ПОЛТАВСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ

Department of Orthodontics

Ukraine NOW ua

4 course

Class II (distal) and Class III (mesial) malocclusion. Etiology, pathogenesis, clinic and diagnostic features, planning and treatment in the different age groups

Poltava 2024

Plan of lecture:

1. Class II (distal) malocclusion

2. Class III (mesial) malocclusion.

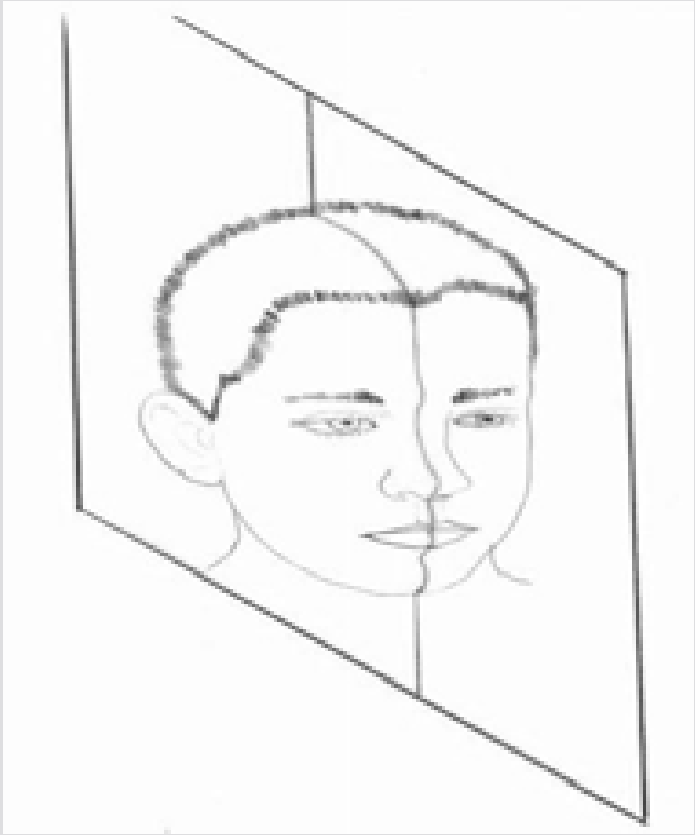
3. Etiology, pathogenesis, clinic and diagnostic features, planning and treatment in the different age groups

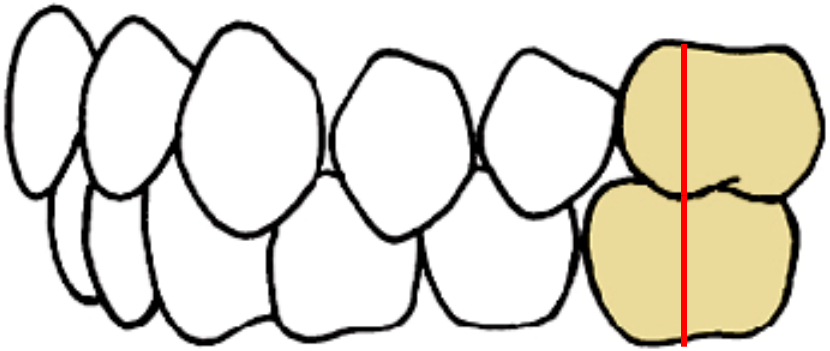
Sagittal Plane

An imaginary plane that passes longitudinally through the middle of the head and divides it into right and left halves. Used to describe anterior-posterior relationships.

- **Describe**

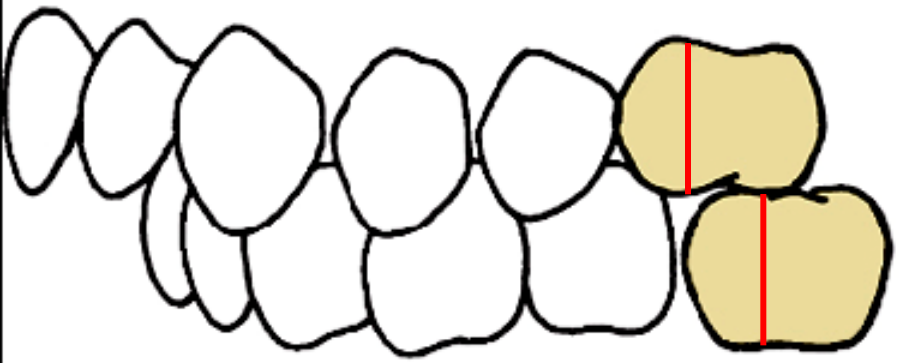
-Canine and molars relationship
-Overjet
-Incisors covering



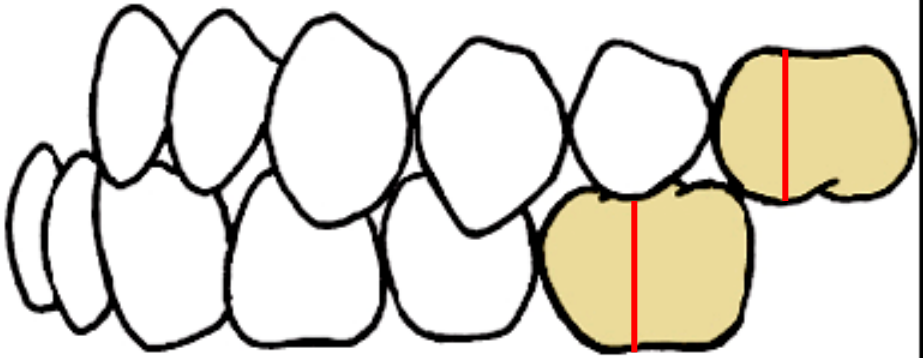


Normal occlusion

Class I malocclusion

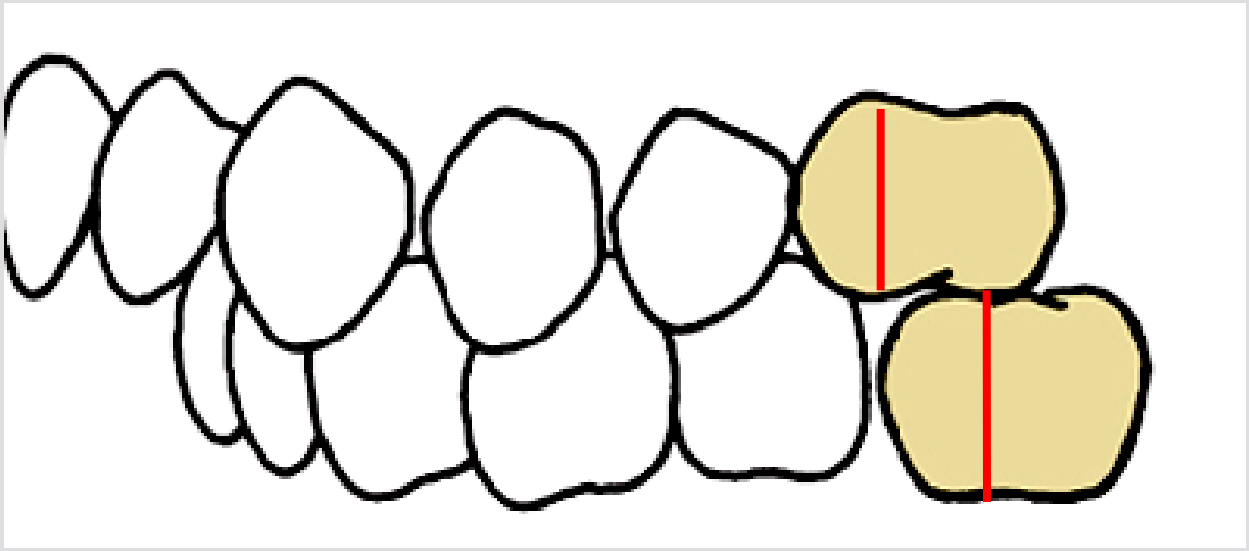


Class II malocclusion



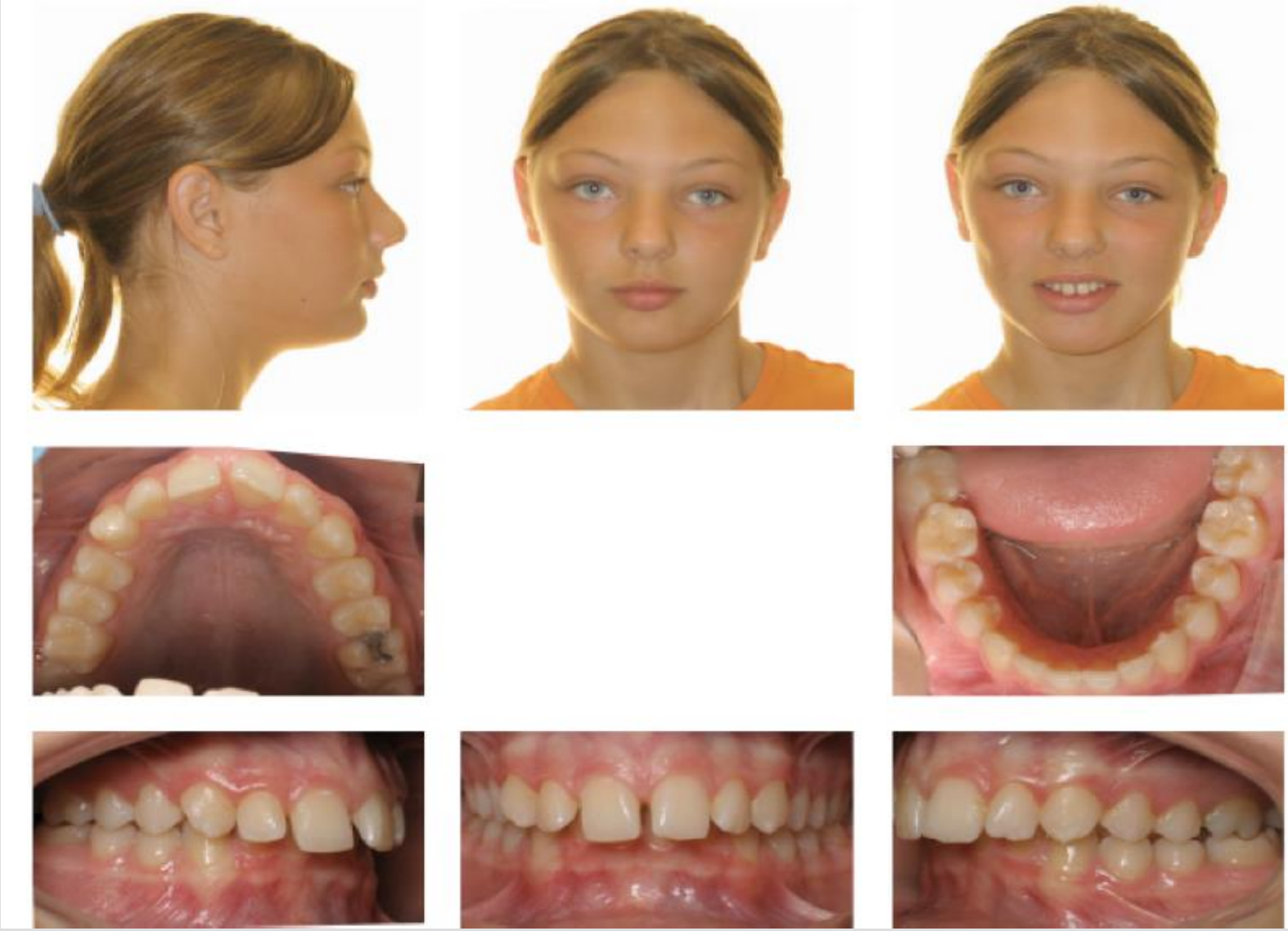
Class III malocclusion

Class II



The mesial groove of the mandibular first permanent molar articulates posterior to the mesiobuccal cusp of the maxillary first permanent molar.

Class II subdivision 1 Relationship



In different classifications:

Angle:
II-1 class

Batelman:
distal bite with hypofunction of muscles,that remove lower jaw forward and orbicularis oris

Forms:
1-lower micrognathia
2-upper macrognathia
3-lower micrognathi and upper macrognathia
4- upper prognatia with narrowing of lateral pert

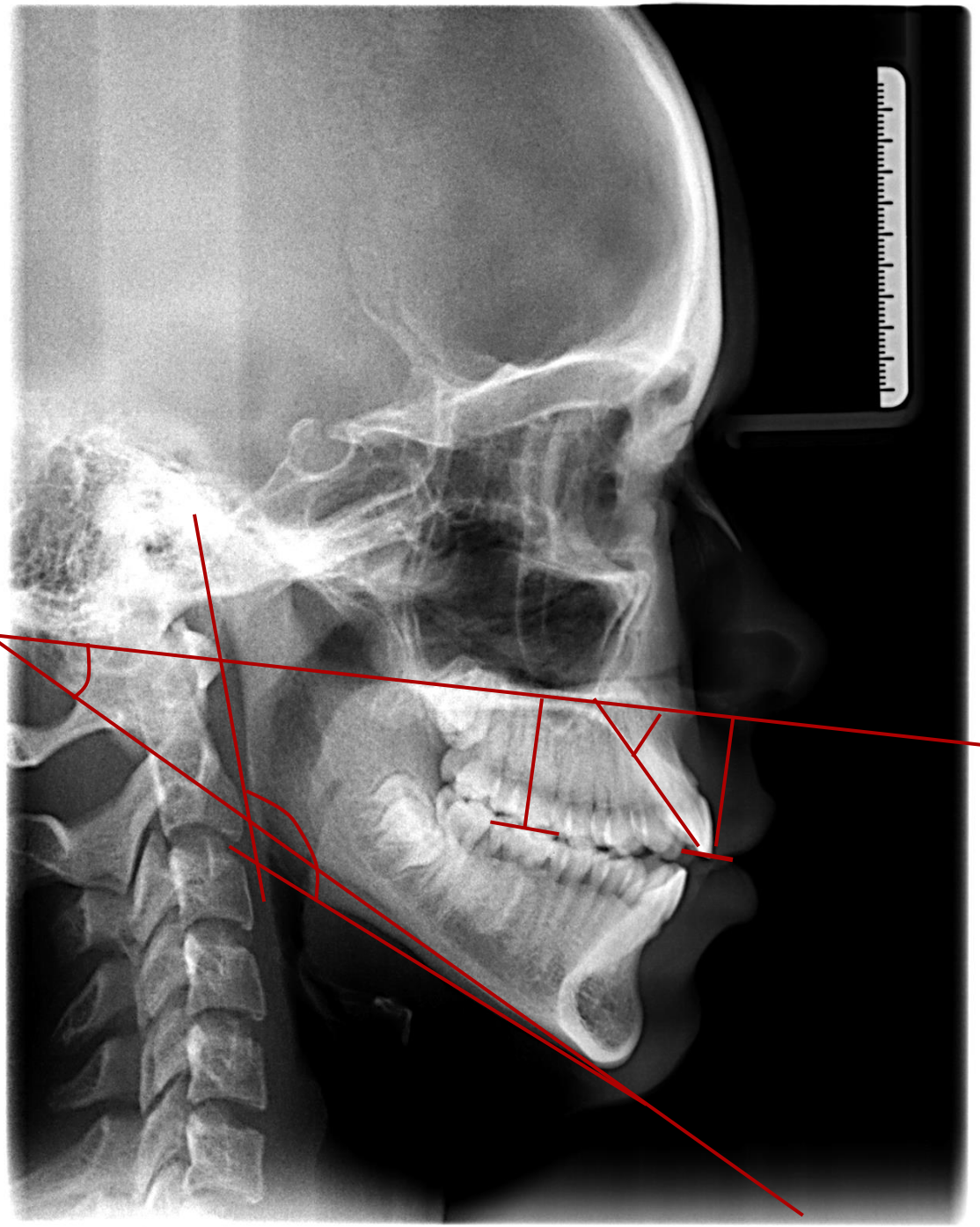
WHO:
Jaw size abnormality
1-lower micrognathia
2-upper macrognathia
Jaw relationship to cranial base
upper prognathia
lower retrognathia
Malocclusion
Distal occluion

Kalvelis:
Prognathia
Roof like deep bite

Grigoryeva:
Prognatic distal bite
Distal bite

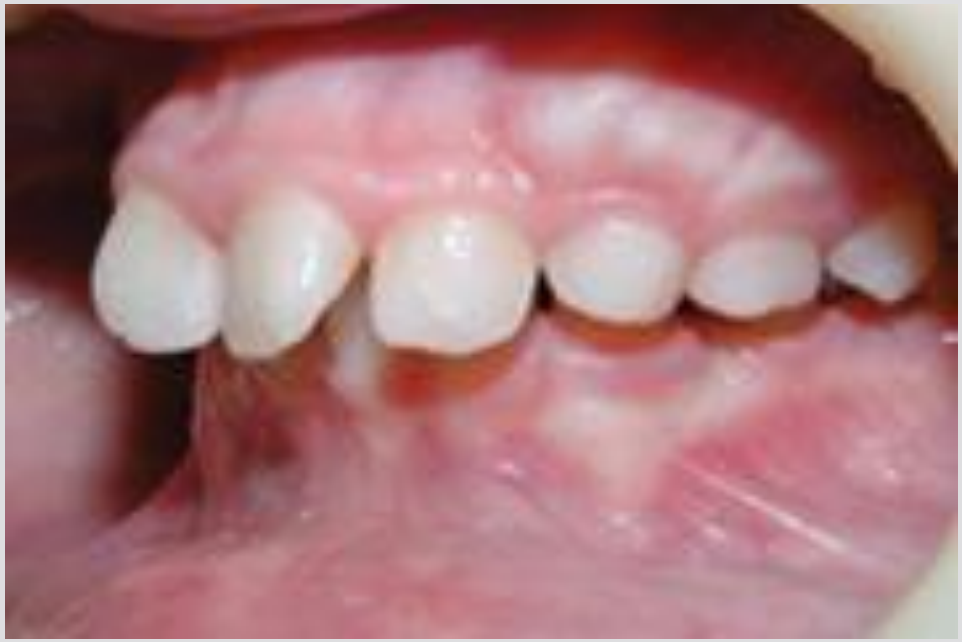
Clinical forms of the distal bite:

- Skeletal
- Dents-alveolar

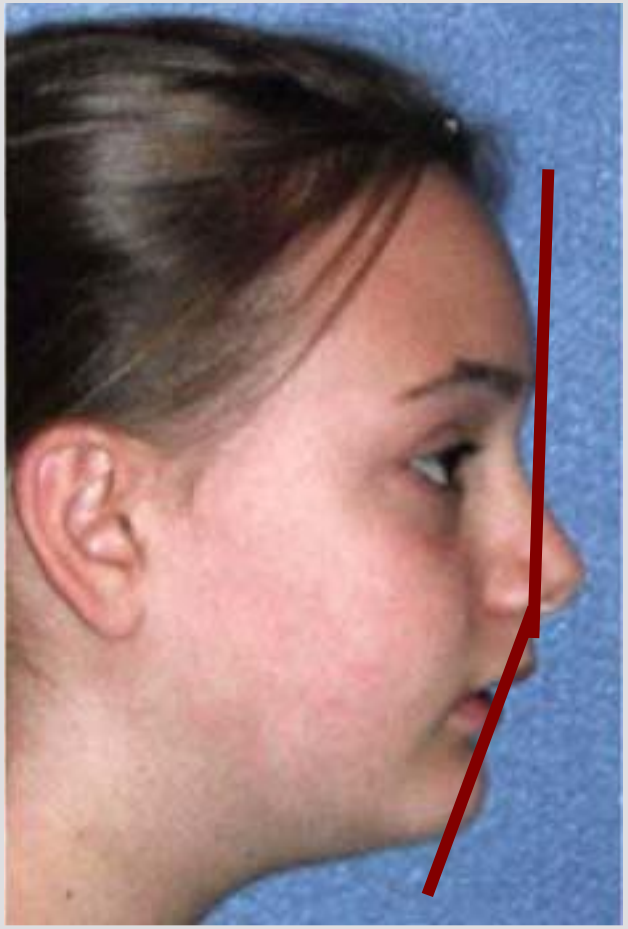


Etiology

inherited innate acquired

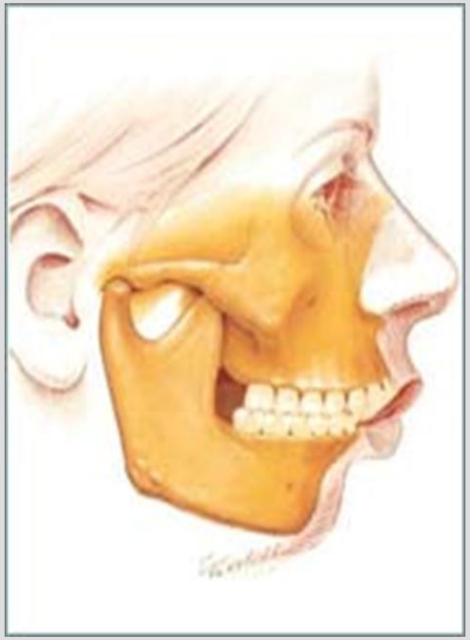


skeletal



Genetic component

- Prognathic maxilla
- Retrognathic mandible
- Combination of both
- Lower micrognathia
- Upper macrognathia

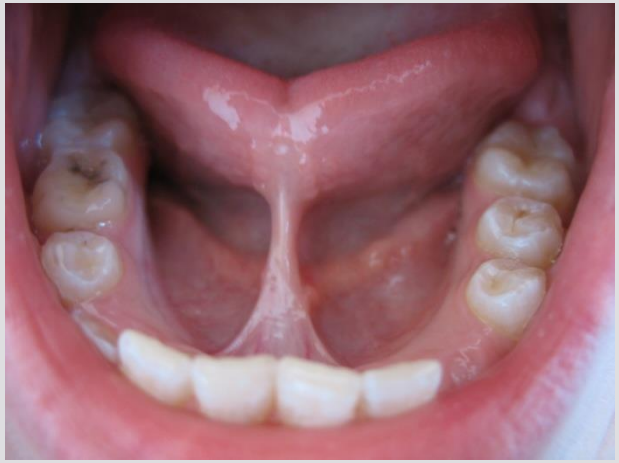


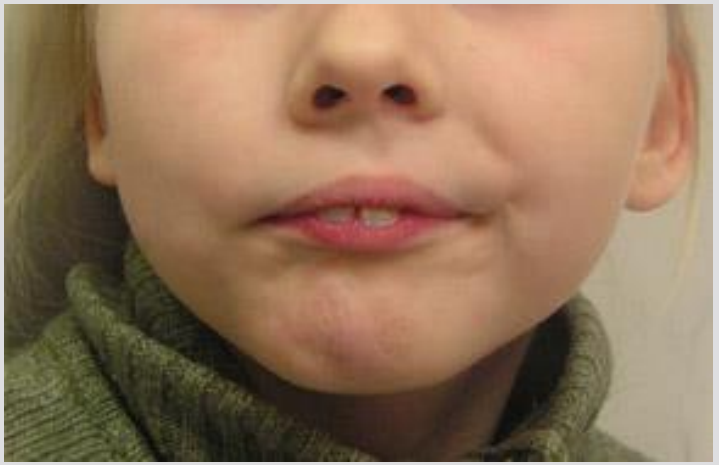
❑Incompetent lips

- ❖ proclined upper incisors

❑Lower lip trap behind upper incisors

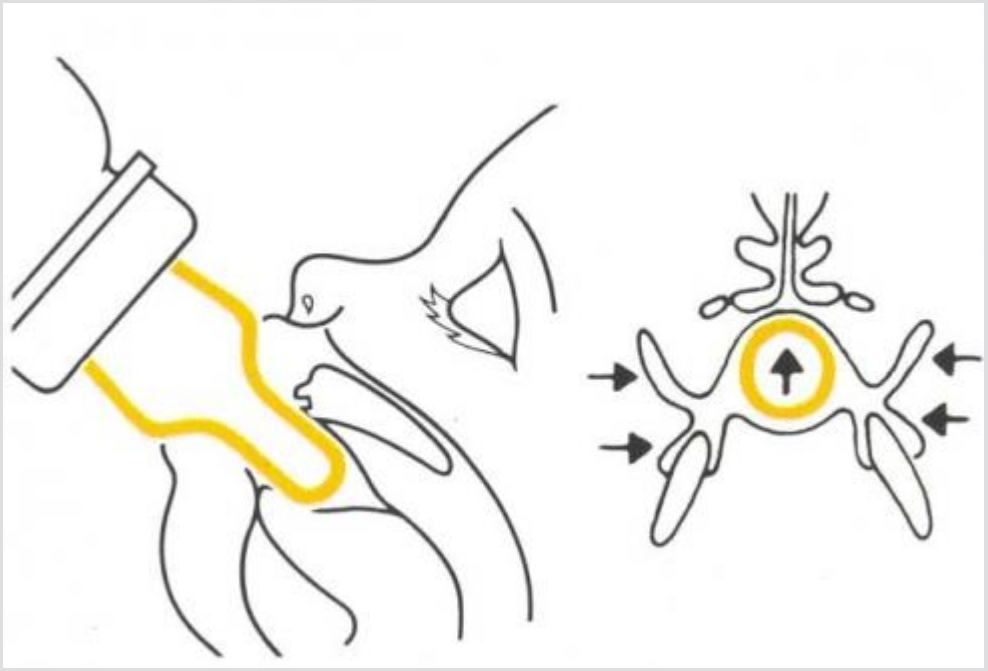
- ❖Proclination of upper incisors
- ❖Retroclination of lower incisors



