



ПОЛТАВСЬКИЙ
ДЕРЖАВНИЙ МЕДИЧНИЙ
УНІВЕРСИТЕТ

Department of Orthodontic



4 course

Individual Teeth Position anomalies.

Poltava 2024

Plan of lecture

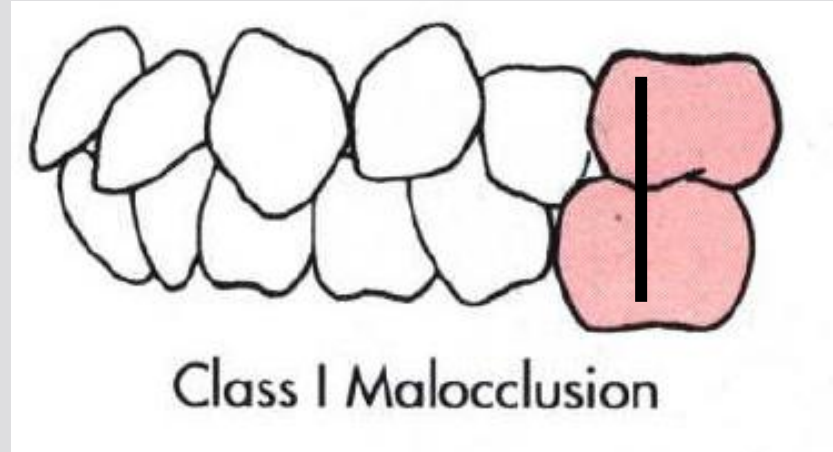
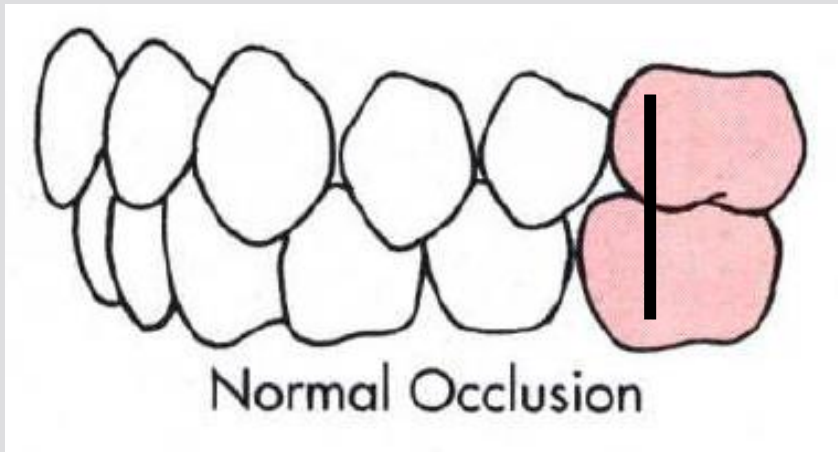
- Etiology,
 - Pathogenesis
 - Clinical presentation
 - Diagnostics
 - Treatment
 - Prevention.
-

Andrews 's Six Keys to Occlusion

- Molar relationship
 - Crown angulation (tip)
 - Crown inclination (torque)
 - Rotations
 - Contacts
 - Curve of Spee
-

Angle`s classification of malocclusion

Angle's class I malocclusion -is also known as neutroclusion



the other teeth in malocclusion

Molar relationship

Mesiobuccal cusp of the upper first permanent molar lies in the mid buccal groove of the lower first permanent molar

I class - Angle described 7 malposition of individual teeth

- 1. Buccal or labial
 - 2. lingual
 - 3. mesial
 - 4. distal
 - 5. tortoocclusion (rotated)
 - 6. infraocclusion
 - 7. supraocclusion
-

D.A. Kalvelis classification:

Disturbance in the Formation of Dental Arches:

- Labial-buccal position
 - Palatal-lingual position
 - Distal position
 - Mesial position
 - Infraocclusion
 - Supraocclusion
 - Tooth transposition
 - Dystopia of upper canines
 - Crowded teeth
 - Spacing , diastema
-

Anomalies in the Shape of Dental Arches

- Narrow dental arch
 - Saddle-shaped compressed dental arch
 - V-shaped dental arch
 - Rectangular dental arch
 - Asymmetric dental arch
-

Dental arch form disturbance

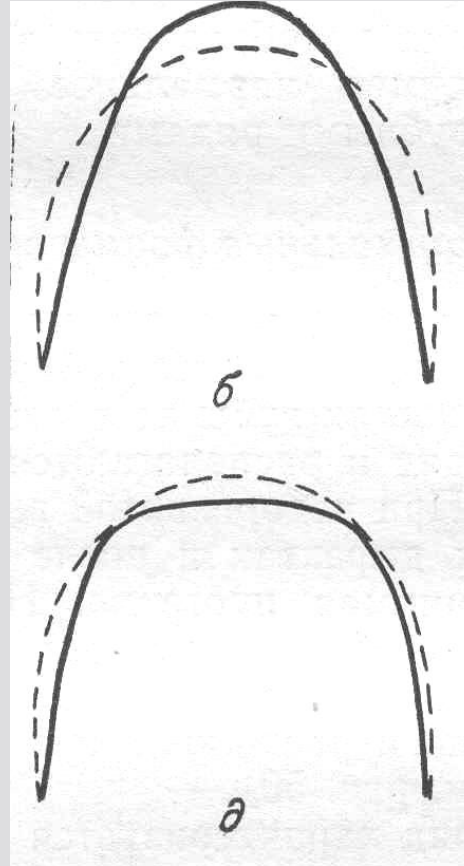
- **Вертикальні аномалії**

а)зубоальвеолярне подовження

б) зубоальвеолярне вкорочення в передній
або бічній ділянці



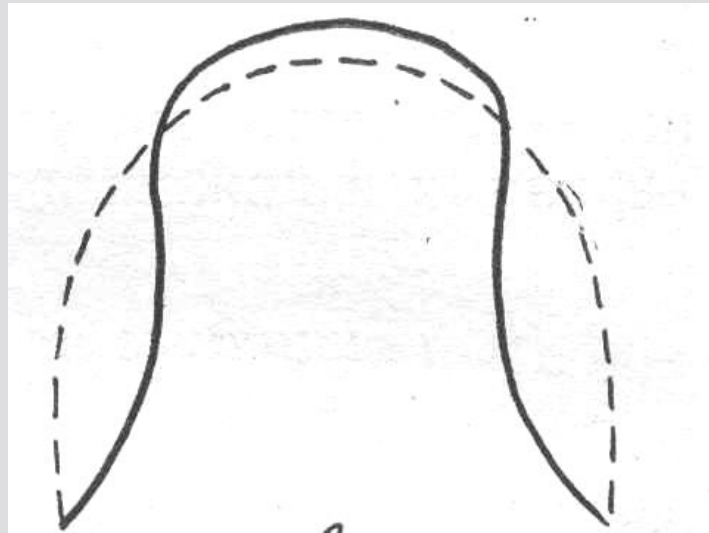
- **Сагітальні аномалії**



а) подовження
б) вкорочення

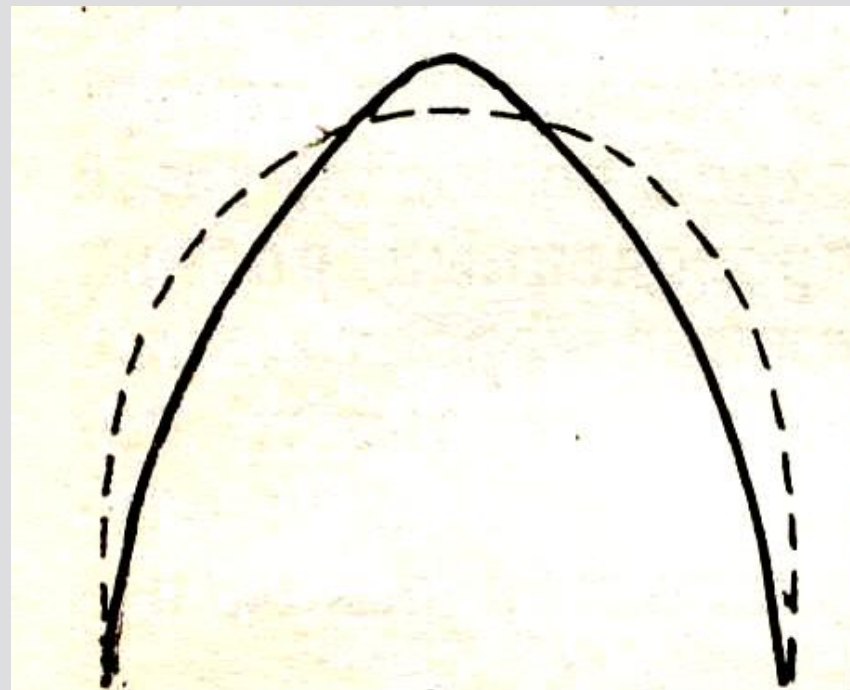
Діагностика : визначення довжини зубного ряду за Коргхаузом

