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Anterior Loop Connector Fixed Dental Prosthesis: A simple yet effective solution to complex Esthetic dilemma.

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Abstract

Rehabilitatinganterior teeth with wide pontic space pose a great challenge for prosthodontist in situation where implant supported prosthesis cannot be done either due to cost factor or anatomic limitations. Also doing conventional fixed dental prosthesis in such cases give unesthetic appearance. So, to overcome the challenges, loop connectors can be used to optimize the edentulous space while preserving the esthetics. The following case report presents a clinical situation of wider diastema space which is restored with loop connector to achieve Estheticsin maxillary anterior region.

Keywords: Fixed dental prosthesis, connector, loop connector, diastema

1. INTRODUCTION

Replacement of anterior teeth has always posed an aesthetic challenge for a dental practitioner. The situation becomes more challenging when the edentulous space is very wide as compared to the replacement tooth/teeth. A large/wide pontic will not only affect the occlusion but also produce unesthetic appearance. Every effort should be made to produce aesthetic and pleasing results without compromising functional requirements. Existing diastema before tooth loss leads to excessive mesio-distal width. Though implant retained prosthesis can be used as a treatment choice, but the cost factor, time required, anatomic limitations and systemic concerns restricts it's use as a treatmentoption. Loop connectors as achoice of treatment can be used in such clinical situation when an existing diastema is to be maintained in the planned fixedprosthesis. The connector consists of a loop on the palatal aspect of the prosthesis that connects the adjacent retainers and pontics. The loop may be cast from sprue wax that is circular in cross section or can also be shaped by drop- wax technique by hand instruments like PKTs. Other option like orthodontics for the approximation of abutments requires a definite and specified time period and cannot be utilised in situation where patient demands immediate restoration.

This clinical report describes a step-by-stepprocedure to fabricate afixed dental prosthesis having cast loop connector to provide maximum esthetics and functional correction for a patient withmissing 21.

Case report

A 55-year-old female patient reported to the department of Prosthodontics, with a chief complaint of missing upper left front tooth. Intraoral examination revealed missing 21 and the edentulous space was large (14mm). The detailed case history revealed that she had undergone trauma 5 months back due to which she lost 21 and partial damage to 11 (Ellis Class 1). The patient also confided that she had a diastema between front teeth previously and wished to have that diastema in the replacement teeth as well. A conventional fixed dental prosthesis could not be planned as it was not possible to maintain a space with this option. Also, patient did not want to go for implant treatment because of cost factor. The option of removable partial prosthesis was also nullified as she wanted a fixed treatment. Taking into consideration all these factors, the fixed prosthesis with palatal loop connector was planned with 11 and 22 as abutment teeth and discussed with the patient. The patient gave her consent for the same.

Procedure

Before undertaking the prosthesis fabrication, the patient was sent for oral prophylaxis phase-I therapy.The radiograph of the abutment teeth was done and revealed 11 to be root canal treated. The obturation was satisfactory. Upper and lower diagnostic impressions were made with the irreversible hydrocolloid i.e., Alginate(DPI, India) and cast poured in type III gypsum product (DPI, India).

The mock reduction of abutments on study cast was done and diagnostic wax up completed (Fig:2A, B). An alginate (Algitex, DPI, India) impression of this mock up was taken and duplicated in type III dental stone (Labstone, Kalabhai, India). A putty index of addition polyvinyl siloxane(Aquasil soft putty, Dentsply, USA) was made which was later used to fabricate provisional restoration (Fig: 3).

Tooth preparation was done in relation to 11 and 22 with subgingival finish line (Fig: 4). Gingival retraction was done and an impression with Polyvinyl siloxane (Aquasil soft putty and Aquasil LV, DentsplyUSA) was made using putty wash Two step technique in a rim lock impression tray. Impression was poured and master cast fabricated. Interocclusal registration was done using quick setting rigid vinyl polysiloxane(Futar- D, Kettenback, Germany). The provisional restoration was relinedintraorally, finished, polished and cemented with temporary cement (Zinc oxide eugenol, DPI, India) (Fig: 5). Casts were mounted on a semi adjustable articulator using facebow transfer(Hanau Springbow, teledyne USA). Two coats of die spacer (Tru Fit, Taub, USA) were applied on the dies to provide space for cementation. Wax pattern for the retainerswere made with Inlay Casting Wax (Harward Dental, Germany). Loop connector wax up was done with 2 mm circular sprue wax, keeping in mind the vallies of the palatal rugae (Fig:6A, B). The pattern was invested in phosphate bonded investment (BellavestT Bego) and casted in Ni- Cr base metal alloy (Wiron, 99, Bego). The metal framework was tried for fit; occlusion and it was found to be accurate (Fig:7A, B). Porcelain firing (Vita VMK-95) was done and bisque trial was checked intraorally. The esthetics and positioning of pontic was verified. The cervico-incisallength of the incisors was verified by phonetics and esthetic method. Final glazing was done and cementation was performed with GIC cement (GC Fuji) (Fig: 8A, B). The patient was instructed regarding proper oral hygiene procedure and the importance of periodic recall and follow up was reinforcedto the patient.

