



2016 CDA Presents in Anaheim

Anterior Tooth Positioning for Occlusion and Esthetics

Thomas R. McDonald, DMD

Friday, May 13, 2016

8–10:30 a.m.

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California Dental Association Meeting
May 13, 2016

Anterior Tooth Positioning for Occlusion and Esthetics

Thomas R. McDonald, D.M.D.
1010 Prince Avenue
Athens, Georgia 30606
706-543-8208
tmcdent@aol.com
www.DrThomasMcDonald.com

The anterior teeth provide 98% of our esthetic requirements and 90% of our occlusal requirements. Proper shaping and positioning of the upper and lower anterior teeth are critical for the success and longevity of the restorative case. With modern ceramic materials, the chance for catastrophic failure due to

incorrect shape and interference with function is increased. During diagnosis and restoration the anterior teeth can be positioned and shaped via completely esthetic means or completely functional means. Master clinicians will utilize both methods to accomplish the most beautiful and stable result.

Diagnostic and Treatment Protocol

1. Comprehensive examination, records, diagnostic work-up, and comprehensive treatment plan
2. Establish a repeatable joint position
3. Restore, reshape and/or realign the anterior segment within the envelope of function (parafunction) and esthetic requirements
4. Create an ideal lower occlusal plane
5. Restore upper posteriors to established lower occlusal plane

Functional Diagnosis

REPEATABLE JOINT POSITION

1. Determine joint health, rule-out active pathology, and judge the ability to withstand long-term muscular forces.
2. Utilize Bimanual Guidance, Leaf Gauge, or Anterior Bite Plane to load test.
3. Achieve accurate diagnostic casts and pinpoint occlusal records.
4. If a repeatable joint position or accurate recording cannot be established initially, utilize other therapies to achieve an accurate starting position prior to treatment.

TMJ-RESTORATIVE PROTOCOL

Splint Therapy Considerations

Restorative Protocol			
Muscle Symptoms	Joint Symptoms	Load Test	Restorative
Yes	Yes	Positive	No
Yes	Yes	Negative	Yes
Yes	No	Positive	No
Yes	No	Negative	Yes
Yes	No	Positive	No
Yes	No	Negative	Maybe
Posterior Stop After Prep	Anterior guidance in IP	TMJ Symptoms	Restore in IP
Yes	Yes	No	Yes
Yes	Yes	Yes	Maybe

Yes	No	No	Maybe
Yes	No	Yes	No
No	No	No	No
No	No	Yes	No

Restorative Position

Phonetic Evaluation

Sound	View	Clinical Relevance
"E"	Frontal	Observe the distance from upper to lower lip. If incisors fall below 50%, they generally can be lengthened. If 70%, can generally not be lengthened.
"F"	Profile	Observe interaction between incisal edges and lower lip. Evaluate length and position.
"S"	Profile	Observe interaction between upper and lower incisal edges. Evaluate length and position.
"Th"	Profile	Observe clarity and crispness of sound. Evaluates lingual contour.

Laboratory Esthetic Evaluation and Diagnostic Waxing

Armamentarium: Dividers, red and blue pencil, Bunsen burner, presentation wax, PKT waxing instruments #1 and #2, Hollenback and cleoid-discoid carvers, Bard Parker lab knife, Boley gauge, Denar ruler, and Panadent platform with golden proportion guides

1. Remove upper cast from articulator.
2. Establish ideal lower incisor shape.
3. Analyze and correct lower occlusal plane with Broaderick Analyzer
4. Replace upper cast and correct posterior occlusion (additive or subtractive).
5. Establish parallel upper incisal plane with Dento-Facial Analyzer.
6. Attempt to correct midline if possible.
7. Scribe gingival margins with blue pencil.
8. Measure and establish absolute symmetry at the central incisors.
9. Use golden proportion guides for placement of laterals.
10. Use canines and first premolars to add and subtract space needed elsewhere.
11. Evaluate gingival levels. Central incisors must be at least 10mm.
12. Rationalize with desired occlusal scheme and refine anterior guidance.

