



## Telescopic Double Crown Overdenture: A Case Report

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### Abstract

Patients with insufficient restorative and prosthodontic treated teeth seek additional treatment to restore their appearance and regain confidence. In this case report, a 64- year-old female patient received overdentures for aesthetic and chewing improvement. The process is described starting from the diagnostic cast and discussion of treatment options to temporary bridges, preparation and trying in of crowns and casts, and final trying in of the telescopic dentures. The success of the procedure and the importance of regular follow-ups are discussed.

### Introduction

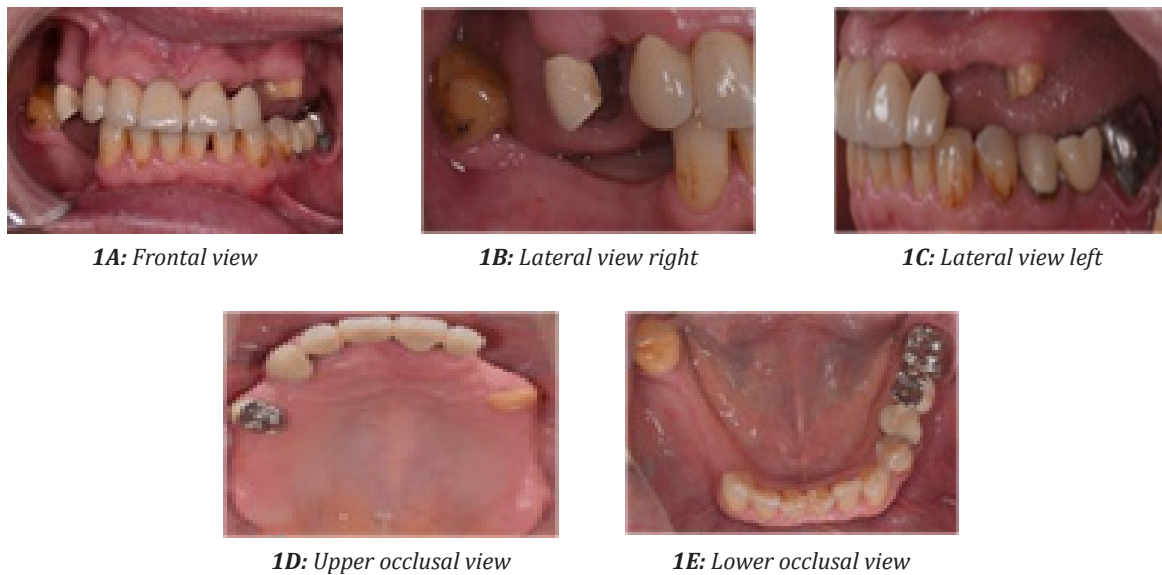
Different treatment options exist for patients with numerous missing teeth, such as removable partial dentures (RPD). Telescopic dentures are types of prosthesis that are retained or attached by double crowns [1, 2]. The remaining teeth are thereby used to stabilize the prosthesis [3]. The aim of the present article was to report a clinical case in which telescopic dentures were fabricated and tried in on both jaws in order to improve aesthetics and mastication in a female patient without RPD.

### Case Report

#### *Assessment and Diagnosis*

A 64-year old female retiree was referred to our departmental prosthodontic clinic after surgical treatment for further prosthodontics management and treatment. The patient wished for aesthetic and chewing improvement. The medical history included high blood pressure (hypertension), for which she reported taking 5 mg Ramipril daily. In terms of her dental history, the patient had multiple extracted teeth but had no RPD. She had restorations and old porcelain-fused-to-metal (PFM) bridges in the lower left 3 unit and the upper anterior 5 unit, and teeth number 37 and 24 were crowned and endodontically treated. The patient was motivated to receive the treatment. The extra- oral examination showed no muscle pain or temporomandibular joint pain upon palpation, and no temporomandibular joint noise was audible. Figure 1 shows different views of the intra-oral examination. The retromolar pad was well marked on both sides (Figure 1E) and the tuberosity well-defined. Oral hygiene was moderate. A cross bite of the right posterior teeth and multiple restorations were noted. An open margin crown had been placed on tooth number 37 due to caries (Figure 1C). In terms of migration, the midline shifted to the right, there was an unstable occlusion in the molar region, and tooth number 48 tilted mesial.

