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SINGLE SITTING INTERIM FIXED PROSTHESIS USING NATURAL TEETH SUBSEQUENT TO AVULSION IN A 13 YEAR OLD CHILD

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ABSTRACT:. Facial trauma resulting in tooth avulsion results in problems of physical and emotional nature for the patient, parent and a challenge for the dentist. Avulsion accounts for 0.5–16% of traumatic injuries in the permanent dentition which can occur at any age and is most common in the young permanent dentition and in the maxillary anterior region. Re-implantation of the avulsed tooth is the preferred emergency treatment depending on the extra-alveolar period and the storage medium used. The biggest advantage of immediate re-implantation is the psychological boost to the child of retaining his/her own natural teeth. A case report of 13 year old female patient with a history of trauma to the anterior region of maxilla and avulsion of 3 anterior teeth is discussed. An interim fixed partial denture was delivered using patient's avulsed natural teeth in a single appointment.

KEYWORDS: ***Interim fixed prosthesis, Natural tooth pontic, Avulsion***

INTRODUCTION

Avulsion accounts for 0.5 – 16% of all traumatic injuries to the permanent dentition and is most commonly observed in young adolescents.[1] Also, tooth avulsion results in problems of emotional and physical nature for the patient, parent and a challenge for the dentist.[2] The important factors to consider while management of avulsed teeth are conservation, preservation, minimal invasion, patient acceptance and cost.[3] Re-implantation of the avulsed tooth is the preferred treatment of choice. Also the success of re-implantation of avulsed tooth is very low.[4] Removable partial dentures made from acrylic resin are unaesthetic, bulky, non-functional and cause discomfort to the patient.[5] A clinical technique is presented for the fabrication of a transient fixed prosthesis using the patient's own avulsed natural teeth as pontics in a single appointment.

Fig.1a. Extraoral Preoperative

Case report

A 13 year old girl reported to the Department of Pedodontics and Preventive Dentistry with the chief complaint of loss of 3 upper anterior teeth 3days back due to fall from cycle. The patient was then immediately taken to a local clinic where she was given medication for pain relief and booster dose of Tetanus toxoid. The avulsed

Fig.1b. Intraoral Preoperative

tooth were collected from the site and kept in a cloth for 24hrs after which the teeth were transferred to a bottle containing water for the next 48 hrs. Health and family history were not significant. On clinical examination the face was bilaterally symmetrical with lacerations on the chin **(Fig.1a).** Intraoral examination revealed permanent dentition with missing maxillary permanent central incisors and right lateral incisor. Class I molar relation was present bilaterally and oral hygiene was poor **(Fig.1b).** Intraoral periapical radiograph was taken to confirm the integrity of alveolar bone and presence of any fractured tooth fragments. Re-implantation of avulsed tooth was ruled out considering the extra-alveolar dry time. The treatment planned was to use the patient's own teeth as pontics and fabricate an interim transient fixed partial denture on the same visit.

Technique

Stainless steel molar bands were adapted on both the 1st permanent maxillary molars. Maxillary mandibular alginate impressions were made and disinfected. The bands were transferred to the impression, stabilized and then study models were made **(Fig.2).** The avulsed teeth were debrided and cleaned using 5%sodium hypochlorite solution. The crowns of the teeth were decoronated and pulp was extirpated and then sealed with composite **(Fig.3a).** The crowns were then transferred to the study model and placed so as to duplicate the natural esthetics **(Fig.3b).** A groove was made on the palatal surface of all the incisors close to the cingulum using a round bur. A palatal arch was fabricated using 0.9mm stainless steel round wire and was adapted to fit exactly into the groove on the incisors **(Fig.4a).** The palatal surface of the natural avulsed teeth was then dried and acid etched with 37% orthophosphoric acid for 20 seconds and rinsed with water for 30seconds **(Fig.4b)**. It was air dried for 30seconds and a light-curing adhesive was applied which was subsequently light cured. The palatal arch was then fitted into the grooves and flowable composite was placed and light cured **(Fig.4c).** The palatal arch assembly with the teeth was then soldered to the molar bands. The solder joints were finished and polished **(Fig.5).** The entire assembly was cemented in the maxillary arch using glass ionomer luting cement **(Fig.6).**

The prosthesis was checked for occlusion, palatal adaptation and esthetics. The patient was recalled after a week and then monthly follow up for 3 months.

Discussion

Loss of permanent anterior teeth is traumatic experience not only for the child but also for the parents. It compromises mastication, affects speech and esthetics.[6] It also impairs the personality and causes a huge psychological trauma to the child. At present there is no standardized treatment protocol for management of avulsed permanent anterior tooth in cases that occur before cessation of growth.[7] Interim removable partial dentures are the preferred treatment of choice in such cases.[8] But the patients compliance to wear the appliance, its maintenance, subject to fracture, irritation to palatal mucosa and also the psychological setback to the patient does not fulfill our goal of restoring the patients health and overall well being.[9] Whereas a transient fixed prosthesis does not hamper the growth of the alveolar ridges can offer several advantages over removable partial dentures such as better esthetics, faster delivery of the appliance and the patient does not have to get accustomed to using the appliance as compared to removable partial dentures. By using patients own natural teeth as pontics we can not only restore the esthetics of the patient as closely as possible, it also excludes the need for complicated laboratory procedures.[10] Moreover, the natural tooth can be the best pontic in terms of shape, size, color and alignment. The patient was a 13 year old female patient and was already concerned about her esthetics at such a young age and was in a state of mental depression and unwilling to meet people and friends due to poor esthetics. Thus our treatment plan focused on restoring the esthetics of the patient in the same appointment and trying to boost the patient's self confidence until final treatment plan was decided. The prosthesis was made using patients natural permanent teeth and fixed to palatal arch with bands fabricated on both maxillary first permanent molars. The technique proved to be practical, economical and was completed in a single appointment. This particular design allowed us to align the coronal part of the avulsed natural tooth in exact position. The prosthesis delivered was noninvasive and can be easily removed during the placement of permanent prosthesis.

***CONCLUSION*:**

The objective of this paper was to describe an easy, economical and time saving procedure for the fabrication

Fig.2a. Alginate impression with bands on 1st permanent molars

Fig.2b. Study casts

Fig.3a.Decoronated avulsed natural teeth

Fig.3b. Avulsed natural teeth aligned in occlusion on study casts

Fig.4 a. Palatal arch adapted into the grooves prepared on lingual surface

Fig.4 b. Acid etching of lingual surface

Fig.4 c. Palatal arch assembly with natural avulsed teeth as pontics

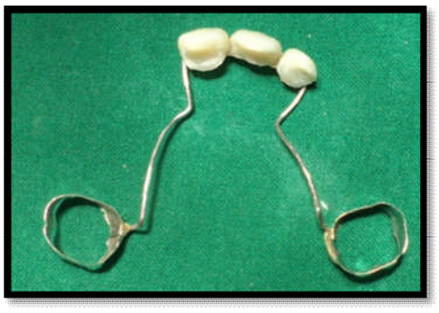

Fig 5. Final palatal arch assembly after soldering and polishing.

Fig.4a. Extraoral postoperative

Fig.4b. Prosthetics in-situ

Fig.4C. Intraoral postoperative

of a transient fixed prosthesis using patient's natural avulsed tooth. This protocol not only helped in fabrication and delivery of the appliance in a single sitting, but had huge impact in restoring the confidence of the 13 year old child.

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