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RESEARCH ARTICLE

TELESCOPIC OVERDENTURE- A CASE REPORT

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ABSTRACT

The goal of this article was to describe the importance of saving the natural remaining teeth and the fabrication of telescopic dentures as an alternative to the conventional removable dentures, to minimize the complete denture problems. Telescopic dentures consist of an inner or primary telescopic coping which is permanently cemented to an abutment and an outer or secondary telescopic coping which is attached to the prosthesis. These copings protect the abutment from dental caries and thermal irritations and also provide retention and stabilization of the secondary coping. The secondary coping engages the primary copings to form a telescopic unit and it provides retention and stability to the prosthesis.

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INTRODUCTION

Preventive prosthodontics emphasizes the importance of any procedure that can delay or eliminate future problems. Retention of teeth and roots of one or more teeth for overdenture offers the patient a lot of advantages like better retention, stability, proprioception, support, maintenance of alveolar bone and psychological aspect of retaining teeth. The use of tooth-supported overdenture is a common form of treatment. There are two physiologic tenets related to overdenture therapy. The first concerns the continued preservation of alveolar bone around the retained teeth while the second relates to the continuing presence of periodontal sensory mechanisms that guide and monitor gnathodynamic functions (Prince, 1965; Yalisove, 1966). A telescopic denture is a prosthesis that consists of a primary coping that is cemented to the abutments in a patient's mouth and a secondary coping that is attached to the prosthesis and fits on the primary coping. It thereby increases the retention and stability of the prosthesis. According to Glossary of Prosthodontic terms, a telescopic denture is also called as an overdenture, which is defined as "any removable dental prosthesis that covers and rests on one or more of the remaining natural teeth, on the roots of the natural teeth and/or on the dental implants". It is also called as overlay denture, overlay prosthesis and superimposed prosthesis. Telescopic crowns were initially introduced as retainers for the removable partial dentures at the beginning of the 20th century. They were also known as a double crown, a crown and sleeve coping or as Konuskrone, a German term that describes a cone-shaped design. These crowns are an effective means for retaining the Removable partial dentures and dentures. They transfer forces along the long axis of the abutment teeth and provide guidance, support and protection from the movements that dislodge the denture (Langer, 2000). The double crown systems are usually distinguished from each other by their differing retention mechanisms. There are three different types of double crown systems. These are telescopic crowns, which achieve retention by using friction, and conical crowns or tapered telescope crowns, which exhibit friction only when they are completely seated by using a "wedging effect." The magnitude of the wedging effect is mainly determined by the convergence angle of the inner crown: The smaller the convergence angle, the greater is the retentive force. The double crown with a clearance fit (also referred to as a hybrid telescope or a hybrid double crown) exhibits no friction or wedging during its insertion or removal. The retention is achieved by using additional attachments or functional molded denture borders (Wenz and Lehmann, 1998).This clinical report describes the prosthodontic management of a patient with few remaining mandibular teeth by using the telescopic mandibular overdenture.

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CASE REPORT

A 60-year-old male patient reported to the Department of Prosthodontics, Crown and Bridge and Implantology with the chief complaint of difficulty in chewing and request for replacement of missing teeth. The patient gave a history of loss

of teeth since 3 years due to caries and mobility. On intraoral examination, teeth present in the maxillary arch were 12, 13, 14 and 15 and mandibular arch were 34, 35, 36, 43, 45. All the teeth were supraerupted and 36 and 43 presented grade III mobility (Fig.1 and Fig.2). The edentulous area presented favourable ridge and attached keratinized mucosa with respect to both arches. Diagnostic impressions were made and diagnostic mounting was performed to evaluate the interarch space and different possible treatment modalities. All treatment options were presented and discussed with the patient, and a cast partial denture in the upper arch and telescopic lower denture was elected as the treatment of choice. After taking consent from the patient, extraction of 36 and 43, oral prophylaxis, root planning and endodontic treatment of remaining natural teeth were carried out. Simultaneously, surveying of the upper cast was done for the cast partial design. The design was a complete palate major connector, a continuous esthetic clasp as a direct retainer with rests on 12 and 15, indirect retention on 13 and a meshwork minor connector. After assessing the endodontic therapy, tooth preparation was done in the upper arch to receive crowns and in the lower arch to receive primary copings on 34, 35 and 45. After the preparation of the abutments, upper and lower impression were made by using a polyvinyl siloxane elastomeric impression material (putty and light body) by a double step putty wash technique. The impression was poured with a die material to obtain the cast, on which porcelain fused to metal crowns were fabricated in the upper arch with rest seats on 12, 13, and 15 and primary copings were fabricated for the lower arch. The fit of the crowns and primary coping was evaluated in the patient's mouth (Fig.3 and Fig.4), after which upper prosthesis was cemented using glass ionomer cement and

