

Removable partial denture with telescopic overdenture

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ABSTRACT

Telescopic dentures have better retention and stability than conventional complete dentures. It improves masticatory efficiency, patient comfort, and reduces alveolar bone resorption. This article reports an overdenture telescopic denture as a treatment option in progressive bone loss, low stability and retention, loss of periodontal proprioception and low masticatory efficiency. A 35-years-old female came to RSGM Unhas, with complaints of difficulty chewing food due to the loss of several posterior teeth of the upper jaw and lower jaw. The patient felt pain when chewing due to cavities. The patient wanted to retain the remaining teeth and wanted minimal denture-covered mucosa. After considering all factors, a telescopic overdenture removable denture RA and RB was recommended. Intraoral examination dental caries 13,11,21,22,23,34,35,45; edentulous 12,14,16,24,25,37,36,44,46 anterior deep bite, normal occlusion. It was concluded that the evaluation of occlusion, aesthetics, phonetics and comfort showed that the patient was satisfied, could speak, chew well while using his denture.

Keywords: telescopic, overdenture, removable partial denture

INTRODUCTION,

Loss of permanent teeth in adult patients without replacement can result in impaired masticatory, esthetic and phonetic functions. In addition, there can be disturbances in the balance of the masticatory organs in the mouth, such as migration of neighbouring teeth, extrusion of antagonistic teeth, loss of contact, caries, gingival recession and periodontal pockets which cause more complex dental and oral health problems.¹

Definitive overdentures have been used to rehabilitate partially and completely edentulous patient overdentures were defined as removable partial or complete dentures that cover and rest on one or more remaining natural teeth, roots, and/or dental implants. Additionally, overdentures may be defined as dental prostheses that replace the lost or missing natural dentition and associated structures of the maxilla and/or mandible receiving partial support and stability from one or more modified natural teeth.²

Telescopic overdenture is a development of conventional overdenture, with more advantages than conventional overdenture. The concept of a telescopic crown comes from an optical microscope that works on the principle of movement between two parallel cylinders. Telescopic crown is a denture with a combination of tooth and mucosal support, is a removable prosthesis that is designed to fit the natural tooth and the surrounding soft tissue in order to replace the missing tooth.³

The telescopic crown prosthesis consists of a) coping primers or caps, made of precious or base metal, cemented onto the prepared tooth; b) secondary coping (alloy metal) which is inserted into

the secondary crown, with the aim of retaining the tooth through a sliding friction mechanism that is tight on the tooth. This secondary coping has a facing surface which will be filled with acrylic resin, composite, or ceramic; c) the skeleton is made of base metal alloy embedded in acrylic resin to support acrylic teeth which will serve to replace the missing teeth.³

Prosthetic rehabilitation of a partially edentulous patient can be established by using a wide range of treatment options. Most preferred prosthetic approaches are conventional removable partial dentures (RPD), teeth or implant supported overdentures, fixed partial dentures, and implant supported fixed or partial dentures (ISFPD). Conventional removable dentures, supported by remaining teeth and alveolar tissues, have been widely used. However, the traditional retention systems such as metallic clasps, frequently used in these conventional removable dentures, impose lateral forces on remaining abutments, increase abrasive wear, and cause unaesthetic appearance case.⁴

Rehabilitation therapy with these anchorage methods could increase retention and stability compared to conventional RPDs retained by clasps and have aesthetic advantages due to the absence of any visible metallic clasps. This procedure is a simple, economic and conservative solution, which retains the principles and advantages of classic overdentures⁵

CASE

A 35-year-old female patient referred to Department of Prosthodontics, Faculty of Dentistry, Hasanuddin University, for esthetic problem and chew-

ing inability. After obtaining her medical, dental, and social histories, the patient was examined clinically and radiographically; shows that she had lost her many teeth in the upper jaw and the lower jaw due to periodontal diseases and caries. Intraoral examination shows edentulous 14,15,16,21,24,26,34,36,37,46,47; anterior deep bite, normal occlusion (Fig.1).

MANAGEMENT

Anatomical impressions were taken on the first visit (Fig.2). Then, preliminary treatments were done before the prosthodontics treatment; scaling on all remaining teeth, full crown preparation for telescopic crown on teeth 13,22,35,44,45. Gingival retraction with thread and adrenaline, as well as printing of the working model with a perforated stock tray with PVS impression material (Fig.3). Making temporary crown with acrylic self-curing material and the laboratory process is carried out for the manufacture of double crowns.

After the primary coping framework was completed, a try-in was performed on teeth 13,22 and 35,44,45. Check the edge accuracy of the primary coping framework. The impression was made with PVS impression material along with the primary coping framework and sent back to the laboratory for the final process of making primary coping, secondary coping, and metal frame partial denture base (Fig.4). After primary coping, secondary coping and finished base, a trial pair of primary coping was performed on teeth 12,13 and 35, 44,45. The impression is made with PVS impression material along with the primary coping framework (Fig.5), and sent back to the laboratory for the final process of making primary coping, secondary coping, and removable partial overdenture metal frame base. At the next visit after primary coping, secondary coping and base of RPD finished metal frame, trial and error of primary coping was performed on the teeth (Fig.6,7). After all the crowns were delivered and cemented, the partial removable telescopic overdenture was inserted (Fig.8,9), checking for retention, stabilization, occlusion, esthetics and patient comfort in wearing dentures. If there is a traumatic occlusion, grinding is done on the traumatized area.

