

# Introduction to Prosthodontics

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# History of false teeth

- *Replacements of lost teeth have been produced for thousands of years*
- *1<sup>st</sup> dentures were 700 BC from ivory & bone*
- *Silver, gold, mother of pearl*
- *In 1774, dentures made from porcelain*
- *The real breakthrough came when vulcanized rubber was discovered*

# History of false teeth

- *The discovery of acrylic resin is the next major revolution in prosthodontics*
- *Another important milestone in tooth replacement was the introduction of implants.*

# Definitions

- ***Prosthetics:*** *Replacements for missing parts of the human body.*
- ***Prosthodontics:*** *The branch of dentistry pertaining to the restoration and maintenance of oral function, comfort, appearance, and health of the patient*
- ***Prosthesis:*** *An artificial replacement of absent part of human body*

# Definitions

- ***Dentulous:*** *An individual who has his/her natural teeth present.*
- ***Edentulous:*** *The individual who has lost his/her natural teeth.*
- *Depending on the number of teeth missing they may be partially or completely edentulous.*

# Branches of Prosthodontics

1. *Fixed prosthodontics*
2. *Removable prosthodontics*
  - a) *complete denture prosthodontics*
  - b) *partial denture prosthodontics*
3. *Implant prosthodontics*
4. *Maxillofacial prosthetics*

# Types of Prostheses

- ***Denture:*** A prosthesis which replaces the one or more teeth and related structures in the mouth. Partial, complete, fixed or removable.
- ***Partial denture:*** A dental prosthesis which restores part not all of the dentition.
- ***Fixed partial denture:*** luted or securely retained to natural teeth, roots, or dental implants. The patient cant remove from the mouth.

# Types of Prostheses

- ***Removable partial denture:*** Any prosthesis that replaces the teeth in a partially dentate arch. The patient can remove it from the mouth.
- ***Complete denture:*** A removable dental prosthesis that replaces the entire dentition and associated structures of the maxilla and mandible.



# Reasons for tooth loss

- *Traumatic injuries*
- *Caries*
- *Periodontal diseases*
- *Cysts, malignancies and tumors*
- *Radiation therapy for tumors*
- *Grossly malaligned teeth*
- *Iatrogenic extraction*
- *Congenitally missing teeth*
- *Failure to erupt (impacted teeth)*

# Sequelae of tooth loss

- ***Resorption:*** *The socket gradually remodels until it assumes the shape of the rounded edentulous ridge.*
- ***Tilting***
- ***Drifting***
- ***Occlusal disharmony*** *leads to discomfort, pain, or damage to temporomandibular joints.*

