Companion Booklet
for ALF Online Seminar

Ljuba Lemke, DMD
My gratitude goes out to Dr. Darick Nordstrom.

He developed the ALF over many years and has shared his insights with us. His ingenious mind, as well as his warmth and modesty are reflected in this wonderful work.

Forever learning, Ljuba Lemke

Acknowledgements

I am grateful to the Universe for bringing me together with my parents, Erwin and Henriette Lemke, and my sisters, Vera Peiffer and Nada Lemke. You have been a tremendous support for me throughout my life and I love you.

I want to thank my friends and advisers: Luann Andrew, Holly Gillen, Rubi Starr, and McCarson Jones. Without your support this project could not have happened.

My appreciation goes out to the many wonderful teachers who inspired and encouraged me on my path. I know that I am standing on the shoulders of giants.

And a big thank you to all my patients who trusted me with their care. I feel honored that you allowed me to be part of your journey!
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- “Crozat Arch Development”, by Dr. Jack Hockel 57  
- Case Summary Q.C. 58
Chapter 1 - Introduction

References:

• Biomimetics: http://ngm.nationalgeographic.com/2008/04/biomimetics/tom-mueller-text

• The ratio of photons to particles of matter is a constant of nature at $9.746 \times 10^8$. This ratio means that a science which solely looks at matter is only covering one-billionth of all the phenomena in the cosmos. (Paraphrase from “Bioresonance and Multi-Resonance Therapy, Vol 1”, Hans Brugeman, Ed. Haug Publishers Brussel: English Edition)

• “Dr. Nordstrom ALF Appliance”: www.youtube.com/watch?v=mtTzpPkWvUA
Chapter 2 - Treatment Objectives, OFM, Patient Selection

References:

- International Association of Facial Orthotropics: www.orthotropics.org
- American Academy of Otolaryngology - Head and Neck Surgery: www.entnet.org/content/pediatric-sleep-disordered-breathingobstructive-sleep-apnea
- “Finding Connor Deegan”: https://www.youtube.com/watch?v=Sk5qsmRyVcE#t=15
- Buteyko Professionals International: www.buteykoclinic.com/code-conduct.php
- Graduate School of Behavioral Health Sciences: www.breathingsciences.bp.edu
- Substance P and Trigeminal System: www.substancep.info
- International Association of Orofacial Myology: www.iaom.com
- Academy of Orofacial Myofunctional Therapy: www.myoacademy.net
- Ankyloglossia: www.cigna.com/healthwellness/hw/medical-topics/tongue-tie-hw183100
- The Vicious Cycle of Vertical Growth
- Mew’s Indicator Line
- OFM Treatment Objectives
The Vicious Cycle of Vertical Growth

Causative Factors:
- food intolerances,
- allergies,
- lack of muscle tone,
- airway obstructions,
- genetic mishaps,
- non-integrated primitive reflexes

Dental Anomalies:
crowding in the anterior area,
insufficient space for wisdom teeth

Restricted Airway

Mouth Breathing

Altered Mandibular Development:
down and backwards,
growing into a retrusive position

Deficient Maxillary Development:
narrow, short, downwards

Deficient Midfacial Development:
short, posterior
## Mew’s Indicator Line

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to 17</td>
<td>age plus 23 mm</td>
<td></td>
</tr>
<tr>
<td>5 to 15</td>
<td></td>
<td>age plus 21 mm</td>
</tr>
<tr>
<td>18 and older</td>
<td>40 - 44 mm</td>
<td></td>
</tr>
<tr>
<td>16 and older</td>
<td></td>
<td>38 - 42 mm</td>
</tr>
</tbody>
</table>
OFM Treatment Objectives

- nose breathing
- lip seal
- tongue rest position
- teeth-together swallowing
- mouth opening at least 20 mm with tongue against palate
Chapter 3: ALF Basic Design

References:

- Pearson Dental Supplies - www.pearsondental.com
- Design Elements and Their Function
- Composition of Biosteel and Elgiloy
- Conversion Table mm / inches
- Material List
## Design Elements and Their Function

<table>
<thead>
<tr>
<th>Design Element</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>body wire</td>
<td>connection between both sides</td>
</tr>
<tr>
<td>loop</td>
<td>arch development: transverse and sagittal opening up spaces stress breakers</td>
</tr>
<tr>
<td>crib</td>
<td>anchorage tooth rotation and tilting</td>
</tr>
<tr>
<td>crescent, resin ledge</td>
<td>anchorage directs forces to a specific tooth</td>
</tr>
<tr>
<td>hook, buccal arm</td>
<td>purchase point for rubber band</td>
</tr>
<tr>
<td>lip bumper</td>
<td>relaxation of orbicularis oris and/or mentalis muscle, stimulation of bone apposition</td>
</tr>
<tr>
<td>labial bow</td>
<td>tooth alignment intrusion / extrusion</td>
</tr>
<tr>
<td>finger springs</td>
<td>single tooth movement (design depends on direction of intended move)</td>
</tr>
<tr>
<td>acrylic pads, resin build-ups</td>
<td>bilateral: increase of vertical dimension unilaterial: correction of maxillary roll</td>
</tr>
</tbody>
</table>
**Wire Composition**

**Elgiloy yellow**  
*Composition in %:*

<table>
<thead>
<tr>
<th>Element</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>iron</td>
<td>55.34</td>
</tr>
<tr>
<td>cobalt</td>
<td>40</td>
</tr>
<tr>
<td>chromium</td>
<td>20</td>
</tr>
<tr>
<td>nickel</td>
<td>15.5</td>
</tr>
<tr>
<td>molybdenum</td>
<td>7</td>
</tr>
<tr>
<td>manganese</td>
<td>2</td>
</tr>
<tr>
<td>carbon</td>
<td>0.15</td>
</tr>
<tr>
<td>beryllium</td>
<td>0.01</td>
</tr>
</tbody>
</table>

**Biosteel**  
*Composition in %:*

<table>
<thead>
<tr>
<th>Element</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>iron</td>
<td>77.8</td>
</tr>
<tr>
<td>chromium</td>
<td>18</td>
</tr>
<tr>
<td>manganese</td>
<td>18</td>
</tr>
<tr>
<td>molybdenum</td>
<td>2</td>
</tr>
<tr>
<td>nitrogen</td>
<td>1</td>
</tr>
<tr>
<td>nickel</td>
<td>0.2</td>
</tr>
</tbody>
</table>
### Conversion Tables: inches / mm

<table>
<thead>
<tr>
<th>inches</th>
<th>mm</th>
<th>gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.018”</td>
<td>0.46</td>
<td>25</td>
</tr>
<tr>
<td>0.020”</td>
<td>0.51</td>
<td>24</td>
</tr>
<tr>
<td>0.022”</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>0.024”</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>0.025”</td>
<td>0.64</td>
<td>22</td>
</tr>
<tr>
<td>0.028”</td>
<td>0.71</td>
<td>21</td>
</tr>
<tr>
<td>0.030”</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>0.032”</td>
<td>0.81</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>mm</th>
<th>inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.6</td>
<td>0.024”</td>
</tr>
<tr>
<td>0.7</td>
<td>0.027”</td>
</tr>
<tr>
<td>0.8</td>
<td>0.031”</td>
</tr>
<tr>
<td>0.9</td>
<td>0.035”</td>
</tr>
<tr>
<td>1.0</td>
<td>0.039”</td>
</tr>
</tbody>
</table>
# Material List

