

# **The postoperative investigation of the abutment teeth using a magnetic attachment.**

H. Kumano, R. Kanbara, T. Masuda, H. Nakamura, S. Tanaka and J. Takebe

Department of Removable Prosthodontics, School of Dentistry, Aichi Gakuin University

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## **Abstract**

The magnetic attachments can be small and powerful attractive force by using a neodymium magnet which is one of rare earth magnets. This system can be used as abutment teeth by decreasing the lateral force even if crown-root ratio is poor. Therefore the clinical efficacies of a magnetic attachment have been widely demonstrated. It is thought that it is necessary to observe the long-term progress of the abutment teeth after setting of the magnetic attachment to get a good clinical result. The purpose of this study was to observe the long-term progress of abutment teeth with magnetic attachment. The investigation period was five years from 2008 to 2013, and it was the case of regular visits. As a result of postoperative investigation of abutment teeth, the following knowledge was obtained. The number of teeth with magnetic attachment was 257, and the maxilla was more than 1.5 times larger than the mandible. The number of lost teeth of the abutment teeth with magnetic attachment in the investigation period was 48, the maxillary first premolar was the most, and the order of mandibular first premolar and maxillary canine was followed.

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## **Introduction**

These newer encased magnets provided improved corrosion resistance and improved magnetic attachment retention and clinical durability. As newer magnetic materials have been developed, the advantages of size reduction, stronger attractive retentive force, and improved clinical utility and use have substantially improved the range of useful applications compared to earlier versions previously available. While certain types of esthetically hidden precision attachments are considered rigid and inflexible, magnetic attachments are considered more capable of stress release due to an inherent ability to minimize and reduce unfavorable horizontal mechanical force transfer. Reduced horizontal force transfer for prosthetic retentive elements has been considered advantageous in preventing abutment overload and unwanted breakdown. A smaller attachment size is also of greater benefit for esthetic adaptability and constrained space applications<sup>1, 2</sup>. To observe the long-term progress of abutment teeth after setting of the dental magnetic attachment is indispensable in order to obtain good clinical results, diagnosis, designing denture and maintenance of the index<sup>3</sup>.

## **Objective**

The purpose of this study was to observe the long-term progress of abutment teeth with the dental magnetic attachment and to understand the real condition of abutment teeth.

## Materials and Methods

The investigation period was five years from 2008 to 2013, and a dental magnetic attachment was set at magnet denture clinic, Aichi Gakuin University Dental Hospital, and it was a case that is undergoing regular maintenance. In addition, the abutment teeth were used only for the root cap with the keeper coping, and the Magno-telescopic Crown and the implant using the magnetic attachment was excluded.

## Results

In the investigation control group, 28 males and 59 females totaled 87 people and the average age was 73.4 years old. The denture using the dental magnetic attachment as the retainer was a total of 103 plates, 55 plates in the maxilla and 49 plates in the mandible (Fig. 1). Comparing the difference in material, the denture of the maxilla was 43 plates (78%) of metal base denture, 12 plates (22%) of resin base denture, the denture of the mandible was 28 plates (57%) of metal base denture, 21 plates (43%) of resin base denture (Fig. 2).

The number of abutment teeth with dental magnetic attachment was 257. The number of abutment teeth in the maxilla was 152, and the number of abutment teeth in the mandible was 105 (Fig. 3). Comparing the maxilla with mandible, the number of dental magnetic attachment that was set to the maxilla was about 1.5 times that of the mandible. This time, the number of lost teeth of the abutment teeth with dental magnetic attachment was 48. The extraction was 34, detachment of the magnet assembly and the root cap with the keeper coping was 14. Breakdown of the number of lost teeth in the maxilla, the extraction was 17, the detachment of the magnet assembly and the root cap with the keeper coping was 11. Breakdown of the number of lost teeth in the mandible, the extraction was 17, the detachment of the magnet assembly and the root cap with the keeper coping was 3 (Fig. 4). The number

of lost teeth set to the dental magnetic attachment in the investigation period in the tooth type of the maxilla and mandible is shown in table 1. The number of lost teeth set to the dental magnetic attachment was the most in the maxillary first premolar, followed by the mandibular first premolar and the maxillary canine.

