Maryland Bridge: A Boon for the Missing Permanent Teeth

Shweta Bhayade¹, Vivek Shinde², Minal Niswade³, Milind Wasnik¹, Sandesh Chokhandre⁴
¹Post Graduate Student, Department of Pedodontics and Preventive Dentistry, Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Nagpur; ²Post Graduate Student, Department of Orthodontics and Dentofacial Orthopaedics, Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Nagpur; ³Dental Surgeon, Nagpur; ⁴Post Graduate Student, Department of Pedodontics and Preventive Dentistry, VSPM Dental College and Research Centre, Nagpur.

Address for Correspondence:
Dr. Shweta Bhayade, Department of Pedodontics and Preventive Dentistry, Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Nagpur, Maharashtra, India.

ABSTRACT:
Traumatically avulsed maxillary central incisor is the most commonly encountered tooth by dentists. Replacement of missing maxillary central incisor in young patients is advised using several options. The first line management of the avulsed tooth is to replant it. In cases where re-implantation is not achievable due to extended extra-oral dry storage, fixed space maintainer using Maryland Bridge can preserve the space till the time development and growth is completed of the jaws.

Keywords: Fixed space maintainer, Maryland Bridge, Maxillary expansion, Missing anterior tooth, Omega clasp.

INTRODUCTION
Tooth avulsion in children is the most common form of traumatic injury witnessed in seven to nine years of age, which is mainly due to the more resilient alveolar bone which causes minimum resistance to extrusive forces. In majority of the reported clinical cases, maxillary central incisor is the commonly affected tooth with the incidence greater in boys as compared to girls.¹ The prognosis of avulsed permanent tooth depends upon the extra-oral storage period and condition of the tooth after avulsion. Therefore precise and immediate diagnosis of the traumatized tooth leads to appropriate management post trauma.² Re-plantation is the first line treatment for these teeth as the replanted tooth also remains functional for a few years. The cases which cannot be treated by re-plantation, in such cases replacement of the missing tooth should done using till the complete growth of the maxillary jaw by delivering a space maintainer to serve the functions like space maintenance, aesthetics and phonetics. An extensive and lengthy utilization of removable partial denture causes resorption of the bone and leads to the degeneration of the inter dental papillae. Preparing a tooth for complete veneering perhaps causes injury to the pulp and may lead to pulpal damage. In adolescent patients large pulp chambers often cause hypersensitivity.³ In order to maintain the adequate alveolar height and space loss immediate replacement should be graphed which will eventually help in maintaining better aesthetics, will serve for the lost space and will safeguard the surrounding soft tissues.

CASE REPORT
In the Department of Pedodontics and Preventive Dentistry, a 9 year old female reported with the chief complaint of replacement of right missing maxillary permanent central incisor (Figure 1). Detailed history indicated a traumatic accident one year ago which resulted in avulsion of the right maxillary central incisor with space loss (Figure 2). Further clinical and radiographic examination revealed no evidence of alveolar defects in the same region. All possible treatment options were discussed with the patients' parents. Implant with the missing tooth was advised to the patient by the age of
18 years. The space loss in the missing tooth region was corrected using removable maxillary expansion appliance incorporating the omega clasp for 8 weeks (Figure 3,4). The incorporated omega clasp was activated every 2 weeks. The required space for the fabrication of the pontic was gained by the end of 8th week (Figure 5). Retention grooves were prepared on the palatal aspect with 12 and 21 followed by which an alginate impression was made and working model was prepared. The pontic was fabricated using composite resin. The fabrication of bridge was done using the composite pontic and a glass fibre reinforced material (Interlig). Modeling wax was used for the measurement of the length of the bridge and then it was adapted on the working cast.

A glass fibre-reinforced composite material was used for fabricating the Maryland bridge. The bridge was inserted into the mouth to check its fit and occlusal interferences. The teeth surfaces to be bonded were uncontaminated with a pumice slurry. Under suitable isolation the teeth were rinsed and air dried. The enamel surfaces were etched with 37% of phosphoric acid for 30 seconds followed by rinsing and air drying. The etched surfaces were then bonded and light cured for another 30 seconds. A skinny film of flow able composite resin was applied onto the palatal planes of the prepared teeth surfaces. The fabricated Maryland bridge was placed in and was firmly held in the accurate position (Figure 6). Surplus composite resin was taken away and the complete bridge assembly (Figure 7) was light cured for 30 seconds. Patient and parents was given post insertion instructions and was advised to maintain proficient oral hygiene. A routine 3 months follow-up was recommended to the patient until the replacement of the bridge with a further permanent treatment option.
DISCUSSION
A missing tooth in the anterior region is a bodily loss and a disturbing episode for every individual. Replacement of a single tooth is a challenging restoration in dentistry due to the lack of awareness of the available diverse treatment modalities. The returns and shortcomings of the treatment options are important for choice of the patients. Fixed Maryland bridge is characterized by many advantages like ease of fabrication, bondability, longevity and reparability. It is a minimally invasive procedure with a lesser amount of tooth reduction when compared to the traditional prosthetic replacements. Maryland bridge traditionally includes a metal framework. Glass fibre reinforce composite splint do not require a metal framework thus makes it more aesthetic and more easy to bond with adjacent teeth. It do not have any metal shadow.

CONCLUSION
In the present article the technique of maxillary expansion using a removable appliance incorporating omega clasp for expansion followed by the Maryland bridge fabrication is a new treatment procedure for the replacement of a missing anterior tooth with space loss in young patients. The procedure used in the present case well reinstates the purpose, utility and aesthetics and is more relaxing than a not fixed appliance. In addition to all these qualities the procedure is more hygienic and non-irritating to the surrounding hard and soft tissues. The technique do not necessitates the need of extensive tooth reduction and can be effortlessly refurbished, altered or parted from teeth. Hence, in young paediatric patients the suggestion of a provisional prosthesis like Maryland Bridge with appropriate treatment plan can prevent the ill effects of edentulous space and invasive substitute procedure like rigid partial denture specially in anterior regions.

REFERENCES