



PROSTHODONTIC REHABILITATION OF LOWER JAW WITH ATTACHMENT RETAINED OVERDENTURE

Prosthodontics

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ABSTRACT

Attachment supported overdenture is one of the good preventive prosthodontic treatment option. The Complete denture wearers experience a number of problems like instability of the mandibular dentures, inability to masticate food properly to overcome these challenges the attachments are used to enhance support and stability of the lower denture. Attachment retained overdentures improves the masticatory efficiency and slow the rate of alveolar resorption resulting in improved quality of life and oral health. Even though the retained teeth may be periodontally compromised, they still may provide sufficient support for the transmission of masticatory pressure and periodontal ligament receptors to initiate a jaw opening reflex. The following case report discusses the fabrication of mandibular overdenture supported with Preci-clix overdenture attachments.

KEYWORDS

Overdenture; CekaPreci-clix post; overdenture attachments.

INTRODUCTION

Overdenture is a good treatment modality in means of preservation, retention and stability of prosthesis and thereby increase the patients perception, acceptance and quality of life. Today, implants are the most popular and reliable treatment option but still preservation of natural teeth or roots is more desirable and in agreement with De van's dictum.¹ Moreover dental implants are not easily accepted by the patient due to medical problems, cost and duration of patient treatment. Overdentures are considered better than the conventional dentures in terms of retention, stability, retain proprioception, preserves the alveolar bone and improves the bone resorption. According to GPT-9 overdenture is defined as the removable partial or complete denture that covers and rests on one or more remaining natural teeth, roots, and/or dental implants.²

Overdenture is indicated in patients with few remaining retainable teeth in an arch. It is also preferred in patients with mal related ridge cases; patients needing single denture; patients with unfavorable tongue positions, muscle attachments, and high palatal vault, which render the stability and retention of the prosthesis.

Overdentures are contraindicated in patients with questionable oral prophylaxis, systemic complications, and inadequate inter arch distance.³

Retention and stability of overdentures can be further improved by adding attachments and magnets. An attachment is a connector consisting of two or more parts. One part is connected to a root, tooth or implant and another part to the prosthesis. Attachments retained overdenture helps in distribution of masticatory forces, minimizes trauma to the abutments and soft tissue, attenuate ridge resorption, improves esthetics and retain proprioception. Ceka attachment is a prefabricated, resilient, non rigid attachment which can be used intracoronally or extracoronally.⁴

There is always a problem of retention, stability and support of the removable prosthesis. It is most difficult to satisfy the patients who have high retentive demands especially in the mandibular removable denture. This paper presents a case where in few remaining natural teeth of the patient was used and ceka attachments were placed to enhance the retention, stability and support of the mandibular overdenture prosthesis.

CASE REPORT

A healthy 60 years old male reported to the department with a chief complaint of few remaining natural teeth and difficulty in chewing. During clinical examination it was revealed that patient had completely edentulous maxillary arch and partially edentulous mandibular arch with 33, 35, 42, 43, 45, 46 present. Out of which 42 and 46 had grade (III) mobility (Fig.1). The Periodontal findings were significant with severe gingival recession but no pocket formation. The best possible treatment was planned and discussed with patient which

included implant supported dentures after extraction of teeth but patient rejected the option due to fear of surgery, treatment cost and duration. As remaining teeth were periodontally compromised, RPD would not restore function and esthetics to optimum. The final treatment plan was formulated according to De Van's statement, retain the mandibular canines for attachment retained overdenture and conventional denture for maxillary arch. The extraction w.r.t 42 and 46 was completed after oral prophylaxis. The intentional root canal treatment for the selected abutments teeth 33, 35, 43, 45 was done. Then, the tentative vertical dimension recordings were obtained with the occlusal rims fabricated on diagnostic cast. The available inter-arch space was analysed and found to be adequate for attachment retained overdenture.

A) Preparation Of Teeth

The canines (33 & 43) were prepared to form a dome shape and rest of the teeth were trimmed to the level of gingiva and rounded off. The Primary impression of maxillary arch was made with impression compound and mandibular arch with irreversible hydrocolloid. The primary casts were obtained over which the special trays were fabricated with auto-polymerizing acrylic resin 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. Denture was then waxed and flaked for processing. After curing lab remounting and selective grinding was done. Finally dentures were finished and polished.

B) Preparation Of Post Spaces

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.

C) Cementation Of Posts

Cementation of posts was carried out with Glass Ionomer Cement (GC Fuji luting and lining, GC Corporation, JAPAN).

D) Incorporation Of Plastic Female In Mandibular Denture

The 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.

E) Finishing And Polishing Of Denture

The denture was finished and polished. Patient was recalled and final insertion was done. Post insertion instructions were given along with a

recall appointment. After 7 days patient was recalled and final correction were done.

F) Instructions To The Patient

The patient was instructed to maintain an oral self care program that included the use of fluoridated toothpaste and clean the attachment with a interdental tooth brush using warm salt water. Initially, follow-up was once a week for a month. Later evaluation was done once in every 6 months. At the time of follow-up, routine maintenance such as oral prophylaxis was carried out.

DISCUSSION

The edentulous state not only disturbs the integrity of the masticatory system but also give adverse functional, esthetic and psychological problems to the patient.⁵ The success of the overdenture treatment depends upon attachment selection. The attachment selection is based on available buccolingual and interarch space, bone support, opposing dentition, clinical experience, personal preferences, ease of maintenance and cost. The use of attachments can redirect occlusal forces away from the weak supporting abutments and onto the soft tissues. They act as shock absorbers or stress redirectors as well as provide superior retention.⁶

Crum and Rooney 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.⁷

Pacer and Bowman explained 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.⁸

Rissin et al. in 1978 showed that the over-denture patients had a chewing efficiency one-third higher than the complete denture patient.

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^{10]}

In the case reports described above post is a stud attachment occupying less vertical space and the male units on the different teeth roots. Its parallel sided thread design provides maximum retention. The ball and socket attachment allows rotation of the denture attachment. The snap fit of the denture in mouth provides more comfort during functional movement.

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.



Figure 1 Pre Operative View



Figure 2 Pre-operative Completely Edentulous Upper And Partially Edentulous Lower Arches.



Figure 3 33 And 43 Canal Prepared For Post Placement



Figure 4 Cementation Of Posts On 33 And 43



Figure 5 Intaglio Surface Of The Final Denture



Figure 6 Denture Insertion



Figure 7 Post Operative View

CONCLUSION

Retention of complete mandibular dentures is a common complaint among the denture wearer patients. With the development of osseointegrated implants, the concept of overdentures has become more popular, but not all patients are able to afford the treatment costs. An attachment retained overdenture may be advised whenever several

good teeth remain in the arch. The different attachment designs suggested in the literature for implant overdentures also hold true for tooth supported overdentures. Teeth that might be considered for extraction may be considered as long or short term alternatives to implant or total edentulousness. Careful case and abutment selection, inter arch space, clinical skill, patient motivation and periodic recall are the keys to successful prosthetic rehabilitation.

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