

## Case Report

# DENTURE SHORE UP WITH METAL TO IMPROVE SNUG ZONE

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### ARTICLE INFO



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### ABSTRACT

There are various materials used for denture fabrication but, each material has certain limitations. Metal reinforced denture is an alternative to conventional acrylic resin. This material has superior physical properties and also aid in conserving the basal seat of the denture.

### Introduction

Metal denture can be used in various clinical situations. As this base are thin, stronger, greater resistance to fatigue and even good thermal conductor. Studies have concluded that the most important factor for adequate distribution of stress to the supporting tissue is depended only on the ability of the denture base to resist deformation. Denture with metal inserts exhibit lesser deformation than plastic denture during mastication.<sup>1</sup> Cast metal bases can made of aluminium alloy, gold, cobalt chromium alloy and nickel chromium alloy and titanium.

The aluminium alloy used in many dentures has 2-4% magnesium and 5% silicone. The physical

properties of aluminium alloy in dentistry is of 2.66,brinell hardness is 60-68,melting range of this alloy is 580-640 degree Celsius and ultimate tensile strength is 9.6ton per square inch. The denture cast with aluminium alloy is as light as acrylic resin and is indicated especially when bad retentive factors exists.18-20 carat gold was alloyed with silver and teeth were attached by riveting. Hard and soft type of gold was used which has a density of 15,the hardness of soft gold is 138 and hard is 210.the melting range of

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PRIMARY AND SECONDARY IMPRESSION



GOTHIC ARCH



WAX PATTERN AND SPURE ATTACHMENT



PROTRUSIVE CONTACT



LATERAL CONTACT



FACEBOW TRANSFER



LATERAL CONTACT



TRY -IN WITH FRAMEWORK



MOUNTING



INSERTION



TRACING OBTAINING RECORD



FINAL PROSTHESIS

gold is 875-980 degree Celsius. Gold metal inserts for denture can be a choice for resorbed mandibular residual ridges. The ultimate tensile strength of soft gold is 26 and hard is 49 ton per square inch. Cobalt chromium has density of 8.2-8.6gm/cm<sup>3</sup> and brinell hardness of 280, melting range of alloy 1270-

1305 degree Celsius and ultimate tensile strength is 49 tons per square inch.<sup>2</sup>

**Advantages** of using metal inserts as bases:

- 1) Metal base is stronger and is subjected to less breakage.
- 2) It prevents warpage during processing,

- 3) Metal reinforced denture reduces denture fracture caused by extensive biting,
- 4) Metal bases are rigid and have excellent strength to volume ratio
- 5) Metal bases have good adaptation to tissues.
- 6) Metal bases have being considered as good thermal conductor as it reduces burning on intake of cold liquid and food
- 7) Metal inserts in denture reduces burning as it eliminates the allergic response of methyl methacrylate material.<sup>3</sup>
- 8) Metal bases avoid bacterial colonization and denture induced candidiasis associated with methyl methacrylate denture base resin,
- 9) High thermal conductivity exhibited by metal bases improves the health of the tissues,
- 10) Metal denture replicate accurate details and exhibit better fitting when compared to acrylic resin.<sup>4</sup>
- 11) Hygiene maintenance is easy for complete denture with metal inserts and there is less chance of fungal growth.
- 12) Metal denture base does not interfere with phonation<sup>5</sup>
- 13) Metal denture bases causes less sore spots
- 14) Metal denture base deform less during lateral mandibular function
- 15) Less tissue changes occur with metal bases as denture.

**Disadvantage:**

- 1) High cost
- 2) Difficulty in rebasing
- 3) Increased time consumption for denture fabrication.
- 4) Aesthetic quality is compromised<sup>6</sup>

**Case report**

A male patient was wearing denture since 6years and reported with the chief complaint of unable to sense the taste of food with resin based denture material.so, as an alternative metal reinforced denture was planned. Primary impression was made and cast was poured. A special tray was constructed and border moulding was done. The obtained master cast was duplicated and poured with refractory material (wirovest). The stippled casting wax of 30 gauge was adapted on the palatal surface of refractory cast and on the residual ridge surface the ready-made shapes grid or mesh form casting wax was adapted. After completion of the framework it was spurred with Wax and casting was done. After finishing and polishing metal try in was done after which permanent record base is fabricated followed occlusal rim and record bases. Face bow transfer was done transferred to the Hanau articulator and mounting was done. Extra oral tracers were attached and tracing was done. Once the tracing is completed centric and protrusive records were registered and programming of the articulator was done. The condylar path inclination value was 30 degrees, the Bennett angle was 15 degrees and incisal guidance table was adjusted accordingly following which teeth was arranged in balanced occlusion and try in was done. After completion of try in the denture was processed and insertion was done.

**Discussion:**

Metal denture base decreases the amount of bone resorption, has high thermal conductivity and provides close adaptation to tissues. As the patient was uncomfortable with the acrylic denture base and chief complaint was unable to sense the taste of food.so, metal denture base can be a preferred choice for this type of patients. Regli and gaskill had concluded that

even metal denture base exhibit adequate distribution of stress to supporting tissues and prevent ridge resorption.<sup>1</sup> Other denture base materials are resin material, reinforced resin, resin with modified chemical structures and thermoplastic resin. Cobalt chromium alloy was used for the metal framework because of superior physical property. The occlusal scheme pursued was balanced occlusion as asymmetric arrow point tracing was obtained, the reason may be inhibition of forward movement of the condyle either on left or right side. Other forms of arrow point tracing are typical, flat form, miniature arrow point, double arrow point, dorsally extended arrow point, interrupted Gothic arch form and atypical form. Balanced occlusion enhances stability and also prevents residual ridge resorption and also help for better distribution of stress. Hence, the metal denture base with balanced occlusion was constructed for this patient.

**Conclusion:** Metal denture base is an alternative treatment option to acrylic denture as it provides physical and psychological boost to the patient and has low or no tendency for resorption.

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