Case Series

Orthodontic Management of Periodontally Compromised Adult Patients- A Case Series

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ABSTRACT

Periodontally compromised adult patients present with multiple problems of malocclusion, esthetics, function and psychological stress. Orthodontic treatment of such patients is not contra indicated but needs special considerations, certain precautions, and determination of specific, realistic and achievable treatment objectives. Need of the hour is to have an integrated approach where the periodontal treatment precedes Orthodontic treatment to restore periodontal health. Orthodontic treatment should be performed under strict plaque control and with measures to place the teeth in a structurally balanced and functionally efficient position. Aim of this case series is to demonstrate orthodontic treatment of adult patients with periodontally compromised status. In this case series more emphasis is given on correction of Gingival recession on single tooth by means of torquing alone without any free gingival grafts.

Key words: Interdisciplinary, Orthodontics, Adult, Periodontal.

INTRODUCTION

Dentofacial aesthetics is the main driving force in adolescent and adult population for seeking the orthodontic treatment. The number of adults seeking orthodontics has increased considerably in the last 2-3 decades.[1] 20-25% orthodontic patients are reported to be adults and this trend is increasing due to society becoming esthetic and health conscious.[2] Primary motivating factor in adults is the desire to improve their dental and facial esthetics.[3,4] Studies have proved that orthodontic treatment, besides improving dental esthetics, also has a significant impact on the psychological aspect of patient's life.[5] It has also been found that about 80% of orthodontic patients seek treatment due to esthetic concerns rather than for dental health and function.[6] At present, the orthodontist faces new challenges such as treating periodontally compromised patients whose conditions are often not the most favorable because there may be reduced elements of periodontal support. Periodontally compromised patients are treated in an interdisciplinary fashion with the objective of not only improving oral function, gingival status, their attachment and aesthetics but also to prevent future problems and further bone loss.[7] Many of the adult patient get affected with malocclusion due to their neglected periodontal health leading to bone loss around teeth and ensuing pathological migration with loss of attachment. The periodontally compromised patients can benefited from orthodontic treatment as the tooth can be placed more in the centre of bone rather than engaging the labial or lingual cortical plate with severe proclinations which lead to fenestrations and dehiscence leading to gingival recession. By certain orthodontic tooth movements the tooth can be placed at better positions in the periodontium so that they are in harmoniously placed within the surrounding structures .[8]

All the corrections were achieved with Orthodontics alone by placing the roots back in the centre of alveolar bone by giving individual tooth torqueing. In the periodontally compromised patients presented here, successful results were achieved with improved oral hygiene, periodontal health, esthetics, masticatory function and self confidence.

CASE 1

A 30 year old married female patient reported to the Department of Orthodontics, was referred from the department of Periodontology. The patient's chief complaint was spacing in the front teeth. The patient was diagnosed with chronic generalised periodontitis with horizontal bone loss. The treatment consisted of scaling, root planning and oral hygiene instructions. The therapy took 4 months and the patient was monitored. Facially, she presents a straight profile, euryprosopic pattern, average smile line, potentially competent lips, and a slightly everted and protrusive lower lip. Upon clinical examination and intraorally presents with dentoalveolar Angle's Class I type 2 Malocclusion(Figure 1) overjet of 3 mm,overbite of 4mm, Katz (+0,+0), spacing in maxillary and mandibular

arch, with a habit of tongue thrust developed secondary to the spacing and pathologic migration. Proclined maxillary and mandibular incisors, rotation wrt multiple teeth. Maxillary midline and mandibular midline cannot be assessed. Controlled chronic generalized periodontitis with grade 1 mobility in anteriors was present.

Figure 1: Intra oral photographs Pretreatment

Figure 2: Habit interception and deep bite correction.

Figure 3: space closure

Figure 4: Post Treatment Photographs

TREATMENT OBJECTIVES

The treatment objectives were to improve the occlusal relationships in order to promote the conditions of periodontal health and aesthetics of the patient, rigorous oral hygiene maintenance and oral prophylaxis sessions ,closure of spaces in anterior region using light forces , to reduce incisor protrusion, to maintain proper overjet and overbite , eliminate the etiology and the tongue thrusting habit ,eliminate primary and secondary occlusal trauma by providing functional occlusion, class I canine and molar relation ,to improve the profile, esthetics and lip relationship. Thus a stable occlusion could be achieved and the dental inclinations could be corrected in order to improve the aesthetic and functional conditions.