# Sequelae of tooth loss



# Treatment Options

- *Preservation and prevention*
- *Post and core/crowns*



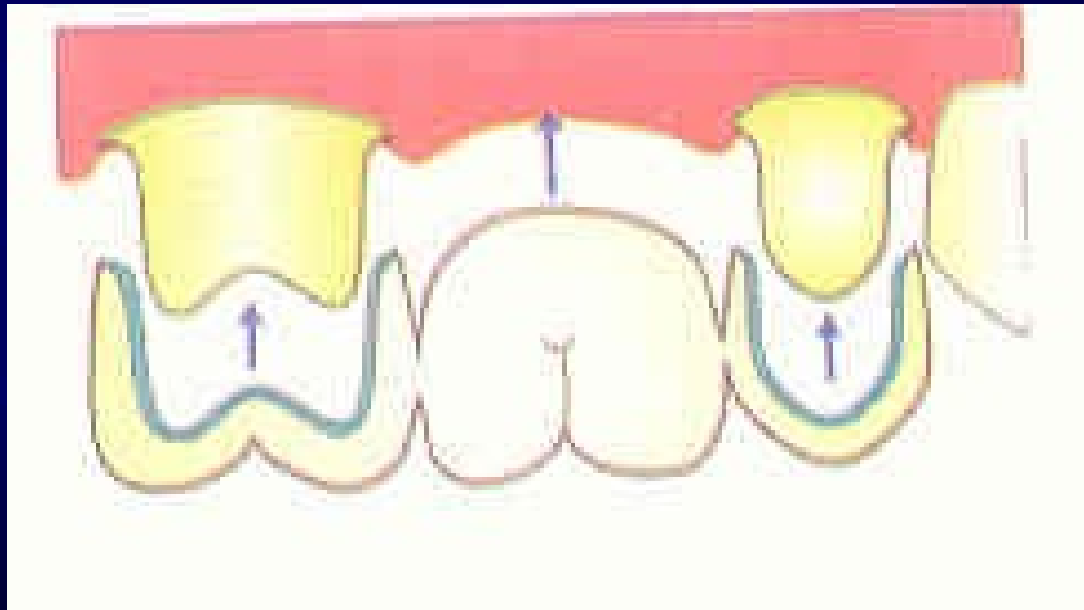
# Treatment options

- *Implants*



# Treatment options

## *Fixed partial dentures*



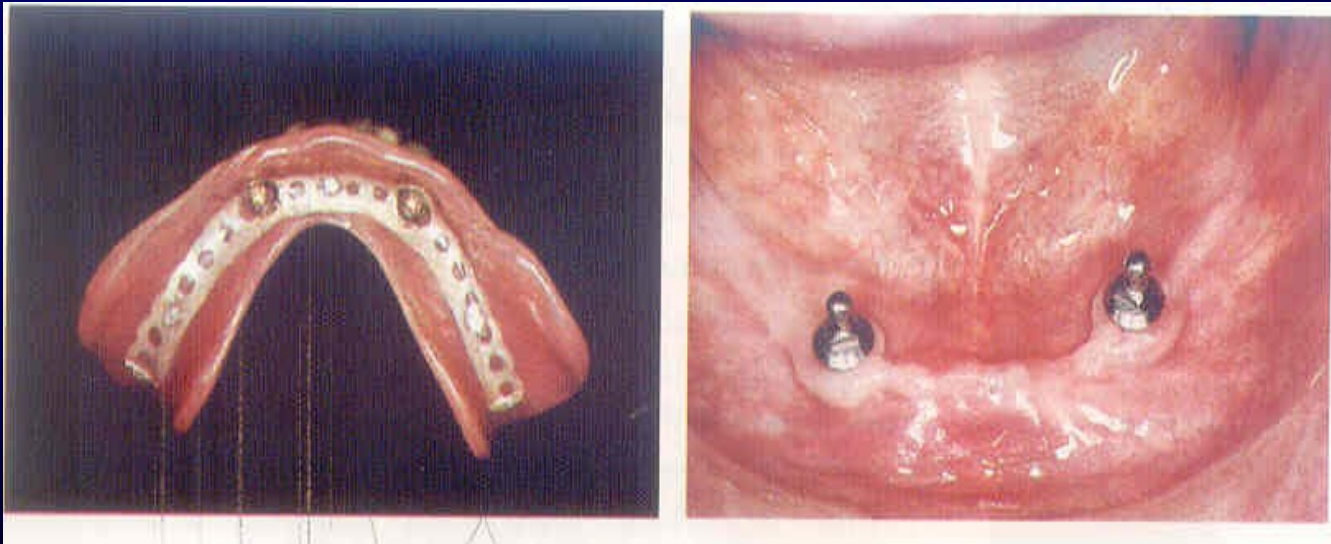
# Treatment options

- *Cast Removable partial dentures*



# Treatment options

- *Overdenture*





# Treatment options

- *Complete denture*



# Treatment options

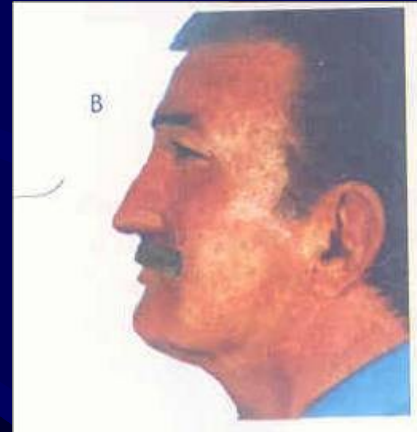
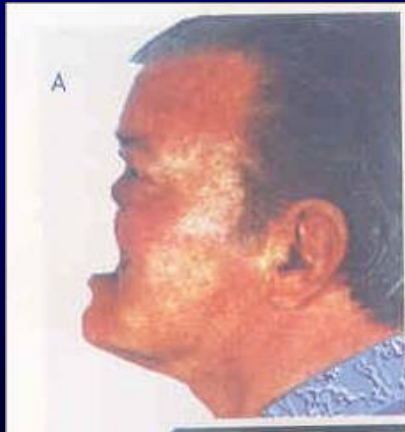
- *Implant retained denture*



# Treatment options

- *Maxillofacial prostheses*

*Make prosthetic replacements of other areas of the mouth and face lost by disease and trauma*



# Treatment objectives of CD

- *Patient education*
- *Restoration of esthetics*
- *Improvement of mastication*
- *Improvement of speech*
- *Preservation of remaining oral structures*