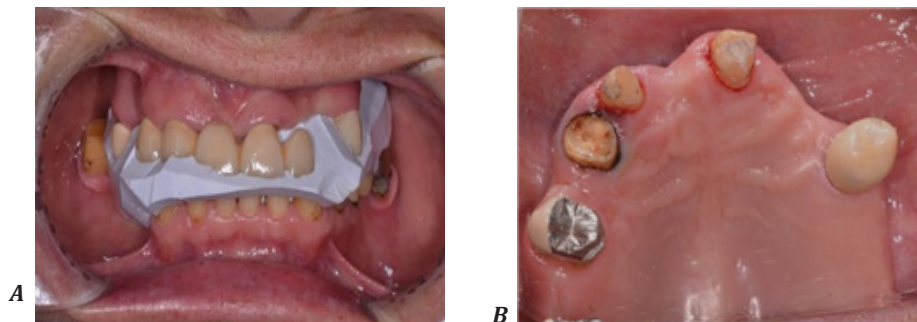
The patient was diagnosed with insufficient restorative and prosthodontic-treated teeth and loss of the vertical dimension.



**Figure 1:** Intra-oral examination

### First appointment

During the first appointment, the patient's medical history and her chief complaint were assessed, and the extra- and intra-oral examinations were conducted. The treatment options were discussed with the patient and the selected treatment plan explained. System build-up as well as restoration for teeth number 13, 15, 33, and 34 was done with Ti-Core™ (Essential Dental Systems, S. Hackensack, NJ, USA). A temporary bridge and crown were fabricated with temporization material (Protemp™ 4, 3M ESPE, Neuss, Germany). The upper and lower primary impressions were taken with alginate, and the primary jaw relation with silicon (Silaplast™, DETAX, Ettlingen, Germany, Figure 2A). A diagnostic cast was generated to fabricate a thermoplastic vacuumed moulded template for a provisional bridge. The anterior bridge present in the upper jaw was removed (Figure 2B). Prefabricated unimetric post (11.5 mm length, Maillifer, Dentsply Sirona, Bensheim, Germany) was prepared for tooth number 24 and cemented with Flexi-Flow™ and then Ti-Core™ (Essential Dental Systems, S. Hackensack, NJ, USA)



**Figure 2:** Jaw relation (A.) and upper jaw after removal of the anterior bridge

### Second appointment

During the second appointment, the fine preparation was performed and bite registration using a thermoplastic material (Brown Kerr™, Kerr Dental, Brea, CA, USA) done. The anterior teeth were prepared first, followed by anterior bite registration (Figure 3A, 3C, 3D). After that, the posterior teeth number 15 and 24 were prepared, followed by the lower left side and tooth number 43 (Figure 3B).

The anterior bridge was removed first and bite registered (Figure 3C), and then a bite registration was done for both the anterior and posterior teeth to maintain the vertical dimension (Figure 3E – 3G). The final impression was made with polyether impression material (Impregum™ and Permadyne™, 3M ESPE, Neuss, Germany, Figure 4). Figure 5 shows the temporary bridge in different views.



