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Single complete denture

The construction of a single denture may be presented in a variety of dental combinations. It could be:

1. Single complete denture opposing natural teeth. which either:
   - **A.** Upper complete opposing by complete mandibular dentition
   - **B.** Upper complete opposing by a mandibular partial denture
   - **C.** Lower complete opposing by an upper partial denture
   - **D.** Lower complete opposing by complete maxillary dentition
2. A single complete denture opposing previously constructed complete denture the single complete maxillary denture opposing all or some of the mandibular natural teeth is a very common clinical situation

- **Maxillary complete opposing by complete mandibular dentition:**

with this case

- a gross occlusal discrepancy is very common and requires occlusal modification, adjustment, or orthodontic.
- Morphology of natural teeth which determines the selection of artificial teeth size and shape. Ex
  - If mandibular teeth are attrited, cuspless teeth are preferred.
  - If mandibular teeth are not attrited, anatomic teeth are preferred.

- **OCCLUSAL MODIFICATION**:

occlusal modification of remaining natural teeth is usually required before the construction of a single complete denture.it is a pre-prosthetic procedure where occlusal discrepancies present in natural teeth are corrected.

Several techniques could be used to determine occlusal modifications that are necessary before denture construction:

1. **(Yurkstas technique):** Use of a commercially available U-shaped metal occlusal template that is slightly convex on the lower surface. This template is often an aid in detecting minor deviations in the occlusal scheme
2. **(Swenson's technique):** Upper and lower casts are mounted on the articulator. The upper denture is constructed. If the lower natural teeth interfere with the placement of the denture teeth, they are adjusted on the cast, and the area is marked with a pencil. The natural teeth are then modified using the marked diagnostic cast as a guide. This technique is simple but time-consuming.
3. **(Bruce technique):** Use of a clear acrylic resin template fabricated over the modified stone cast. The inner surface of the template is coated with pressure-indicating paste and placed over the patient's natural teeth.

- **Upper complete opposing by a mandibular partial denture**

These dentures are very significant due to their complications, teeth selection is very important in the fabrication of dentures. so, the selection of teeth is based on the following:

- If the opposing partial denture has porcelain teeth, porcelain teeth are preferred
- If opposing natural teeth have gold or metal crowns, then acrylic teeth are preferred.

- Acrylic teeth are preferred in dentures opposing normal natural teeth or partial dentures with artificial acrylic teeth.

- **Complications**
    a) **Combination syndrome**
- **Combination Syndrome and Associated Changes (Kelly's Syndrome)**

A Combination Syndrome by Kelly (1972): destructive problems, which may be encountered as a result of long-term use of a mandibular distal extension partial denture against a complete maxillary denture.

Pathogenesis

Sequence 1:

the patient will tend to concentrate the occlusal load on the remaining natural teeth (mandibular anterior) for proprioception. Hence there is more force acting on the anterior portion of the maxillary denture. This leads to increased resorption of the anterior part of the maxilla which gets replaced by flabby tissue. the occlusal plane gets tilted anteriorly upwards and posteriorly downwards due to a lack of anterior support. The labial flange will displace and irritate the labial vestibule leading to the formation of epulis fissuratum. Posteriorly there will be fibrous overgrowth of the tissue in the maxillary tuberosity.

The shift of the occlusal plane posteriorly downward produced resorption in the mandibular distal extension denture-bearing area. Due to the tilt of the occlusal plane shifts anteriorly during occlusion. The vertical dimension decreased. The retention and stability of the denture are also decreased. The tilt of the occlusal plane disoccludes the lower anterior causing them to super erupt this reduces the periodontal support of the anterior teeth. The shift of the occlusal posteriorly downward produces resorption in the mandibular distal extension denture-bearing area. Due to the tilt of the occlusal plane, the mandible shifts anteriorly during

occlusion. The supra-erupted anterior increases the amount of force acting on the anterior part of the complete denture and the vicious cycle continues.

Sequence 2:

There is gradual resorption of the distal extension residual ridge in the mandible. This leads to tilting of the occlusal plane posteriorly downwards and anteriorly upwards rest of the vicious cycle continues

- **This syndrome consists of:**

1. Loss of bone from the maxillary anterior edentulous ridge
2. Down growth of the maxillary tuberosities
3. Papillary hyperplasia of the tissues of the hard palate.
4. Extrusion of the lower anterior teeth
5. Loss of bone beneath the removable partial denture bases.

- **It usually has six associated changes:**

1. Loss of vertical dimension of occlusion.
2. Occlusal plane discrepancy
3. Anterior spatial resorption of the mandible.
4. Development of epulis fissuratum
5. Poor adaptation of the prosthesis and, Periodontal changes.

- **The Combination Syndrome Is a Result of Three Main Factors**

1. the great magnitude of forces involved,
2. the unsuitability of the denture foundation to resist them
3. the particularly unfavorable occlusal relationship

- **SETTING OF TEETH AND OCCLUSAL CONCEPT**

Balanced occlusion or monoplane occlusion. Selecting the occlusal concept depends on the occlusal anatomy of the opposing teeth If opposing teeth are anatomic then

balanced occlusion is used. Or opposing teeth are attrited then monoplane occlusion is used

b) Fracture of denture

is a common case with single complete this is because the denture will receive excessive load from the natural teeth. the main possible factors that produce denture fracture.

