A case of lower removable partial denture with dental magnetic attachment

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Abstract

The patient was a 67-year-old female who had visited our clinic. She had complaint of her lower removable partial denture. She was provided with a non-metal clasp lower partial denture from a certain dental clinic. However, she could not wear it because the gingival inflammation caused by the non-metal clasps of the denture cut into her gingiva. She hoped another type of esthetical partial denture without clasps. No.45 was designed as a root cap with a stud attachment and No.37 was designed as magno-telescopic crown. As No.33 of direct abutment tooth was vital, this tooth was designed as a resin-facing crown with an extracoronal dental magnetic attachment. As for patient education after wearing the denture, in addition to explanation of cautionary circumstances concerning dental magnetic attachment, we instructed about cleaning method of extracorporeal attachment region of No. 33 in particular.

Because the new denture was good esthetically, and putting on and taking off and the cleaning were easy, it went to the satisfaction to a patient. The results of evaluation of various functions before and after treatment were found an improvement tendency.

Introduction

Dental magnetic attachments are very useful for the retention of removable partial dentures. At this time, we report on a clinical case of a lower removable partial denture with stud, intracoronal and extracoronal dental magnetic attachments.

Clinical history

The patient was a 67-year-old female who had visited our clinic on April 17, 2014. She had complaint of her lower removable partial denture. In 2013, she was provided with a non-metal clasp lower partial denture for the edentulous region of Nos. 34, 35, 36, 46, and 47 from a certain dental clinic. However, she could not wear it because the gingival inflammation caused by the non-metal clasps (Nos.33, 37,44, and 45) of the denture cut into her gingiva. Her complaint was the gingival inflammation by the clasps regions of

the non-metal clasp lower partial denture. She hoped another type of esthetical partial denture without clasps (Fig.1).

Fig.1 Intraoral findings without the lower partial denture (May 15, 2014)

Treatment procedure

As No. 45 and 37 were non-vital direct abutment teeth, a magnotelescopic crown was designed for No. 37 (Figs.2,3). As No. 33 was a vital direct abutment tooth, a resin-facing crown with an extracoronal dental magnetic attachment was designed for this tooth (Fig.4). Dental magnetic attachments (GIGAUS C600®; GC Corporation, Tokyo, Japan) were used as retainers in all three abutments. After fixing inner crowns of No. 37 and No. 45 with adhesive resin cement, a removable partial denture was fabricated by the conventional method (Figs.5, 6).