3A. Preparation of the upper jaw



3B. Preparation of the lower jaw



3C. Anterior bite registration



3D. Thermoplastic material for the anterior bite registration



3E. Upper and lower bite registration

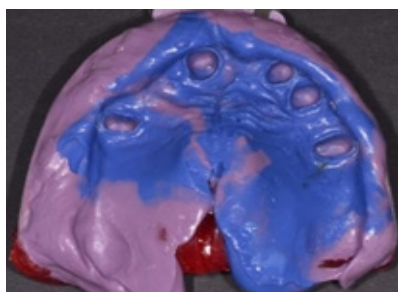


3F. Thermoplastic material for upper and lower bite registration

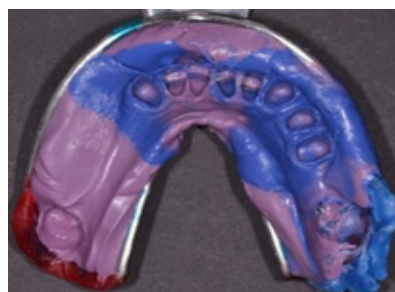


3G. Upper and lower bite registration cast

**Figure 3:** Fine preparation and impressions (second appointment)



4A. Upper final impression



4B. Lower final impression

**Figure 4:** Final polyether impression



5A. Upper occlusal view



5B. Smile view



5C. Lower occlusal view



5D. Lateral view right



5E. Lateral view left

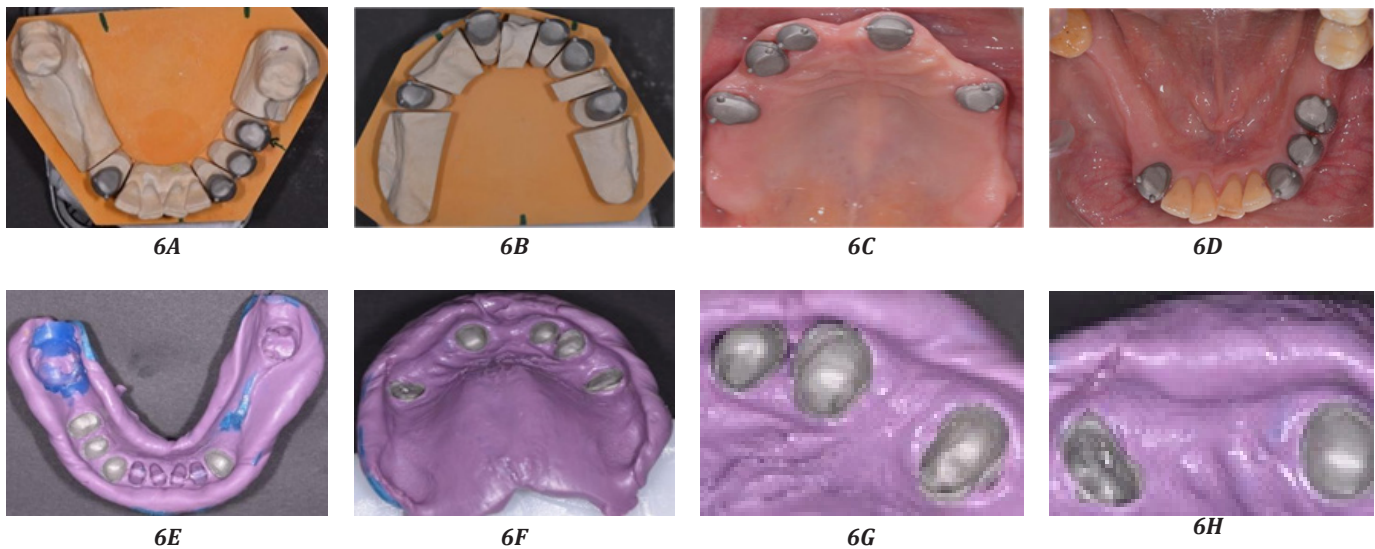


5F. Frontal view

**Figure 5:** Temporary bridge fabricated with temporization material

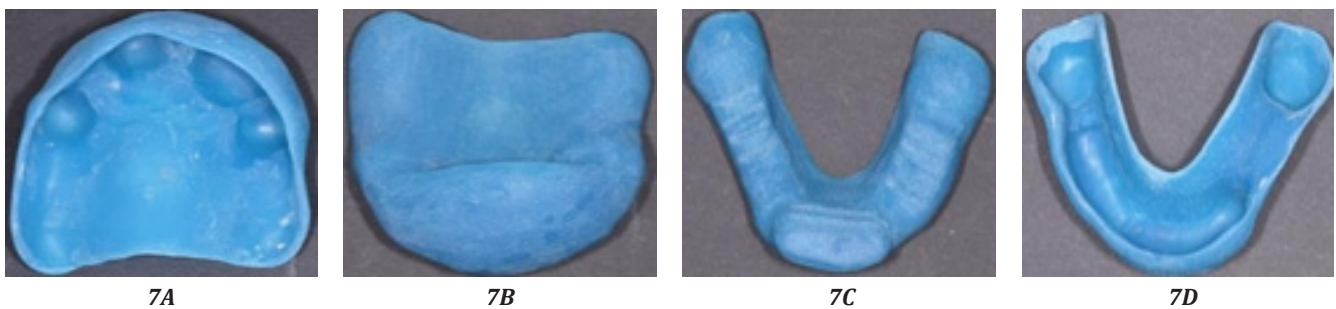
### Third Appointment

The primary crowns were tried in (Figure 6 A and B) and their fitting checked (Figure 6C and 6D) during the third appointment. Fixation impressions with the primary crowns in the mouth were taken, using a polyether impression material (Impregum™ and Permadyne™, 3M ESPE, Neuss, Germany) (Figure 6E – 6H). The custom trays were also tried during this appointment (Figure 7).



