

Case Report

A Multidisciplinary Approach to Use Magnetic Assembly in Mandibular Overdenture Fabrication

Pardeep Bansal¹, Kabira², Preetika Bansal³

¹Professor & Head, ²PG Student, Department of Prosthodontics, ³Associate Professor, Department of Periodontics, Dasmesh Institute of Research and Dental Sciences, Faridkot, Punjab

Abstract

Magnets have been widely used in the field of dentistry for many years with some success, as they can be manufactured in small dimensions as retentive devices in overdenture technique, maxillofacial prosthesis. These magnets are retained are attached with remaining root structure which transfer the load to the remaining bone through periodontal ligament of the retained roots. In this article, the use of magnetic assembly in fabrication of mandibular overdenture on the retained roots and a conventional maxillary complete denture is discussed. The magnetic assembly consists of magnet and coping with a keeper on the remaining tooth structure.

Key words: Dental magnetism, maxillofacial prosthesis, overdenture.

Corresponding author: Dr Pardeep Bansal, Professor & Head, Department of Prosthodontics, Dasmesh Institute of Research and Dental Sciences, Faridkot, Punjab

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INTRODUCTION:

Dental magnetic attachment systems have been increasingly utilized in prosthodontics to improve the retention of overdenture. Recently development of hard magnetic substances such as samarium- cobalt and iron – neodymium – boron magnets provide stronger magnetic forces per unit size than the earlier open field aluminum nickel cobalt magnets which are susceptible to corrosion by saliva and provide weak retentive forces. This clinical report describe fabrication of mandibular overdenture by embedding the magnetic assembly in the denture base and by inserting its corresponding keeper into the abutment root , and conventional maxillary overdenture to rehabilitate the patient.

CASE REPORT

A 59 year old woman was referred to the department of prosthodontics at Dasmesh Dental College and Research Institute, Faridkot. Intraoral evaluation revealed completely edentulous maxillary arch and partially edentulous mandible

arch. Remaining teeth in the mandibular arch (34, 35,44, 45) were vital and periodontally sound and

moderate resorption was recorded in relation to bilateral mandibular posterior ridge. (figure I) Patient was made aware of the clinical condition and he was willing to preserve the remaining teeth as long as possible.

Clinical Procedure

Endodontic treatment and abutment teeth preparation for mandibular teeth

Abutment teeth (34, 35, 44, 45) were endodontically treated and prepared with diamond rotary instruments, reduced slightly above the gingival margin (2mm), followed by removal of two- third of the root canal filling material with a rotary drill instrument (peasow reamer) to prepare the post space to accommodate the post and keepers. For (35, 45) customized metallic post and core was fabricated and for (34, 44) canal were prepared for magnetic keeper. Inlay wax was used to make impression for the post space. Keepers

were placed parallel to the occlusal plane. Final impressions were after border molding was made in polyvinyl siloxane impression material.

Try –in, and definite impression of mandibular arch

The customized post and core for (35, 45) and keepers for (34, 44) were checked for their final fit. Keepers were place parallel to the occlusal plane after their final tri in the final cementation was done with glass ionomer cement. After the cementation the final impression was made in polyvinyl siloxane impression materials and definite cast was poured. Now occlusal rims were fabricated on definitive upper and lower cast. Jaw relation, teeth

arrangement and try were completed, the waxed denture were processed in heat cure PMMA. All the interceptive occlusal contacts were eliminated before fixing the magnetic assembly.

Placement of magnetic assembly

All magnets were kept on the top of keeper, so to coincide with both central axes, and autopolymerizing cure resin was filled into the space left for magnetic assembly in the impression surface of mandibular overdenture. Patient was asked to occlude till curing of the resin. Excess of resin was removed, the occlusion was checked to remove the interceptive occlusal contacts, and denture was inserted.

