

Oral Rehabilitation with Telescopic Overdenture-A Case Report

Sanjana Devi*, Deepak Nallaswamy, Revathi Duraisamy

Department of Prosthodontics, Saveetha Dental College, Saveetha Institute of Medical and Technical Science, Saveetha University, India

ABSTRACT

Any procedure that can delay or eliminate potential future problems come under preventive prosthodontics. In scenarios with few remaining natural teeth, prosthodontists are posed with a dilemma for the treatment options. In such cases, treatment with overdentures has been proven to be advantageous. This gives the patient a lot of advantages like better stability, proprioception, support among a few. A telescopic overdenture is a removable prosthesis that has a primary coping on the teeth and a secondary coping in the denture. The primary copings are full-coverage parallel-milled copings that are cemented to the prepared teeth. The secondary coping fits over the primary coping. It works by the application of interfacial surface tension and friction fit mechanism of retention using double copings. They are, however, indicated only for patients with multiple abutments distributed bilaterally along the dental arch. This clinical report describes the prosthetic rehabilitation of a patient with only a few remaining teeth in the mandible, and all the teeth were on one side of the arch.

Key words: Telescopic denture, Telescopic overdenture, Attachment, Overlay prosthesis

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Corresponding author: Sanjana Devi

e-mail ✉: 151809006.sdc@saveetha.com

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INTRODUCTION

Any procedure that can delay or eliminate potential future problems come under preventive prosthodontics. Retention of teeth offers a variety of advantages like proprioception, better stability, support, and retention. Alveolar bone is also preserved [1,2]. When only a few teeth are remaining in the arch, we can go for either a fixed or removable prosthetic option. However, bridges and implants are not always an option for several patients. Reasons can vary from socioeconomic conditions, anatomic conditions, systemic conditions, or the patient's attitude toward dental implants. In such cases a removable prosthesis would be ideal [3-5]. But patients are not always satisfied with removable dentures due to excessive tissue coverage, lack of retention, etc. A telescopic overdenture can overcome these problems [6,7].

A telescopic overdenture is a removable

prosthesis that has a primary coping on the teeth and a secondary coping in the denture. The primary copings are full-coverage parallel-milled copings that are cemented to the prepared teeth. The secondary coping fits over the primary coping. It works by the application of interfacial surface tension and friction fit mechanism of retention using double copings. This increases retention and stability. It is otherwise known as overlay denture, overlay prosthesis and superimposed prosthesis [8-11].

They work by transferring the forces along the long axis of the abutment teeth and prevent dislodgement of the denture. It can also be used in patients with reduced and residual dentition as it gives an opportunity to reduce destructive rotational and horizontal occlusal forces by directing them more axially [12,13].

A major advantage of telescopic overdentures is that it can be used in periodontally compromised patients as well, as it disperses the forces and prevents pathological migration of teeth. They are, however, indicated only for patients with multiple abutments distributed bilaterally along the dental arch [14,15].

Previously our department has published extensive research on various aspects of prosthetic dentistry [16-26] this vast research experience has inspired us to research about this topic. Considering the above factors discussed, this clinical report describes the prosthetic rehabilitation of a patient with only a few remaining teeth in the mandible, and all the teeth were on one side of the arch.

CASE REPORT

A 62-year-old patient reported to the Department of Prosthodontics with a chief complaint of multiple missing teeth and a desire to improve chewing and esthetics. History revealed the patient was a smoker for the past 21 years. Extraoral examination revealed a convex profile and a normal temporomandibular joint. On intraoral examination there was missing 15, 16, 17, 23, 27, 31, 32, 33, 34, 35, 36, 37, 41, 42, 46, 47 and non-vital 12, 13, 14, 21, 24, 25, 26.

Patient underwent periodontal therapy - scaling, root planning and flap surgery to save the remaining teeth. This was followed by root canal treatment of 12, 13, 14, 21, 24, 25, 26. Diagnostic casts were prepared after taking alginate impressions. Temporary denture base and wax occlusal rim was fabricated on the mandibular diagnostic cast. The occlusal rim was used to determine the vertical dimension of occlusion, prior to tooth preparation. Casts were mounted on a semi-adjustable articulator and were analyzed.

Various prosthetic options, including implant therapy, were given to the patient. The patient was interested in saving the remaining teeth and did not give a positive response for implants. Patient also had a removable partial denture previously and was not satisfied with it.

After consideration of all factors a treatment plan of fixed prosthesis irt 11, 12, 13, 14, 21, 22, 23, 24, 25, 26, with an attachment removable partial denture irt 15, 16, primary metal copings irt 43, 44, 45, 48 with a lower complete telescopic overdenture was planned (Figure 1).

