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Case Report

IATROGENIC NEGLIGENCE AND ITS IMPACT ON COMPLETE DENTURE TREATMENT: A CASE REPORT ON CORRECTING CENTRIC RELATION AND PERIPHERAL EXTENSIONS

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ABSTRACT

Treating completely edentulous patient is common in dental practice. The use of a conventional removable complete denture has eclipsed with the development of most modern treatment modalities. But many factors like poor socioeconomic status, motivation, poor general health, poor education, etc still make the public to seek for a conventional removable complete denture. Understanding various factors related to these treatment is mandatory to give a successful denture. Making a good final impression and recording centric relation is considered to be one of the crucial steps in fabrication of a complete denture. Lack of care or knowledge in doing these steps could lead to serious issues in function and comfort of the patient. The aim of this article is to document a complete denture case that reported with a faulty centric relation and peripheral extensions which occurred due to iatrogenic negligence. The method to rectify the same is explained. This could help the budding dentist to use these techniques appropriately when needed.

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INTRODUCTION

Treating completely edentulous patient is common in dental practice. Understanding various factors related to these treatment is mandatory to give a successful denture. Handling a denture patient is still a night mare for a dentist. This could be partly attributed to the lack of knowledge in understanding various key factors by the dentist, or may be from technical aspects or patient factor itself. Registering centric relation is one of the most important key factor for success in complete denture treatment. Multiple definitions have been given for centric relation over years (Wiens *et al*, 2018). However; the most acceptable definition among dental professionals is "The maxillomandibular relation in which the condyle articulate with the thinnest avascular portion of their respective disks with the complex in the anterior superior position against the shape of their articular eminences" (GPT- 9, 2017).

Various perspectives such as reviews, methods, materials, problems etc in constructing complete dentures are well documented (Critchlow *et al*, 2012; Daher *et al*, 2008; Raigrodski *et al*, 1998; McCord and Grant, 2000) but a documentation on how to rectify a centric relation in an existing prosthesis along with its peripheral extensions is rare.

The aim of this article is to document a case which required a correction in faulty centric relation and peripheral extensions in an existing complete denture.

Case Report

A 55 year old male patient reported to our clinic, giving a chief complaint of inability to chew and looseness with his lower existing complete denture. He gave a history of a new denture being made three month back from a private polyclinic. A routine intraoral and extra oral examination was done and were found normal. His Orthopantomogram (OPG) was normal. The existing dentures were evaluated for factors like retention, stability, support, vertical dimension, hygiene, esthetics, denture coverage and occlusion. Two factors were found unsatisfactory; one was the deviated occlusion (Fig 1) and the other was the posterior extension of the lower denture (Fig 2). The deviated occlusion was due to the faulty registration of centric relation while the looseness of lower denture was due to inadequate extension of the denture onto the retromolar pad region. The upper denture was normal in all aspects and patient was satisfied with its performance. A diagnosis of upper and lower completely edentulous arches with loose and faulty occluding lower dentures was made. Based on the diagnosis a

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treatment plan was formulated to correct the centric relation in existing denture and also to extend the posterior part of lower denture till the recommended seal areas. The procedure was divided into two parts. The first was to correct the centric relation and to rearrange the tooth into centric occlusion and the second step was to correct the posterior extension of the lower denture during the try in procedure. The patient was explained regarding the treatment procedure and an informed consent was obtained.

Procedure

A face bow record (Hanau Springbow, Whip Mix) was made using the upper denture. The occlusal units of the lower denture was completely removed (Fig 3) by using a slow speed micromotor handpiece (NSK Ltd, Japan) and bur (Komet TC, Germany). The grinding was done until the base was made fairly thin without perforations. After removal of required areas, a wax rim was constructed onto the denture base. The maxillomandibular relations were performed (Fig 4). The lower rims were adjusted to the correct vertical dimensions in relation to the upper complete denture and the midline was marked. The patient was guided to centric relation and a bite registration was made using bite wax (Bite wafers, Coltene). Selection of shade was done using the upper denture as a guide. A modelling clay material (Camlin, India) was molded and inserted into the tissue surface of both the dentures (Fig 5) to facilitate the construction of remount cast by the laboratory technician. At the lab the relations were transferred to a semiadjustable articulator (Hanau Vide View, Whip Mix) and the artificial teeth were arranged.

