Top Ten Lessons I Have Learned in Orthodontics

Richard McLaughlin, D.D.S.

AAO 2015
San Francisco, CA

The greatest challenges in orthodontics are in the area of diagnosis and treatment planning.
THIS CAN INCLUDE:

1) Incorrect diagnosis and/or treatment planning
2) Lack of acceptance by the patient

DIAGNOSIS AND TREATMENT PLANNING

- 60% - 20% - 20% Rule
- Can be very time consuming
- We need an efficient and accurate system

ACHIEVING THE GOAL

A systematic approach to each aspect of treatment
**DIAGNOSIS AND TREATMENT PLANNING CHALLENGES**

- Presentation of surgical cases
- Presentation of extraction cases
- Presentation of IPR cases

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**Build our story before we tell the story**

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**DIAGNOSIS AND TREATMENT PLANNING**

<table>
<thead>
<tr>
<th>History</th>
<th>Clinical Exam</th>
<th>Records</th>
</tr>
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<tbody>
<tr>
<td><strong>CHECK LIST</strong></td>
<td>• TMJ’s and Musculature</td>
<td><strong>PROBLEM LIST</strong></td>
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<tr>
<td>• Airway</td>
<td>• Perio Status-and Soft Tissue</td>
<td>• Habits</td>
</tr>
<tr>
<td>• Facial and Skeletal Pattern</td>
<td>• Dentition</td>
<td></td>
</tr>
</tbody>
</table>
SN-GoGn° 32
F-Mand° 26
Pal-Mand° 28

U1-Palatal plane° 110
-1 A-Na Perp mm

U1 APO° 2
0 Wits
L1 APO mm

L1-Mand plane° 95
-4 Pg-Na Perp mm

82 SNA°
80 SNB°
2 ANB°
2014 JCO Study of Orthodontic Diagnosis and Treatment Procedures-Part 1

Table 3
Cephalometric Diagnostic Records
Percentage of the time a routine pre-treatment cephalometric X-ray taken

- 1986 - 90%
- 1996 - 90%
- 2008 - 74%
- 2014 - 64%
Why is this occurring and is there a solution?

Cephalometrics should provide objective back-up to subjective observations

Conventional Cranial Based Cephalometrics- Five Plane Evaluation

- SN Plane
- Frankfort Horizontal Plane
- Palatal Plane
- Occlusal Plane
- Mandibular Plane
The “Wits” appraisal of jaw disharmony

Alex Jacobson, MDS, MS, PhD

AJO-DO

November 2003 - Volume 124 Issue 5

Pages 470-479

or www.ajodo.org
With Class I occlusions, the occlusal plane can vary from 80° to 110°, or a total 30°.

This can effect the position of pogonion by 1.5 to 2 cm.
Conventional Cranial Based Cephalometrics- Five Plane Evaluation

- SN Plane
- **Frankfort Horizontal Plane**
- Palatal Plane
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- Mandibular Plane
Conventional Cranial Based Cephalometrics- Five Plane Evaluation

- SN Plane
- Frankfort Horizontal Plane
- **Palatal Plane**
- Occlusal Plane
- Mandibular Plane
Orthodontists need to
dentally compensate incisors
in many cases

“There is often a tension
in orthodontics between
stability and esthetics”

Larry Andrews
Tetragon: A Visual Cephalometric Analysis

Jorge Fastlicht, DDS, MS

Journal of Clinical Orthodontics

Vol 33 2000 Number 6
Pages 353-360

or www.jco-online.com
CLASS I

J.C.

High Angle
1) Cranial Base as a Reference

2) Soft Tissue

S.Z. BEGINNING 10.11 yrs

Bruce Epker and Larry Wolford

S.Z. BEGINNING 10.11 yrs

S.Z. BEGINNING 10.11 yrs

AGNETT
SOFT TISSUE
CEPHALOMETRIC ANALYSIS

- NATURAL HEAD POSITION
- WAX BITE IN CR
- RELAXED LIPS

True Vertical Line

AJO, SEPT. 1999
# Natural Head Posture Literature

- Cooke - AJO, March 1988
- Ludstrom and Lundstrom - AJO, March 1992
- Arnett and Bergman - AJO, April and May 1993

## Lundstrom and Lundstrom

- Natural Head Posture as Basis for Cephalometric Analysis, AJO, March 1992

<table>
<thead>
<tr>
<th>Measurement</th>
<th>SD</th>
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<td>Sella-Nasion</td>
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<td>Basion-Nasion</td>
<td>4.7</td>
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<tr>
<td>Porion-Orbitale</td>
<td>5.0</td>
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<tr>
<td>Natural Head Position</td>
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• NHP is the most reproducible and accurate
ARNETT NORMS AND STANDARD DEVIATIONS

UPPER ANTERIOR SEGMENT-HORIZONTAL
Female STCA research values and (means)
↑ Incisor torque to occl. plane 54.3° to 59.3° (57°)
↑ Incisor tip to TVL -11.4 mm to -7.0 mm (-9)
↑ Lip thickness 10.8 to 14.4 mm (12)
↑ Lip to TVL 2.5 mm to 4.9 mm (3)

UPPER ANTERIOR SEGMENT-VERTICAL
Female STCA research values and (means)
Max. anterior height 23.6 mm to 27.8 mm (26)
↑ Lip length 19.1 mm to 22.9 mm (21)
↑ Incisor exposure 3.1 mm to 6.3 mm mean (5)
Inter-labial gap 2.0 mm to 4.0 mm (2)

