

# Identification Of Post Insertion Complete Denture Problems: A Summary

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## ABSTRACT

In recent decades, the prevalence of edentulism and the incidence of tooth loss has decreased in developed countries; furthermore, oral implants are becoming more popular. However, in developing country like India, in the coming decades, most patients with edentulism will still continue to receive conventional prosthodontic treatment. Nevertheless, regular follow up and maintenance is needed, and as most of the patients are of older age complications like oral mucosal lesions are relatively high.

Longterm denture use, especially of a poorly maintained or ill-fitting denture, can lead to complications like tissue trauma, chronic soreness, residual ridge resorption, and denture-related oral mucosal lesions. According to previous studies, nearly a half of denture wearers present at least one denture-related mucosal lesion, and three most commonly found denture-related mucosal lesions among elderly wearers of removable denture are denture stomatitis, angular cheilitis and traumatic ulcer.

**Keywords:** Oral mucosal lesions, Residual ridge resorption, Denture sore mouth, Angular cheilitis, Traumatic ulcers, oral Thrush, Epulis Fissuratum..

## INTRODUCTION

Oral mucosa is exposed to various physiological and pathological changes due to several local environmental and systemic conditions. The prevalence of oral mucosal lesions is usually reported to be higher in denture wearers than in non-denture wearers. Wearing of artificial dentures may cause a wide variety of injuries ranging from traumatic ulcers, hyperplasia, chronic atrophic candidiasis, contact allergy, angular cheilitis and even palatal perforation in rare cases depending on the severity and denture associated aspects.

### Denture related Mucosal Lesions: [1]

- a) Traumatic Ulcer
- b) Denture stomatitis or Chronic atrophic candidiasis
- c) Epulis fissuratum, Reactive fibrous hyperplasia, or Denture-induced fibrous hyperplasia
- d) Inflammatory Papillary Hyperplasia
- e) Palatal Papillary Hyperplasia
- f) Angular Cheilitis
- g) Irritation Fibroma
- h) Frictional Keratosis
- i) Contact allergic stomatitis
- j) Palatal Perforation
- k) Cheek bite or Morsicatio buccarum
- l) Oral Thrush/ Candidiasis

#### a) Traumatic ulcer:

Traumatic ulcers are small, irregularly shaped, erythematous painful lesions that often develops within 2 to 3 days post insertion of complete denture as a result of local tissue reaction covered by greyish necrotic membrane surrounded by an inflammatory halo Clinically these are painful, solitary shallow or deep discontinuity type showing on the epithelium and are associated with peripheral keratosis of mild to severe degree often heals with or without scar depending on the extent of the damage occurred.

Traumatic ulcers are seen associated with overextension of flanges, sharp or any high spots and points, irregular roughened inner surface of the dentures, presence of any spicules bone, and/or bony sequestration under the denture. Most often, traumatic ulcers can heal spontaneously and uneventfully without complications in a brief period of time. Nonetheless, management includes removal of the any spicules/sequestrum of underlying bone, correction of flanges, high points and inner surface of the denture by providing relief areas at the involved site. Also, patient is advised for medication such as analgesics and antiseptic ointments [2,3].

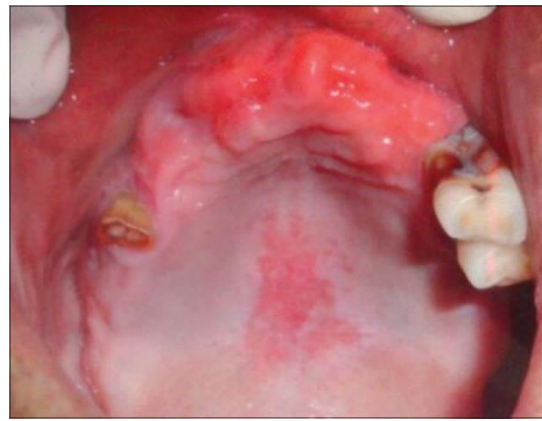


Fig.1&2. Traumatic Ulcer

#### b) Denture Stomatitis or Chronic Atrophic Candidiasis:

Denture stomatitis or denture sore mouth is the common form of chronic atrophic candidiasis manifests as a diffuse inflammation of denture bearing maxillary region exhibiting fungal growth (70% cases), bacterial or yeast colonization with or without angular cheilitis (15 to 20%) seen under ill-fitting complete or partial dentures, poor oral hygiene, dentures not properly cleaned or maintained as a result of local and mechanical irritation from *Candida Albicans* dentures or a tissue response to microorganisms living beneath the dentures.