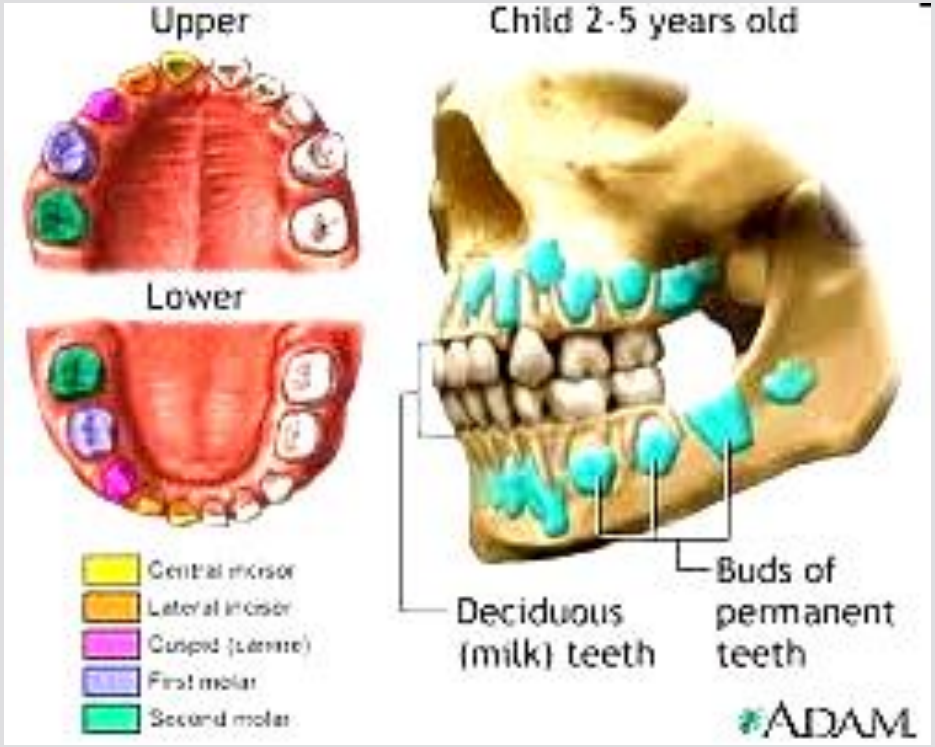


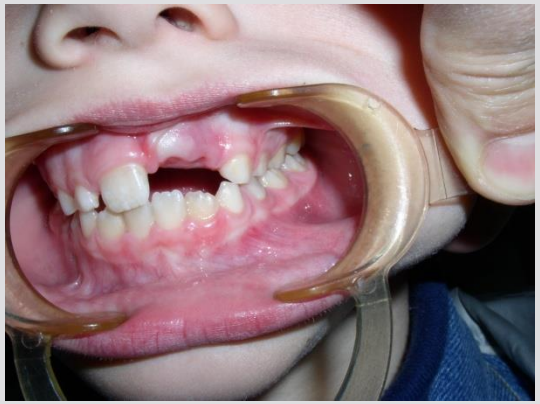
Habits

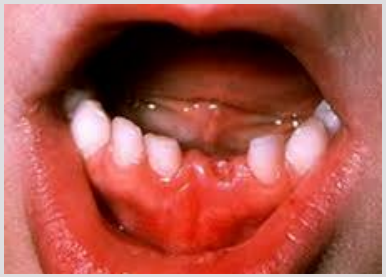
-durable pasifier using



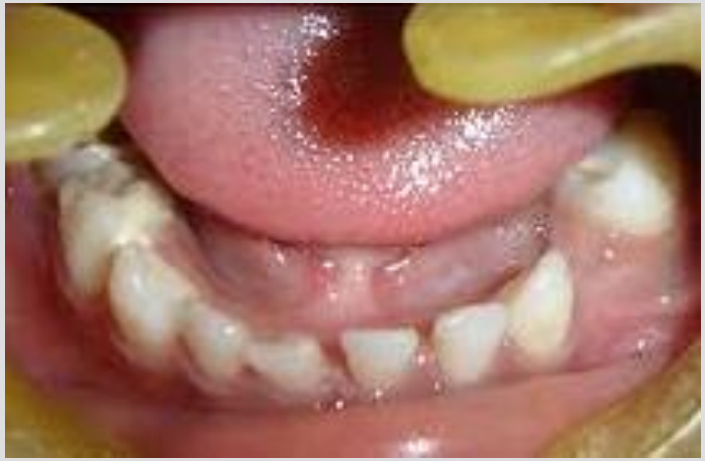
-disorders of teeth eruption' term

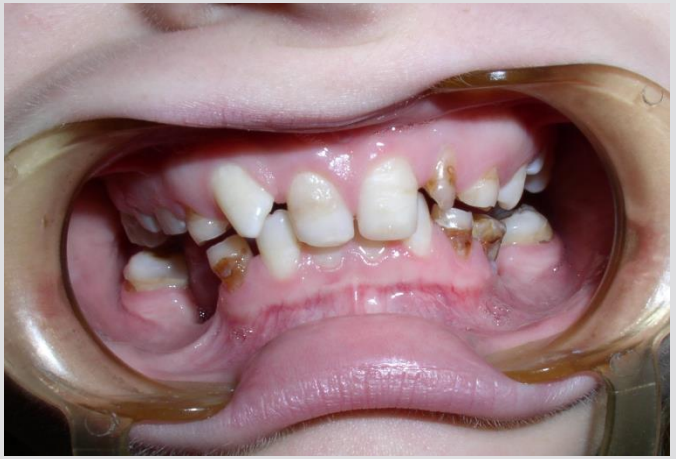


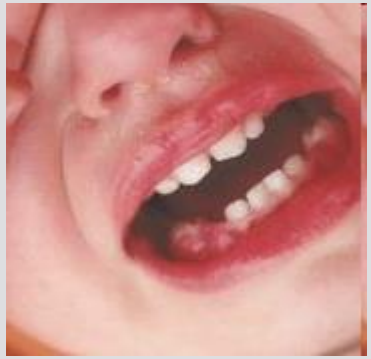




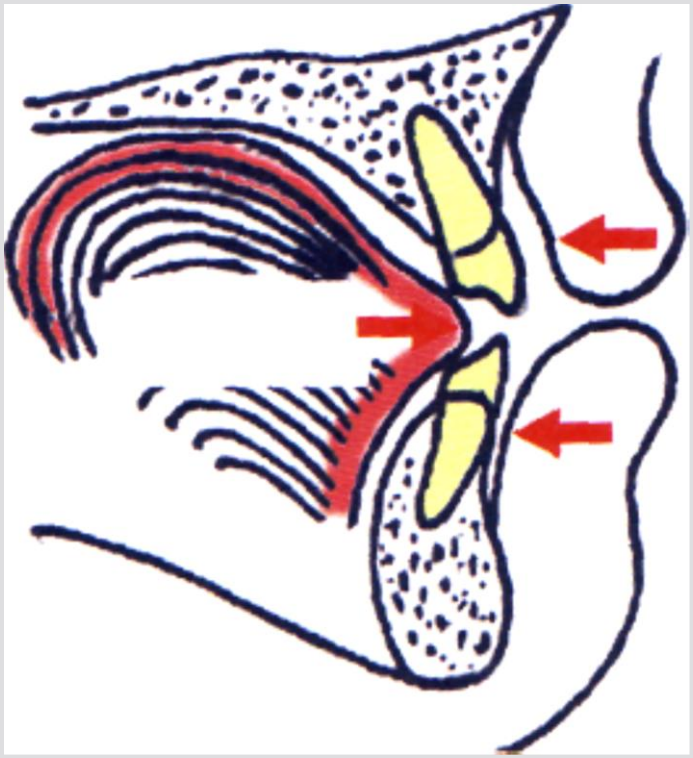
-early extraction of teeth

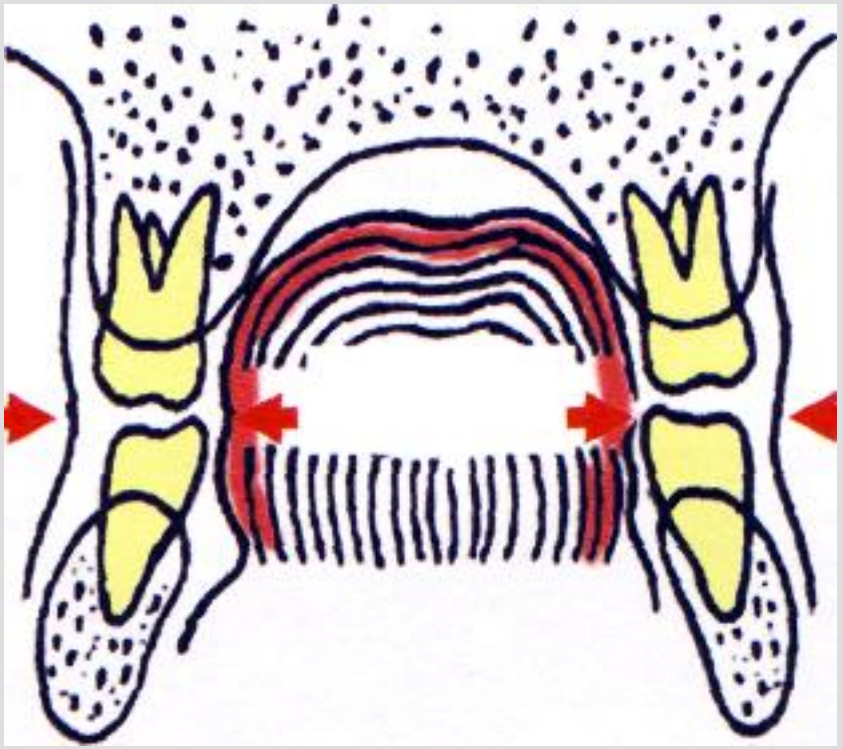




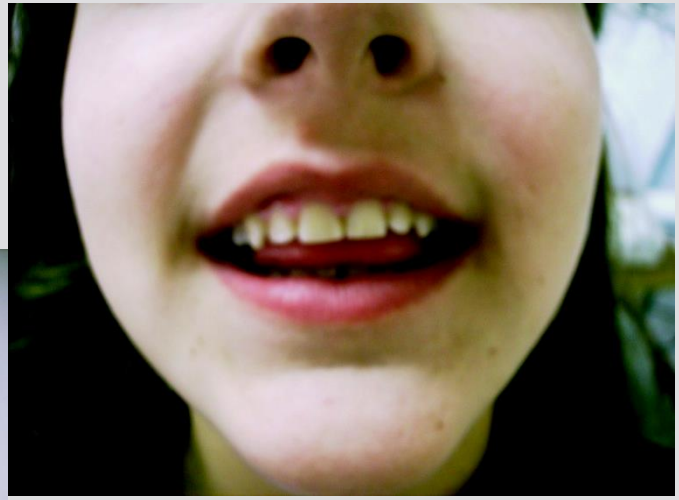


-disorder of myodynamic balance

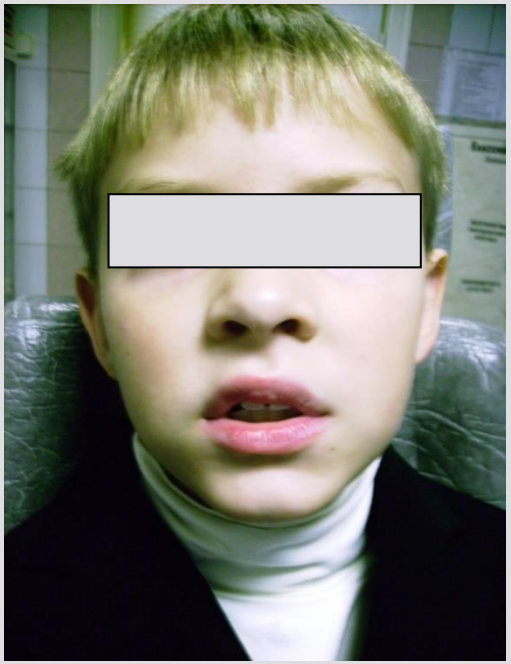


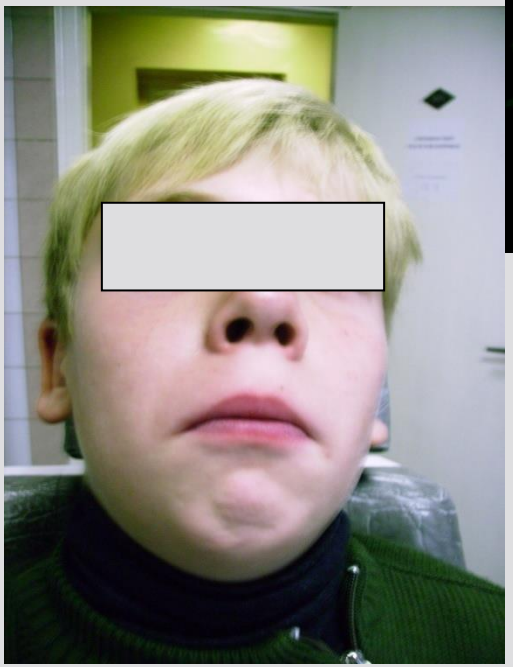


Functional disorders

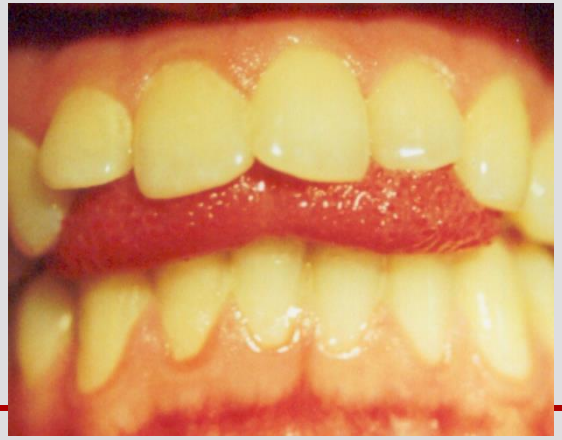


function of breathing



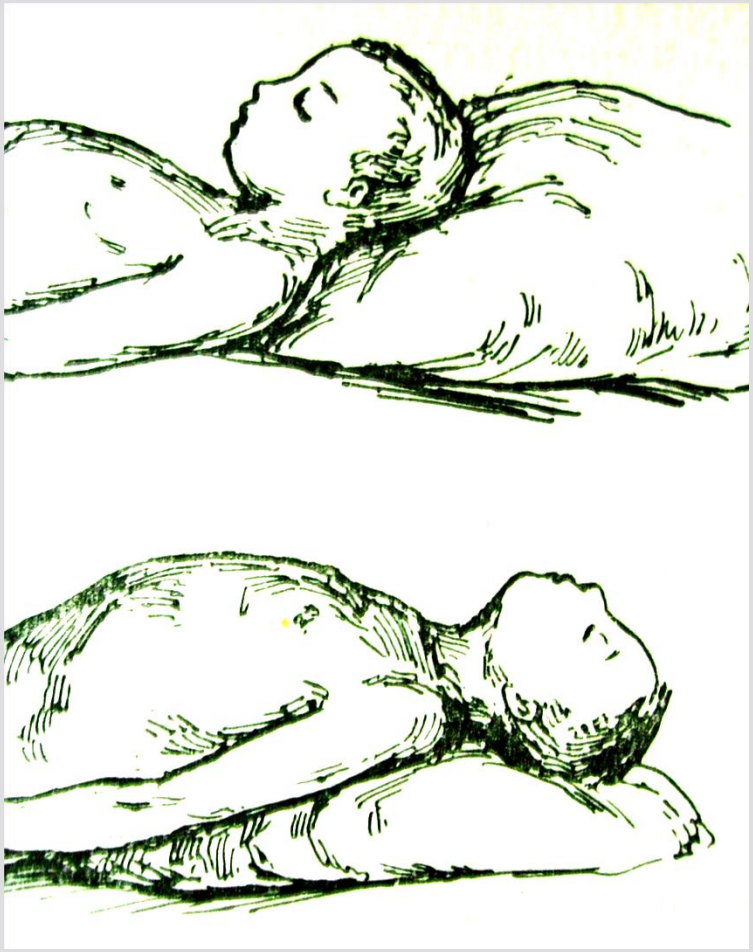


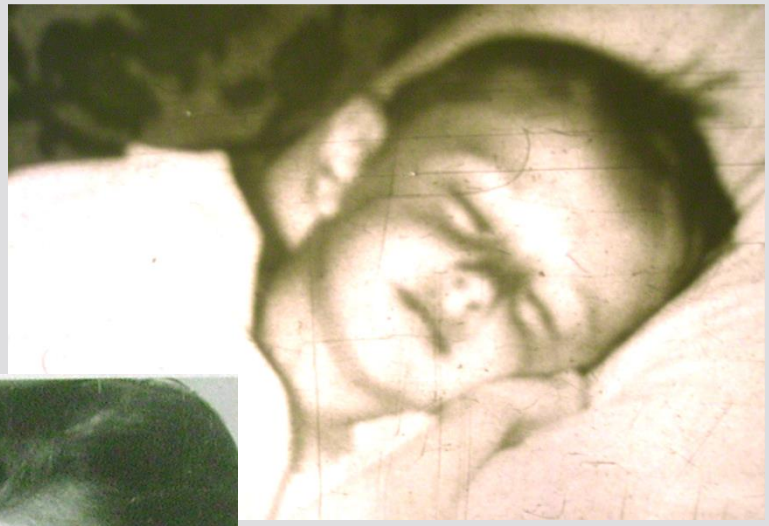
function of speech

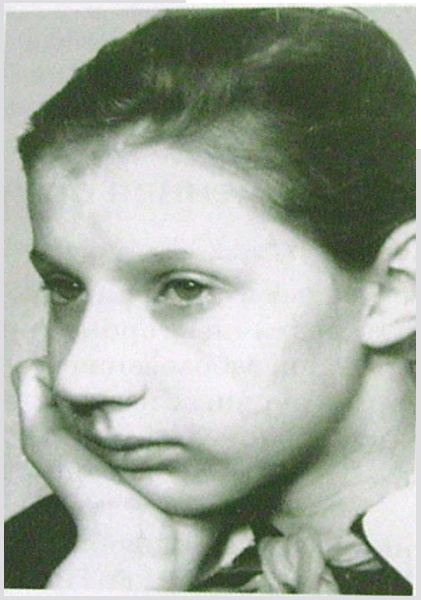


swallowing

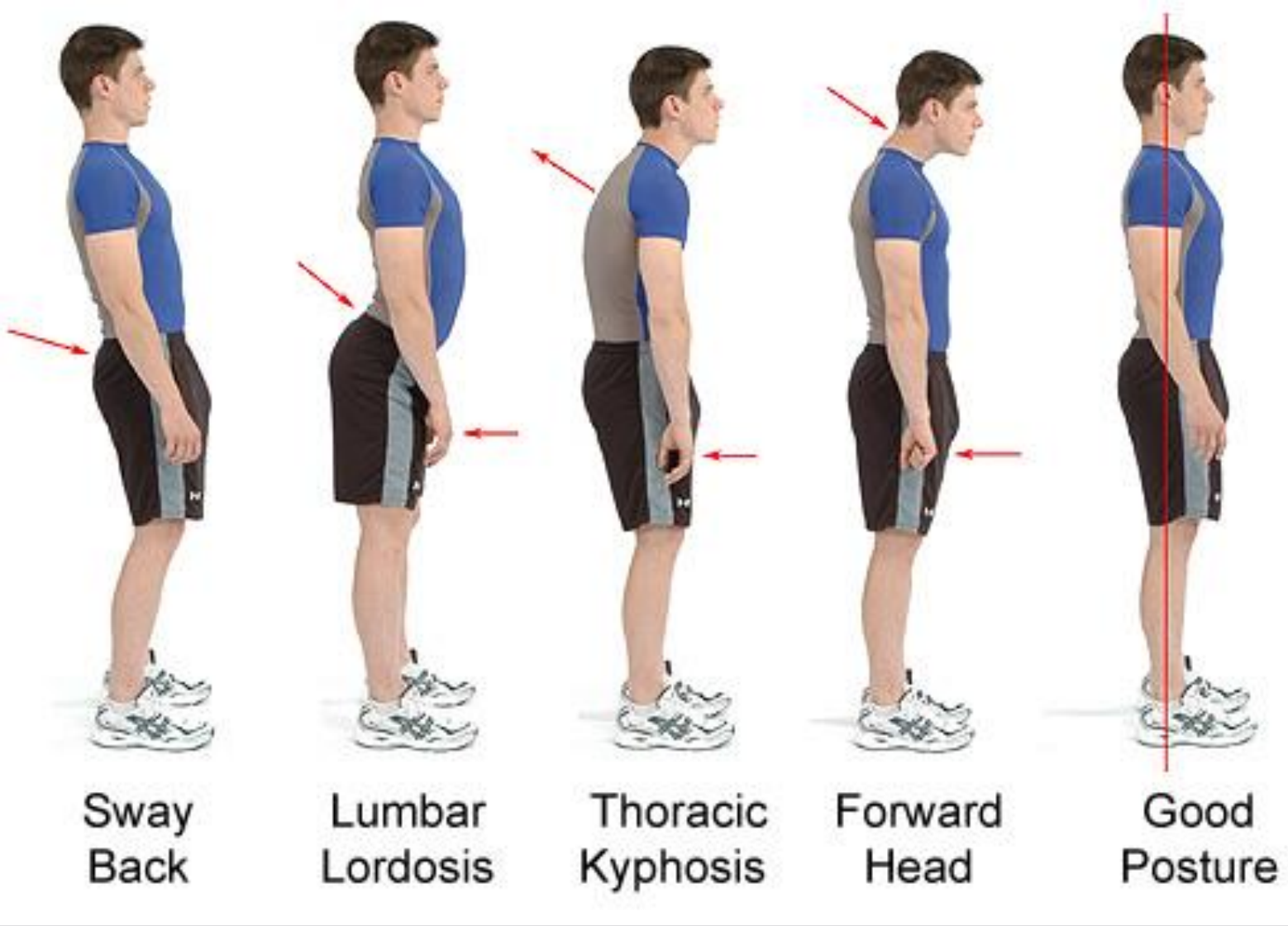
incorrect different body part's position during the day and sleeping



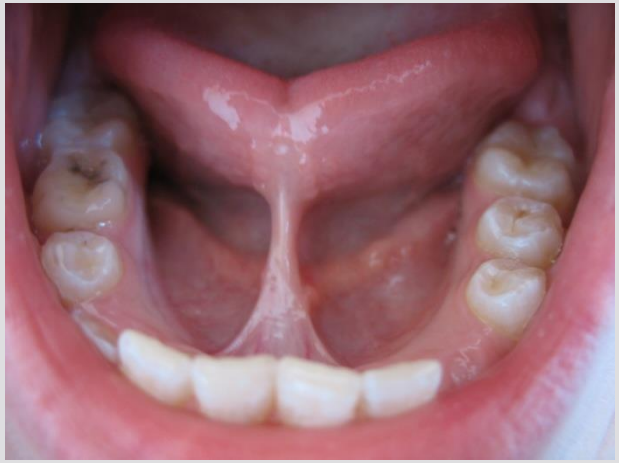


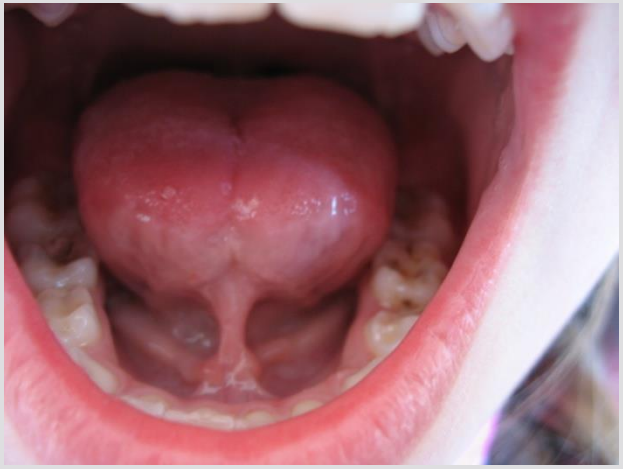


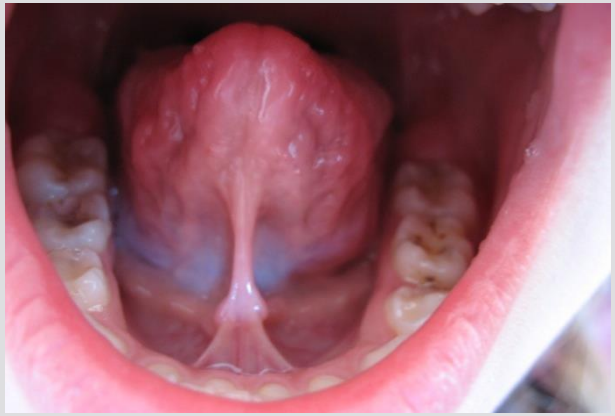
-wrong posture

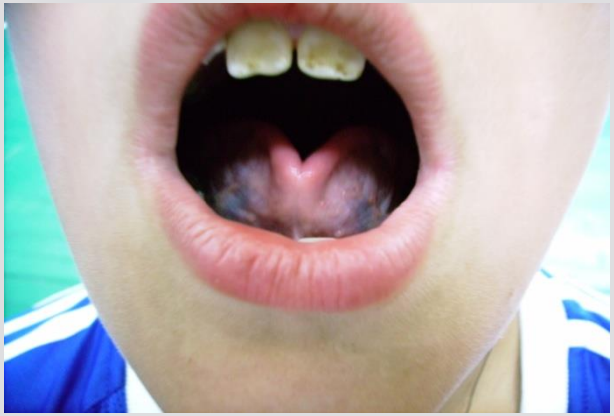


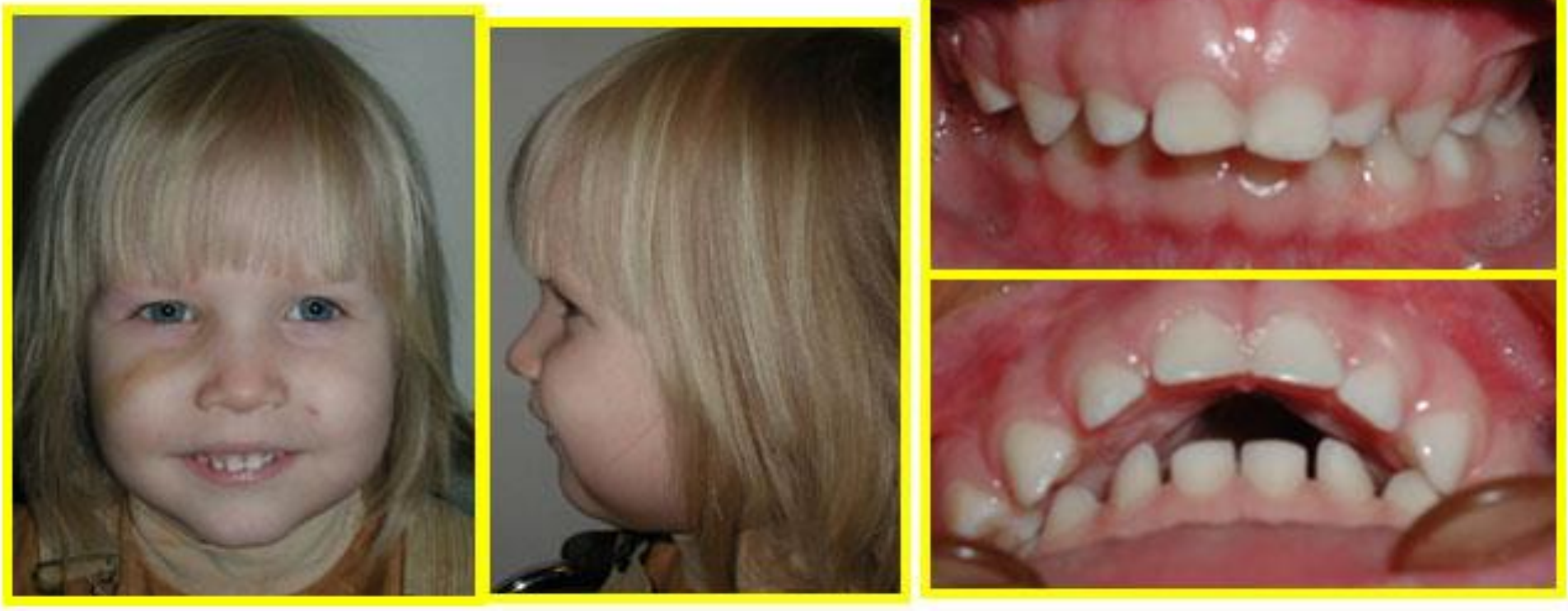
soft tissues disorders



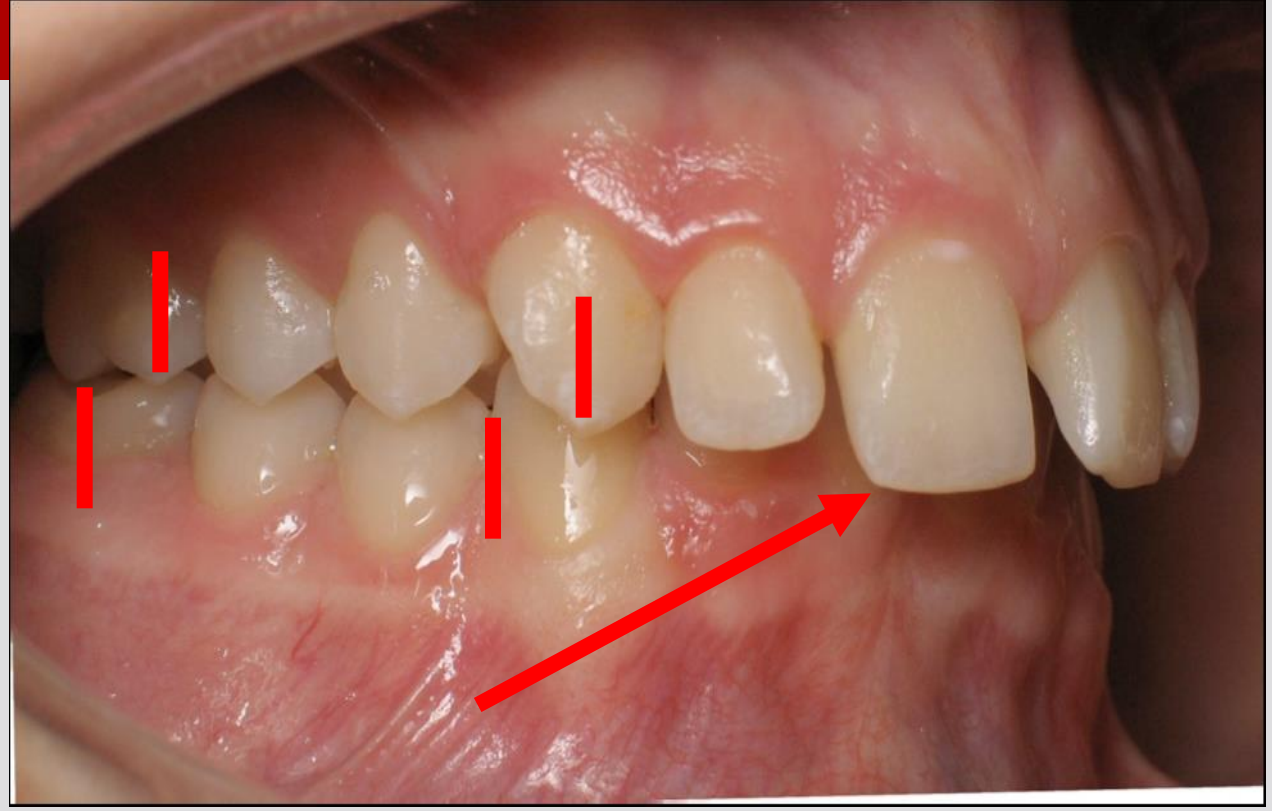








II-1

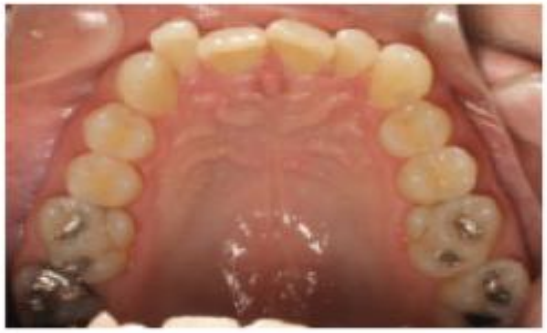


Morfological disorders (dental features)

