Prosthodontics
FAGD Review 2013

Outline--Fixed
Diagnosis & Treatment Planning
Occlusal Plane Evaluation
Ridge Shape and Augmentation
Diagnostic Casts and Articulators
Periodontal Consideration
Retainer Choice (Full, Partial, or Resin Bonded)
Design (Teeth to Include)

Outline--Fixed
Preparation, Impressions & Provisional Restorations
Preparation Design
Pontic Design
Posts/Cores/Build-ups
Margin Placement
Soft Tissue Management
Impression Techniques
Provisional Restorations
Esthetics
Insertion & Post-Insertion

Diagnosis & Treatment Planning
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Occlusal Plane Evaluation
Curve of Spee (anterior to posterior)
Flat
Normal (slightly curved)
Acute (heavily curved)
Curve of Wilson (bucco-lingual curve)

Occlusal Plane Evaluation
Angle’s Classification
Class I
Class II
Class III

Occlusal Plane Evaluation
Missing Teeth
Supra-eruption
Mesial or Distal inclinations
Rotated teeth

Ridge Shape and Augmentation
Siebert’s Ridge Classification
Class I: Loss of buccolingual ridge width; normal ridge height
Class II: Loss of ridge height; normal buccolingual ridge width
Class III: combination loss of ridge height and buccolingual width

Ridge Shape and Augmentation
Insufficient vertical and buccolingual bone
Maxillary anterior ridge morphology which would lead to an unacceptable esthetic result
Extreme loss of facial bone plate with gingival recession

Diagnostic Casts and Articulators
Preliminary Impressions
Alginate Impressions
Even thickness (5-7 mm of thickness desirable)
The cooler the water = the longer the setting time
Proper powder : liquid ratio results in proper consistency
Tear strength and resistance to deformation increase over time (about 2-3 min)
Pour in stone within 12 minutes to minimize distortion
Dimensional stability affected by water loss (syneresis).
Diagnostic Casts
Proper powder : liquid ratio of stone results in predictable cast dimensions and hardness
If you increase your liquid, you will increase setting time resulting in decreased expansion and decreased compressive strength
A 2-step pour avoids "soft cusp tips" due to heavy particles setting
Break out no less than 45 min or no longer than 60 min to avoid alginate absorbing moisture from stone surface.

Diagnostic Casts and Articulators
Celenza classification
Class I (Non-adjustable) – simple holding device/accepts single static registration for vertical motion (ex: a verticulator)
Class II (Non-adjustable) – Vertical / horizontal movement, does not orient to TMJ and does not accept a facebow (ex: Gysi simplex)

Diagnostic Casts and Articulators
Class III (Semi-adjustable) – simulates condylar pathways using anatomic values, allows for joint orientation (Arcon or Non-Arcon)
A- accepts protrusive records (ex: Hanau H2)
B-accepts lateral and protrusive records (ex: Whip-mix, Denar)

Diagnostic Casts and Articulators
Arcon - ball of the condyle analogs are located on the lower element and the fossa assemblies are on the upper element; like the skull (ex: Whip-mix, Denar)
Non-arcon - ball of the condyle analogs are located on the upper element and the fossa assemblies are on the lower element (ex: Hanau H2)

Diagnostic Casts and Articulators
Class IV (Fully-adjustable) – accepts three dimensional dynamic registrations; allows joint orientation of cast
A- condylar paths form by patient (ex: TMJ)
B- condylar paths are formed from angled and customized inserts (ex: DenarD5A, Stewart, SAM)

Diagnostic Casts and Articulators
Simple crowns: Class I or II articulator (or triple tray)
Multiple crowns and FDPs: Class III articulator
Full mouth rehabilitation: Class IV articulator

Periodontal Consideration
Crown : Root ratio
Ideal  1 : 2
Minimum 1 : 1
Realistic 2 : 3
Root shape: Multi-rooted teeth with widely separated roots are best.  Worst are conical roots
Mobility: No mobility is best, followed by slight (but equal) mobility among the abutments

Periodontal Consideration
Status of Periodontal Disease: Active or Inactive?  You don’t want to build on an unstable foundation.
Keratinized gingiva: Should be 2 mm or more to prevent chronic inflammation around crown margins

Periodontal Consideration
Biologic width: distance from prep finish line (crown margin) to alveolar bone according to Gargulio (1961).
1.07 mm connective tissue
.97 mm junctional epithelium
about 0.69 mm free gingival margin (sulcus)

