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Case Report

# Rehabilitation of Vertical Dimension Decreased Case in Elderly Patient

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KEYWORDS

elderly patients;
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treatment planning

## ABSTRACT

**Introduction**: An elderly person is considered elderly when he or she reaches 65 years or more. Among the problems that occur in the elderly is the loss of teeth. Elderly patients who lose several teeth might decrease the vertical dimension; additional tooth migration causes extensive loss contact. Obtaining an ideal occlusal schema was challenging for dental practitioners. A suitable and efficient preprosthetic plan might be essential to acquire comfortable and good dentures for patients. Our objective is to organize a suitable and efficient preprosthetic, planning to acquire comfortable for patient. **Case Report**: A 69 year old man who had lost several teeth due to caries on teeth 15, 14, 13, 12, 11, 21, 24, 25, 26, 34, 37, 44, 46 and 47. He had used dentures over the last 15 years and needed a new one since the previous dentures was impaired. We determined the tentative vertical dimension and position to the articulator. Preprosthetic planning fixed the prosthesis on 36 and 27 with extraction on 18. A second impression was made and placed on the articulator, arranging the teeth and try in wax dentures continously. We used a definitive dentures and suggest a periodic control. **Conclusion:** The loss of several teeth decreased vertical dimensions, and existing tooth migration caused extensive loss contact. The systematic preprosthetic planning might be arranged on behalf of success prosthesis.

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## INTRODUCTION

Elderly has been defined as age of 65 years old or older, while those from 65 to 74 years old are called as early elderly and over 75 years old are called as late elderly.[1] Meanwhile, in Indonesia, according to Article 1 of Law No. 13 (1998) that 60 years and above is old age.[2] Regardless of the exact years of life, losing teeth is a common problem among the elderly.

Cases of the elderly losing several teeth will often show a decrease in the vertical dimension, causing dysfunctionality, discomfort, and visual displeasure.[2] Measuring vertical dimensions is an important step in the procedure when constructing a removable partial denture. Most patients who lost a several or all of their teeth have adapted to the decreased vertical dimension, so that returning to the original is rather difficult due to changes in the resting position. Mistakes at this stage will cause discomfort so that the dentures are unusable or eventually cause damage to the stomatognathic system.[3,4]

Excessive vertical dimension (VD) can cause an increased risk of trauma to the tissue under the denture due to the loss of freeway space, resulting in continued clenching of the teeth. The sign that will be occurred are the pain in the mucosa and muscles, especially masseter. The phonetic problems arise because of the difficulty to close the teeth (e.g. “t”, “s”, and “d”).

When the VD is decrease, causing saliva to drip on the corners of the mouth and the possibility of angular cheilitis. Mastication and aesthetic efficiency will be reduced due to the lack of lip and cheek support as well as chin protrusion when jaw closure occurs.[5] Signs of aesthetic decline include: (1) the lower third of the face is shorter than it should be, (2) the commisura of the lips is wider than it should be, (3) the protruding lower lip is out, (4) the nasal lobe is pushed up and out, (5) facial expression looks older.[6]

In removable partial dentures, the most common difficulty is obtaining an occlusal scheme because the remaining teeth have not contacted their opposing teeth for a long time and have also migrated so that the teeth extrude and tilt. Therefore, an appropriate and efficient preprosthetic treatment plan is necessary to facilitate the dentist in designing and constructing dentures that are comfortable and good for patients.[7,8]

Preprosthetic is a stage of work carried out before dentures are made or inserted.[7] Preprosthetic treatment is rarely performed in elderly patients who need complete dentures unless there is an interruption that will complicate or aggravate trauma when the complete denture is placed, such as flabby tissue, exostosis and a large torus. In patients who need partial dentures, however, especially those with a lot of tooth loss, there are usually many teeth that do not come in contact so that there is a shift in the teeth that can make the occlusal scheme change.[9,10]

Preprosthetic treatment is carried out to get optimum hard and soft tissue conditions so that they are ready for prosthesis.[11] These preprosthetic stages can generally be arranged as follows: oral hygiene and prophylaxis, periodontal treatment, oral surgery treatment, restoration of normal stomatognathic function, orthodontic treatment, endodontic treatment, and restoration of the damaged teeth. In this case report, we will explain the rehabilitation stage of returning the vertical dimension of occlusion in elderly patients with several missing teeth.