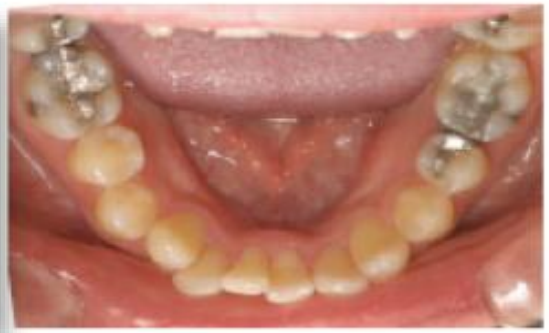
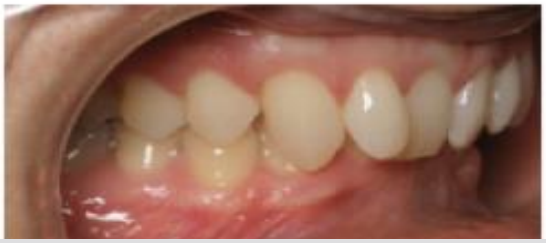
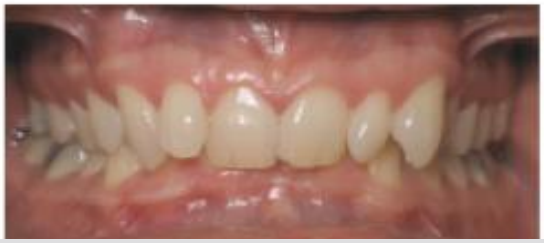
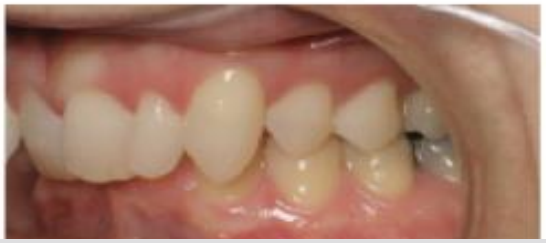
- Class II molar, canine relations
- Proclined upper incisor, or normally inclined;
- Increased overjet
- Open bite, normal overbite or deep bite

CLASS II DIVISION 2



MAXILLARY CENTRAL (AND LATERAL) INCISORS TIPPED ORALLY WITH EXCESS OVERBITE

In different classifications:

Angle:
II2 class

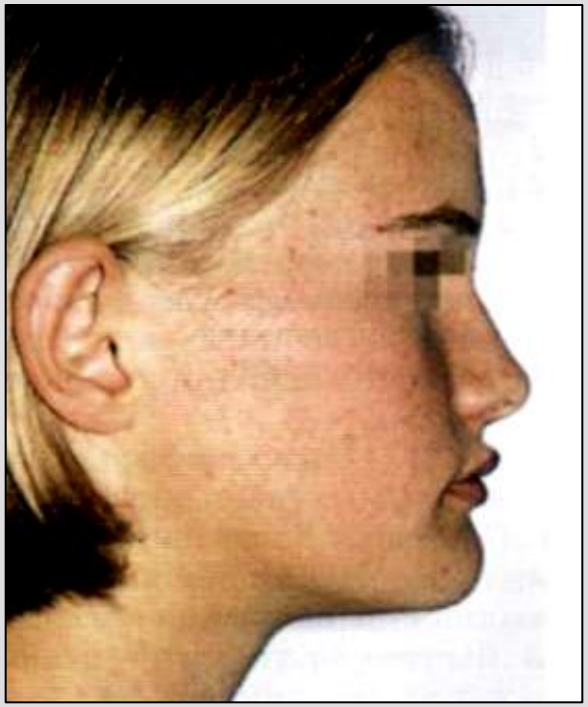
Batelman:
Deep bite with hypofunction of muscles,
that remove lower jaw forward

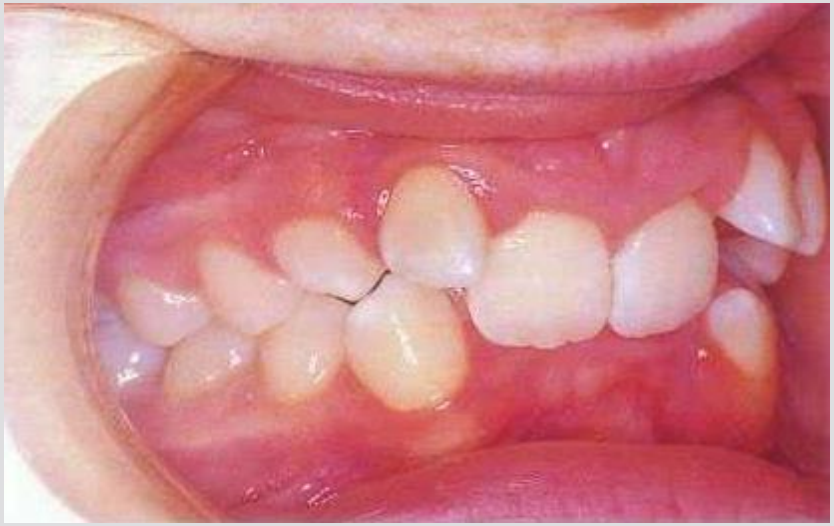
Kalvelis:
Covering deep bite

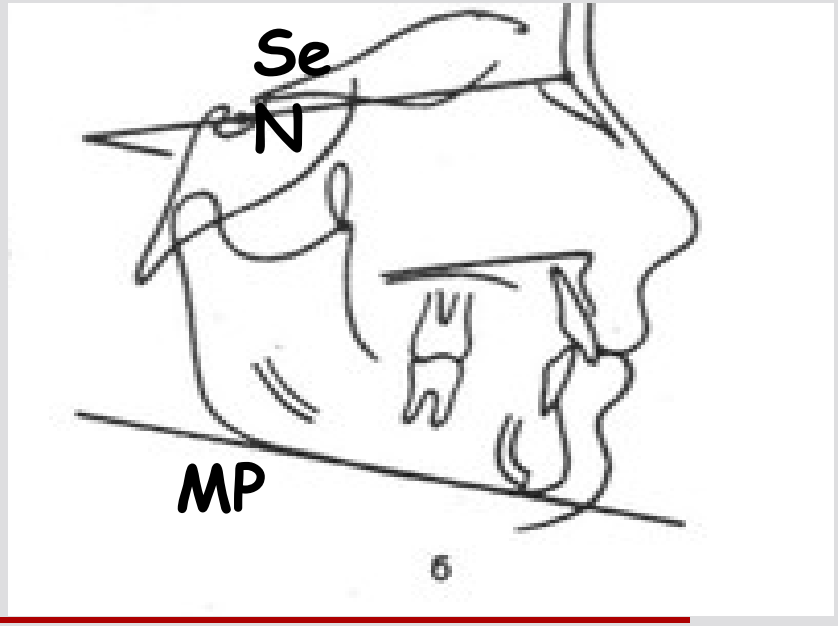
WHO:
distal bite
Covering bite (deep overbite)

Grigoryeva:
Deep distal bite

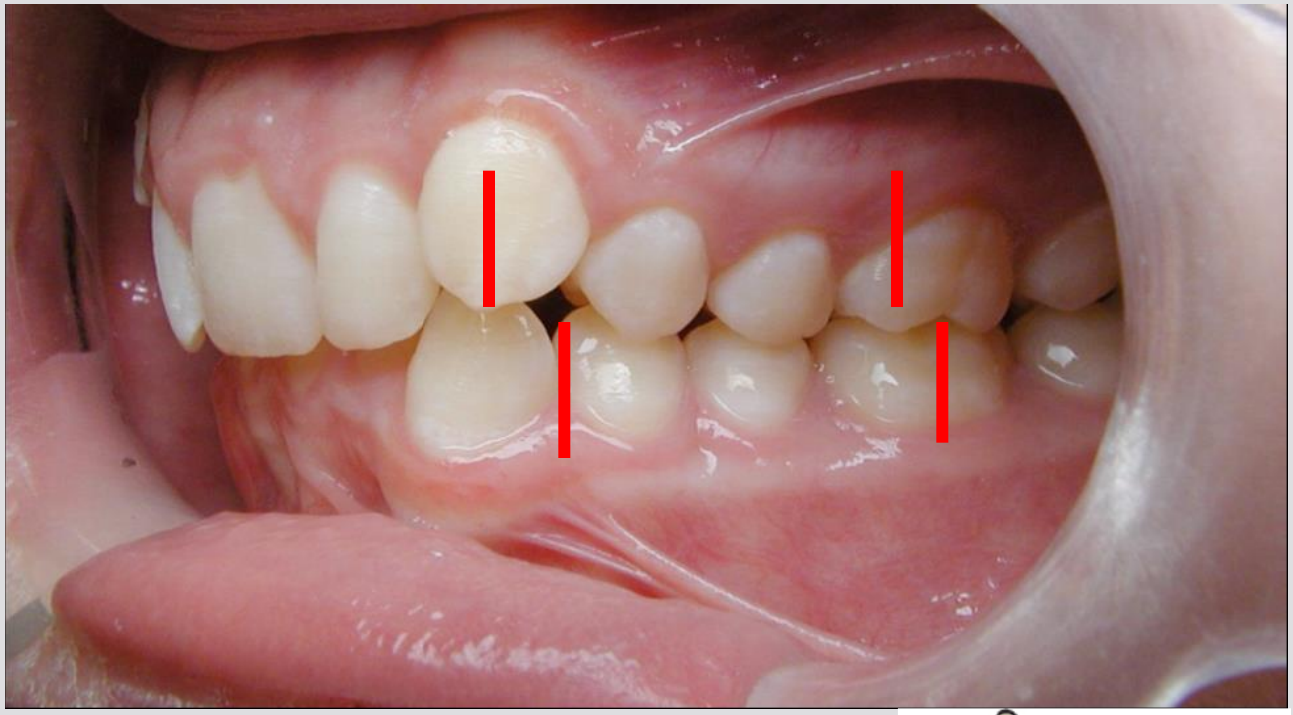
domination of horizontal type of the grows





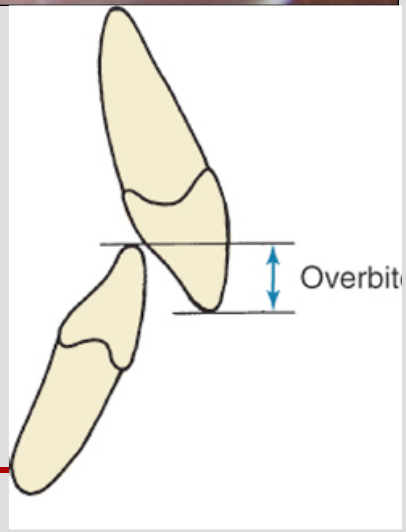


II-2

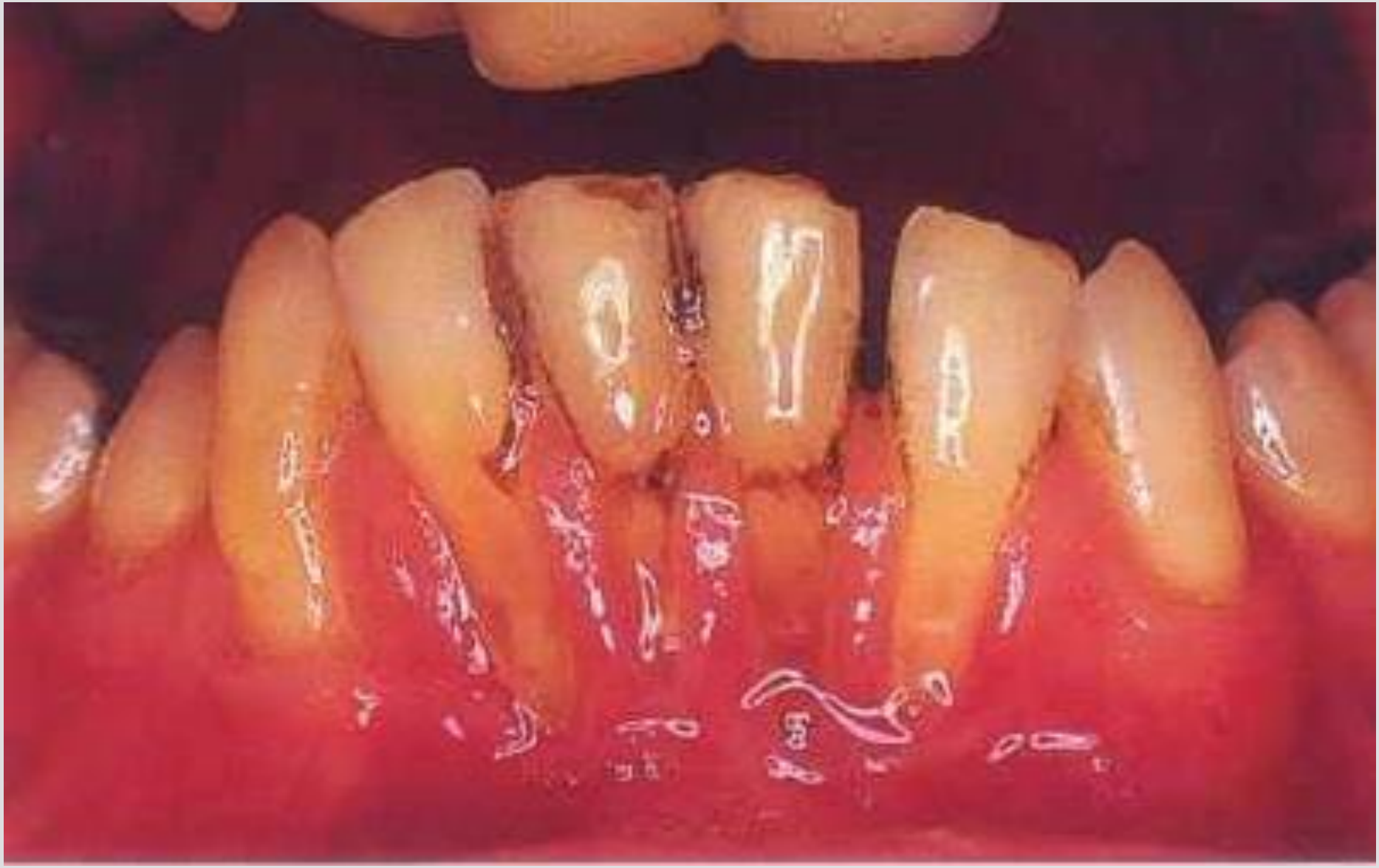


Morfological disorders

- Retrusion of frontal teeth;
- Retrusion of lower frontal teeth;
- Overbite



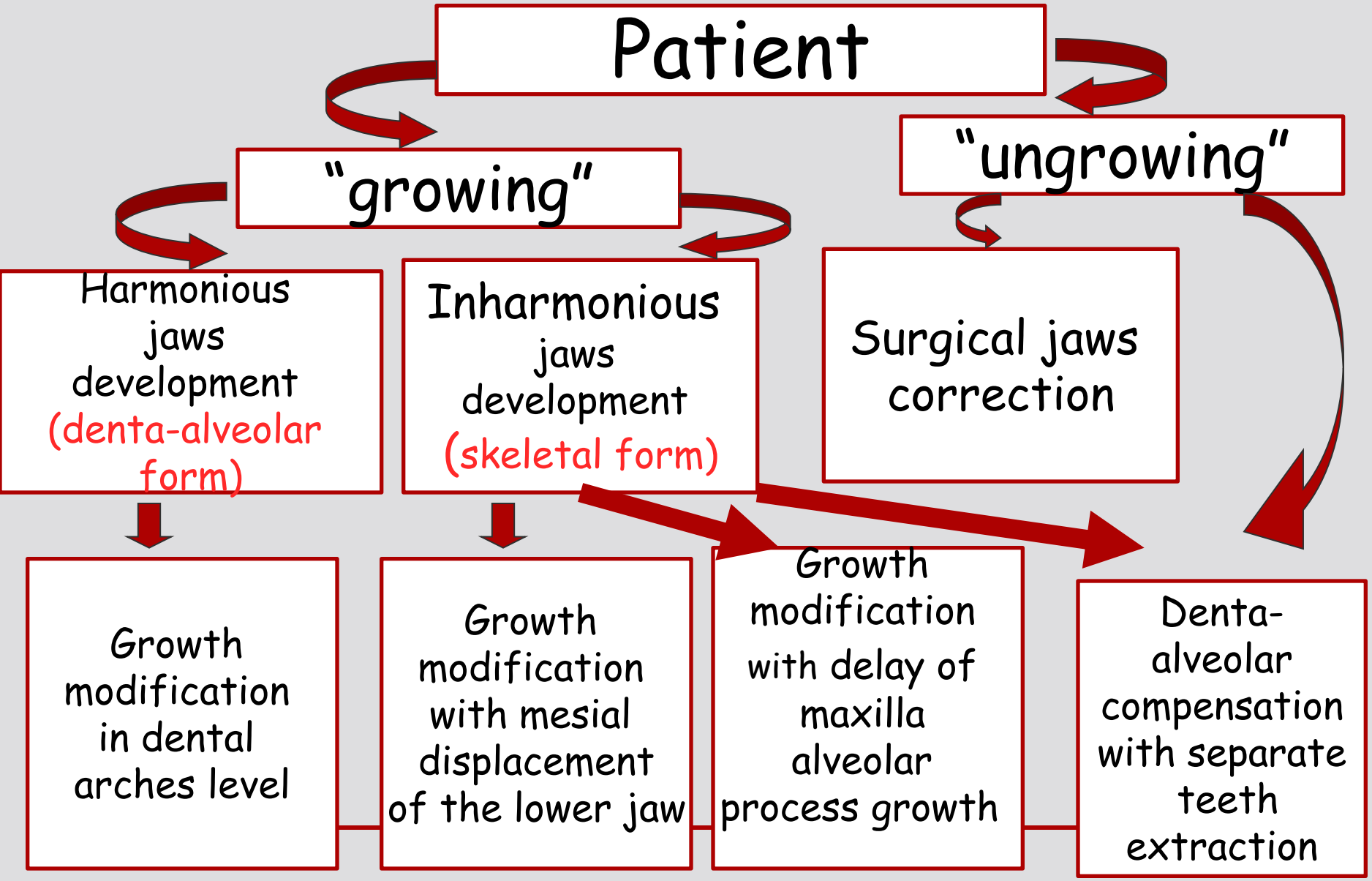
Traumatic overbite



Class II treatment
(according to the patient age and clinical form)

- Elimination of etiological factors;
- Normalization of the function;
- Myodynamic balance normalization;
- Correction of teeth position, dental arches shape, occlusion;
- Growth stimulation of the dental arches apical bases in the parts of their inhibiting;
- Upper jaw growth delay and lower jaw growth stimulation.
- Retention results.

Distal occlusion planning and treatment

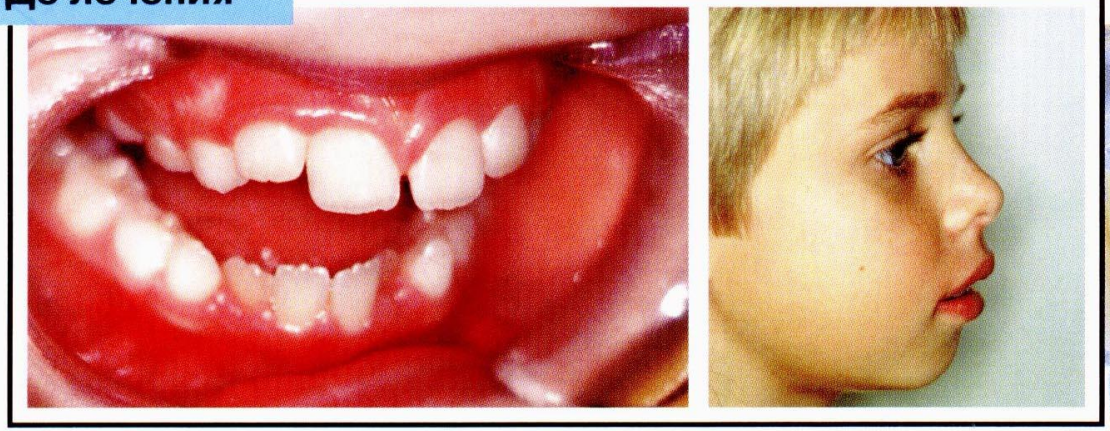


MILKY AND MIXED DENTITION
(GROWING PATIENT)