- **Трансверзальні аномалії**



а) звуження
б) розширення

- **Трансверзальні аномалії**



Діагностика : визначення
ширини зубного ряду за Поном

Some main causes of malocclusion class I

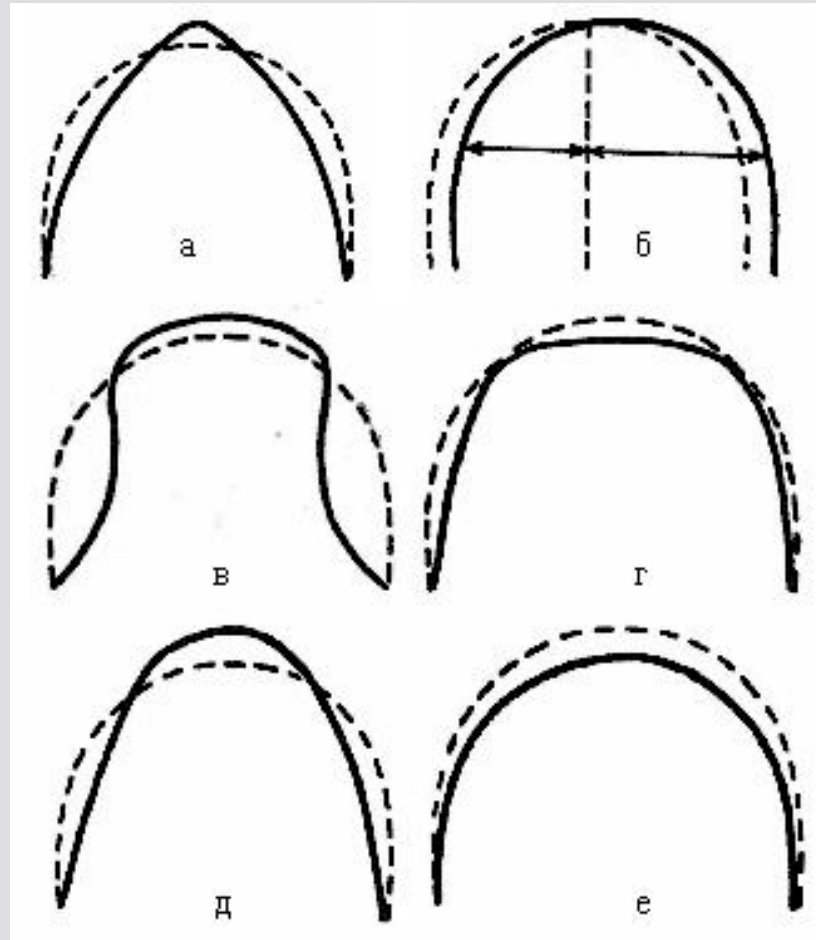
- Growth jaws disturbance
 - Germs malposition
 - Teeth development disturbance
 - Early extraction of primary teeth
 - Disturbance of eruption process (early or subsequently eruption)
 - Disturbance of teeth amount
 - Disturbance of size ratio between the primary and permanent teeth.
 - **Function disorders**
-

Forms of Malocclusion

- Skeletal
 - Dent-alveolar
 - Combined
-

Arch Forms

**V-shaped
Square
Tapering**



Vestibular teeth position (protrusion)



BiProtrusion due to infantile swallowing (mixed dentition)



Oral (Palatal or lingual) teeth position



Treatment of tooth inclination

(buccal, or labial, lingual, mesial, distal).

(according to the presence of space, age and clinical situation):

- **Orthodontic**

appliances: removable and fixed:

- **Combined with surgical**

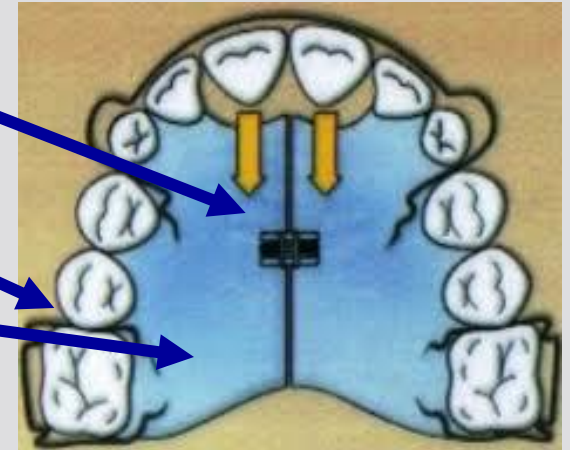
Tooth movement with removable appliances

Tooth movement with removable appliances almost always falls into one of the following categories:

- 1- Increase arch perimeter (arch expansion).
 - 2- Repositioning of individual teeth within the arch.
 - 3- Oral or labial teeth movement.
-

Component of Removable Appliances

- Active component
 - Spring, screw, elastics,....
- Retentive components
- Acrylic base plate



Active component

- Increase arch perimeter (arch expansion).

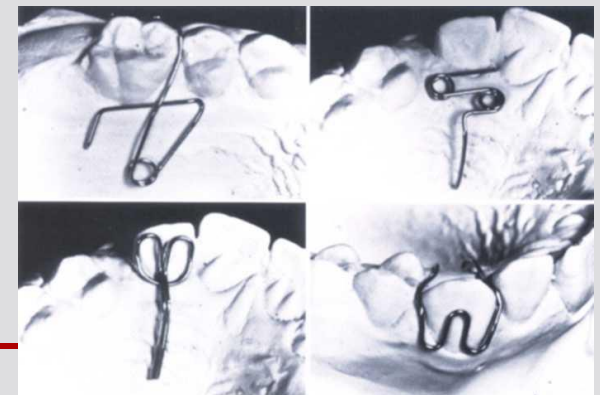


Screws

- Uni-dimensional screws
- Bi-dimensional screws
- **Normalization of inclination**

Wire springs

- Finger spring
- Z-spring
- Canine retractor
- Short labial arch



Active Plate for Arch Expansion

- Anterior Expansion of maxillary incisors.
 - Transverse Expansion of the Arches.
 - Simultaneous Anterior and posterior Expansion
 - Active plates are most useful when a few millimeters of space are needed (1.5-2 mm side).
-

Protrusion treatment

Selection of appliance and the spring design depend on

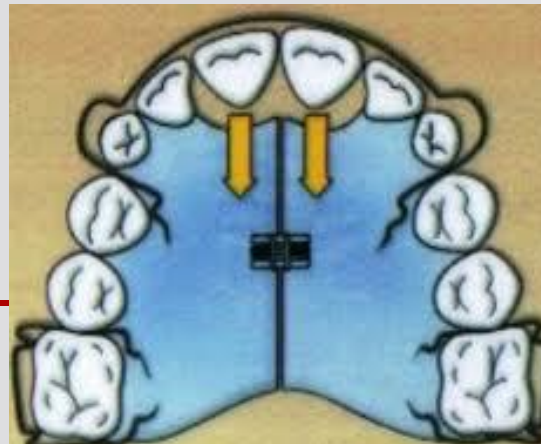
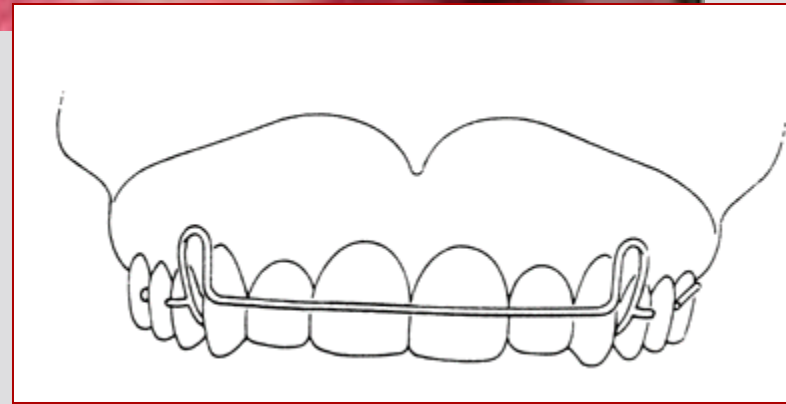
Space presence



ACTIVE COMPONENT

○ labial arch

- It must contact the middle 1/3 of the labial surface of the teeth 21|12



Protrusion treatment functional plates

TRAINER FOR KIDS



Combined functional and Active plate
Andresen Activator



Frankel I (RF-I)



labial arch



- Accessory springs to guide the eruption of the maxillary lateral incisors.



