Case Report

Magnetic Attachment Retained Overdenture

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Abstract

Lack of adequate retention of mandibular denture is one of the common problems associated with complete denture therapy. Retention of natural teeth and use of attachments can increase the patient compliance by providing good retention to the complete denture. Magnetic attachments for overdenture abutments are good solutions for providing the patient with a retentive and stable complete denture. This article describes the use of magnetic attachments for root supported mandibular overdenture.

Key Words: Overdenture, Magnetic Attachment, Complete Denture.

Introduction

Good retention and stability are prime requisites for a successful complete denture therapy. The presence of the palatal vault and good peripheral seal makes it favorable for fabricating a good retentive complete denture in maxillary arch. Whereas, the anatomy of the denture bearing area of the mandibular arch, extensive resorption, reduced denture stability due to tongue movements makes the mandibular denture less retentive than the maxillary denture.[1]

Various methods like extended lingual flange, retention of natural teeth, implants and denture adhesives have been reported in the literature to enhance the retention and stability of the mandibular denture.[2,3] The existing natural teeth apart from adding to the retention also helps in maintaining the alveolar bone. These natural teeth which are preserved are referred to as overdenture abutments. The abutment teeth can be modified to receive retentive/non retentive copings, attachments for increasing the retention of the mandibular complete denture. The attachments can be intra or extra radicular in nature. Ball attachments, locator attachments, bar frameworks and magnetic attachments have been reported in literature for improving the retention.[4,5,6] This clinical report describes the use of magnetic attachments for tooth supported over denture.

Case Report

A male patient of age 62 reported with the complaint of difficulty in chewing due to lack of teeth. On examination, patient was completely edentulous in maxilla and partially edentulous in mandible. Teeth no 35 and 43 were present and were in healthy periodontal status (Fig-1). After discussing various options of replacement, patient agreed for root anchored magnet retained overdenture. The two remaining teeth were endodontically treated and decoronated. Post space preparation was done and the dome shaped keeper with post (Magfit RK) (Fig-2) were luted to the post space in the prepared natural teeth using dual cure resin cement (Fig-3). Primary impression, secondary impression, jaw relation recording and wax try-in procedures were done similar to a routine complete denture fabrication. At the time of insertion of the denture, the magnetic assembly with the magnet inside was kept on top of the keeper and space created in the tissue surface of the denture for the magnetic attachment. Auto polymerizing resin was used to pick up the magnetic attachment intra orally. During the pickup of the magnetic attachment, care was taken to seat the denture in the correct position and occlusion maintained by having the mouth closed in centric relation as the resin was polymerizing. The resin was allowed to completely harden and the excess removed and polished around the magnetic attachment (Fig-4). Finished denture was reinserted to check for adequacy in retention by asking the patient to move the tongue in lateral and protrusive movements (Fig-5).