## CASE REPORT

A 69-year-old male lost several teeth in the maxilla and mandible, they were tooth 15, 14, 13, 12, 11, 21, 24, 25, 26, 34, 37, 44, 46 and 47. The patient had used removable partial dentures for 15 years and wanted to make new dentures because they were damaged.

The clinical extra oral examination: Ovoid symmetrical face, straight profile. Upper lip normal, thin, symmetrical, and long. Lower lip normal, thin, and symmetrical (Fig. 1). In Fig. 2, intra oral examination showed moderate oral hygiene with calculus and stain, normal and viscous saliva, normal tongue, Wright class 2 position, bite present but unstable, overlap anterior 2.5 mm, anterior bite distance 0.5 mm, no contact premature and blocking, big chewing power, bad habit of crunching and chewing on right side, attrition of teeth 17, 16, 22, 23, 27, 36, 35, 33, 32, 31, 41, 42, 43 and 45, lower anterior teeth are crowded, freeway space of 5 mm.

The diagnostics after examination are the case of losing teeth class 3 maxillary of modification 1 Kennedy and class 1 mandible of modification 2 Kennedy required rehabilitation with the construction of partially removable acrylic dentures. After the diagnostic was done, the treatment will be planning. In the preliminary treatment, extraction of tooth 18 was carried out and followed by making a dowel crown on tooth 36 and metal crown on teeth 27 (Fig. 3).

Preliminary impressions were carried out using an alginate to obtain the study model. When the study model was ready then tentative Measurement of VD and installation model on the articulator must be carried out (Fig. 4). Preprosthetic step with constructing dowel crown on 36 and metal crown on 27 using a bite rim as a guidance (Fig. 5). Preparing a final impression after dowel crown 36 and metal crown 27 were ready to be

reassembled the articulator (Fig. 6). Then the arrangement of anterior and posterior teeth must be done. Try in wax dentures with aesthetic and phonetic checking (Fig. 7). Finally, removable partial dentures insertion and articulation occlusion checking (Fig. 8, 9). The publication of this case report was approved by the patient for scientific purposes and there were no lawsuits afterwards.

