Anterior Loop Shaped Connector Fixed Partial Denture- The Simplest Way to Maintain The Diastema in Anteriors: A Case Report

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Abstract

The diastema in the maxillary anteriors are always a dilemma for a prosthodontist. The traumatic loss of the maxillary anterior is a complex clinical situation as it is very difficult to maintain the diastema. The pontic space available in the diastema case may result in either excessively large pontic giving an unesthetic appearance to the patient. The traditional fixed partial denture is not going to work in these situations. The loop connector although rearly used but an excellent option to simulate the previous esthetics with diastema. The 'U' shaped connector is a variant of loop connector. The 'U' shaped connector is going to maintain the diastema in the anterior as well as it is going to strengthen the fixed partial denture.

Introduction

A large maxillary diastema is unaesthetic and may result from disproportionate arch development with disharmony in size of individual teeth. When physical and patient generated treatment limitations are present, the clinical challenges can be significant. A variety of factors affecting esthetics may motivate a patient to seek prosthodontic treatment. An unusually wide or large restoration will not only affect occlusal function but will also produce an unnatural appearance.

Drifting of teeth into the edentulous area may reduce the available pontic space; whereas a diastema existing before extraction may result in excessive mesio-distal width to the pontic space. In these situations the simplest approach would be to maintain the existing diastemata. Although rarely used, loop connectors are sometimes required to address the problem of excessive mesio-distal width pontic space.

Case Report

A 23 years old female patient reported to the department of Prosthodontics, with the missing right maxillary central incisor. The anterior edentulous space was large, there was generalized spacing between all the anteriors. The maxillary anteriors are slightly proclined and there was a slight deep bite relationship between maxillary and mandibular anterior teeth.(Fig 1)

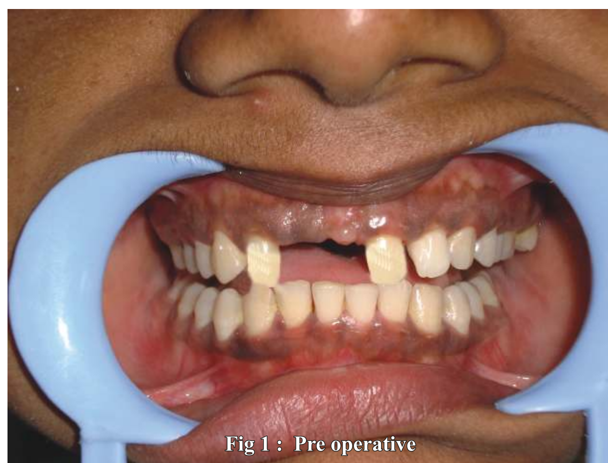

Fig 1 : Pre operative

A conventional fixed partial denture could not be planned without the orthodontic correction of a large space. A single tooth implant was a viable alternative as it would allow a restoration maintaining both the mesial and distal diastemas. However an implant would entail surgery and a more protracted treatment. But the patient was neither willing for the orthodontic treatment nor for surgery for implant placement and wanted an immediate fixed alternative for the missing right maxillary central incisor. So, there were only two treatment potions left: 1) A loop connector fixed partial denture 2) a spring cantilever (which is infact a variation of loop connector) fixed partial denture. However a spring cantilevered fixed partial denture for replacing an anterior tooth while maintaining the diastemas are indicated when a posterior tooth needs crowning as well. It is also difficult to clean and maintain, as compared to a loop connector fixed partial denture. In this case the patient did not require any posterior crowns and the left central incisor and the right lateral incisor also needed certain esthetic corrections so it was decided to fabricate a loop connector fixed partial denture with right lateral incisor and left central incisor as an abutment teeth, maintaining the diastemas between the pontic and the retainers on either side.

Procedure

Tooth preparation was done in relation to the right lateral incisor and left central incisor, with slight sub gingival finish line. (Fig2)

Fig 2 : Intra-operative view

Retraction procedures were carried out, a polyvinyl siloaxne (Aquasil soft putty and Aquasil LV , Dentsply Int) impression was made using the putty reline technique in a rim lock impression tray and removable dies were fabricated. Die ditching was done to expose the restoration margins.

Temporization was done using the loop connector fixed partial denture (Fig 3).

Fig 3: Temporization with loop connector

Since the patient is having deep bite then it is observed that the loops might be in contact with the mandibular anterior teeth. So a variant of loop connector was thought as a 'U' shaped connector. The 'U'shaped connector is more advisable in order to get the strength in the final prosthesis.

