



Dentures with Phonetically Contoured Palate: A Simple Technique of Adding Customized Rugae and Palatal Contours to the Maxillary Denture

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ABSTRACT

Speech is essential to human activity, therefore phonetics must be considered with mechanics and esthetics as the cardinal factors contributing to the success of the dental prosthesis. The aim of this following procedure is to produce dentures that are mechanically functional, esthetically pleasing and permit normal speech.

Keywords: Phonetically contoured palate, Customized rugae and palatal contours, Putty matrix, Vacuum formed thermoplastic resin former.

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INTRODUCTION

Speech is essential to human activity, therefore phonetics must be considered with mechanics and esthetics as the cardinal factors contributing to the success of the dental prosthesis. Palatal rugae contours have very important role in phonetics. In the production of various speech sounds, the tongue contacts various portions of the teeth, the alveolar ridge and the hard and soft palate.¹ For those patients who have difficulty with their speech patterns accommodating to the introduction of prosthesis, texture in the palatal region may prove helpful.² Most of the prosthodontic literature on phonetic research has been concerned with the positioning of the artificial teeth and vertical dimension of occlusion. Little scientific study has been reported that relates the speech changes to palatal contour of complete denture.

The production of palatolingual group of sounds involves firm contact of the tip of the tongue against the rugae. When

these rugae and the hard palate are covered by the denture, proprioceptive feedback may be changed. Therefore phonetics may be affected by the presence of denture. Copying of the rugae on the palatal surface of the denture reduces this problem.³

Accurate approximation of palatal contours of a maxillary complete denture to patient's tongue can improve intelligibility, if other factors such as tooth position, occlusal plane and vertical dimension are satisfactory.⁴

A method for functionally modifying the contour of the palatal vault of maxillary complete denture can be achieved at the trial stage of denture construction and incorporated in the finished denture.⁵ Artificial duplication can be done using corrugated metal plates, plastic palate forms, free hand wax carving of anatomical palate forms etc. These artificial rugae may cause interference with speech if they are made too prominent.⁶

The use of ribbed features, when made from a significantly stiffer material and designed to mimic palatal rugae, offer an acceptable method of providing significant improvement in speech as well as rigidity to the maxillary denture.⁷ In this study, a simplified technique of adding patient's customized rugae and palatal contours to the maxillary denture is described to achieve normal speech patterns in completely edentulous patients.

PROCEDURES

- After the routine conventional procedures for fabrication of complete denture like preliminary and master impressions followed by recording of maxillomandibular relations, teeth arrangement, wax try-in and prior to wax-up procedures, the denture base is retrieved from the cast and a putty matrix for rugae and palatal contours is

made over the master cast using polyvinyl siloxane putty impression material (Aquasil soft putty/regular set, Dentsply, Germany) (Fig. 1).

- Vacuum formed 0.020 thermoplastic resin sheet is taken and matrix former is created over the putty matrix using proform vacuum former. The coping material is thin enough that the contours transfer through to the reverse side of the material, providing a smooth, contoured, non-irritating facsimile (Figs 2 and 3).
- Palatal portion of the trail denture has been removed by cutting the denture base placed on the master cast (Fig. 4).
- A thin layer of modeling wax (1.5 mm) is flowed into the palatal region and the coping is cut out and set in place for final wax-up procedures.
- Flasking, dewaxing, packing and curing carried out according to the manufacturer's instructions. After deflasking, while trimming and polishing the denture care is taken in the palatal and rugae region (Fig. 5).

CONCLUSION

Phonetics is one of the important factors in complete denture construction. Frequently, however, this factor is neglected



Fig. 3: The vacuum formed 0.020 coping placed on the master cast

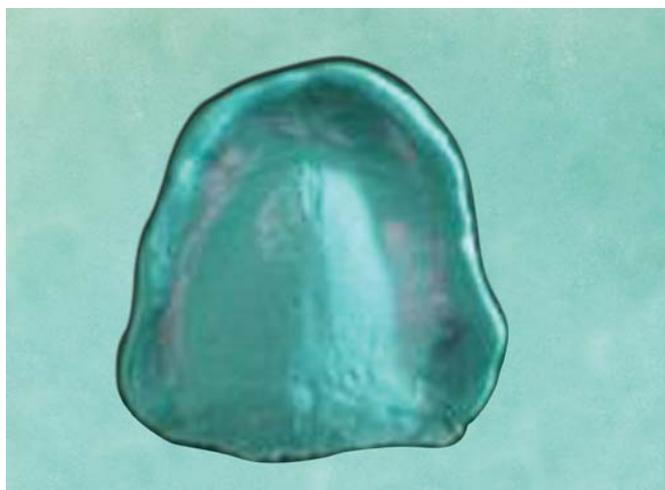


Fig. 1: A putty impression of palatal vault is made



Fig. 4: Palatal portion of the trail denture has been removed by cutting the denture base placed on the master cast

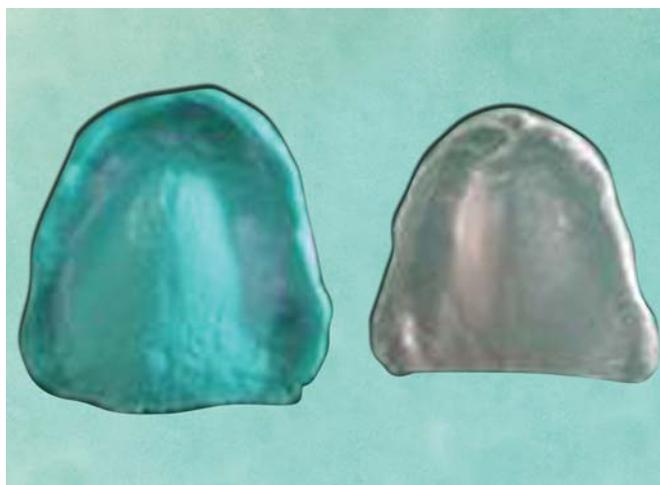


Fig. 2: The vacuum formed 0.020 coping was created over the putty matrix



Fig. 5: The final denture with customized rugae and palatal contours

because of the adaptability of patients. It is true that most patients can learn to produce satisfactory speech in spite of an unsatisfactory denture. The need to consider phonetics is not recognized in most instances until a patient complains of inability to produce certain sounds with the dentures. Completely edentulous individuals using dental prosthesis tend to mispronounce certain sounds, phonation of which depends upon the rugae pattern and also the palatal contour. Thus, prosthodontists need to create the customized rugae and palatal contours in complete dentures with care for achieving speech which is much more normal and also eliminate the waiting and training period after denture insertion. To aid the dentist in minimizing these speech problems, the importance of phonetics in dental prosthesis has been discussed. A simplified technique for adding customized rugae and palatal contours has been described for achieving normal speech after denture insertion.

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