the

143RD

CHICAGO DENTAL SOCIETY
MIDWINTER MEETING

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SCIENTIFIC PROGRAM: FEBRUARY 21 – 24, 2008
EXHIBIT DATES: FEBRUARY 22 – 24, 2008

COURSE C06
HOW TO ACHIEVE PREDICTABLE ESTHETIC DENTISTRY THAT LASTS!
GLENN E. DUPONT, DDS
THURSDAY, FEBRUARY 21, 2008

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CHICAGO DENTAL SOCIETY **MIDWINTER MEETING COURSE EVALUATION**

SPEAKER: _____ DATE: _____

SUBJECT: _____ NUMBER OF ATTENDEES: _____

PLEASE RATE YOUR SPEAKER AS TO:	**Excellent**	**Good**	**Fair**	**Poor**	**N/A**
SUBJECT SELECTED	4	3	2	1	0
TIMELINESS OF SUBJECT	4	3	2	1	0
COMPREHENSIVENESS	4	3	2	1	0
MEETING YOUR EXPECTATIONS	4	3	2	1	0
CONTENT LEVEL	4	3	2	1	0
DELIVERY	4	3	2	1	0
VOICE QUALITY	4	3	2	1	0
HOLDING YOUR INTEREST	4	3	2	1	0
APPROPRIATE AUDIOVISUALS	4	3	2	1	0
EFFECTIVE AUDIOVISUALS	4	3	2	1	0
OVERALL EVALUATION OF SPEAKERS	4	3	2	1	0
OVERALL EVALUATION OF THE PROGRAM	4	3	2	1	0
SHOULD THIS SPEAKER BE INVITED FOR FUTURE MEETINGS?	YES	NO			

WHAT TOPICS INTEREST YOU FOR THE FUTURE? _____

COMMENTS (use reverse if you need additional space): _____

_____

_____

NAME (REQUESTED BUT NOT REQUIRED—PLEASE PRINT): _____

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How To Achieve Predictable Esthetic Dentistry That Lasts

143rd Chicago Dental Society
Midwinter Meeting
February, 2008

Glenn E. DuPont, D.D.S.

10 Keys to Predictability

1. Confidence
2. Relationship
3. Understand Health
4. Understand Problems
5. Implications of Problems
6. Comprehensive Treatment Plan
7. Efficient Treatment Sequence
8. Lab Communication
9. Verification
10. WIDIOM

MASTICATORY SYSTEM PROBLEM EVALUATION

1. Thorough history
2. Palpation of muscles
3. Range of mandibular movement
4. Joint analysis
    A. Palpation
    B. Load testing
    C. Doppler
    D. Imaging
5. Occlusal analysis
    A. C.R. vs. C.O.
    B. Occlusal stability
6. Muscle deprogramming

Key points *about the clinical exam:*

1. The order of the examination should be dictated by the chief concern of the patient. If the patient presents with a chief concern of a broken tooth, address that concern before doing a TMJ evaluation. If a patient presents with a chief concern of bleeding gums, address the periodontal situation before talking about caries. If the patient presents with a chief concern of clicking joints and headaches, address the occlusal condition before doing a full mouth periodontal probing.

2. Regardless of the order of the exam, the goal is to have the patient realize all three areas (periodontal/soft tissue, dental and TMJ/occlusal) are related to each other. Too often, patients do not understand the interrelationship of the different parts of the masticatory system.

3. It is effective to point out areas of concern to the patient during the examination and to listen for the response. If the patient understands the problems, the chances are he/she will ask how to correct the problem. At that point, you can explain the need for gathering diagnostic information so that you can make a thorough assessment in order to offer the best option. If you are pointing out different problems and the patient is not giving any response or showing any interest, proceed slowly. The patient may not fully understand or accept the problems you are discussing.

To summarize treatment planning, four questions must be answered positively by the patient:

1. Does the patient understand the problem?
2. Does your solution make sense to the patient?
3. Is this the time for the patient to fix the problem?
4. Are you the dentist to fix the problem?

