The Resorptive Pattern

Muscles of Facial Expression
Vertical Dimension Evaluation
A Revealing Composite
Diagnostic Records
Diagnostic Records
A Triptych
Biometrics

- Mold
- Size
- Proportion
- Midline
- HP of MAS
- Arch Form
Mold

Trubyte Bioform System

B stands for Blonde

B also stands for Bioform

When you specify tooth shades... SPECKLE IS FOR BIOFORM

Trubyte Bioform® • The first vacuum-formed porcelain teeth

Size

16 TO 1

Size

IPD/6.6 = MDW of CI

Mean MDW (male) = 9mm
Mean MDW (female) = 8.5mm

Size

$MDW\ CI = \frac{.618 \times ICD}{2}$

Mean MDW = 8.9 mm males

8.68 mm females

Is Beauty Reducible to Proportions?
Golden Proportion

\[
\frac{89}{55} \approx 1.618/1
\]

Marquardt’s Analysis

Nefertiti circa 1400BC          Roman 164 AD          Marilyn Monroe
A Handy Ratio
The Perceived Width of Maxillary Anteriors


The Golden Proportion

\[
\frac{1}{0.618} = 1.618
\]
Preferences of Anterior Tooth Proportion

Preferences of Anterior Tooth Proportion

Normal or Short Teeth
70-80% ratio

CI W/H ratio = 0.75

Midline

Anatomic Landmarks?

Midline
Midline

Horizontal Plane of Maxillary Central Incisors

Horizontal Plane of Maxillary Central Incisors
Horizontal Plane of Maxillary Central Incisors

Men > AL < PMD than Women
CI Women > labially pos. to canine than men

Law of Harmony
Facial Form and Arch Form

Diastemas
24% incidence

Square
Facial Form and Arch form

Crowding
31% incidence

Tapering
Dentogenics

Dentogenics
Arrangement of Teeth
Axial Asymmetry
Cuspid Rotation
Lateral Incisor Rotation
Physiologic Wear
Dynamic Rotation
Anterior Arrangements
Anterior Set-up
Size
Shade Considerations

Higher values associated with lighter eye color/females
Lower saturation of chroma for females

Tooth Display

1.9 mm Average maxillary central incisor exposure 3.4 mm
Visual Harmony
Lip Support

Lip Thickness
Anterior Tooth Display
Papillameter

Grant AA et al, Complete Prosthodontics: Problems, Diagnosis and Management. 1994
Smile Line
Phonetic Keys

Fricatives
Incorrect Fricatives

F sound like V-TL
V sound like F-TS

Anterior/Posterior Malpositioning
Phonetic Keys

Sibilants
Phonetic Keys

Sibilants
Mandibular Anterior Display

Mandibular Anterior Arrangement
Buccal Corridor
Posterior Teeth Esthetics
Facial Width Compensation

Posterior Occlusal Plane
Completed Wax-up
Anterior Try-in
Esthetic Zone
You be the Judge
Denture Tooth Selection

Subjects per width

Width of Anteriors on Curve

Phonetic Keys

Sibilants
Occlusal Schemes for the Edentate

Circa 1600

Advantages of Balanced Occlusion

1) Chewing
2) Swallowing
3) Parafunctional movements
4) Christensen Phenomenon

Bilateral Balance vs Canine Guidance

38 patients
2 week/4 week evaluation
63%/47%

Occlusal Schemes for the Edentate

- Balanced
- Monoplane
- Lingualized

Balanced Occlusion

working

protrusive

balancing
Hanau’s Quint

- Condylar Inclination
- Incisal Guide Angle
- Orientation Plane
- Compensating Curve
- Cusp Inclination

Protrusive Guidance
Mandibular Anterior Set-up

15° Pro
5° Lat

Arrangement of Mandibular Anterior Teeth
Verify Centric and Protrusive Jaw Relationship

Maxillary Posterior Teeth

Lateral Compensating Curve

Occlusal view of Maxillary posterior teeth
Occlusal Plane Verification
Occlusal Plane Verification
Dynamic Spiral

Buccal view of Maxillary posterior teeth
Mandibular Posterior Teeth
Completed Set-up
Balanced Occlusion

working

protrusive

balancing
Anatomic Teeth

**Advantages**
- More efficient chewing
- Can harmonize with TMJ and muscles
- Resist rotation
- Enhanced esthetics
- Aids in verticalizing chewing cycle

**Disadvantages**
- Technique sensitive
- Reline more exacting
- Jaw discrepancies more difficult
- Requires NMC for CR
- Lateral torque in eccentric positions
Indications for Monoplane Teeth
Nonanatomic Occlusion
Nonanatomic Occlusion

