Management of Congenitally Missing Lateral Incisor

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ABSTRACT

Multiple treatment options are available to patients who have congenitally missing teeth. Management options for the treatment of missing teeth can include the following: (1) Orthodontic space closure and adjacent tooth substitution, (2) autotransplantation, (3) prosthetic replacement with resin-bonded fixed partial dentures, conventional fixed partial dentures and single-tooth implants. In this case report, treatment of a patient with congenitally missing maxillary right lateral incisor will be presented.

Keywords: Congenitally missing tooth, Lateral incisor, Midline shift, Oral rehabilitation, Interdisciplinary treatment.

INTRODUCTION

Congenital tooth agenesis of one or more teeth also known as selective tooth agenesis (STHAG) is the most common abnormality of human dentition. In the permanent dentition, the third molars are the most frequently congenitally missing tooth (30%) followed by mandibular second premolars (3.4%) and maxillary lateral incisors (2.2%).

The oral rehabilitation of patients presenting with congenitally missing dentition is challenging because of the need for a multidisciplinary approach. Different treatment alternatives, such as canine substitution, resin-bonded fixed partial dentures, conventional fixed partial dentures and single-tooth implants are available for treatment of missing maxillary lateral incisors in adults.

While formulating a treatment plan, several parameters need to be considered, such as severity of hypodontia, underlying skeletal and incisor relationship, facial profile, age, motivation, tooth size, color and shape of adjacent teeth.

Orthodontic space closure is an alternative when there is a concomitant malocclusion that has to be treated. A combination of factors representing a typical orthodontic indication may include increased over-jet; marked crowding; poor interdigitation of posterior teeth to name a few. In particular, changing the axial inclination and crown torque of lateral incisors and canines is a time-consuming and relatively difficult orthodontic procedure. If the crown of a canine in lateral incisor position has not been given the correct lateral incisor torque, the result may appear unnatural.

Few indications for prosthetic replacement include a stable Angle’s Class I buccal segment relationship, a tendency towards a Class III malocclusion, when there is a color incompatibility between maxillary canines and central incisors, generalized spacing of the teeth, additional congenitally missing teeth in the quadrant which also have to be replaced.

While attempting prosthetic replacement either by implants or fixed bridges, space appropriation is a very critical factor. The orthodontist should achieve the specific space requirements by positioning the teeth in the ideal restorative position. The correct amount of space is generally determined by the esthetic placement of the central incisors and the functional positioning of the canines.

In a patient with congenitally missing single maxillary lateral incisor, the amount of space for the implant/pontic and crown is determined by the contralateral lateral incisor. However, in some patients, the existing lateral incisor may be peg-shaped. In other situations, both lateral incisors are congenitally absent. The amount of space is determined by two factors: Esthetics and occlusion.

An esthetic relationship exists between the size of the maxillary central and lateral incisor teeth. This size ratio has been called the “golden proportion”. Ideally, the maxillary lateral incisor should be about two-thirds width of the central incisor. Most central incisors are between 8 and 10 mm wide. If the central incisor is 8 mm in width, then the lateral incisor should be 5.5 mm wide.
CASE REPORT

The patient was a 23-year-old girl. Her chief complaint was spacing in upper teeth. She had a mild concave profile with competent lips and shallow mentolabial sulcus (Fig. 1). She had an Angle’s Class I molar relationship with missing right lateral incisor, with an edge to edge bite. There was 1.5 mm arch length discrepancy in the lower arch and mild rotations present in the buccal segment. While in the upper arch 3.5 mm spacing was present. The upper midline was shifted to the right by 3 mm, while the lower midline was coincident with the facial midline (Fig. 2). In the lower arch, Bolton discrepancy with 2 mm excess tooth material was present in the mandibular anterior region. She had a dilaceration in the middle third of the root 11 (Fig. 6).

Cephalometrically, she had a Class III skeletal base malocclusion with congenitally missing 12, acceptable IMPA angle, facial esthetics, acceptable axial inclination of the upper and lower incisors with a normodivergent facial pattern (Figs 3 and 4).

Treatment Plan

As she had a Class I molar relationship with acceptable profile, prosthetic replacement of missing tooth was decided, since the buccolingual ridge thickness was inadequate for an implant placement. It was decided to open spaces for the replacement of missing right lateral incisor with resin modified bridge as this involved minimal tooth reduction.

Treatment Progress

0.022 inch edgewise brackets (Roth prescription) were bonded and first molars were banded. Leveling and alignment were started in both upper and lower arches with 0.016 inch Wilcock Premium Plus wire. It was followed by 0.018 inch Wilcock Premium Plus stainless steel wire and open coil was compressed between the upper right central incisor and canine till the upper and lower midline were coincident and 6.5 mm space had opened between the right central incisor and right canine, this took 4 months.
In the lower arch, mild proximal stripping was done to resolve the mild crowding. Wire was progressively changed to 0.019 × 0.025 inch stainless steel wire and the space closure was done.

As tipping movements had occurred, uprighting movement was started with a continuous archwire with a box loop incorporated in the region of 13. Mild Class II elastics for continuous wear were given for 3 months. In relation to 11,
step bends were placed in the 0.019 × 0.025 inch stainless steel wire to upright the upper right central incisor, which was mildly dilacerated (Fig. 6).

After desired amount of space was opened and uprighting of teeth took place with midlines being coincident with facial midline, settling elastics were given for 2 weeks. After which debonding was done and upper (only in the second quadrant) and lower fixed multi-stranded lingual retainers were bonded (Figs 7 to 10).

The case was, here after referred to the prosthodontist for placement of a resin modified bridge in relation to 11, 13. The total treatment time was 13 months. Slight uprighting of 13 was still needed but the case had to be deboned prematurely, as patient desired removal of the brackets.

The facial profile was better than the pretreatment even though the teeth were flared. This is because of better lip support and fullness of lips that was desirable (Figs 11 and 12, Table 1).

**DISCUSSION**

The presented case report demonstrates that acceptable results can be obtained with decision to replace missing tooth with fixed prosthesis. The clinical situation associated with congenitally missing teeth is often difficult, and a dilemma for a clinician to select the best treatment plan. The common alternatives may include single tooth implants, transplantation, orthodontic space closure and conventional or resin-bonded fixed partial dentures.

By far, the most conservative tooth-supported restoration is the resin-bonded fixed partial denture because it leaves the adjacent teeth relatively untouched. As the patient had time constraints along with decision not to disturb good buccal Class I molar relationship, prosthetic replacement treatment plan was prudent. Even though the upper teeth were proclined (from
6 mm, 37° to 8 mm, 40°), lips were better supported and a more pleasing profile was achieved at the end of treatment.

Although single tooth implant prosthesis would have been a good option, it was ruled out in this case as the ridge requirements were not satisfactory. Treatment duration, buccal corridor spaces along with type of malocclusion present are some factors that need to be considered before contemplating any type of tooth movement.

### CONCLUSION

The oral rehabilitation of patients presenting with congenitally missing dentition is challenging because of the need for a multidisciplinary approach. Additional deficiencies present in conjunction with the missing teeth, soft tissue defects, existence of malformed dentition, severe diastemas, and psychological status must be considered.

### REFERENCES