LOWER ANTERIOR SEGMENT
Female STCA research values and (means)
Occlusal plane to TVL 93.8° to 97.4° (96°)
↓ Incisor torque to occl. plane 61.1° to 67.5° (65°)
↓ Lip thickness 12.2 to 15.0 mm (13)
↓ Lip to TVL -0.5 mm to 3.3 mm (1)
Soft tissue 'B' point -6.8 mm to -3.8 mm (-5)
Soft tissue pogonion -4.5 mm to -0.7 mm (-3)

UPPER ANTERIOR SEGMENT-HORIZONTAL
Male STCA research values and (means)
↑ Incisor torque to occl. plane 54.8° to 60.8° (57°)
↑ Incisor tip to TVL -13.9 mm to -10.3 mm (-12)
↑ Lip thickness 13.4 to 16.2 mm (14)
↑ Lip to TVL 1.6 mm to 5.0 mm (3)

UPPER ANTERIOR SEGMENT-VERTICAL
Male STCA research values and (means)
Max. anterior height 25.2 mm to 31.6 mm (28)
↑ Lip length 21.9 mm to 26.9 mm (24)
↑ Incisor exposure 2.7 to 5.1 mm mean (4)
Inter-labial gap 1.3 mm to 3.5 mm (2)

LOWER ANTERIOR SEGMENT
Male STCA research values and (means)
Occlusal plane to TVL 93.6° to 96.4° (95°)
↓ Incisor torque to occl. plane 60.0° to 68.0° (64)
↓ Lip thickness 13.4 to 16.2 mm (15)
↓ Lip to TVL -1.6 mm to 3.2 mm (1)
Soft tissue 'B' point -8.7 mm to -5.5 mm (-7)
Soft tissue pogonion -5.3 mm to -1.7 mm (-3)
Upper Anterior Segment – Horizontal Numbers

Upper Incisor Inclination
Mx1 – Mx OP

Upper Incisor Tip Projection
Mx1 – TVL

Upper Lip Thickness
Mx1 Labial - ULA

Upper Lip Anterior
ULA - TVL

57 9 12 3
Upper Anterior Segment – Vertical Numbers

- Mx Anterior Height Sn’ – Mx1 Tip
- Upper Lip Length Sn’ – ULI
- Upper Incisor Exposure UL1 – Mx 1 Tip
- Inner Labial Gap UL1 – LLS

26
21
5
2
Lower Anterior Segment Numbers

- Mx Occlusal Plane Mx OP - TVL
- Lower Incisor Inclination Md1 – Md OP
- Lower Lip Thickness LL Inside – LLOutside
- Lower Lip Anterior LLA
- Soft Tissue B Point B'
- Soft Tissue Pogonion Pog’ - TVL
ARNE TT SOFT TISSUE CEPHALOMETRIC ANALYSIS
Anterior Segment – Numbers

Mx Occlusal Plane
Upper Incisor Inclination
Upper Incisor Tip Projection
Mx Anterior Height
Upper Lip Length
Upper Lip Anterior
Upper Incisor Exposure
Inner Labial Gap
Lower Lip Anterior
Lower Lip Thickness
Soft Tissue B Point
Soft Tissue Pogonion

96
57
26
21
13
12
5
3
-3
-2
-1
9
5

AJO, SEPT. 1999
TMJs
And
Muscles
Airway
Perio Status
Habits
Facial & Skeletal Pattern
Dental Status

Soft Tissue & Incisors-
Anterior Segments
Transverse Dimension

Remaining Dentition-
Canines, Premolars, Molars

ARNETT SOFT TISSUE CEPHALOMETRIC ANALYSIS
Upper Anterior Segment – Horizontal Numbers

AJO, SEPT. 1999
Facial Keys to Orthodontic Diagnosis and Treatment Planning
-Part I & II

Arnett, G. W. & Bergman, R. T.
American Journal of Orthodontics
April & May, 1993

The transverse dimensions is about four factors:

Midline, Cant, Yaw and Widths
Patient: N.D.
### ARCHWIRE SEQUENCE

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2nd BICUSPID EXT.

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.019 x .025 & .017 x .025 rectangular ss heat treated
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.019 x .025 rectangular heat activated
.019 x .025 & .017 x .025 rectangular ss heat treated

2nd BICUSPID EXT.

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.0175 multistrand
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.019 x .025 & .017 x .025 rectangular ss heat treated
.016 round heat activated
.016 x .022 rectangular heat activated
.019 x .025 rectangular heat activated
.019 x .025 & .017 x .025 rectangular ss heat treated
ORTHODONTIC VTO

MIDLINE MOLAR POSITION

Right 1st molar  Midline  Left 1st molar

Overjet ___mm  Overbite___mm  Crossbite [ ]

LOWER ARCH DISCREPANCY

3 x 3  7 x 7

Crowding/Spacing-Anteriors
C/S-Bicuspids (E-L space)
C/S-Molars
Curve of Spee
Midline
Incisor Position
Initial Discrepancy
Stripping
Expansion
Distalizing 6 6
Extraction
Remaining Discrepancy

THE DENTAL VTO

Right 1st molar  Midline  Left 1st molar

( ) cuspid  cuspid  ( )

( )  ( )

( )  ( )