The try in dentures were then inserted and evaluated (Fig 6). After the patient's approval, the lower denture was corrected for posterior extension by conventional border molding (Fig 7) using a green stick compound (DPI, India) and a reline impression was made using a medium bodied impression material (3M ESPE India) (Fig 8). The denture was processed and inserted. All factors were evaluated including occlusion and retention (Fig 9). A post insertion check was done at 24 hours, 76 hours, one week and one month. The patient was satisfied with his denture both in fit and function.



Figure 1 Deviated occlusion due to faulty centric registration



Figure 2 Existing lower prosthesis with circled area denoting lack of peripheral extension



Figure 3 Removal of occlusal units from lower complete denture



Figure 4 Jaw relations using lower new wax rims with existing upper complete denture



Figure 5 Modelling clay molded and inserted for remount cast



Figure 6 Trial lower denture in mouth



Figure 7 Border molded lower trial denture for correct peripheral extensions



Figure 8 Reline impression on lower trial dentures



Figure 9 Final dentures after insertion

DISCUSSION

The dental profession should be alert in all phases of construction in complete dentures. One of the most important objective of treating a complete denture is to get a comfort in masticatory function. Accurate registration of the impression and edentulous jaw relationships are mandatory to obtain these objectives. Centric relation is of utmost importance and is also considered as a start point from which all other movements (eccentric) are made. It is in this step where most of the dentist could go wrong. It may be attributed to the lack of experience, knowledge or ignoring the importance of these steps in fabrication of a complete denture prosthesis. Dentist quite often ignore the importance of extension of denture bases till the seal areas. It is mandatory to extend the lower dentures onto the retromolar pad area so that it would give a good retention and as well as stability (Sharma *et al*, 2016; Pietrokovski *et al*, 2007).

Massad JJ *et al*, (2004) constructed an occlusal device to rectify the existing vertical dimension and centric relation in a complete denture patient with existing prosthesis for neuromuscular deprogramming of habitual mandibular posturing influenced by the malocclusion of existing ill-fitting complete dentures, and also to facilitate diagnostic evaluation of the patient's esthetic, phonetic, and functional tolerance of maxillomandibular relationship proposed for complete denture therapy. Butcha AN *et al* (2018) have explored influence of the methods used to obtain the centric relation on stomatognathic system based on patient's satisfaction. They concluded that Gothic arch tracing gave the best result than the conventional method. However; Gothic arch tracing is time consuming and technique sensitive and may not be feasible in routine and busy clinical practices.

The world of dentistry is now emerged into digitalization. Qu F *et al* (2018) described an appliance fabricated by CAD-CAM and 3D printing to combine definitive impression making and centric relation recording into a single step while Goodacre BJ *et al* (2012) used intraoral scanner to digitally record centric relation from existing denture to replicate the tooth position and denture base morphologies into a new denture. But these type of methods are quite expensive and need further documentations. Critchlow SB *et al* (2012) reported inadequate impressions and denture extensions onto the retromolar pad region as one of the reasons for patient dissatisfaction. In this patient, the lower denture was good in its adaptability and other factors but was not extended onto the retromolar pad region which was the reason for its looseness.

In this article, we have described how to rectify a faulty centric relation and extend the lower denture to its correct peripheral extensions. The advantage of doing this could be a reduced financial burden on the patient and also a psychologic benefit of having their own old dentures in terms of its adaptation. However; these type of procedures require a careful evaluation on existing prosthesis for factors such as esthetics, retention, stability, satisfaction etc. If these factors are not met then it is better to remake a new denture.

CONCLUSION

The case discussed here is one among many cases happening all over the world. It is the duty of every dentist to be

responsible in their work. Ignorance and lack of knowledge in what they do can lead to loss of faith in doctors by the patient. Here the patient was quite cooperative throughout the treatment process. The patient was followed up for one year and the results were satisfactory. It is we the dental professionals, who have to maintain the high standards in treating a complete denture patient and these types of treatment protocols could be considered as and when necessary in their practice. Dentist especially the youngsters should be careful in selecting and treating complete denture cases, which would further help in gaining patient confidence.

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