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CASE STUDY

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## LOOP CONNECTOR FIXED PARTIAL DENTURE – A SUBTLE SOLUTION TO MAINTAIN DIASTEMA

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### ABSTRACT

Space management while restoring an edentulous space might be quiet difficult sometimes either due to drifting of teeth into edentulous area or an existing diastema before an extraction which may result in excessive mesiodistal dimension of 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.

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### INTRODUCTION

Restoration of esthetics is one of the major goal of a successful prosthodontic treatment. Certain situations can present a challenge for the clinician especially when the space available for restoring the tooth is not appropriate. Of all the treatment modalities available now a days for replacing a missing tooth, conventional fixed partial dentures remain an economically feasible treatment of choice (Al-Quran, 2011). Most of the times, drifting of teeth into the edentulous area occurs which causes reduction of the available pontic space, but sometimes a diastema which exists before an extraction may result in excessive mesiodistal dimension to the pontic space (Shah, 2012).

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This is a challenging clinical situation for the prosthodontist and leaves him in a dilemma whether to close the space or maintain it in the restoration to simulate natural tooth appearance. If diastema is to be maintained and implant supported prosthesis is not selected as a treatment option, loop connector fixed partial denture may be the simplest and best solution which also provides optimum restoration of esthetics (Shillingburg, 2002). Connectors are basically components of the fixed partial denture that join the retainers and the pontics together (Rosenstiel, 2007). Loop connectors are non rigid type of connectors required to maintain the existing diastema in a planned fixed prosthesis (Shillingburg, 2002). Loop connectors consist of a loop on the lingual aspect of the prosthesis that connects adjacent retainer and/or pontics. The loop connectors may be cast from sprue wax that is circular in cross-section or shaped from platinum-gold-palladium (Pt-Au-Pd) alloy wire (Chapman, 1982). This article presents cases with excessive space in the anterior region treated with a loop

connector to achieve ideal esthetic results in the maxillary anterior segment.

### Case Report 1

A 39-year-old female patient reported with the chief complaint of missing tooth in upper left front region. Patients medical, social and drug history were non-significant, whereas dental history revealed loss of maxillary left central incisor due to dental caries. Her prime concern was aesthetic replacement of the concerned tooth. On examination the available edentulous span was greater than the approximate size of the adjacent central incisor [Fig-1(a,b)]. Therefore fabrication of a loop connector fixed partial denture (FPD) was planned which is a variant of Maryland bridge or Resin bonded FPD with the right central incisor and left lateral incisor as the abutments and left central incisor as pontic maintaining diastema between the pontic and the retainers.

The treatment modality was discussed with the patient and the procedure was performed with required consent of the patient. After diagnostic mounting and mock up analysis a treatment planning was done. The treatment started with preliminary impression making with Irreversible hydrocolloid (CA 37; Cavex, Holland), following which diagnostic casts were mounted and a design for the final resin bonded prosthesis was made. Abutment teeth (maxillary right central incisor and left lateral incisor) were prepared [Fig 2 (a,b)] and Final impressions were made with Addition polyvinyl siloxane material (Reprosil, Dentsply/ Caulk; Milford, DE, USA) and temporization was done. Two casts were poured with die stone- one for die preparation and the other for checking the relation between the tissue surface of the die and the loop connector. To maintain the distance between the two central incisors a loop connector was designed that would replicate midline diastema in the restoration. Wax patterns for the retainers were fabricated with indirect inlay wax (Kerr co; USA) (Fig. 3).



(a)



(b)

Fig. 1.



(a)



(b)

Fig. 2.

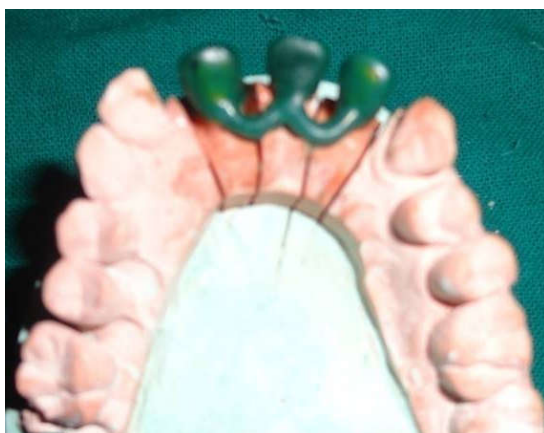


Fig. 3.

