

Over Denture-A Case Series

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Abstract: Tooth supported overdentures are simple and cost-effective treatment than implant supported overdentures. When few teeth are present which are periodontally strong can be used as abutment for fabrication of overdenture. This helps in the stability and retention of final prosthesis. Preservation of abutment teeth is important as extraction of teeth can cause bone resorption.

Keywords: Tooth supported denture, implant supported denture, stud attachment, telescopic denture

INTRODUCTION

A complete or partial denture prosthesis that is made on existing teeth or root structure.

Any dental prosthesis which is removable that covers and rests on one or more remaining natural teeth, the roots of natural teeth, or dental implants.

A dental prosthesis that covers and it is partially supported by natural teeth, natural tooth roots, or dental implants. It is also called overlay denture, overlay prosthesis, superimposed prosthesis.

Goals

1st goal - maintains teeth as part of the residual ridge thus giving the patient a denture that has for more support than any conventional appliance.

2nd goal - it decreases the rate of resorption by preserving the alveolar bone.

3rd goal - increases the patient's manipulative skill in handling the dentures. With the preservation of teeth for an overdenture there is also preservation of periodontal membrane that surrounds the teeth.

Types

1. Tooth supported
 - Bare root surface
 - Metal copings
 - * Dome shaped copings (short)
 - * Thimble shaped copings (long)
 - Attachments
 - Stud attachments:
 - Extra radicular attachments
 - Intra radicular attachments
 - Bar attachments:
 - Hader bar
 - Dolder bar
 - Magnetic attachments
2. Implant supported
3. Immediate over denture

Case Report:

This article presents four case reports in which overdenture applications were planned. All the patients visited Department of Prosthodontics and Crown & Bridge, Karpaga Vinayaga Institute Of Dental sciences, Chengalpet.

CASE 1:

TOOTH SUPPORTED OVERDENTURE

A 65 years old female patient reported to the department of Prosthodontics and Crown and bridge of Karpaga Vinayaga institute of dental sciences with the chief complaint of difficulty in mastication. On examination, it was found that multiple teeth were missing in both the arches and she was not wearing any denture. In lower arch, only right and left canine were present. Periodontal support was good for 33 and 43.

The different treatment options available for these patients were:

1. Tooth extraction which is followed by implant supported overdenture in both the arches.
2. Extraction of remaining teeth which is followed by conventional complete denture in both maxillary and mandibular arches.
3. Tooth supported overdenture in mandibular arch with conventional complete denture in maxillary arch.

It was decided to fabricate an overdenture using the remaining teeth as abutments. The location of the remaining teeth was favourable for an overdenture. The patient was advised to retain the remaining teeth in the mandibular arch. Conventional complete denture was planned in maxillary arch because of economic reasons. The remaining teeth were endodontically treated. In vertical height, the abutment teeth were reduced to 2mm above the crest of the ridge. The tooth preparation was done to place copings. Impression was taken and casts were made. Over the prepared teeth, wax pattern was made. Metal copings were casted and then cemented over the prepared teeth. Using a custom tray, final impression with coping in place on their respective abutment was made. Then, the jaw relation was recorded. Teeth arrangement was made. Try-in was done. Maxillary and mandibular complete dentures were fabricated following the conventional method. The recess was made in mandibular denture on the impression surface. The dentures were finished, polished and inserted into the patient mouth. Post insertion, removal and maintenance instructions were given. Periodic follow-up was carried out.



TOOTH SUPPORTED OVER DENTURE (STUD ATTACHMENT)

A 53 year old female patient reported to the department of Prosthodontics, crowns and Bridges with the chief complaint of impaired esthetics and difficulty in mastication. Past dental history reveals extraction of all maxillary and mandibular teeth except lower left and right canine. On examination, it was found that multiple teeth were missing in both the arches and she was not wearing any denture.

Procedure:

Treatment plans were decided and suggested for the patient after a thorough diagnostic evaluation.

Treatment choices were an attachment retained tooth supported mandibular complete denture and a tissue supported maxillary complete denture. The abutment teeth were reduced to receive a prefabricated axial attachment. The maxillary and mandibular muscle trimming was done. The final impressions were made with zinc oxide eugenol material. The maxillomandibular jaw relation was made on the trial denture bases. The try-in procedure was done. Post space was prepared in the abutments and the prefabricated matrix of the axial attachment was cemented in the post space. The processing of dentures was done with pink heat polymerized acrylic resin. In the lower denture, a hole was drilled with a no. 2 round bur in the region of the stud attachment. Upper and lower dentures were placed, their extensions were adjusted. By selective grinding, occlusal refinement was done. Then, the matrices which is a female attachments were positioned over the matrices which is a male studs. While obliterating the openings in the lower denture, they are picked up in self polymerizing acrylic resin. The metal housing was placed only on the right side as the vertical space available was limited on the left side. A low retention matrix was used on the left and a medium

retention plastic matrix was used on the right for the non-parallelism of the stud attachments. Final occlusal refining and polishing was done. Post insertion and removal instructions for dentures were given. The retention and esthetics of dentures were good. Recall appointments were given.



IMPLANT SUPPORTED OVER DENTURE

A 53 year old female patient presented to the Department of Prosthodontics, crowns and bridges with the chief complaint of multiple missing teeth in maxilla and mandible. Severe periodontal disease was evident in all the remaining teeth. She had no previous experience of any prosthesis.

On **examination**, the maxillary ridge was favorable for complete denture construction. Preoperative radiographs were taken and radiographs revealed severe bone loss and deficiency in height and width in mandible. So, she was informed about the implant based treatment. Treatment of choice was extraction of all teeth and replace them with a conventional complete denture in the maxillary arch and a two implant supported overdenture in the mandibular arch.