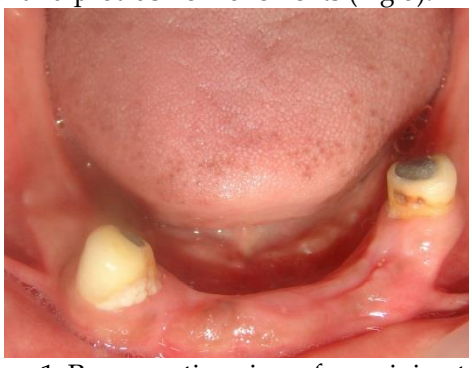

Figure 1: Pre-operative view of remaining teeth

Figure 2: Magfit dome shaped magnetic attachment for root

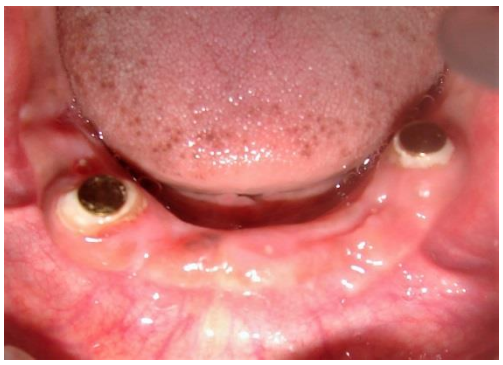

Figure 3: Keeper with post luted to natural roots

Figure 4: Magnetic attachment fixed to denture

Figure 5: Test for retention of mandibular denture

Discussion

Geriatric patients requiring complete dentures often face the discomfort of less retentive mandibular complete dentures due to extensive resorption of the mandibular ridge. Age, lack of dexterity, medical conditions to undergo an extensive surgery and financial implications are multiple factors that deter replacement of teeth with implants. Replacement of teeth with complete denture still remains the standard of care for completely edentulous patients. Retention of few remaining teeth for fabricating an overdenture can reduce the financial burden at the same time can take care of retention, stability and support of the complete denture. Various attachments for radicular retainers have been used worldwide. Most of them like ball, locators and bar & clips are based on mechanical retention. Lack of parallelism of remaining natural teeth makes it difficult to insert prefabricated attachments inside the post space for retention purpose. Such situations would require the need for making a post space impression and fabrication of root anchored attachments in the laboratory by the casting process. This can be a cumbersome procedure and also would necessitate lot of inter-occlusal space for the attachment assembly. These resilient attachments do not prevent excessive lateral forces on to the natural teeth due to its design feature and are at times difficult to insert and remove for elderly patients with reduced manual dexterity. The magnetic attachment is a retentive attachment for removable prostheses which assists retention using magnetic force. The magnetic assembly contains the magnet and is set in the denture base. The keeper with the post is magnetically attracted to the magnetic assembly.7 The attraction between the two components provide the desired retention to the complete denture. The attractive force is primarily vertical preventing dislodgement in the vertical direction. Excessive lateral forces dissociate the magnetic coupling reducing the lateral loading to the tooth root. Since it is based on surface attraction, the attachment is often less in height when compared to other attachment designs therefore requiring minimal inter-occlusal space for restoration.8 The magnetic force helps in self-assembly of the attachment aiding in easy insertion of the denture.

Conclusion

Magnetic attachments provide long lasting retention for complete dentures. Preservation of few remaining natural teeth is of paramount importance in providing the patient with a predictable long term treatment outcome. The use of magnetized keeper with post is a simple procedure that can be done chairside minimizing extensive lab work and also reduces the cost to the patient. Good maintenance by the patient to preserve the natural teeth is important for ensuring long term survival of the natural teeth.

References

1. Carlsson GE. Clinical morbidity and sequelae of treatment with complete dentures. J Prosthet Dent 1998;79:17-23
2. Visser A, Raghoebar GM, Meijer HJA, Batenburg RHK, Vissink A. Mandibular overdenture supported by two or four endosseous implants. A 5 year prospective study. Clin Oral Implants Res 2005;16:19-25
3. Carlsson GE. Implant and root supported overdentures – a literature review and some data on bone loss in edentulous jaws. J Adv Prosthodont 2014;6:245-252.
4. Tancu AM, Melescanu Imre M, Preoteasa E. Therapeutical attitudes in tooth supported overdentures with ball attachments. Case report. J Med Life 2014;7:95-98.
5. Mensor NC. Attachment fixation for overdentures, Part I. J Prosthet Dent 1977;37:366-373.
6. Rutkunas V, Mizueani H. Retentive and stabilizing properties of stud and magnetic attachments retaining

mandibular overdenture. An in vitro study. Stomatol Baltic Dent Maxillofac J 2004;6:85-90
7. Maeda Y, Nakao K, Yagi K, Matsuda S. Composite resin root coping with a keeper for magnetic attachment for replacing the missing coronal portion of a removable partial denture abutment. J Prosthet Dent 2006;96:139-142.
8. Boeckler AF, Morton D, Ehring C, Setz JM. Mechanical properties of magnetic attachments for removable prostheses on teeth and implants. J Prosthodont 2008;17:608-615.