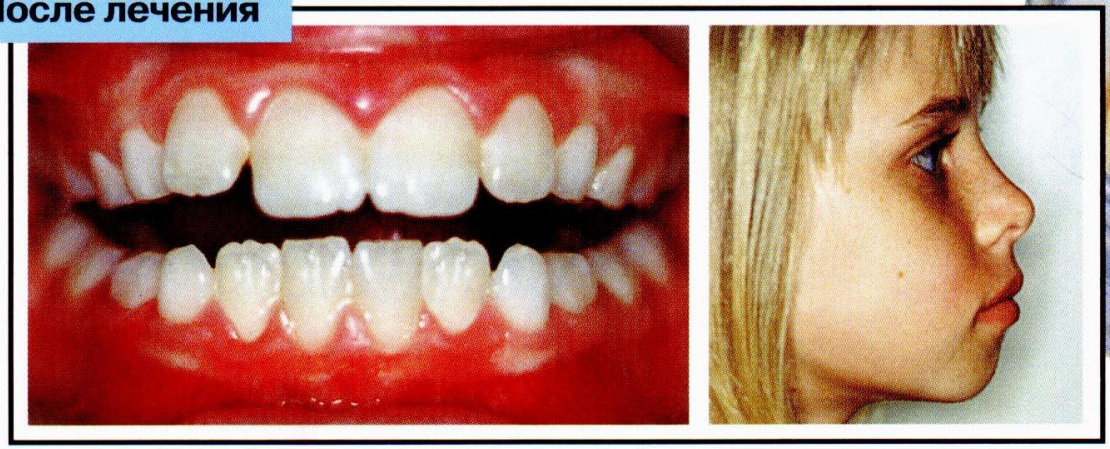
prophylactic appliances

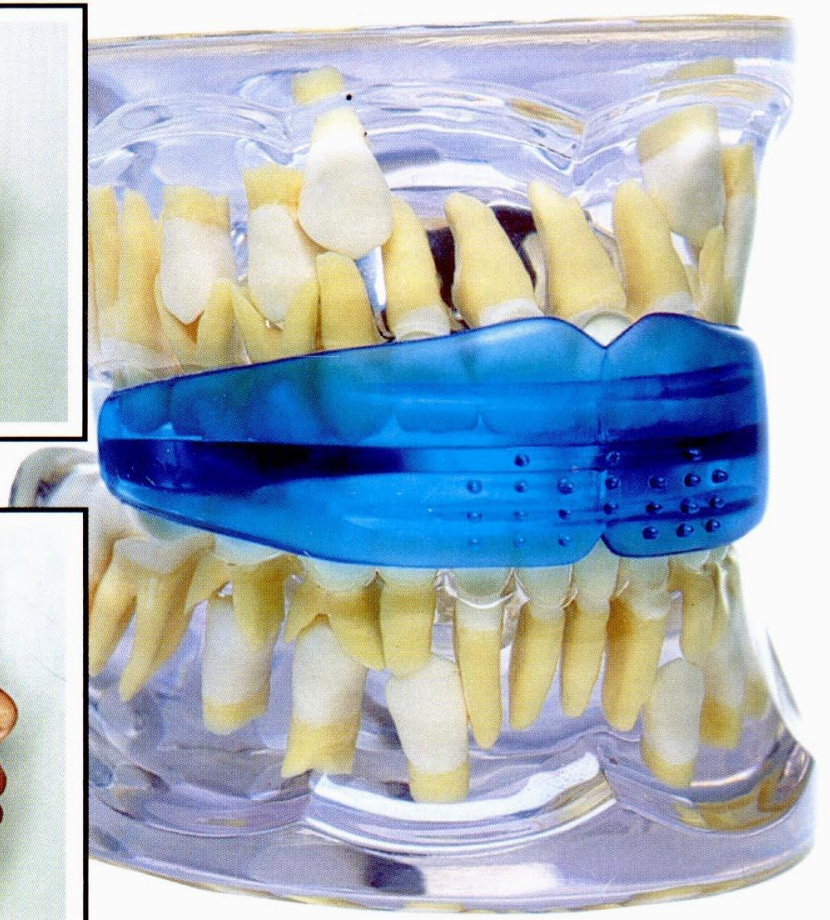
Vestibular Hinz plates

До лечения

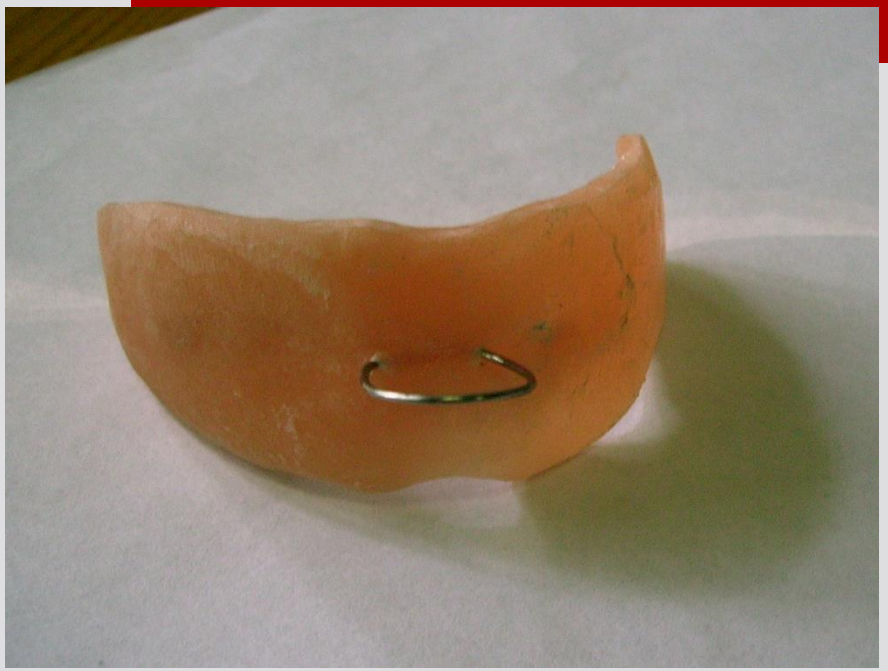


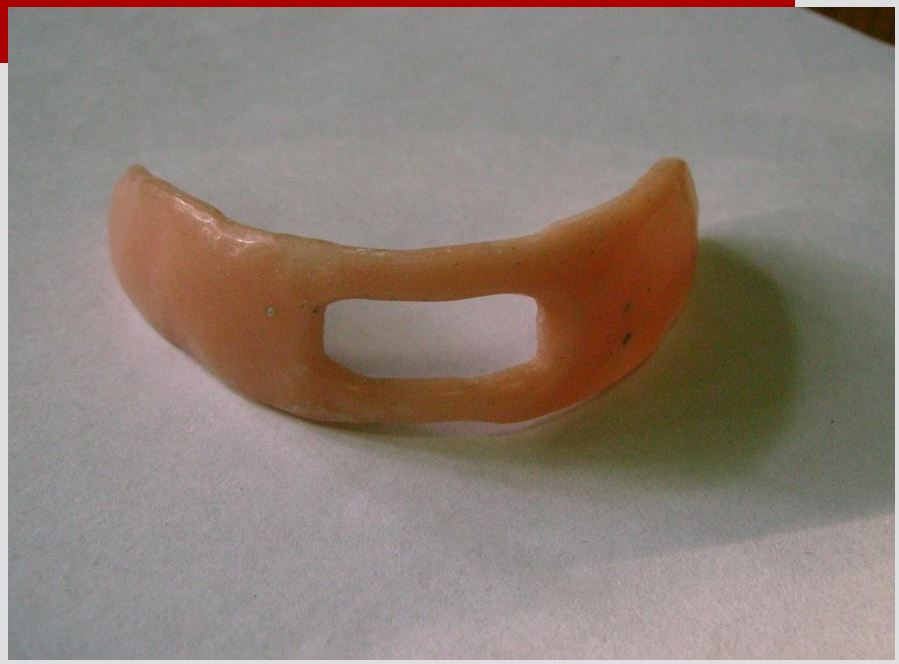
После лечения

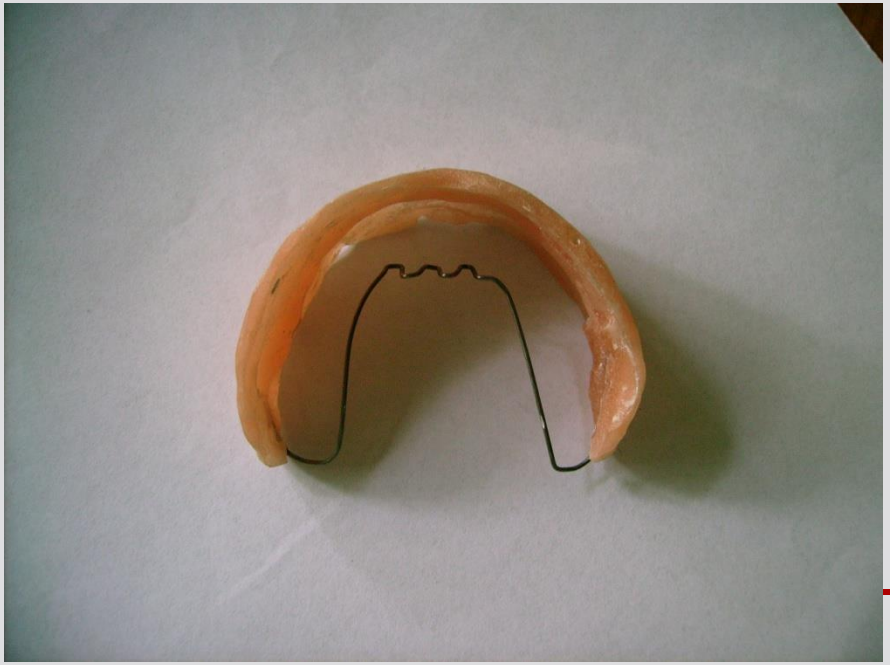


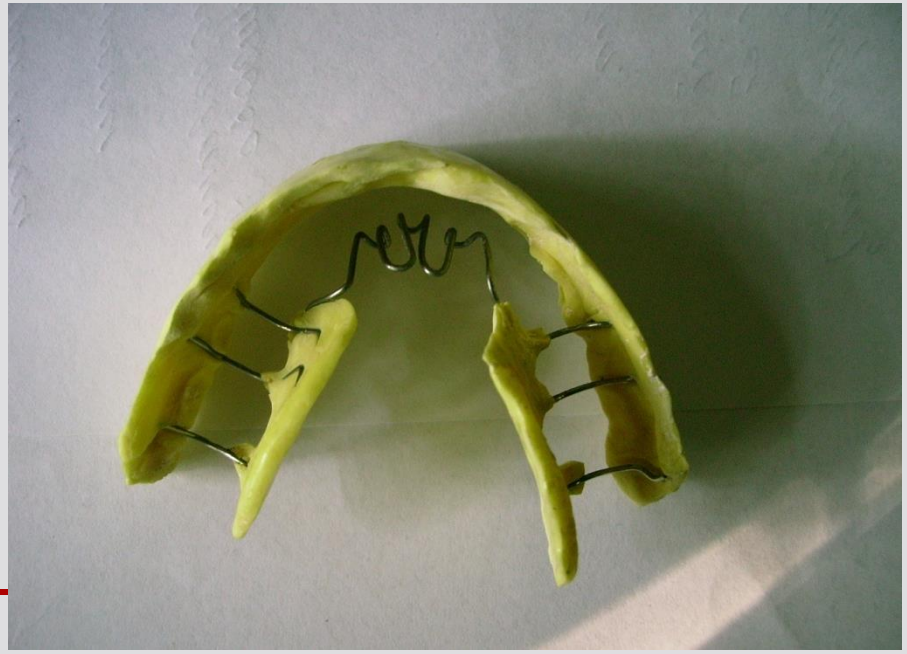


The Pre-Orthodontic *Trainer for Kids*

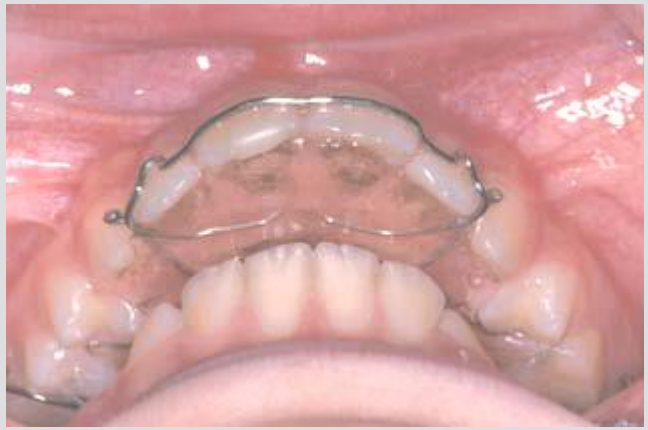








Milky and Mixed dentition (growing patient)



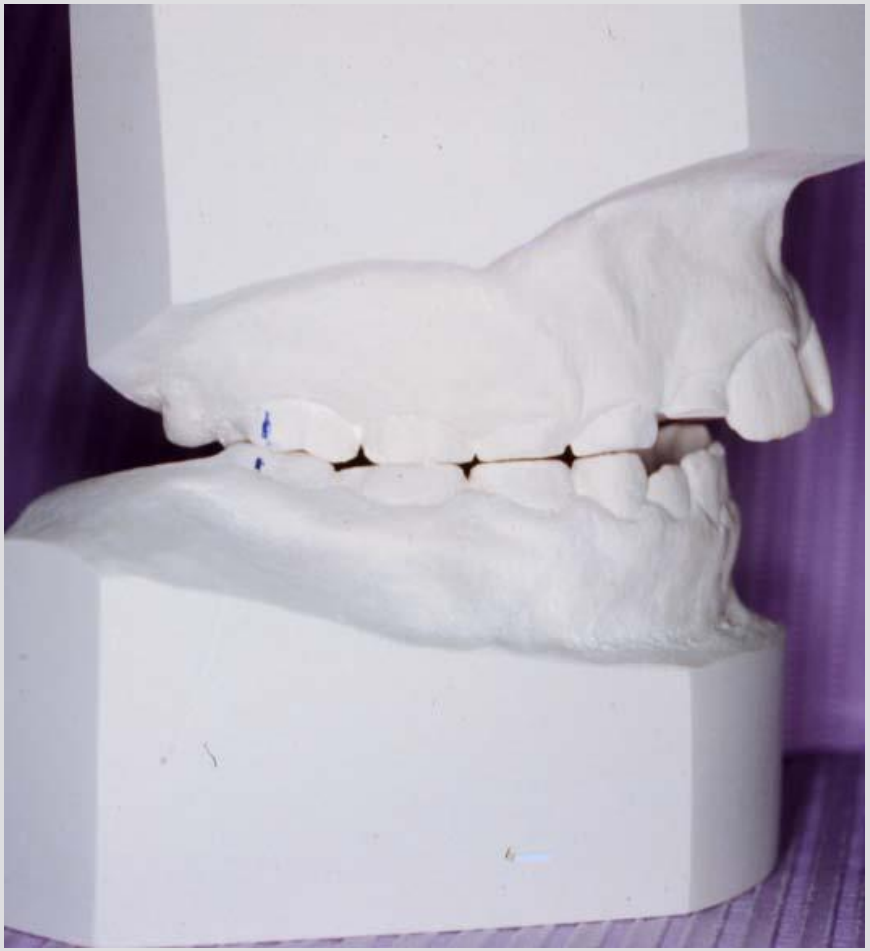
Appliance treatment

- Overbite elimination
- Correction of teeth position, dental arches shape
- Normalization of jaw position

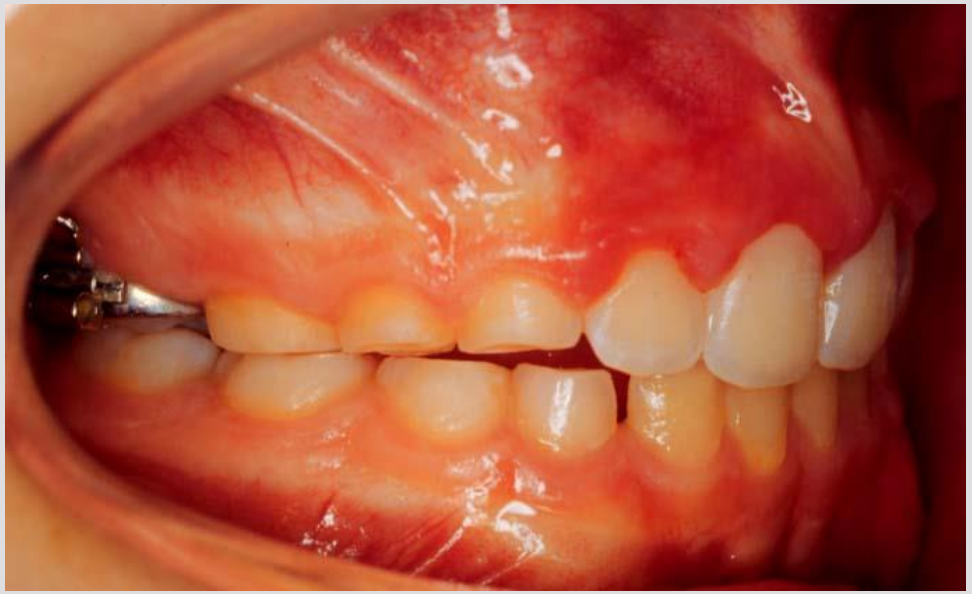
(Eschler-Bittner test)

Molar distalisation ⟶ upper frontal teeth retraction

GROWTH MODIFICATION
MAXILLARY EXTRA-ORAL TRACTION

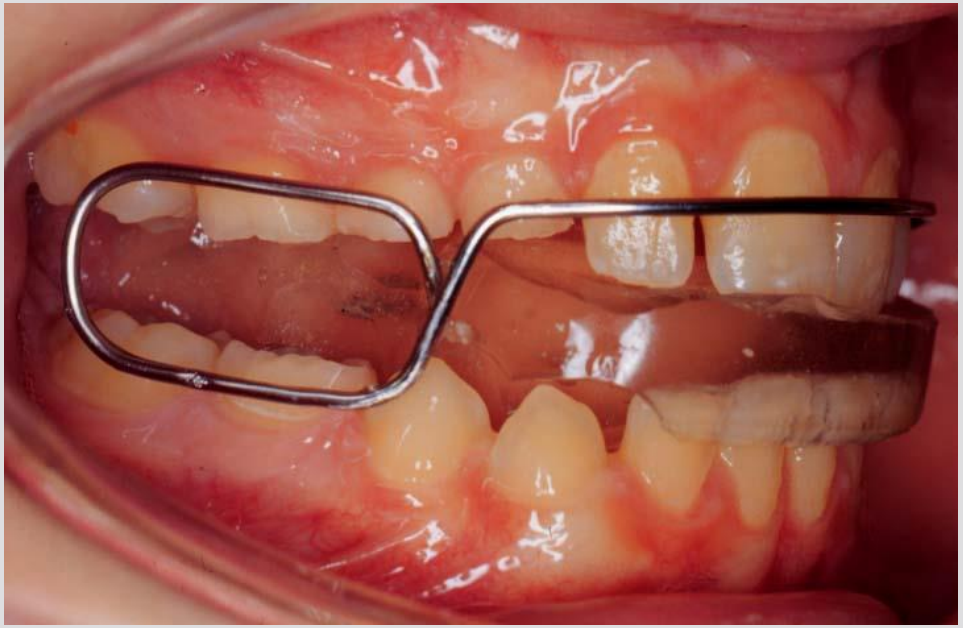


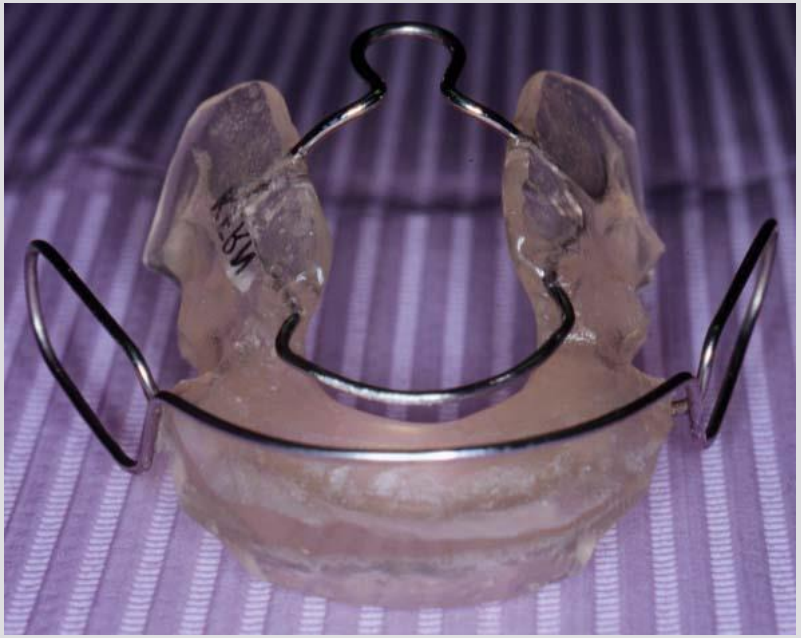
PRE-TREATMENT
CLASS II DIVISION 1
MIXED DENTITION



EXTRA-ORAL TRACTION
CERVICAL HEADGEAR

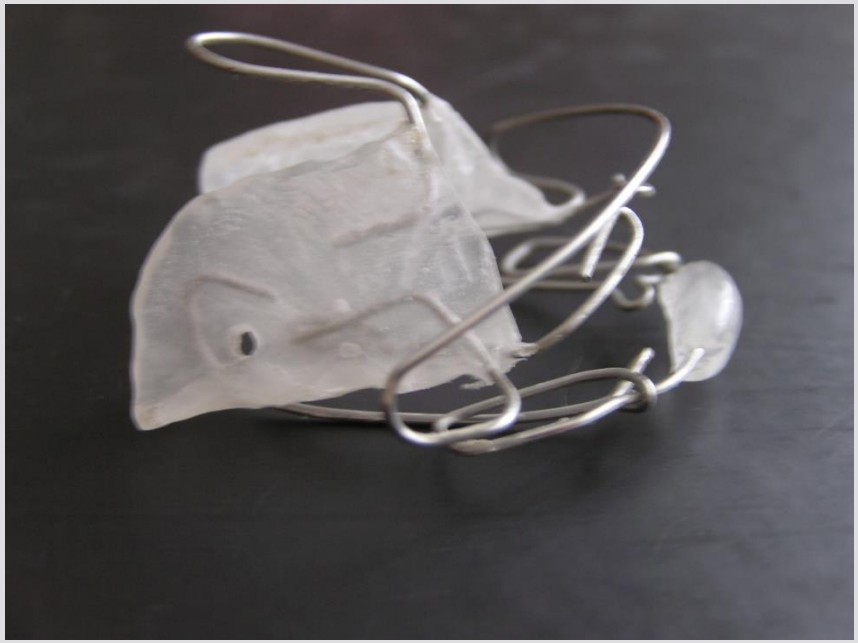
Bionator by Balters



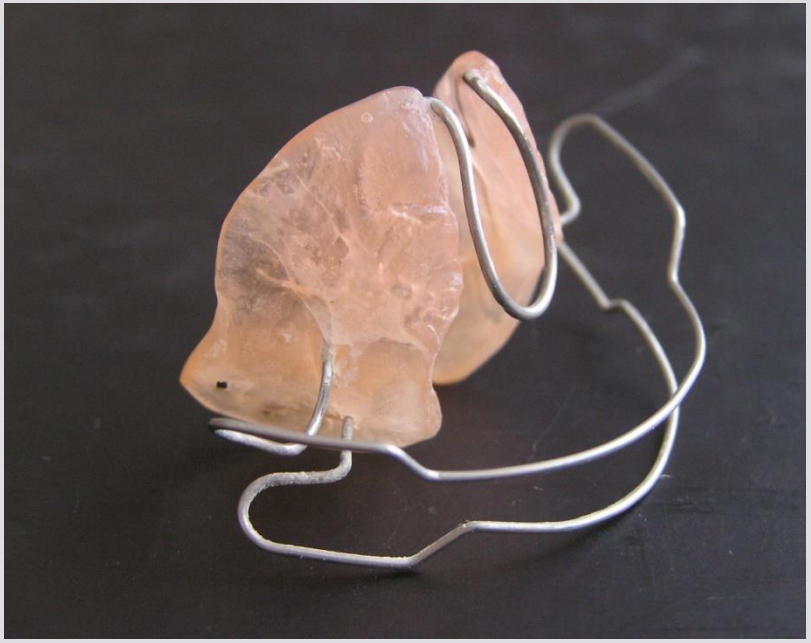


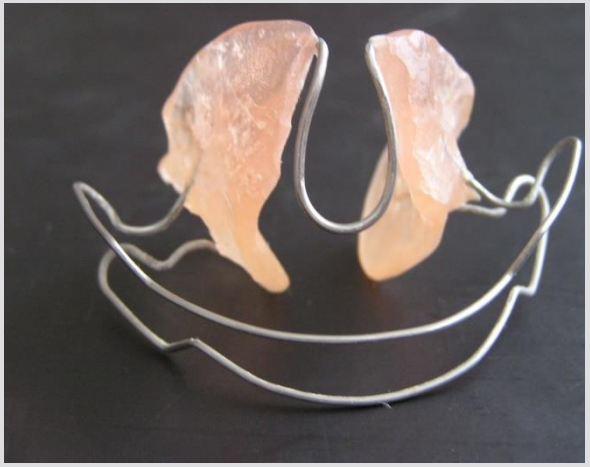
MANDIBLE IN
PROTRUSIVE POSITION
AND INCREASED VERTICALLY

Bimler apliance

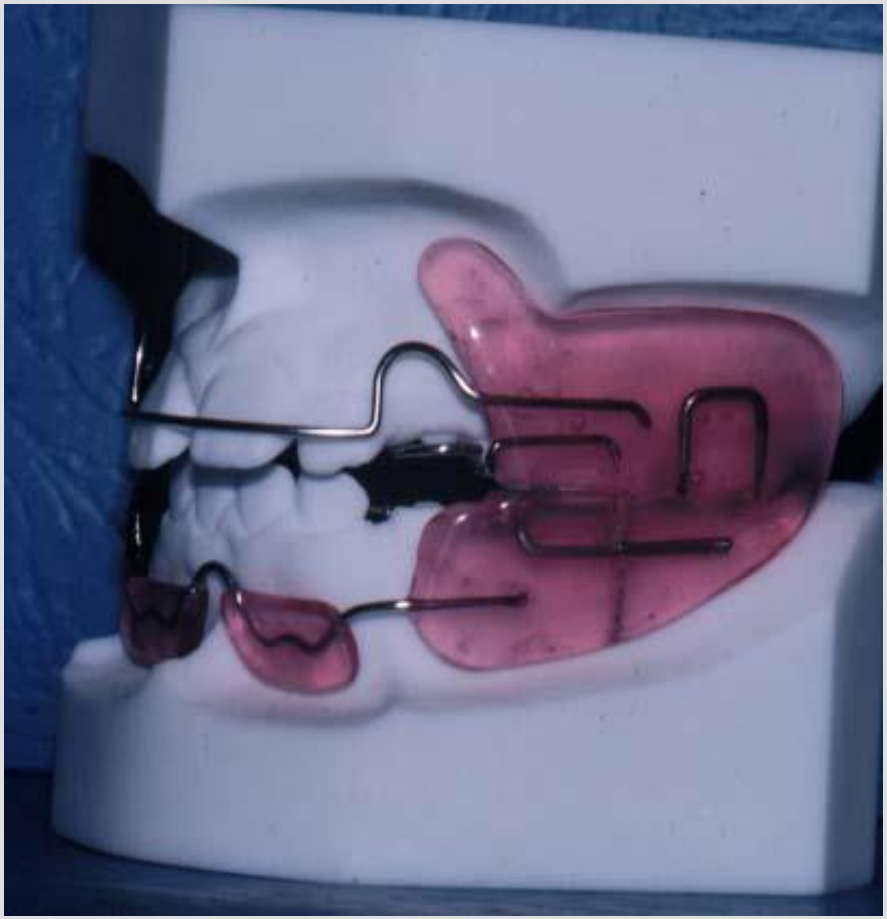


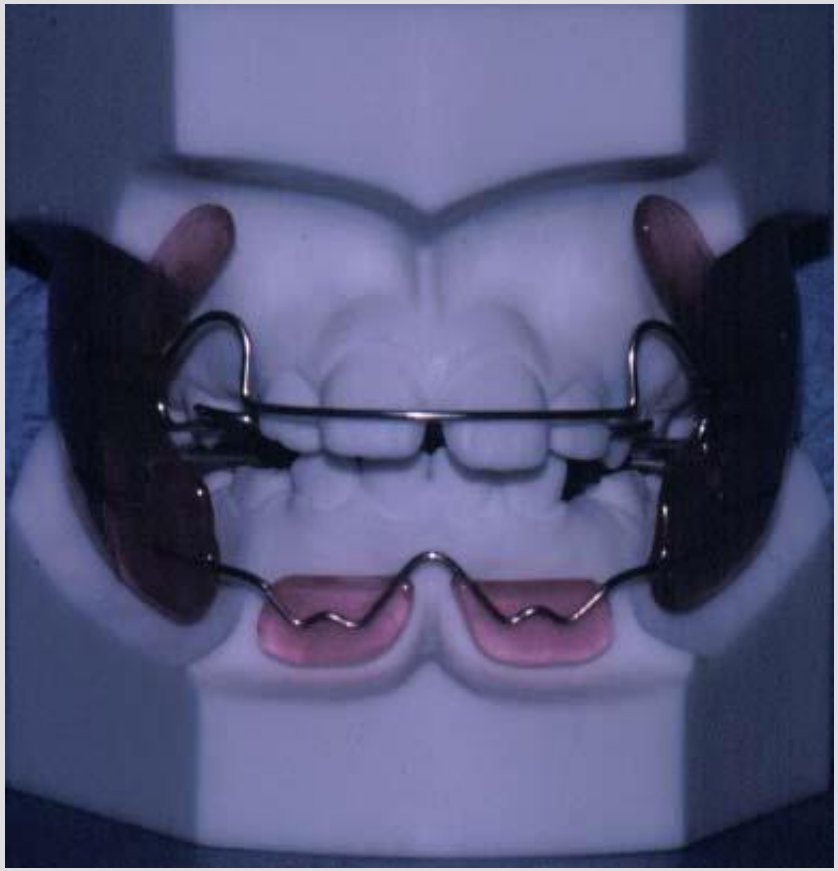
Activator by Clammt





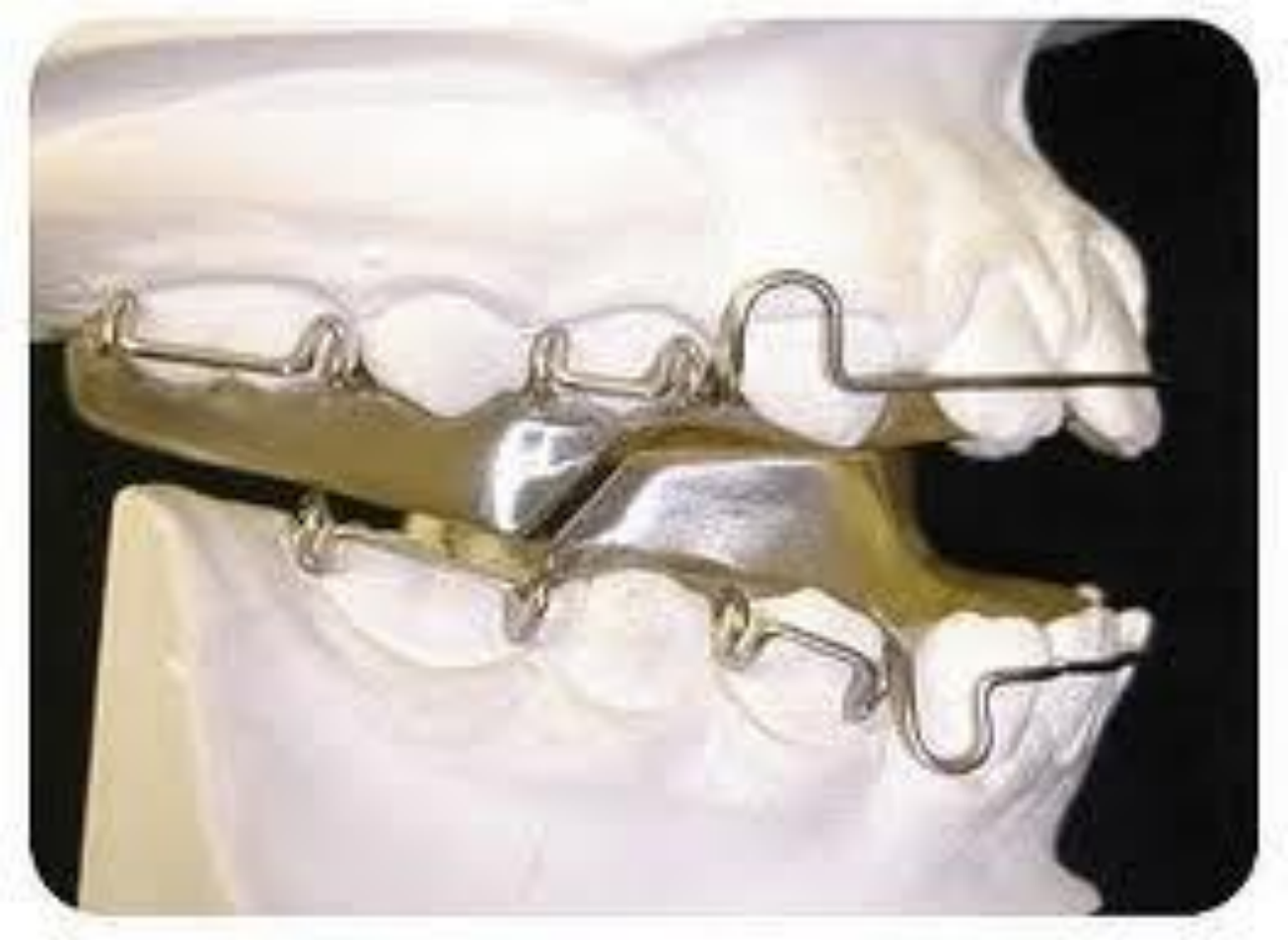
CLASS II MALOCCLUSION
FUNCTIONAL APPLIANCES



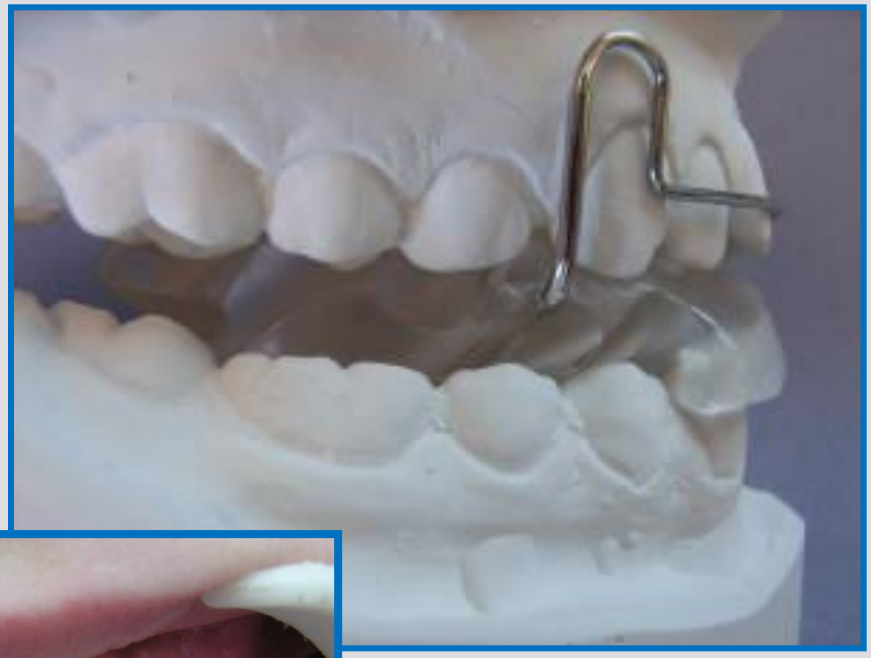


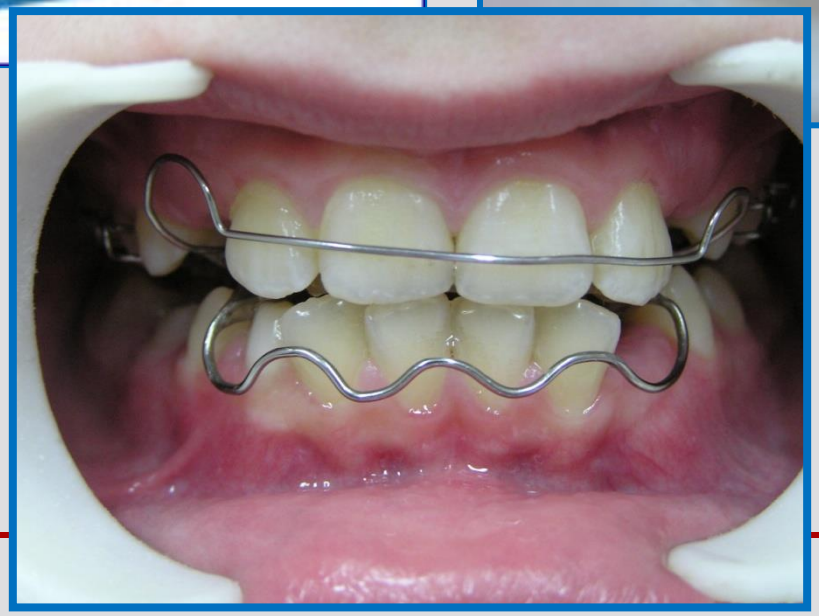
FUNCTIONAL REGULATOR RF-I, RF-II
(FRANKEL APPLIANCE)

Twin Block removable appliance that pull the mandible forward.