**Figure 6:** Trying in and fitting of the primary crowns

6A: Lower primary crowns, 6B: Upper primary crowns, 6C: Upper primary crowns tried in, 6D: Lower primary crowns tried in, 6E: Fixation impressions for the lower primary crowns, 6F – 6H: Fixation impressions for the upper primary crowns



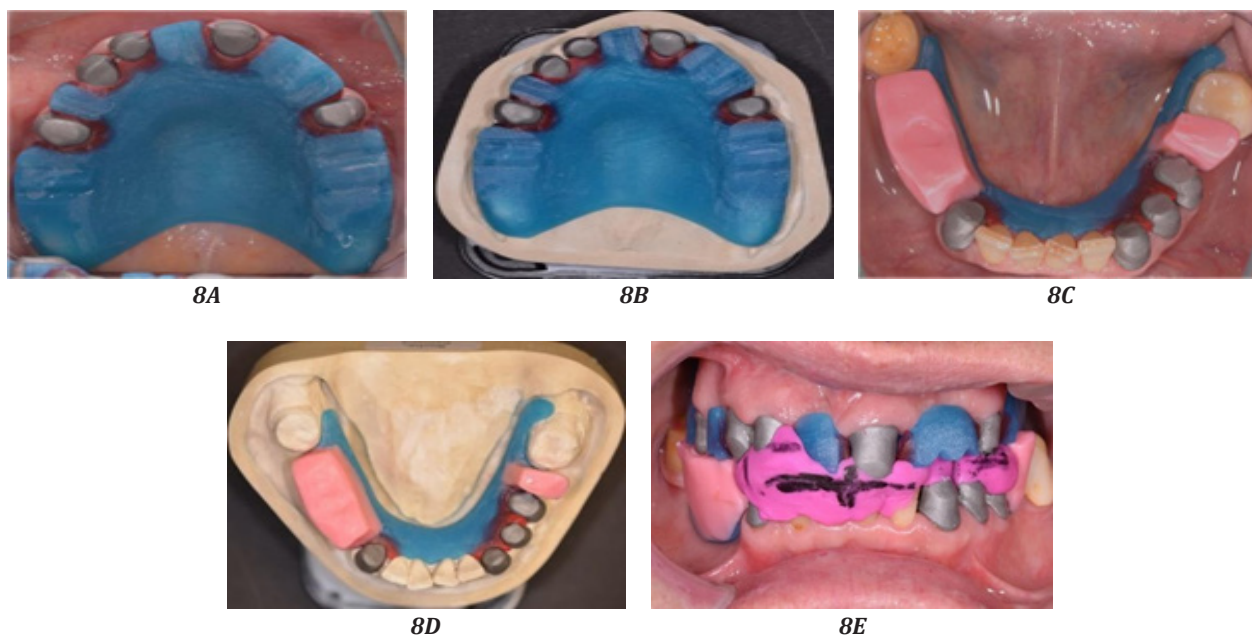
**Figure 7:** Trying in of the custom trays

7A and 7B: Upper custom tray, 7C and 7D: Lower custom tray

### Fourth Appointment

Only one procedure was carried out during the fourth appointment. The upper acrylic record block (Figure 8A and 8B) and the lower wax record block (Figure 8C and 8D) were tried in the patient's mouth separately and together. The clinical information following the basic protocol for removable dentures for the orientation of the antero- superior occlusion rim in parallel with the bipupillary plane was recorded. The support of the lips was checked and the orientation of the postero-superior occlusion rim in parallel with the camper plane was carried out. Finally, the occlusal vertical dimension was oriented on the rest position and the centric relation bite registration for anterior teeth was done using Futar™ bite registration material (Kettenbach GmbH, Eschenburg, Germany) (Figure 8E). The face bow was recorded. The mid-line, close lip line, smile line, and canine lines were marked in the record block for the second wax try-in.

