Orthodontic Treatment of Periodontally Compromised Patient: A Case Report

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Abstract

With increasing awareness about esthetics, more adults are seeking orthodontic treatment nowadays. Most common chief complaint of these patients is proclination and extrusion of upper incisors, which are considered as the main manifestations of pathological migration. With orthodontic-periodontal teamwork it is possible to reestablish a healthy and well-functioning dentition with good occlusion, sufficient masticatory function and satisfactory esthetics that will improve the psychological status of the patient.

This report presents a case with pathological migration of both upper central and lateral incisors treated with a combination of periodontal and orthodontic therapy by intrusion and retraction movement. These mechanics improve the bone topography, esthetics and also helps the patient to maintain good oral hygiene.

Key words: Periodontitis; Pathological Migration; Orthodontic Intrusion; Adult Orthodontics;

Introduction

During the last decade the number of adults seeking orthodontic treatment has increased significantly. After the age of 35 years, about three out of four adults are affected to some degree with periodontal disease which results in pathological migration of teeth[1]. Pathologic migration of anterior teeth is a common cause of esthetic concern among adults. Pathological migration is defined as a change in tooth position resulting from disruption of the forces that maintain the teeth in a normal position, with reference to the skull[2].

The classic periodontal patient usually presents with the maxillary labial segment showing proclination, spacing, rotations and over eruption of the dentition. However, these changes decrease the ease of plaque control, compromise the aesthetics and also the function[3]. The prevalence of pathological migration after the age of 35 years has been reported as 30% to 55% [4].

Loss of periodontal bone support may occur during orthodontic realignment of pathologically migrated front teeth[5]. However, with proper treatment and good oral hygiene maintenance, no further deterioration of periodontal tissue occurs[6]. The new periodontal architecture following teeth realignment helps patients to achieve good oral hygiene.[7]

With adequate orthodontic-periodontal teamwork it is possible to reestablish a healthy and well-functioning dentition with good occlusion, sufficient masticatory function and satisfactory esthetics that will improve the psychological status of the patient after correcting the elongation and the migration of the anterior teeth.[7]

Case Report

A 21 years old female patient presented for orthodontic treatment with periodontal compromised teeth, midline shift and trauma from occlusion. The patient's chief complaint was to improve her esthetics because her maxillary incisors were spaced and forwardly placed. Patient gave a history of periodontal surgery with splinting done two years ago.

Patient was referred to department of periodontics for evaluation. On periodontal examination gingiva palatal to maxillary central incisor was inflamed with deep periodontal pocket and purulent discharge. 46 was missing and extrusion of 16 in the extracted space was seen (Fig 1). The incisors had been splinted with a thick guage wire, which on removal showed grade II mobility of the central incisors and grade I mobility of lateral incisors. Radiographic examination revealed generalized horizontal bone loss more in the upper anterior region (Fig 2a). Subgingival scaling and root planning was carried out. Patient was given a course of antibiotics and was placed on 0.2% chlorhexidine rinse as part of periodontal maintenance care. Intensive oral hygiene instructions were given. Patient was reviewed after one month when clinical signs of inflammation were absent.

At this phase, after adequate periodontal health was achieved orthodontic treatment was initiated to create cosmetically acceptable tooth positions, with pre-adjusted edgewise appliance and light forces for intrusion of incisors and retractions of anteriors. Periodontal assessment was done on every visit and patient was motivated for maintaining oral hygiene. After acceptable esthetics, intrusion, retraction and space closure were achieved, the appliance was debonded and fixed 3-3 retainers were bonded in the upper and lower jaws to prevent relapse (Fig.1, 3)

Discussion

Periodontal disease can lead to pathologic migration of involved teeth and cause severe functional and esthetic problems. Orthodontic treatment is not a contraindication in the therapy of severe adult periodontal disease and the maintenance of healthy periodontal status after orthodontic treatment[8] is easy. In such cases, orthodontic treatment often improves the health of the deteriorated dentition. It is of paramount importance to control the existing periodontal disease before initiating comprehensive orthodontics[7]. It has been reported in literature that intrusive movement has been recommended in cases of pathologic migration, to realign the teeth and improve clinical crown length and marginal bone levels[9]. Histological studies suggest that new cementum and collagen attachment was formed after orthodontic intrusion if good oral hygiene was maintained [10,11]. In the present case, intrusion was done to improve the alignment and osseous topography.

