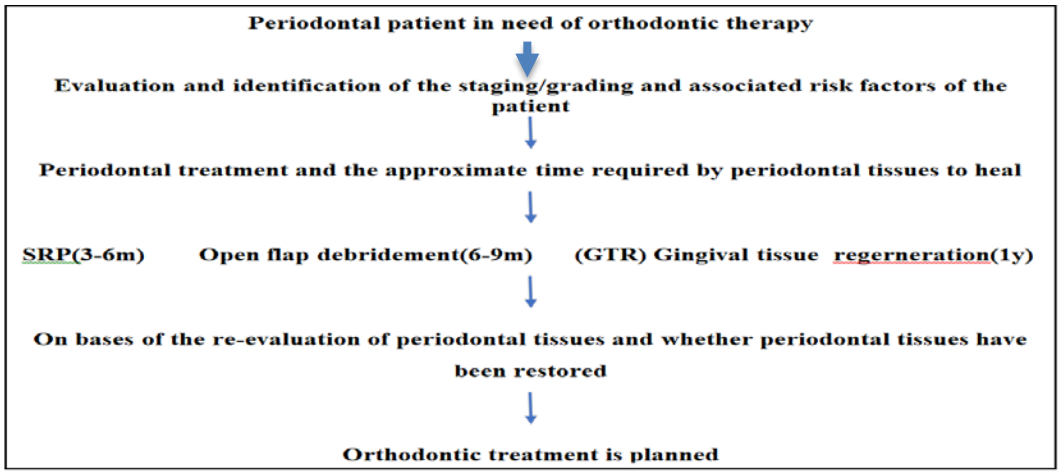
Diagnosis

Dental therapies usually have two approaches, i.e., 'causal' and 'symptomatic'. Before continuing with the treatment it is important to contemplate and diagnose compromised periodontal patients on the basis of history, clinical examination, and radiographs in order to be sure of any promising risk factors.[3] Periodontal health is a prime factor in

the success of orthodontic treatment as the periodontal disease can be seen progressing from gingivitis to periodontitis in which gingival recession, gingival enlargement, alveolar bone loss, dehiscence, fenestration, and dark triangles can be seen. For the success of orthodontic therapy, oral hygiene instructions as well as scaling and root planning is a part of supportive periodontal therapy that must be followed.[4]

Multidisciplinary Treatment Plan

Even Though It Is Usually Anticipated That Orthodontic Therapy should start after the complete healing of previously compromised periodontal tissues, the literature still remains uncertain about the best time to start orthodontic movement after the periodontal treatment i.e., immediately after scaling and root planing (SRP), 1 to 2 weeks, 2 to 6 months, or 8 to 12 months after active periodontal therapy. Precise answers to such questions remain obscure, demonstrating that "a grey zone" reside in the orthodontic treatment of periodontally compromised patients.[4] However, orthodontic tooth movement must begin usually in a healthy periodontium. Such as, in case of infrabony defects of 4–5 mm deep after the initial periodontal treatment, despite the favored approach, the surgical stage should be followed by a healing time before the initiation of orthodontic treatment. Non-surgical phase healing time can be reduced with laser therapy. In case if implants are planned and placed before the completion of orthodontic treatment, there are various factors which help in decision making before orthodontic treatment in reduced periodontium and regenerative periodontium (Figure 1).



Periodontal Considerations during Adult Orthodontic Treatment

A healthy periodontium is extremely required for any kind of dental procedure, may it be orthodontic or prosthodontic and so must be handled and respected carefully. In patients, even though periodontal tissues might be reduced and have compromised long-lasting capacity, they should be free of inflammation. A multidisciplinary assessment should be done to evaluate the patient's age; the severity of periodontal disease (i.e., grade/stage); the influence of pre-existing systemic conditions; and patient's lifestyle and compliance with the proposed combined therapies.[4] Each tooth movement induces remodelling and reorganization of periodontal tissues which is of vital importance in teeth with reduced periodontium as further loss of periodontal support results in increased crown-root ratio

which would need certain care in order to avoid further periodontal tissue destruction. Specific attention should be paid to avoid when possible, bulk elements such as bands or other orthodontic components placed close to gingival margin that apart from plaque retention might cause marginal gingival injury and attachment loss. For that reason, "Special periodontally friendly bands" are being designed which is more hygienic than the conventional bands and easy to maintain.[6] Also, with the demand of esthetics and the modification in technology, orthodontic treatments based on removable appliances or aligners have been increased ten folds. The advantage with them is that they permit unimpeded oral hygiene and result in better periodontal health. However, any treatment without the patient's compliance can never be successful. So, the patient education and the regime followed by patient to maintain his hygiene should be followed.[7]