2. DISCUSSION

According to GPT 9 Connector in fixed Prosthodontics is that portion of a fixed partial denture that unites the retainer(s) and pontic(s). The connectors are broadly

classified into Rigid and Non- rigid. Loop connectors are rigid connectors/casted connectors consisting of a loop on the palatal aspect of the prosthesis that connects adjacent retainers and/or pontic. It is mainly indicated when there are wide mesio-distal spaces and cannot be restored with conventional fixed dental prosthesis without compromising the esthetics. However, the design of loop connector should be meticulously planned to ensure that plaque control is not impeded. The loop connector should be oval or rounded in cross section so that less food lodgement occurs. Also, the positioning of loop should be such that there is no/minimum tongue interference and speech discomfort.

3. CONCLUSION

This clinical report discussed a systematic approach for fabrication of fixed prosthesis with loop connector to provide maximum esthetic and functional rehabilitation for a patient with extensive anterior diastema. Frequent follow up recalls are vital to achieve a good long-term prognosis.

Fig: 1 Diagnostic cast

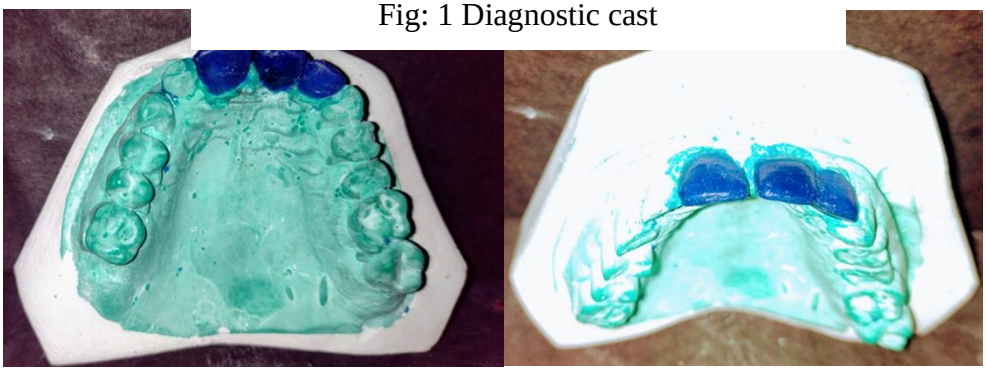

Fig: 2 A, B Mock up reduction and wax-up

Fig: 3 Temporary crowns made from putty index after duplication (into dental stone) of wax-up

Fig: 4 Tooth preparation done with respect to 11 and 22

Fig: 5 Temporisation done

Fig: 6A, B Final wax-up with palatal loop connector.

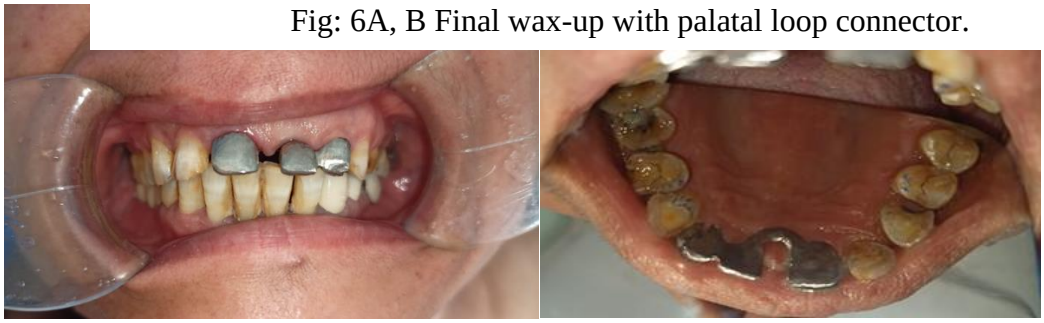

Fig: 7A, B Metal trial done

Fig: 8A, B Final cementation of the prosthesis.

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