


Successful Outcomes in Contemporary Removable Prosthodontics: Clinical Complete Dentures

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Academy
of General Dentistry

Successful Outcomes in Complete Denture Prosthodontics

- Introduction & Demographics
- Diagnosis & Treatment Planning
- Impression Techniques & Materials
- Digital Denture Tooth Selection
- Occlusal Schemes for CD's
- Proper Sequence of Clinical Appointments
- Abbreviated Sequence for CD Fabrication
- Developments in CAD/CAM Dentures

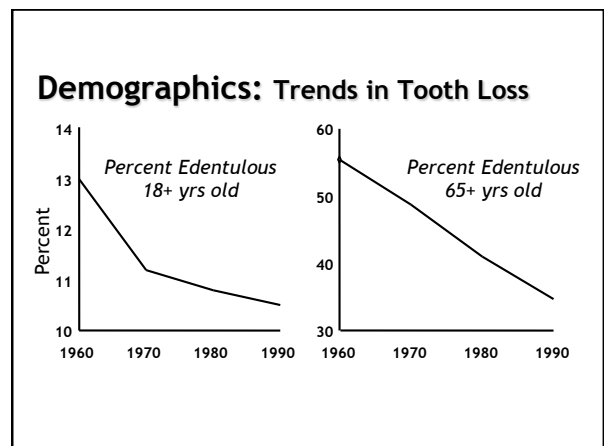
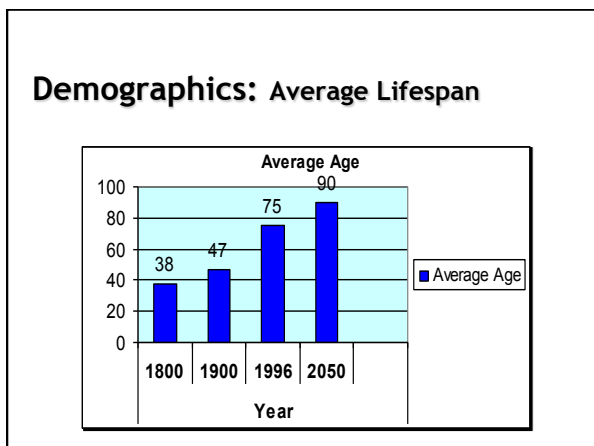
Review of Clinical and Laboratory Procedures for Complete Denture Prosthodontics



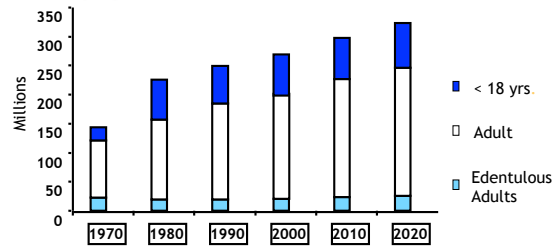
Complete Denture Success Depends on 3 Factors

- Accurate diagnosis and execution of the required technical procedures
- Meeting or exceeding the patient's desires and expectations
- Establishing good doctor-patient communications that results in patient confidence

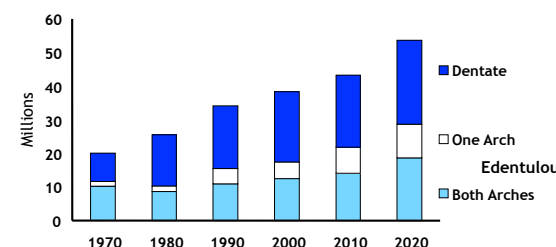
"Dr. Charles Goodacre, Dean - Loma Linda University"



Demographics:
Estimates of U.S. total adult and edentulous adult population



Demographics:
Estimates of U.S. total elderly (65+yrs.) and elderly edentulous in one or both jaws



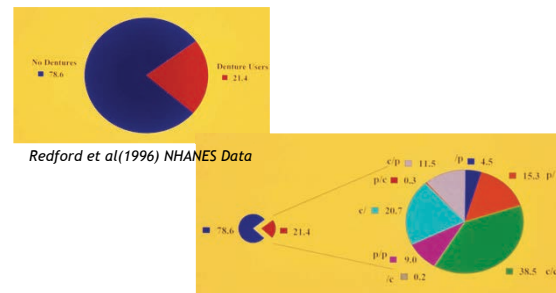
Demographics:

Will there be a need for complete dentures in the United States in 2020?

Douglas et al., J Prosthet Dent 2002

Complete dentures for all age groups from 25 to 85 years of age will increase from 33.6 million adults in 1991 to 37.9 million adults in 2020. The 10% decline in edentulism experienced each decade for the past 30 years will be more than offset by the 79% increase in the adult population older than 55 years.

Demographics:
Denture users in the adult population



Demographics:

Denture use and the technical quality of dental prostheses among persons 18-74 years of age: United States, 1988-1991

Redford et al., J Dent Res 1996

➤ Analysis of prosthodontic evaluation data indicate that approximately 60% of denture users have at least one problem with the denture.

Demographics:

Complete dentures in the prosthetic rehabilitation of the elderly persons; five different criteria to evaluate the need for replacement.

Nevalainen et al., J Oral Rehabil 1997

This study evaluated the complete dentures of 144 patients over 75 years old. They found that depending on the criteria used, between 10% and 80% of the dentures were in need of replacement.

Demographics: Trends in the laboratory industry

Answers to the question, "what is your lab specialty?"			
Type	1999	2002	% change
Partial Dentures	8%	24%	+16%
Complete Dentures	18%	23%	+5%
Orthodontics	2%	3%	+1%
Implants	3%	3%	0
Full Service	16%	16%	0
Crown & Bridge	51%	49%	-2%

Demographics: Summary

Marcus, P.A. et. al. Complete Edentulism and Denture Use for Elders in New England.

J. Prosthet. Dent.76:260, 1996

"Treatment of edentulous patients will continue to be a challenge for the dental profession; therefore, dental schools must provide adequate dental education and training in complete denture prosthodontics for the foreseeable future."

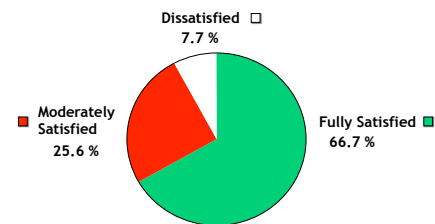
Demographics: Summary

Future needs for fixed and removable partial dentures in the United States

Douglas et al., J Prosthet Dent 2002

- The number of people in the United States who need complete dentures will increase over the next 20 years.
- Dental education programs and practitioners should consider the implications of these continuing patient needs.

Demographics:



Berg E (1998); Smedley TC et al (1989); Kapur KK et al (1997)

Demographics:

- Despite all the shortcomings edentulous patients are quite satisfied with their complete dentures, only 5-20% of them are not.

Van Waas, 1990

- Denture satisfaction is influenced by various factors, including denture quality, the denture bearing area available, the quality of dentist-patient interaction, previous denture experience and the patients personality & psychologic well being.

Berg, 1991

- Outcome from the patient's point of view is only in part related to technical aspects of the treatment modality


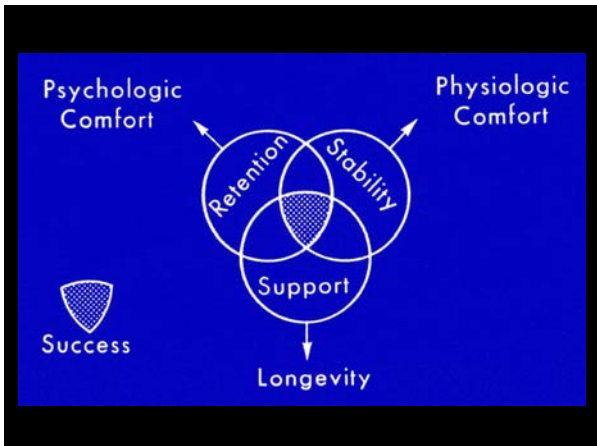
Vervoorn, 1988; Van Waas, 1990

1st Clinical Appointment -Baseline & Preliminary Impressions



1st Clinical Appointment -Baseline Evaluation

- Denture History
- Clinical Findings
- ✓ retention
- ✓ stability
- ✓ support

Successful Complete Dentures = Optimizing Retention, Stability & Support

Retention <ul style="list-style-type: none"> • Peripheral Seal - palatal seal area - tongue position - border tissue attach. - functional mobility of the floor of the mouth - facial muscle tone - salivary Flow - character of saliva - amount of saliva 	Stability <ul style="list-style-type: none"> • Residual Ridge Height & Contour • Residual Ridge Relationships • Residual Ridge Parallelism 	Support <ul style="list-style-type: none"> • Condition of Existing Dentures • Size of Jaws • Soft tissues • Max. or Mand. Tori • Palatal Vault Form 	Misc. Findings <ul style="list-style-type: none"> • Interarch Space • Tongue Size • Lip Mobility & Length • Anterior Max. Ridge Prominence • Radiographs
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Retention-resistance to vertical dislodging forces