Protrusion treatment

Fixed appliances
case with extraction



Oral position treatment

Selection of appliance and the spring design depend on

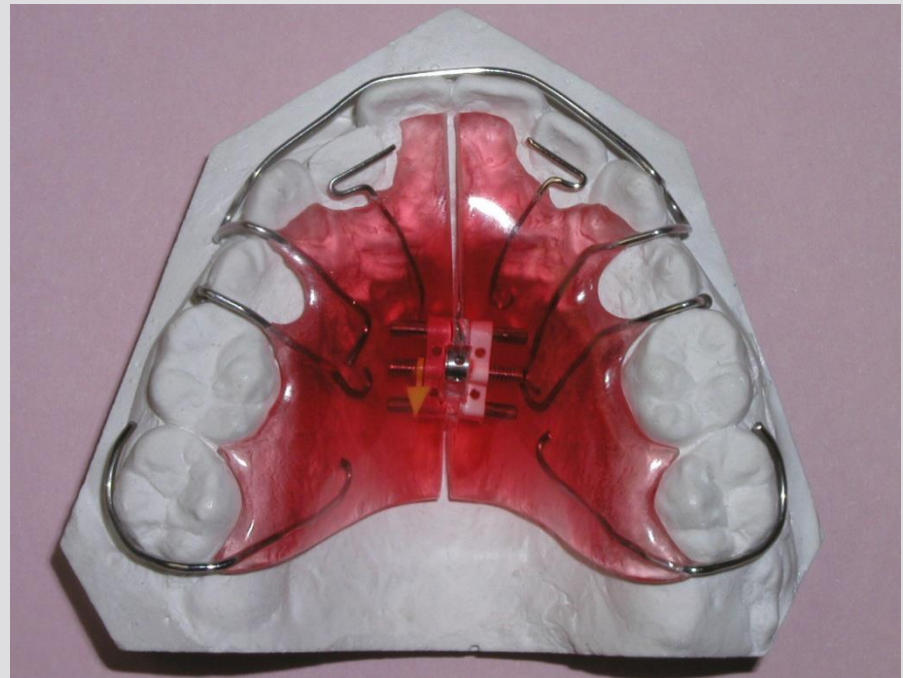
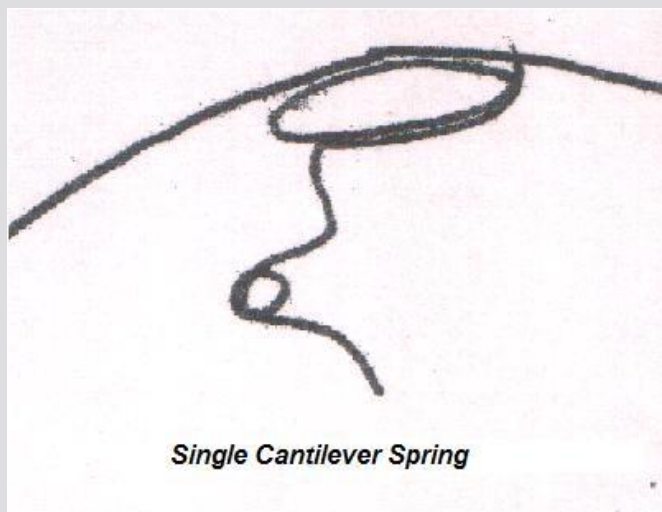
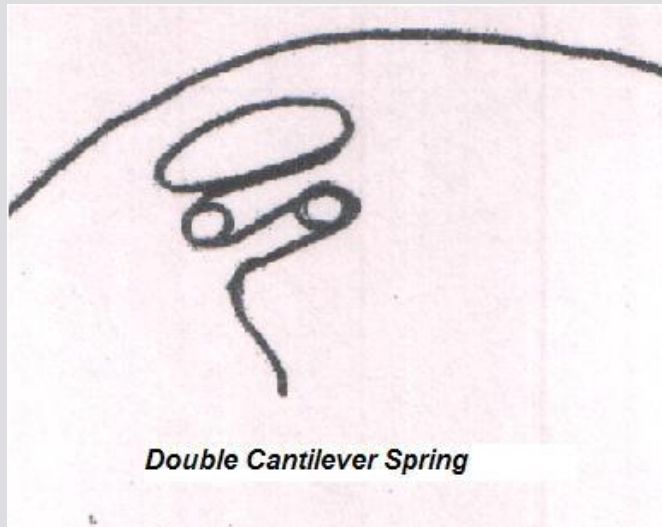
Space presence

Depth of the over bite.



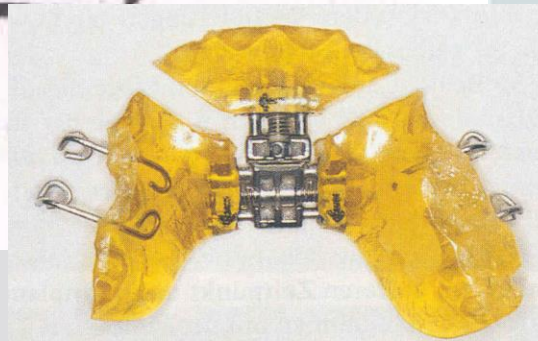
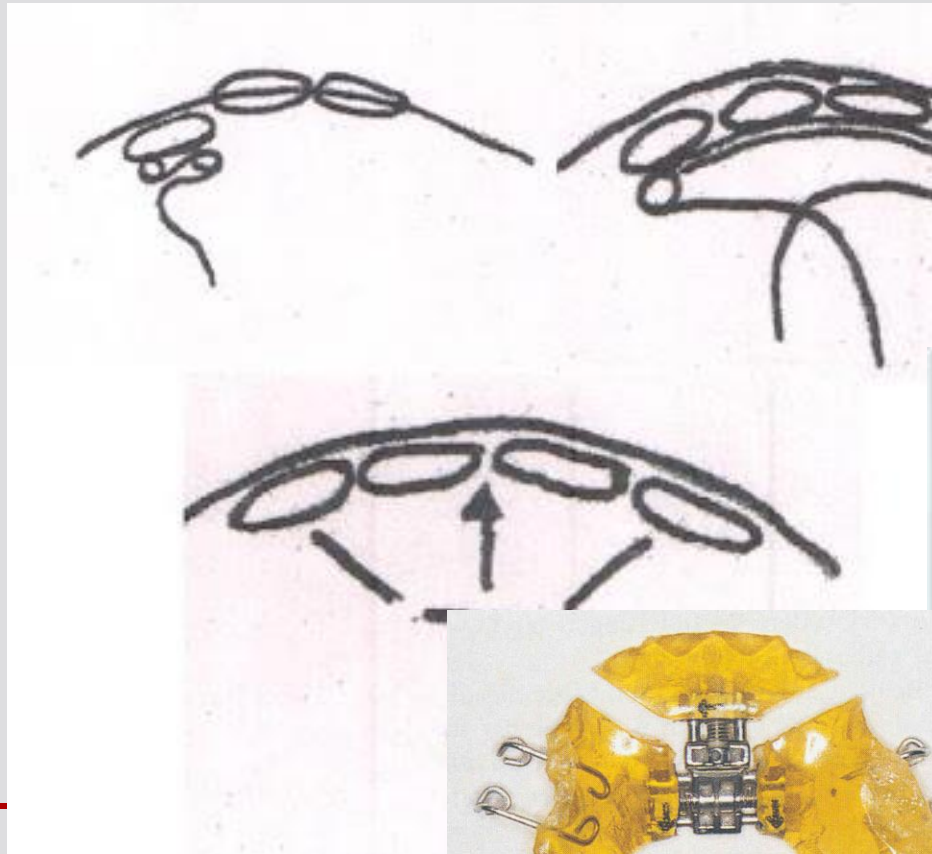
Selection of appliance and the spring design depend on

