

# Single Anterior Tooth Replacement by a Cast Lingual Loop Connector - A Conservative Approach

SHILPA SUDESH DANDEKERI<sup>1</sup>, SAVITA DANDEKERI<sup>2</sup>

## ABSTRACT

One of the most challenging and complex treatment modality is replacement of single anterior tooth. This can be overcome by different treatment options such as implant-supported restorations as well as conventional porcelain-fused-to-metal and resin-bonded fixed partial dentures. Drifting of teeth into the edentulous area may reduce the available pontic space; whereas a diastema existing before an extraction may result in excessive mesiodistal dimension to the pontic space. Loop connector fixed partial denture (FPD) may be the simplest and best solution to maintain the diastema and provide optimum restoration of aesthetics. This article describes the procedure for the fabrication of a loop connector FPD to restore an excessively wide anterior edentulous space in a patient with existing spacing between the maxillary anterior teeth.

**Keywords:** Loop connector, Metal frame work, Midline diastema, Resin-bonded

## CASE REPORT

A 19-year-old male patient reported to the Department of Prosthodontics, chief complaint of replacement of missing teeth in upper right front region. His prime concern was aesthetic replacement as well as maintenance of midline diastema. On examination the available edentulous span was greater than the approximate size of the adjacent central incisor [Table/Fig-1]. Therefore, it was decided to fabricate a loop connector fixed partial denture (FPD) which is a variant of Maryland bridge or Resin bonded FPD with the right central incisor as pontic and left central incisor and right lateral incisor as the abutment for lingual plates, maintaining diastema between the pontic and the retainers. The patient was explained about the treatment modality, and procedure was performed with required consent of the patient.

## PROCEDURE

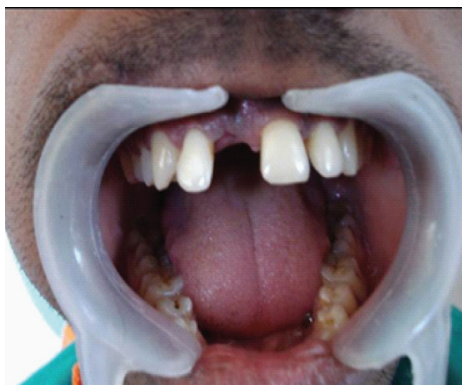
During the first appointment, diagnostic impressions were made and a mockup was done on the diagnostic cast. Abutment teeth are prepared on the lingual surface. Sufficient lingual clearance about 0.8 to 1mm was provided. Lingual segment of the proximal reduction about 0.6 to 0.8mm done using flat end tapered diamond point and a supragingival chamfer margin given on the lingual surface using chamfer diamond point. Three vertical stops or counter sinks about 0.5mm of depth were prepared on the lingual surfaces which aided preventing displacement of the prosthesis. a rubber base impression (Aquasil LV, Dentsply Intl) was made, two

sets of cast were poured, one for laboratory procedures and one for mounting respectively. Shade selection for the porcelain fused to metal pontic was also determined. In laboratory, the frame work design was outlined on maxillary cast. Wax patterns for two lingual loop connectors were incorporated into the design of metal frame work [Table/Fig-2]. The frame work casted, the lingual plates are about 0.8 to 1mm and the loop is about 1.5 to 2mm thick [Table/Fig-3]. During the second patient appointment, try in of the frame work was made to ensure proper fit and lack of palatal tissue impingement. The porcelain fused to metal pontic was baked on after the try in [Table/Fig-4].

Before the final seating of the prosthesis, the aesthetic appearance of the denture was confirmed with the patient. The abutment teeth were properly isolated and cleaned. A resin system (Calibra®, Dentsply Intl) was used to permanently attach the frame work to the abutment teeth. The frame work was firmly seated and excess composite material was removed, and finishing was completed [Table/Fig-5]. As the patient had been to department of periodontics for oral prophylaxis before starting the prosthetic work and hence the oral hygiene was good and well maintained cementation of the prosthesis was carried out.

## DISCUSSION

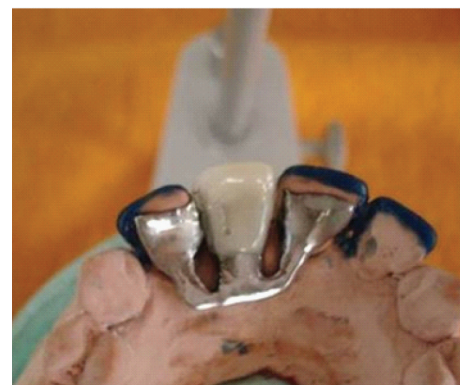
The anterior extensive diastema is a challenging aesthetic problem to overcome as it is difficult to obtain maximum aesthetic results by maintaining natural anatomic forms of the teeth with minimal over



[Table/Fig-1]: Preoperative



[Table/Fig-2]: Wax pattern with loops



[Table/Fig-3]: Metal frame work



[Table/Fig-4]: Prosthesis cemented



[Table/Fig-5]: Postoperative

contouring of the adjacent teeth. Implants and removable partial denture and conventional FPD are also the options available to treat patient with anterior single missing teeth [1]. A conventional FPD was opted out since the space was large and existing spaces between her anterior teeth was to be maintained. But the patient was neither willing for implant placement as it would entail surgery and a more protracted treatment nor removable partial denture and wanted an immediate fixed alternative for his missing teeth. In such cases Resin bonded FPD or Maryland bridge are the better choice as they follow the principles of tooth conservation and aesthetics. They also provide added advantages like good periodontal health as the finish lines are always supra gingival, requires no anaesthesia, and also economical [2-5]. Loop connector FPD is one of the choice to solve this problem of excessive mesiodistal width of pontic space when FPD are planned [6].

