# A Case Report of Occlusal Reconstruction with Overdenture Using Magnetic Attachments

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### Introduction

To maintain a harmonious craniofacial system, it is essential to establish an appropriate occlusal vertical dimension (OVD). This case report describes the establishment of an appropriate OVD and occlusal reconstruction with an overdenture using magnetic attachments.

## **Clinical History**

The patient, a 65-year-old male, had a partially edentulous mandible (Eichner B1: missing mandibular second premolar and first molar teeth) with the chief complaint of masticatory dysfunction. All maxillary prostheses had failed, with a marginal discrepancy and caries damage. In addition, OVD analysis led to a diagnosis of intraocclusion (Fig.1).







Fig.1 Intraoral view at the initial examination

In addition, upon periodontal examination, mobile teeth and poor periodontal tissue health were evident (Fig.2). Radiographic examination showed alveolar bone resorption (Fig.3). Finally, we made the treatment decision to fabricate a maxillary overlay complete denture with magnetic attachments, which the patient found acceptable.

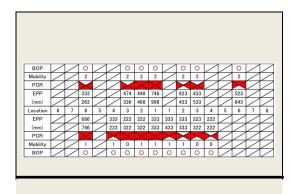


Fig.2 Periodontal chart at the initial visit

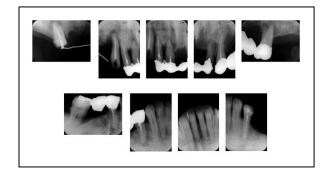


Fig.3 Dental radiographs at the initial visit

#### **Treatment Procedure**

At first, the prostheses with the marginal discrepancies were removed, and the #6, 7, and 8 teeth were extracted due to severe caries and periodontitis. Then, an immediate denture in the maxilla was set on a portion of the edentulous area (Fig.4).







Fig.4 Intraoral view with an immediate denture

However, the patient was dissatisfied with the dynamic stability and retention of the immediate denture. Therefore, the magnetic attachments that act as the retention elements were applied to the remaining radicular teeth (#3, 10, and 11 teeth). The magnetic attachments used in this case report were GIGAUSS D400<sup>®</sup> (#10 and #11 teeth) and GIGAUSS D1000<sup>®</sup> (#3 tooth) (GC, Japan). Keepers of the magnetic attachment were fixed with adhesive resin cement on the abutment teeth (Multilink® Automix, Ivoclar Vivadent, Liechtenstein) (Fig.5). As a result, the patient's complaints of functional dissatisfaction were resolved.



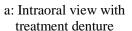




Fig.5 Seating of keepers on the abutment teeth

After the initial preparation (Periodontal treatment and extraction of the #14 tooth), the OVD was increased both by use of the treatment denture and by the built-up restoration using composite resin materials on the teeth, and the patient obtained an optimal occlusal relationship (Fig.6a,b).









b: Composite resin restoration

Fig.6 Bite raising

As a definitive denture, a maxillary complete overlay denture was fabricated with a metal framework made of titanium alloy with magnetic attachments (Fig. 7). Fig. 8 is an intraoral view of the definitive denture.







Fig.7 Maxillary overlay complete denture

Fig.8 Intraoral view with definitive denture

## **Conclusions**

The results suggest that the magnetic attachment in the immediate denture could provide the patient with comfortable retention earlier. Therefore, continuous follow-up is necessary with occlusal adjustment and relining of the denture base to prevent any reduction of the OVD. In addition, periodontal management and force control of the remaining dentition should be evaluated during the maintenance program.