

Operativ techniques in Dentistry: Paedodontics and Orthodontics

- The purpose of orthodontics
- Grouping of the appliances
- Elements of fixed appliances
- The types and parts of the removable appliances

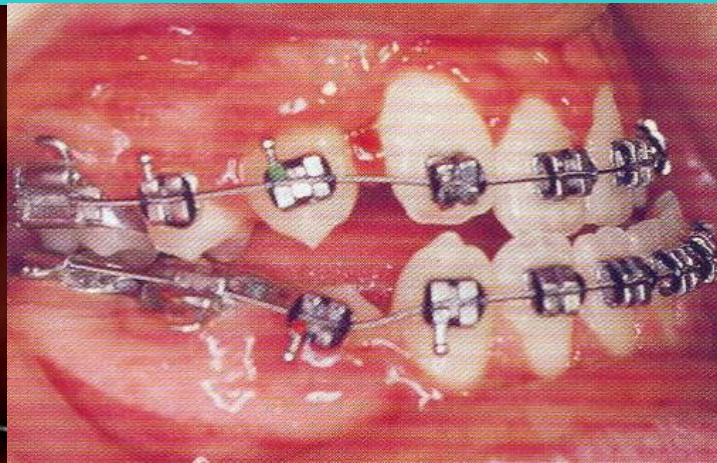


The purpose of orthodontic treatments

To solve esthetic complaints

To treat the functional anomalies (chewing, speech, TMI, etc.)

Prevention (caries, parodontitis, TMJ dysfunction)

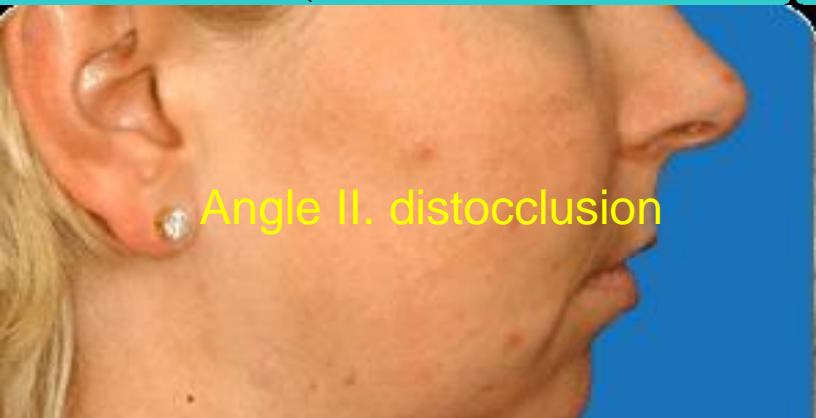


Angle Classification

- Class I Molar (65%)
- Class II Molar (30%)
- Class III Molar (5%)



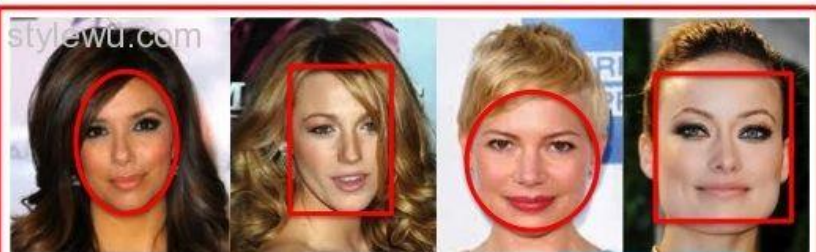
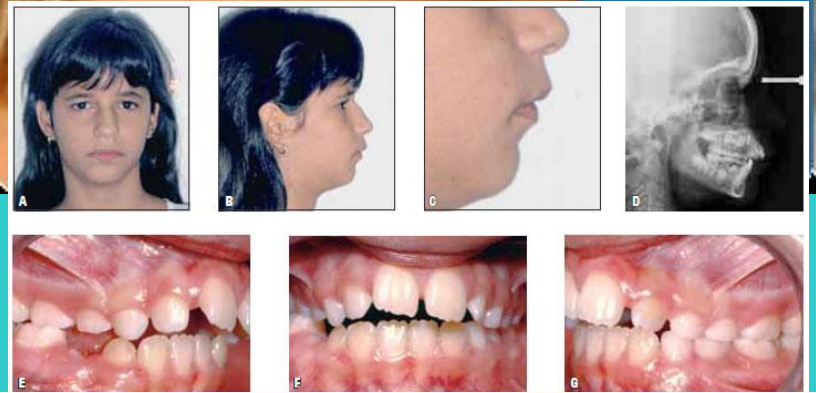
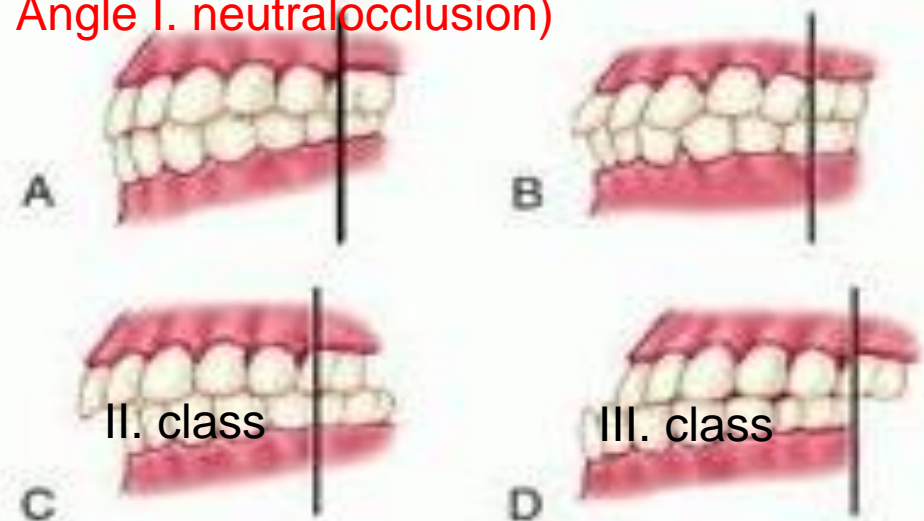
Sagittal anomalies - Angle classification (based on: anteroposterior relationship of the jaws)



Angle III. mesiocclusion



Angle I. neutral occlusion)



I. class)



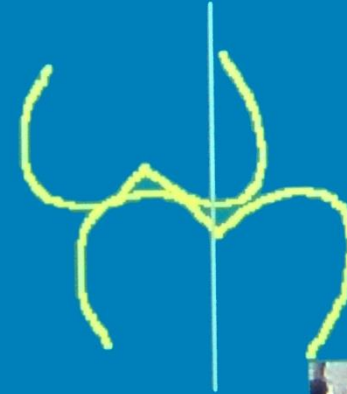
I. class

Angle I. osztály



Class I Molar

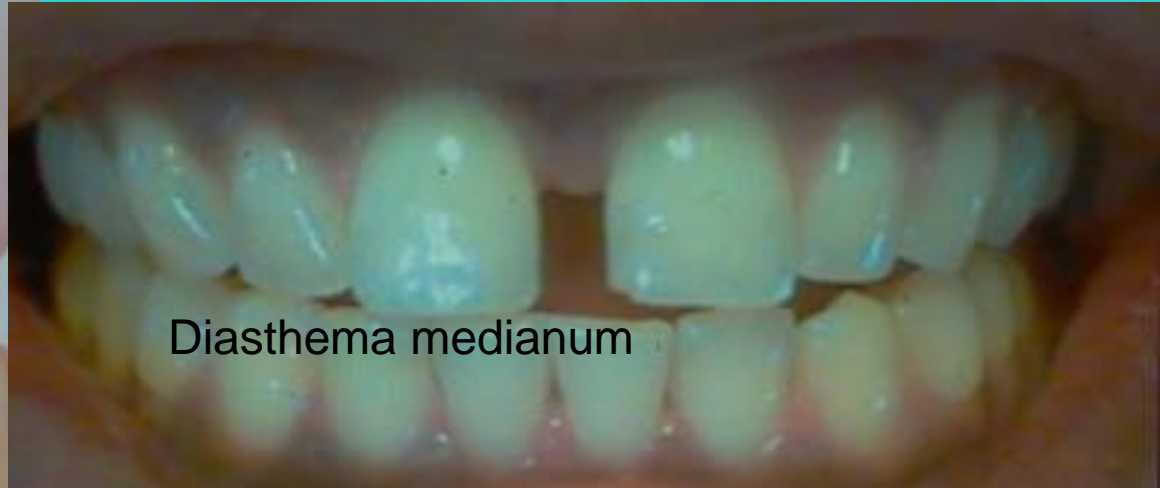
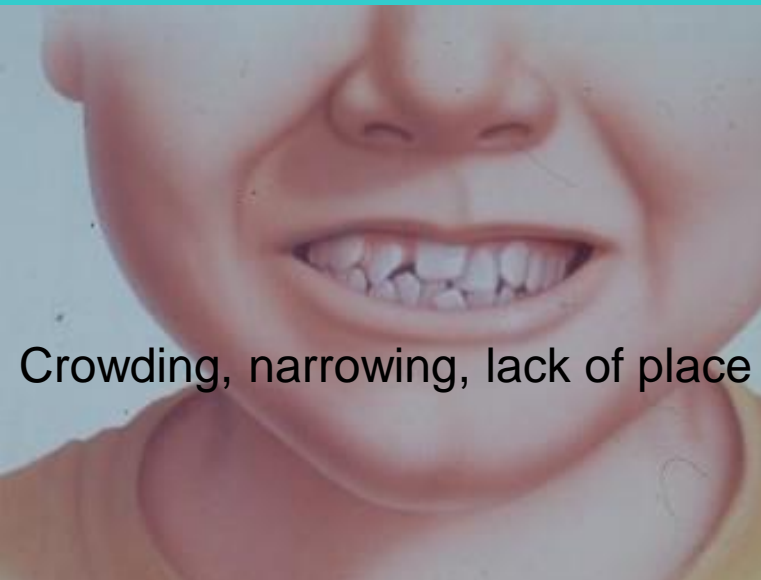
Distal



Mesial



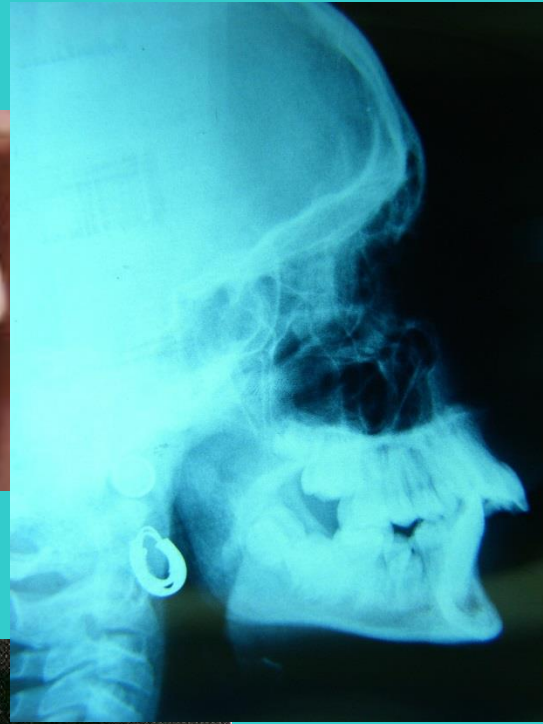
Angle I.



Angle II. - Distocclusion



Angle II/1



Angle II/2



The mandible is backward or/and the maxilla is forward)





Before

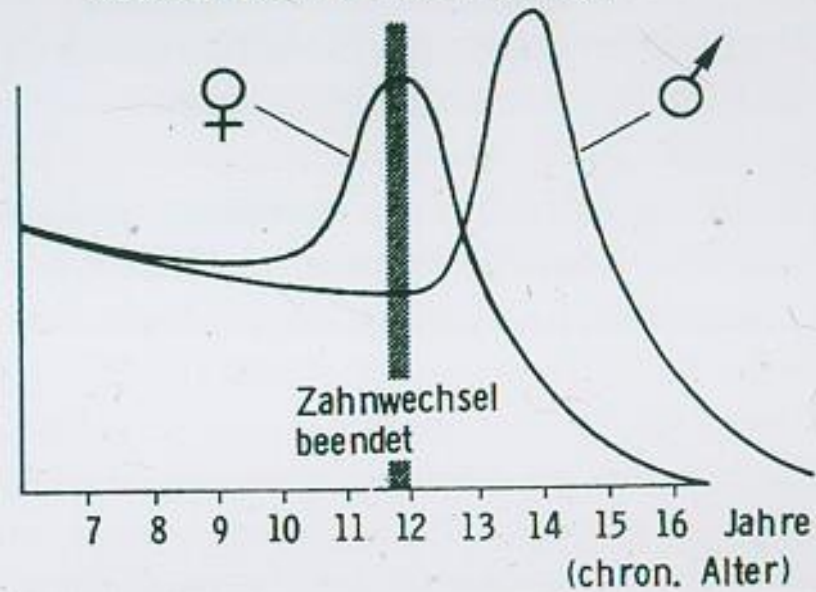


After

Functional jaw orthopaedics, bimaxillary, functional appliances



Wachstumskurven nach TANNER

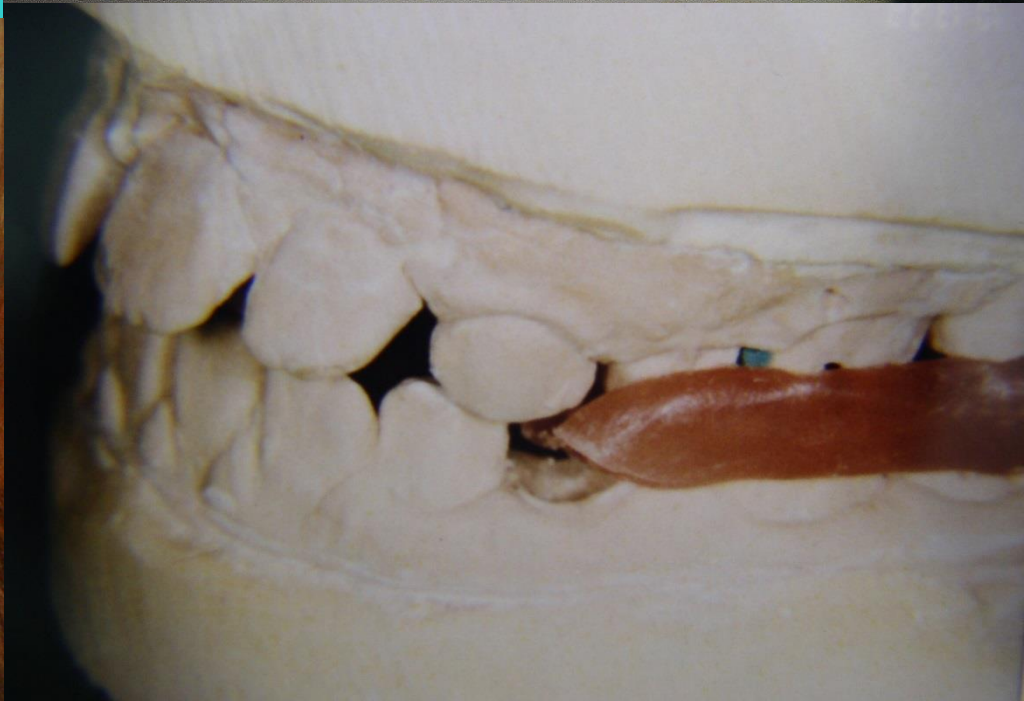
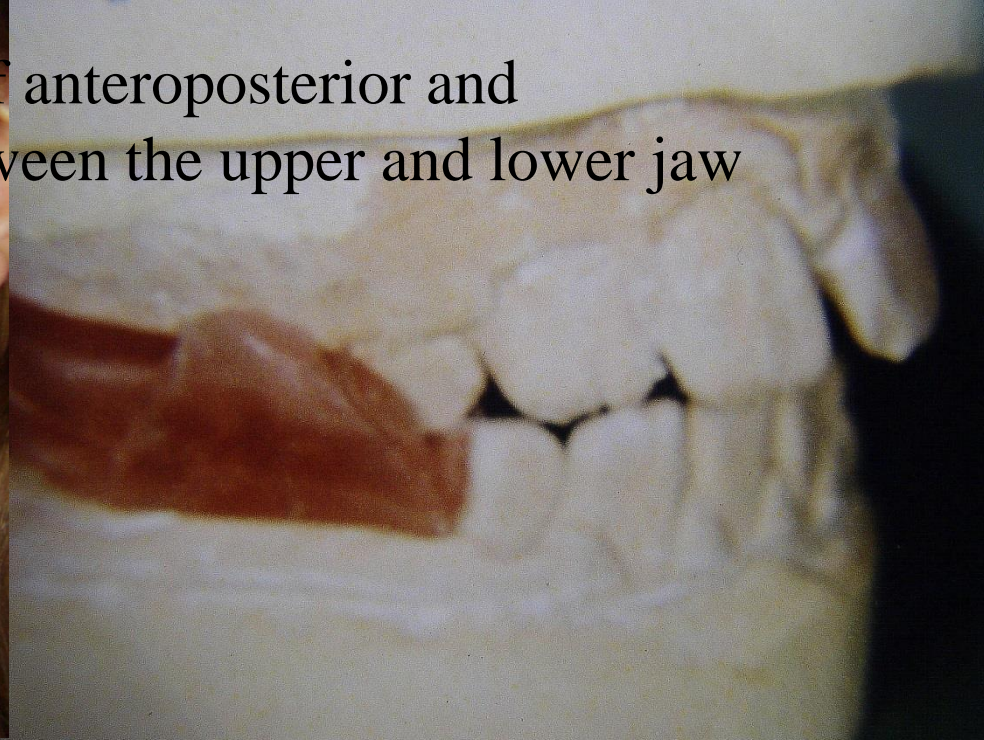


Functional jaw orthopaedics, bimaxillary, functional appliances

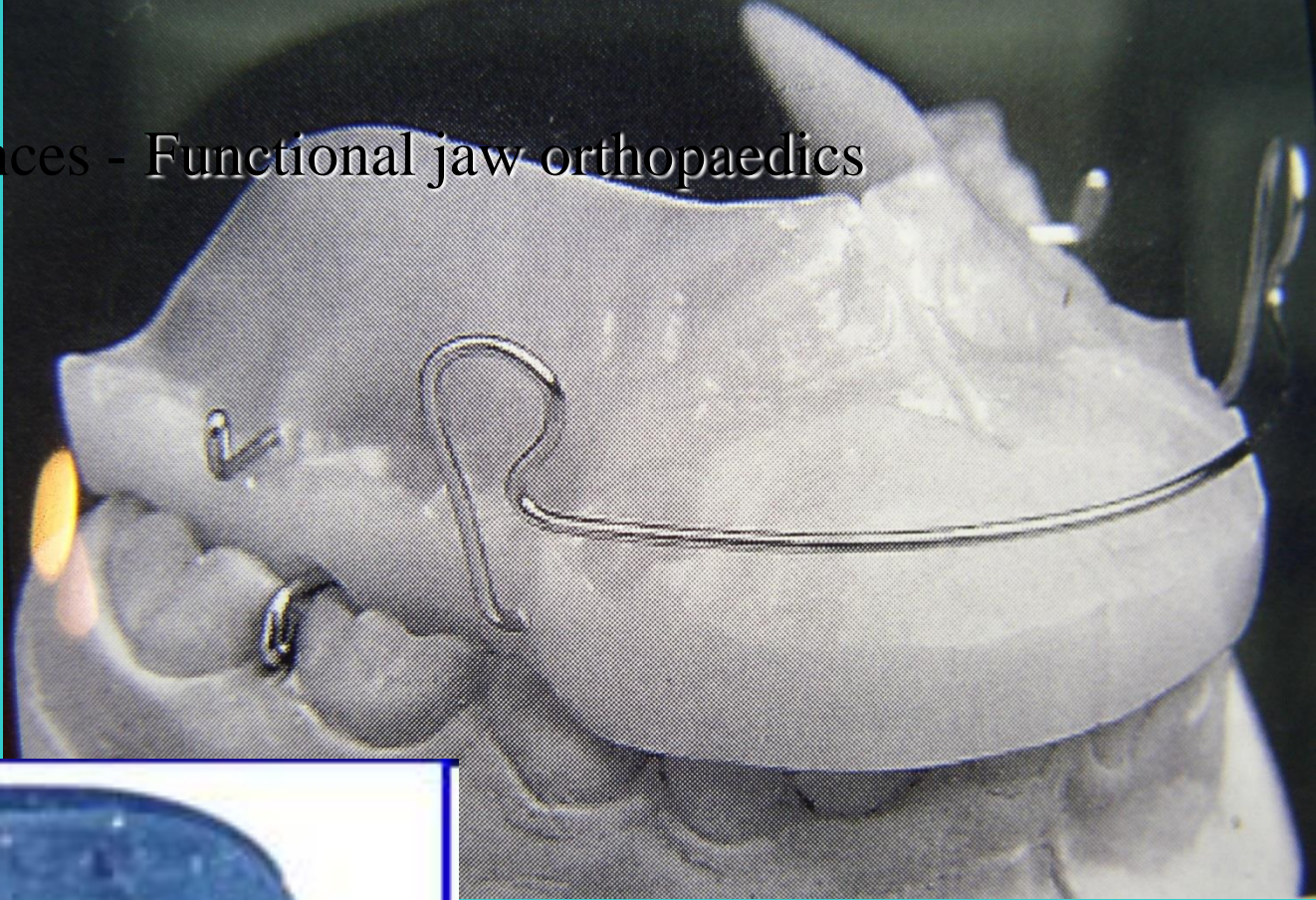
- Restructuring of TMJ
- Restructuring of dentoalveolar area
- New muscle balance



Construction bite - set of anteroposterior and vertical relationship between the upper and lower jaw



Bimaxillary appliances - Functional jaw orthopaedics



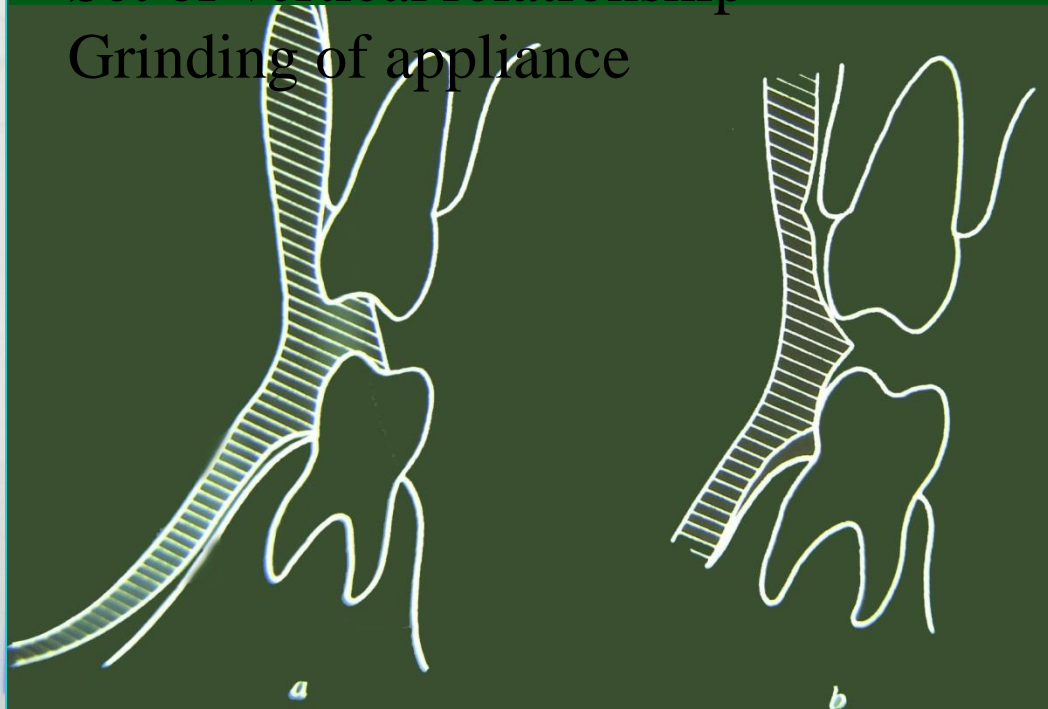
AKTIVATOR

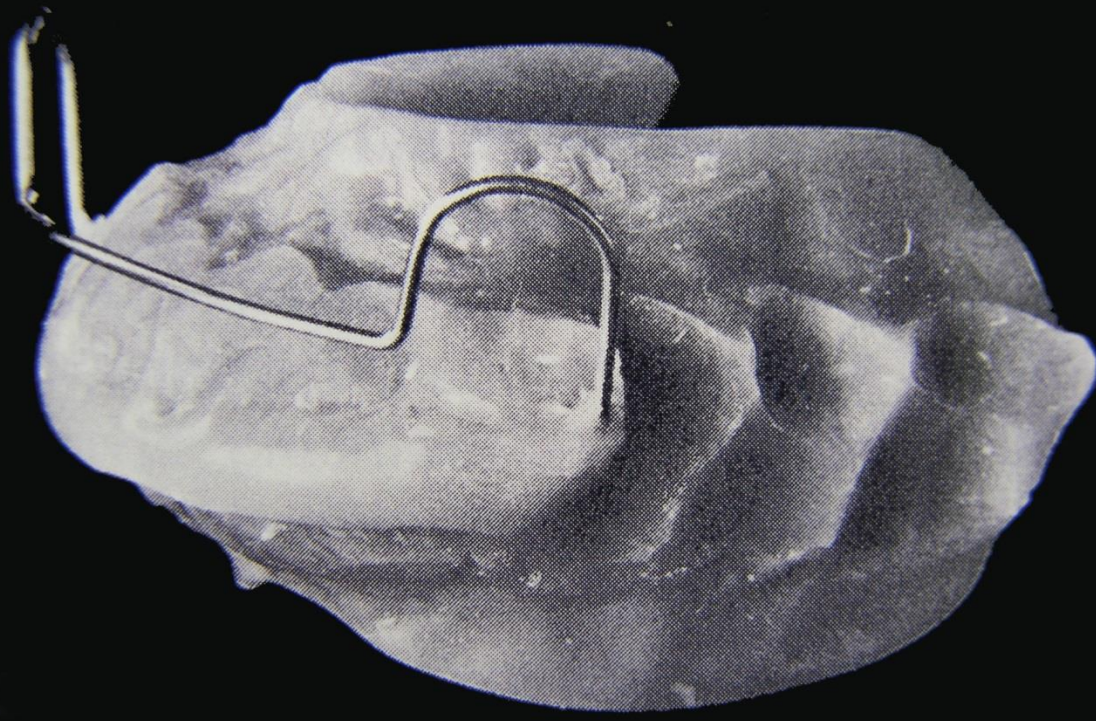
Functional jaw orthopaedics



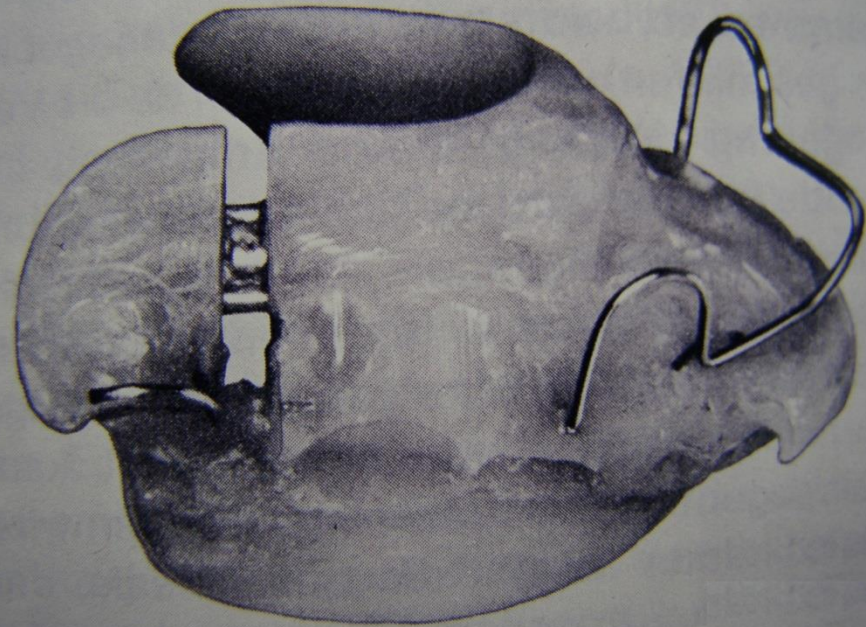
Fig. 11. Corrected incisor relationship, bilateral open bites.