- Immediate Retention
 - Intimate Tissue Contact
 - Peripheral (border) Seal
 - Atmospheric Pressure




Retention-resistance to vertical dislodging forces

- Immediate Retention
 - Intimate Tissue Contact
 - Peripheral (border) Seal
 - Atmospheric Pressure
- Long Term Retention
 - Neuromuscular Control



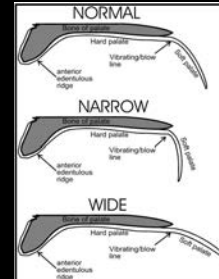
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- ✓ **Salivary Flow**
 - character of saliva
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Stability-resistance to lateral forces

- ✓ **Residual Ridge Height & Contour**
- ✓ **Residual Ridge Relationships**
- ✓ **Residual Ridge Parallelism**



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Support-resistance to vertical seating forces

- ✓ **Condition of Existing Dentures**
- ✓ **Size of Jaws**
- ✓ **Soft tissues**
- ✓ **Max. or Mand. Tori**
- ✓ **Palatal Vault Form**



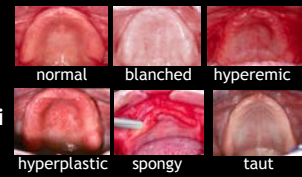
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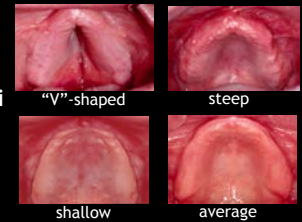
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Miscellaneous Findings

- ✓ Interarch Space
- ✓ Tongue Size
- ✓ Lip Mobility & Length
- ✓ Anterior Max. Ridge Prominence
- ✓ Radiographs



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- normal
- retained roots
- embedded or impacted teeth
- irregular spiny ridge
- pathology local
- pathology systemic

1st Clinical Appointment

-Oral Examination

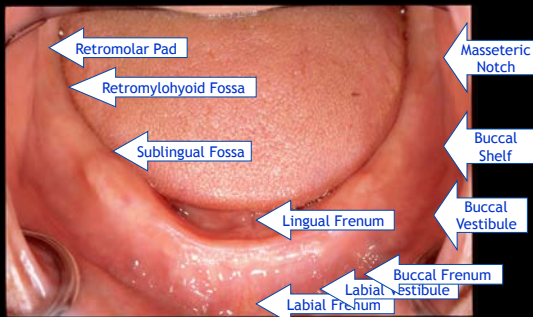
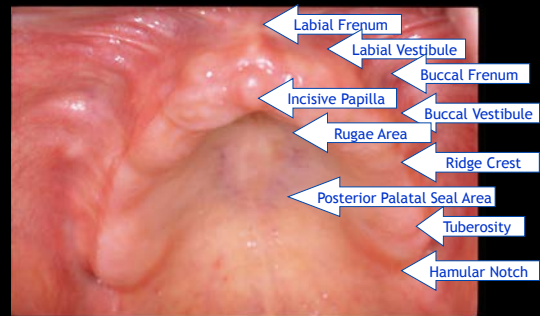
1st Clinical Appointment

-Preliminary Impressions

“The ideal impression must be in the mind of the dentist before it is in his hands.”

“He must literally make the impression rather than take it.”

M.M. De Van J. Prosthet. Dent. 2:26, 1952



Tray Selection



Anatomically correct trays for edentulous impressions

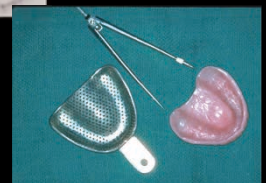
StoK
square tapered-ovoid

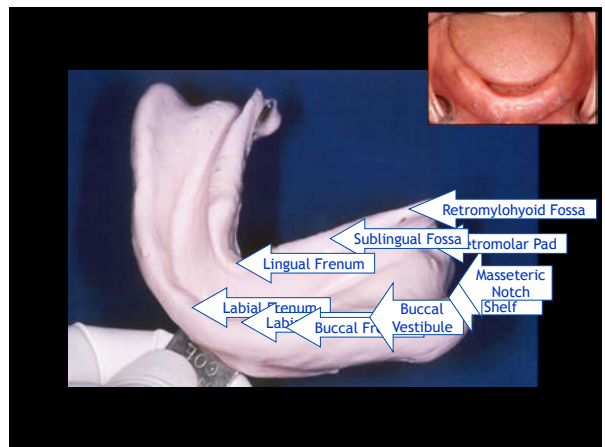
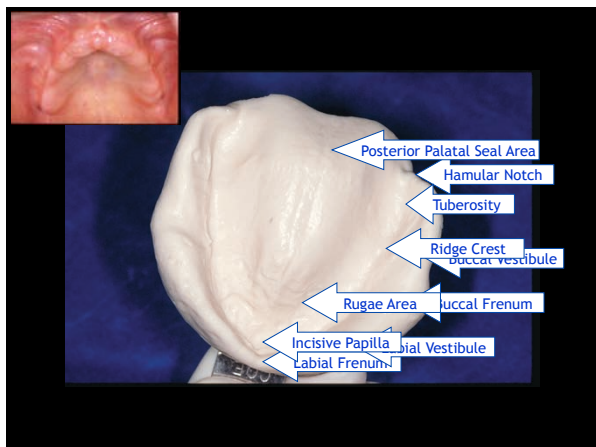
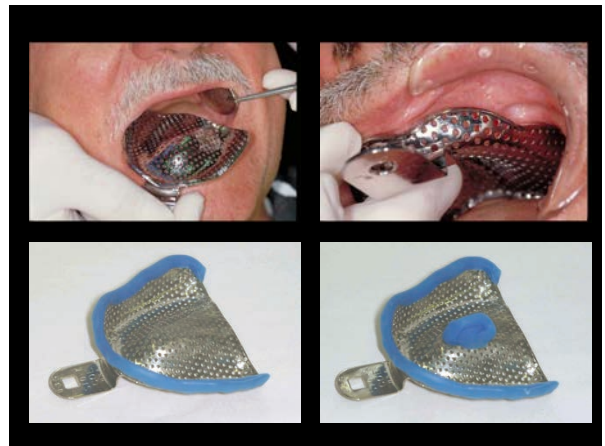
STOK is a trademark of StoK. These trays are designed after a series of tests of hundreds of mandibular and maxillary arch forms. Each design was classified in the familiar forms square, tapered, ovoid. The present trays are the result of a series of tests of hundreds of arch forms. The present trays combine the recommendations of practitioners in various parts of the United States and Europe for selection of the trays.

