

Case Report

Maryland bridge in a 4 year old patient: A case report

¹Arpita Thakur, ²Shilpy Dwivedi, ³Babu G.V.

¹Post Graduate Student, Department of Pedodontics and Preventive Dentistry, New Horizon Dental College and Research Institute, Chhattisgarh, India;

²Associate Professor

³Professor and Head of the Department

ABSTRACT:

Aesthetics plays a major factor while treating an anterior teeth. Premature loss of anterior primary teeth leads to delayed eruption of the permanent maxillary incisor as the area is covered with reparative bone and dense connective tissue. Other problems include undesirable appearance, development of habits such as tongue thrusting, lisping, forward resting posture of tongue and altered behaviour pattern causing damage to the overall development of the child. Therefore, treating a missing anterior teeth becomes a challenge for a paediatric dentist. Resin bonded partial denture is a prosthesis that is luted to tooth structure, primarily enamel, which has been etched to provide mechanical retention for the composite resin. A 4 year old male patient visited the department with the chief complaint of missing anterior left tooth. Aesthetics being the major concern of the parents, treatment was planned accordingly and it was decided to give a Maryland bridge to the patient.

Index Terms: Maryland bridge, Resin bonded fixed partial denture, Prosthetic rehabilitation

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Corresponding author: Arpita Thakur, Post Graduate Student, Department of Pedodontics and Preventive Dentistry, New Horizon Dental College and Research Institute, Chhattisgarh, India

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INTRODUCTION

Missing teeth specially in the anterior region is a major matter of concern for a paediatric patient, for the parents as well as for the clinician as this can cause space loss and a malpositioning of the teeth, resulting in collapse of anterior segment of jaw. Apart from this, it can also lead to closure of space and shift of midline. The child may also develop para-functional habits and altered behavioural patterns including depression and increased shyness leading to less friendly and less acceptable daily lifestyle. Overall it hampers the quality of life of the child. Therefore, the best way to avoid these situations is to replace the missing teeth. Replacement of missing single tooth is always a challenge for the clinician, especially in growing patients. Congenitally missing teeth, caries or trauma are all possible causes of absence of teeth in oral cavity. One of the most prevalent causes of tooth loss in the anterior part of the oral cavity is severe trauma leading to avulsion. One study reported that out of 2,100 children (aged 8-14 years) surveyed for teeth fractured due to trauma, 60.74% were aged between

11 and 14 with 13.8% cases involved incisors. 1 Re-implantation of the avulsed tooth, removable partial denture, porcelain fused metal (PFM) bridge, resin-bonded partial denture (Maryland bridge) and dental implants are some of the therapy options available for treatment in such conditions. 2 This case report presents a case of replacement of missing anterior teeth with Maryland bridge.

CASE REPORT

A 4 year old boy reported to the department of Pedodontics and Preventive dentistry with the chief complaint of missing upper anterior teeth since 2 months. He had no past medical or dental history. He had a history of trauma 2 months back. Extra-oral examination showed no abnormalities. Intra-oral examination revealed displaced tooth (due to trauma) with 61 and white spot lesion with 62 (Fig 1) Radiographic examination revealed submerged tooth with 61.

Fig 1: Preoperative Intraoral view



Fig 2: Labial view of Maryland Bridge on cast



The parents were extremely concerned about the patient's aesthetic and wanted replacement. Keeping the patient's age, compliance, better aesthetics in mind and the fact that the permanent successor will take almost 3 years to erupt in its place, Extraction of 61 followed by placement of Maryland bridge was considered as a treatment option for prosthetic rehabilitation as well as for maintaining the space. Due to lack of patient compliance and average aesthetics, Gropers appliance was rejected by the parents. Minimal tooth preparation was done on the lingual surface of 62 for better retention of wings of the bridge using standard technique. Impression was taken using Putty elastomeric impression material and was sent to the laboratory(Fig 3 and 4).

Fig 3: Palatal view of Maryland Bridge on cast



Fig 4: labial view of Maryland Bridge post cementation.



At the next appointment the bridge was cemented using resin cement(Fig 5,6 and 7).

Fig 5: Palatal view of Maryland Bridge post cementation



Fig 6: Extraoral view of Maryland Bridge post cementation



A follow up of 6 months showed no problem with the bridge and parents and patient were happy with the aesthetic and functional result(Fig 8).