Centric Relation

Protrusive

Centric Relation

Protrusive
Protrusive Excursion Options
Nonanatomic Teeth

**Advantages**
- Simpler technique and articulation
- Minimize horizontal pressures
- Centric relation an area rather than a point
- Offridge relations easier
- Accommodate resorptive changes better

**Disadvantages**
- Less efficient in mastication
- Encourage a higher degree of lateral chewing
- Often inadequate food escapeways
- Inferior esthetics.
Lingualized Occlusion

28 patients LO/BBO
LO-Retention rated higher

Lingualized Occlusal Scheme
Lateral Excursions

Right Working

Left Balancing

Diagram of working and balancing contacts.
Medial Lateral Curve
Advantages of Lingualized Occlusion

- Centers the occlusal forces over ridge
- Only one contact point
- Buccalization of buccal cusps
- Simplification of set-up
- Can be used for all ridge morphologies
Lingualized vs Monoplane Occlusal Scheme

- 30 patients
- 3 week evaluation
- Crossover study
- Questionnaire

RESULTS
- 67% preferred lingualized design
  a) Masticatory ability
  b) Comfort
  c) Esthetics

“It’s a simple operation. You’ll be good as old in no time.”
Reinforced Registration Bases
Denture Base Systems

PMMA heat-cured
PMMA auto-cured
Triad
Eclipse


Higher flexural strength
Higher elastic modulus
Maxillomandibular Relations
Anterior Try-in
Anterior Posterior Wax-up
Intraoral Verification

Centric Relation

Protrusive

Right Lateral

Left Lateral
Posterior Set-up Vis a Vis the Tongue Position
Esthetic Evaluation
Centric Relation Record
Posterior Deflection

A. Apparent Interdigitation
B. Actual Contact
Aluwax Remount
Eccentric Records

Protrusive

Right lateral

Left lateral
Wash Impression
Rearticulate Casts
Selection of Denture Base Color
Processed Dentures
Inspection of Arch Form
Verification of Vertical and Horizontal Records
Equilibration

High Cusp

Grind the Fossa
Equilibration

Max. Molars Too Far Buccal

Grind Buccal Inclined Planes of Max. Lingual Cusps and Lingual Inclined Planes of Mand. Buccal Cusps
Equilibration

Max. Molars Too Far Lingual

Grind the Lingual Inclined Planes of Max. Buccal Cusps and Buccal Inclined Planes of the Mand. Lingual Cusps
Equilibration

- High in Centric
- High in Working
- High in Balancing
- Cusp Reduced
Equilibration

- High in Centric
- OK in Balancing
- OK in Working
- Deepen the Fossa
Intraoral Evaluation

CR

Protrusive

RW

LW
Reduced Processing Time
Cleaner
Superior Adaptation
Porosity (Thick)

Processing

Compression Molded
Injection Molded
Microwave Polymerized

Characterizing the Base
Characterized Complete Denture
Complete Denture Education

Preliminary imp.- 87%
VLC record base- 70%
Semiadj. articulator- 98%
Semianatomic teeth- 70%
Protrusive record- 80%
EO, S, E technique VD- 59%
Facebow registration- 75%
Clinical remount- 91%
Compression tech.- 84%

Placement Appointment
Inspection of Intaglio Surface
Management of Tissue Surface Discrepancies
Evaluation of Peripheries
Correction of Occlusal Discrepancies

Centric Relation Registration
Remount Procedure

Equilibration
Occlusal Balance Verification

Kerr’s Occlusal Wax
Viscogel Refit

Technique for Application of Tissue Conditioner

- Relieve 1-2 mm
- 2.5/2 P/L ratio for 30s, 3 min. stand
- Lubricate, roll into ribbon 1/4” diameter
- Place on periphery
- Allow patient to make functional movements- 5-10m
- 1:1 L/P ratio for intaglio

Durable Tissue Conditioner
Patient Instructions

Written and Verbal Instructions

Post-Insertion Adjustments
Lipstick and PIP
Overextensions

Fit Checker
Kerr Disclosing Wax
Correcting Posterior Palatal Seal

Phonetic Evaluation

Palatograms

Protocol for Phonetic Resolution

1. Compare new set with old one
2. Attempt to mimic distorted sound
3. Make necessary modifications with wax
4. Have the patient’s hearing evaluated
5. Refer to a speech pathologist
Functional Refit

Adaptol wax sticks
10 drops of vegetable oil
Laboratory Reline

Resilient Denture Liners

- Reduce localized pressure
- Acrylic/silicone based liners
- Heat-polymerized silicone liners—higher bond strength/lower hardness.