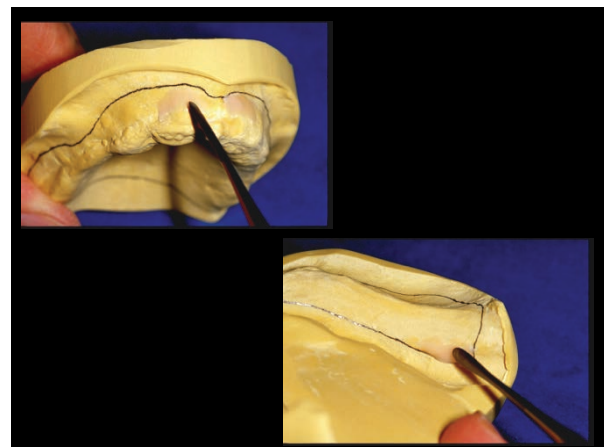
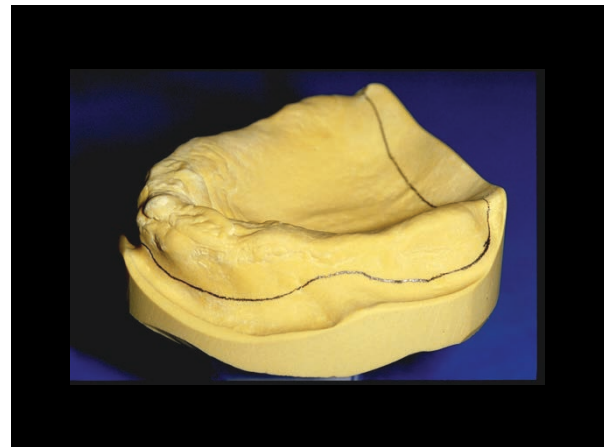
<p>square</p> <p>Indicated for the maxillary arch. The square tray is the most common type and is used for the maxillary arch. It is used for the maxillary arch because of its shape and the fact that it is the most common type of tray used for the maxillary arch.</p>	<p>tapered</p> <p>Indicated for the maxillary arch. The tapered tray is used for the maxillary arch because of its shape and the fact that it is the most common type of tray used for the maxillary arch.</p>	<p>ovoid</p> <p>Indicated for the maxillary arch. The ovoid tray is used for the maxillary arch because of its shape and the fact that it is the most common type of tray used for the maxillary arch.</p>
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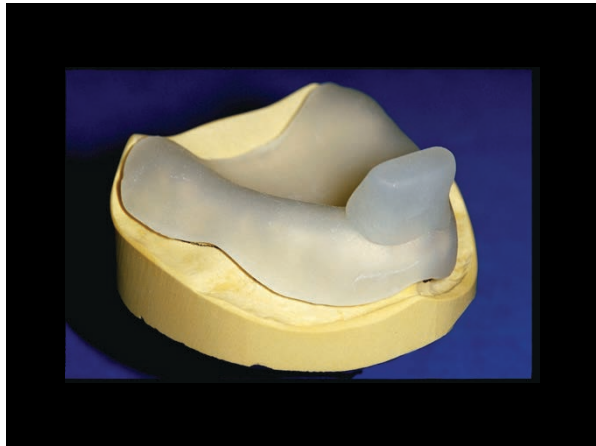


Choosing Maxillary Tray










2nd Clinical Appointment -Final Impressions



- Try-in Custom Trays
- Border Molding
- Final Impressions

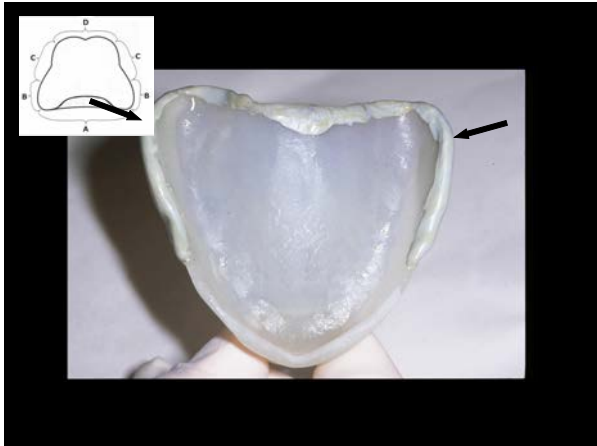
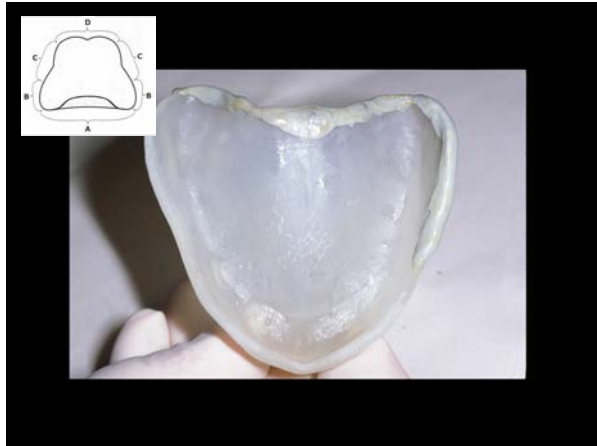
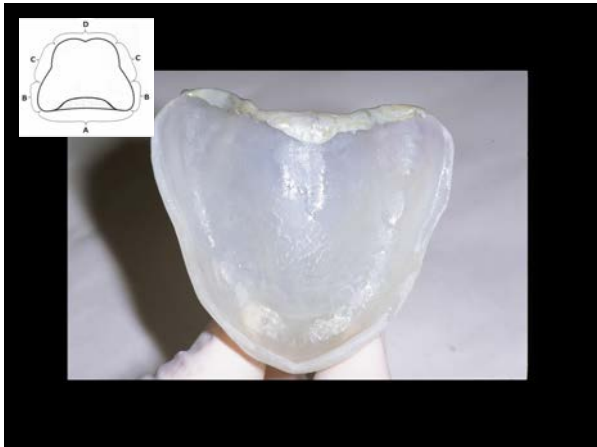
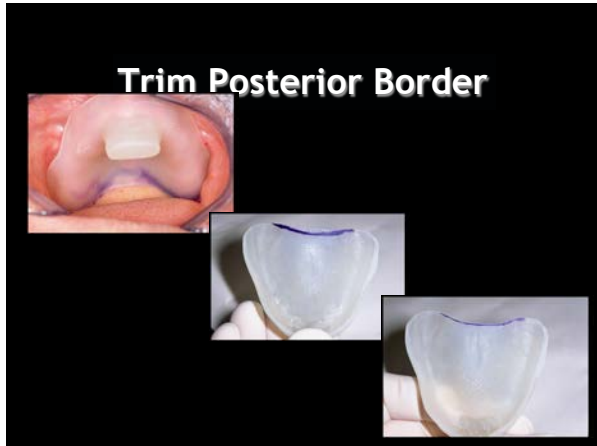


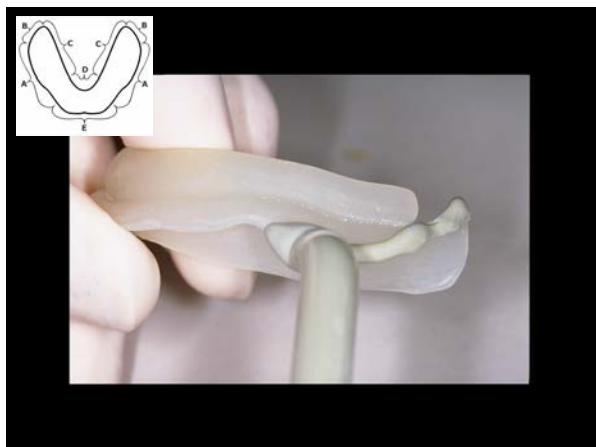
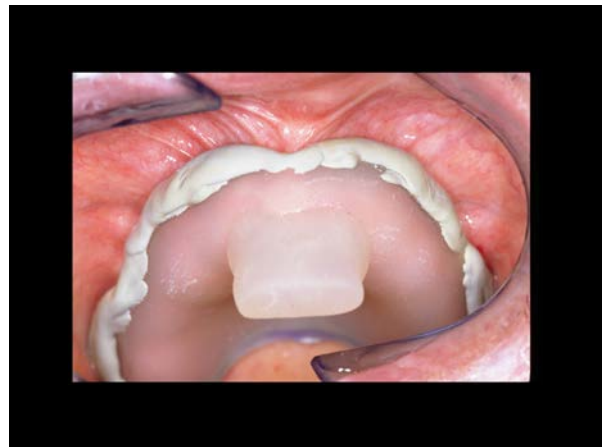
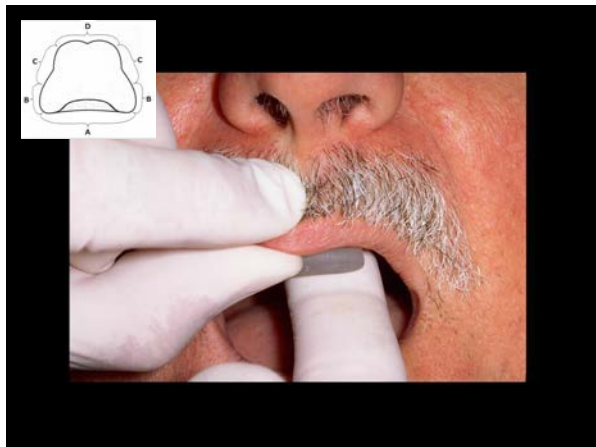
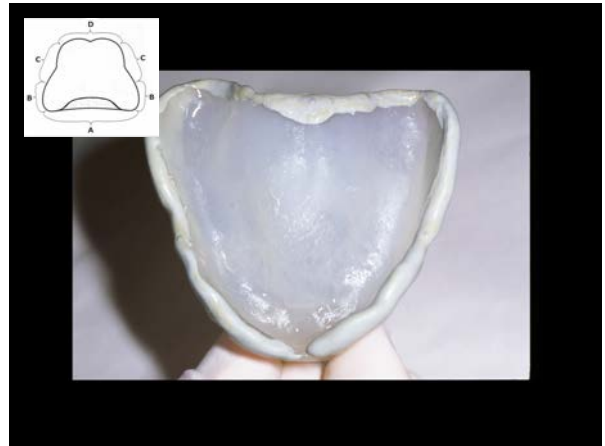
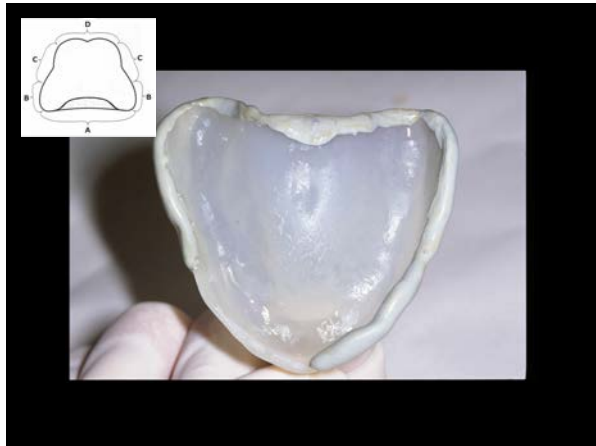
Try Trays in the Mouth

