Course & Title: **529-A Treatment and Management of the Edentulous Patient**

Session & Topic: **Lecture VII : Occlusion For Complete Dentures**

General Goal: To understand the principles of articulation and occlusion for the completely edentulous patient.

Objectives: Upon completion of this course the student should be able to :

1. Identify the requirements of a complete denture occlusion from a patient perspective.
2. compare and contrast the general considerations of an occlusion for the natural dentition and one for complete dentures.
3. Discuss the features and general principles of a bilaterally balanced occlusion, a neutro centric occlusion, and a lingualized occlusion and compare and contrast them with the other occlusal schemes.
4. Discuss the interplay between the five factors of articulation as proposed by the Hanau Quint in maintaining a balanced articulation.
5. Distinguish between mechanically balanced occlusion and physiologically balanced occlusion.
6. Describe the classification of tooth forms and the factors used in the selection of a tooth form and occlusal scheme for complete dentures.
7. Discuss the theory and application of the concept of lingualized occlusion.

LECTURE VII

OCCLUSION FOR COMPLETE DENTURES

I. Introduction
- A. Historical background
  - 1. Balanced vs. Unbalanced
  - 2. Anatomic vs. Non-anatomic
- B. Evaluation criteria
  - 1. Denture base stability
  - 2. Functional efficiency
  - 3. Preservation of supporting tissues
- C. Scientific Evidence
  - 1. Does not prove the superiority of one tooth form or arrangement
- D. Conclusion
  - 1. Selection of tooth form and arrangement is according to the philosophy of the individual practioner

II. Comparison With The Natural Dentition
- A. Natural dentition
  - 1. Each tooth functions as a unit with minimal influence on adjacent teeth
  - 2. Periodontal receptors provide protective and guiding influence
  - 3. Adaptive responses to increased functional demand are possible
  - 4. Individual teeth in health are inherently more stable due to PDL suspensory mechanism
- B. Complete denture occlusion
  - 1. Complete denture functions as a single unit i.e. forces applied to one tooth are transmitted to remainder of denture
  - 2. Lack of periodontal receptors precludes protective or adaptive responses
  - 3. Muco-periosteal support is inherently more unstable

III Philosophy of Occlusion
- A. Universal tenets
  - 1. Maximum intercuspation of teeth when jaws are in centric relation (reproducibility)
  - 2. Incisal guidance as determined by anterior teeth should be minimized
    - a. Denture stability
    - b. Reduce stress to delicate anterior ridge tissues
  - 3. Freedom to glide freely in various jaw movements without interference
    - a. Denture stability
    - b. Preservation of supporting tissues
  - 4. Teeth with natural appearance

IV. Concepts of Occlusion

A. Bilaterally balanced occlusion

1. Simultaneous contact of the upper and lower posterior teeth on the right and left sides in centric and eccentric positions
2. Designed to reduce tipping and rotation of the denture bases relative to the supporting tissues
3. Exists with artificial teeth only
4. Primary influence occurs in para functional movements as functional movements are complicated by presence of food bolus

B. Neutrocentric concept

1. Plane of occlusion parallel to the mean foundation plane
2. Uses non-anatomic teeth set on a single flat plane (monoplane)
3. Assumes vertical pattern of functional movement

C. Lingualized occlusion

1. Compromise between balanced occlusion and neutrocentric concept
2. Maxillary lingual cusp functions against a mandibular 0° or shallow cusp tooth
3. Can be used with monoplane or balanced schemes

D. Comparison with natural dentition

1. Cuspid protected occlusion
2. Group function occlusion

V. Classification of Tooth Forms

A. Anatomic - varying degrees of cusp incline

1. 33°
2. 30° (Pilkington-Turner)
3. 20°
4. 10° (Anatoline)

B. Non-Anatomic - 0° cusp incline

1. Rational *
2. Monoline

C. Materials

1. Porcelain
2. Acrylic
3. Composite resin
4. Others:

VI. Selection of Tooth Form

A. Ridge foundation

B. Patient coordination
C. Age
D. Previous experience
E. Ridge relationship
6. Experience and personal preference of the dentist *****

VII. Additional Considerations For Balanced Occlusion

A. Hanau Quint
1. Incisal guidance (IG)
a. esthetics and phonetics
b. minimize for stability of denture
2. Condylar guidance (CG)
a. fixed value for each patient (anatomic factor)
3. Cusp height (CH)
a. influences lateral and protrusive balance
b. provides tooth material for adjustments
4. Occlusal plane (OP)
a. plane of orientation
b. relationship to the ala-tragus line
5. Compensating curve
a. curve of Spee
b. influences lateral and protrusive balance
6. Thielemann's Formula

$$\frac{CG \times IG}{CC \times OP \times CH} = K \text{ (Balance)}$$

B. Protrusive movement
1. Relationship of the mandible to the maxilla when the mandible is thrust straight forward
2. Christensen effect
a. separation of the jaws upon protrusion
b. caused by the condyle translating down the articular eminence
3. Protrusive record
a. records Christensen effect
b. use 3+ thicknesses of aluwax for registration
c. register with mandible ~6mm. anterior to centric without displacing rims
d. must be straight protrusive
e. articulation
1. loosen condylar elements of articulator
2. place wax rims with protrusive record on master casts previously mounted in centric relation
3. adjust horizontal condylar guidance

4. lateral condylar guidance is pre-set on the Hanau modular articulator

VI. Indications For Neutrocentric Occlusion
- A. Senile patients with little coordination
- B. Flat ridges with lack of support
- C. Class II relationships (interdigitation of teeth not required)
- D. Class III relationships - easy to set in crossbite

VII. Principles of Neutrocentric Occlusion
- A. 0 degree cuspal inclination
- B. 0 degree horizontal condylar guidance
- C 0 degree lateral condylar guidance
- D. forces directed toward the center of support
- E. forces directed perpendicular to the ridge
- F. reduction of buccolingual width of teeth
- G. instruction to patient
  1. eliminate the incising action of anterior teeth
  2. function in centric occlusion