Comprehensive Examination

• Initial Patient Interview;
  – Medical and Dental Histories
  – Patient’s Objectives
• Full-Mouth Radiographic Survey
• Head and Neck Examination
• Periodontal and Soft Tissue Examination
• Individual Tooth Examination
• Occlusal and TMJ Examination
• Intraoral Camera Pictures
• Cosmetic Dental Examination

Interview = French entrevoir, “to see one another”


• Important for the patient to get to know us, an exchange of ideas, opinions and experiences
• Not the time for long statements from the dentist about quality, excellence, or mission statements
• Held in a quiet, confidential area
• Patients feel respected when they have the opportunity to speak directly to the dentist
• Speak with “Authentic Presence”, i.e. help others feel better about themselves

“Let’s accurately identify every esthetic objective you wish to fulfill, then let me inform you as to the functional parameters I must adhere to so that your dentistry will not only look and feel good, but will be made to last.

From these critical elements, the treatment plan will present itself to us. Does that sound like a good way for you to gain the information you need to make an informed decision concerning what you’d like to do?”
General Restorative

Patient Satisfied with Esthetics & Function
Occlusion Good- No Problems

No Data Collection Necessary

* Introduce to Hygiene Department
Establish Rapport for Long-term Care

Functional & Occlusal

- Wear
- Signs of instability like mobility, erosion, fractures
- Facial Muscle soreness and pain
- Headaches
- Recurrent TMJ soreness precipitated by MIP/CR discrepancies
- Investigation of intra-articular disorders

Auxiliary
Polyvinylsiloxane Impressions for S.M.’s
Facebow Transfer

Dentist
CR Bite Registration
TMJ Assessment
**DCA Maxillary Cast Orientation**

Geometric Analysis of Occlusal Plane Orientation Using Simulated Ear-Rod Facebow Transfer  
Santos J, Nelson SJ, Nummikoski P.  
J Prosthodon 1996;5:172-181

**Conclusion**

Cephalographs showed extreme variability in the position of the earpiece to the bony structures of the skull.

**Discrepancies Between Arbitrary and True Hinge Axes**

Weinberg LA. J Prosthet Dent 1959;9;775-787

**Conclusion**

An error of 2-3 mm in the location of the transverse hinge axis produces such a slight discrepancy that no CR record or cementation could be equally accurate.

**Maxillary Cast Orientation**

- Based off of John Kois’ research of an average axis-incisal distance of 100mm. (corroborated by Bonwill’s Equilateral Triangle, Monson’s Sperical Theory (4”=100.12mm) and Weinberg’s studies in 63’)
- Essentially relates the maxillary incisal edge to an average distance of the true hinge axis
- 80% of the population is within 5mm of the average 100mm axis-incisal distance, which is approximately the same %’s reported in research with arbitrary facebows (earbow-type)

**Kois Facial Plane Analyzer**

- Orthopedically stable TMJ’s
- Posterior, bilateral, simultaneous contacts
- Anterior Guidance in harmony with mandibular function
- Non-interfering posterior teeth in excursive movements
- All teeth in functional harmony with the TMJ’s, musculature & opposing dentition

**Equilibrium of the Masticatory System**

- Orthopedically stable TMJ’s
- Posterior, bilateral, simultaneous contacts
- Anterior Guidance in harmony with mandibular function
- Non-interfering posterior teeth in excursive movements
- All teeth in functional harmony with the TMJ’s, musculature & opposing dentition
• **Auxiliary**
  Polyvinylsiloxane Impressions for S.M.’s Facebow Transfer

• **Dentist**
  CR Bite Registration
  TMJ Assessment
  1. Bimanual Manipulation
  2. Lucia Jig w/Bimanual
  3. Kois Deprogrammer

**DCA** Centric Relation Bite Record

Tissue side

Occluding Side

esp for Intermediate to Long-Term Deprogramming

- Patient sitting at 45 degree angle
- “open/close”... “open/close”
- “forward/back”... “forward/back”
- “open/close”...
- Mark with articulating film
- “Tap, Tap, Tap”
- Bite registration material
- “close”
- Mandibular incisor should be on the mark
Photography
The key is to make dental photography diagnostic
To do so requires great attention to detail in the composition

