Early Orthodontic Treatment: 
* Who, When, Why and How to Treat

Class III Treatment
* Mini-Plates
* Orthopedics
* Camouflage

Orthodontic Goals:
For Class III camouflage-prioritization required

F unction
R 2 eliable/Realistic
E 2 sthetics/Economic
S 2 tability/Satisfaction
H ealth

Class III Treatment Approaches

Risk/Cost
Severity/Reward

Risk/Cost
Severity/Reward

S.O.F.T. Procedure $8-10K
Distraction w/Plates $17-20K
Camouflage-Non-growing
Camouflage-Growing
Orthopedics w/plates $3-5K
Single Jaw Surg $40-45K
Double Jaw Surg $50-60K

Reference—WITS
Initial Differential Diagnosis
Approach
Secondary Differential Diagnosis
Timing
Pts w/Class III Conditions
Non-growing

Parent/Child Management
Trauma
Ectopic Teeth
Extraction/Non-Extraction
Class II Treatment
Treatment decision in adult patients with Class III malocclusion: Orthodontics or orthognathics?

1. Cephs of 175 — 87 non-surg; 88 surg. Group
2. 20 linear, proportional and angular measures discriminant analysis
3. “Research effort to provide cephalometric yardsticks that would make the treatment decision more objective.”

Camouflage Therapy
Underestimation of Effectiveness

Craniofacial Characteristics

- Moderate basal bone discrepancy:
  Both jaws contribute- 60% maxillary retraction/ 40% mandibular excess
- Adequate alveolar bone and gingivae for incisor reangulation
- Minimal mandibular asymmetry (< than 5mm)
- Minimal max. vertical excess or deficiency
Camouflage Therapy for Class III patients

Behavioral Characteristics of Patient
1. Existing facial proportion acceptable to patient (Needs to be discussed as part of treatment planning options)
2. Proposed angular changes of teeth acceptable to patient

Camouflage Therapy
Underestimation of Effectiveness
Four General Types:
1. Camouflage thru differential extraction
2. Camouflage thru non-extraction
3. Camouflage—add teeth (eg. missing #7 and 10)
4. *Camouflage thru soft tissue procedures (Cosmetic/Surgical)

The Orthodontist’s
10-15 Billion Dollar Decision
Camouflage or surgery? Class III adults

Measurement of WITS from Ceph w pt in centric occlusion

Class III camouflage?
Orthodontic Goals:
For Class III camouflage-prioritization required

- **F** unction
- **R** eliable/Realistic
- **E** sthetics/Economic
- **S** tability/Satisfaction
- **H** ealth (Minimally invasive)

### Class III – Camouflage?
*Classic case of goal prioritization*

F. R. E’S.H. Esthetics Versus Economics $55,000 saved

Ortho. camouflage (U4 ext) in adult Class II cases can have a definite impact on facial aging.

Other considerations w camouflage recommendation:

“*Youthful appearance has a well-defined mandibular line and good definition between face and neck.*”

“*The aged face…*”


### Camouflage Therapy
Underestimation of Effectiveness

**Author’s Note:**
Many non-growing skeletal Class III’s can be well treated with minimal compromise and significant patient satisfaction through proper application of the principles of camouflage therapy.

What are the key principles?
### Key Principles of Camouflage

For Class III patients

- **Clear diagnosis of degree of skel problem**
  *(Template for both doctor and patient understanding) Graber*

- **Explain options:** "ideal versus practical"
  *(What are the downsides of practical plan—your view)*

- **In treatment plan write-up—indicate both plans and why practical was chosen** *(risk/benefit issues; pt. Issues)*

- **Avoid over-retraction of lower incisors or protraction of upper incisors**
  *(Frequently requires non-x upper, & if crowding en. re-contouring and gingival grafting to accomplish non-x goal on upper arch. Also add congenitally missing teeth and enlarge small laterals.)*

### Checklist for Non-Growing Class IIIls

#### Craniofacial Characteristics

- Moderate basal bone discrepancy:
- Both jaws contribute—Example
  - 60% maxillary retraction
  - 40% mandibular excess

- Adequate aveolar bone and gingivae for incisor reangulation
- Minimal mandibular asymmetry (< than 5mm)
- Minimal max. vertical excess or deficiency

#### Behavioral Characteristics of Patient

- Existing facial proportion acceptable to patient *(Needs to be discussed as part of treatment planning options)*
- Proposed angular changes of teeth acceptable to patient

### Initial tx. plan for 61 yr. Class III old male:

- Extract upper 2nd bis
- Decompensate incisors
- Advance Max. approx 5mm
- Set mandible back approx 3mm

### Tx. Plan for 61 yr. Class III old male:

- ANB = -3.0
- Wits = -15
- Mx/Mn = 41

**Age 61:1, Wits -15**

**62:11, Wits -8.5**

During early Class III elastic traction Fax came from Florida: "………………………….."
Initial tx. plan for 61 yr. Class III old male:

- Extract upper 2nd bis
- Decompensate incisors
- Advance Max. approx 5mm
- Set mandible back approx 3mm

ANB = -3.0
Wits = -15
Mx/Mn = 41

Age 61, Wits -15
62 yrs, Wits -16

During early Class III elastic traction Fax came from Florida: ".........................."
"Force systems are your medicine"
Weinstein/Hoack

Growing Class III Pts.
Timing

15 year follow-up

The Checklist Manifesto:
How to Get Things Done Right
Atul Gawande

“That means we need a different strategy for overcoming failure: one that builds on experience and takes advantage of the knowledge people have but somehow also makes up for our inevitable human inadequacies. And there is such a strategy — though it will seem almost ridiculous in its simplicity, maybe even crazy to those of us who have spent years carefully developing ever more advanced skills and technologies.

