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PREVENTIVE PROSTHODONTICS: OVERDENTURE WITH CEKA ATTACHMENT: A CASE REPORT

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ABSTRACT: Functional stability and the preservation of remaining alveolar bone are primary, and often elusive, goals when restoring the partially edentulous arch. Conventional complete denture wearers experience a number of problem such as instability of the mandibular dentures, inability to masticate food. Overdenture increases the retention , improves support, preserve the alveolar bone by decreasing the rate of resorption and improves the masticatory efficiency resulting in improved quality of life and oral health. The teeth which are preserved play a vital role by improvement of crown root ratio, provide proprioception. Rehabilitation using over dentures is a widely accepted preventive approach due to its ease of fabrication and the successful prognosis. This clinical report describes a multidisciplinary approach for complete oral rehabilitation of a patient with two remaining natural teeth using precision attachment (ceka Preci-Clix Radicular RC) for mandibular overdenture and conventional overdenture.

KEYWORDS: Overdenture, Ceka attachment, preci-clix, retention, radicular attachment.

INTRODUCTION

De Van golden statement: “Perpetual preservation of what remains is more important than the meticulous replacement of what is missing” still rings true. Overdenture is definitely a better option as compared to a removable complete denture prosthesis.[1]

Preventive prosthodontics emphasizes the importance of any procedure that can delay or eliminate future prosthodontic problems and overdenture is an important part as the preventive treatment modality. The "Glossary of Prosthodontic Terms" defines an overdenture as “any removable dental prosthesis that covers and rests on one or more remaining natural teeth, the roots of natural teeth, and/or dental implants; a dental prosthesis that covers and is partially supported by natural teeth, natural tooth roots, and/or dental implants. - called also overlay denture, overlay prosthesis, superimposed prosthesis.[2]

Now a days with concentration on preventive measures in Prosthodontics, the use of over dentures has increased to the point of most feasible treatment plan.

The over denture basically fulfills three main goals: First, it maintains the teeth as part of the residual ridge. Secondly, it decreases the rate of resorption and thirdly, it improves the proprioceptive response of patient[2].

Case Report

A 74 year old male patient reported to the department of prosthodontics of Mansarovar Dental College, Bhopal Madhya Pradesh, India with the chief complaint of missing teeth in upper arch and only two teeth left in the lower arch. On clinical examination, the patient was found to have an acceptable bilateral symmetry with oval face form and a straight profile. In the mandibular arch, teeth present were 34 and 44 and maxillary arch was completely edentulous**. [Fig. 1 and Fig. 2].**

The entire treatment plan was divided into two phases: Endodontic phase and Prosthetic Phase.Endodontic phase included RCT in relation to 33 and 44 **[Fig. 2].** Prosthetic phase started around 10 days after the completion of endodontic phase and included fabrication of an over denture with Ceka Preci-clix type of attachments. Steps carried out are as under:

For mandibular overdenture: (Preci-Clix Radicular RC)

- Teeth were reduced to level of adjacent gingiva and sharp edges of teeth were rounded up.
- Root canal space was prepared with the predrilling bur and the diamond burr was used to prepare the

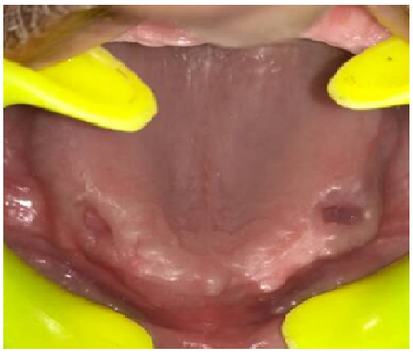


Fig. 1(A): Maxillary arch

Fig.1(B): Mandibular arch

- base of the Preci-Clix post **[Fig. 3].** Reamer was used to prepare for the diameter of the post.

- Post was checked for proper orientation before cementing with the iopa and was cemented with Resin bounded cement **[Fig. 4]**

- Primary impression was made using irreversible hydrocolloid impression material[**Fig. 5].** Special tray was made by giving two layer thick spacer around the posts**[Fig. 6].** Border molding was carried out with rubber base impression material**[Fig. 7].**

- Secondary impression was made with light body impression material **[Fig. 8]** and analogue was re indexed into recess created in impression **[Fig. 9]** and master cast was poured with die stone. **[Fig. 10]**

- Metal housing with rentention caps were placed over the cast and were blocked with wax **[Fig. 11**] . Record bases were fabricated **[Fig. 12]**and occlusal rims were prepared.