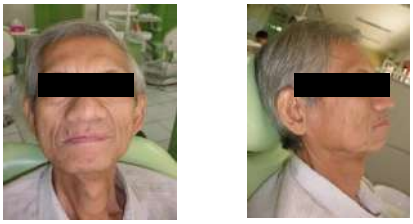

**Figure 1.** Profile before prosthodontics treatment

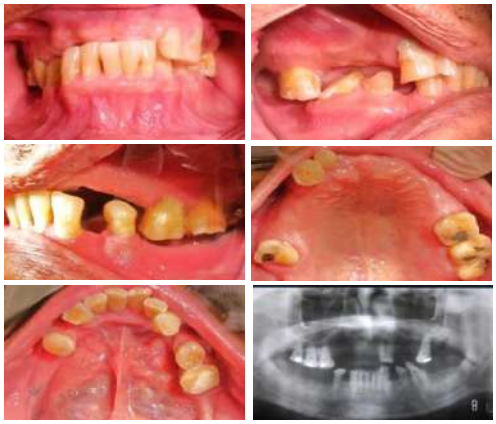

**Figure 2.** Intra oral condition and panoramic

**Figure 3.** X ray of teeth 36 and 27

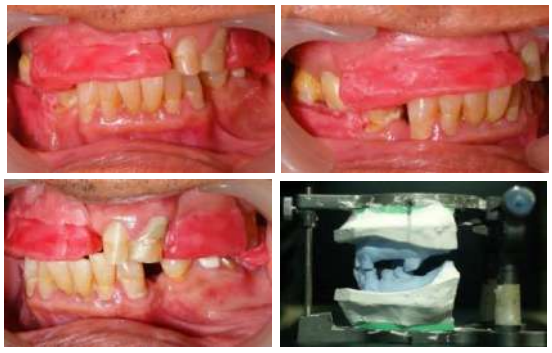

**Figure 4.** VD tentative measurement installment model in articulator

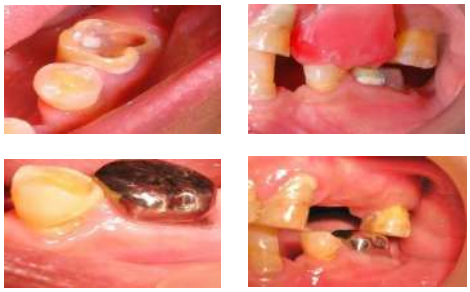

**Figure 5.** Preprostetik stage on tooth 37 with dowel crown.

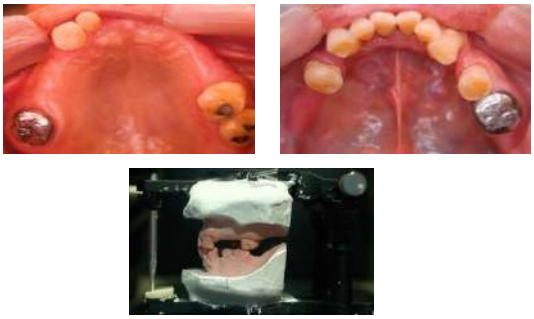

**Figure 6.** Intra oral condition after preprosthetic and instalment in the articulator.

**Figure 7.** Try in wax dentures and phonetic checking.

**Figure 8.** Pressure indicator paste and insertion of removable partial denture

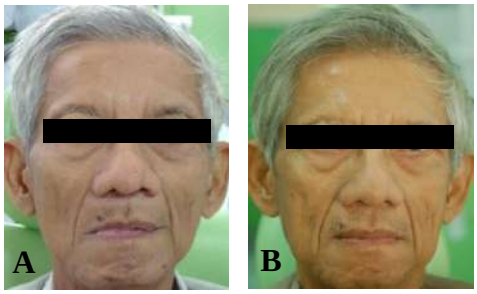


**Figure 9.** Frontal profile before (A) and after (B) treatment

## DISCUSSION

Construction of removable partial dentures with cases where many teeth are lost requires a good treatment planIn elderly patients who need partial dentures, non-occlusion teeth will migrate so that the teeth will elongate or tilt so the occlusal scheme is not optimal. Therefore, harmony of the jaw relation by obtaining a good vertical dimension is difficult to achieve, yet expected to improve the occlusal scheme as well.[12]

In this case, the elderly patient lost several of his anterior and posterior teeth in the maxilla. In the lower jaw, the anterior teeth were still exist, and in the right posterior region, the teeth were absent. The loss of this many teeth cause the patient's vertical occlusion to decrease. The absence of interocclusal spacing makes it difficult to place tooth elements. In this elderly patient, the freeway space obtained was 5 mm, requiring the return of the occlusion vertical dimension to reach the normal freeway space of 2 to 4 mm. The difficulty is that the patient had long lost his teeth and become accustomed to the vertical dimension of the old occlusion. The advantage in this case is the presence of tooth 36, which can still be treated with a dowel crown and used as a benchmark for the vertical dimensions of the occlusion.

The initial treatment stage is the tentative VD measurement and installation on the articulator, which is done to determine the treatment plan whether it is necessary to be preprosthetic or not. After the tentative VD measurements and installation of the articulator are made, the next treatment plan can be decided. For this case, tooth 36 that has been treated with root canals hermetic results will be made a dowel crown to maintain the VD occlusion that has been obtained, and tooth 27 made an artificial crown with good contour so that it will increase the retention of dentures. The difficulty faced when constructing the dowel crown on 36 is determining how high the core will be made so that the obtained VD can be maintained. To overcome this condition when preprosthetic treatment is performed, a bite rim from a tentative VD is used as a guidance.

Loss of the upper anterior teeth cause less support for the lips, aging the patient's appearance. The lip contour, which can be used as a guide, is influenced by the intrinsic structure and the support behind it — in this case the anteroposterior position of the teeth and the contours of the denture base.[13] Therefore, dentists usually form the contour of the bite-rim labial surface to match the existing structure.[14]

The phonetic testing stage in determining the vertical dimension is used to observe the oral tissue when talking and more importantly to hear and analyze the sounds coming out of the patient.[15] The position of the anterior teeth is determined by the position of the upper jaw when the patient says a word beginning with "F" or "V," while the position of the lower teeth is determined when the patient says the words beginning with the letter "S."

## CONCLUSION

The result of making removable partial dentures is to restore the patient's oral condition so that the patient's comfort, function, aesthetic, good speech, and health of the stomatognathic system can be obtained. When the patient loses almost all his teeth, the vertical dimension will decreased. A systematic treatment plan needs to be implemented to successfully treat and avoid unnecessary treatment.

## CONFLICT OF INTEREST

There is no conflict of interest.

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