Prosthetic Rehabilitation of Patient with Attachment Retained Over denture –
A Case Report

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ABSTRACT

Prosthetic rehabilitation with complete denture can be a treatment challenge for many dentists, especially when the patient has few remaining teeth. Any conservative treatment that can delay or eliminate future prosthodontic problems should be considered. This case report describes the use of remaining roots to aid in the stability, support and retention of root-supported over dentures.

Key Words: Root supported over dentures, Semi-precision attachment, edentulous, rehabilitation.

INTRODUCTION

Over denture is a removable partial denture or a complete denture that covers and rests on one or more remaining natural teeth, the roots of natural teeth, and/or dental implants. The use of over dentures is not a new concept. It is one that has become increasingly more popular as the emphasis on prevention in dentistry has grown. The most important benefits are preservation of the remaining alveolar supporting bone along with increased stability and retention of the prosthesis. Retaining natural teeth under an over denture preserve sensory input from the periodontal receptors which are more precise than that obtained from oral mucosa. Periodontal receptors also play important role in the masticatory salivary reflex by regulating the range and type of the masticatory stroke. Thus, over dentures are more beneficial as they provide psychological, functional as well as biological advantages for the patients.

However a conventional root supported over denture many times had to compromise on retention as the denture base had to be fabricated with considerable block out around the retained roots.[1] Hence an attachment retained over denture was developed, which helped in the proper retention, stability of the denture with remaining teeth and which distributed forces evenly.

CASE REPORT

A 70 year old male patient reported to the Department of Prosthodontics, Govt. Dental College and Hospital, Patiala with the chief complaint of difficulty in chewing due to missing teeth. There was no relevant medical history affecting prosthodontic treatment. Intraoral examination revealed well formed maxillary and mandibular ridges in class I ridge
relationship. Only 33 and 43 were present in the mandibular arch Fig.1 and radiographic examination revealed good bone support and long roots. The different treatment options available for this patient’s mandibular arch were—extraction of the remaining teeth followed by conventional complete denture, implant supported over denture and tooth supported over denture.

![Fig.1 Intraoral frontal view of the patient showing edentulous maxillary and mandibular ridge with 33 and 43 teeth.](image1)

It was decided to use both the canines as abutments and fabricate an over denture. The location of the remaining teeth was favourable for an over denture. After clinical and radiographic examination, wax rims were fabricated on diagnostic casts to determine the approximate vertical dimension of occlusion. Vertical dimension recordings were determined by phonetics and esthetics which showed sufficient interocclusal space to accommodate the stud attachments. Treatment plan included root canal treatment for the retained teeth which were 33, 43 and fabrication of attachment retained over dentures.

Elective endodontics was carried out with teeth 43 and 33 and they were prepared in a dome shaped contour and hemispherically rounded in all dimensions with approximately 2 mm projecting just above the gingiva to minimize the horizontal torque on the roots. The gutta percha was removed from the root canal from gates glidden drill and the place for post was created. Then the pre fabricated metal post was cemented byusing GIC (GC Fuji PLUS™ GC America) luting cement. (Fig.2)

![Fig. 2 Teeth reduced to the level of adjacent gingiva and sharp edges of teeth rounded off. Preci-elix post cemented in the prepared canal.](image2)

A primary impression of the lower arch was made with alginate and a special tray was fabricated on the primary cast after block out. Using conventional techniques border moulding was done and secondary impression was made with medium viscosity rubber base material (Aquasil™ Ultra Monophase, DECA Regular Set, Dentsply). (Fig.3)
Metal housing without retention caps were placed over the posts on the secondary cast. Then metal housing blocked out with wax and record base fabricated over it with auto polymerizing acrylic resin. (Fig.4) Record rims were made and the jaw relationship was recorded. Bilateral balanced occlusion was given try in was accomplished. After a satisfactory try in, the waxed up denture was flaked and dewaxed. After dewaxing the metal housing was placed back on the abutment and sealed at its place using pink colored auto polymerizing acrylic resin denture base material. Packing done with heat cure acrylic resin using compression moulding technique. (Fig.5) Once the denture was ready the female component- retention caps were placed into the metal housing embedded on the impression surface of the denture with the help of preci clix insertion tool. (Fig.6)
The denture was delivered and the patient was given instructions about insertion and removal, eating and speaking as well as maintenance of the denture. Periodic follow-up was carried out (Fig. 6).

**DISCUSSION**

Fabrication of tooth supported over denture is a step in the direction of preventive prosthodontics [2]. The residual ridge reduction coupled with reduced dexterity at advanced age impairs the adaptation to denture prosthesis. The obvious way to prevent denture problems is to save the natural teeth [3]. Healthy teeth with compromised periodontal status can be modified and retained for biomechanical and psychological advantages. This preventive approach can be achieved by means of over denture [4]. Among different options attachment retained over denture could be a better option for patients with few teeth remaining and which is not in an ideal location to support fixed partial denture [5]. Different options of attachments could be magnetic retained over denture or bar retained over denture or ball attachments.

Bar attachments compared to ball attachments require more amount of interocclusal space, is unesthetic due to the bulkier denture base and anterior teeth arrangement is difficult [6]. The choice of ball attachment in this clinical report was considered because this attachment exhibits a simple design, easy maintenance and allows multi-directional movement of the retentive housing. This system provides vertical movement during mastication allowing minimum stress transferred to supporting roots, directing the occlusal force to supporting soft tissues. However, it is necessary to inform the patient that the elastic inserts of this system are affected by wear, resulting in a gradually loss of retention. Consequently, there is need for follow-up appointments to check the hygiene situation and the eventual replacement of the elastic insert(s) when retention levels begin to decrease [7,8]. Due to these reasons, in this case ball attachment was used. Among possible roots to be used to support the over denture the canine is a tooth that better exhibits characteristics associated with support. This occurs because of its large root with greater periodontal area for attachment and also due to its localization in the transition area between anterior and posterior teeth [7]. Finally, one of the most important requirements to the success of overdentures
is the patient’s awareness of their need to improve oral hygiene of the remaining roots used for support and/or retention. The patient must be instructed to correct techniques of oral hygiene to improve considerably the longevity of the oral rehabilitation as long as possible [9].

CONCLUSION

For many patients the transition from their own teeth/dentition to “dentures” is a challenging one. As teeth are extracted the supporting bone and soft tissues begin to resorb or shrink providing much less stability and retention for the denture during the functional stresses of chewing and swallowing. This allows for a poor peripheral seal and stability of denture becomes a major problem. This is perhaps the single biggest complaint amongst edentulous patients and one of the reasons we encourage patients to maintain several of their own natural teeth so they can be modified to help anchor and stabilize the denture so that treatment remains satisfactory for a long time.

REFERENCES