



## Unique Journal of Medical and Dental Sciences

Available online: [www.ujconline.net](http://www.ujconline.net)

### Case Report

# MANAGEMENT OF BRUXISM USING UNCONVENTIONAL COMPLETE DENTURE: A CASE REPORT

Arora Sheen J<sup>1\*</sup>, Arora Aman<sup>2</sup>, Khullar Anika<sup>3</sup>

Reader, Department of Prosthodontics, D.A.V. Dental College, Yamuna Nagar, Haryana, India  
 Professor and Head, Department of Prosthodontics, D.A.V. Dental College, Yamuna Nagar, Haryana, India  
 P.G. student, Department of Prosthodontics, D.A.V. Dental College, Yamuna Nagar, Haryana, India

Received: 02-10-2014; Revised: 31-10-2014; Accepted: 30-11-2014

\*Corresponding Author: **Dr. SHEEN J ARORA**

Reader, Dept of Prosthodontics, D.A.V. Dental College, Yamuna Nagar, Haryana Mobile: 09996322300

## ABSTRACT

Completely edentulous patients frequently suffer from various problems, thereby making the treatment quite complicated and this often results in patient remaining unsatisfied with the final treatment outcome. Routine complications faced by the dentist include atrophic ridge, microstomia, flabby tissue, xerostomia, bony exostosis, esthetic demand, bruxism, systemic disorders, patient's demand for duplicating dentures etc. Management of these difficulties can be done by proper incorporation of suitable materials and advanced techniques. Very frequently, patients seem to suffer from bruxism, a para functional habit, which can interfere with the successful outcome of the complete denture treatment. The most frequent problem encountered by these patients is the repeated fracture of the maxillary complete denture caused by flexural fatigue. Metal bases are ideal for maxillary dentures subjected to severe mechanical stresses in bruxing patients. This article describes the unconventional approach for a bruxer so as to provide ultimate satisfaction for the patient.

**Keywords:** Bruxism, complete denture, midline fracture of dentures, metal denture base, temporo mandibular disorders, facial esthetics.

## INTRODUCTION

Bruxism is defined as "an oral habit wherein involuntary rhythmic or spasmodic non-functional gnashing, grinding or clenching of teeth occurs." While not a life threatening condition, chronic bruxism often impairs the quality of life of affected individuals. As the teeth wear out, they become shorter. As a result, when the mouth is closed, the upper and lower jaws are nearer than they used to be, and so are the nose and the chin. The skin now may bag below the eyes and curl around the lips, causing the lips to seemingly disappear. The chin recedes, and the person looks comparatively old<sup>1</sup>. Long term bruxers sometimes experience jaw tenderness, jaw pain, fatigue of facial muscles, headaches, neck aches, tinnitus, ear aches and hearing loss<sup>2</sup>. Another complication involves the occasional inflammation and blockage of some salivary glands<sup>3</sup>. In this case, the masseter muscle becomes disproportionately overdeveloped and block the opening of nearby parotid gland. Thus, they interfere with the flow of saliva into the mouth, causing the saliva to accumulate in the glands. This in turn may lead to periodical swelling, pain, inflammation and abnormal dryness of the mouth. Bruxism

may also damage the temporo mandibular joints<sup>4,5</sup>. Chronic bruxism may induce temporo mandibular disorders (TMDs). TMDs are often associated with chronic pain which may last for months or years. Bruxism may affect elderly individuals as well. The complications listed above can subsequently affect the satisfactory outcome of the complete denture treatment. Therefore, attempts should be made for improving the quality of treatment to such patients.

Poly methyl methacrylate (PMMA) denture bases have good mechanical, biological and aesthetic properties. However, they may fail because of excessive para functional and/or functional forces (in cases of bruxism and/or complete dentures opposing natural mandibular teeth). In such circumstances, metals or metal alloys can be used to strengthen the denture bases<sup>6</sup>. These thin metallic bases have several advantages, besides rigidity and fracture resistance, like excellent strength, good adaptation to the supporting tissues, enhanced control of denture plaque, high thermal conductivity, high biocompatibility, no dimensional changes in time through fluids absorption and no interferences with phonation<sup>7,8</sup>. Various approaches such as use of metal bases, wires, bars, and high impact acrylic resin reduces the

incidence of midline fracture. In this article, a treatment approach in a bruxing complete denture wearer is described.