- Maxillary primary impression was made with impression compound(DPI)and single step border moulding was done rubber base impression material**[Fig. 13]** and secondary impression made with light body**[Fig. 14].**

- Face bow transfer was done**. [Fig. 15**].Jaw relation was recorded using the nick and notch method **[Fig. 16].** Teeth arrangement and try in of denture was done to check centric relation, vertical dimension and esthetics**. [Fig. 17]**

- For mandibular denture fabrication, denture was flasked and dewaxing was done in conventional manner. 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).2 The yellow female components were incorporated in denture with the black fixing tool and held with the chair-side rapid repair resin. The denture was inserted and occlusal equilibrations were carried out. Post insertion instructions were given to the patient . **[Fig. 18]**

Discussion

Various techniques are there for restoration of the lost dentition using over dentures namely Simple tooth modification and reduction, Tooth reduction and cast coping, Endodontic therapy with cast coping and Endodontic therapy with some form of attachment.

Crum and Rooney [6] 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.

Miller [13] in his study concluded that alveolar bone resorption depends upon three variables which are:

1. The character of the bone.
2. The health of the individual.
3. The amount of trauma to which the structures are subjected.

Fig.2. Orthopatomograph

Fig.3: **various reamers used for CEKA PRECI-CLIX RADICULAR RC**

Fig.4(a):post in 44

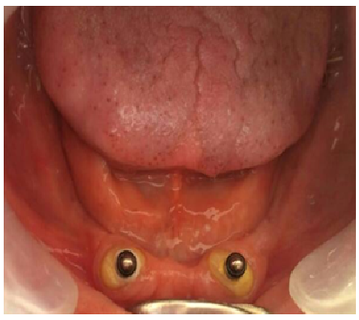


Fig. 4: post checked for proper alingnment

Fig.4(b):post in 33

Fig.5. Primary impression

Fig.6. Special Tray

Fig.7.Border moulding with RBM

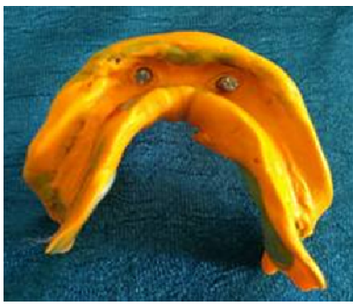


Fig.8. Secondary Impression

Fig.9. Analogue Reindexed into Recess

Fig.10. Master cast

Fig.11. Special Tray with metal coping

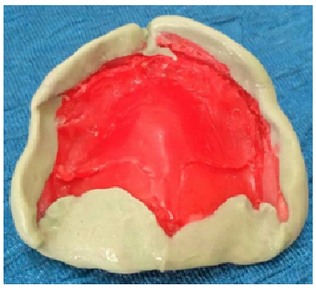
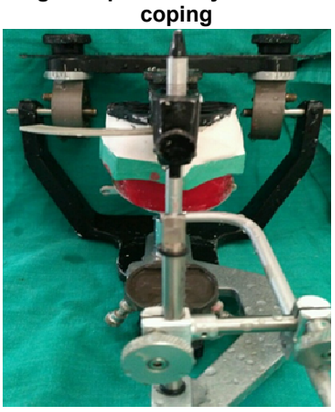


Fig.12. Maxillary Border moulding

Fig.13. Maxillary secondary impression



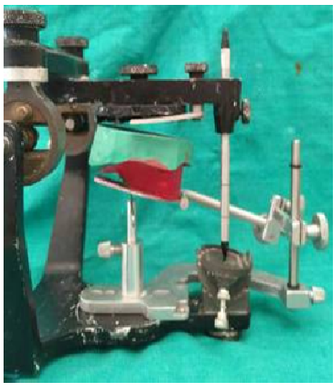


Fig. 14: Facebow tranfer on Hanau

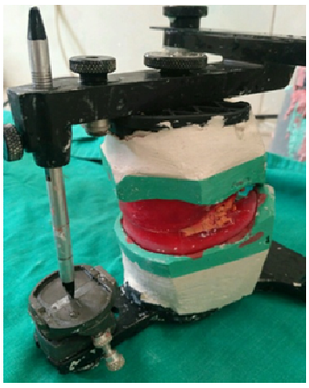
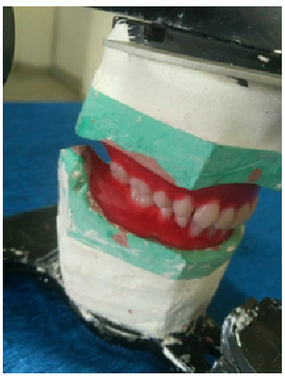


