

Solving Complete Denture Problems by The Use of Overdenture: Clinical Case Report

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الخلاصة

المهدف: تهدف الدراسة الى تقييم الأداء السريري للأسنان أو الطقم الفوقي المسند بالأسنان، أو الأسنان معتمدة بالرابط الدقيق Rhein'83 مع طقم الأسنان التقليدية. المواد وطرائق البحث: أربعة مرضى تتراوح أعمارهم بين (45-65) سنة، وتتألف من (2) ذكور و (2) إناث، مختارة من كلية طب الأسنان، جامعة الموصل. الأجهزة الصناعية التي قدمت، شملت على (3) أطقم علوي كامل over denture ، اثنان طقم سفلي كامل ، وثلاثة over denture منهم مع Rhein'83، واثنين منهم بدون رابط دقيق. ردود أفعال المرضى تم تدقيقها سريريا. النتائج: اظهرت النتائج استحابة المرضى بشكل موحد مع الخدمة التي كانوا قد حصلوا عليها. حيث شعروا بأن لديهم القدرة على المضغ جيدا ويفضلون وجود أطقم الأسنان الفوقي مع الرابط الدقيق Rhein'83. الاستنتاجات: Overdentures مع Rhein'83 المرفق هي أكثر استقرارا ووظيفيا بالمقارنة مع العلاج التقليدي بالطقم الكامل. لكن هذا النمط من العلاج يستغرق وقتا أطول لتصنيعه. رضا المرضى وقبول overdenture طريقة العلاج بالطرق الحديثة هو المتفوق عند مقارنة أطقم الأسنان التقليدية.

ABSTRACT

Aim: The aim of this study was to evaluate the clinical performance of tooth, or teeth supported overdentures with Rhein'83 attachment vis a vis conventional dentures. **Materials and Methods:** four patients aged (45 to 65) years, comprising of 2 males and 2 females, selected from the Prosthetic Department, College of Dentistry, University of Mosul. The prosthesis provided included 3 complete upper overdenture, two complete lower overdenture, three of them with Rhein'83 attachment and two with out attachment. **Results:** Patients response were uniformly pleased with the service that they had received. They felt that they could chew well and preferred having over dentures with attachment. **Conclusions:** Overdentures with Rhein'83 attachment are more stable and functionally more retentive in comparison to conventional denture therapy. But this mode of treatment takes longer time to fabricate. Patient satisfaction and acceptance of the overdenture treatment modality is superior when compare to conventional dentures.

Key words: Complete denture, Over denture.

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INTRODUCTION

Overdenture is widely used in clinical practice and should be executed whenever the clinical conditions suggest it. Through a critical review of the literature, the anatomical, functional, psychological, and clinical advantages are emphasized⁽¹⁾.

Overdenture therapy envisages essentially a preventive prosthodontic concept since it attempts to conserve the few remaining natural teeth.

There are two physiologic tenets related to this therapy: the first concerns the continued preservation of alveolar bone around the retained teeth⁽²⁾. While the second relates to the continuing presence of

periodontal sensory mechanisms⁽³⁾, that guide and monitor gnathodynamic functions.

Overdentures help to partly overcome several problems posed by conventional complete dentures like progressive bone loss, poor stability and retention, loss of periodontal proprioception, low masticatory efficiency⁽⁴⁾.

The physiological basis of overdenture therapy lies in the continued retention of reduced natural teeth under the denture base. The abutment teeth retained apart from supporting and anchoring the appliance and contribute towards the continued preservation of alveolar bone and perio-

dental proprioception⁽⁵⁾.

The purpose of this study was to evaluate the treatment modality by using Rhein'83 attachment was made against the conventional dentures routinely being provided simultaneously to other comparable cases. The study was conducted to evaluate the clinical performance of tooth supported overdentures vis a vis conventional dentures.

MATERIALS AND METHODS

Overdenture were constructed for four patients aged (45 to 65) years, comprising of 2 males and 2 females. They were selected among the patients referred to the Prosthetic Department, College of Dentistry, University of Mosul. The prosthesis provided included three complete upper overdenture, two complete lower overdenture, three of them with attachment and two without attachment.

Patient Selections: The patients were selected depending on the following criteria:

Good general health, healthy oral mucosa, class I jaw relation, availability of adequate inter-ridge space and suitable

abutment teeth, good oral hygiene, cooperative attitude and motivation.⁽⁶⁾

Tooth Selections: Abutments were selected according to the clinical assessments:

Radiographical examination (Figure 1), for study of crown root ratio and root morphology, nature of alveolar support.⁽⁷⁾ This examination was done with the use of intraoral film holder (Figure 2).