<table>
<thead>
<tr>
<th>Name</th>
<th>Manufacturer/Source</th>
<th>Notes</th>
<th>Picture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articulator and Facebow</td>
<td>various&lt;br&gt;Panadent: 1620 AR Magnetic Model PSH Articulator&lt;br&gt;4000 FB Pana-Mount ™ Face-Bow</td>
<td></td>
<td><img src="image1.png" alt="Articulator" /></td>
</tr>
<tr>
<td>Band Pusher / Scaler</td>
<td>various; Rocky Mountain Orthodontics&lt;br&gt;<a href="http://www.rmortho.com">www.rmortho.com</a>&lt;br&gt;tel. (800) 525-6375</td>
<td>handy to seat ALFs and remove them</td>
<td><img src="image2.png" alt="Band Pusher" /></td>
</tr>
<tr>
<td>Boley Gauge / Caliper</td>
<td>Ortho Organizer&lt;br&gt;<a href="http://www.orthoorganizers.com">www.orthoorganizers.com</a>&lt;br&gt;(part of Henry Schein)&lt;br&gt;tel. (800) 547-2000&lt;br&gt;order # 636159</td>
<td>much cheaper ones available online; they are poor quality</td>
<td><img src="image3.png" alt="Boley Gauge" /></td>
</tr>
<tr>
<td>Bonding Material</td>
<td>various&lt;br&gt;Optibond Solo by Kerr Corporation, item # 31513</td>
<td>bonding material for resin ledges</td>
<td><img src="image4.png" alt="Bonding Material" /></td>
</tr>
<tr>
<td>Buttons, lead-free</td>
<td>Blumenthal Lansing&lt;br&gt;<a href="http://www.BlumenthalLansing.com">www.BlumenthalLansing.com</a>&lt;br&gt;tel. (563) 538-421</td>
<td>orofacial myology tool</td>
<td><img src="image5.png" alt="Buttons" /></td>
</tr>
<tr>
<td>Camera</td>
<td>various</td>
<td>oftentimes simple cameras, including phone cameras, will do a good job</td>
<td><img src="image6.png" alt="Camera" /></td>
</tr>
<tr>
<td>Cheek Retractors, double-ended,</td>
<td>various; Great Lakes Orthodontics&lt;br&gt;<a href="http://www.greatlakesortho.com">www.greatlakesortho.com</a>&lt;br&gt;tel. (800) 828-7626</td>
<td></td>
<td><img src="image7.png" alt="Cheek Retractors" /></td>
</tr>
<tr>
<td>Cheek Retractors, metal</td>
<td>PhotoMed Intl.&lt;br&gt;tel. (818) 908-5369&lt;br&gt;Univ. Wire Stainless Retractors - Square&lt;br&gt;item # IO-R-2000</td>
<td></td>
<td><img src="image8.png" alt="Cheek Retractors" /></td>
</tr>
<tr>
<td>Cheek Retractors, narrow</td>
<td>PhotoMed Intl.&lt;br&gt;tel. (818) 908-5369&lt;br&gt;item # IO-R-1000</td>
<td></td>
<td><img src="image9.png" alt="Cheek Retractors" /></td>
</tr>
<tr>
<td>Composite: Twinky Star</td>
<td>Patterson Dental&lt;br&gt;<a href="http://www.pattersondental.com">www.pattersondental.com</a></td>
<td>light-curing comomer with glitter effect, comes in different colors, used for resin ledges</td>
<td><img src="image10.png" alt="Composite: Twinky Star" /></td>
</tr>
<tr>
<td>Composite: Premise Flowable</td>
<td>Kerr</td>
<td>resin ledges, this material is flowable but does not slump</td>
<td><img src="image11.png" alt="Composite: Premise Flowable" /></td>
</tr>
<tr>
<td>Name</td>
<td>Manufacturer/Source</td>
<td>Notes</td>
<td>Picture</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Etch Gel, 40%</td>
<td>various</td>
<td>resin ledges</td>
<td></td>
</tr>
<tr>
<td>Trubyte Fox Occlusal</td>
<td>Dentsply - Genie PVS - Putty and XLight Body, both rapid set, Sultan Healthcare</td>
<td>normally used for complete dentures; take pics with the Fox Plate to assess roll and pitch</td>
<td></td>
</tr>
<tr>
<td>Impression Material: PVS</td>
<td>various; Kromopan 100 by Lascod</td>
<td>alginate with chromatic phase indicator; impression can be poured up to 168 hours, lends itself to being poured twice</td>
<td></td>
</tr>
<tr>
<td>Impression Material: alginate</td>
<td>various; Maxi Lock Ortho-Direct <a href="http://www.ortho-direct.com">www.ortho-direct.com</a> tel. (800) 833-7790</td>
<td>red and orange are pedo sizes, great locking mechanism that eliminates the need for adhesive; very rigid</td>
<td></td>
</tr>
<tr>
<td>Impression Trays</td>
<td>various; Maxi Lock Ortho-Direct <a href="http://www.ortho-direct.com">www.ortho-direct.com</a> tel. (800) 833-7790</td>
<td>red and orange are pedo sizes, great locking mechanism that eliminates the need for adhesive; very rigid</td>
<td></td>
</tr>
<tr>
<td>Marking Tool</td>
<td>Le Pen by Marvi Uchidea, Japan order from Amazon</td>
<td>used to mark the wire; does not dry out when left without the cap; alternative: red pencil (wet the tip so that it will leave a mark on the wire) OR permanent, fine-tipped marker</td>
<td></td>
</tr>
<tr>
<td>Ortho Grid</td>
<td>Rideau Orthodontic <a href="http://www.orthodontic.ca">www.orthodontic.ca</a> tel. (800) 267-7982</td>
<td>handy to check symmetry of the ALF</td>
<td></td>
</tr>
<tr>
<td>Photocopy Machine</td>
<td>various</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photographic Mirrors, palatal and buccal, adult and child size</td>
<td>various</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pliers: Bird Beak Pliers with narrow beaks (without inserts)</td>
<td>various</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pliers: Bird Beak Pliers with inserts</td>
<td>various NPI Company, <a href="http://www.npi-pliers.com">www.npi-pliers.com</a></td>
<td>Tungsten Carbide inserts; NPI has the best price but the pliers tarnish and even rust easily in the autoclave</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Manufacturer/Source</td>
<td>Notes</td>
<td>Picture</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>---------------------</td>
<td>----------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Pliers: 3-prong pliers, aka Aderer</td>
<td>various</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pliers: Direct Bond Bracket Remover</td>
<td>various</td>
<td>use to remove very tight fitting cribs and/or resin ledges</td>
<td></td>
</tr>
<tr>
<td>Direct Bond Bracket Remover, Angled</td>
<td>Dentsply</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.dentsply.com">www.dentsply.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>tel. (800) 877-0020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pliers: How</td>
<td>various</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>American Tooth Industries tel. (800) 235-4639</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.americantooth.com">www.americantooth.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pliers: Oculist (Optical Pliers)</td>
<td>various</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>American Tooth Industries tel. (800) 235-4639</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.americantooth.com">www.americantooth.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pliers: Weingart</td>
<td>various</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>American Tooth Industries tel. (800) 235-4639</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.americantooth.com">www.americantooth.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Range of Motion Ruler</td>
<td>various</td>
<td>I used to get them from DOCS but they are out of business</td>
<td></td>
</tr>
<tr>
<td>Relief Wafers</td>
<td>various</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ortho Organizers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>item # 301-040</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retainer Cases</td>
<td>various</td>
<td>marbled, assorted colors, 24/Pk</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Practicon</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.practicon.com">www.practicon.com</a></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>tel. (800) 959-9505</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>item #70-86010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulcabrasheh</td>
<td><a href="http://www.sulcabrasheh.com">www.sulcabrasheh.com</a></td>
<td>oral hygiene tool, give to patient at insertion visit</td>
<td></td>
</tr>
<tr>
<td>Wax: Coprwax</td>
<td>Coprwax Bite Wafers by Heraeus Kulzer, Inc. item # 50092178</td>
<td>use for bite registration</td>
<td></td>
</tr>
<tr>
<td>Wax: Red Beading Wax (Utility or Rope Wax)</td>
<td>various; Utility Wax Square Ropes Red Dentsply International order # 77305</td>
<td>place on down-facing side of Fox plate</td>
<td></td>
</tr>
<tr>
<td>Wax: Relief Wax</td>
<td>various</td>
<td>relieves discomfort from wire irritating cheek or lip; give to patient at insertion visit</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Manufacturer/Source</td>
<td>Notes</td>
<td>Picture</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Wire Cutter</td>
<td>hardware store</td>
<td>get a sturdy one, can have plastic grip if used in lab</td>
<td></td>
</tr>
<tr>
<td>Wire: Biosteel</td>
<td>made by Pozzi, order from PEARSON</td>
<td>less than 1% nickel content; round, spring hard; 0.6, 0.7, 0.8 mm</td>
<td></td>
</tr>
<tr>
<td>Wire: Cobalt Clasp Crozat</td>
<td>made by Leone, order from <a href="http://www.americantooth.com">www.americantooth.com</a></td>
<td>can be used for cribs, crescents, or occlusal rest</td>
<td></td>
</tr>
<tr>
<td>Wire: Elgiloy yellow, 0.025&quot;</td>
<td>Rocky Mountain Orthodontics <a href="http://www.rmortho.com">www.rmortho.com</a></td>
<td>order 0.025&quot; for the wire bending exercises</td>
<td></td>
</tr>
<tr>
<td>Wire: Multi-Purpose Wire -</td>
<td>hardware store</td>
<td>for wire bending exercise</td>
<td></td>
</tr>
<tr>
<td>Galvanized Utility Wire 16</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Alternative Orthodontics

