



Review Article

Denture related pathosis and its management

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ABSTRACT

The oral environment is highly altered when a removable dental prosthesis is inserted. This further causes adverse effects on the integrity of the oral tissues. A rough surface on a denture may cause mechanical irritation resulting in a mucosal reaction, surface irregularities or porosities may result in accumulation of microbial plaque on the dentures, sometimes the constituents of the dental materials itself may induce an allergic reaction. A constant pressure on the bony ridge results in residual ridge resorption. Wearing complete denture significantly alter the masticatory function, indirectly resulting in nutritional deficiency. The sequelae of wearing complete denture reaction may be a direct or an indirect one.

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1. Introduction

The use of complete dentures is never considered trouble free. The dentures can produce severe side effects, which if left unchecked will produce, destabilization of occlusion, loss of retention, decreased masticatory efficiency, poor esthetics, increase ridge resorption, tissue injury. These problems when ignored, will progress to a stage where the patient is considered maladaptive and even, cannot wear the denture.¹ This can be totally avoided by providing proper post insertion instructions to the patient, educating the patient on denture care and maintenance and importance of regular dental visits for check-up.

2. Classification

Depending on the effect of the prosthesis on the tissues, the sequelae of complete denture wear can be classified² as follows:

2.1. Direct sequelae

A. Mucosal reactions.

1. Denture stomatitis.
2. Flabby ridge.
3. Traumatic ulcers.
4. Epulis fissuratum.
5. Oral cancers in denture wearers.

B. Burning mouth syndrome.

C. Gagging.

D. Residual ridge resorption.

E. Caries and periodontal diseases.

2.2. Indirect Sequelae

1. Atrophy of masticatory muscles.
2. Nutritional deficiency.

3. Types of Sequelae

3.1. Direct sequelae

1. Mucosal reactions³

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3.2. Denture stomatitis

Also called as denture stomatitis, inflammatory papillary hyperplasia and chronic atrophic candidosis.⁴

3.2.1. Classification according to Newton's

1. TYPE-1: A localized simple inflammation or pinpoint hyperemia
2. TYPE-2: An erythematous or generalized simple type presenting a more diffused erythema involving a part of the palate or entire denture bearing mucosa.
3. TYPE-3: A granular type (inflammatory papillary hyperplasia) commonly involving the central part of the palate and alveolar ridges.

Type 3 is often seen with type 1 or type 2

3.2.2. Etiology

1. Presence of dentures in the oral cavity for longer duration (both day and night).
2. Mechanical trauma from the dentures in addition to the plaque accumulation.
3. Candida infection.
4. Bacterial inflammation.
5. Allergic reactions.

3.2.3. Diagnosis

The presence of mycelia or pseudohyphae in the direct smear confirms the diagnosis. Management:

3.3. Supportive measures

A. To follow effective oral and denture hygiene methods and correction of the prevailing denture wearing habits.

B. Educating the patient on proper usage of dentures which include:

1. Removing of the dentures during night times and placing it in water.
2. Removing of denture after meals and to scrub it before reinserting.

C. Smoothing the rough areas of the denture to avoid trauma.

3.4. Drug therapy

Local therapy with antifungal mouth wash which include nystatin, amphotericin B are preferred to systemic therapy because resistance of candida species occur regularly when ketoconazole is used systemically. The antifungal drugs are continued for four weeks to avoid relapse.

3.5. Surgical management

The deep crypts in type III denture stomatitis requires surgical intervention which is preferably done by cryosurgery.

3.6. Flabby ridge

Flabby ridge is due to replacement of bone by fibrous tissue which is mobile and highly resilient. It is seen most commonly in the anterior part of the maxilla with opposing anterior teeth in the mandible. It is usually caused due to excessive load of the residual ridge and unstable occlusal condition. They provide poor support for the denture.

3.6.1. Management

Surgical treatment has to be considered depending on amount of bone resorption⁵ because in case of complete atrophy removal of the flabby ridge will eliminate the vestibule.

3.7. Traumatic ulcers (sore spots)

Overextended borders or unbalanced occlusion are the usual causes of traumatic ulcers.

3.7.1. Clinical features

These ulcers are small, painful and usually develop within few (1-2) days after the placement of a new denture. They are often covered by a grey necrotic membrane surrounded by an inflammatory halo with firm elevated borders.⁶

3.7.2. Management

1. Usually the ulcer heal within few days after correcting the dentures.
2. If no treatment is provided, it may progress into a denture irritation hyperplasia.

3.8. Epulis fissuratum (inflammatory fibrous hyperplasia, denture injury tumour, denture epulis)

It is a hyperplastic reaction of the oral mucosa that occur along the borders of the dentures and usually caused due to the trauma from the thin denture flanges of an unstable denture.

3.8.1. Clinical features

1. Usually it appears as a single or numerous flaps of connective tissue while some appear erythematous and ulcerated.
2. The flange of the associated denture fits conveniently into the fissure between the folds.
3. It usually develops on facial aspect of alveolar ridge and the anterior regions of the jaw.

3.8.2. Management

1. Treatment consists of removing the offending denture or shortening the flange to permit tissue rest and healing.
2. Denture or borders are corrected with soft denture liners or tissue conditioning agent.