Study cast was examined.

Location of the abutment in the dental arch (Figure 3).

Case no.1: One tooth anteriorly, midline of the upper arch.

Case no.2: One tooth anteriorly positioned in the upper arch.

Case no.3: One tooth unilateral posteriorly positioned in the lower arch.

Case no.4: Two teeth anteriorly positioned bilaterally in the upper arch and two teeth anteriorly positioned bilaterally in the lower arch.

Tooth mobility, periodontal status it was within normal.

Carries involvement, all teeth were sound.

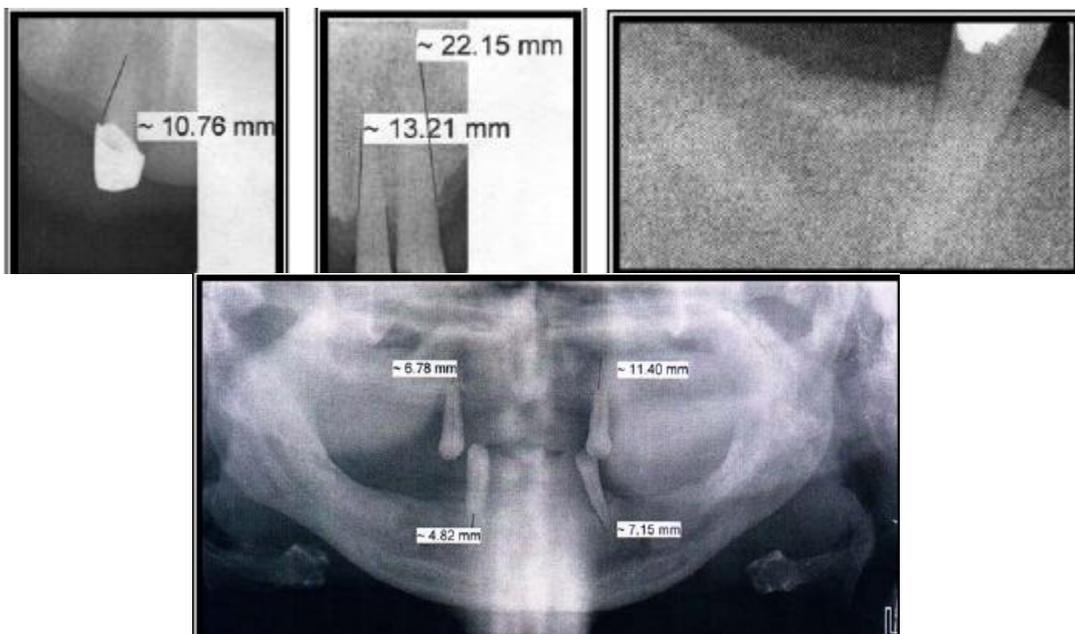


Figure (1): Radiographical feature of the four cases

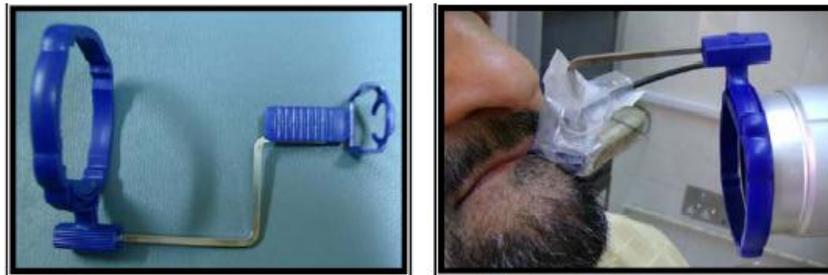


Figure (2): Intra oral film holder

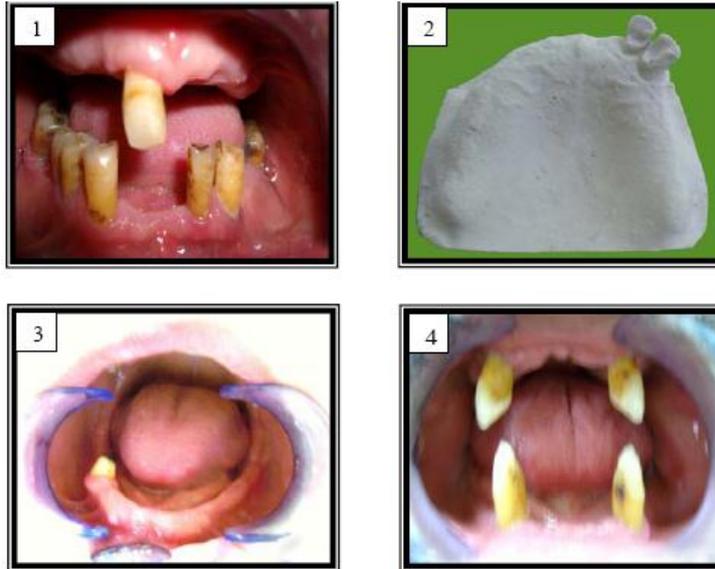


Figure (3): Location of the abutments

Preparatory Treatments: Full mouth scaling and polishing for enhance periodontal health. Root canal is done for upper two canines and lower two canines for case no.4 with working length of 29mm obturation done by cutta percha by lateral condensation technique.⁽⁸⁾

Abutment Preparation: The first three cases abutments were prepared to a height of 4-5mm for occluso-gingivaly, with a

uniform taper of 3-5 degree and apical chamfer at dento-gingival junction (1) (Figure 4).

Case (no.4): A 3mm cylindrical channel with antirotation extension prepared in pulp canal developed the space for short dowels cast as a part of the metallic coping. This greatly enhanced retention of copings⁽¹⁾ (Figure 4).



Figure (4): Abutment preparations.

Copping and Cementation: Open mouth two steps impression technique for the first three cases were made using a rubber base impression material ⁽⁹⁾. Case (no.4), the impression of the prepared canals and the entire surface in the same arch by using light body impression material.

