



Management of Severe Mandibular Posterior Ridge Atrophy Using Tooth-Supported Telescopic Complete Denture: A Clinical Report

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Abstract

Severe residual ridge resorption poses a significant challenge in prosthodontic rehabilitation, especially in partially edentulous patients with compromised anatomical support. Conventional removable dentures often fail to provide sufficient retention and stability in such cases. Telescopic dentures offer a conservative and effective solution, particularly for the elderly, to avoid surgery. Double crowns, which consist of primary copings cemented to abutment teeth and secondary crowns incorporated into the denture, will create passive friction for mechanical retention to enhance load distribution, stabilize abutment teeth, and preserve natural dentition. Telescopic dentures are adaptable over time and provide improved comfort, esthetics, and patient confidence. This clinical report presents a 70-year-old male patient with severe ridge resorption in the bilateral posterior mandible, characterized by extremely shallow retromylohyoid areas. Successful rehabilitation was achieved using a mandibular telescopic complete denture, demonstrating the value of conservative prosthodontic planning.

Keywords: overdenture, telescopic, double crown, ridge atrophy.

Introduction

Severe residual ridge resorption remains a major challenge in prosthodontic rehabilitation, particularly in partially edentulous patients where the anatomical foundation for conventional removable prostheses is compromised.¹ In such clinical situations, achieving adequate retention, stability, and support becomes increasingly difficult, often resulting in patient dissatisfaction and functional impairment.² Addressing these challenges requires a treatment modality that is both functionally effective and biologically conservative, particularly in older individuals who prefer simpler procedures with fewer surgical risks.

One such option is the telescopic denture system, a prosthetic modality that has proven valuable in the management of complex cases involving few remaining teeth with moderate-to-good periodontal support.³ This system is characterized by the use of double crown mechanisms, where primary copings, are permanently cemented to the abutment teeth, and secondary crowns are integrated within the removable prosthesis to fit precisely over the primaries.⁴ The passive friction generated between these components provides mechanical retention, eliminating the need for visible

clasps or auxiliary attachments.⁵ Moreover, this design helps stabilize abutment teeth and distributes occlusal forces more evenly onto abutment teeth and underlying tissues.⁶

Telescopic dentures are in harmony with conservative dental treatment concepts, as they prioritize the maintenance of the patient's natural dentition and reduce reliance on invasive surgical techniques.⁷ This form of prosthetic care is especially advantageous for older individuals or those with systemic limitations where implant placement may not be advisable. Its capacity to be modified over time makes it a flexible long-term solution. Notably, patients often express greater comfort and assurance in public situations, attributed to the reliable retention and esthetically pleasing design of the restoration.⁸

This clinical report highlights the use of a telescopic complete denture in a patient with severe alveolar ridge resorption. It demonstrates how thoughtful prosthodontic planning and conservative use of remaining dentition can restore esthetics, function, and patient confidence without the need for surgical intervention.

Case Report

A 70-year-old male patient visited the Prosthodontic Department Universitas Airlangga Dental Hospital with a chief complaint complain of difficulty in mastication due to multiple missing teeth. He expressed the desire to have a comfortable and easy-to-use denture, emphasizing his need for enhance his overall quality of life, without undergoing any surgical procedures.

Medical history was unremarkable, with no systemic conditions contraindicating dental treatment. Intraoral examination revealed partially edentulous maxillary and mandibular arches, along with significant residual ridge resorption, particularly in the posterior mandible. Tooth 18 was present as a retained root, while teeth 34 and 44 were fully erupted, periodontally stable, and deemed suitable for use as abutments were periodontally stable, exhibiting adequate bone support and crown height, rendering them viable abutments for a fixed-removable prosthesis. Panoramic radiographic assessment

confirmed the presence of root fragment 18, generalized ridge resorption on the posterior mandible, and healthy bone support around teeth 34 and 44. Periapical radiograph of tooth 44 exhibited a normal periapical appearance and adequate bone support and tooth 34 demonstrated a radiolucency extending into the root canal system, accompanied by a mild periapical radiolucency.

Tooth 18 was scheduled for extraction. Tooth 34 underwent root canal treatment followed by the placement of a fiber post to restore its structural integrity and enable it to serve as a functional abutment. The definitive treatment plan involved the fabrication of a maxillary complete denture and a mandibular telescopic complete denture supported by the strategically preserved teeth 34 and 44. This prosthetic solution was chosen for its conservative nature, allowing improved retention and stability without the need for surgical intervention.