Set of vertical relationship
Grinding of appliance





AKTIVATOR



Fixed appliances for the treatment of II. class anomalies

- Herbst-appliance
- Jusper Jumper
- Forsus spring stb.



CLASS II MALOCCLUSION FUNCTIONAL APPLIANCES



**PERMANENT DENTITION
CLASS II DIVISION 1**

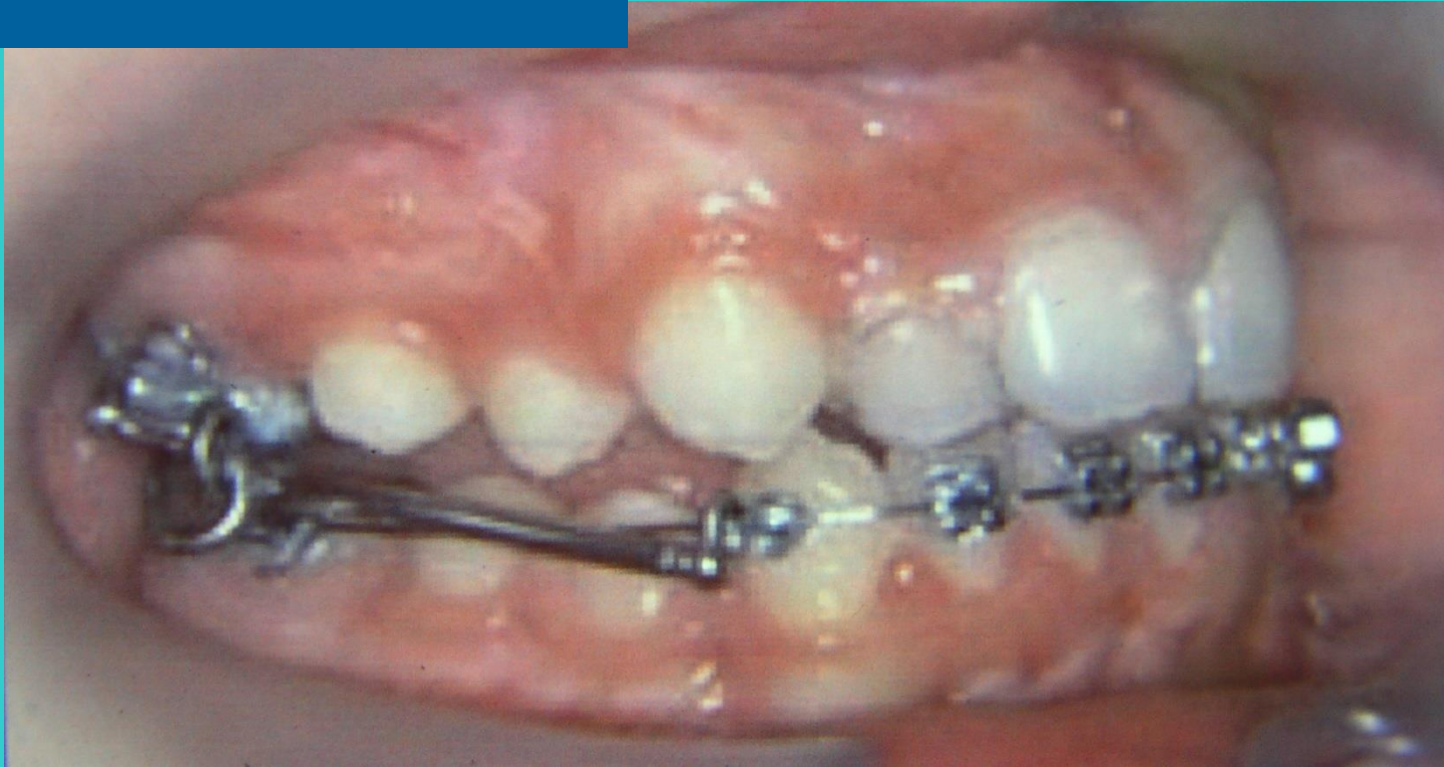
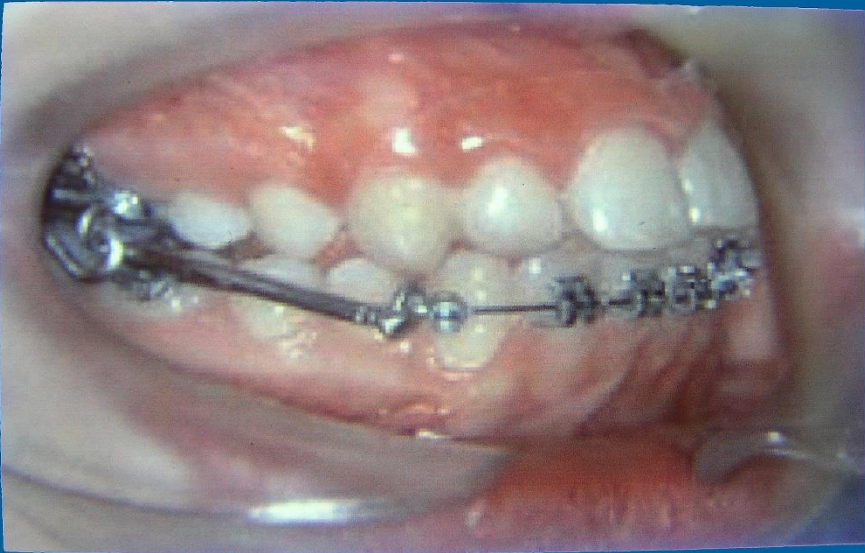


**HERBST APPLIANCE (FIXED)
MANDIBLE HELD IN
PROTRUSION +
OPEN VERTICALLY**

CLASS II MALOCCLUSION FUNCTIONAL APPLIANCES



FIXED HERBST APPLIANCE



II. Class rubbers

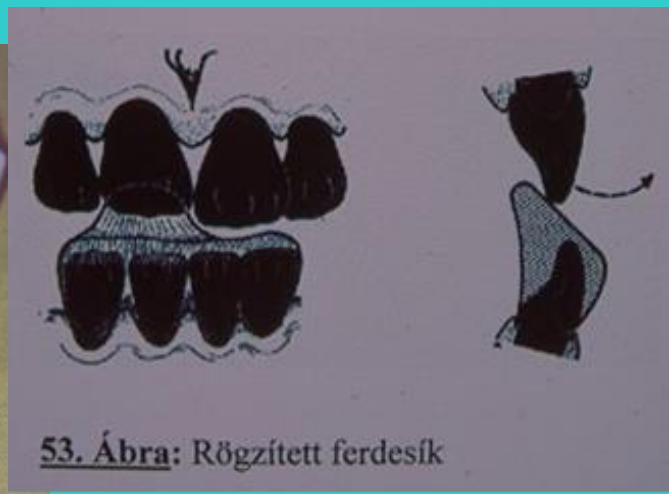


Angle III – progenie - mesiocclusion



Orthodontic treatment in primary dentition

- Progenia
- 1.appliance: chin cap
- 2. Inclined plane
- (against frontal crossbite)



53. Ábra: Rögzített ferdesík

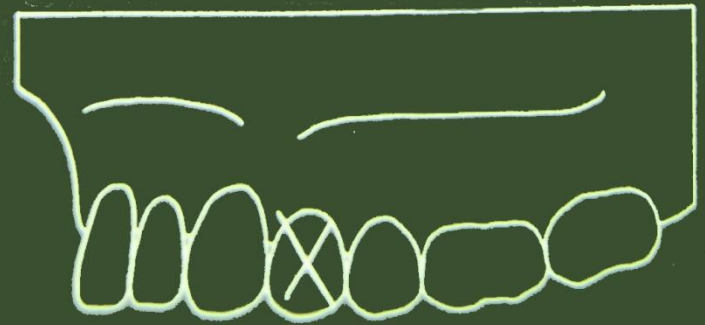
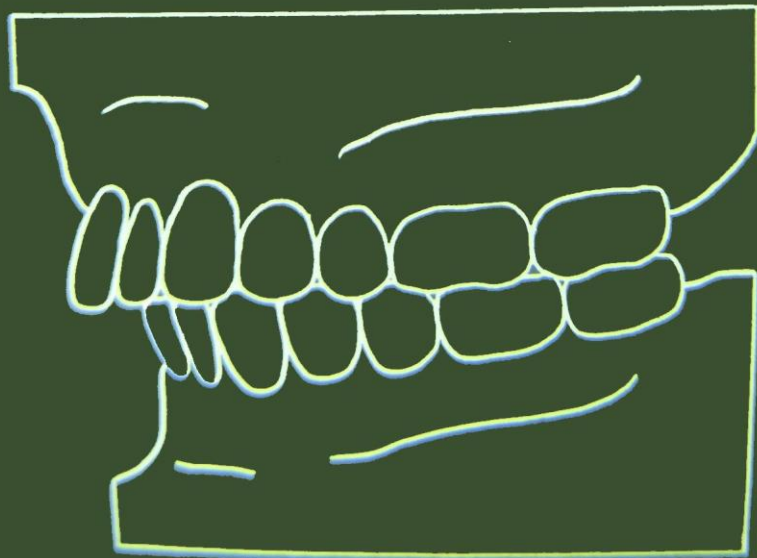
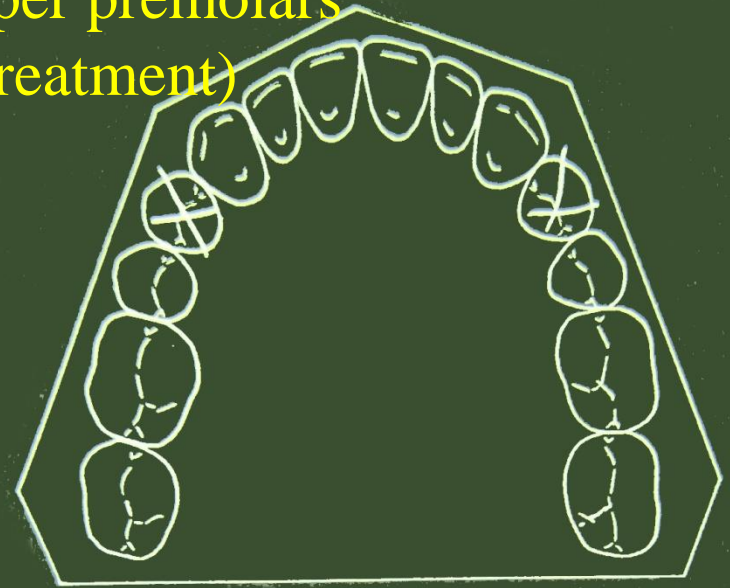
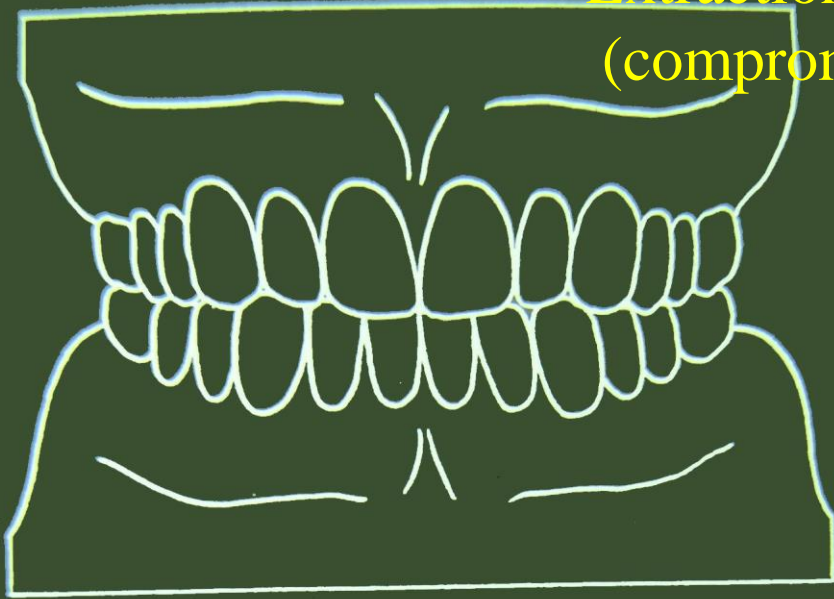
Headger and fixed appliance



If the maxilla is responsible for the anomaly and in mild distalocclusion
Distalisation of upper molars
Prohibition of growing of upper jaw



Extraction of upper premolars
(compromised treatment)



- Szisztémás extractio
- Kompenzáló extr. korai tejfog eltáv. után
- Bőleesség fogak eltávolítása
- Metsző fogak extractiojának feltételei
- Felső második molárisok extractioja
- Praemolarisok extractioja
- Aszimmetrikus extractio indikációja
- Fogeltávolítás torlódás esetén
- Sagittalis eltérések esetén végzett extractiok

Extraction by sagittal anomalies

Compensation of sagittal anomalies

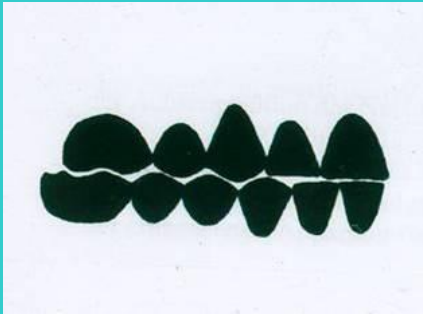
- medium degree Angle II
- low degree Angle III cases

Extraction of upper premolars

Compensation of the skeletal anomaly

Reasons:

1. Sagittal anomaly, overjet, protrusion stb.



Anchorage: Microvis implant



Extraction of upper premolars



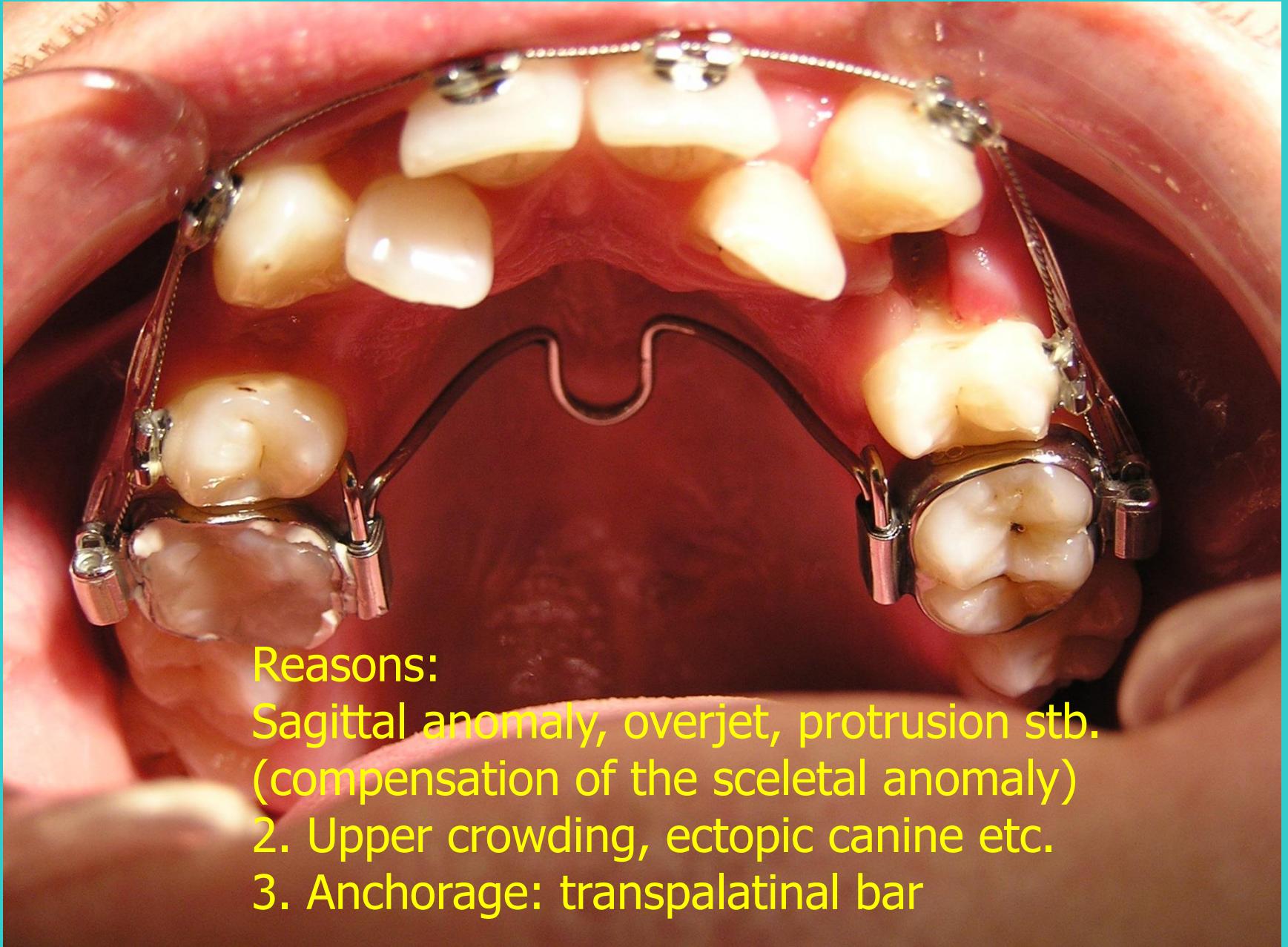
Reasons:

Sagittal anomaly, overjet, protrusion stb.
(compensation of the skeletal anomaly)

2. Upper crowding, ectopic canine etc.



Extraction of upper premolars



Reasons:

1. Sagittal anomaly, overjet, protrusion stb.
(compensation of the skeletal anomaly)

2. Upper crowding, ectopic canine etc.

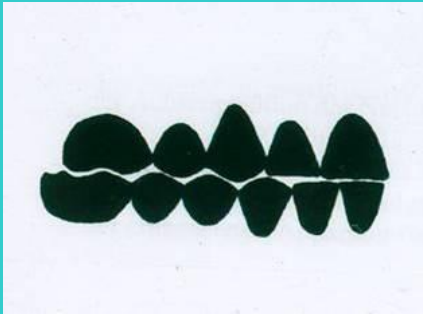
3. Anchorage: transpalatinal bar

Extraction of upper premolars

Compensation of the skeletal anomalies

Reasons:

1. Sagittal anomaly, overjet, protrusion stb.



Anchorage: Microvis implant



Face profile !!!