Amount of forward movement required



Selection of appliance and the spring design depend on

Number of teeth involved

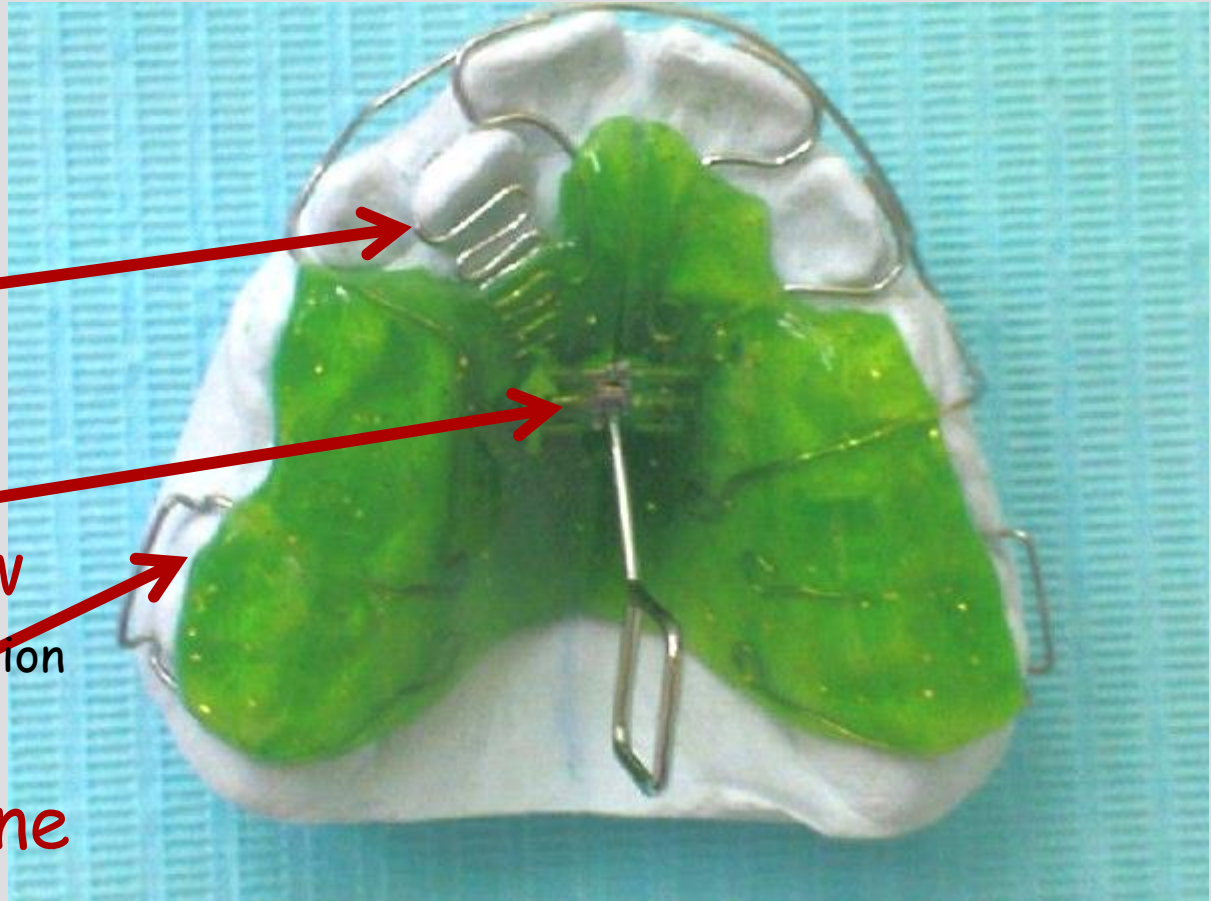


Z-spring

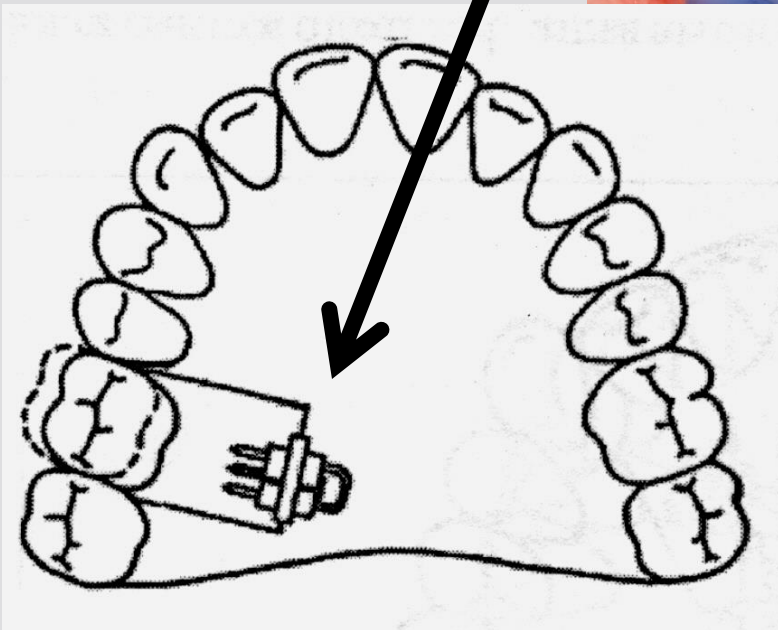
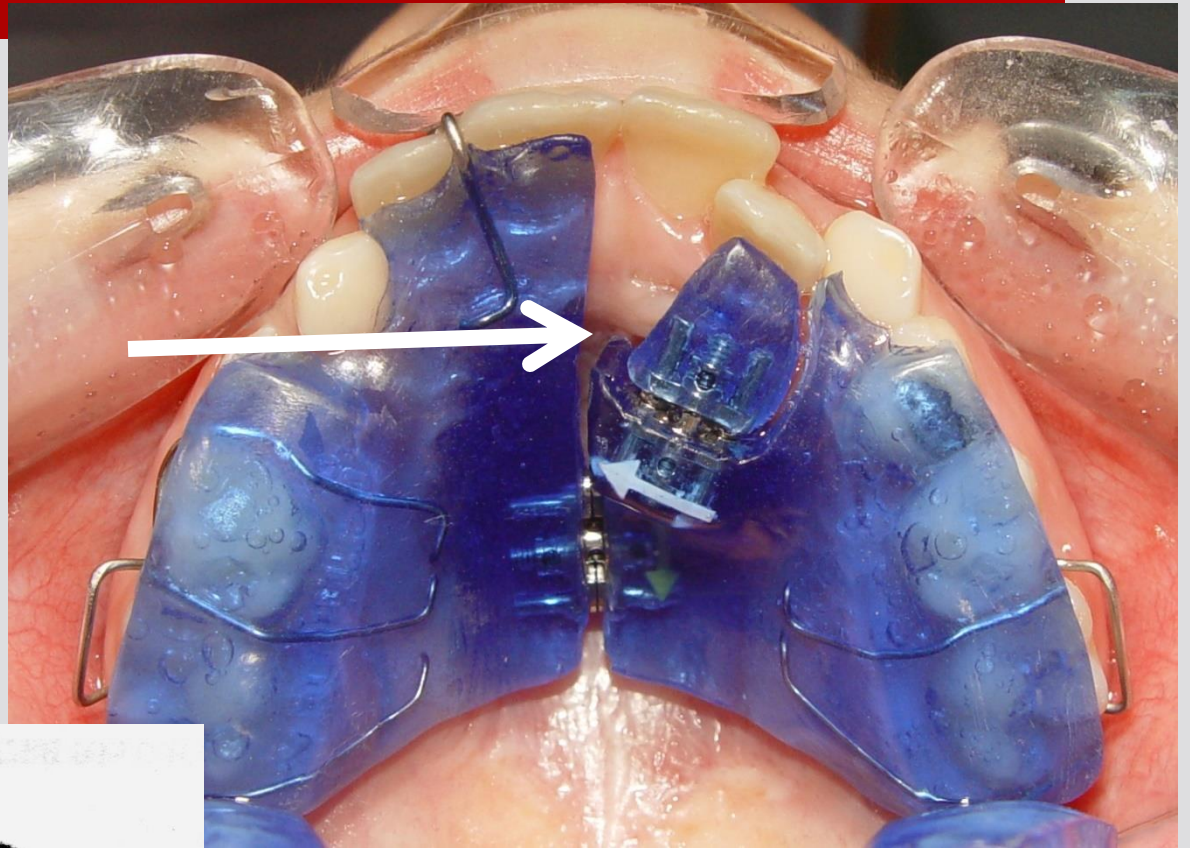
Repositioning of individual teeth within the arch.