3. Surgical removal is attempted only if this treatment fails to bring about resolution.
4. Tissue rest is generally enough to cause regression of the epuli and complete healing.
5. Suturing after surgery may decrease sulcular depth of the vestibule once scar contracture occurs. In such cases vestibuloplasty should be considered.⁷

3.9. Oral cancer in denture wearers

An association of denture wearing and oral cancer has been strongly claimed, but there is no definite proof to this statement. The factors which lead to oral cancer in denture wearing patients are heavy smoking, consumption of alcohol, poor oral hygiene and low socio-economic status.⁸

3.9.1. Management

1. Any persistent sore spot remaining even after the correction of dentures are often suspected for malignancy.
2. Regular recall visits at duration of 6 months has to be followed for comprehensive oral examination.

3.9.2. Burning mouth syndrome

It is characterised by the burning sensation in the oral tissues which are in contact with the dentures without any visible changes. Most commonly seen in women denture wearers above the age of 50 (post-menopausal).^{9,10}

3.9.3. Clinical features

The pain usually starts in the morning and aggravates during the day and the burning sensation is often associated with dry mouth and persistent alteration in the taste. Other associated symptoms include headache, insomnia, decreased libido, irritability fatigue.

3.9.4. Etiological factors

1. Local factors.
2. Systemic factors.
3. Psychogenic factors.

Local factors: Irritation caused by ill-fitting dentures, constant parafunctional movements of tongue, prolonged masticatory activity and constant excessive friction on the mucosa.

Systemic factors: vitamin B-12 deficiency or iron deficiency, xerostomia which is caused by radiation therapy, systemic disease or drugs.

Psychogenic factors: patients with anxiety and depression are more associated with BMS.

3.9.5. Management

Identifying the causative factor is important and it should be removed. Vitamin therapy is provided when associated with

its deficiency. If psychogenic / psychosocial disturbance are diagnosed, adequate treatment should be offered through counselling and use of tranquilizers if required.

3.9.6. Gagging

Gag reflex is considered a normal. It is a healthy defence mechanism that prevents the foreign bodies from entering into the trachea.

3.9.7. Causes

It can be triggered by tactile stimulation of the posterior portion of the tongue, soft palate and faucial pillars. Other stimuli include taste, sight, noise or psychological factors can also stimulate gagging. The placement of new dentures can stimulate gag reflex in sensitive patients. Overextended denture borders in posterior part of maxillary or the distolingual part of the mandibular denture often result in a persistent gagging.^{11,12}

3.9.8. Management

1. It reduces gradually within few days as patient adapts to the new denture.
2. Correction of the posterior extensions of the denture.

3.9.9. Residual ridge resorption

It is the most common sequelae of wearing complete denture in which there is a continuous loss of bone not only after the extraction of teeth but also after the placement of dentures. Residual ridge resorption is a normal physiologic process wide variation in the rate of resorption.^{13,14}

3.9.10. Management

1. Prosthodontic
2. Surgical

3.9.10.1. Prosthodontic management.

1. Mouth preparation
2. Modification of the fitting surfaces
3. Occlusion adjustment
4. Impression making

3.9.10.2. Surgical management.

1. Vestibuloplasty
 - a. Labial
 - b. Lingual
2. Ridge augmentation with
 - a. Hydroxyapatite
 - b. Alloplastic materials
 - c. Implants

3.9.11. Caries and periodontal disease (in case of over denture abutments)

In case of over denture abutments, the risk of caries and periodontal disease is very high because of bacterial

colonization (mostly streptococcus and actinomyces) and plaque formation at the sites where the access for cleansing and maintenance is very limited.^{15,16}

3.9.12. Preventive measures and Management

1. Dental Caries can be prevented by fluoride application and also by avoiding the use of dentures during night time (where the flow of saliva help in cleansing and protecting the abutments from caries).
2. Patient education and motivation to maintain good oral hygiene along with regular follow up is required.
3. Chlorohexidine mouth wash can be used to prevent periodontal problems.
4. Periodontal therapy can be done for pocket elimination.

3.10. Indirect sequelae of denture wearing

3.10.1. Atrophy of masticatory muscles

Maximal bite force tends to decrease in old persons. CT studies of muscles show greater atrophy of muscles in denture wearer especially in women. Masticatory muscles impairment is often caused due to reduced bite force and chewing efficiency.

3.10.2. Diagnosis

1. Measurement of capacity to reduce test foods into small particles verified the chewing efficiency.
2. In order to achieve equivalent reduction of food the number of chewing strokes required by a denture wearer is more than the person with natural dentition.

3.10.3. Preventive measurement and Management

1. Retention of teeth and using as over denture abutment will improve masticatory performance of individual.
2. Implant supported over denture is usually followed by improved masticatory efficiency.

3.10.4. Nutritional Deficiency

Nutritional deficiencies seen in older patients is often due to decreased food intake which can be due to reduced masticatory function or even due to reduced taste perception. However, some individuals even with poor masticatory function, rarely show nutritional deficiencies. Prosthodontic therapy should be indicated to improve the masticatory function. Other factors that effect nutrition include General health, socioeconomic status and dietary habits.¹⁷

3.10.5. Management

1. Restoring the masticatory function by providing a prosthesis or by preventing the sequelae of complete denture.
2. Modification of the dietary habits.

4. Conclusion

There are many problems related to complete denture treatment. Several can be easily solved according to research and clinical experience. For others lack of evidence based knowledge making treatment unpredictable. Therefore continuing investment in clinical research and follow up on denture wearing patients are required.

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6. Conflict of Interest

None.

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