CASE REPORT

Prosthodontic Management of Xerostomic Patient with Reservoir Denture - A Case Report

Laxman Singh Kaira*

Abstract

Xerostomia is the subjective sensation of oral dryness, usually, but not invariably, associated with hyposalivation. The major dental problems reported by xerostomic patients include a high caries rate, repeated failure of dental restorations, and early tooth loss that necessitate various degrees of prosthodontic treatment. This article outlines the prosthodontic management of this special group of patients.


Keywords: reservoir denture, xerostomia, rehabilitation

Introduction

Xerostomia is a subjective complaint, often referred to as reduced salivary flow. Xerostomia is a common patient complaint that could be a result of systemic conditions like rheumatic, Sjogren's Syndrome, salivary gland diseases, Diabetes mellitus, Parkinson’s disease, dysfunction of immune system like HIV/ AIDS, due to head and neck radiation, medication-related side effects. Patients suffering from xerostomia may complain of not only a dry mouth, but also of difficulty in normal oral and oropharyngeal functions including eating, speaking and swallowing. Increase susceptibility to infection is also seen. Extreme discomfort is a common complaint in a denture wearer. It can also add to the problem of retaining and eating with dentures. Salivary mucins possess rheological properties that include elasticity and adhesiveness, which aid in retention of dentures. So in xerostomia, dentures invariably become loose. Depending upon the cause, variety of treatment options is available. In medication induced xerostomia, dosage, timing, or a change in medication may reduce the severity of the problem.

In such cases, measurement of a patient's nonstimulated salivary flow rates before and after altering their medication may be useful in gauging the success of treatment. Gustatory stimulation of the salivary glands by mastication of sugar free chewing gums or lozenges is also helpful. Artificial salivary stimulants may be used. To minimize patient discomfort, soft denture liners can also be used. Often, a combination of treatments

*Senior Lecturer, Department of Prosthodontics, Institute of Dental Sciences, Bareilly, Uttar Pradesh

Address for Correspondence:
Luckysinghkaira1111@gmail.com
may be required. Saliva substitutes containing thickening agents for longer relief and increased moistening and lubrication of the oral surfaces have been developed. These are available as solutions, sprays or gels and have multiple contents such as carboxymethylcellulose, electrolytes and flavoring agents e.g. wet mouth (ICPA Health Products Ltd), aqwet (Cipla Ltd). However, the main problem is to deliver this substitute constantly into patient’s mouth without affecting his normal routine. Where all treatment modalities have proven unsuccessful, the incorporation of artificial salivary reservoir in dentures, has been proposed in such cases. Patient suffering from xerostomia not only has dry mouth but also difficulty in normal oral and oropharyngeal functions including eating, speaking and swallowing etc. It also makes wearing of dentures very uncomfortable for affected individuals. To help overcome this problem, number of techniques have been proposed for incorporating reservoirs containing salivary substitutes into dentures with varying degrees of success. This case report presents a case of a patient suffering from xerostomia who was successfully treated with a new form of reservoir in maxillary denture where other treatment modalities had failed. This modified new technique resulted in denture that provided good lubrication of the oral tissue, was easily cleansed by the wearer and was fabricated from routine denture material also.

Case Report

A 65-years old edentulous female patient reported having complained of dryness of mouth and severe discomfort while speaking, eating. Intraoral examination revealed maxillary and mandibular edentulous residual ridges, areas of irritation associated with the maxillary denture, dry tongue, and minimal frothy saliva in the floor of the mouth. Patient’s mouth was noted to be very dry with cracks at the corner of the mouth. Medical history revealed that she was on medications for hypertension and non-insulin dependent diabetes mellitus. The patient’s general practitioner was also contacted and the medications were reduced or altered to reduce the xerostomia. The patient was given multivitamin supplements, she had been advised to use salivary substitute (methyl cellulose) regularly and frequently drink water to overcome the dryness and discomfort. After that, the patient still suffered from dryness of mouth and discomfort from his lower denture. At this stage, fabricating upper complete denture with salivary reservoir was planned. The procedure is outlined below.

Procedure:

- Primary impressions were made in putty rubber base impression material while final impressions was made in light body polysiloxane (condensation-type) impression material (Speedex, Coltène, Whaledent AG, Alstätten, Switzerland,) since zinc oxide eugenol paste may cause burning sensation to the patient. Till try in everyone is same as in conventional dentures. After try in of the setup the reservoir was constructed. Two pieces of 2mm thick modelling wax was laid over the palatal wax used in arranging the denture teeth (Fig 2). The centre of palatal wax was removed (Fig 3). A rim of wax remained to form the reservoir. The assembly was processed with heat cured acrylic resin (Fig 4). After the deflasking and polishing procedures were completed, wax was poured into the reservoir space(Fig 5). After the separating medium was applied on the wax, another layer of wax was added on the previous layer and a lid was made (Fig 6). This second layer of wax was also processed with heat cure acrylic resin (Fig 7). Now the previous layer of wax was dewaxed and the lid was permanently attached to the denture with the help of autopolymerising acrylic resin (Fig 8).

Artificial saliva

- Artificial saliva is needed as a medicament in this prosthesis. A number of Artificial salivary substitute are available in market, such as
  - Wet mouth
  - Saliveze
  - Salivart
  - Moi-stir
  - Salix
But due to limited clinical usage they are not freely available in the market.

**Composition of artificial saliva**

- Potassium chloride  0.62 g/l
- Sodium carboxymethylcellulose  10.0 g/l
- Sodium chloride  0.87 g/l
- Magnesium chloride  0.06 g/l
- Calcium chloride  0.17 g/l
- Di-potassium hydrogen orthophosphate  0.80 g/l
- Potassium di-hydrogen orthophosphate  0.30 g/l
- Sodium fluoride  0.0044 g/l
- Sorbitol  29.95 g/l
- Methyl p-hydroxybenzoate  1.00 g/l
- Spirit of lemon  5 ml g/l

The patient was instructed about the filling of the reservoir and the due care. Post insertion check up was done after a day and regular recall visits were scheduled. The patient was satisfied with the prosthesis (Fig 10).

**Discussion**

Placement of reservoir in the maxillary dentures has been documented well in the literature. This denture in the maxillary denture offers clinicians an alternative method of treating patients suffering from xerostomia.

**Advantages of this technique**

- Additionally, it also enables the patient to clearly visualize the levels of saliva substitute within the chamber.
- The ready access to the reservoirs, both by the patient and by the dentist.
It allows easy cleaning and adjustment of the reservoirs as needed.

The only drawback of the technique is the additional laboratory steps but it can be of great utility in cases of xerostomia.

**Conclusion**

This paper reports a novel technique for the construction of a maxillary denture incorporating salivary reservoir. Xerostomic patients wearing prosthesis can benefit immensely from it. The use of dear acrylic for the base section permits the clinician to determine the best size and position for placement of the reservoirs. It also enables the patient to dearly visualize the levels of saliva substitute within the chamber. This method utilizes routine materials during construction.

**Reference**