Molloplast-B

- Mandibular denture satisfaction
- Candida growth
- Life span
- Cratex wheel adjustment

Denture Tooth Retention

Denture Repairs

- Poor fit
- Poorly balanced occl.
- Faulty fabrication
- Stress on denture base after yrs of use
- High loading forces
The Single Denture
Combination Syndrome

24%

Combination Syndrome
In Extremis
Factors Affecting Strength of Denture Repairs

**Repair Material**
- APMM 60%-65% OS, HPMM 75%-80% OS

**Reinforcement**
- Metal wires - sandblasting/silanization
- Woven polyethylene fibers
- Glass fibers

**Surface treatment**
- MM monomer - (3min)

Mechanical Treatment

1.5-3.0 mm

Butt Joint

°45 Bevel

Rounded joint

Denture Maintenance

ProTech
1-800-872-8898

Patient Education

- First oral feelings
- Excess Saliva
- Speech
- Eating
- Tongue position
- Maintaining tissue health
- Over-the-counter aids

Adhesives

Neutral pH
Minimal toxicity
Adhesive bond- 12-16 h
Acemannan
Super Wernet’s
Super Poli Grip

Patient Complaints and Proposed Solutions

Generalized Discomfort

- Excess OVD
- CR errors
- Poor fit
- Errors in processing

Sore Spots

- Internal or occlusal prematurity

Patient Complaints and Proposed Solutions

Loose Mandibular Denture

- Underextended-reline add peripheries especially in RMH space
- Overextended-reduce periphery
- Poor fit-reline
- Retruded tongue-educate patient
- Incorrect arch form-check 1st bicuspids for neutral zone problem
- Atrophic ridge-discuss IOD.
Patient Complaints and Proposed Solutions

Loose Maxillary Denture

- Inadequate posterior palatal seal - add
- Excessive posterior palatal seal - relieve
- Internal prematurity esp. on borders
Patient Complaints and Proposed Solutions

Cheek Biting

- Inadequate tooth overlap
- Contact of bases
- Inadequate VDO
Patient Complaints and Proposed Solutions

Lip Biting

- Anterior overlap

Tongue Biting

- Narrow arch - NZ violation
Patient Complaints and Proposed Solutions

Clicking During Speech

- Inadequate IOD
- Loose denture
- Patient with poor NMC
Patient Complaints and Proposed Solutions

Difficulty with Speech

- Lisping or slushy speech - anterior teeth set too far forward, or insufficient IOD
- Whistling - recontour, reposition anterior teeth if set too far lingually

Patient Complaints and Proposed Solutions

Difficulty Chewing

- Poor interdigitation-remount, counsel patient on chewing strategies
Patient Complaints and Proposed Solutions

Gagging

- Posterior border overextended
- Inadequate posterior palatal seal
- Excess OVD
- Patient rejection of dentures
- Excessive lingual bulk
- Occlusal plane too high
Patient Complaints and Proposed Solutions

Painful Swallowing

- Linqual flange too long
- Maxillary denture overextended
Patient Complaints and Proposed Solutions

Numb or Tingling Ridge

• Pressure on mental nerve or incisive papilla
Technique for Application of Tissue Conditioner

- Relieve undercuts and 1-2 mm of acrylic resin lingual to the crest of the ridge
- Mix 2 parts liquid and 2.5 parts powder for 30 seconds and allow to sit for 3 minutes
- Lubricate fingers and roll the material into a ribbon ¼ to 3/8 inch in diameter
- Place on lingual border or entire periphery
- Seat denture and allow patient to perform functional movements for 5-10 minutes

Vertical Dimension Reference
Gold Occlusals
Final Wax Try-in
Technique for Application of Tissue Conditioner

- Remove denture and trim excess with sharp scalpel blade
- Make a second mix of same liquid/powder ratio and allow this mixture to sit for 2 minutes
- Place on polished surface where indicated
- Insert denture and instruct patient to make functional movements for 5-10 minutes
- Make a third mix 1:1 L/P ratio and place on intaglio surface
- Seat, functional movements, remove, trim, place, and instruct for home use, 24 hr recall, 7-14 day function and rebase
Laboratory Fidelity
Wear of Acrylic and Composite Resin Artificial Teeth

**Brand Name**
- VH
- Dentron
- Bioform IPN
- SR Orthosit
- PE

Attrition
A New Polymer

Vicker’s Hardness

80-100 kgf/mm²
Gold Occlusals
Gold Occlusals
Conversion to Gold Occlusals
Registration Bases
Disadvantages

1. Unaesthetic
2. Anterior overlap may need to be minimized
3. Lack penetration of food
4. Inadequate sluiceways
Indications for Nonanatomic Teeth

1. Minimize lateral force transmission to residual ridge
2. Knife-edge and flat ridges
3. Large interridge space
4. Broad chewing pattern
5. Compromised muscle neuromuscular coordination
Functional Tissue Conditioning
Working and Balancing Guidance
Setting an Average Bennett Angle

L = H/8 + 12

L = 17°

82% of 139 patients achieved BB with 17° Bennett angle