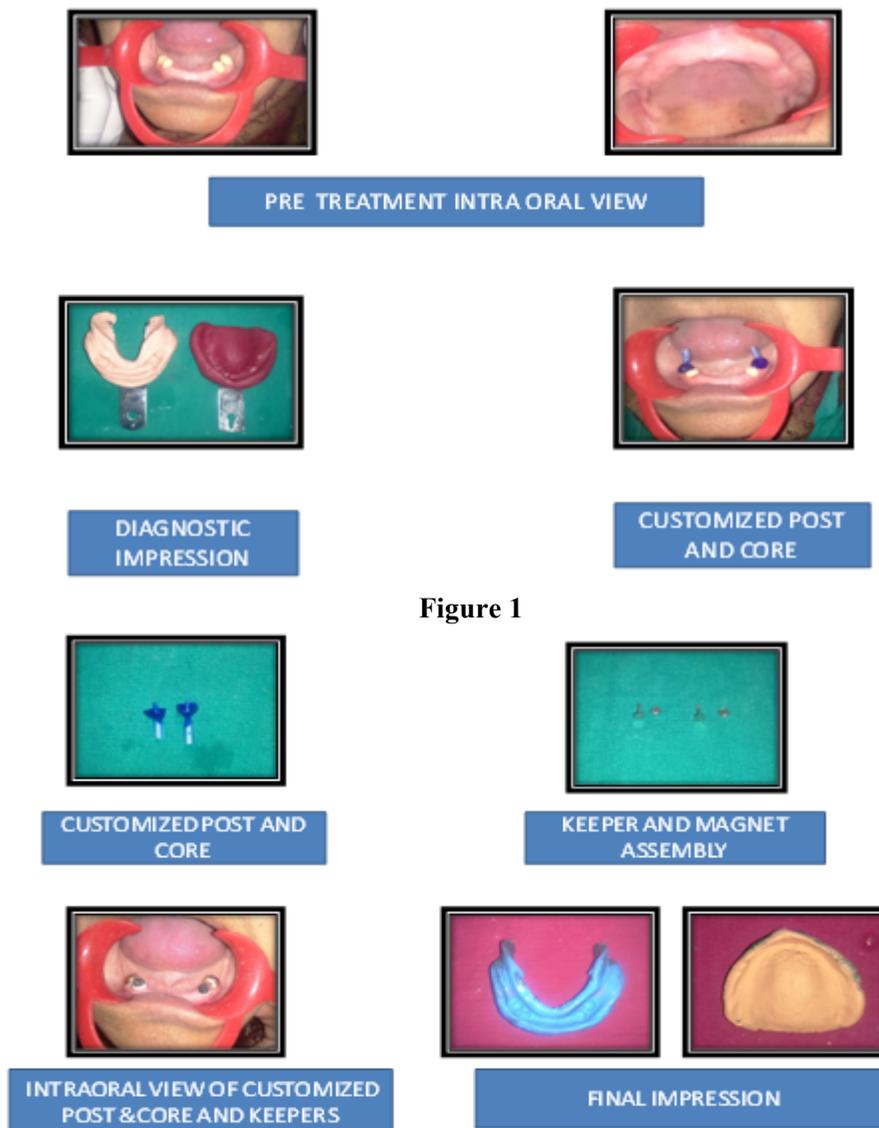


Figure 1

Figure 2

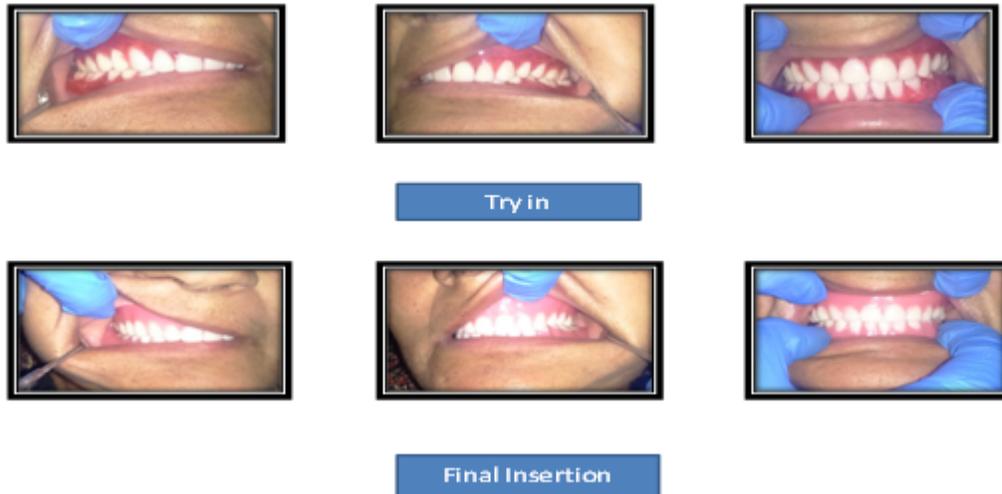


Figure 3

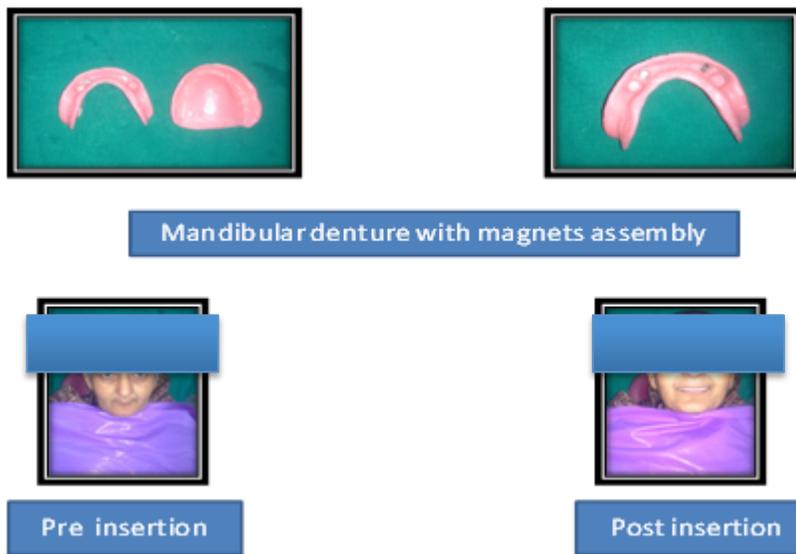


Figure 4

DISCUSSION

Dental magnetic assembly of various types and sizes are commercially available. These systems, consisting of a magnet and a keeper, used to retain removable complete and partial dentures and maxillofacial prosthesis. Magnetic system can also be used in an implant supported overdenture, with magnets incorporated into the denture acting upon the keeper attached to the implant abutments. Most commercially available attachments are composed of a magnet and yoke made from ferromagnetic materials. Since these rare earth magnets were

vulnerable to corrosion, especially in the oral cavity.

Advantage of intra oral magnets include easy incorporation into the denture involving simple clinical and technical procedures, ease of cleansing, ease of placement for both dentist and patient.⁵ They are typically useful for patient with restricted interocclusal space, can also accommodate a moderate divergence of alignment between two or more abutment and dissipate lateral functional forces. On the other hand, poor corrosive resistance of magnets within oral fluid requires encapsulation within a relatively inert alloy such as stainless steel or titanium.⁸

CONCLUSION

This system has successfully rehabilitated the patient 8. when compared to overdenture with implants, when cost and time factors were considered. Magnet retained overdenture preserving natural teeth has better proprioception and satisfaction, and also is 9. psychologically beneficial as the patient had not undergone extraction.

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