It is the checklist.”
Additional variables that need consideration:
(Seldom discussed but can be critical)

- Psychological factors of appearance
- Transverse deficiency of maxilla (skeletal component); space available (dental component)
- Clockwise growth & excessive mand. growth
- Asymmetrical growth
- True condylar hyperplasia
- Short stature/Class III: Rx human growth hormone

Checklist (at Phase II) for Class III- ing Pts.

<table>
<thead>
<tr>
<th>Patient’s Name:</th>
<th>Age</th>
<th>Skeletal Age</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Family history: Yes No
- Initial diagnosis (med excess): Yes No (%Max vs. Mand.)
- Response to Ph I: Good Fair Poor
- Diagnosis @ Ph II (Wits): Better Same Worse
- Facial balance: Mild Mod. Severe
- Skeletal age @ Ph II: Favorable Unfavorable (asym/open)
- Growth pattern: Favorable Unfavorable
- Ging Health/Root length: Favorable Unfavorable
- Capacity to camouflage: Favorable Unfavorable
- Compliance: Favorable Unfavorable
- Growth hormone: Yes No

**Phase II Decision Time:** Non-surg; Therap, Wait & plan surg.

Principles applied--5 case examples

- When a young patient is Class III- ing—what is the role of camouflage in treatment management

Chapter 16: 75 + references
Class III: The Evidence on Diagnosis and Treatment
J. Gahfari, et al.

- “Treat early for more effect”
- “Chin cup success is questionable”
- “Tx is better than no tx.”
- “Over-treat for stability”
- “Forecasting growth is difficult”

Case #1 A. C. --Pre-Treatment
Checklist Phase II conference for Class III- ing Pts.

<table>
<thead>
<tr>
<th>Patient’s Name: Alicia C</th>
<th>Age</th>
<th>Skel. Age</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family history</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Initial diagnosis (med exa)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Response to Ph I</td>
<td>Good</td>
<td>Fair</td>
</tr>
<tr>
<td>Diagnosis @ Ph II (Wits)</td>
<td>Better</td>
<td>Same</td>
</tr>
<tr>
<td>Facial balance</td>
<td>Mild</td>
<td>Mod.</td>
</tr>
<tr>
<td>Skeletal age @ Ph II</td>
<td>Favorable</td>
<td>Unfavorable</td>
</tr>
<tr>
<td>Growth pattern</td>
<td>Favorable</td>
<td>Unfavorable (asym/open)</td>
</tr>
<tr>
<td>Ging Health/Root length</td>
<td>Favorable</td>
<td>Unfavorable</td>
</tr>
<tr>
<td>Capacity to Camouflage</td>
<td>Favorable</td>
<td>Unfavorable</td>
</tr>
<tr>
<td>Compliance</td>
<td>Favorable</td>
<td>Unfavorable</td>
</tr>
<tr>
<td>Growth hormone</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Phase II Decision Time: **Non-surg:** Thera dx; Wait & plan surg.

Orthopedics + Camouflage + Fx Shift Elim. + Clockwise rotation of “B” point ***

Case #2: Intervene now or wait? 4:1 female Unilateral repaired cleft lip and palate

Early intervention with AC reversal & very good growth response allowed **conservative** correction.

Checklist (at Phase II Conf.) for Class III- ing Pts

<table>
<thead>
<tr>
<th>Patient’s Name: Amber A</th>
<th>Age</th>
<th>Skel. Age</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family history</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Initial diagnosis (med exa)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Response to Ph I</td>
<td>Good</td>
<td>Poor</td>
</tr>
<tr>
<td>Diagnosis @ Ph II (Wits)</td>
<td>Mild</td>
<td>Mod.</td>
</tr>
<tr>
<td>Facial balance</td>
<td>Mild</td>
<td>Mod.</td>
</tr>
<tr>
<td>Skeletal age @ Ph II</td>
<td>Favorable</td>
<td>Unfavorable</td>
</tr>
<tr>
<td>Growth pattern</td>
<td>Favorable</td>
<td>Unfavorable (asym/open)</td>
</tr>
<tr>
<td>Ging Health/Root length</td>
<td>Favorable</td>
<td>Unfavorable</td>
</tr>
<tr>
<td>Capacity to Camouflage</td>
<td>Favorable</td>
<td>Unfavorable</td>
</tr>
<tr>
<td>Compliance</td>
<td>Favorable</td>
<td>Unfavorable</td>
</tr>
<tr>
<td>Growth hormone</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Phase II Decision Time: **Non-surg:** Thera dx; Wait & plan surg.
1. Initial Diagnosis
2. Phase I—“Ther. Diagnosis”
3. GTRV @ 3 yrs. (Wits)
4. Green; yellow or red
5. Phase II or wait for surgery

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### Checklist #3 (at Phase II Conf.) for Class III-ing Pts.