Orthodontics as a Tool for Periodontal Health Enhancement

The demand of aesthetics is the major concern these days among the young population which have made the orthodontic therapy a major demand. Extrapolation of animal studies' findings to human conditions has been questioned, mostly because of the specific pattern of attachment loss that occurs on humans.[5] Orthodontic therapies enhance periodontal health due to their ability to create an adequate dental environment. They can also contribute, in adjunct with periodontology, to the correction of certain aesthetic and functional defects associated with periodontitis such as through reduction of intraosseous defects or furcation lesions, reduction in gingival recession, black triangles etc.[1]

After Completion of Orthodontic Therapy

The critical factor in the orthodontic treatment is the maintenance of final orthodontic result, considered as the third phase of orthodontic therapy and its major long-term goal. Post-orthodontic relapse has been mainly associated to elasticity of gingival tissues that are compressed towards the direction of tooth movement. The time period for retention should surpass the time for remodelling of periodontal fibres, which usually ranges from 4 to 6 months.[5] The retainers consists of two big categories of removable and fixed ones. Removable retainers are considered best if periodontal health is considered, but poor compliance by patient may result in relapse. Fixed retainer may contribute to plaque retention but at the same time assures firm position, satisfying the long-term stability.The bulky fixed retainers that block easy access through interdental spaces should be avoided and patients should be given exhaustive instructions for appropriate oral hygiene maintenance.[6]

Case Report

A patient of aged 20 years was referred to the department of Periodontology and Oral Implantology from the department of Orthodontics and Dentofacial Orthopedics with the chief complaint of unaesthetic appearance and bleeding from gums. History of present illness revealed gingival enlargement since last 1 month with the presence of bleeding on probing. Patient also revealed sensation of cold in all teeth. On Intra-oral examination gingival enlargement was observed in the 22, 23 tooth region. The clinical attachment level (C.AL.) came out to be 4mm on mesio-buccal, 6mm on mid-buccal and 3mm on disto-buccal for 22 and 2mm on mesio-buccal, 3mm on mid-buccal and 3mm on disto-buccal for 23. No relevant medical history was present. An informed consent was obtained. Following which the surgical procedure was performed.

Surgical Procedure:

- Proper aseptic conditions and proper sterilization protocol was followed.

- Patient was advised to do oral rinse with chlorohexidine mouthwash 0.2%.
- Surgical site was anesthetized by local infiltration with 2% lignocaine containing 1:80000 adrenalines.
- Once the site was anesthetized, bleeding points were marked with pocket marker on the gingival tissue to be excised.
- Diode laser of 800 nm wavelength was used at 0.8 watts for gingivectomy.

Post-operative instructions were given to the patient. The patient was dismissed and instructed to avoid spicy foods and to use warm salt water rinses three to four times daily after 24 hours of surgery until he presented for the follow-up appointment. Patient was advised to maintain oral hygiene. Oral hygiene instructions were reinforced to the patient. Tab. Combiflam S.O.S. was given to the patient. Following which patient was instructed for a follow up. On the 8th day irrigation was done, healing was found to be satisfactory. Oral hygiene instructions were repeated.

CLINICAL PHOTOGRAPHS

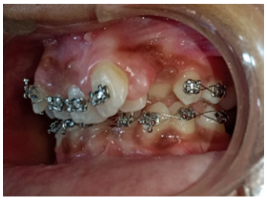


FIGURE 2

PRE-OPERATTIVE PHOTOGRAPH

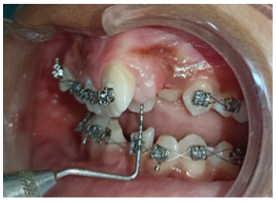


FIGURE 3

PRE-OPERATTIVE PHOTOGRAPH WHILE RECORDING C.A.L.

