MANAGEMENT OF SINGLE MANDIBULAR COMPLETE DENTURE WITH CUSTOM METAL MESH – A CASE REPORT

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ABSTRACT

It is very common to find maxillary single edentulous arch, but there are certain cases where edentulous arch is found to be Mandibular and this type of single complete dentures suffer greater pressures as the basal seat area available is limited and the opposing arch consists more or less of natural teeth. As the forces acting by the opposing natural teeth will be more on the denture, only heat cure acrylic resin would not withstand flexural strength and can lead to fracture. In the present case report Mandibular single complete denture was rehabilitated successfully by custom metal mesh with stoppers.

KEYWORDS: Single Complete denture, metal mesh, flexural strength

INTRODUCTION

Patients who has become entirely edentulous in one jaw and retaining either or all or some of natural teeth in the others is not uncommon. Neither is it uncommon to find that the successful complete denture for such a patient is often very difficult and on occasions virtually impossible. Several difficulties are encountered in providing a successful single complete denture.

It is very common to find maxillary single edentulous arch, but there are certain cases where edentulous arch is found to be Mandibular and this type of single complete dentures suffer greater pressures as the basal seat area available is limited and the opposing arch consists more or less of natural teeth. There are many factors which play an important role in the success of the outcome of the prosthesis.

The first is related to firmness and rigidity with which the natural teeth are retained in the bone and the magnitude of the force they can resist or deliver n without discomfort or displacement. This force has been recorded as high as 198 lb on single molar teeth. This is in sharp contrast with the force which a complete denture, resting simply on the delicate mucosa of the ridge can resist or deliver. This force has been established as being a maximum static load of 26 lb.

The second reason is related to the occlusal form of the remaining natural teeth, which will of necessity dictate the occlusal form of the denture. The natural teeth may be supraerupted or tilted and their cusps high and sharp. As a result, occlusion and articulation will involve contacting of the inclined planes of the cusps in such a way that the denture will continually be thrust or dragged horizontally on the ridge.

CASE REPORT

A 65 year old male patient reported to the department of the Prosthodontics, K.M Shah Dental College & Hospital, Vadodara with a diagnosis of Mandibular completely edentulous arch. Primary impression for the maxillary arch was made with irreversible hydrocolloid and poured with dental stone. For the Mandibular arch primary impression was made with impression compound and poured with dental plaster. Secondary impressions were made with low fusing compound and washed with zinc oxide eugenol paste and poured with dental plaster.

Refractory cast was made by duplicating master cast with agar with wax spacer on the ridge to allow space for the acrylic with stoppers. Wax pattern for the mesh was adapted on the refractory cast and sprued (Fig.1) and invested with the phosphate bonded investment material. Casting was done with cobalt chromium alloy according to the standard protocol and final finishing and polishing was done once obtained (Fig.2). Simultaneously jaw relations were made and try in was done. For the maxillary partial denture fabrication procedure was similar as for the conventional. For the Mandibular denture once the dewaxing procedure was done cast metal mesh was adapted on the ridge of the master cast and was

Memon et al. EJDTR, 2013:2:137-139
evaluated for the complete closure of the flask. Once it was confirmed then the mesh was stabilized with heat cure acrylic resin so that it cannot move at time of packing. Heat cure acrylic resin was mixed and at dough it was flaked. Long curing cycle was performed for the fabrication of the dentures. Maxillary and Mandibular denture were retrieved and finishing and polishing was done before insertion and the stops were clearly seen on the tissue surface area (Fig. 3). Then it was tried into the patient and insertion was done with post insertion instructions (Fig. 4).

DISCUSSION

When a complete denture is opposed by natural teeth, it will require some degree of contouring to provide a harmonious occlusion as there is unfavourable inclination of the occlusal plane, malpositioned individual teeth which have assumed positions resulting excessively steep cuspal inclinations, and wide buccolingual width of the natural teeth.

In complete denture the teeth and the base functions as one unit and force exerted against any tooth in an unfavourable direction dislodges the whole denture. Dentures remain stable only when forces exerted against the teeth are directed favourably to the base support. Horizontal thrust not only tends to dislodge the dentures but also tends to destroy the residual ridge.
Fracture of the denture is more common failure of the single complete denture. Because of the high forces acting on the denture leads to stress propagation which will further lead to crack and finally causing fracture. The midline fracture in a denture is often a result of flexural fatigue. Though poly Methyl Metha Acrylate denture bases have good mechanical, biological and esthetic properties, the impact and fatigue strength of PMMA are not entirely satisfactory, thus may fail when there is excessive parafunctional and/or functional forces.

A cast metal base reduces functional deformation and thrust to the supporting tissues occurring in the anterior part of mandible. Besides rigidity and fracture resistance these metal bases have several other advantages like excellent strength to volume ratio, good adaptation to the supporting tissues, enhanced plaque control, high thermal conductivity, very little dimensional changes in time through fluid absorption.

CONCLUSION

In this case report Mandibular custom metal mesh was strong to resist catastrophic failure and flexural fatigue if PMMA was to be used as denture base. The metal mesh are good thermal conductors and less bulky. There would be no propagation of crack from the deep labial notch as well. Metal mesh in the Mandibular denture has an added advantage as it increases the strength and durability of the denture with patient satisfaction.

REFERENCES