Case Report

Orthodontic management of a periodontally compromised patient

ABSTRACT

Today many adult patients with periodontal disease demonstrate malocclusions that compromise their esthetics and ability to maintain oral hygiene. With adequate combined orthodontic-periodontal treatment it is possible to correct malocclusion and re-establish a healthy and well-functioning dentition. However, while orthodontic treatment can realign periodontally affected teeth, esthetic appearance may be compromised by gingival recession due to alveolar bone dehiscences or fenestrations in combination with a thin gingival biotype. This article reports an interdisciplinary (orthodontic and periodontic) approach for the treatment of a periodontally compromised patient with spacing in anterior dental region. Periodontal therapy, including periodontal plastic surgery to obtain root coverage as well as orthodontic treatment by means of a fixed appliance was used to achieve stable periodontal conditions and successful esthetic and functional final results.

Keywords: Interdisciplinary approach, orthodontic tooth movement, periodontal therapy

INTRODUCTION

Orthodontic tooth movement may provide a substantial benefit to periodontal therapy. Patients with periodontal disease exhibit problems with tooth malpositioning that compromise their esthetics and ability for proper mechanical tooth cleaning. The correction of malpositioned teeth improves facial esthetics and permits the patient better access for oral hygiene. Adequate periodontal and orthodontic treatments have been shown to improve the periodontal condition and to re-establish a well-functioning dentition provided that an efficient plaque control is maintained.[1] Moreover, orthodontics gives the opportunity to improve the appearance of the esthetic zone. However, a different orthodontic treatment approach is required in periodontally compromised patients in terms of stabilizing anchorage system, force system, retention, as well as plaque control during treatment.

This clinical report describes an interdisciplinary (periodontic and orthodontic) approach for the treatment of a periodontally compromised patient with anterior dental spacing. Periodontal therapies, including periodontal plastic surgery as well as orthodontic treatment by means of a fixed appliance were used to achieve stable periodontal conditions and successful esthetic and functional final results.

CASE REPORT

A 22-year-old female patient reported to the Department of Orthodontics and Dentofacial Orthopedics, SVS Institute of Dental Sciences, with the chief complaint of bleeding gums and increasing frontal spacing in the maxillary and mandibular teeth. There was no history of medical ailments. Extra oral examination revealed no gross facial asymmetry, incompetent

Madhukar Reddy Rachala, Kaladhar Reddy Aileni, Pitalla Naveen Kumar, Donthula Soujanya, Chinthakunta Reddy Prathima

Department of Orthodontics, SVS Institute of Dental Sciences, Mahabubnagar, Telangana, India

Address for correspondence: Dr. Donthula Soujanya, Department of Orthodontics, SVS Institute of Dental Sciences, Mahabubnagar, Telangana, India.
E-mail: souji3105@gmail.com

Access this article online	
Website: www.orthodrehab.org	Quick Response Code
DOI: 10.4103/ijor.ijor_34_16	

How to cite this article: Rachala MR, Aileni KR, Kumar PN, Soujanya D, Prathima CR. Orthodontic management of a periodontally compromised patient. Int J Orthod Rehabil 2017;8:78-80.

lips with interlabial gap of 3 mm. She had a mild concave profile with anterior divergence of face. The occlusal examination revealed Angle's Class I molar relationship bilaterally. The upper incisors showed pathologic anterior migration and extrusion of left central incisor, whereas the lower arch segment demonstrated generalized spacing in the incisor region [Figure 1]. A periodontal examination and charting were performed including the assessment of probing depths, clinical attachment levels, full mouth bleeding, and plaque scores. Generalized pocket depths ranging 4–6 mm in the posterior region and 7–8 mm depths in the upper anteriors were present. Radiographic examination showed generalized, moderate, horizontal bone loss in both arches [Figure 2]. Given the presented information, a diagnosis of moderate to advanced generalized chronic periodontitis with anterior dental spacing was made. Before starting orthodontic treatment, the patient received periodontal treatment. The treatment comprised of oral hygiene instructions, supragingival scaling, and periodontal flap surgery. After periodontal treatment, the patient acquired good plaque control and clinically healthy gingiva. Probing depths were reduced with no signs of bleeding.

Six months after periodontal surgery, orthodontic treatment was started with 0.022" × 0.028" preadjusted edge-wise appliance. During the initial alignment and leveling stage (6 months), very light force with thin NiTi wires was applied. Anterior space was closed by loop mechanics/frictionless mechanics with 0.019 × 0.025 titanium molybdenum alloy wire for 4 months followed by finial finishing and detailing [Figure 3]. Posttreatment results showed significant improvement in the extra oral features with competent lips and an ideal over jet and overbite [Figure 4].

After the removal of the multibracket appliances, the maxillary and mandibular teeth were stabilized by bonded lingual canine-to-canine retainers. The patient was seen every 4 weeks for periodontal maintenance during the orthodontic treatment and home care was emphasized. During active orthodontic treatment and retention, pocket depth, and clinical attachment levels were maintained at the levels achieved after periodontal treatment [Figure 5]. However, after orthodontic treatment a marked loss of the interdental bone and soft tissue height between the maxillary incisors compromised the esthetic result. The interdental papilla loss can be contributed to the factor of the destruction of the crestal bone between the incisors. Today we know that the presence of papilla strictly depends on the distance between the contact point and the crest of the bone.