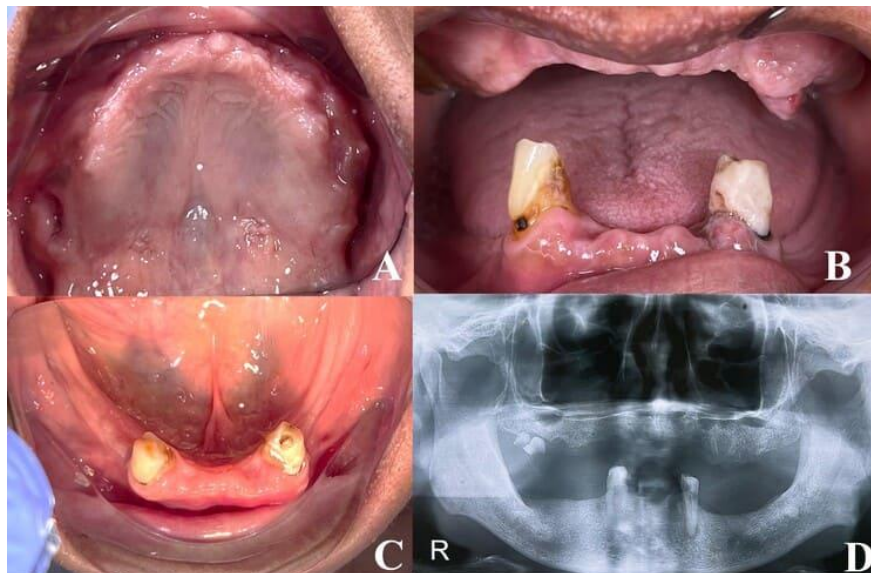


Figure 1: Objective Examination. (A-C) Intraoral Examination (D) Radiographic Examination

Initially, treatment was commenced with the fabrication of a maxillary complete denture and a mandibular transitional removable partial denture. This interim prosthesis served to restore function and esthetics during the planning phase, while also allowing for occlusal assessment and adaptation by the patient. Maxillary and mandibular primary impressions were taken using irreversible hydrocolloid material, followed by custom tray fabrication. Border molding and final impressions were made with polyvinyl siloxane (PVS) to capture accurate soft tissue details.

Maxillomandibular relationship records were then established by determining a new occlusal vertical dimension (OVD), to ensure proper function and esthetics. Teeth arrangement was performed in accordance with the newly established vertical dimension and patient-specific esthetic requirements. Following the try-in and verification of esthetics, phonetics, and occlusion, the maxillary complete denture and transitional mandibular denture were inserted. The transitional mandibular denture was designed to be

tissue-supported, providing short-term function while preserving abutment teeth 34 and 44. These interim prostheses restored function and esthetics during the treatment phase, allowing the patient to adapt while definitive rehabilitation was being planned.

Following the successful adaptation to the maxillary complete denture and mandibular transitional prosthesis, definitive treatment was initiated. Tooth 34 had previously undergone root canal treatment and was restored with a fiber post to ensure adequate retention and stability for the planned telescopic system. Tooth 44, with a healthy periapical status and sufficient crown structure, was also selected as an abutment. Both abutment teeth were prepared with a parallel milling technique to accommodate primary metal copings with a path of insertion aligned to enhance retention. The first definitive impressions were made using polyvinyl siloxane (PVS) impression material using stock tray. The primary copings were fabricated in cobalt-chromium alloy, checked intraorally for fit and parallelism.

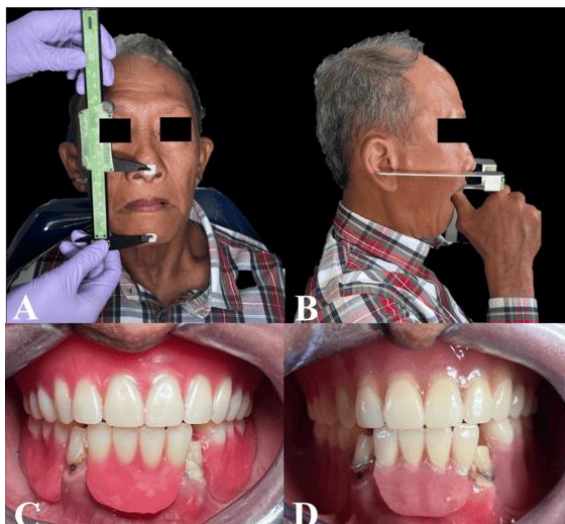


Figure 2: Fabrication of Maxillary Complete Denture and Mandibular Transitional Denture. (A) Measurement of OVD; (B) Alignment of the maxillary complete denture; (C) Try-in of artificial teeth; (D) Insertion of the denture

Once the primary copings were confirmed for fit, a secondary impression was taken using the pick-up

impression technique. The primary copings were temporarily placed onto the abutment teeth, and a new impression was made to capture the copings in place using individual tray. This step ensured that the final framework would fit precisely over the primary copings, providing a stable and passive retention mechanism.

