Case Report

Combined Periodontal and Orthodontic Treatment of Pathologic Migration of Anterior Teeth

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Introduction

There is an ever increasing concern for dentofacial esthetics in adult population. The primary motivating factor for seeking orthodontic treatment is dental appearance [1]. Pathologic migration of anterior teeth is a common cause of esthetic concern among adults. Pathologic migration is defined as change in tooth position resulting from disruption of the forces that maintain teeth in normal position in relation to their arch. The disruption of equilibrium in tooth position may be caused by several etiologic factors. These include periodontal attachment loss, pressure from inflamed tissues, occlusal factors, oral habits such as tongue thrusting and bruxism, loss of teeth without replacement, gingival enlargement and iatrogenic factors. However, according to the literature, destruction of tooth supporting structures is the most relevant factor associated with pathologic migration. Periodontal disease in the upper anterior region can be in isolation or may affect more teeth. The periodontal disease and its sequale such as diastema, pathological migration, labial tipping or missing teeth often lead to functional and esthetic problems either alone or with restorative problems [2]. Advanced periodontal disease is characterized by severe attachment loss, reduced alveolar bone support, tooth mobility and gingival recession. Orthodontic treatment is initiated only after periodontal disease is brought under control [3]. This communication highlights good treatment outcome achieved in a patient with impaired dentofacial aesthetics and advanced periodontal disease.

Case Report

A 22 year old female presented for orthodontic treatment with periodontally compromised upper left central incisor, midline shift and trauma from occlusion in the maxillary anterior region (Fig. 1). The patient's chief complaint was to improve her esthetics because her "maxillary incisors were spaced and did not look good". The maxillary left central incisor was mobile, extruded and the periodontal tissue around was grossly inflamed with deep periodontal pocket and pus discharge (Fig. 2). The lower teeth were impinging against the inflamed upper gingiva causing lot of discomfort.

Patient was referred to periodontist for evaluation. On periodontal examination gingiva palatal to maxillary central incisor was inflamed with 5mm deep periodontal pocket and purulent discharge. Subgingival scaling and root planning was carried out. Patient was given a course of doxycycline and was placed on 0.2% chlorhexidine rinse as part of periodontal maintenance care. Intensive oral hygiene instructions were given. Periodontal surgery was delayed till the etiological factor i.e. the impinging lower inciors was eliminated by orthodontic tooth movement. Patient was reviewed after one month when clinical signs of inflammation were absent.

At this phase, orthodontic treatment was initiated to create cosmetically acceptable tooth positions by closing the diastema, uprighting the anterior teeth and reducing the overjet. An acrylic plate with anterior bite plane relieving upper gingiva of trauma from occlusion was provided. Fixed orthodontic appliance (O18 Roth PEA) was placed and initial alignment wire O12 NITI arch wire was used for alignment. Gradual transition from flexible to rigid wire followed over a period of three months, subsequently 018 SS with loops anterior to canines was placed and space closure with 1½ to 2 ounce force using elastomeric chain. A 17x25 SS wire was placed following space closure.

Patient was referred to periodontist once the overjet was reduced and trauma from occlusion eliminated. After periodontal examination it was decided to treat the patient by guided tissue regeneration (GTR). Under local anaesthesia a full thickness flap was raised on palatal aspect. Granulation tissue was removed and debridement of osseous defect carried out. Bone graft (bio-Oss) was placed in the defect and was covered with resorable collagen membrane (Fig. 3). Flap was

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Fig. 1 : Proclined maxillary left central incisor with diastema and deep bite