Periodontal Consideration
Crown lengthening:
-Non-esthetic area: can wait 6-8 weeks post surgery to make final impression
-Esthetic zone: should wait 4-6 months post surgery prior to making final impression
-Indications: insufficient biologic width

**Retainer Choice (Full, Partial, or Resin Bonded)**
Resin Bonded or Maryland Bridge
Common complications
Debonding (21% of prostheses)
Tooth Discoloration (due to wing show-through)
Caries
Porcelain fracture
Goodacre, JPD 2003
Full Coverage
Most common
Easiest?
Partial (½, ¾ etc.) Coverage
Esthetics
Conservation of tooth

**Mal Design (Teeth to Include)**
Abutment angulation: abutments should converge by no more than 25-30°
How to correct this
Orthodontic uprighting
Telescopic crown
Proximal half crown
Non-rigid connector

**Preparation, Impressions & Provisional Restorations--Fixed**
Preparation Design
Pontic Design
Posts/Cores/Build-ups
Margin Placement
Soft Tissue Management
Impression Techniques
Provisional Restorations
Esthetics

**Preparation Design**
Ante’s Law: The combined root surface area of all abutment teeth should be equal to, or greater than, the combined root surface area of the tooth (or teeth) being replaced.

**Preparation Design**
Law of Beams:
Span length (x): if you double x, then the flex increases 8 fold
1 pontic; flex = x
2 pontics; flex = 8x the deflection
Law of Beams:
Vertical height (x): if you 1/2x, then the flex increases 8 fold
Grooves can be placed buccal and lingual on the abutments to resist tensile forces, which could cause an open margin.

**Preparation Design**
6 degree taper between opposing axial walls (3 degrees/wall)
The minimally accepted taper has been calculated to be roughly:
30 degrees for anterior teeth,
10 degrees for premolars
8 degrees for molars - with a minimum of .40 height/ base ratio

**Preparation Design**
Resistance and Retention Form
Retention Form: prevents removal of restoration along its path of insertion
Resistance Form: Limits displacement from torquing or twisting forces in the horizontal plane
Grooves:
For single unit crowns, you can add grooves on the mesial and distal to prevent dislocation
For FDPs, you can add grooves on the buccal and lingual of the abutments to offset the flexure of the FDP.

**Preparation Design**

**All Metal crown**

Occlusal reduction:
- Stamp/functional cusp: 1.5 mm
- Shear/non-functional cusp: 1.0 mm
- Axial reduction: 0.75 mm/chamfer margin

**Preparation Design**

**Metal Ceramic Crown (PFM)**

Occlusal/incisal reduction:
- Stamp cusp/incisal: 2.0 mm
- Shear cusp: 1.0 mm
- Buccal/labial margin: 1.5 mm/flat margin or chamfer w/ a bevel
  - 0.3-0.5 mm for metal
  - 0.2 mm for opaque porcelain
  - 0.7 mm for body porcelain
- Axial reduction: 0.75 mm/chamfer margin
- Lingual reduction (for anterior teeth): 1.0 mm

**Preparation Design**

**All Ceramic Crown**

Occlusal/incisal reduction:
- Stamp cusp/incisal: 1.5-2.0 mm
- Shear cusp: 1.5 mm
- Axial reduction: 1.2-1.5 mm

**Round off all edges and angles**

**Pontic Design**

Ridge lap (saddle): Never Used

Modified ridge lap: used mostly

**Pontic Design**

Hygienic (sanitary): common in posterior or non-esthetic area

Modified hygienic (Perel)

**Pontic Design**

Conical (bullet)

Ovate: used to develop bony contours post-extraction (emergence profile)

**Posts, Cores & Build-ups**

If 4.0 mm or greater remains in the chamber of a posterior tooth, a core build-up and crown could be used

If less than 4.0 mm remains in the chamber of a posterior tooth, a post (custom or pre-fab) and core build-up should be done

Anterior teeth with one or both marginal ridges involved in the access should be restored with a post, core and crown

**Posts, Cores & Build-ups**

5 features of a successful post and core:

- Adequate length and strength of post
- Adequate apical seal (3-5 mm of gutta-percha remains)
- Anti-rotation feature
- Vertical Stop
- Ferrule for crown

**Purpose of a post: to retain the core**

**Posts, Cores & Build-ups**

Types of post systems

- Pre-fabricated posts
- ParaPost system
- Carbon Fiber posts
- Ceramic posts
- Custom cast post & core

