

## Case Report

# Anterior Loop Connector: A Subtle Solution For Maintaining the Diastema and Esthetics – A Case Report

Mehtaab Singh Bhatia<sup>1</sup>, Nitin A. Vaidya<sup>2</sup>, Vidya N. Vaidya<sup>3</sup>, Saumya Sharma<sup>4</sup>, Pranay Kankaria<sup>5</sup>, Hemangi Som<sup>6</sup>

<sup>1</sup> Senior Lecturer, Department of Prosthodontics and Crown & Bridge, Maitri College of Dentistry and Research Center, Durg, Chhattisgarh

<sup>2,3,4</sup> Professor, Department of Prosthodontics and Crown & Bridge, Maitri College of Dentistry and Research Center, Durg, Chhattisgarh

<sup>5,6</sup> Post Graduate Student, Department of Prosthodontics and Crown & Bridge, Maitri College of Dentistry and Research Center, Durg, Chhattisgarh

### ARTICLE INFO



#### Keywords:

Diastema, anterior edentulous space, loop connector, aesthetic, fixed partial denture.

### ABSTRACT

Patients with missing anterior teeth, along with diastema have very limited treatment options to restore the edentulous space. Replacement of single anterior tooth is a complex and challenging procedure that can be accomplished either by implant-supported restorations or conventional porcelain-fused-to-metal or resin-bonded fixed partial dentures. If implant supported prosthesis is not the possible treatment option, FPD along with loop connector may be the best solution to maintain the diastema and provide optimum restoration of aesthetic. This clinical report describes the procedure of replacing missing maxillary central incisor with loop connector fixed partial prosthesis while maintaining diastema.

### INTRODUCTION

Different esthetic treatment options are available for replacement of single anterior tooth i.e. implant supported restorations as well as conventional porcelain fused to metal and resin bonded fixed partial dentures.<sup>1</sup> There are a multiple factors which motivate the patient to undergo any treatment dealing specially with the esthetics. Loss of tooth normally causes drifting of the tooth and consequent narrowing of the pontic space. Spacing between natural teeth is a result of a discrepancy between the size of the bony arch and the mesio-distal size of natural teeth. Midline diastema is a clinical condition that presents itself as a space between natural teeth in the midline either in the maxilla or the mandible or both, however a greater difficulty faced in

replacement of the tooth results in cases of flaring of the teeth or diastema or interdental spacing which is present before the loss of the tooth. If diastema is to be maintained and implant- supported prosthesis is not selected as a treatment option because of any reason, loop connector fixed partial denture maybe the simplest and best solution which also provides optimum restoration for diastema and proper emergence profile.<sup>2</sup> This article presents a technique to fabricate a three unit FPD with modified palatal loop connector to achieve an optimal aesthetic and functional correction for patient with missing maxillary central incisor along with spacing in the maxillary anterior region.

\* Corresponding author: Dr.Pranay Kankaria, Post Graduate Student, Department of Prosthodontics and Crown & Bridge, Maitri College of Dentistry and Research Center,,Durg, Chhattisgarh

## CASE REPORT

A 46-year-old male patient reported to the Department of Prosthodontics, with the chief complaint of missing teeth in upper right front region. On intraoral examination, it was seen that the right maxillary central incisor was missing and the edentulous space was wide mesio-distally, the patient gave a history of trauma two years ago and subsequent avulsion of the tooth. A conventional FPD was not possible due to large spaces between the anterior teeth. Patient was neither willing for implant placement nor a removable partial denture. Considering the alternative option for his missing tooth, in fixed partial there were mainly two options, one is spring cantilever FPD and other is loop connectors. Spring cantilever FPD was not an option of treatment as posterior tooth was not required to be replaced. Therefore, if diastema has to be maintained FPD along with loop connector is the best treatment option with the right central incisor as pontic and left central incisor and right lateral incisor as the abutment teeth.



**Fig. 1:** Pre-Operative



**Fig 2:** Tooth Preparation



**Fig 3:** Final Impression



**Fig 4:** Metal Trial on Cast



**Fig 5:** Metal Trial Intraorally



**Fig 6:** Cementation

## PROCEDURE

Following clinical procedure was carried out:

- Tooth preparation was done with 12,21 with equigingival margin in order to enhance the esthetics as it prevents the color of the metal from showing thorough translucent enamel.<sup>3</sup>(Figure 2)
- The gingival retraction was done and final impressions were made using elastomeric impression material. (Figure 3)
- An inter-occlusal record was made using bite registration material.

