

Interdisciplinary Treatment of Periodontally Compromised Dentition : A Case Report

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Abstract

Orthodontic treatment in adult patients is one of the most frequently encountered components involving interdisciplinary approach. In this article, we present a case report to aptly describe the benefits of adjunctive orthodontic treatment for restoration as well as function in a patient with periodontally compromised dentition.

Key Words: Periodontitis, Multidisciplinary treatment, Canine substitution.

Introduction

With an increasing number of adult patients now seeking orthodontic treatment, the problem of a dentition affected by chronic periodontitis are more likely to be encountered. The primary motivating factor in this group of patients has been reported to be a desire to improve dental appearance.¹ Therefore, it is important for the clinician to differentiate between what is possible in an adult and to what extent the problem can be corrected. Patients with periodontal problems considering orthodontic treatment should be assessed in an interdisciplinary fashion with the restorative dentist, orthodontist and periodontist contributing to a comprehensive treatment plan. The outcome of orthodontic treatment is influenced by the patient's periodontal status before, during and after active treatment. The most commonly encountered problems

in periodontally compromised patients are migration, extrusion, flaring of teeth which may further cause tipping of adjacent teeth.² Pathologic migration of anterior teeth is an esthetic and functional problem that may be associated with advanced periodontal disease. The destruction of tooth-supporting structures is the most relevant factor associated with pathologic migration.³

This case report describes the benefits of integrating periodontal, orthodontic and endodontic therapies in case of chronic periodontitis that led to pathologic migration and extrusion of a maxillary left lateral incisor associated with severe bone loss and periodontal abscess.

Case Report

A female aged 22 years, complained of migration of upper front tooth. She complained of mobility and compromised esthetics due to extrusion of

maxillary left lateral incisor (Fig. 1 & 2). On periodontal examination, the maxillary left lateral incisor was extruded and had deep pockets mesially and distally. There was draining sinus in relation to root of maxillary left lateral incisor. A probing depth of 7 mm with Grade III mobility was found. There was no evident pus discharge; though bleeding on probing was present.

Radiographic examination revealed localized severe bone loss with deep angular bony defect associated with maxillary left lateral incisor. Periapical radiolucency was also seen (Fig. 3).

The patient was advised extraction of maxillary left lateral incisor with surgical curettage of the periodontal defect followed by adjunctive orthodontic therapy. After the active periodontal treatment, 6 weeks of healing time was advised before commencement of orthodontic treatment.

Adjunctive orthodontic treatment

was done using 0.022" slot self-ligating Smart clip appliance. Patient had Class II division 1 malocclusion with deep bite. Canine substitution for missing maxillary left lateral incisor and premolar protraction to the area of canine eminence to obtain a better contour of the face without prosthesis was planned and on the contralateral side extraction of maxillary right 1st premolar and retraction of incisors into the extraction space was planned. At the beginning of orthodontic treatment, the upper left canine was reshaped mesiodistally by stripping, and the buccal surface was flattened. Maxillary space closure was obtained and case was debonded in 12 months (Fig. 4). The cosmetic phase began on the day of debonding. Composite build-ups were performed to obtain an ideal tooth-to-tooth and tooth-to-soft tissue relationship (Fig. 5 & 6). The final occlusion showed the first molar in a Class II relationship, with maxillary left canine substituting for the extracted maxillary left lateral incisor and first premolar replacing the canine. Lingual bonded retainer was given to provide permanent retention until the completion of healing and new bone formation.

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. Advanced periodontal disease may result in pathological migration (extrusion) and intraosseous defects. The present case report shows a pathological migration (extrusion) of maxillary left lateral incisor resulting in esthetic and functional problems.

Treatment options for patients with a congenitally missing or lost lateral incisor because of a pathologic condition or accident include space closure (a canine protracted to the position of the lateral incisor and shaped as the missing incisor) and space reopening (a pontic space provided for a single tooth implant or traditional bridge). In a historical review, the proper treatment method for a missing lateral incisor was space reopening because space closure would lead to improper occlusion and a poor facial expression.^{4,6} Carlson⁷ and Turverson⁸ both described canine substitution for missing maxillary laterals and premolar protraction to the area of canine eminence to obtain a better

contour of the face without a prosthesis.