**Posts, Cores & Build-ups**

Pre-fabricated post vs. Cast Post & Core
Vertical forces only: pre-fabricated post & core
Heavy vertical and/or lateral forces: cast post & core
FDP or RDP abutment tooth: cast post & core

**Posts, Cores & Build-ups**

How long should the post be?
- At least as long as the crown or 2/3 the length of the root; which ever is greater (Shillingburg/ Standlee)
- As long as possible without disturbing the apical seal
- At least ½ of the root remaining in bone

**Margin Placement**

Margin Location:
- Best to worst
  - Supra-gingival
  - @ Gingival crest
  - Sub-gingival
- Things to consider
  - Caries
  - Abrasion
  - Erosion
  - Existing restorations
  - Clinical crown length
  - Esthetics

**Soft Tissue Management**

Two-cord technique
Types of cord:
- Twisted
- Knitted
- Braided

**Soft Tissue Management**

Chemistry
- 21.3% aluminum chloride (Hemodent)
- 15.5-20% ferric sulfate (Astringident)
- Expasyl
- Cordless retraction with aluminum chloride
- Traxodent
  - 15% aluminum chloride paste cords or caps
- Electrosurgery or laser

**Impression Techniques**

Full Arch
  - “Triple Tray”
- Fast and accurate
- 1 or 2 units
- Non-guidance teeth
- No distal abutments

**Impressions**

Materials:
- Addition Silicone (PVS or VPS)
- Polyether
- Polysulfide (Rubber Base)
- Condensation Silicone (not used much today)
- Reversible Hydrocolloid (Agar)

**Provisional Restorations**

Materials:
- Chem cured composites: Integrity
- Bis-Acryl with fillers: Protemp Plus
- Polymethyl Methacrylate (PMMA): Jet acrylic
- Polyethyl Methacrylate (PEMA): Snap
Vinyl Methacrylate: Trim
Filled resin (auto cured): Alike (PMMA w/ Barium glass)
Filled resin (light cured): Triad

**Insertion & Post-Insertion--Fixed**
Remove Provisional Restoration/cleanse prep
Adjust Proximal Contacts
Evaluate “Fit”
Check Pontic Contact
Evaluate Occlusion
Establish Final Contour
Finish Restoration

**Insertion & Post-Insertion--Fixed**
Contact Evaluation
Floss Test
Shape/Location of Contact
Esthetics
Evaluate Pre-restoration Contacts
Centric Occlusion vs. Maximum Intercuspation
Eccentric Contacts

**Insertion & Post-Insertion--Fixed**
Porcelain Restorations
In Bisque Bake
Don’t Grind Metal and Porcelain Simultaneously
Incisal Edges
Gingival Contour - Emergence Angle
Embrasures - “Black Triangles”

**Insertion and Post-Insertion--Fixed**
Positive error: A high restoration where there should be space
Negative error: Space exists where there should be an anatomical feature.
**Positive errors can be corrected w/ chairside adjustments.**

**Outline--Removable**
Diagnosis & Treatment Planning
Soft Tissue
Hard Tissue
Jaw Relationship
Patient Health
Preprosthetic Surgical Indications
Overdenture Abutment Selection
Removable Complete Dentures
Overdenture Abutment Preparation
Immediate Denture Conditioning
Jaw Relations (Vertical and Centric)
Set Up
Insertion
Post-Insertion Troubleshooting
Reline & Rebase
Tissue Conditioning
Removable Partial Dentures
Framework Design
Abutment Teeth
Survey Considerations
Impressions
Tooth Selection & Arrangement
Framework Try-In
Insertion
Post-Insertion Troubleshooting
Diagnosis & Treatment Planning

Removable

Soft Tissue
Hard Tissue
Jaw Relationship
Patient Health
Preprosthetic Surgical Indications
Overdenture Abutment Selection

Soft Tissue
Redundant tissue
Frenum
Muscle attachments
Vestibules

Hard Tissue
Remaining (abutment) teeth
Supporting bone
Resorption of ridges

Jaw Relationship
Jaw Relationship (Skeletal)
Class I
Class II
Class III

Patient Health
Diabetes
Osteoporosis
Medications (Xerostomia issues?)

Patient Health
Caries
Periodontal disease
Oral Hygiene
Crown-to-root ratios
Number and position of remaining teeth
Health of supporting structures

Preprosthetic Surgical Indications
Exostosis
Epulis fissuratum
Inadequate vestibules

Overdenture Abutment Selection
Healthy periodontal tissues
Canines and premolars are best (canines have longer roots)
Need endodontic treatment (unless severe pulpal recession has occurred to the extent of calcification)
Gross carious lesions extending subgingival is contraindicated.