THE EXAMINATION PROCESS

There are seven essential steps in a complete examination.

1. **The patient interview**. Take time to develop a relationship that makes your patient comfortable with you as a person.
   (a) Review the medical history
   (b) Chief complaint
   (c) Esthetic concerns
   (d) Anything else?

2. **TMJ screening history and examination**. Muscle examination, movements, and joint examination are essential. You must verify centric relation or adapted centric posture before you can analyze the occlusion. Load testing is an **essential** step. If you can't load without any sign of tenderness or tension, you must find out why. Classify every TMJ (Piper classification).

3. **Soft tissue exam**. Examine the orofacial structures for any abnormalities. Do a cancer screening exam.

4. **Occlusal evaluation**. After determining that the TMJ's are OK, evaluate occlusal relationship. Look for signs of occlusal disease. Classify occlusion (Dawson classification) and note it in the record.

5. **Teeth**. Note that the teeth are one of the last things you examine. Now you can relate any signs of instability to occlusal factors or periodontal factors. If a tooth is loose or worn, show the patient how it interferes with jaw closure in centric or in excursions. Point out overhangs on margins and relate them to swollen gums. Let the patient see what you see. Then help the patient to understand that there is a problem. Show decay, cracks, abfractions, and defective restorations so the patient clearly sees and understands each problem that is present.

6. **Supporting structures**. Do complete perio evaluation. Examine sulcular depth and evaluate access for cleanability on every tooth. Patient should watch in mirror or on video screen as you point out every problem. Be sure to start perio exam by showing what healthy tissue looks like and what normal sulcus depth is. Make this part of the exam particularly informative.

Key point** . . . The purpose of the first appointment is to examine the total masticatory system so thoroughly that no problem gets missed. The key to successful patient communication lies in your attitude of **helping the patient to see and understand every problem.

Patients can not perceive a need for treatment if they do not clearly understand the problem and the implications of the problem if left untreated. Don't attempt to explain treatment options until both the problems and the implications are clearly understood.

New Patient Examination

Patient _____ Chart #_____ Date_____

D.O.B._____ Referred by_____

Chief complaint:_____

_____

History:_____

_____

_____

CLINICAL EXAMINATION

I-**Muscle Evaluation:** (none:0, mild:1, moderate:2, severe:3)

R	L	R	L
( ) Posterior Temporalis	( )	( ) Digastric	( )
( ) Anterior Temporalis	( )	( ) Hyoid	( )
( ) Superficial Masseter	( )	( ) Sternocleidomastoid	( )
( ) Deep Masseter	( )	( ) Occipital	( )
( ) Lateral Pterygoid	( )	( ) Trapezius	( )
( ) Medial Pterygoid	( )		

Comments: _____

_____

Headaches:_____

_____

II- Range of Motion Measurements:

Vertical opening:

_____ Comfortable opening

_____ Full opening

_____ Deviation

Deviation

Excursive movements:

_____ Right

_____ Left

_____ Protrusion

Comments: _____

_____

III- Joint Evaluation:

a)- History:

_____

_____

b)- Palpation: (none:0, mild:1, moderate:2, severe:3)

R	L
( ) Capsulitis	( )
( ) Ligaments	( )

Palpation: (positive:+, negative:-)

R	L	R	L
( ) Opening click	( )	( ) Piper II test	( )
( ) Closing click	( )	( ) Crepitus	( )

d)- Doppler Examination: (Crepitus: quiet:0, mild:1, moderate:2, coarse:3)

R L
( ) Medial pole Crepitus ( ) Tentative Piper Classification

Tongue on roof of mouth:
( ) Lateral pole Crepitus ( ) Right:_____ Left:_____

Wide opening:
( ) Opening click ( )

( ) Closing click ( )

Comments: _____

_____

e)- Bimanual Manipulation/Load Test:

	R		L		R		L		R		L	
Level 1:	Pos.	Neg.	Pos.	Neg.	Level 2;	Pos.	Neg.	Pos.	Neg.	Level 3:	Pos.	Neg.	Pos.	Neg