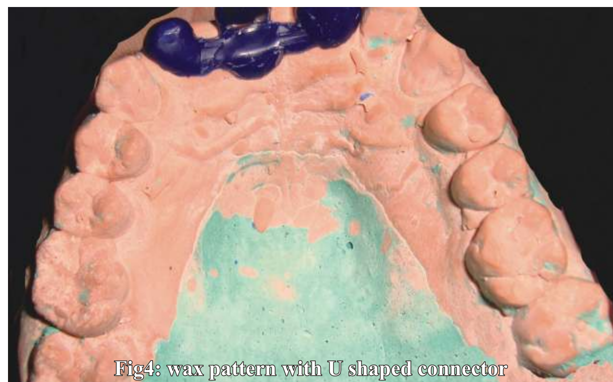

Fig4: wax pattern with U shaped connector

The wax pattern was fabricated by using the inlay wax .(Fig 4) and the casting was done for a porcelain fused to metal prosthesis. The connectors were relieved from the rugae area and the coping trial was done. The space available for the porcelain firing was evaluated and the precise fit of the coping was checked.

After porcelain firing the 'U' shaped connector is polished to high shine. Lastly the final restoration cemented. (Fig 5 and 6)

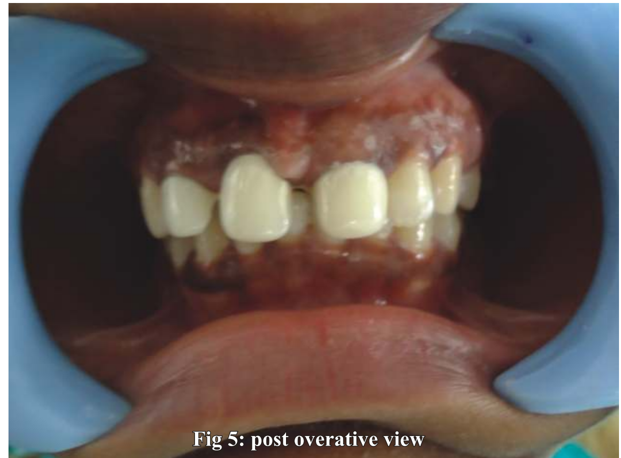

Fig 5: post overative view

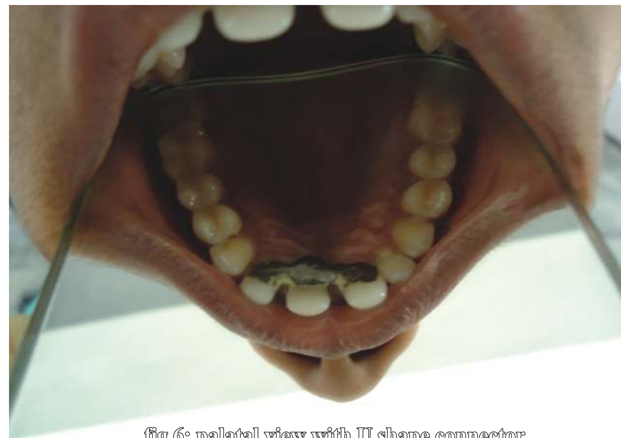

fig 6: palatal view with U shape connector

Discussion :

In a loop connector fixed partial denture, the connector consists of a loop on the lingual aspect of the prosthesis that connects the retainers and/or pontic. Meticulous design is important to ensure that plaque control is not impeded. As mentioned earlier, a spring loaded cantilever fixed partial; denture could be a less time consuming alternative.

The palatal connector in spring cantilever fixed partial denture is type of loop connector. However the connector here is a long, thin and resilient bar, closely adapted to the palate so that it is partly supported by the soft tissue. It connects the pontic to a posterior tooth or teeth requiring full coverage crowns. Although in rear instance healthy

and sound, posterior teeth have been used as abutments to replace a maxillary anterior tooth with diastema, using a resin bonded spring cantilever fixed partial denture. The long palatal connector in spring cantilever fixed partial denture may deform, if thin, and produce coronal displacement of the pontic; it may interfere with the speech and is often poorly tolerated. For these reasons this design is seldom used.

In the above case the loop connector FPD not only addressed the problem of excessive mesio-distal width pontic space, but it is also corrected the axial alignment of the right lateral incisor. It is also easy to clean and maintain. The connectors should not be overly thick and should have an intimate contact with the underlying mucosa, otherwise the patient may develop the annoying habit of pursing the tip of the tongue into the gap between the mucosa and the loop or 'U' of the connector.

Conclusion

A loop connector FPD offers a simple solution to a prosthodontic dilemma involving an anterior edentulous space, albeit with the maintenance of the diastema. A 'U' shaped connector is a variant of the loop connector in order to provide strength to the prosthesis and it also prevents the labial displacement of the pontic during function.

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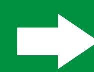
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