

Incisal Ridge Reconstruction Using Removable Partial Prosthesis

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Summary

The wear of dental hard tissues is a long-term process, which can cause complete wear of clinical crowns. Complete oral rehabilitation is then needed to restore damaged oral relations. Unfortunately, such therapy is often financially unsuitable to the patients. A case is reported of such patient treatment, using an upper partial removable denture with metal base, which provided satisfactory functional and aesthetic effect at minimum cost.

Key words: *incisal ridge, tooth wear, removable partial denture*

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CASE REPORT

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Introduction

Intermaxillar vertical dimension decrease is mostly the result of distal tooth lost and/or wear of clinical crowns of all remaining teeth. According to Pindborg (1), the wear of dental hard tissues is a process that can be divided into: erosion, attrition, abrasion and perimyolysis. Aetiology of dental hard tissues is often unknown, so it is usually said to be multicausal. Ekfeldt defines the number of teeth, sex, bruxism, age, buffer capacity of saliva as some of the potential factors, although they explain only 41% of all recorded dental hard tissue wear (2). It is definitely a long-term process (2), which can prograde till the complete clinical crown disappears (3). Such patients, about 0.5-4% of the population, come to the dentist with different degrees of clinical crown wear in vertical and/or horizontal dimension, requiring prosthodontic care (2). Prosthetic treatment can be semi-irreversible or irreversible. Examples of the first type are com-

posite resin buildups, partial removable dentures and overdentures. The second type are various fixed prosthodontics constructions such as full and partial crowns, onlays, laminates, etc. (2). In the case of advanced tooth wear complete oral rehabilitation is needed in order to re-establish damaged intermaxillar relations and to remove or at least reduce consequences to the whole masticatory system.

Because of the small retentive area of the clinical crown the remaining part i.e.- the abutment tooth, more retention it is often necessary. This can be achieved by the use of cast metal posts, which require intraradicular retention, i.e. adequate endodontical treatment of the root canal (3,4,5). It is often hard to explain to the patient the need for pulp extraction on all remaining teeth, which is long-term (according to the number of remaining teeth) and a frustrating procedure for the patient. In addition, we cannot neglect the financial aspect of such oral rehabilitation, which also demands endodontic treatment and fixed prosthetic supras-

structure. Therefore, dentists are forced to find solutions that will financially and aesthetically satisfy the patient, at minimal costs. This is becoming a problem for prosthetic patients' treatment, not only in our country but also in the richer countries of the world (7,8).

A 74 year old man came to his dentist because of the lack of posterior teeth and dissatisfied with the appearance of the remaining (frontal) teeth, which were too short (Figure 1). Examination revealed loss of all premolars and molars in both jaws, and frontal teeth wear with consequently lowered vertical intermaxillar relation. Extirpation of the pulps of both upper medial incisors and the left upper canine was suggested, and construction of individual cast metal posts in order to enlarge the retentive area of the abutments. On the abutments, modified veneered crowns with rests for upper metal base of a partial removable denture would be made. After this had been explained to the patient, and especially after the costs had been calculated (which he could not afford), the first plan was abandoned. Wishing to help the patient, a metal base removable partial denture was constructed so that the metal base goes over the worn incisal ridges and substitutes them.

Firstly, all the remaining upper frontal teeth were prepared with a shoulder about 2 mm below the worn incisal ridge (Figure 2) in order to obtain precise fit of the partial denture metal base and increased axial loading of the teeth.

Corrective impression was taken using vinyl polysiloxan impression material (3M Express, St. Paul, USA), and cast in hard gypsum (Moldasynth, Bayer Dental, Leverkusen, Germany). The upper jaw model was mounted in the SAM 2 articulator (SAM Praezisionstechnik, Munich, Germany) using quick mount face bow technique (9). The vertical

dimension of the intermaxillar relation was determined 3 mm above resting position and registered with bite rims (10). Bite rims were transferred from the mouth into the articulator, and the lower jaw model was mounted. Incisal ridges of frontal teeth were modelated on the working model, using self-polymerising acrylate (Pattern resin, GC, Tokyo, Japan), and their fit on the prepared shoulder was checked (Figure 3).

The modelled acrylic incisal ridges were transferred onto the double model of the investment material (rema Exact, Dentaurem, Pforzheim, Germany). The rest of the metal base modelling, investment, casting and polishing were done according to the common procedure (11). Partial denture metal base (Remanium GM 380, Dentaurem, Pforzheim, Germany) was tried in the mouth (Figure 4) and wax bite rims were placed on it. The registered intermaxillar relation was again checked, this time with the partial denture metal base and acrylic teeth placed. After polymerisation of the acrylic parts of the partial denture, veneering of the metal incisal ridges of the upper frontal teeth was performed (Artglass, Kulzer, Wehrheim, Germany) (Figure 5). The newly made prosthetic appliance matched with colour and shape the remains of the worn teeth re-establishing adequate intermaxillar relation with satisfactory aesthetic appearance (Figure 6). Construction of a lower metal base partial removable denture was simply a routine procedure.

Prosthetic treatment of severely worn teeth is often a very demanding procedure, especially because it is often too expensive for the patients. Therefore, it is often necessary to find alternative procedures by careful evaluation, therapy planning and high standards of clinical and laboratory procedures, thus providing satisfactory results.