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Case Report

A Novel Technique for Palatal Rugae Transfer to a Complete Denture: A Case Report

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ABSTRACT

Complete dentures should not only provide better function and aesthetics, but also should permit normal speech. Palatal rugae transfer is clinically significant because a palatal contour plays a very important role in phonetics. Proper contact between the tongue and the palate is always involved in the production of linguopalatal group of sounds. Patient usually gets easily adapted to the maxillary complete denture when the palatal contours are customized, which in turn will significantly reduce the time period for achieving proper pronunciation. This article describes a novel technique for palatal rugae transfer to a complete denture.

Key words: Palatal rugae, Rugae transfer, Phonetics, Linguopalatal sounds.

INTRODUCTION

A complete denture prosthesis should provide excellent functional efficiency, esthetics and comfort for the patient. Prosthodontists usually consider these three components with greater emphasis and so often neglects thorough evaluation of phonetics. Palatal rugae play a very important role in phonetics and also help forensic odontologists in the identification of a person along with other biological components. [1] Complete dentures should always be fabricated with the aim of complete restoration of patient's speech. Most of the patients have the ability to adapt their speech to the usual palatal contour of complete dentures with time, but some patients speech can be sensitive to the altered relationship of tongue with the palatal contour of the denture. This impedance in proper articulation can be alleviated by proper texturing on the palatal portion of the complete denture, especially by means of transferring palatal rugae to the complete denture.

Phonetics can be described in terms of two concepts, first one is the obstruction to create turbulence in the outgoing stream of air and the second one is that there should be some landmark where the tongue recognizes as the locale, where it produces the best particular sound. [2] This article describes a novel technique for palatal rugae transfer to a complete denture using putty silicone impression material.

CASE REPORT

A 58 year old male patient reported to the Department of Prosthodontics, with a chief complaint of unsatisfactory retention of upper denture and a broken lower denture. He was a school teacher by profession and had difficulty in pronouncing some syllables while using his old complete denture for the past 7 years (Fig 1, 2). Patient wanted a new denture with which he

could pronounce the syllables properly while teaching.

Technique

1. Maxillary and mandibular primary impressions were made using impression compound and custom trays for secondary impression were made using auto polymerizing acrylic resin.
2. Custom trays were then inserted in the patient's mouth and extensions were verified and corrected. Border moulding was then done using green stick compound and wash impression was taken using zinc oxide eugenol impression paste. (Fig 3)
3. Permanent denture bases were then made, followed by recording of jaw relations (Fig 4) and teeth arrangement in a semi adjustable articulator. (Fig 5)
4. After try-in stage, pattern of rugae was recorded from the patient using putty impression material. (Fig 6) The impression recorded the rugae pattern on either side of the midline along with the prominent incisive papilla.
5. The maxillary permanent denture base was then trimmed off without perforating the rugae area of the maxillary try-in denture, followed by addition of wax of about 1.5 mm thickness into this area, which was then merged with the permanent denture base.
6. The impression of rugae was then cut to the required dimensions and it was then pressed with sufficient finger pressure over the heat softened wax (Fig 7), so as to transfer the palatal rugae pattern using incisive papilla as the guide. (Fig 8)
7. While investing a mix of die stone was poured over the rugae region to preserve the finer details.
8. After dewaxing mould was then packed with heat cure acrylic resin and curing was done.
9. After curing and deflasking, trimming and polishing were done. The transferred details of the palatal rugae was thoroughly checked in the denture (Fig 9) followed by its insertion (Fig 10.) The patient was satisfied with the improved phonetics. (Fig 11)