After the pick-up impression was obtained, a secondary framework incorporating the outer crowns was designed to friction-fit over the primary copings and integrated into the mandibular removable prosthesis. Maxillomandibular relationship records were taken based on the transitional denture. A try-in was performed to verify esthetics, occlusion, and phonetics before final processing.

At the time of prosthesis delivery, occlusion was carefully adjusted, and the patient was provided with instructions on the proper insertion, removal, and maintenance of the prosthesis. The patient was followed up at 24 hours, three days, and one week, with no significant complaints. At the end follow-up, the patient reported significant improvement in masticatory function, prosthesis stability, and overall comfort, with enhanced satisfaction.



Figure 3: Fabrication of Tooth-Supported Telescopic Complete Denture. (A) Abutment tooth preparation; (B) Evaluation of preparation using transitional denture; (C) Try-in of primary coping; (D) Pick-up impression; (E) Try-in of secondary coping with metal framework; (F) Jaw relation record; (G) Try-in of artificial teeth; (H) Final denture insertion



Figure 4: Facial Appearance. (A) Before treatment; (B) With transitional denture; (C) After treatment without wearing denture; (D) With definitive denture

Discussion

In the prosthodontic management of partially edentulous patients, especially those with advanced alveolar ridge resorption, treatment planning must be individualized by balancing functional demands, anatomical limitations, systemic health, and patient preferences. While implant-supported prostheses often provide superior retention and stability, they are not always feasible.⁹ In this case, implant placement was not pursued due to the patient's reluctance to undergo any surgical procedures, a decision influenced by age-related concerns and the desire for a minimally invasive solution.

Instead, a tooth-supported telescopic complete denture was selected as a strategic alternative. This approach leverages the remaining dentition as abutments to enhance prosthesis stability and retention without relying on surgical intervention. Unlike conventional removable partial dentures (RPDs) that utilize visible clasps for retention, telescopic systems employ a double crown mechanism.¹⁰ Primary copings are cemented onto prepared abutment teeth, while secondary crowns, integrated into the denture base, fit precisely over the primaries using frictional retention. This configuration eliminates the esthetic and biomechanical drawbacks associated with clasp-retained dentures.¹¹

One of the key advantages of the telescopic dentures lies in its ability to distribute occlusal forces more uniformly across the supporting structures.¹² The splinting effect of the double crown system reduces stress concentration on individual abutments and improves the longevity of remaining teeth.¹³ Additionally, telescopic copings maintain axial loading and enhance proprioception, which is often diminished in conventional RPDs.¹⁴ This controlled force transmission is particularly important in patients with compromised ridges, where uneven stress may exacerbate residual ridge resorption.

Moreover, telescopic dentures offer superior esthetics due to the absence of clasps, which can be particularly beneficial for anterior abutments.¹⁰ The design also facilitates easier hygiene access, as the prosthesis can be removed, and the abutments can be cleaned thoroughly. This design is essential feature for elderly patients with declining manual dexterity. The precision fit between the primary and secondary components also results in improved retention and resistance to dislodging during mastication and speech.⁸ Moreover, research indicates that individuals rehabilitated with telescopic dentures demonstrate considerably higher satisfaction regarding retention, comfort, and social confidence when compared to those with conventional clasp-retained dentures.¹⁵

In the present case, the use of telescopic complete dentures successfully restored the patient's masticatory function, improved retention and esthetics, and eliminated the need for invasive procedures. By utilizing the available abutment teeth conservatively and integrating a biomechanically sound design, this treatment not only respected the patient's preferences and clinical limitations but also ensured long-term adaptability and comfort. The transitional denture phase allowed gradual functional adaptation and occlusal

planning, further contributing to the clinical success of the definitive prosthesis.

Overall, this case underscores the value of telescopic complete dentures as a viable prosthetic option in medically compromised or surgically averse patients. They serve as a bridge between conventional dentures and implant-supported restorations, offering a blend of mechanical performance, biological preservation, and esthetic enhancement that is particularly suited for complex partial edentulism.