Dr. Ljuba Lemke version 16-04
Chapter 4: ALF Adjustments (1), Diagnostic Records

Materials needed for this chapter:

- bird-beak pliers
- wire cutter
- Elgiloy yellow, 0.025”
- multi-purpose wire
- fine-tipped marker or colored pencil
- print-out of template “Wire Bending: Angles and Curves”
- print-out of template “Wire Bending: ALF Prototype Big”

References:

- Wire Bending: Angles and Curves
- Wire Bending: ALF Prototype Big
- Checklist for Diagnostic Records

Instructional Videos:

- Wire Bending: Angles and Curves
- Wire Bending: ALF Prototype Big
- Taking Photocopy of ALF
- ALF Initial Adjustment
- Tightening Cribs
Wire Bending: Angles and Curves
Wire Bending: ALF Prototype Big
## Checklist for Diagnostic Records

<table>
<thead>
<tr>
<th>Patient Name:</th>
<th>Date:</th>
</tr>
</thead>
</table>

### IMPRESSIONS
- PVS wash impression
  - upper
  - lower
- bite registration (as needed)
  -

### PHOTOS
- extra oral / standing, whole body (ears and neck visible, preferably shoes off)
  - frontal
  - right side
  - back
  - frontal with Fox plate
- face
  - frontal with Fox plate
  - right side with Fox plate
  - frontal, relaxed
  - frontal, smiling
  - right side, relaxed
  - right side, smiling
  - frontal, relaxed
  - frontal, smiling
- intra oral:
  - maximum intercuspation
- IF APPLICABLE: dental midlines aligned and mandible protruded to establish a class I canine relationship
  - "as if" position
- slightly open
- occlusion
  - frontal view
- tongue habits
  - tongue rest position
  - tongue thrust
- maxillary arch including nose
  - maxillary arch
  - mandibular arch

### RADIOGRAPHS
- recent bite wings
  -
- panoramic radiograph
  -
- cephalometric radiograph
  -
- ideally: cone beam radiograph
  -

### TMJ Exam
- range of motion
  -
- sounds
  -
- path of opening/closing

### MEW’S INDICATOR
- tip of nose to tip of central incisors
  -

### OROFACIAL MYOLOGY FINDINGS
- breathing
  -
- lip seal
  -
- tongue rest position
  -
- swallowing
  -

### CRANIAL MOTION
- amplitude
  -
- symmetry
  -
- direction of movement
  -
Chapter 5: Diagnosis and Treatment Plan

Materials needed for this chapter:

- print-out of “Diagnosis and Treatment Plan”
- Boley Gauge
- set of casts

References:

- Diagnosis and Treatment Plan
- Lab Prescription
- Pont’s Index
- Common Treatment Objectives
- Lab Master Prescription for ALF
- Lab Master Prescription for Crozat
- Wire Gauges for Components

Case:

- A.D.: diagnosis and treatment plan
## Diagnosis and Treatment Plan

### Patient Name ___________________________ Tx Started (date/age) ____________ Anticipated Tx Time ____________

### Chief Complaint, Medical and Dental Hx, Clinical Notes:

<table>
<thead>
<tr>
<th>Posture:</th>
<th>Mew's:</th>
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</table>

<table>
<thead>
<tr>
<th>Cranial Findings:</th>
<th>Amplitude:</th>
<th>Symmetry:</th>
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<tr>
<td>Maxilla in IR:</td>
<td>Roll:</td>
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<tr>
<th>TMJ:</th>
<th>MO:</th>
<th>Path of Opening:</th>
<th>Sounds:</th>
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### Occlusal:

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<th>Midlines:</th>
<th>Overjet:</th>
<th>Overbite:</th>
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<tbody>
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<td>Angle Class:</td>
<td>right 6s</td>
<td>left 6s</td>
<td>right K9s</td>
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### Radiographs:

### Other Findings:

### Pont's Index:

<table>
<thead>
<tr>
<th>ant Δ</th>
<th>M</th>
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<th>P</th>
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### OFM Objectives

<table>
<thead>
<tr>
<th>Objective</th>
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<tr>
<td>☐ nose breathing</td>
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<tr>
<td>☐ lip seal</td>
<td></td>
</tr>
<tr>
<td>☐ tongue rest position</td>
<td></td>
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<tr>
<td>☐ teeth-together swallowing</td>
<td></td>
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<tr>
<td>☐ mouth opening at least 20 mm with tongue against palate</td>
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### Treatment Objectives

<table>
<thead>
<tr>
<th>Face</th>
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<td>TMJ</td>
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<table>
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<table>
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<table>
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<th>Interarch Relationship</th>
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### Co-Treatment with:

### NOTES:
### Pont’s Index

<table>
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<th>Width of upper 4 incisors</th>
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<td>41</td>
<td>32.3</td>
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</tbody>
</table>
Pont’s index is a tool that suggests measurements for fully developed arches which provide sufficient space for all teeth.

- Measure the mesial/distal width of the four upper incisors and add them to get the Pont’s number for this person. Take into consideration peg laterals and adjust the Pont’s number according to what their final width may be after future restoration.

If no upper incisors have erupted so far, take the width of one lower incisor, multiply it by four, and multiply this number by 1.36 to determine the Pont’s number.

- Locate that number on the left hand side in the chart.

- Read across the chart to find the required interarch distance for the canines, first bicuspid, and first molars.

- Measure the actual widths on the casts with a Boley Gauge as follows:
  - **canines**: from one cusp tip to the other, recorded as UC (upper canines) and LC (lower canines)
  - **first primary molars or first bicuspid**: from one distal pit to the other, recorded as B (maxilla) and P (mandible)
  - **first molars**: from one central pit to the other, recorded as M (maxilla) and W (mandible)
Common Treatment Objectives

- develop arches transverse and/or sagittal
  - to make room for crowded teeth
  - to increase oral volume, creating more tongue space
- establish pleasing alignment of anterior teeth
- correct midline deviations
- develop midface
- reposition mandible
- resolve a deep bite / open bite / cross bite / scissors bite
- establish a class I canine relationship (with canine guidance if permanent 3s are present)
Lab Master Prescription for Pedo ALFs

- **Cribs**: foiled, on second primary molars

- **Body Wire**:
  - Elgiloy yellow 0.025”
  - made from one piece of wire
  - on one horizontal plane, no ups and downs, just incisal to papillae
  - evenly curved between cuspids; same wire length from the midline of the anterior loop to each of the canines
  - loops: upper midline loop: omega-shaped, 6 - 7 mm long
  - lower midline loop: hairpin-shaped, 4 - 5 mm long

- **Crescents**: on canines

- **Auxiliaries** to first molars
  (if present; otherwise short wire extension coming off to the distal from cribs)
  - upper: short, ending at midpoint of lingual circumference
  - lower: long
Lab Master Prescription for Pedo Crozats

- **Cribs:** foiled, on second primary molars

- **Body Wire:**
  - Elgiloy yellow: upper 0.028”, lower 0.030”
  - 1 to 1.5 mm clearance off tissues (not more)

- **Lingual Arms:** 0.030”

- **Auxiliaries** to first molars: 0.026”
  (if present; otherwise short wire extension coming off to the distal from cribs)
  - upper: short, ending at midpoint of lingual circumference
  - lower: long, occlusal rests depend on how much first molars are erupted (to be specified by dentist for each case)
Wire Gauges for Components

Unless specified otherwise the wire material is Elgiloy yellow.