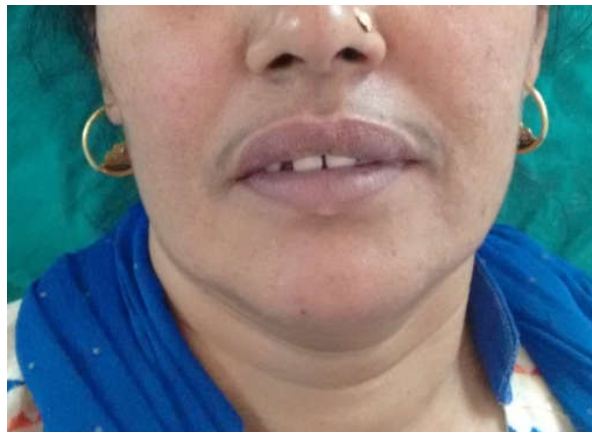


Fig. 4.



(a)

(b)



(c)

Fig. 5. (a,b,c)

The loop connector connecting the pontics to the retainers were made with round 14 gauge wax. A 0.2mm of relief was provided in the region of loop connector. The wax patterns were casted. The cast framework was tried in the patient [Fig 4] and ceramic build up was done. The rest of the laboratory procedures were common with the conventional metal-ceramic FDP fabrication. The patient was then given instructions regarding the oral hygiene maintenance and was put on strict follow up. After finishing and polishing definite prostheses were cemented and successfully delivered [Fig. 5].

### Case 2

A 32-year-old female patient reported with the chief complaint of missing tooth in upper left front region. After discussing the treatment plan 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.

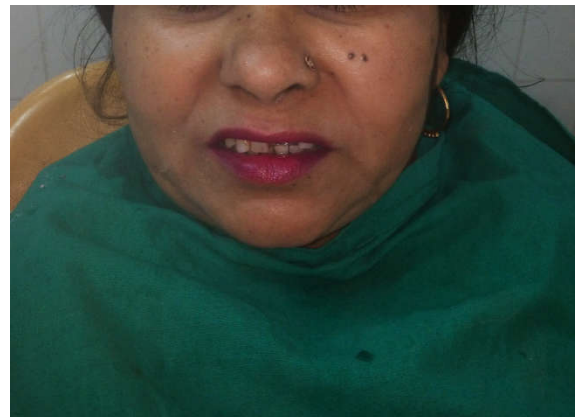


Fig. 6. (Preoperative)

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. The frame work casted, the lingual plates are about 0.8 to 1mm and the loop is about 1.5 to 2mm thick. During the second 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. 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. The frame work was firmly seated and excess composite material was removed, and finishing was completed.



Fig. 2. (Postoperative)

## 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 contouring of the adjacent teeth. A conventional FPD is usually opted out in cases of anterior spacing due to large amount of existing spaces between teeth. But 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 (Shah, 2012; Shillingburg, 2002; Rosenstiel, 2007 and Shillingburg, 2002). Loop connector FPD is one of the choice to solve this problem of excessive mesiodistal width of pontic space when FPD are planned (Chapman, 1982). 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 (Kamalakanth, 2008 and Sharma, 2012). 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 (Taggart, 1990). 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 (Kamalakanth, 2008). In the present cases, the loop connector FPD was an exclusive conservative technique. In the above cases, 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.

## REFERENCES

- Al-Quran, F.A., Al-Ghalayini, R.F., Al-Zu'bi, BN. 2011. Single-tooth replacement. factors affecting different prosthetic treatment modalities. *Oral Health.*, 11:1-7.
- Chapman, K.W., Hamilton, M.L. 1982. Maintenance of diastem as by a cast lingual loop connector and *acid-etch technique*. *JADA*.1982;104:49-50.
- Kamalakanth, S., Arba, z S. 2008. Anterior loop connector fixed partial denture: A simple solution to a complex prosthodontic dilemma. *Journal of Indian Prosthodontic Society.*, 8:162-64.
- Madhav, V.N.V, Jadhav, R. 2011. Treatment options for replacement of missing central incisor. *Trends in Prosthodontics and Dental Implantology.*, 2:1-2.
- Rosenstiel, S., Land, M., Fujimoto, J. 2007. Connectors for partial fixed dental prosthesis. *Contemporary prosthodontics*.4th edition. New Delhi, Elsevier, 843-69.
- 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.
- Sharma, N., Paleka, U., Sharma, S. Loop connector - bridging the gaps. A case report. *NJDSR*.2012;1:42-45.
- Shillingburg HT Jr, Hobo S, Whitsett LD, Jacobi R, Brackett SE. *Fundamentals of fixed prosthodontics*, 3rd edition. New Delhi, Passi, 2002;537.
- Shillingburg HT Jr, Hobo S, Whitsett LD, Jacobi R, Brackett SE. *Fundamentals of fixed prosthodontics*, 3rd edition. New Delhi, Passi, 2002;509-12.
- Taggart J. Resin bonded spring cantilever bridge. *Restorative dentistry*. 1990;6:4-5.

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