

Modified Kiddie Fixed Partial Denture: A Path towards Novel Approach

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Abstract

Case Report

One of the paediatric dentist's greatest restorative challenges is the esthetic rehabilitation of a young toddler who has suffered multiple tooth loss subsequent to early childhood caries or extensive dental trauma. An anterior esthetic appliance may be used to replace lost teeth. Other considerations include: space maintenance, masticatory function, speech development, and tongue habits. The most decisive factor for placing an anterior esthetic appliance is parental desire. This paper discusses in detail about single fixed anterior esthetic appliance and the considerations to be made for deciding when and why to place such type of anterior functional space maintainer.

Keywords: Early Childhood Caries, Premature Loss of Maxillary Anterior Teeth, Anterior Functional space maintainer.

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INTRODUCTION

Dental caries is the most common chronic infectious disease of childhood, caused by the interaction of bacteria, mainly *Streptococcus mutans*, and sugary foods on tooth enamel. Early childhood caries (ECC) is a serious public health problem in both developing and industrialized countries [1]. ECC can begin early in life, progresses rapidly in those who are at high risk, and often goes untreated [2]. Its consequences can affect the immediate and long-term quality of life of the child and family, and can have significant social and economic consequences beyond the immediate family as well. In Indian population more than 50% of children are found to be suffering from early childhood caries. It is a serious public health problem seen in both the developing and industrialized countries, where malnutrition is common [3]. Early childhood caries (ECC) is the main reason for premature loss of Maxillary anterior primary teeth during the infancy and toddler period [4].

Proactive parents demand restoration of their children's teeth for better functional and esthetic [5]. This case depicts a novel approach towards loss of primary maxillary anterior teeth with the fabrication of Modified Kiddie Fixed Partial denture.

CASE

The six year boy reported to department of Paedodontics and preventive dentistry, K.M. Shah Dental Hospital, with the chief complains of decayed upper anterior teeth since 3-4 months. Medical and family history was non-contributory. Intraoral Examination revealed that 52, 51, 61 and 62 were decayed.(Fig.1) IOPA radiograph with maxillary anterior teeth was carried out.(Fig.2) The diagnosis for 52, 51 and 62 had proximal caries and a sub-gingival caries in relation to 61. The treatment plan was to extract 61 followed by replacement of Anterior Functional Space Maintainer and RMGIC in relation to 52, 51 and 62.

Appliance Fabrication done by two methods

1. With Edentulous area
(Loss of tooth due to trauma, Premature exfoliation or Extraction)

If edentulous area is present then follow the below mentioned procedure.

2. tooth in arch advised to extraction
(Due to Extensive caries, Periapical pathology, complex trauma)

If tooth is present in the arch which has to be extract due to caries, make impression and pour the cast. The present tooth in the cast to be trimmed and follow the below mentioned procedure.

Appliance Design

Steps followed at first appointment

- The Anterior tooth other than those which are to be functionally replaced are prepared and restored so that the accuracy during appliance fabrication is maintained.
- Band pinching and adaptation to be done bilaterally on both primary maxillary second molars.
- Make an alginate impression of maxillary arch with the bands in place. Bands to be Occlusal stabilized and working cast to be made. Disinfect with iodine. Alginate impression of mandibular arch and working cast to be made for fabrication.

Steps followed in Lab Procedure

- Remove the cast from impression once dental stone sets and disinfect it.
- Make a palatal arch wire bar with the 0.9mm wire passively running 1.5 mm away over maxillary

region and 3-4-mm away from free gingival margin.

- Prepared pontic from 0.7 mm wire with a triangular head (Fig.3) at the end of it to increase the surface area for better support of strip crown.(Fig. 4 and 5)
- The Other free end of post wire is looped around the palatal arch wire and soldering is done in relation to 61 regions.
- Anterior strip crown selection was done based on mesiodistal space of missing tooth and strip crown was attached to the palatal arch wire determination engaging the crown. (Fig. 6 and 7)
- Soldering of arch bar wire with molar bands.
- Remove the whole components from the cast and polished it.

Steps followed in Second appointment

- After the try in and required correction is done, the appliance is cemented with resin modified glass ionomer cement.
- Post cementation instruction was given to the parents regarding don't use the appliance to chew hard food stuffs.



Fig-1: Pre-operative Clinical view of Primary Maxillary Anterior teeth



Fig-2: Pre-operative IOPA of Primary Maxillary Anterior teeth



Fig-3: Triangular shape post which had been soldered to palatal arch wire



Fig-4: Soldered bands with palatal arch wire and reconstructed strip crown on triangular shape post



Fig-5: The cast showing the Soldered bands with palatal arch wire and reconstructed strip crown on triangular shape post



Fig-6: Post-operative Intra-oral Clinical view of Primary Maxillary Anterior teeth.