Fig.15. Nick and Notch



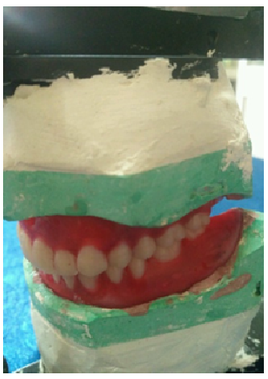


Fig.16A- Teeth setting

Fig.16B- Try In stage

Fig.17. Investing

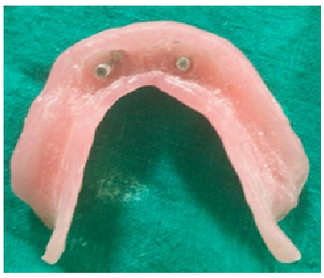


Fig.18. Mandibular denture with analogues retrieved

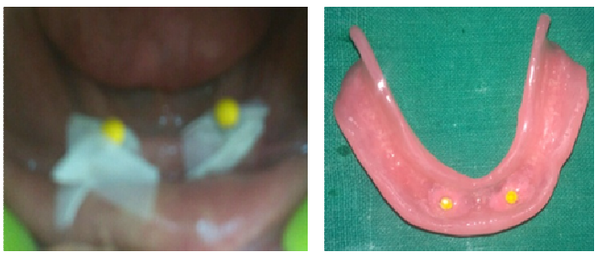


Fig.19. Chair side Transfer

Fig.20. Denture Delivered.

Overdenture helps reduce shrinkage of surrounding bone and reduces pressure on the alveolar ridge. In case of overdenture prosthesis, proprioception is maintained [10]there is the presence of directional sensitivity; dimensional discrimination; canine response and tactile sensitivity.[14] The average threshold of sensitivity to a load was found to be 10 times as great in denture wearers as in dentulous patients.[15,16] Thus, overdentures are more beneficial as they provide psychological, functional as well as biological advantage for the patients.[21]

Overdenture with attachments can redirect occlusal forces away from weak supporting abutments and onto a soft tissue or redirect occlusal forces toward stronger abutments thereby resulting in superior retention.[18]

The use attachments is reserved for selective number of candidates mainly having increased amount of bone loss desiring significant improvement in retention. We, in this case selected for the Preci-Clix type of attachments which belong 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. Fixation is achieved with the help of female component in the form of ring placed on the tissue side of the denture. The main reasons for selection of this type of attachment are its simplicity, ability to rotate in all directions and single visit application of the attachment.[19]

Saving natural teeth and using them as abutments for attachments is a viable and tissue, and time tested alternative for those patients who cannot have implants due to various reasons such as medical contraindications, cost factors, etc.,[18]

The use of attachments can redirect occlusal forces away from weak supporting abutments and onto soft tissue, or redirect occlusal forces toward stronger abutments and away from soft tissues. They act as shock absorbers and stress redirectors as well as provide superior retention.

The key to success of an overdenture is the selection of strategic roots or teeth for retention. The shortened crown improves the crown to root ratio, thereby decreasing the motility of the abutment teeth under an overdenture. [2]

CONCLUSION

Completely edentulous patient often seek tooth replacement for comfort, esthetics and function. Dental practitioners often find difficulty in achieving retention and stability in resorbed ridges. Over denture usage has become popular mode of rehabilitation in the modern dentistry. It is reasonable to say that retention obtained on part of natural dentition allows the overdenture patient a gain in the neuromuscular performance, thereby giving him an edge over his edentulous counterpart. Careful case and abutment selection, patient motivation and periodic recall are the keys to successful prosthetic rehabilitation.

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