



## MANAGEMENT OF XEROSTOMIA – SIMPLE STEPS FOR BETTER HEALTH

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### ABSTRACT

Role of saliva in the field of prosthodontics is well known as saliva plays a very significant role in providing retention to the complete denture. Both quality and quantity of saliva are important. Edentulous patients with xerostomia whether due to systemic or iatrogenic reasons often complain of burning sensation, difficulty in mastication and poor retention of the denture. This case report presents treatment provided to a xerostomic patient with modifications done in the conventional denture which apart from fulfilling the functional and esthetic requirements also provided the patient with substitute of saliva being constantly delivered in the mouth during function.

### INTRODUCTION

Xerostomia is a common clinical condition characterized not only by the dry mouth, but also by difficulty in normal oral and oropharyngeal functions.<sup>1</sup> Extreme discomfort in wearing dentures is a common complaint associated with it.<sup>2,3</sup> Xerostomia has many possible causes associated with it such as old age, anxiety, depression, salivary gland diseases, sjogren's syndrome, medication - related side effects, head and neck radiation and medically compromised conditions like diabetes mellitus.<sup>4,5</sup>

A variety of approaches have been used to supply xerostomic patients with a moist oral environment. These includes increasing the frequency of water intake, changing dietary habits by including more citrus fruits in the diet, salivary stimulants which include sugar free chewing gums or lozenges.<sup>6,7</sup> In severe xerostomic patients, salivary substitutes may be utilized.<sup>8,9</sup> One method of using salivary substitutes is incorporating salivary reservoir in the dentures like palatal reservoir and reservoir in mandibular dentures.

This paper presents the case report of a xerostomic patient who was successfully treated with a new form of reservoir in mandibular removable partial denture where all other treatment modalities had failed.

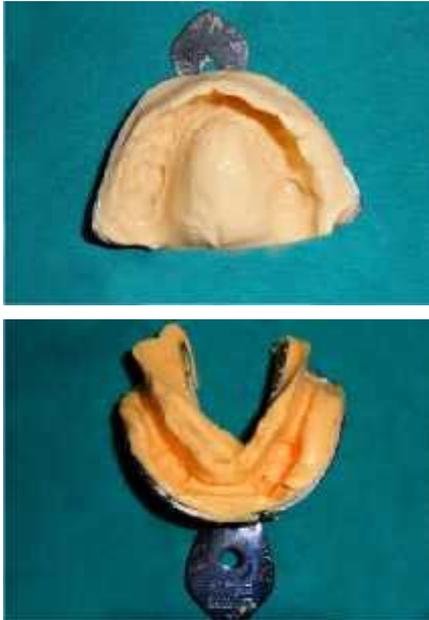
#### Case Description

A 47-years old female patient reported to the Department of Prosthodontics with the chief complaint of some missing

teeth in the lower arch and also complained of discomfort while eating and swallowing due to dryness of mouth. Intraoral examination revealed partially edentulous mandibular arch (w.r.t. 31, 32, 36, 37, 41, 42, 47). On visual inspection, the patient presented with dry tongue and sticky frothy saliva in the floor of the mouth. Since the patient was suspected for xerostomia, stimulated saliva test was undertaken. The patient was instructed to chew on a wax strip for 30 seconds, after which the stimulated saliva was collected in a cup. It was found that less than 3.0 ml of saliva was collected over a period of five minutes. Hence the patient was confirmed as xerostomic. The patient had high caries rate due to xerostomia which resulted in early tooth loss and full crown restorations of multiple teeth in the mouth. It was observed that the patient had angular cheilitis and generalized ulcerations intra orally. The patient presented with no relevant medical history. For the relief of ulceration, the patient was given multivitamin supplements along with vitamin C supplements. [Antex Forte multivitamin capsules prescribed once daily for a period of 15 days.] She had been advised to use mouth wash regularly and frequent intake of water to overcome the dryness and discomfort. The patient was given a removable prosthesis for the replacement of missing teeth without the reservoir. But still, the patient felt discomfort and no improvement in oro pharyngeal functions. At this stage, fabricating lower removable partial denture with salivary reservoir was planned. The procedure is outlined below.

**Procedure**

Primary impressions were made with irreversible hydrocolloid impression material (Plastalgin, U.S.A.) (Figure1). The primary casts were poured.



**Fig 1** Primary impression in irreversible hydrocolloid impression material

Special tray was fabricated with auto polymerising acrylic resin (DPI Cold Cure Resin, Mumbai, India) on the mandibular cast. The border moulding was done in conventional manner followed by final impression which was made in medium body polyvinyl siloxane impression material (Figure 2) since zinc oxide eugenol paste may cause burning sensation to the patient (Figure 3).



**Fig. 2** Mandibular border moulding with green stick compound



**Fig. 3** Secondary impression with medium body polyvinyl siloxane impression material

The jaw relations and the teeth arrangement were done. After try in, the wax up was done for the assembly. Additional 2 mm of modelling wax was added lingually on both sides of the denture base (Figure 4). Before dewaxing, two windows were cut lingually on both sides and additional layer of wax was removed. (Figure 5).



**Fig. 4** Additional wax added lingually on both the sides of denture base



**Fig. 5** Windows cut lingually on both the sides of denture base

The assembly was then processed with heat cured acrylic resin (DPI Heat Cure Resin, Mumbai, India). Then deflasking, finishing and polishing procedures were completed conventionally. (Fig: 6).



**Fig. 6** Flask after conventional dewaxing



**Fig. 7** Flasking of the lids

Two lids were made of modelling wax sheets of thickness approximately 2 mm. They were of the size of the lingual cut out windows. The lids were processed separately with heat cure acrylic resin (Figure 7).