Figure 1: Pretreatment extraoral and intraoral photographs

DISCUSSION

Periodontal disease can lead to pathologic migration of involved teeth and cause severe esthetic and functional problems. The clinical manifestations of pathologic migration, such as rotation, elongation and spacing/crowding of the incisors, have been found in 30%–50% of patients with moderate to severe periodontal disease.[2,3] In the present case report, pathologic migration of upper incisors and spacing of the maxillary and mandibular incisors and periodontal disease were significant. The migration of the maxillary incisors, as well as the spacing of the mandibular incisors was believed to be the result of pathological migration, since the patient reported no previous spacing.[4,5] In this case, the combined periodontal and orthodontic treatment resulted in stable periodontal health exhibiting probing depths <4 mm with no signs of bleeding throughout the dentition. In addition, eliminating maxillary and mandibular anterior spacing helped to improve bone support and secure access for plaque control. Studies showed that orthodontic treatment in general does not have any negative effects on the periodontal tissues when a high level of oral hygiene is maintained.[6] Thus, orthodontic tooth movement is no more a contraindication in the therapy of periodontally compromised patients. 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.[7,8]

It has to be emphasized that the key element in the orthodontic management of adult patients with periodontal disease is to eliminate plaque accumulation and gingival inflammation.[9,10] In the present case, initial periodontal conditions were improved by scaling and root planning in conjunction with

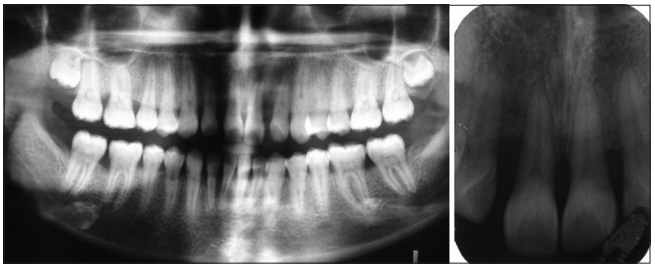

Figure 2: Pretreatment orthopantomogram and intraoral periapical of maxillary central incisors

Figure 3: Anterior space closure using loop mechanics

Figure 4: Posttreatment extraoral and intra oral photographs

Figure 5: Posttreatment orthopantomogram and intraoral periapical of maxillary central incisors showing increase in bone levels

the periodontal flap surgery before orthodontic treatment. During orthodontic treatment, a strict oral hygiene program was applied, including oral hygiene control and professional tooth cleaning every 4 weeks. The planning of retention and the stability of orthodontic treatment requires greater consideration in periodontally compromised patients.[11] Thus, permanent retention is often part of the total treatment plan for these patients. A long-term lingual-bonded wire retention was applied in the upper and lower arch.

CONCLUSION

Recently, there is an increasing demand from adult patients for orthodontic treatment, either purely for esthetics, to improve esthetics or function following previous disease, or to facilitate the stabilization, restoration, or replacement of teeth. Orthodontics may have a major role in the rehabilitation of patients suffering the effects of advanced periodontal disease, but there are a number of important factors to be considered in the management of such patients if the optimal outcome is to be obtained. The interdisciplinary treatment approach that involved nonsurgical periodontal therapy, orthodontic tooth movement with the use of light continuous forces resulted in significant functional, esthetic, and periodontal improvements.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Boyd RL, Leggott PJ, Quinn RS, Eakle WS, Chambers D. Periodontal implications of orthodontic treatment in adults with reduced or normal periodontal tissues versus those of adolescents. Am J Orthod Dentofacial Orthop 1989;96:191-8.
2. Towfighi PP, Brunsvold MA, Storey AT, Arnold RM, Willman DE, McMahan CA. Pathologic migration of anterior teeth in patients with moderate to severe periodontitis. J Periodontol 1997;68:967-72.
3. Martinez-Canut P, Carrasquer A, Magán R, Lorca A. A study on factors associated with pathologic tooth migration. J Clin Periodontol 1997;24:492-7.
4. Geiger AM. Malocclusion as an etiologic factor in periodontal disease: A retrospective essay. Am J Orthod Dentofacial Orthop 2001;120:112-5.
5. Paunio K. The role of malocclusion and crowding in the development of periodontal disease. Int Dent J 1973;23:470-5.
6. Dannan A, Darwish MA, Sawan MN. How do periodontal tissues react during orthodontic alignment & leveling phase. Virtual J Orthod 2008;8:1-7.
7. 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;15:321-30.
8. Williams S, Melsen B, Agerbaek N, Asboe V. The orthodontic treatment of malocclusion in patients with previous periodontal disease. Br J Orthod 1982;9:178-84.
9. Artun J, Urbye KS. The effect of orthodontic treatment on periodontal bone support in patients with advanced loss of marginal periodontium. Am J Orthod Dentofacial Orthop 1988;93:143-8.
10. Tarnow DP, Magner AW, Fletcher P. The effect of the distance from the contact point to the crest of bone on the presence or absence of the interproximal dental papilla. J Periodontol 1992;63:995-6.
11. Wennström JL. Mucogingival considerations in orthodontic treatment. Semin Orthod 1996;2:46-54.