DISCUSSION

Loss of Anterior teeth requires immediate attention of the clinician for restoring the aesthetics and function. Re-implantation, removable partial dentures, fixed partial dentures and dental implants are all options for replacing a single lost tooth. When paediatric patients are considered re-implantation,functional space maintainer and resin bonded partial denture(maryland bridge) are some alternatives. Each modality is a therapy option with its own set of benefits and drawbacks. Because patient's understanding of the benefits and drawbacks of various treatment options is critical for making informed decision, teeth replacement is one of the most difficult restorations in paediatric dentistry. In the present case the patient reported with a submerged tooth with 61, so replacement was not a treatment option. Removable partial dentures are the simplest and least expensive alternative available, but they are frequently rejected by paediatric patients because of their lack of cooperation. Functional space maintainer(Gropers appliance) can be a good alternative but due to patients compliance and rejection by the parents due to major

aesthetic concern, this option was avoided. In this case, a zirconia resin reinforced bridge was chosen to give the patient with a single-visit, cost-effective, and minimally invasive fixed treatment.

Maryland bridge was initially the concept of Livaditis et al in 1982 which was further evolved by Holt et al in 2008 as Procera Maryland bridge, where single piece zirconia framework was incorporated on an all ceramic incisor pontic connecting the two wings that were bonded to the lingual surface of adjacent teeth. Preparation was restricted to the lingual surfaces, limited to 0.5 mm or less of the enamel layer. The framework was precision milled from a solid piece of zirconia.⁵ Conventional maryland bridge utilizes a metal wings instead of full crown preparations, which are bonded to the palatal or lingual surfaces of the abutment teeth.⁶ Most common disadvantage with this is its highest failure rate. Almost 21% patients wearing Maryland bridges complains of debonding within a year. Other disadvantage includes discoloration (18%) and caries (7%).⁷ Although caries are a very rare complication, debonding is the main matter of concern and it has been observed that rebonding of a debonded maryland bridge have a much higher failure rate and recementing for a second time is generally ill advised as replacing the bridge has been found to have a higher success rate.⁸ In this case maryland bridge was modified by fabricating a single unit bridge with porcelain wings attached to the artificial teeth. Metal serrations were created on the tooth surface of wings for better adhesion making this a modified version of maryland bridge. Authors have reported that debonding does not affect the patients satisfaction⁹ and there is very less damage to the abutment teeth.¹⁰ In our case also acceptance by patient and parents both were satisfactory. Debonding was not an issue after 6 months followup. The parents were instructed to not let the patient bite anything in tearing motion from anterior teeth. Oral hygiene was

also maintained which added to the success of this treatment.

CONCLUSION

The Maryland bridge is an aesthetic and less invasive treatment that causes less damage to the abutment teeth, requires less chair time, and is less expensive. Patient cooperation is needed for a successful treatment. It is well received by young patients and can be utilised as a therapy alternative.

REFERENCES

1. Gupta A, Yelluri RK, Munshi AK. Fiber-reinforced Composite Resin Bridge: A Treatment Option in Children. *Int J Clin Pediatr Dent* 2015;8(1):62-65.
2. Gupta K, Tandon S, Prabhu D (2002) Traumatic injuries to the incisors in children of South Kanara district: A prevalence study. *J Indian Soc Pedod Prev Dent* 20(3): 107-113.
3. Holt LR, Drake B (2008) The Procera Maryland Bridge: A case report. *J Esthet Restor Dent* 20(3): 165-171.
4. Livaditis GJ, Thompson VP. The Maryland bridge technique. *Tic* 1982;41:7-10.
5. Holt LR, Drake B (2008) The Procera Maryland Bridge: A case report. *J Esthet Restor Dent* 20(3): 165-171.
6. Kravitz, N. D. (2020). The Maryland bridge retainer: A modification of a Maryland bridge. *American Journal of Orthodontics and Dentofacial Orthopedics*, 157(1), 128–131.
7. Goodacre CJ, Bernal G, Rungcharassaeng K, Kan J. Clinical complications in fixed prosthodontics. *The Journal of Prosthetic Dentistry* 2003;90:31-41.
8. Creugers NH, Kayser AF. An analysis of multiple failures of resin-bonded bridges. *J Dent*. 1992;20:348-51.
9. Creugers NH, De Kanter RJ. Patients' satisfaction in two long-term clinical studies on resinbonded bridges. *J Oral Rehabil*. 2000;27:602-7.
10. Binsu, S¹, Shilpa Joseph, Jenish George Kizhakkemuriyil, and Seema George¹. "MARYLAND BRIDGE." INDEXED WITH: 54.