TREATMENT PLAN

MBT System appliances(0.022x0.030” slot) with bands in the first and second upper and lower molars was placed. An inter consultation was made with the Periodontics Department where scaling and root planning in the lower anterior area was performed.

TREATMENT PROGRESS

Treatment was started with the placement of fixed appliances, 0.022” slot MBT system, in the lower arch by placing 0.014”-NiTi archwire , sparing the anteriors. Sequential bonding was done in the lower anteriors after posterior segments on both the sides were consolidated. A removable habit breaking appliance was inserted to eliminate the habit of tongue thrusting. After levelling in the lower arch, light forces were used to initiate the closure of space in anteriors . The space closure was done with the help of E-chain and the patient was recalled after 4-6 week interval (figure 2). When the space closure was done in the lower arch, and enough overjet was created to retract the upper incisors. Fixed appliances were placed in the upper arch and the alignment was done on 0.014 niti. Spaces in the upper segment was closed on 0.018 ss wire (figure 3). After space closure, the teeth were levelled according to the bone level and the molars

were hypomineralized. A prosthodontic rehabilitation was recommended by the prosthodontist for the upper molars. This helped in preserving the integrity of molars. The upper and lower archwires were removed and bonded lingual retainers were placed. The arches were debonded and the patient was advised for regular check up after one month and strict oral hygiene protocol and prophylaxis after 2-3 month interval(figure 4).

RESULTS

The arches were successfully correlated by eliminating the habit, the spaces were closed thus improving occlusal relationships and maintaining molar and canine class I. The resulting overbite and overjet were adequate and remained under control. Periodontal status, aesthetics and function were favoured so the oral health and facial status of the patient was improved, emphasizing the harmony of a beautiful smile. Post treatment diagnostic records including study models, intraoral and extraoral photos were taken(figure 4) .

CASE 2

A case of 22 year old female with Skeletal Class I jaw base relation on account of normally placed maxilla and normally placed normal sized mandible with an underlying average towards horizontal growth pattern, Dentoalveolar Angle's Class I type 2 malocclusion with tongue thrust habit, Katz (0,0), spacing in maxillary and mandibular arch, mandibular overall bolton excess of 1.1 mm and mandibular anterior bolton excess of 0.5mm, proclined maxillary and mandibular incisors, gingival recession wrt 31, grade 1 mobile 31.

0.022" slot MBT System appliances with bands in the first and second upper and lower molars was placed

Treatment began with the placement of fixed appliances, 0.022" slot MBT system, in the upper and the lower arch by placing 0.012"- NiTi archwire, followed by the sequential Niti archwire such as 0.014 and 0.016 niti. The treatment then progressed to vertical helical loop on 0.016 ss wire to close the spaces with very controlled tooth movement and maintaining the M/F ratio by gradual activation of the loop each 6-8 weeks. Recession appeared on one of the lower incisor after space closure. Pretorquing photos were taken once the spaces got closed (fig 5). Individual lingual root torque was given on 19*25 TMA wrt 31(fig 6). The lingual root wire was left for adequate time for the expression of torque for about 8-10 weeks (fig 7). The gingival recession was successfully treated wrt 31, the spaces were closed, and the habit got eliminated. Periodontal status was improved after the treatment.

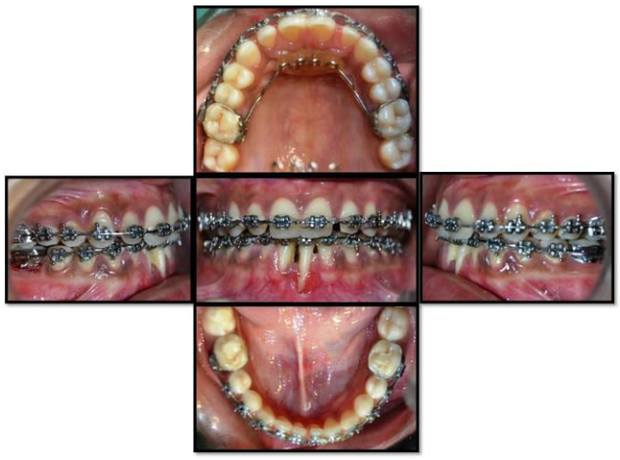

Figure 5: Gingival recession as a result of uncontrolled tipping during space closure.

