Avulsion of primary tooth-modified Essix retainer as a space maintainer

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Abstract
Children who present with loss of anterior teeth due to trauma or caries pose a difficult clinical problem. Traumatic injuries intend to be intensely assessed and managed. Rapid restoration of the avulsed tooth is of prime significance to enhance esthetics as well as to keep up the structure, function and form, and prevent any psychological trauma to the children. A modified Essix retainer, simply constructed in the laboratory, can be used to provisionally restore the primary anterior tooth lost due to avulsion or caries.

Keywords: Avulsion, children, Essix retainer

CASE REPORT

INTRODUCTION

Essix retainers were introduced as an esthetic, comfortable, and inexpensive alternative to traditional bonded retainers and removable appliances.[1] Sheridan was the first to describe the Essix orthodontic retainer in 1993 and subsequently its use to provide a provisional restoration. Some concern was raised regarding original design, which only covered from canine to canine as a slight increase in open bite was observed. Extending the retainer to cover all occlusal surfaces has been recommended to prevent this.[2] Giving a quick, esthetic, retentive, and agreeable replacement for avulsed or grossly decayed or fractured deciduous teeth can be an ultimatum in a restricted time period. Guaranteeing a substitution is accessible promptly after extraction obliges arranging and contact with lab support. This restoration is generally an interim restoration so is ideally inexpensive. This technique gives a biological preference during healing and providing almost a quick and economical substitution of the extracted tooth. The restoration is independent of the soft tissues and entirely tooth-borne, hence the retainer may be worn during the healing stage when the bone and soft tissues are remodeling, without loading the area and also it does not affect the growth of maxilla or mandible. This device is also easily removed thus facilitating hygiene.[3]. There is no reduction in retention as the supporting tissues remodel, negating the need for relining the prosthesis.

Case Report

A 2½ old boy was reported to the Department of Pediatric and Preventive Dentistry V. S. Dental College, Bengaluru with a history of avulsed upper anterior tooth 1-week ago [Figure 1]. Intraoral periapical radiograph was taken to confirm the missing tooth. Detailed medical and dental history was taken and there was no significant medical and dental history.

Based on the low level of evidence to support the procedure and on the risk-benefit assessment of the outcomes, it is not advisable to reimplant a deciduous tooth.[4] Hence, a modified Essix retainer was fabricated to act as a provisional restoration for the avulsed 61 in the present case.

The following procedure was followed for the construction of the modified Essix retainer.

An Alginate impression of the maxillary arch was made, and the impression was poured with die stone. After the stone was set, acrylic teeth were trimmed and secured onto the edentulous space. A sheet of polypropylene (0.75 mm thick) was placed in the frame of the vacuum forming machine.
Amitha, et al.  Modifi ed Essix retainer for avulsion

Once it is adequately heated, the heater was turned off, and the vacuum was turned on. Simultaneously, the heated polypropylene sheet was lowered over the cast and allowed to cool completely under vacuum for the maximum adaptation of the material to the tooth portion of the cast [Figure 2]. The retainer was trimmed using acrylic to eliminate sharp edges and scallop the retainer to follow the gingival margins. The tissue surface of the retainer was smooth and ideally convex to make it cleansable. The retainer was fitted on the maxillary arch of the patient [Figure 3]. Patient was made aware of the short-term nature of this restoration and the need for meticulous oral hygiene.

Discussion

Traumatic dental injuries are frequent during childhood with a frequency that varies from 4% to 30%. The most frequent types of dental traumas in primary teeth are avulsion. The maxillary teeth in both primary and permanent are most affected by trauma, especially the central incisors due to its position, [5]

The management of avulsion in deciduous teeth is a clinical challenge. Initially, it is necessary to provide emergency treatment, but definitive cosmetic treatment must often be delayed. The modifi ed Essix retainer is an esthetic, cost-effective, and effi cient means of providing a provisional temporary restoration during this period. It is a comfortable appliance to wear and readily accepted by the patient. Some disadvantages of the modifi ed Essix retainer have been noted. It is a removable restoration, and plaque retention and gingivitis can develop in the presence of poor oral hygiene. The importance of good oral hygiene must be stressed to the patient when a modifi ed Essix retainer is fi tted. [6]

Different treatment alternatives have been recommended to replace the loss of primary anterior teeth because of injury or dental caries. This includes removable space maintainers, bonded space maintainers using Ribbond or no treatment at all. The choice of treatment depends upon various factors, which include the age, cooperation level of the children, and demand for esthetics. Considering the lack of cooperation and compliance by children in the preschool age group, in this case, the modifi ed Essix retainer was considered as the treatment of choice.

Conclusion

This technique can be utilized as a quick short-term solution after the loss of teeth due to injury or caries. Long-term use is not advisable in patient with poor oral hygiene. This appliance can be effortlessly evacuated to encourage in maintaining hygiene, it is accessible very quickly, is cheap, comfortable to wear, conservaive of abutment teeth.

References