Mid-line screw
for arch expansion

Posterior bite plane
to disocclude teeth



Mini-screw



Fixed appliances



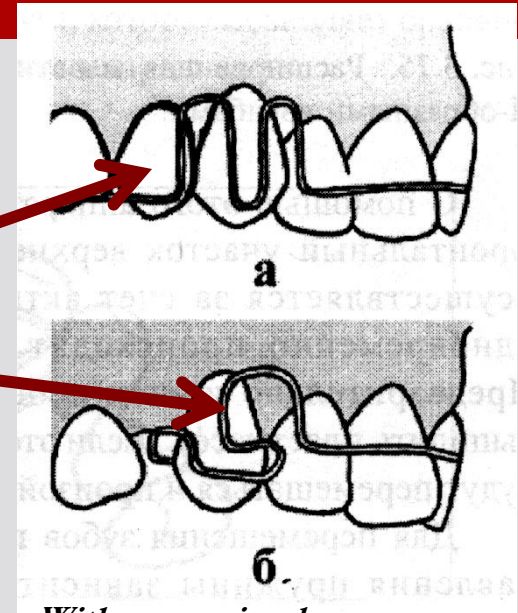


Disposition of canines or supraposition by Angle

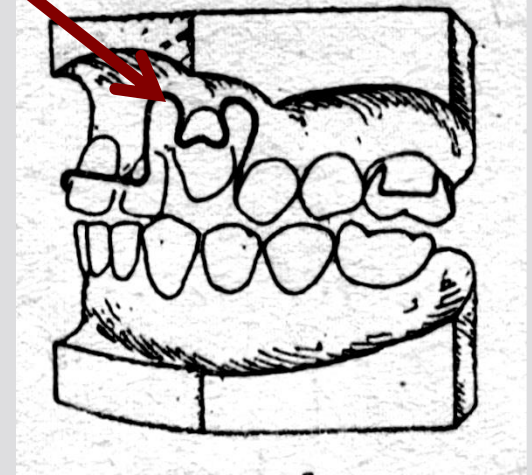
Accessory springs on Labial arch



Teeth have the tendency to move towards the front



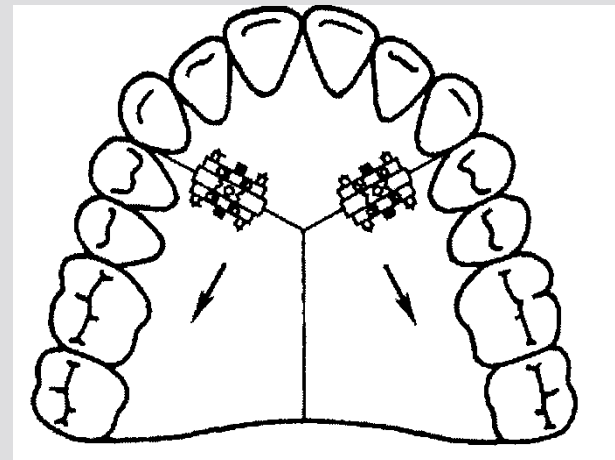
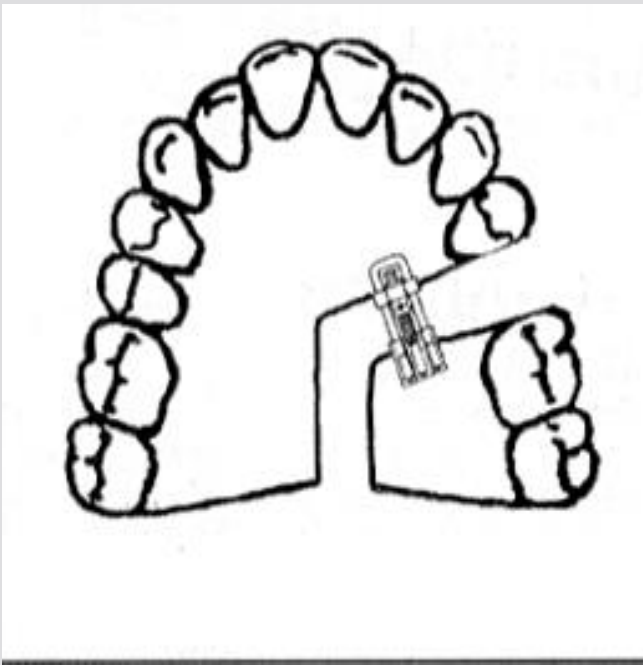
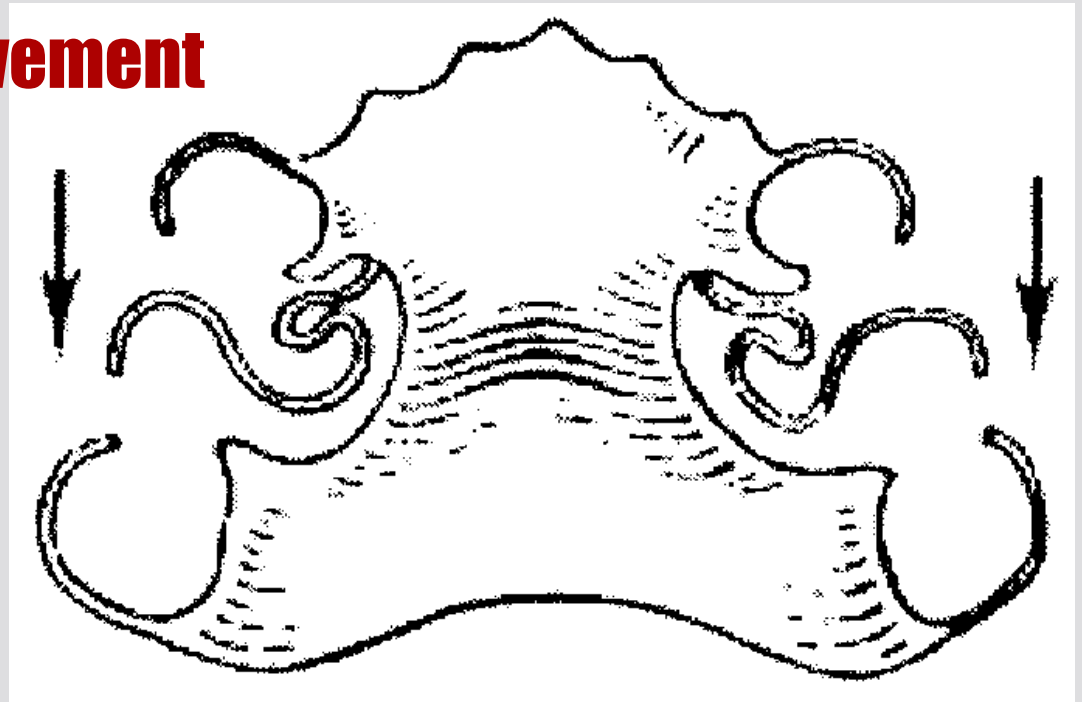
*With a pressing loop
(horizontal or vertical)*



