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**A TOOTH-SUPPORTED TELESCOPIC OVERDENTURE FOR IMPROVED
RETENTION AND STABILITY IN COMPROMISED ORAL CONDITIONS**

Muhammad Genadi Askandar¹⁾, Mohd. Dwira Wardhani²⁾, Michael Josef Kridanto Kamadjaja²⁾

¹⁾Department of Prosthodontics, Faculty of Dentistry, Universitas Lambung Mangkurat, Banjarmasin, Indonesia

²⁾Department of Prosthodontics, Faculty of Dentistry, Universitas Airlangga, Surabaya, Indonesia

ABSTRACT

Background: Telescopic overdenture is a removable prosthesis that covers and utilizes remaining teeth as support through a double crown system consisting of inner and outer copings. This type of prosthesis is indicated in cases where several teeth require extraction while others can still be preserved despite compromised periodontal conditions. Its advantages include good long-term prognosis, ease of cleaning, and reduced food retention due to the metal coping surface, which helps maintain periodontal health of abutment teeth. **Purpose:** To improve esthetics, speech, and masticatory function using telescopic overdenture. **Case:** A 38-year-old male presented with multiple missing and mobile teeth in both maxillary and mandibular arches. The patient reported discomfort during mastication and decreased self-confidence due to poor dental appearance, and requested prosthetic rehabilitation. **Case Management:** Initial treatment included scaling and root planing, extraction of teeth 13, 21, 23, 24, 28, 33, and 32, and occlusal adjustment. Transitional dentures were fabricated for both arches as an interim solution. Definitive treatment involved a telescopic overdenture in the mandible and a complete denture in the maxilla. **Conclusion:** Telescopic overdenture is an effective treatment option for partially edentulous patients, providing improved retention, stability, esthetics, and function while preserving remaining teeth and supporting long-term oral health.

Keywords: Double crown, Occlusal force, Periodontal tissue, Splinting teeth, Telescopic denture

Correspondence: Muhammad Genadi Askandar, Department of Prosthodontics, Faculty of Dentistry, Universitas Lambung Mangkurat, Indonesia, genadiaskandar@ulm.ac.id, +6281234119838.

INTRODUCTION

Teeth missing can occur due to caries, trauma, and periodontal disease, congenital defects, and iatrogenic treatments. Epidemiological studies have shown that partial edentulism is highly prevalent worldwide, particularly among adults, with prevalence rates ranging from 30% to 70% depending on age group and population.^{1,14} Severe tooth loss and edentulism are also reported to affect quality of life, including mastication, speech, esthetics, and psychosocial well-being. Missing teeth can be replaced by dental implants, complete denture, removable partial denture, and fixed prostheses.

The absence of teeth leads to progressive alveolar ridge resorption, which is an irreversible physiological process. Approximately 40% of alveolar bone height and 60% of width may be lost within the first six months following extraction, followed by continuous resorption at a rate of 0.25–0.5% per year. This condition complicates prosthodontic rehabilitation and may compromise denture retention and stability if not managed appropriately.^{1,15}

Conventional complete dentures and removable partial dentures are commonly used treatment options; however, they present several limitations, including reduced retention and stability, especially in cases with severe ridge resorption, compromised periodontal support, or unfavorable anatomical conditions.³ Additionally, conventional dentures rely primarily on mucosal support, which may accelerate residual ridge resorption and reduce patient comfort over time.

In contrast, telescopic overdentures offer a more favorable biomechanical and clinical outcome by utilizing remaining teeth as abutments. This system consists of a double crown design (inner and outer coping), which enhances retention, stability, and load distribution along the long axis of the abutment teeth.^{4–5} Furthermore, telescopic overdentures provide a splinting effect, improve proprioception, and facilitate oral hygiene maintenance, contributing to long-term periodontal health and prosthesis longevity.⁶

Despite these advantages, reports on the clinical application of telescopic overdentures in partially edentulous patients with compromised periodontal conditions remain limited, particularly in younger adult populations. Therefore, this case report aims to describe the clinical management and outcomes of a telescopic overdenture in a partially edentulous patient, highlighting its functional and esthetic benefits as well as its role in preserving remaining teeth.

CASE(S)

A 38-year-old man came to RSKGM UNAIR with chief complaints are several missing teeth and teeth mobility in his upper and lower jaws. He experienced discomfort while eating and desired dentures. The patient does not have any systemic disease. The patient has never used dentures before. Treatment planned for this case are completed denture for upper jaw and telescopic overdenture for lower jaw.