Tooth preparation was done in the maxillary and mandibular arch. After preparation of the abutments, impression was made using polyvinyl siloxane elastomeric impression material (putty and light body) by double step



Figure 1: Pre-operative right, frontal and left view intraoral photographs.

technique. Primary copings were fabricated on the master cast obtained and the fit of the copings were evaluated in the patient's mouth, after which they were cemented on the abutments with glass ionomer cement. At the same time, metal trial for the maxillary arch was done and maxillomandibular relationship was assessed using occlusal rims.

Bisque trial for upper arch along with a Kennedy's class 2 RPD irt 16, 17 was done along with wax trial of lower telescopic complete denture. Occlusion along with protrusive and laterotrusive movements were assessed. The RPD and complete denture were processed with heat cure acrylic while the ceramic was glazed. A follow up of 1 year revealed no prosthetic complication and complete patient satisfaction (Figures 2-4).



Figure 2: Occlusal view of maxillary arch. Attachment for RPD seen.



Figure 3: Post-operative right, frontal, and left view intraoral photographs of final prosthesis.



Figure 4: The pre-operative and post-operative extraoral images of the patient.

DISCUSSION

In this case, considering the age of the patient and his habits, implant supported prosthesis was ruled out as a treatment option for the patient. A telescopic denture was chosen as a favorable treatment option for mandible, even though it is usually indicated for patients with multiple abutments distributed bilaterally along the dental arch. This overcame many of the problems posed by conventional complete dentures like progressive bone loss, less retention and stability, loss of periodontal proprioception and low masticatory efficiency. It also helped in better distribution of forces [27,28].

It is a known fact that the residual alveolar ridge undergoes rapid loss in all dimensions [29]. The residual ridge resorption (RRR) is said to be rapid, progressive, irreversible, and inevitable. It has been well observed and documented in the literature [29-32]. However, it was also observed that bone is maintained around standing teeth and implants [33,34]. Therefore, retaining teeth as overdenture abutments slows down the rate of alveolar resorption [35]. A study by Crum et al. concluded that patients treated with complete maxillary dentures and mandibular overdentures demonstrated less vertical alveolar bone reduction than patients with complete maxillary and mandibular conventional dentures [36].

Prosthetic rehabilitation with over dentures constitutes essentially a preventive prosthodontics concept, as it endeavors to preserve the few remaining teeth and the supporting structures [37]. The teeth which are generally too weak to support a fixed partial denture and are considered unsuitable abutments to support a removable partial denture can often at times be usefully conserved and suitably modified to act as abutments for over dentures for a useful span of time [38]. Proprioception, through the periodontal fibres, also gives the patient a sense of discrimination to touch and pressure, which is less with conventional complete dentures [39,40].

A telescopic overdenture is a removable prosthesis that has a primary coping on the teeth and a secondary coping in the denture. The primary copings are full-coverage parallel-milled copings that are cemented to the prepared teeth. The secondary coping fits over the primary

coping. It works by the application of interfacial surface tension and friction fit mechanism of retention using double copings. The smaller the degree of the taper, the greater the frictional retention of the retainer. The average wall taper is a 6-degree angle. A longitudinal study conducted by Bhagat et al. stated that conical crown-retained partial dentures have a lower failure rate compared to those retained with clasps or precision attachments [41]. Stability is enhanced by the vertical component of the retained teeth. The copings are milled to exact configurations of taper angles of the walls with each other to create a common path of insertion for outer telescopic crowns of a retrievable superstructure [42-44].

Retrievability is the major advantage of telescopic overdenture, that is not available with a fixed prosthesis. It is a more versatile alternative for these patients because the prosthesis can be repaired without reconstruction of the entire superstructure. Patients should be given instructions regarding denture maintenance since distortion of an outer telescopic crown can reduce the retention of the prosthesis. They also promote oral hygiene and periodontal health because the abutments are more accessible for oral hygiene [45].

However, as it is an overdenture, its success depends on the continued retention of the underlying abutments. From the practitioner's end, it becomes obligatory to periodically monitor their health and institute necessary steps to prolong their useful span. Periodical recall and review is of utmost importance [46].

CONCLUSION

Although the cost and number of appointments are higher with the overdenture treatment when compared with conventional complete dentures, it is justified as telescopic overdentures are a superior health service. Even with the increased use of implant supported overdentures, tooth supported telescopic overdentures can be an alternative treatment plan.

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CONFLICT OF INTEREST

There are no conflicts of interest.

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