<table>
<thead>
<tr>
<th>Component</th>
<th>ALF inches / mm</th>
<th>Crozat (light wire design)</th>
</tr>
</thead>
<tbody>
<tr>
<td>crib</td>
<td></td>
<td>same</td>
</tr>
<tr>
<td>- crescents and main wire</td>
<td>0.022 - 0.026” or 0.6 to 0.7 mm Leone wire; 0.025” or 0.6 to 0.7 Leone wire</td>
<td>same</td>
</tr>
<tr>
<td>- occlusal rest</td>
<td></td>
<td>0.028 - 0.032”</td>
</tr>
<tr>
<td>body wire</td>
<td>0.025 - 0.030”</td>
<td></td>
</tr>
<tr>
<td>occlusal rests</td>
<td>0.025 - 0.032” or 0.6 to 0.8 mm Leone wire</td>
<td>same</td>
</tr>
<tr>
<td>cuspid crescents</td>
<td>0.020 - 0.025”</td>
<td></td>
</tr>
<tr>
<td>auxiliaries</td>
<td>0.020 - 0.032”</td>
<td>0.022 - 0.030”</td>
</tr>
<tr>
<td>molar extensions</td>
<td>0.025”</td>
<td>same</td>
</tr>
<tr>
<td>finger springs</td>
<td>0.020 - 0.022”</td>
<td>same</td>
</tr>
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<td>labial bow</td>
<td>0.030 to 0.032”</td>
<td>same</td>
</tr>
<tr>
<td>lingual arms</td>
<td></td>
<td>0.025 - 0.028”</td>
</tr>
<tr>
<td>canine recurves</td>
<td></td>
<td>0.025 - 0.028”</td>
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<tr>
<td>looped lingual auxiliaries for incisor alignment</td>
<td>0.025”</td>
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</table>
### Case Summary A.D.

**Patient Name**: A.D., 07/22-08

**Companion Booklet for ALF Master Class**

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>07/22-08</th>
</tr>
</thead>
</table>

**Chief Complaint**: Medical and dental problems, family history of bruxism, TMJ dysfunction.

**Presenting Signs & Symptoms**: Headache, TMD, myofascial pain, altered facial expression, altered speech, decreased range of motion.ental occlusion.

**Past Medical History**: Hypertension, diabetes, allergic rhinitis.

**Social History**: Non-smoker, non-alcoholic, does not use tobacco products.

**Family History**: Father has a history of bruxism, TMD.

**Medical History**: Hypertension, diabetes, allergic rhinitis.

**Dental History**: Abnormal occlusion, resorption of teeth, malocclusion, altered facial expression, altered speech.

**Deduction**: Mid line deviation. Overjet: 3 mm, Overbite: 6 mm, PNS.

**Angle Class**: Right: II, Left: I, Right ANB: 0°, Left ANB: 10°.

**Radiographs**: Anteroposterior: occlusal eruption.

**Other Findings**:

<table>
<thead>
<tr>
<th>Pont's Index</th>
<th>J.</th>
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<tbody>
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<td>Art D</td>
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<td>10.6</td>
<td>88</td>
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<tr>
<td>6.7</td>
<td>412</td>
</tr>
<tr>
<td>-1.2</td>
<td>-4</td>
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</table>

**OFN Objectives**

- **Speech breathing**: ✔
- **Jaw seal**: ✔
- **Tongue rest position**: Low
- **Tongue-together swallowing**: Tongue presses
- **Mouth opening at least 20 mm with tongue at rest position**: To be assessed

**Treatment Objectives**

- **Face**: Dacrase Mar’s; advance mandible
- **Mandible**: Increase range of motion
  - **Maxilla**: 1. Transverse development: UR and PL 6 mm, 14 mm
    - Sagittal development: 1. 3.5 mm (once lateral incisors erupt)
  - **Mandible**: 1. Transverse development: LC 6 mm, PL 6 mm
      - Sagittal development: 2. Align Incisors

**Intervention**

- **Post-treatment**
  - Increase vertical dimension
  - Supplemental retention of maxillary
  - Sagittal development to achieve anterior coupling

**On Treatment with**: Craniofacial therapist (unnamed)

**Notes**: Occlusal eruption #23, #29
Chapter 6: Cranial Osteopathy

References:

- www.osteopathyontario.org/about-osteopathy/history-of-osteopathy/
- www.biotensegrity.com
- www.researchgate.net/publication/236146619_Tensegrity_-_The_New_Biomechanics
- Cranial Base Affecting Facial Development
- Why do Osteopathic Physicians Need to Know About ALF?

Instructional Video:

- Flexion - Extension
Cranial Base Affecting Facial Development

<table>
<thead>
<tr>
<th>Flexion</th>
<th>Sphenoid</th>
<th>Occiput</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>(affects midface)</td>
<td>(affects temporal bones)</td>
</tr>
<tr>
<td>external rotation</td>
<td>wide palate</td>
<td>mandible posterior</td>
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</table>

| Extension | narrow palate | mandible anterior |
| internal rotation | | |
MEDICINE AS AN ART RATHER THAN A SCIENCE

Medicine - with orthodontics as a special branch - in its nature is not a science but an art that uses a complex scientific system.

No two patients are the same and factors well beyond what can be captured in double-blind studies greatly affect the outcome of treatment, one of the most important factors possibly being the personal encounter between patient and his or her practitioner.

If we as dentists opt to ignore the significance of ‘subtle energy fields’ - as have been proven in quantum physics - our understanding of treatment response and health will always be lacking.

Hans Brugeman pointed out: ‘The ratio of photons (particles of energy) to particles of matter is a constant of nature at 9.746 x 108 to 1. This ratio means that a science which solely looks at matter is only covering one-billionth of all the phenomena in the cosmos.’

DIFFERENT APPROACHES TO ORTHODONTICS

Since the beginnings of medicine a lot of different treatment philosophies have been taught resulting in a wide variety of treatment approaches. Most of them can be classified either as a ‘Method of Substitution’ or a ‘Method of Stimulation’.

A prime example for substitution is human engineering: the ‘fix-it’ mentality prevails. In orthodontics it means that an external observer collects data that can be measured and repeatedly verified, deduces a treatment plan and executes it on the patient using whatever means required, including surgery.

Opposed to that is ‘stimulation’ which triggers the patient’s self-regulatory mechanisms, which are self-healing in nature. Osteopathic concepts and homeopathy emphasize this principle.

The human being, consisting of so much more than ‘measurable data’, is an ‘open system’ with subtle-energy interactions going on not only within but also with the world around us. Mental attitude and emotions have as much to do with health and treatment response as physical parameters do (see also Bruce H. Lipton The Biology of Belief).

The drawback of working with ‘stimulation’ is that this approach makes treatment much more complex and less predictable. The gain is that we see changes in our patients that go far beyond that which meets the eye.

An example for ‘stimulation’ in orthodontics is the use of Advanced Lightwire Functionals (ALF) as introduced by Dr. Darick Nordstrom of Hollister, CA.

ALF APPLIANCE

The ALF appliance was inspired by Crozat and Kernot Universal Lightwire appliances. With an Elgiloy yellow body wire of 0.025” or 0.028” thickness (about 0.6 to 0.7 mm) the ALF has a high degree of flexibility. It uses the teeth as handles to affect the alignment of cranial bones and change craniosacral motion, for better or for worse - it all depends on the dentist’s skills when making adjustments.

Though the various ALF designs look simple it takes time and dedication to master the art of ‘tweaking’ the appliance just right to achieve the desired outcome, for example making an adjustment using pliers as opposed to finger pressure will result in different effects. Kinesiology and/or cranial palpation are essential tools to verify whether adequate forces are being delivered.
ALF AND CRANIAL STRAINS

A number of excellent articles about cranial strains and malo-closure have been written by Gavin A. James and Dennis Strokon (published in various IJO journals). The authors explain basic strain patterns and the use of ALF appliances to correct them.