Conclusion

Tooth supported telescopic complete dentures offer a conservative and effective solution for patients with severe ridge resorption and limited abutment teeth, especially when implant placement is not feasible. Compared to conventional clasp dentures, they provide better retention, stability, and esthetics through a friction-fit double crown system. In the present case, the use of strategically preserved mandibular abutment, combined with careful endodontic and prosthodontic planning, resulted in a successful rehabilitation with improved mastication, phonetics, and patient satisfaction. The non-surgical nature of the approach, coupled with high functional outcomes, further supports the role of telescopic dentures as a conservative yet durable treatment modality in modern prosthodontics.

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References

1. Jacobson TE, Krol AJ. A contemporary review of the factors involved in complete denture retention, stability, and support. Part I: retention. *J Prosthet Dent.* 1983;49(1):5-15. [https://doi.org/10.1016/0022-3913\(83\)90228-7](https://doi.org/10.1016/0022-3913(83)90228-7) PMID:6337253
2. Km S, Koli DK, Jain V, Pruthi G, Nanda A. Comparison of ridge resorption and patient satisfaction in single implant-supported mandibular overdentures with conventional complete dentures: A randomised pilot study. *J Oral Biol Craniofac Res.* 2021;11(1):71-77. <https://doi.org/10.1016/j.jobcr.2020.11.014> PMID:33376669 PMCID:PMC7758555
3. Singh K, Gupta N. Telescopic denture - a treatment modality for minimizing the conventional removable complete denture problems: a case report. *J Clin Diagn Res.* 2012;6(6):1112-6.

4. Brunda, K., Kalpana, D., Sharan, S., Sreeharsha, T. V., & Chandra, P. K. Telescopic overdenture - A case report. *International Journal of Science and Research*, 2018;7(12):1-5.
5. Kara R. Telescopic double crowns in prosthodontics. *Int J Dent Res*. 2021;8(2):17-23. <https://doi.org/10.14419/ijdr.v8i2.31531>
6. Guckes AD, Guckes SM, Shelton T, Carr AB. Tooth-supported telescopic prostheses in compromised dentitions: A clinical report. *J Prosthet Dent*. 2000 Sep;84(2):129-32. <https://doi.org/10.1067/mpr.2000.108026> PMID:10946327
7. Kumar A, Shankar S, Rani S, Singh R, Sinha R. Telescopic denture: a treatment option for occlusal rehabilitation. *Cureus*. 2023 Mar 15;15(3):e35202. <https://doi.org/10.7759/cureus.35202> PMID:36968911 PMCID:PMC10032173
8. Hakkoum MA, Wazir G. Telescopic denture. *Open Dent J*. 2018;12:246-54. <https://doi.org/10.2174/1874210601812010246> PMID:29760817 PMCID:PMC5897958
9. Leong JZ, Beh YH, Ho TK. Tooth-supported overdentures revisited. *Cureus*. 2024;16(1):e53184. <https://doi.org/10.7759/cureus.53184>
10. Krestiono MS, Laksono H. Telescopic overdenture as an aesthetic treatment for partially dentate patients: a case report. *Indones J Dent Med*. 2018;1(1):27-30. <https://doi.org/10.20473/ijdm.v1i1.2018.27-30>
11. Djafri R, Mude AH. Removable partial denture with telescopic overdenture. *Indones J Prosthodont*. 2023 Dec;4(2):89-92. <https://doi.org/10.46934/ijp.v4i2.240> .
12. Shruthi, C. S., Poojya, R., Ram, S., & Anupama. Telescopic Overdenture: A Case Report. *International journal of biomedical science : IJBS*, 2017;13(1):43-47. <https://doi.org/10.59566/IJBS.2017.13043> PMID:28533736 PMCID:PMC5422644
13. George M, Mahoorkar SS, Sushna K. Telescopic overdenture: A case report. *RGUHS J Dent Sci*. 2023;15(1):108-12. https://doi.org/10.26463/rjds.15_1_7 PMID:26918091
14. Dede DÖ, Durmuşlar MC, Fahn O, Köroğlu A, Ecebal Ö. Telescopic overdenture and implant-supported fixed partial denture: A pragmatic treatment approach. *Case Reports in Dentistry*. 2015;2015:392397. <https://doi.org/10.1155/2015/392397> PMID:26106491 PMCID:PMC4461731
15. Minervini G, Cervino G, Chaturvedi S, Franco R, di Francesco F, Fiorillo L, Cicciù M. Advanced method of rehabilitating edentulous jaws: A review on telescopic denture. *Technology and Health Care*. 2023;31(3):791-807. <https://doi.org/10.3233/THC-220641> PMID:36617805