Case Report

Metal Base Single Complete Denture -A Case Report

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Abstract

The most commonly used material in the fabrication of complete dentures is polymers. They are used due to their aesthetic, biological properties, and minimal expenses. They can be used for many techniques. However, there are some situations in which these bases are not recommended, for though cases metals and metal alloys are used as denture base material. Metal dentures serve as a promising treatment in rehabilitation

***Keywords**: Polymers, Biological Properties, Metal Alloys.*

Introduction

The situations in which polymers are not recommended include patients with neuromuscular disorders **(**1**)** and a patient who has become entirely edentulous in one jaw while retaining either all or some of his natural teeth in the other jaw **(**3**).** Besides polymers, many other materials such as polyamide, glass fibers, carbon fibers, epoxy resins, polystyrene can also be used **(**4**)**.

Clinical Report

A 65 years old male, reported with a chief complaint of inability to chew food due to missing teeth in the maxillary arch. The patient came in with a midline fracture of maxillary denture and complaint of repeated fracture of a maxillary denture.

Intra-oral examination revealed missing 31, 32, 41,42,46 but the patient was not willing to replace mandibular teeth. The hard palate was found to be flat **(Figure-1)**. The patient was co-operative and philosophical according to House classification2. The patient was given different treatment options including implant-supported overdenture but he opted for the economical treatment that is single denture with a metal denture base.

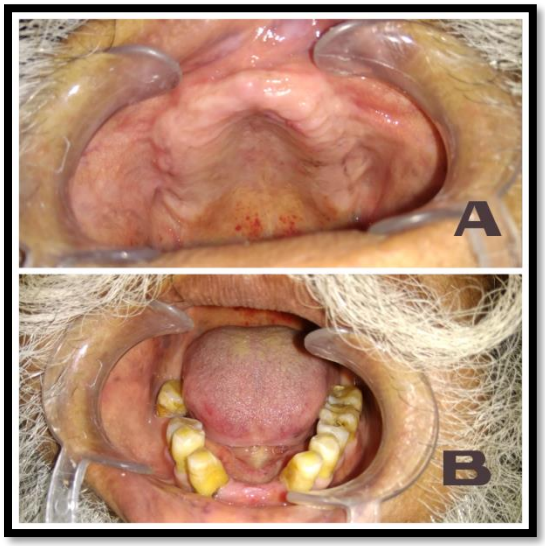

Figure -1(intraorally, A-Maxilla B-Mandible)

Procedure

The primary impression was made, maxillary with impression compound and mandible with irreversible hydrocolloid **(Figure- 2)**. The impressions were washed and poured with the dental plaster.

Figure-2 (preliminary impressions)

Fabrication of custom tray with auto-polymerizing acrylic resin. Border moulding was performed with a green stick and secondary impression made with Zinc oxide Eugenol. The master cast was made with type IV gypsum products. The master cast was duplicated with alginate and a refractory cast was poured with phosphate bonded investment material **(Figure-3).**

Figure-3 (A -Refractory cast, B- Relief area in master cast before pouring refractory cast)

On the refractory cast, the denture base pattern wax was adapted and the sprues were attached & invested **(Figure-4A)**. The denture base was cast. The denture base covered the palate in the maxillary cast and retentive loops extending on the ridges for mechanical retention of acrylic resin and teeth to the metal **(Figure-4B)**.

Figure-4(A- wax pattern, B-denture base cast)

Occlusal rims were fabricated, fitted, and adjusted. After verification, Teeth were arranged in centric occlusion so that the centric relation records could be verified and try–in done**.**

Wax-up was completed and dewaxing of the trial denture was done. The metal framework of the denture bases was placed on their respective casts then proceeds with the acrylization using heat cure denture base material. Trimming, finishing, and polishing was done for maxillary dentures with metal base**. (Figure-5)**

Figure-5(Finished denture)

Then insertion of the maxillary denture with a metal base was done and delivered to the patient and instructions were given to the patients for the proper care and maintenance of the denture**. (Figure-6)**

Figure-6(Denture insertion is done)

Discussion

Midline fracture of the denture is common in a single complete denture. This is due to flexural fatigue and impact failure. Flexural fatigue leads to cyclic deformation of the denture base. This is also aggravated by certain stress concentration areas, such as high frenula attachment, lack of inadequate relief, thin or under extended flanges **(**4**)**. Cyclic deformation ultimately leads to fracture of the denture.

Advantages **(**5**)**

1. Very rigid.

2. High thermal conductivity.

3. Stable form.

4. High abrasion resistance.

5. Less porous than plastic and therefore easier to clean.

Disadvantage (6)

1.Cost: The metal base denture increases the cost to the patient.

2.Time: Metal base fabrication can add 5 to 10 laboratory working days.

3.Relining/rebasing: It is rather difficult to reline metal-base dentures.

4. Allergy: Allergies to non-precious metal base materials have been reported with an estimated frequency of 10% in women and 1% in men **(7)**.

Conclusion

Metal bases for complete dentures have been used successfully and provide many advantages over the more commonly used acrylic resin. Though, by incorporating metal into the denture, the weight of the denture is increased. The added weight may also contribute to lower denture stability.

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