Most of our patients do not fall clearly into just one category of strain patterns. Since cranial movement can be restricted between any of the bones each case presents with its own individuality.

ALF therapy cannot successfully be mastered in a cookbook approach. Dr. Nordstrom always emphasizes in his seminars the difference between a cook and a chef: the cook follows recipes whereas the chef understands principles and applies them.

During the course of their ALF treatment our patients will get maximum benefits if they also receive osteopathic adjustments that can help with ascending problems and integration of changes triggered by activation of the ALF.

ALF, cranial motion and health

One goal of an ideal orthopedic/orthodontic treatment is to establish the patient’s full potential of occlusal transverse, sagittal and vertical development. If we chose not to ‘muscle’ the teeth towards their new position but instead release strains and tension we see the body reaching out for its full potential. The closer we get to this goal the more health improvements we see in our patients some of which we can understand easily, for example:

- establishing an unobstructed nasal airway improves body posture by allowing the mandible to come forward and clears up chronic sinus infections and allergies
- correcting TMJ dysfunction results in full range of mandibular motion
- cosmetic improvements of the smile increase the patient’s self-esteem

Our dental training does not provide us with an understanding of the wider health implications that originate from good, symmetrical cranial motion. On the contrary: mainstream teaching denies any such motion insisting that the cranial sutures are ossified in adults. It is up to each individual dentist to pursue further studies on his or her own to ascertain the veracity of previous assumptions.

Even without an understanding of the dynamic aspects of the cranium we can appreciate the significance of the cranial base: all nerves, blood and lymph vessels enter and exit the brain through foramina in the skull base (illustration 2: skull base with foramina, view from coronal). A distortion here, as seen in many cranial strains, can create tension and stretching of anatomical structures that pass through the foramina. The possible consequences are diminished blood supply to the brain, venous congestion in the brain, and/or chronic irritation of any of the 12 cranial nerves.

If we are willing to look even further beyond the boundaries of Western mainstream medicine we will find that acupuncture physiology offers further explanations of how ALF treatment contributes to improving overall health. While discussing the fundamentals of acupuncture is beyond the scope of this article I want to point out an interesting connection: the premaxilla with the incisors has energetic connections with the kidney meridian. Freeing up the premaxilla is a treatment goal early on in ALF therapy and goes along with seemingly unrelated health improvements.

The kidney has an anatomical distinctiveness that sets them apart from other internal organs: they are not attached to the peritoneum. That gives them an inherent mobility that shows as a drop of up to two inches depending on whether a person lies down or stands up.

If the ‘kidney energy’ and the connective tissue are weak the physiologic limits can be exceeded and the patient develops ‘nephroposis’, which is a hypermobility of the kidneys, resulting in a drop of more than the height of two vertebrae. The German internist and pathologist Kurt Beisch established the significance of this condition in 1982 by pointing out that about 60% of his patient population suffered from it and women were affected more often than men. The implications of a floating kidney are far-reaching:

1. UTI infections: Contrary to the kidney the ureter is attached to the peritoneum. A sagging kidney causes a kink in the ureter obstructing urinary flow and resulting in an increase in residual urine content in the kidneys and possibly hypertension.

2. Adrenal fatigue: The adrenal or suprarenal glands are two small, flattened bodies that sit on top of the kidneys. Arterial blood supply comes from the three suprarenal arteries: superior, middle and inferior. In about 80% of the population the main blood supply comes from the inferior suprarenal artery which directly branches off the renal artery. As the kidneys sag excessively they stretch the renal artery decreasing its diameter. Picture a ‘macaroni’ turning into a ‘spaghetti’. The diminished blood circulation affects the kidneys but even more so the adrenal glands: severe hypoxemia, possibly for hours (as long as the person is standing), interferes with hormone and neurotransmitter production.
3. Irritation of the Autonomous Nervous System (ANS): The ANS acts to maintain normal internal functions and consists of three parts: the sympathetic nervous system which controls the ‘fight and flight’ response, the parasympathetic nervous system allowing us to ‘rest and digest’, and the enteric nervous system, our ‘gut-brain’ that causes diarrhea when we are frightened or stomach cramps before an important exam. A network of sympathetic nerve fibers covers the entire arterial circuit where it constricts smooth muscle activity diminishing blood flow to the abdominal viscera. Stretching the renal artery beyond its physiologic limits feeds back afferent irritation signals to the solar or celiac plexus where sympathetic, parasympathetic and sensory visceral fibers intertwine. Depending on the individual’s constitutional weakness any internal organ can become symptomatic caused by a hypermobile kidney.

CONCLUSION

It can therefore be said that ALF treatment offers tremendous opportunities to improve overall health. The more we know about the stomatognathic system and its whole-body connections the more obvious is the need to master the challenge of adjusting the ALF appropriately.

REFERENCES

Why Do Osteopathic Physicians Need to Know about ALF?
Ljuba Lemke, DMD, Feb. 2015

More and more dentists begin to understand how the oro-facial complex affects the whole body. Realizing that they do not have all the tools to address their patients’ needs, dentists seek the help of osteopathic physicians.

Osteopathic physicians regularly encounter patients with headaches, low back pain and other complaints in which temporomandibular (TMJ) and dental occlusal dysfunctions are associated. Frequently, these patients require dental procedures in addition to osteopathic manipulative treatment. It is essential for osteopathic physicians to: become aware of issues originating in the dental field which impede treatment success for their patients; understand an orthopedic/orthodontic way of addressing TMJ and dental occlusal dysfunction, namely the Advanced Lightwire Functionals approach (ALF). establish a strong, interdisciplinary, and well-functioning relationship with a dentist trained in the ALF approach and/or biologic dentistry - all with the goal of helping their patients-in-common.

There are frequent occurrences of insufficient maxillary and mid-facial development in our patient population. Rigid orthodontic appliances as well as braces (due to their mechanics) have a restrictive component which contributes and sometimes exacerbates the problem. A narrow, posteriorly and downward positioned maxilla keeps the mandible in a retruded position, jams the cranial mechanism, and reduces the overall vitality of the patient. It can also change the conformation of the cranial base as the temporal bones are thrown into external rotation. This can alter the occipital bone into a position that favors flexion, moving the occipital condyles anteriorly and creating a head-forward posture.

Meanwhile the airway is obstructed by a diminished volume of the maxillary sinuses, a high arched palate, the tongue being closer to the pharyngeal wall, all of which leading to mouth breathing. A small maxilla, a retruded mandible, mouth breathing and reduced vitality are all too common findings in our society.

To address this we need dental appliances that develop the maxillary dental arch in a horizontal rather than vertical direction without restricting cranial motion. The Advanced Lightwire Functional (ALF) appliance, created by Darick Nordstrom, DDS, is able to do this. It is a wire-appliance, worn behind the teeth, which uses the teeth as handles to help release cranial strains. It is first and foremost meant as a supportive device (rather than a mechanical one to move teeth). This is achieved by using very light forces that are in the physiologic range and mimicking nature by encouraging a functional tongue rest position and swallowing pattern, as well as nasal breathing. During this process the teeth move to a new position, mostly anteriorly and laterally, allowing the mandible to reposition forward. This in return improves TMJ health and airway. It alleviates a common finding in which the mandibular condyle is placed posteriorly in the glenoid fossa, with or without displacement of the TMJ disk. This ‘internal derangement’ of the TMJ is associated with a number of symptoms.
Subjective symptoms can encompass amongst others:
- TMJ pain
- breathing and swallowing difficulties
- headaches
- vision disturbances
- neck pain

Objective symptoms can be:
- restricted range of mandibular motion
- TMJ clicking and popping
- deviations on opening and closing
- facial and masticatory muscle tenderness.

Causes for TMJ and dental occlusal dysfunctions are manifold, such as traumata, whiplash and head injuries to nutritional deficiencies, oral posture (tongue and lip position, breathing habits), genetic make-up and more.

Unless dental dysfunctions are properly addressed, many people have ongoing symptoms despite adequate osteopathic manipulative treatment (OMT). Wearing orthotics for the feet, proper optical prescriptions, and dental appliances all can positively affect the balance in the patient’s body, facilitating the osteopathic physician’s work.