Child aged 10 and 12; extractions and fixed braces

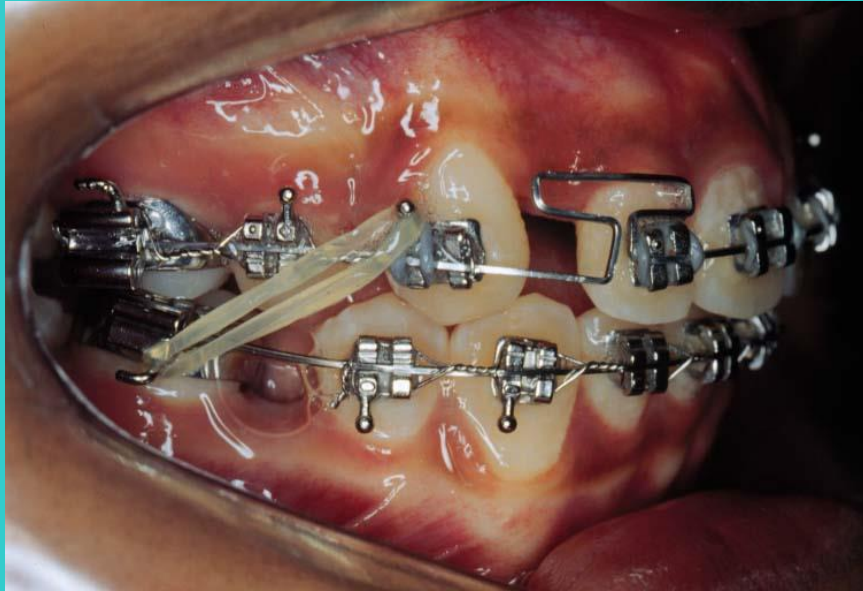


Bird face

Retrognath face

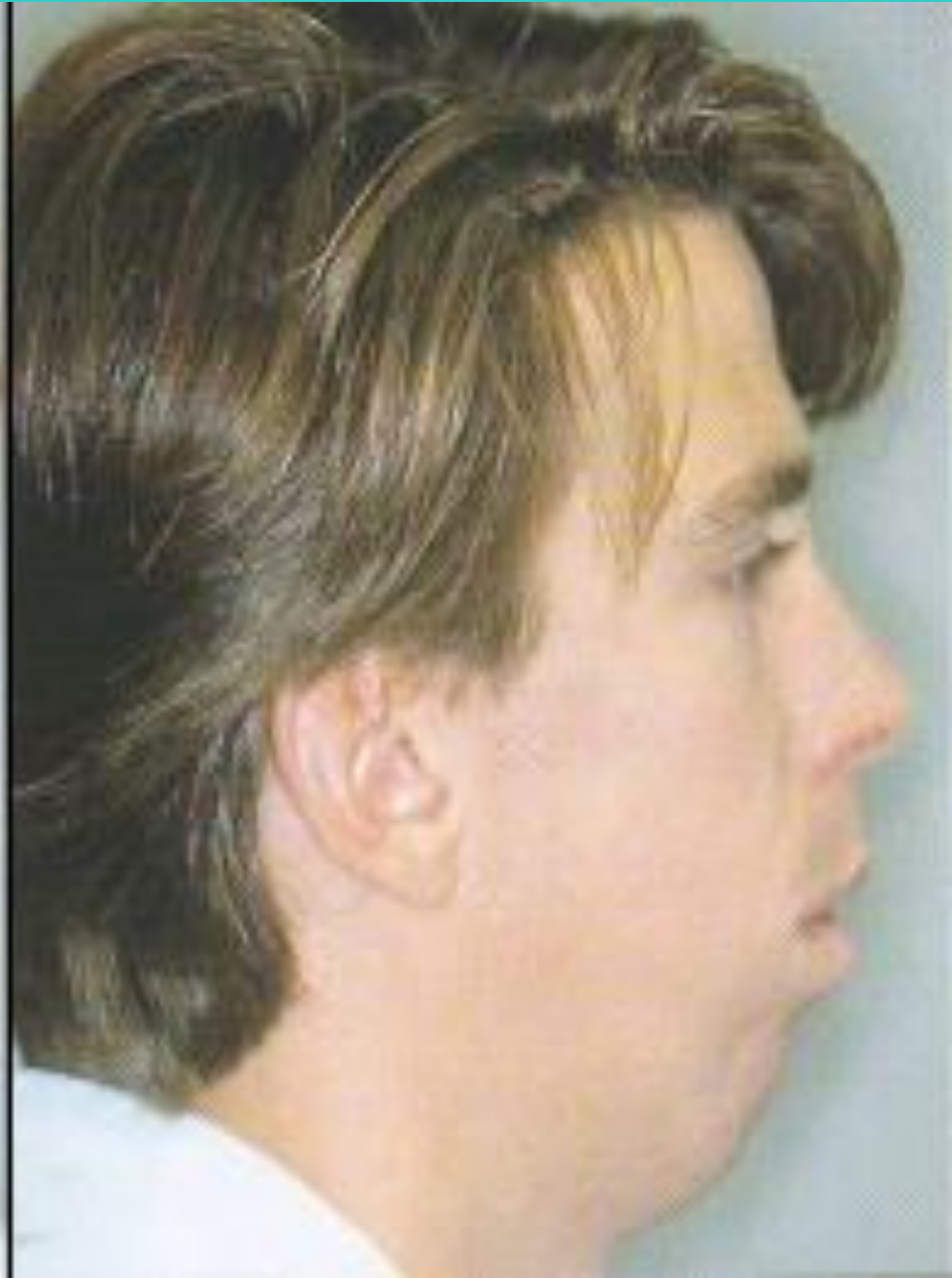


CLASS II MALOCCLUSION EXTRACTION Intermaxillary anchorage

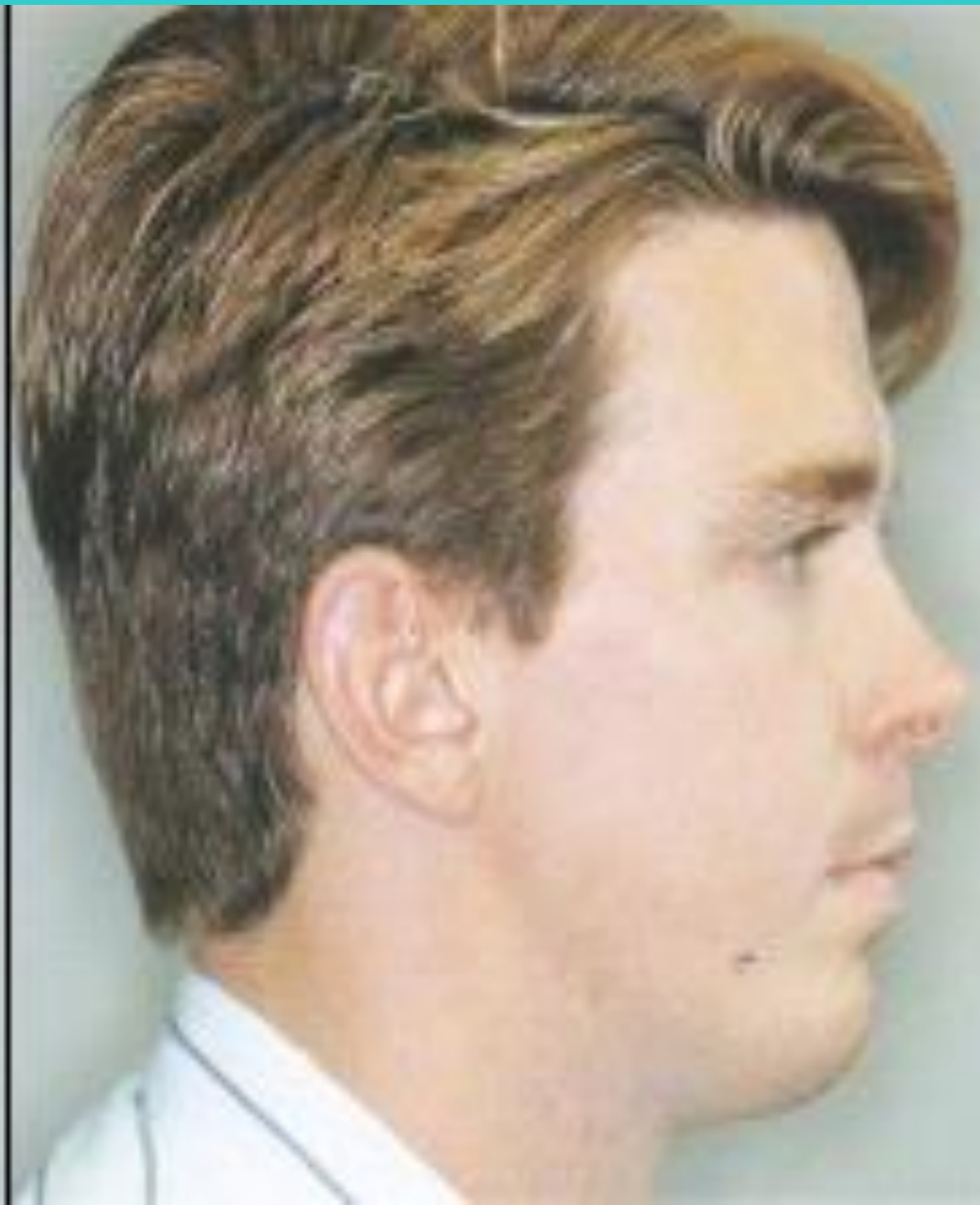


**EXTRACTION OF
UPPER FIRST PREMOLARS +
LOWER SECOND PREMOLARS**

Surgical solutions



Műtéti előkészítés

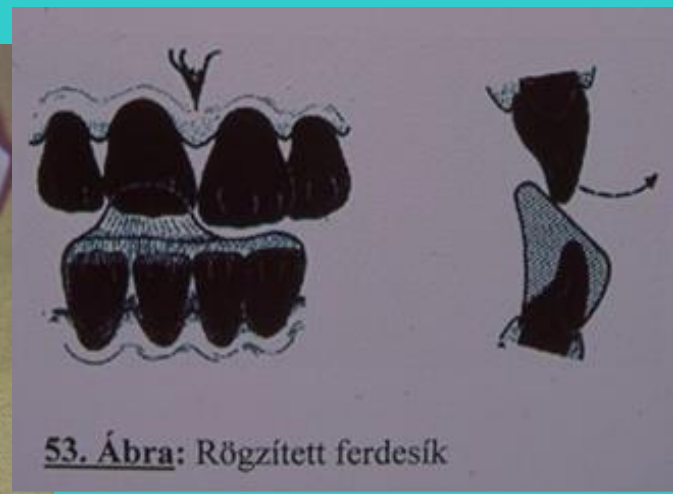


Angle III – progenie - mesiocclusion



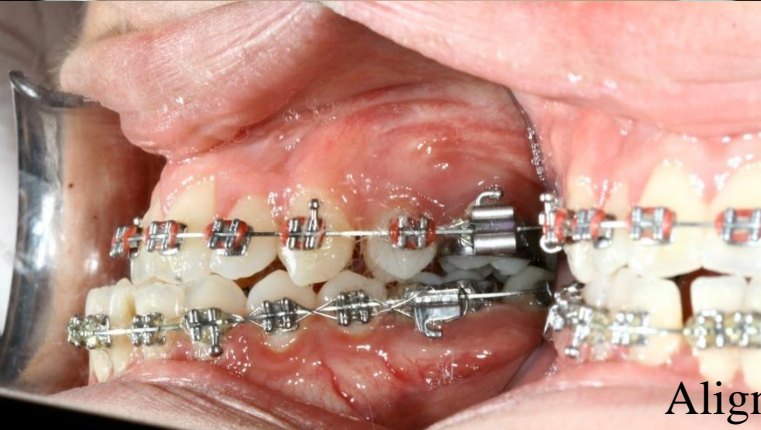
Orthodontic treatment in primary dentition

- Progenia
- 1.appliance: chin cap
- 2. Inclined plane
- (against frontal crossbite)



53. Ábra: Rögzített ferdesík

Real progeny - surgery



Aligned dentures

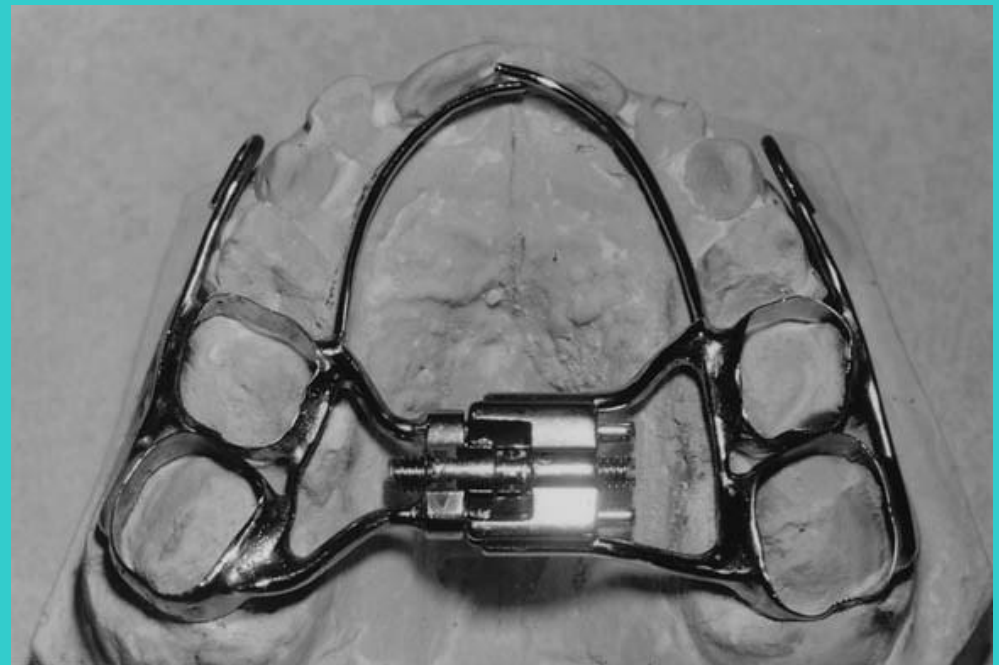
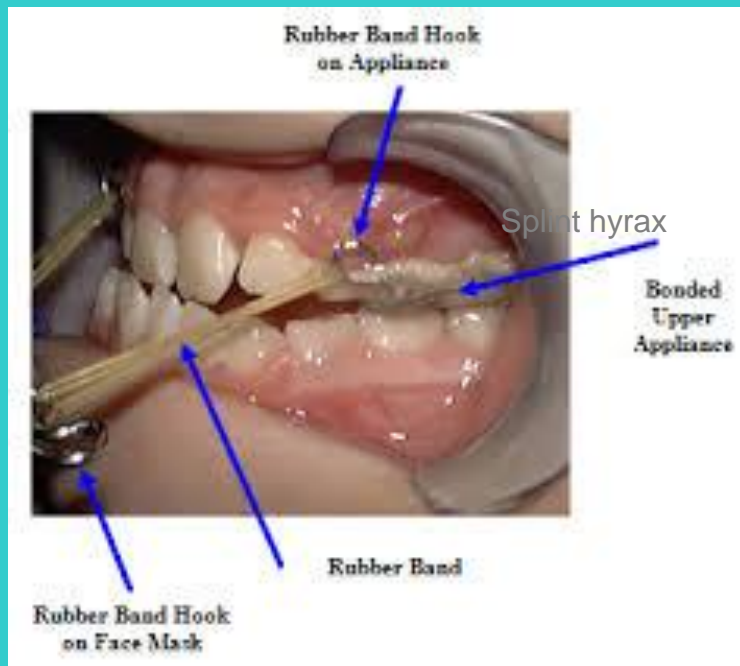
the sizes of the arches are fit to each other



Dr Nemes Bálint esete

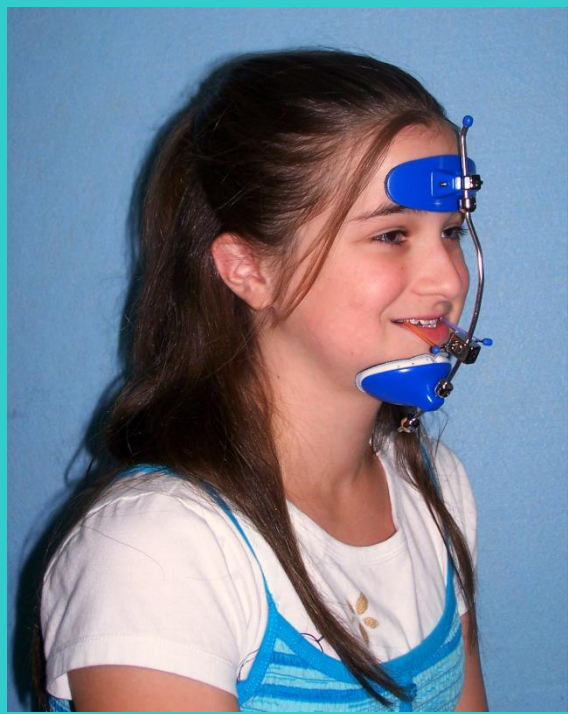
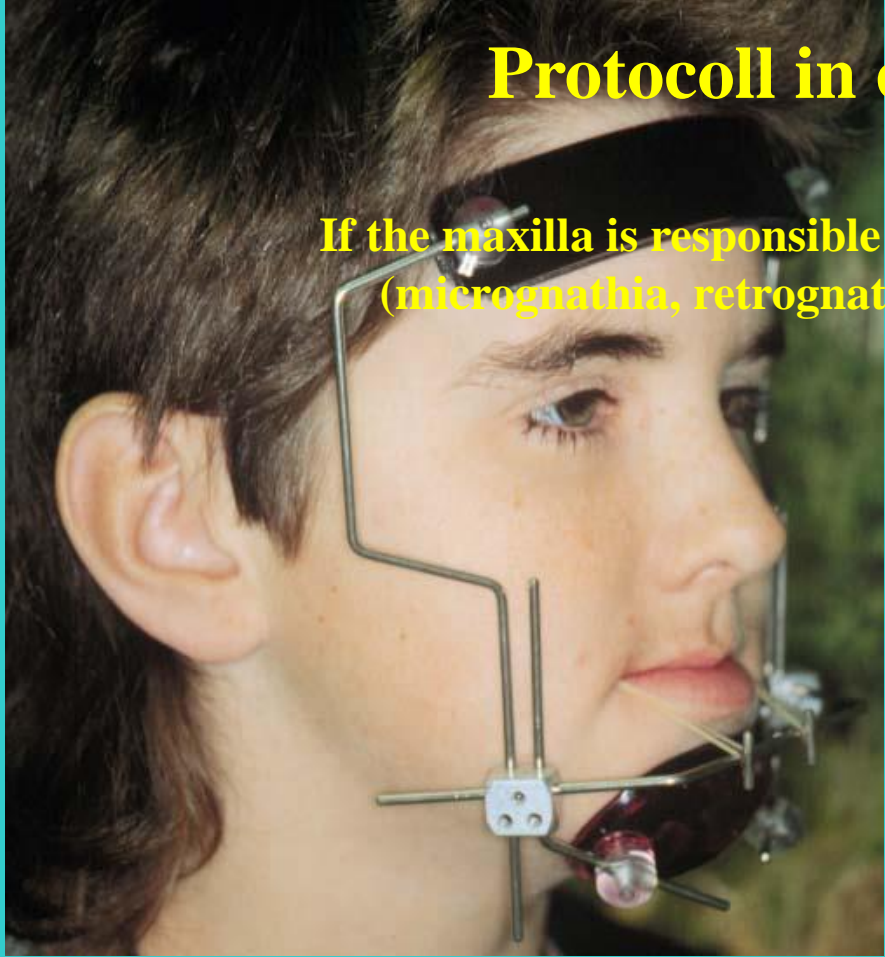
Protocoll in III. class cases

- Hyrax and
- Reverse headger



Protocoll in class III. cases

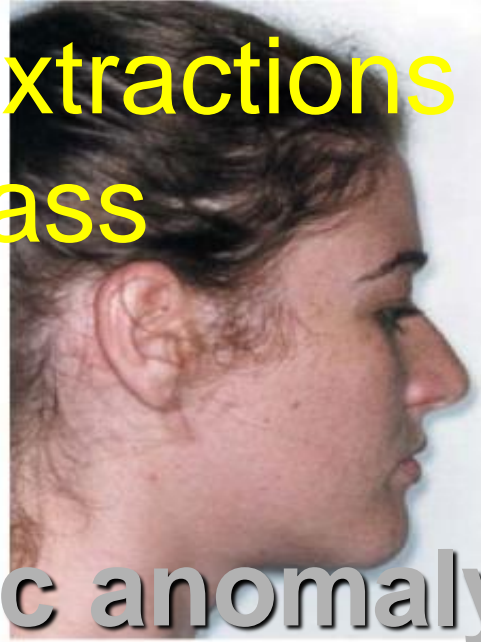
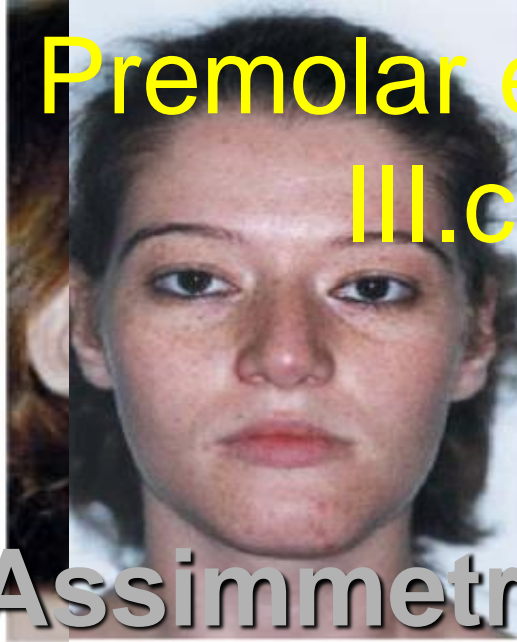
If the maxilla is responsible for the anomaly
(micrognathia, retrognathia f.e. after the surgical closure of cleft palate)



**PROTRACTION of the maxilla
HYRAX +FACE MASK
(DENTAL + SKELETAL)**

Premolar extractions III.class

Assimmetric anomaly



Extraction of lower permanent incisors

Bimaxillary protrusion with lower crowding, I. class



2 upper premolars and 1 lower incisor are extracted

Angle III – progenie - mesiocclusion



Elements of fixed appliances

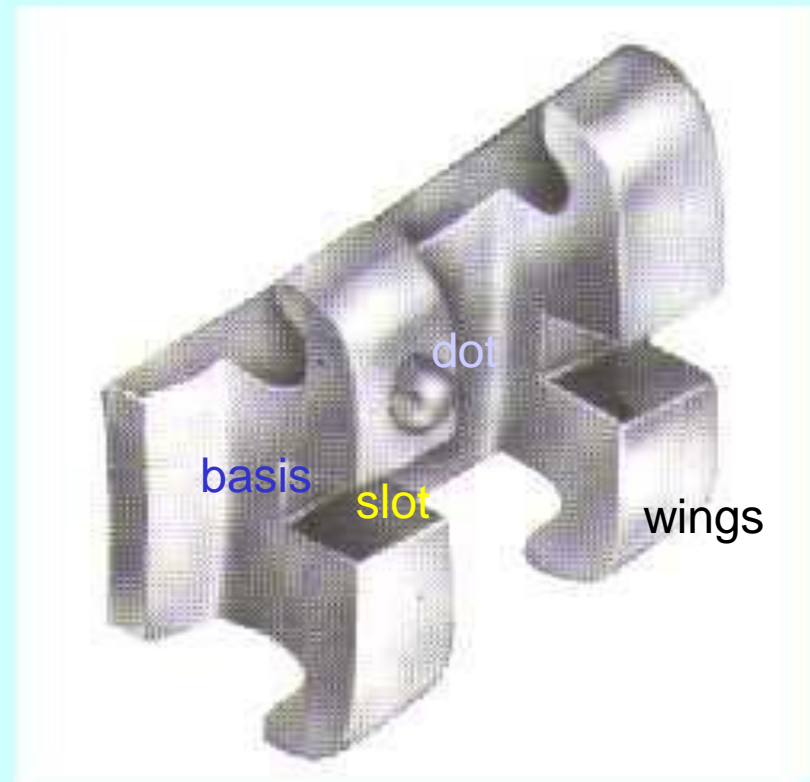


Direkt bonding system (multibond, multibracket appliance)



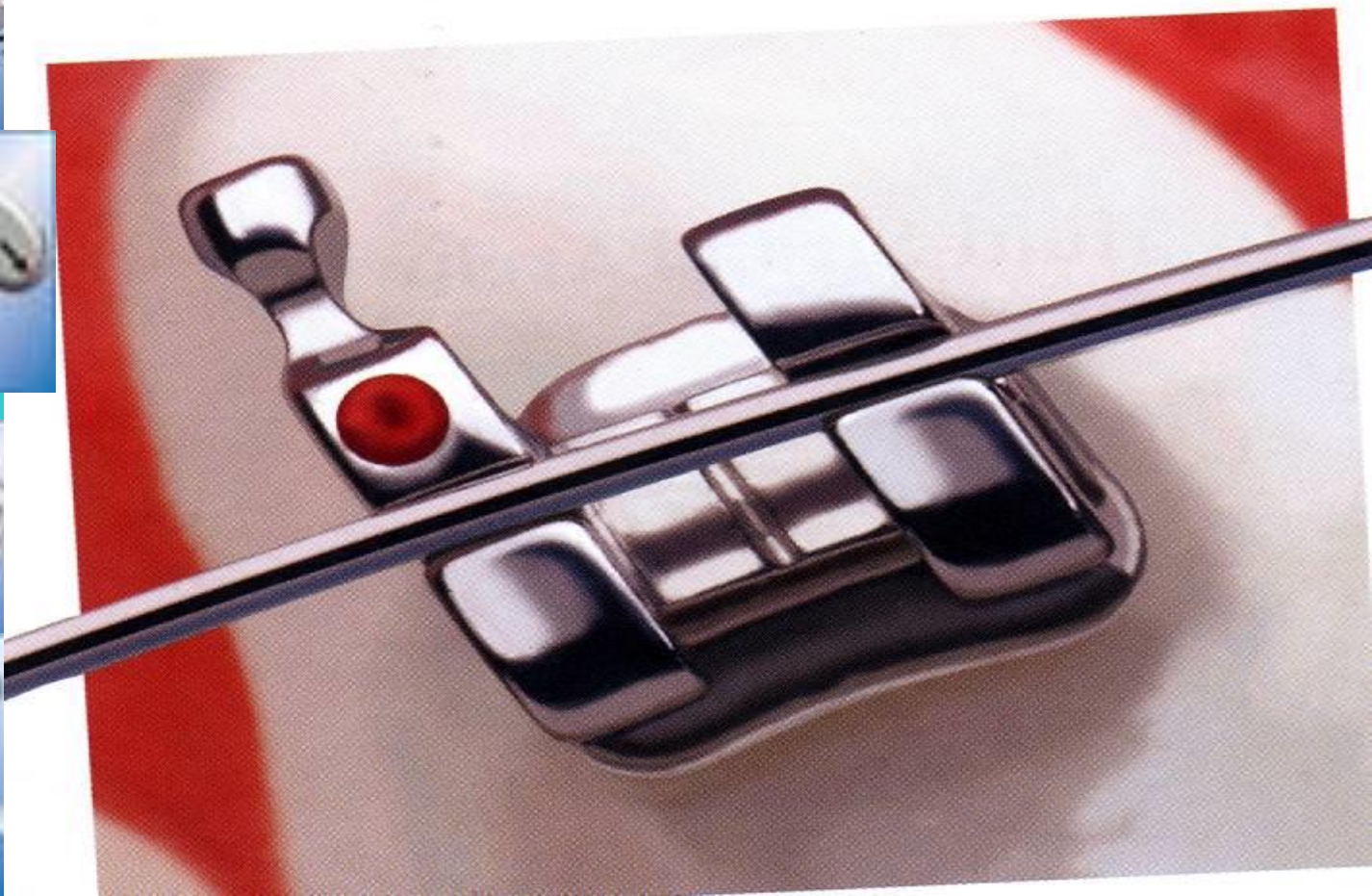
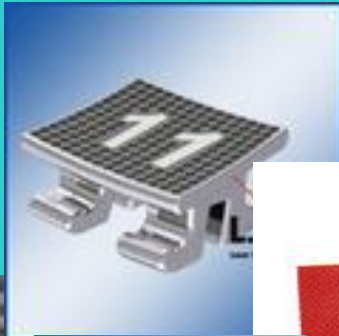
Components of the **Multiband** Appliance

- Rigid connectors, called **molar tubes** and **brackets**
- Archwires, and other elastic sources of force
- Auxiliaries
(Everything else needed to get the job done.)