# Treatment objectives of CD

- *Maintenance of the health and comfort of the mouth*
- *Maintenance of the health of the TMJ*
- *General physical and psychological well being of the patient.*

# The residual alveolar ridges

*Following loss or extraction of teeth:*

- *The empty socket fills with clot and gradually replaced with new bone*
- *The bone around the socket reorganizes*
- *The mucoperiosteum gradually heals & covers the healing socket*
- *The remodelling process results in a rounded ridge like structure known as the residual alveolar ridge (RAR)*

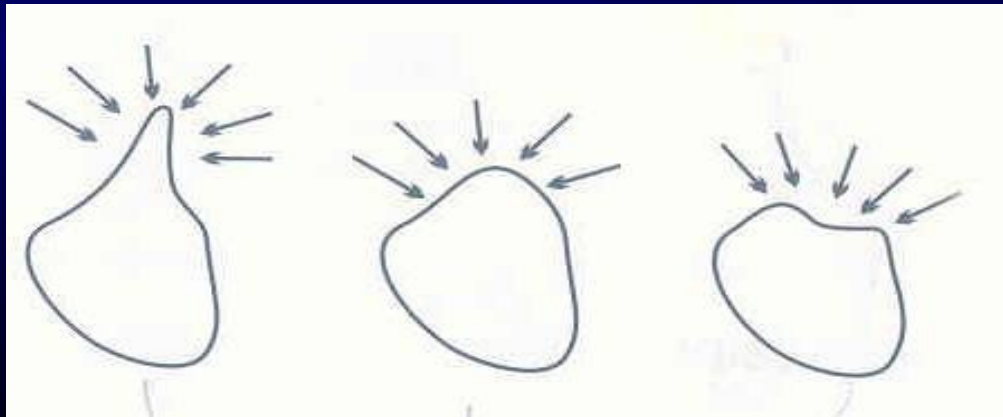
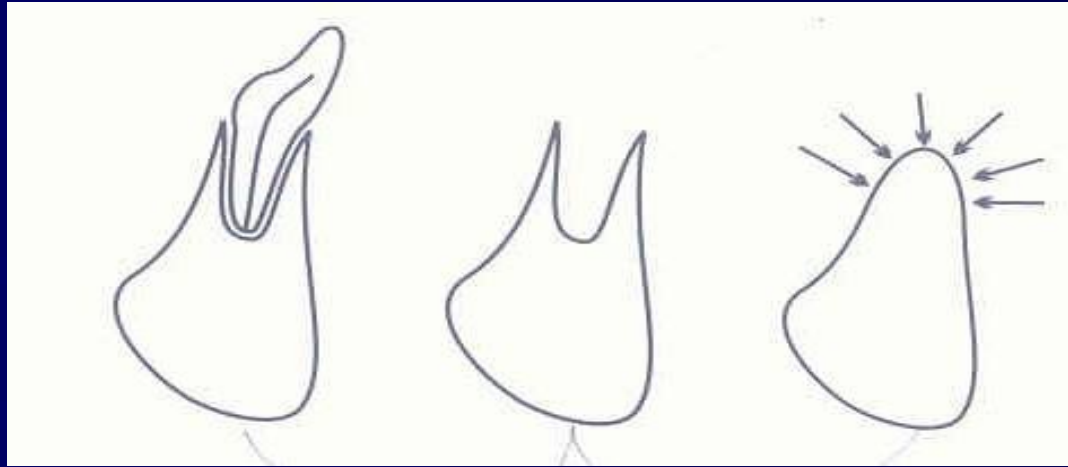
- *The RAR plays a very important role in the construction of the CD*

# Six orders of residual ridge form

- *Order I Preextraction*
- *Order II Postextraction*
- *Order III High, well rounded*
- *Order IV Knife edge*
- *Order V Low, well rounded*
- *Order VI Depressed*