*With the M-shaped loops
for canines*

Treatment of mesial movement

Teeth distalization
Finger spring





Edgewise Appliance
Combined treatment



DIASTEMA or distal position of teeth by Angle

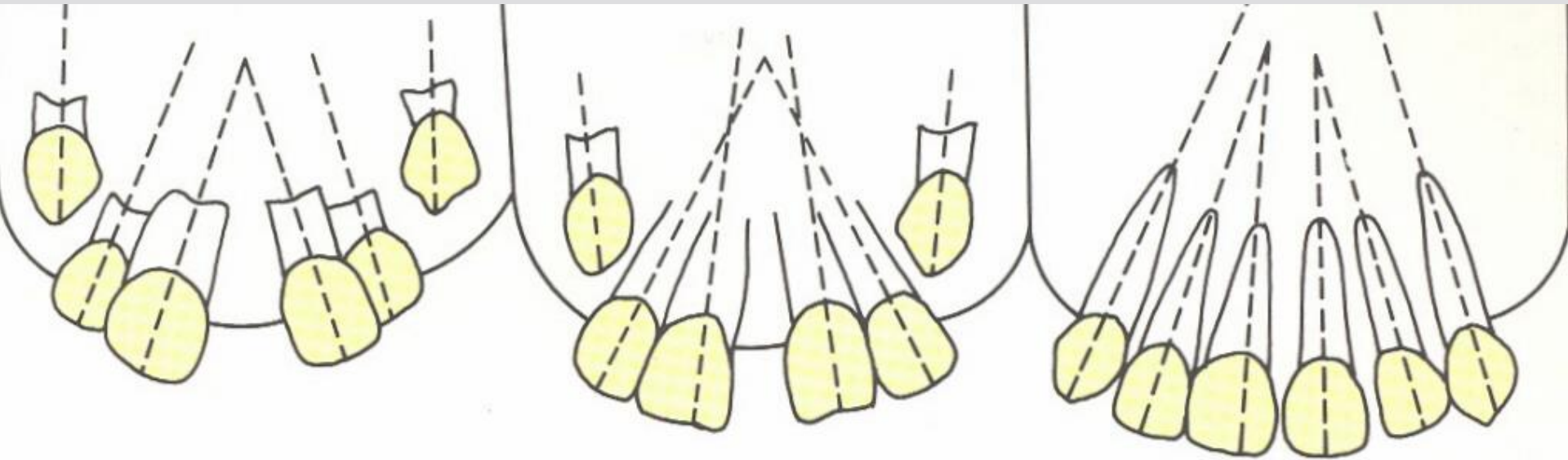
- a space between the central incisors.



7 years old

9 years old

14 years old



Changes in the axial inclination due to the eruption of the maxillary anterior teeth (Broadbent, 1957).

Dental Spacing (diastema)

- Can be due to
 - Heredity
 - Large sized jaw-macrognathia
 - Small teeth (tooth size discrepancy)
 - Frenum
 - Habits (tongue thrust, thumb sucking)
 - Mesiodens
 - Proclination of upper incisors
 - Peg laterals
 - Missing laterals
 - Deep bite
 - Midline cysts



Occlusal X-Ray

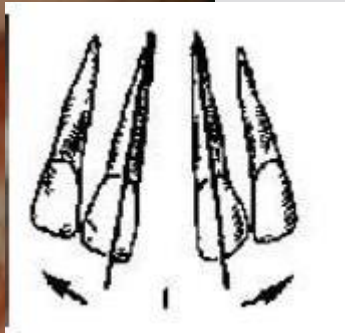




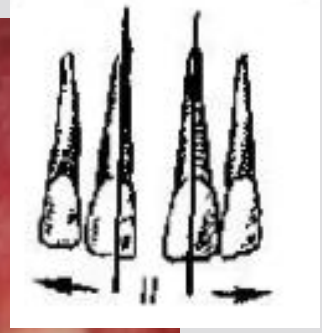
ASYMMETRIC
DIASTEMA



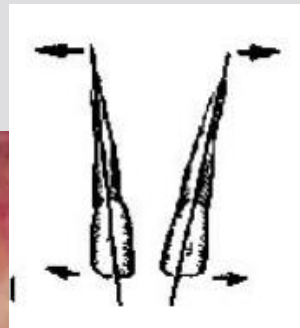
SYMMETRIC
DIASTEMA



I type



II type

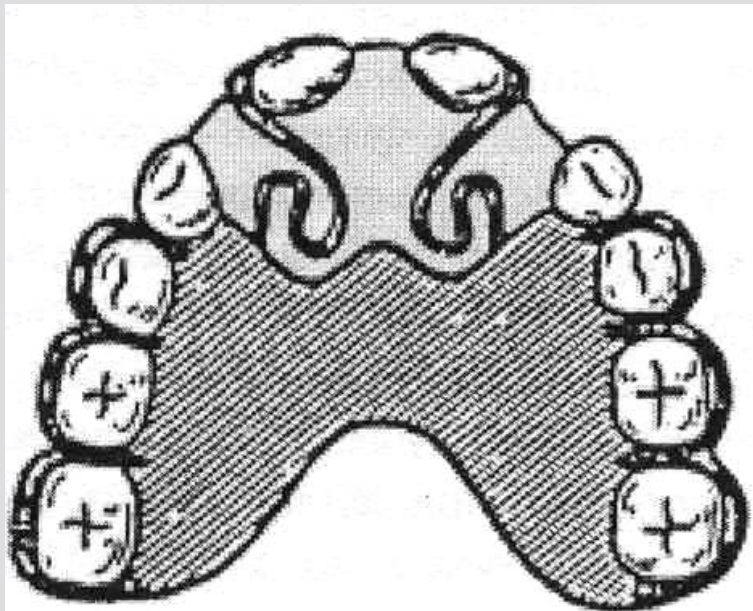


III type

Diastema Closure in the mixed dentition (if the d.>3 mm)

Removable appliances with
mechanical elements (springs and other)

- Helical coil spring to move a central incisor toward the midline.
- Finger spring



Diastema Closure

Cases without an overjet

- the teeth cannot be tipped back to close the space
 - diastema closes by moving the central incisors toward the midline, after that composite buildups on the lateral incisors (in the permanent dentition)
 - another approach - composite buildups on the mesial surfaces of the central incisors without orthodontic movements.
-

