

Periodontally Compromised Adult Patient Treating with Light Force in Fixed Mechanotherapy: A Case Report

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Abstract:

Periodontal disease and its sequelae often lead to an unesthetic appearance and functional problems which may be also associated with restorative problems. Adult orthodontic therapy has a role in providing a complete rehabilitation in terms of both appearance and function with a satisfactory long-term prognosis, if the patient is reasonably motivated and responds well to the initial periodontal therapy. In this case report of patient who underwent orthodontic treatment because of right anterior spacing. The bone health of upper and lower anterior teeth was compromised. At the end of treatment, there was marked improvement in the bone level and profile of the patient.

Key words: Periodontium, light force, compromised bone.

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INTRODUCTION

Dentistry has undergone significant evolution in the last two decades; there is tremendous focus on cosmetics today. The relationship between a person's physical appearance and his self-esteem is well documented.¹

Orthodontic treatment has become one of the most commonly carried out treatment procedure in the present generation and more and more adult patients are in verge of accepting treatment because of improved and more developed diagnostic and treatment technique.¹ Periodontitis is an inflammatory disease associated with a bacterial infection.⁶

Ngom et al.³ found significant correlations and suggested that malocclusions are risk markers for periodontal diseases.⁴

Multidisciplinary approach is often necessary to treat complex dental problems in our patients and there cannot be a better example than ortho-perio interaction.⁵ Orthodontic treatment is based on the

principle that if prolonged pressure is applied to a tooth, it will move as the surrounding bone remodels. Hence it is mandatory to see that good periodontal health should present before, during and after orthodontic treatment.⁵

The presence of microbial plaque, most important factor in the initiation, progression and recurrence of periodontal problems.

Many adult patients seek orthodontic treatment for aesthetic improvement due to the malalignment of the anterior teeth secondary to periodontal breakdown.⁵

The combination of orthodontic intrusion and periodontal treatment has been shown to improve periodontal conditions which leads to maintained oral hygiene.⁸

Therefore, the field of orthodontics should consider the combined regenerative and periodontal surgical treatments an invaluable addition to the

armamentarium available for the orthodontic treatment of adult patients with severe loss of periodontal tissues. Similarly, the field of periodontics should recognize the importance of orthodontic intervention in achieving results unattainable with periodontal treatment alone.⁵

Case Report

A female patient at age of 21years old, complains of spacing in upper front region of teeth. On examination, the patient was in good health and had

no history of medical problems. On clinical examination shows class I skeletal base with proclined maxillary and mandibular anterior teeth with spacing.

On periodontal examination, the left maxillary central incisors was extruded and right lateral incisor was proclined and found to have deep pockets mesially and distally [Figure 2]. A probing depth of 6 mm, 5 mm and 5 mm was found in relation with left central, and right lateral incisor respectively.

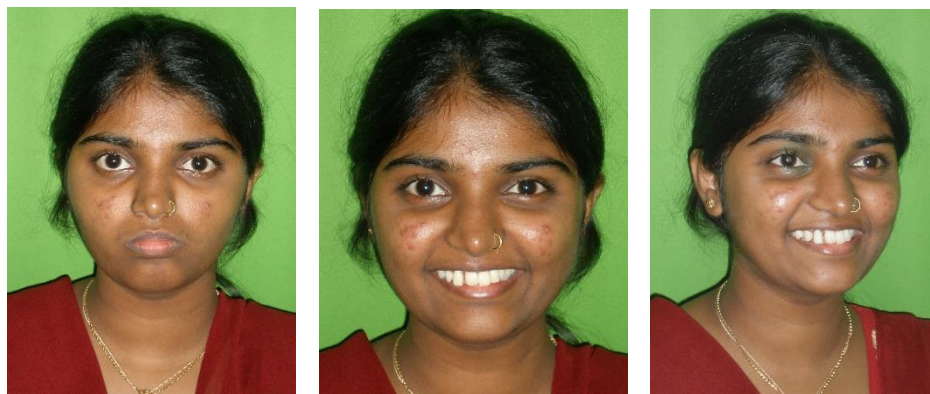


Figure 1: Pretreatment extra-oral photographs



Figure 2: Pretreatment intraoral photographs

There was no evident pus discharge, though bleeding on probing was present. Patient was advised for periodontal therapy.

Initial treatment consisted of scaling, root planning and surgical curettage in relation to the maxillary anterior teeth, followed by adjunctive orthodontic therapy.

After inter departmental discussion on the treatment plan, it was decided to proceed with following steps in this case:

Phase I therapy comprising of scaling and root planning before orthodontic treatment.

Continuous monitoring of periodontal health with periodic scaling and root planning to improve the attachment was coordinated by the periodontist.

After the initial treatment, we started with the orthodontic treatment. Special attention was taken in using light forces to achieve leveling and

aligning. Fixed mechanotherapy was started using preadjusted edgewise appliance, MBT prescription 0.022" slot. In the maxillary and mandibular arch, alignment was started using 0.014" NiTi archwire and was followed by 0.016, and 0.018 NiTi followed by adequate leveling and aligning in both the arches, upper and lower 0.019"×0.025" NiTi archwires were given followed by 0.019"×0.025" SS archwires with loop distal to the lateral incisor. As soon as an 0.019"×0.025" SS archwires was inserted, retraction of anterior teeth was performed using active tiebacks.