Patients with scoliosis demonstrate distortions of mandibulo-maxillary symmetry. Some scoliosis patients respond to OMT better when the distortions of the cranium, including the TMJ, are properly addressed. Including the jaw in the treatment plan makes sense because so many muscles that operate the jaw can act asymmetrically, thus, distorting the face and the entire skull and spine. There are instances in which an injury to the lower extremity or pelvis is reflected in asymmetry of the jaw, and unless the jaw is included in the treatment, the lower extremity or pelvis will not fully stabilize from OMT.

Asymmetric patterns of function, if left over time, will not reverse themselves, unless they are specifically rebalanced. Occlusal surfaces drive the masticatory functions, which drive the muscular attachments and the shape of the skull. These misshapen parts will affect distant regions of the anatomy.

The following skills are necessary for any osteopathic physician who wishes to work with an ALF dentist for the benefit of their patients-in-common:
- assessing the patient’s vitality and how the ALF appliance changes it;
- using the primary respiratory mechanism (PRM) as the central focus in assisting and guiding the dentist in adjusting the ALF appliance through the course of treatment to enhance the patient’s mechanism;
knowledge to answer questions like:
- Does the appliance alter the patient’s PRM in amplitude, in direction?
- What influence does an old injury have on the patient’s dysfunction?
- What needs does the patient’s structure demonstrate and should these structural distortions be corrected before the dentist takes an impression of the patient’s teeth?
- How does the dental work-up reflect the structural findings of the osteopathic physician?
- How do the dental and cranial findings determine the appliance design? Should the osteopathic physician and dentist see the patient simultaneously or separately? At what point should collaboration start?

There are courses available that will prepare osteopathic physicians for the complex task at hand which will be a considerable benefit to their patients.
Chapter 7: Assessing Lab Work, Work Flow

References:
- Estimate for Treatment Time
- Tooth Eruption Table
- Consultation Visit:
  - Workflow
  - Consultation Report
- Diagnostic Records Visit:
  - Workflow
  - Checklist for Diagnostic Records
- Insertion Visit:
  - Workflow
  - Instructions After ALF Insertion
- Initial Adjustment:
  - Workflow
- Periodic Treatment Visit:
  - Workflow
  - Periodic Re-Evaluation
- Retention Phase:
  - Retention Consent Form

Instructional Video:
- Insertion and Removal of ALF Appliance

Case:
- E.L.: diagnosis and treatment plan
## Estimate for Treatment Time

<table>
<thead>
<tr>
<th>Dentition</th>
<th>Active Treatment Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>early mixed dentition</strong></td>
<td>6 to 18 months (+ 6)</td>
</tr>
<tr>
<td>(permanent incisors erupting)</td>
<td>(retention for at least 1 year)</td>
</tr>
<tr>
<td><strong>late mixed dentition</strong></td>
<td>24 to 30 months (+ 6)</td>
</tr>
<tr>
<td>(permanent bicuspids and canines erupting)</td>
<td>+ time waiting for tooth eruption</td>
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<tr>
<td></td>
<td>(retention for at least 2 years)</td>
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</table>
Tooth Eruption Table

<table>
<thead>
<tr>
<th>PRIMARY TEETH</th>
<th>Erupt</th>
<th>Shed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Teeth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Incisor</td>
<td>8-12 mos</td>
<td>6-7 yrs</td>
</tr>
<tr>
<td>Lateral Incisor</td>
<td>9-13 mos</td>
<td>7-8 yrs</td>
</tr>
<tr>
<td>Canine (Cuspid)</td>
<td>16-22 mos</td>
<td>10-12 yrs</td>
</tr>
<tr>
<td>First Molar</td>
<td>13-19 mos</td>
<td>9-12 yrs</td>
</tr>
<tr>
<td>Second Molar</td>
<td>25-33 mos</td>
<td>10-12 yrs</td>
</tr>
<tr>
<td>First Permanent Molar</td>
<td>6-7 yrs</td>
<td>Permanent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lower Teeth</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Incisor</td>
<td>6-10 mos</td>
<td>6-7 yrs</td>
</tr>
<tr>
<td>Lateral Incisor</td>
<td>10-16 mos</td>
<td>7-8 yrs</td>
</tr>
<tr>
<td>Canine (Cuspid)</td>
<td>17-23 mos</td>
<td>9-12 yrs</td>
</tr>
<tr>
<td>First Molar</td>
<td>14-18 mos</td>
<td>9-11 yrs</td>
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<tr>
<td>Second Molar</td>
<td>23-31 mos</td>
<td>10-12 yrs</td>
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<tr>
<td>First Permanent Molar</td>
<td>6-7 yrs</td>
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</table>

<table>
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<tbody>
<tr>
<td>Upper Teeth</td>
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<tr>
<td>Central Incisor</td>
<td>7-8 yrs</td>
</tr>
<tr>
<td>Lateral Incisor</td>
<td>8-9 yrs</td>
</tr>
<tr>
<td>Canine</td>
<td>11-12 yrs</td>
</tr>
<tr>
<td>First Premolar / Bicuspid</td>
<td>10-11 yrs</td>
</tr>
<tr>
<td>Second Premolar / Bicuspid</td>
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</tr>
<tr>
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<td>6-7 yrs</td>
</tr>
<tr>
<td>Second Molar</td>
<td>12-13 yrs</td>
</tr>
<tr>
<td>Third Molar</td>
<td>17-21 yrs</td>
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</table>

<table>
<thead>
<tr>
<th>Lower Teeth</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Central Incisor</td>
<td>7-8 yrs</td>
</tr>
<tr>
<td>Lateral Incisor</td>
<td>8-9 yrs</td>
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<tr>
<td>Canine</td>
<td>11-12 yrs</td>
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<tr>
<td>First Premolar</td>
<td>10-11 yrs</td>
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<tr>
<td>Second Premolar</td>
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</tr>
<tr>
<td>First Molar</td>
<td>6-7 yrs</td>
</tr>
<tr>
<td>Second Molar</td>
<td>12-13 yrs</td>
</tr>
<tr>
<td>Third Molar</td>
<td>17-21 yrs</td>
</tr>
</tbody>
</table>
Workflow for Consultation Visit

Forms:
- Medical History Form
- Consultation Report / Follow-Up Letter
- Fee Agreement
- Instructions After ALF insertion / What to expect
- Treatment Consent Form
- Permission to Use Records

- Observe the child’s OFM patterns, personality, and temperament
- Assess treatment needs
- Palpate cranium
- Explain cranial osteopathy concept, using a skull for demonstration
- Recommend co-treatment with an osteopathic physician or holistic body worker
- Introduce oro-facial myology
- Discuss:
  - Treatment Goals
  - Frequency of Visits
  - Estimated Length of Treatment
- Try-in impression trays and have patient take them home to practice
- Go over treatment fees (done by a staff member)
- Hand-out: (done by a staff member)
  - Consultation Report/ Follow-Up Letter
  - Fee Schedule
  - Treatment Consent Form
  - Instructions After ALF Insertion
Consultation Report

Date: ___________

RE: orthopedic / orthodontic treatment for ____________________

Dear __________________:

This letter is a summary of what we discussed at our recent orthodontic consultation appointment.