1. Excessive anterior occlusal load.
2. Deep labial frenal notches.
3. High occlusal load due to excessive action of the masseter

Several precautions including checking for occlusion may decrease masticatory loud through:

- **a.** Maintain adequate thickness of denture base
- **b.** Never deepen the labial notch
- **c.** For cases with high fracture potential, use a cast metal denture base.

c) Wear of natural teeth

when porcelain teeth are used, severe abrasion of opposing natural teeth will occur, hence, a proper selection of teeth material is very important Care should be taken to avoid any occlusal discrepancy.

Selecting the occlusal concept depends on the occlusal anatomy of the opposing natural teeth

• Opposing teeth anatomic then balanced occlusion is used.

• Opposing teeth are attrited then monoplane occlusion is used.

- **TYPES OF TEETH.**

A. **PORCELAIN TEETH:** they cause rapid wear of opposing natural teeth and the occlusal vertical dimension is maintained. CONTRAINDICATED

B. **ACRYLIC TEETH:** No wear of the opposing natural teeth, they are the teeth of choice. The major disadvantage of resin teeth is their wear, which results in loss of vertical dimension.

C. **ACRYLIC WITH GOLD OCCLUSAL SURFACE:** In patients with financial resources, gold occlusal can be used to minimize wear on the occlusal surfaces. Although gold occlusal is considered the best material to oppose natural teeth, they are expensive and need time to fabricate.

D. **ACRYLIC WITH AMALGAM STOPS:** In patients with limited financial resources, amalgam stops can be inserted into the cusp tips of the acrylic resin denture teeth to reduce the occlusal wear, and the technique is simple less time-consuming, and less expensive than with the gold occlusal.

- **Mandibular single denture:**

The prognosis of a mandibular single denture against natural teeth is less favorable than when the full upper denture is opposed by natural lower teeth It would be difficult to classify this case as clinically successful. This is due to:

1. Excessive resorption of the lower ridge due to greater stresses per unit area delivered to the mandibular ridge by the natural teeth.
2. Amount of firmly attached mucosa to the denture. Denture bearing area in mandible less than the maxilla.

- **The alternative line of a treatment plan for such patients could be either:**

A. It can be best treated with a dental implant if possible

B. Use of resilient denture liner in the mandibular denture. generally, Mandibular single dentures have a very poor prognosis.

- **Problems with single dentures:**
  1. Greater magnitude of forces Changes in the underlying bone. In the long term, Denture will compromise
  2. Occlusal form of the remaining natural teeth: This occlusal form dictates the occlusal form of the denture teeth which might be unsuitable for the denture.
  3. Occlusal scheme causing more horizontal forces. These factors cause the occurrence of:

a. Single denture syndrome
b. loose or tilting denture
c. damage of mucosa
d. ridge resorption.

- **How to Overcome These Problems????????**

The primary consideration for the continued success of a single complete denture is by the preservation of remaining tissue through the following:

a. Proper diagnosis and full use of every factor, which favors success for this denture. Diagnosis and treatment planning includes:
   1. Complete case history is taken and oral examination is done.
   2. Studying upper and lower casts
   3. The upper cast is mounted on the articulator using a face bow.
   4. The lower cast is mounted on the articulator using a provisional centric interocclusal record at an acceptable vertical dimension.
   5. Applying the principles of complete denture construction which includes:

- ❖ Maximum base extension within functional anatomical limits (distributed forces over the largest possible area of supporting structures and the force per unit area kept at a minimum.
- ❖ Lip support
- ❖ Minimal vertical overlap (Overbite)
- ❖ Suitable occlusion and free articulation.
- ❖ Avoid broad inclined planes.

- **Steps for Single Denture Construction**

1. Proper Diagnosis and mounting the diagnostic casts for evaluation of
   a. Ridge relationship
   b. Interdental space
   c. Occlusal plane
   d. Spaces
   e. Tooth position (Cusp inclination &Rotations)
   f. Tooth wear: With single complete dentures, the natural dentition opposing the edentulate arch often exhibits an uneven occlusal plane. Tilted teeth
2. Occlusal Adjustment and Tooth Modification
3. Final Impression. An ideal impression should provide:
   a. Maximum extension without muscle impingement.
   b. Intimate contact with the tissue area covered.
   c. Proper form of the borders including the posterior border of the maxillary denture.
   d. Proper relief of hard and sensitive areas.
4. Jaw relation.
5. Face bow transfer. Recording Intermaxillary Relations for Single Upper Denture. Freely removing from the upper rim whatever quantity of wax is

necessary to achieve the required degree of jaw closer. The incisal level of the upper front teeth and the occlusal plane can be determined later by reference to the lower natural teeth.

6. Artificial teeth adjustment and Try-in of waxed denture.
7. Delivery