COMPOSITE RESTORATION

Before



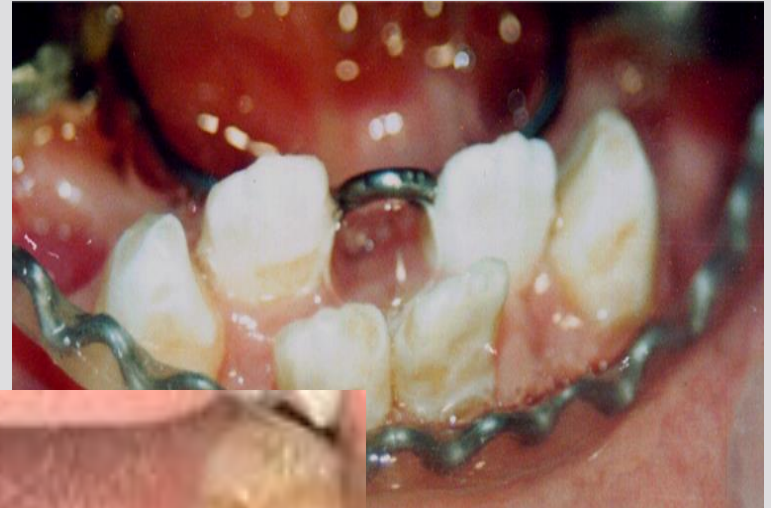
After



- Veneers

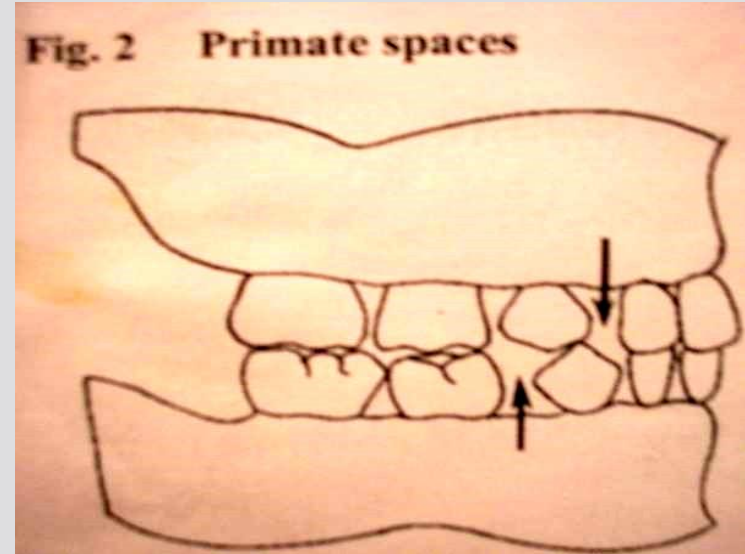


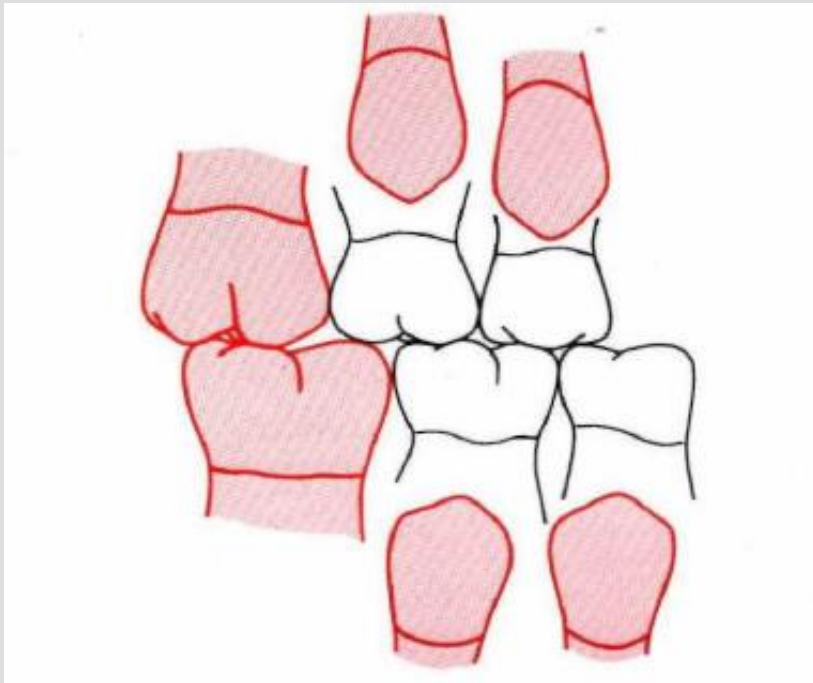
- Crowding
- Crowding of the tooth is caused by a faulty relationship between *jaw size*, and *tooth size*.



ESSENTIAL FACTORS FOR A SMOOTH TRANSITION FROM PRIMARY TO PERMANENT DENTITION

1. Primate space
2. General spacing
3. Preservation of “leeway space”
4. Sequences of eruption
5. Tooth size and jaw in harmony





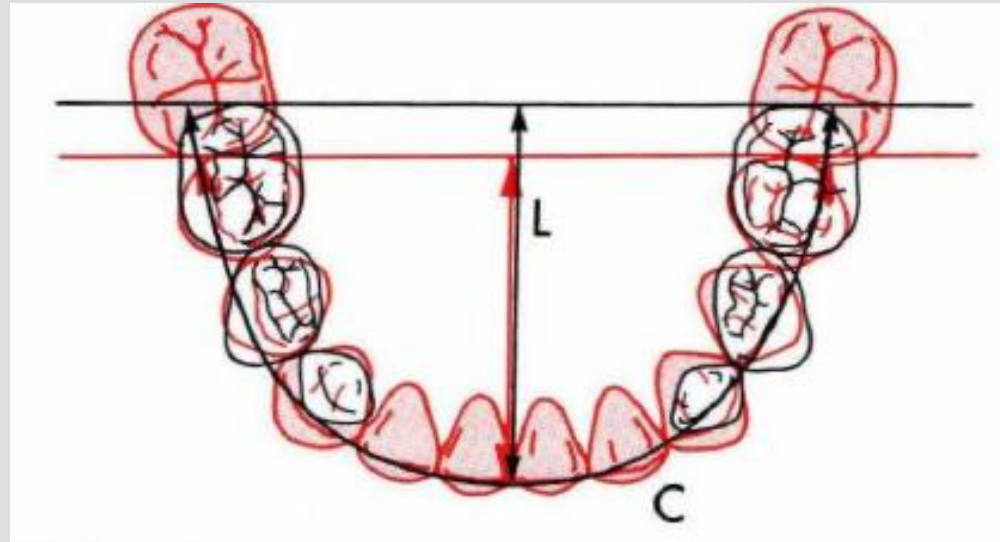
Leeway space

is the difference in space between the combined mesial – distal crown dimensions of the unerupted permanent canine, first and second premolars, and the primary canine and molars

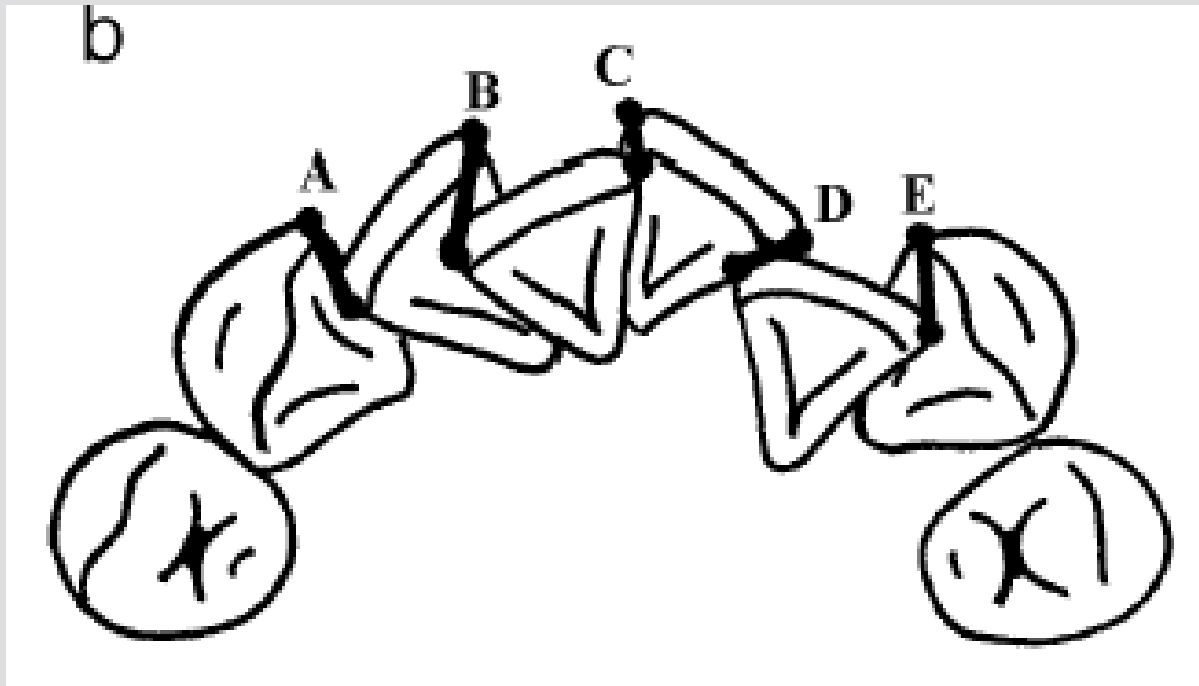
Mandible – 2.5mm / side

Maxilla – 1.5mm / side

Length change →



Measurement of anatomic contact points of each mandibular incisors



$A+B+C+D+E =$ Anterior lower incisor crowding

- 0-1 ideal
 - 2-3 mild crowding
 - 4-6 moderate crowding
 - 7-10 severe crowding
 - > 10 extreme crowding
-

Mild Crowding

If the space discrepancy is up to 4mm:

- usually resolves without extraction.
- Proximal stripping
- Alignment of teeth by labial bow, finger spring.