The cases particularly suited for canine substitution would be Angle class II malocclusions with no crowding in the mandibular arch or class I space deficiency cases. Generally, patients with a straight profile are good candidates, but those with a mildly convex profile may also be acceptable. The ideal canine to use to substitute for a lateral incisor is one with a similar color and shading as the central incisor, with smaller dimensions both at the cemento-enamel junction (CEJ) buccolingually and mesiodistally, and with a relatively flat labial surface and narrow midcrown width buccolingually.^{9,10}

When canine occupy the lateral incisor position, the canine's greater labiolingual dimension can create an occlusal interference with the mandibular incisors. Therefore, palatal trimming throughout treatment is necessary when occlusal prematurities with the mandibular incisors are detected to prevent having the canine positioned labially.^{8,11} The cusp tip and the labial surface were reduced to produce a flat incisal edge and composite buildups at the mesial and distal angles of the canine were needed to complete the canine transformation. When premolars are substituted for maxillary canines, they should look and function like canines. The premolars were extruded relative to the adjacent teeth and rotated mesially for a better contact point.^{8,11,12} The premolar's roots were also torqued buccally to simulate a canine prominence.¹¹

Canine-protected occlusion is not feasible when the canine is replaced by the premolar. As a result, the forces generated through lateral excursive movements are placed on the roots of the first premolar¹³ or distributed by group function.^{8,14,15} Some investigators fear loss of periodontal attachment, because of the stresses placed on the premolars.¹⁵ However, long-term periodontal and occlusal studies on congenitally missing lateral incisors have shown that space closure with premolars substituting for canines was equally sound occlusally and preferable periodontally to orthodontic space opening with prosthetic replacement of the missing lateral incisor.⁴

A major advantage of such an approach is the permanence of the finished result. The tendency of the

spaces to reopen after treatment can be overcome with properly finished occlusal contacts and long-term retention.¹⁶

Conclusion

Periodontal disease and its sequelae often lead to unesthetic and functional problems, either alone or with other restorative problems. With increasing demand to improve general quality of life, patients with compromised periodontal support also seek highly esthetic and functional improvements. Case selection is important when considering canine substitution in cases with a missing lateral incisor.

Also, proper treatment planning is necessary to obtain better esthetic and functional results. Commonly such patients require care from a number of clinicians and hence interdisciplinary treatment planning is crucial in ensuring the best outcome for patients.

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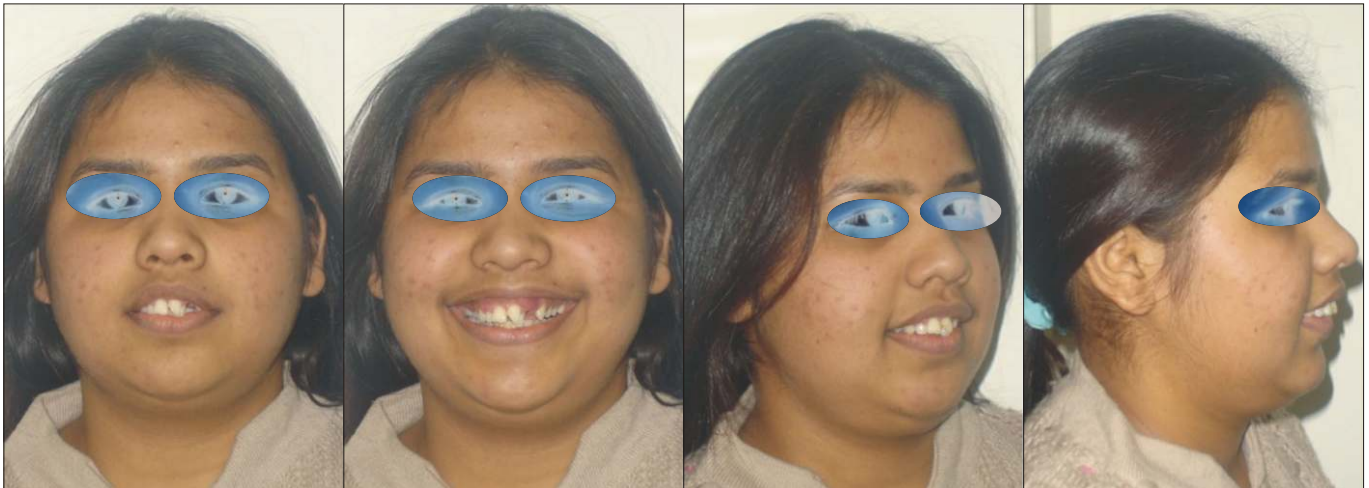


Fig 1 Pre Treatment Extra Oral Photographs



Fig 3 Pre Treatment OPG and Lateral Ceph



Fig 2 Pre Treatment Intra Oral Photographs



Fig 4 Post Treatment Intra Oral Photographs



Fig 5 Composite build-ups to obtain an ideal tooth-to-tooth and tooth-to-soft tissue relationship

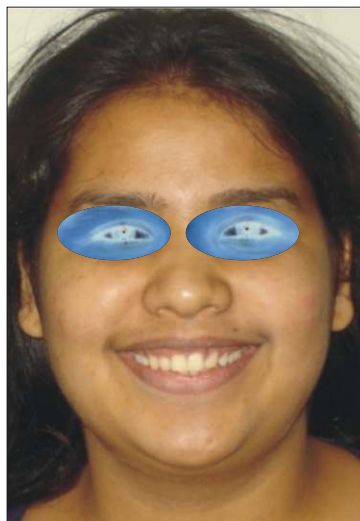


Fig 6 Post treatment Extra Oral Frontal smile Photographs