



REVIEW ON PROSTHODONTIC MANAGEMENT OF PATIENTS WITH XEROSTOMIA

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ABSTRACT

This review article describes the overview of dry mouth condition, role of saliva, leading causes and symptoms of dry mouth, its impact on oral health and about the diagnosis and prosthodontic treatment of patients with xerostomia.

KEYWORDS :

INTRODUCTION

Saliva is a clear, tasteless, odourless slightly acidic viscous fluid, consisting of secretions from the parotid, sublingual, submandibular salivary glands and mucous glands of oral cavity. It hydrates, maintains, and lubricates oral soft tissue, and supports mineralization of teeth, reduces infection and promotes healing and maintenance of oral mucosa when saliva stimulation is not sufficient, it leads to various problems which affects normal life of an individual. Saliva plays an important role in retention and comfort of removable prosthesis. Absence of saliva in the interface of denture and mucosa can cause denture sores because of the lack of lubrication, lack of denture retention and stability. Therefore xerostomia and Hyposalivation can have a devastating effect on the psychology of the patient.^{1,2}

IMPACT OF SALIVARY DYSFUNCTION leads to Dry mouth (xerostomia), Dysphagia, Dysphonia, Odynophagia, Altered/reduced taste, Mucosal sensitivity/burning sensation, Difficulty in wearing dentures

LOCAL DISEASES- Dental demineralization/caries, Dental erosion Dental hypersensitivity, Halitosis, Atrophic and red oral mucosa, Traumatic mucosal, ulceration, Cracked lips, Angular cheilitis.

MICROBIAL DISEASES- candida infection, gingivitis, periodontitis, other pathogens.

SOCIAL IMPACT: Impaired social and role function. Impaired quality of life.¹

Xerostomia is defined as the subjective perception of dry mouth. It is not a disease by itself, but a symptom associated with alterations of salivary function. Xerostomia have a major impact on a patient's oral health and quality of life.¹

SYMPTOMS OF XEROSTOMIA

Tongue sticking to roof of mouth, Difficulty swallowing, Inability to eat dry food because it sticks to the roof of mouth, Increased. Liquid intake, Halitosis, Sensitivity to spicy food, Lack or diminishes taste perceptions, Altered salty or metallic taste, Mouth pain or burning sensation, Development of hoarseness, Coughing episodes, Painful salivary gland.^{3,4}

EFFECTS OF XEROSTOMIA

The buccal mucosa, tongue and lips tend to stick to the denture predisposing to mucosal abrasion and ulcerations.

Extreme discomfort in wearing dentures and dislodgement of dentures at rest is also common.

Difficulty in normal oral and oropharyngeal functions including mastication, speaking and swallowing that may impair social interactions and may cause some patients to avoid social engagements.^{1,5}

PROSTHODONTIC IMPLICATIONS

Retention is affected.
Frictional irritation to the denture supporting tissues
Difficulty in mastication and deglutition.
Patient may discontinue the use of dentures

DIAGNOSIS AND TREATMENT CONSIDERATIONS

The **first step** in treating patients with xerostomia is **History** and examination of the patient
Evaluation of the **cause**.

Establishing a **diagnosis**. Multidisciplinary approach to the diagnosis and the management of underlying systemic conditions is imperative to reduce oral complications.

For the medication induced xerostomia, discussion with a patient's general medical practitioner about the timing, dosage or change in medication may reduce the severity of the problem.

Dental evaluations are done to assess patients for oral complications of low salivary output

TREATMENTS FOR XEROSTOMIA can be classified into four major categories:

Preventive measures
Symptomatic treatment
Local or topical salivary stimulants and
Systemic therapies.

PREVENTIVE MEASURES

Preventive measures must be emphasized with every patient who has decreased salivary function.

Frequent dental examinations are essential. For patients receiving radiation therapy. Strategies are available to limit salivary gland exposure. **Radiation stents** can be fabricated to shield the ipsilateral side when unilateral radiation treatment is required.

Patients treated using **intensity-modulated irradiation (imrt)** had fewer xerostomia complaints, a higher quality of life, and less loss of total parotid gland function than patients treated with conventional radiotherapy

SYMPTOMATIC TREATMENT OF ORAL CONDITIONS

Dental caries -restorative therapy, topical **fluoride** application
Oral candidiasis -**chlorhexidine** 0.12%: rinse, swish, and spit 10 ml twice daily .

Nystatin / triamcinolone **ointment** for angular cheilitis: apply topically 4 times daily

clotrimazole troches: 10mg dissolved orally 4-5 times daily for 10 days systemic therapy for immuno compromised patients Denture antifungal treatment - soaking of denture for 30 minutes daily in **chlorhexidine** or 1% **sodium hypochlorite**.

Bacterial infections - systemic **antibiotics** for 7–10 days

Ill or poor fitting prosthesis –denture adjustment, hard and soft relines, use of denture adhesives

SALIVA STIMULATION AND SUBSTITUTION

For patients with remaining viable salivary gland function, stimulation techniques are helpful.

Sugar-free chewing gum, candies and mints can stimulate salivary output.

The u.s. food and drug administration has approved two secretagogues i.e **pilocarpine** and **cevimeline**, for the treatment of xerostomia, these drugs are effective in increasing secretions and diminishing xerostomic complaints in patients. In edentulous patients use of fruit flavoured confectionery may be useful to stimulate residual salivary function. Recent evidence indicates that secretion of mucous saliva from the palate improves measurably after drinking 2 liters of water, when chewing vigorously or when taking oestrogen or pilocarpine.