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

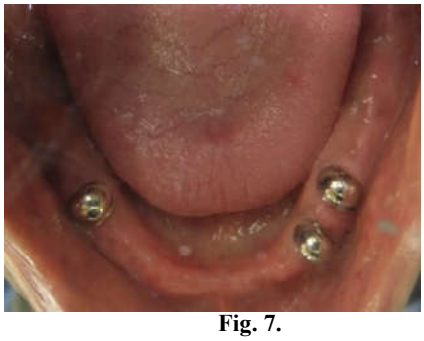

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

another impression was made for fabricating the cast partial denture. For the lower arch, a pick up impression of the primary copings was made using a custom acrylic resin tray to obtain a cast on which the secondary copings were fabricated . The secondary copings consisted of small metal projections which were known as retention beads (Fig.5), which helped in the mechanical interlocking of the secondary copings in the denture base. The frictional contact between the primary and secondary copings helped in the retention of the prosthesis. The secondary copings were to be placed on the master cast, covered with wax and a trial denture base had to be fabricated with chemically cured acrylic resins. Occlusion rims were also fabricated over the trial denture base and also on the upper cast partial denture after checking the fit in the patients mouth. Horizontal and vertical maxillomandibular records were obtained transferred to a semiadjustable articulator by using a face bow. The artificial teeth were selected and arranged on the record bases for a trial denture arrangement and they were evaluated intraorally for phonetics, aesthetics, occlusal vertical dimension and centric relation (Fig.6). A protrusive record was made, to set the articulators condylar elements and to achieve a balanced occlusion. After the wax up, the dentures were processed, finished, polished. The primary copings were then cemented in the with glass ionomer cement (Fig.7) and denture was delivered to the patient (Fig.8 to Fig. 10). The patient was scheduled for follow-up visits every 3 months.

DISCUSSION

It is a documented fact that after the loss of the teeth, the residual alveolar ridge undergoes rapid bone loss in all dimensions. The residual ridge resorption (RRR) is stated to be rapid, progressive, irreversible and inevitable, and has been well observed and documented in the literature. Telescopic crowns have been used mainly in RPDs to connect dentures to the remaining dentition (Langer, 1981), but these can be used effectively to retain complete dentures which receive their support partly from the abutments and partly from the underlying residual tissues. Telescopic crowns have also been used successfully in RPDs and FPDs, supported by endosseous implants, in combination with the natural teeth, which includes the overdentures (Laufer and Gross, 1998; Besimo and Graber, 1994). Telescopic crowns can also be used as effective direct retainers for RPD (Langer, 1980). Their degree of retention can be planned to suit different situations by modifying their designs. One of the main advantages of the telescopic retainers is that, being pericoronal devices, they transmit the occlusal forces in the direction of the long axes of the abutment teeth. This has proven to be the least damaging application force. The lateral forces exert traumatic pressure on the abutments. Careful assessment of the interarch space is very important for the successful fabrication of the telescopic dentures. Sufficient space must be present to accommodate the primary and secondary copings, to have a sufficient denture base thickness to avoid fracture, space for the arrangement of the teeth to fulfill the aesthetic requirements and to have an interocclusal gap. The space consideration usually requires the devitalization of the abutments (Preiskel). It has been found that the telescopic dentures which are supported by the roots of natural teeth have more predictable prosthodontic outcomes because of increased support, stability and retention and decrease in rate of the residual ridge resorption. Patients with natural teeth can masticate more effectively than when they are edentulous. This is due in part to their degree of accuracy in the functional jaw movements, which are possible with a better neuromuscular feedback mechanism from the periodontal ligaments. The proprioceptive nerve endings in the periodontal ligaments feed information into the neuromuscular mechanism. In the absence of teeth, this information is missing. By retaining the roots of some teeth, it may be possible to use this proprioceptive apparatus with complete dentures. If this is so, a higher degree of accuracy in the jaw movements and the masticatory performance could result. By this means, teeth that normally might have a very short life span can been retained for long periods of time. This can thus benefit the patients in their denture function (Bergman *et al.,* 1996). Thus, complete denture fabrication for maladaptive elderly patients becomes difficult. Therefore, they are the group of patients who will benefit most with telescopic dentures. Overdentures which are supported and/or retained with a few remaining teeth or implants can be a predictable treatment that will fulfill most of the demands of the elderly denture patients.

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