

## Xerostomia, Its Influence On Oral Mucosa Of Partial Denture Wearers - A Review

Review Article

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## Abstract

Xerostomia, also called dry mouth, is associated with change in composition of saliva or reduced saliva. Hyposalivation may cause dental caries, acid erosion, oral candidiasis, sialadenitis, or even dysgeusia. Hyposalivation or change in saliva consistency can be caused due to dehydration, radiotherapy involving salivary glands, chemotherapy and several diseases. Hyposalivation causes difficulty wearing dentures when swallowing or speaking. There may be generalized mucosal soreness and ulceration of the areas covered by the dentures. A salivary film layer is present for lubricating and hydrating the mucosa beneath the denture base and for protection. RPDs are a common treatment option for partially dentated individuals as they allow replacement of up several missing teeth, across either single or multiple edentulous areas. Although RPDs have these advantages, they are well known for exacerbating plaque levels in individuals with less than oral hygiene. Although RPDs have these advantages, they are well known for exacerbating plaque levels in individuals with less than oral hygiene. In this review, the influence of xerostomia on pain sensitivity in oral mucosa of denture wearers is demonstrated. The aim of the study is to evaluate the association between oral dryness and oral pain sensitivity.

**Keywords:** Xerostomia; Hyposalivation; Oral Mucosa; Pressure Pain; Partial Denture Wearers; Retention.

## Introduction

Xerostomia, also called dry mouth, is associated with a change in composition of saliva or reduced salivary flow. This condition is common in older people as they tend to take several medications and also in persons who have a habit of breathing through their mouth. Hyposalivation or change in saliva consistency can be caused due to dehydration, radiotherapy involving salivary glands, chemotherapy and several diseases. Sometimes there is no identifiable cause, and can be a psychogenic reason [40]. Sialogogues are drugs or substances that increase the rate of salivary flow. Hyposalivation may cause dental caries, acid erosion, oral candidiasis, sialadenitis, or even dysgeusia [6]. Hyposalivation causes difficulty wearing dentures when swallowing or speaking. There may be generalized mucosal soreness and ulceration of the areas covered by the dentures [19].

There are several potential treatment options available including removable partial dentures (RPDs), bridges and implants [15, 16]. RPDs are a common treatment option for partially dentated individuals as they allow replacement of up to several missing teeth, across either single or multiple edentulous areas [36]. Being removable it also aids in cleaning of prosthesis and also provides cost effectiveness. RPDs are alternative treatment to other available options such as bridges and implants. Although RPDs have these advantages, they are well known for exacerbating plaque levels in individuals with less than oral hygiene. RPDs have shown association between increased risk of periodontal disease [24], dental caries and denture stomatitis [30] in numerous studies. In RPDs, the abutment teeth appear to suffer the most deleterious effects [12]. The pocket depths in abutment teeth were not greater than due to these teeth being subjected to additional forces that can cause tooth mobility [11]. In a comparative study of patient's

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**Received:** January 12, 2021**Accepted:** January 22, 2021**Published:** January 29, 2021

**Citation:** A. Sankari Niveditha, Venkatesh, Lakshminarayanan Arivarasu. Xerostomia, Its Influence On Oral Mucosa Of Partial Denture Wearers - A Review. *Int J Dentistry Oral Sci.* 2021;08(01):1499-1501. doi: <http://dx.doi.org/10.19070/2377-8075-2100029>

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satisfaction between complete and partial removable denture wearers, RPDs wearers had more satisfaction with the retention and the comfort of wearing mandibular denture [9].

The oral mucosa is the mucous membrane lining of the oral cavity. It comprises stratified squamous epithelium, termed the "oral epithelium" and the underlying connective tissues termed lamina propria. The oral cavity has been described as the mirror that reflects the health of individuals. Denture stomatitis or denture sore mouth refers to inflammatory changes in the oral mucosa of denture bearing tissues [3]. These changes are characterized by erythema and are found beneath the complete or partial dentures in both jaws, but are more commonly reported in maxilla [46].

The prevalence of pain after delivery of dentures was 43% and the mucosal pain in removable partial denture wearers was associated with pain sensitivity as well as oral mucosal characteristics, associated with age and also behavioral factors [27]. Pressure pain threshold is defined as the minimum pressure that induces pain and has been used to measure the level of pain sensitivity in the oral mucosa in several studies [34, 44, 22].

