



MANAGEMENT OF PIER ABUTMENT WITH A NOVEL INEXPENSIVE NON RIGID CONNECTOR FIXED PARTIAL DENTURE: A CASE REPORT

Prosthodontics

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ABSTRACT

Dental implants are regarded as third dentition for humans. However they are expensive and their use become limited as it requires surgical incision. Conventional fixed partial denture serves alternative to dental implants. Management of pier abutment with conventional fixed partial denture with rigid connectors creates a fulcrum at pier abutment which results in debonding of prosthesis. It is also difficult to achieve parallelism of all teeth in such situation. Fixed partial denture with non rigid connector is good solution to hazards of rigid connector in pier abutment situation. However these non rigid connectors are expensive and require accuracy for its fabrication. A case of fixed partial denture with non rigid connector for managing a pier abutment is presented in this article.

KEYWORDS

Pier abutment, Non rigid connector, semi precision attachment, fixed partial denture

INTRODUCTION:

In modern world, implant supported prosthesis has become a choice of treatment for replacement of missing teeth. However dental implants cannot be used in all situations, so conventional treatment option like fixed partial denture or removable partial denture needs to be considered in such situations.

Fixed partial dentures with rigid connectors are used frequently for replacement of one or two missing teeth as rigid connectors provide good strength and stability to the prosthesis. But a real challenge arises during management of pier abutment. A pier abutment is an abutment which is bounded by edentulous area on either side along with their terminal abutments¹. Management of such pier abutment with rigid connector fixed partial denture will result into failure of prosthesis and abutment. A fulcrum is established at pier abutment which results either debonding of prosthesis or extrusion of terminal abutment and intrusion of pier abutment². It is also difficult to achieve parallelism of all abutments. So fixed partial denture with non rigid connectors are used to manage such situation. The non-rigid connector act as stress breaker between retainer and pontic thus preventing excess of stress to the abutments. The four different types of non rigid connectors are as follow Dovetail or tenon mortise type connectors, split pontic connectors, cross pin and wing connectors and loop connectors^{3,4,5}.

This clinical report describes a method to fabricate the fixed partial denture with non rigid type of connector from scrap for management of pier abutment.

CASE REPORT

A 28 year old female patient reported with chief complaint of difficulty of eating and poor esthetic in upper left anterior and posterior region since last six months. Past dental history showed extraction with 22 and 24 which was done 6 months back. Medical, personal and family history was not relevant.

Extra oral examination showed that patient had square facial form, convex facial profile and average lip length. On smiling black void was visible near left corner of mouth.(Fig 1)



Fig 1: Pre operative extra oral

Intra oral examination showed missing 22 and 24. Cervical caries with 11 and 21. Patient had mutually protected occlusion. On lateral excursive movement patient had canine guided occlusion on both side. (Fig 2)

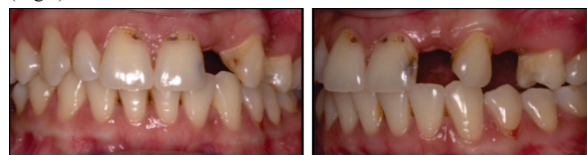


Fig 2: Pre operative intra oral

Other history was not relevant. Radiographic examination showed good periodontal support of abutment teeth. Four Treatment options were given to the patients which are as followed implant supported prosthesis, non rigid connector fixed partial denture, cast partial denture and acrylic partial denture. Patient disagreed to removable partial dentures. She even did not opt for implant supported crown due to surgical intervention and cost efficacy. A non rigid connector fixed partial denture was planned for the patient.

Study models were made from diagnostic impression and a diagnostic mock up was done on this model. Tooth preparation was done with 21, 23 and 25 for porcelain fused metal prosthesis.(Fig 3) Gingival retraction was done using 000 mechanical cord dipped in 23 % aluminum chloride solution.(Fig 4)



Fig 3: Tooth preparation



Fig 4: Gingival Retraction

Final impression was made in two stages using addition silicone. Immediate protemp provisional restoration was done using putty index and mock made on study model.(Fig 5) Final cast was poured in die stone and die cutting was done.