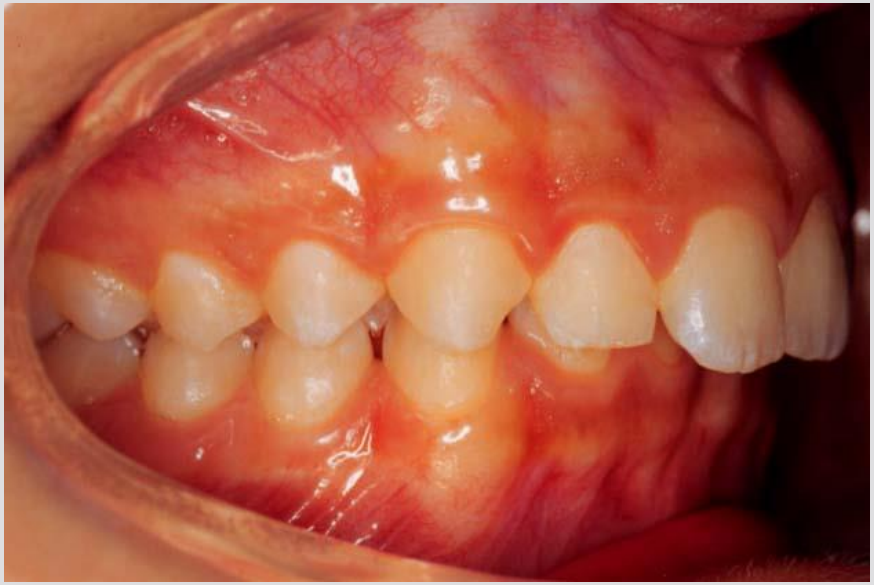


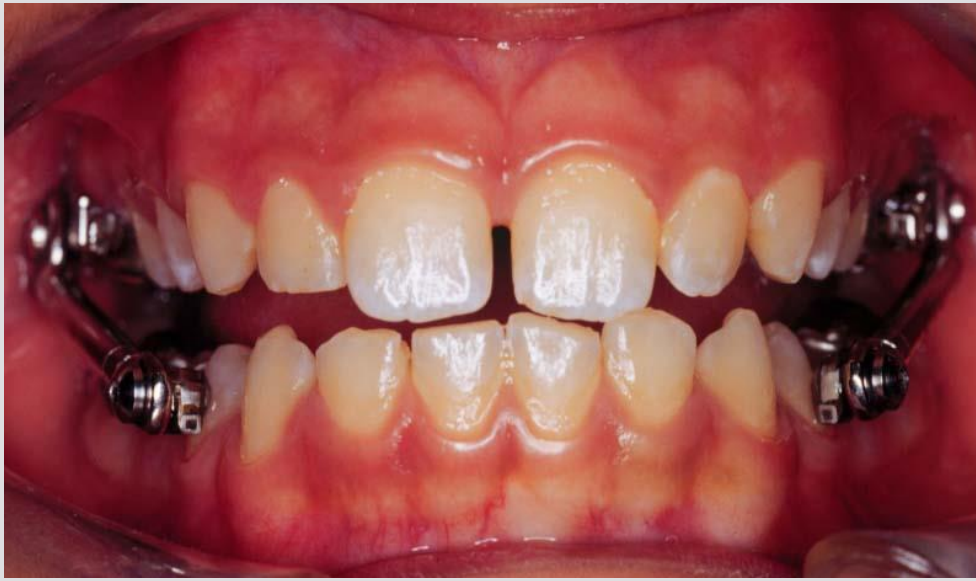
Andresen appliance





HERBST APPLIANCE (FIXED) MANDIBLE HELD IN PROTRUSION +OPEN VERTICALLY





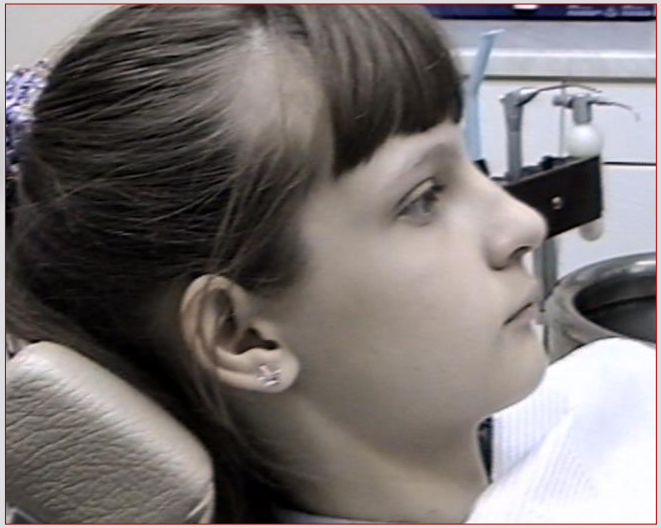
PERMANENT DENTITION
CLASS II DIVISION 1

Permanent dentition (adult treatment)

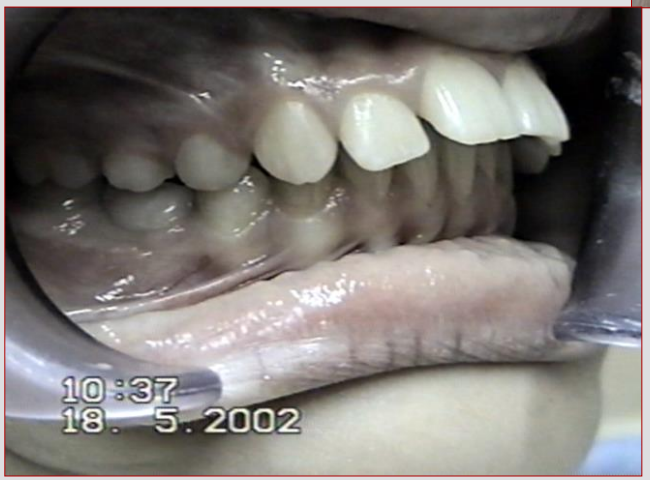
Dento-alveolar compensation.

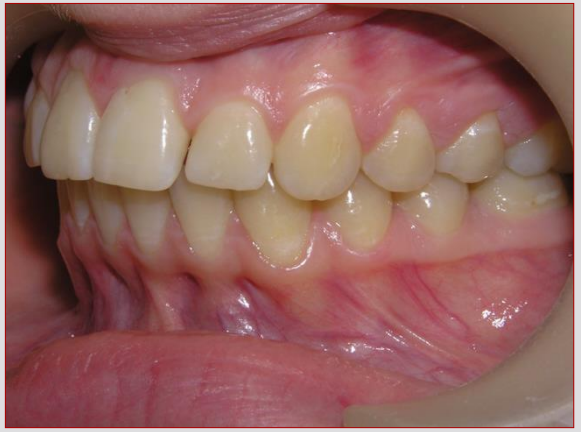
- With extraction
- Without extraction

BRACHYCEPHALIC



- Treatment without extraction
- + functional appliances



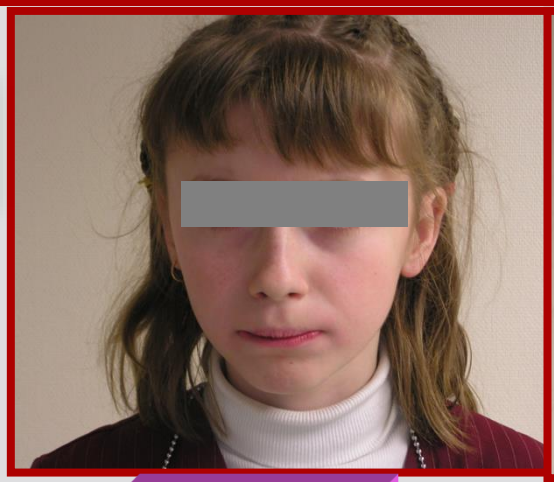


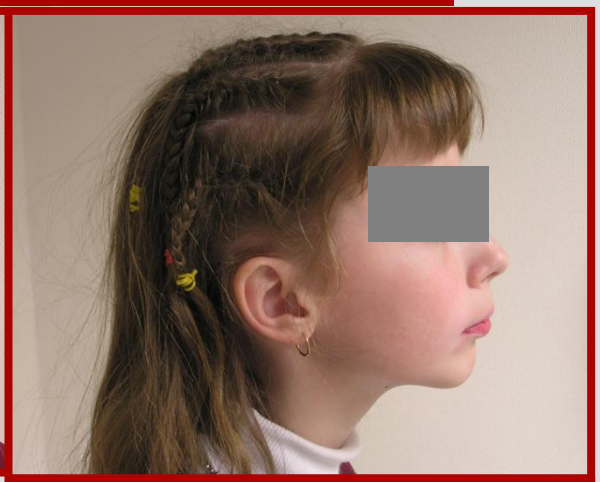
before

after

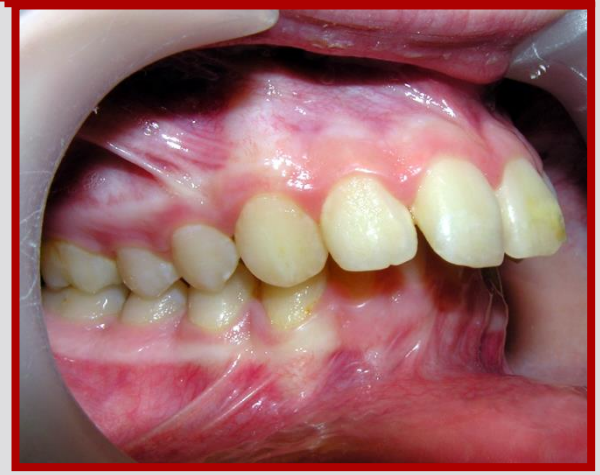
DOLICOCEPHALIC

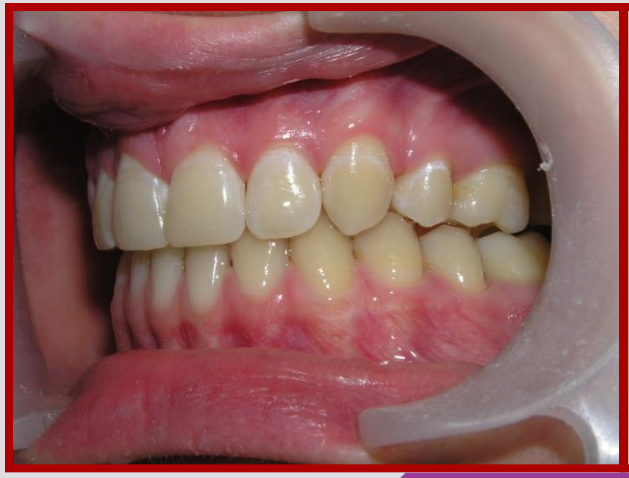
- Treatment with extraction

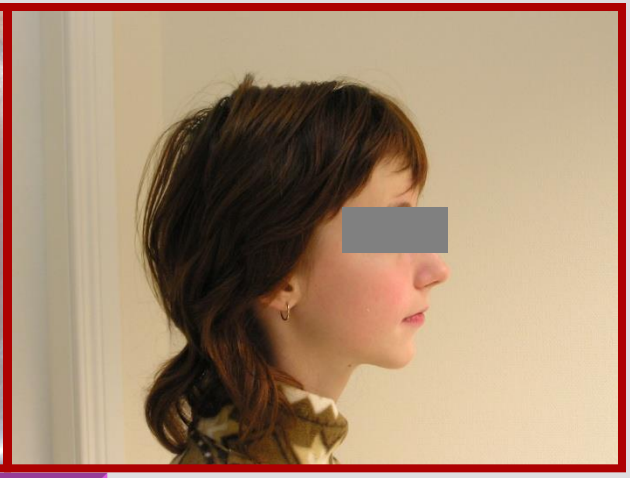




before



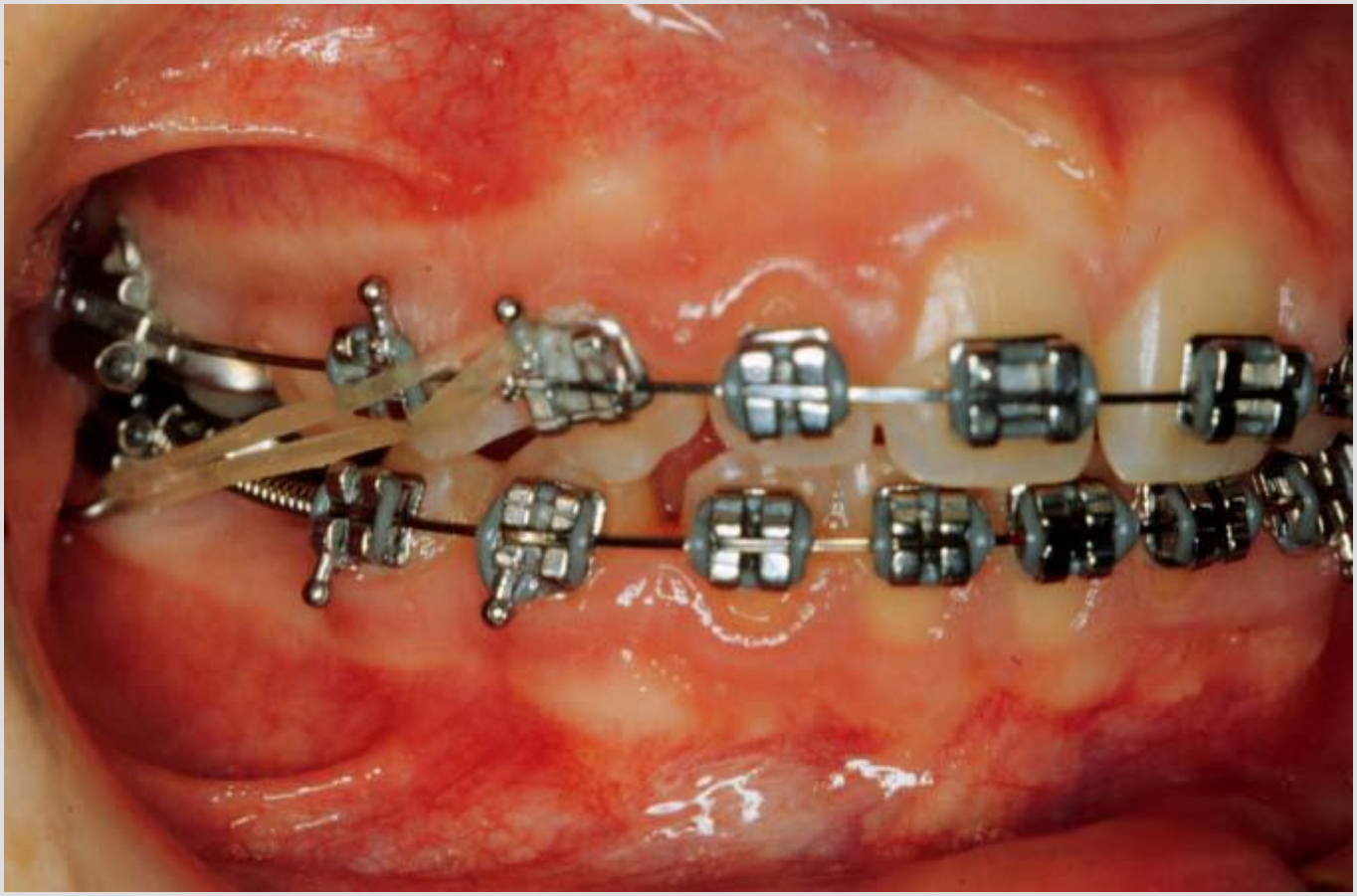


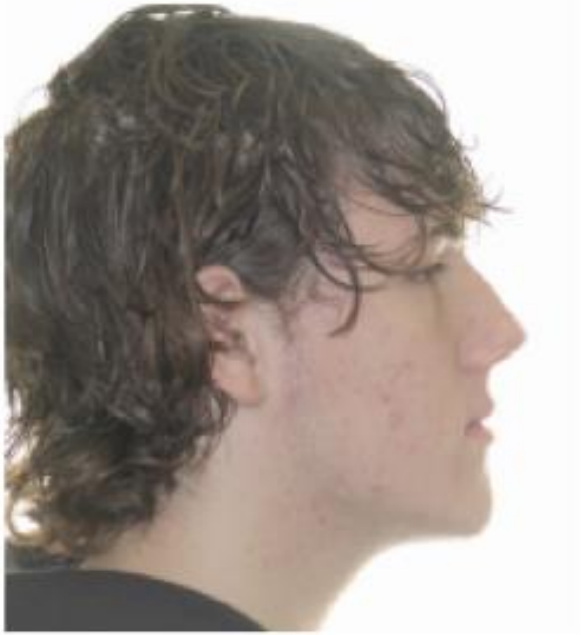


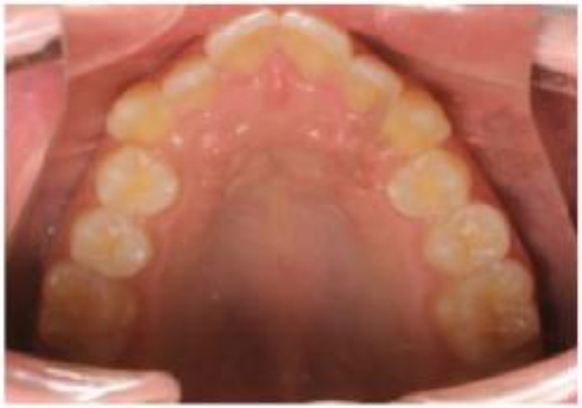
after

- MAXILLARY HEADGEAR (DENTAL/SKELETAL)
  Molars DISTALIZING APPLIANCES

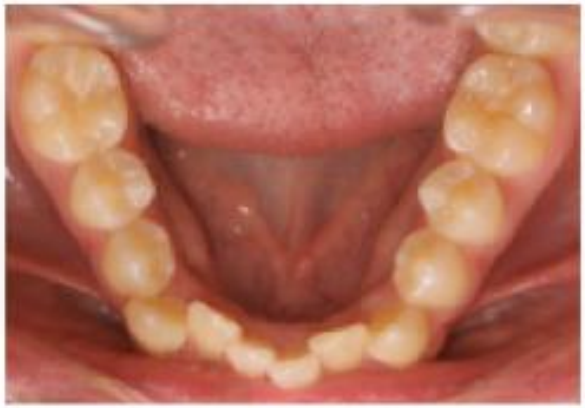
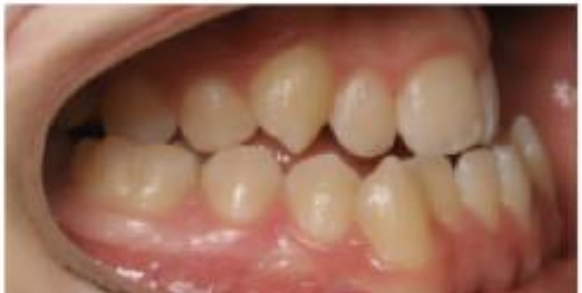
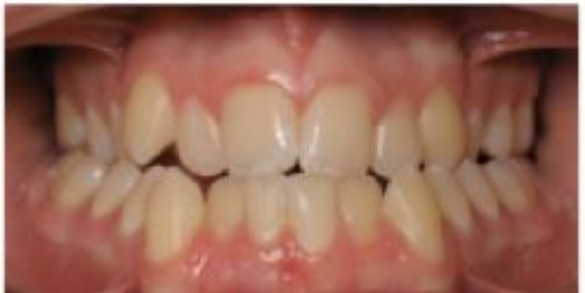
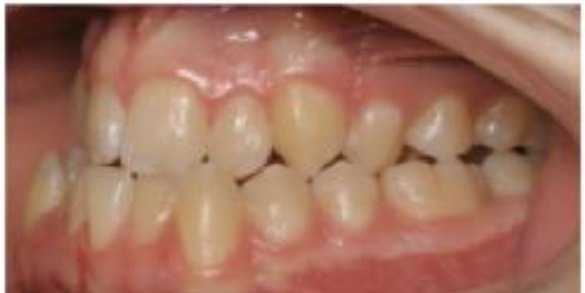
- CLASS II ELASTICS





Angle Class III Relationship

In different classifications:

Angle:
III class

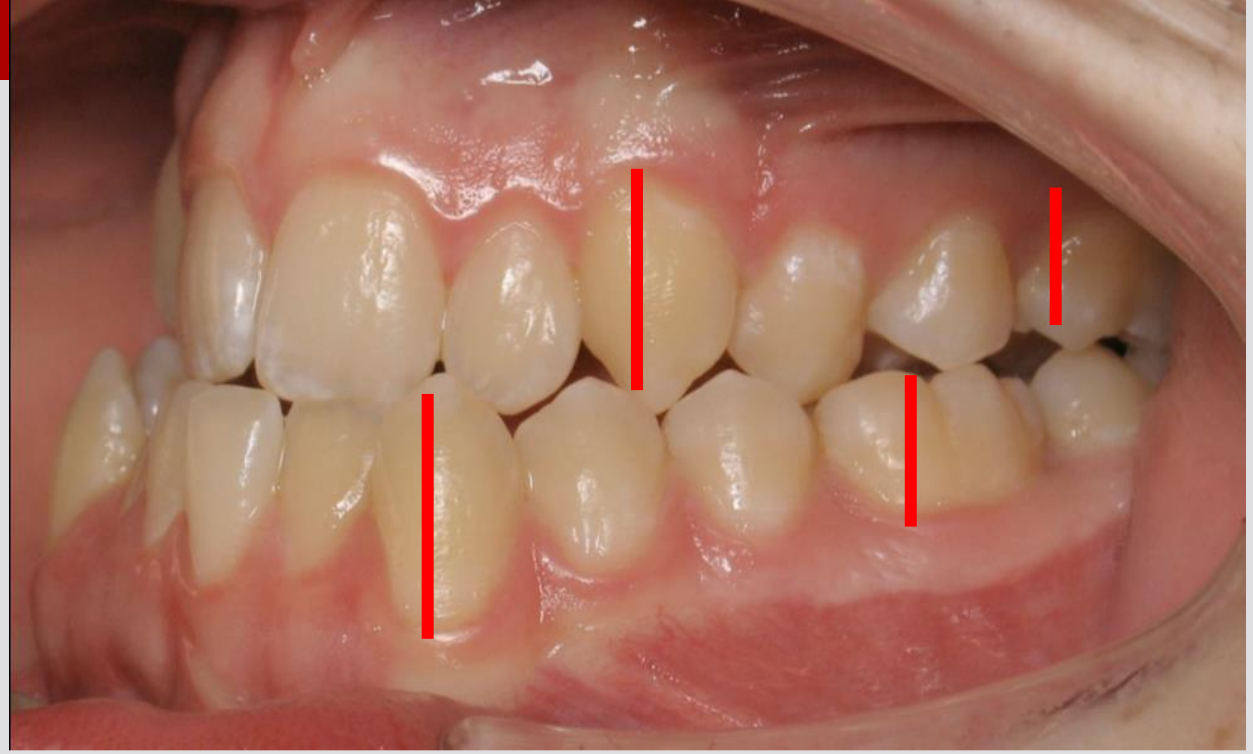
Batelman:
mesial bite with hyperfunction of muscles, that remove lower jaw forward

Forms
1-upper micrognathia
2-lower macrognathia
3-upper micrognathi and upper macrognathia

WHO:
Jaw size abnormality
1-upper micrognathia
2-lower macrognathia
Jaw relationship to cranial base
lower prognathism
upper retrognathia
Malocclusion
mesial occluion

Grigoryeva:
Progenic mesial bite

Kalvelis:
progenia: true and false



Morfological disorders(dental features)

- Class III molars, canines relations
- Retroclined lower incisors, proclined upper incisor, or normally inclined;
- Open bite, normal overbite or deep bite
- Anterior cross bite, posterior cross bite or normal
- Narrow upper arch and broad lower arch