Deprogramming used? Yes or No

Comments:_____

IV – Occlusal Examination:

First contact:_____ Slide:_____

Anterior tooth contact in MI/Guidance: _____

Anterior fremitus: (slight, moderate, severe)_____ Posterior fremitus(slight, moderate, severe)_____

Occlusal plane:_____ Midline_____

Tori:_____ Comments:_____

V – General Oral Examination:

Cancer screening: Pos. Neg. _____

Any positive findings should be photographed

VI – Perio: (charted in computer) Missing teeth: (chart in computer)

☐ Pocket depths ☐ Recession (MGJ)

☐ Bleeding ☐ Mobility

☐ Furcations

VII – Tooth Evaluation: Utilize "Tooth Form"

VII – Esthetics: ☐ Bleaching ☐ See smile evaluation form

Comments: _____

IX - Additional Diagnostics:

		CT Scan: (circle one)	
☐ Photos	☐ FMX 1.	☐ Atypical facial pain	code 350.2
☐ Study Models (1 or 2)	☐ Panorex 2.	☐ Articular disk disorder	code 524.63
☐ Wax up	☐ MRI 3.	☐ Osteoarthritis, (implants)	code 715.18
		☐ Panoramic	code 00330

THE FIVE REQUIREMENTS OF OCCLUSAL STABILITY

There are five requirements for stability. They must become a dominant factor in any occlusal analysis and every occlusion should be evaluated to see whether or not each requirement is fulfilled. The requirements must be used **in sequence**. They can be used for determining what problems exist or for deciding on what treatment is necessary. They apply to individual teeth or to the entire dentition.

The requirements for stability of occlusion are:

1. Stable stops on all teeth of equal intensity when the condyles are in centric relation.
2. Anterior Guidance in harmony with the border movements of the envelope of function.
3. Disclusion of all posterior teeth in protrusive movements.
4. Disclusion of all posterior teeth on the non-working (balancing) side.
5. Disclusion or non-interference of all posterior teeth on the working side, with either the lateral anterior guidance, or the border movements of the condyle.

In establishing a stable occlusion, the anterior guidance assumes the key role. The anterior teeth are better able to resist lateral stress than the posterior teeth. This is so because of their mechanical position in relation to the TMJ fulcrum, and the muscle force.

Studies by Williamson and Mahan also point out that muscle activity is less intense if only the front teeth are in contact in excursions.

The anterior teeth also generally have denser bone around longer roots with better crown-root ratios.

KEY POINT

In working with problems of occlusion, you will find that the difficulty of each problem directly relates to whether or not an acceptable anterior guidance can be established.

PROGRAM TREATMENT PLANNING

1. EVALUATE EACH REQUIREMENT For stability in _____. Start with requirement #1 and solve any problems with _____ a holding contact for every tooth or _____ for the missing contact or _____.

