

Loop connectors: A novel solution to prosthodontic dilemma.

Dishita Chokhani

Senior Lecturer, Department of Prosthodontics Nanded rural dental college and research centre, Nanded, Maharashtra, India.

Abstract

Restoring a single missing anterior tooth is perplexing and challenging prosthodontic procedure that can be achieved with implant-supported restorations as well as conventional porcelain-fused-to-metal or resin-bonded fixed partial dentures. Variable esthetic treatment options should be explored while treating such patients. As the presence of interdental spaces between the anteriors preceding the extraction may result in excessive pontic space. Loop connectors are use to resolve this problem of excessive mesio-distal pontic space that cannot be managed by conventional fixed partial dentures. Loop connector offers an effortless solution for a situation involving an anterior edentulous space albeit with the maintenance of the diastema. The present article enlightens a unique solution for a case with excessive mesio-distal space in the anterior region to achieve ideal esthetic results in the maxillary anterior segment.

Keyword: Diastema, loop connector, esthetics, anterior edentulous space.

Address of correspondence: Dr. Dishita Chokhani, Nanded rural dental college and research centre, Nanded, Maharashtra, India,

Email address: drdishichokhani7@gmail.com **Phone no:** 9404278769. **DOI:** 10.5281/zenodo.5205441

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Introduction

Restoring a single missing tooth within the anterior region has always been observed as a Prosthodontic challenge. Likewise, the loss of anterior tooth with pre-existing interdental spacing between the anteriors may leads to have excessive pontic space. This again adds a question for the prosthodontist either to close the space or to preserve the space with restoration for a natural appearance. Several treatment options are present for restoration of a single missing anterior tooth that features an implant supported prosthesis or conventional fixed partial denture (FPD). If interdental spaces has to be maintained in the final restoration and implant isn't a treatment option, then FPD together with loop connector is considered to be the most effective treatment option. As FPD with loop connectors not only helps in improving the natural appearance of the restoration but also helps in maintaining the diastema and proper emergence profile of the restoration. This clinical report, portrays a unique technique to

fabricate a 3 unit porcelain fused to metal FPD with modified palatal loop connector to gain flawless esthetic and functional correction for the patient having missing maxillary central incisor along with interdental spacing in the maxillary anterior region.^{1,2}

Case report

A 34-year-old male patient reported to the department of prosthodontics, with the chief complaint of missing teeth in upper right front region of jaw and wants to get it replaced (Figure 1). On intraoral examination, it was evaluated that, right maxillary central incisor was missing, the edentulous space was large and there was generalized spacing between all the anteriors (Figure 2). The patient gave a history of trauma due to fall from staircase 5 years ago and subsequent avulsion of the tooth. Due to the presence of large interdental spaces between the anteriors, conventional FPD cannot be chosen as an appropriate treatment

option. A single tooth implant or Removable partial dentures were the viable treatment alternatives. Patient was neither willing for implant placement, since it entails a surgery nor a removable partial denture. He wanted a good fixed alternative for his missing tooth. Consequently, in Fixed Dental Prosthesis there were mainly two options to rehabilitate, out of which one was Spring cantilever FPD and the other was Loop connectors. Although, the use of a Spring cantilever FPD for replacing an anterior tooth along with maintaining the interdental spacing is advised when a posterior tooth also needs a crown prosthesis. Together with that it is also difficult to clean and maintain a spring cantilever FPD, as compared to a Loop Connector Fixed Partial Denture. Therefore, the appropriate treatment decided was to fabricate a loop connector fixed partial denture with the left central incisor and the right lateral incisor as the abutment teeth, keeping the interdental spacing between the pontic and the retainers on either side.

Clinical procedure

The present treatment plan was discussed with patient and following clinical procedure was carried out for his oral rehabilitation with his consent. During the first appointment, diagnostic impressions were made using alginate and a mockup was done on the diagnostic cast (Figure 3). Tooth preparation for porcelain fused to metal prosthesis was carried out on right maxillary lateral incisor and left maxillary central incisor with equigingival margins and heavy chamfer finish line in order to enrich its esthetics (Figure 4). The gingival retraction was carried out with gingival retraction cord (Figure 4), and final impressions were made using elastomeric impression material (Aquasil Soft Putty and Aquasil LV, Dentsply Intl) with two stage double mix technique in a rim-lock perforated stock metal tray (Figure 5). Shade selection for the

porcelain fused to metal pontic was also determined and provisional restoration (DPI tooth colored acrylic resin) was fabricated cemented (Figure 6). Type IV dental stone was used for pouring the impression and making the cast. After the retrieval of cast die ditching was performed so as to expose the restoration margins.

