Treatment of Angle Class III

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Disorders in Angle Class III

• The position of the lower jaw is forward regarding to the upper jaw
  – Mesialocclusion (regarding the 1st perm. molars)
  or
  – Progeny
  or
  – „Bulldog-bite“
Disorders in Angle Class III

Properties:

– Big mandible, expressed tip of the chin
– Upper front region is tilted labially
– Lower front region is seriously tilted lingually
– Many times the incisors are still in crossbite position
– Lateral crossbite often occurs
Disorders in Angle Class III

- **Aetiology** – genetics can play the most important role
  - Very hereditary in families, but the severeness of this disease is random
  - 1-3% frequency in European race
  - Meaningful problem if the direction of the growth of mandible is forward and downward
Disorders in Angle Class III

Aetiology - Main skeletal factors:

• Increased mandibular length
• Forward positioning of glenoid fossa
• Reduced maxillary length
• Short cranial base
• Reduced cranial base angle
• Combination of above factors
Disorders in Angle Class III

- **Aetiological hypothesis:**
  - Flat, forward positioned tongue, susceptibility for tongue trust swallowing can cause Angle class III malformation.
  - Because of unfavorable incisor guidance, a forced crossbite can be developed, *real skeletal* Angle Class III will be fixed.
Disorders in Angle Class III

• **Aetiological hypothesis**
  – The baby is layed on high pillow
  – Early loosing of the primary molars for the reconstruction of the mastication
    the mandible will be in forced forward position
  the primary incisors set in crossbite, after the changing of the dentition
  the crossbite remains
Diagnosis of Angle Class III

- **Soft tissue, face analysis**
  - The thick of the tip of the chin can form the esthetics of the profile better or worse
  - The nasolabial angle can also play an important role in esthetics (110°)
Diagnosis of Angle Class III

• **Examination of the dentition and jaws**
  – Usually the occlusion is Angle Class III
  – Crossbite of the incisors *(not always!)*
  – The severeness can be more serious because of
    • Less developed upper jaw *(especially in CLP patients)*
    • Narrow upper dental arch
    • Aplasia in the upper jaw
Diagnosis of Angle Class III

• **Functional analysis**
  
  – Determining of the real rest position of the mandible (rest balance of the orofacial muscles)
  
  • Positioning of the head (FH || horizontal plane of the head)

  • Asking the patient to tell a proper consonant (as m) (the mandible returns into a rest position…)

  • Stressfree situation

  + have to take care of the return of the mandible from the rest balanced position to the total (habitual) occlusion (max. intercusp.)
Diagnosis of Angle Class III

• **Movement of the mandible**
  – Free phase: from rest position to initial position
  – Articulating phase: from initial contact position to CR

• **True rotation** (anatomically and functionally the same – real Angle III) *unfavorable*

• **Rotation with forward movement** (in the articulating phase the mandible will be in progenical forced crossbite) *favorable* (exception: pseudo forced crossbite - bad prognosis)

• **Rotation with backward movement** (usually serious cases, especially well expressed progeny) *very bad prognosis*
Diagnosis of Angle Class III

- **Cephalometrical measurements** (dentoalveolar, skeletal problem or both?)
  - Influence on the treatment plan and the type
    - **Dentoalveolar Angle Class III**
      - There is no discrepancy in the relationship of the jaws, ANB angle accept., unfavorable incisor tilting – treatment in time!!!: correction of the axis’
    - **Skeletal Angle Class III - mandibular problem (overgrowth)**
      - Relation of the jaws is mesial - accept. SNA angle, SNB angle is bigger, ANB is negative, Gonion is bigger
      - The body and the ramus of the mandible are elongated, force forward positioned, tongue is flat and forward pos., unfavorable incisors’ situation – treatment need to be started in the mixed dentition, otherwise SURGERY
Diagnosis of Angle Class III