2. PROVIDE for unfulfilled requirements if indicated by:

A. _____

B. _____

C. _____

D. _____

E. _____

3. SUBSTITUTE for unfulfilled requirements if they cannot be provides logically by:

A. _____

B. _____ PALATAL BARS

C. PATIENT _____ (must evaluate carefully)

4. ELIMINATE the NEED by:

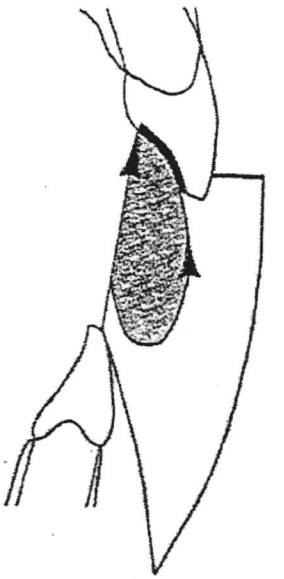
A. _____

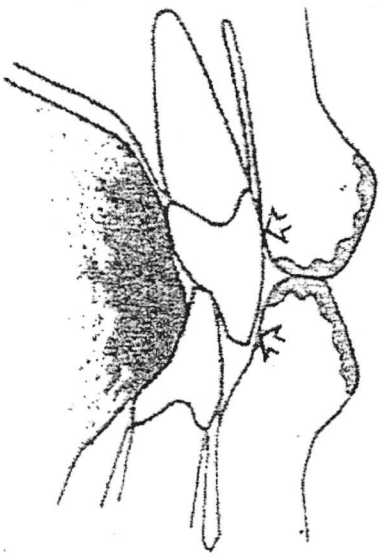
5. AFTER planning for the first requirement of stability is satisfied, work out a plan for solving any problems related to the second requirement, then the third, etc…

DETERMINING THE LINGUAL CONTOURS
For upper anterior teeth

The lingual contour from centric relation out to the incisal edges in all excursions constitutes the anterior guidance. It can not be accurately determined until the incisal edges have been located. The anterior guidance must be in harmony with the envelope of function, or the occlusion will lack stability. Just being in non-interference is not enough, because tilting the axis of the upper teeth outward can eliminate interference to the envelope of function, but can place the incisal edges in interference with the lip closure path and the neutral zone. It also interferes with phonetic relationships, especially the "F" and "V" sounds.

THE ENVELOPE of FUNCTION... The functional movements of the lower incisal edges determine the envelope of function. Any interference to these functional movements seems to invariably cause bruxing or pushing against the interfering upper teeth. This leads to excessive wear, movement of teeth, or hypermobility.

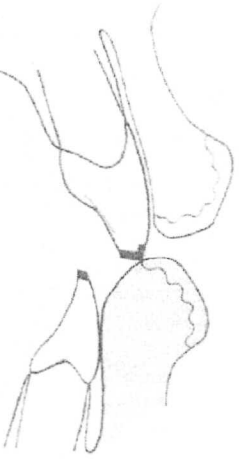




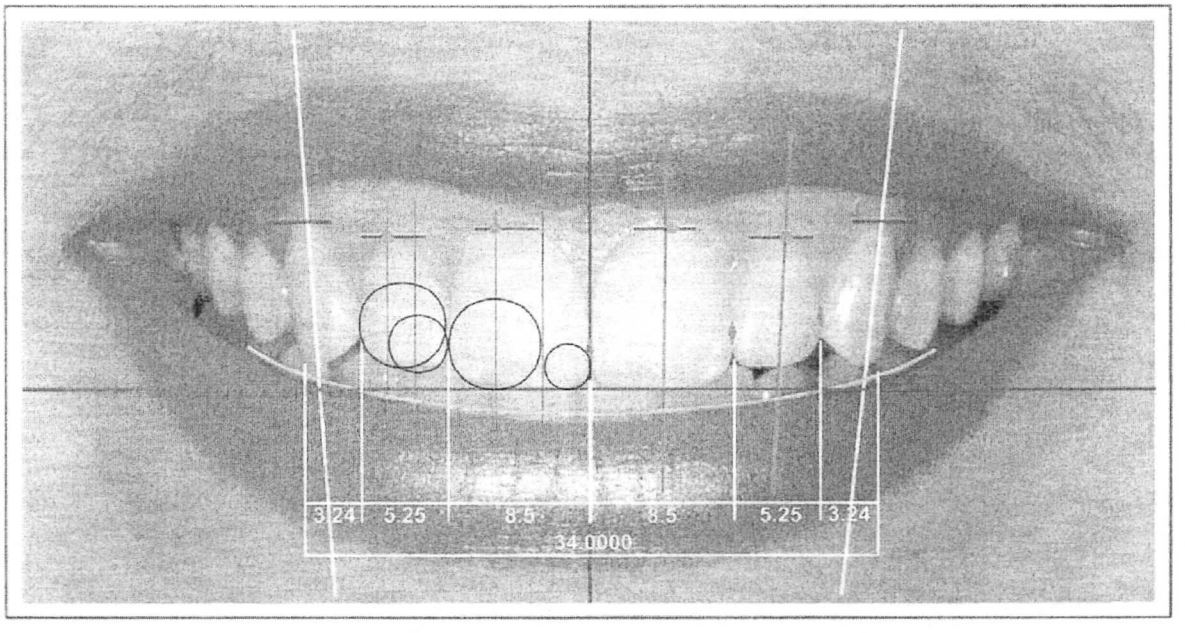
THE NEUTRAL ZONE ... The stability if the entire dentition is dependent on the teeth being in harmony between the outward force of the tongue, and the inward force of the lips and cheeks. A dominant inward force results from the Buccinator Muscle, a band of muscle that stretches around the entire arch. It originates behind the molars on each side and attaches to the orbicularis oris.

