

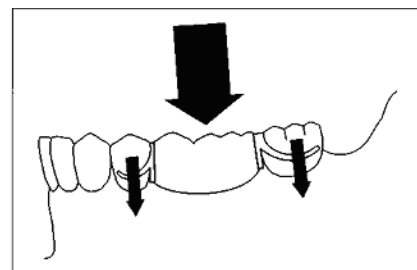
Secondary Impressions:  
Anatomic and Physiologic  
Impressions

April, 8, 2015

Impressions for tooth-supported RPDs

Impressions for tooth and tissue supported RPDs

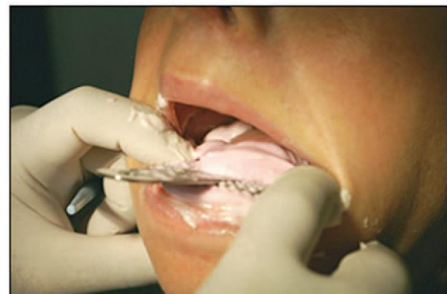
- In **tooth-supported removable partial denture** forces are directed through the rests and transmitted to the abutments.
- Teeth absorb these forces before the forces can be transmitted to the tissues of the residual ridge.

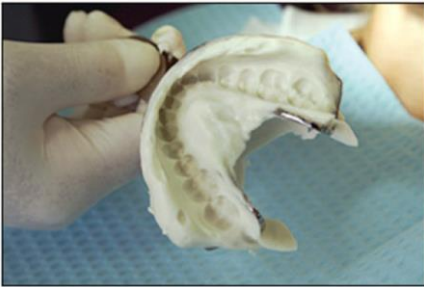


**Fig . 1** Forces on a tooth-supported removable partial denture (*large arrow*) are directed through the rests and transmitted to the abutments (*small arrows*).

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

McCracken's Removable Partial Denture, 11th edition 2005

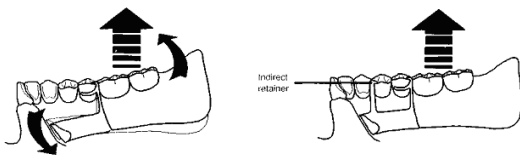


Fig 4 An indirect retainer helps control rotation of a prosthesis (small arrows) and limits movement of a distal extension base away from the residual ridge (large arrows).

## 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

McCracken's Removable Partial Denture, 11th edition 2005

### Type and accuracy of the impression registration:

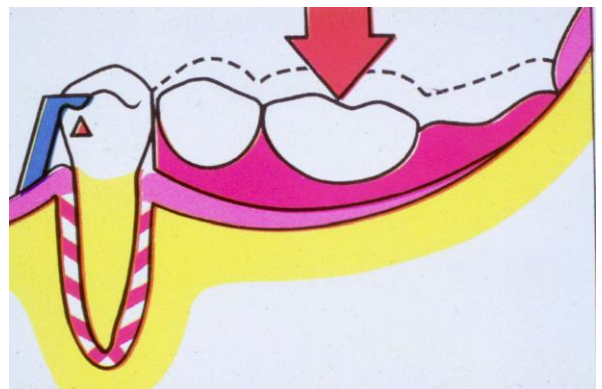
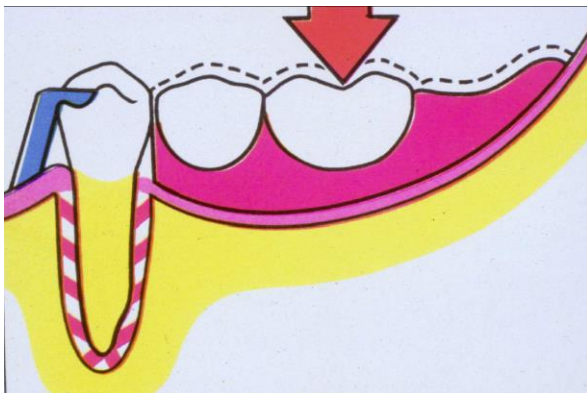
- The residual ridge has 2 forms:
  - 1) Anatomic form:
    - Surface contour w/out occlusal loads applied
  - 2) Functional form:
    - Surface contour w occlusal loads applied
- Distortion and tissue displacement can occur due to:
  - a) Viscosity of the material
  - b) Insufficient thickness of impression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

McCracken's Removable Partial Denture, 11th edition 2005

### 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

McCracken's Removable Partial Denture, 11th edition 2005



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

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.

McCracken's Removable Partial Denture, 11th edition 2005

### Functional impression:

- 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.

- 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:

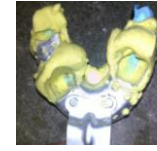
- McLean, 1936:
  - Dual-impression technique
  - Functional impression of the distal extension ridges under closing pressure with a custom tray
  - Overall hydrocolloid impression with the first impression held in position



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)