Dot is always on the distal wing of the bracket

METAL BRACKETS



Metalbrackets

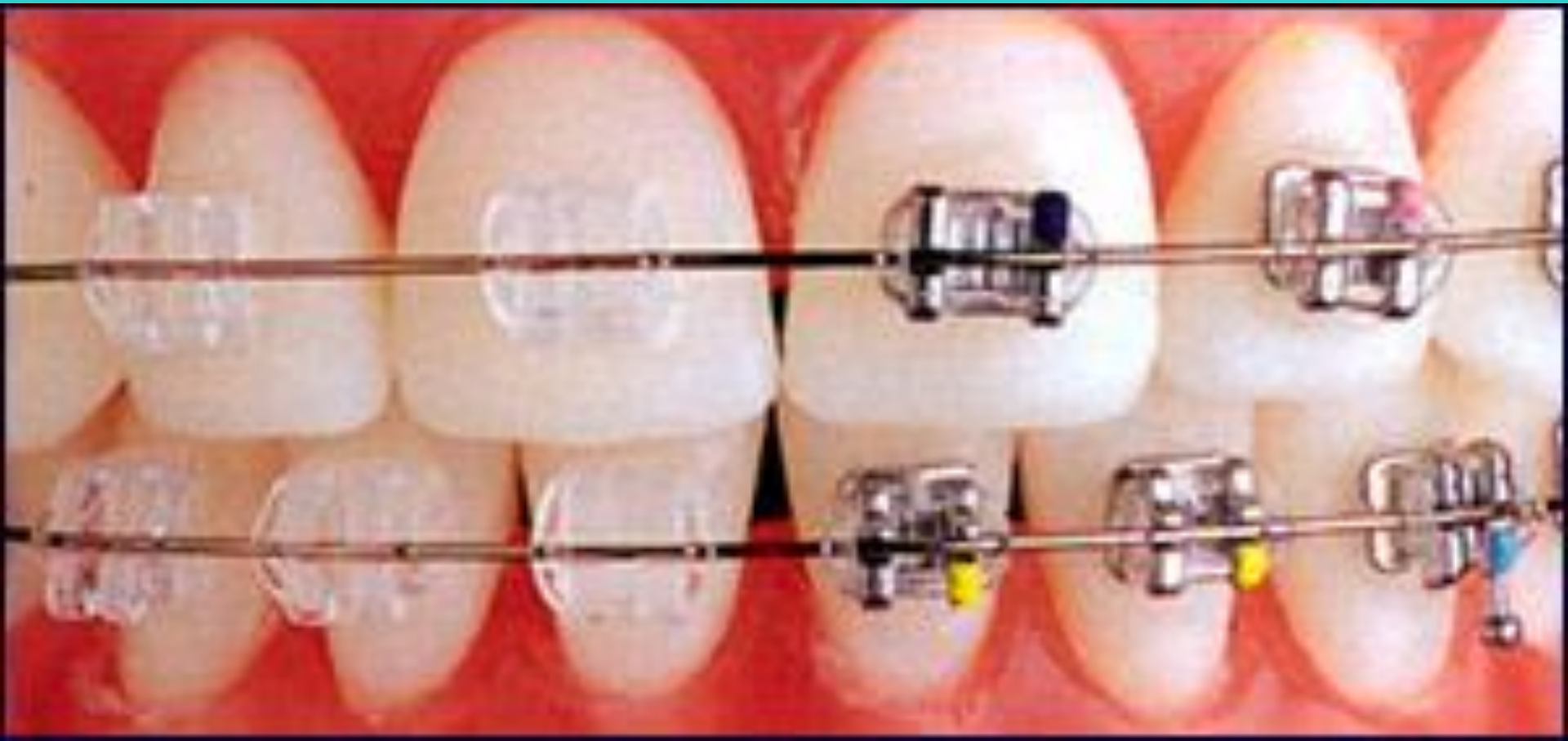
- Stainless steel brackets
- Titanbrackets
- Gold brackets







Ceramic brackets



Ceramic brackets

- Disadvantages:
 - expensive
 - fragile
 - difficult to remove the brackets
 - more difficult to apply ligatures

Advantages:

- esthetic

Ligatures

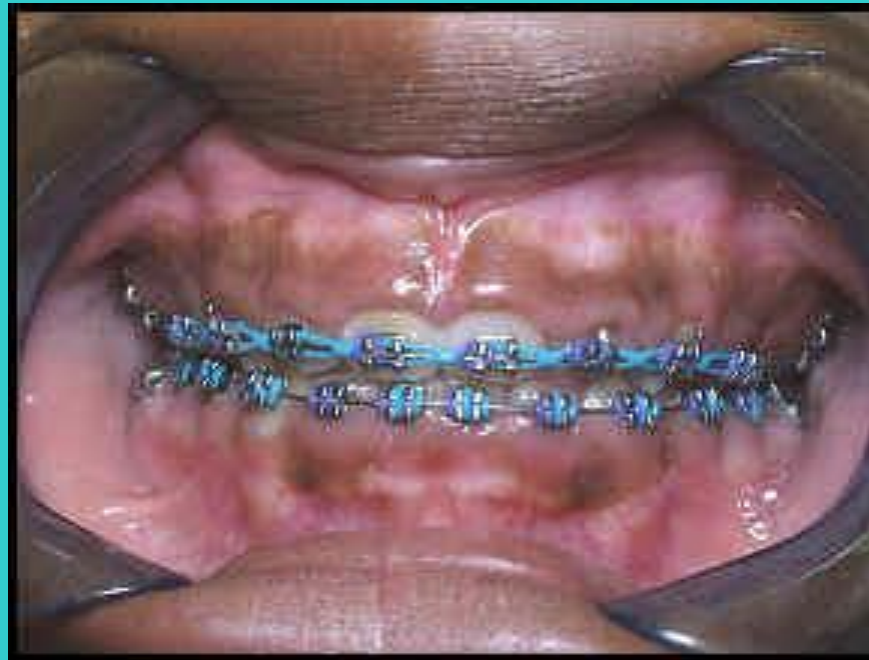
Elastic ligatures (rubbers)



Metal ligatures



Elastic chain (for space closer)



Placing Orthodontic Bands

- Three major steps in banding:
 - separation of adjacent teeth
 - sizing and fitting the band to the tooth
 - **cementation** and cleanup



Placing Orthodontic Bands

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 - separation of adjacent teeth
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Placing Orthodontic Bands

- Three major steps in banding:
 - separation of adjacent teeth
 - **sizing and fitting** the band to the tooth
 - cementation and cleanup



Direct bonding tubes





Headgear



Anchorage

Distalisation of molars

Treatment of vertical anomalies



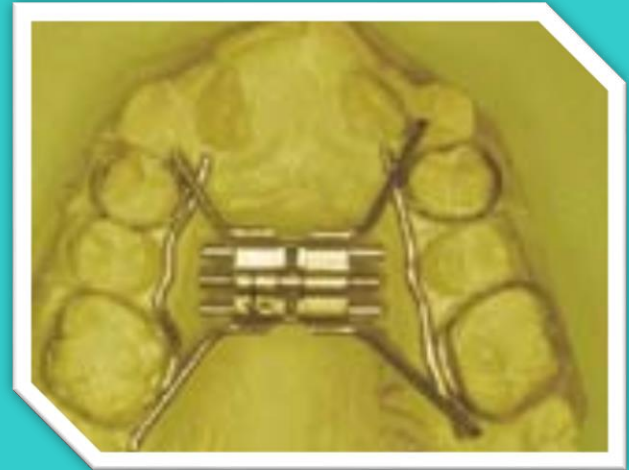
Fixed expanders – Quad-helix



Fixed expanders – Transpalatal bar



Fixed expanders - Hyrax



Hyrax



Indication:

- -serious narrowing of the upper arch
- -bilateral or unilateral cross bite
- -treatment of cleft palate (scar-tissue enlargement)
- hyrax has a **skeletal affect** (childhood, puberty, 8-14 ages)
- Expansion in serious II. and III. class cases

Hyrax is used in mixed and permanent dentition, while children are growing.

After the end of the development hyrax can't be used (alone)

Affect:

- - ripping („breaking”) of the sutura palatina mediana

Case I

narrowing, lack of place



Case I

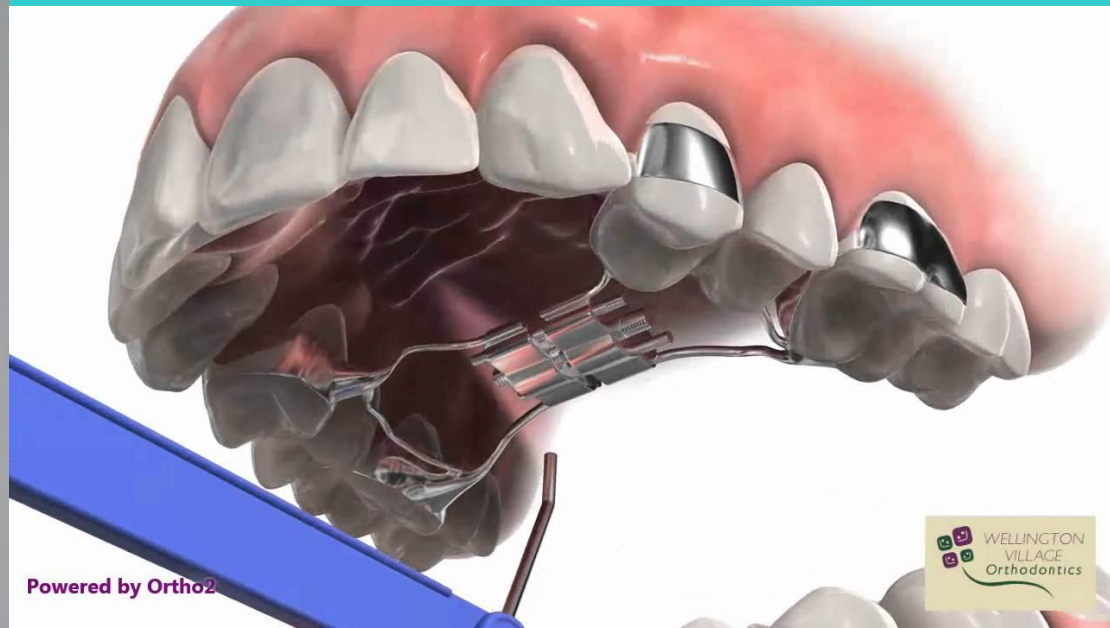
Gap between the central incisors shows the correct result (shows the skeletal affect)



Hyrax – permanent dentition

Structure in permanent dentition:

- Metal bands on teeth 14,16,24,26,
6 or 12 mm expanding screw

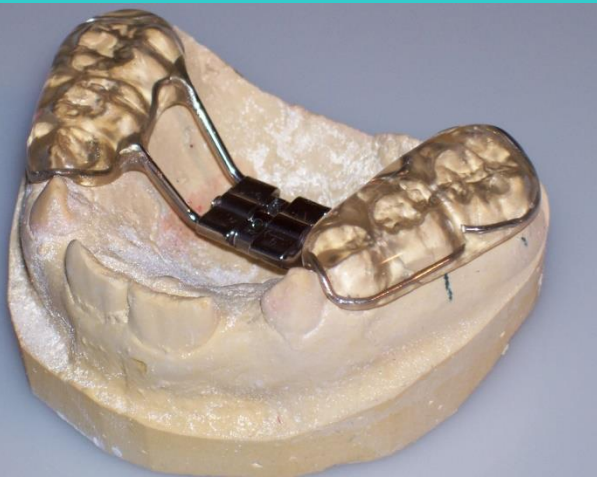


Hyrax – mixed dentition

Structure in mixed dentition:

- Acrylic splint on the lateral teeth (canines, primary molars)

6 or 12 mm expanding screw



Fixed expanders - Hyrax



Hibrid-hyrax



Dystractor



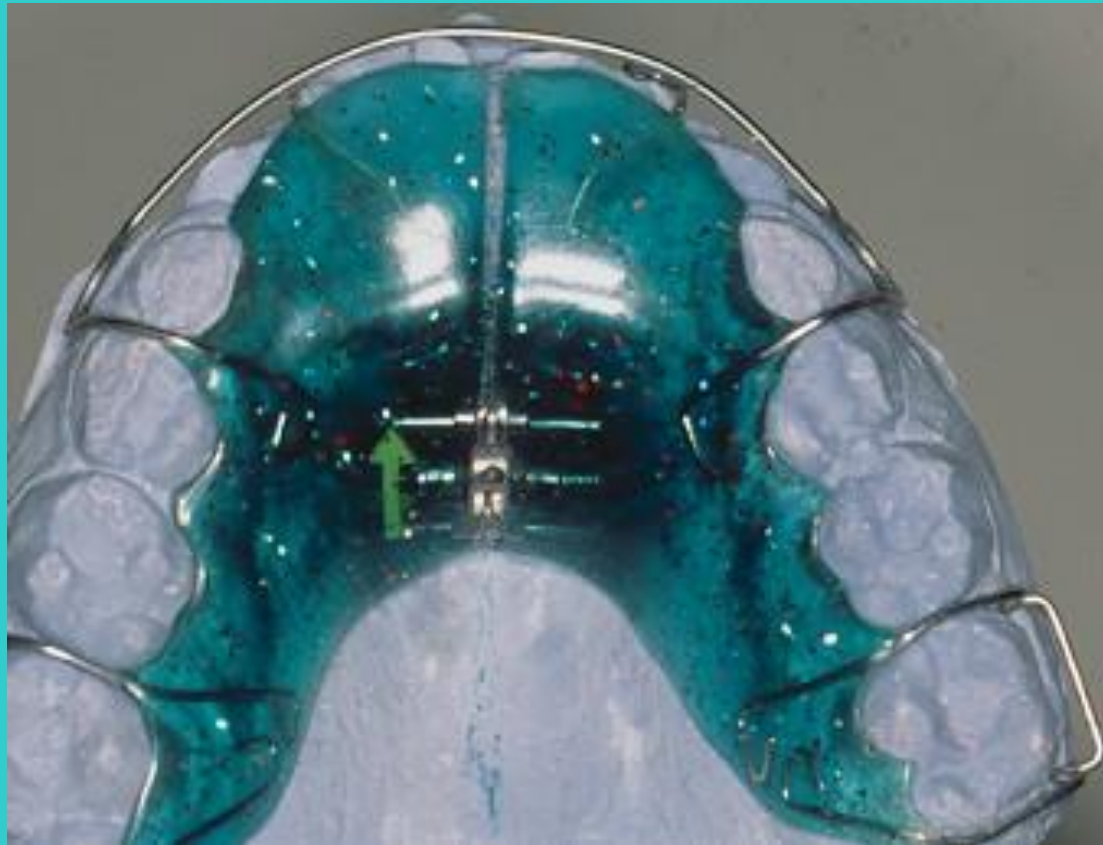
SARME = Surgically assisted rapid maxillary expansion, dystractios osteogenesis



Transversal problems



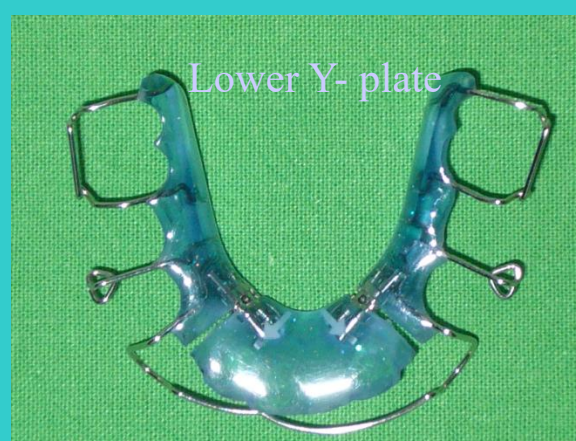
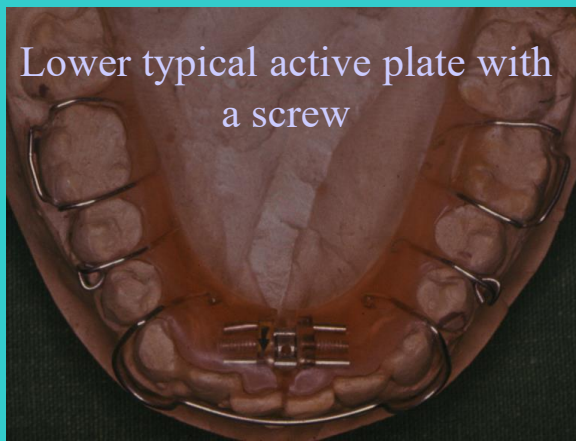
Active acrylic plates (in mixed dentition)



REMOVABLE APPLIANCES: ACTIVE AND PASSIVE PLATES

mainly in mixed dentition

The grouping of the plates



Grouping the plates

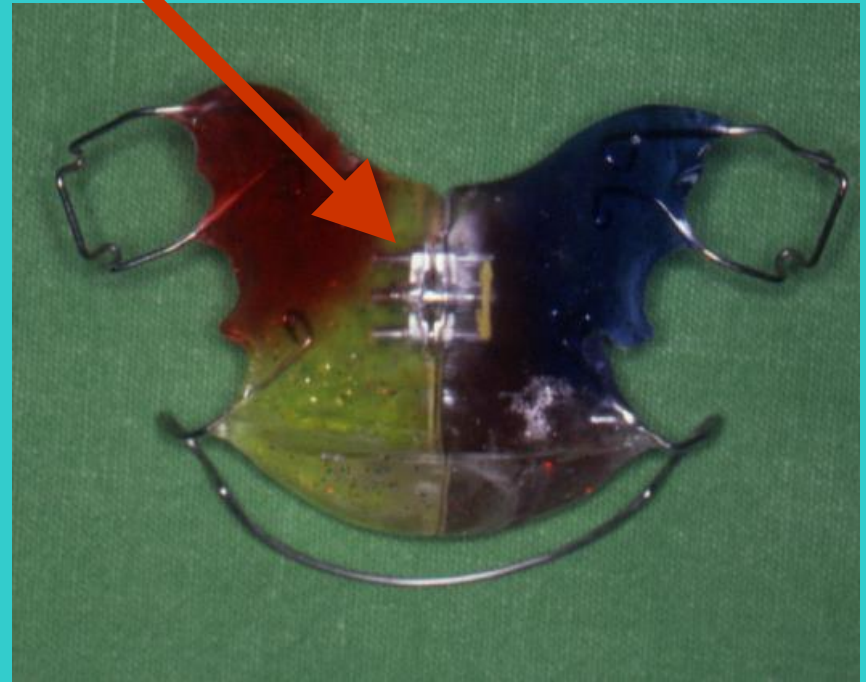
Passive

Active

Screw!



Upper passive (retention) plate

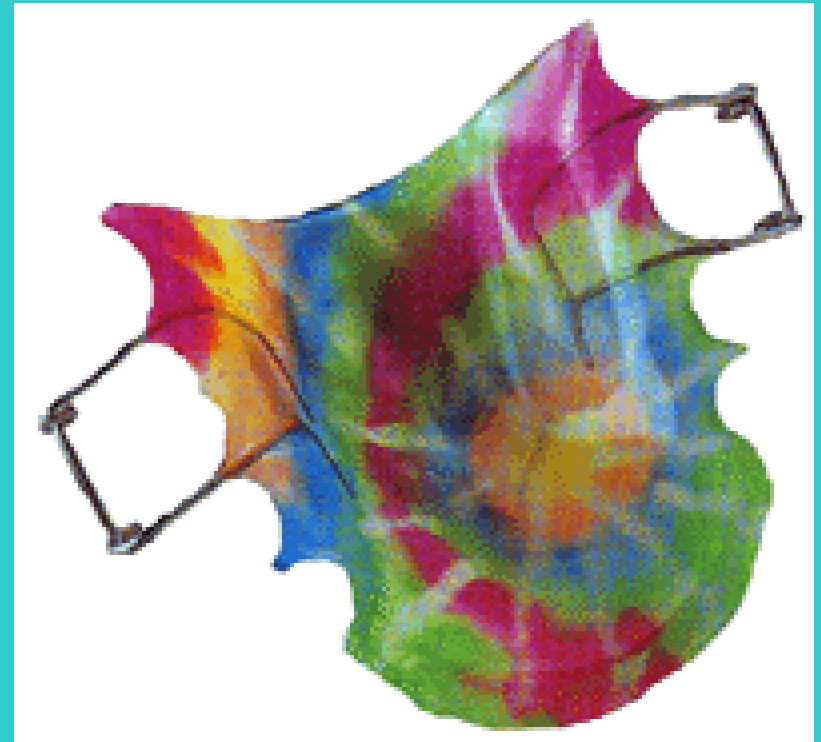


Upper typical active plate with a screw and inclined plane

The elements of the plates

Upper passiv (retention) plates

- Acryl basic plate
- Labial bow
- Clasps
- Active elements



(Hawley) retenciós lemez

The elements of the plates

Lower passiv (retention) plate

Acryl basic plate

Labial bow

Clasps

Active elements



The elements of the plates

- Acryl basic plate
- Labial bow
- Clasps
- Active elements



The elements of the plates

Acryl basic plate

Labial bow

Clasps

Active elements



Adams clasp

Adams clasp



Adams clasp



The elements of the plates

Acryl basic plate
Labial bow
Clasps
Active elements

Arrow clasp



Arrow clasp



The elements of the plates

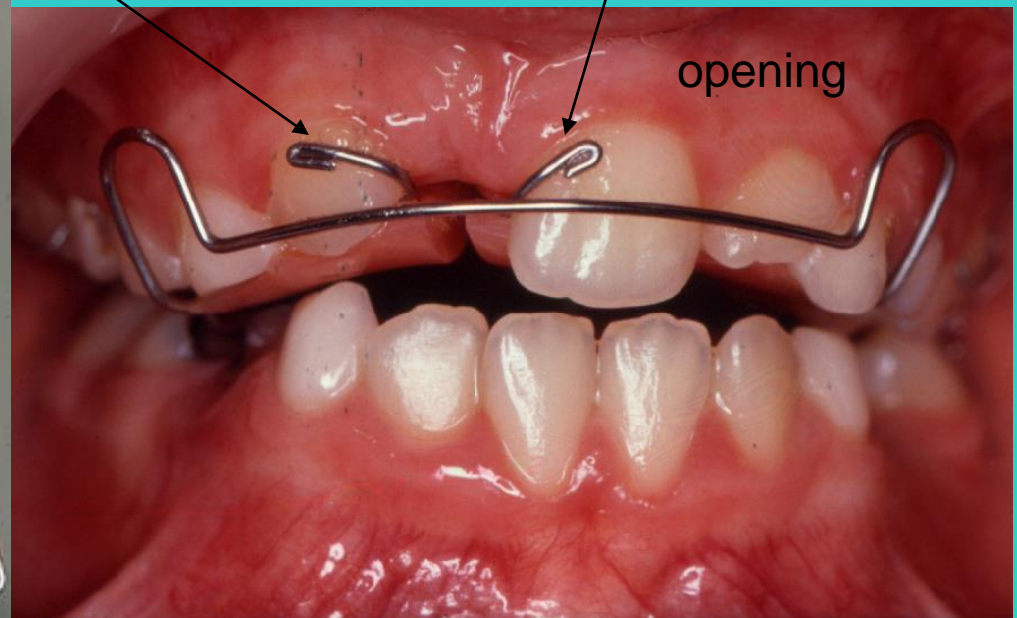
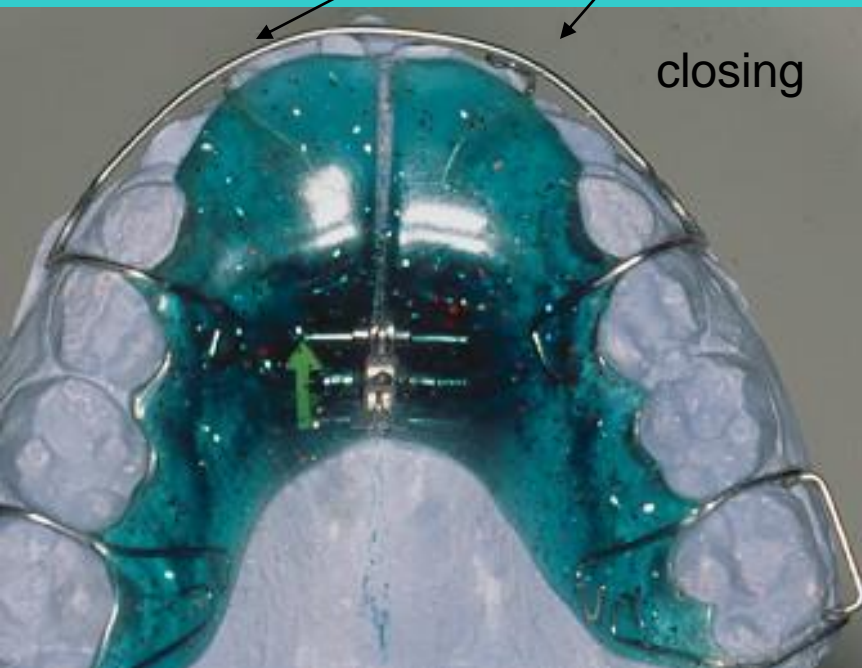
Acryl basic plate