Use of Attachment: In case (no.3), the

location of the abutment was not in the mid line. In order to increase the retention and stability of the denture the indication of telescopic crown with stud attachment were preferred, mesial and distal to the tooth to equilibrate the vertical force. Prefabricated stud two attachment of type Rhein'83 were fabricated (Figure 5).

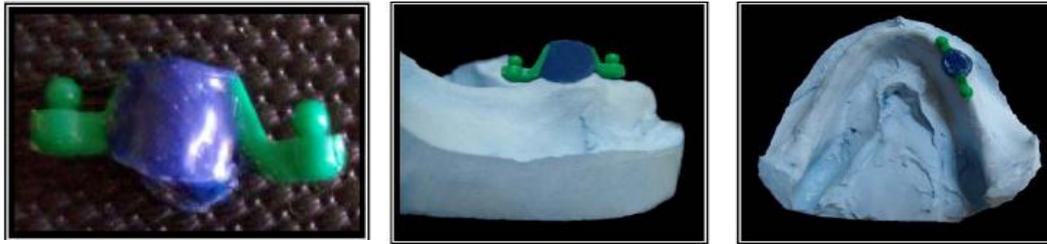


Figure (5): Waxing model of the pre fabricated stud attachment of type Rhein'83.

In the case (no.4), the use of cast crown with stud attachment is indicated, because the abutments were canines and these were the most indicated teeth for sustaining the retentive force. A suitable size prefabricated stud attachment with

post was chosen with its suitable copers of type Rhein'83 (7) . Copings were casted by standard technique; using Nickel-Chromium alloy. Finished copings were cemented using glass ionomer cement ⁽⁹⁾ (Figures 6, 7).



Figure (6): Cast crowns (Case no. 1, 2).



Figure (7): Casting with attachment Case no. (3,)

Denture Fabrication and Insertion: After 24 hours of coping cementation, two steps impression techniques were done for all cases except case (no.3, and no.4), the

impression was done after block out intra orally the stud attachments by wax ⁽¹⁰⁾ (Figure 8).

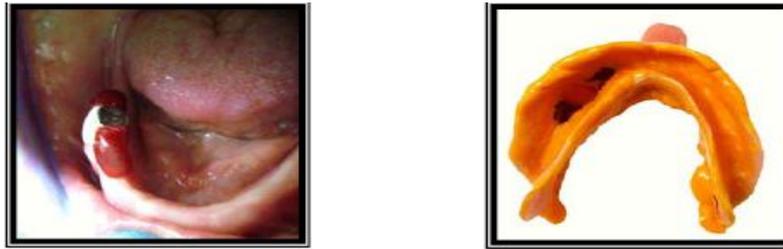


Figure (8): Block with wax and final impression of Rhein'83 attachment

Record of vertical dimensions, centric jaw relation and, try in the wax overdenture for the patients' approval of esthetics and phonetics were done⁽⁹⁾. Flasking, packing, finishing, and polishing were done by the

conventional method. Self curing acrylic resin in flowing consistency was used to fit the coppers of the stud attachments; these became embedded in acrylic base at this stage (Figure 9).