"F" or "V" Sounds

The relationship of the upper incisal edges to the vermillion border of the lower lip is one of the most dependable guidelines. The importance of the smile line now becomes apparent with the understanding that control of escaping air between the upper incisal edges and the lower lip is necessary for proper phonetics. If the upper incisal edges are not correctly determined, they will not relate to the lip correctly and an unnatural or strained lip position will be required for making "F" and "V" sounds.



Determining the Facial Esthetics
for upper anterior teeth



Mid Line
Incisal Embrasures
Proximal Contacts
Tooth Axis
Division of Thirds
Cuspid Profile
The Golden Proportion
Smile Line
Zenith of the Gingival Margin
Gingival Height

from Dr. Peter E. Dawson's *The Concept of Complete Dentistry*
2000 Ray Cass Dental Laboratory

The Importance of Mounted Diagnostic Casts

The common use of unmounted casts or inadequate articulators is a baffling inconsistency, since the basic geometry it violates is so simple to understand and the error it produces is so substantial.

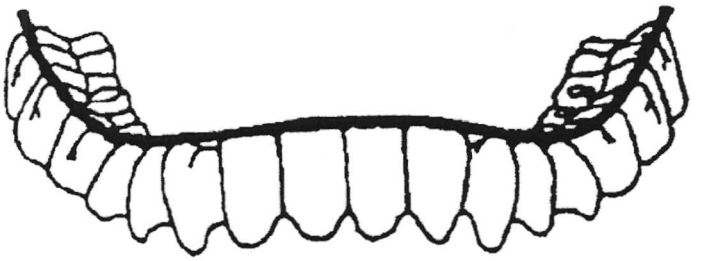
It is obvious we cannot open on one axis and then close on another axis and still return to the same position.

Since most centric relation records must be taken at an opened vertical to avoid interfering tooth inclines, the articulated casts must be able to close on the same arc to determine correct tooth to tooth relationships at the fully closed jaw position.

It is not enough to determine just the first point of contact. We must analyze the PATH of each tooth as it approaches and contacts its opposing tooth at the most closed position without displacing the condyles from centric relation.

Key point . . . *Correct tooth-to-tooth relationships can be accurately analyzed only at the same vertical as the intended final intercuspal contact*

The Plane of Occlusion

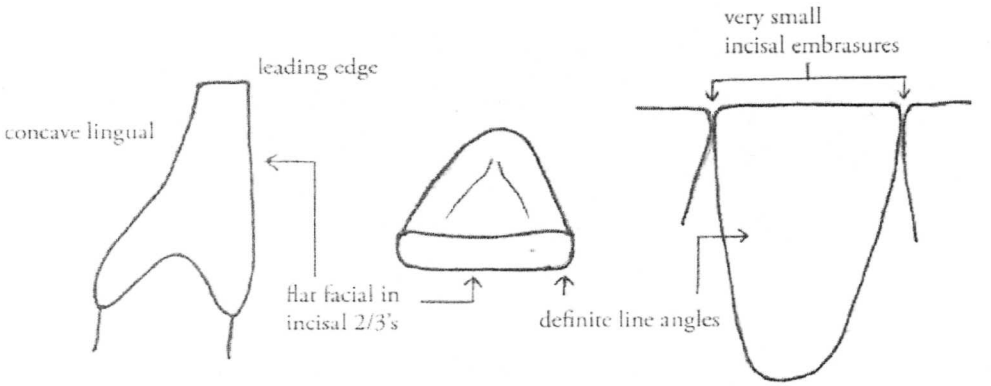


Establishment of a proper line and plane of occlusion is one of the most misunderstood aspects of occlusion. Understanding its purpose should eliminate the confusion.