Fig 5: Provisional restoration

For fabrication of non rigid type of connector, a base of waste pen refill was used. It was cut into desired size depending upon the space available. A vertical cut was then given to make it into half out of which one half was used to fabricate female part of non rigid connector. Pattern resin was used to fabricate male part of non rigid connector. (Fig 6)

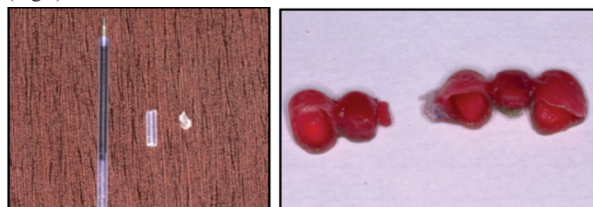


Fig 6: Pen refill for fabrication of non rigid connector

Anterior wax pattern was made first female part was incorporated into anterior wax pattern. Male part was incorporated in posterior wax pattern. (Fig 7)

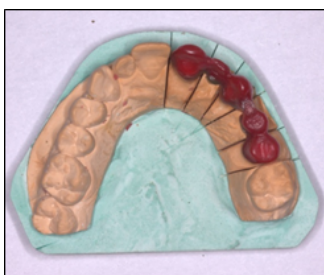


Fig 7: Wax pattern on master cast

Casting was done which was finished and sand blasted. Metal trial was done to evaluate the fit of framework. Ceramic buildup was then done followed by staining and glazing. (Fig 8) Final cementation of prosthesis was done with zinc phosphate cement. (Fig 9)

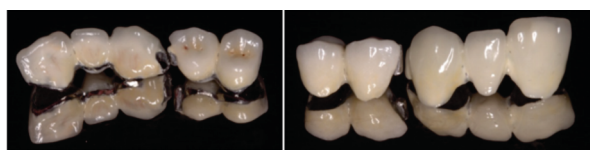


Fig 8: Final ceramo metal restoration

Anterior segment was cemented first followed by posterior segment. Patient was happy and satisfied with the treatment. (Fig 10) Dental floss and proxa brush was prescribed to patient for maintenance of oral hygiene.



Fig 9: Final cementation of ceramo metal restoration



Fig 1: Pre operative extra oral

Fig 10: Post operative extra oral

DISCUSSION

Long term success of fixed partial denture depends upon type, size, shape, design and location of connector⁶. Improper selection of this, results into abnormal stress concentration which further results into failure of prosthesis and teeth. Conventional fixed partial denture replacing one or two missing teeth are fabricated with rigid connectors. However problem arises in pier abutment situation. Bothello and Dyson have shown that fixed partial denture with pier abutment are associated with higher debonding rates than a short-span prosthesis and may result in microleakage and recurrent caries⁷. Even it results into high stress concentration at pier abutments and at the cervical dentin near the edentulous ridge. Even it is difficult to achieve parallelism of all teeth. Fixed partial dentures with non rigid connectors are preferred in such situation. Carl Misch suggested placing the female component in mesial aspect of most distal pontic and male component on distal aspect of pier abutment. Shillingburg et al suggested placing the non rigid connector at the distal aspect of pier abutment⁸. This will prevent mesial drifting of teeth and unseating of the prosthesis. So in this case non rigid connector was placed at distal aspect of canine.

CONCLUSION

Conventional fixed partial dentures with rigid connectors are frequently used for replacement of one or two missing teeth. However real problem arises when we deal with pier abutment. Fixed partial denture with non rigid connector serves boon in such situation. Fabrication of fixed partial denture with non rigid connector are expensive and requires skill. This clinical report has describe a smiple method of fabrication of fixed partial denture with non rigid connector which can be effective for management of pier abutment.

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