

Metal occlusal surface dentures: A Case Report

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Abstract

The wearing out of the occlusal surfaces of the acrylic teeth of a complete denture with its use over a period of time is a common phenomenon. Other factors which lead to the wearing of denture teeth are some unconditional forces & eating habits of the edentulous patients. Following a successful insertion of the complete denture with acrylic teeth the dentures were taken back from the patient & the occlusal surfaces have been modified with cast metal using the lost wax technique. The final restorations were cemented on the prepared plastic teeth. This article describes a simplified method for making cast metal occlusal surfaces & to improve the retention of the same with the underlying plastic structure.

KEYWORDS: Metal occlusal surface, customized occlusal surface dentures.

Introduction

Occlusal surfaces of posterior teeth of complete dentures that are harmonious with mandibular movement contribute to masticatory efficiency and stability of dentures. However, the rate of wear is dependent hugely on the dietary component of the patient. It has been observed that the rate of wear has been quite high in patients who predominantly have a non vegetarian diet or some bad habits like chewing tobacco. Historically, cast gold occlusal surfaces for complete or removable partial dentures have been fabricated with retentive loops or beads and then luted to prepared denture teeth.¹

Methods have been developed where acrylic resin is used first for the occlusal surfaces of posterior teeth, occlusal adjustments are carried out in the patient's mouth, and acrylic resin is then replaced by metal. However, conventional procedures make it difficult to convert occlusal surfaces of posterior artificial teeth to metal occlusal surfaces. One method includes removing occlusal surfaces of arranged resin teeth and making a wax pattern and a casting. Another method uses metal occlusal surfaces fabricated by making a core of adjusted resin occlusal surfaces. These methods, however, are relatively complicated, and it is often difficult to accurately reproduce the occlusion established in acrylic resin teeth.²⁻⁷

Clinical Report:

A 68 year old male patient reported with a chief complaint of worn out dentures. On taking the detailed history it was revealed that the patient had come for a third pair of complete denture in as many years. Furthermore, it was observed that the diet of the patient was purely non-vegetarian & habit of tobacco chewing reported. Pigmentation of the maxillary & mandibular ridge is also reported (Fig 1).

Examination of the dentures depicted that only the occlusal surfaces had severe wear pattern as opposed to the denture base which was normal(Fig 2). Clinical evaluation revealed dentures with good retention and stability but there was an associated loss of vertical dimension. It was diagnosed as a case of excessively worn out dentures because of dietary habits.



Fig 1. Maxillary & Mandibular ridge



Fig 2. Previous sets of dentures



Fig 3. New Dentures Articulated



Fig 4. Duplicated Dentures



Fig 5. Prepared occlusal surfaces of Max. denture



Fig 6. Wax patterns



Fig 7. Cementation of castings



Fig 8. Occlusal adjustment



Fig 9. Wax patterns



Fig 10. Prepared occlusal surface of mand. Denture with cemented castings.



Fig 11. Dentures inserted



Fig 12. Post Operative view

The treatment plan suggested to the patient was that of dentures with metallic occlusal surfaces considering his economic status and non compliance regarding the dietary habits.

Procedures: The complete denture was fabricated as per the routine procedure and was inserted. The patient was advised to use the denture for a couple of days as the metal occlusal surfaces are made after all adjustments are completed and occlusion is

harmonious. After the patient got adjusted to the new set of dentures, the laboratory procedure was initiated & the set of duplicated dentures were given to the patient. (Fig 3 & 4)

1. A new cast was poured with the recently made dentures.
2. The maxillary & mandibular complete denture (along with the centric records) mounted on the semiadjustable articulator.

3. Firstly the occlusal surfaces of all the posterior teeth of the maxillary denture teeth have been prepared, wax patterns fabricated & castings being done.(Fig 5 & 6)
4. After finishing & polishing the castings were cemented with resin modified glass ionomer cements. After this the occlusal adjustment were made with the mandibular denture. (Fig 7 & 8)
5. The posterior teeth of the mandibular denture are also prepared in the same manner & the castings were cemented to the denture with the help of resin cement. (Fig 9 & 10)
6. Occlusal adjustment has been done followed by the finishing & polishing of the dentures & the dentures were inserted. (Fig 11 & 12)

Discussion :

The technique described in this article is unique in many ways. Unlike other techniques no stone indexes were used to fabricate the wax patterns as one by one the occlusal surfaces of acrylic teeth were prepared and the wax patterns were adjusted to their opposing occlusal surfaces. As a result less occlusal adjustments were required in the final restorations. Additionally, individual units, not multiple units, were fabricated. Improved access to casting margins was provided so that the final finishing & polishing can be completed to near perfection. Moreover, while preparing the acrylic occlusal surface a small post space is also prepared to enhance the retention of the cemented casting. An esthetic concern for all techniques that advocate the use of metal occlusal surfaces is the display of metal while smiling and speaking.⁸ Frosting the metal with a light spray of a sand blaster can reduce the amount of light reflected , thereby making the metal less noticeable. Fabrication of metal occlusal surface for denture teeth is not a widespread practice considering that it has rare indications as depicted in this case. The need for such kind of modification is quite subjective and has its own sets of implications. Not only the forces of occlusion transferred to the bone, but also they cause the wearing of the denture teeth thus maintaining equilibrium.⁹ However in case of metal occlusion, bone would bear the brunt of forces & eventually resorb at a faster rate. Furthermore, correction of occlusion in such cases may be very tedious if the precautions are not carried out at the time of cementation of castings.

Summary & Conclusion:

The use of this combination is also effective with various ridge relationships & there is no specific occlusal scheme that needs to be followed for the same. Establishing metal occlusal surfaces for

dentures remains to be very subjective and needs a judicious treatment planning.

References :

1. Lloyd PM. Laboratory fabrication of gold occlusal surfaces for removable & implant supported prostheses". J Prosthodont 2003 Mar ; 12(1):8-12.
2. Wallace DH. The use of gold occlusal surfaces in complete & partial dentures. J Prosthet Dent 1964; 14: 326 – 33.
3. Koehne CL, Morrow RM. Construction of denture teeth with gold occlusal surfaces. J Prosthet Dent 1970; 23: 449 – 55.
4. Woodward JD,Gattozzi JG. Simplified gold occlusal technique for removable restoration. J Prosthet Dent 1972; 27: 447 – 50.
5. Elkins WE. Gold occlusal surfaces & organic occlusion in denture construction. J Prosthet Dent 1973; 30 : 94 – 8.
6. Rhoads JE, Rudd KD, Morrow RM. Dental laboratory procedures complete dentures.Vol 1, 2nd ed. St. Louis: CV Mosby;1986.
7. Hansen CA,Clark, Wright P. Simplified procedure for making gold occlusal surfaces on denture teeth. J Prosthet Dent 1994; 71: 413 – 6.
8. Schneider RL. Custom metal occlusal surfaces for acrylic resin denture teeth. J Prosthet Dent 1981; 46: 98 – 101.
9. Sheldon Winkler. Essentials of complete denture prosthodontics. 2nd edition.