Removable Complete Dentures
Overdenture Abutment Preparation
Immediate Denture Conditioning
Jaw Relations (Vertical and Centric)
Set Up
Insertion
Post-Insertion Troubleshooting
Reline & Rebase
Tissue Conditioning

Overdenture Abutment Preparation
Maximal reduction of coronal portion of tooth
Endodontic therapy
Restoration of tooth depends on remaining tooth structure above gingival attachment:
Resin composite
An alloy (amalgam)
Gold coping (post & dome)
*Attachments can improve stability and retention of the OD.

**Overdenture Abutment Preparation**
- Alveolar bone preservation
- Increased proprioception/Motor skills
- Occlusal force sensory input preserved
- Better masticatory performance compared to complete dentures
- Maintenance of arch integrity

**Immediate Denture Conditioning**

**Jaw Relations (Centric)**
CR = A maxillomandibular relationship in which the condyles articulate with the thinnest avascular portion of their respective discs, with the complex in an anterior-superior position against the shapes of the articular eminencies. The position is independent of tooth contact and is restricted to purely rotational movement about the transverse horizontal axis.

**Jaw Relations (Vertical)**
Niswonger technique: Marks are made on the patient's face and VDO is determined by subtracting approximately 4mm from the patient's vertical dimension of rest

**Set Up**
- Selection of Teeth: Dentogenics
  - Fisher and Frush wrote about Dentogenics and the SPA factor
  - Sex
  - Female – smaller laterals with rounded features
  - Male – square shorter lateral incisors
- Personality
- Vigorous, medium, and delicate
- Age
- Features such as worn cusp tips, darker color, and receded tissue occur as you get older

**Set Up**
- Philosophies of setting teeth
- Set for mechanical advantage
- Place teeth to lingual to increase stability
- Keep height of occlusal plane closer to less favorable ridge
- Occlusal plane parallel
- Set where natural teeth are
- Placing teeth to lingual violates tongue space
- Collapses facial contour
- Natural location improves masticatory function and esthetics
- Develops a harmonious relationship between tongue, teeth and facial muscles

**Set Up**
- Classification of tooth forms
  - Anatomic teeth – 30, 33, 45 degrees
  - Semi-anatomic teeth – 10, 25 degrees
  - Nonanatomic teeth – 0 degrees

**Set Up**
- Patient factors in set up
  - Health and age
  - Chewing habits (vertical or horizontal)
  - Esthetic and functional requirements
  - Ridge type
  - Interocclusal distance
  - Ridge relation
  - Teeth in previous denture

**Set Up**
- Five basic occlusal schemes for complete dentures
  - Anatomic, balanced occlusion
  - Semi-anatomic, balanced occlusion
Lingualized occlusion (balanced or non-balanced)
Nonanatomic, balanced occlusion
Neutrocentric occlusion

**Set Up**
Balanced occlusion
Anatomic & Semi-anatomic Balanced articulation
Definition: the bilateral, simultaneous, anterior and posterior occlusal contact of teeth in centric and eccentric positions
(Glossary of Prosthodontic Terms)
cross arch
cross tooth-cross arch

**Set Up**
Balanced occlusion: Anatomic
Teeth with cuspal inclination of 30 degrees or more
Teeth placed in same position as natural teeth were in
Vertical and horizontal overlap present on anterior teeth

**Set Up**
Anatomic occlusion
Cusp-to marginal ridge or tooth-to-teeth arrangement of posterior teeth
Cross-tooth, cross arch and protrusive balance during excursive movements is present

Advantages of anatomic occlusion
Better esthetics
Ease of penetration of food
Denture stability during parafunctional movements

Disadvantages of anatomic occlusion
Precise, exact, reproducible records are required
More time-consuming technique
Generate greater lateral forces on inclines
Only effective in young patients
Works best with class I relationships

**Set Up**
Balanced occlusion: semi-anatomic occlusion
(1952) Schuyler pointed out that functional harmony can be achieved with shallow cusp teeth by reduction of incisal guidance

Advantages and disadvantages are same as anatomic occlusion
Esthetics is compromised a bit
Lateral forces are reduced

**Set Up**
Lingualized occlusion
First suggested by Pound and Payne
Attempts to maintain the esthetics and food penetration of anatomic forms
Maintains the mechanical freedom of non anatomic form
Utilizing maxillary anatomic teeth and mandibular nonanatomic or semi-anatomic teeth