Fig. 3&4 Denture Stomatitis or Chronic Atrophic Candidiasis

Clinical stages include numerous palatal petechial lesions followed by more diffused erythematous lesions covering the entire denture bearing areas subsequently resulting in development of granulation and nodular, papillary hyperplastic projections involving the central and periphery of the maxillary alveolar ridges. It is usually asymptomatic characterized by diffuse erythema, edema, and sometimes petechiae and white spots that represent accumulations or *Candida* hyphae. Antifungal therapy followed by replacement of denture, improvement of denture fit relining with denture soft liners, oral hygiene or cessation of denture wearing in severe cases before surgical excision is often recommended [4, 5, 6].

**c) Epulis Fissuratum, Reactive Fibrous Hyperplasia, or Denture-induced Fibrous Hyperplasia:**

Epulis fissuratum, reactive fibrous hyperplasia, or denture-induced fibrous hyperplasia is a relatively common hyperplasia of the fibrous connective tissue. The lesion presents as multiple or single inflamed and elongated papillary folds, usually in the mucolabial or mucobuccal grooves around poorly fitting partial or complete denture.

Epulis fissuratum is predominantly a tumor like hyperplastic growth of fibrous connective tissue appears as a single or multiple folds of tissue associated with flanges of ill-fitting complete or partial denture in the alveolar vestibule. Appearance of the lesions varies from small, erythematous, ulcerated, raised sessile lesion in the form of folds with a smooth surface with less than 1cm in diameter

to large, nodular growth involving the entire vestibule. This mucogingival hyperplasia is a reactive condition of oral mucosa to excessive mechanical pressure on mucosa. Surgical excision and construction of a new denture adequate for the newly established vertical dimensions. Excision can be performed by either conventional surgical approaches or by use of laser [7, 8, 9].



Fig. 5&6 Epulis Fissuratum

**d) Inflammatory Papillary Hyperplasia:**

Inflammatory hyperplasia clinically presents as a nodular growth extension localized to the traumatic site occurring on the surface of the oral mucosa caused by ill-fitting denture that histologically represent inflamed fibrous tissue, thin squamous epithelium and granulation tissues. Lesions are mostly seen in the hard palate in patients who have complete acrylic maxillary dentures. Inflammatory papillary hyperplasia lesions are generally asymptomatic and have colour spectrums varying from red to pink. It presents as hyperplastic nodules 3–4mm wide, with erythematous and cobblestone appearance.

Variants of inflammatory hyperplasia includes fibro epithelial polyp, fibrous inflammatory hyperplasia that are either sessile or pedunculated. Fibromas are firm, sessile lesions that are <1cm in diameter and epulis fissuratum is often split by the edge of the denture. One part lying under the denture and other lying between lip and the outer denture surface. Fibro epithelial polyp occurs as a flattened pink

pedunculated growth attached by a narrow stalk with serrated edges resembling a leaf (leaf like denture fibroma) beneath the maxillary denture on the hard palate. Chronic sialadenitis, osseous and chondromatous metaplasia are few reactive phenomena caused by chronic irritation at the site of pedunculated growth.

The major etiological factors include chronic trauma and irritation produced by overhanging restorations and flanges, ill-fitting dentures, acute or chronic tissue injury from biting, old dentures and fractured prosthesis. Continuous usage of prosthesis without night rest, inadequate denture flange edges, poor oral hygiene habits, allergic reactions against denture liners, abuse of tobacco, senility, and several systemic reactions are other reasons [10, 11]



Fig.7&8 Inflammatory Papillary Hyperplasia

Removal of the chronic irritation factors by relining and rebasing the ill-fitting denture followed by excision of the inflamed mucosa is recommended for inflammatory hyperplastic lesions such as fibrous hyperplasia, traumatic fibroma and pseudo-epitheliomatous hyperplasia. Different techniques have including supra-periosteal excision, the blade loop technique, or electrosurgery, with or without soft tissue grafts, cryosurgery, and lasers been described to prevent further irritation and to ensure soft-tissue seal at the periphery of the denture base.[12]

**e) Palatal Papillary Hyperplasia:**

Denture papillomatosis or palatal papillary hyperplasia is the most common lesion (3% to 4%) that develops under the maxillary denture at the

palatal region where relief areas or suction chambers are provided in the palatal seating surface. These lesions are usually associated with denture stomatitis, and chronic candida infection. Various clinical presentations include pinpoint hyperemia, erythematous, red to scarlet, swollen, friable, berry-like projections on the hard palate often bleeds with minimal trauma, and granular inflammation involving the central part of hard palate and alveolar ridges.

