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

Session & Topic: Complete Denture Impressions – General Concepts

General Goal: To understand the principles, materials and techniques of impression making for the edentulous patient and to apply this knowledge in a laboratory or clinical setting.

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

1. Define a complete denture impression in their own words.
2. Compare and contrast impressions made of hard tissues with impressions of soft tissues.
3. Describe the mechanisms of support for a tissue borne prosthesis.
4. Define the concepts of primary and secondary stress bearing areas as well as relief areas and give an example of each.
5. Define the (5) objectives of impression making and relate them to a desired impression technique.
6. Discuss in simple terms the three basic philosophies of impression making relative to pressure.
7. Outline the procedure and materials of the selective pressure technique used at BCDS.
8. Describe the characteristics of an ideal impression material for complete denture impressions and explain why each characteristic is important.
9. List currently used complete denture impression materials and compare characteristics of the material used at BCDS with those of the ideal material.
LECTURE IV

COMPLETE DENTURE IMPRESSIONS

I. Basal Seat
   A. Denture bearing area
   B. Foundation for dentures made up of bone covered by mucous membrane (mucosa & submucosa)

II. Stress-bearing Areas
   A. Primary stress-bearing areas - most favorable for supporting the denture due to firmness and position
      1. Maxillary residual ridge & most of hard palate
      2. Mandibular buccal shelf
   B. Secondary stress-bearing areas - help to resist movement of the denture
      1. Maxillary rugae
      2. Mandibular residual ridge
   C. Relief areas - are not favorable for supporting a denture
      1. Median raphe - thin mucosal covering
      2. Incisive papilla - nasopalatine nerve and vessels

III. 5 Primary Objectives of Impression Making
   A. Preservation
      1. maintenance of health of oral tissues
      2. pressure in the impression results in pressure in denture base resulting in soft tissue damage and bone resorption
   B. Support
      1. "snowshoe effect"
      2. resistance to forces toward the basal seat
      3. distributes applied forces over as wide an area as possible
   C. Stability
      1. resistance to horizontal movement
      2. achieved with close adaptation of the denture to undistorted mucosa
   D. Esthetics - border thickness to achieve proper lip support
   E. Retention
      1. resistance to forces away from the basal seat
      2. factors affecting retention
         a. atmospheric pressure
            (1). 14.7 lbs/square inch
            (2). "suction" - there is no negative pressure except when another force is applied
            (3). need a good peripheral seal
         b. adhesion
            (1). physical attraction of unlike molecules for each other
(2). example: saliva to acrylic

c. cohesion
   (1). physical attraction of like molecules for each other
   (2). example: saliva to saliva

d. interfacial surface tension
   (1). resistance to separation
   (2). possessed by the film of liquid between 2 well-adapted surfaces

e. capillary attraction - force that causes the surface of a liquid to become elevated or depressed when it's in contact with a solid

f. mechanical locks

g. muscle control - musculature should fit automatically against the denture and reinforce the border seal

h. patient tolerance

IV. 3 Basic Philosophies of Impression Making

A. Pressure - functional

B. Non-Pressure - mucostatic

C. Selective Pressure
   1. multiple impression technique that allows for maximum tissue coverage while remaining essentially passive
   2. steps involved
      a. preliminary impression in stock tray
      b. diagnostic cast
         (1). diagnosis
         (2). fabricate custom tray
      c. final impression in custom tray
      d. master cast

V. Impression materials for the Edentulous Patient

A. Characteristics of an ideal impression material
   1. free flowing - light bodied
   2. dimensionally stable
   3. accurate in recording fine detail
   4. neat, clean, easy to manipulate
   5. ample working time, short setting time
   6. elastic with high high tear strength
   7. hydrophillic
   8. economical

B. Materials
   1. ZOE impression paste
   2. polysulfide rubber impression materials
   3. Polyether materials
   4. silicones (addition silicones)***
   5. mouth temperature wax
C. Material used in this course
   1. Exa mix NDS ® (G C Dental)
      a. addition silicone
      b. auto mix
      c. high dimensional stability (delayed pouring)
         accurate

VI. Implants
   A. Terminology
      1. abutment
      2. analog
      3. impression coping
      4. transfer
      5. pickup
   B. Technique

VII. Impression Procedure
   A. Preliminary Impression
      1. Overextended impression that registers entire basal seat
      2. Stock tray
         a. adapt by bending the flanges
         b. adapt by adding wax
         c. goal is uniform 4 - 6mm. thickness of alginate impression material
      1. Diagnostic cast
   B. Custom Trays
      1. Purpose
         a. greater accuracy of fit
         b. control tray borders
         c. control final impression material
         d. assures uniform thickness of impression material
      2. Materials
         a. auto-polymerizing acrylic resin
         b. modified impression compound
         c. Triad
      3. Fabrication
         a. outline
         b. wax spacer
         c. adaptation of acrylic resin
   C. Border Molding
      1. the shaping of the borders of an impression by manipulation or by action of the tissues adjacent to the borders
      2. Materials
a. impression compound  
b. mouth temperature wax  
c. elastic impression materials

D. Final Impression  
1. negative registration of the entire denture coverage area, which is used for making the master cast

E. Beading and Boxing  
1. Building walls around the impression  
2. Advantages  
   a. preserves critical areas  
   b. controls thickness of base  
   c. allows for pouring impression upright  
   d. conserves material  
   e. allows for denser cast

F. Master Cast  
1. Cast for denture fabrication  
2. Characteristics  
   a. crest of ridge (mean foundation plane) should be parallel to base of cast  
   b. base thickness is 1/2"  
   c. land area 2-3mm. wide with slight downward angle  
   d. grooves - 3 v-shaped notches on base of cast used for re-orienting casts to articulator mounting during a subsequent step