The reservoir was filled with Biotene dry mouth moisturizing liquid. After finishing and polishing, two holes were created in the lids with the help of no. 6 round bur, so as to facilitate the salivary substitute in the oral cavity (Figure 8). The lids were permanently attached to the denture with the help of autopolymerising acrylic resin (DPI Cold Cure Resin, Mumbai, India). (Figure 9).



Fig. 8 Holes created in the lid for salivary substitute



Fig. 9 Attachment of the lid to the denture

The completed assembly was smoothed and given a final polish, so as to facilitate communication between reservoir and the oral cavity. The patient was instructed about the filling of the reservoir using the disposable syringe. 1.5-2 ml of the liquid was filled in the reservoir which provided action for approximately 6 hours. Hence refilling of the reservoir was required thrice during the day. Patient was recalled after 24 hours and regular recall visits were scheduled. The patient was satisfied with the prosthesis (Figure 10).



Fig. 10 Post Rehabilitation extraoral view

The patient reported improved masticatory efficiency, relief of oral ulcerations and improved swallowing.

## DISCUSSION

Placement of reservoir in the maxillary dentures has been documented well in the literature. This paper describes a new technique of incorporating reservoir in the mandibular removable partial denture that offers clinicians an alternative method of treating patients suffering from xerostomia. Reduced salivary flow is common in the elderly, and is associated with a variety of factors like therapeutic head and neck irradiation, Sjogren's syndrome, HIV, diabetes, renal failure, and pharmacotherapy.

Depending upon the cause, variety of treatment options are available. Gustatory stimulation of the salivary glands by mastication of sugar free chewing gums or lozenges is also helpful.<sup>10</sup> In severe Xerostomia cases, saliva substitutes or salivary stimulants may be used. Earlier more viscous salivary substitutes were used for lubrication of the oral surfaces for longer relief. However, the main problem is to deliver this substitute constantly into patient's mouth without affecting his normal routine.

A number of Artificial salivary substitute are available in market, such as Oralube, Wet mouth, Saliveze, Salivart, Moistir, Salix, Saleva, Sorbitol, Methyl p-hydroxybenzoate (1.00 g/l), Spirit of lemon (5 ml g/l). The salivary substitute chosen in this case was Biotene dry mouth moisturizing liquid. It is an artificial saliva solution that provides instant relief from the symptoms of dry mouth. It also has antibacterial action as it contains lysozyme, lactoferrin and lactoperoxidase and glucose oxidase.

Clinical Significance: Advantages of this technique are that it is economic as it is made with the easily available materials. It allows easy cleaning and adjustment of the reservoirs as needed. Secondly, the choice of salivary substitute greatly affects the prognosis of the prosthesis. Fluoride containing salivary substitutes are better because of the added advantage that it helps reducing further progression of caries by preventing demineralisation and enhancing remineralisation of the tooth substance.

The limitations of the mandibular reservoir partial denture is that food lodgement might clog the reservoir thus making its functioning difficult.<sup>11</sup> Cutting reservoir into denture weakens its structure. Hence, cases with no bony undercuts and sufficient vertical dimensions are more suitable for incorporation of lingual reservoir.<sup>12</sup>

## CONCLUSION

This paper presents a creative technique for the construction of a mandibular partial denture incorporating salivary reservoir. Artificial saliva is needed as a medicament in this prosthesis. It not only improves the oropharyngeal functions but also it certainly enhances the quality of life in xerostomic patients. Successful treatment depends on knowledge and recognition of particular problems and methods of prevention combined with skilful prosthodontics.

## References

1. The glossary of prosthodontics terms. *J Prosthet Dent* 2005; 94: 81
2. *Dent Oral Epidemiol* 1993; 21:165-8.

3. Locker D. Subjective reports of oral dryness in an older adult population. Community Greenspan D. Xerostomia: diagnosis and management. *Oncology* 1996; 10:7-11.
4. Närhi TO, Meurman JH, Ainamo A. Xerostomia and hyposalivation: Causes, consequences and treatment in the elderly. *Drugs Aging* 1999; 15:103-16.
5. Moore PA, Guggenheimer J, Etzel KR, Weyant RJ, Orchard T. Type 1 diabetes mellitus, xerostomia, and salivary flow rates. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2001; 92:281-91.
6. Itthagarun A, Wei SH. Chewing gum and saliva in oral health. *J Clin Dent* 1997; 8:159-62.
7. Risheim H, Arneberg P. Salivary stimulation by chewing gum and lozenges in rheumatic patients with xerostomia. *Scand J Dent Res* 1993; 101:40-3.
8. Wall GC, Magarity ML, Jundt JW. Pharmacotherapy of xerostomia in primary Sjogren's syndrome. *Pharmacotherapy* 2002; 22:621-9.
9. Daniels TE, Wu AJ. Xerostomia - clinical evaluation and treatment in general practice. *J Calif Dent Assoc* 2000; 28:933-41.
10. Toljanic JA, Zucuskic TG. Use of palatal reservoir in denture patients with xerostomia. *J Prosthet Dent* 1984; 52:540-4.
11. Mendoza AR, Tomlinson MJ. The Split denture: a new technique for artificial saliva reservoirs in mandibular dentures. *Aust Dent J* 2003; 48:190-4.
12. Hirvikangas M, Posh J, Makila E. Treatment of xerostomia through use of dentures containing reservoirs of saliva substitute. *Proc Finn Dent Soc* 1989; 85:47-53.

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