Indications of lingualized occlusion
High priority esthetics with poor alveolar ridges
Used when complete denture opposes removable partial denture

**Set Up**
Principles of lingualized occlusion
Anatomic posterior teeth of 30 or 33 degrees are used for maxillary denture
Nonanatomic or semianatomic teeth are used for mandibular denture
Maxillary lingual cusp should contact mandibular teeth in centric occlusion

**Set Up**
Principles of lingualized occlusion
Balancing and working contacts should only occur on the maxillary lingual cusps
Bilateral balanced occlusion in lateral excursions (2-3 mm)

**Set Up**
Advantages of lingualized occlusion
Most of the advantages of anatomic and nonanatomic are retained
Cusp form is more natural in appearance
Good penetration of food bolus
Vertical forces are centralized on mandibular teeth
Eliminates lateral interferences
Disadvantages of lingualized occlusion
Less resistance of denture base rotation than balanced occlusion
Less masticatory efficiency than balanced occlusion
Cannot use for flat ridges or severe inter-ridge distance

**Set Up**

Nonanatomic occlusion
Teeth with zero degree, non-cusps, or monoplane occlusion
Posterior compensating curve is present
Requires protrusive and lateral records to set the articulator
Advantages of nonanatomic occlusion
More esthetic than neutrocentric occlusion
Simple and less-time consuming technique
Good for patients with crossbite, class II and III relationships
Disadvantages of non anatomic occlusion
Compensating curve acts as one long tooth causing lateral forces to the denture
Occlusal adjustments are harder to do

**Set Up**

Neutrocentric occlusion
Exact opposite of anatomic occlusion
Was developed by Devan 1954
Objectives
neutralization of inclines
centralization of forces
Elements of neutrocentric occlusion
POSITION - teeth are placed over the residual ridge as far lingually as the tongue will allow
PROPORTION- occlusal table is reduced by 40%
PITCH- place occlusal plane parallel to underlying ridges or midway between them
FORM - flat teeth are used

**Set Up**

Advantages of neutrocentric occlusion
Simple technique
Requires less precise records
Decreased lateral forces
Easier to adjust
Provides area of closure and does not lock the mandible
Good for class II and III, crossbites
Good stability
Disadvantages of neutrocentric occlusion
The least esthetic occlusal scheme
Poor bolus penetration
Effect or condylar guidance is absent
Cannot be balanced
Greater lateral forces on inclines

**Set Up**

Arrangement of posterior teeth
Anterior reference point
Posterior reference point
Three positions of plane of occlusion

**Set Up**

Anterior Reference Point
Esthetics and phonetics of lower anterior teeth
Using Pound’s technique let “s” be your guide
Class 1 - vertical overlap (1.5-3mm)
Class 2 - more overlapping and have 10mm posterior speaking space
Class 3 - vertical overlap >2mm/ posterior space is 1-1.5 mm

Posterior reference point
The distance from the distal of lower cuspid to the apex of the retromolar pad will determine number of teeth used (29 mm)
A line drawn horizontally 1-2 mm below the superior surface

Set Up
Anteroposterior position
(Based on anatomical considerations)
Anatomic landmarks used
Frankfort plane
Ala-tragus line or Camper’s plane
Height of lower cuspid to distal half of retromolar pad

Insertion
Ensure good tissue adaptation
Establish good occlusion
Establish patient comfort, esthetics and function

Post-insertion Trouble Shooting
Maxilla
buccal flange near tuberosities
labial flange and frenum
Mandible
mylohyoid ridge
retromylohyoid areas
distobuccal border of distal extension
Assess occlusion

Post-insertion Trouble Shooting
Cheek biting
lack of horizontal overlap in posteriors
overclosure
teeth too far buccally
Soreness
Ridge Crest (generalized)- excess OVD, impression errors, allergy
Localized unilateral- premature contact, unilateral chewer, denture bleb
Vestibular area-overextended borders, inadequate relief for frena
Vertical surface of alveolar process- excess pressure, undercuts
Labial flange-overextension, patient masticates in protrusion, no balance

Post-insertion Trouble Shooting
Difficulty swallowing
overextended posterior border (Max)
overextended distobuccal border (mand)
excessive OVD
Occlusal prematurities
Clicking
lack of retention
excessive OVD
overextended mand denture

Post-insertion Trouble Shooting
Gagging
overextended posterior border (Max)
posterior border too thick in posterior palatal seal
excessive OVD
overextended mandibular distolingual flange
occlusal prematurities
teeth set too far lingually