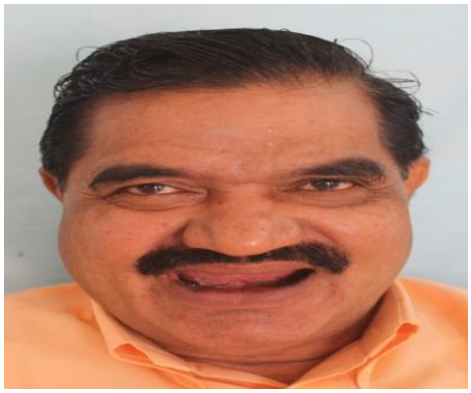

Figure 1: Pre operative frontal view

Figure 2: Pre operative view of maxillary ridge

Figure 3: Final impression

Figure 4: Facebow transfer

Figure 5: Trial denture in semi adjustable articulator

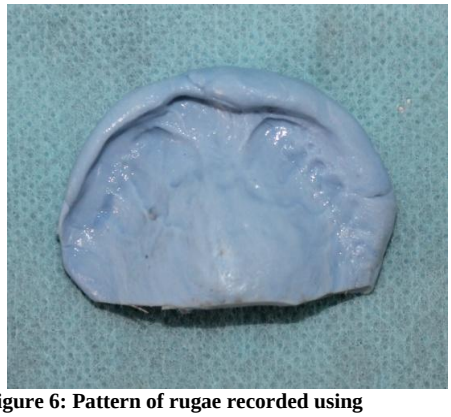

Figure 6: Pattern of rugae recorded using putty impression material

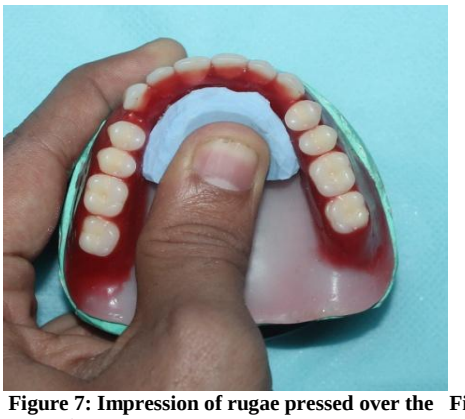

Figure 7: Impression of rugae pressed over the heat softened wax

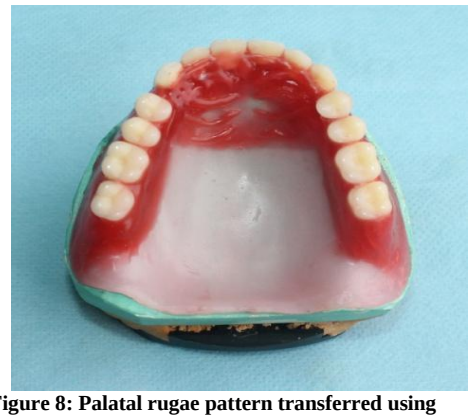

Figure 8: Palatal rugae pattern transferred using incisive papilla as guide

Figure 9: Maxillary denture with rugae in-situ

Figure 10: Final denture in patient's mouth

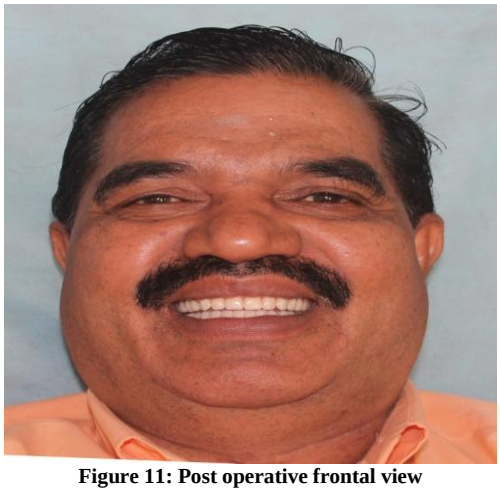

Figure 11: Post operative frontal view

DISCUSSION

During denture fabrication greater emphasis is given for esthetics, function and comfort while phonetic evaluation is generally neglected. [3,4] Most of the dentists assume that the patient would get successfully adapted to the new denture within a few weeks and the phonetic component will get automatically corrected. [5,6] In reality it takes a much longer duration to compensate for the changes in the palatal contours of the maxillary complete dentures, particularly for elderly patients. [7]

Unfortunately, some patients will never get adapted to the change in palatal contours of the maxillary denture and they continue to experience difficulties in pronouncing linguopalatal group of sounds, especially the sibilant sounds. [8]

By transferring the palatal rugae contour to the maxillary complete denture, the patient usually gets easily adapted to the new definitive contours of the denture, which in turn will shorten the time period for achieving proper pronunciation. [8] Several techniques are there for the transfer of palatal rugae contours, out of which arbitrary carving of the rugae is the simplest technique, but it is difficult and time consuming. Another technique is by metal plates formed by electroplating, which is also time consuming, technique sensitive, expensive and cannot be applied to acrylic complete dentures. Other methods use custom acrylic pattern, dental stone and tinfoil to duplicate the patients palatal contours. [7] But this article describes a simple technique to transfer the palatal rugae pattern using an elastomeric impression material.

CONCLUSION

Mechanics, esthetics and phonetics are three major factors in complete denture fabrication. Over the years mechanics and esthetics have improved significantly, but little has been done to improve phonetics. This major factor is mostly neglected because of the fact that most of the complete denture patients return to normal speech after a post - insertion period of about some days to several weeks. But some elderly patients find it impossible to get adapted to the palatal contours of new denture and continue to experience difficulty in pronouncing sibilant sounds. So it could be concluded that the palatal rugae transfer to complete dentures have an important role in phonetics. It can also be used in forensic odontology for identification of a person since the pattern of rugae is unique and individualistic.

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