Loop connector FPDs and Spring cantilever FPDs are types of Resin bonded FPD. In the loop connector FPDs, the loop can be fabricated by casting it from sprue wax that is circular in cross section [7,8]. The palatal connector in spring cantilever FPD can be a choice when the posterior teeth are healthy and sound, they are used as abutments to replace a maxillary anterior tooth with diastema. The connector runs over the palatal soft tissue with long, thin and resilient bar. but these connectors have disadvantages like the long palatal connector may deform or produce coronal displacement of the pontic; it may interfere with speech and cause discomfort to the patient [9]. Hence, a loop connector fixed partial denture prosthesis is better as compared to the spring cantilever. But in both these designs it is important to ensure that plaque control is not impeded. The patients should be instructed not to push the tip of the tongue into the gap between the loop and the mucosa [7-9]. In this particular case the patient was advised to follow all the instructions properly as he could not come back for a follow up visit.

In the present case, the loop connector FPD was an exclusive conservative technique where in only palatal surfaces of the abutment tooth was prepared to accommodate the plates as

compared to many other similar cases where in loop connectors are attached to full coverage retainers. In these cases the tooth is prepared similar to the conventional FPD, which results in loss of vital tooth structure and it's no more conservative preparation [2,7,8,10]. In the above case, the loop connector FPD not only addressed the problem of excessive mesio-distal width pontic space, but also was a conservative approach for aesthetic replacement of single missing anterior teeth.

## CONCLUSION

There are different treatment options available to replace a single missing anterior tooth such as the implants, removable partial dentures, conventional fixed partial dentures. This paper has described a conservative approach for anterior esthetic replacement with the loop connectors help to maintain the diastema with good aesthetic results. The patient was very pleased with the final outcome as the restoration achieved excellent form and function.

## REFERENCES

- [1] Al-Quran FA1, Al-Ghalayini RF, Al-Zu'bi BN. Single-tooth replacement.factors affecting different prosthetic treatment modalities. *Oral Health*. 2011;11:1-7.
- [2] Shah M, Singh S, Rastogi N, Chopra D, Kumar A, Nair C, et al. Aesthetic Triad: Maryland Bridge, Ovate Pontic and Loop Connector. *JDSOR*. 2012;3:45-47.
- [3] Shillingburg HT Jr, Hobo S, Whitsett LD, Jacobi R, Brackett SE. Fundamentals of fixed prosthodontics, 3<sup>rd</sup> edition. New Delhi, Passi, 2002;537.
- [4] Rosenstiel S, Land M, Fujimoto J. Connectors for partial fixed dental prosthesis. Contemporary prosthodontics. 4<sup>th</sup> edition. New Delhi, Elsevier, 2007;843-69.
- [5] Shillingburg HT Jr, Hobo S, Whitsett LD, Jacobi R, Brackett SE. Fundamentals of fixed prosthodontics, 3<sup>rd</sup> edition. New Delhi, Passi, 2002;509-12.
- [6] Chapman KW, Hamilton ML. Maintenance of diastem as by a cast lingual loop connector and acid-etch technique. *JADA*. 1982;104:49-50.
- [7] Kamalakanth S, Arbaz S. Anterior loop connector fixed partial denture: A simple solution to a complex prosthodontic dilemma. *Journal of Indian Prosthodontic Society*. 2008; 8:162-64.
- [8] Sharma N, Paleka U, Sharma S. Loop connector - bridging the gaps.....a case report. *NJDSR*. 2012;1:42-45.
- [9] Taggart J. Resin bonded spring cantilever bridge. *Restorative dentistry*. 1990;6:4-5.
- [10] Madhav VNV, Jadhav R. Treatment options for replacement of missing central incisor. *Trends in Prosthodontics and Dental Implantology*. 2011;2:1-2.

### PARTICULARS OF CONTRIBUTORS:

1. Reader, Department of Prosthodontics, AB Shetty Memorial Institute of Dental Sciences, Mangalore, India.
2. Professor, Department of Prosthodontics, Yenepoya Dental College, Mangalore, Karnataka, India.

### NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Shilpa Dandekeri,  
Reader, Department of Prosthodontics, Including Crown and Bridge and Implantology,  
AB Shetty Memorial Institute of Dental Sciences, Deralakatte, Mangalore, Karnataka, India.  
Phone : +919008150986, E-mail: dandekeri@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **Dec 10, 2013**  
Date of Peer Review: **Jun 01, 2014**  
Date of Acceptance: **Jun 17, 2014**  
Date of Publishing: **Sep 20, 2014**