**Post-insertion Trouble Shooting**

**Phonetics:**
- “S” sound – whistle – too narrow anterior air space
- “S” sound – lisp – too broad an anterior air space
- “Th” and “T” sounds indistinct-inadequate interocclusal distance
- “F” sounds like “V” – maxillary anterior teeth too long
- “V” sounds like “F” – maxillary anterior teeth too short
- “S” sounds indistinct – excessive OVD

**Post-insertion Trouble Shooting**

Lack of Retention/Stability
- Inadequate posterior palatal seal
- Overextended borders
- Hyperplastic tissue
- Inadequate relief of buccal frenum
- Teeth encroach on tongue space
- Inaccurate impression
- Dehydration, weight loss
- Errors in occlusion

**Post-insertion Trouble Shooting**

Burning sensation
- Hormonal, allergy, anterior palatine papilla pressure, vitamin deficiency, systemic

**Esthetics**
- Full maxillary lip – thick borders, max teeth too anterior
- Too much anterior tooth- incisors set too low, excessive OVD
- Too little anterior tooth- overclosed, incisors set too high, teeth too lingual

**Reline & Rebase**

Reline: the procedures used to resurface the tissue side of a denture with new material, thus producing an accurate adaptation to the denture foundation area.

Rebase: the laboratory process of replacing the entire denture base material on an existing prosthesis without changing the occlusal relations of the teeth.

**Tissue Conditioning**

Short-term soft reliners (Tissue Conditioners)
- Treatment and conditioning of abused/irritated denture supporting tissues
- Allows tissues to rest and regain their health

**Tissue Conditioning**

Long-term soft reliners (plasticized acrylics)
- Used as a therapeutic measure for patients who cannot tolerate the stresses induced by dentures.

**Complete Denture Tidbits**

House Classification
Throat Form
House
Neil
Combination Syndrome
Denture Support
Impression Techniques

**Complete Denture Tidbits**

House Classification of Patient Attitude
- Important in developing dentist-patient relationship
- Important in determining treatment plan
- Philosophical
- Hysterical
- Indifferent
- Exacting

**Complete Denture Tidbits**

House Classification of Patient Attitude
Philosophical
Best mental attitude!!!
Rational, sensible, calm and composed
Overcomes conflicts
Organizes time and habits in an orderly fashion

Hysterical
Emotionally unstable
Excitable, excessively apprehensive, and hypersensitive
Psychiatric consultation often required

Complete Denture Tidbits
House Classification of Patient Attitude

Indifferent
Questionable or unfavorable prognosis
Apathetic, uninterested, and lacks motivation
Uncooperative and blames dentist for poor dental health

Exacting
REQUIRES EXTREME CARE
Methodical, precise, accurate, and makes severe demands
Requires each step to be explained

Complete Denture Tidbits
House Palatal Throat Form
I) 5-12 mm distal to a line down across palate at distal edge of tuberosities
II) 3-5 mm distal to the line drawn across palate at distal edge of the tuberosities
III) “curtain” of soft palate turns down abruptly 3-5 mm anterior to line drawn across the palate

Complete Denture Tidbits
Neil’s Lateral Throat Form
I space between mylohyoid ridge and retromylohyoid curtain
II > ½ inch
II < ½ inch
III no space

Complete Denture Tidbits
Combination Syndrome
Loss of vertical dimension of occlusion
Resorption of anterior maxillary edentulous ridge
Overgrowth of maxillary tuberosities
Maxillary papillary hyperplasia
Extrusion of mandibular anterior teeth
Resorption of mandibular posterior edentulous ridges
Kelly, JPD 1972

Complete Denture Tidbits
Combination Syndrome
Loss of vertical dimension of occlusion
Occlusal plane discrepancy
Anterior spatial repositioning of mandible
Poor tissue adaptation of prostheses
Epulis fissuratum
Periodontal changes
Saunders et al., JPD 1979

Complete Denture Tidbits
Complete Denture Support
distribution of applied forces over as wide an area as possible. Helps with ridge preservation, prosthesis stability and retention.