- Single lens reflex camera
  (to control exposure and depth of field in macro image capture)
- At least 5 megapixels
- Capable of capturing RAW image format

DCA

Esthetic & Functional

- Auxiliary
  Photographic Series (AACD Series + Profiles)
  Polyvinylsiloxane Impressions for S.M.’s Facebow Transfer

- Dentist
  CR Bite Registration
  TMJ Assessment
  Review Esthetic Objectives (Questionnaire?)
Photographic Composition

“Esthetic Plane”

Patient looking forward, standing or sitting erect

- 1:10 magnification
- horizontal slide
- crosshairs= nose, however focusing is on the teeth
- patient standing or sitting erect
- x and y axis based on the esthetic plane and not skewed by canted interpupillary line, ears, or arches

- 1:2 magnification
- SAME POSTURE
- crosshairs= facial midline & horizontally centered
- patient standing or sitting erect
- x and y axis based on the esthetic plane and not skewed by muscle asymmetry or canted arches
- crosshairs= center of lateral incisor
- contralateral ant. teeth in view
- x and y axis based on the esthetic plane and not skewed by muscle asymmetry
• 1:2 magnification
• SAME POSTURE
• crosshairs= facial midline & esthetic plane of maxillary arch
• patient standing or sitting erect
• x and y axis based on the esthetic plane and not skewed by muscle asymmetry or canted arches

• 1:1 magnification
• SAME POSTURE
• crosshairs= dental midline & mid-dentition
• black background
• x and y axis based on the esthetic plane and not skewed by “tug” of cheek retractors

• 1:2 magnification for occlusals
• mirrored shot
• incisal edge bisects facial & lingual surfaces of anterior teeth
• patient in operatory

• crosshairs= center of lateral incisor & incisal edge of lateral
• contralateral ant. teeth in view
• x and y axis based on the esthetic plane and not skewed by muscle asymmetry or canted arches
Photographic Composition

- **SAME POSTURE**
- esthetic plane
- profile includes gonial angle

**“Brow-to-Chin”**

- Photographs
- 1:5 magnification

**“Profile Shots”**

- 1:2 or 1:5 magnification
- **SAME POSTURE**
- patient standing or sitting erect

**“Repose”**

- 1-2mm = center of the bell curve
- Females show more; about 2-4mm
- Males less; about 1-3mm
“Maximum Dynamics”

- Exaggerated
- Average retraction about 7-8mm
- Extreme lip mobility = 12-14mm
- Increased confidence = Increased exposure
- Display: As a percentage for both M and F
  “High” (11%), “Medium” (69%), “Low” (20%)

“Maximum Dynamics”

- At 50% or less, makes it easy to increase length of maxillary teeth
- At 70% or greater, makes it very difficult to lengthen maxillary anterior teeth.
"Brady Bunch" image collage sent home in patient consult packet...

Andrea G

Presenting Conditions 2008

The Diagnostic Tracing Analysis

One mm on the Study Model

Equals One cm on the Tracing

Auxiliary

- Projects AACD Slide Series #5 onto wall (1:10 ratio from study model measurement)
- Traces Teeth
- Measures Outlines of Teeth Lengths, Widths, and Midline-Distal of Canine
- Computes Width/Height Percentages

Widths of Individual Teeth
Lengths of Individual Teeth
Midline to Distal of Canine
Width/Height X 100% = Ratio %
Golden Proportion Rule

For Dentistry, the Golden Proportion ratio \# = 1.618 and it relates to the anterior teeth as:

Central Incisor - 1.618
Lateral Incisor - 1.0
Cuspid - .618

Therefore,

Width of the Lateral = Width of Central \[ \frac{1.618}{1.0} \]

Width of Cuspid = Width of Lateral \times .618
Central Incisor Anatomy & Characteristics

**Primary**
- “Gross Morphology”
  - Silhouette (or Outline)
  - Height-to-Width Ratio / Proportionate Balance
  - 3 Planes on the Facial
  - Incisal Embrasures & Incisal Corners
    - Square-Square, Square-Round, Round-Round
  - Generalized Tooth Contour: Concave, Flat, Convex

**Secondary**

**Tertiary**

- Looking for a natural progressive increase in the incisal embrasure size from central to cuspid

