

## Telescopic Overdenture as An Aesthetic Treatment for Partially Dentate Patients – A case report

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### ABSTRACT

**Background:** Metal frame denture design is common used for partially dentate patient, one of the problem was a metal appearance from wrought wire or a metal casting clasp as retainer, which is not really aesthetic. Telescopic overdenture with its double crown will be the best solution for those cases. **Purpose:** The purpose of this case report was to reported telescopic overdenture design and fabrication where the aesthetic was the main consideration. **Case:** Sixty years old female patient, a businesswoman, came to Dental Hospital of Universitas Airlangga, complained about her upper partially dentate and 6 years lower fixed partial denture, which is not comfortable to wear and her upper anterior teeth doesn't look quite good. She wanted to make crowns and removable denture. **Case management:** After the diagnosis were made, the pretreatment plan were remove crown for the upper jaw, remove the bridges on lower jaw, and transitional dentures were made to maintain the VDO. The crowns and veneer were fabricated and inserted while the inner copings were tried up on prepared teeth. After the the dentures were produced, the inner copings were luted to the abutment teeth, and then the dentures were inserted using FGP (Friction GriP) cement for the friction effect. **Discussion:** Telescopic overdenture is 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 over denture that can be removed by the patient. **Conclusion:** This technique ensures that telescopic overdentures give natural aesthetic result.

**Keywords:** telescopic overdenture, friction effect, transitional denture

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### INTRODUCTION

Telescopic denture copings were initially introduced as retainers for removable partial dentures. Because of its system of double crowns, which can be fitted into each other, became known as the telescopic denture.<sup>1</sup> Telescoping refers to the use of a primary full-coverage casting (inner coping) luted to the prepared tooth with a secondary casting (outer portion), which is a part of the denture framework and is connected by means of interfacial surface tension over the primary casting. They act by transferring forces along the abutment teeth axis and provide guidance, support, and protection from movements that might dislodge the removable partial dentures.<sup>1</sup> The purpose of this case report was to reported telescopic overdenture design and fabrication where the aesthetic was the main consideration.

### CASE

A 60 years old female patient, a business woman, came to Dental Hospital of Universitas Airlangga, complained about her complained about her upper partially dentate and 6 years lower fixed partial denture, which is not comfortable to wear. The second complaint was about her upper anterior teeth does not look quite good. She was asked to remove her old bridges, and filled her partially dentate with a new dentures that can easily removable but still have a nice appearance (she refused metal frame denture design with clasp).

In clinical examination, we found there were partially dentate on 18,17,16,26, 28,38,37,35,34, 44,45, and 48; abration on tooth 14,21,22,23,24; chronic apical periodontitis *et causa* gangrene radix on tooth 22,24,46; post endodontic treatment on tooth 15,13,12,11,36, 33,46 also calculus on

the rest of the remaining teeth. The intra oral examination shown in Figure 1.

From the clinical and radiographic examinations, we found that the endodontic treatments mentioned by the patient (on tooth 15,13,12,11,36, 33 and 46) were not good. The treatment all of those teeth did not reach the apical. The radiographic view shown in Figure 2.

### CASE MANAGEMENT

Anatomical impressions were taken on the first visit. The next step was doing the preliminary treatments. Preliminary treatments were done before the prosthodontics treatment. Those treatments were extractions of 24 and 46; endodontic treatments for 22; tooth filling on 14,21,22,23; scalling on all remaining teeth; occlusal adjustment on 14 and then make a transitional denture.

This transitional denture was made to maintain the VDO before the occluded teeth were prepared (Figure 3). A wax up design was

made to immitate the future anterior teeth design. After having patient permission, a lithium disilicate veneer preparation was make first on tooth 21, because it was only needing a thin layer of preparation. After cementing the veneer on tooth 21, we began to remove the old crowns, prepared some teeth then we make a shade guiding based on the veneer that we inserted before both using regular lens and polar, to take the right chroma and hue for the crowns next to it (Figure 4). Meanwhile, some temporary crown was making before the final crowns were delivered with the transitional removable dentures were used to maintain the VDO during treatment

After all the crowns were delivered and cemented (Figure 5), we began to prepared the abutment teeth for partial telescopic overdenture, and then some impression was made using elastomer, after the gingiva was being retracted. There was retention ball on unpolished inner coping to make retention on the next outer/ secondary coping impression, then it was sent to the laboratory (Figure 6).



Figure 1. Intra oral condition (A) Anterior view, (B) Upper occlusal view, (C) Lower occlusal view



Figure 2. Radiographic examination on panoramic radiograph

After the impression poured with gypsum, the inner was milled in the laboratory to make a new pathway for the insertion of the outer coping. Then the outer that produce with the metal frame in single cast technique (with bite rim) were tried in the patient's mouth with it inner coping separated using vaselin. Base plate and bite rim were used on the next step which was bite registration. A serial bite registration was done, first by using upper wax bite rim and

lower removable transitional denture continued by upper bite rim opposing the lower bite rim. A metal frame base frame work was tried with the set up artificial teeth, in this step, we have to make sure the centric relation and occlusion. This serial bite registration was done under the same VDO that used before (Figure 7). The inner coping was cemented on the abutment teeth using Fuji I cement (by GC, Japan)

Then, the surface of the inner coping was brushed using a vaseline separator. The inner surface of the outer coping was brushed using primer bond, then given a little amount of FGP (Friction GriP, by Bredent) cement to create a friction between inner and outer copings. After

the denture mounted to the inner coping abutment for about 1 minute, then the denture was removed to reduce the cement spill. Then the denture was inserted to the inner coping abutment until it sets, while we ask patient to occluded (Figure 8).

