Research Article

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Customized Occlusion for Single Complete Denture: Clinical Experience and Review

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ABSTRACT

Background: For successful complete denture depends on many situations, but there are most common three factors in terms of functional success: retention, stability, and support. Out of three factors, generally agreed that stability is the most important factor. Single complete denture (SCD) opposing natural dentition is a common occurrence in clinical practice.[2] Malposed, tipped or supra-erupted teeth in the opposing arch is a perplexing problem in achieving harmonious balanced occlusion in single complete denture. Fabrication of single complete denture is challenging to achieving harmonious occlusion because the occlusal plane is a primary objective of any restorative procedure to facilitate natural mandibular movements and mastication. This clinical report describes establishing normal plane of occlusion with the help of custom-made occlusal plane in maxillary and mandibular single complete denture by author, single handedly. It described about the material involved and techniques performed for the same, to get more harmonious occlusion. It concludes with the comparison of various technique.

Keywords: Single complete denture, Customized occlusion.

INTRODUCTION

Acc. To winkler Single complete denture is a challenging clinical situation especially when the opposing natural dentition is not in a normal plane of occlusion. Mal-aligned, tilted or supra-erupted teeth in the opposing arch are some of the problems that should be corrected to achieve a balanced occlusion in patients who require SCD.[1] Balanced occlusion is bilateral, simultaneous, anterior, and posterior occlusal contact of teeth in centric and eccentric positions.[2] It is improve the stability of the dentures during all the functional and parafunctional movements. Improper occlusion produce variety of denture related problem like lack of retention, improper stability, mucosal inflammation, soreness, bone resorption and ultimately leading to patient's dissatisfaction patient.

MATERIALS AND METHODS

In this paper four techniques were performed by single operator with different occlusal scheme:

1. Customized occlusal with functionally generated path
2. Customized occlusal with Three-fourths metal crowns
3. Functionally generated path with metal reinforcement

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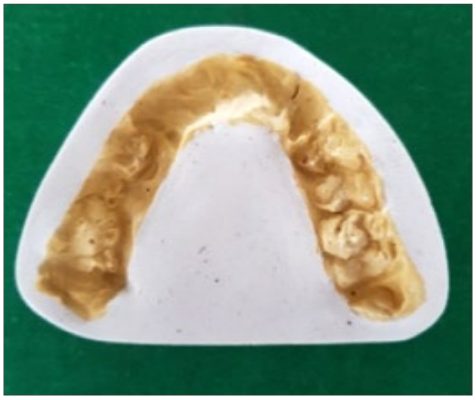
1. Customized occlusal with functionally generated path:[4]

This technique described by Meyer in 1959. It is used for record all dimensions of mandibular border movement. Preliminary impression taken with impression compound with non perforated tray. Impression poured with plaster and fabrication of custom tray with auto -polymerising resin (Asian acrlyalates), border moulding was performed with low-fusing compound (Dental Product of India; DPI) and the wash impression made with zinc oxide eugenol (DPI). The final cast was poured in dental stone and the denture base was constructed using auto-polymerising resin (DPI) over which a wax rim (DPI) was made and the jaw relation was recorded. The record was transferred onto the semi-adjustable articulator.

Selection of artificial teeth was made according to gender, personality and age (SPA) factors (acryrock); the arrangement was completed and preparation done on posterior teeth 1mm reduction on non- fuctional cusp and 1.5mm reduction on functional cusp. Functionally generated path was recorded by performing all mandibular movement with the help of aluwax. After recording all mandibular movement Stone index are prepared for established new occlusion.



Wax pattern fabrication occlusal surfaces for acrylic resin denture teeth for new occlusion. Wax pattern Try – In is done and than casting of the wax pattern metal framework fabricated.

These metal occlusals were cemented with auto-polymerising resin (pyrex). To reinforce the denture base, metal mesh was incorporated in the palatal region during packing of the denture. The denture was then finished by polishing. During denture delivery, selective grinding was performed to remove the interferences. The patient was given post-insertion instructions for maintenance of the denture.

2. **Customized occlusal with Three-fourths metal crowns:**[5]

In this thechnique Three-fourths metal occlusals were given for aesthetics, function and longevity. This technique given by Dr. Nivedita Panchore, Dr, Jayanti Patel et al in 2013.