#### CLINICAL REPORT

A 60 year old male patient, who had been a denture wearer since four years reported to our department with the chief complaint of recurrent fracture of the upper denture and inability to eat from his current denture. (Fig 1, 2, 3) Patient was also quite concerned about his looks and complained of looking older than his actual age. On taking the detailed history, accompanying family members stated that the patient remained quite anxious all the time and wore his dentures throughout day and night. Also they revealed that he had the habit of grinding his teeth not only during sleep but also during the day. Denture examination revealed completely flattened occlusal surfaces resulting in decreased vertical dimension. This resulted in decreased lower facial height of the patient. Also, the denture was repaired several times from the midline. These repeated repairs alongwith wear of the occlusal surfaces resulted in extreme discomfort to the patient. Clinical functional analysis revealed no signs or symptoms of temporomandibular disorders. The patient was advised to remove his dentures during the night. After thorough examination, a complete denture with metal denture base was planned for maxillary arch. A maxillary metal base cast from Ni – Cr alloy was chosen to enhance the physical properties.

#### CLINICAL PROCEDURE

##### Primary impression procedure

Preliminary impressions for maxillary and mandibular arches were made using impression compound (DPI Pinnacle, Mumbai, India) to record the anatomical and the limiting structures in both the arches and the primary casts were obtained.

##### Secondary impression procedure

Custom trays were fabricated in the usual manner and border moulding was carried out conventionally using low-fusing impression compound (DPI Pinnacle, Mumbai, India). The final impression was made using zinc-oxide impression paste (DPI Pinnacle, Mumbai, India). The final casts were obtained.

##### Construction of metal framework for maxillary arch

The refractory maxillary cast was obtained over which wax pattern was made and investing and casting procedures were carried out. Metal framework was then finished and polished.

##### Framework trial

The metal framework so obtained was tried in patient's mouth was checked for the stability and extensions upto the posterior palatal seal area.

##### Jaw relations and try-in

Maxillomandibular relationships were recorded and articulation was done followed by teeth arrangement and try-in in the conventional manner. Special attention was given during both these appointments on the esthetics and phonetics of the patient. After the patient had approved of the trial, further procedures of processing the denture were carried out.

##### Processing of the denture

The regular protocol of flasking and dewaxing procedure was carried out. Before packing, the metal framework was placed on the maxillary cast and acrylization procedure was completed (Fig 4).



Figure 1: Excessive wear of acrylic resin complete denture teeth due to heavy bruxism



Figure 2: Fracture of maxillary poly methyl methacrylate denture base under severe mechanical stress



Figure 3: Pre operative Extra oral view of the Patient



Figure 4: Maxillary complete denture with metal base

The prosthesis was finished, polished and delivered. The regular follow up for one year has been uneventful (Fig 5).



Figure 5: Post operative Extra oral view of the Patient

## DISCUSSION

The fracture of complete denture is a common occurrence. Occlusal problems and denture-base fractures which are commonly seen due to the result of one or all of the following:

- (1) The position of the mandibular teeth, which may not be properly aligned for the bilateral balance needed for stability,
- (2) High palatal vault,
- (3) Limited manual dexterity of the patient, and
- (4) Flexure of the denture base<sup>9</sup>.

There are several methods to increase the resistance to mechanical stress of a maxillary denture base. Materials used for metal denture base are Chromium-cobalt (most retentive), aluminium, nickel – chromium, titanium, gold. In a patient with recurrent fractures of the denture, the clinician must treat the patient using either a metal base (casted Cr-Co alloy or titanium, galvanoformed pure gold) or a PMMA base reinforced with wire netting, carbon fibre, glass fibre or ultra-high modulus polyethylene<sup>10,11</sup>. Indications include deep palatal vault, prominent residual ridges, when additional strength is needed because stresses are concentrated over small parts of denture, shallow flat palates and mentally compromised patients who may drop their denture.