*All early Class III's require Therapeutic Dx*

<table>
<thead>
<tr>
<th>Patient's Name: Jamie F.</th>
<th>Age</th>
<th>Skel. Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Family history: Yes No
- Initial diagnosis (mnd excess): Yes No (%Max vs. Mand)____
- Response to Ph I: Good Fair Poor______________
- Diagnosis @ Ph II (Wits): Mild Mod. Severe
- Facial balance: Mild Mod. Severe
- Skeletal age @ Ph II: Favorable Unfavorable__________
- Growth pattern: Favorable Unfavorable [asymp/ipsymp]
- Ging Health/Root length: Favorable Unfavorable__________
- Capacity to Camouflage: Favorable Unfavorable__________
- Compliance: Favorable Unfavorable__________
- Growth hormone: Yes No

**Phase II Decision Time:** Non-surg; Thera dx; Wait & plan surg.
Case #4: Pre-tx. Lauren R. 9yrs.

Checklist #4 (at Phase II Conf.) for Class III-ing Pts.
All early Class III's require Therapeutic Dx

Patient's Name: Lauren R  Age ________  Skeletal Age ________

- Family History
  - Yes  No
- Initial Diagnosis (mmx & exs)
  - Yes  No (%Max vs. Mand)
- Response to Ph I
  - Good  Fair  Poor
- Diagnosis @ Ph II (Wits)
  - Mild  Mod.  Severe
- Facial Balance
  - Mild  Mod.  Severe
- Skeletal age @ Ph II
  - Favorable  Unfavorable
- Growth Pattern
  - Favorable  *Unfavorable (asym)
- Ging Health Root length
  - Favorable  Unfavorable
- Capacity to Camouflage
  - Favorable  Unfavorable
- Compliance
  - Favorable  Unfavorable
- Growth hormone
  - Yes  No

Phase II Decision Time: Non-surg; Therap dx; Wait & plan surg.

Case #5
Checklist #5 (at Phase II Conf.) for Class III ing Pt.

- **Patient’s Name:** Robin P
- **Age:** __________
- **Sex:** Male, Female

- **Family history:** Yes, No
- **Initial diagnosis (mand excess):** Yes, No
- **Response to Ph I:** Good, Poor
- **Diagnosis @ Ph II (Wits):** Mild, Mod., Severe
- **Facial balance:** Mild, Mod., Severe
- **Skeletal age @ Ph II:** Favorable, Unfavorable
- **Growth pattern:** Favorable, Unfavorable (asym/open)
- **Ging Health/Root length:** Favorable, Unfavorable
- **Capacity to Camouflage:** Favorable, Unfavorable
- **Compliance:** Favorable, Unfavorable

**Phase II Decision Time:** Non-surg; Thera dx; Wait & plan surg.

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**Graph:**
- **Surgical**
- **Non-Surgical**
- **Borderline**

**Graph Data:**
- @5.0 (~5.5)
- @16.0 (~2.5)
Cephalometric Effects of Class III Treatment
A Comparison of ORTA™ and Protraction Facemask

Kristin N. Moore, D.M.D.
Master of science in Oral Sciences Thesis Defense

Conclusions:
ORTA™ provides orthodontists with a useful noninvasive alternative treatment modality to protraction facemask in Class III malocclusion. Similar dental and skeletal results can be achieved by use of either the protraction facemask or the ORTA™.

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Thought
MD: Second Opinions

"In a predictable world, clinical decision making would be a well defined, scientific exercise with set methods for diagnosis and treatment."
Synopsis for use of camouflage for Class III

I. Prioritize goals for Class III patients—F.R.E.S.H.
II. Differential diagnosis—Max./Mand Diff.—Wits
III. Effective therapeutic measures—ORTA + + +
IV. Treatment response—WITS Changes +++++
V. Additional variables—Checklist
   (Apply the checklist before Phase II)
VI. Application of treatment principles—Individualize

POINTER: CLASS III CAMOUFLAGE VS. ORTHODPEDIC THERAPY
Best minimally invasive outcomes frequently require incorporation of both treatment modalities—not either/or!!!

Conclusion:
Since force systems are our medicine: Dose, duration & compliance will effect outcome. It is suitable to increase dose and duration if initial response not effective. Checklist (variables) encourages objectivity & communication prior to Phase II with incorporation of camouflage mechanism to complete correction.

Our findings indicate: Dentoalveolar camouflage is a very useful modality in a wide range of Class III skeletal dysplasias. Minimal deleterious side effects were observed in periodontium. Proper diagnosis and realistic treatment objectives are necessary! Parents, patients and doctor must understand the limitations of the camouflage mechanism.