# Six orders of residual ridge form



# Rate of resorption

- *Most rapid in the first 1 year after extraction and can be as high as 4.5 mm / year.*
- *After healing of residual ridge, annual rate of reduction in height is about 0.1-0.2 mm in mandible*
- *Annual rate of reduction in height is about 4X greater in mandible than in maxilla.*

# Pattern of resorption

## *Maxilla*

*The resorption is upwards and inwards  
(smaller)*

## *Mandible*

*The resorption is downward and outward  
(wider)*

# Masticatory loads

- *Significantly lower than that produced by natural teeth*
- *Natural teeth can produce forces up to **175** pounds but usually 40 to 50 pounds*
- *Denture wearers: the average force was in the region of **22-24** pounds in the molar-bicuspid region*

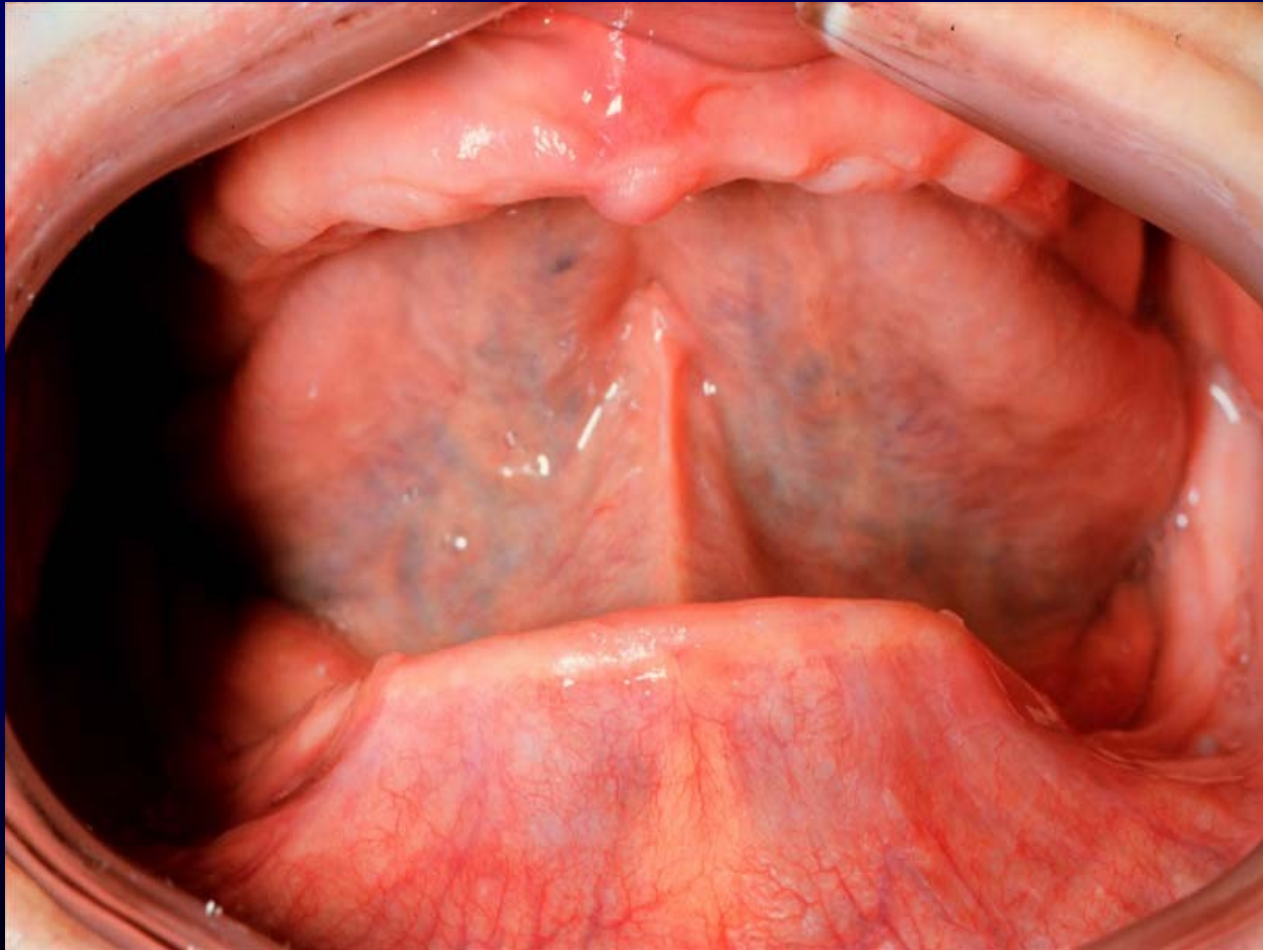
# Masticatory loads

*CD wearers are able to generate forces that are only 10-15% of those with natural teeth*