Labial bow

Clasps

Active elements-springs

Free-ended or finger springs



The elements of the plates

Acryl basic plate

Labial bow

Clasps

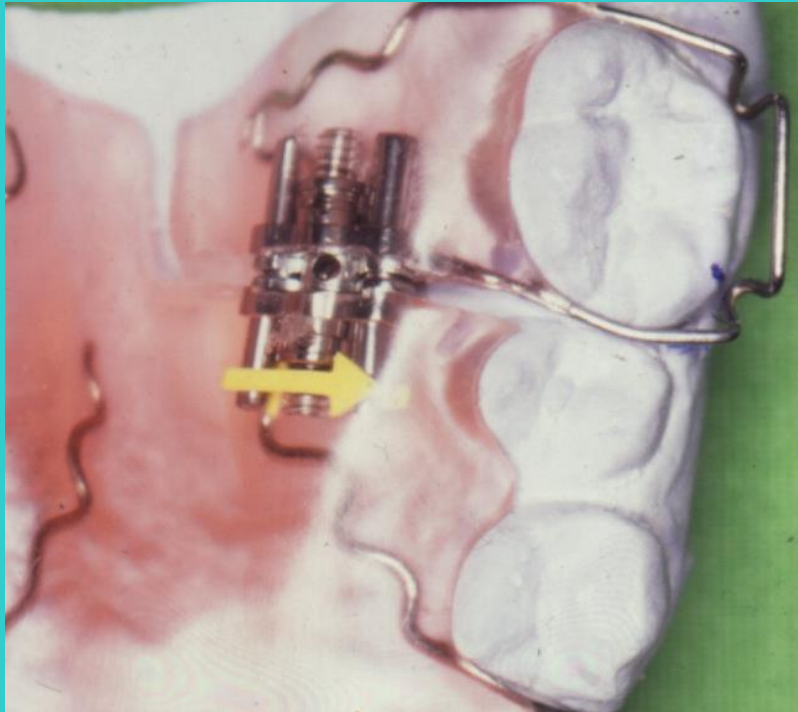
Active elements

•console-like springs



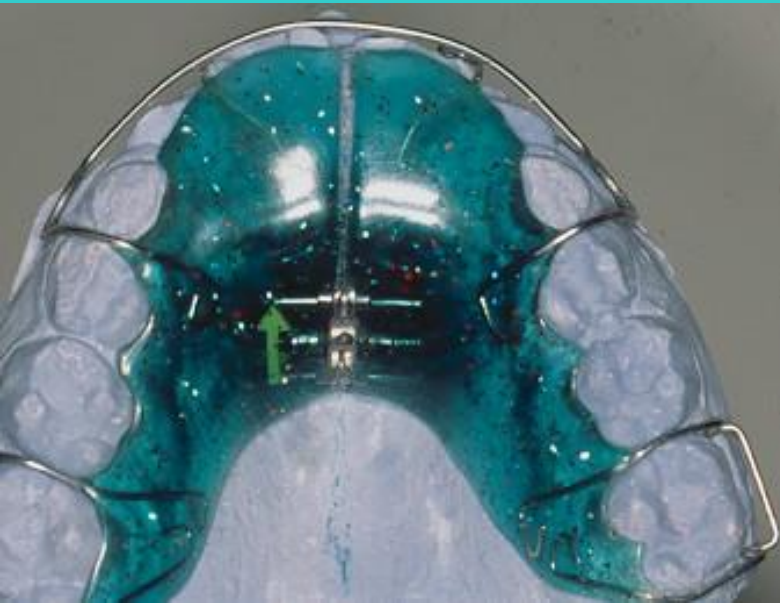
Active plates

The screws

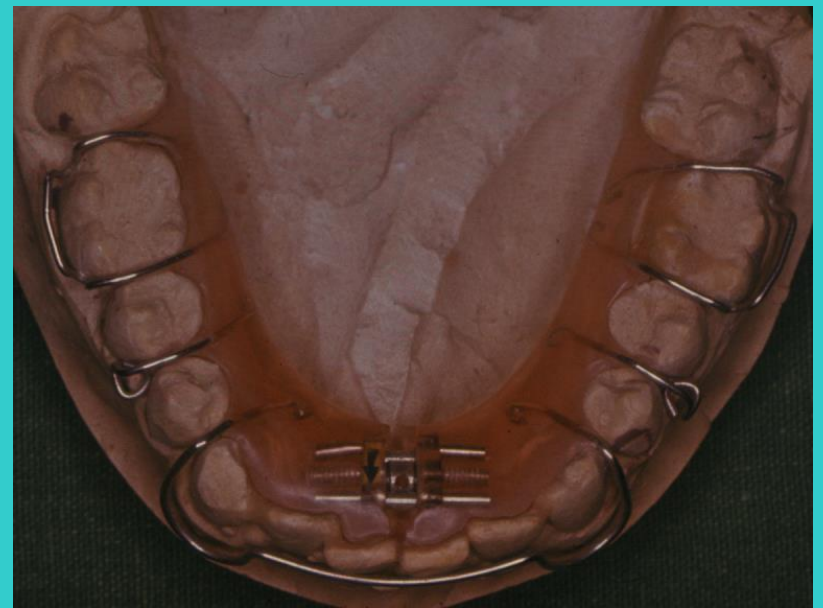


Activ plates

- Upper typical (symmetrical) activ plate



Lower typical (symmetrical) activ plate

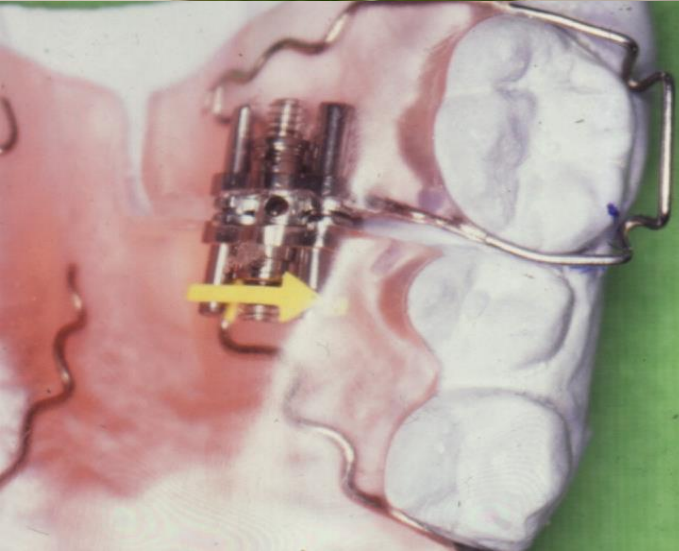


Activ plates

Upper atypical active plate



Lower atypical active plate with



Active plates Y-plate



Upper Y-plate



Lower Y-plate

Active plates



Upper atypical active plate with a screw and occlusal biteraiser
(lateral crossbite)

The elements of the plates

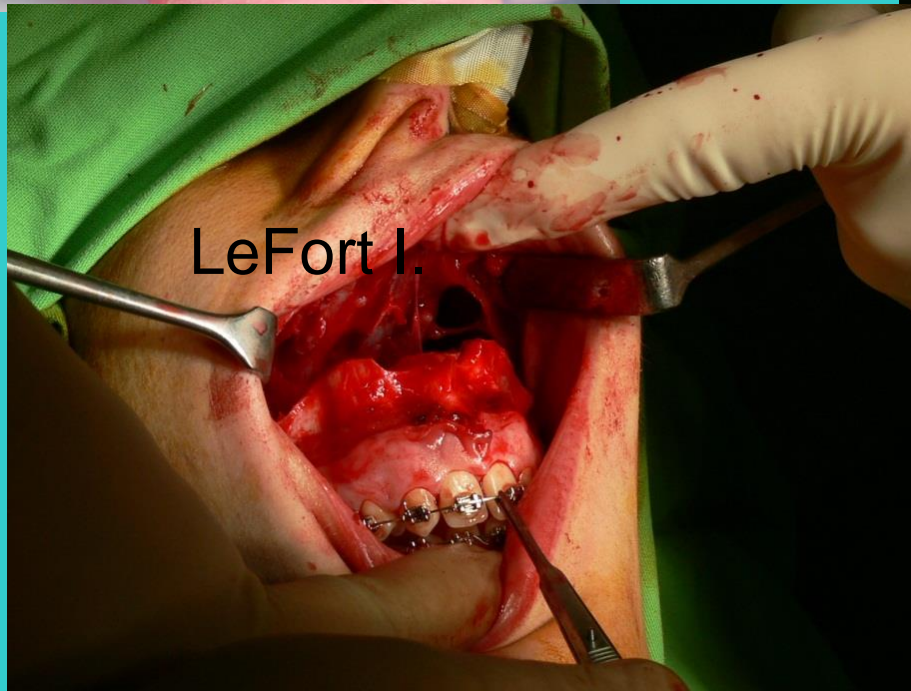
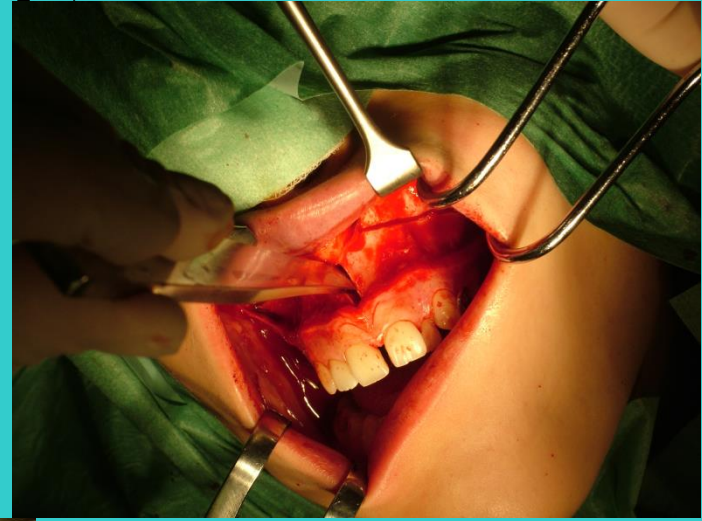
Bite raising plane

thick acrylate behind the upper incisors →
intrusion of lower incisors



Surgical solution in adulthood

(after 18y.)



Vertical anomalies



Deepbite

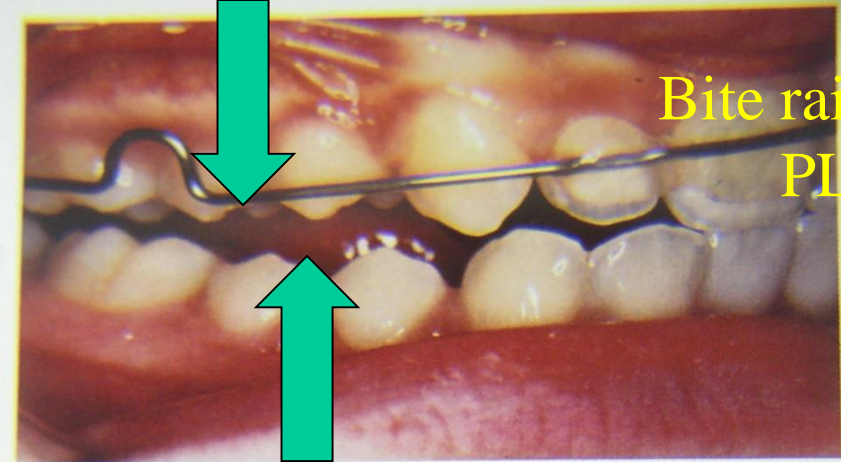
Open bite

(skeletal or

dentoalveolar ?)

Bite raising plane (on the upper appliance)





Bite raising plane
PLANE

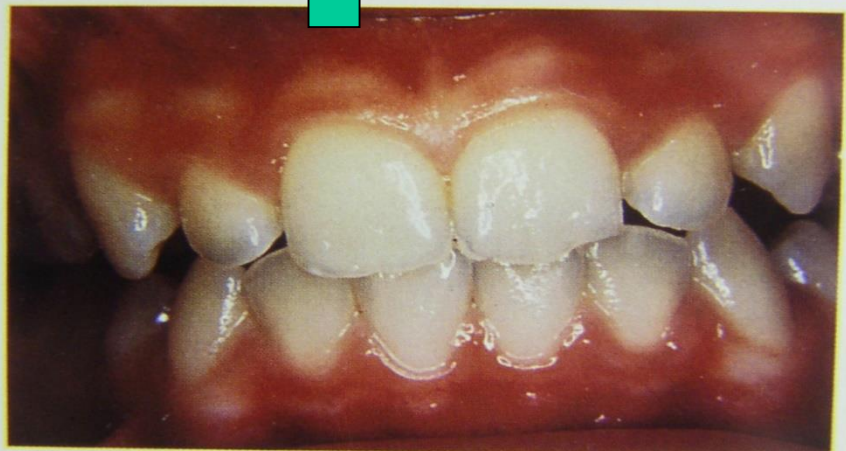
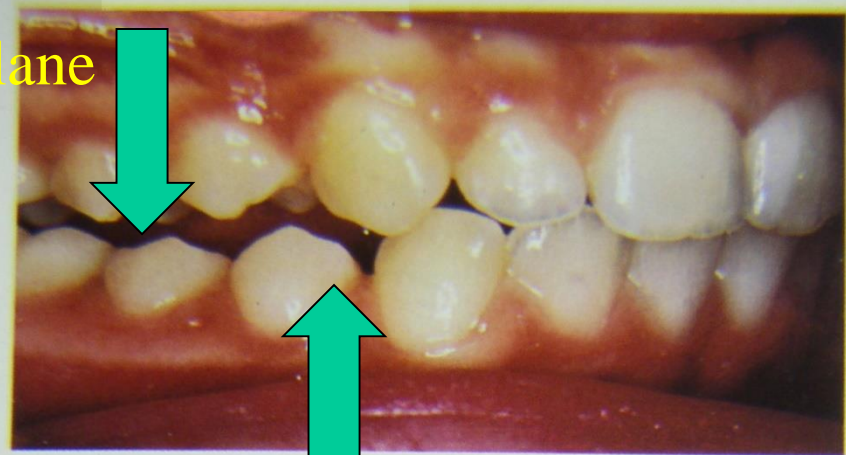
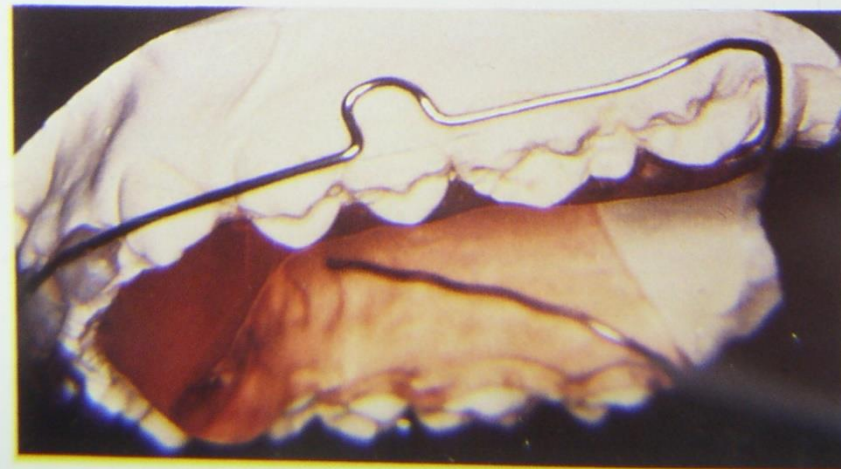
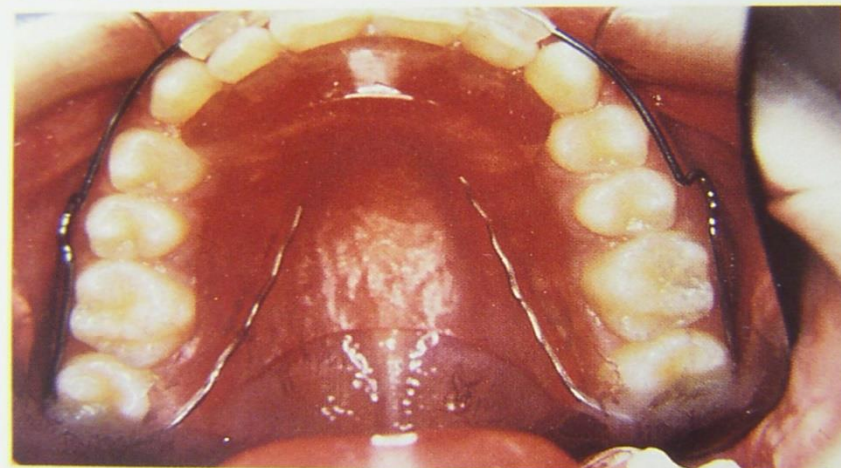
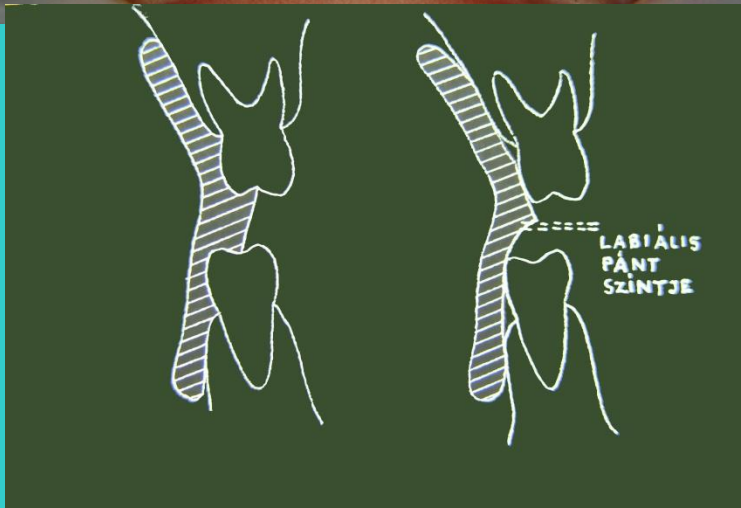
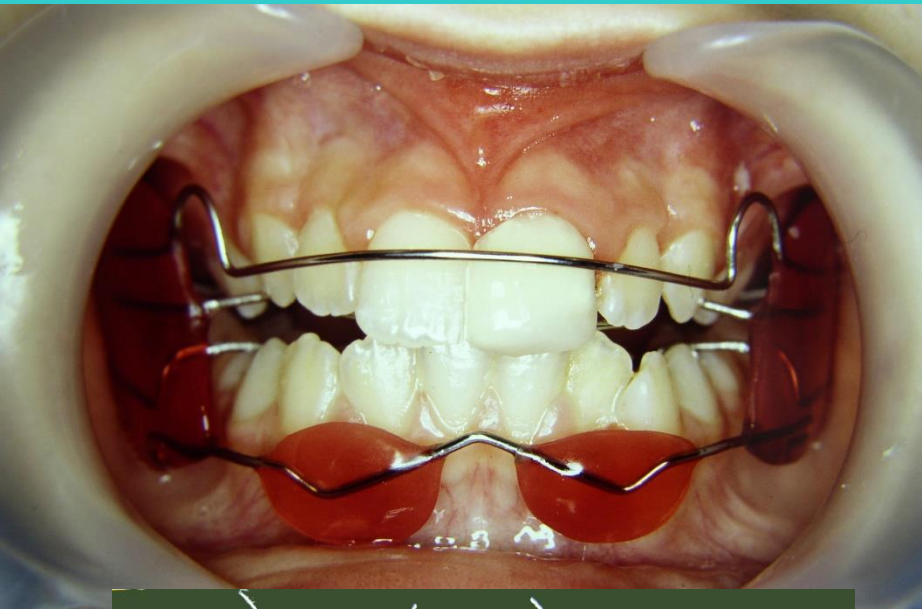


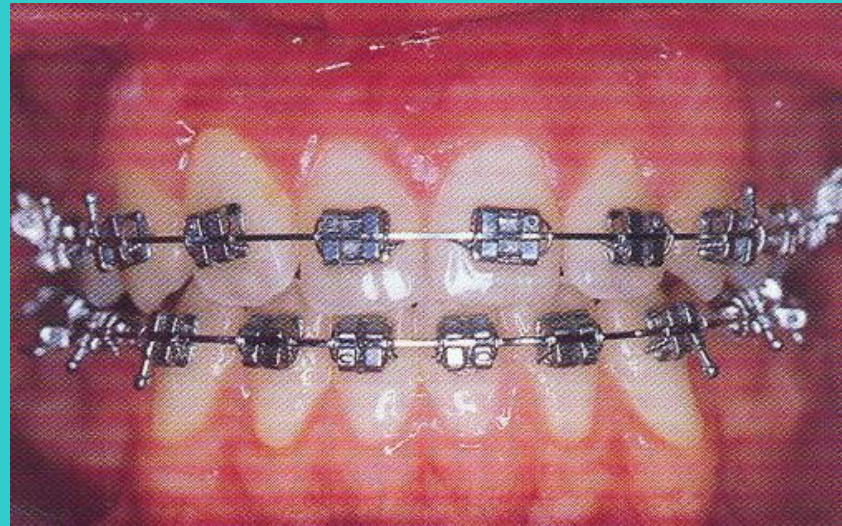
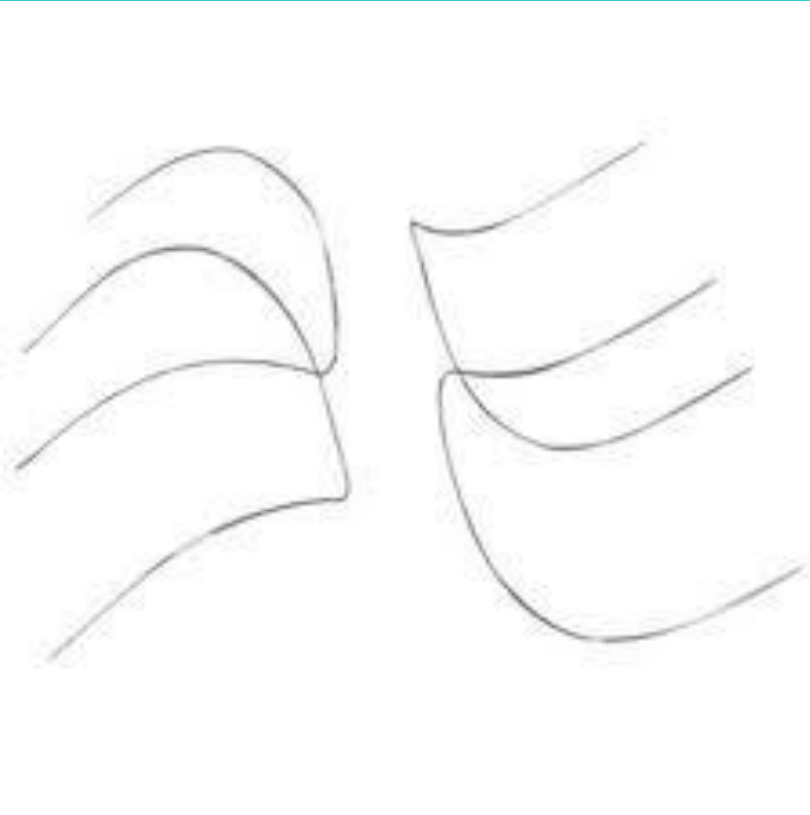
Fig. 11. Corrected incisor relationship, bilateral open bites.