Facial Appearance

- mid-face, including upper jaw, is too far back
- lower jaw is too far back
- Mew’s indicator line
- other: ______________________________________

General

- primary dentition (all primary teeth and no permanent teeth are present)
- early mixed dentition (1st permanent molars and one or all four permanent front teeth are present)
- late mixed dentition (1st permanent molars and all four permanent front teeth are present; permanent bicuspids and canines are erupting)
- all permanent teeth are present (possibly except wisdom teeth)
- poor oral hygiene / risk of tooth decay is high
- other: ______________________________________

Upper Jaw (maxilla)

- narrow arch
- short arch
- heavy labial frenum
- crowding of front teeth
- front teeth tipped back / flared forward
- other: ______________________________________

Lower Jaw (mandible)

- narrow arch
- short arch
- short lingual frenum
- crowding of front teeth
- other: ______________________________________
Consultation Report

Bite (occlusion)
- □ deep bite
- □ open bite
- □ crossbite
- □ front teeth are meeting edge to edge
- □ overbite (lower front teeth are biting much further back than upper front teeth; sometimes called “buck teeth”)
- □ “underbite” (lower front teeth are biting further forward than upper front teeth)
- □ dental midlines are off
- □ other: ______________________________________

TMJ
- □ restricted mouth opening
- □ other: ____________________________

Habits
- □ clenching/ grinding
- □ thumb / digit sucking
- □ snoring
- □ other: ____________________________

Oro-Facial Myology
- □ mouth breathing
- □ tongue rest position
- □ short lingual frenum

Cranial Motion
- □ _________________________

Posture
- □ _________________________

Nutrition and Water Intake
- □ _________________________

Anticipated Treatment Time: ________________________

We will be happy to answer any questions you may have and are looking forward to hearing from you,

Dr. Ljuba Lemke, GENERAL DENTIST
Instructions after ALF insertion

What to expect:

It may take a few days to get used to your ALF. Since some of the wires end slightly below the gum line the ALF may pinch a bit in the beginning. This will subside after 1-2 days.

It is normal to bite on the wire in the beginning. During that time you may feel some mild discomfort, as well as food getting stuck along the wires. If a wire is sticking out, poking into your tissue, pinch off a bit of the relief wax and place it over the irritating wire. The discomfort should stop soon; if it doesn’t, please let me know.

Initially a slight lisp can occur. The tongue learns very quickly to deal with this and speech will return to normal (the more you talk, the faster the lisp disappears).

The homeopathic remedy Arnica 30 C and also Vitamin C help to relieve most of the discomfort.

It is very important that you DO NOT use your fingers or tongue to pick or pull at the ALF. Doing so will make them come loose. (If parents notice the child playing around with the appliance please contact me. We will set up an appointment to secure the appliance even more securely in the child’s mouth. I might recommend that the parent takes the appliance out to prevent the delicate wires from getting bent and distorted).

How to take care of your appliance:

The ALF is meant to stay in your mouth at all times; only the dentist is supposed to take it out. Please do not pick at the appliance with your fingers or move it around with your tongue. Since the wire is very flexible and delicate it can get bent easily.

Brush your teeth as you normally would; we will show you how to floss your teeth with the ALF in place. There are two additional tools that are very helpful to keep everything clean: the Sulcabrush (www.Sulcabrush.com) and an oral irrigation device / Waterpik.After a while you will notice that your tongue will have learned to keep most food from getting stuck between the wires.

Eating:

You can eat pretty much everything, including hard foods like carrots and nuts; but you’ll have to stay away from chewing gum, pop corn, and any sticky stuff like caramel. Any gooey candy will wrap around the wires and can pull the appliance loose. If your appliance should come loose: Your appliances are made to fit as tight as possible but loose enough that your dentist can take them out. Sometimes it happens that the appliance comes loose while you are eating, normally just on one side.

Use your finger to push the loose side back into place until you feel that it is seated properly. If you should not be able to push it back in place, grab the opposite side (the one that is still holding on to your tooth) and pull it loose. Keep your appliance in the retainer box and let your dentist know right away that it needs to be put back in your mouth.

Any questions?

Please call us at 970-259-0896 or send us an email: info@OrthodonticsWithoutBraces.com.
# Checklist for Diagnostic Records

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td><strong>Patient Name:</strong></td>
<td><strong>Date:</strong></td>
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## Impressions

<p>| | |</p>
<table>
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<tr>
<th></th>
<th></th>
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</table>
| PVS wash impression | □ upper  
□ lower |
| bite registration(as needed) | □ |

## Photos

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
</table>
| extra oral / standing, whole body *(ears and neck visible, preferably shoes off)* | □ frontal  
□ right side  
□ back  
□ frontal with Fox plate |
| face | □ frontal with Fox plate  
□ right side with Fox plate  
□ frontal, relaxed  
□ frontal, smiling  
□ right side, relaxed  
□ right side, smiling |
| intra oral: | □ maximum intercuspation |
| IF APPLICABLE: dental midlines aligned and mandible protruded to establish a class I canine relationship | □ "as if" position  
□ slightly open |
| occlusion | □ frontal view |
| tongue habits | □ tongue rest position  
□ tongue thrust |
| maxillary arch including nose | □ maxillary arch  
□ mandibular arch |

## Radiographs

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>recent bite wings</td>
<td>□</td>
</tr>
<tr>
<td>panoramic radiograph</td>
<td>□</td>
</tr>
<tr>
<td>cephalometric radiograph</td>
<td>□</td>
</tr>
<tr>
<td>ideally: cone beam radiograph</td>
<td>□</td>
</tr>
</tbody>
</table>

## TMJ Exam

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| □ range of motion  
□ sounds  
□ path of opening/closing |

## MeW’s Indicator

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>□ tip of nose to tip of central incisors</td>
<td></td>
</tr>
</tbody>
</table>

## Orofacial Myology Findings

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| □ breathing  
□ lip seal  
□ tongue rest position  
□ swallowing |

## Cranial Motion

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| □ amplitude  
□ symmetry  
□ direction of movement |
Permission to Utilize Patient Records

Dr. Ljuba Lemke
GENERAL DENTIST

1800 E 3rd Ave., Suite 110
Durango, CO 81301
Tel. (970) 259-0896
info@OrthodonticsWithoutBraces.com

PERMISSION TO UTILIZE and SHARE PATIENT RECORDS

I hereby grant Dr. Ljuba Lemke permission for

Name: ______________________________
    myself / my child

- to use the diagnostic and treatment records for the purpose of display for scientific articles, seminars, and presentations
- to share information per e-mail with co-treating professionals

Date ____________________________
Signature of Patient
(Parent or Guardian if patient under 18 years of age)
Workflow for Insertion Visit

● BEFORE insertion:
  - Take photo of appliance(s) on and off the cast
  - Take photocopy of appliance
  - Explain diagnosis and treatment plan to patient and parent
  - Assess cranial motion for amplitude, symmetry, and strain pattern

● AFTER insertion:
  - Assess cranial motion for amplitude, symmetry, and strain patterns
  - Osteopathic rebalancing and cranial suture release (however much or little you can do is a bonus to overall treatment)
  - Address tongue position: introduce ‘the spot’
  - Tighten cribs if applicable
  - Bond resin ledges if needed as well as build-ups (whenever in doubt it is needed)
  - My preference is to NOT activate the ALF at the insertion visit. Rather give the patient one to 3 weeks to get used to appliances experiencing minimal discomfort.
  - Check for blanching of tissue (wire may be impinging).
  - Go over dental hygiene. Recommend apart from regular brushing:
    ▪ Oral irrigation device
    ▪ SulcaBrush
  - Explain:
    ▪ What to do if ALF comes loose.
  - Have patient bounce 5 minutes on the trampoline.
  - Give patient/parent:
    ▪ Retainer case
    ▪ Relief wax
    ▪ “Instructions After ALF insertion”
Workflow for Initial Adjustment Visit

• Ask:
  - Is the ALF sitting tight in your mouth, not coming loose when you eat?
  - How long did it take to get used to it?
  - Does your tongue or do your fingers play with the ALF?

• Instruct about flossing with the ALF in place, including the teeth with cribs.

• Remove the appliances and have child brush and floss.

• Have child bounce for 5 minutes on the mini-trampoline with a bite wafer separating the teeth.

• In the meantime make the initial adjustment, widening the midline loop about 1 to 1.5 millimeters, keeping the molar width the same. (This starts the process of freeing up the premaxilla).

• Take photocopies.

• Reinsert the ALF(s), explaining to the patient what we want to achieve with the new adjustment, for example “we start making your jaws wider”.

• Explore the “tongue spot” some more.

• Finish with cranial palpation and osteopathic rebalancing.
Workflow for Periodic Treatment Visit

- **Ask:**
  - Is the ALF sitting tight in your mouth, not coming loose when you eat?
  - Does your tongue or do your fingers play with the ALF?

