Secondary Impressions:
Anatomic and Physiologic Impressions

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Impressions for tooth-supported RPDs

Impressions for tooth and tissue supported RPDs

- In tooth-supported removable partial denture, forces are directed through the rests and transmitted to the abutments.

- Teeth absorb these forces before the forces can be transmitted to the tissues of the residual ridge.
So tooth-supported removable partial denture can be constructed from a single impression:

denture base does not contribute to the support
underlying mucosa and bone are not subjected to functional forces

1) SINGLE STAGE ANATOMIC IMPRESSION STOCK T RAY-IRREVERSIBLE HYDROCOLLOID.
SINGLE STAGE ANATOMIC
IMPRESSION- CUSTOM TRAY -
IRREVERSIBLE HYDROCOLLOID

Impression Material
Options??
Tooth-Mucosa Borne RPDs

General Considerations

1) Impression procedures for tooth-mucosa borne partial dentures should be designed to record teeth and mucosal tissues in a manner that maximizes support.

2) Muco-osseous tissues have been described as being approximately 25 times more displaceable than the dento-alveolar tissues.

Support for the distal extension denture base

- Teeth –tissue borne support
- Affected by the following:
  1) Contour and quality of the residual ridge
  2) Extent of residual ridge coverage by the denture base
  3) Type and accuracy of the impression registration
  4) Accuracy of the fit of the denture base
  5) Design of the RPD framework
  6) Total occlusal load applied

Contour and quality of the residual ridge

- Ideal residual ridge:
  1) Cortical bone that covers relatively dense cancellous bone
  2) Broad rounded crest and high vertical slopes
  3) Covered by firm, dense, fibrous C.T.
  - This would provide optimal vertical and horizontal support against the stresses
Type and accuracy of the impression registration:

- The residual ridge has 2 forms:
  1) Anatomic form:
     - Surface contour w/out occlusal loads applied
  2) Functional form:
     - Surface contour w/occlusal loads applied

- Distortion and tissue displacement can occur due to:
  a) Viscosity of the material
  b) Insufficient thickness of impression material

Anatomic form impression:

- One stage impression method using an elastic impression material
- Represent the hard and soft tissue at rest
- Upon occlusal loading:
  1) Rest will act as a definite stop
  2) Limited movement near the abutment
  3) Distal end able to move freely – receive the most occlusal load
  4) Torque to the abutment teeth
Anatomic impression for the distal extension RPD:

- Should consider the need of mechanical stress breaker
- Disadvantages:
  1) Bone loss on the distal end of the ridge
  2) Cantilever action of the distal extension base against the abutment teeth
  - Loosening of the abutments

McCracken's Removable Partial Denture, 11th edition 2005

Resilient soft tissues of the primary supporting areas must be mildly displaced to promote their contribution to support.

Secondary and non-supporting areas should be recorded at rest to minimize the forces directed to these areas which are more susceptible to pressure-induced resorption.

Functional impression:

- Need to record the tissue that supports the distal extension RPD in its functional form & relating them to the remainder of the arch
- The more the mucosa displaces under function, the more rebound there is likely to be

McCracken's Removable Partial Denture, 11th edition 2005
Functional impression:

- McLean, 1936:
  - Dual-impression technique
  - Functional impression of the distal extension ridges under closing pressure with a custom tray
  - Overall hydrocolloid impression with the first impression held in position

- Hindels, 1952:
  - Dual-impression technique
  - Anatomic impression of the ridges
  - Specially made custom tray for the second irreversible hydrocolloid impression
  - Finger pressure applied through holes in the tray to the underlying anatomic impression of the ridges

Diwan et al, JPD 1988; 60(4)
Impressions for Distal Extension RPDs

1. At the imp. stage:
   • Disadvantages
     – If the clasp action is sufficient to maintain the denture base in its intended position, this may result in compromised blood flow with adverse soft tissue reaction and bone resorption.
     – If clasp action is not sufficient to maintain that functional relationship of the denture base to the soft tissue, this will result in floating denture with premature contact and patient dissatisfaction.

2. At the framework stage:
   Altered Cast Technique

   Functional impression:

   • Applegate, 1955:
     - Introduced altered cast technique
     - Trays attached to the metal framework
     - Fluid-impression wax (Korecta Wax IV)
     - Ridges of the master cast cut away
   • Diwan et al, JPD 1988;60(4)