BRING BACK THE SMILE AND SELF-ESTEEM IN AN 11-YEAR-OLD CHILD: A CASE REPORT

Dental Science

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ABSTRACT

Oligodontia is the congenital absence of six or more than six teeth in either permanent or primary dentition. Because of the missing teeth in these patient's esthetic, functional and psychological problems may arise. Oral rehabilitation is recommended for the positive development of self-esteem as well as for improved speech, masticatory function and facial esthetics. Congenital absence of incisors may jeopardize the esthetic appearance of a child, especially during years of transition into adolescence. In such situations, interim restorations can be provided before any definitive treatment. This paper deals with the full mouth oral rehabilitation of an 11-year old child using a multidisciplinary approach involving acrylic crowns, 2*4 appliance, anterior functional space maintainer and direct composite restoration.

KEYWORDS

Oligodontia, 2*4 Appliance, Anterior esthetic space maintainer, Direct composite restoration

INTRODUCTION

In the modern, civilized and cosmetically aware society that we live in, the younger adolescent patient can easily become self-conscious if their teeth are different from others. A well-contoured and well-aligned dentition sets the standard for beauty. Congenitally missing mandibular permanent central incisors can hugely affect the esthetics and psychological development of a child, especially during the years of transition into adolescence.

Hypodontia is the congenital absence of one or more teeth, either primary or permanent. The appearance of peg shaped lateral incisors can be a disappointment to the patient as they may not be of the perfect shape or may be too small in comparison to rest of the anterior teeth. In certain situations, where hypodontia as well as the presence of peg laterals co-exist in a child, the esthetic appearance becomes highly compromised and it can have a heavy psychological impact on the child and the parents. Due to the agenesis of permanent successors, the infra occluded teeth does not exfoliate within the normal time range, thus the clinician can end up in a dilemma whether to retain or extract the permanent teeth. Some possible treatment options include extracting the primary teeth followed by orthodontic space closure, or placing a space maintainer until final prosthetic reconstruction may be favorable. In other situations, however, retaining the primary tooth may be the preferred mode of treatment. In these cases, buildup of the crown structure to maintain function and esthetics may be required. The crown build-up may be achieved via stainless steel crowns, esthetic posterior crowns, or resin-based composite restorations.

Active interceptive treatment measures in mixed dentition are usually confined to the correction of anterior and posterior cross bites and alignment of ectopic incisors. In this regard 2*4 is a highly versatile appliance. In the modern era of esthetic dentistry, there are many new conservative options using direct and indirect composite resin materials in order to alter peg shaped laterals.

In this paper, we present a case with congenital agenesis of permanent incisors, peg shaped lateral incisors and generalized spacing in the anterior region which was treated successfully with direct composite, and anterior esthetic space maintainer (Hollywood bridge) to maintain space for the future definitive treatment option along with the enhancement of esthetics of the adolescent. All the treatment options were discussed with the parent and the patient as it involved early decision making of the adolescent.

CASE REPORT

An 11-year-old female reported to department of Pediatric and Preventive Dentistry with the chief complaint of spacing in between the upper anterior teeth. Intraoral examination revealed maxillary arch with permanent dentition and presence of retained deciduous

mandibular central incisors. The retained deciduous incisors were infra occluded, vital and there was no mobility associated with the retained central incisors.

Permanent maxillary right lateral incisors were missing clinically and presence of peg shaped left lateral incisors was seen. (Figure: 1) Class 1 molar relation with generalized spacing in the maxillary arch was evident. The child was born to non-consanguineous parents. The pregnancy and delivery were uneventful. There was no history of any severe systemic diseases, trauma or infections to the anterior region. Family history revealed no similar finding in any other members of the family. Panoramic examination revealed congenital absence of permanent mandibular central incisors and maxillary right lateral incisor. (Figure: 2)

Figure: 1(pre-operative)

Figure: 2 (pre-operative OPG)

After assessing the present case, acrylic crowns were planned to be placed on the lower retained mandibular primary central incisors. Crown preparation was done, impression was made with elastomeric material and cast was poured and retrieved. Wax pattern was fabricated on the cast and using the typical lost wax technique, heat cure acrylic crowns were fabricated with appropriate shade match. Good quality of surface finishing and polishing was done and the acrylic crowns were cemented on 71 and 81.