In the present case, the patient was day and night bruxer and increased para functional forces led to worn down acrylic resin teeth, hence decreased masticatory efficiency and consequently decrease in the vertical dimension of the patient. The patient was even disturbed with his looks because of drooping of the corners of the mouth and decreased lip support. As the teeth wear out, they become shorter. As a result, when the mouth was closed, the upper and lower jaws were nearer than they used to be, and so are the nose and the chin. The skin bagged below the eyes and curled around the lips, causing the lips to seemingly disappear. All this resulted in the aged look of the patient. History of frequent fracture of maxillary acrylic denture alongwith patient's concern about the facial esthetics, led to the decision in favour of a metal denture base. Hence in this case, special attention was kept in mind to enhance the facial esthetics of the patient along with keeping the mechanical considerations of the maxillary denture in mind.

A critical point of the metal dental base was the interface between metal and acrylic resin. Improper positioning of metal-resin finish lines can affect phonetics and its incorrect design may adversely influence the mechanical behaviour of the adjoining acrylic. A butt joint was created palatal to the crest at the junction of acrylic and metal that enhances the strength of the metal acrylic junction. Anatomic acrylic resin teeth have been selected to prevent rapid bone resorption of the residual ridges and to avoid chipping/fracture that often appears in porcelain artificial teeth.

The metal denture base fabrication has certain disadvantages including high cost as compared to acrylic resins, difficult refitting of the denture and the technique is more time-consuming than those for making plastic base dentures. However, the advantages seem to outweigh the disadvantages.

## CONCLUSION

Metal denture base decreases the amount of bone resorption, increases stability, retention, provides a close adaption to the underlying tissue, eliminates the acrylic denture-induced allergic reactions, avoids microbial colonization and decreases its susceptibility to fungal growth.

Metal denture bases are ideal for maxillary dentures subjected to severe mechanical stresses. In addition the patient should be well instructed and cautioned regarding wearing of dentures during night. Also the dentist plays a major role in decreasing awake bruxism by making the patient aware of it and reinforcing the management of psychogenic stress through biofeedback and relaxation techniques.

## REFERENCES

1. Schlott WJ. Midface collapse: an overlooked disease. *Dentistry Today*. 1997;16(9): 54-7
2. Bubon MS. Documented instance of restored conducting hearing loss. *Functional Orthodontist*. 1995; 12: 26-9
3. Mehta, Noshir. Muscular Disorders. In Kaplan, AS & Assael, LA. *Temporomandibular disorders*. Philadelphia: Saunders, pp. 118-141.
4. Glaros AG, Tabacchi KN & Glass EG. Effect of parafunctional clenching on TMD pain. *Journal of orofacial pain*. 1998; 12: 145-52
5. Israel HA. The relationship between parafunctional masticatory activity and arthroscopically diagnosed temporomandibular joint pathology. *Journal of oral and maxillofacial surgery*. 1999; 57(9): 1034-9
6. Ohkubo C, Kurtz KS, Suzuki Y, Hanatani S, Abe M, Hosoi T. Comparative study of maxillary complete dentures constructed of metal base and metal structure framework. *Journal of Oral Rehabilitation* 2001; 28: 149-156
7. Da Silva L, Martinez A, Rilo B, Santana U. Titanium for removable denture bases. *J Oral Rehabil* 2000; 27: 131-5.
8. Satyabodh Guttal, Narendra P. Patil. Cast titanium overlay denture for a geriatric patient with a reduced vertical dimension. *Case report. Gerodontology* 2005; 22: 242-245.
9. Rai N, Pal B, Shivashankar M, Jagadeesh, Kashinatha HM. Single metal base complete denture – a case report. *Journal of Dentistry and Oral Biosciences* 2012; 3(1): 14-17.
10. Schneider RL, Stokes JL, LaDuke D. Design and fabrication technique for metal palates in maxillary complete dentures. *J Dent Technol* 2000; 17: 8-11.
11. Karacaer O, Dogan OM, Tincer T & al. - Reinforcement of maxillary dentures with silane-treated ultra high modulus polyethylene fibers. *J Oral Sci* 2001; 43: 103-107.

Source of support: Nil, Conflict of interest: None Declared