Moderate crowding:

If space discrepancy is in the range of 5-9mm, treated without extractions by :

Arch expansion

Molar anchorage or

Proximal stripping

Severe crowding :

Patients with space discrepancy of 10 mm or more:

- Extract all 1st premolars

- Retract canine by canine retractor

- Align anteriors by labial bow

- Retention

CASES FOR DISCING

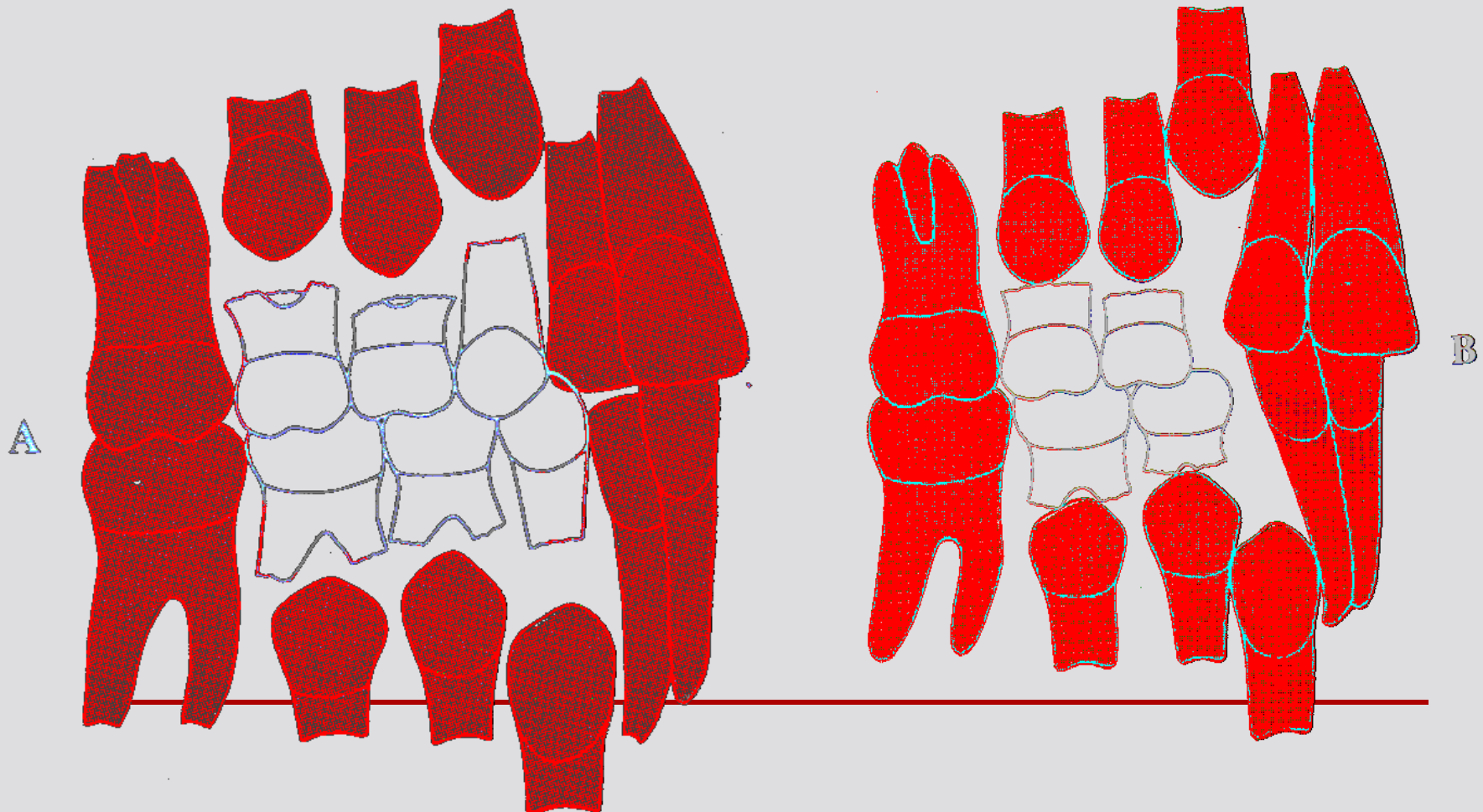
Those with 3 – 4 mm. arch crowding.
The goal is to transfer the anterior crowding posteriorly into the leeway space.



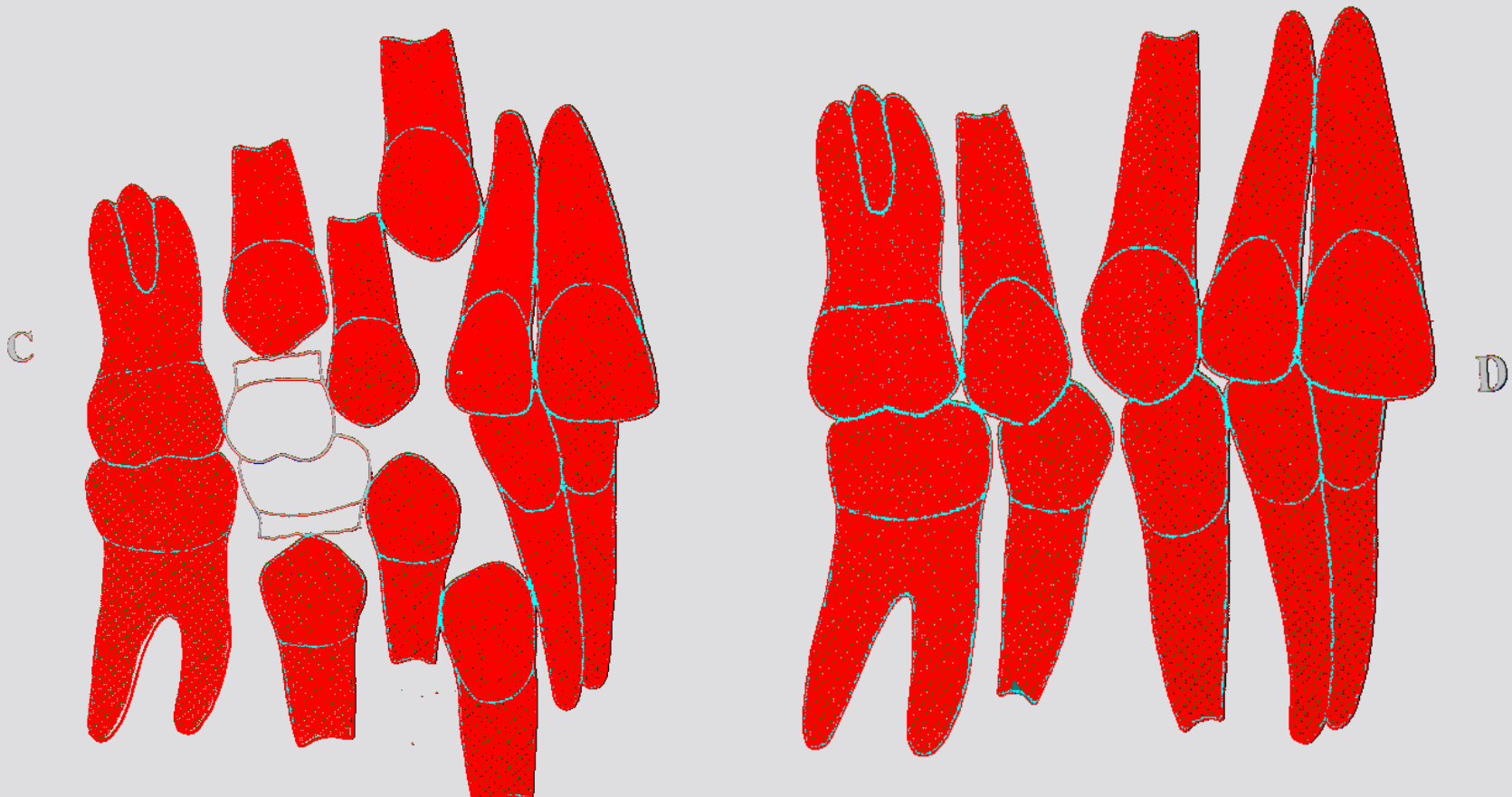
Serial extraction in the mixed dentition

When arch crowding is 4 to 9 mm.

- The primary canines and first molars may be extracted to allow the incisors more space to align themselves.



- Once the first premolars are visible, they are extracted, this provides the erupting canines and second premolars with adequate arch length in which to erupt.





Edgewise Appliance
Combined treatment



Intrusion



Infraocclusion on lower jaw



Supraocclusion on upper jaw

extrusion



TREATMENT

- Removable appliance with bite plane
 - Fixed appliance
-



infraposition



Rotated teeth (torsoocclusion)

Treatment

- Fixed appliances
- Composite restoration







Thanks!