# Complete Denture Overview



# Diagnosis and Treatment Plan



# Tissue Condition

## *Improve Tissue Health*





# Tissue Condition

## *Resilient Liner*



# Preliminary Impressions



# Pour Diagnostic Casts



# Make Custom Trays

## *More Accurate Impressions*





# Border Mold

*Accurate Registration of Peripheries for Retention*



# Remove Tray Spacer and Load Impression Material



# Make Final Impression





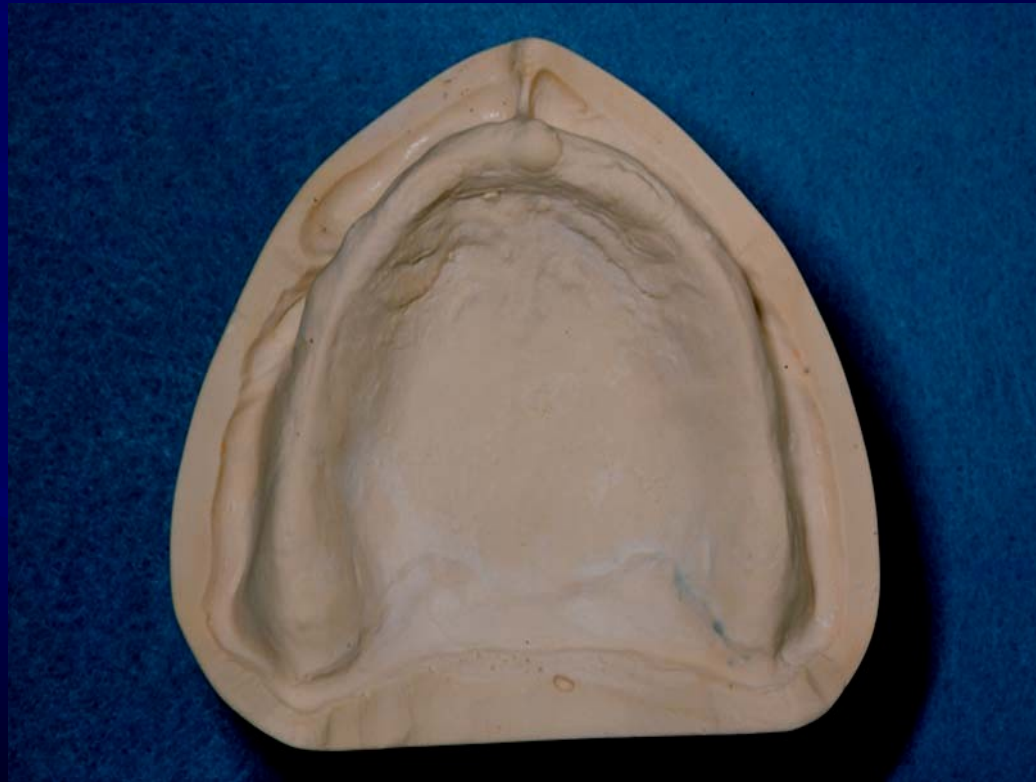
# Box Impression

*Stronger cast with peripheries for processing*





