CASE REPORT

Space Management for Unilateral Congenitally Missing Lateral Incisor using CAD/CAM Aligners

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ABSTRACT

The use of aligners for orthodontic treatment is gaining wide popularity. This case report presents the treatment of a male patient with congenitally missing upper right lateral incisor, spaced upper arch, protruded upper and lower incisors and midline shift. The patient was treated with 13 upper and nine lower aligners. The duration of treatment was just 6 months and 2 weeks.

Keywords: Missing lateral incisor, Aligner.

INTRODUCTION

Adult orthodontic patients who require full-mouth orthodontic treatment can be given an esthetically agreeable solution by using a computer-assisted technology that produces series of clear plastic overlays.

Initially, the use of aligners was restricted for treating only certain orthodontic cases, but the improvement in aligner manufacturing in the last 5 years has allowed us now to use aligners in a variety of malocclusion situations. Closing spaces with aligners is a good example of its application.

DIAGNOSIS

A 32-year-old male patient reported to the clinic with spaces between his upper teeth and forwardly placed incisors. Patient’s lateral Ceph, OPG, study models and photographs were recorded. The patient was diagnosed of having class I malocclusion with missing upper right lateral incisor, spacing with upper arch, proclined upper and lower incisors, midline shift due to deviation of the upper midline 1 mm to the right side and high upper labial frenum attachment (Fig. 1).

Treatment Objectives

1. To maintain class I molar and canine relationship
2. To create enough space for the missing upper right lateral incisors
3. To close any other spaces in the upper arch
4. Midline correction
5. Retroclination of the upper and lower incisors.

Treatment Plan

1. To do full mouth scaling, curettage and fillings for all carious teeth
2. Using aligners for both upper and lower arches to manage the upper arch spaces and to retrocline both upper and lower incisors. This was made visible using CAD/CAM technology used with clear path aligners (Fig. 2).
3. Frenectomy.

Treatment Progress

The treatment progress was recorded every month as shown in serial photographs (Figs 3A to E):

1. In the first month, the movement was mainly to move the upper right central incisor mesially
2. In the second, third and fourth months, more mesial movement of the right upper incisor was done as well as retraction of both upper and lower incisors
3. In the fifth month, correction of the midline shift and frenectomy were done
4. Finishing and final detailing was achieved in the last month
5. After finishing the treatment, upper and lower clear retainers were removed and a pontic of composite was added at the space of missing lateral incisor (Table 1) explains all the movement done by each aligner.

RESULTS

Facial and intraoral photographs (Fig. 4) show midline correction, closed upper spaces (except the space of the missing upper right lateral), decreased upper and lower proclination. Overall treatment time with aligners lasted for 6 months and 2 weeks for the upper and 4 months and 2 weeks for the lower.
Fig. 1: Pretreatment photographs

Upper occlusal – before and after

Frontal – before and after

Lower occlusal – before and after

Left buccal – before and after

Right buccal – before and after

Interproximal Reduction required before Wearing 2nd Aligner

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Fig. 2: CAD/CAM treatment planning assisted
Table 1: Movement record form

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MTR—Mesial translation; BTO—Buccal torque; DTR—Distal translation; LTO—Lingual torque; LTR—Lingual translation; DTO—Distal torque; BTR—Buccal translation; MTO—Mesial torque; LTP—Lingual tipping; INT—Intrusion; MTP—Mesial tipping; EXT—Extrusion
DTP—Distal tipping; DRO—Distal rotation; BTP—Buccal tipping; MRO—Mesial rotation
The overall hygiene maintenance and the level of clinical finish achieved was of acceptable quality. The acceptance of this treatment modality is far more as compared to conventional orthodontics.\(^4\)

**CONCLUSION**

This case report demonstrates the use of aligners as one of the option in orthodontic treatment. The space management of patients having unilateral missing lateral incisors is one such indication where the results are achieved in a short period of time. Aligners have advantage of being an invisible appliance and also offer better oral hygiene as compared with fixed appliance treatment.

However, further patient observation is required after aligner treatment to known about its long-term effects.

**REFERENCES**