

# “Salivary reservoir – low and high volume techniques”

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## Abstract

Sustained release of artificial saliva within a complete denture prosthesis not only helps a xerostomic patient to utilize the denture properly, but it also prevents undue harm to the oral mucosa that can result due to the mucosal dehydration and denture friction. A number of methods have been described in the literature which utilize the use of precision attachments, which makes such modified denture fabrication expensive and technique sensitive. We present two simple maxillary denture modifications that are intended to serve as low and high volume salivary reservoir within the maxillary complete denture prosthesis.

**Keywords** — xerostomia, complete denture, denture processing, elastomeric impression material

## I. INTRODUCTION

Xerostomia is a common problem in old age. It can be physiological due to aging or it can be due to underlying systemic or local pathology. It can be also due to pharmaceutical drugs that an elderly patient is taking for treating his systemic disease. Within a period of a minute, if saliva is produced below 0.1 milliliters after stimulation, the condition is considered hypofunction of the salivary glands or xerostomia. <sup>1</sup> Irrespective of underlying causes, the problem of xerostomia not only impacts quality of life <sup>2</sup> but also causes problems like dysphagia and dysgeusia. <sup>3</sup> In a complete denture wearer, xerostomia renders denture retention and denture comfort ineffective and incompetent, besides causing frequent tissue trauma and halitosis. Xerostomia can be managed by different approaches that range from dietary measure, counselling of patient, lifestyle modification like smoking cessation, salivary stimulants and use of salivary substitutes. <sup>4,5</sup>

There are a number of techniques described in the literature to incorporate salivary reservoir within the denture. The use of locks, <sup>6</sup> magnets <sup>7</sup> and precision attachments <sup>8</sup> have been incorporated by various authors to incorporate a salivary reservoir within the denture. Since such modalities are expensive and not viable for low income countries where neither patients can afford such devices, nor precision attachments are manufactured by industries

at low cost, we present two techniques one being a low volume and the other being a high volume salivary reservoir. Both techniques are easy to follow and are not technique sensitive, do not require extra equipment, material or time for a laboratory technician.

## Technique 1 (Low volume maxillary salivary reservoir) (Fig 1)

1. After denture trial is completed, perform the wax up of the maxillary complete denture. Remove the wax from the denture base in the region of the palate and carve a locking mechanism on the border of the cut area (Fig 1 A). The locking mechanism can be created by preparing a groove that results in a minimal undercut to which an extension of acrylic lid will fit (similar to the locking mechanism present in ordinary pens).
2. Prepare a lid from a sheet of a modelling wax and incorporate the counter key within the lid (Fig 1 B)
3. Convert the wax lid into an acrylic lid and verify the fit of the lock on the waxed up maxillary complete denture (Fig 1 C)
4. Complete maxillary denture processing in conventional technique. Place the lid within the chamber and adjust the same (Fig 1 D).
5. Make little holes (1 mm diameter) within the lid of the salivary chamber (Fig 1 E).
6. Try the assembly in the patient's mouth and adjust the borders for any inadequacy (Fig 1 F).

## Technique 2 (High volume maxillary salivary reservoir) (Fig 2)

1. Duplicate an old ideal maxillary denture or an ideal maxillary dentulous cast using irreversible hydrocolloid. Pour it with dental stone and retrieve the cast from it (Fig 2 A).
2. For a demonstration of this technique conventional dental processing procedure has not been used, but the steps have been explained in both conditions. After dewaxing of the denture adapt a sheet of modelling wax on the master cast (Fig 2 B) which is to be converted into a heat cure acrylic denture base (Fig 2 C). During denture processing, once

dewaxing is done place the denture base back on the master cast within the flask.

3. Make a clear acrylic overlay on the ideal cast that was prepared at the beginning (**Fig 2D**). In case of patients make an overlay of his trial denture after doing a denture trial by making an alginate impression of trial denture and then pouring a cast into it.
4. Use single putty material of the addition silicone elastomeric impression material and adapt it on the trial denture base (**Fig 2E**). The material will never set since catalyst is not added. The putty is used only as a spacer for a chamber.
5. Use the clear acrylic overlay to shape the putty and remove excess putty from the overlay. Leave the putty on the denture base and carry the usual denture processing procedure (**Fig 2F**). Once denture processing is completed, make a window in the denture and remove the putty from within the denture. Make a lid for the window using self cure denture base acrylic. Finish and polish the lid.

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### Conclusion

The techniques described in this article are simple and does not require elaborate equipment. The second technique is initially cumbersome, but with practice it is easy to use and provides large volume for salivary substitute. One needs to have proper understanding of the materials used in both the techniques.

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**Figure 1: (A) carved reservoir within trial denture (B) wax lid (C) acrylic lid (D and E) denture without liquid and with liquid (F) denture clinically in place**



**Figure 2: (A) ideal cast (B) modeling wax base (C) processed denture base (D) acrylic overlay (E) adapted putty and (F) defining the spacer**