# Pour Master Casts



# Record Bases and Occlusion Rims

*For Making Jaw Relationship Records*



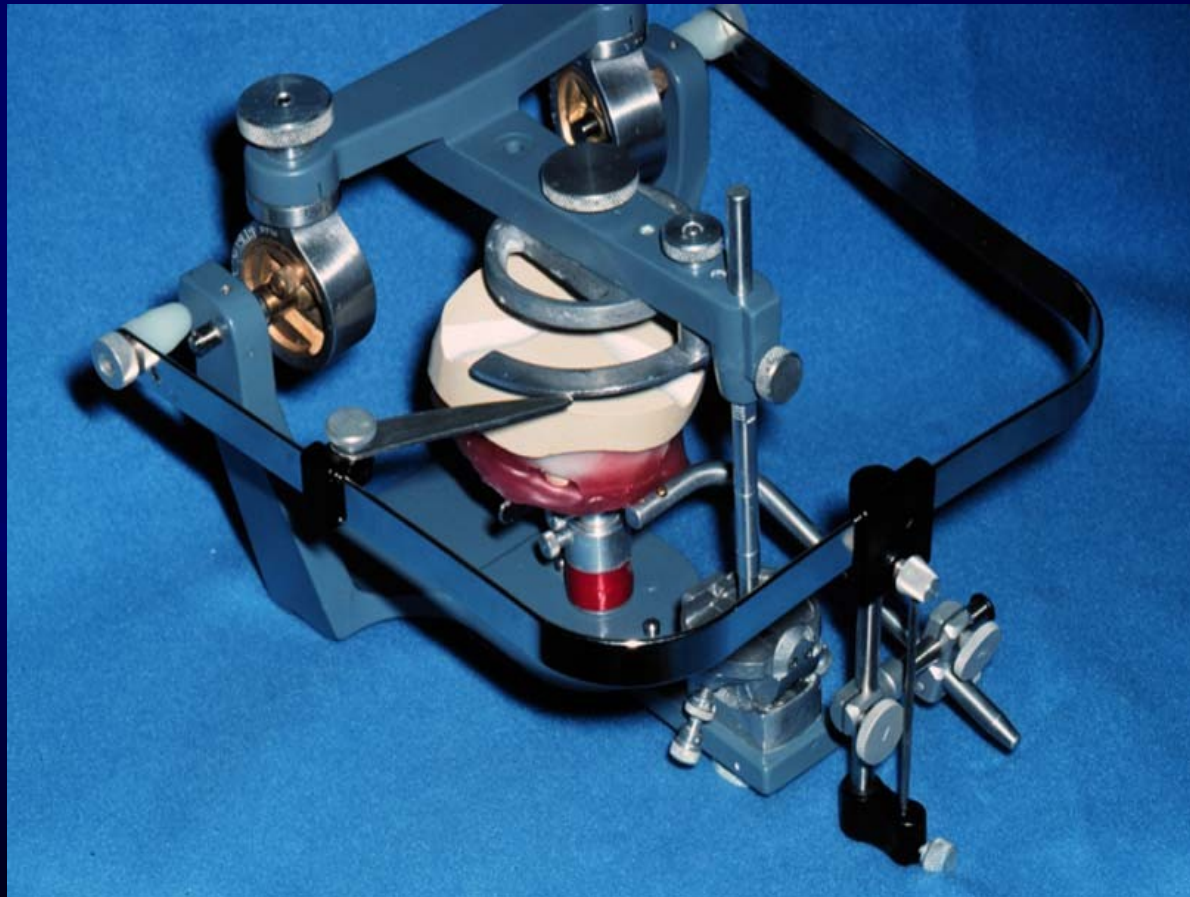
# Facebow Record

*Relates Maxilla to Transverse Hinge Axis*



# Mount Maxillary Cast

*Same Relationship to Transverse Hinge Axis*





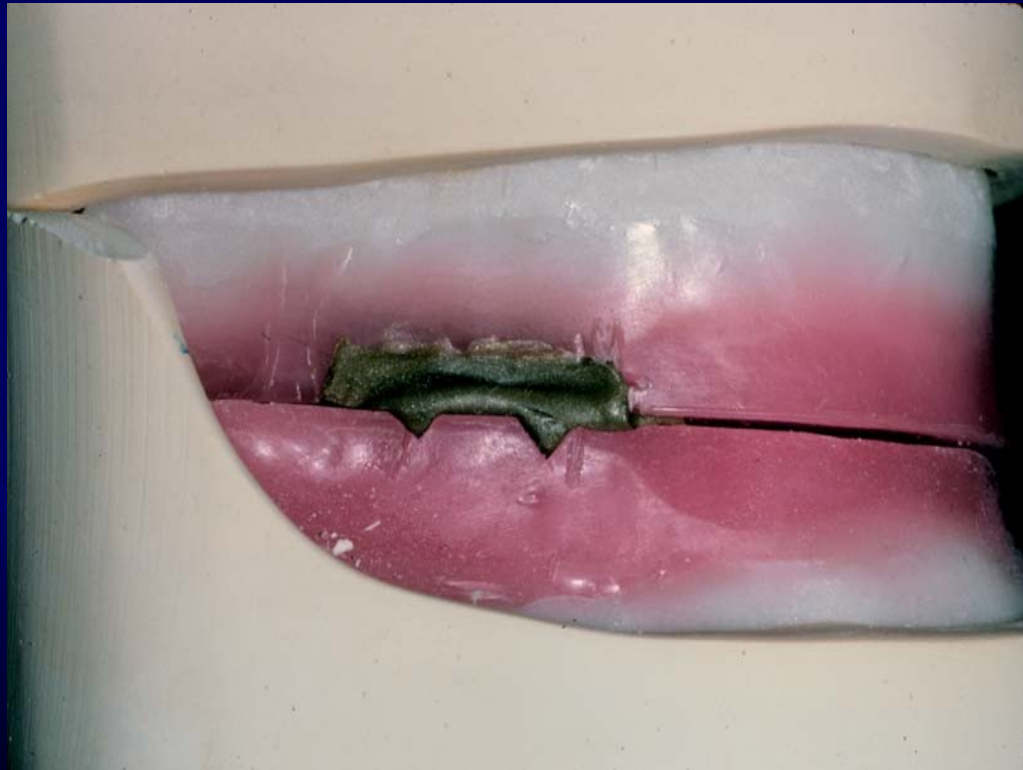
# Determine Occlusal Vertical Dimension

*Facial Height/Separation of Dentures*

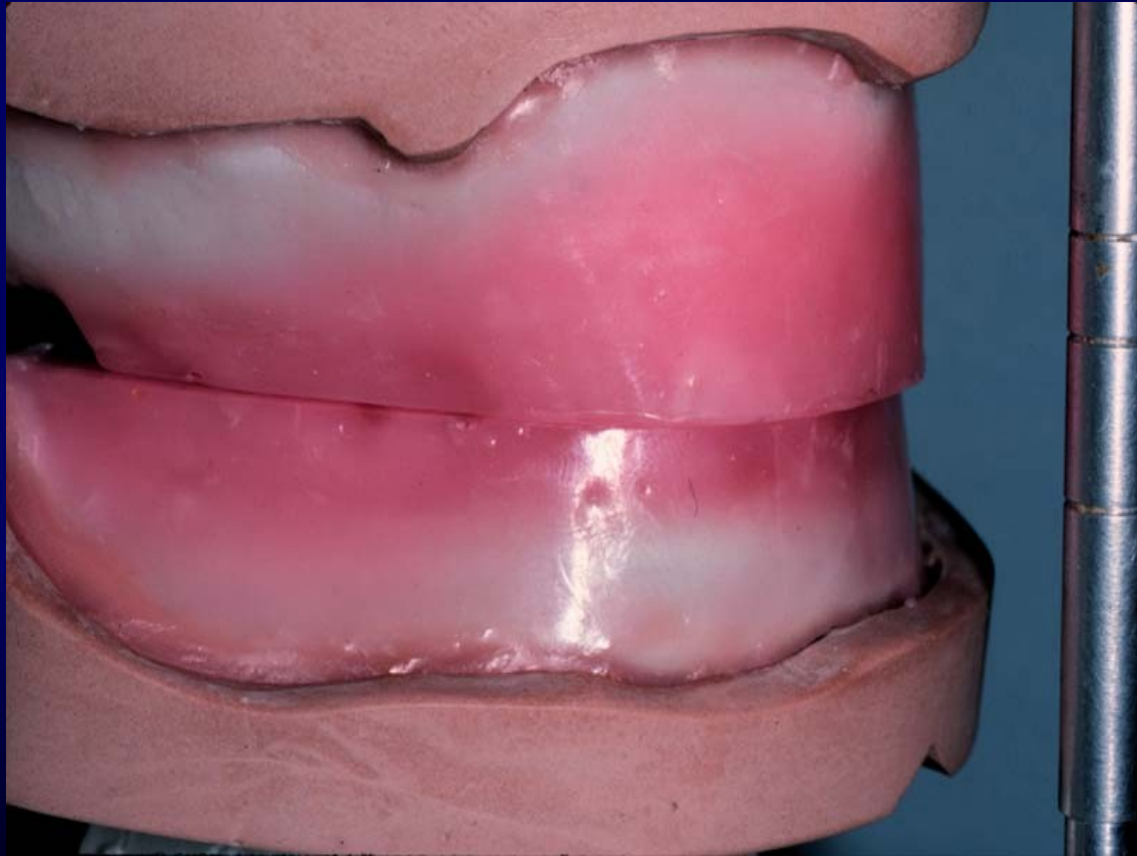


# Centric Relation Registration

*Ant/Post & Mediolateral Relationships*

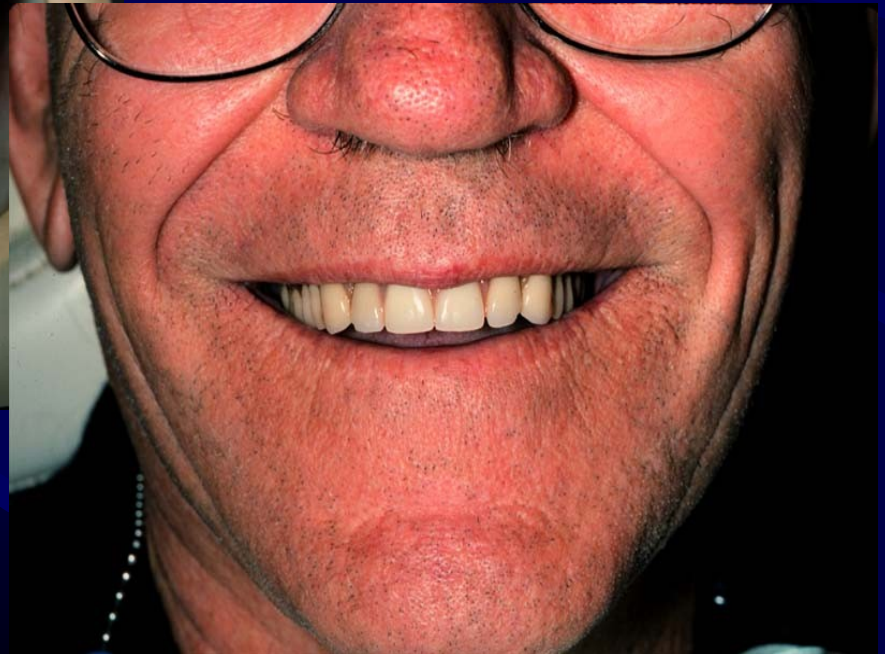
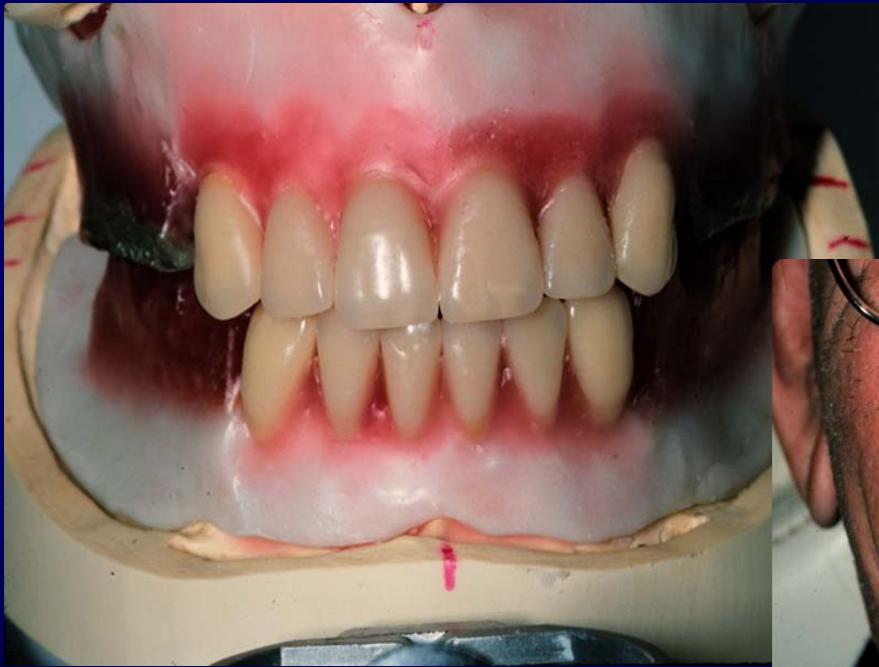