When the mandible is protruded, the anterior guidance and the downward-forward movement of the condyles should disclude all posterior teeth. If the Curve of Spee is too concave or too high posteriorly, one or more posterior teeth may interfere in protrusion, which is very stressful because it activates muscle incoordination. An improper curve can produce balancing side interferences also.

A correct plane of occlusion allows protrusion without posterior interference. It permits non-interfering lateral excursions without loss of function on the working side.

Considerable flexibility is permissible in determining the curve without jeopardizing the results. Consequently, teeth should never be restored unnecessarily, simply to conform to an arbitrary predetermined curve.



Since it is the incisal 1/3 of the lower anterior teeth that is seen when a person talks, the contouring of that part of the lower teeth is critical to a natural appearance.

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MODEL WORK-UP

Step #1:

- Check and verify accurate mounting
- Mark first contact and compare to chart
- Place WB onto models
    - Check for tooth – wax tooth
    - Open posterior latch, place articulating ribbon over condyles and see if pulls out as hold models into WB
- Check amount and direction of slide and compare to chart

Step #2:

- Examine lower anteriors, occlusal plane, CR stops, anterior guidance, etc.
- Fill out Diagnosis and Treatment Planning Chart

Step #3:

- Mark hopeless, questionable teeth, and teeth that need to be crowned due to weakness or breakdown (from clinical and radiographic exam)

Step #4:

- Unlock the centric relation lock and slide the cast together into maximum intercuspation or centric occlusion.
- Drop the anterior guide pin down to contact the table on the front of the articulator and secure that in position.
- Now place the cast back into centric relation and lock into place.
- Close the cast together to the first tooth contact and observe the distance of separation between the pin and table anteriorly. This is the amount of room available for reduction to return to the vertical dimension of occlusion. Decide on the vertical dimension of occlusion you wish to work at.

Step #5:

- Equilibrate all premature interfering contacts between teeth to return the pin to contact with the anterior table and to establish uniform centric relation stops all the way around the arch including the anterior teeth. We should now have uniform centric relation stops with a good cup fossa relationship on each posterior tooth and a stable holding contact on each anterior tooth. If not, consider sawing and moving teeth or waxing up to restore teeth. Be sure to create ideal anterior contours starting with lower anteriors.

Step #6:

- Eliminate all balancing and working interferences by unlocking the centric relation lock and guiding the cast in left, right and protrusive excursions, marking with a red ribbon.
- Lock the cast back in centric relation and mark with a black ribbon to read your centric relation stops which have been previously established.
- Now eliminate all red skid marks that do not directly super-impose over black centric relation stops which you have established on all posterior teeth.
- What remains should be only centric relation stops posteriorly and red guiding marks on anterior teeth.

Step #7:

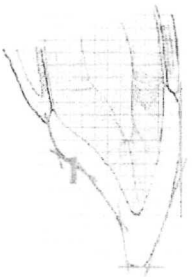
- Now harmonize the anterior guidance to establish a smooth gliding movement of the cast both left, right and protrusive. It is desirable to share this movement with as many teeth as possible anteriorly.
- Be sure the anterior guidance is not too steep and the envelope of function not constricted or restricted.
- You can now consider waxing up teeth in order to create ideal anterior guidance and esthetics being careful not to steepen the envelope of function.
- Consider cross-over and any other habits as revealed by wear facets.

Step #8:

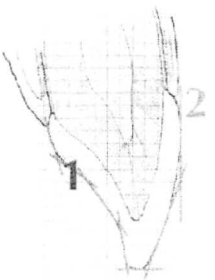
- Once the anterior guidance has been harmonized, re-check for any posterior balancing, working, or protrusive interferences and eliminate those. Smooth anterior movements.