- **Remove the appliances, observe whether it is passive, lining up with the teeth.**

- **Assess what changes have occurred in the patient’s mouth since the last visit. Are they congruent with the previously made adjustment?**

- **Have child brush and floss.**

- **Have child bounce for 5 minutes on the mini-trampoline with a bite wafer separating the teeth.**

- **In the meantime adjust appliances according to treatment progress.**

- **Take photocopies.**

- **Reinsert the ALF(s), explaining to the patient what we want to achieve with the new adjustment.**

- **Give OFM instructions as needed.**

- **Finish with cranial palpation and osteopathic rebalancing.**

**Re-evaluate treatment needs about every 6 months:**

- **Take new impressions, face bow transfer and bite registration.**

- **Obtain intra-oral and facial photos, including those with Fox Plate.**

- **Re-assess diagnostic findings and treatment plan.**

- **Review progress with patient and parents.**
# Periodic Re-Evaluation

**Patient Name** ____________________________________________

<table>
<thead>
<tr>
<th><strong>Treatment Objectives</strong></th>
<th><strong>Date:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Face</td>
<td>__________________</td>
</tr>
<tr>
<td>TMJ</td>
<td>__________________</td>
</tr>
<tr>
<td>Maxilla</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Mandible</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Interarch Relationship</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**NOTES:**

________________________________________________________________

________________________________________________________________
Retention Consent Form

Name: _________________________________

By signing this form, I understand that wearing retainers is a critical and sometimes the final phase of my orthodontic treatment and that they are required for my teeth to stay in the position we have worked so hard to put them in. Wearing retainers as instructed, the cost of replacing lost or broken retainers, and/or re-straightening my teeth, if necessary, is my responsibility.

Trainer/Myobrace: I understand that wearing the Trainer/Myobrace 1 hour every day and at night will keep my teeth aligned as they are right now. Wearing the Myobrace 2 hours every day and at night, will help to make my teeth align even better.

No one can MAKE me wear my retainer... neither my dentist, nor my parents. The responsibility is completely with ME.

Patient signature:

__________________________________ Date:________________

Parent/Guardian signature:

__________________________________ Date:________________
**Patient Name:** E.L., *02-17-01*  
**Tx Started (date/age):** 2/17/11, 4 yr  
**Anticipated Tx Time:** 3 years

### DFM Objectives

<table>
<thead>
<tr>
<th>Objective</th>
<th>Achieved</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Open bite -Tongue rest position -Level plane occlusion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* -Open bite -Tongue rest position -Level plane occlusion</td>
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### Treatment Objectives

**Date:** Feb. 2011

<table>
<thead>
<tr>
<th>Phase</th>
<th>Objective</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>advance mandible</td>
</tr>
<tr>
<td>2</td>
<td>align incisors</td>
</tr>
<tr>
<td>3</td>
<td>align incisors</td>
</tr>
<tr>
<td>4</td>
<td>increase overjet</td>
</tr>
</tbody>
</table>

### Other Findings:

- **Pond’s Index:**
  - **mm**: 32
  - **N**: 21
  - **U**: 95
  - **L**: 103
  - **R**: 25
  - **D**: 90

### Notes:

- Initial treatment with maxillary physician (name)
Chapter 8: ALF Adjustments (2), Trouble Shooting, More Designs

Materials needed for this chapter:
- utility wire
- wire cutter
- cloth
- bird beak pliers
- Boley gauge
- template (printed): small ALF prototype

References:
- Myofunctional Research Company: www.myoresearch.com

Resources:
- Orthodontic Education - Newsletter by Dr. Gavin James: www.orthodonticed.com
- James / Strokon Material: contact Dr. Gavin James, gavin@orthodonticed.com, tel. (905) 468-7751, 215 Ricardo St., Apt 309 Niagara on the Lake, Ontario L0S 1J0, Canada
  - Manual 1 and 2: $150 each plus $30 S/H
  - DVD on insertion and adjustment of ALF: $150 plus $30 S/H
    Payment requested beforehand, material will be sent out by courier as soon as the payment is received.
- “Crozat Arch Development: Crozat Mechanics for Children and Adults”, by Dr. Jack Hockel
  see flyer for order details
- “ALF-FACES Study Group” - Dr. Darick Nordstrom’s secret Facebook group
Instructional Videos:
- Wire Bending: ALF Prototype Small
- Staying on plane
- Anterior triangle
- Molar rotation
- Adjusting Crozat Design
- Adjusting loop

Case:
- Q.C.: diagnosis and treatment plan
Wire Bending 3: ALF Prototype (small)
“Crozat Arch Development”, by Dr. Jack Hockel

Crozat Arch Development: Crozat Mechanics for Children and Adults
by Dr. Jack Hockel
150 pages; quality trade paperback (softcover); catalogue #08-0846; ISBN 1-4251-8184-8;

This book demonstrates Crozat arch development mechanics in the permanent dentition and early expansion in the young child for non-extraction orthodontics, techniques also applicable in cosmetic dentistry and Invisalign orthodontics.

About the Book

The mechanics of arch development with the Crozat appliance for adults and early expansion in young children is described. The fascinating history of the Crozat, beginning with Dr. Crozat himself, is traced; the contributions of Dr. Albert Wiebcrecht led to the concept of functional arch development in the adult dentition.

The book covers applications in a general practice, diagnosis and rationale for arch development, components and construction of the Crozat appliance, delivery, mechanics and activation, variations and additions to the basic appliance and examples of early expansion in the child and arch development in the adult dentition.

There is a place in the general and specialty practice for Crozat arch development in the permanent dentition, particularly in the fields of cosmetic dentistry and the new Invisalign technology, as well as early expansion in the young child. It is unquestionably the most comfortable, hygienic and inconspicuous of all removable orthodontic appliances. The public appreciates the aesthetics of a full smile, and an initial phase of Crozat therapy reduces time in fixed appliances, which adults appreciate.

Crozat practitioners have long realized the potential of arch development for helping the patient with facial and temporomandibular pain, and new research in the field of cranial osteopathy has provided the insight for understanding the mechanism for this.

Young children tolerate Crozats easily, so a phase one treatment including expansion fits easily into a general practice for the dentist who takes the time and effort to learn the Crozat technique and orthodontic diagnosis.

About the Author

Dr. Jack Hockel practiced general dentistry in Walnut Creek, California for over 40 years. The last twelve years were limited to orthodontics. He taught gnathology and reconstruction in continuing education at UCSF from 1976-1983, and taught Crozat orthopedics and orthodontics from 1981 to 2007 for the American Academy of Gnathologic Orthopedics (AAGO) and in study groups. He has been the editor of the AAGO Journal since 1996. He edited “Orthopedic Gnathology” in 1983, published by Quintessence of Chicago.

His interests, besides his family and orthodontics, include playing in bands and vegetable gardening.

Order directly from the author:
$47 US check or money order including postage. (Tax and postage extra)
Bulk order discounts available.

Dr. Jack Hockel
2621 Oak Grove Rd.
Walnut Creek, CA
94596
### Case Summary Q.C.

**Chief Complaint, Medical and Dental History:**
- Concern about need for orthodontic intervention.HX: Hx at least wheat, dairy, was allergic to mother's buttermilk. Seasonal allergies.
- Family history: mother had orthodontic treatment.
- OTH: past medical history.

**Extracranial Findings:**
- Posture: good
- Face: well-developed
- Symmetry present
- Fullness: no
- Overjet: 4 mm
- Overbite: N/A
- Angle Class: Right 60, Left 60, N/A

**Radiographs:**
- NAS: N/A

**Other Findings:**
- Ponc's Index:
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<th>Ant N</th>
<th>M</th>
<th>W</th>
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<th>P</th>
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**OFM Objectives**
- Transverse: UC (10.7) > B (8.5) / M
- Sagittal: 4 mm
- Facilitate eruption of WB

**Mandible:**
- Transverse: LC (8.5) > P (7.3) / W
  1. Align incisors
  2. 
  3. 

**Treatment Objectives**
- Date: June 2009
- Path: ✓
- TMJ: ✓

- Mandible:
  1. Transverse: UC (10.7) > B (8.5) / M
  2. Sagittal: 4 mm
  3. Facilitate eruption of WB

- Mandible:
  1. Transverse: LC (8.5) > P (7.3) / W
  2. Align incisors
  3. 

**Interarch Membership:**
- ✓

**NOTES:**