Lesions are usually excised (surgical, electro-cautery, cryosurgery or laser surgery) before denture preparation and a palatal splint is often recommended to maintain the post-operative surgical dressing over the denuded area [13, 14].



Fig.9&10 Palatal Papillary Hyperplasia

**f) Angular Cheilitis/Cheilosis:**

Angular Cheilitis or angular cheilosis or angular stomatitis is the inflammation of the skin and mucous membrane at the angle of the mouth characterized by redness, fissuring, scaling or crust formation with tendency to bleed. Clinically red, dry, liner deep fissured, crusty areas are seen at the angle of the mouth bilaterally associated with pain, bleeding, difficulty in mastication, mouth opening and inability to wear denture. Furrows at the angles of the mouth are deeper by loss of vertical dimension and by loss

of support by upper lip caused by resorption of the underlying bone associated with sagging of facial tissues with age.

Management includes establishment of correct vertical dimension and increasing the thickness of the labial flange of the upper denture can slightly lessen the furrows and rarely can be eliminated completely. Treatment of intraoral candida infection causing leakage of saliva containing *C.albicans* can be eliminated by application of local antifungal agents [15, 16].

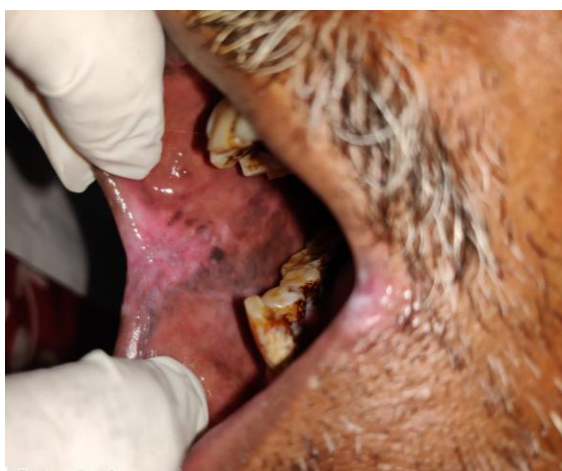


Fig. 11&12 Angular Cheilitis

### g) Irritation Fibroma

Irritation fibroma is a reactive fibrous hyperplastic tissue in response to local irritation or trauma caused by denture components or denture itself. Clinically it appears as a smooth surface, pink nodule similar to surrounding mucosal region and may also appear white due to hyperkeratinization from continuous irritation. Denture fibroma develops around the borders or flanges of an ill-fitting complete or

removable partial denture with various terms including flabby gum. Often asymptomatic lesion unless secondary traumatic ulceration occurs due to prolonged irritation. Management includes conservative surgical excision with denture replacement [17].



Fig. 13&14 Irritation Fibroma

### h) Frictional keratosis

A poorly defined patch of keratosis on the buccal mucosa is due to friction from the sharp dentures. The clinical appearance can vary depending on the degree of trauma. White patches can be caused by prolonged mild abrasion of the mucous membrane by irritants like denture components or denture itself. In some patients the frictional keratoses can be extensive involving the entire cheek and extending to the lips. The clinical findings can be of an ill-defined area of gray or white papules and plaques and may be associated with erosions and ulcers if the bite trauma is extensive.

The retromolar pad and edentulous alveolar ridge can exhibit benign keratosis as the area is susceptible to both masticatory forces, occlusal trauma or ill-fitting dentures or other dental appliances. The affected area may exhibit a macerated appearance with shredded keratin and peeling, at first, patches are pale and

translucent but later become dense and white with a rough surface. Management includes removing the frictional element by correcting ill-fitting dentures, replacement of denture components and removal of rough surface in denture. [18, 19].