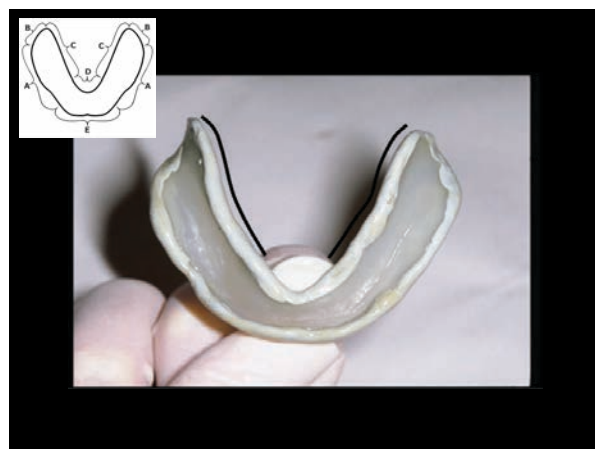
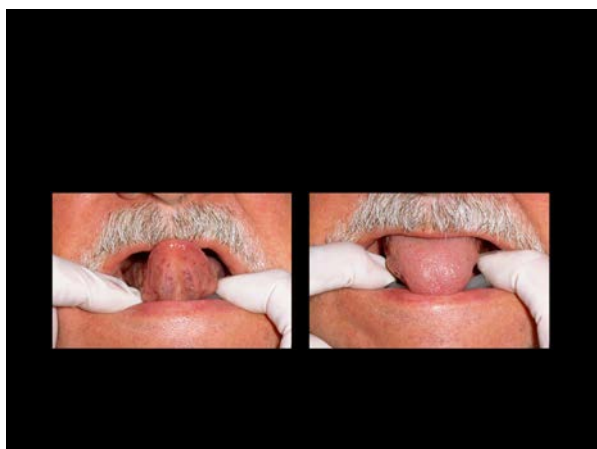
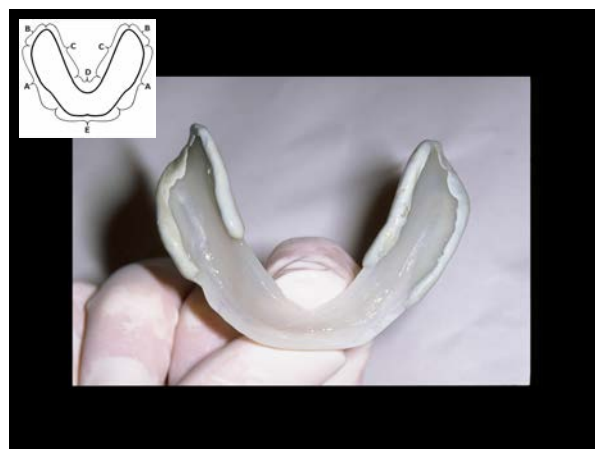
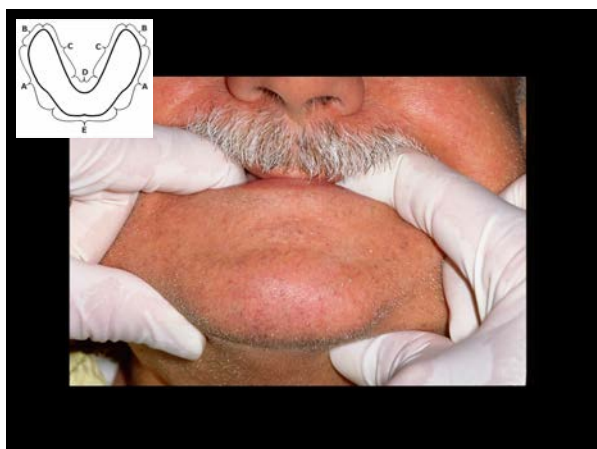
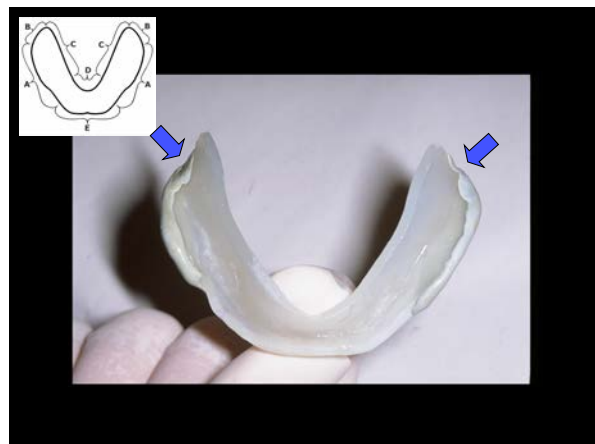
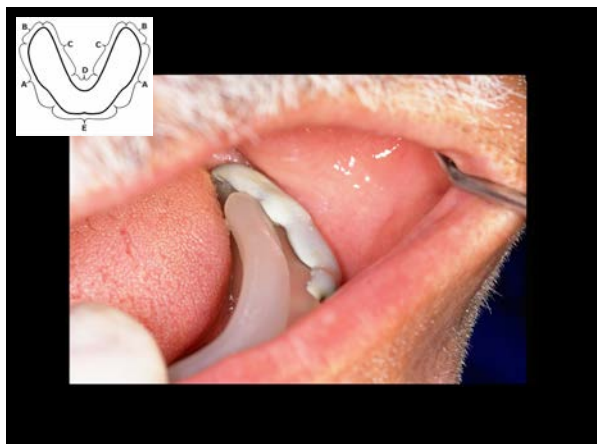