Esthetic Guidelines

1. Central incisor length \geq 10mm
2. Central incisor width \geq 7.5mm
3. Incisal plane = Horizon
4. Gingival line = Horizon
5. Central incisor: Central incisor width \leq 3mm
6. Central incisor: Central incisor length \leq 1.5mm

7. Midline embrasure:Vertical

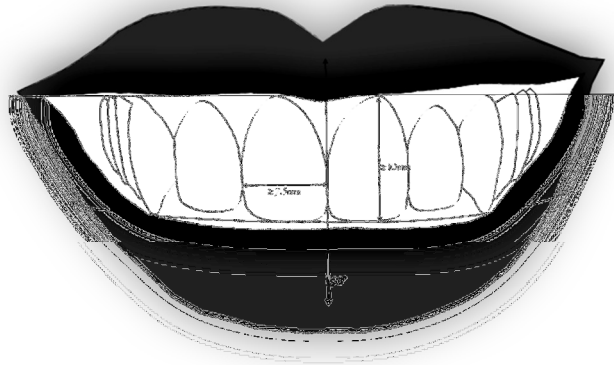
8. Midline teeth:Midline face=N/A

9. Tooth:Tooth width \approx Golden Proportion

10. Upper lip

during smile:Gingival

margins \leq 4mm



Development of Posterior Occlusal Plane

Broaderick Occlusal Plane Analyzer

1. Set pin at first point of contact and remove upper cast.
2. Add wax arbitrarily to lower posteriors
3. Set compass to 4in radius
4. Establish anterior survey point (cusp tip of idealized lower canine)
5. Scribe an arc onto the flag
6. Establish the posterior survey point (ideal second molar cusp, condylar axis point)
7. Scribe a line onto the flag
8. Place the compass at the intersection of lines and scribe a line onto the wax
9. Wax anatomic posterior teeth using scribed wax guidelines for Curves of Spee and Wilson
10. Replace upper cast and adjust upper occlusal surfaces to allow for anterior contact

11. Set pin at this point
12. Wax upper lingual cusps to occlude into each central fossa of the lower posterior teeth
13. Wax upper buccal cusps for esthetics
14. "Clear" the lingual inclines of the buccal cusps to allow for immediate posterior disclusion
15. Refine anatomic contours

Instruments and Materials

Digital X-Ray	Dexis	Provision Dental Systems Dexis Digital X-ray 1000 Northfield Court Suite 150 Roswell, GA 30076 888-88DEXIS www.dexray.com
Facial Measurement	Trubyte Tooth Indicator	Densply-Trubyte York, PA 800-877-0020 www.trubyte.densply.com
Occlusal Measurement	Range of Motion Scale	Great Lakes Prosthodontics Tonawanda, N.Y. 800-828-7626 800-324-4434(NY) www.greatlakesortho.com
Occlusal Evaluation	T-Scan	Tekscan, Inc. 307 West First Street. South Boston, MA TekScan.com
Impression Material	Jeltrate-Plus	Dentsply-Caulk Milford, DE 800-534-2855 www.caulk.densply.com
Alginate Mixer	Alginator II	Great Lakes Prosthodontics

Facebow	Kois Dento-facial Analyzer	Panadent Corporation Grand Terrace, California 909-783-1841 www.panadent.com
Facebow Registration	Bite-Tab	Panadent Corporation
Occlusal Registration	Delar Wax (D-Style)	Delar Corp.
Cast Stone	Silky-Rock White	Whip Mix Corporation Louisville, Ky. www.whipmix.com
Mounting Stone	Kerr Sno-White #2	Kerr Manufacturing Co. Orange, California 1-800-KERR-123 www.kerrlab.com
Articulator	Panadent PCH	Panadent Corporation
Diagnostic Wax	Presentation Wax	Great Lakes Prosthodontics
Occlusal Plane Analyzer	Broaderick Analyzer	Panadent Corporation
Waxing Instruments	PKT 1,2,4 Cd 3/6,#7 wax spatula, Bard- Parker lab knife Fillastre Carver for Analyzer (Panadent)	Hu-Friedy Mfg. Co., Inc. Chicago, IL 800-HU-FRIEDY www.hufriedy.com
Articulating Paper-Lab	Surgident Full Arch	Heraeus Kulzer South Bend, IN www.kulzer.com
Articulating Paper-Oral	Bausch 40µ	Bausch Articulating Papers Nashua, NH www.bauschdental.com
Retraction Cord	Raycord #9 and #10	Pascal Co.
C+B Impression	Impregum Penta	3M-ESPE
Matrix Material Single	Matrix Buttons	Advantage Dental Products
Matrix Material Multiple	Genie Putty	Sultan Chemists
Composite Matrix	Memosil	Heraeus Kulzer
Matrix-guided composite	Filtek Supreme Ultra	3M-ESPE
Provisional Resin	Protemp Plus	3M-ESPE
Burs	Thomas R. McDonald DMD Preparation Kit Provisional Kit	Brasseler USA Savannah, Ga. www.brasseler.com

