

# CUSTOM MADE RUGAE PATTERNS USING ACRYLIC PALATAL STAMP

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## Abstract:

*Phonetics is one of the most important factors to be taken into consideration in complete denture prosthodontics. Customizing palatal contour of a maxillary denture by adding palatal rugae helps in eliminating the adjustment period for achieving proper pronunciation. This article describes a simple technique for palatal rugae duplication using an acrylic palatal stamp.*

**Key words:** Palatal rugae, Phonetics, Acrylic resin

## Introduction

Speech is a distinctly human phenomenon. Most of the complete denture patients normally have the ability to adapt their speech in the presence of denture. But there are patients whose speech are sensitive to the changed relationships with the dentures and have difficulty in accommodating. A tactile sense is required to orient the tongue in such cases. By customizing palatal contours of a maxillary denture to the tongue, the patient may easily adapt to the definitive denture contour, which in turn shortens or eliminates the adjustment period for the achievement of proper enunciation<sup>1</sup>. Adding palatal rugae to complete denture may help alleviate the speech problems.

Apart from enhancing phonetics, these soft tissue landmarks aids in mastication, deglutition and better taste perception<sup>3</sup>. This article describes a novel technique for palatal rugae transfer to a complete denture using palatal stamp method.

## Case report

A 60-year-old female patient reported to the Department of Prosthodontics with the chief complaint of missing teeth. Patient is a Bhagavad Gita reciter and she wanted a denture with which she could pronounce the syllables properly. On examination completely edentulous maxillary and mandibular ridges.

1. Maxillary and mandibular primary impressions were made and custom trays for secondary impression were fabricated using autopolymerising 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.

## Palatal stamp fabrication

Separating medium was applied on the rugae portion of the master cast. Auto polymerizing acrylic resin was adapted on to this portion of the cast covering the entire palatal rugae pattern.

A handle was fixed at the centre of the palatal stamp and the whole unit was kept apart.

3. Temporary denture bases were then made on the master cast, followed by recording of jaw relations and teeth arrangement.

4. After try-in stage, pattern of rugae was recorded from the patient using palatal stamp method.

### Palatal stamp method

The fabricated palatal stamp was tried on the patient's palate.

A line was marked through the centre of the incisive papilla of the patient and this line was extrapolated on to the centre of the palatal stamp to get an orientation during duplication procedure. The maxillary temporary denture base was then

trimmed off without perforating the rugae area of the maxillary try-in denture. A light body elastomeric impression material was loaded on the intaglio surface of the palatal stamp and pressed against the patient's rugae.

Tissue conditioner material was applied on the trial denture base. The palatal stamp containing the impression of the rugae pattern of the patient was stamped on to the trial denture base using incisive papilla as the guide. Thus, an accurate duplication procedure was completed.

5. While investing a mix of die stone was poured over the rugae region to preserve the finer details. After dewaxing mould was then packed with heat cure acrylic resin and curing was done. After curing and deflasking, trimming and polishing were done. The transferred details of the palatal rugae



Fig.1 Master Cast



Fig.2 Palatal stamp fabricated on the master cast



Fig.3 Intaglio surface of palatal stamp



Fig.4 A line marked through the centre of the incisive papilla



Fig.5 Line through the centre of incisive papilla extended to the centre of palatal stamp



Fig.6 Impression of palatal rugae made using palatal stamp loaded with light body elastomeric impression material.

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was thoroughly checked in the denture followed by its insertion. The patient was satisfied with the improved phonetics.

## Discussion

In complete denture prosthodontics, phonetics is one of the most important factors to be taken into consideration. Often complete denture wearers complain of improper pronunciation of certain words which is attributed to the rugae form and palatal contour<sup>2</sup>. Rugae refers to the prominent ridges present on either side of the mid palatine raphe across the anterior portion of the palate<sup>5</sup>. The palato lingual consonant sounds t, d, n, and l are of interest to dentists. The tongue must be placed firmly against the anterior part of the hard palate to produce these sounds<sup>2</sup>. Central and lateral lipping may develop in a patient's speech when contours are incorrect<sup>7</sup>. Slaughter et al believes that the smoothness of the denture is disturbing, and without rugae the tongue loses its capacity for local orientation<sup>6</sup>. Palatal rugae can also be used in forensic odontology for identification of a person since the pattern of rugae is unique and individualistic<sup>13</sup>. The patient's own rugae can be transferred to the palatal surface of the denture by various techniques. Using clear acrylic stents with

condensation silicone<sup>8</sup> and Dentalfloss<sup>9</sup>. Another method involves pressing the Putty Impression of rugae over the heat softened wax<sup>10</sup>. Palatogram method was used to customize the palatal contour of a complete denture<sup>11</sup>. The simplest procedure involves hand carving the palate of the finished denture<sup>12</sup>. This article describes a simple technique to transfer the palatal rugae pattern using a palatal stamp.

## Conclusion

It is believed that fabricating a complete denture with good mechanics and esthetics will automatically bring the phonetics into it. Phonetics is not recognized in most instances and it is considered as a need when a patient complains of inability to produce certain sounds with the dentures. So, transferring the details of the soft tissue onto the cameo surface of the denture, especially the palatal rugae have a significant role in improving the phonetics of the patient. Natural rugae are more or less resilient and do not maintain their full passive form during tongue function and tend to flatten out, even when light pressure is applied. We need to take up this challenge and use a tissue resilient material for the palatal rugae duplicated on the denture.



Fig.7 Tissue conditioner application on thinned out portion of the trial denture base



Fig.8 Palatal rugae pattern stamped on trial denture base



Fig.9 Finished denture with the intact rugae pattern

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