Since we want to visualize the end product, we are able to decide, through our model work, if we can successfully complete the case through equilibration or if we need to reposition or restore teeth to provide our requirement for occlusal stability.

Determining Anterior Tooth Position and Contour

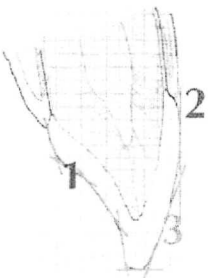


Step 1: **Refine and verify lower incisal edge position, shape and plane.**
If upper anterior position has not been determined, it must be done in combination with lower determinations.

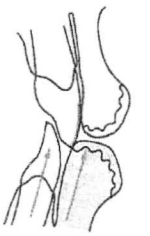


Step 2: **Establish centric holding stops.**
This is always the first step. The correct anterior guidance can not be determined until all interferences to CR have been eliminated.

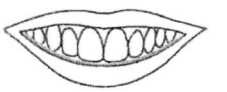
Step 3: **Lip support** in line with alveolar contour.
The upper half of the labial contour can be determined fairly well on the cast. Upper impression must include the complete contour of the alveolar process.

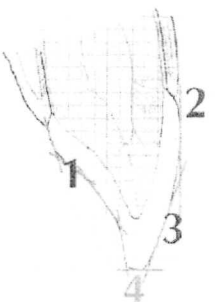


Step 4: **Lip closure path.**
This is a critical determinant for the incisal half of labial contour.
It can only be determined in the mouth



Step 5: **Determine incisal edge length** (using the smile line).
This relationship is important for phonetics of the "f" & "v" positions as well as for best esthetics.

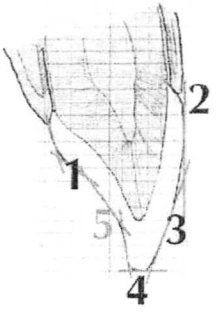




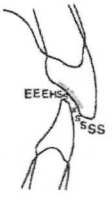
Step 6: **Verify incisal edge position** (using "f" & "v" sounds).
Determination must be made with gentle, softly spoken sounds.

Step 7: **Adjust for long centric** (if needed).
Follow the rules for anterior guidance after CR and incisal edges have been determined.

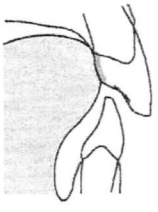
Step 8: **Establish lingual contours** (anterior guidance) in harmony with the envelope of function:
a. in straight protrusive
b. in lateral protrusive

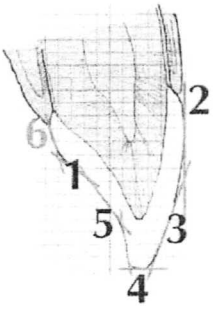


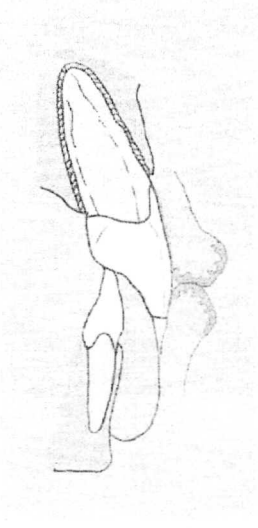
Step 9: **Evaluate "s" sounds.**
The closest speaking position should produce no whistle or lisp.



Step 10: **Evaluate cingulum contours** (using "t" and "d").
Round into centric stops.







Key Points

For optimum stability, comfort, and function, the anterior teeth must be:

- in harmony with the neutral zone
- in harmony with the lips
- in harmony with phonetics
- in harmony with centric relation
- in harmony with the envelope of function
- in harmony with the anterior guidance

This results in tooth position and contours that are in harmony with a matrix of functional anatomy that also produces the most natural esthetics.