Wax Pattern was fabricated using blue inlay wax (Figure 7). The palatal loops were made using round 14 gauge wax (Figure 7). With utmost concern the loops were kept away from rugae area. Further laboratory procedures were same as the fabrication of conventional metal-ceramic FPD construction. After evaluating the metal try in (Figure 8, 9), the ceramic build-up was done (Figure 10). Further, Bisque trial was carried out and interferences if any were removed. The palatal loops of Loop connector were highly polished to the high shine. Glass ionomer cement was used for luting of Final fixed dental prosthesis with loop connectors (Figure 11,12). The patient was explained about the post-cementation care and maintenance of proper oral hygiene. Then the patient was re-evaluated after 1-week to assess the oral hygiene status, which was good and well maintained.

Discussion

Connectors, one of the part of FPD actually plays a very vital role, since it acts as a connecting link between the different parts of FPD (i.e pontic and retainers). They are either rigid or non-rigid. Missing central incisor with wide spaces is a complex esthetic problem to settle using conventional FPD. Utmost esthetic results may be achieved only if the natural anatomic forms of the teeth are preserved and the interdental spaces are maintained.³ FPD with loop connectors are used in such cases of excessive mesiodistal width of pontic space when fixed partial dentures are planned.⁴ The size, shape and

position of connector influences the final outcome of the prosthesis.⁵

FPD with loop connectors maintains the interdental spaces, improves the natural appearance of the restoration, provides proper emergence profile.⁶ Although loop connectors render several advantages, it also poses few disadvantages which includes additional laboratory procedures, difficulty in maintaining oral hygiene, interference in tongue movement and discomfort in speech. However, keeping the connectors round and small in size will not affect the phonetics.⁷

Conclusion

The article described above sheds light on the additive benefits of using FPD with loop connectors in a patient having missing tooth with a preexisting diastema. As, it bestows a unique solution to a prosthodontic challenge involving an anterior edentulous space along with the preservation of pre-existing interdental spacing.

Declaration of patient consent:

The authors certify that appropriate consent form was signed by the patient. In the form, the patient has given consent for images and other clinical information to be reported in the journal. The patient understands that name will not be published and due efforts will be made to conceal the identity, but anonymity cannot be guaranteed.

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FIGURES



Figure:1 Preoperative Extraora



Figure:2 Preoperative Intraoral



Figure:3 Mock preparation



Figure:4 Tooth Preparation and Gingival Displacement



Figure:5 Final Impression



Figure:6 Provisionalization



Figure:7 Wax pattern

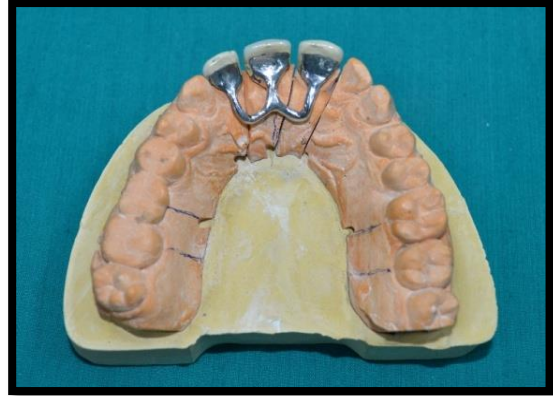


Figure:10 PFM bridge with Loop connector on cast

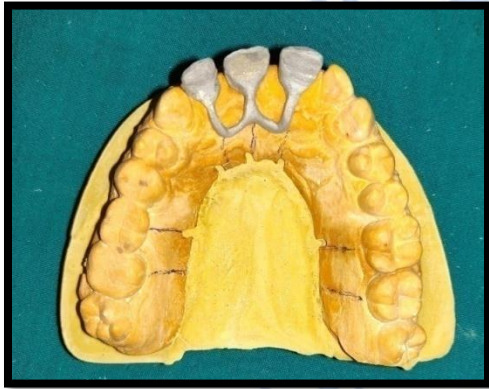


Figure:8 Metal coping



Figure:11 Postoperative Intraoral



Figure:9 Intraoral metal coping trial



Figure:12 Postoperative Extraoral

