

# A case report of a removable denture using magnetic attachments for a successful prognosis of abutment teeth

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## Abstract

This report describes two clinical cases. In both cases, the abutment teeth that acted as retention elements for the dentures were detached due to secondary caries and excessive occlusal force. The patients were dissatisfied with the retention of their denture. However, radiographic examination showed that the crown-to-root ratio of the abutment teeth must be improved for a successful prognosis for the abutment teeth.

After the initial preparation, a removable overlay denture with coping-type magnetic attachments was fabricated as a definitive prostheses, and keepers of the magnetic attachments were fixed to the remaining radicular teeth. As a result, the crown-to-root ratios of the abutment teeth were improved, and patients' complaints of functional dissatisfaction were resolved.

## Introduction

Magnetic attachments that have the significant feature of "retention without bracing" protect abutment teeth from excessive occlusal force.<sup>1)</sup> Thus, coping-type magnetic attachments can be applied to abutment teeth with decreased crown-to-root ratios.<sup>2)</sup> We report the clinical use of coping-type magnetic attachments for successful prognoses of abutment teeth.

## Case 1

**Clinical History:** The patient, a 65-year-old female, complained of aesthetic dissatisfaction and masticatory dysfunction. The patient had a partially edentulous maxilla (Kennedy Class I). At the initial examination, a porcelain-fused-to-metal crown of #7 as an abutment tooth for a removable partial denture was detached, and radiographic examination showed that #6 and #7 has unfavorable crown-to-root ratios (Fig.1). Poor health of the periodontal tissue was not evident.

**Treatment Procedure:** At first, a porcelain-fused-to-metal crown of #6 was removed, and coping-type magnetic attachments that act as retention elements were applied to #6 and #7 (Fig.2). In this case report, the magnetic attachments used were GIGAUSS C600® (GC, Japan).

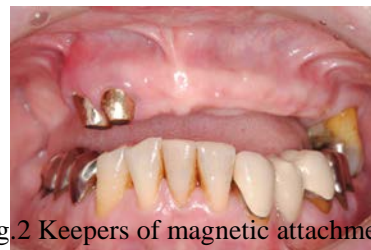


Fig.2 Keepers of magnetic attachments

Fig.1 Intraoral view and dental radiograph of #6 and 7 at the initial examination

As a definitive prosthesis, a maxillary removable overlay denture with a horseshoe plate as the major connector was fabricated. As a result, the patient's complaints of aesthetic dissatisfaction and masticatory dysfunction were resolved.



Fig.3 Intraoral view with a definitive prosthesis

## Case 2

**Clinical History:** The patient, a 71-year-old female, complained of masticatory dysfunction. The patient had a mandibular removable partial denture (Kennedy Class II). At the initial examination, a horizontal crown fracture of #29 as an abutment tooth was caused by severe caries (Fig.4). The radiographic examination showed that #29 had an unfavorable crown-to-root ratio (Fig.5). Poor health of the periodontal tissue was not evident.

**Treatment Procedure:** After endodontic treatment (Fig.5), a coping-type magnetic attachment that acts as a retention element was applied to #29 (Fig.6). In this case report, the magnetic attachment used was GIGAUSS D400® (GC, Japan). Keepers of the magnetic attachment were fixed with adhesive resin cement on a metal coping by the KB method (RelyX™ Unicem 2 Automix, 3M™ ESPE™, USA). The magnetic assembly was then attached to an additional tooth of the denture, which was still used after being repaired (Fig.7). As a result, the patient's complaints of functional dissatisfaction were resolved (Fig.8).



Fig.4 Intraoral view at the initial examination



Fig.5 Dental radiograph (before and after endodontic treatment) Fig.6 Keeper of a magnetic attachment

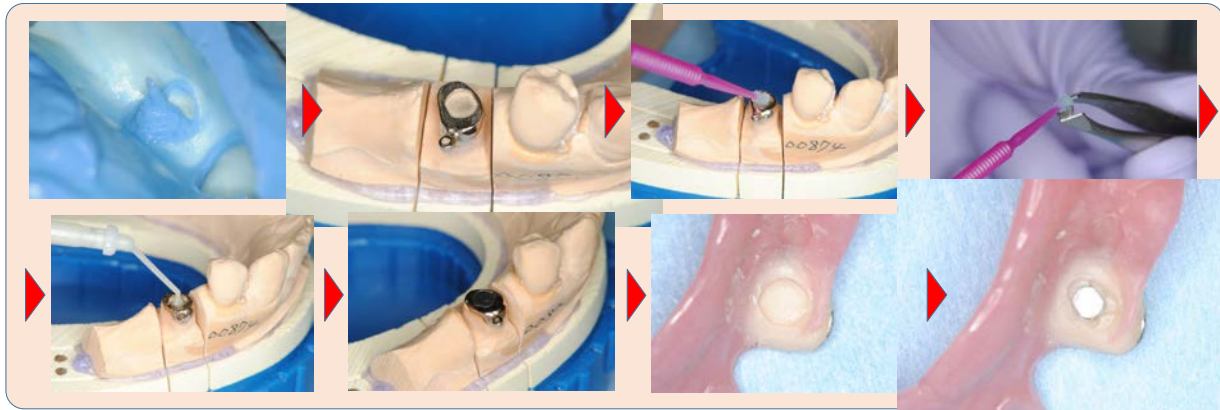


Fig.7 Magnetic attachment treatment procedure



Fig.8 Intraoral view after prosthetic treatment

## Conclusion

In the one year since final prosthetic treatment, no complications with dentures or abutment teeth have occurred. These results suggest that coping-type magnetic attachment could provide patients with comfortable retention earlier and improve crown-to-root ratios of abutment teeth of successful prognoses.

## References

1. H. Mizutani: Characteristics and clinical indications of magnetic attachment, J Jpn Prosthodont Soc, 48, 10–19, 2004.
2. M. Sone: A case report of a removable denture using magnetic attachments for a missing mandibular molar with a decreased occlusal vertical dimension followed up for 3 years, JJ Mag Dent, 24(2), 10–14, 2015.