DISCUSSION

The treatment of this patient is telescopic partial removable overdenture on the upper and lower jaw. Overdenture is one of treatments for patients who have bad conditions of teeth-crowns but good conditions of periodontal tissue and teeth's root,

which can support the denture.⁴Overdenture can improve support and denture stability, increase the supporting teeth's life expectancies, and inhibit resorption of the residual ridge.⁶



Figure 1 Intraoral condition left and right sides view



Figure 2 Anatomical impression using an irreversible hydrocolloid impression



Figure 4 insertion trial of inner coping

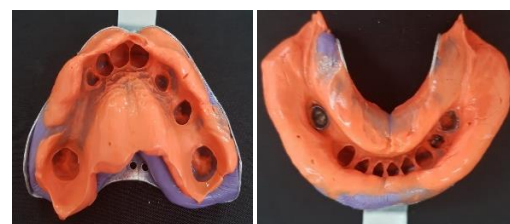


Figure 5 Pick up impressions

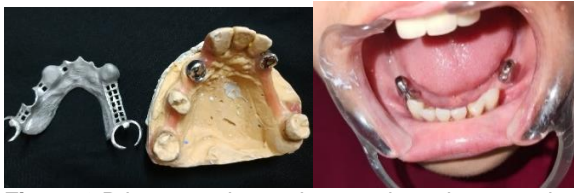


Figure 6 Primary coping and cementing primary coping



Figure 7 Metal frame design



Figure 8 The set-up of artificial teeth on metal frame



Figure 9 Telescopic RPD insertion

Some of the benefits of the telescopic overdentures include the prevention of bone loss, esthetic appeal, improved speech when compared with other types of dentures), proper jaw alignment, and improved chewing efficiency. Periodontitis oral disease that is dreaded that causes the gums to recede, loosening teeth, and eventually leading to loss of teeth.

The telescopic denture is best suited to restore new teeth for the periodontal patients. It consists of a double crown system known as *the telescopic*, the procedure involves fitting the remaining natural teeth with inner metal crowns, followed by outer crowns as part of an overdenture that can be removed by the patient. The outer crown are modeled and cast together with the major connector in single-piece casting, so the partial denture structure in one piece. This technique ensures that bite stress is distributed evenly between each tooth, protecting the remaining teeth and the end result looks quite natural.⁶

Total or partial edentulism not only leads to patient's impairment of oral function but also influences facial appearance and psychological conditions.⁴ Rehabilitation of an edentulous patient is a complex situation that several treatment options should be developed to solve this problem. While the conventional dentures like removable partial or complete dentures are the most preferred restoration options, they also have several limitations. In removable complete or partial dentures, retention and stability are the main factors to reach the success of the rehabilitation.⁴

A telescopic overdenture has advantages of good retentive and stabilizing, rigid splinting action, and better distribution of stresses.⁴ In the current study, according to the periodontal condition, the distribution, and the number of remaining teeth, teeth supported overdenture would be the most appropriate treatment option for mandibular partial edentulism. The main advantage of the telescopic overdenture in the present case is providing balanced stress distribution between teeth and soft tissues. The telescopic retainers decrease the proportion of most traumatic lateral forces and transmit the occlusal forces in the direction of the long axis of the abutment teeth.⁴ Furthermore, due to the well stress distribution and continued proprioceptive sensation, telescopic overdenture also prevents residual alveolar bone resorption. It is also more aesthetic and and hygienic than conventional removable partial dentures.

The advantages and disadvantages of a telescopic overdenture are that it provides a good path of insertion, is easy to perform routine oral hygiene, is rigid so that it helps splinting of mobile teeth, distribution of pressure on the abutment teeth, provides a suitable abutment for removable partial overdentures even when remaining teeth with periodontal abnormalities, insertion it is much easier for the patient, accommodate future changes in the treatment plan, and is psychologically tolerated by the patient. The disadvantages are increased cost, complex laboratory procedures, large number of tooth reductions required, large number of visits, difficulty in obtaining esthetics, reduced retention after repeated insertion/separation cycles, difficult adjustment of retention forces.¹

It is concluded that tooth supported overdentures with telescopic crowns may be preferred in the rehabilitation of partial edentulous patients to the conventional removable dentures, because of their advantages such as better retention, stability, stable occlusion, and chewing function due to the conservation of proprioception feedback.

REFERENCES

1. Ardiansyah M. Preventive treatment of telescopic overdenture prosthodontics. *Makassar Dent J* 2016;5(1):19–24.
2. Sd P. Specially designed copings for stability of overdentures. *JSM Dent* 2016;4:1–5.
3. Santoso P, Tahjanti MTE. Overdenture with telescopic crown handle. *Maj Dentistry Indonesia* 2014;21(1):72.
4. Dede DÖ, Cenk Durmuşlar M, Ahn O, Köroğlu A, İşsağ . Telescopic overdenture and implant supported fixed partial denture: a pragmatic treatment approach. *Case Rep Dent* 2015;2015.
5. Melilli D, Wandscher VF, Ciocca L, Curr G, Parisi C, Gallina G, et al. Retention strength of ball-attachment titanium post for removable partial denture or overdenture. *Braz J Oral Sci* 2020;19:1–11.
6. Laksono H. Telescopic overdenture as an aesthetic treatment for partially dentate patients-a case report. *Indonesia J Dent Med* 2018;1(1):27.