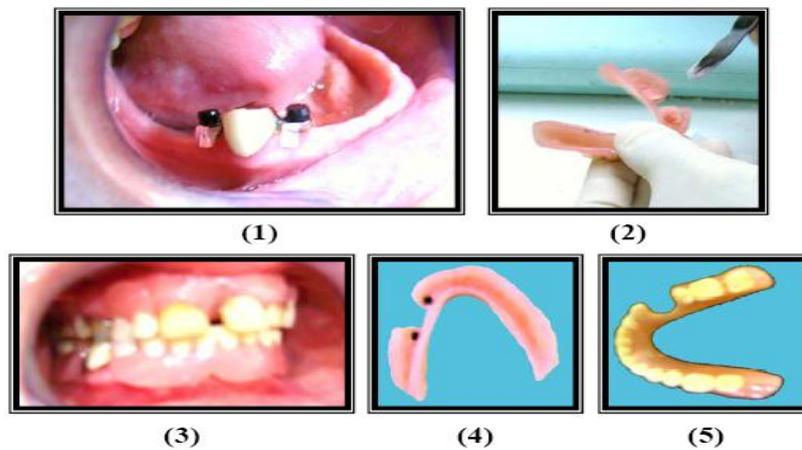


Figure (9): Steps of insertion of overdenture with Rhein'83 attachment.

Patient Response: Patients were uniformly pleased with the service that they had received. They felt that they could chew well and preferred having overdentures as opposed to complete edentulous. The retention of the prosthesis was adequate. The examination formed a distinct clinical impression that the overdenture were more stable than conventional complete denture and that the overdenture were more resistant to movement from occlusal or lateral loading than complete dentures. Adjustment was provided, scaling or denture adjustment was proved. Oral hygiene habits were re-cured, and the patient instructed to use a fluoride gel to place a drop inside his denture every day for about more or less one month.⁽¹¹⁾ After a period of 6 weeks from the time of insertion, the mastication was evaluated based upon patient's subjective judgment, questioning for the patient was done regarding the na-

ture of food and eating habits of the patients and the ability to chew roasted groundnuts one by one.

DISCUSSION

Overdenture therapy constitutes essentially a preventive prosthodontic concept as it endeavors to preserve the few remaining teeth and the supporting structure.⁽¹⁾ The teeth are too weak to a fixed partial denture and considered unsuitable to support a removable partial denture can oftentimes be usefully conserved and suitably modified to act as abutments under overdentures for useful span of time.⁽¹⁰⁾

The key to this procedure is elective endodontics. This allowed for a shortened dental crown, which created adequate space for the overlying artificial denture tooth and denture base. The shortened crown also improved the crown to root ratio,

which reduced the mobility of roots with limited bone support.⁽⁸⁾

The over denture theory and practice are based on rational principles and the procedures involved have been standardized and simplified to such an extent that this modality of treatment (Overdenture with attachment) should be considered for virtually every patient for whom full mouth extractions have been planned. It, however, cannot be overemphasized that good principles of complete denture construction must be followed in letter and spirit to achieve optimum results from the over denture therapy^(1,12,13). As the overdenture status of the prosthesis and its benefits to the patient depend solely on the continued retention of the underlying abutments, it becomes obligatory to periodically monitor their health and institute necessary steps to prolong their useful span. Here in lays overdenture therapy a continued service.⁽¹⁰⁾

The superior stability and retention of the overdenture were apparent from the insertion phase itself. Patients wearing complete over dentures in this study got accustomed to their appliances in an appreciably shorter span of period as compared to those wearing conventional complete dentures. Patients with over dentures reported fewer incidences of sore spots in relation to prosthesis.⁽¹³⁻¹⁵⁾

CONCLUSIONS

The conclusions of this study were depend on concluding remarks of patients: Patient satisfaction and acceptance of the overdenture treatment modality is superior when compare to conventional dentures. Patients (with posterior teeth supported Overdenture) felt less stress on the crest of alveolar bone in relation to patients with anterior teeth supported Overdenture. Overdentures with Rhein'83 attachment are more stable and functionally more retentive. Compared to conventional denture therapy, this mode of treatment takes longer time to fabricate.

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