

Retrieve the Space to Restore the Smile: A Report of Two Cases

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Abstract

Case Report

Facial esthetics plays an important role in self identification, self image as well as self confidence in children & adolescents. Traumatic dental injuries (TDI) are often observed in the pediatric age groups. Maxillary central incisors are most commonly subjected to various types of trauma, the most severe form being tooth avulsion. When a permanent tooth is lost, the adjacent teeth tend to migrate into that space resulting in space loss. Management of space is especially important in anterior region to avoid psychological and orthodontic complications. Short course of orthodontic treatment regains the lost space and facilitates the replacement of missing anterior teeth in growing children. In these case reports, the first case shows the space regaining using simple orthodontic forces. The second case describes using the natural tooth crown as an adhesive bridge to restore the smile.

Keywords: Avulsion, space loss, removable appliance, fiber-reinforced composite bridge.

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INTRODUCTION

Traumatic loss of maxillary incisors during the mixed dentition is a serious and challenging clinical situation. Because of the frequency of dental trauma, traumatized teeth with variable long-term prognosis pose a problem. These may lead to orthodontic malocclusions such as midline shift and anterior crossbite caused by space loss, or ectopic eruption of adjacent teeth [1]. The choice of the appropriate treatment modality for the missing maxillary central incisor depends on the specific characteristics of each situation.

Various treatment options are available to conserve the space after a traumatic episode. Tooth loss may be inevitable in most of avulsion injuries and as the replantation of teeth has questionable prognosis because of ankylosis or inflammatory resorption, it is important that an immediate replacement is provided in order to avoid esthetic, masticatory, phonetic disturbances and to maintain the edentulous space thereby avoiding arch length discrepancy [2].

These case reports describe the management of anterior tooth loss. In the first case, space loss was present which was retrieved using a simple finger spring and later the space was maintained by a removable partial denture. The second case shows utilization of the tooth crown as a part of adhesive bridge [2,3].

CASE REPORTS

Case 1

A ten year old female child reported to the Department of Pedodontics and Preventive Dentistry, Govt Dental College & Hospital, Hyderabad with the chief complaint of loss of right upper central incisor 8 months back due to trauma while playing in school. Space closure of about 3mm was seen due to drift of the adjacent lateral incisor (Fig-1). A removable appliance with a finger spring was planned for the child as there is adequate space available to regain between permanent lateral incisor and primary canine (Fig-2).



Fig-1: Pre-operative image showing drift of lateral incisor mesially



Fig-2: Removable appliance with a finger spring on right lateral incisor

She was periodically followed and activation of the finger spring was done for every 15 days. After 8 months of periodic activation, space was regained (Fig-

3). A removable partial denture was then delivered to the child (Fig-4) and instructions were given about the maintenance of the denture.



Fig-3: Space retrieved after periodic activation of finger spring



Fig-4: Removable partial denture

Case 2

A 12yr old male child reported to the Department of Pedodontics & Preventive Dentistry with the chief complaint of mobility of upper central incisor (Fig-1). The child had a past history of traumatic injury and avulsion of the same tooth 1year back for which he underwent reimplantation in a private clinic. An intra-oral periapical radiograph revealed inflammatory

resorption of the entire root of permanent upper right central incisor (Fig-2) and the tooth crown is retained only with the support of soft tissues surrounding it. The poor prognosis of the tooth was explained and the treatment for the patient was initiated with the extraction of permanent upper right central incisor (Fig-3) under 2% lignocaine topical anesthetic solutions.



Fig-1: Pre-operative view showing discolored 11



Fig-2: IOPA revealing inflammatory resorption in 11

The extracted tooth was placed in normal saline, and it was sectioned in a horizontal plane at the level of the cemento-enamel junction with the help of an abrasive disk under constant irrigation. The cervical portion was contoured using a flame-shaped air-rotor bur and checked for the appropriateness of size and shape. Then its palatal surface was etched with 37% phosphoric acid and rinsed for about 15 seconds. Adhesive was applied to the etched surface. A fiber-reinforced resin composite was placed and light cured for 40 seconds. The tooth was then held in its anatomical position in the mouth in passive contact with the socket and re-checked for appropriateness of size and

occlusion. The fiber-reinforced composite was also extended on either side of the pontic i.e., over the palatal surface of 12 and 21. Over the fiber-reinforced composite, conventional composite resin was placed in increments over all the three teeth and again light cured for 40 seconds (Fig-4). The occlusion was once again checked for appropriateness during excursive movements (Fig-5).

Oral hygiene instructions were given and the patient was advised to avoid biting on the front teeth. Periodic recall was done and the patient was followed for 1yr uneventful.



Fig-3: Crown of right upper permanent central incisor after extraction



Fig-4: Crown used as an adhesive bridge



Fig-5: Post-op view of adhesive bridge using natural crown of 11 as pontic and fixed with fiber-reinforced composite

DISCUSSION

Traumatic dental injuries (TDI) are commonly observed in the children and young adults. They comprise 5% of all injuries [3]. Among all the TDI, avulsion of permanent anterior teeth is seen in 0.5-3% [4]. Timely management is important for a good prognosis. However, due to lack of parental awareness and not storing the tooth in proper medium or losing the tooth often results in choosing treatment options rather than re-implantation. If the treatment is delayed, the adjacent teeth drift into the edentulous space leading to space loss and crowding. Especially in anterior region, the loss of an incisor tooth disrupts the esthetics, leading to psychological trauma to the child and even interfering with the socialization of the child during the important development stage [5]. All these sequelae might subject the child for a full mouth comprehensive orthodontic treatment later in life.

The management of anterior space loss in the young growing children is challenging. In the first case, no space maintainer was given after tooth loss, which leads to space loss due to drifting of adjacent teeth into avulsed space. Initially space was regained using a finger spring which was activated periodically as a result of which space was regained [6]. A removable partial denture was then delivered. A short course of orthodontic treatment in the mixed dentition phase helped to regain the space effectively. This was economically feasible to the parents and also motivated the child for effective oral hygiene measures.

Replacement resorption is the most common outcome after delayed reimplantation. The loss of teeth presents a difficult prosthetic problem [7]. This can be managed in several ways like 1) a provisional removable partial denture replacing the missing tooth 2) a provisional fixed acrylic bridge utilizing the adjacent teeth as full crown abutments or 3) a bonded bridge using either a denture tooth, or a chair side fabricated resin tooth as a tooth replacement [8, 9].

In the second case we used the third technique as it has many advantages over others which include [10].

- The clinical skills and material needed for the procedure are easily available in all dental clinics.
- Avoids a laboratory stage, which reduces the cost and the number of visits.
- Effect of tooth loss is better tolerated by the child since immediate replacement with the natural tooth is achieved.
- Use of natural tooth ensures consistency of shape and shade which is not easy to achieve in a fixed / removable prosthesis.
- Preparation of abutment teeth is not required.

Implants are the treatment of choice and should be considered when general and local conditions are favorable. Their use is not generally intended before the end of growth period and around the age of 18 years. Because of the high cost, poor financial conditions could also limit their use. More economically acceptable treatments should therefore be

explored for the replacement of missing tooth, as a main treatment or as a long-term provisional treatment before implant therapy.

CONCLUSION

Early loss of anterior permanent tooth might lead to psychological impact on child development, such as aesthetics, speech and socialization. Management of space loss is more valuable at an early stage. Appropriate case selection and assessment will help the practitioners to choose an effective technique to regain the space effectively. Non invasive and expedient techniques are to be preferred in the pediatric practice.

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