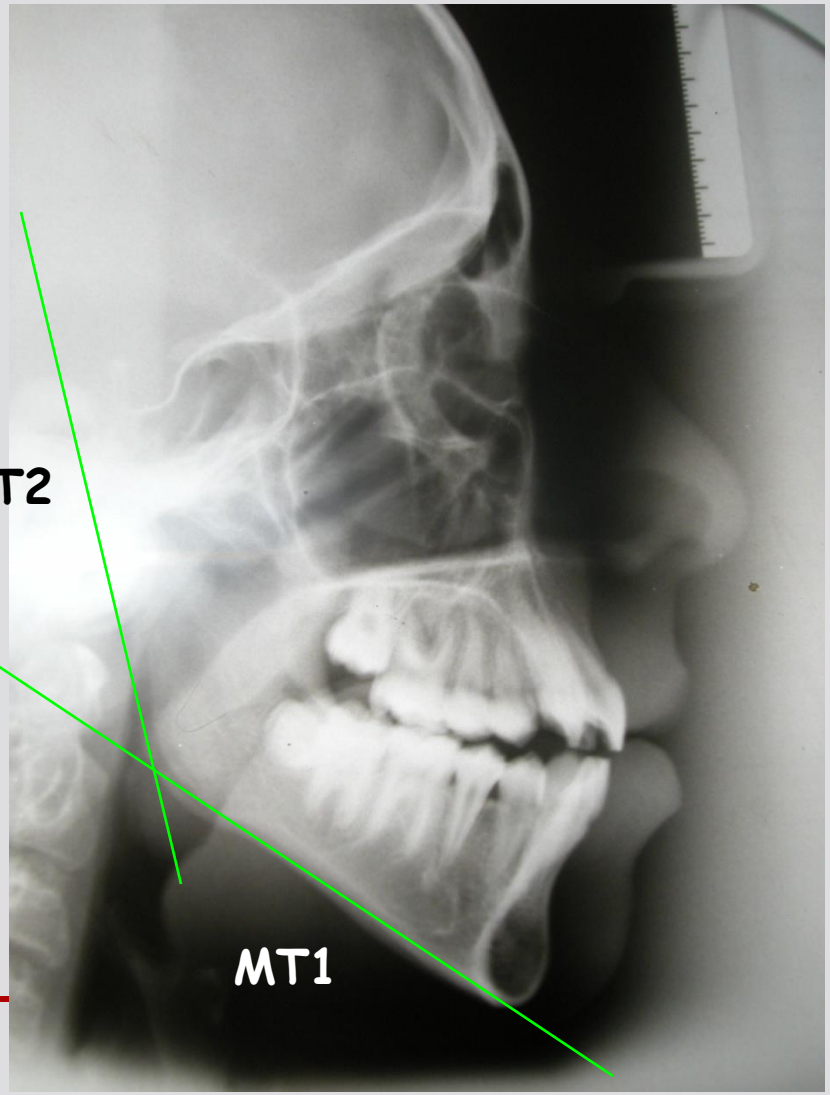
Clinical forms of the mesial bite:

- **Skeletal**
- **Dents-alveolar**

Gonial angle

(MT1-MT2, inferior and posterior borders of mandible)

>123 ± 10



Skeletal pattern

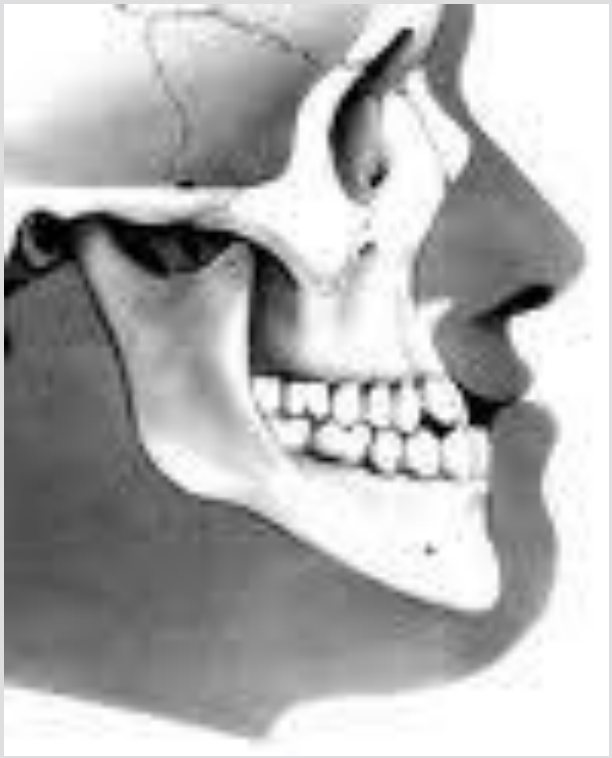
1.increased mandibular length

2.more anteiorlly placed glenoid fossa so that the condylar head positioned more anteriorly leading to mandibular prognathism.

3.decreased maxillary length

4. maxillary retrusion

5. combination



ETIOLOGY

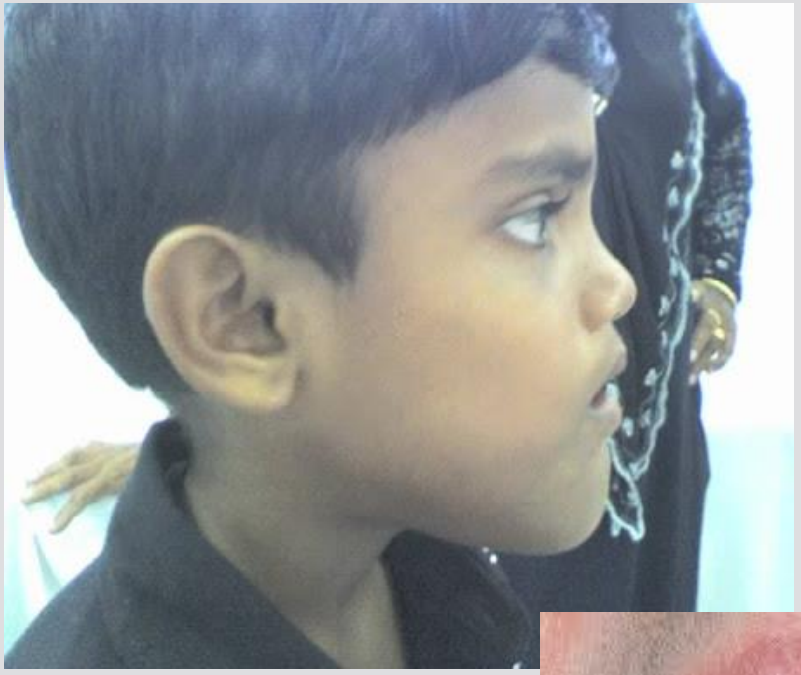
THE INHERITED ANOMALIES

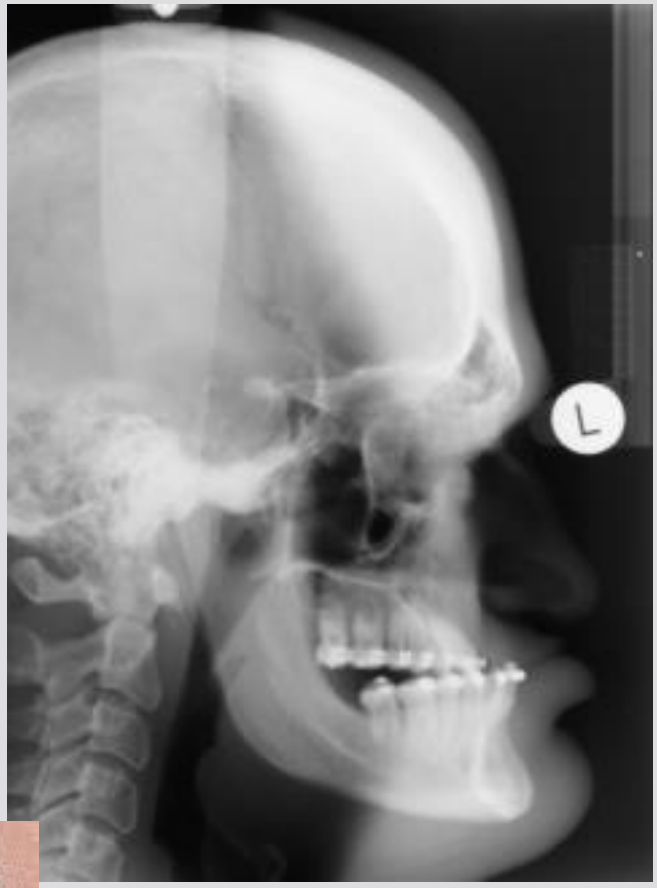
Diego Velazquez

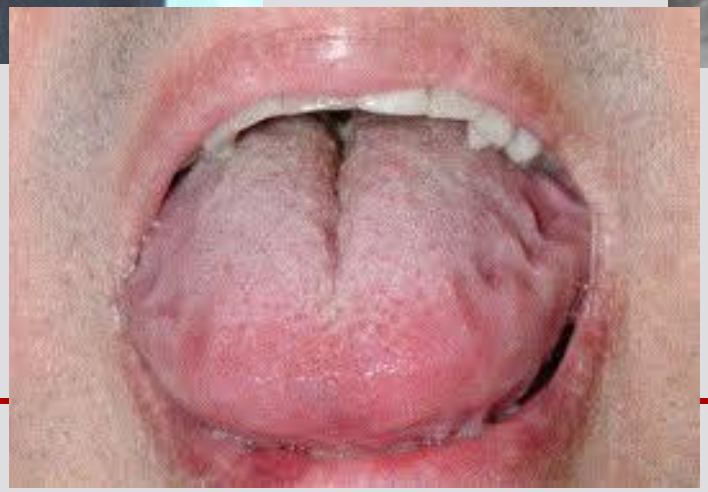
Philip IV, 1655, Madrid

Karl II, sun of Philip IV

Mandibular prognathism and macroglossia caused by acromegaly

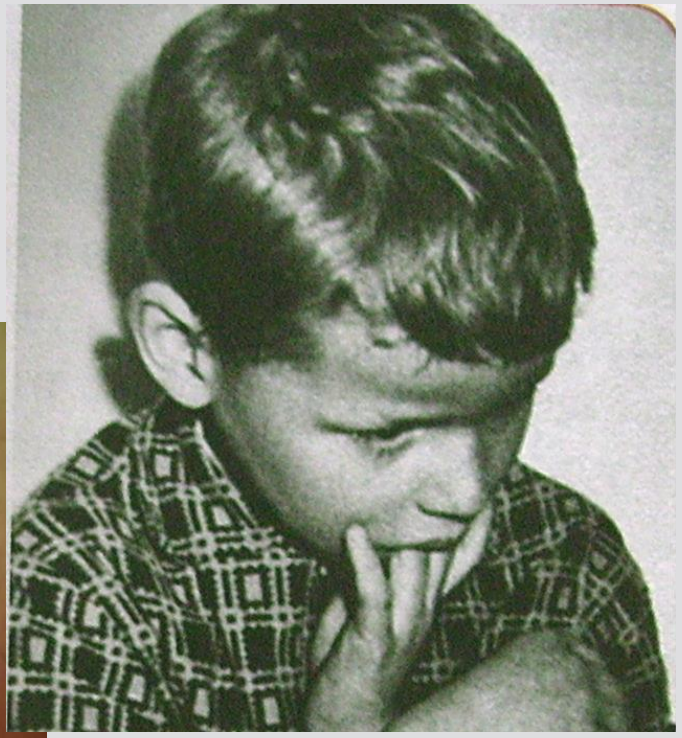






Etiology

Habits



Etiology

- CLEFT LIP repair cases
- Supernumerary teeth
- Arch length inadequacy

Treatment planning

A number of factors should be considered:

1. Pt’s opinion.
2. Severity of skeletal pattern.
3. Expected pattern of future growth.
4. Dento-alveolar compensation.
5. Degree of crowding.

Treatment OPTIONS

1. Accepting the incisors relationship.
2. Proclination of upper labial segments.
3. Retroclination of the lower labial segment with or without proclination of upper labial segment
4. Surgery

[I] IN PRIMARY DENTITION

Elimination of the factors that may lead to the anterior cross bite

E.g.

- Removal of occlusal prematurities.
- Extraction of supernumerary tooth, before they cause displacement of other tooth.
- Habit breaking appliance.

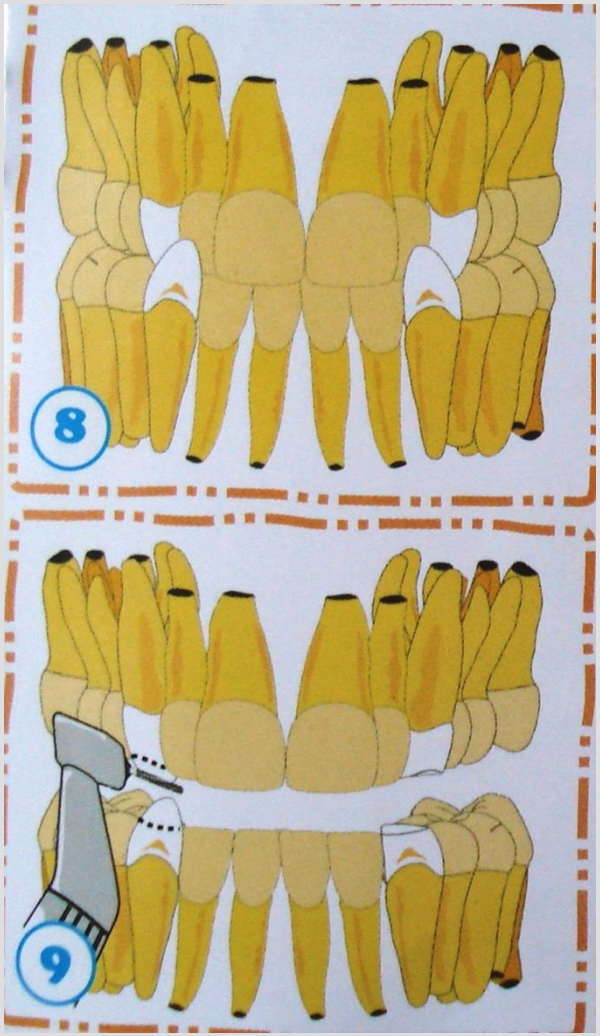
[II] IN MIXED DENTITION:

(In pre-adolescent age group)

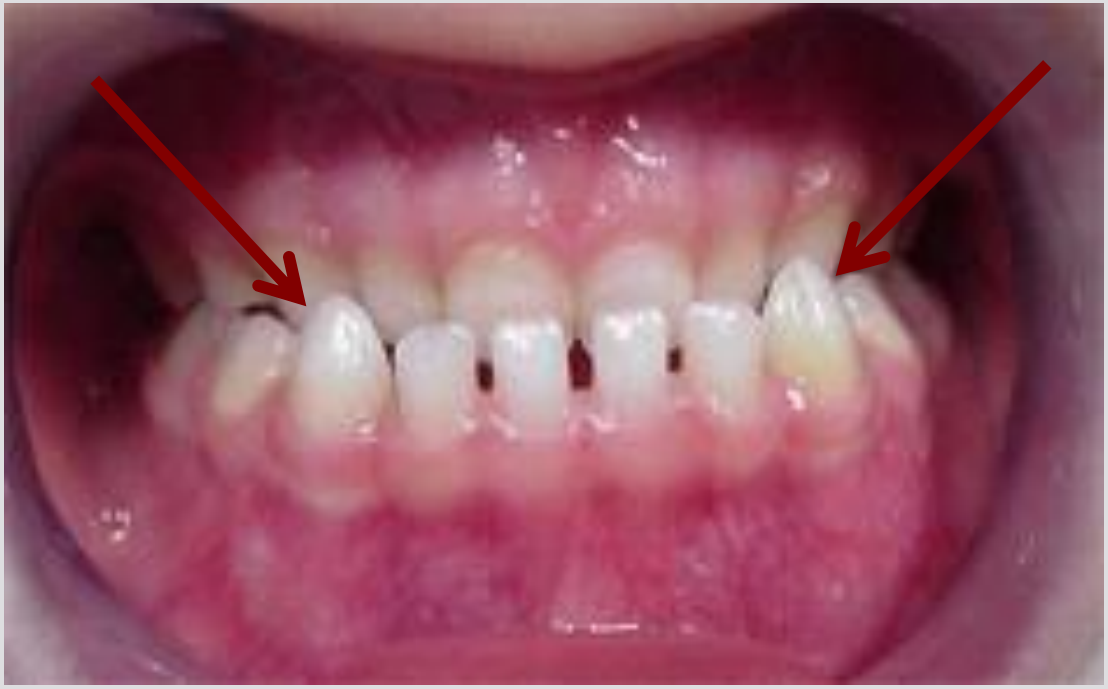
Anterior cross bite should be treated at an early stage.

Because

1. If a cross bite present in the deciduous dentition, it may manifest in the mixed & permanent dentition as well.



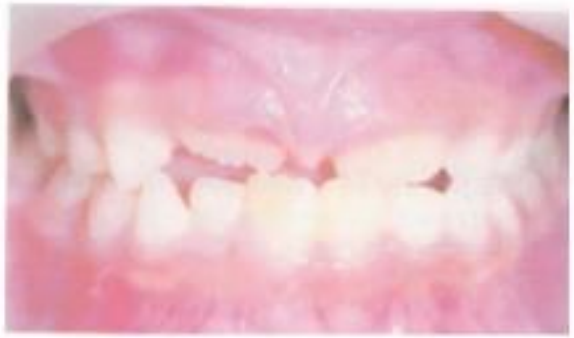
Milky teeth abrasion



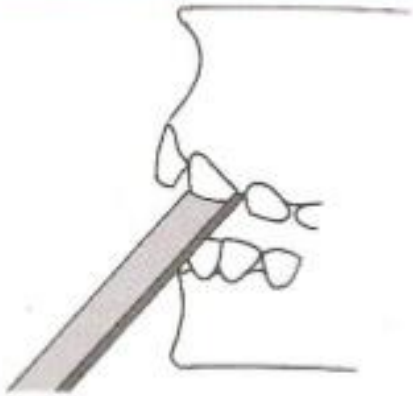
(1) Use of tongue blade

Indications

- Used when a cross bite is seen at the time the permanent teeth are making an appearance in the oral cavity.
- It is placed inside the mouth contacting the palatal aspect of the maxillary teeth.



Upon slight closure of jaw the opposing side of the stick come in contact with the labial aspect of the opposing mandibular tooth acts as a fulcrum.



This is continued for 1-2 hours for about 2 weeks.

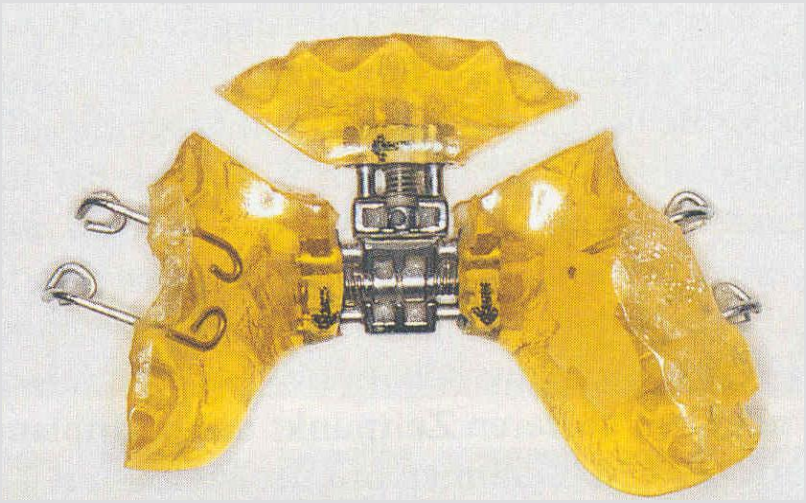
PROCLINATION OF UPPER LABIAL SEGMENT

*It can only be concidered in cases with:

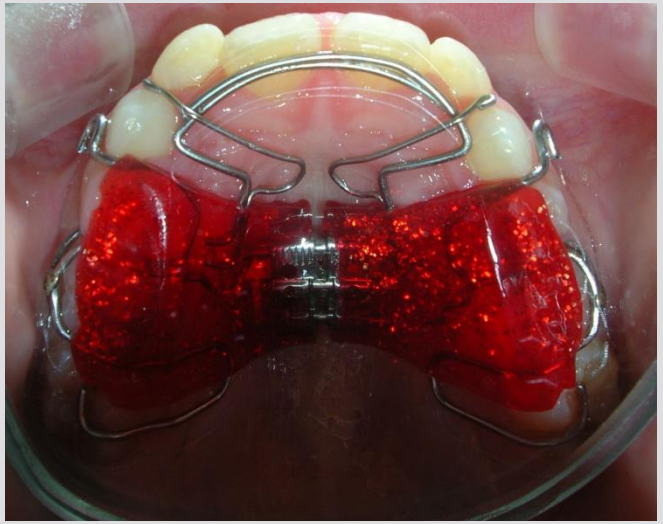
1. Mild class III skeletal pattern.
2. The upper incisors are not already significantly proclined.
3. An adequate overbite will be present at the end of treatment to retain the corrected position of upper incisors

PROCLINATION OF UPPER LABIAL SEGMENT

Posterior bite plate to disjoin



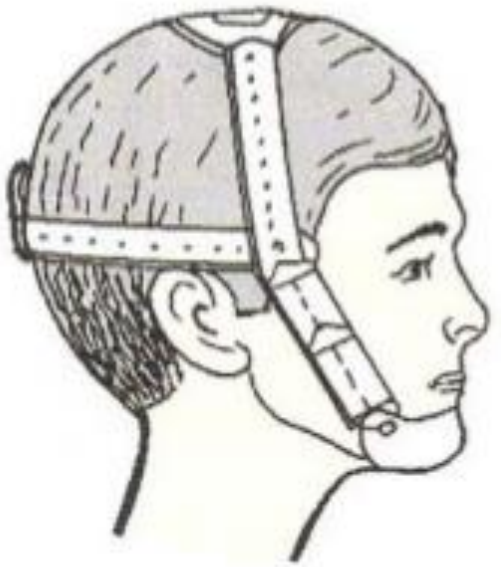
- Screws



- Spring

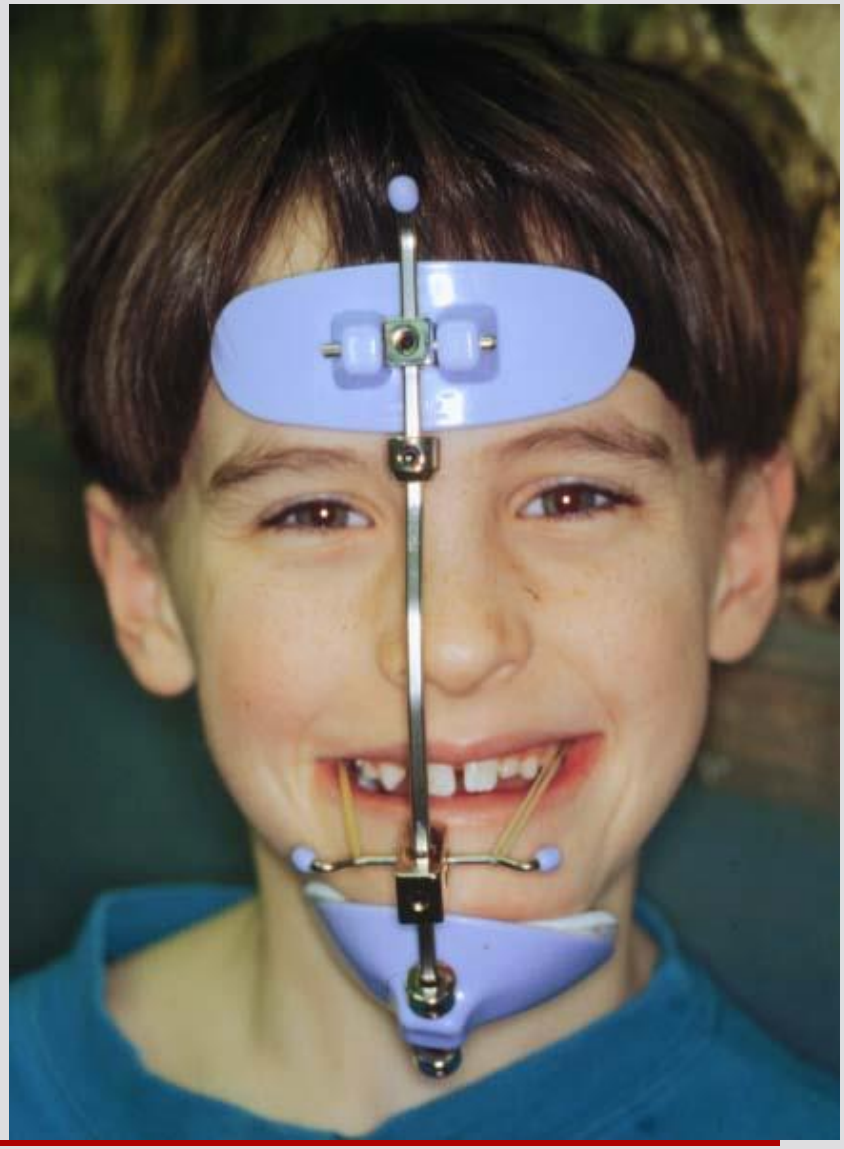
Chin cap appliance

- Used to correct or prevent the anterior cross bite due to a prominent mandible.
- Chin cap appliance rotate mandible backward and downward.

