

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.

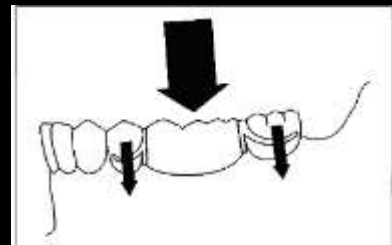


Fig 1 Forces on a tooth-supported removable partial denture (large arrow) are directed through the rests and transmitted to the abutments (small arrows).

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

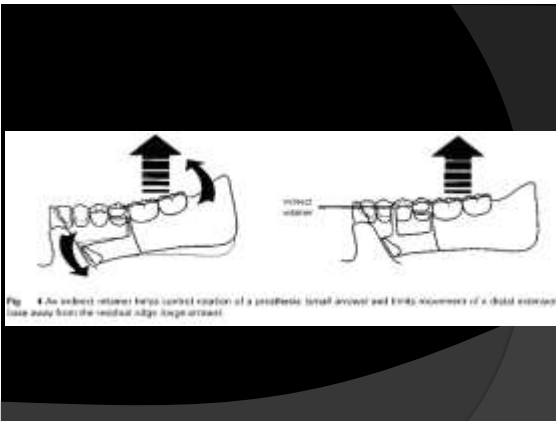
General Considerations

- 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

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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

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Type and accuracy of the impression registration:

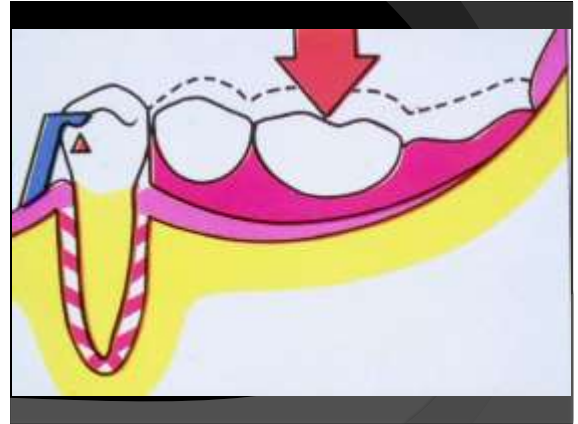
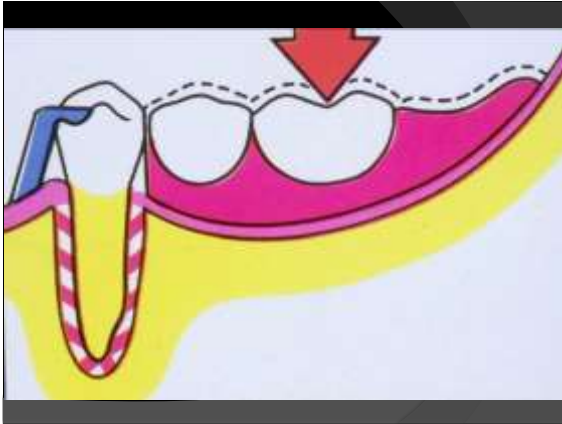
- ⊙ The residual ridge has 2 forms:
 - 1) Anatomic form:
 - Surface contour w/out occlusal loads applied
 - 2) Functional form:
 - Surface contour w occlusal loads applied
- ⊙ Distortion and tissue displacement can occur due to:
 - a) Viscosity of the material
 - b) Insufficient thickness of impression material

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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

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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

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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.

- ◉ This is accomplished by a dual impression technique .
 - **Teeth** in their anatomic positions.
 - **Residual ridge** which must record the soft tissues in their functional form.

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

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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

Diwan et al. JPD 1988;60(4)



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



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)