Bimaxillary, functional appliances

Frankel- appliance

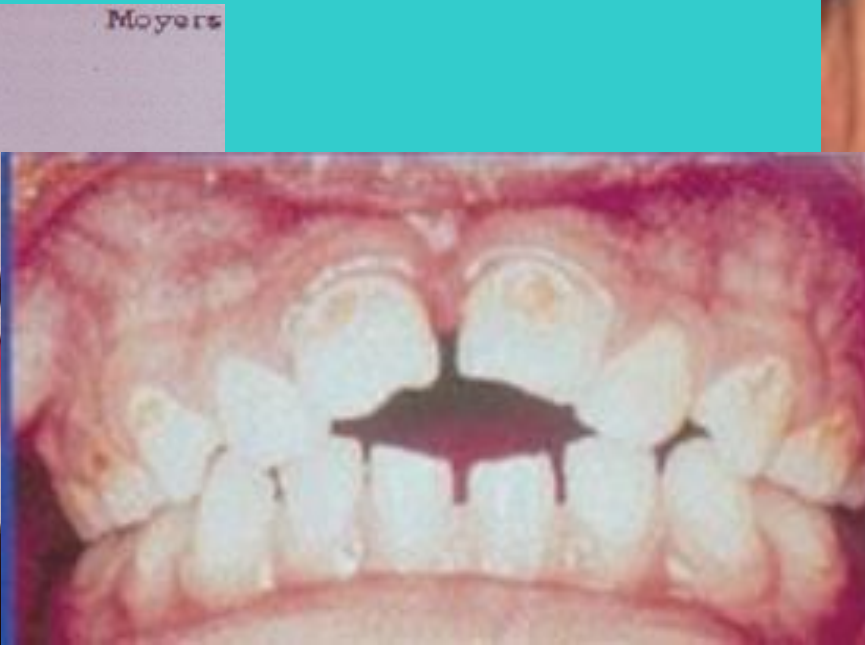
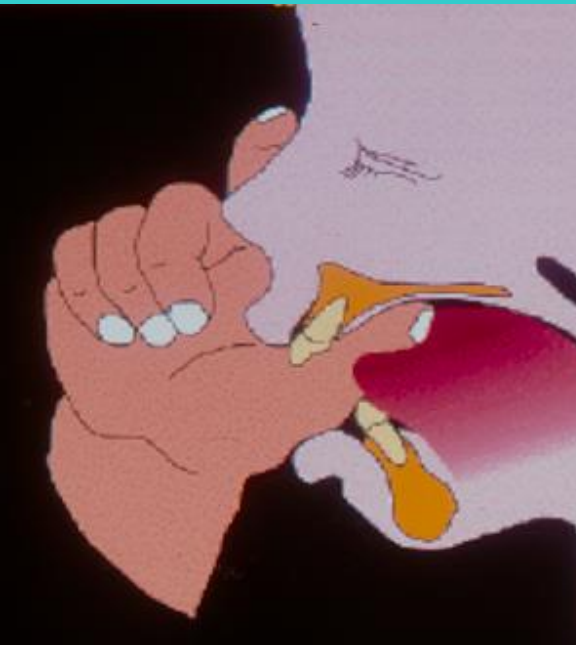


Anti Spee (curve) wires



Open bite

- Consequences of thumb sucking
- Open bite
- Protrusion of upper incisors
- Retrusion of lower incisors
- - Distalocclusion



Habit breakers

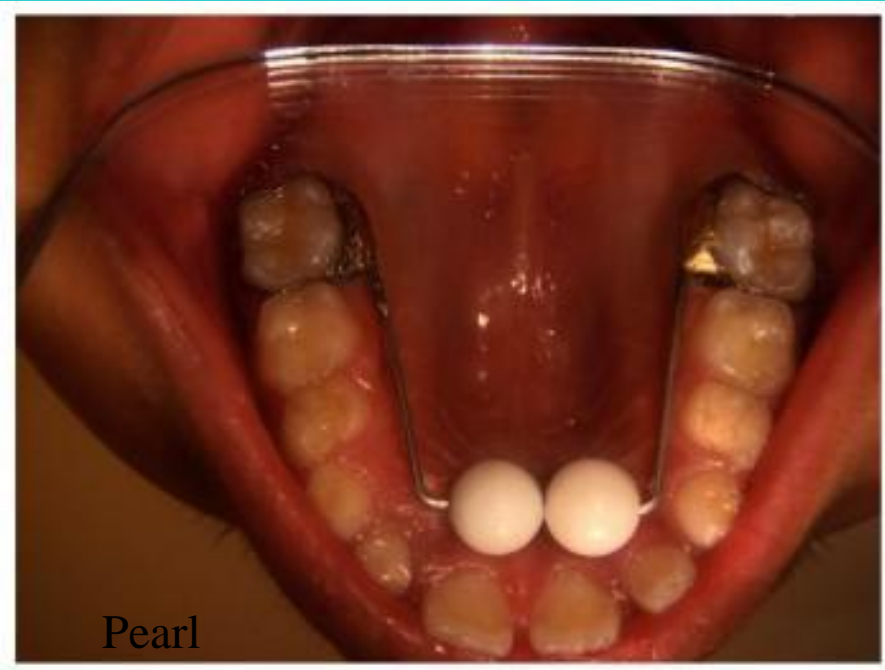


INTERCEPTIVE ORTHODONTICS

Local factors: THUMB SUCKING

- At what age should treatment be started?
 - Da Silva et al (1991) “from the 5th year of age”
 - Proffit (1993) “before the eruption of permanent incisors”
 - Houston (1993) “ by 7-8 years of age “
 - Mills (1982) “before permanent dentition”
 - Larsson (1987) “before pubertal growth spurt”

Appliances against bad habits

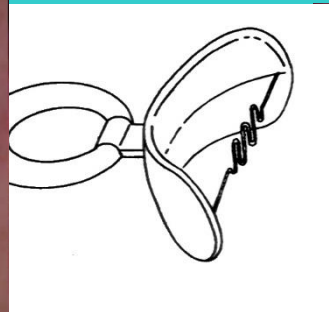


LOGOPÉDUS !!



DEGLUTITIO INFANTILIS

Tongue thrust swallow



5- Intermaxillary rubbers, miniimplant Bite closure



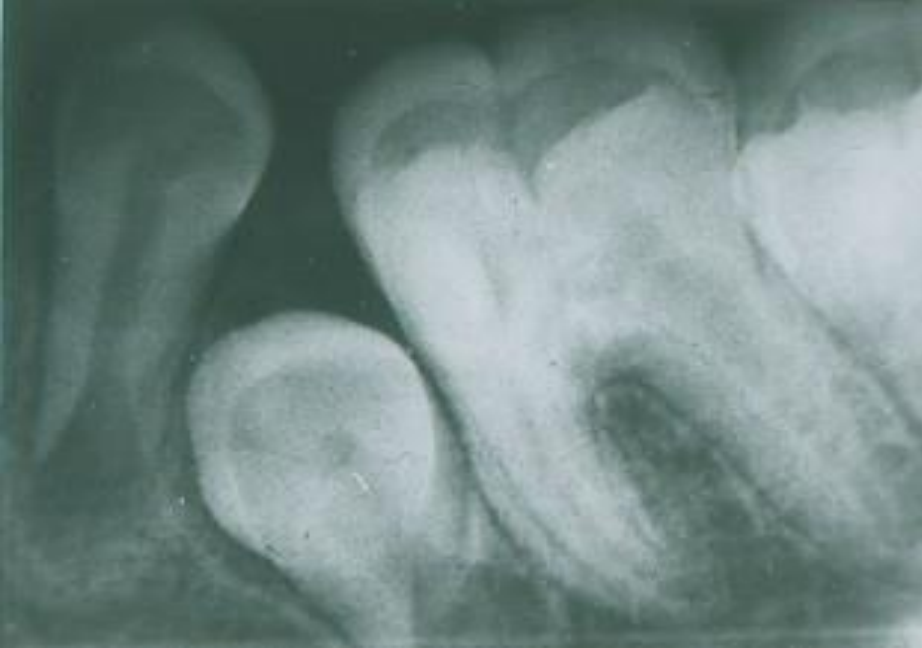
- Hereditary skeletal open bite: surgery !!!



Thank you for your attention !



Primary teeth extractions



Basic Space Maintainers

- NANCE (Transpalatal Arch with Acrylic Button Stop on Palate)
- LOWER LINGUAL HOLDING ARCH (LLHA)
- BAND/CROWN and LOOP
- DISTAL SHOE

NANCE (Transpalatal Arch
with Acrylic
Button Stop on Palate)



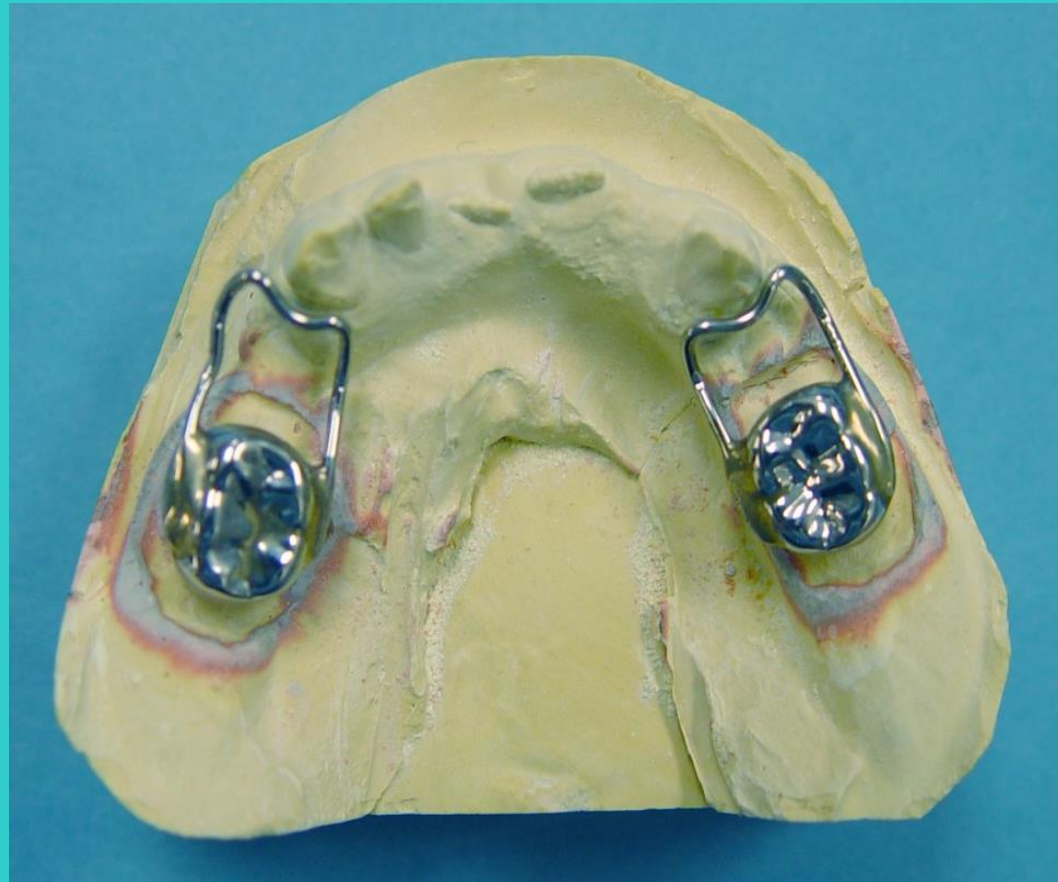
BAND/CROWN and LOOP



BAND/CROWN and LOOP



BAND/CROWN and LOOP



LOWER LINGUAL HOLDING ARCH (LLHA)



- Omega Loops in area of premolars allow slight adjustment to fit appliance

LOWER LINGUAL HOLDING ARCH (LLHA)



- Mandibular incisors often erupt lingually and are pushed forward by the tongue or lingual arch

Transzpalatal bar

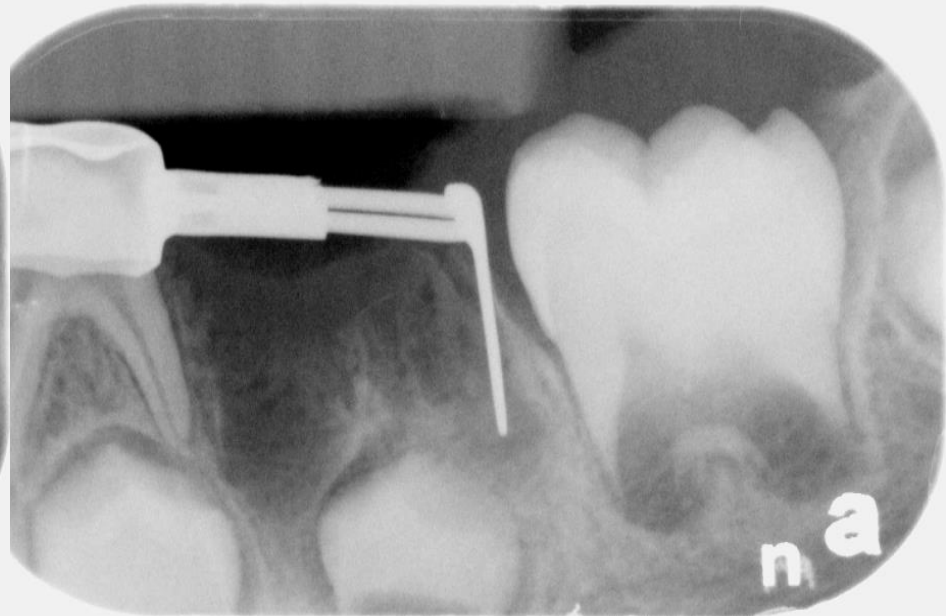


Distal Shoe

- Before the eruption of the first molar



Distal Shoe

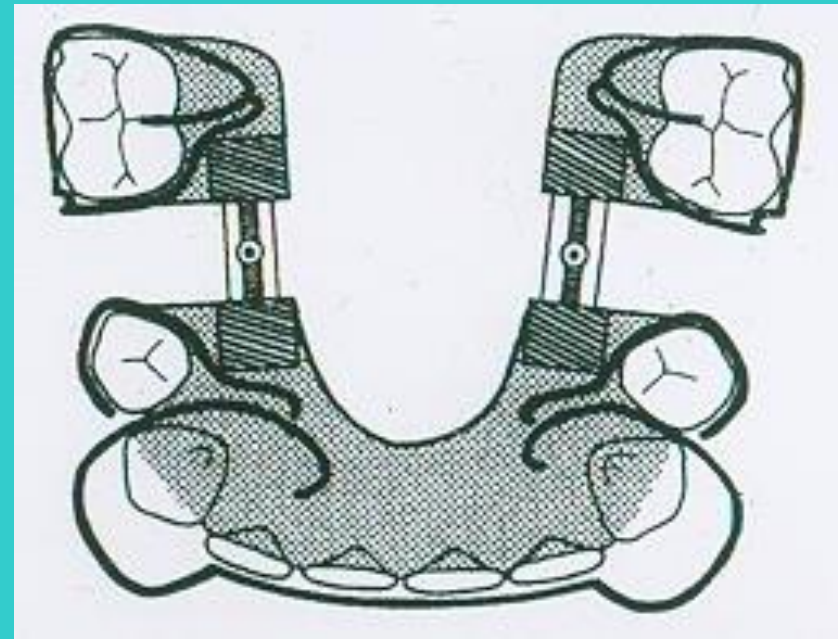


Removable space maintainer

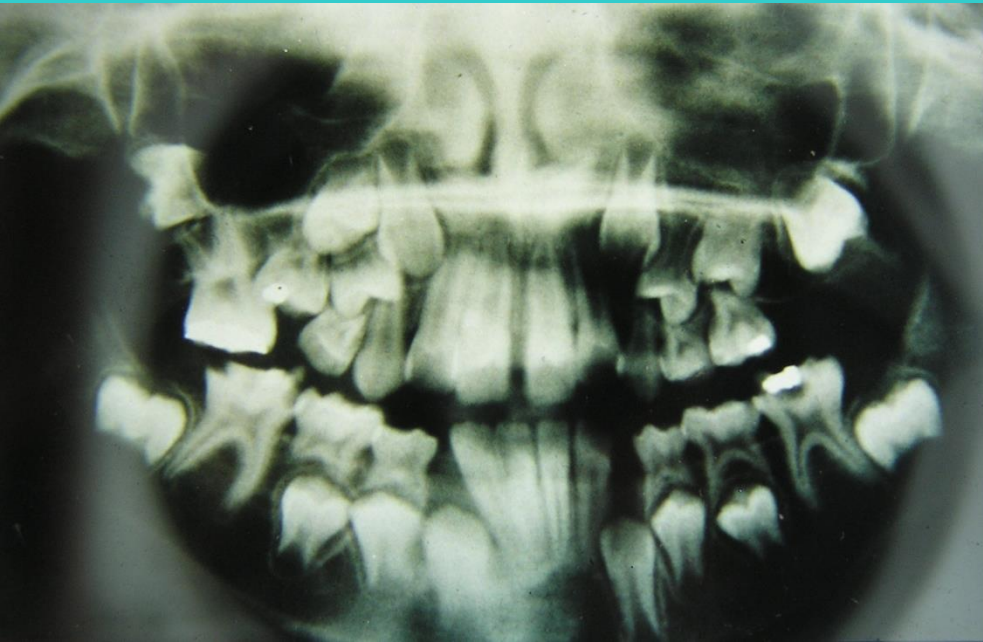
Passive



Active

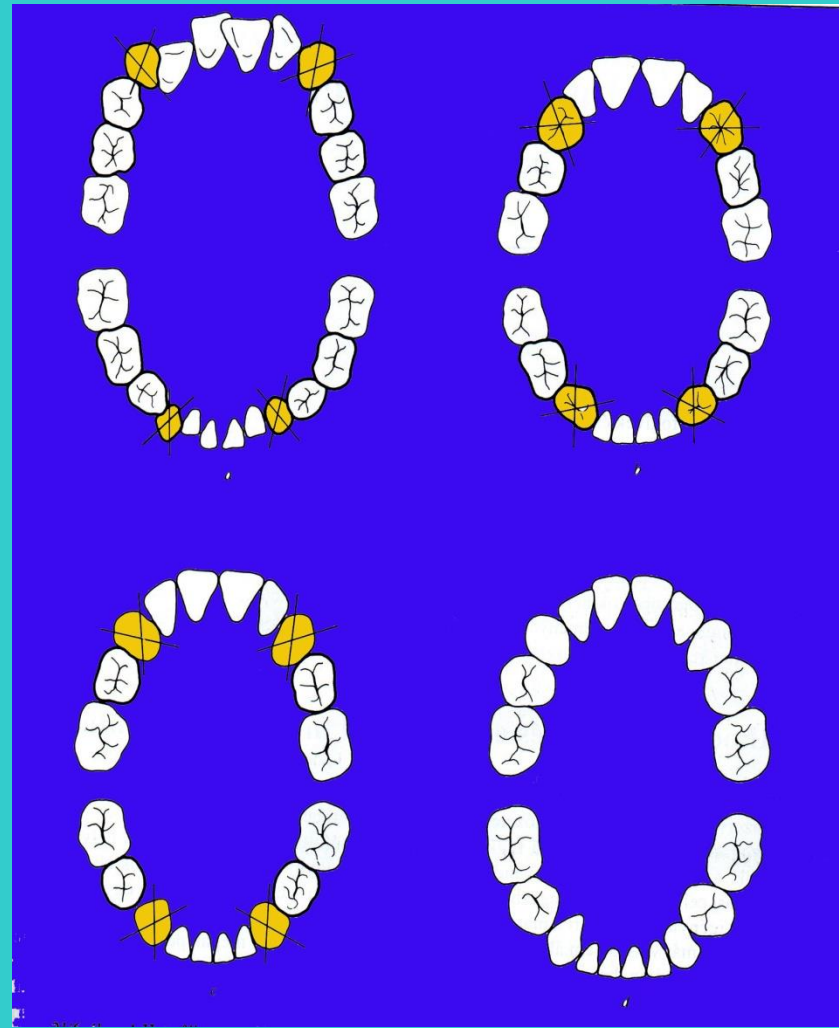


Early loss of the primary canines
(never extract primary canines,
because you will lose the place of
the permanent canine)

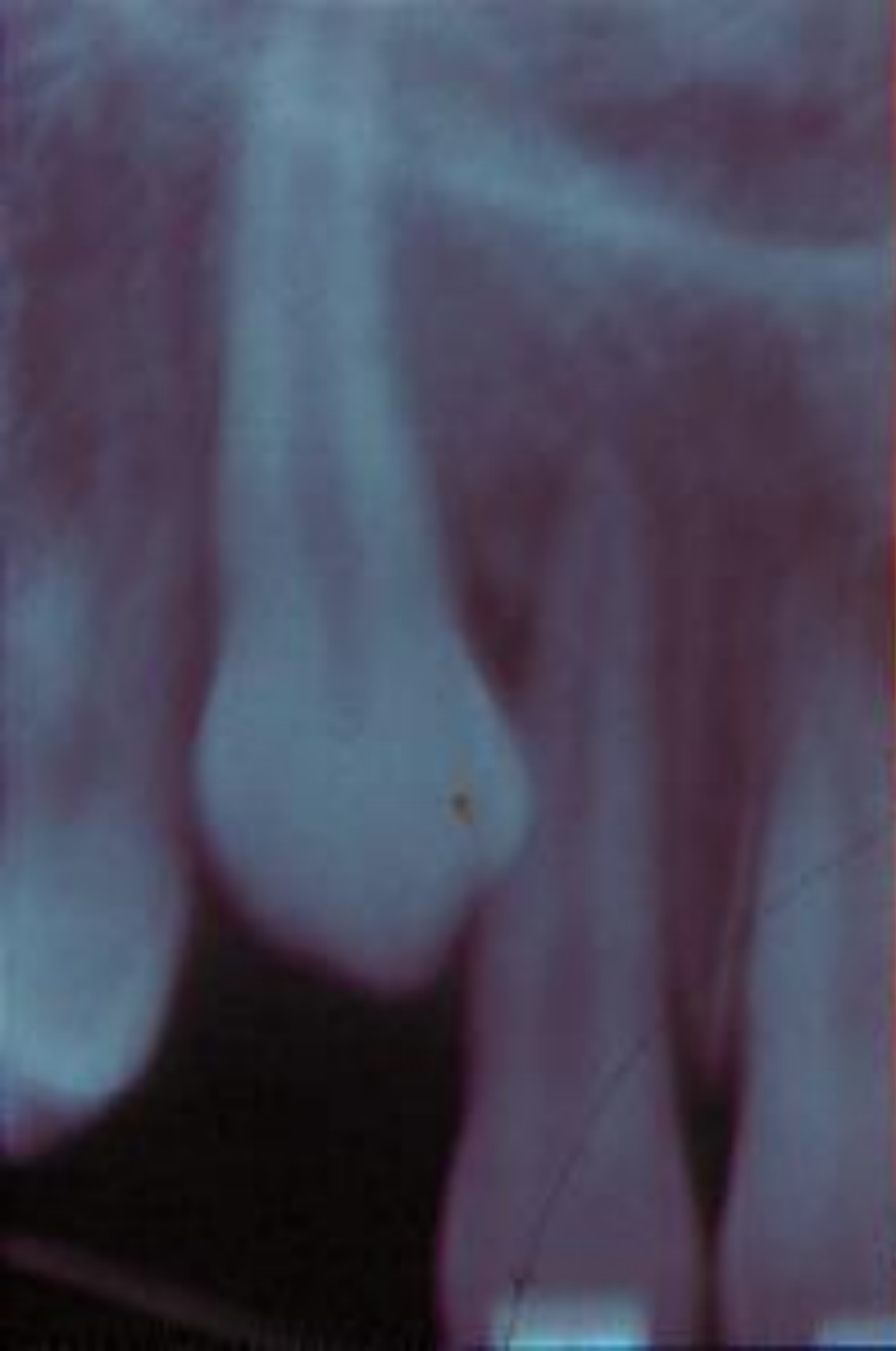


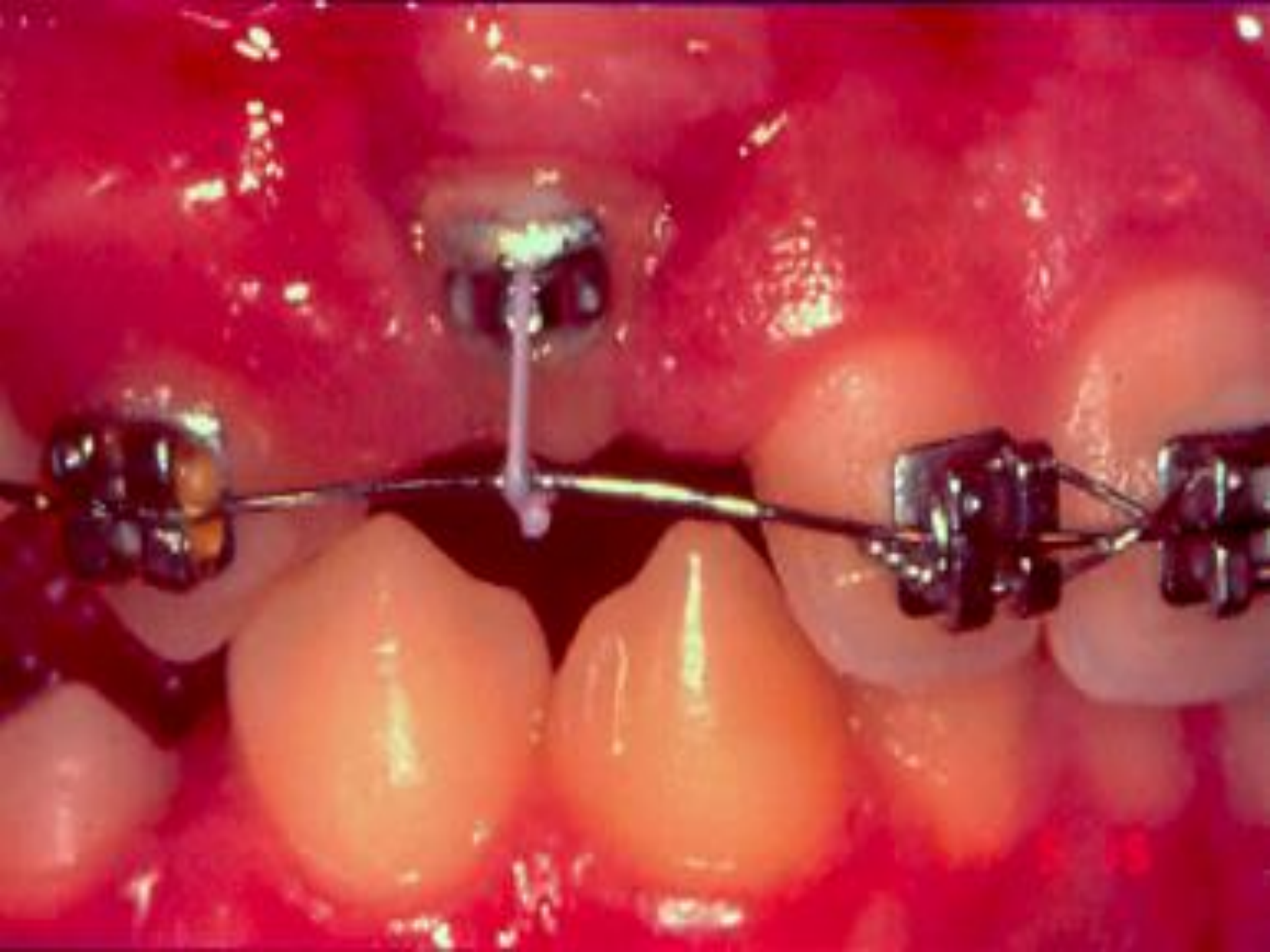
Hotz serial extractions

- primary canines
- primary first molars
- permanent first premolars









98 3 13



Possibilities by missing teeth

- Reimplantation (after accidents)
- Bridge
- Implantation
- Space closure with fixed orthodontic appliance
- Preprosthetic orthodontic treatment +prosthetic solution



