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Maintaining Diastema in Fixed Dental Prosthesis with Loop Connectors: A Case Report

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Abstract: ***Patients with missing tooth along with diastema have limited treatment options to restore. If implants are not indicated, use of fixed partial denture to replace the missing tooth may result in too wide anterior teeth leading to poor aesthetics. The use of removable partial denture creates discomfort to the patient. Loop connector is the fixed dental prosthesis replacing the missing teeth while maintaining the diastema and provide optimum aesthetics. This case report describes rehabilitation of a patient with FPD along with loop connector in maxillary anterior region in which diastema was maintained.***

Keywords: Diastema, denture, partial, fixed, aesthetics

1. Introduction

Different esthetic treatment options are available for replacement of single anterior tooth i. e. implant supported restorations as well as FDP or resin bonded fixed partial dentures. [1] It becomes challenging for a prosthodontist in replacement of the teeth in cases of diastema or interdental spacing. The use of a conventional fixed partial denture (FPD) to replace the missing tooth may result in too wide anterior teeth, an over-contoured emergence profile, which results poor esthetics. [2]If implants are not indicated for some reason and patient is not comfortable wearing removable prosthesis. Modified fixed dental prosthesis with loop connectors are a good alternative. The modified FPD with loop connectors enhances the natural appearance of the restoration, maintain the diastema, proper emergence profile and preserve the remaining tooth structure of abutment teeth. [3] This case report describes a technique to fabricate a three-unit FPD to rehabilitate a patient with missing maxillary right central incisor along with spacing in the maxillary anterior region.

2. Material and Methods

A 28-year-old male patient reported to the Department of Prosthodontics WITH chief complaint of missing upper right front teeth. On clinical examination the available space to replace missing teeth was greater than the approximate width of the adjacent central incisor (Figure 1). Diagnostic impression was made with irreversible hydrocolloid impression material and was poured with type 3 dental stone. Various treatment options were discussed with the patient, since patient was not willing for implant other treatment options was considered. Diagnostic wax up was done and it was decided to fabricate a loop connector fixed partial denture (FPD) with the right central incisor as pontic and left central incisor and right lateral incisor as abutments for lingual plates, maintaining diastema between the pontic and the retainers. Complete treatment plan was explained to the patient and his consent was obtained.

After complete oral prophylaxis, tooth preparation was done irt 12 and 21 for PFM crown. Gingival retraction was done using chemico-mechanical method. (Figure 2) Final impression was made using two stage putty wash technique with polyvinylsiloxane impression material. (Figure 3) Provisionals were made using tooth coloured autopolymerising PMMA. (Figure 4) Master cast was poured with type 4 gypsum products. Wax up was done on 12, 21 for PFM crown and two loops were connected on the palatal aspect with sprue wax, connecting both the abutments. (Figure 5) metal trying was first done on cast and then on patient for marginal adaptation, passivity of the framework. (Figure 6) Shade selection was done under natural light and ceramic build up was done. Finished framework was cemented using glass ionomer cement (Figure 6) oral hygiene instructions. Patient was highly satisfied with the aesthetic outcome and we were able to match patient's satisfaction. (Figure 7)

Figure 1: pre-op with missing 11

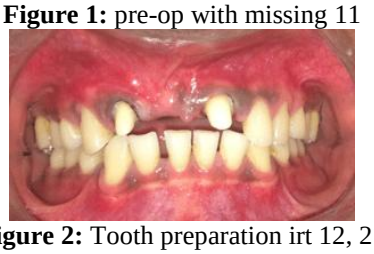

Figure 2: Tooth preparation irt 12, 21

Figure 3: Final impression

Figure 4: provisionals

Figure 5: Wax up

Figure 6: metal try in

Figure 7: Palatal aspect of loop connector

Figure 8: Final prosthesis

3. Discussion

The presence of missing central incisors with a wide diastema is a challenging situation for a prosthodontist. To aesthetically rehabilitate such cases fixed dental prosthesis with loop connectors is a good aesthetic alternative to implants, or conventional fixed dental prosthesis. Modified fixed dental prosthesis with loop connector improves aesthetics, emergence profile, maintains diastema and also follows principles of golden proportion. The connector here is a loop, closely adapted to the palate so that it may partly gain support from the soft tissue. [4] It connects the pontic to the abutments. In some rare instance healthy and sound, posterior teeth have been used as abutments to replace maxillary anterior teeth with diastema.

In a loop connector, the loop should be of adequate thickness to prevent deformation but not so much that it becomes noticeable for the tongue. Thus, loop connectors have several advantages when it comes to the aesthetic appearance. [5, 6] Disadvantages of loop connector includes additional laboratory procedures, difficulty in maintaining oral hygiene, interference with tongue and discomfort in speech. However, these disadvantages can be minimised by keeping the connectors round and small in size. [7, 8]

Photo elastic analysis studies mentions that maximum stresses in cases of loop connectors are at the gingival junction. Design and geometry of the loop connector ca control the stress acting on the prosthesis.

4. Conclusion

This case described the incorporation of a loop connector with the fixed dental prosthesis in patient with missing central incisor with excessive edentulous space. with this prothesis replacement of the missing teeth was done along with maintaining the midline diastema. There was marked improvement in aesthetics of the patient. Patient was highly satisfied with the result.

5. Financial support and sponsorship

Nil.

6. Conflicts of interest

There are no conflicts of interest.

7. Patient consent

Obtained.

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