SEQUELAE OF WEARING COMPLETE DENTURES
**introduction**

- Complete denture for edentulous patient can restore function, improve esthetics and enhance self esteem.
- Oral cavity is not a static biologic entity, irrespective of presence or absence of teeth.
- Time dependent changes occur, particularly at the interfaces between prostheses and their supporting and surrounding tissues. Even the best designed and well-fitting denture are not meant to last a lifetime.
- Long-term denture wearing is accompanied by consequences in local morphology, plus functional and esthetic changes.
DENTURE AND ORAL ENVIRONMENT

• Placement of a removable prostheses in the oral cavity leads to time related direct and indirect changes in the oral environment.

➢ Direct mucosal reactions often result from mechanical irritation together with an accumulation of microbial plaque on denture plus an infrequent toxic or allergic reaction to constituents of the denture material. Long term and continuous denture wearing may have a negative effect on residual ridge form because of progressive alveolar bone resorption.

➢ Indirect effect as wearing complete denture that function poorly and impair masticatory functions could be a negative factor with regard to maintenance of adequate muscle function and nutritional status, particularly in older persons.
Direct sequelae

- Traumatic ulcers and cheek biting
- Denture irritation hyperplasia
- Denture stomatitis
- Flabby ridge and pendulous maxillary tuberosities
- Hyperkeratosis and oral cancer
- Residual ridge resorption
- Altered taste perception
- Burning mouth syndrome
- Gagging

Indirect sequelae

- Atrophy of masticatory muscles
- Nutritional status and masticatory functions
**Traumatic ulcers**

- When dental prostheses are first inserted, the supporting mucosa will be compressed. If pressure areas are not relieved, traumatic ulcers will result and compromises denture’s occlusal harmony and stability.

- Develop within 1-2 days after placement of new dentures.

- Small painful lesions, covered by a gray necrotic membrane and surrounded by an inflammatory halo with firm, elevated borders.

- Caused due to overextended denture flanges or unbalanced occlusion.
TREATMENT

• To correct the situation, the lesions may be marked intraorally with a thompson colour transfer stick, followed by careful insertion of the denture and relieving the area where the color has been transferred.

• In a non–compromised host ulcers will heal after correction of dentures. When left untreated, it subsequently develops into denture irritation hyperplasia.
Cheek biting

• It may be due to posterior denture teeth being in violation of neutral zone concept i.e. placed too far buccally
• This is commonly corrected by recontouring of the prosthetic teeth or even having to reset them
Denture Irritation Hyperplasia

• Common sequelae of wearing ill-fitting dentures is occurrence of tissue hyperplasia of mucosa in contact with denture border

• Lesions are a result of chronic injury by unstable dentures or by thin, overextended denture flanges.

• Lesions may be single or quite numerous and are composed of flaps of hyperplastic connective tissue.
• Inflammation is variable; however in bottom of deep fissures, severe inflammation may occur.

• Treatment is adjustment or replacement of denture. Surgical excision of hyperplastic tissues.
Denture stomatitis

NEWTON’S CLASSIFICATION

On the basis of extent and severity of disease it is classified as:

Type I: localized simple inflammation or pinpoint hyperemia

Type II: An erythematous or generalized simple type seen as more diffuse erythema involving a part or entire denture covered mucosa

Type III: granular type involving central part of hard palate and alveolar ridges
Etiology

• Type I is trauma induced whereas types II & III are caused by presence of microbial plaque accumulation (bacteria or yeast) on the fitting denture surface & the underlying mucosa.

• Denture plaque and trauma reduce the degree of keratinization and barrier function of epithelium thus the penetration of fungal and bacterial antigens takes place more easily.

• *Candida albicans* is most often associated with denture stomatitis along with the other causative factors. It is then termed as *candida associated denture stomatitis*. 
Predisposing factors for candida-associated denture stomatitis

**SYSTEMIC FACTORS**

- Old age
- Diabetes mellitus
- Nutritional deficiencies—iron, folate, vit B12
- Malignancies [acute leukemia, agranulocytosis]
- Immune defects
- Corticosteroids, immunosuppressive drugs

**LOCAL FACTORS**

- Dentures
- Xerostomia
- diet
- Broad-spectrum antibiotics
- Smoking tobacco
**Diagnosis**

- Confirmed by finding of mycelia or pseudohyphae in a direct smear or isolation of candida species in high numbers (>50 colonies)
Management and preventive measures

• Institution of efficient oral and denture hygiene and correction of denture wearing habits
• Patient instructed to remove dentures after meal and scrub them vigorously with soap before reinserting them
• The mucosa in contact with denture should be kept clean and massaged with a soft toothbrush.
• Patients with recurrent infections should be persuaded not to use the dentures at night but rather leave them exposed to air or in disinfectant solution of 0.2%-2% chlorhexidine during nights
Correction of ill fitting denture

• Rough areas on the fitting surface should be smoothened or relined with a soft tissue conditioner
• About 1 mm of internal surface being penetrated by microorganisms should be removed and relined
• Polishing or glazing of tissue surface of denture should be done
Antifungal therapy

• Local therapy with nystatin, amphotericin B, miconazole or clotrimazole is preferred to systemic therapy with ketoconazole or fluconazole because resistance of candida species to latter drugs occurs regularly.

• Treatment with antifungals should continue for 4 weeks.

• When lozenges are prescribed, the patient should be instructed to take out dentures during sucking.
Surgical treatment

• Surgical elimination of deep crypt formations in type III denture stomatitis is a prerequisite for effective mucosal hygiene. Achieved with cryosurgery
Commisural cheilitis

• Inflammation of the angles of mouth.

• Attributed to excessive interocclusal distance.