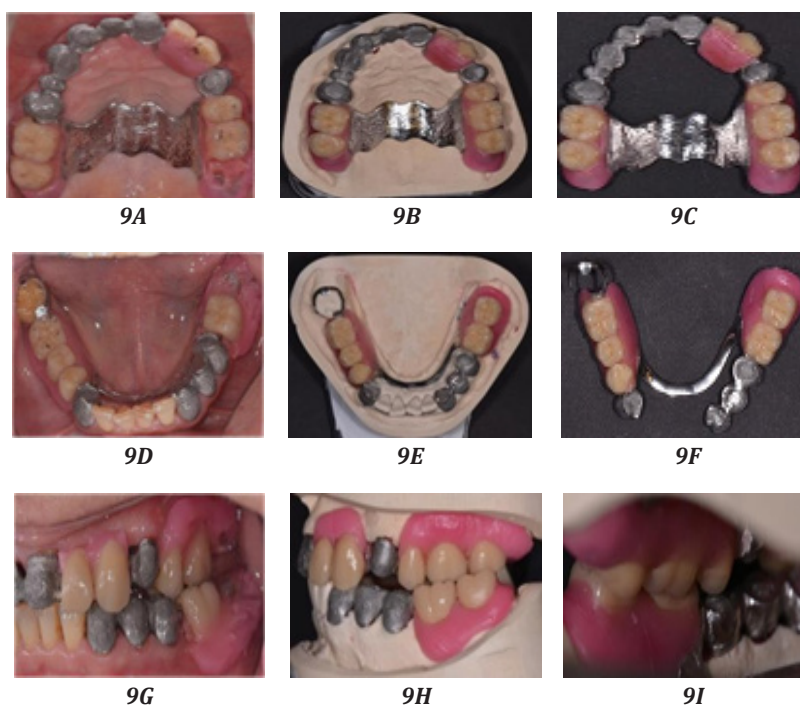


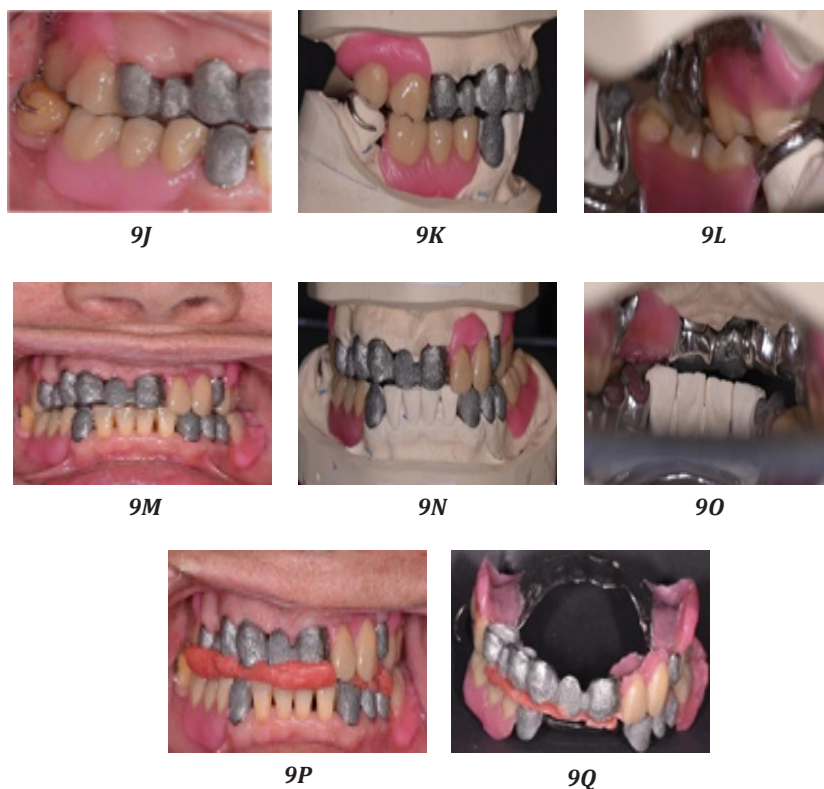


**Table 8:** Trying in of the upper acrylic record block and the lower wax record block  
*A and B: Upper acrylic record block, C and D: Lower acrylic record block, E: Fixation impression*

**Fifth Appointment**

Tooth number 37 was extracted. In the wax-up try-in appointment, the framework and wax-up telescope RPD for the upper (Figure 9A – 9C) and lower (Figure 9D – 9F) jaw were tried in separately and together. Figures 9G – 9I and 9J – 9L show the left and right framework and lateral view, respectively. The occlusion was adjusted, and aesthetic, phonetic, and smile lines were checked (Figures 9M – 9O). The patient’s opinion on the form and color of the teeth was taken, and a new bite registration was done with hard beauty pink wax (Integra Miltex GmbH) in the front and posterior teeth (Figure 9P and 9Q).