Fig.15&16 Frictional Keratosis

**i) Contact Allergic Stomatitis**

Allergic reaction, hypersensitivity reaction or contact allergy to denture base occurs rarely as a red patchy area under the tissue involving the adjacent mucosal surfaces in contact. Contact area of oral mucosa due to denture base materials, restorative materials, mouthwashes, dentifrices, chewing gums, food, and other substances. Various chemical or natural agents such as cinnamon essential oils in contact with the mucosa can irritate and may trigger the formation of allergic stomatitis. Denture base materials predominantly acrylic resins, epoxy polymers are found to initiate allergic local reaction.

Diffuse erythema, edema, occasionally small vesicles, and shallow erosions appear immediately after contact with the allergen on the affected mucosal surfaces. Lesions are associated with burning symptom. In chronic allergies, whitish, hyperkeratotic, erythematous lesions form. Treatments include complete history taking and

examination, removal of suspected allergens, and use of topical or systemic corticosteroids, antihistamines [1, 6, 20].



Fig. 17&18 contact Allergic Stomatitis

**j) Palatal Perforation:**

Suction Chambers or disks used in complete denture to promote secondary retention in maxillary dentures can cause negative pressure on the underlying hard palate devoid of submucosal with thick membrane resulting in destructive effect on the palatal tissues. This negative pressure reduces the blood flow by occluding the vascular channels, creating hypoxic environment and necrosis of the tissue with bony perforation. Surgical closure of the opening and promote healing by healing plate followed by fabrication of new denture is advised. [21, 22]



Fig. 19&20 Palatal Perforation

**k) Cheek Bite or Morsicatio Buccarum:**

Cheek bite or impingement of buccal mucosa between the dentures results in inflammation and difficulty in masticatory process. Thin or overextended flanges, insufficient denture base, loss of muscular tone, insufficient arch clearance and inter-arch distance, inadequate horizontal overjet, edge to edge occlusion are few factors that causes impingement. The lesions made by chronic bite trauma (nibbling) on the buccal mucosa generally causes keratinized shreds, tissue tags, or erosive and desquamative surfaces.



Fig. 21&22 Cheek Bite

Lesions are apparent as shallow whitish wrinkles which are diffuse and present irregularly on the buccal mucosa. Management often depends on nature of jaw bone and providing adequate clearance by trimming dentures at tuberosity and/or retro-molar pad areas, re-arrangement of teeth in proper occlusion relationship, and by recontouring and polishing buccal surfaces to create horizontal overjet [6, 23, 24].

**l) Oral Thrush/ Candidiasis:**

Candida Albicans is the most prevalent microorganism in the biofilm of oral candidiasis and denture stomatitis. Candida albicans is a polymorphic fungus that can penetrate the oral mucosa barrier and invade the bloodstream in its hyphal form. Gram-positive bacteria, as Streptococcus s.anguis, S.gordonii, S.oralis, S.anginosus, Staphylococci and rods as Actinomyces predominately, followed by Lactobacillus. White creamy or yellow raised spots on the mucous membrane of mouth often described as curd like appearance. Spots can be scraped off, leaving a red tender area beneath, which can bleed. Loss of taste or an unpleasant taste in the mouth, redness inside the mouth and throat. The risk factors of candidiasis are ill-fitting denture, poor oral hygiene, poor denture hygiene, Nocturnal denture wear, smoking, Diabetes, Nutritional deficiency, Immune deficiency, broad spectrum antibiotic, corticosteroid therapy, high carbohydrate diet, xerostomia, Radiotherapy.





stomatitis is complex because of its multifactorial etiology therapeutic strategy includes the use of topical and systemic antifungal drugs, the use of preservatives and disinfectants, the irradiation with microwaves and the scrupulous removal and control of the plaque present on the denture and on the oral mucosa and several antifungal drugs include nystatin, amphotericin-B, miconazole and fluconazole. Management of underlying systemic disease, improve fit of poorly fitting dentures, improve denture hygiene, Patient education, remove dental plaque. [15-17]

Fig. 23&24 Oral Thrush/Candidiasis

Table 1: Denture induced Lesions, Causes and Treatment:

The treatment of Candida-associated denture

Denture-Induced Lesions	Causes	Treatment
a) Traumatic Ulcer	Overextension of Flanges, Sharp points, irregular Roughened surfaces, Bony Spicules beneath denture Base	Spontaneous healing Removal of spicules, Providing relief areas and Correction of flanges
b) Denture stomatitis or chronic atrophic candidiasis	Ill-fitting complete or Partial Dentures, Poor oral hygiene, Dentures not properly Cleaned or maintained.	Antifungal therapy, Appropriate denture Maintenance, Good oral Hygiene and Denture Hygiene
c) Epulis fissuratum, reactive fibrous hyperplasia, or denture-induced fibrous hyperplasia	Poorly fitting complete or Partial dentures at the Vestibular region.	Surgical excision and Construction of a new Denture.



