

An interdisciplinary approach to restore missing maxillary lateral incisor with Orthodontics and Implant Prosthodontics: A Case Report

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Abstract

The absence of the maxillary lateral incisors create an aesthetic problem that can be managed with different treatment modalities. Comprehensive treatment planning is required to achieve a satisfactory result, keeping in mind the aesthetics, function and periodontal stability. An interdisciplinary treatment approach is beneficial and involves orthodontic closure of the space with maxillary canine substitution or space opening for single-tooth implants, bridges and tooth-supported restorations. The present case of a 21-year-old female dental student with agenesis of maxillary left lateral incisor with the presence of maxillary left canine in place of lateral incisor, and midline deviation. Treatment included space creation and placement of 3.3mm implant together with bone augmentation, immediate temporization and finally restored with porcelain crown after healing period of three months.

Keywords: Congenitally missing lateral incisor, Space creation, Implant restoration

Introduction

Agenesis of maxillary lateral incisor is the second most common congenitally missing teeth. The incidence of missing maxillary lateral incisors is 1% to 2% in white population and 2% in indian population [1]. Missing permanent teeth creates an aesthetic problem and it might affect patients' self-esteem, communication behavior, professional performance and quality of life. Moreover, patients may also suffer the complications of malocclusion such as midline deviation, arch constriction [2].

Management of missing teeth requires an integrated multidisciplinary approach. There are two treatment options that exist for replacing missing lateral incisor. The choice between space opening with tooth replacement and space closure with canine substitution relies on several parameters. Facial profile, molar relation, overjet, overbite, arch length, tooth size discrepancy, canine morphology and colour may address to different treatment strategies [3].

Low-angle , retruded profile , Molar Class I or Class III, reduced overjet and increased overbite individual should be better treated with space opening to preserve ideal occlusal anterior and posterior relationship. In high-angle, full cusp or partial molar class II, increased overjet and reduced overbite subjects, space closure should be preferred to preserve arch anchorage and avoid clockwise rotation of lower jaw. Individuals with large canines, space opening is advocated but small canines can be easily transformed in lateral incisors by using porcelain veneers or composite materials [4, 5].

Case Presentation

A 21-year-old female dental student with complaint of lower incisor crowding ,upper dental midline shift and missing maxillary lateral incisor came to Orthodontic Department.

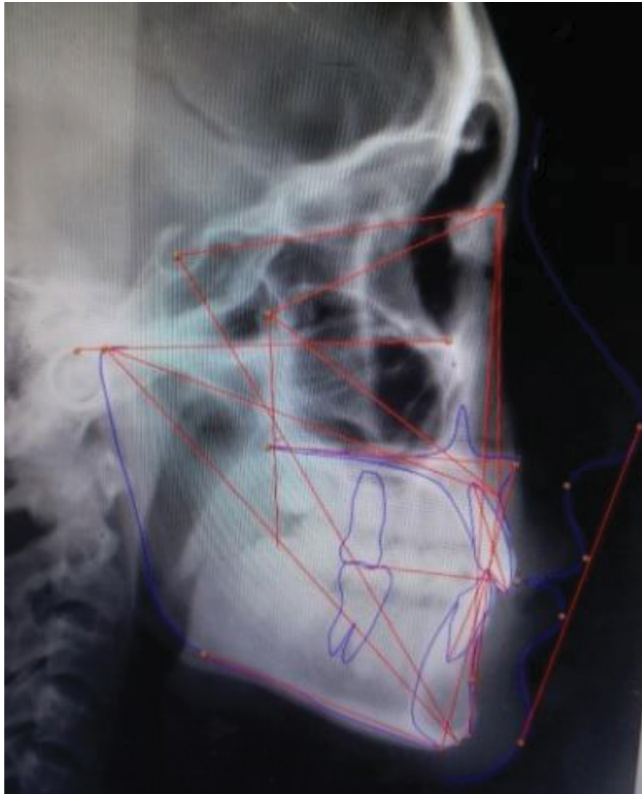
Clinical evaluation showed mesofacial pattern, retruded lips, missing upper left lateral incisor, upper dental midline shift left (2mm) to facial midline, collapsed upper arch, lower anterior crowding(-3mm), localized crossbite at lower left canine, reduced overjet , increased overbite, canine Class II in both sides although molar relation is Class I.

The treatment objectives were correction of dental midline shift, correction of lower crowding, obtaining a favourable overjet, overbite, a Class I incisor and canine relation , maintaining Class I molar relation and improving the soft tissue facial profile.

Proposed treatment plan was the space creation for missing lateral incisor with non-extraction orthodontic plan and replace it with implant to obtain desire treatment objectives.



Fig 1. Pretreatment Record



SNA	83.6 *
SNB	80.1 *
ANB	3.5 *
U1-FH	105.8*
L1-MP	90.8 *
Intercisal angle	139.8 *
FMA	22.4 *
WITS	1.1mm
Nasolabial angle	106.4 *
U lip- E line	-1.1 mm
L lip- E line	-1.5 mm
Y axis	61.2 *
OJ	1.8m
OV	5mm

Fig 2. Pretreatment Cephalometric Analysis

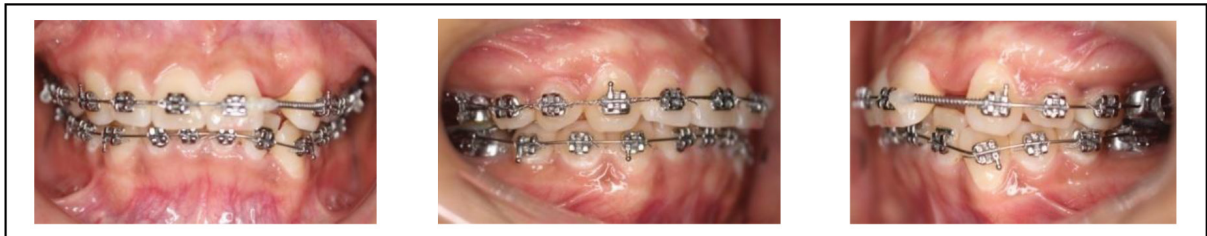


Fig 3. Space creation for missing lateral incisor with NCS after leveling and alignment



Fig 4. Preprosthodontic arrangement with orthodontic treatment



Fig 5. Papilla sparing flap and surgical guide positioned



Fig 6. Fixture placement (Arrow implant 3.3x12mm, BrainBase Co. Ltd, Tokyo, Japan)



Fig 7. Temporary abutment attached



Fig 8. Immediate temporization and flap sutured



Fig 9. Impression taking after 3 months



Fig 10. Radiograph showing implant restoration



Fig 11. Post Orthodontic and Prosthodontic Treatment Photos

Discussion

Although the canine substitution is the alternative treatment plan for missing lateral incisor, canine recontouring to the shape of lateral incisor, a favorable color to match the maxillary central incisors, properly position the gingival margin and midline control are the big challenges [6]. In addition, single-tooth implant has become a popular method for replacing missing lateral incisor. With hard and soft tissue grafting procedures that are available, implant success rate as well as final esthetic outcome have become increasingly predictable. In some instances, however, patients are not willing to undergo implant placement because of expensive cost and fear of risk of surgery [7].

Conclusion

The major objectives of treatment were achieved. Molar and canine class I relationship was obtained with normal overjet and overbite. Dental midlines were coincide with the facial midline and improved facial esthetics. Excellent aesthetics was achieved through close collaborative treatment between Orthodontist and Implant Prosthodontist.

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