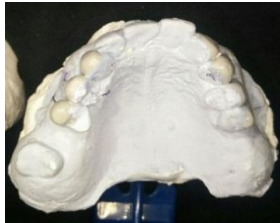


Figure 3. Wax up design for upper teeth



Figure 4. (A-C) Preparing tooth 21 and cementing the veneer



Figure 5. (A-B) Cementing crowns



Figure 6. Inner coping (with retention ball) insertion trial



Figure 7. (A-B) The set-up of artificial teeth on metal frame



Figure 8. (A-B) Inner coping cementation, (C) Telescopic overdenture insertion

## DISCUSSION

There was some treatments on this patient, include complex denture on upper jaw and telescopic partial overdenture on the lower jaw. In this treatment, the subgingival marginal border were made deep chamfer using fissure round end boors. This design was chosen because it can make enough space for all ceramics restorations, and did not make any bulging or overcontour.<sup>2</sup> All porcelain restorations in this case was chosen because it can obtain the esthetical factor, and this kind of restoration did not have any metal material that

can distract the light transmission, resemble the teeth.<sup>3</sup> Overdenture is one of treatments for patients who have bad conditions of teeth-crowns but good conditions of periodontal tissue and teeth root, which can support the denture.<sup>4</sup> Overdenture can improve support and denture stability, increase the supporting teeth's life expectancies, and inhibit resorption of the residual ridge.<sup>5</sup>

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 is a dreaded oral disease 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 modelled and cast together with the major connector in single-piece casting, so the partial denture structure is one piece.<sup>1</sup> This technique ensures that bite stress is distributed evenly between each tooth, protecting the remaining teeth and the end result looks quite natural.<sup>6</sup> The chewing force is also distributed all the way to the remaining teeth along its axial axis, so it can obtain the teeth and periodontal healthy.<sup>7</sup> Between the inner and the outer crown was given a thin layer of FGP® (Friction GriP by Bredent), as friction elements that have advantages whether make just a little scratch on inner coping, and it can be applied in office by dentist.<sup>8</sup>

Patient was also given the instruction about how to take care the denture. The patient has to remove the denture at bedtime, because according to Watt and Gregor this is an efficient way to control caries and progression of periodontal disease. Denture can be cleaned using an antibacterial denture cleanser.<sup>9</sup> Before being put into the denture cleanser fluid, the patient can do the cleaning of the denture by brushing it with gauze and soap with gentle pressure. This way of cleaning is in accordance with the opinion of Zarb, it is not recommended to use toothpaste to clean a denture, because most toothpaste contain abrasive materials that can erode acrylic resin's surface.<sup>10</sup> Periodic controls every 6 months have to be done for optimizing this prosthodontic treatment. This telescopic overdenture technique ensures that

bite stress is distributed evenly between each tooth, protecting the remaining teeth and the end result looks quite natural. This technique ensures that bite stress is distributed evenly between each tooth, protecting the remaining teeth and the end result looks quite natural. The conclusion of this case report is the fabrication of telescopic overdenture design can achieve the aesthetic natural consideration.

## REFERENCES

1. Henning W, Ralf D, Siegfried F, Olga M, Matthias R. *Telescopic Double Crown-Individual Solution-Practical and Economical*. 1<sup>st</sup> Ed. Academia Dental International School BEGO. Germany. 2009; p.22
2. Carranza FA, Newman MG, Takei HH. *Carranza's Clinical Periodontology*. 9<sup>th</sup> Ed. Saunders; 2002. p.16,336,475
3. Rosenstiel SF, Land MF, Fujimoto J. *Contemporary Fixed Prosthodontic*. Mosby Company, Missouri. 2006; p.115-42, 192k-96
4. Crum RJ, Rooney GE. *Alveolar Bone Loss in Overdenture: A 5-Years Study*. J Prosthet Dent. 1978; p.40(1): 610-13.
5. Brewer AA, Morrow RM. *Overdenture* 2<sup>nd</sup> Ed. St Louis: The C.V. Mosby Co.; 1980. p.3-11
6. Varshney N, Madaan S, Kumar S, Rani S. *Telescopic hybrid prosthesis-A case report*. International Journal of Research and Reports in Dentistry. 2019; 1(1): 1-6.
7. Vijay P, Hari P, Ruchi G. *Fixed Removable Prosthesis Employing Marburg Double Crown System*. The J Indian Prost Soc. 2008; p.8:59-62
8. XP Dent, *Catalogs*, [http://www.xpdent.com/catalogs/bredent/attachments/fgp-attachment.aspx/=b\\_1](http://www.xpdent.com/catalogs/bredent/attachments/fgp-attachment.aspx/=b_1), diakses 20 Juni 2019
9. Watt DM, MacGregor AR. *Designing Partial Denture*, 3<sup>rd</sup> ed, John Wright & Sons Ltd. Published under the Wright Imprint, Eridinburg. 1993. p. 90-109.
10. Zarb GA, Bolender CL, Eckert SE, Fenton AH, Jacob RF, *Prosthodontics Treatment for Edentulous Patients*, 12<sup>th</sup>, CV. Mosby Co, St. Louis. 2004. p. 123-25