### Xerostomia

In this condition, subjective complaints of dry mouth and Hyposalivation [20]. There will be a change in both qualitative and quantitative changes in the composition of saliva [37]. Oral dryness is a clinical problem that has several detrimental effects on oral health, including dental caries, periodontitis, difficulty with mastication, swallowing and speaking [4] and oral soreness [18] [48]. The minor salivary glands, which are mainly mucous-secreting glands responsible for improving mucosal tolerance against mechanical, chemical, allergic and biologic injuries. Patients with oral dryness are likely to report more intense and frequent pain the denture bearing mucosa [21]. Salivary flow protects the soft tissues from desiccation, penetration or ulceration by means of lubricating function [32]. In terms of gender, Narhi reported that females have more chances of perceiving dry mouth more than males. This difference may have originated from low salivary flow due to menopausal age of the women [33, 7]. Oral dryness due to medication is often reversible. Cessation of these drugs will reverse the Hyposalivation but some of them are lifelong medications [29]. Thus it is impossible for the patient to quit the drug, but he/she can ask the doctor to prescribe less xerogenic drugs.

### Partial Denture Wearers

Patients undergoing pre-prosthetic treatment regimens are commonly provided with Removable Partial Dentures (RPDs) to preserve or restore function and esthetics during their interim period [38]. The service duration of such interim RPD is usually limited by its inexpensive fabrications and prolonged coverage of abutment teeth by the denture base and clasps can give rise to periodontal and various lesions [23]. Any restorative treatment aims to provide high long-term stability, and any tooth-supported restoration, whether fixed or removable, will heavily depend on the quality of its abutment teeth. In a study by Addy M Bates JF accessing a group of 45 patients wearing RPDs, a significant increase in plaque accumulation was seen, especially buccally and lingually [1, 5]. Extreme discomfort in wearing dentures is a common complaint in patients with xerostomia [47]. Denture stoma-

titis is common among denture wearers [17].

### Oral Mucosa Pain

Mucosal damage was the most significant factor associated with mucosal pain due to oral dryness [43]. A salivary film layer is essential for lubricating and hydrating the mucosa beneath the denture base and for protecting the mucosal tissues from functional lead applied with the denture base [10, 25]. The saliva can stimulate soft tissues repair by reducing clotting time and accelerating the wound contraction [13]. Pain sensitivity is influenced by physiological systemic, mechanical factors [14].

### Treatment

Treatment of oral dryness may be effective in healing or relieving the mucosal pain in denture wearers [45]. Denture adhesives (DA) are designed to improve retention and stabilization of removable prosthesis. DA in glue form had the best retention effectiveness in patients with xerostomia [2]. Adjustment of the prosthesis can also be done to reduce the red mucosal pain [31]. Sugar free gum or Lozenges may help to increase salivary output, and also drinking water on a regular basis [28, 42] symptomatic relief can be provided by treatment with parasympathomimetics such as pilocarpine hydrochloride or neostigmine bromide [8]. The other means of managing xerostomia is artificial saliva or salivary substitutes. Artificial saliva acts by humidifying and lubricating the dehydrated oral mucosa [39]. To provide easier application of artificial saliva, an intra oral salivary reservoir in the hallowed lingual flange of mandibular denture or palatal reservoir is also a technique [35].

### Dental Hygiene

Denture cleaners that can be used are Val-clean, effervescent peroxidase, chlorhexidine, etc. Poor denture hygiene influences risk factors like caries, periodontal diseases and denture related stomatitis. Millard reported that only 60% of denture wearers demonstrated denture cleanliness [26]. A denture cleaner is used to clean the dentures when they are out of the mouth. The main use of this is to control the growth of microorganisms on the denture, especially *Candida albicans*, thereby preventing denture related stomatitis [41].

### Conclusion

The review demonstrates the influence of xerostomia on pain sensitivity in oral mucosa of partial denture wearers. Diagnosis and Treatment of oral dryness should be done prior to prosthetic treatment like removable partial denture and thereby decrease the pain sensitivity on the oral mucosa. Thereby relieving the denture related mucosal pain and prosthodontics management xerostomic patients has been a challenging task for dentists. Since the quality and quantity of saliva have an important rule in the success of dentures, the patients with hyposalivation need to be treated to prevent adverse effects on the oral mucosa.

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