Dry mucosal surfaces and dysphagia are treated with oral moisturizers and lubricants and night time use of bedside humidifiers, clinicians must instruct patients to drink fluids while eating, particularly if foods are dry and rough.

USE OF SALIVA SUBSTITUTES

In patients with extreme or prolonged dry mouth, substances that replace lost salivary functions can be used. These options include **artificial saliva**, which humidifies the oral cavity, particularly protecting it from irritating mechanical or chemical factors and infections.

Artificial saliva can be classified into three groups: Glycerine and lemon, they are simplest but if natural teeth are present ,may cause erosion, in addition glycerine is astringent and may sting the soft tissues.

Those based on carboxymethyl cellulose.

Those based on mucin, having best properties.

Components quantity

- Water- 500ml
- Xylitol- 20gm
- Potassium chloride- 1.2gm
- Sodium chloride- 0.843gm
- Magnesium chloride - 0.051gm
- Tricalcium phosphate - 20ml
- Peppermint food flavour - 5ml
- Carboxymethylcellulose - 10gm

Few commercially available saliva substitutes are Luborant, Glandosane

PROSTHODONTIC MANAGEMENT

Various treatment modalities are available for xerostomia- Replacement of teeth by dentures is recommended only in cases where it is an absolute necessity.

Removable prosthesis are fabricated with **special care** to avoid any trauma to the dry oral mucosa. The better options of fixed prosthesis, implant supported prostheses or fully bone anchored implant prosthesis should always be verified as patients wearing implant supported prosthesis exhibit increased comfort, stability and retention.

Preventive measures such as frequent dental and oral evaluations, good oral hygiene, daily use of topical fluorides and antimicrobial mouth rinses are critical to help prevent dental caries, periodontal diseases, mucosal infections and other oral complications.^{4,5,6}

PARTIAL DENTURES

A short span edentulous area is best restored by a fixed partial denture as it reduces mucosal contact and further irritation.

Fixed partial dentures should have full coverage retainers and easily cleaned pontics and connectors. The margins of retainers should be supragingival.

Removable partial dentures should be designed in such a way that it should be entirely tooth supported with minimum tissue coverage.

Denture components should be highly smooth and polished to minimize plaque formation and facilitate soft tissue movement.

Connectors should be kept at least 4mm clear of the gingival margin to aid in reduction of plaque stagnation. Conventional gingivally approaching clasp should be avoided because they stand away from the tissue and are likely to catch on the cheeks.

Reservoirs can be incorporated into partial removable dentures

COMPLETE DENTURES

Complete dentures can be very damaging to the dry mouth, so special consideration should be given to clinical and laboratory procedures and aimed at optimizing denture retention and stability.

The lips should be coated with petroleum jelly to help with retraction and access to the oral cavity. The operator's gloved fingers should be wetted to prevent them sticking to the soft tissue.

A careful and gentle approach is essential for patients with dry mouth as the mucosa and lips are friable and easily traumatized.

A mirror should be used instead of fingers to facilitate insertion of the tray in cases of circumoral scarring due to chronic angular cheilitis or underlying connective tissue diseases.

The restricted oral aperture makes access for impression making extremely difficult and painful, so a two part impression may be necessary.

Zinc oxide eugenol paste will adhere to the dry mucosa and cause severe irritation/burning sensation. Similarly, impression plaster will adhere to mucosa and abrade it. Therefore such impression materials must be avoided. Silicone impression materials are best tolerated and least traumatic to the mucosa.

Dentures with metal bases exhibit improved accuracy of fit and effective wetting contributing to better retention.

Non-anatomic teeth are preferred and are to be placed in the neutral zone. Well finished prosthesis is recommended. Soft denture liners can be used on the fitting surface of denture routinely to minimize the traumatic forces and patient discomfort.

Retention can be increased by soaking the denture in water, then spraying its entire surface with artificial saliva.

The best results are obtained by moistening the mouth with a sip of water and then spraying with the saliva substitute before placing the dentures.

A common **disadvantage** of these moistening techniques is the relative short retention time of saliva substitute in the oral cavity requiring **reapplication** every few hours, which is highly inconvenient for the patients.

To circumvent this problem slow release devices like **artificial saliva reservoirs** within removable prosthesis have been suggested for patients with xerostomia .

A reservoir denture can hold and release increased volume (between 2 and 4 ml) of artificial saliva.⁶

DENTAL IMPLANTS

There have been only a few reports on the use of implants in patients with xerostomia, which indicate that these patients can be successfully treated with osseointegrated implants resulting in enhanced patient comfort. In these patients placement of implant and their integration into the underlying bone occur normally unless there is a significant immunosuppression or patient is under high doses of steroid therapy.

When implants are considered to be viable therapeutic options, it seems prudent for clinicians to adhere to the following guidelines .

Prior to implant placement, the underlying cause of the xerostomia should be properly **diagnosed** and treated. Any oral bacterial infections such as **periodontitis**, caries or **fungal infections** such as candidiasis should be thoroughly treated prior to implant placement.

After implant placement, **maintenance** intervals should be shortened to prevent the development of peri-implantitis due to the increased plaque formation in these patients.^{1,7,8}

CONCLUSION-

Dry mouth problems have a clinically significant deleterious impact on oropharyngeal health, making dental management more challenging. Therefore Prosthodontist must be able to diagnose dry mouth conditions in their elderly patients and provide preventive and interventional treatments to reduce the impact of this on the quality of life of the affected. The combination of various treatment modalities appears to be more appropriate in most of these patients.

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