• It usually develops when occlusal plane of the lower teeth is too high. This prevents the regular action of the cheek from eliminating the saliva from the lower buccal vestibule, so saliva will exit through the corners of mouth indicating spread of infection to the angles of mouth.

• Advisable to construct new dentures
Flabby ridge

- Flabby ridge (mobile or extremely resilient alveolar ridge) is due replacement of bone by fibrous tissue.
- Seen in anterior part of maxilla, probably sequelae of excessive load of residual ridge and unstable occlusal conditions.
• Marked fibrosis, inflammation and resorption of underlying bone is seen.

• They provide poor support for denture.
• To improve stability of denture and minimize ridge resorption, the tissue should be surgically removed.

• In situation of extreme atrophy of maxillary alveolar ridge, flabby ridges should not be totally removed because the vestibular area would be eliminated.
Gagging

- Stimulation of sensitive areas in posterior pharyngeal wall, soft palate, uvula, fauces or the posterior surface of tongue results in series of uncoordinated and spasmodic movements of swallowing muscles. This is referred to as gagging.
Treatment

• Determine the cause
• Eliminate the biological and mechanical factors that contribute to the problem.
• Prescribe a combination of hyoscine, hyoscyamine and atropine with a sedative during initial period of denture use.
Burning mouth syndrome

- Characterized by a burning sensation in one or several oral structures in contact with dentures.
- Symptoms often appear for first time in association with placement of new dentures.
- Common sites are tongue and upper denture bearing tissues. Less common sites are the lips and lower denture bearing tissues. Oral mucosa appears normal.
Causes

• Local factors: mechanical irritation, allergy due to residual monomer, infection, oral habits and parafunction, myofascial pain.

• Systemic factors: vitamin deficiency, iron deficiency anemia, xerostomia, menopause, diabetes, parkinson’s diseases, medication.

• Psychogenic factors: depression, anxiety and psychosocial stressors.
Management

• Initial assessment (history/examination/special test)
• Provisional diagnosis
• Initial treatment (elimination of local irritants & investigating & treating haematinic deficiencies)
• Assessment of initial treatment
• Definitive diagnosis
• Definitive treatment (local/systemic/psychological therapy)
• Follow-up
Residual ridge resorption (GPT 7): A term used for the diminishing quantity and quality of the residual ridge after teeth are removed.

Continuous bone loss after tooth extraction and placement of complete denture is seen. Reduction is a sequel of alveolar remodeling due to altered functional stimulus of bone tissue. It is a progressive and irreversible course that results in impairment of prosthesis and oral function.
The process of resorption is important in areas with thin cortical bone (e.g., buccal and labial plates of maxilla and lingual plate of mandible).

The annual rate of reduction in height in mandible is about 0.1-0.2 mm and in general four times less in edentulous maxilla.
CLASSIFICATIONS OF RESIDUAL RIDGE RESORPTION

ATWOOD’S CLASSIFICATION:

Order I - Pre-extraction
Order II - Post – extraction
Order III - High, well rounded
Order IV - Knife edge
Order V - Low, well rounded
Order VI - Depressed
Etiological factors of residual ridge reduction

• Anatomical factors
  Important in mandible versus maxilla
• Short and square face associated with elevated masticatory forces
• Alveoloplasty
• Prosthodontic factors
  Intensive denture wearing
  Unstable occlusal conditions
  Immediate denture treatment
• Metabolic and systemic factors
  Osteoporosis

• Mechanical factors
  transmitted by dentures or tongue to the residual ridges results in remodeling process.
Consequence of residual ridge reduction

1. Apparent loss of sulcus width and depth

2. Displacement of muscle attachment closer to the crest of residual ridge

3. Loss of vertical dimension of occlusion

4. Reduction of lower face height

5. Anterior rotation of mandible
6. Increase in relative prognathia.

7. Changes in interalveolar ridge relationship after progression of residual ridge reduction.

8. Morphological changes of alveolar bone such as sharp, spiny, uneven residual ridges and location of mental foramen to the top of residual ridge.
Pre-prosthetic surgery includes the following:

- Ridge preservation procedure as a preventive measure.
- Corrective or recontouring procedures of the defects and abnormalities.
- Ridge extension procedures:
  Relative methods Eg. sulcus extension (vestibuloplasty)
  Absolute methods Eg. Ridge augmentation methods.
Indirect sequelae: atrophy of masticatory muscles

- Masticatory function depends on the skeletal muscular force and the facility with which the patient is able to coordinate oral functional movements during mastication.
- In complete denture wearers, particularly in women, atrophy of masseter and medial pterygoid muscle is seen.
- The decrease in bite force and chewing efficiency results in impaired masticatory function.
Preventive measures & management

• Retention of a small number of teeth used as overdenture abutments helps in maintenance of oral functions.

• In completely edentulous patients, placement of implants is usually followed by an improvement of masticatory function & an increase of maximal occlusal forces.
Nutritional status and masticatory functions

• 4 factors are related to dietary selection and nutritional status of wearers of complete dentures:
  1. Masticatory function and oral health

  2. General health

  3. Socio-economic status

  4. Dietary habits
Management

1. Re-education of elderly denture wearers regarding dietary habits.

2. Replacement of ill-fitting dentures.

3. Mechanical preparation of food before eating will help mastication and reduce its influence on food selection.
CONTROL OF SEQUELAE WITH THE USE OF COMPLETE DENTURES

• The essential consequences of wearing complete dentures are reduction of residual ridges and pathological changes of oral mucosae. This results in poor patient comfort, destabilization of occlusion, insufficient masticatory function and esthetic problems.
• Effort should be made to retain some teeth in strategically good positions to serve as overdenture abutments. The maintenance of tooth roots in mandible is important.

• 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 advantage are improved comfort and maintenance of masticatory function.

• 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.
Thank you