Complete Denture Tidbits
Posterior Palatal Seal (Functions)
Retention of the maxillary denture
Firm contact with the tissue of the soft palate reduces the gag reflex
Reduces food accumulation
The pressure to the tissue makes the distal border less noticeable to the dorsum of the tongue
Compensates for dimensional changes
The thickened area provides added strength across the denture

**Complete Denture Tidbits**

Impression Techniques
Mucostatic (no-pressure or pressureless)- (Page)
Made with a spaced tray
No border seal or border defining
Selecteive pressure (Boucher)
Uses a tray with space to control pressure
Uses a mixture of medium (rigid areas) and light (flabby areas) body
Drill holes in the tray- allows release of hydrostatic pressure
Uniformed pressure (Jacobson and Krol)
Also known as **Functional**
No spacers on tray
Records tissues in a mildly displaced form
Uses moderate viscous light body rubber base
Ensures close adaptation- less dimensional changes

**Removable Partial Dentures**

Framework Design
Abutment Teeth
Survey Considerations
Impressions
Tooth Selection & Arrangement
Framework Try-In
Insertion
Post-Insertion Troubleshooting

**Framework Design**

Major Connectors
Minor Connectors
Rests
Direct Retainer
Retentive Clasp/Reciprocal Arm Assembly
Indirect Retainer
Denture Base Retention

**Framework Design**

Maxillary Major Connectors
Anterior-Posterior Palatal Strap
Palatal Plate
Single Posterior Palatal Strap--Kennedy Class III
U-shaped Palatal Connector
Minimize coverage but maintain rigidity
6 mm from free gingival margin
Avoid premaxillary coverage
When palatal coverage is necessary, use palatal plate
Mandibular Major Connectors
Lingual Bar
Lingual Plate  
Sub-Lingual bar  
Labial bar  
Minimize coverage but maintain rigidity  
4 mm from free gingival margin

**Framework Design**  
Minor Connectors  
Joins denture base to major connector  
Lingual plating  
Join rests, indirect retainers and clasp assemblies to major connectors  
Denture base retentive elements  
Guide plates- made long for retention and bracing, short for stress relief

**Framework Design**  
Rests  
Directs forces (vertical and lateral) along long axis of tooth  
Vertical stop  
Can function as an indirect retainer in distal extension areas  
Prevents tooth extrusion, food impaction  
Correction of occlusal plane (occlusal rest)

**Framework Design**  
Rests  
 Rounded internal line angles  
1/3 the F-L widths and ½ the width of the tooth at the cusp tips  
Less than 90 degrees

**Framework Design**  
Retentive Clasps  
The direct retainer portion of the clasp assembly engages a predetermined amount and location of undercut providing resistance to removal of the RPD along its path of insertion.  
Reciprocal Arms  
The reciprocating arm and/or minor connectors of the clasp assembly contact the tooth surface opposite the undercut resisting the force placed on the abutment as the direct retainer passes over the height of contour

**Framework Design**  
Clasp Assembly  
PARRSS  
Passive (No force)  
Adequate Encirclement (180 degrees)  
Retention  
Reciprocation  
Stability (horizontal/rotational forces)  
Support (vertical forces)

**Framework Design**  
Clasps  
Cast  
Circumferential  
RPA  
RPC  
Roach Clasp  
I-bar  
T-bar  
Wrought Wire

**Framework Design**  
RPC  
Cast metal clasp (rest, proximal plate and circumferential direct retainer)  
Mesial occlusal rest  
0.01” mesiobuccal undercut  
Direct retainer superior border at survey line (terminal 1/3 in undercut)
Direct retainer inferior border does not contact tooth
RPA
Cast metal clasp assembly
0.01” undercut
Direct retainer terminal one-third in gingival one-third
Reciprocating arm at junction of middle and gingival thirds

Framework Design
RPI Clasp
Cast metal clasp (rest, proximal plate, and I-bar direct retainer)
Mesial occlusal rest
0.01” mid-buccal undercut
Direct retainer inferior border tooth contact at undercut
Superior border at survey line
Approach arm 3.0 mm from free gingival margin

Framework Design
RPI Advantages
Free rotation tissue-ward
Determined by:
Proximal plate contact
Minor connector design
Direct retainer placement
Minimizes contour changes
RPI Contraindications
Soft tissue undercuts
High survey line
Lingual plating of abutment
Inability to place mesial rest
Need for increased stability

Framework Design
Wrought Wire Clasp
Wrought direct retainer and cast reciprocal arm
Rest opposite undercut location
0.02” mesio- or distobuccal undercut
Direct retainer and reciprocating arm have same location as circumferential clasp arms

Framework Design
Denture Base Retention
Mesh
Lattice
Loops
Beads
Posts

Framework Design
Indirect Retainer
Locate as far from the horizontal fulcrum line as possible
Requires a prepared rest seat
Provides third point of reference during reline

