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OVERDENTURE WITH CEKA ATTACHMENT; AN APPROACH TO PREVENTIVE PROSTHODONTICS: A CASE REPORT

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ABSTRACT Overdenture is a pristine treatment modality for elderly patients with few remaining teeth. The preservation of teeth to support an attachment-retained overdenture is an appropriate and preferable alternative to complete dentures. It is much simpler, cost effective and more biologic than implant overdenture. When few firm teeth still remain in a compromised dentition, preservation of these teeth for overdentures can improve retention and stability. The concept of overdentures may not be the elixir in itself, but suitable case selection, attachment selection and adherence to basic principles of complete denture design are necessary for prevention of geriatric/denture induced sequelae. This article presents rehabilitation of a case with tooth supported mandibular overdenture by Preci-Clix attachments.

KEYWORDS : Overdenture, Attachments, Ceka, Preci-Clix

INTRODUCTION

Preventive prosthodontics emphasizes the importance of any procedure that can delay or eliminate future prosthodontics problems.[1] On extraction of natural teeth, the inevitable residual ridge resorption may progress to flat or atrophic ridge. So every effort should be made to preserve root and alveolar bone.[2] Retention of teeth or tooth roots in the alveolar bone can improve bone maintenance around and between these structures. Bone maintenance is the most significant advantage of a tooth-borne complete overdenture treatment because the maintenance of bone volume and vertical height can produce improved prosthesis retention and stability.[3] Tooth-retained overdentures transfer occlusal forces to the alveolar bone through the periodontal ligament of the retained tooth roots and thereby prevent bone resorption.[4]

Traditionally the majority of problems arise with a mandibular prosthesis, as due to the increased rate of bone loss and less surface area than maxillary arch. Hence they fail to provide adequate support, retention and stability.[5] By use of attachments on the remaining teeth, enhances the retention of the denture and satisfy both the patient and dentist. Attachments may not be used by many dental professionals for reasons such as cost and reluctance to grasp the intricacies of their indications and applications.[6] Use of attachments and adherence to basic principles of complete denture design can improve both retention and stability of overdentures.

CASE REPORT

A 52 year old lady referred to the Department of Prosthodontics and Crown & Bridge, S.C.B. Dental College and Hospital, for rehabilitation of her both arch. There was no relevant medical history affecting prosthodontic treatment. Intraoral examination revealed well formed edentulous maxillary arch and in mandibular arch only 35, 44, 45 teeth are present with badly resorbed posterior region[Fig.1].

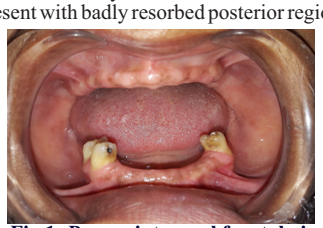


Fig.1: Pre-op intraoral frontal view

An orthopantomogram (OPG) and diagnostic casts were made. Radiographic examination revealed sound bone support and long roots.

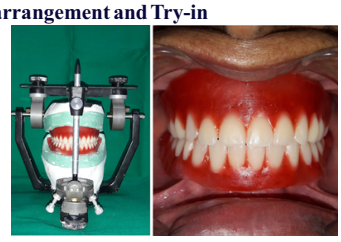
The treatment options available for this patient's mandibular arch were- (1) extraction of the remaining teeth followed by conventional complete denture, (2) implant supported overdenture or (3)tooth supported overdenture.

Due to a surgical procedure and cost, patient did not agree for implant supported overdenture. But for better retention than conventional denture tooth supported overdenture was planned for mandibular arch and conventional complete denture for maxillary arch.

Treatment plan included intentional root canal treatment for the selected abutments teeth 35, 44, 45. Then, tentative vertical dimension recordings were determined with the occlusal rims fabricated on diagnostic cast. The available inter-arch space was assessed and found to be adequate for overdenture stud type of attachment.

Abutment teeth 35, 44, 45 were reduced to the level of the gingiva and rounded to form a dome shape. Primary impression of maxillary arch was made with impression compound and mandibular arch with irreversible hydrocolloid. Special trays were made of auto-polymerizing acrylic resin over primary casts and border molding was carried out using low fusing impression compound. Spacers were removed from both trays and secondary impressions were made using low viscosity addition silicone paste(Affinis Light body,COLTENE, INDIA) . Occlusal record rims were made, Face-Bow transfer was carried out and the jaw relationship (vertical and centric) was recorded. Bilateral balanced teeth arrangement was carried out for the patient and trial denture was evaluated for centric, vertical relation, esthetics, form and phonetics[Fig.2]. After a satisfactory try-in, the prosthesis was processed in high impact heat cure acrylic resin(PMMA) and was finished.

