

Mandibular Magnet Retained Complete Overdenture

Glady Chumaidi, Agus Dahlan, Harry Laksono

Departement of Prosthodontics, Faculty of Dental Medicine

Universitas Airlangga

Surabaya - Indonesia

ABSTRACT

Background: Complete denture in the lower jaw often has problems. The entire loss of the mandibular teeth often has a large resorption, so it is difficult to obtain retention and stability. **Purpose:** To report mandibular magnet retained complete overdenture is can increase retention and stability in the lower jaw. **Case:** A 60-year-old man came to the Prosthodontics Clinic of RSGM Airlangga University with complaints of the old complete denture that made by previous dentist, is often unstable while talking and chewing, so the patient feel uncomfortable. The denture has been used for approximately four years. Therefore the patient wants to make a new complete denture. **Case Management:** PFM crown removed and 31,32,33,41,43 are treated with root canal treatment. Magnet keepers are fabricated on teeth 33,43, and metal copings are fabricated on teeth 31,32,41. The complete lower denture is attached to the magnet. Acrylic material denture are chosen. **Discussion:** Overdenture is a complete or partial denture that is placed above the tooth structure or the root of the original tooth which is the support of the denture. Overdenture treatment can maintain ridge height, reduced load of supporting elements, and avoid mucosal irritation. It's necessary to add retention in the form of magnets to the teeth 33 and 43 to get good retention and stability. **Conclusion:** Mandibular magnet retained complete overdenture is can increase retention and stability in the lower jaw so that the patient feels satisfied and comfortable because the dentures are more retentive and stable.

Keywords: Complete Denture, Overdenture, Magnet

Correspondence: Agus Dahlan, Department of Prosthodontics, Faculty of Dental Medicine, Universitas Airlangga, Jl. Prof. Dr. Moestopo No. 47 Surabaya 60132 – Indonesia, Phone: +62315030255 Email: agus-d@fkg.unair.ac.id

INTRODUCTION

Complete denture in the lower jaw often has problems. The entire loss of the mandibular teeth often has a large resorption, so it is difficult to obtain retention and stability in the complete denture of the mandible¹. The aim of this case was to report that the retention and stability of the complete denture in the lower jaw, can be obtained by using overdenture with magnetic retention².

Periodontal tissue of the retained teeth under overdenture needs to be considered, because only potential teeth can be used as abutment teeth. The teeth should have minimal mobility, the depth of the sulcus that can be treated, and well attached to the attached

gingiva. It is necessary to keep the remaining teeth or root that become abutment under the base of the overdenture to stay healthy³.

CASE

A 60-year-old man came to the Prosthodontics Clinic of Airlangga University Dental Hospital with complaints of the old complete denture that made by previous dentist, is often unstable while talking and chewing, so the patient feels uncomfortable. The denture has been used for approximately 4 years. Therefore, the patient wants to make a new complete denture. Intra oral examination as seen in (Figure 1), and dental panoramic radiograph as seen in (Figure 2).

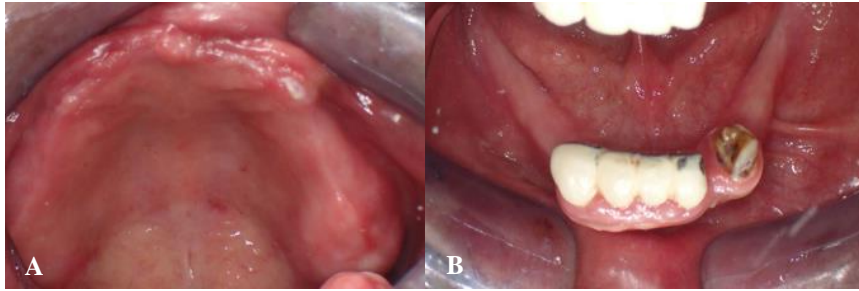


Figure 1 . Intra oral clinical presentation, A. Maxilla, B. Mandible



Figure 2. There is decrease in alveolar bone on 32,33,41,43

CASE MANAGERMENTS

The initial treatment is DHE, scaling treatment, PFM crown removal and root canal treatment 31,32,33,41,43. Then impression was done for the fabrication of magnetic keepers on teeth 33,43 and metal coping 31,32,41, and then cementing with Glass Ionomer Cement type 1. Functional impression of the maxilla and mandible for the manufacture of complete dentures. In the manufacture of complete dentures it is necessary to do a return of vertical dimensions both in the state of rest and occlusion.

After complete denture has been made, and the magnetic keeper has been installed (Figure 3), the magnetic keeper was marked with an indelible pencil, then placed a complete denture under the occlusion with the maxillary denture. Then the patient was told to close his mouth slowly until the attached keeper touches the fitting surface of the mandibular denture, as a result the ink pencil marks will be imprinted on the fitting surface of the lower denture. The ink pencil description on the lower surface fittings will be used as a benchmark for the magnetic position which

will be combined with the keeper as precision retention in overdenture.