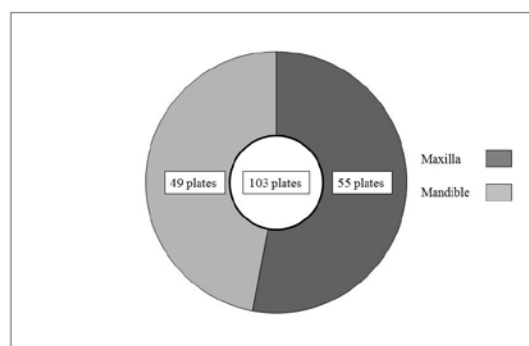


Fig.1 Number of denture

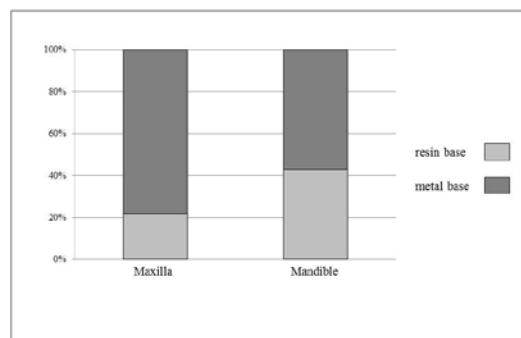


Fig.2 Difference in material of denture base

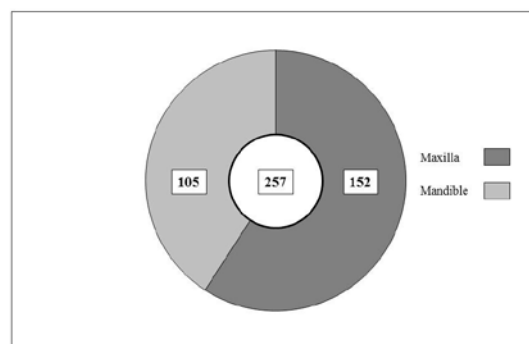


Fig.3 Number of abutment teeth

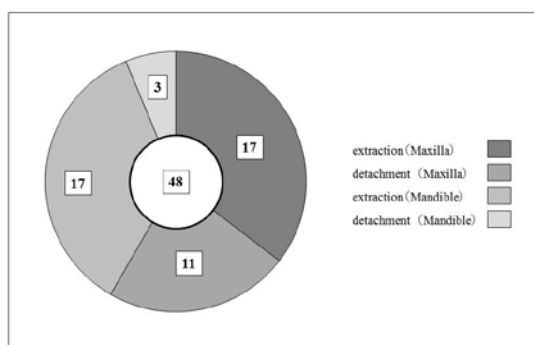


Fig.4 Number of lost teeth

Table 1 number of lost teeth by tooth type

Tooth type	1	2	3	4	5	6	7	8	Total
Maxilla	2	1	7	10	4	2	2	0	28
Mandible	0	2	5	8	2	0	2	1	20
Total	2	3	12	18	6	2	4	1	48

## Discussion and Conclusion

As a result of the postoperative investigation of the abutment teeth set to the dental magnetic attachment from 2008 to five years in 2013 at magnet denture clinic, Aichi Gakuin University Dental Hospital, the following knowledge was obtained.

1. Both the maxilla and mandible was more metal base denture than the resin base denture.
2. The number of abutment teeth with dental magnetic attachment was 257. The number of dental magnetic attachment that was set to the maxilla was about 1.5 times that of the mandible.
3. The number of lost teeth of the abutment teeth with dental magnetic attachment in the investigation period was 48. The maxillary first premolar was the most in, followed by the mandibular first premolar and the maxillary canine.

## References

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