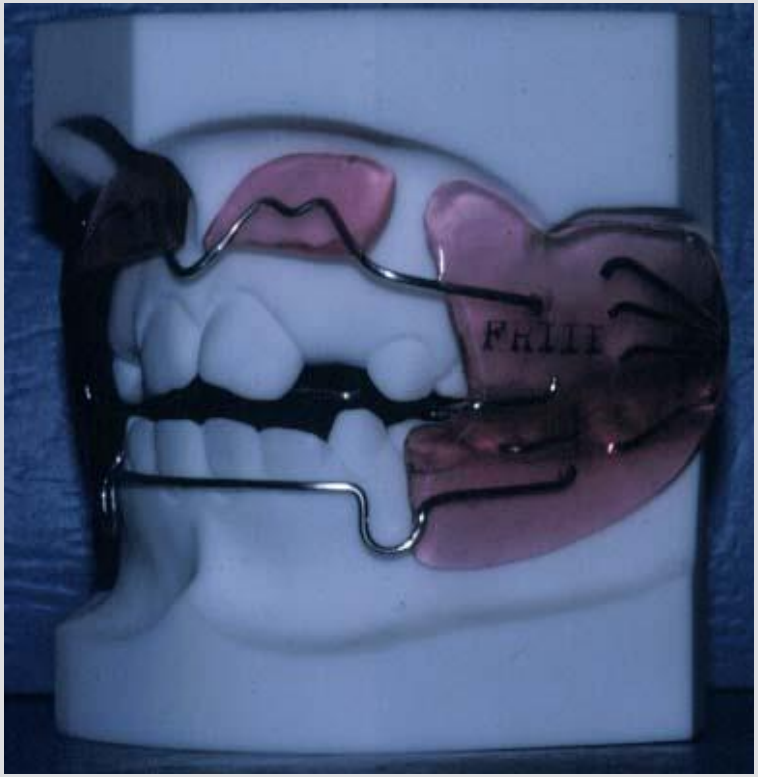


CLASS III MALOCCLUSION

PROTRACTION
FACE MASK
SKELETAL AND DENTAL



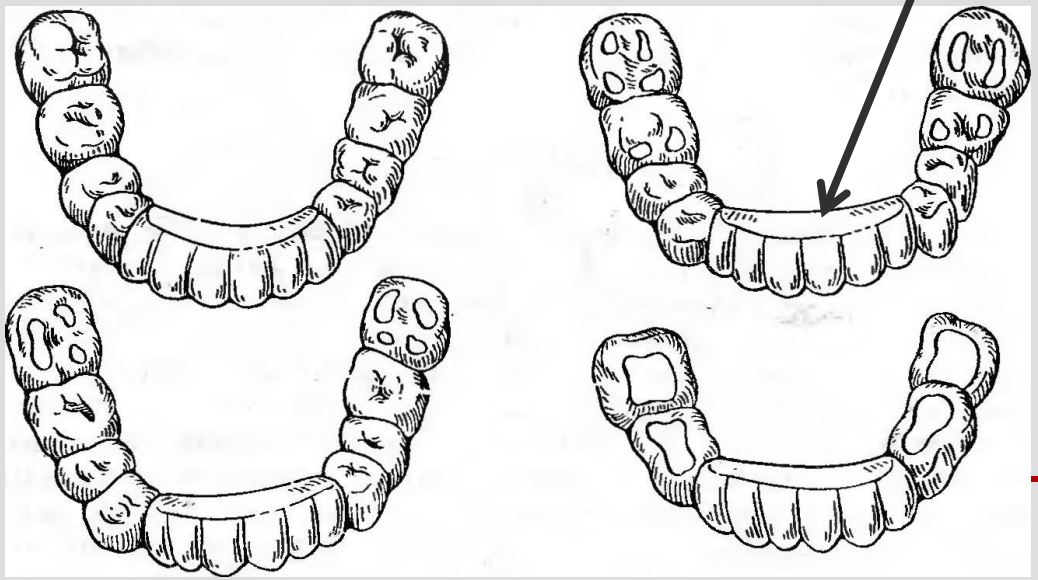
CLASS III MALOCCLUSION
FUNCTIONAL APPLIANCE



FUNCTIONAL REGULATOR III
(FRANKEL III)

Anterior bite plate

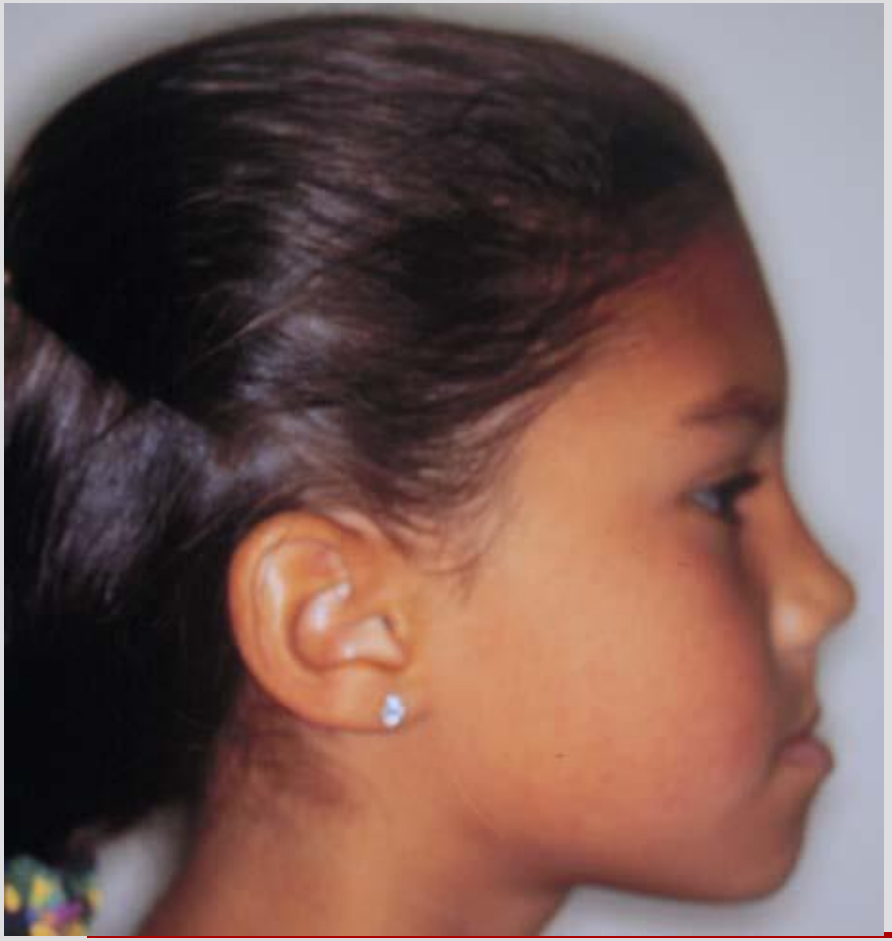
Brukl appliance

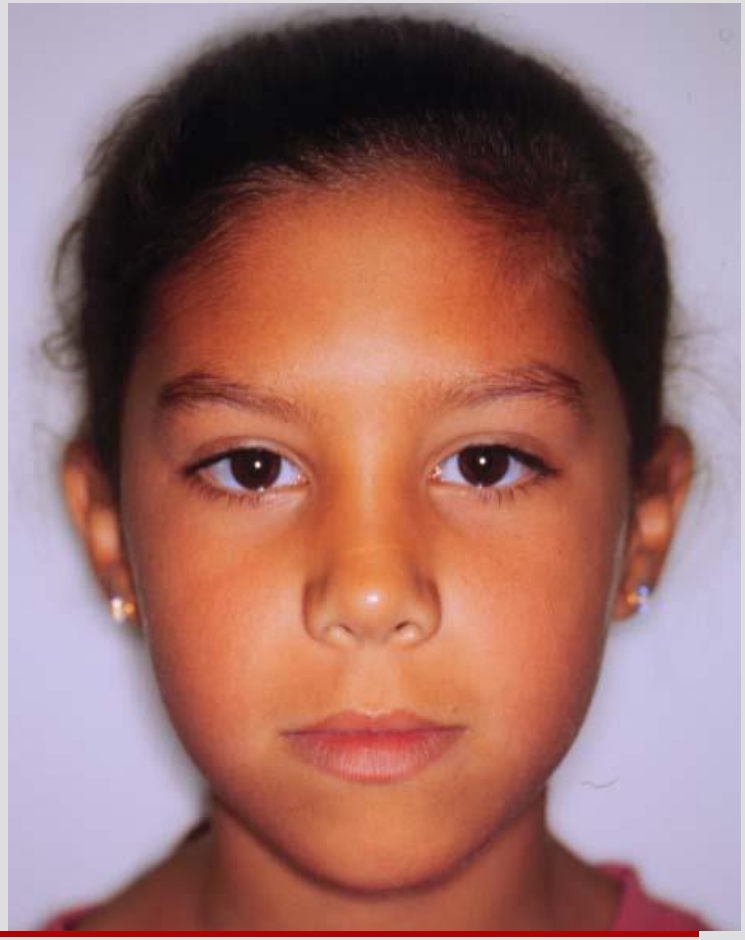


Bynin’s gum shield

CLASS III MALOCCLUSION

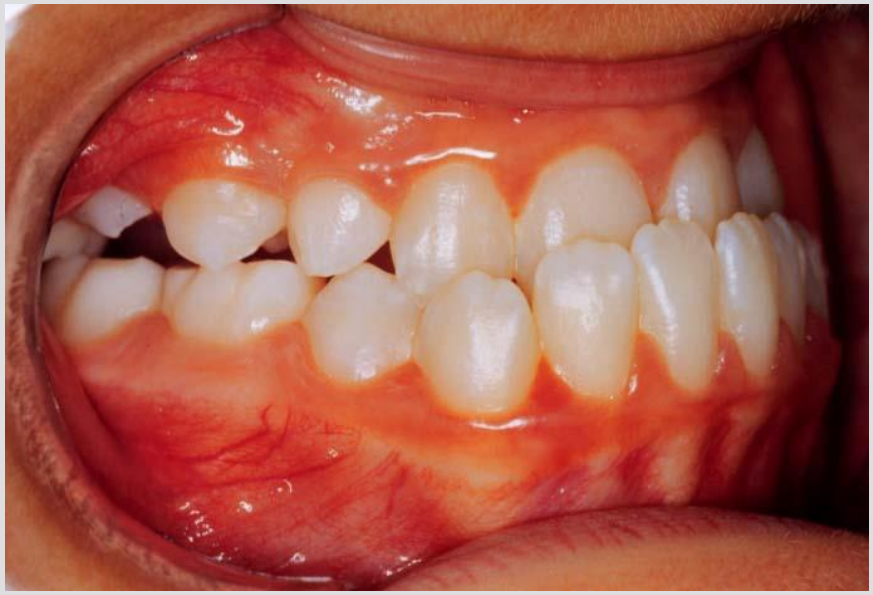
MAXILLARY DENTAL PROTRACTION
MANDIBULAR DENTAL RETRACTION
INCREASE THE VERTICAL DIMENSION

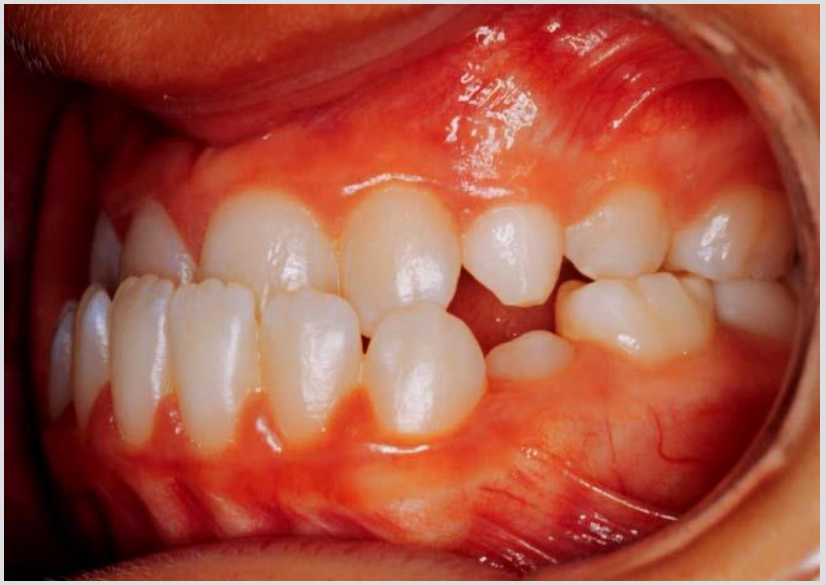




STRAIGHT
PROGNATHIC

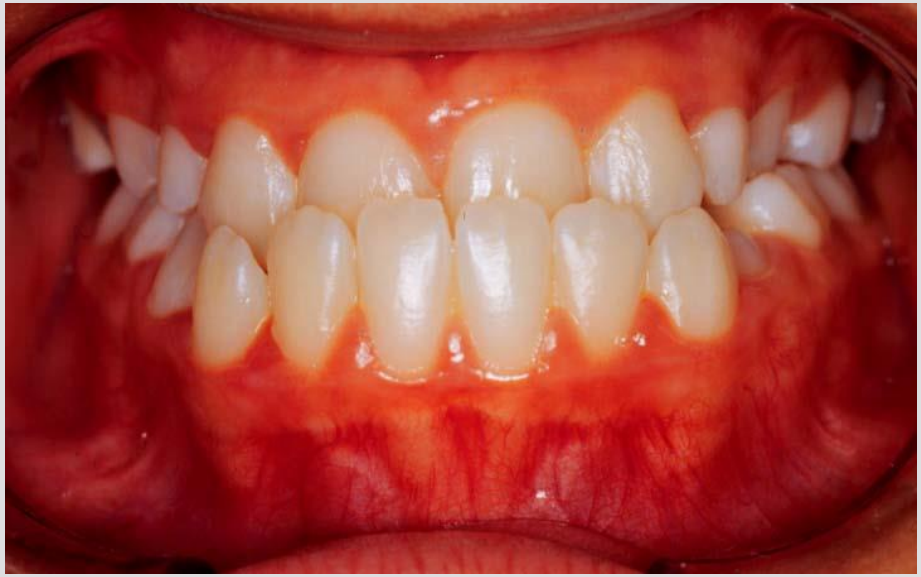
CLASS III MALOCCLUSION

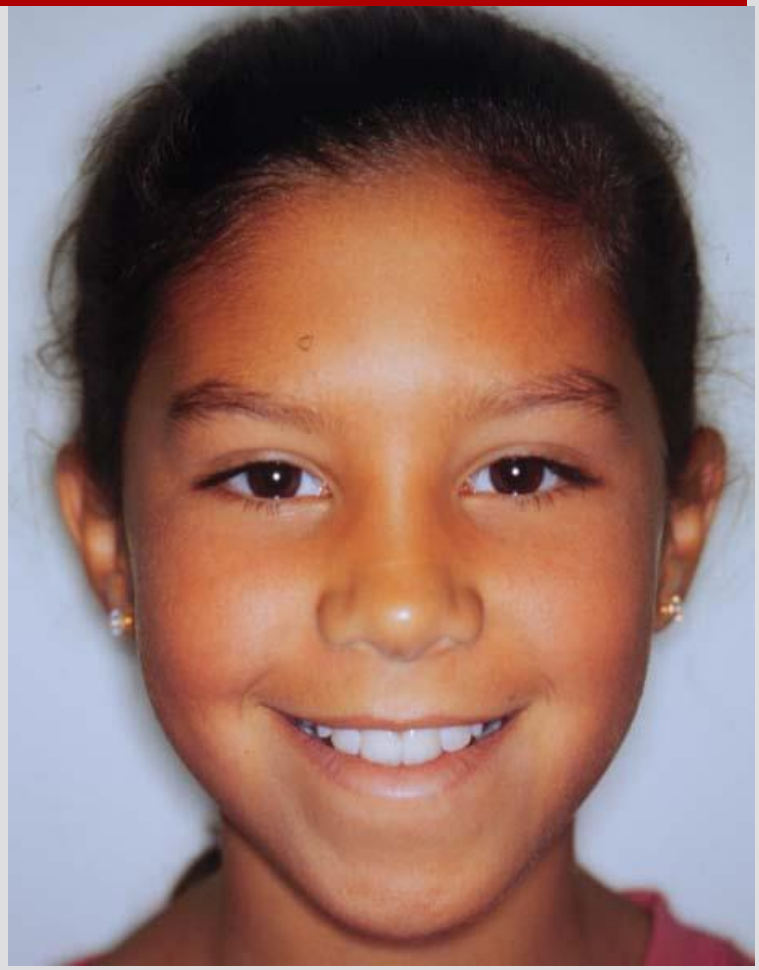




LATE MIXED DENTITION
CLASS III MALOCCLUSION
ANTERIOR CROSSBITE

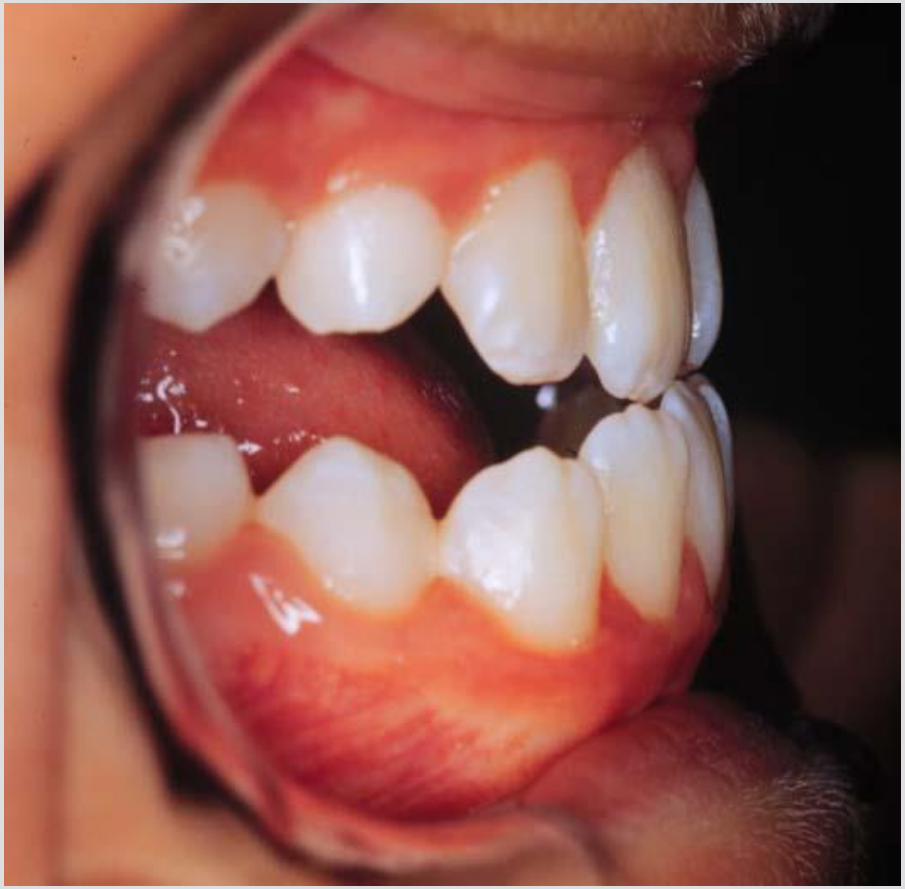
CLASS III MALOCCLUSION

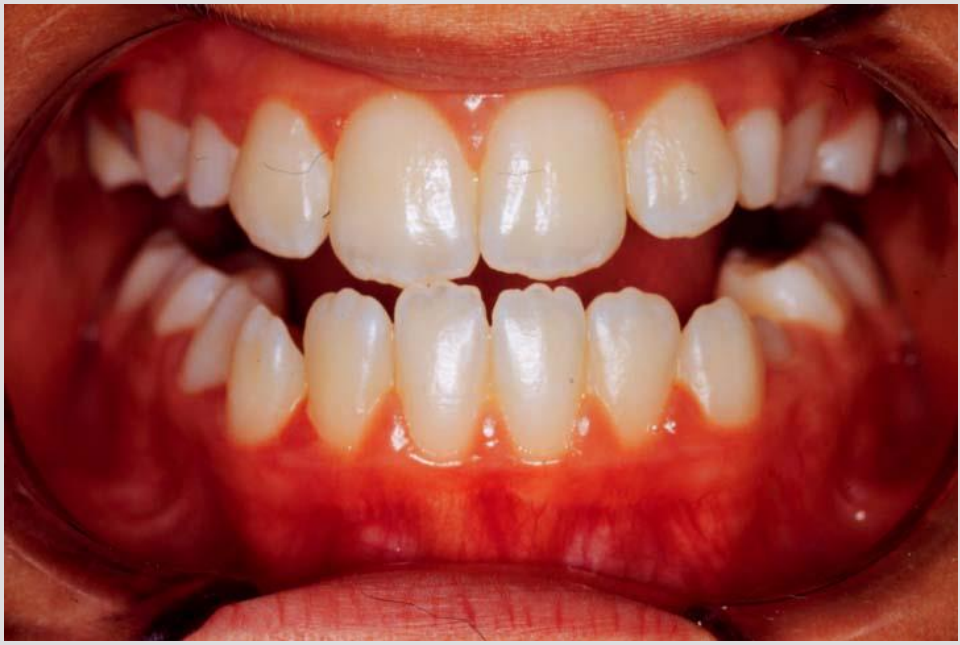




DEEP OVERBITE
MAXIMUM INTERCUSPATION

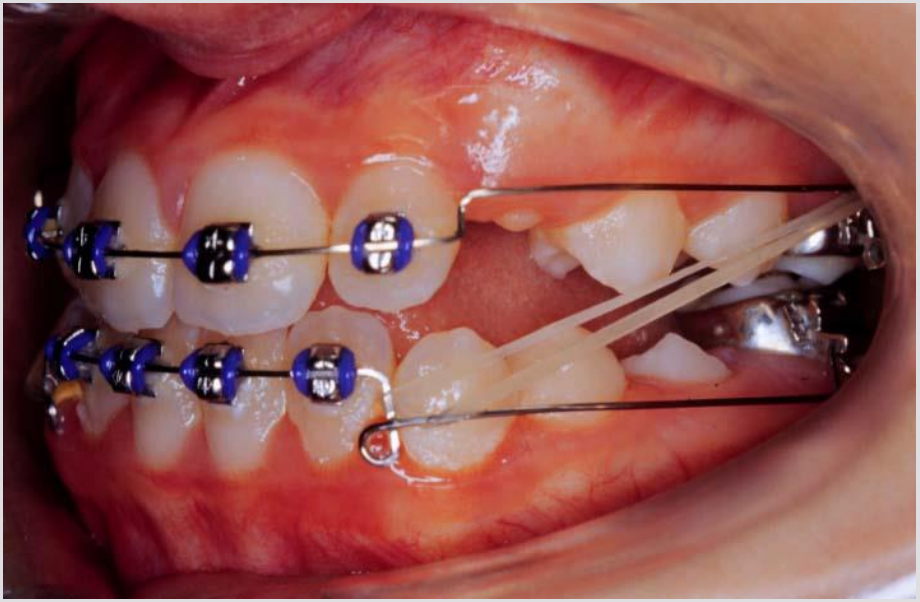
CLASS III MALOCCLUSION

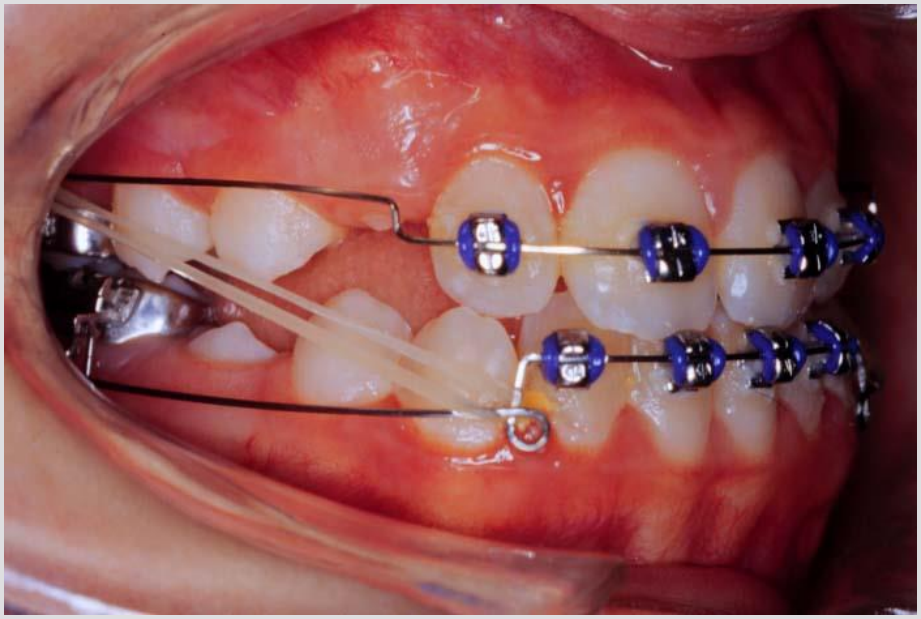




INITIAL CONTACT POSITION RESULTS IN SOME ANTERIOR FUNCTIONAL SHIFT

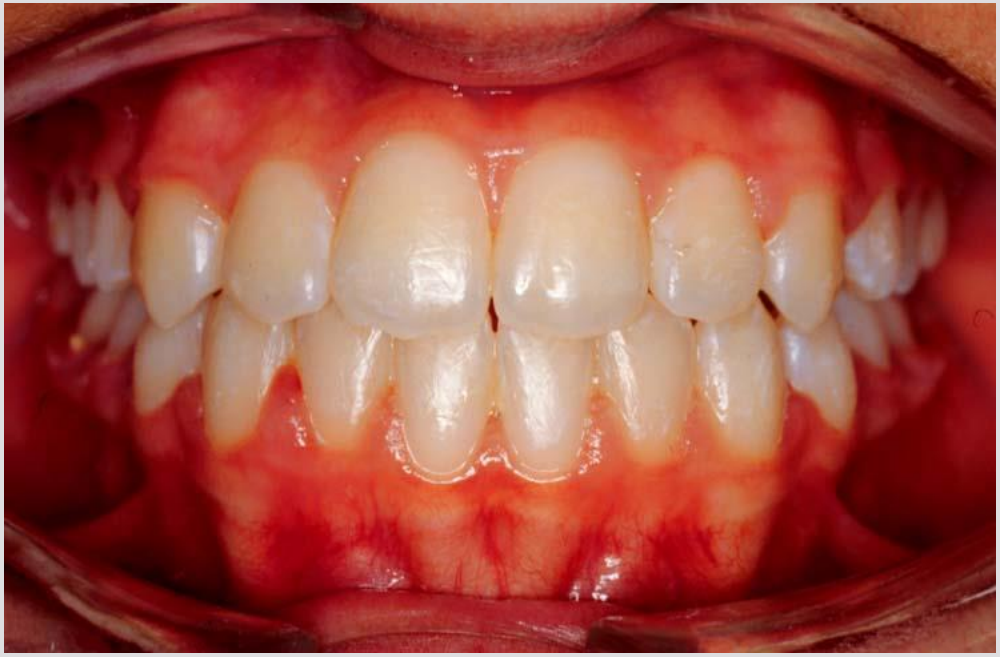
CLASS III MALOCCLUSION





PARTIAL FIXED APPLIANCES
CLASS III ELASTICS
CORRECTION OF ANTERIOR CROSSBITE

CLASS III MALOCCLUSION



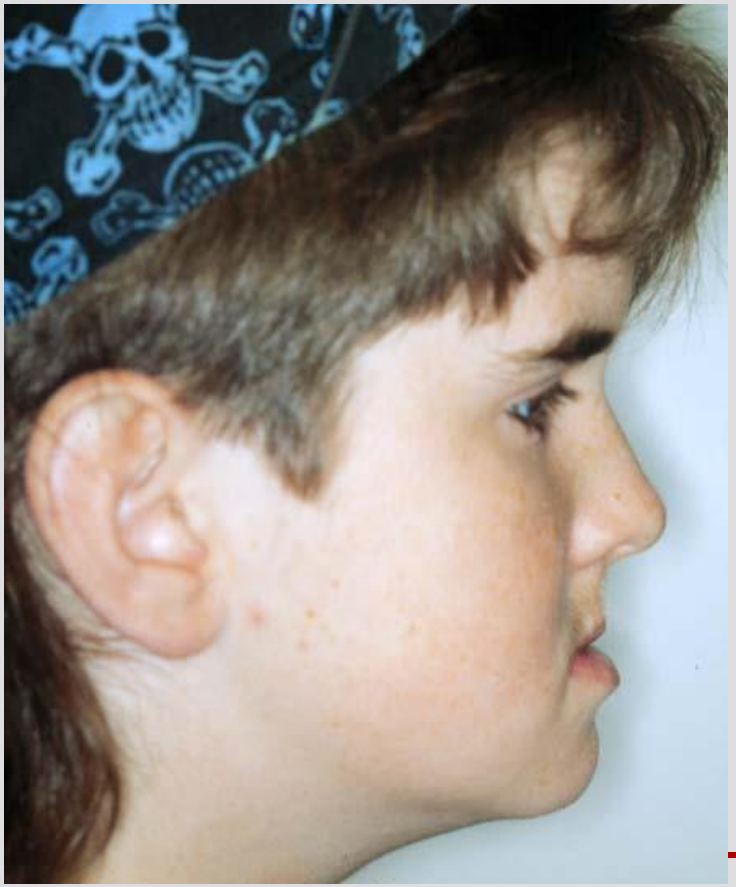
POST-TREATMENT

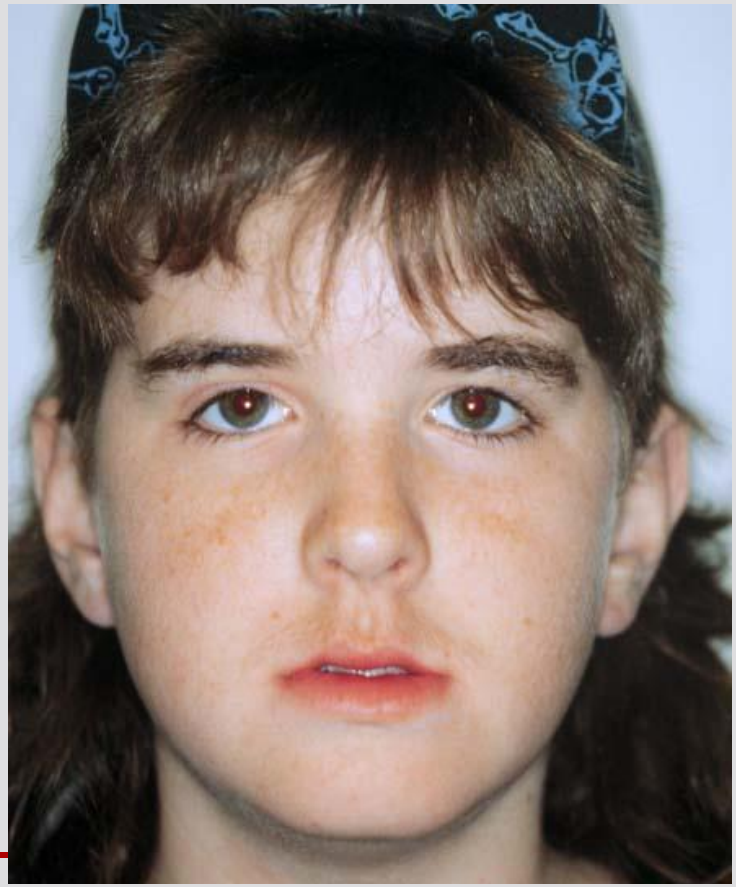
MAXILLARY SKELETAL EXPANSION

MAXILLARY PROTRACTION (SKELETAL + DENTAL)