This helped us to intrude and retract the anterior segment as well as to convert the horizontal bone defect to a vertical defect.

Continuous periodontal follow-up comprising of scaling and root planning in the anterior region was performed with favourable results.



Figure 3: Mid treatment intra-oral photographs

To achieving the short term orthodontic objectives such as alignment, good contacts, absence of rotations, class I occlusion with good cusp to fossa relation and good facial balance in periodontally compromised patients receiving orthodontic procedures in require extensive periodontal care/consideration to maintain the periodontium in a healthy condition during and after treatment.

Minor periodontal surgery may be required to prevent relapse after orthodontic treatment. In addition, it also required the lingual bonded retainers on a long-term basis.

Since there is a close relationship between orthodontic treatment and periodontal health and vice versa, an understanding of the ortho-perio

relationship will help in bringing the best possible results in needy patients.

Result achieved

The case was finished with Class I incisor relationship with normal overjet and overbite. The right and the left buccal segment finished with a Class I molar and canine relationship. All rotations were corrected by the end of the treatment. No signs of root resorption in lower anterior teeth were noted and smile esthetics was significantly improved[Figure 4].

Comparison of pretreatment and posttreatment reveals good esthetic and functional result[Figure 5]



Figure 4: Post treatment intra-oral photographs



Figure 5: Post treatment extra-oral photographs

Discussion

The goal of orthodontic treatment is not only to improve facial esthetics and function but also to address the health of supporting structures and how teeth are placed in them. Elongated and spaced incisors are common problems in patients suffering from severe periodontal disease.

Lighter orthodontic force systems should be applied to periodontally compromised teeth as they can move easily, and greater orthodontic forces may negatively affect the periodontal membrane. It is essential that periodontal treatment with elimination of the plaque induced lesion be performed before the initiation of orthodontic treatment. Maintenance of excellent oral hygiene during the course of treatment is equally important. Schwarz postulated that forces of about 25 gm/cm² equal to blood pressure of PDL terminal capillaries should be optimal for tooth movement, while larger forces would block PDL blood flow, leading to tissue necrosis at compressed areas. Hence, necrosis caused is not due to the direct destructive effect of large orthodontic force but rather to stagnation of blood supply to the area. Due to the low force of 10 to 25 gm that was used in the patients there were no detrimental effects in the pulp.

Controlling plaque and eliminating inflammation are extremely important during the orthodontic treatment of patients with periodontal disease. Once orthodontic treatment is finished, the maintenance phase begins. The patient is required to be reviewed every 3–6 months to prevent reinfection and recurrence.^{11,12}

Conclusion

Since there is a close relationship between orthodontic treatment and periodontal health and vice versa, an understanding of the ortho-perio relationship will help in bringing the best possible results in needy patients.

Reference

1. Claman L, Alfaro MA, Mercado AM. An interdisciplinary approach for improved esthetics result in anterior maxilla. *J Prosthet Dent* 2003;89(2):1-5.

2. Ngom PI, Benoist HM, Thiam F, Diagne F, Diallo PD. Influence of orthodontic anomalies on periodontal condition. *Odontostomatol Trop* 2007;30(4):9-16.
3. Griffiths GS, Addy M. Effects of malalignment of teeth in the anterior segments on plaque accumulation. *J Clin Periodontol* 1981;8(1):481-90.
4. Diedrich P, Fritz U, Kinzinger G. Interrelationship between periodontics and adult orthodontics. *Periodontology* 2000 2004;1(11):143-9.
5. Ramachandra CS, Shetty PC, Rege S, Shah C. Ortho-perio integrated approach in periodontally compromised patients. *J Indian Soc Periodontol*. 2011;15(4):414-7.
6. Sidana A, Tandon R, Srivastava SC. Quantitative changes in anaerobic subgingival microbiota in patients, before and during fixed orthodontic treatment. *J Indian Orthod Soc* 2017;51:147-15
7. Padmanabhan R, Deviah S, Suchindran, Kumar P, Singh GD. Treatment of Periodontally Compromised Teeth using Adjunctive Orthodontic Therapy: A Multidisciplinary Approach. *J of Ind Ortho Soc* 2010;44(4):115-18.
8. Management of periodontally compromised patient by orthodontic treatment: Does it help esthetically and biologically? *Contemp Clin Dent*. 2012;3(2):215-8.
9. Chung CH, Vanarsdall RL, Cavalcanti EA, Baldinger JS, Lai CH. Comparison of microbial composition in the subgingival plaque of adult crowded versus non-crowded dental regions. *Int J Adult Orthodon Orthognath Surg* 2000;15(6):321-30.
10. Williams S, Melsen B, Agerbaek N, Asboe V. The orthodontic treatment of malocclusion in patients with previous periodontal disease. *Br J Orthod* 1982;9(11):178-84.
11. Mathews DP, Kokich VG. Managing treatment for the orthodontic patient with periodontal problems. *Semin Orthod* 1997;3:21-38.
12. Kim YI, Kim MJ, Choi JI, Park SB. A multidisciplinary approach for the management of pathologic tooth migration in a patient with moderately advanced periodontal disease. *Int J Periodontics Restorative Dent* 2012;32(5):225-30.