Abutment Teeth
Modification
Rarely is there a situation where alteration of an abutment tooth is not indicated
Modification includes:
Enameloplasty
Recontouring with composite resin
Surveyed crowns

Abutment Teeth
Modification
Modify the existing contours
Guiding planes
Height of contour
Rest seats
Surveyed Crown
Normal reduction for crown
Rest seat preparation

**Survey Considerations**
Essential in RDP design process
Lab communication
Clasp undercuts
Height of contour

**Impressions**
Reproduce tooth contours
Reproduce tissue limits affecting major connector and clasp assemblies
Reproduce denture foundation with controlled load bearing areas

**Tooth Selection & Arrangement**
Types of Teeth
Acrylic (easiest to modify)
Metal occlusals on acrylic teeth
Porcelain teeth
Facings on metal teeth waxed up in framework

**Consider narrowing B-L occlusal table in posterior to decrease occlusal load to ridges.**

**Always choose the highest cusp possible compatible to opposing natural teeth to grind into occlusion.**

**Framework Try-In**
Adjust the framework to the opposing occlusion.
The teeth should occlude the same with the framework out as with it in.
If adjusting maxillary and mandibular frameworks together:
Adjust one, remove it
Adjust the other by itself
Adjust both together

**Insertion**
3 Stages
Initial adjustment
Patient education
Follow-up Adjustments & Maintenance

**Insertion**
Initial Adjustment
Bearing surfaces and periphery (check for rough areas)
Pressure Indicating Paste for intaglio surface
Occlusion
Consider clinical remount for Kennedy Class 1 or 2

**Insertion**
Patient Education
Sore spots
Feeling of fullness
Increase in saliva activity
Changes in speech
Home denture cleaning solutions are ok (not bleach)
When not wearing, keep in container covered w/ water.

**Insertion**
Follow-up Adjustments & Maintenance
24 hours (Pt should wear RDP 1st 24 hours)
7 days
1 month
6 months

**Check occlusion at every adjustment visit.**
Post-Insertion Troubleshooting
Maxilla
Buccal flange near tuberosities
Labial flange and frenum
Mandible
Mylohyoid ridge
Retromylohyoid area
Distobuccal border of distal extension
Assess clasps
May bend apically into greater undercut (cast clasps)
Assess occlusion

Removable Partial Tidbits
Kennedy Classifications
Applegate’s Rules
KratochvilVs. Krol
Flexible Base Dentures

Removable Partial Tidbits
Kennedy Classifications—Edentulous Space
Class I: bilateral distal extension
Class II: unilateral distal extension
Class III: distal space
Class IV: anterior space

Removable Partial Tidbits
Applegate’s Rules
Rule 1-Classification should follow, not precede extractions
Rule 2-If a 3rd molar is missing and not being replaced, it’s not considered in the classification
Rule 3-If a 3rd molar is present and not to be used as an abutment, it’s not considered in the classification
Rule 4-If a 2nd molar is missing and not to be replaced, it’s not considered in the classification
Rule 5-The most posterior area always determines the classification
Rule 6-Edentulous areas other then those determining the classifications are referred to as modification spaces and are designated by the #
Rule 7-The extent of the modification is not considered, only the number of additional edentulous areas
Rule 8-There are no modification areas in a Kennedy Class IV

Removable Partial Tidbits
Kratochvil
Proximal plate: marginal ridge to junction of middle and gingival thirds
Minimal to no physiologic adjustment necessary
Krol
Proximal plate: entire length of the clinical crown
Minimal tissue relief: physiologic adjustment necessary

Removable Partial Tidbits
Flexible Base Partials
Valplast (etc)
Light weight
Transition may be easier

References
Naoshi, Sato, Periodontal Surgery-A clinical atlas
Okeson, Jeffrey P, Management of Temporomandibular Disorders and Occlusion
ABGD Review Handout (Drs Christopher Minke, Marcus McDonald, and Gary Braun)
LtCol Allan Parke (Chief of Prosthodontics -Barksdale AFB AEGD-1)

References
Carr, Alan B & Brown, David T, McCracken’s Removable Partial Prosthodontics, 12th Edition
Stewart, Clinical Removable Partial Prosthodontics
Boucher, Prosthodontic Treatment of the Edentulous Patient
Dr. N. Chaffee and Dr. M. Belles
ABGD Review Handout (Drs Christopher Minke, Marcus McDonald, and Gary Braun)
LtCol Allan Parke (Chief of Prosthodontics - Barksdale AFB AEGD-1)