Correction of the
abutment tooth



Indication of preprosthetic orthodontic treatment

- Correction of the tooth axis
- Space opening for bridge or implantatum
- Treatment of crossbite
- Alignment of impacted teeth
- Treatment of the consequences of parodontopathia

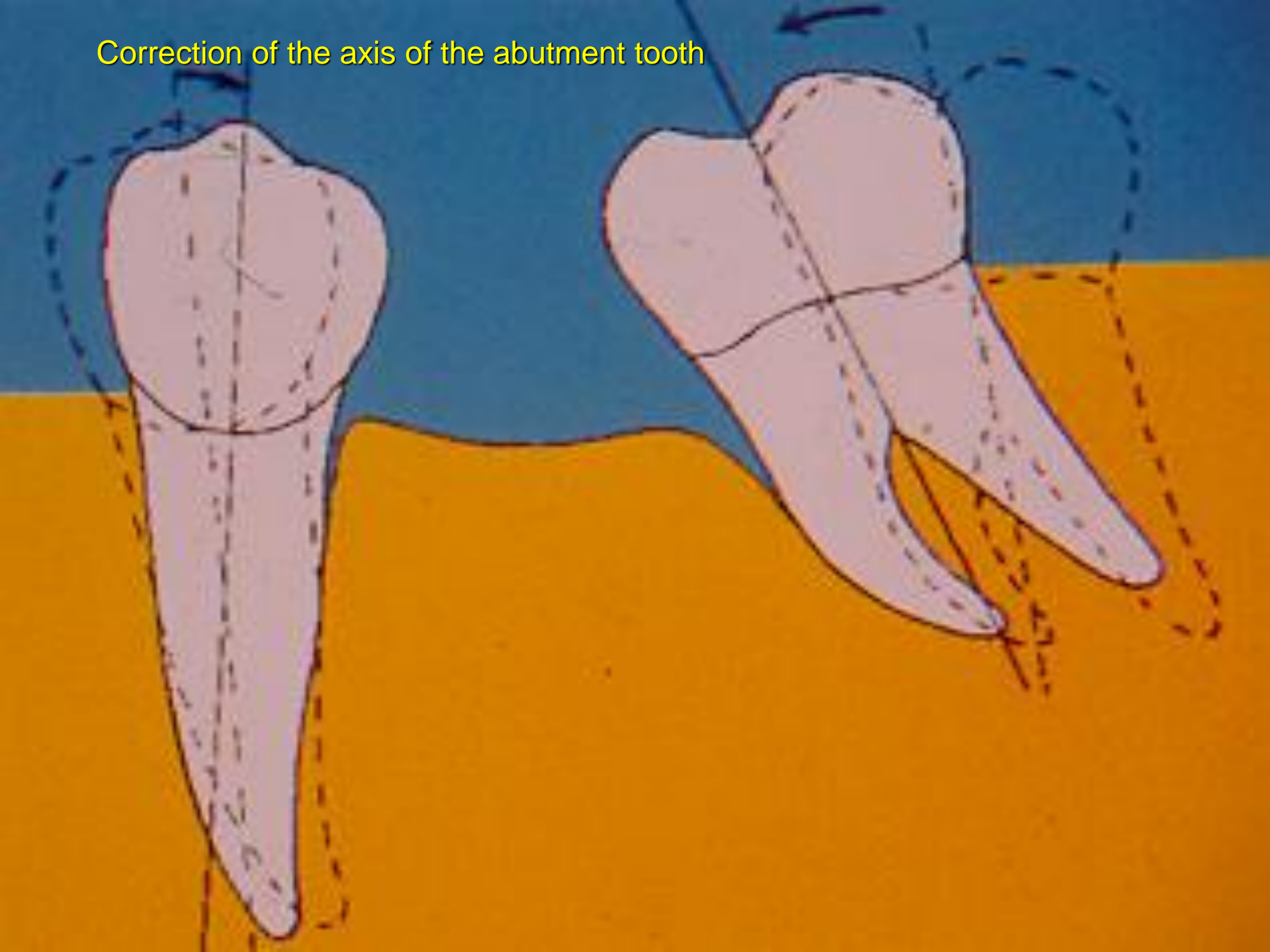


Pillérfogak tengelykorrekciója

Correction of the axis of the abutment tooth



Correction of the axis of the abutment tooth



Indication of preprosthetic orthodontic treatment

- Correction of the tooth axis
- **Space opening for bridge or implantatum**
- Treatment of crossbite
- Alignment of impacted teeth
- Treatment of the consequences of parodontopathia

Preprosthetic orthodontic treatment, opening the space

Space opening with fixed appliance Case 3



Case 3

Preprosthetic orthodontic treatment, opening the space



Case 3

Preprosthetic orthodontic treatment, opening the space



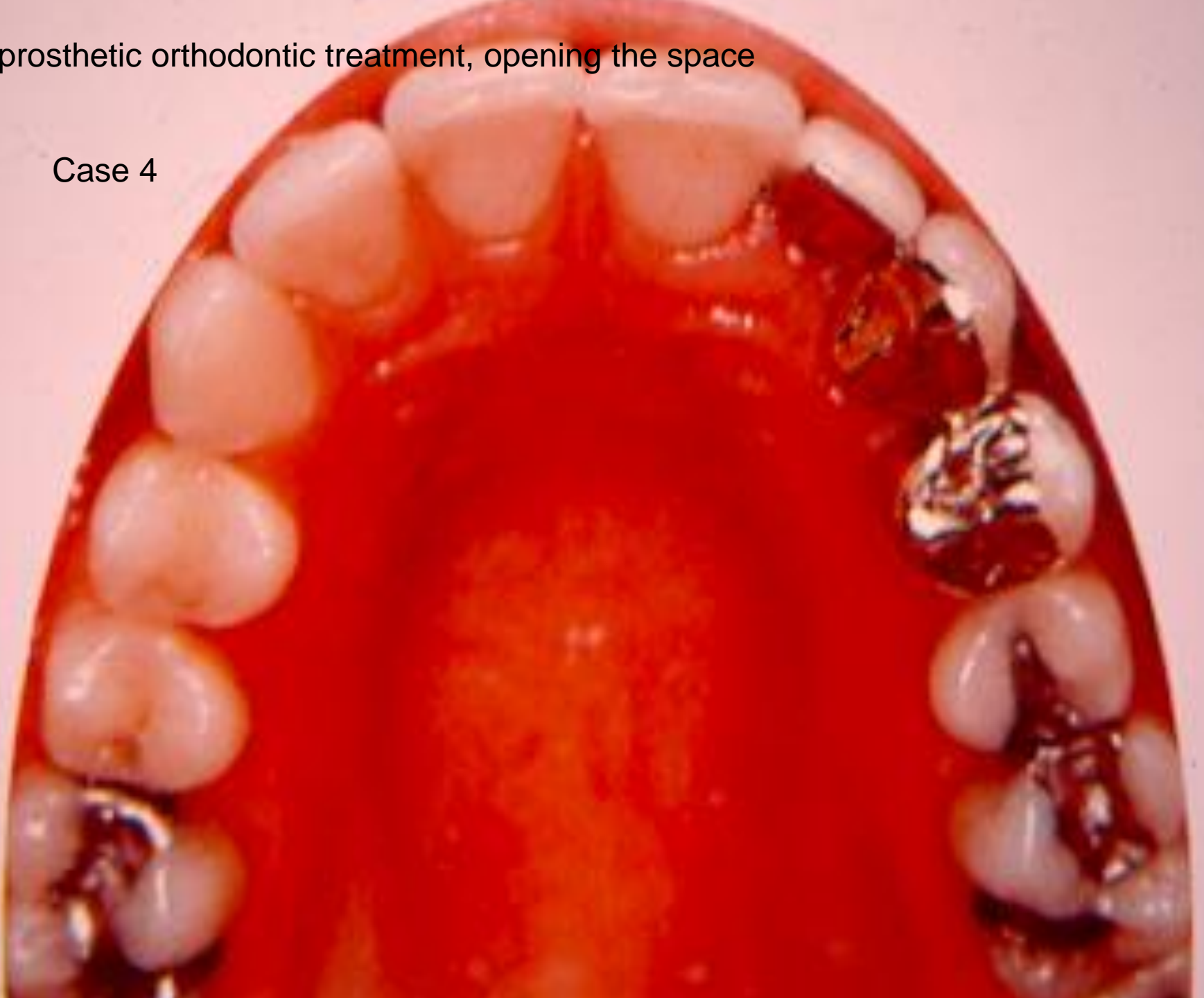
Case 4

Preprosthetic orthodontic treatment, opening the space



Preprosthetic orthodontic treatment, opening the space

Case 4



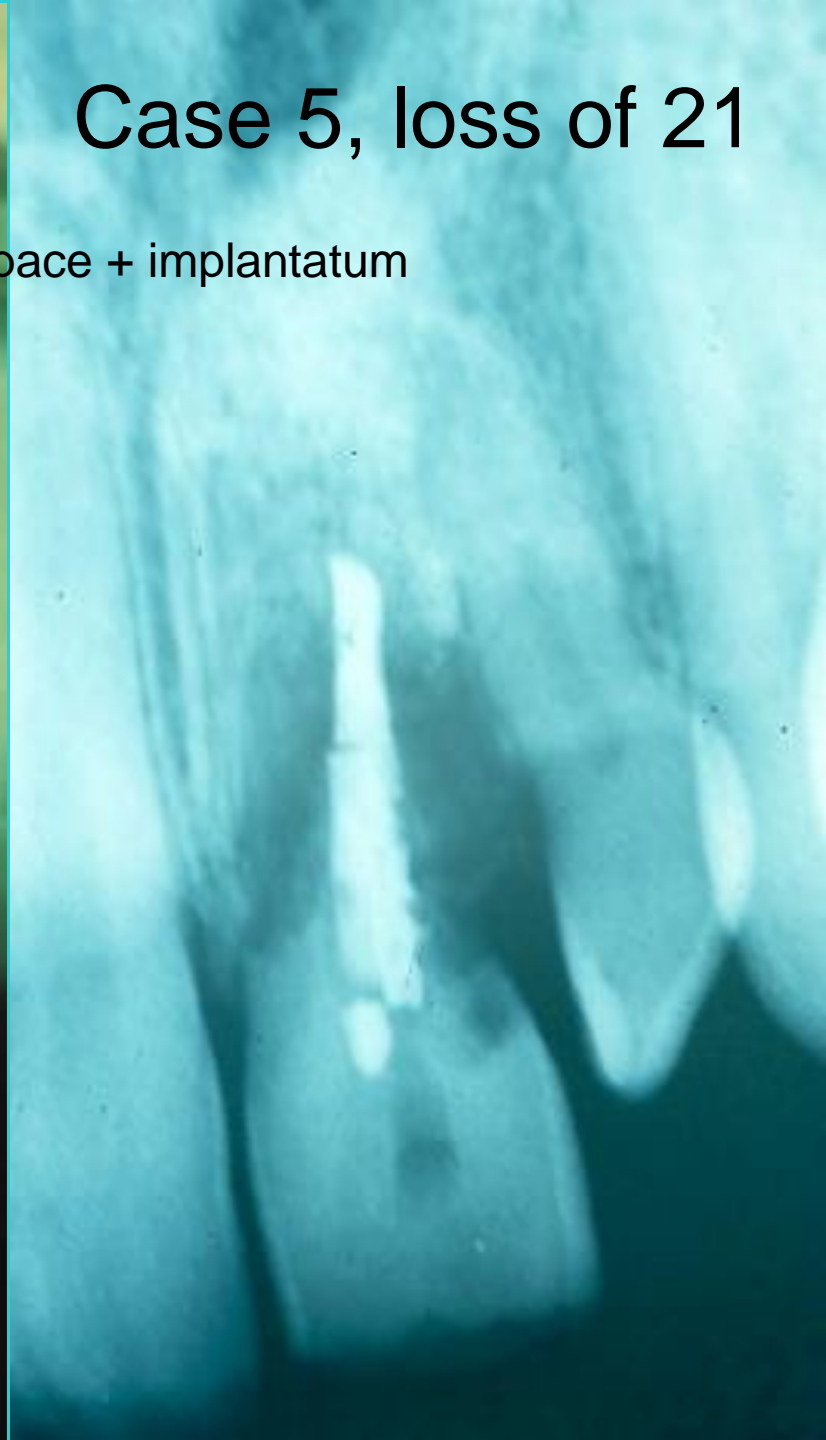
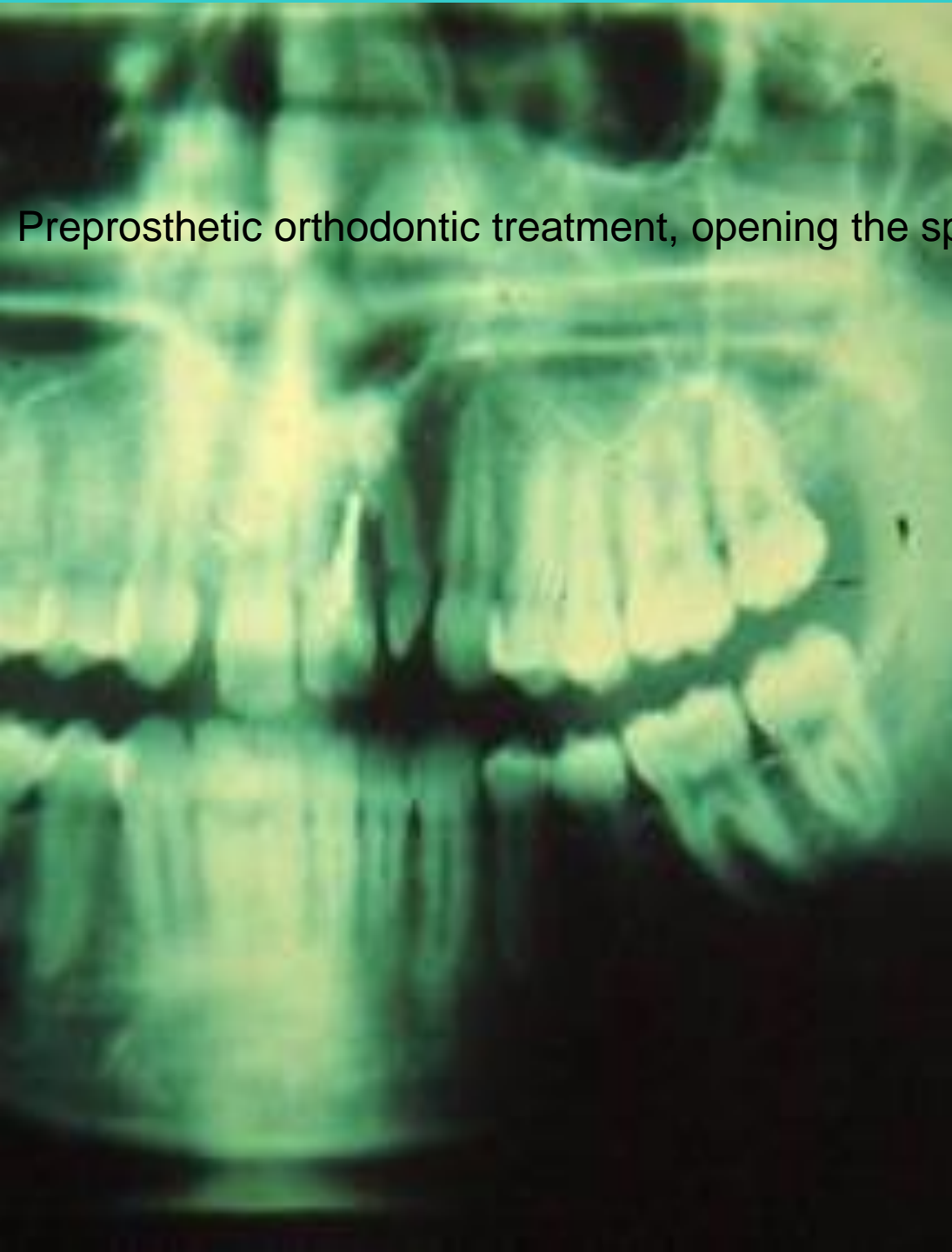
Preprosthetic orthodontic treatment, opening the space

Case 4



Case 5, loss of 21

Preprosthetic orthodontic treatment, opening the space + implantatum



Preprosthetic orthodontic treatment, opening the space + improving the cross of 21



Preprosthetic orthodontic treatment, opening the space + implantatum

Case 5, loss of 21



Preprosthetic orthodontic treatment, opening the space + implantatum



Case 5, loss of 21

Preprosthetic orthodontic treatment, opening the space + implantatum

Case 5, loss of 21



Case 5, loss of 21

Preprosthetic orthodontic treatment, opening the space + implant



Preprosthetic orthodontic treatment, opening the space + implant Case 5, loss of 21



Preprosthetic orthodontic treatment, opening the space

Case 6



Preprosthetic orthodontic treatment, opening the space

Case 6



Preprosthetic orthodontic treatment, opening the space

Case 6



Indication of preprosthetic orthodontic treatment

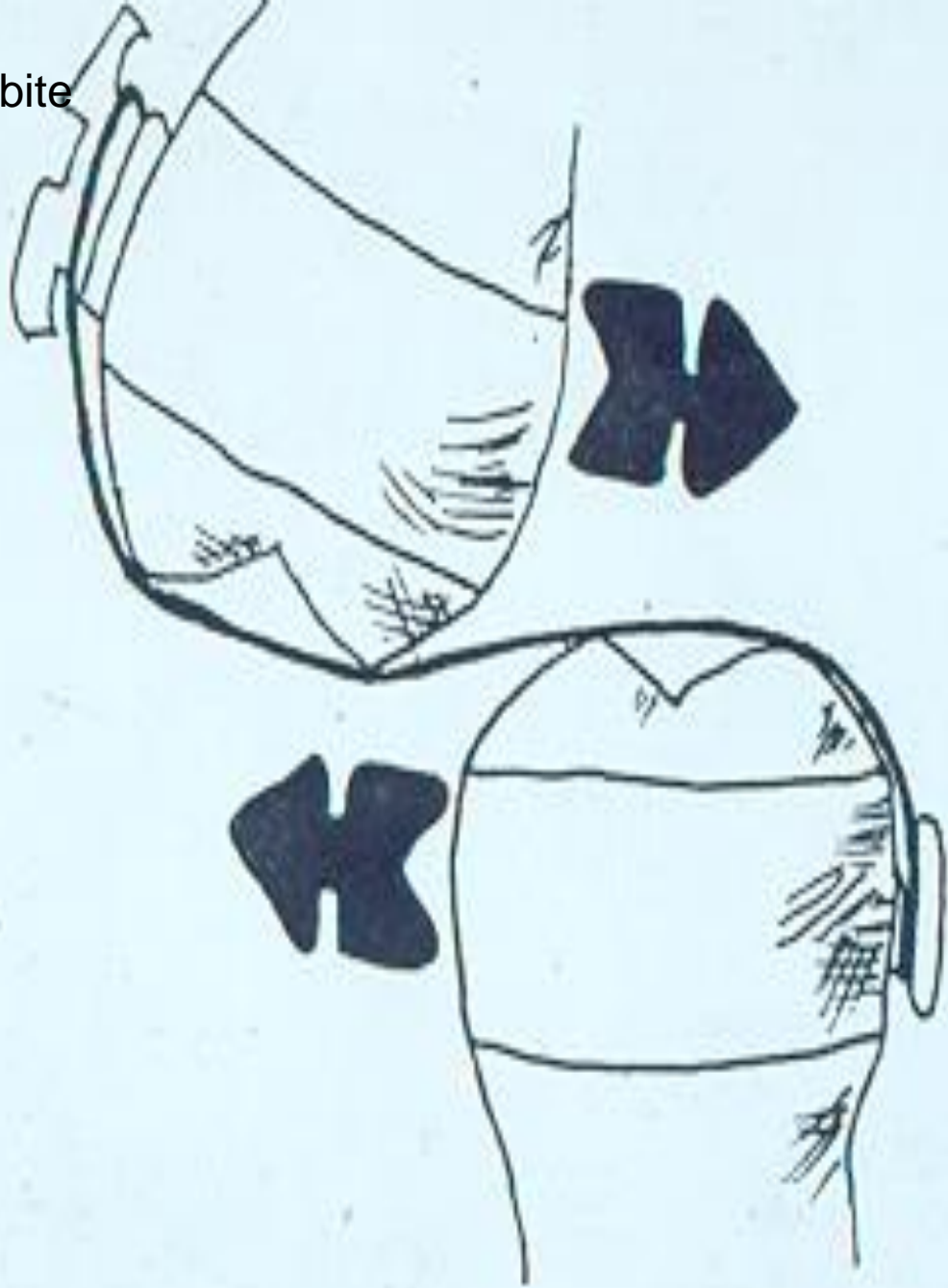
- Correction of the tooth axis
- Space opening for bridge or implantatum
- **Treatment of crossbite**
- Alignment of impacted teeth
- Treatment of the consequences of parodontopathia

Metszőfogak kereszttherapásának kezelése

Preprosthetic orthodontic treatment, crossbite



Preprosthetic orthodontic treatment, crossbite



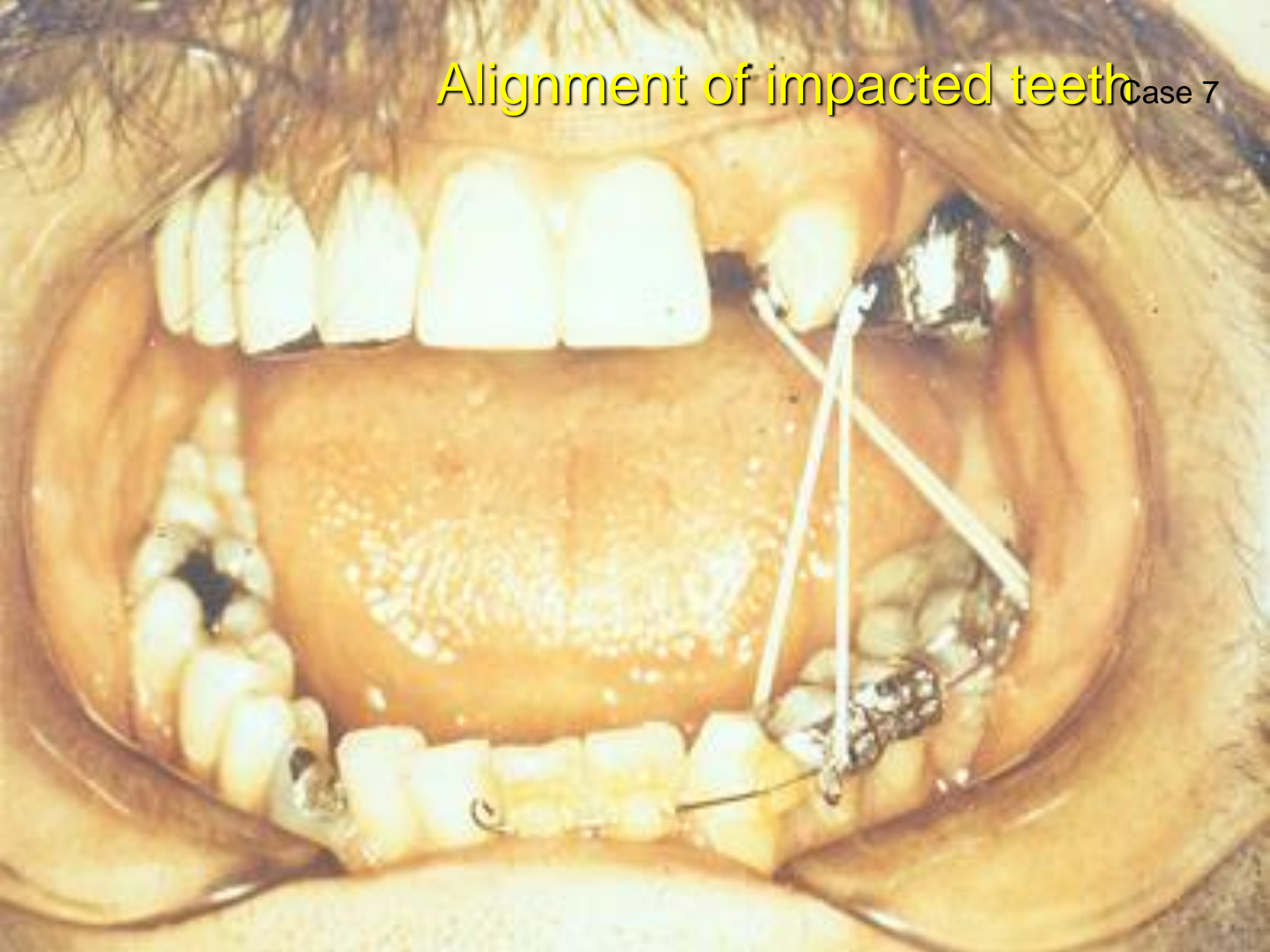
Indication of preprosthetic orthodontic treatment