The lower jaw base plate was punched right on the pencil mark according to the magnitude of the magnet to be installed. Acrylic resin self-curing dough was made according to the manufacturer's instructions and then inserted into the hole on the base plate. All the coping and keeper parts are applied with cocoa butter with the aim that the self-curing does not stick to the metal undercut or coping. Then the dentures were installed in the correct position and the patient is asked to cover the maxilla and mandible in the centric position of the occlusion until the setting was complete.

The mandibular denture was removed then the magnet will stick to the base plate (Figure 4), then it was trimmed and the remaining remnants of acrylic on the base plate was cleaned. Instructions post insertion, which are: patients were encouraged to adapt to their protests, remove the prosthesis at night and soak it in clean water, maintain the cleanliness of prostheses and remaining roots, and patients were taught how to treat the remaining roots by applying fluoride solution regularly to prevent caries⁴.



Figure 3. Cementing keeper magnet and metal coping with GIC type 1



Figure 4. Magnet retention on mandibular complete denture

DISCUSSION

Overdenture is a complete or partial denture that is placed above the tooth structure or the root of the original tooth which is the support of the denture. Overdenture treatment can maintain ridge height, reduced load of supporting elements, and avoid mucosal irritation⁵.

The presence of abutment teeth can inhibit the resorption process, resulting in maximum retention and stabilization. Abutment teeth that are under the base of the overdenture, can maintain the height of the alveolar ridge, so that the denture will be quite stable. This stability can last longer because the occlusal load is more easily monitored and accepted evenly by the supporting teeth and surrounding tissue⁶.

In this case, teeth 31,32,33,41,43 have no abnormal tooth mobility, so that it can still be maintained and can be used as retention. The prognosis was good because the gingival attachment and 1/3 of the tooth root were still good⁷. But it is not strong enough to hold high occlusal load so the acrylic material denture in maxilla is chosen to minimize the occlusal load.

It is necessary to add retention in the form of magnets to the teeth 33 and 43 to get good retention and stability. From these considerations, the design of complete overdenture was chosen with the addition of magnetic retention in tooth 33 and 34.

The magnet used is Magfit DX 600 with a round diameter of 3.6mm. Used in teeth 33, 43 because the tooth has strong roots with a diameter of 6 mm. In teeth 33,43 a cast coping of magnet keeper and teeth 31,32,41 was made with metal coping.

When the patient controls, he is instructed to maintain oral and dental health. maintaining

the health of periodontal tissues is a determining factor in the success of overdenture treatment, which means it depends also on the effectiveness of plaque control carried out by the patient. The easiest procedure is to brush teeth regularly and use toothpaste containing fluoride⁸.

Patients also need to be instructed to maintain cleanliness around the root cap. If there is a shallow periodontal pocket, instruct the patient to use a soft-bristled brush and use it around the edge of the root cap. If there is a deep periodontal pocket, it is recommended to use an interdental brush. Dentures must be cleaned with a brush, use of denture cleaning agents can be used. It is recommended to remove the denture at night. As with other removable dentures, checking at a return visit is important for maintaining dentures in good condition⁹. Because of it is high magnetic strength and low potential for tooth damage, so the applications of magnets in overdenture technique has been widely used¹⁰.

The case showed that mandibular magnet retained complete overdenture is can increase retention and stability in the lower jaw so that the patient feels satisfied and comfortable because the dentures are more retentive and stable.

REFERENCES

1. Minoru Ai, Shiau Y. New Magnetic Application in Clinical Dentistry. Tokyo. 2004.
2. Rilley MA, Anthony DW, Ivor RH. Magnet in ProstheticDentistry. J ProsthetDent. 2001;86 (2); Pp.137-42.
3. Lord JL, Teel S. Overdenture : patients selection, using coping, and evaluation. J Prosthet Dent. 1995; 32: 41-51.

4. Toolson LB, Talor TD. A 10 years report of a longitudinal recall of overdenture patients. *J Prosthet Dent* 1989; 62 : 179-81.
5. Basker RM, Harrison A, Ralph JP. Overdenture in general dental practice. *Br Dent J* .1993; 154: 285.
6. Brewer AA, Morrow RM. 1980. Overdenture 2 ed. The C.V Mosbby Co; 100-35, 208-10,222-45,341-7,376-9.
7. Dharma U. 2016. Gigi Tiruan Implan dan Overdenture. CV. Menara Intan : p. 60-80.
8. Ai M, Shiau YY. 2004. New magnetic application in clinical dentistry. Quintessence Publ Co. Ltd, Tokyo. p.30.
9. Alani A, Maglad A, Nohl F. 2011.The Prosthetic Management of Gingival Aesthetics. *Br. Dent. J.* 210:63-69.
10. Rutkunas V, Mizutani H, Takahashi H. Influence of attachment wear on retention of mandibular overdenture. *J Oral Rehabil.* 2007;34(1):41-51.