<p><b>d) Inflammatory papillary hyperplasia</b></p>	<p>Acrylic maxillary dentures, Ill-fitting complete or partial Dentures, Continuous usage Of prosthesis without night Rest, Inadequate denture Flange edges, Poor oral Hygiene habits.</p>	<p>Removal of the chronic Irritation factors by Relining And Rebasing the ill-fitting Denture followed by Excision of the inflamed Mucosa.</p>
<p><b>e) Palatal Papillary hyperplasia</b></p>	<p>It develops under the maxillary Denture at the palatal region Where relief areas and suction Chambers are provided in the Palatal seating surface.</p>	<p>Surgical Excision, Electro-Cautery, Cryosurgery or Laser Surgery</p>
<p><b>f) Angular cheilitis</b></p>	<p>Loss of vertical dimension, Loss of support by upper lip, Candida infected saliva</p>	<p>Adequate vertical dimension and increasing the thickness Of the Labial flange of the Upper denture and Antifungal therapy</p>
<p><b>g) Irritation Fibroma</b></p>	<p>Partial Denture components Or Ill-fitting complete or Partial denture</p>	<p>Conservative surgical Excision with Denture Replacement</p>
<p><b>h) Frictional keratosis</b></p>	<p>Prolonged mild abrasion of The mucous membrane by Irritants like denture Components or Ill-fitting-Fitting complete or Partial Denture</p>	<p>Correcting ill-fitting Dentures, Replacement of Denture components and Provide smooth surface areas</p>

<b>i) Contact allergic stomatitis</b>	Denture base materials- Acrylic resins, Epoxy Polymers	Medical history, Removal of Suspected allergens and Alternative materials, Use of Topical or Systemic Corticosteroids, Antihistamines
<b>j) Palatal Perforation</b>	Suction Chambers or Disks Used in maxillary dentures	Surgical closure of the Opening and promote Healing by healing plate Followed by fabrication of New denture
<b>k) Cheek bite or Morsicatio buccarum</b>	Thin or Overextended Flanges, Insufficient denture base, Loss of Muscular tone, Insufficient Arch clearance and Inter-arch distance, Inadequate Horizontal overjet, Edge to edge Occlusion	Providing adequate clearance By trimming Dentures at Tuberosity and/or Retro-molar pad areas, Re-arrangement of teeth in Proper occlusion relationship, and by Recontouring and Polishing Buccal surfaces to create Horizontal Overjet
<b>l) Oral Thrush/Candidiasis</b>	Poorly fitting Dentures, Poor denture hygiene, Nocturnal denture wearer, Smoking, Diabetes, Broad spectrum Antibiotics, Corticosteroid therapy	Improve fit of poorly fitting denture, Improve denture hygiene, use of topical and antifungal therapy, Management of underlying systemic diseases.

**Conclusion:**

The essential consequences of wearing dentures may lead to reduction of residual ridges and pathological changes of Oral mucosa. This results in poor patient comfort, Destabilization of occlusion, insufficient masticatory Function and esthetic problems. Efforts should be made to retain some teeth in strategically good positions to serve as overdenture abutments. The patient should follow a regular follow - up schedule at yearly interval so that an acceptable fit

and stable occlusion can be maintained. Patients should be aware of implant supported prosthesis.

In young patients, advantage would be reduced residual ridge reduction. In elderly patients, the main advantages are improved comfort and maintenance of masticatory function. Proper denture care is important for health of both denture and patient mouth. Patient should be motivated to practice proper denture wearing habits and maintenance of oral hygiene and follow a program of recall and

maintenance for continuous monitoring of dentures and oral tissues. Early identification of complete denture problems in edentulous patients to improve patient's "Oral Health Related Quality of Life" {OHRQL}.

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