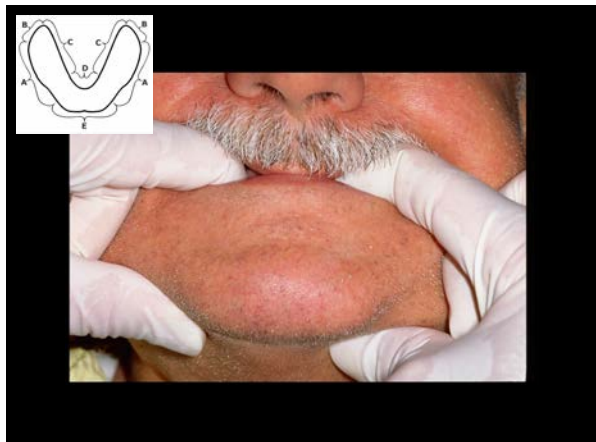
Mark Posterior Palatal Seal











Rinse and Pack Gauze



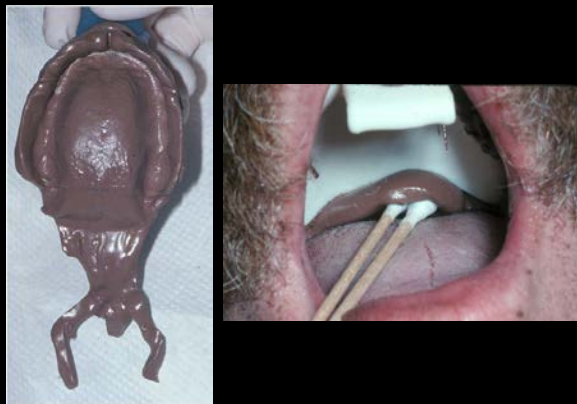
Dispense and Mix Impression Material



Load Impression Tray



Seat Impression Tray



Remove and Inspect Impression



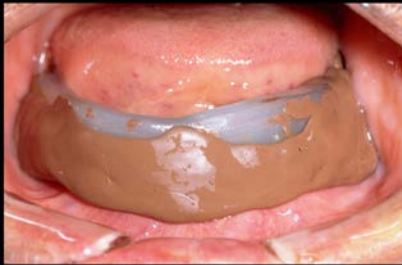
Rinse and Pack Gauze



Load Impression Tray



Seat Impression Tray



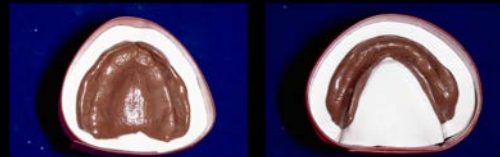
Remove and Inspect Impression



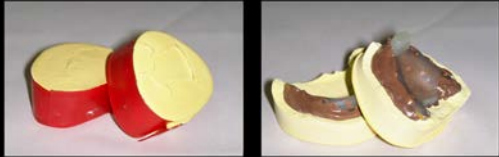
Trim Over-Extensions



Bead and Box Impressions



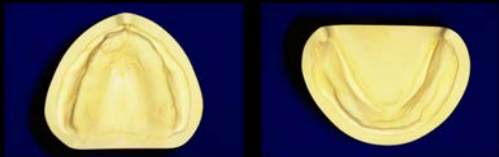
Pour in Vacuum Mixed Stone



Place in Warm Water



Inspect Master Casts



Store Casts in Clean, Dry Place



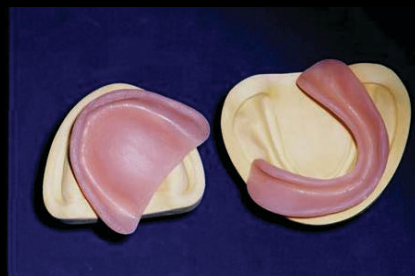
3rd Clinical Appointment

*-Maxillomandibular Relations &
Anterior Tooth Selection*

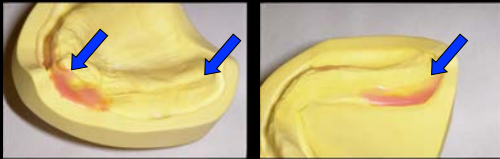
- Establish Plane of Orientation
- Determine VDO
- Make C.R. Record
- Make Facebow Registration
- Select Anterior Teeth



Triad Record Bases



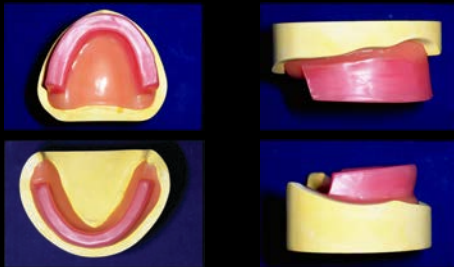
Block-out Undercuts Master Casts



Lubricate Casts & Process Record Bases



Attach Wax Occlusion Rims



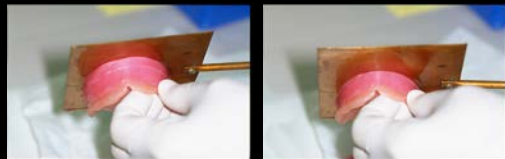
Place Reference Marks



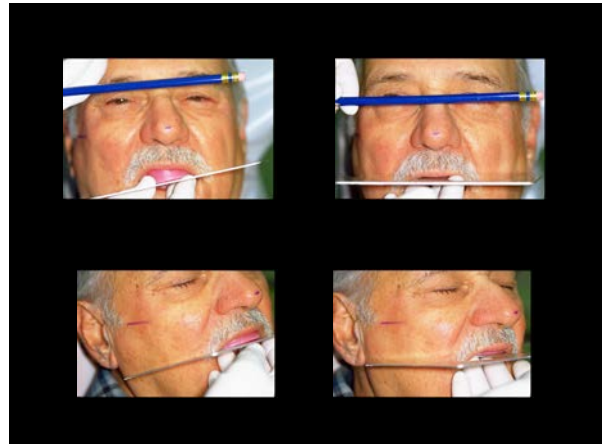
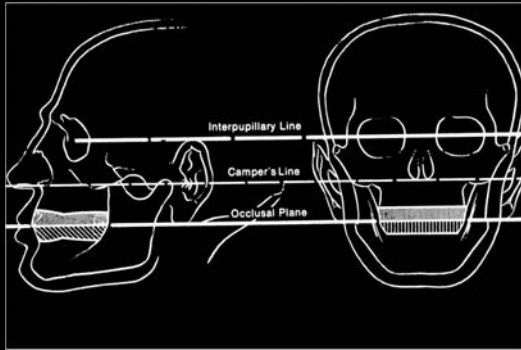
Adjust Maxillary Wax Occlusion Rim



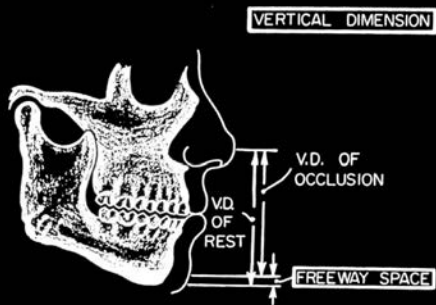
Adjust Length of Wax Rim



Adjust Level of Maxillary Occlusal Plane



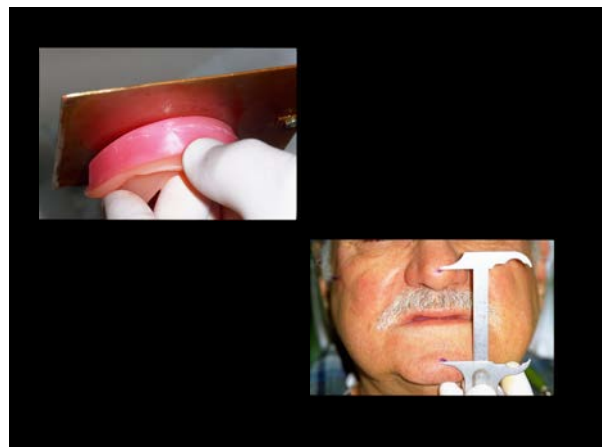
Determine Vertical Dimension of Occlusion



-1st Record Vertical Dimension of Rest.
 -Subtract 3mm to get Vertical Dimension of Occlusion.