Procedure:

After obtaining consent from patient, all the remaining teeth were extracted. Upper and lower impressions were made. Jaw relations were recorded. Diagnostic teeth setup was done with appropriate vertical dimension. With indirect technique, superstructure was attached to denture.

Surgical phase: A surgical guide was fabricated from the diagnostic set up. After four weeks of extraction, two implants were placed at positions following proper protocol. After 2 weeks, complete dentures were given to the patients. The tissue surface of mandibular denture was relieved. Relining was done using temporary soft denture liner.

Prosthodontic phase: Second stage surgery was carried out, after 4 months of healing. Then, gingival formers were placed. Mandibular definitive impressions were made, after two weeks. Fabrication of custom perforated tray for the mandibular arch. On the implants, open tray impression copings were attached. Modification of custom tray was done to allow individual access to each impression coping. With polyvinyl siloxane, a rubber base impression was made. To the impression copings, implant analogs were attached. The impression was poured in die stone. On the Hanau's Wide View Articulator, maxillary cast was mounted with face bow transfer. The mandibular cast was mounted on the articulator in centric relation. Teeth setting was carried out. Denture try-in was done.

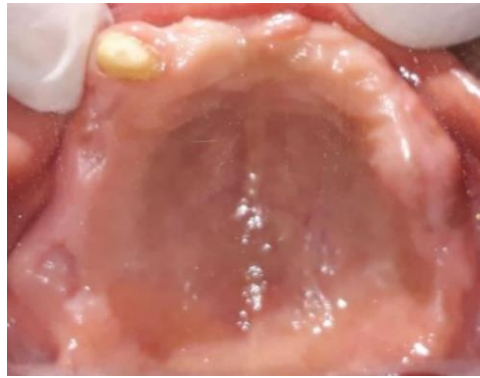
To the implant analogues, bar fabrication UCLA abutments were screwed. They cut to appropriate height for the available restorative space. A castable bar system was used. To the UCLA abutments, the plastic bar pattern was cut to the desired length and attached. The bar was finished, polished and checked in patient intraorally. Then radiographically checked for passive fit. The finished bar was placed on the articulated master cast. Over the tissue surface of the trial denture base, the space was provided for the bar assembly. The undercuts were blocked. The whole assembly was duplicated for getting the working cast. The positioner clip with trial denture base and metal housing were placed on the working cast. The position of the anterior teeth was not disturbed. To avoid flow of resin between clip and bar, the undersurface of the metal housing was blocked out with dental stone. By conventional technique, the dentures were processed. The final prosthesis was with the metal housings placed in the tissue surface.

Denture insertion appointment : The finished bar was placed in patient's mouth. Abutments were screwed. With gutta percha points, the screw openings were blocked. The denture was inserted in the patient's mouth. Then checked for proper extensions and occlusal contacts. For sufficient retention, the retentive clips clicked into place on the bar. Instructions were given regarding the insertion and removal of the denture to the patients.



TELESCOPIC OVERDENTURE

A 62 year-old patient reported to the Department of Prosthodontics, crowns and bridges with a chief complaint of missing teeth and to improve chewing and esthetics. Past dental history reveals uneventful extraction of teeth. On Extraoral examination revealed a concave profile and a normal temporomandibular joint. On intraoral examination there was missing 17,16,15,14,12,11,21,22,23,24,25,26,27,,36,35,34,32,31,41,42,45,46 and non-vital 13,37,47 save the teeth patient underwent periodontal therapy - scaling, root planning and flap surgery. This was followed by root canal treatment of 13,37,47. Alginate impressions were taken to prepare diagnostic casts. In mandibular diagnostic cast the wax occlusal rim was fabricated and temporary denture were given. Prior to tooth preparation occlusal rim was used to determine the vertical dimension of occlusion. In Semi-adjustable articulator the casts were mounted and analyzed. Various treatment options, including implant therapy, were given to the patient. After consideration of all factors a treatment plan of complete prosthesis in maxillary arch tooth preparation were done and in mandibular arch primary metal copings in 37 and 47 with a lower complete telescopic overdenture was planned. After preparation of the abutments, impression was made. Fabrication of primary coping were done on the master cast and the fit of the copings were evaluated in the patient's mouth. Using glass ionomer cement copings were cemented on the abutment teeth. At the same time, metal trial for the maxillary arch was done and maxilla mandibular relationship was assessed using occlusal rims. After this procedure the complete denture were Fabricated and inserted. Post insertion instructions and periodical follow ups were carried out.



DISCUSSION

Over dentures are the step in the direction of preventive Prosthodontics. Advantages of over dentures include preservation of residual ridge, provide support and stabilization to the denture base. Some issues with over denture include difficulty in selection of abutment teeth, fabrication of metal copings, removal and insertion of dentures, esthetics. Tooth supported over denture indicated in patient with few remaining natural teeth, misrelated ridge cases, Patients with unfavorable tongue position, muscle attachment, high palatal vault where the retention and stability of the prosthesis is difficult. The major disadvantage of over dentures is cost effective, poor denture hygiene, more bulker, lack of sufficient inter arch space which leads to difficulty in fabrication of over dentures.

CONCLUSION

Over denture has innumerable advantages and application compared to conventional complete dentures. Over denture reduces pressure on the alveolar ridge and also helps in reducing the shrinkage of surrounding bone. Implant supported over denture is a better treatment alternative to the conventional denture. They help in preservation of hard and soft tissue of Patients and give psychological relief to the patient.