On extraoral examination, the temporomandibular joint (TMJ) had no issues: the face was square in shape; eyes, nose and lips were symmetrical; and there were no abnormalities. Intraoral examination revealed multiple missing teeth at 18, 17, 16, 15, 14, 12, 11, 22, 25, 26, and 27; tooth mobility 3° at 13, 21, 23, 24, 28, 33, 32; superficial caries with tooth mobility 2° with at 37, 36, 46, 47 and gangrene radix at 16 (Figure 1). On radiographic examination, there was a visible decrease in alveolar bone at the apical third of teeth 13, 21, 23, 24, 28, 33, 32 (Figure 2).



Figure 1. Intra oral initial condition



Figure 2. Panoramic radiograph

CASE MANAGEMENT(S)

Primary impression was done using alginate to get study model for analyzed the treatment. Preliminary treatments performed were: mandibular scaling and root planing; extraction of teeth 13, 16, 21, 23, 24, 28, 33, 32; and composite restoration of teeth 37, 36, 46, 47. The first treatment for the patient were fabricate complete denture for maxilla and fabricate the transitional denture for mandibula to maintain the vertical dimension occlusion while teeth 35,36,45,46 are planning for the reduction as primary coping the telescopic.

On the next visit, measure the correct vdo and final impression were done. For maxillary impression, green stick was used for border molding and polyvinyl siloxane was used for final impression. Confirmation of the correct the vertical dimension occlusion (Figure 3) then determining the horizontal relation of the upper and lower jaw. Maxillary mandibular recording using bite registration polyvinylsiloxane (Figure 4). After processing acrylic, insertion for complete denture on maxilla and transitional denture for mandibula were done on the next visit (Figure 5).



Figure 3 Determine VDO



Figure 4 Maxillary Mandibular Record



Figure 5 Insertion the Denture

Patient need to recall for third times after insertion the denture to know if patients had complaints about denture allergies, retention, stability, phonetic, and occlusion. The patient did not have complaint about denture and felt comfortable with denture, so can continue to make telescopic denture for the lower jaw.

The next visit preparation was done on the abutment teeth 36, 35, 45, and 46 (Figure 6). Final impression using putty and light body on lower jaw then sent to dental lab to make inner coping (primer) on 36, 35, 45, and 46. Try in for inner coping was done on the next visit and check for the fit on the abutment teeth (Figure 7).



Figure 6 Preparation results on 45, 46, 35, and 36



Figure 7 Try in inner coping on 45, 46, 35, and 36

Inner coping was good and fit on abutment teeth, then take the impression for mandibula while coping still in the abutment teeth using elastomer (polyvinylsiloxane) medium and light body. Send to dental lab to make outer coping and metal framework. Next visit check for the outer coping and metal frame neither fit and retention with the inner coping, so it can continue to make bite registration between upper and lower jaw. Then we take the teeth shade guide to process the wax denture.

Try in the wax denture in patient mouth on the next visit, check how teeth occlusion. The occlusion was good, so we can be packing the denture acrylic (Figure 8).



Figure 8 Try in Wax Denture

For mandibular telescopic denture insertion, the inner and outer copings are inserted simultaneously using Fuji type I GIC. Figure 9 show the insertion of inner coping result on teeth 46, 45, 35, and 36 . The teeth adjacent to the abutment teeth and the gingival mucosa around the abutment teeth are smeared with vaseline to

prevent cement from sticking to the area. Vaseline is also applied to the area around the inner and outer copings to prevent cement from sticking to the gap between the inner and outer copings. Figure 10 show the insertion of telescopic overdenture on mandibula. An evaluation is performed using articulating paper to observe the occlusal contact and to evaluate the retention and stability of the dentures. The patient is instructed to practice articulation and phonetics to get used to it. The patient is informed how to remove and insert dentures, how to clean the dentures. The patient is instructed to maintain oral hygiene and the dentures. The patient is asked to wear the dentures for 24 hours and remove the dentures when eating. The patient is instructed to come for a check-up the next day.



Figure 9 Inner Coping Insertion Result on teeth 46, 45, 35, and 36



Figure 10 Telescopic Overdenture Insertion

After inserted the telescopic overdenture, Patient need to recall third times to know if patients had complaints about denture allergies, retention, stability, phonetic, and occlusion. If the patient did not have complaint about denture and felt comfortable with denture, we can give advises to patient to keep hygiene of their

dentures and oral cavity. Patients are instructed to have regular check-ups with their dentist every six months or if they have any complaints.