Adjust Mandibular Wax Rim to Vertical Dimension of Occlusion



Mark Mid-Line



Check Record Bases



Notch Maxillary Wax Rim



Remove 2mm From Mandibular Wax Rim

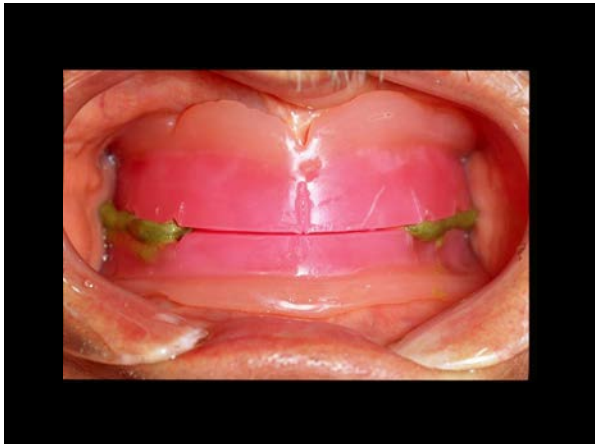


Adapt Aluwax to Wax Rim



Make Centric Relation Record

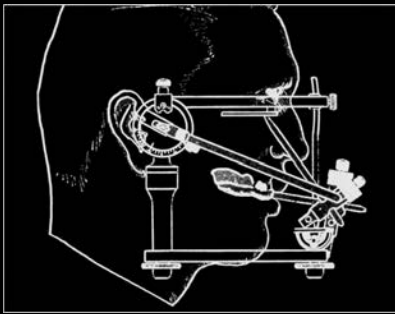




Remove and Inspect Record



Make Facebow Transfer



Attach Bite Fork to Wax Rim



Attach Spring Bow and Align 3rd Point of Reference Indicator



Tighten Screws on Face Bow



Remove Face Bow with Bite Fork



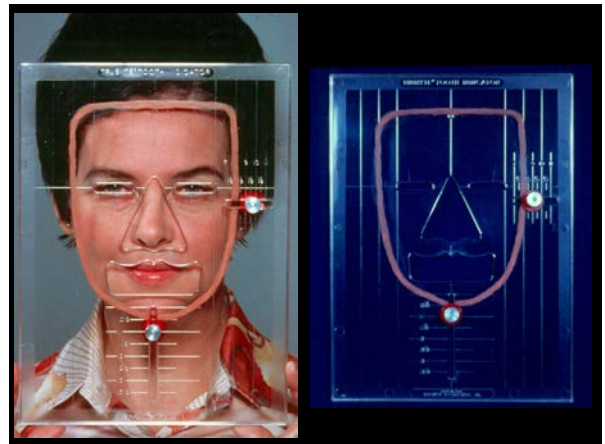
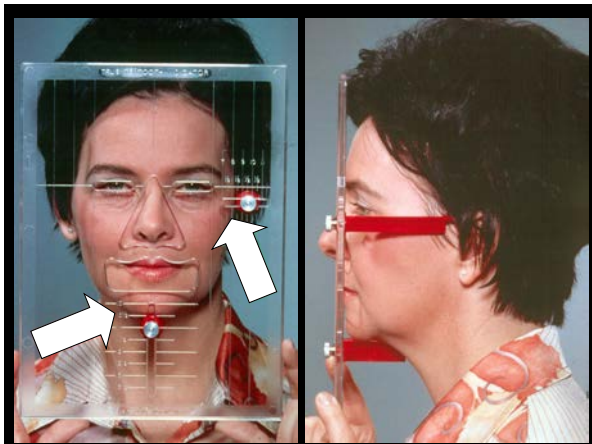
Select Anterior Denture Teeth



Make Diagnostic Impressions of Old Denture



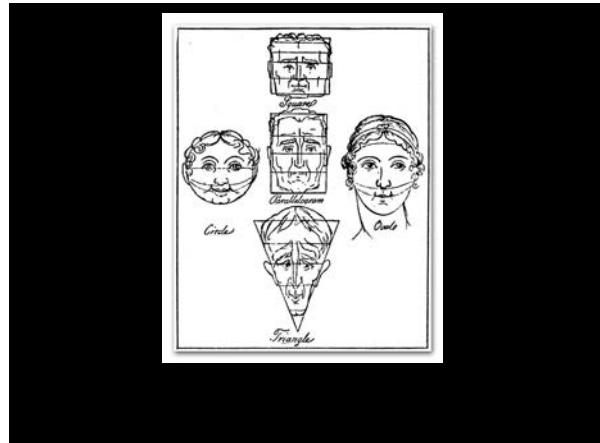
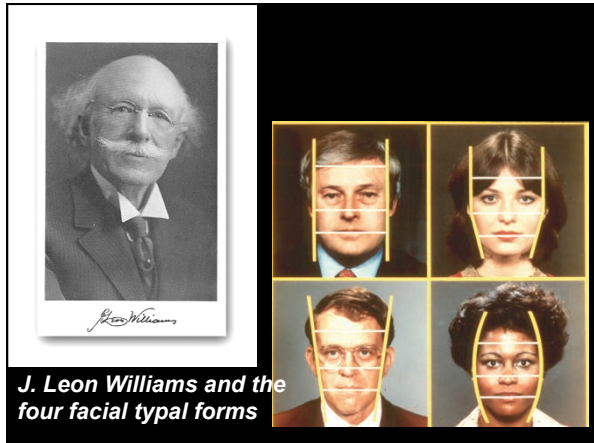
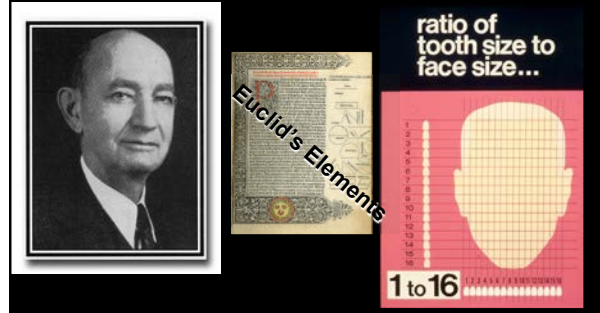
Dentsply TruRx Digital Denture Prescription



Dentsply TruRx Digital Denture Prescription

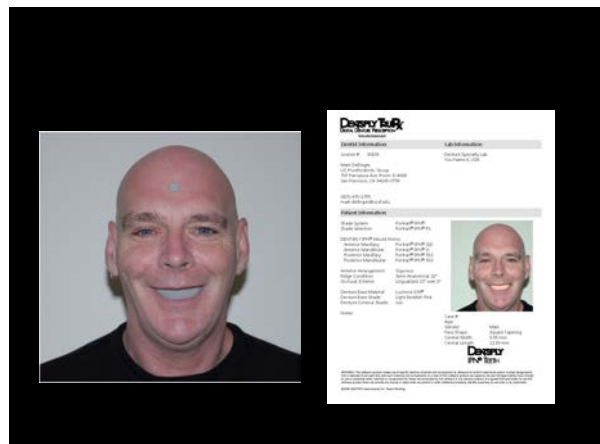


Milus M. House and the "Divine or Golden Proportion"



“....more than two thirds of subjects tested showed no similarity between face-form and incisor tooth form.”

Mavroskoufis F, Ritchie G M: The face-form as a guide for the selection of maxillary central incisors. J Prosthet Dent 43:501, 1980





Desruy & Pollock
Laboratory

Professional Information:
 Name: [Name]
 Title: [Title]
 Address: [Address]
 Phone: [Phone]
 Fax: [Fax]
 Email: [Email]

Education:
 Degree: [Degree]
 Institution: [Institution]

Professional Information:
 License: [License]
 State: [State]

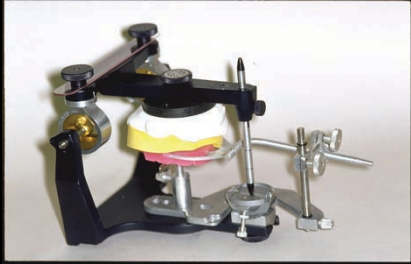


Mounting Master Casts

Notch Master Casts

Attach Mounting Jig and Mounting Assembly to Articulator

Quick Mount Maxillary Cast



Attach Mandibular Wax Record to Maxillary Wax Rim



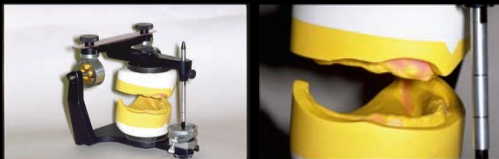
Quick Mount Mandibular Cast



Dress Up Mountings



Verify Ridge Relationships



Set Anterior Teeth



Transfer Midline Mark to Cast



Set One Maxillary Central Incisor



Set the Other Central Incisor



Set Laterals and Cuspids



Make Guidelines to Set Mandibular Anterior Teeth



Set Mandibular Anterior Teeth



4th Clinical Appointment -Anterior Try-in

- Try-in Anterior Teeth
- Verify C.R.
- Make Protrusive Registration
- Select Posterior Teeth