TREATMENT SEQUENCING

PHASE I TREATMENT

Eliminate pain and/or abscesses
Emergency concerns of patient
Initial scaling and root planning
Home Care Instructions
Caries Control

Refer to specialists for evaluation to get the "whole picture"

Re-evaluate to verify completion and be sure patient is ready for phase II

PHASE II TREATMENT

Splint therapy
Equilibration
Referral to specialists for treatment
Provisionals

Re-evaluate to be sure TMJ, perio, ortho, etc.... completed satisfactorily and all is ready for phase III

Re-evaluate to be sure provisionals are approved by Dr. and patient

PHASE III TREATMENT

Restorative Dentistry

1. Mandibular Anteriors
2. Maxillary Anteriors
3. Mandibular Posteriors
4. Maxillary Posteriors

Communication with the Technician

When discussing lab communication it is important to remember that as dentists and technicians we must learn to work together as a team. Each team member must respect the challenges of the other, and strive to overcome these challenges together. A prep or a margin won't always be perfect, nor will a shade or shape of restoration, but all successful teams have one thing in common and that is the ability to communicate clearly and effectively for maximum predictability. After all, it's the patient's oral health, your image, your reputation, your stress level, your chair-time and your money at stake . . . why cut corners?

4 Keys to better doctor/technician communication:

Key 1 – Choosing the right restoration is important to know *prior* to preparing the teeth since a specific type of preparation may be required.

This is decided in discussion with your lab technician after the model work and/or wax-ups have been completed. Utilizing the study casts and your photos along with your knowledge of the patient function can help in deciding which restoration is best.

Key 2 – Double and triple check to be sure you have given the lab everything needed to complete the case exactly the way you want.

Only after you determine exactly what you want can you communicate those needs to the laboratory. If you don't communicate exactly what you want the lab technician to do for you, he or she will have to guess. The outcome is never predictable if it depends on guessing. **You can't hit a target you do not have**.

As you refine the preparations before taking impressions, the question you must ask is, "Did I prepare enough room for material, esthetics, and function?"

The last step before you finish is to ask yourself:

Do I have everything the lab needs to:

1. mount all models interchangeable in CR
2. determine the exact lower incisal edge position
3. determine the exact upper incisal edge position
4. determine the upper facial contour
5. reproduce the anterior guidance that was established in the mouth
6. set the correct VDO
7. copy the pre-determined tissue contours
8. create the shade needed
9. copy the esthetic contours established in the provisional

What the lab expects from you.

Full arch impressions or casts, including full extension of flanges and palate (for fixed-removable cases only) and accurate preps with legible margins 360 degrees on each tooth.

Approved provisional model (APM) where function, phonetics, and esthetics have already been worked out.

Pre-op study models including any instructions of reproducing existing tooth morphology, contour and surface texture.

CR bite relation record. Preferable Delar Wax Tapered bite or rigid silicone bite registrations material for soft tissue segments.

Facebow or Facebow mounted models.

Slides or photos of natural teeth, provisionals, and exposed preps (for dentin shade for all-ceramic restorations) with shade guide tabs **IN THE PHOTO**.

Written detailed instructions, Dawson Esthetic Checklist, and a listing of any future work that will be done (if case is being done in segments).

If all teeth in one arch are being restored, communicate the desired V.D.O. Ideally this is done with a CR Delar Wax bite taken with the anterior provisionals in and the posteriors out. This is used to mount our approved provisional model AND our master model interchangeably.

Key 3 – Be sure your lab prescription is clear and signed. Include an Esthetic Check List when appropriate.

Information that needs to be on the prescription is the type of restoration you desire, splinting of restoration, attachments, slots, and any restorations you are planning to do in the future.

Precision partials require special attention: the laboratory has to know before they saw or trim any dies in order to be ready for a transfer tray after the restorations are completed by them. Be sure to communicate this clearly.

Key 4 – Develop a strong, positive relationship with your laboratory.

Find out their desires and goals and share yours. There must be a common goal of quality, "What's best for the patient," no holds barred attitude. Both sides must be open to suggestions at any time to accomplish this goal of providing the best results.

NOTES