- To ensure optimum rigidity of the connector, length was decreased and half round form of cross-section was given. The patterns were invested and casted in a base metal alloy.(Figure 4)
- Metal try-in was done to verify the proper seating.(Figure 5)
- Bisque trial was done to verify the aesthetics.
- After evaluation the occlusion was adjusted where necessary. Loop connectors were highly polished to high shine.
- Final fixed dental prosthesis with loop connectors was luted using glass ionomer cement.(Figure 6)
- The patient was instructed to maintain proper oral hygiene. Use of dental floss and interdental brush were recommended.
- The patient was evaluated after one week to assess the oral hygiene status.

## DISCUSSION

The presence of the anterior extensive diastema is esthetic problem to resolve with conventional fixed partial dentures.<sup>4</sup> Connectors basically link different parts of FPD; pontic and retainers. Thus constitute an important part of FPD. Patient with missing central incisor along with diastema have limited treatment option. Closing the space (diastema) with conventional FPD without considering golden proportion would fail to create an esthetically pleasing appearance. Maximum esthetic results may be obtained only if the natural anatomic forms of the teeth are protected and the diastema is maintained with the minimal contouring of adjacent teeth.<sup>5</sup> If an implant supported prosthesis is not selected as a possible treatment modality, then the only viable option available to maintain spaces in FPD is with the help of loop connectors, which is both esthetically and mechanically challenging. Loop connectors are non-

rigid connectors that permit limited movement between otherwise independent members of the fixed partial denture prosthesis. Its flexibility depends upon its length, diameter and its cross section. The size, shape and position of the loop connector are vital for the prosthesis, as it prevents its distortion and fracture. Meticulous designing of the prosthesis is important to ensure that plaque control is not impeded. The size, shape and position of connector affects the success rate of the prosthesis.<sup>6</sup> There should be adequate thickness of the connector to prevent deformation but not so much that it becomes conspicuous to the tongue. The incorporation of a loop connector in this design allowed the patient to be given an excellent esthetic outcome without compromising the functionality of the restoration.<sup>2, 7, 8</sup>

## SUMMARY

Treatment planning is crucial to the success when considering any form of tooth replacement. Although loop connectors are rarely used, loop FPD connectors are sometimes required and serves as simple solution when an existing diastema and interdental spacing is to be maintained in a planned fixed prosthesis. Whichever treatment modality is finally selected, it should suit the needs of the patient. With the disadvantage of maintain oral hygiene, interference in tongue movement and discomfort in speech, if the patient can be motivated to get adapted to it, loop connector in FPD offers a simple and excellent solution for cases where excessive mesio-distal pontic space is present. This clinical report describes use of loop connector for replacing missing central incisor with the maintenance of the diastema. This prosthesis resulted in good esthetic result and proper emergence profile

**REFERENECES**

1. Marinello CP, Meyenberg KH, Zitmann NU, Et al. Singletooth replacement: some clinical aspects. *J Esthet Dent*. 1997; 9(4):169-78.
2. Kamalakanth S, Arbaz S. Anterior loop connector fixedpartial denture: A simple solution to a complex prosthodontic dilemma. *Journal of Indian Prosthodontic Society* 2008; 8:162-4.
3. Eshleman JR, Janus CE, Jones CR. Tooth preparation designs for resin-bonded fixed partial dentures related to enamel thickness. *J Prosthet Dent* 1988; 60:18-22.
4. Ashish Kalra et al. Aesthetic rehabilitation with Multiple loop Connectors. *Cont Clin Den*. 2013; 4(1):112-5.
5. Bello A, Jarvis RH. A review of esthetic alternatives for the restoration of anterior teeth. *J Prosthet Dent* 1997; 78:437-40.
6. Fischer H, Weber M, Marx R. Lifetime prediction of allceramic bridges by computational methods. *J Dent Res* 2003; 82:238-42.
7. Dange SP, Khalikar AN, K. Shiv. Non- Rigid connectorsin fixed dental prosthesis - A Case Report. *JIDA*, 2008; 2:356-8.
8. Taggart J. Resin bonded spring cantilever bridge. *Restorative dentistry*. 1990; 6(2):4-5.