

# “Abridged duplication of palatal rugae for complete denture prosthesis”

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## Abstract

*The duplication of palatine rugae in the complete denture prosthesis is a useful aid for patient to position his tongue in desired position during denture adaptation. This allows the patient to learn to speak with dentures quickly, which in turn improves his denture satisfaction. Many techniques of duplicating palatine rugae to new complete denture prosthesis have been mentioned in the literature that involves materials which are at times not available in a clinical setting. We present a simple technique of palatine rugae duplication that can be done with the aid of an aluminum foil which is a common household item. A step by step procedure has been described in a sequential order.*

**Keywords** — complete denture, denture adaptation, tongue position, aluminum foil

## INTRODUCTION

Palatal rugae (plicae palatinae transversae, palatine rugae) are defined as irregular fibrous connective tissue ridges located in the anterior third of the hard palate. 1 They develop before palatal shelves elevate as localized regions of epithelial proliferation with fibroblasts and collagen fibers coalescing in the underlying connective tissue (anteroposteriorly) thus giving them the peculiar orientation. 2 Anatomically they occur due to a discrepancy in the surface area between underlying bone and overlying soft tissue. 3 Although, significance of palatal rugae in speech production has not been established but covering the area by a denture base acrylic resin has been associated with proprioceptive changes which renders most complete denture patients to experience disturbances in speech and pronunciation. 3 It has also been suggested that duplicating the palatine rugae in the complete denture base facilitates speech especially the linguo-palatal consonants. 4 Their role along with the tongue in oral stereognosis helps a completely edentulous patient to identify the shape of a particular object. 5 The irregular surface that they provide helps guiding the tongue position during early denture adaptation. 6 Various techniques to duplicate palatal rugae have been mentioned in the literature that involve different use of materials, techniques, methods, similar or different individual and timing of denture fabrication. 3,6-8 This article

presents a very inexpensive and a simple technique that utilizes household cooking aluminium foil (standard or heavy duty) and can be used to duplicate either the rugae pattern of the same patients master cast or if not available an ideal or different master cast.

## Technique

**Step 1: Analyzing diagnostic and master cast:** analyze the prominence of the rugae pattern on both diagnostic and master casts (**Fig 1 A, B**) for the height, thickness and depth of the ridges of the palatal rugae. Any discrepancy between the two should be first verified clinically on the patient or on a photograph of patients palatal mucosa. At this stage, determine whether existing rugae pattern are sufficient enough to be replicated in the denture, keeping in mind the future effect of the finishing and polishing procedures to be done on the denture. In this case we used an ideal cast (**Fig 1C**) since the rugae pattern of the patient was not prominent.

**Step 2: Adaptation of aluminium foil:** Take either a double thickness (0.016 mm) or a single thickness heavy duty (0.024 mm) household aluminium foil and cut into a section that corresponds to the area where rugae are positioned in an ideal cast. Apply gentle heat to the foil and adapt it to the rugae area of the cast (**Fig 1C**). Heating improves the moldability of the foil. Adapt the heated foil on the cast near the rugae area with either a finger or a cotton roll. Take the waxed up trial denture and reheat the wax in the region where rugae pattern has to be impregnated (**Fig 1D**). Alternately, the foil can be heated from outside to transfer the pattern.

**Step 3: Denture processing and finishing:** Once the rugae pattern have been created in waxed up trial denture, carry out routine denture processing with special attention given to the polishing of the waxed up denture in the rugae area and the finishing of the same area after denture processing. The use of trial closure using wet polyethylene sheet is an excellent way of minimizing finishing and polishing procedure since it imparts a smooth finished surface on the final denture. Polish the denture using routine laboratory procedures and evaluate the depth of the rugae

pattern that has been transferred to the denture (Fig 1D, E)

### Conclusion

The technique mentioned in this article is simple, inexpensive and easy to master and imparts esthetics to the denture along with aiding tongue position during denture adaptation.

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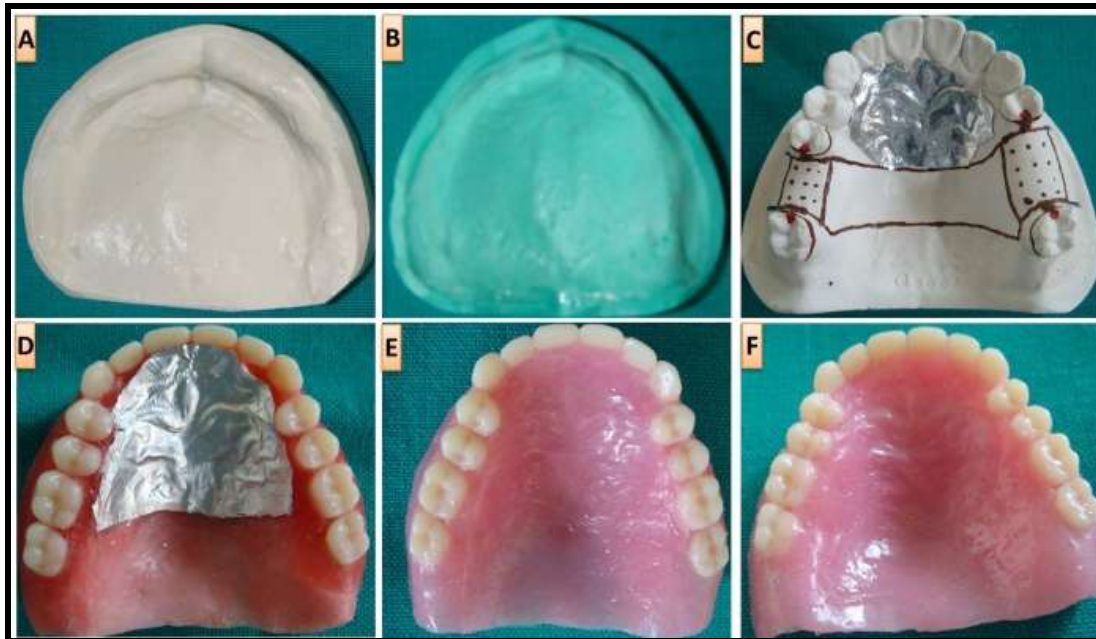


Fig 1: Diagnostic and master cast (A, B), Adaptation of cooking foil on an ideal cast an adapting the foil to the cast (C), transferring the adapted foil to the trial denture (D), processed (E) and finished denture (F).If necessary, the images can be extended both columns