

A case report of removable partial denture applied magnetic attachment and zirconia framework for a patient with decreased occlusal vertical dimension

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Introduction

Infraocclusion is one of the most difficult prosthetic problems because it often leads to denture fracture and the pain of alveolar ridge due to excessive occlusal force and insufficient denture space. In this case report, a case of partial denture with magnetic attachments and zirconia framework for a patient with Eichner's classification B4 who had a infraocclusion due to high occlusal wear, was introduced.

First consultation

Patient: 84 years old, male

Chief complaint: Masticatory disturbance and repeated denture fractures

Past history: Right trigeminal neuralgia

Remaining teeth:
$$\begin{array}{r} 74 \ 2 \ | \ 2 \\ \hline 3 \ | \ 57 \end{array}$$

Eichner classification: B4



Fig.1 Intraoral at first consultation



Fig.2 Panoramic x-ray

Table 1. Pocket depth

Pocket (mm)	4	/	/	4	/	3	3	3	3	/	/	/	/	/
dental formula	7	6	5	4	3	2	1	1	2	3	4	5	6	7
dental formula	7	6	5	4	3	2	1	1	2	3	4	5	6	7
Pocket (mm)	/	/	/	/	3	3	3	3	3	3	3	3	/	4

Materials and Methods

Since infraocclusion was considered as the cause of the disturbance, occlusal vertical dimension was increased by insertion of mandibular treatment denture that covered on the occlusal surfaces of the remaining teeth (Fig. 3). After obtaining an adequate occlusal relationship, the definitive denture was fabricated, which was supported by occlusal rests on the worn occlusal surfaces similar to the treatment denture. The magnetic attachment (GIGAUSS C, GC) (Fig. 4) and clasps were applied as retainers, the framework including major connector was milled from zirconia disk based on the scanned STL data of the wax denture (Aadva E I, GC) (Fig. 5). The zirconia framework was tried to fit in patient's mouth, then the mandibular removable partial denture was conventionally completed (Fig. 6-8). After about three weeks from the definitive denture were delivered, the magnetic assembly was fixed to the zirconia framework.



Fig. 3 Treatment denture



Fig. 4 Magnetic attachment (GIGAUSS C, GC)



Fig. 5a Scanned image of mandibular working model

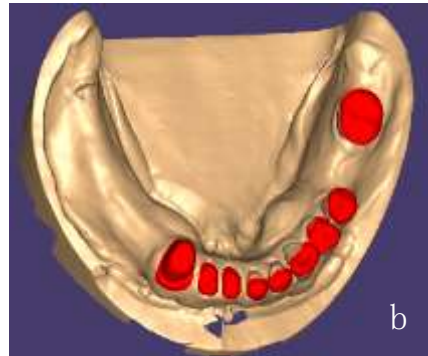


Fig. 5b Repair the undercut of remaining teeth and space making for magnetic assembly

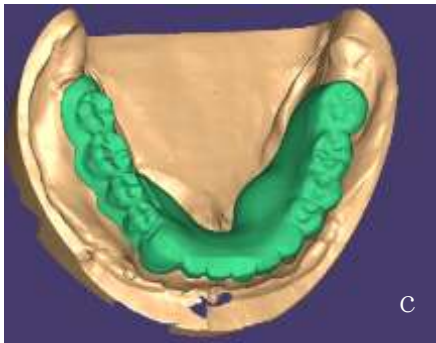


Fig. 5c Framework design



Fig. 6 Trial fitting of zirconia framework (High permeability zirconia, Aadv E I)



Fig. 7 Definitive mandibular denture



Fig. 8 Placement of the definitive denture

Results and Discussion

Compared with the previous denture, the definitive denture improved denture rigidity and stability. Furthermore, the occlusal contact area and the maximum occlusal force were increased.(Fig.9) The patient's satisfaction and masticatory function were improved by the placement of removable partial denture with the magnetic attachments and zirconia framework using CAD/CAM technology.

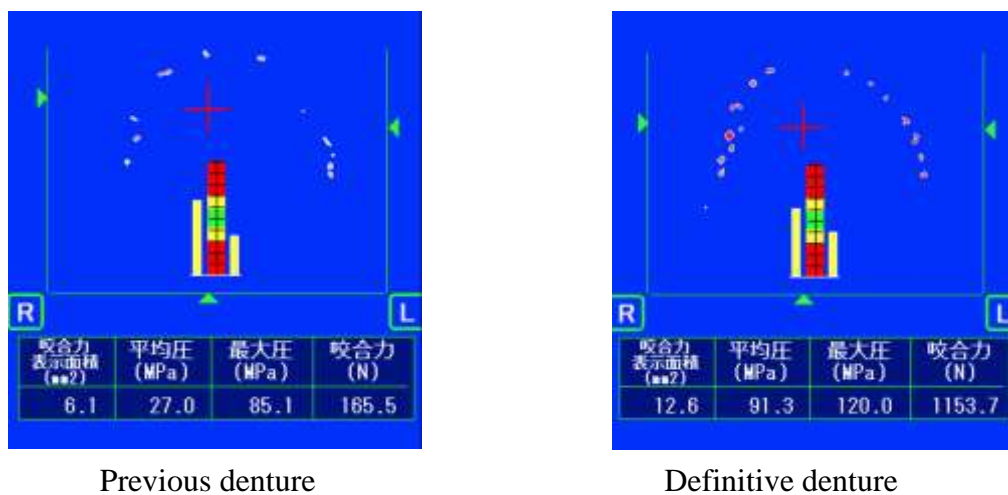


Fig. 9 Occlusal examination by dental prescale