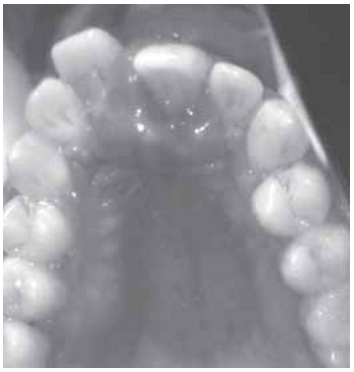

Fig. 2 : Inflamed gingival and deep periodontal pocket

Fig. 3 : Guided tissue regeneration done with bone graft and resorbable membrane

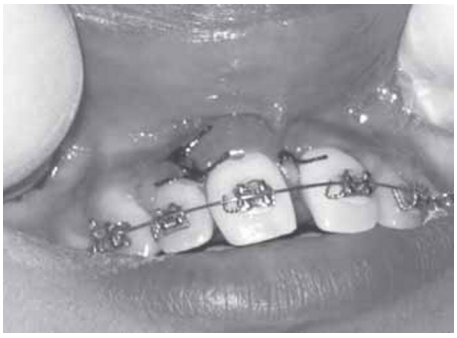

Fig. 4 : Flap sutured

Fig. 5 : Post treatment alignment of teeth

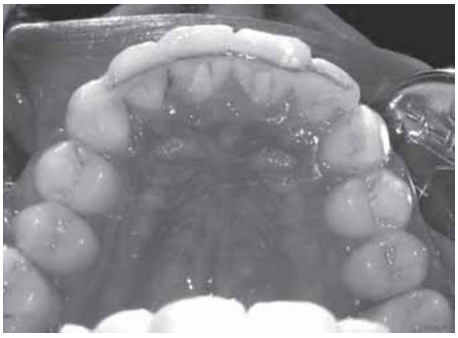

Fig. 6 : Post treatment splint in place and healthy periodontium in relation to maxillary left central incisor

sutured back and periodontal dressing placed (Fig. 4). Sutures were removed after 10 days. The fixed appliance insitu acted like a splint during post surgical phase. The fixed appliance was removed after six months of surgery. Retention with fixed lingual bonded retainer was provided. There was gross improvement in the dentofacial esthetics and periodontal health (Fig. 5,6). Moreover, pre and post-regenerative therapy radiographic evaluation showed reduction of the infrabony defect.

Discussion

Majority of adult orthodontic patients manifest with a coexisting periodontal pathology resulting in pathologic migration, spacing, flared incisors and trauma from occlusion. Orthodontic treatment is not a contraindication in the therapy of severe adult periodontal disease and the maintenance of healthy periodontal status after orthodontic treatment [4]. 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 [5].

In the present case, comprehensive orthodontics was initiated with pre adjusted edgewise appliances using very light force which resulted in optimal biological response. Since there was trauma from lower anterior teeth, anterior bite plane allowed posterior eruption of teeth which resulted in the opening of the bite. The periodontal health improved the moment trauma was relieved.

Tissue damage, particularly root resorption, should be kept to a minimum. The root length and the nature of periodontal support will influence the force system. During active orthodontic treatment, attention was paid to the optimal force magnitudes which perhaps stimulated bone formation in the periodontium.

Periodontal treatment and the patient's co-operation in oral hygiene were also continued as supportive therapy. Case reports in the literature have demonstrated that, with adequate plaque control, teeth with reduced periodontal support can undergo successful tooth movement without compromising their periodontal condition [6-8]. 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. Clinical examinations during post active orthodontic phase have demonstrated that reduced periodontal support can successfully undergo tooth movement without compromising their periodontal situation. Fixed bonded retainer was provided which not only acted as a periodontal splint but also minimized relapse. Optimum functional occlusion was achieved. This also created an environment conducive for maintenance of oral hygiene.

In periodontally compromised adult cases a close interdisciplinary approach is critical for successful outcome [9]. Advanced orthodontic-periodontal treatment not only resulted in restoration of function of the periodontally involved dentition but also marked improvement in aesthetics in our case. This article demonstrates the value of interdisciplinary approach in the management of periodontally compromised dentition to achieve long lasting functional and esthetic results.

Conflicts of Interest

None identified

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