A case report of removable partial dentures using magnetic attachments for problematic dental implants

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Abstract

In this presentation, we report on a case in which occlusal reconstruction was performed by attaching dentures with different types of magnetic attachments for problems after oral implant placement.

The patient, a 66-year-old female, complained of aesthetic dissatisfaction and masticatory dysfunction. Six years earlier, she had undergone full-mouth rehabilitation—including implant treatment at a local clinic—and had been doing well since that time. However, one year earlier, a root fracture had occurred in the teeth opposite the implant placement site. It was suggested that she have the fractured teeth extracted and wear telescopic crowns using the implant as an abutment. The superstructure was removed, but the abutment screw broke during the procedure. Therefore, the patient visited the department of prosthodontics at our university hospital.

As a result of treatment, a maxillary definitive prosthesis was fabricated with a non-palatal overdenture using a coping type and an extracoronal magnetic attachment. A mandibular definitive prosthesis was fabricated with a partial denture with an extracoronal magnetic attachment, and the implant abutments were coated under the denture base.

Introduction

In recent years, implant treatment has been an effective option widely used for partial dentition defects. However, there are still many problems after the procedure, such as damage to the superstructure. In this presentation, we report on a case in which occlusal reconstruction was performed by attaching dentures with different types of magnetic attachments for problems after oral implant placement.

Clinical History

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Six years earlier, she had undergone full-mouth rehabilitation including implant treatment at the local clinic and had been doing well since that time. However, one year earlier, a root fracture had occurred in the teeth opposite the implant placement site. It was suggested that she have the fractured teeth extracted and wear the telescopic crowns using the implant as an abutment. The superstructure was removed, but the abutment screw broke during the procedure. Therefore, she visited the Department of Prosthodontics at the University Hospital because she did not trust the local clinic.

Already, provisional restorations were placed in the oral cavity. In addition, the left middle incisor of the upper jaw was left in the residual root state. An implant was placed in the lower jaw in the bilateral molar area. However, on the left side, the superstructure had already been removed, and the screw hole was found to be frustrated (Fig. 1).

Fig. 1 Intraoral view at the first visit

Figures 2 and 3 show a dental X-ray and the results of the periodontal disease examination. As for the remaining teeth from the test results, the crown–root ratio was somewhat poor in the whole jaw; however, there was no transmission image at the root apex, and there was no periodontal pocket of 4 mm or more.

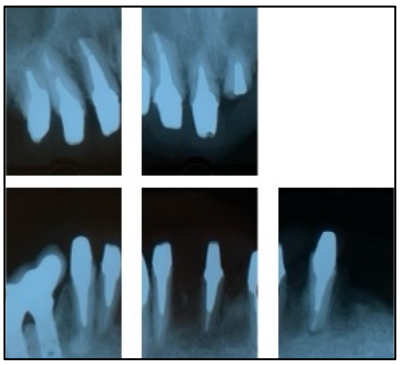

Fig. 2 X-ray photographs at the first visit

BOP																
Mobility					0	0	0	0	0							
PCR																
EPP(mm)					3	3	3	2	2							
Location	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
EPP(mm)		5	4	3		2	2		1		2			3	3	
PCR																
Mobility		0	0	0		0	0		0		0			0	0	
BOP														○	○	

Fig. 3 Periodontal disease examination at the first visit

There were three requests from patients: “I want to have a prosthetic dental treatment with less discomfort in the oral cavity and consideration for aesthetics,” “Because of this trouble I’ve had, I want you to stop the prosthetic intervention in the implant part,” and “I want you to move to the final prosthetic device because the jaw position established in the current provisional restoration is very favorable.” Finally, we suggested that removable partial dentures using magnetic attachments be fabricated, which the patient found acceptable.

Treatment Procedure: Based on dental X-ray photographs and periodontal disease examination, the distal root of the maxillary left middle incisor was fitted with a coping magnetic attachment (Fig. 4), in consideration of its load-bearing capacity as an abutment tooth. We decided to fabricate an extracoronal magnetic attachment using an EC Keeper Tray (GC, Japan) for the maxillary right first premolar and the mandibular left canine (Figs. 5 and 6).

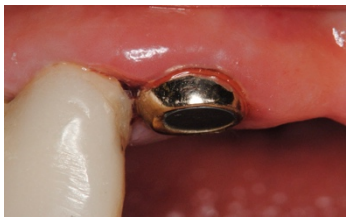

Fig. 4 Coping type of magnetic attachment

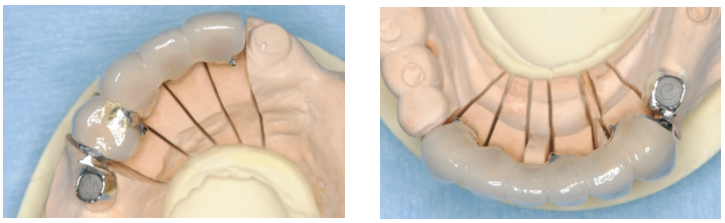

Fig. 5 Extracoronal magnetic attachment

After fixing the coping magnetic attachment to the oral cavity, a pick-up impression was taken in the oral cavity for making a working model, and wax dentures were fabricated on it (Figs. 6 and 7).

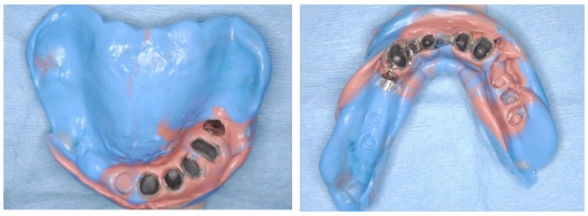

Fig. 6 Pick-up impression

Fig. 7 Wax denture

As a result of treatment, a maxillary definitive prosthesis was fabricated with a non-palatal overdenture using coping and extracoronal magnetic attachments. A mandibular definitive prosthesis was fabricated with a partial denture with extracoronal magnetic attachment, and the implant abutments were coated under the denture base (Figs. 8 and 9).

Fig. 8 definitive prostheses

Fig. 9 Intraoral view with definitive prostheses

Conclusion

A magnetic attachment could be provided as a means for alleviating patient concerns regarding aesthetics and functions. As a result, OHIP-14, which is related to QOL, improved from 25 points to 6 points.

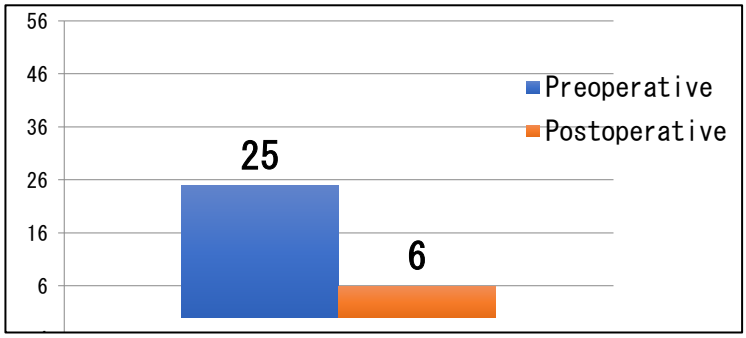

Fig. 10 OHIP-14

It is difficult to maintain an ideal combination of aesthetics and functionality because the design of a final prosthesis is complex.[1)] Therefore, continuous follow-up is necessary with occlusal adjustment and relining of the denture base. In addition, periodontal management and force control of the remaining dentition should be evaluated during the maintenance program.

References

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