

# SINGLE ANTERIOR TOOTH REPLACEMENT BY MARYLAND BRIDGE WITH LOOP CONNECTOR: A CASE REPORT

\*V.N.V. Madhav, \*\*Priyanka Patil

\*HOD and Professor, \*\*Post graduate student, Y.C.M.M. and R.D.F'S Dental College, Ahmednagar | Corresponding Author: Dr. Fayiz S Faizal, Email: priyankapavanpatil@Gmail.Com

<https://doi.org/10.55231/jpid.2022.v06.i01.06>

## Abstract

*Restoring a single missing tooth in the mandibular anterior region is often a great concern to the dentist because it requires unnecessary removal of healthy abutment tooth structure. Also because of the drifting of the teeth may reduce the available pontic space or presence of diastema before can result in excessive mesiodistal space which again compromises the aesthetics. When the patients demand more conservative and less invasive treatment options, a combination of Maryland Bridge with a loop connector may be the best alternative option to restore the missing teeth whenever the diastema is present. It is the modification of resin bonded FPD which offers a simple solution when the above dilemma is present. It consists of a loop on the lingual aspect, joining the pontic in the center, and then attaches to the wing retainer on the abutment tooth. This case report provides a straightforward and innovative method for the fabrication of modified resin bonded FPD along with maintaining diastema.*

**Keywords:** Midline Diastema, Maryland Bridge with loop connector, Modified Resin Bonded FPD

## INTRODUCTION

Replacement of anterior missing teeth is always challenging to the dentist to satisfy patients' aesthetic and functional demands. Different treatment options are available to replace single missing anterior tooth include implant-supported restoration, fixed partial denture, removable partial denture. Sometimes due to treatment cost or when the patient doesn't want to undergo the surgery or doesn't want removable prosthesis, the best treatment option available is a resin-bonded prosthesis. The Maryland Bridge is one of the most conservative and less invasive treatment modalities. Sometimes, drifting of teeth into the edentulous space leads to reduction of the available pontic space; whereas a diastema present before extraction may result in excessive mesio-distal width to the pontic space.<sup>1</sup> In such situations, the simplest approach would be to maintain the existing diastema using a loop connector. These connectors include a loop which is placed on the lingual aspect of the prosthesis that connects adjacent retainers and/or pontics.<sup>2</sup> Maryland bridge with a loop connector could be a better option for retain-

# PROSTHETIC AND IMPLANT DENTISTRY

Official Publication of Indian Prosthodontic Society  
Kerala State Branch

ing the diastema with a minimalistic approach. It has advantages of both resin bonded prosthesis and loop connector.

## CASE REPORT

A 21-year-old male patient reported to the Department of Prosthodontics, complaining of a missing tooth in the lower front region since 6 months. On intraoral examination, it was found that the mandibular right central incisor was missing and edentulous space was too large to replace the single missing tooth [figure 1]. The treatment option given to the patient was implant-supported restoration. The patient denied the treatment because of surgery. Conventional FPD was not planned because the patient wasn't ready for orthodontic correction prior to prosthesis fabrication otherwise it could compromise the aesthetic. As the patient was more concerned about his aesthetic appearance and

diastema, an alternative treatment option given to the patient was Modified Resin Bonded FPD i.e. Maryland Bridge with a loop connector.

During the first appointment, Diagnostic impressions were made with irreversible hydrocolloid and face bow transfer was taken. Diagnostic casts were made and mock-up was done. Abutment teeth were prepared on the lingual surface of 42 and 31 according to the guidelines of Maryland bridge preparation [figure 2]. Sufficient lingual clearance about 0.8 to 1mm was given. About 0.6 to 0.8mm reduction was done on a Lingual segment of the proximal surface using a flat end tapered diamond point and a supragingival chamfer margin was placed on the lingual surface using chamfer diamond point. A polyvinyl siloxane impression was made using two-stage double mix techniques (3M, ESPE). Provisional restorations were fabricated with protemp and cemented until the definitive



Fig. 1 Pre-operative view



Fig. 2 Occlusal view showing Teeth preparation

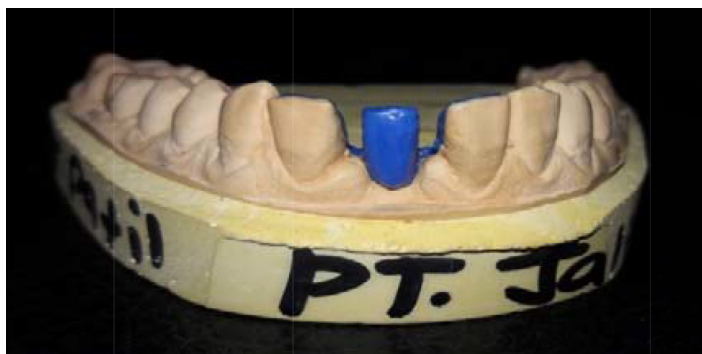


Fig.3 wax pattern fabrication



Fig.4 wax pattern fabrication showing loop connector

# PROSTHETIC AND IMPLANT DENTISTRY

Official Publication of Indian Prosthodontic Society  
Kerala State Branch

prosthesis was fabricated. Two sets of the cast were obtained, one for laboratory procedures and one for mounting respectively. And shade selection was carried out for PFM prosthesis. Wax patterns for lingual retainers along with loop were fabricated using blue inlay wax on the working cast [fig.3]. Modified ridge lap design was given on the tissue surface of the pontic because of the thin biotype and inadequate width of the attached gingiva. Two loops of 2mm thickness, round in cross-section were fabricated and joined to the retainers 31, 42, and the pontic 41 on the palatal aspect [fig.4]. A 0.2mm relief was provided in the region of the loop connectors. The wax patterns were cast and copings were finished, after that those copings were checked on the master cast for the accurate fit [fig.5 and fig.6], thereafter it was tried in the patient's mouth followed by ceramic build-up was completed and the bridge was cemented using resin-based luting cement [3M Rely X U200], [fig.7 and fig.8].

