Early Class III Treatment:

What are the Non-surgical limits?

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Early Class III Treatment

What are the non-surgical limits?

How is the decision made?

When can we find out?

I. Goals for early treatment Class III patients

  F unction

  R2 iable/Realistic

  E2 hetics/Economic

  S2 tability/Satisfaction

  H alth

II. Differential diagnosis of growing Class III pts

Components of Class III Malocclusion
5-15 year old studied; Ceph assessment

1. Mnd. skeletal prognathism 20%
2. Max. skeletal retrusion 25%
3. Max. skel. Retru. & Mnd. Progn. 22%
4. Normal Max./Mnd. (Ant. Crossbite) 33%
Diagnostic deficiency in the Angle system

Helpful diagnostic nomenclature change:
- Class III descriptor for growing patients changes to Class III-ing i.e., an action verb rather than a static noun.

Changes static diagnosis, to dynamic diagnosis.

Also term, Pseudo-Class III, confuses diagnostic process—preference, Class III skeletal pattern exacerbated by functional shift of mandible.

III. Effective therapeutic measures

ORTA®
Orthodontic Removable Traction Appliance
- Intraoral
- Inexpensive
- High compliance
- Disarticulation
- Easily adjusted

"Force systems are your medicine" Weinstein/Haack

"So which "medicine" is the best?"
IV. **Treatment response—assessment** *(Changes in Wits measurement, preferred)*

Class III—Treated non-surgically; note growth vectors of A1-A2 & B1 to B2

Bolton Standard—Normal Growth 6-16
V. Additional variables to review at Phase II conference

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
### VI. Application of treatment principles—checklist & case reports

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

| Patient’s Name: ___________________________ Age _______ Skel. Age _____ |
|-----------------------------|-----------------|
| Male                        | Female          |
| ✓ Family history            | Yes             | No ____________________ |
| ✓ Initial diagnosis (mnd 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__________ |
| ✓ Growth pattern            | Favorable       | Unfavorable (asym/open) |
| ✓ 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 #1

ANB = +3.5°
Mx/Mnd = 20mm
WITS = -5mm

A.C.—Before and after

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

Case # 2

ANB = -0.5°
Mx/Mnd = 27mm
WITS = -7mm
**Checklist** (at Phase II Conf.) for Class III-ing Pts.

**Hypothesis**

*All early Class III’s require Therapeutic Dx*

<table>
<thead>
<tr>
<th>Patient’s Name: ___ Erin A.</th>
<th>Age ________</th>
<th>Skel. Age ________</th>
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</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>
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</tbody>
</table>

**Phase II Decision Time:** Non-surg; Thera dx; Wait & plan surg.
Case #3

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

| Hypothesis | All early Class III’s require Therapeutic Dx |
| --- |
| Patient’s Name: | E.K. | Age | Skel. Age |
| Male | Female |
| ✓ Family history | Yes | No |
| ✓ Initial diagnosis (mnd excess) | Yes | No (%Max vs. Mand) | Mild |
| ✓ 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 |
| ✓ Growth hormone | Yes | No |

Phase II  **Decision Time:** Non-surg; Thera dx; Wait & plan s.
Orthodontic Removable Traction Appliance (ORTA)

Indications and Utilization

**CLASS III MALOCCLUSION**

**Anterior crossbite - Disarticulate**
- Mixed dentition or adult dentition with anterior crossbite and some amount of functional shift benefit from a lower Class III anchor plate; if posterior bite plane is needed, it can be added to avoid incisor trauma while crossbite correction occurs

**Class III - Maxillary Deficiency**
- Lower Class III anchor plate is frequently useful with patients that are also undergoing RPE, partial braces, and orthopedic traction to enhance maxillary horizontal growth. The RTA can be worn 24 hours per day (high compliance), the face mask 10-12 hours per day.

**Functional Shift - Class III**
- Same as above; “anterior crossbite to disarticulate”

**Surgically Assisted R.P.E. - Class III**
- Adult cases with surgically assisted R.E. and mild maxillary deficiency can be treated with lower Class III anchor plate to apply traction to maxilla during healing of osteotomy. Forward positioning of maxilla has been documented.

**Orthodontic re-treatment of Class III tendency**
- Several males and an occasional female will grow out of orthodontic correction. Upper Class III RTA helps in **mild cases**. Lower braces are placed, discing to the [4 5 3] area and Class III traction to correct the Class III tendency of the lower arch.
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Orthodontic *Removable Traction Appliance*

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CLINICAL STEPS ORTA—Orthodontic removable traction appliance

Determine traction requirements (II, III, crossbite, or vertical)
- Adhesive “retentive ridges” should be placed on an area where optimal elastic traction is to be applied.

Prepare teeth for adhesive “retentive ridges”
- Typical acid etch technique.

Add adhesive “retentive ridges” to stabilize appliance during traction - 75% M-D; 2-3 mm height
- Better to “over do” slightly; the “retentive ridges” can be trimmed easier than adding more adhesive.

Alginate impression
- Typical steps

LABORATORY STEPS ORTA—Orthodontic removable traction appliance

Stone Model
1. Trim for vacuum form;
2. Relieve undercuts (except “retentive ridges”)
3. Check for retention of “retentive ridges”;
   NOTE: use smaller retentive ridges with less retention when using biocryl for RTA
4. Make sure that “retentive ridges” are large enough on the tooth for adequate retention;
   Then, when the model is poured up, lightly scrape plaster around the area of the “retentive ridges” so they are well defined;

Durasoft Material (Great Lakes Orthodontic Products)
1. Catalog number = 030-001 (box of 10)
2. Price @ $4.99 per sheet

Essix “C” (“Invisacryl” -Great Lakes Orthodontic Products)
1. Catalog number =021-056 [box of 100]
2. Price @ $0.59 per sheet

Vacuum Form to model
1. Trim with diamond disc
2. Smooth edges with diamond bur
3. Be sure to leave > 2 mm under retentive ridges to aid in retention

Add Caplin Hooks (GAC) for elastic traction.
1. Heat Kaplan hook (GAC International) with torch and place in the area of desired traction.
2. After inserting the hook into the plastic (essix, biocryl or durasoft) material, check the underside to make sure that the hook is not showing through the plastic
3. Pull hook to be sure it’s attached to material securely; it should not be able to be detached from elastic pull.
References for Early Class III Treatment

I. Diagnosis of the Class III Skeletal Problem


II. Therapeutic Approaches


III. Therapeutic Diagnosis and Treatment Responses


IV. Treatment Outcomes—Long-term Follow-up