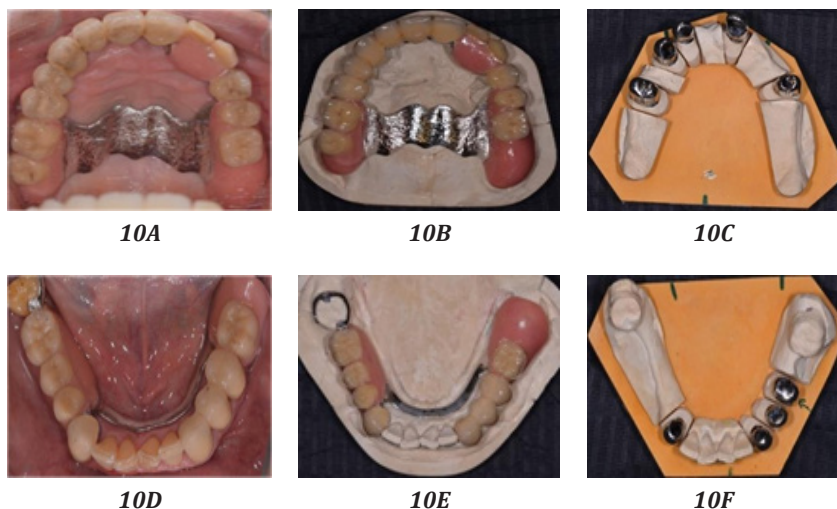


**Figure 9:** Wax-up trying-in

*A – C: Upper framework and wax-up occlusal view, D – F: Lower framework and wax-up occlusal view, G – H: Left framework and wax-up lateral view, J – L: Right framework and wax-up lateral view, M – O: Frontal view framework and wax-up, P and Q: New bite registration*

**Final Appointment**

During the final appointment, the finished prostheses were tried in and the fitting, occlusion and aesthetics were checked (Figure 10). The primary crowns in the upper and lower jaw were cemented with zinc phosphate cement (Harvard cement). Wearing the prostheses and taking them out were practised with the patient. The patient was provided with oral hygiene instructions, and a recall appointment date after one week was scheduled. The patient was requested to come for regular check-ups every 6 months.





**Figure 10:** Final fitting of the telescopic dentures

A – C: Upper telescopic denture occlusal, D – F: Lower telescopic denture occlusal,  
 G – I: Telescopic denture frontal view, J – L: Telescopic denture lateral view (left side),  
 M – O: Telescopic denture lateral view (right side)

The final results are shown in frontal view as before and after pictures in Figure 11.



**Figure 11:** Before (left) and after (right) comparison after fixture of the telescopic dentures



## Discussion

The present case report summarizes the aesthetic procedure of overdenture and crown fixtures in a patient diagnosed with insufficient restorative and prosthodontic treated teeth and a loss of vertical dimension. The patient suffered from her aesthetics before the treatment and sought treatment primarily to improve her appearance with dentures. With the improvement of the aesthetics and the restoration of the chewing ability and oral hygiene, the patient regained confidence in herself and her quality of life increased.

In a stepwise approach during multiple appointments, a diagnostic cast was prepared to identify treatment options, followed by fitting of a temporary bridge, preparation and fitting of the crowns, trying in of the crowns and the impressions, and finally fitting of the telescopic dentures. With this approach, the dentures provided an obvious improvement in the patient's appearance (Figure 10).

In patients who have spent an extended period of time without teeth or prosthesis (in this case, about 7 years), the orthodontist faces difficulties with recording of the jaw relation. Therefore, more than one method of recording the relation should be used to find the right position in such cases. In the present case, the rest position, speaking distance and concept of thirds of face were used to establish the jaw relation. In particular, the bridge was sectioned in the lower left side at tooth number 35 and teeth were used as an abutment for a telescopic denture. A telescopic prosthesis was done, as this type of restoration offers better guidance, fixture and support compared to *removable partial dentures*. In addition, it offers the advantage of better aesthetics (e.g., no brackets, bone defects) and hygiene.

The telescopic denture success rate is higher than that of removable partial dentures [4]. For patients with free ends in the upper jaw, it is recommended to use a large connector (transverse band) for increased stability. In order to guarantee long-term success with telescopic prostheses, the patient should receive hygiene instructions and regular controls [5]. Follow-up care is of importance to maintain oral hygiene, ensure appropriate positioning and fixture of the dentures, and improve the long-term success of the dentures [5, 6].

In summary, the present case report demonstrates successful restoration of the oral appearance in a patient with insufficient prosthodontics and loss of vertical dimension. It corroborates the need for multiple recordings of the jaw relation to ensuring correct fitting and optimal aesthetics.

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