MANDIBULAR DENTAL RETRACTION

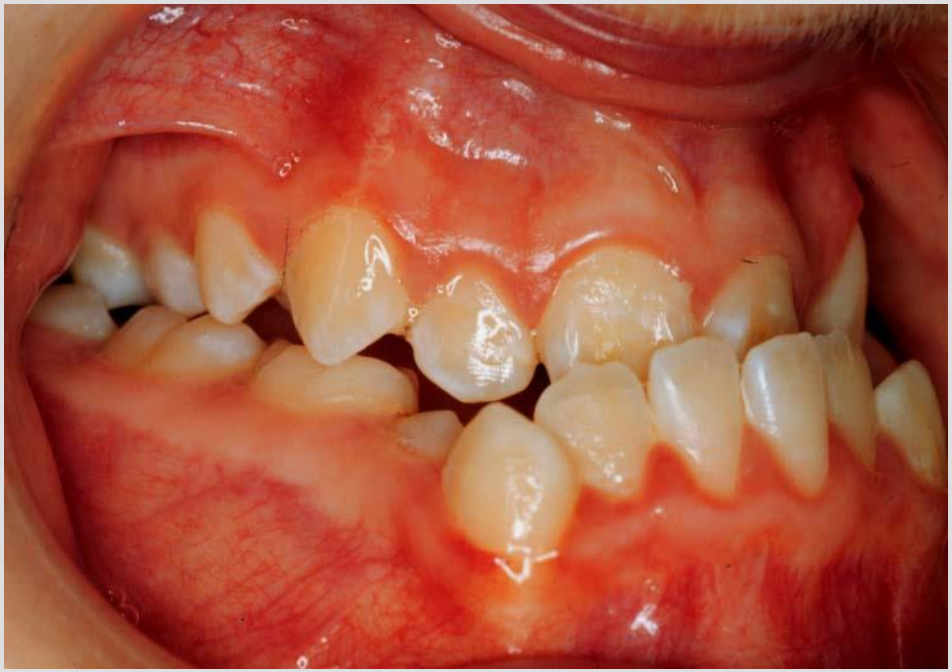
INCREASE THE VERTICAL DIMENSION

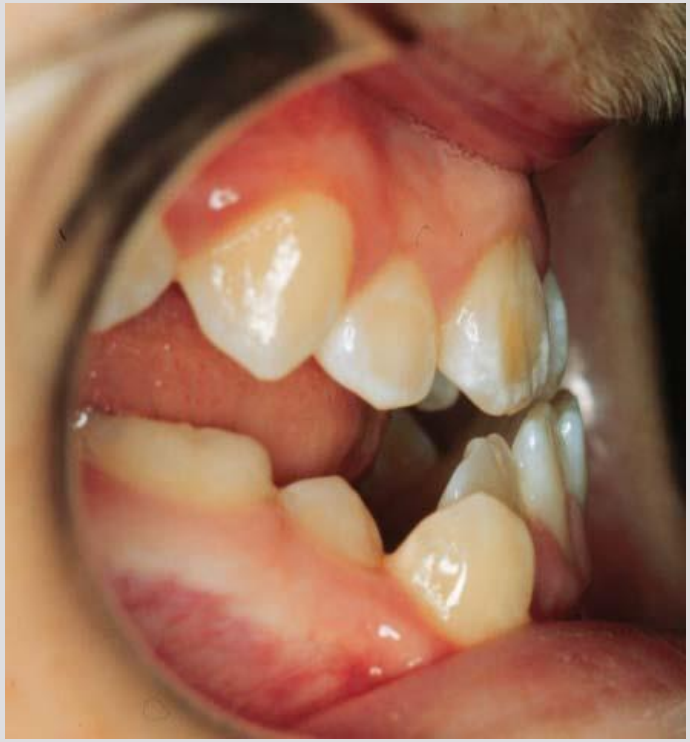




CONCAVE PROGNATHIC

CLASS III MALOCCLUSION

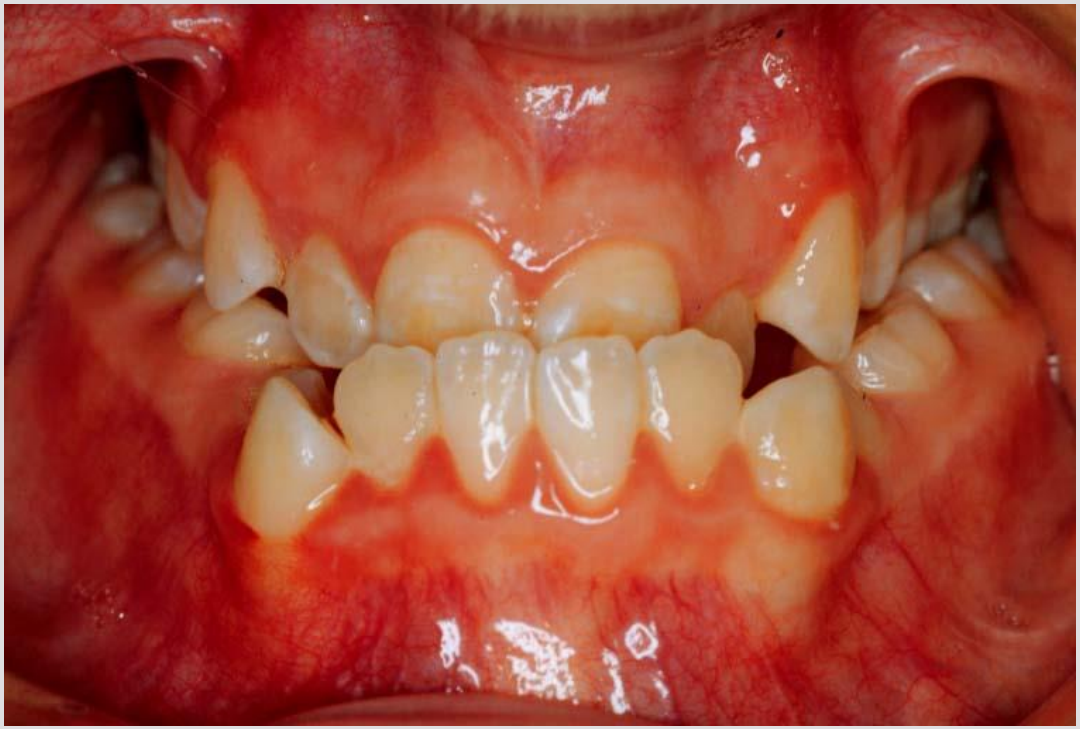


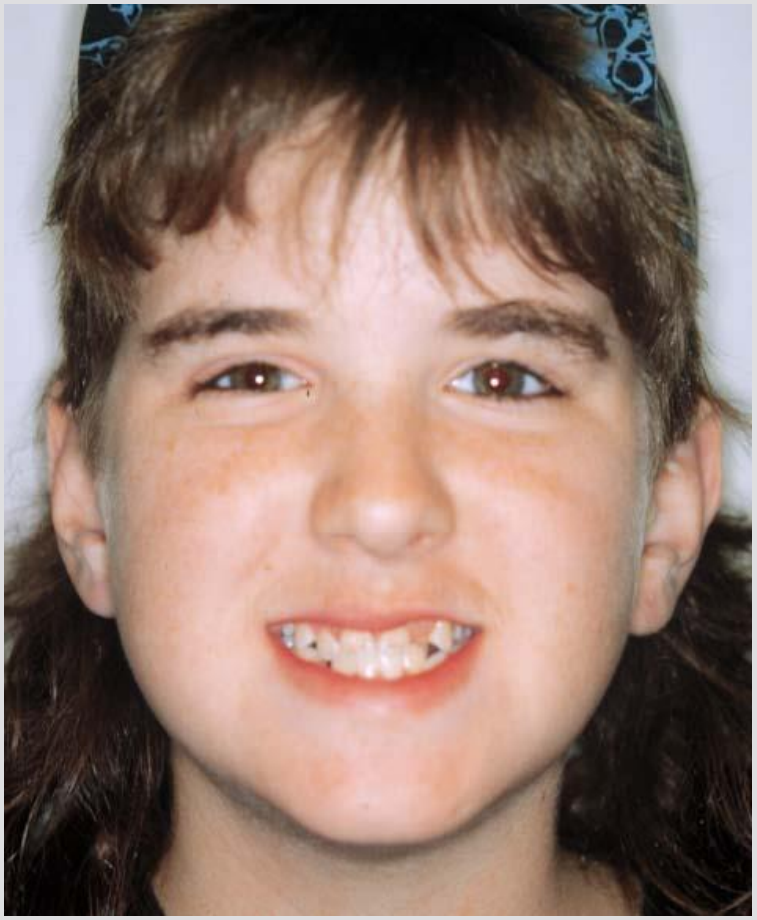


LATE MIXED DENTITION
MAXIMUM INTERCUSPATION
ANTERIOR CROSSBITE
DEEP OVERBITE
POSTERIOR CROSSBITE

INITIAL CONTACT POSITION-LEADING TO (ANTERIOR FUNCTIONAL SHIFT)

CLASS III MALOCCLUSION

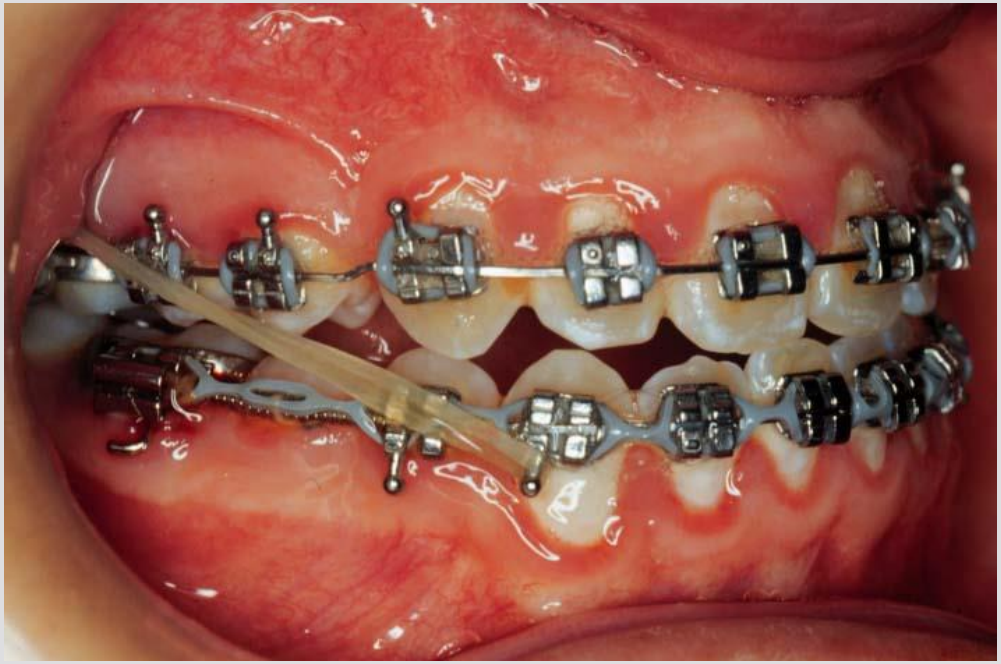




BILATERAL POSTERIOR CROSSBITE

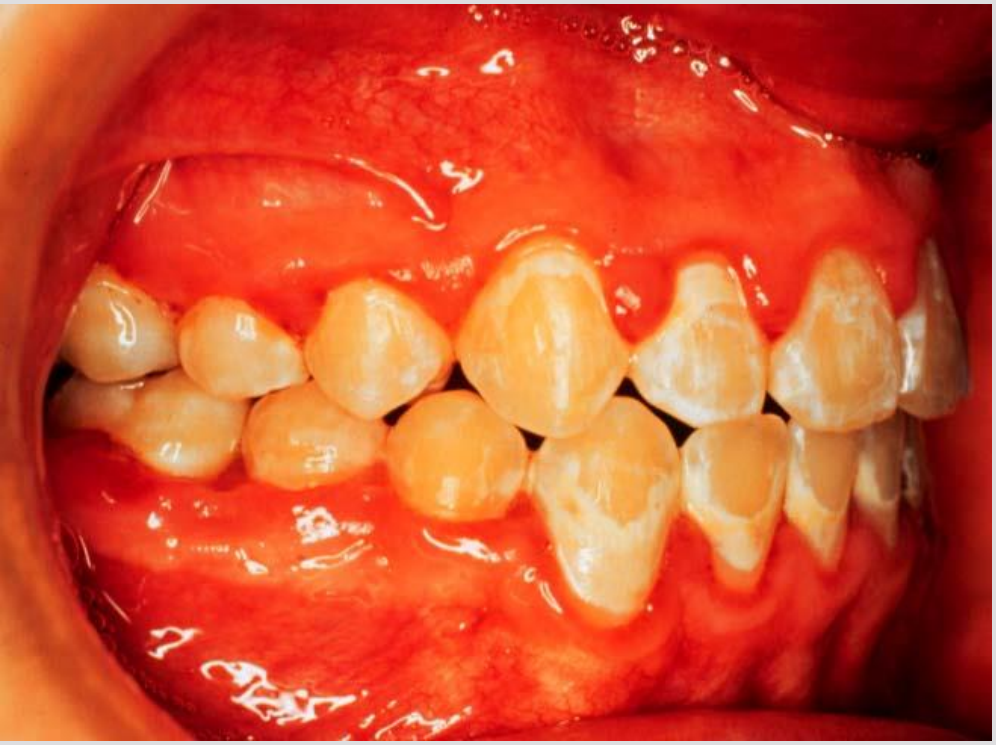
CLASS III MALOCCLUSION

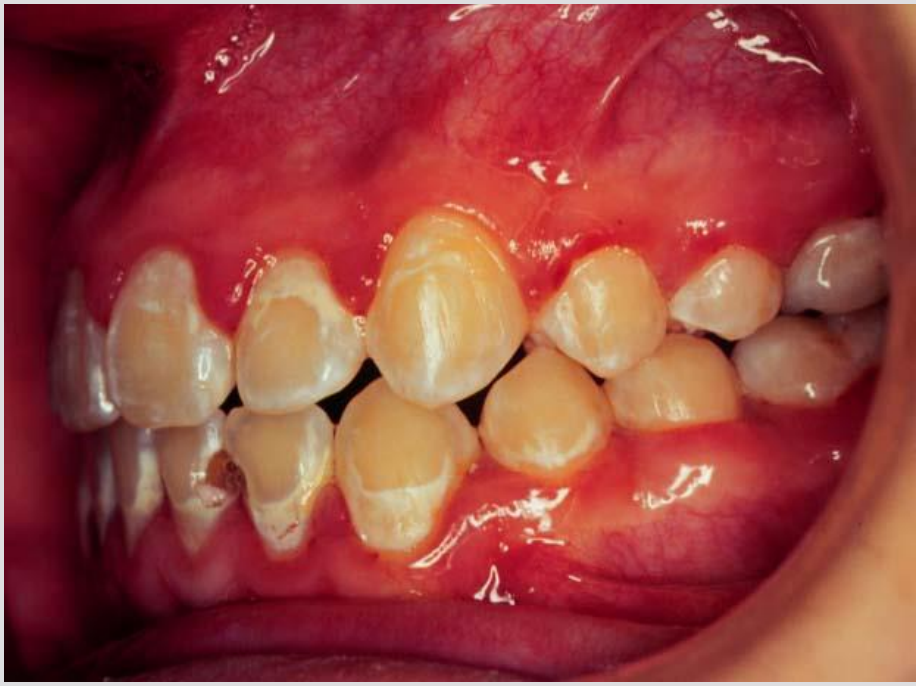
PROTRACTION
FACE MASK
(DENTAL + SKELETAL)



FULL FIXED APPLIANCES
CLASS III ELASTICS

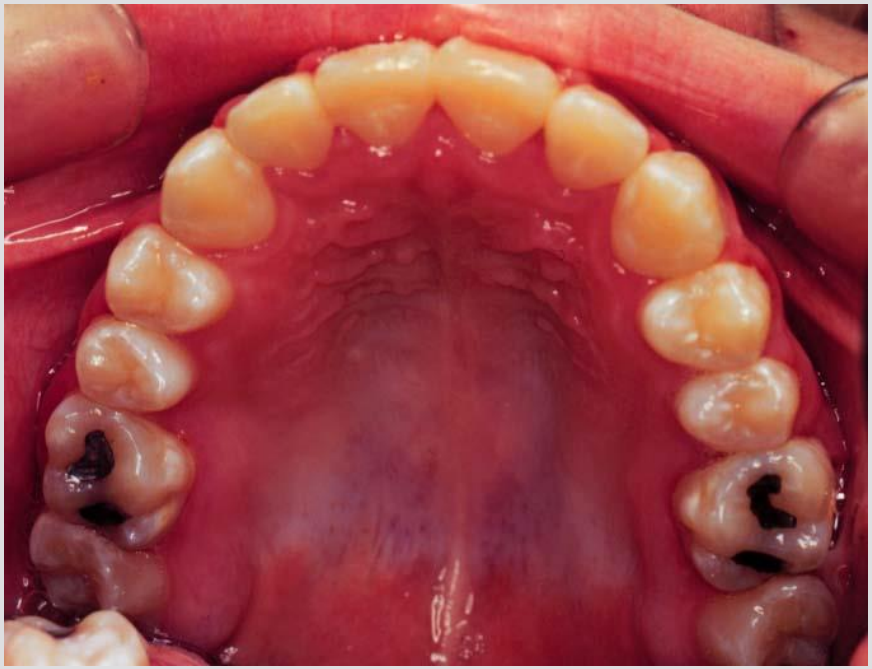
CLASS III MALOCCLUSION

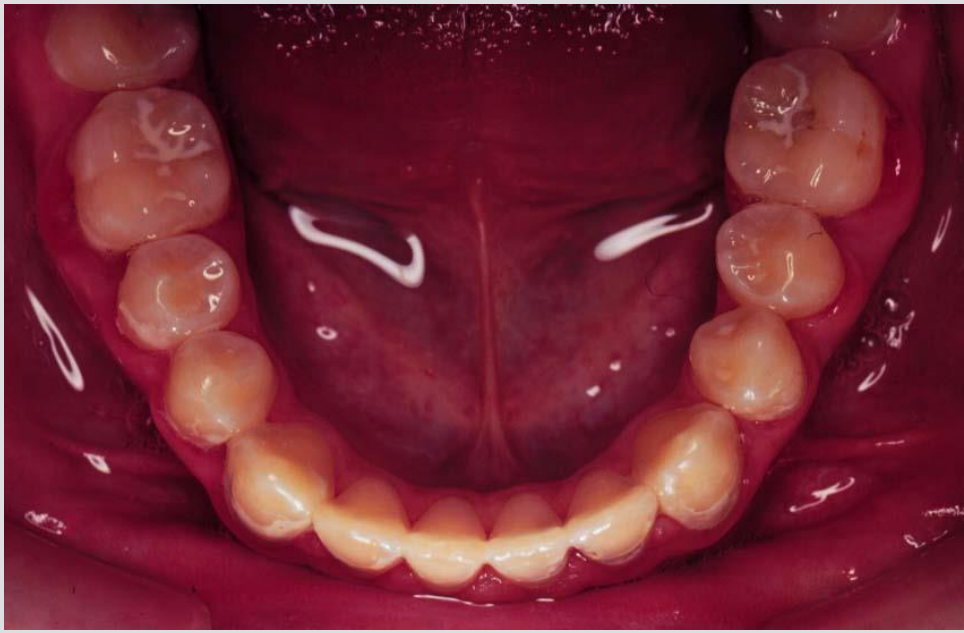




POST-TREATMENT
NORMAL OCCLUSION
IATROGENIC DECALCIFICATION

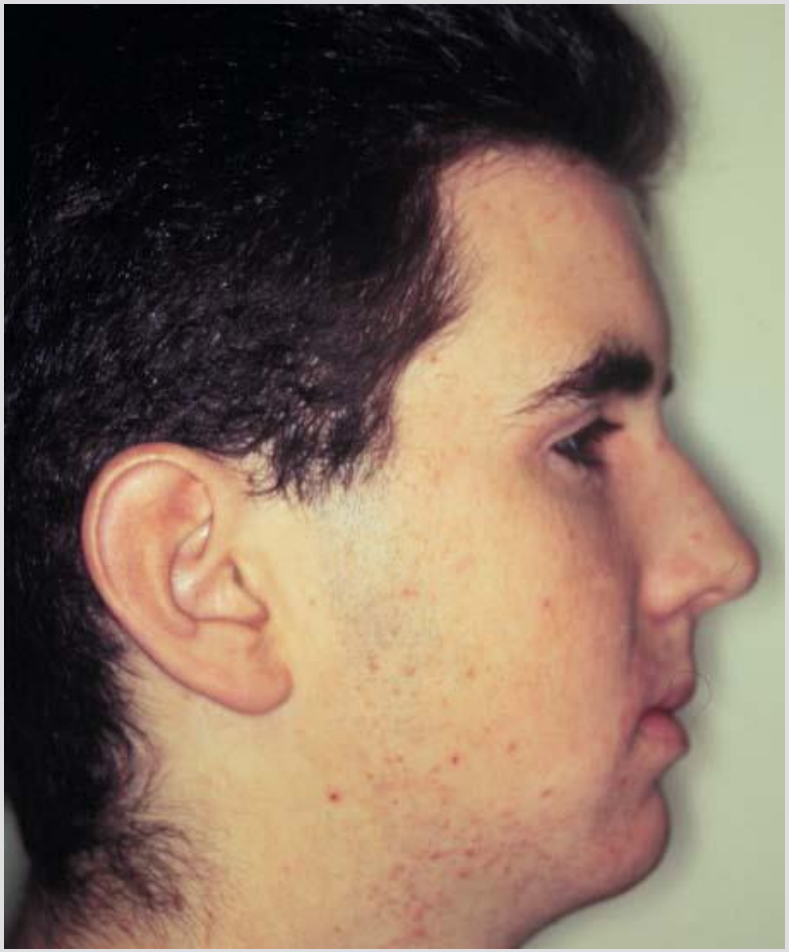
CLASS III MALOCCLUSION



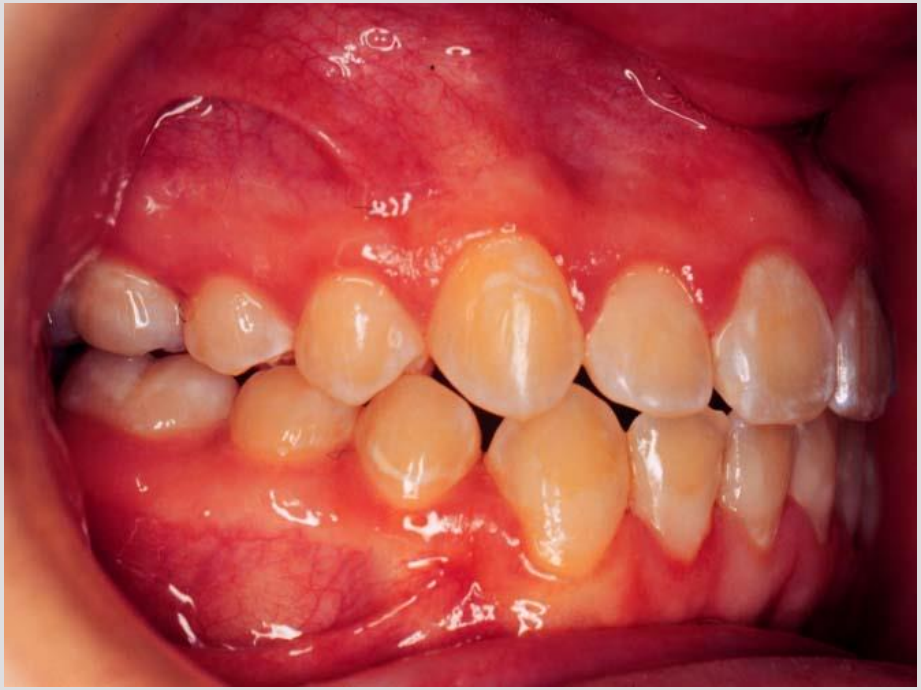


POST-TREATMENT

CLASS III MALOCCLUSION



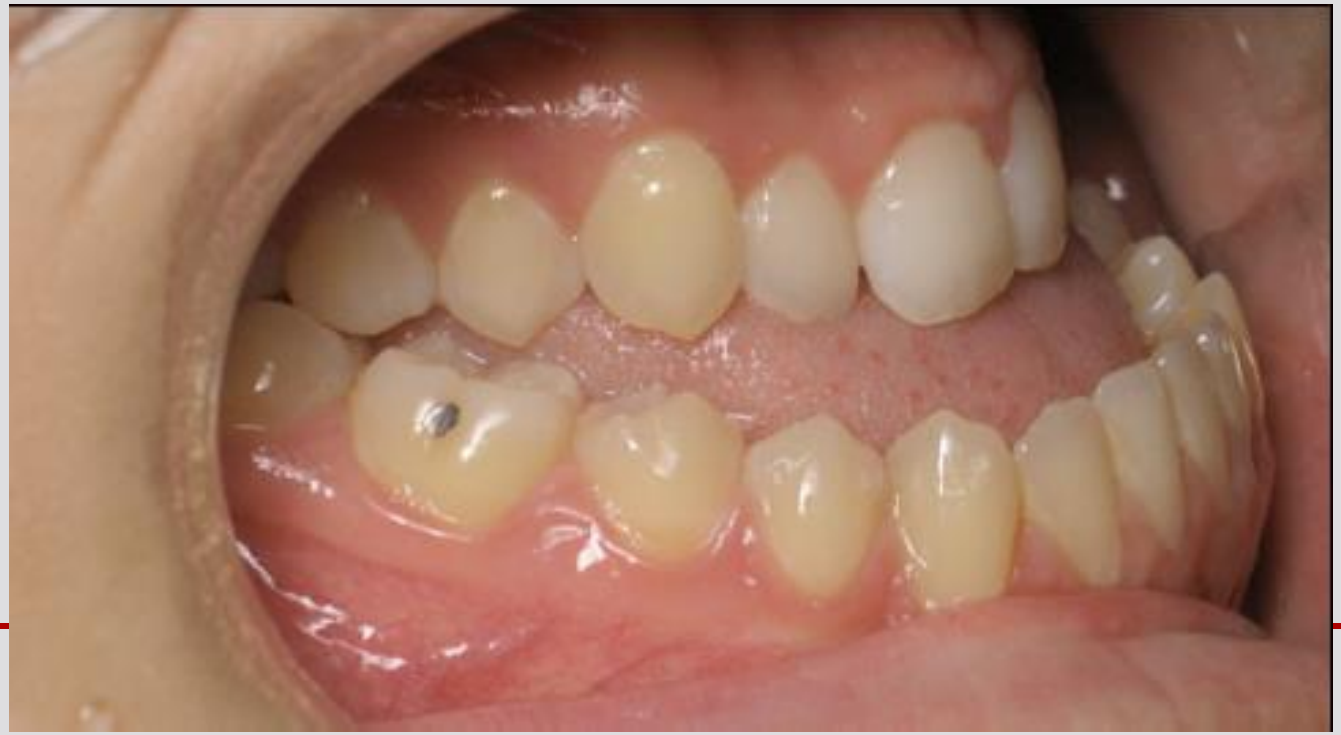
POST-TREATMENT
STRAIGHT ORTHOGNATHIC
PROFILE



DECALCIFICATION RESTORED

SURGERY

When orthodontic ttt alone cannot correct some cases of severe skeletal pattern &\or presence of reduced over-bite or an anterior open-bite




Thanks!