Ideally Orthodontic force should be kept within biological limits, which are further minimized when applied to teeth with compromised bone support, because of the diminished PDL area. The best results are obtained with light forces (5 to 15 gm/tooth) and the line of action of the force should pass close to the center of resistance[9].The interval of orthodontic force activation should also be longer, because remodeling the periodontal tissues will take longer than in patients with healthy periodontal tissues.

In the present case, comprehensive orthodontics was initiated with pre-adjusted edgewise appliance and light forces for intrusion of incisors and retractions of anteriors, which resulted in optimal biological response. The periodontal health improved the moment trauma was relieved. Initial periodontal condition was improved by scaling and root planning before the start of the orthodontic treatment, if this had not been done, an orthodontically applied force could have enhanced the gingival inflammation and periodontal destruction.

Several authors have investigated the correlation between the amount of intrusion and the amount of root resorption. Dermaut and Demunck, McFadden et al[10] reported a low correlation. Others have reported that root resorption would increase with intrusion of incisors. In the present case, the root resorption of the maxillary incisors was not seen since the forces were kept minimal (Fig 2b). The periodontal status of the present case was maintained by regular control and by the meticulous oral hygiene, thus providing satisfactory result. It is mentioned in the literature that the dentition with severe bone loss show a high tendency for relapse after active orthodontic treatment[12], therefore a fixed 3-3 retainers was bonded in the upper and lower jaws. Optimum functional occlusion was achieved which also created an environment conducive for maintenance of better oral hygiene.

Conclusion

In periodontally compromised cases a close interdisciplinary approach is critical for successful outcome. The interdisciplinary treatment approach that involved non-surgical periodontal therapy, orthodontic tooth movement resulted in significant functional, esthetic and periodontal improvements. Thus, orthodontic-periodontal treatment not only resulted in restoration of function of the periodontally involved dentition but also marked improvement in aesthetics in this case. This article explains the value of interdisciplinary approach in the management of periodontally compromised teeth to achieve long lasting functional and esthetic results by orthodontic treatment.

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Legends.

Fig. 1: Pre and Post Treatment Intraoral Photographs.
Fig. 2a : OPG showing horizontal bone loss.
Fig. 2b : Pre and Post Treatment Peri-apical Radiograph.
Fig. 3 : Pre and Post treatment Extraoral Photograph.

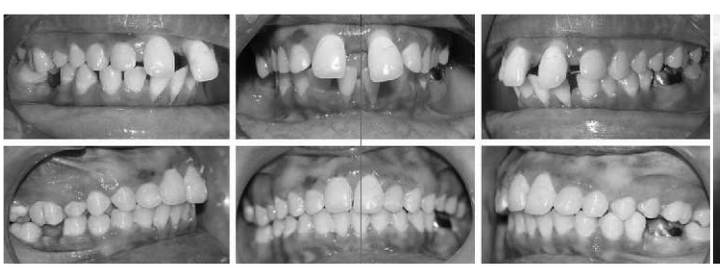

Fig. 1

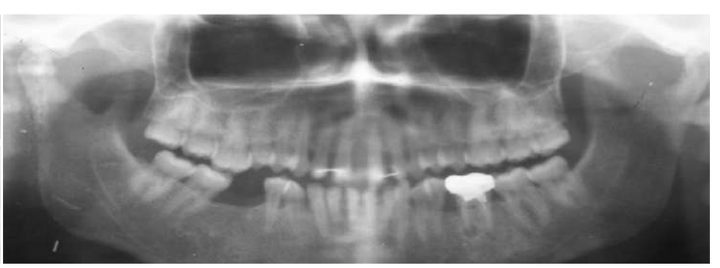

Fig. 2a

Fig. 2b

Fig. 3