FIGURE 4

POST-OPERATTIVE PHOTOGRAPH

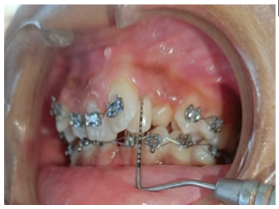


FIGURE 5

POST-OPERATTIVE PHOTOGRAPH AFTER A WEEK

Discussion

The orthodontic treatment of patients with periodontal disease should always be conducted in association with other specialties to achieve good results. Often cases of crowding and rotation along with orthodontic devices may complicate the oral hygiene by promoting the accumulation of pathogenic anaerobic bacteria which increases the risk of periodontal disease, leading to alveolar bone loss and compromising tooth longevity. Therefore, it is important to aware the orthodontic patient about oral hygiene importance and should be trained by orthodontist for using charter's brushing technique in which firm but gentle strokes about 20 at each position for about 2-3 minutes are demonstrated by dentist for the prevention of plaque accumulation as well as stimulation of gingiva. It is believed that the placement of an orthodontic appliance complicates the hygiene measures and thus favors the risk of gingival inflammation. In case of deficient keratinized tissue, orthodontic treatment on a reduced periodontium would enhance the risk of periodontal tissue destruction. Orthodontic bands may led to inflammation of the periodontal supporting tissue if the edges of the band does not fit properly and are placed close to gingival margin for which it must be remembered that the bonding points must be kept as far away from the gum line as possible to preserve the periodontium.[1] Levin et al.[9] show that the closer the device is to the gum,

the higher plaque indices and formation of dental calculus. As in our case, due to orthodontic treatment, patient was unable to maintain oral hygiene leading to accumulation of plaque and disruption in microbial flora which eventually led to gingival inflammation. So, it is important that the orthodontist must work in conjunction with a periodontist to maintain an adequate dental environment in a way that the functionality and the aesthetics of the patient can be maintained.[1]

Conclusion

Orthodontic treatment is an important aid in the treatment and control of periodontal disease, as it promotes the correct management of the periodontium and facilitates oral hygiene and biofilm control. Bracket placement is a key factor in maintaining the periodontal health. The position of bracket usually depends on smile arc of placement. Even though each case is different and so the position of bracket varies in each case such as maxillary brackets are usually positioned more gingivally. So, bracket should be placed in a way that it is in harmony with periodontium and patient is able to maintain his oral hygiene. However, the lack of an accurate diagnosis and treatment planning can lead to failure and relapse of orthodontic treatment. So, it is must to have an interdisciplinary approach followed by regular follow up of the patient as orthodontic treatment is possible only when the disease is brought under control via careful monitoring before, during, and after the active therapy.[10]

References

1. Amal EA, Hajar B, Ousehal L, Quars FEL. "Severe periodontitis and orthodontics: Case reports and literature review". International Journal of Current Research 2022; 14(5):21487-90.
2. Goyal S, Jajoo S, Nagappa G, Rao G. Estimation of relationship between psychosocial stress and periodontal status using serum cortisol level: A clinico-biochemical study. Indian J Dent Res 2011; 22(1):6-9.
3. Sofaer JA. Genetic approaches in the study of periodontal diseases. J Clin Periodontol 1990; 17(7):401-8.
4. Pini Prato GP, Chambrone L. Orthodontic treatment in periodontal patients: The use of periodontal gold standards to overcome the "grey zone". J Periodontol 2019;1–5.
5. Kalamaj Z, Anastasiou AD, Jha AR, Grassi F. Periodontal considerations in adult orthodontic patients. In: Periodontitis- A useful reference. London: IntechOpen 2017;00:1-5.
6. Gyawali R, Bhattarai B. Orthodontic management in aggressive periodontitis. Int Sch Res Notices 2017:1-8.
7. Azaripour A, Weusmann J, Mahmoodi B, Peppas D, Gerhold-Ay A, Van Noorden CJF et al. Braces versus Invisalign®: Gingival parameters and patients' satisfaction during treatment: A cross-sectional study. BMC Oral Health. 2015; 15(1):69.
8. Tondelli PM. Orthodontic treatment as an adjunct to periodontal therapy. Dental Press J Orthod 2019;24(4):80-92.
9. Hazan-molina H, Levin L, Einy S, Aizenbud D. Aggressive periodontitis diagnosed during or before orthodontic treatment Acta Odontologica Scandinavica 2012.
10. Thomas RP. Bracket positioning for smile arc protection. J Orthod 2017; LI(3):142-56.