Procedures for Anterior Tooth Try-in *-preserve the centric relation record!*



Try-in Teeth & Verify CR Record



Evaluate Tooth Length and Lip Support



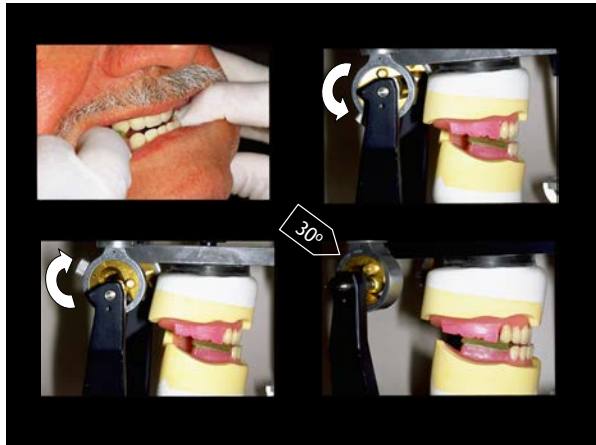
Evaluate Phonetics



Obtain Patient approval



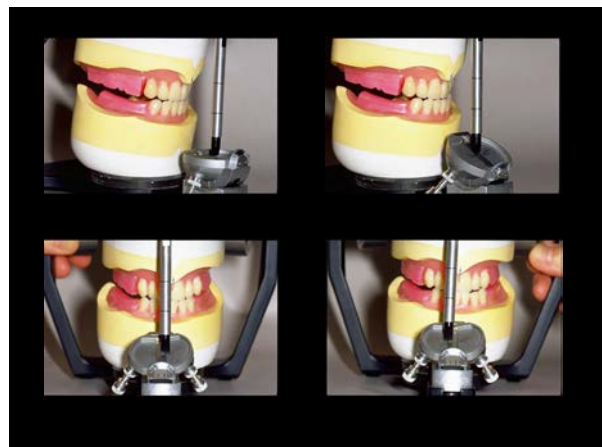
Make Protrusive Record



Hanau Formula: $H/8+12 =$ Lateral Condylar Inclination



Set Incisal Guide Table

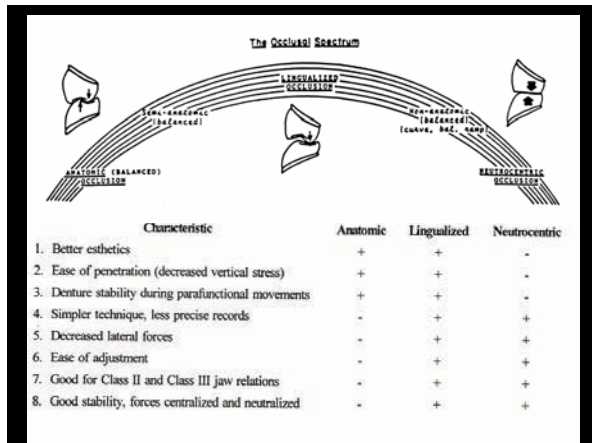
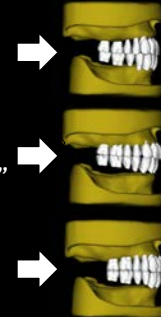


Select Posterior Denture Teeth



Concepts of Occlusion

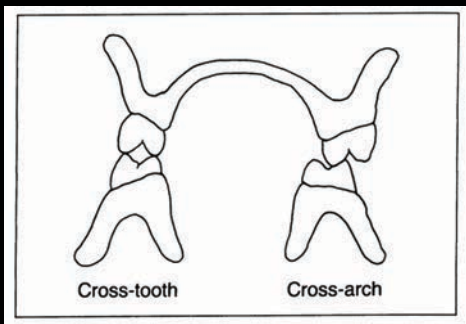
- Balanced Articulation
"Anatomic"
- Non-Balanced Articulation
"Neurocentric or Monoplane"
- Lingualized Articulation



Balanced Articulation

"The stable simultaneous contact of opposing upper and lower teeth in centric relation position with a smooth bilateral gliding contact to any eccentric position within the normal range of mandibular function, developed to lessen or limit tipping or rotation of the denture bases in relation to the supporting structures."

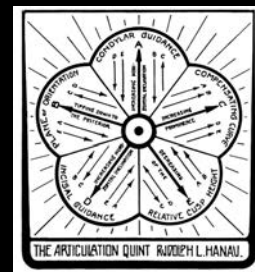
Cross-Tooth, Cross-Arch Balance

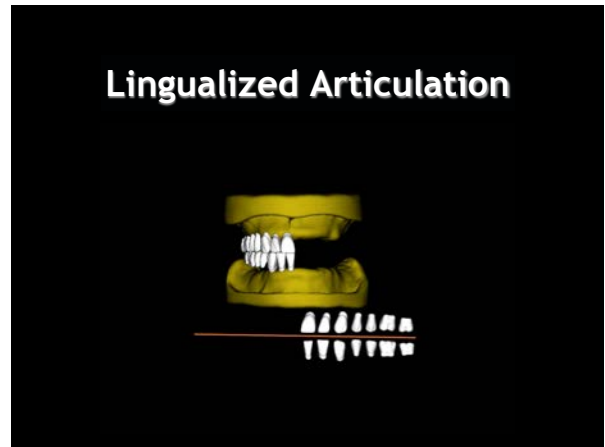
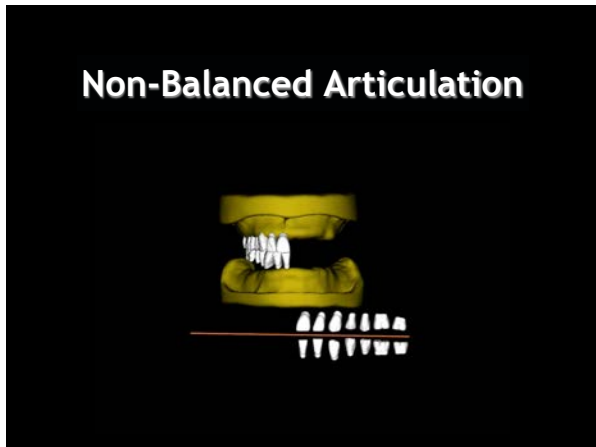
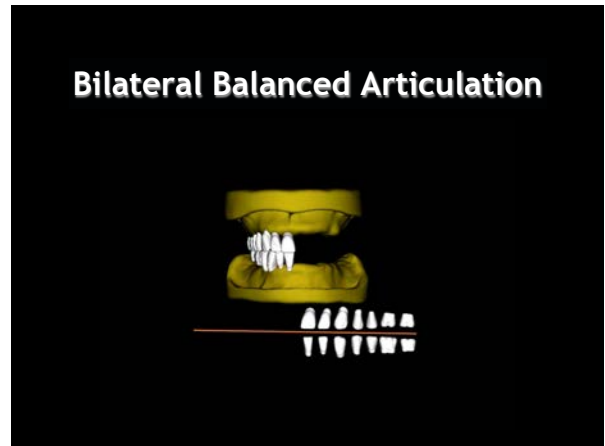
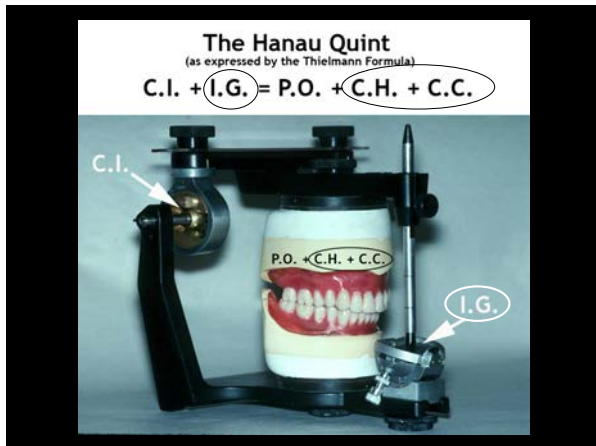


Hanau's Quint

Five Factors Affecting Occlusal Balance

- Condylar Inclination
- Incisal Guidance
- Plane of Occlusion
- Cusp Height
- Compensating Curve





Mark Guidelines to Set Teeth



Set Posterior Denture Teeth



Set Posterior Denture Teeth



Complete Wax Contour



5th Clinical Appointment -Posterior Try-in

- Try-in Posterior Teeth
- Verify VDO & C.R.
- Confirm Posterior Palatal Seal
- Select Denture Base Shade