## DISCUSSION

Replacing the anterior teeth in midline diastema is usually requires fine balancing by the dentists because it is difficult to get maximum aesthetic results by maintaining natural anatomic forms of the teeth without over contouring of the adjacent teeth.<sup>3</sup> In this case, Maryland Bridge with a loop connector offers better treatment options as they follow the principles of tooth conservation and aesthetics. They even have added advantages like good periodontal health because the finish lines are placed supragingival, requires no anaesthesia, also economical and rebonding is possible.<sup>4,6</sup>

This Modified Resin Bonded FPD is the ultimate option to solve this problem of excessive mesiodistal width of pontic space when FPD's are planned.<sup>7</sup> Also, this option was given to the patient because the occlusion was favourable.



Fig.5 coping trial on Hanau articulator



Fig.6 coping trial in mouth



Fig.7 definitive prosthesis



Fig.8 definitive prosthesis showing a lingual aspect



Extra oral view of definitive prosthesis



# PROSTHETIC AND IMPLANT DENTISTRY

Official Publication of Indian Prosthodontic Society  
Kerala State Branch

The casting of the loop can be done from sprue wax that is circular in cross-section or shaped from platinum gold-palladium (Pt-Au-Pd) alloy wire,<sup>8</sup> choice depends upon the dentist. A modified ridge lap pontic was planned due to Siebert's class I situation thus avoiding the soft tissue grafting procedure. The advantage of a modified ridge lap pontic is that it gives good aesthetic, easy to maintain, gives good emergence profile. The only lingual surface needs to be prepared on abutment tooth to accommodate the wings which are more conservative preparation than FPD along with maintaining the aesthetic and phonetics. Also, oral hygiene maintenance will be easily maintained with a soft toothbrush and dental floss. However meticulous oral hygiene is very important to keep up the prosthesis plaque-free. One important factor must be understood that the size of the connectors shouldn't be kept very bulky and it should be in intimate contact with the underlying mucosa; otherwise, there are chances that the patient may develop the annoying habit of pushing the tip of the tongue into the gap between the loop and the mucosa.<sup>9</sup> Prachi Chaudhari et al, in her case report, used this connector to splint pathologically migrated teeth.<sup>10</sup> While designing the prosthesis, the retainer should be out of contact in all excursive movements. If a protrusive contact is present, then the excursive movement will unseat the retainers irrespective of the strength of the cement.<sup>11</sup>

This case report provides an easy, conservative, non-invasive, and cost-effective treatment choice to improve aesthetics. The limitation of this technique is debonding which can be minimized by the use of resin cement.

## CONCLUSION:

Maryland bridge with a loop connector may be an alternative option to replace a missing tooth as it provides aesthetic and function along with

maintaining diastema. Also, this prosthetic design provides a more conservative option than conventional FPD and gives the advantages of both the Maryland bridge and a loop connector.

**Conflict of Interest:** None

## REFERENCES:

1. Malone WF, Tylman SD, Koth DL. Tylman's theory and practice of fixed prosthodontics. IshiyakuEuroAmerica, Incorporated; 1989.
2. Shah M, Singh S, Rastogi N, Chopra D, Kumar A, Nair C. Aesthetic Triad: Maryland Bridge, Ovate Pontic and Loop Connector. JDSOR. 2012;3:45-7.
3. Dandekeri SS, Dandekeri S. Single anterior tooth replacement by a cast lingual loop connector-a conservative approach. Journal of clinical and diagnostic research: JCDR. 2014 Sep;8(9):07-08.
4. Parker RM. An ultraconservative technique for restoring a missing central incisor. Contemp Esthetics. 2007;7:30-4.
5. Shillingburg HT Jr, Hobo S, Whitsett LD, Jacobi R, Brackett SE. Fundamentals of fixed prosthodontics, 3rd edition. New Delhi, Passi, 2002;537.
6. Rosenstiel S, Land M, Fujimoto J. Connectors for partial fixed dental prosthesis. Contemporary prosthodontics. 4th edition. New Delhi, Elsevier, 2007;843-69.
7. Chapman KW, Hamilton ML. Maintenance of diastemas by a cast lingual loop connector and acid-etch technique. The Journal of the American Dental Association. 1982 Jan 1;104(1):49-50.
8. Stephen F, Rosenstiel, Land MF, Fujimoto J. Contemporary fixed prosthodontics. 3rd ed. St Louis: Mosby; 1995. p. 564-5.
9. Shenoy K, Sajjad A. Anterior loop connector fixed partial denture: A simple solution to a complex prosthodontic dilemma. The Journal of Indian Prosthodontic Society. 2008 Jul 1;8(3):162.
10. Chaudhari P, Bhandari A, Sehwal K, Tarle S. Prosthodontic Management of median diastema using Maryland bridge with Loop connectors. Pravara Medical Review. 2018 Sep 1;10(3).
11. Khurshid Mattoo, Manas Singh, and Roma Goswami, "Resin Bonded Loop Connector Fixed Partial Denture – A Subtle Solution to Maintain Midline Diastema." International Journal of Dental Sciences and Research, vol. 2, no. 6 (2014): 168-170.