# Mount Mandibular Cast on Articulator



# Set Anterior and Posterior Teeth in Wax

*Ability to Visualize and Change Appearance*

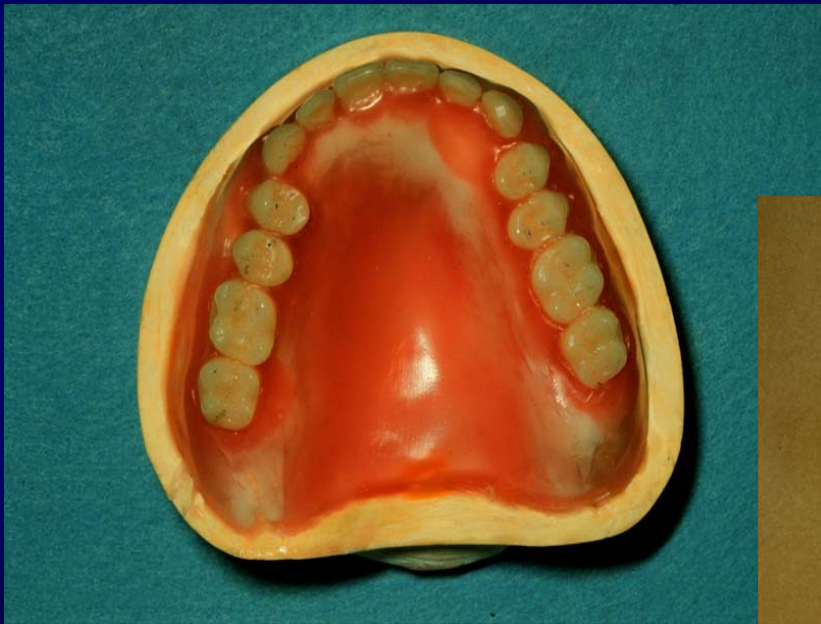




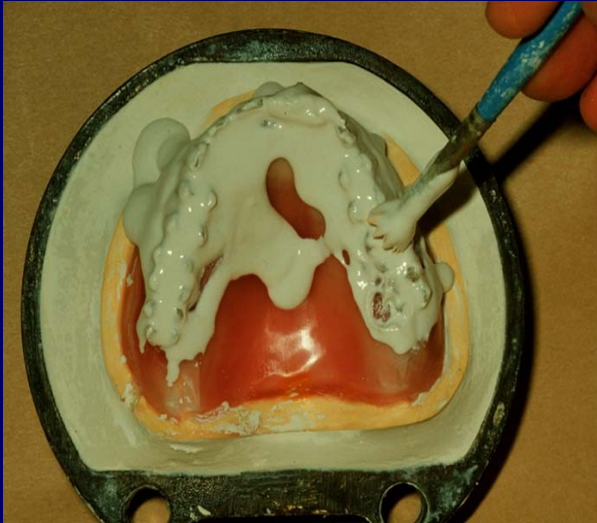
# Finalize Waxup



# Remove Denture from Articulator Flask for Processing



# Flask Waxup



# Boil Out Wax and Remove Record Bases

*Teeth Trapped in Stone*



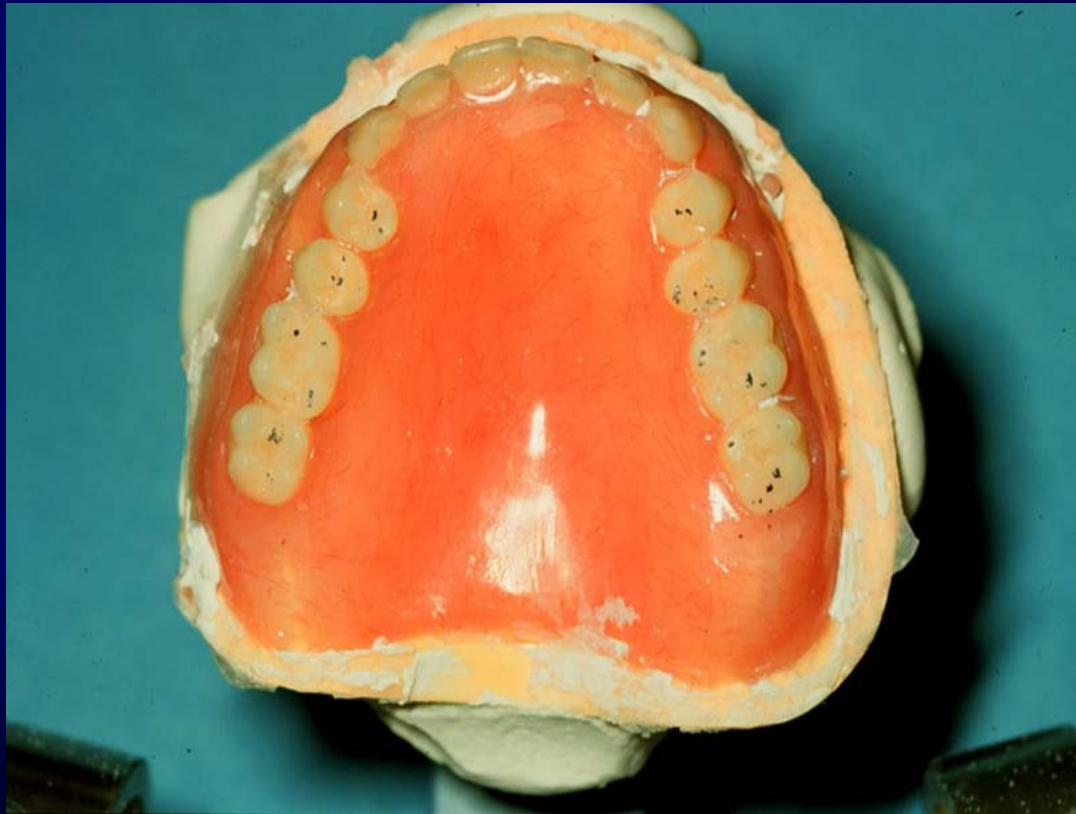


# Pack Acrylic Resin

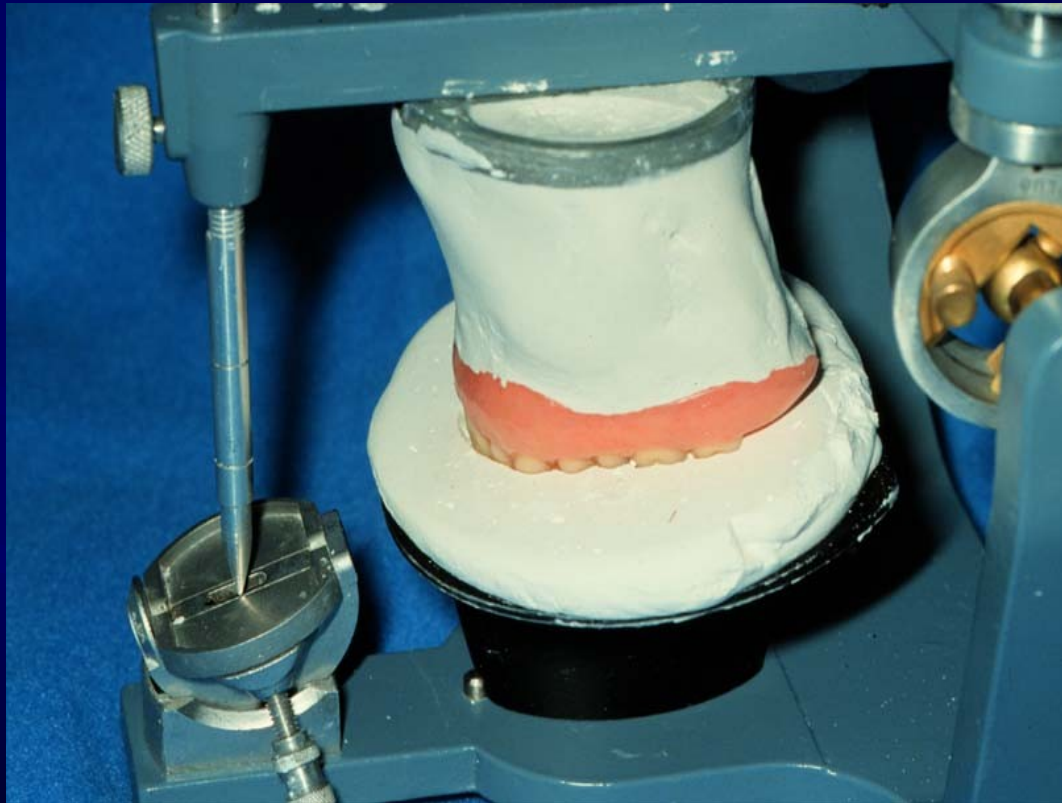
## *Hydraulic Pressure or Injection*



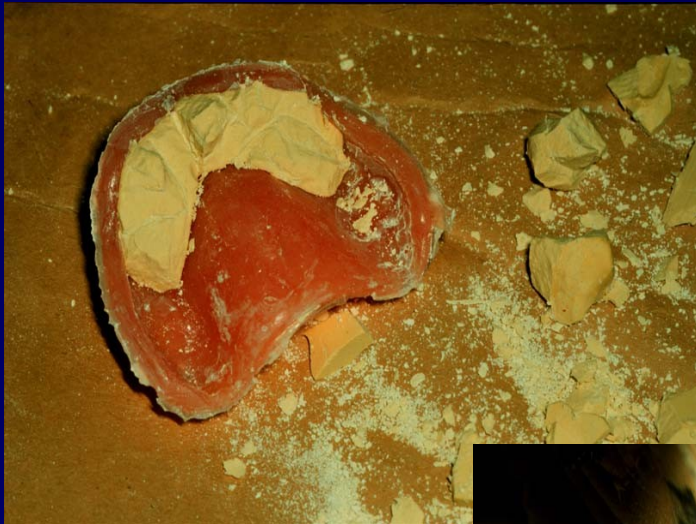
# Remount and Adjust for Processing Errors