- Cephalometrical measurements
  - Skeletal Class III, *maxillary* problem (*underdeveloped*)
    - The sagittal, basal relation is mesial, SNA angle is little, SNB is angle accept.
    - Small maxilla is in retrognath position, mandibula is normal
    - CLP patients - desirable starting time of the treatment in the early mixed dentition, sometimes Delaire-mask can be useful
  - Skeletal Class III, *overdeveloped mandible, underdeveloped maxilla*
    - The *sagittal, basal relation is mesial*, SNA angle -little, SNB angle- higher, ANB -negative
    - *Opened vertical tendency* can be combined with open bite, narrow upper jaw, often 4 premolar extractions and surgical solutions
    - *Deep vertical relation* can be combined with deep bite, ideal incisor position can be obtained with early treatment, occlusal forces can hold the mandible in normal position
Treatment of Angle Class III

• Depends on:
  – Age of the patient (the higher age - the lower growth potential - the skeletal relation is stabilised)
  – Stage of the dentition
  – Type of the anomaly
Treatment of Angle Class III

Factors to be considered for planning the treatment:
• Patient’s concerns and motivation regarding the treatment
• Severity of skeletal pattern
• Degree and direction of any future growth
• Can patient achieve edge-to-edge incisor contact?
• Overbite
• Degree of dentoalveolar compensation present
• Degree of crowding
Treatment of Angle Class III

• Primary dentition

  – Early signs can be observed
    • The child pushes his/her mandible habitually forward, the tongue is flat and in forward position
    • Consequently edge to edge occlusion with attrition, or progenical crossbite with „overlapping” can be fixed
    • After changing of the primary incisors, the primary canines could be held in bad relation, permanent incisors stuck in crossbite

Usually the trimming of the primary canines is enough, sometimes chin cap could be helpful

Spatule exercises (eg. handle of the toothbrush, 3x10 minutes per day)
Treatment of Angle Class III

- **Mixed dentition**

  Aim: to restore the ideal relation of the incisors as soon as possible

  - *Dentoalveolar* Class III – correction of the axis of the incisors with spatule exercises, or upper removable appliance

  - *Skeletal* Class III, *overdeveloped mandible* – aim: positioning of the mandible backwards, to reduce the growth of the lower jaw

  *Early mixed dentition*: extraction of the lower primary canine and the lower primary first molar can be helpful
Treatment of Angle Class III

– Skeletal Class III, underdeveloped maxilla
aim: to increase the growth of the maxilla
in early mixed dentition extraoral force
(Delaire mask) can be useful

transversal expansion of the upper jaw
(Hyrax) needs often regarding the lateral
crossbite in Angle class III
Treatment of Angle Class III

- Bone apposition and expansion in the dental arch with removable appliance
  - Fränkel III. functional appliance
Treatment of Angle Class III

Bone apposition and expansion in the upper dental arch
Positioning the mandible backwards, reducing the growth of the lower jaw
Treatment of Angle Class III

Cephalometric changes
Treatment of Angle Class III
Treatment of Angle Class III

– Skeletal Class III, underdeveloped maxilla, overdeveloped mandible–combined cases are more difficult to treat

Treatment in mixed dentition – till the changing of the primary teeth, patient must be in continuous control
Treatment of Angle Class III

• Permanent dentition
  – Limited possibilities - Good result with conservative treatment - only in dentoalveolar Class III
  – Slight skeletal discrepancy can be treated for dental compensation to achieve esthetics – fixed appliances
  – Real Angle class III. : only surgical-orthodontical treatment can be successful (orth-surg-orth)
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1. Orthodontic treatment with fixed appliances
Treatment of Angle Class III

2. Surgical treatment
Treatment of Angle Class III

Initial

Final
Treatment of Angle Class III

3. Orthodontic treatment – to stabilize the situation
Stability of Class III correction

Relapse of Class III correction may be related to

• An inadequate overbite to maintain the proper incisor position

• Unfavourable growth in the AP and vertical skeletal dimension

unfavourable AP growth can be resulted in a relapse of overjet correction whereas unfavourable vertical growth can be resulted in a reduction of overbite
Thank You for your attention!