



## Prosthetic Therapy of Reduced Occlusal Vertical Dimension in Elderly Patient - Case Report

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### Abstract

Tooth loos and wearing of the hard dental tissues are commonly known to significantly affect quality of elderly life. Multiple tooth loos and extreme loss of the hard dental tissues of the supporting teeth results in loss of normal occlusal plane and reduction of vertical dimension of occlusion. These conditions leads on changes in the temporomandibular joint and loos of normal face proportions. Different approaches for the therapeutic solutions can be considered depending on the number of the remaining teeth and hard dental tissues loss. Therapy of multiple tooth loos and dental tissue wear in elderly patients is complex from occlusal acrylic plates to definite prosthetic therapy with fixed or and removable prosthetic appliances. In the present paper combined prosthetic therapy is demonstrated to solve the problem of vertical occlusal plane correction of the elderly patient with heavily loos of upper frontal and lower lateral teeth and reduced vertical dimension of occlusion.

**Keywords:** Tooth Loos; Elderly; Vertical Dimension of Occlusion; Bite Plate; Prosthetic Therapy

### Introduction

Aging creates a variety of changes in the stomatognathic system in all its components. Blood vessels tighten, nerve impulse transfer is slower, oral mucosa becomes thinner and secondary dentin is formed in larger amount in the pulp chamber of the teeth. One of the important changes is the tooth loos and wearing of hard dental tissues [1-3]. In prosthodontic rehabilitation of patients above the age of 65, various factors should be taken into consideration, which are not important in the case of prosthodontic treatment of healthy adults. Sometimes in the case of bruxism or parafunctions, these conditions can be significant and lead to a significant reduction in the vertical dimension of occlusion. Oral rehabilitation of elderly patients with heavily worn and insufficient dentition is challenging for every doctor of dental medicine, when the space for rehabilitation is not sufficient. Loss of hard dental tissue results in damage of morphology, function and vitality of the tooth, gingivitis and temporomandibular disturbances [4,5]. On the other hand, over erupting of the opposing teeth especially in lateral parts of jaws in free spaces leads to disturbed biomechanics of chewing associated with bruxism. Numerous studies across the globe confirm multifactorial etiology of hard tooth wear and different number of tooth loos in elderly affecting their oral and general health. These includes also changes related to atrophy of the bony support, psychic state, difficulties in performing hygienic procedures and visiting the dentists for checkups, living in residential care homes and frequent hospitalizations due to a poor state of health [6-9]. The loss of the tooth

substance and the whole groups of teeth leads to a reduction in the vertical dimension of the occlusion. The vertical dimension of occlusion represents the vertical distance between the lower and upper jaws when the teeth are in maximum intercuspation. Between the position of the physiological rest and the maximum intercuspation there is a free inter occlusal space. Attrition, but also teeth loos, migration, and tilting of adjacent teeth even more contributes lowering of the vertical dimension of occlusion and disturb occlusal relationships [10,11]. Primary goal of oral rehabilitation therapy is to establish chewing, swallowing, speaking and disrupted appearance of the patients. Restoration of aesthetics and correction of the changes in jaw inter relationships is of utmost importance for psychological balance of the elderly patient. The dental procedure for such a patient is very complex and sometimes involves the therapeutic procedures of several dental branches, such as: endodontics, oral surgery, oral diseases, periodontics and finally dental prosthetics. The purpose of this paper was to present the case of extremely loos of vertical dimension of occlusion and tooth wear due to the loos of upper frontal and lower lateral teeth in elderly male patient and prosthetic therapy solution [12].

### Case Report

Patient S.L., 77-year-old, male, referred for the treatment to the Department of Fixed Prosthodontics Dental Clinic Clinical Hospital Centre Zagreb because of the reduced vertical dimension of occlusion, multiple tooth loos and poor appearance. On initial

examination, partial edentulousness was determined with a loss of upper frontal and lateral lower teeth on the positions 18, 16, 15, 14, 13, 23, 24, 25, 36, 37, 38, 46, 47 and 48 (Figure 1). The patient did not report any disturbance in the temporomandibular joint (TMJ) although the teeth in upper jaw were hidden by the lower jaw in protrusion. There were no pulpal pains or swelling, although teeth with deep caries and root remnants have been noticed on the positions 13, 12, 22 and 23. The signs of the periodontal disease were noticed probably due to over erupting teeth especially in the lateral segment of the upper jaw. The oral hygiene was poor. Diagnosis was determined based on anamnesis, clinical findings, orthopantomography and anatomical models. In the first phase of pre prosthetic treatments, tooth affected with deep caries 13, 12, 22 and 23 have were extracted. Endodontic therapy was performed on abraded teeth 31 and 41. In agreement with the patient because of his financial limitation, the upper jaw was supplied with modified full metal and veneer crowns and partial removable prosthesis with metal basis. Lower jaw was supplied with the block of partial veneer crowns and lower partial removable prosthesis with metal basis. Prior to prosthetic therapy acrylic bite plates were inserted in patient's mouth for four month to adapt the patient on the new vertical dimension of occlusion (Figure 2).

Endodontic treated teeth 31 and 41 were supplied by casted post and cores. The teeth were prepared according to the rules for full metal and partial veneer crowns. Impressions were taken after tooth preparation. The models were mounted in SAM 2P articulator after fixing vertical dimension of occlusion with face bow and occlusal wax rims (Figure 3). The technological part of the crowns were made in laboratory and tried in the mouth (Figure 4). After finishing fixed prosthetic appliances, partial removable dentures with metal basis were done at the end of prosthetic rehabilitation (Figure 5-7).



**Figure 1:** Elderly patient at the first checkup. Mandible is in the protrusion and the upper teeth are hidden.



**Figure 2:** Mandible and maxilla in the elevated position with acrylic bite plates.

The first checkup of acrylic bite plates was done for a week and then once a month. After the period of adjustment of the patient to the new height of the jaw interrelationships, the prosthetic therapy started according to the plan of prosthetic rehabilitation.



**Figure 3:** Wax rims fixed in elevated position of the jaws for the transfer in the articulator.



**Figure 4:** Crowns in the upper and lower jaw ready for removable partial dentures procedures.



**Figure 5:** Wax rims in the upper and lower jaw ready for transfer in the articulator.



**Figure 6:** Final intraoral appearance of the elderly patient after prosthetic rehabilitation.



**Figure 7:** Natural appearance of the lips and teeth after rehabilitation.

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## Discussion and Conclusion

The prosthetic treatment of multiple teeth loss and hard dental tissue wear in older people is complex. In these patients, it is necessary to perform a good anamnesis and clinical examination and carefully set up a protocol for the therapy. Dental treatment of reported patient has been performed in several steps. First step was reconstructing of the occlusal vertical dimension with acrylic plates and then in the second act prosthetic therapy has been performed. It can be concluded that in the complex cases where many teeth are missing combined with wear of the remaining teeth, the treatment is complex by extensive fixed and removable prosthetic therapy as a part of oral rehabilitation procedure. Additionally age and general health of elderly may also influence on indications for oral rehabilitation of such patients.

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