# Fabricate Remount Index



# Remove From Cast Finish and Polish





# Remount & Adjust Occlusion



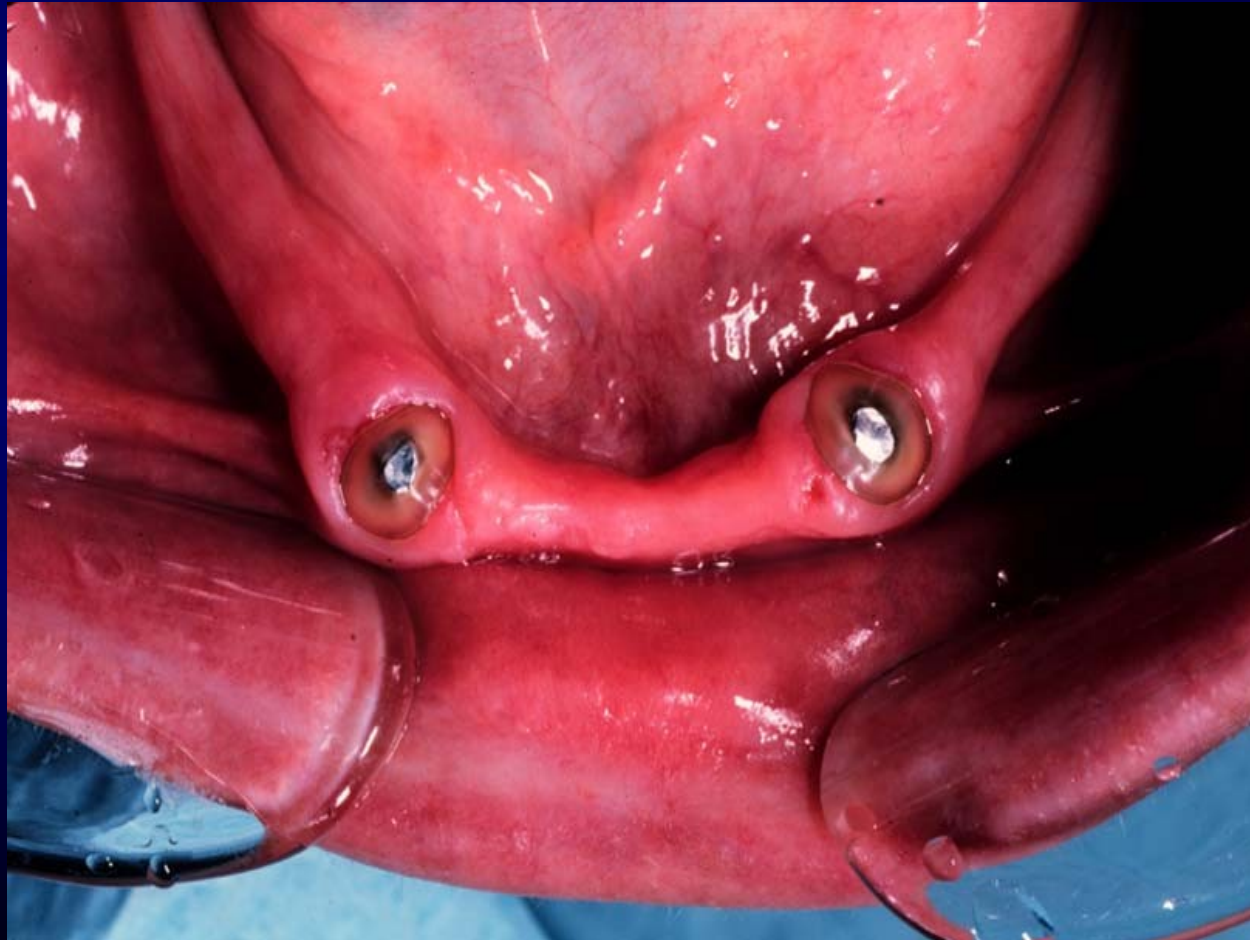
# Variations

## *Single Dentures*



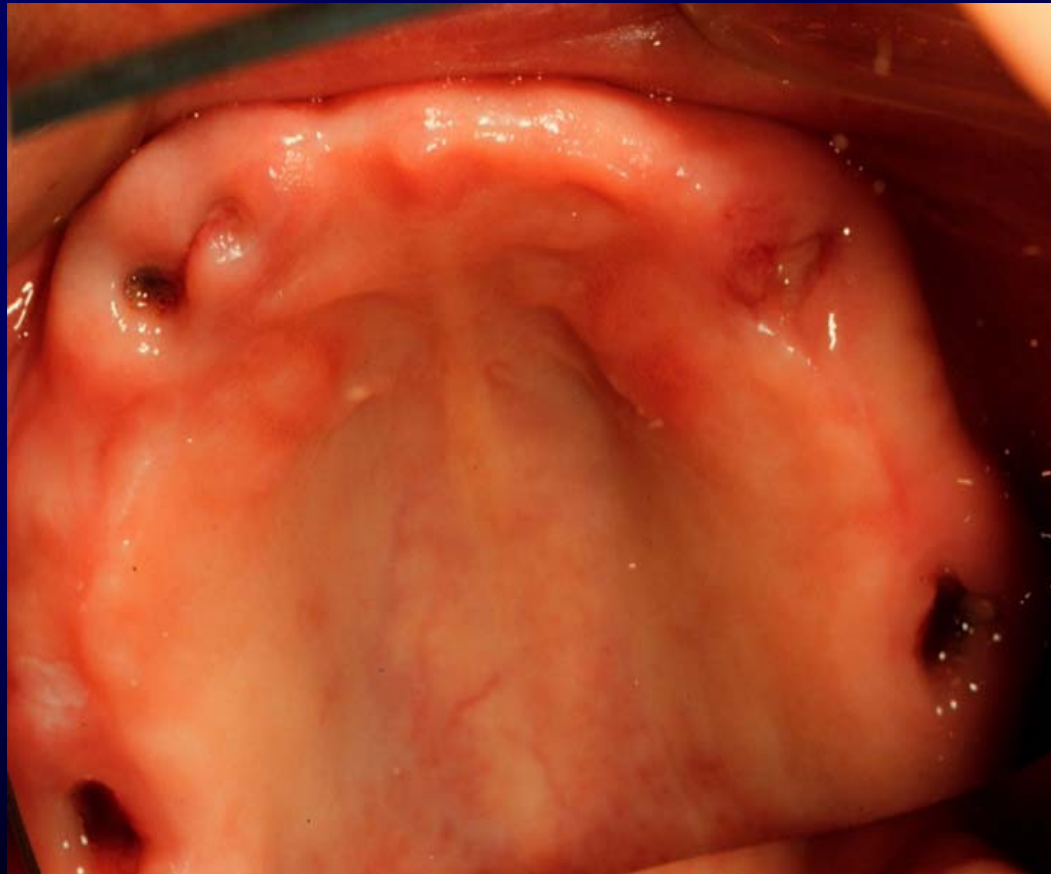
# Variations

## *Overdentures*



# Variations

## *Immediate Dentures*



# *References:*

*Complete Denture Prosthodontics, 1<sup>st</sup> Edition,  
2006 by John Joy Manappallil, Chapters 1 & 2*

**Any Question ?**