Generalized Tooth Contour

<table>
<thead>
<tr>
<th>Concave</th>
<th>Square-Square</th>
<th>Square-Round</th>
<th>Round-Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convex</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Central Incisor Anatomy & Characteristics

Primary

• “Dental Anatomy”
  › Line Angles
  ‣ Mesial Line Angles- Equidistant & Mirror Images
  ‣ The most important 18 sq mm in Smile Design!
  ‣ Nuances; Distal Concavity at the Cervical
  ‣ Reflective & Deflective Surfaces

Secondary

Altering Shapes of Incisors

by **Controlling the Line Angles**

<table>
<thead>
<tr>
<th>Narrow</th>
<th>Widen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move line angles centrally</td>
<td>Move line angles laterally</td>
</tr>
<tr>
<td>Increase facial embrasures</td>
<td>Decrease facial embrasures</td>
</tr>
<tr>
<td>Increase facial convexity</td>
<td>Flatten facial contour</td>
</tr>
<tr>
<td>Add vertical lines/ridges</td>
<td>Add horizontal lines/ridges</td>
</tr>
<tr>
<td>Increase incisal embrasures</td>
<td>Decrease incisal embrasures</td>
</tr>
</tbody>
</table>

Altering Shapes of Incisors

by **Controlling the Line Angles**

<table>
<thead>
<tr>
<th>Shorten</th>
<th>Lengthen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emphasize cervical convexity</td>
<td>Flatten cervical convexity</td>
</tr>
<tr>
<td>Move cervical convexity coronally</td>
<td>Place cervical convexity apically</td>
</tr>
<tr>
<td>Create distinct shade transitions incisocervically</td>
<td>Create more uniform shade incisocervically</td>
</tr>
</tbody>
</table>
Centric Relation

... is defined as the maxillomandibular relationship in which the condyles articulate with the thinnest avascular portion of their respective disks with the complex in the anterior-superior position against the shapes of the articular eminences. This position is independent of tooth contact. This position is clinically discernible when the mandible is directed superiorly and anteriorly. It is restricted to a purely rotational movement about the transverse horizontal axis.

Sequential Anatomy of the Temporomandibular Joint
University of Paris
Carpentier, Yung, Marguelles-Bonnet

Glossary of Prosthodontic Terms- Eighth Edition

T1 images correspond primarily to fat or lipid content
the repetition time (TR) is on the order of 500-700 milliseconds
the echo-delay time (TE) would be on the order of 15-30 milliseconds

smilesonline.net

MENU TAB
Lectures & Education
Lecture Handouts

PASSWORD:
smiles
With T2 images water does not energize as well at low intervals, therefore both TR & TE are increased:

- the repetition time (TR) is on the order of 2200-3000 milliseconds
- echo-delay time (TE) would be on the order of 80-100 milliseconds

Hybrid scans show some characteristics of both fat and water and they are called a “proton density scan.”

- the repetition time (TR) is on the order of 2200-3000 milliseconds
- echo-delay time (TE) would be on the order of 15-30 milliseconds

Occlusion/Functional Risk Assessment

- Prognosis Decreases
  - Acceptable
  - Constricted Chewing Pattern
  - Dysfunction
  - Parafunction
  - Neurologic Disorder
Occlusal Vertical Dimension

Kois JC, Phillips K, Compendium
1997;18(12)1168-1177

• Alteration of OVD can provide a biologically compatible adjunct to treatment.
• These alterations can improve dentofacial esthetics, create improved visual proportions and provide an important modality for force management of the masticatory system.
• Predictable stability is more easily obtained from the corrections to problems from growth and development rather than neuromuscular concerns.
• Muscles will always win to some degree.
Occlusion/Functional Risk Assessment

Prognosis Decreases

- Neurologic Disorder
- Parafunction
- Dysfunction
- Constricted Chewing Pattern
- Acceptable

Occlusion/Functional Risk Assessment

Prognosis Decreases

- Neurologic Disorder
- Parafunction
- Dysfunction
- Constricted Chewing Pattern
- Acceptable

Nocturnal Bruxism

Prevalence

- Equal Males and Females
- 10% adults and 5% children are aware
- Very common in children up to age 12. Most will outgrow
- Little evidence to support nocturnal bruxism is a reaction to occlusal imperfections
- More wear with brain damage and mental retardation

characterized by:

- Destructive use of the system (No Functional Purpose)
- Extrinsic systemic factors (e.g., medications or drugs) create etiology
- Intrinsic systemic factors (e.g., basal ganglia) create etiology

characterized by:

- Destructive use of the system (No Functional Purpose)
- Normal mastication may occur
- Pathologic conditions of normal function may develop as adaptive (compensation) mechanisms occur.
- Occlusal dysfunction may exacerbate pathologic symptoms
Nocturnal Bruxism

Highlights

• CNS pattern generator
• Scattered throughout sleep/ 90° intervals/ Majority in Stage 2 sleep/ Most often in transition stages
• Individual episode can last 5”
• More symptoms if during REM sleep
• May have spontaneous remission—Stress, Work Cycle, Menstrual Cycle

Occlusion/Functional Risk Assessment

Prognosis Decreases

• Acceptable
• Constricted Chewing Pattern
• Dysfunction
• Parafunction
• Neurologic Disorder

Characterized by:

• Anterior tooth position is constricting envelop of function
• Initial point of contact is on anterior teeth when patient is sitting up
• TMD—May contribute or may be the result
• Anterior wear that “matches up” with functional pathway

Patient History Includes:

• Retroclined anterior teeth
• Jaw growth after orthodontics completed
• 4 x 4 orthodontic bicuspid extractions

Occlusion/Functional Risk Assessment

Prognosis Decreases

• Acceptable
• Constricted Chewing Pattern
• Dysfunction
• Parafunction
• Neurologic Disorder
Constricted Chewing Pattern

- Anterior tooth position is constricting the envelope of function
  - Clinical hint:
    - Initial point of contact when patient is sitting up is an anterior tooth.
    - Really apparent if initial point of contact is on anterior teeth when patient is lying back. However, more than likely the diagnosis is missed when the occlusion is checked while laying back, unless bimanual manipulation is used.

- TMD - May contribute to problem or be the result of it
- Seen a lot with retroclined anterior teeth.
  - Example: Ortho completed with bicuspid extractions and when orthodontics is completed at a young age followed by subsequent mandibular growth.

Patient presentations & symptoms may include:

- Tender Joints - TMD
- Tired muscles when speaking a lot
- Tired muscles with difficulty in nasal breathing
- Absence of wear of posterior teeth (dependent on timing)
- Typical wear pattern -- lingual maxillary anterior teeth and facial mandibular teeth
- Mobile anterior teeth
- No mobility posterior teeth
- Open spaces anterior teeth
- Fast chewing -- fewer cycles
- Initial point of contact on mounted casts is in the anterior after deprogramming

Planning the Comprehensive Case

- Comprehensive Examination
- Apply Rules of Esthetics and Function
- Routine and Non-Routine Data Collection
- Diagnosis and Treatment Plan
- Consultation
- Systematic Treatment Sequence
Diagnosis and Treatment Evaluation in Cosmetic Dentistry; 
A Guide to Accreditation Criteria 
Nathan Blitz DDS, Chip Steel DDS, Corky Willhite DDS

**TMJ Assessment**

...before a definitive treatment plan can be determined, we absolutely have to verify TMJ stability!

...therefore, we must initiate preliminary treatment that will determine whether we can gain an ideal condyle/disk/fossa relationship or we will need to restore to an adapted TMJ relationship.

Piper Education & Research Center

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**to the Lab for Co-Diagnosis**

Phase I Communication
Images
Pre-Model Impressions
Facebow Jig or Mounted Pre-Models
Centric Relation Bite Registration
Impression and/or Cast of Composite Mock-up
Cosmetic Periodontal Treatment

- **Gingivoplasty**
  Sufficient Attached Gingiva
  Desired Gingival Crest 2.5-3mm > Bone

- **Alveolar Crown Lengthening**
  Insufficient Room for Gingival Complex
  “Mini-Flap” or “Closed Flap”

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to the **Lab** for Anterior Prosthodontics

- Impressions for Working Models and Provisionals
- Images or Slides (pre-, w/shade guide tabs, w/ stump shade tabs, and provisionals)
- Bite Registrations (prepped-natural, prepped-prepped)
- Study Models of Provisionals
- Phase II Lab Prescription