Figure 11 The treatment results

DISCUSSION

In this case, a combination of complete denture for the maxilla and telescopic overdenture for the mandible was selected based on the remaining tooth condition and periodontal support. This approach is consistent with previous studies suggesting that preservation of strategic abutment teeth can improve prosthesis performance and delay residual ridge resorption.

Telescopic overdentures have been widely reported to provide superior retention and stability compared to conventional removable dentures. The double crown system creates a frictional fit between the inner and outer copings, resulting in enhanced retention and improved load distribution along the long axis of abutment teeth. Studies by Langer and colleagues demonstrated that tooth-supported telescopic prostheses show favorable long-term outcomes, with survival rates of abutment teeth exceeding 80–90% over 5–10 years.^{9–10} Similarly, Hakkoum and Wazir reported improved retention and patient satisfaction with telescopic systems compared to conventional overdentures.⁷

Compared to conventional overdentures, telescopic overdentures offer several advantages. Conventional overdentures typically rely on attachments such as stud or bar systems, which may require frequent maintenance and are susceptible to wear and loss of retention over time. In contrast, telescopic systems provide a more stable and durable retention mechanism through the double crown design, along with a splinting effect that enhances periodontal support. However, telescopic overdentures require more extensive tooth preparation and precise laboratory procedures, making them technique-sensitive.

When compared to implant-supported prostheses, dental implants generally demonstrate higher survival rates, often reported above 90–95% over 10 years. However, implant therapy may not be feasible in all patients due to systemic conditions, inadequate bone volume, financial constraints, or patient preference. In this case, the presence of compromised periodontal support and the desire to preserve remaining teeth made telescopic overdenture a more conservative and cost-effective option. Additionally, telescopic systems provide proprioceptive feedback through the periodontal ligament, which is absent in implant-supported prostheses.

A telescopic denture is a removable denture that encloses and rests on one or more remaining teeth. A telescopic denture consists of an inner or primary coping and an outer or secondary coping. During installation, the inner coping will be cemented to the abutment teeth, while the outer coping will be integrated with the denture prosthesis. Telescopic dentures are also called double crown dentures because they consist of primary and secondary copings. This double crown system is expected to increase the retention and stability of the denture.^{4,5}

There are four types of double crown systems based on their retention mechanism: cylindrical crown, conical crown, resilient crown, and modified design. A good double crown system requires extensive preparation of the abutment teeth, with a total of 1.8–2 mm of preparation required for the entire abutment tooth. The inner and outer crowns require a thickness of 0.3–0.5 mm each, while the porcelain restoration covering the outer crown requires a thickness of 0.8–1 mm.⁶

Despite its advantages, telescopic overdenture also has limitations. The technique requires precise parallelism of abutments, increased chairside and laboratory time, and higher cost compared to conventional dentures. Furthermore, complications such as decementation of inner copings, wear of coping surfaces, loss of retention, and periodontal deterioration of abutment teeth may occur if oral hygiene is not adequately maintained.

In this case, the use of four abutment teeth (35, 36, 45, and 46) provided a favorable distribution of occlusal forces and a secondary splinting effect, which contributed to good retention and stability. The patient reported improved comfort, mastication, and esthetics, with no significant complications observed during follow-up. The stability and retention of removable prostheses are highly influenced by the degree of residual ridge resorption, which may reduce denture-bearing area and compromise prosthesis performance over time.¹⁵

From a biomechanical perspective, the use of telescopic overdenture allows distribution of occlusal forces along the long axis of abutment teeth, which is more favorable for preserving alveolar bone compared to mucosa-supported dentures. This is consistent with the concept that jawbone responds differently to pressure depending on the direction and magnitude of forces applied.¹⁶

In terms of retention, a systematic review reported that double crown systems, such as telescopic crowns, provide reliable and consistent retention forces due to the frictional fit between inner and outer copings.¹⁷ This contributes to improved prosthesis stability and patient satisfaction compared to conventional removable dentures.

Telescopic overdenture represents a clinically effective treatment option for partially edentulous patients with compromised periodontal conditions, as it successfully restores esthetics, speech, and masticatory function while preserving remaining teeth. This approach provides a favorable balance between biological preservation and prosthetic performance, making it a suitable alternative when conventional dentures are inadequate and implant therapy is not feasible.

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