Bonding of brackets to the permanent incisors and banding of maxillary first permanent molars was performed at the next stage. 0.012-inch NiTi was used for initial alignment and closure of midline diastema. (Figure: 3)

Figure: 3 (2*4 appliance placement)

Fabrication of fixed functional space maintainer, i.e., lingual arch with anterior acrylic prosthesis (Hollywood appliance) was planned. Appropriate preformed orthodontic bands (0.005-inch thickness and 0.180-inch width) were adapted on 16 and 26. The appropriate shade selection for the teeth was performed under natural light. On the upper cast, a stainless-steel wire (0.9 mm) framework was made, spanning from one band to the other. The free ends of the wire were then soldered to the corresponding molar bands. In the anterior region of the upper cast, a trial wax up was done with trimmed acrylic teeth (A2 shade). After cold mould seal application and cold cure acrylic resin application, the appliance was then removed from the cast. After trimming, finishing, and polishing, the appliance was cemented on 16 and 26 with luting glass ionomer cement (Fuji I) and occlusion was checked for any premature contact. The patient and her parents were educated about the care of the appliance. This included vigorous rinsing after every meal and that the food to be chewed only on the molars. Cutting/incising was to be avoided as this appliance had only the cemented molar bands for resistance and stability. (Figure: 3)

Direct composite restoration was done with maxillary left permanent peg lateral to enhance the esthetic appearance. The maxillary left permanent peg lateral was prepared, isolated with cotton rolls, etched with 37% phosphoric acid for 15 seconds and bonding agent (Single Bond Adhesive System, 3M ESPE Adper Dental Products, St. Paul, Minn, USA) was applied to the tooth surface. The curing of the composite was done with halogen light. Before restoration, any sharp margins on the prepared tooth surface were rounded to ensure that there was enough surface area for bonding. Also, a retention groove was prepared to increase the retention of the composite restoration (Z-350, 3M ESPE Dental Products, St. Paul, Minn, USA). Occlusal adjustments were done to prevent any premature contacts, and excess material was removed. After finishing and polishing with diamond burs and Soflex discs (3M ESPE Dental Products, St. Paul, MN, USA), the final esthetic appearance was well accepted by both the patient and the parents.

Figure: 4 (post-operative)

DISCUSSION

The ideal multidisciplinary team for management of hypodontia includes specialists from orthodontics, pediatric dentistry, prosthodontics, and implantology. The need to await complete eruption and root formation of permanent abutment teeth with huge pulp chambers has contraindicated the provision of fixed prosthetic reconstructions in children with hypodontia. As the age of the child is 11, we considered giving composite restorations and acrylic crowns over retained primary incisors that could serve as interim restorations rather than going for bulky removable partial dentures that could be esthetically unacceptable by young patients.

The use of cure acrylic crowns as long term provisional restoration is well accepted in permanent teeth, however restoring primary teeth with acrylic crown can be challenging. Important parameters for successful restoration include at least 1–1.5 mm healthy tooth structure to be available above gingiva, sufficient clearance with respect to overjet and bite should be present, radiographically at least two-third of root length with no periapical pathology or internal resorption should be present. All the above mentioned criteria were present in relation to 71 in the present case whereas 81 shows slight signs of root resorption.

A tapered diamond point was used to reduce the mesial, distal, and labial axial surfaces at a 15° to 20° taper. This provides room for an adequate bulk of crown material for the strength of the restoration, a desirable margin and optimal esthetic appearance. In the present case, thin chamfer type of finish line was placed. SO-20 and TR 13 EF diamond points were used in the present case for tooth preparation and finishing.

In the present case, brackets were bonded to permanent incisors and banding of permanent molars were done. 0.012 inch NiTi wires were used for initial alignment and closure of midline diastema. Lateral incisors were not bonded as it was missing in the first quadrant and 22 appeared to be a peg lateral. Hence the modification of 2*4 appliance was used in our case. Rotation, diastemas and incorrect tooth angulations can be easily corrected using this versatile technique.

The esthetic rehabilitation of primary anterior teeth has a vital psychological impact on recovery of patient's self-esteem (slack and Johns). But in the present case, permanent lateral incisors were missing from the first quadrant. Hence our treatment objectives included preservation of the space, maintenance of the alveolar integrity and the prosthetic replacement of the missing tooth to enhance the function and esthetics. A functional space maintainer was given to the patient and the patient will be followed up until the growth ceases for future permanent prosthesis.

A peg shaped lateral is defined as "an undersized, tapered, maxillary lateral incisor" (glossary of prosthodontic terms (1990) that may be associated with other dental anomalies, such as canine transposition and over retained deciduous teeth. Individuals with malformed lateral incisors often display a diastema in the midline region caused by the distal movement of the central incisor. In the present case midline diastema was closed using 2*4 appliance so that further build up on the peg lateral using direct composite became much easier.

Patient was reviewed after one week following treatment. Repolishing of rough edges was done and functional occlusion was checked. Patient was instructed to follow proper oral hygiene measures to maintain excellent integrity of the composite tooth margin.

CONCLUSION

Bringing back the esthetics and function are the primary priority in the treatment plan for children with congenitally missing anterior teeth. Multidisciplinary treatment approach is required in the management of oligodontia. Pedodontist plays a vital role in diagnosing such cases during the transitional period and providing proper interim restorations.

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