- Correction of the tooth axis
- Space opening for bridge or implantatum
- Treatment of crossbite
- **Alignment of impacted teeth**
- Treatment of the consequences of parodontopathia

Alignment of impacted teeth Case 7



Alignment of impacted teeth Case 7



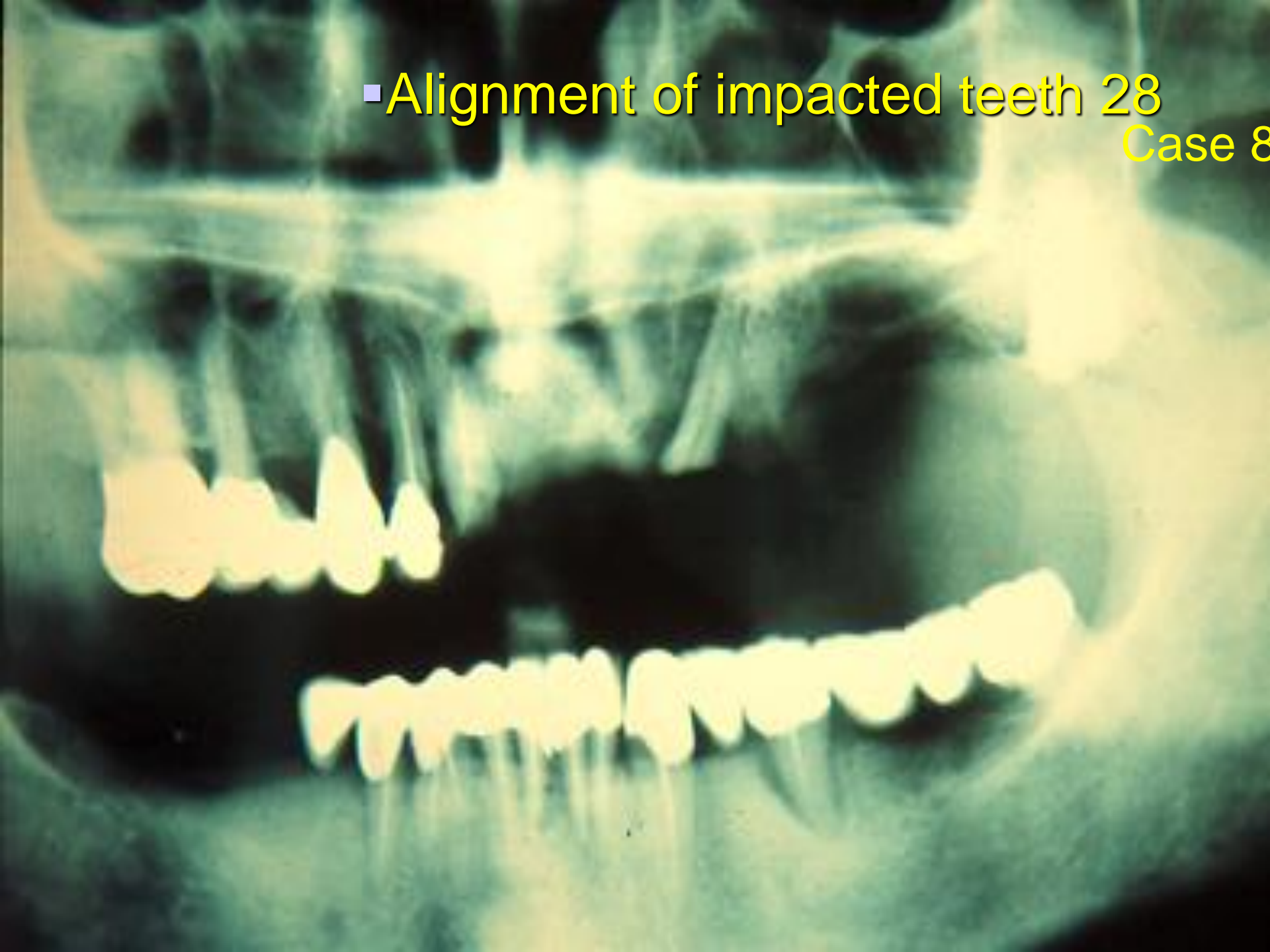
Alignment of impacted teeth + bridge

Case 7



■ Alignment of impacted teeth 28

Case 8



- Alignment of impacted teeth 28

Case 8



Alignment of impacted teeth 28

Case 8



Alignment of impacted teeth 28

Case 8



Alignment of impacted teeth 28

Case 8



Alignment of impacted teeth 28 + bridge Case 8



Alignment of impacted teeth 28

Case 8



Indication of preprosthetic orthodontic treatment

- Correction of the tooth axis
- Space opening for bridge or implantatum
- Treatment of crossbite
- Alignment of impacted teeth
- Treatment of the consequences of parodontopathia

Treatment of parodontopathia

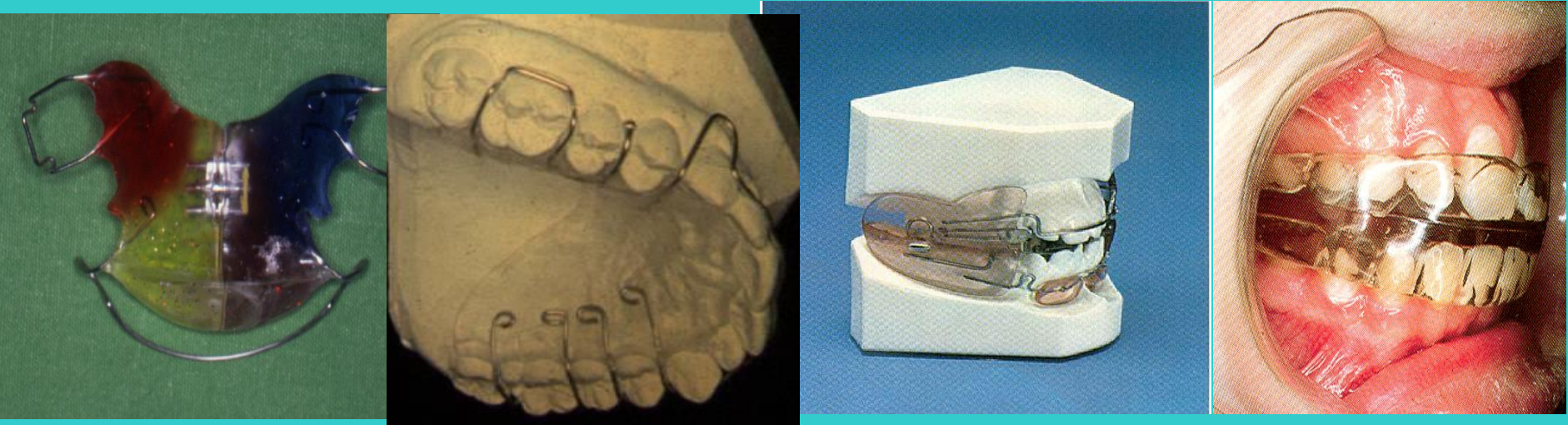


Treatment of parodontopathia



Grouping of the orthodontic appliances

Removable appliances



Fixed appliances



Grouping the appliances

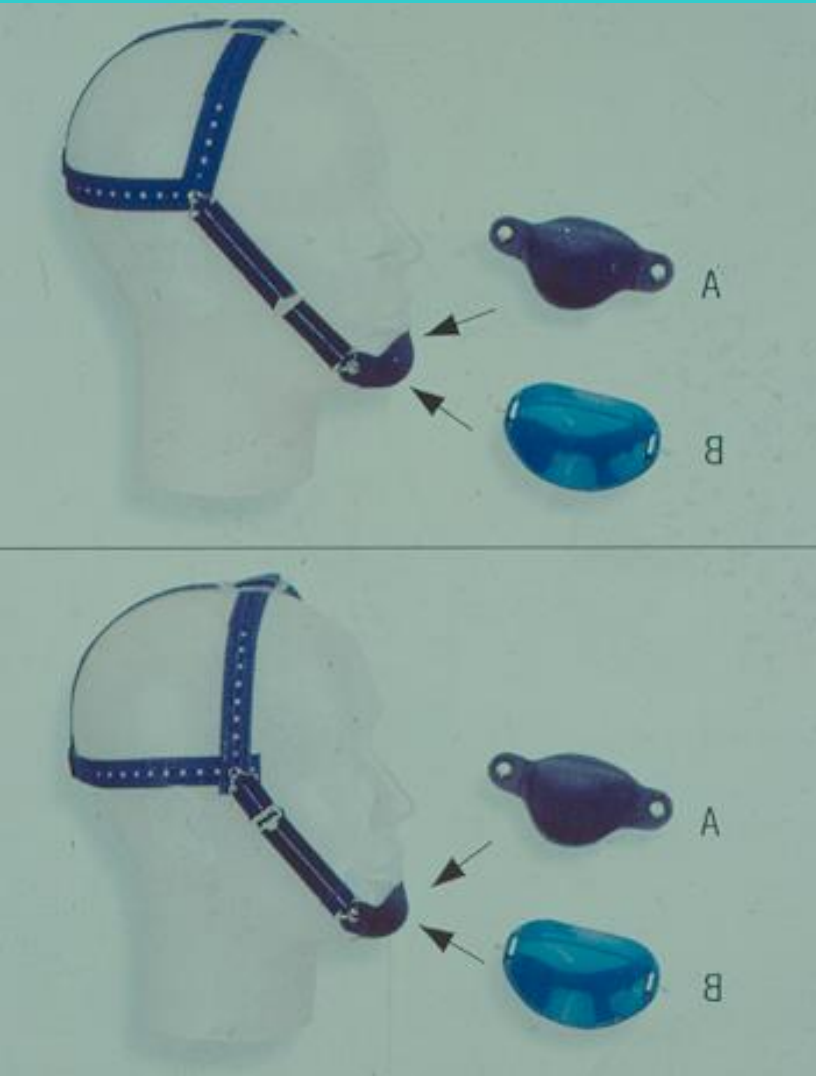


Intraoral appliances

Extraoral appliances

Extra-, intraoral appliances

Chin cap – against progenesis, (extraoral)





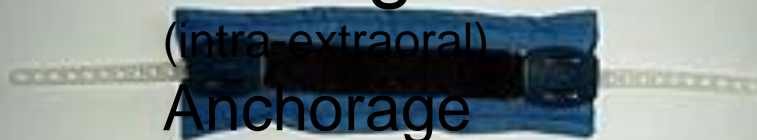
Headgear

(intra-extraoral)

Anchorage

Distalisation of molars

Treatment of vertical anomalies



Reverse Headger Facemask (intra-extraoral)







magic® a de

Das innovative DentaLingual-System



Generationen voraus

Weltneuheit: nickelfreie* Lingual-Brackets

*nickelfrei entsprechend ISO 6871-1

DENTAURUM



Indirect bonding

Indirekt bonding



Removing Fixed Appliances

- Bands are lifted off the tooth with band removing pliers
- Metal brackets are easily removed by gently squeezing them with How pliers
- Ceramic brackets must be removed with great care to avoid enamel fracture.
- Residual cement and adhesive is removed with a scaler or metal finishing bur. or rubbers



Quad-helix



Hyrax



Fixed appliances for the treatment of II. class anomalies

- Herbst-appliance
- Jusper Jumper
- Forsus spring stb.



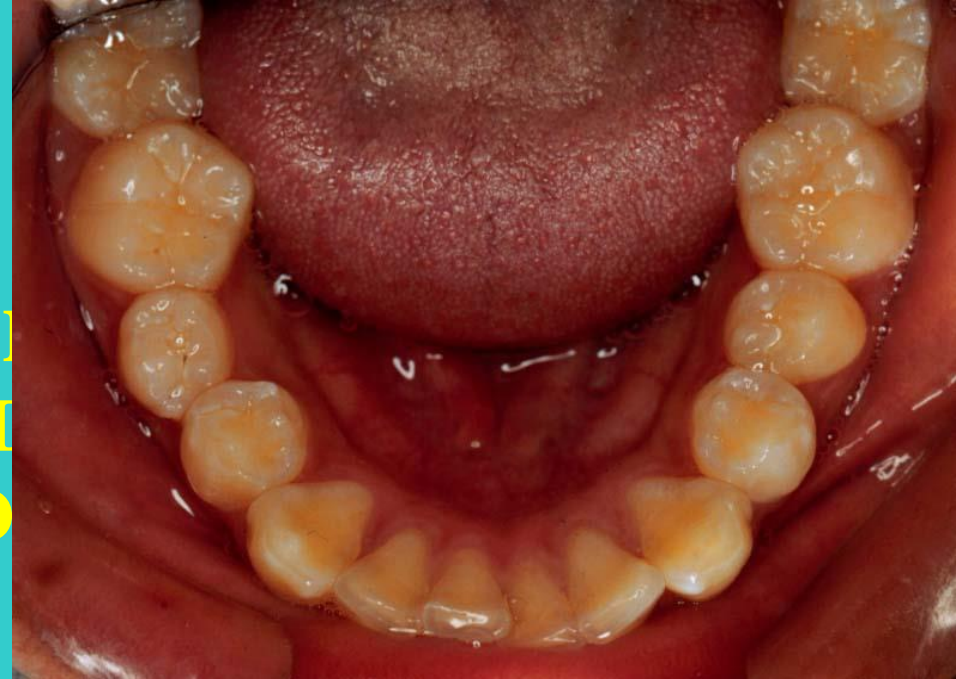
Orthodontic Implants Anchorage



Orthodontic Implants Anchorage

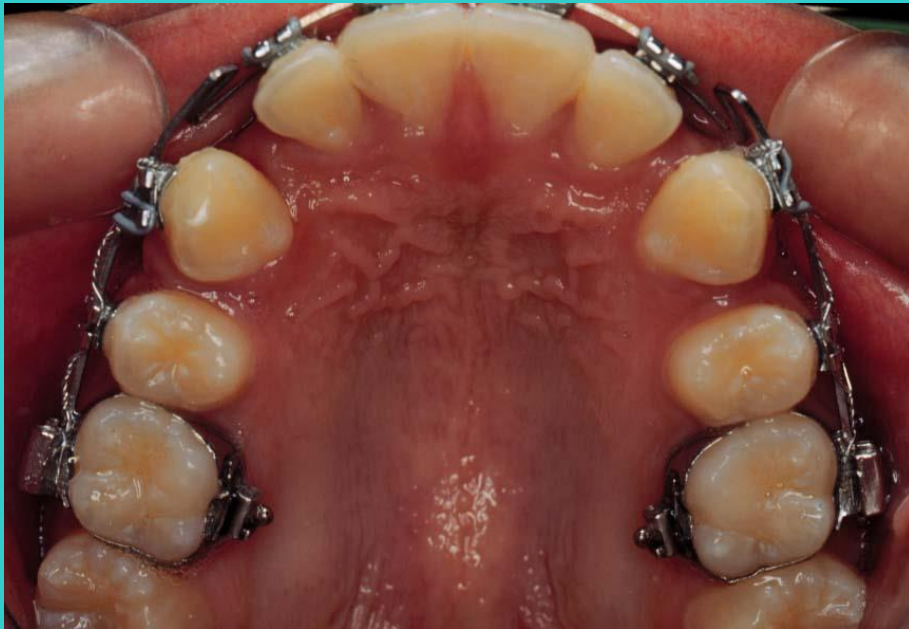


Four premolars extraction

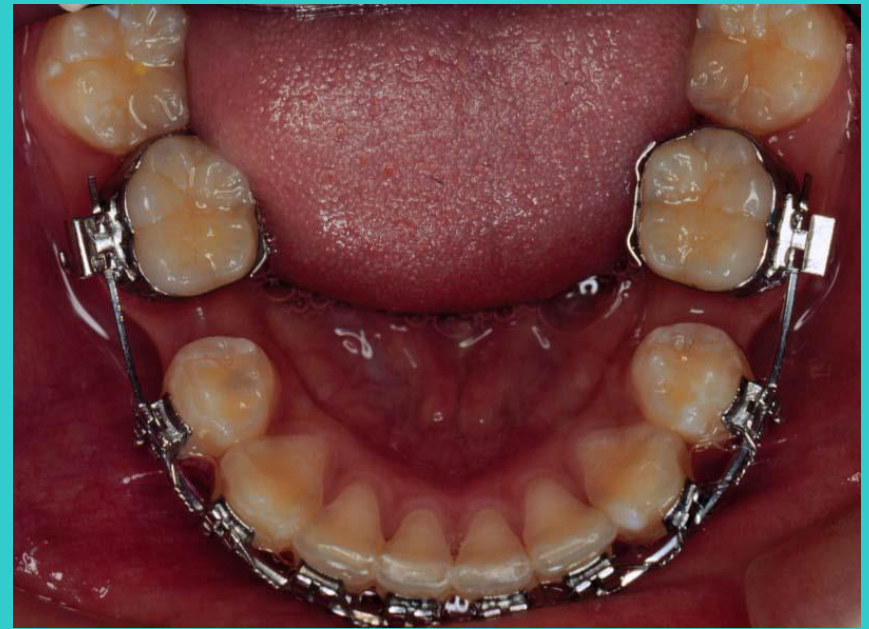


T
B
O

Four premolars extraction



UPPER ARCH



LOWER ARCH

Four premolars extraction



POST-TREATMENT

Two upper premolars extraction

The canine has to be always in correct position !!



Angle II./2

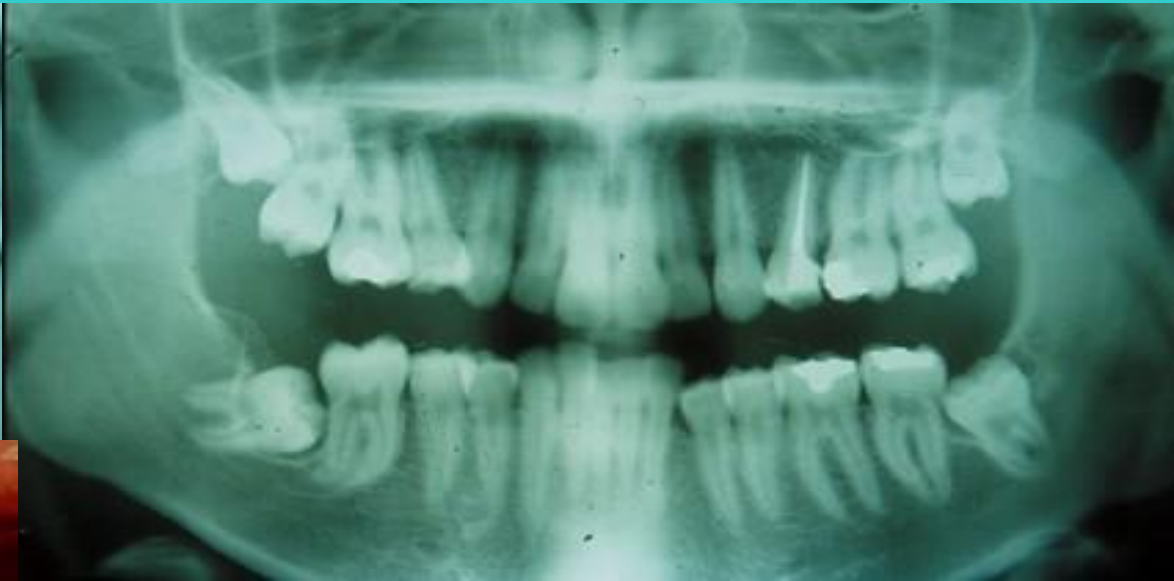


One lower incisor extraction

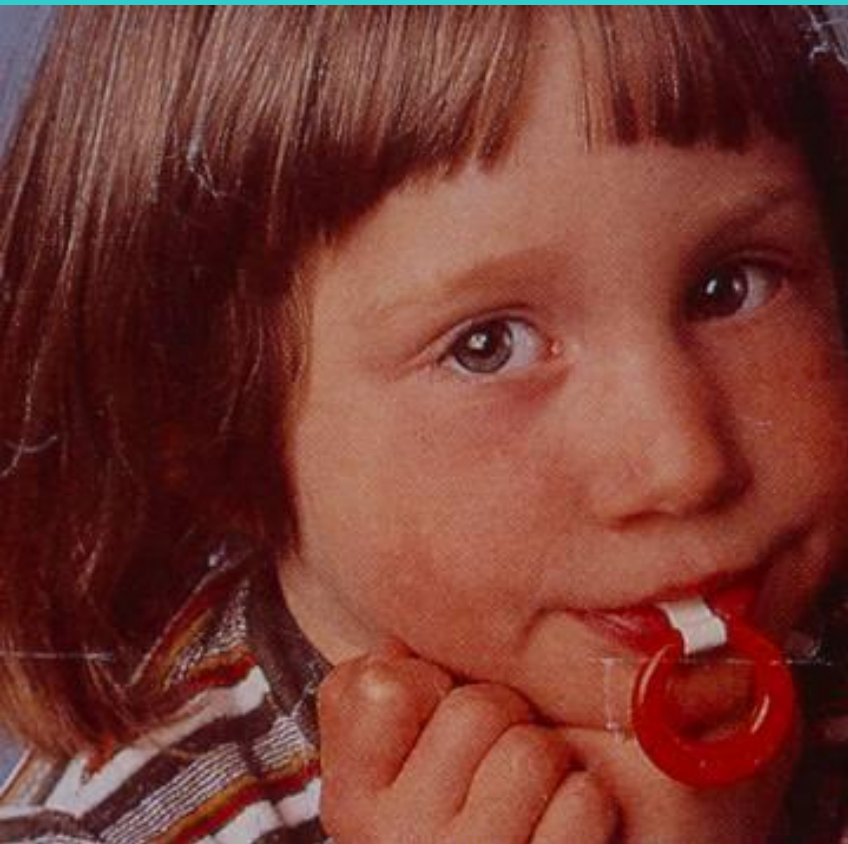


Extraction of wisdom tooth

Orthodontic indication



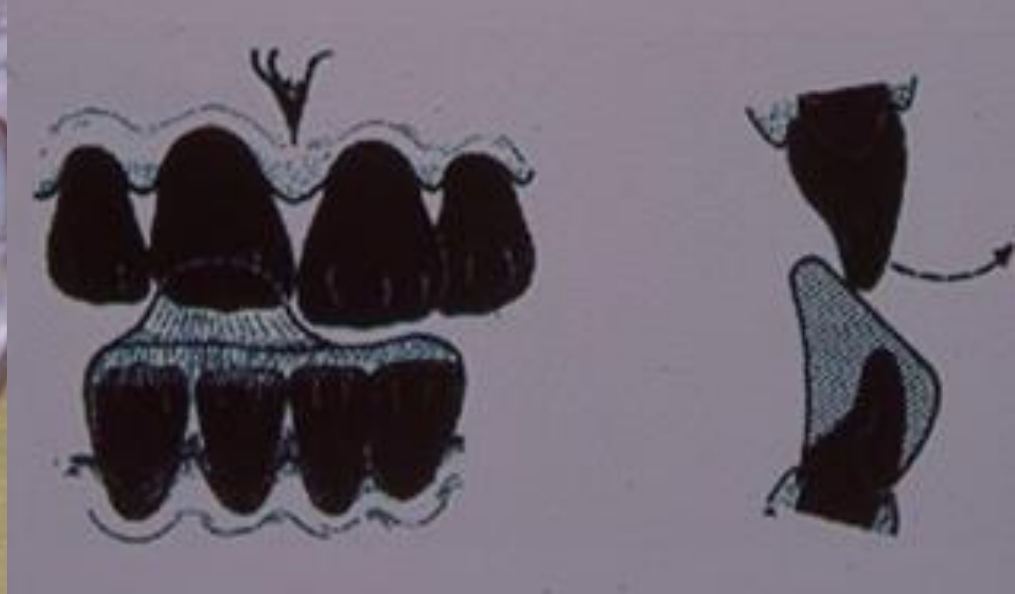
Oral screen



Inclined plane



Keresztharapás



Retention

- *There is only one way to completely avoid relapse. At the end of treatment, remove the braces, polish the teeth, make study models and take photographs. And then take the patient out the back door of the office and shoot him. (Dr. Tom Graber DMD, South African Dental Congress. August 1992.)*

Retention

- Treatment with fixed appliance: 1-3
- The length of retention should be twice longer than the active treatment

1 év > 2 év

Retainers



gyári retainer



vékony acélív



sodort ív



Retainers



Retainers - Essix retainer



Retainers - Positioner



Retainers - Barrer-retainer



- Treatment with fixed appliance: 1-3 (4-5) years
- The length of retention is twice longer than the active treatment

1 év > 2 év