Figure 6: Individual lingual root torque given on 31 on 19*25 TMA

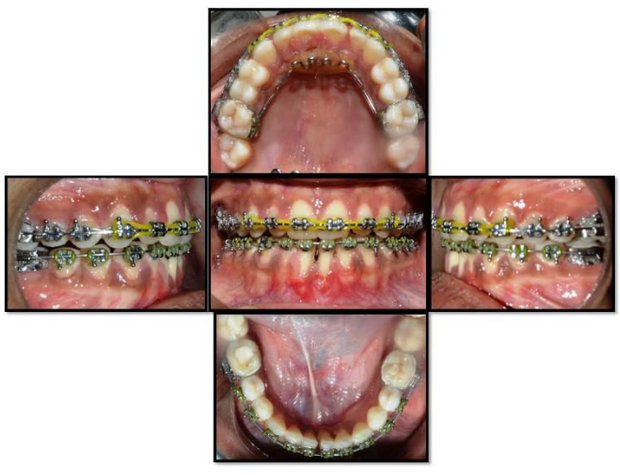

Figure 7: Completely corrected recession without any Flap surgery.

CASE 3

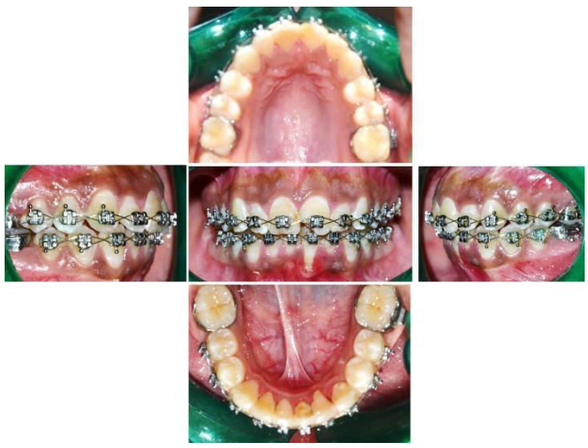

Figure 8: Single tooth gingival recession in relation to 31

A case of 19 year old female with Skeletal Class I jaw base relation on account of normally placed maxilla and normally placed normal sized mandible with an underlying average towards horizontal growth pattern, Dentoalveolar Angle's Class I type 1 malocclusion with Katz (0,0), ellis fracture type 1 wrt 21, crowding in mandibular arch and mandibular anterior bolton excess of 1.0mm, gingival recession wrt 31.

Treatment began with the placement of fixed appliances, 0.022" slot MBT system, in the upper and lower arch by placing 0.012"- NiTi archwire, followed by the sequential archwires for alignment were used(fig 8). Similar to the previous case root recession appeared on one of the incior worsened during space closure in this case. It is then followed by the 19*25 TMA wire with the individual lingual root torque given wrt 31(fig 9). The lingual root wire was left for adequate time for the expression of torque for about 8-10 weeks. The gingival recession was successfully treated wrt 31(fig 10). The periodontal status improved as the attachment of the gingival tissue increased.

DISCUSSION

In spite of the periodontal conditions, it has been shown that orthodontic treatment is no longer a contraindication in the therapy of controlled periodontitis and may even improve the possibilities to save and restore the affected teeth.[8]

Interdisciplinary cooperation and that of the patient can transform the dental and periodontal problems into smiles and aesthetic and healthy dentitions. It is recommended that the orthodontist includes a periodontal evaluation during the patient's initial consultation and if a problem is detected in the stomatognatic system.[9] The main emphasis is to reduce osseus defect, increase tooth longevity, facilitate patient to remove and maintain oral hygiene on a long term basis and improve self confidence. It is important to remember that the crestal bone loss is common in adults & thereby the mechanics need to be modified.

Figure 9: Individual tooth torquing done on 19*25 TMA

Figure10: Post treatment Photographs with completely corrected recession on individual tooth without flap surgery.

It is important to achieve a satisfactory periodontal and functional environment before finishing the treatment, as it helps to provide a good condition to maintain the oral hygiene further. Teeth has to be splinted and thus permanent retention is usually required to prevent spontaneous migration of teeth. Adults exhibit higher relapse tendencies compared to adolescents due to their inability to achieve an early neuro-muscular equilibrium of tissues & thus requiring permanent retention in most cases.[10]

CONCLUSIONS

A proper assessment, a correct interdisciplinary diagnosis, a good treatment plan, proper orthodontic follow-up, good information for the patient and good patient cooperation are important factors for clinical management thus providing integrity of the

periodontium, oral and facial aesthetics in addition to comprehensive health care for the patient.

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