Fig-7: Post-operative Clinical view of Primary Maxillary Anterior teeth

DISCUSSION

The placement of an anterior primary fixed appliance is an elective procedure and is based strongly on parental desires. Parents must be able to make an informed decision and the paediatric dentist should provide them with accurate information facilitating such a decision. As mentioned previously, space maintenance in this region is not generally necessary; eating and function are also not affected. Restriction of growth is not a problem. The chief reason to place this appliance for esthetic and psychological benefit only. The timing of placement is somewhat controversial [6].

Historically, it was suggested to allow 6-8 weeks following tooth loss, before fabrication. This delay was thought to allow good healing and gingival shrinking to occur, which would result in a better fitting, more aesthetically pleasing appliance. However, clinical result has found that delay is not necessary and immediate placement also gives good result. Same-day extraction and appliance placement can result in an excellent clinical outcome [6]. The aesthetic concerns of Parent's for their child improves within the day period.

Clinical considerations are

- Esthetics[5]

- Functions[5]
- Phonetics[7]
- Psychological benefits[8]
- To Prevent the Para functional habits[8]
- To Prevent the arch collapse[9]
- More cooperation and acceptance of fixed appliance over removable in children[10]

Contraindicated in following conditions

- Poor ability to follow-up;
- Very poor hygiene;
- Deep bite patient;
- Bruxism.

In the present case, custom-made posts were used in anterior teeth. Considering the socioeconomic status of the patient, a custom-made post using an orthodontic 0.7 mm wire followed by strip crowns was used. Literature reveals that post helps to achieve satisfactory results in a child patient [11, 12]. However, this is a technique sensitive procedure which requires parent's cooperation. Also, there is a chance of loss of restoration due to trauma or biting on hard food, so the parents were instructed to train the child to avoid hard food. The patient was very happy and satisfied with the functional and esthetic results, cosmetic function, etc. Restorations were found to be serving well at the 1 year recall appointment. Apart from the dental benefits, oral rehabilitation also contributes towards the improvement of general and psychological well-being of the patient as was observed in the present case [13].

CONCLUSION

Early loss of primary teeth continues to be highly prevalent in India due to bottle feeding habit, lack of knowledge of proper oral hygiene maintenance, abnormal feeding habits leading to malocclusion in developing permanent dentition. A continuous and meticulous treatment planning is essential to monitor space loss and eruption of permanent teeth to prevent malocclusion.

REFERENCES

1. Livny A, Assali R, Sgan-Cohen HD. Early Childhood Caries among a Bedouin community residing in the eastern outskirts of Jerusalem. *BMC Public Health*. 2007 Dec;7(1):167.
2. Grindefjord M, Dahllöf G, Modeer T. Caries development in children from 2.5 to 3.5 years of age: a longitudinal study. *Caries research*. 1995;29(6):449-54.
3. Jain M, Singla S, Bhushan BA, Kumar S, Bhushan A. Esthetic rehabilitation of anterior primary teeth using polyethylene fiber with two different approaches. *Journal of Indian Society of Pedodontics and Preventive Dentistry*. 2011 Oct 1;29(4):327.
4. Bariker RH, Mandroli PK, Gokhale N, Pujar P. Esthetic and functional restoration in a child with

5. S-ECC using contemporary and biological techniques. *Indian Journal of Dental Advancements*. 2014 Jul 1;6(3):1649-55.
6. Bimal D. Aesthetic space maintainer – cosmetic alternative for pediatric patients a case report. *Journal Ind Dent Asso* 2010; 4(12):10-14.
7. Waggoner WF, Kupietzky A. Anterior esthetic fixed appliances for the preschooler: considerations and a technique for placement. *Pediatric dentistry*. 2001;23(2):147-50.
8. Metha D, Gulati A, Basappa N, Raju OS. Esthetic rehabilitation of severely decayed primary incisors using glass fiber reinforced composite: a case report. *Journal of Dentistry for Children*. 2012 Apr 15;79(1):22-5.
9. Khare V, Nayak PA, Khandelwal V, Nayak UA. Fixed functional space maintainer: novel aesthetic approach for missing maxillary primary anterior teeth. *BMJ case reports*. 2013 Jun 3;2013:bcr2013009585.
10. Tandon S. *Text Book of Pedodontics*. 2nd ed. Paras Medical Publisher. 2008. p. 446-65.
11. Klapper BJ, Strizak-Sherwin R. Esthetic anterior space maintenance. *Pediatric dentistry*. 1983 Jun;5(2):121-3.
12. Usha M, Deepak V, Venkat S, Gargi M. Treatment of severely mutilated incisors: a challenge to the pedodontist. *Journal of Indian Society of Pedodontics and Preventive Dentistry*. 2007 Jan 1;25(5):34.
13. Aminabadi NA, Farahani RM. The efficacy of a modified omega wire extension for the treatment of severely damaged primary anterior teeth. *J Clin Pediatr Dent*. 2009; 33(4): 283-8.
14. Saini S, Sharma D. Functional and Esthetic Rehabilitation during Deciduous Dentition Stage: A Case Report. *Dent Res J*. 2011; 8(2): 108-111.