Preliminary impression taken with impression compound with non perforated tray. Impression poured with plaster and fabrication of custom tray with auto -polymerising resin (Asian acrlyalates), border moulding was performed with low-fusing compound (Dental Product of India; DPI) and the wash impression made with zinc oxide eugenol (DPI). The final cast was poured in dental stone and the denture base was constructed using auto-polymerising resin (DPI) over which a wax rim (DPI) was made and the jaw relation was recorded. The record was transferred onto the semi-adjustable articulator.

Selection of artificial teeth was made according to gender, personality and age (SPA) factors (acryrock); the arrangement was completed and wax trial denture was approved by the patient. Then, three-fourths preparations were done on the posterior teeth of the trial denture. The wax pattern was fabricated, which was casted into metal. These metal occlusals were cemented with auto-polymerising resin (pyrex).

3. **Functionally generated path with metal reinforcement:**

Preliminary impression taken with impression compound with non perforated tray. Impression poured with plaster and fabrication of custom tray with auto -polymerising resin (Asian acrlyalates), border moulding was performed with low-fusing compound (Dental Product of India; DPI) and the wash impression made with zinc oxide eugenol (DPI). The final cast was poured in dental stone and the denture base was constructed using auto-polymerising resin (DPI) over which a wax rim (DPI) was made and the jaw relation was recorded. The record was transferred onto the semi-adjustable articulator.

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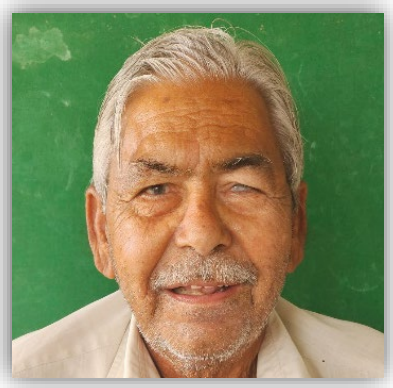

DISCUSSION

Single complete denture is defined as a complete denture that occludes against some or all of the natural teeth, a fixed restoration or a previously constructed removable partial denture or a complete denture.[1]

Loss of teeth has always been associated with ageing and is considered as one of the signs of aging. The single complete denture opposing all or some of the natural dentition is not an uncommon occurrence. The incidence of tooth loss is more in the maxillary arch compared to the mandibular arch. When designing a complete denture, the dentist has complete control over the articulation of teeth with the availability of various type of artificial teeth and occlusal concepts, but this is rarely the case with a single complete denture. Malposed, tipped or supra-erupted teeth or incorrect occlusal plane in already present fixed partial denture in the opposing arch is a problem in achieving a harmonious balanced occlusion in patients with a single complete denture.[1] Balanced occlusion is defined as a bilateral, simultaneous, anterior and posterior occlusal contact of teeth in centric and eccentric positions. It is developed for stability of denture bases in relation to supporting structures during functional and para-functional movements.[2] Lack of occlusal balance may lead to denture instability, mucosal soreness, tissue changes and accelerated ridge resorption. Another problem with the single complete denture is attrition wear of denture teeth if resin teeth are used and attrition of natural teeth if porcelain is used. In this situation, gold occlusals, interpenetrating polymer network and resin teeth with amalgam stops or resin teeth with metal occlusals have been tried as occlusal posterior tooth forms.[3] Metal occlusals wear less and cause less wear of opposing natural teeth. There are certain drawbacks like frequent prosthesis fracture, dislodgement, difficulty in obtaining occlusal balance and achieving satisfactory aesthetics (due to fixed position of the natural teeth).

The major disadvantage of acrylic teeth used in single complete denture opposing natural dentition is rapid wear of occlusal surfaces. This affects the vertical dimension of occlusion and tooth relationships, and results in increased horizontal stresses and their associated sequelae. The rate of wear also depends on the patient's functional and para-functional habits. Giving metal occlusals slows down and controls this wear.

CONCLUSION

Fabrication of complete denture is easier than fabrication of single complete denture. 'The development of a harmonious occlusion is most critical to the success of a single complete denture treatment. Functionally generated path technique record all movement and provide batter occlusion.

DECLARATION OF PATIENT CONSENT

The authors certify that they have obtained all appropriate patient consent form. In the form the patient(s) has/have given his/her/their consent for patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

CONFLICT OF INTEREST

The author declare no Conflict of Interest.

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