

Replacement of Missing Permanent Tooth in Young Patient Using an Interim Prosthesis

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ABSTRACT

General dentists commonly encounter a young patient who has traumatically avulsed a maxillary central incisor. Several options exist for replacing a missing maxillary central incisor. If the tooth has been avulsed, the simplest long-term solution is to replant it. If re-implantation is not possible, fixed space maintainer might be an option in a young patient. In such cases, Maryland Bridge is an ideal interim prosthesis till the time growth is completed.

KEYWORDS: Interim Prosthesis, Maryland Bridge, Fixed Partial Denture, Missing Anterior Tooth

INTRODUCTION

Tooth avulsion is the most common type of traumatic injury seen in children at the age of seven - nine years when the alveolar bone is resilient. The most commonly affected tooth is maxillary central incisor. The management and prognosis of avulsion of a permanent tooth depends upon the measures taken immediately after avulsion.¹ Replantation is the first line treatment but if replantation cannot be done then replacement of the missing permanent anterior tooth has to be done using a space maintainer up to the time of complete growth of the maxillary jaw. A removable partial denture can replace the lost tooth and serve for aesthetics, but long term use of the removable partial denture would lead to resorption of the bone and injury of the interdental papillae. Young patients have large pulp chambers and preparation of teeth in such patients for complete veneer may lead to the pulpal injury, hypersensitive teeth and iatrogenic pulp vandalization.² Therefore, to prevent space loss, immediate replacement of the missing tooth should be planned which will maintain the space, serve for better aesthetics, preserve the soft tissues and alveolar height.

CASE REPORT

A 9 year old female reported to the Department of Pedodontics and Preventive Dentistry with the chief complaint of missing maxillary permanent right central incisor. Detailed history indicated a traumatic accident one day before which resulted in avulsion of the central incisor. The intraoral examination revealed contaminated alveolar socket with 11(Fig. 1). Further clinical and radiographic examination showed no evidence of alveolar bone fracture.



Fig. 1: Avulsed 11 - Intraoral view



Fig. 2: Fabrication of pontic using composite resin

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Figure 3: Framework of Maryland Bridge on working model using Glass Fibre

The socket was thus irrigated using normal saline and betadine solution, fresh bleeding was induced. The socket was compressed followed by a pressure pack and administration of systemic antibiotics and anti-inflammatory drugs. Patient was recalled after seven days for further treatment. Post healing of the socket all treatment options were discussed with the patients' parents, dental implant for the substitution of the avulsed permanent tooth was thus decided when the girl turned 18. Thus, it was decided to place a glass fibre-reinforced composite Maryland bridge as an interim solution. Retention grooves were prepared on the palatal aspect with 12 and 21. An impression was made with alginate for the bridge fabrication using a glass fibre reinforced material (Interlig). A pontic was fabricated using composite resin for the missing tooth (Fig.2). The measurement of the length of the bridge was done using a modeling wax, which was then adapted to the working cast.



Figure 4: Cementation of Maryland Bridge

Maryland bridge was fabricated using a glass fibre-reinforced composite material (Fig. 2). The try in of the bridge was done for its fit and occlusal interferences if any. After proper isolation of the teeth, the tooth surfaces to be bonded were cleaned with a slurry of pumice, rinsed, and air dried. Teeth surfaces were etched using 37% phosphoric acid. After rinsing, all surfaces were air dried, visually inspected for acid etching and were bonded, and light cured for 40 seconds. A thin layer of

flowable composite was placed on the palatal aspect of the prepared tooth surfaces. The bridge was inserted slowly and was held firmly in position (Fig.4,5). Excess composite was removed, and the bridge was then light cured for 40 seconds. Other required restorations and complete oral prophylaxis was carried out. A follow-up was advised until the patient is ready to replace the bridge with a more permanent solution.



Figure 5: Palatal view of the bridge after bonding, finishing, and polishing intra-oral view

DISCUSSION

Missing tooth in the maxillary anterior region at a young age is a physical loss and an emotional experience for the patient. The replacement of the missing tooth by the modification of sound tooth structure of adjoining teeth may be a hostile treatment option for some patients and dentists.³ The available different treatment modalities with their advantages and disadvantages and lack of awareness in patients makes it difficult to decide the treatment for the replacement of missing tooth in restorative dentistry.⁴ Fixed Maryland bridge represent one of these options, with numerous benefits including the ease of fabrication, ability to bond, repair and longevity. This is a minimally invasive approach with a tinge of tooth reduction compared to traditional prosthetic options. Glass fibers reinforce composite splint material is more acceptable for the final structure as compared to the traditional Maryland bridge with metal framework, an FRC bridge is easy to bond, it has no metal shadow giving it more aesthetically pleasing appearance in young permanent teeth.⁵ Different dentin and enamel composites using layering technique to build the intermediate tooth provides a vital final aspect, with natural opalescence, translucency, and opacity.

CONCLUSION

Maryland bridge fabrication technique presented in this article suggests a new treatment option for the replacement of a missing anterior tooth in young patients. This technique restores aesthetic and function. It is more comfortable than a removable appliance, non-irritating, and hygienic. It does not require much tooth reduction and can be easily repaired, modified, or removed from teeth without any problem.⁶ Thus the implication of interim prosthesis like Maryland Bridge in paediatric

patients at a proper age will prevent the patients from the ill effects of edentulous space and invasive replacement methods.⁷

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