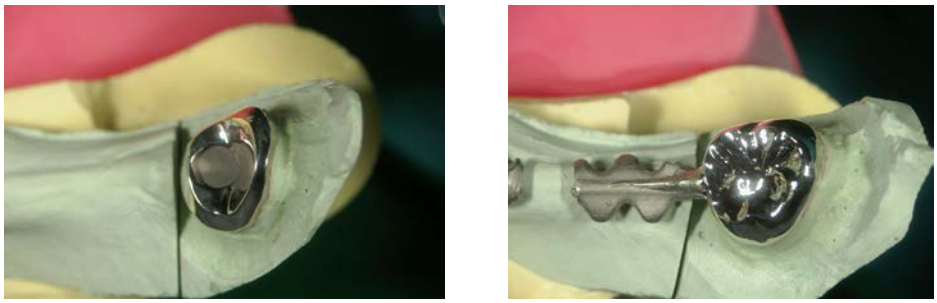

Fig.2 A magnotelescopic inner crown and a full metal outer crown on No. 37

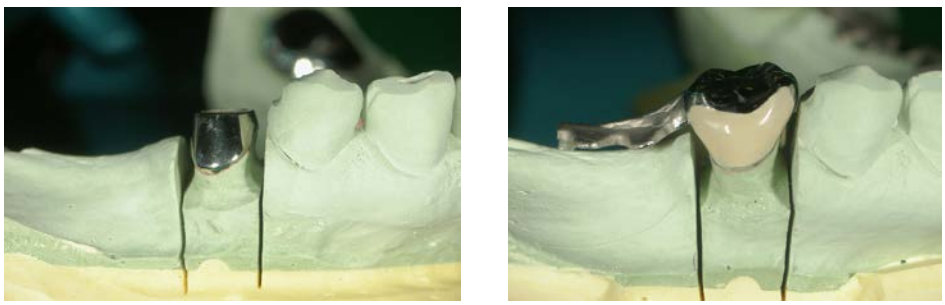

Fig.3 A magnotelescopic inner crown and a resin-facing outer crown on No. 45

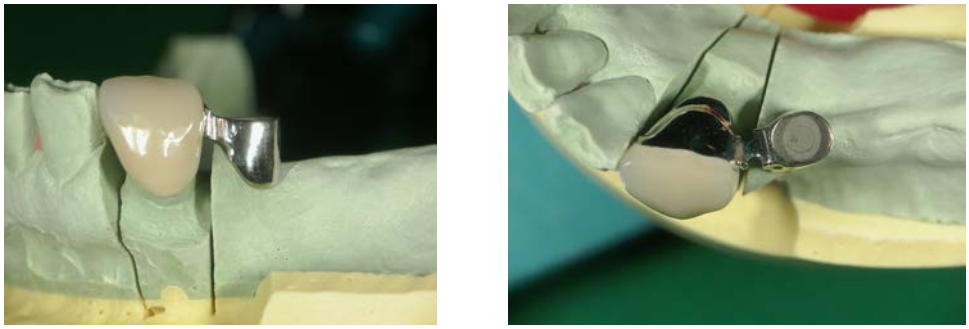

Fig.4 A resin-facing crown with an extracoronal dental magnetic attachment on No. 33

Fig.5 Finished crowns

Fig.6 Wax denture

At the try-in of these crowns and a wax denture, the patient complained about the outer crown of No. 45. She refused to see the metal color of the occlusal surface.

Therefore, we decided to use the inner crown of No. 45 as the root cap of an overdenture (Fig.7).

Fig.7 Root cap with a keeper of No.45

Finished partial denture was set on March 10, 2015 (Fig.8~10). As for patient education after wearing the denture, in addition to explanation of cautionary circumstances concerning dental magnetic attachment, we instructed about cleaning method of extracorporeal attachment region of No. 33 in particular.

Fig.8 Finished denture (August 12, 2014)

Function evaluation

Table 1 shows the results of evaluation of various functions before and after treatment. Maximum occlusal force using the Dental Prescale® was 221.5 N before Tx, 424.2 N after Tx. Mastication score for chewing ability by the amount of glucose elution using Gumi-jelly® was 47 mg / dl before Tx, 228 mg / dl after Tx. Mastication score was 39.7 before Tx, 49.7 after Tx. In Oral QOL evaluation, OHIP-J14 score showed 30 before TX, 18 after Tx and GOHAI score showed 29 before Tx, 51 after Tx. The results showed that all items of functional evaluation were found an improvement tendency.

Table 1 Evaluation of various functions

Prognostic process

As for the periodontal basic examination and the tooth mobility test conducted on November 7, 2017, it was almost possible to clean the patient herself because these scores of all residual teeth were unchanged before treatment. In addition, problems were not observed in denture base fitness test and occlusal examination, and it seemed that this lower removable partial denture functioned well.

Conclusion

Because the new lower removable partial denture in which the dental magnetic attachment is applied as stud, intracoronal, and extracoronal attachment was good esthetically, and putting on and taking off and the cleaning were easy, it went to the satisfaction to a patient. From the post treatment evaluation, it was able to confirm improvement of the oral QOL concerned.

Regarding this report, there is no conflict of interest among all authors.

Evaluation items	Before Tx	After Tx
Occulusal force （Dental prescale：N）	221.5	424.2
Chewing ability （Elution volume of glucose mg/dL）	147	228
Mastication score	39.7	49.7
OHIP14	30	18
GOHAI	29	51