Fig.2: Teeth arrangement and Try-in



On the day of prosthesis delivery, canal spaces were prepared with Ceka Preci-Clix Kit according to the instructions and fit of the posts were confirmed and verified with RVG. Cementation of posts was carried out with Glass Ionomer Cement(GC Fuji luting and lining,GC Corporation,JAPAN)[Fig.3 and 4].

Fig.3: Post space prepared

Fig.4:Cementation of prefrabicated metal post

The female component of Ceka Preci-Clix is available in 3 different colors i.e., white (less retention), yellow (normal retention) and red (increased retention). The yellow female component attached to the male part intra orally and vent holes were created in the mandibular denture in the space maintained for the attachments. Female attachments were picked up by adding autopolymerizing acrylic resin in the space while maintaining upper and lower dentures in occlusion. The excess self-cure acrylic that came out from the vent holes was trimmed[Fig.5].

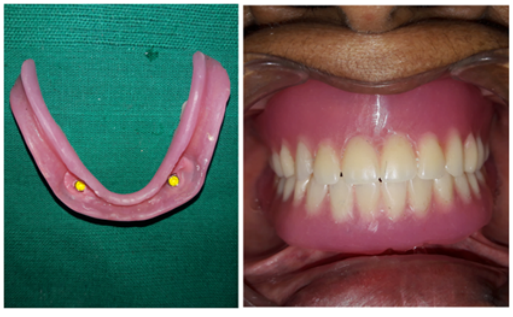


Fig.5: Female housing picked up in final denture and denture delivery

The denture was inserted and occlusal equilibration was carried out. Post insertion instructions were given to the patient and periodic follow-up was done in 4 month interval for 1 year.

Discussion

DeVan golden statement: "Perpetual preservation of what remains is more important than the meticulous replacement of what is missing".[7] Overdenture option as preventive prosthodontic treatment modality should be regularly imbibed in our dental practices because of its innumerable advantages. Crum and Rooney[8] graphically demonstrated in a 5 years study an average loss of 0.6 mm of vertical bone in the anterior part of the mandible of overdenture patients through cephalometric radiographs as opposed to 5.2 mm loss in complete denture patients.

Pacer and Bowman,[9] in their study found that the overdenture patient possessed more typical sensory function, i.e., closer to natural teeth than a complete denture patient in discriminating between occlusal forces. These factors greatly enhance the patient's denture coordination and ability to control the denture in his or her physiologic environment. Rissin et al.[10] in 1978 showed that the over-denture patients had a chewing efficiency one-third higher than the complete denture patient.

Overdenture attachments are classified either as studs, which connect the prosthesis to the individual tooth or as bars which connect the prosthesis to the splinted abutment teeth. Attachments redirect occlusal forces away from weak supporting abutments and onto a soft tissue or redirect occlusal forces toward stronger abutments and increases retention of the denture.[4]

The keystone of success for an overdenture treatment is the selection of strategic abutments with endodontic and periodontal therapy to receive the attachment, appropriate attachment for each individual situation and establishing a careful mode of treatment.[11]

This case selected for the Preci-Clix type of attachments, which belongs to the category of Stud Attachments. Preci-Clix attachments consist of male stud part that usually is a post extending into the endodontically treated tooth. The female component in the form of ring placed on the tissue side of the denture. The prefabricated metal posts exhibit more advantages over the customized cast posts. The exact fit made by special drills and minimal enlargement of the canal space, strengthen the tooth rather than weaken it.[11] The chief reasons for selection of this type of attachment are its simplicity, ability to rotate in all directions and single visit application of the attachment.[12]

Conclusion

Though implants are getting popular now a days but tooth supported overdenture remains efficient treatment modality for its own advantages. According to Mensor, failure of overdentures with attachment fixation does not result from use of attachments. The true causes are improper selection of attachments, failure to develop proper denture base extension and border seal, and for mandibular bases, failure to cover the retromolar pad.[2] The success of the tooth-supported overdenture treatment depends upon the proper attachment selection for the particular case which include available buccolingual and inter arch space, the amount of bone support, opposing dentition, clinical skill personal preferences, maintenance problems, cost and most important being patient's motivation.

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