Procedures for Posterior Tooth Try-in



Check Vertical Dimension of Occlusion



Verify Centric Relation-Patient



Prove Centric Relation-Articulator



Make New Centric Relation Record



Place Set-up on Articulator



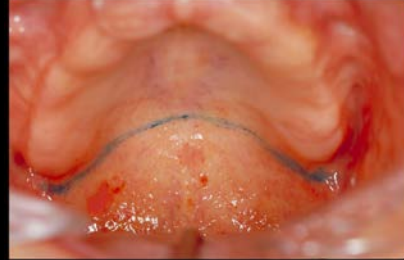
Prove Centric Relation-Articulator



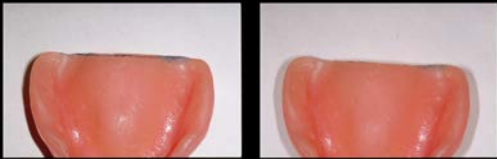
Obtain Patient Approval



Mark Posterior Palatal Seal



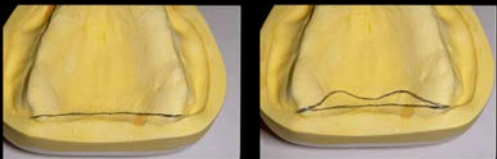
Adjust Record Base



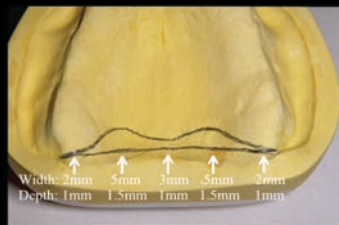
Mark Posterior Border on Cast



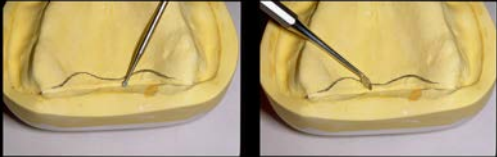
Trace Outline on Master Cast



Carve Posterior Palatal Seal



Carve Posterior Palatal Seal



Chose Denture Base Resin Shade



Chose Denture Base Resin Shade



Seal Record Bases to Master Casts



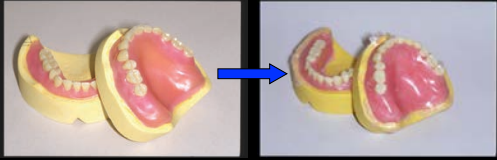
Check Occlusion



Check Occlusion



Process Complete Dentures



6th Clinical Appointment -Delivery of Complete Dentures



Laboratory Remount of Processed Dentures



Attach Dentures to Articulator



Observe Pin Opening



Adjust Centric Prematurities



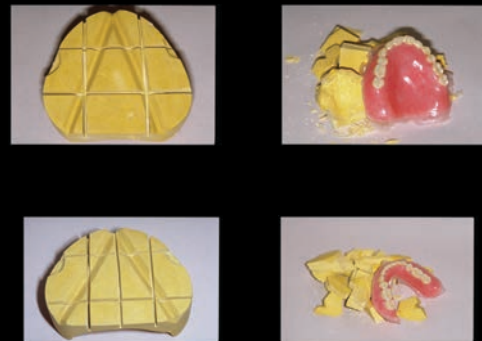
Incisal Guide Pin Touches Table



Make Remount Index



Remount Index



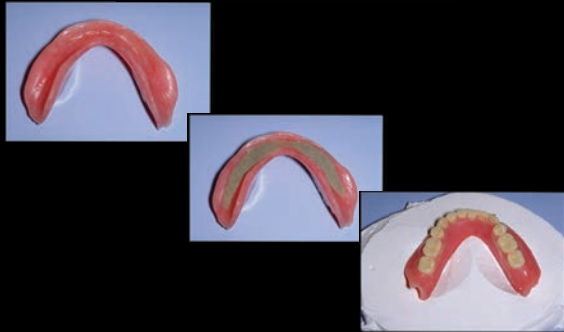
Finish and Polish Dentures



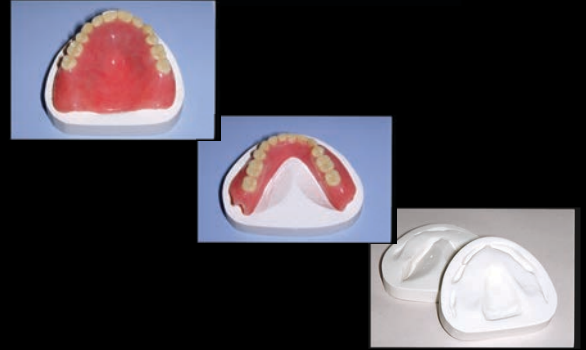
Make Remount Cast



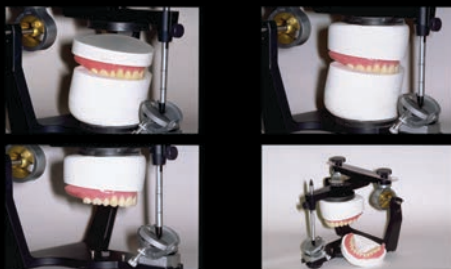
Make Remount Cast



Make Remount Cast



Mount Maxillary Remount Cast



Delivery of Complete Dentures



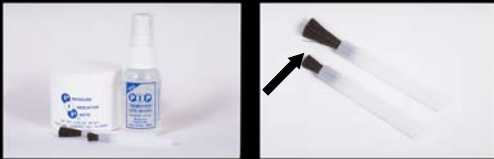
Inspect Intaglio of Dentures



Identify Blebs and Spicules



Obtain PIP Paste and Brush



Use Tongue Blade to Dispense



Paint PIP Paste Inside Denture



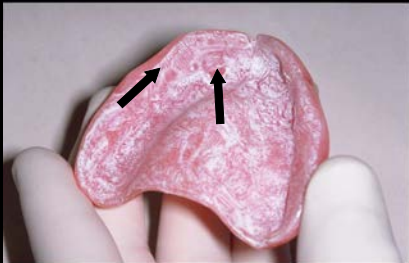
Insert Maxillary Denture



Alternate Seating Force Side to Side



Inspect "Pressure Areas"



Adjust Pressure Spots with Bur



Repeat Procedure 4 to 5 Times



Insert Mandibular Denture



Alternate Seating Force Side to Side



Inspect "Pressure Areas"



Adjust Pressure Spots with Bur



Repeat Procedure 4 to 5 Times



Clean PIP Paste from Denture



Seat Denture Bases



Adapt Aluwax to Mandibular Denture



Make New Centric Relation Record



Inspect Centric Relation Record



Make a Second C.R. Record



Place C.R. Record on Mandibular Denture



Attach Dentures to Remount Casts



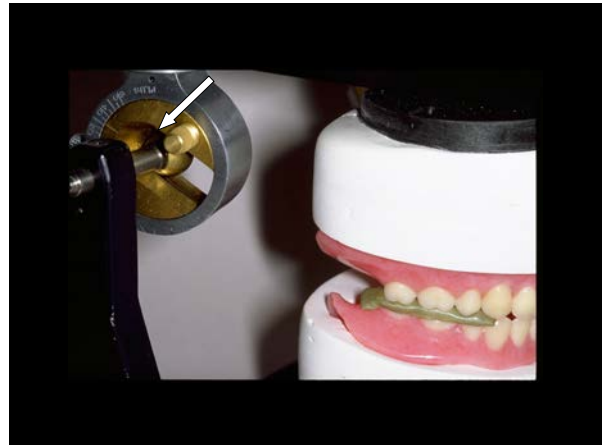
Attach Remount Casts to Articulator



Inspect Mounting



Verify Mounting with Second Record



Start Clinical Remount Procedures



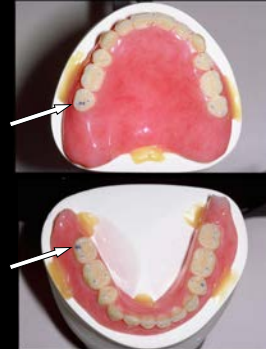
Mark Centric Prematurities



Check for Centric Prematurities



Note Heavy Contacts Between #'s 2 & 31



Achieve Even Posterior Contacts



Adjust Right Working Movement



Adjust Left Working Movement



Adjust Protrusive Movements



**Evaluate Dentures on the Articulator
-Centric**



**Evaluate Dentures on the Articulator
-Lateral Function**



**Evaluate Dentures on the Articulator
-Protrusive Function**



**Evaluate Dentures on the Patient
-Centric**



**Evaluate Dentures on Patient
-Lateral Function**



**Evaluate Dentures on the Patient
-Protrusive Function**



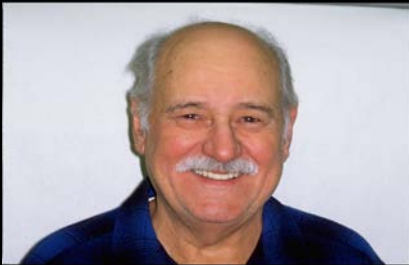
Evaluate Esthetics and Phonetics



Give Patient Instructions



Answer Patient's Questions



Appointments #'s 7 to 9 •Post-Delivery Adjustments



Mark Sore Spot



Seat Denture



Adjust Pressure Spot with Bur



Verify Adjustment with PIP Paste



Adjusting Denture with "No Ulcer"

